

ALASKA CONSULTING AND ENVIRONMENTAL ENGINEERING

ARNE K. TIKKA, P.E.
P.O. Box 2324 Soldotna, Alaska 99669
(907) 262-3197 FAX 262-9013

January 5, 2017

RECEIVED

Project No. 16-162

Paul Horwath, ADEC
43335 K Beach Road, Suite 11
Soldotna, Alaska 99669

JAN 09 2017
ADEC
Kenai Area Office

Subject: Kasilof Riverview; ADEC Spill #93230015402; UST Facility ID #384
Final Stockpile Soil Spread and Former Stockpile Location Soil Sampling
Monitor Well Sampling
Report of Environmental Investigation and Analytical Results

Paul:

Introduction

A Soil Remediation Work Plan Approval was issued by ADEC on June 13, 2005. We were contacted during the late summer of 2016 to evaluate and sample recently completed contaminated soil spreading and to sample the existing onsite monitoring wells. Following is a report of the investigation and findings including analytical results from soil and groundwater sampling.

The soil was reportedly spread during July of 2016 in the approximate location shown on the attached Approximate Final Soil Spread and Former Stockpile Location Site Map, Sheet 1. The soil was reportedly excavated off the stockpile and deposited, using a front-end loader, and spread using a dozer, by Contractor Lee Q. Wiley of Captain Cook Construction, during July 2016.

We observed the final soil spreading and discussed the project investigation, and proposed soil and monitor well sampling, with you, and have completed the soil and monitor well sampling. Following is the report and summary of our findings.

Final Soil Spread and Former Soil Stockpile Location Sampling

The former stockpile was spread near the NW portion of the property as shown on Sheet 1. The soil was spread in an approximate 36'x120' area with soil spread depths ranging from approximately 6-inches to two feet along the eastern edge and approximately 2.5-3.5 feet on the western edge of the spread. Holes were hand dug at 15-ft intervals down the approximate center of the soil spread, and along the eastern edge of the spread, to mostly three feet deep. Many of these hand dug holes extended to apparent undisturbed organic soils. Samples were taken from 17 separate hole locations, immediately upon excavation, at mostly one-foot depth intervals for PID readings in each hole as shown on the Approximate Final Soil Spread Sample Locations Map, Sheet 2. Samples were also taken from six separate hole locations, under the former soil stockpile area, with samples collected for PID vapor readings from 0-13/18" deep for each sample location as shown on the Former Soil Stockpile Soil Sample Location Map, Sheet 3.

1.25'
3.00'
2.125' Avg
Depth

The soil samples were collected in gallon zip-loc bags, warmed, agitated, and PID vapor readings taken using an onsite calibrated MiniRae 2000 PID vapor monitor. The PID vapor screening for the final soil spread sample locations revealed relatively low levels with vapor readings ranging from 0.0 ppm to a high of 17.9 ppm as shown on Sheet 2. The PID vapor readings for soils under the former soil stockpile revealed relatively low readings of 0.0 ppm to 4.9 ppm as shown on Sheet 3.

After discussion with you, soil samples were taken for laboratory analysis, from undisturbed soils in the final soil spread hole locations with highest vapor readings, using decontaminated stainless steel trowel, and placed directly in appropriate containers provided by the laboratory. A combined soil sample was taken from under the former stockpile for lab analysis. Samples were taken for GRO, DRO, and BTEX analysis. Samples for BTEX analysis were immediately field preserved using methanol provided by the laboratory.

The attached Final Soil Spread Soil Sample Locations Map, Sheet 2, and Former Stockpile Soil Sample Locations Map, Sheet 3, shows the sample locations and soil vapor readings for each location, respectively.

Groundwater Sampling

Monitoring wells (MW 1, 2 & 3) were measured for static-water-level (SWL) and total depth (TD) and casing volumes were calculated. The wells were each purged using stainless steel hand bailers until over three casing water volumes were removed from each well. Following purging water samples were taken, using individual decontaminated stainless steel bailers, and transferred directly to containers provided by the laboratory.

Laboratory Sample Results

Samples were stored and shipped to SGS North America, Inc. for sample analysis under proper security and Chain-of-Custody. Soil samples were analyzed for gasoline range organics (GRO) by Alaska Method 101 (AK 101), diesel range organics (DRO) by AK 102, and BTEX by Method 8021B. Monitor well water samples were analyzed for GRO, BTEX, and DRO. The detectable laboratory results are summarized on Tables 1 & 2 and the detailed Analytical Reports and Chain of Custody Records are included as Attachment A.

The soil samples from the final soil spread location show all contamination levels at low levels, or not-detected (ND), for GRO, DRO, and all BTEX components. The highest level for GRO was 4.91 mg/kg in Sample S3 at 1.0-ft depth. The highest levels for DRO were 56.0 mg/kg in Sample S3 at 1.0-ft deep, in the final soil spread area, and the combined Sample SP2/SP4 at 74.0 mg/kg DRO from 0-13/18" deep in the former stockpile location.

Soil boring SB 1/MW 1, sample S-3 at 15 feet deep, collected during the original installation of MW 1 in 2003, showed contamination with a benzene level of 0.0889 mg/Kg, however, the sample at 25 feet showed ND for benzene. This is the only result above the allowable soil cleanup level of 0.02 mg/Kg for benzene migration to groundwater in 18 AAC 75.341, Soil Cleanup Levels; Table B1.

The detectable laboratory results for the groundwater samples show very low estimation levels for DRO ranging from 0.266J-0.415J mg/L. MW 1 revealed a GRO level of 0.139 mg/L, an estimation Ethyl-Benzene level of 0.540J ug/L, and a Benzene level of 53.6 ug/L.

All levels are below the ADEC allowable groundwater cleanup levels contained in 18 AAC 75, Table C, with the exception of the Benzene level of 53.6 ug/L in MW-1, which is over ten times the allowable groundwater level of 5 mg/L.

Spill Site Cleanup Levels

The Alaska Department of Environmental Conservation (ADEC), Oil and Hazardous Substances Pollution Control Regulations, 18 AAC 75, sets Soil Cleanup Levels, 18 AAC 75.340 and provides Soil Cleanup Levels; Tables 18 AAC 75.341. ~~Groundwater and surface water~~ cleanup levels are provided in 18 AAC 75.345.

Based on existing onsite conditions, under Method One, Table A1, the site was previously determined to fall into Category A with soil cleanup levels of GRO - 50 mg/Kg, DRO - 100 mg/Kg, and RRO - 200 mg/Kg. Under Method 2, Table B1, acceptable soil cleanup levels are given for ingestion, inhalation, and migration to groundwater for GRO, DRO, RRO, and BTEX components. Table C provides groundwater cleanup levels. *ε Table B2*

Soil analytical results from the Final Soil Spread and under the Former Soil Stockpile show all contamination levels are below ADEC's Method 1 & 2 allowable soil cleanup levels.

All samples from the Monitor Wells show contamination levels below allowable State cleanup requirements for GRO and DRO, and most BTEX components except for Benzene in MW 1 at 53.6 ug/L, as noted previously.

Groundwater Flow

Prior to bailing and sampling groundwater static-water-levels (SWL's) were recorded in each monitor well on October 9, 2016 and again on December 29, 2016. Additionally, based on the 10-year plus period of site non-investigation ACE Engineering re-surveyed top-of-casing (TOC) relative elevations. Based on the recent SWL and TOC measurements groundwater flow was evaluated using the triangulation plane method between the existing monitor wells. The attached Groundwater Flow Diagram, Sheet 4, shows groundwater flow in the relatively shallow, apparently perched, aquifer is toward the east with a slight northerly component.

Conclusions

Soil samples collected from the Final Soil Spread Location and Former Soil Stockpile Location, show all levels below ADEC's allowable cleanup levels for GRO, DRO, and BTEX.

Benzene was the only contaminate detected in monitor well, MW-1, above ADEC groundwater cleanup levels provided in Table C, 18 AAC 75.345. Previous soil samples taken from the original monitor well, MW-1 boring in April 2003, revealed a benzene level of 0.0889 mg/Kg for S3 taken at 15 feet deep. This was the only result in the original MW 1 boring above the allowable soil cleanup level of 0.02 mg/Kg for benzene migration to groundwater in 18 AAC 75.341. It appears additional benzene has migrated to this shallow perched groundwater table since the 2003 site investigation and sampling. Although historic and recent groundwater flow information shows groundwater flow toward the east site and area topography, and sampling of MW 1, may suggest a southerly component to this flow regime.

The 2003 laboratory results for the groundwater sample taken from MW-1 showed a benzene level of 0.00626 mg/L, slightly above the allowable State groundwater cleanup level of 0.005 mg/L. Based on the current 2016 sample result for benzene of 53.6 ug/L it appears additional benzene has migrated to this apparent perched relatively shallow groundwater table. Although this current laboratory result is more than ten times the allowable groundwater cleanup level of 5 ug/L this cleanup level is for groundwater expected to have a potential future use as a drinking water source, which may not be applicable for this shallow apparent perched water table aquifer. Additionally, the groundwater flow in the aquifer appears to be toward the east, or Sterling Highway, and no known use of this shallow groundwater is known or anticipated. Based on review of the data, onsite soil and groundwater sampling, and sample analytical results, observed soil and groundwater contamination appears to be at levels mostly below allowable ADEC cleanup standards, however, some amounts of Benzene contamination appears in the shallow groundwater at MW 1.

Recommendations

Monitor Well MW 1 should be sampled for BTEX on at least an annual basis, for at least three years, to evaluate benzene levels and to evaluate any potential increase in levels toward the Kasilof River in this shallow aquifer.

Groundwater levels in the monitor wells indicate groundwater flow appears to be mostly toward the east and shows some seasonal fluctuation. This water table may show additional fluctuation during seasonal periods and periods of heavy rain. Static water levels should be monitored in the monitor wells, on at least a quarterly basis, for at least one year, to evaluate if additional monitor well placement is needed and to evaluate potential optimal location(s), if necessary.

Soil samples from the Former Soil Stockpile Location and Final Soil Spread Location indicate all levels for GRO, DRO and BTEX below allowable cleanup levels and no future cleanup action for these areas appears to be needed.

This recent soil and groundwater sampling and testing report is provided to ADEC, at the request of the owner, Joe Browning. Please review this report and attached information and evaluate the recommendations provided for future site action/activities.

Please call with any questions or if you need additional information.

Sincerely, 

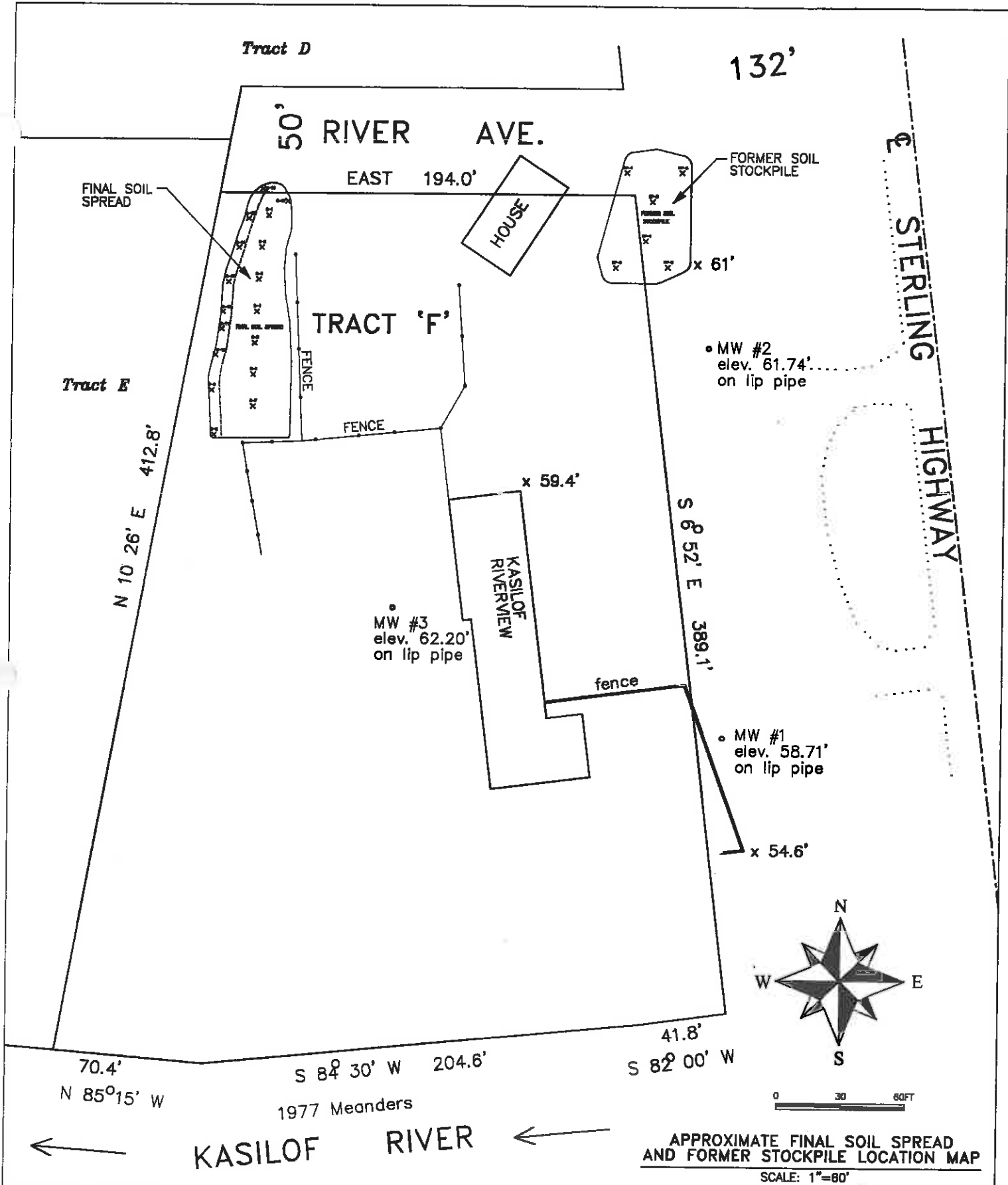
Arne Tikka, P.E.

ACEEISAreports\kasilofriverview2016Report1SA.rpt

Attachments

Approximate Final Soil Spread, Former Stockpile Location, and Monitor Well Site Map,
Sheet 1 of 4
Final Soil Spread Soil Sample Locations, Sheet 2 of 4
Former Stockpile Soil Sample Locations, Sheet 3 of 4
October and December 2016 Monitor Well Groundwater Flow Diagram, Sheet 4 of 4
Laboratory Analytical Results Summaries, Tables 1 & 2
Laboratory Detailed Analytical Report, Attachment A

cc Kasilof Riverview, Joe Browning



APPROXIMATE FINAL SOIL SPREAD AND FORMER STOCKPILE LOCATION MAP
SCALE: 1"=80'

ALASKA CONSULTING AND ENVIRONMENTAL ENGINEERING
ARNE K. TIKKA, P.E.
 P.O. BOX 2324 SOLDOTNA, ALASKA 99669
 (907) 262-3197

DATE: NOV. 2016
 DRAWN: RT
 CHKD: AT
 SCALE: 1"=15'
 PROJ #: 16-162

KASILOF RIVERVIEW
 APPROXIMATE FINAL SOIL SPREAD AND FORMER STOCKPILE LOCATION MAP

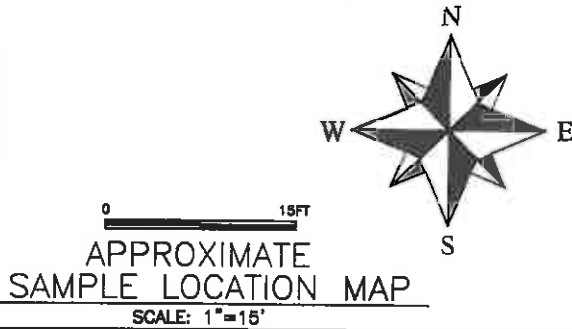
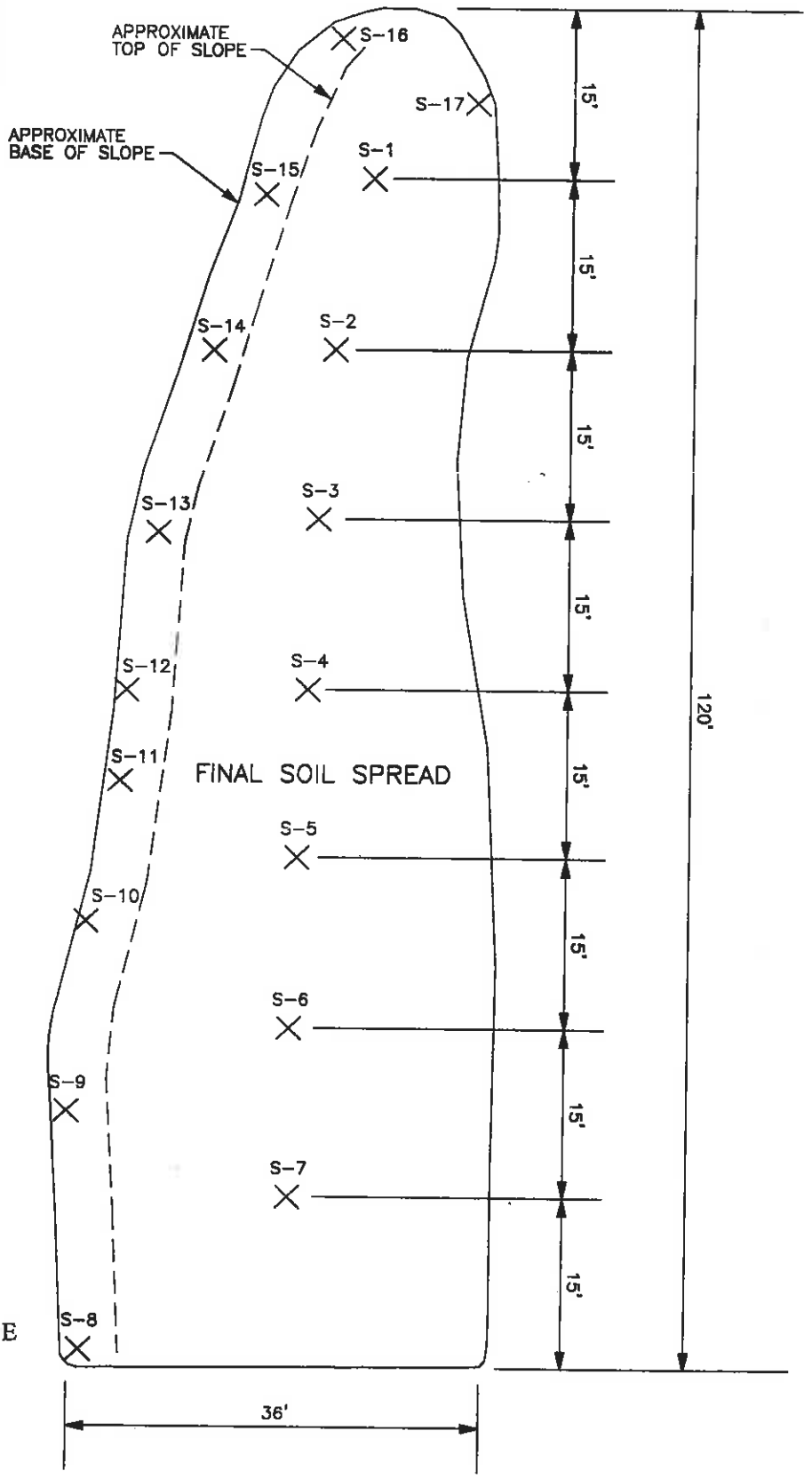
SHEET
 1
 OF
 4

10-05-16

SAMPLE NUMBER	SAMPLE TIME	SAMPLE DEPTH	SAMPLE PID (PPM)	LABORATORY ANALYSIS
S-1	1805 1615	1.0' 3.0'	7.4 ● 1825 19.6 ● 1830	10-09-16 DRO/GRO/BTEX ●3.0'
S-2	1645 1700	1.0' 3.0'	7.7 ● 1710 8.0 ● 1720	
S-3	1810 1820	1.0' 2.2'	17.9 ● 1835 9.5 ● 1830	10-09-16 DRO/GRO/BTEX ●1.0'
S-4	1850 1858 1905	1.0' 2.0' 3.0'	8.8 ● 1915 8.5 ● 1918 8.5 ● 1925	
S-5	1935 1942 1954	1.0' 2.0' 3.0'	5.0 ● 1950 5.4 ● 1957 10.8 ● 2008	10-09-16 DRO/GRO/BTEX ●3.0'
S-6	2014 2020 2023	1.0' 2.0' 3.0'	3.9 ● 2026 7.3 ● 2034 9.1 ● 2037	10-09-16 DRO/GRO/BTEX ●3.0'
S-7	2043 2045 2048	1.0' 2.0' 3.0'	5.7 ● 2056 6.8 ● 2058 7.3 ● 2102	

10-07-16

SAMPLE NUMBER	SAMPLE TIME	SAMPLE DEPTH	SAMPLE PID (PPM)	LABORATORY ANALYSIS
S-8	1400 1408 1415	1.0' 2.0' 3.0'	2.5 ● 1421 0.0 ● 1423 0.7 ● 1425	
S-9	1430 1434 1438	1.0' 2.0' 3.0'	3.8 ● 1444 6.3 ● 1446 7.6 ● 1447	
S-10	1456 1458 1502	1.0' 2.0' 3.0'	4.7 ● 1515 5.0 ● 1518 2.7 ● 1520	
S-11	1525 1527 1529	1.0' 2.0' 3.0'	3.3 ● 1546 5.1 ● 1550 6.3 ● 1552	
S-12	1555 1557 1559	1.0' 2.0' 3.0'	5.8 ● 1617 7.4 ● 1619 3.5 ● 1622	
S-13	1636 1639 1641	1.0' 2.0' 3.0'	8.5 ● 1652 4.3 ● 1655 6.4 ● 1657	10-09-16 DRO/GRO/BTEX ●1.0'
S-14	1708 1708 1710	1.0' 2.0' 3.0'	5.4 ● 1725 5.5 ● 1728 6.2 ● 1730	
S-15	1736 1738 1740	1.0' 2.0' 3.0'	4.1 ● 1750 6.4 ● 1752 6.3 ● 1754	
S-16	1802 1804	1.0' 2.0'	6.2 ● 1815 6.4 ● 1816	
S-17	1645 1700	1.0' 2.2'	1.6 ● 1835 5.1 ● 1837	



ALASKA CONSULTING AND ENVIRONMENTAL ENGINEERING
 ARNE K. TIKKA, P.E.
 P.O. BOX 2324 SOLDOTNA, ALASKA 99669
 (907) 262-3197

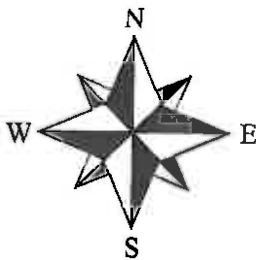
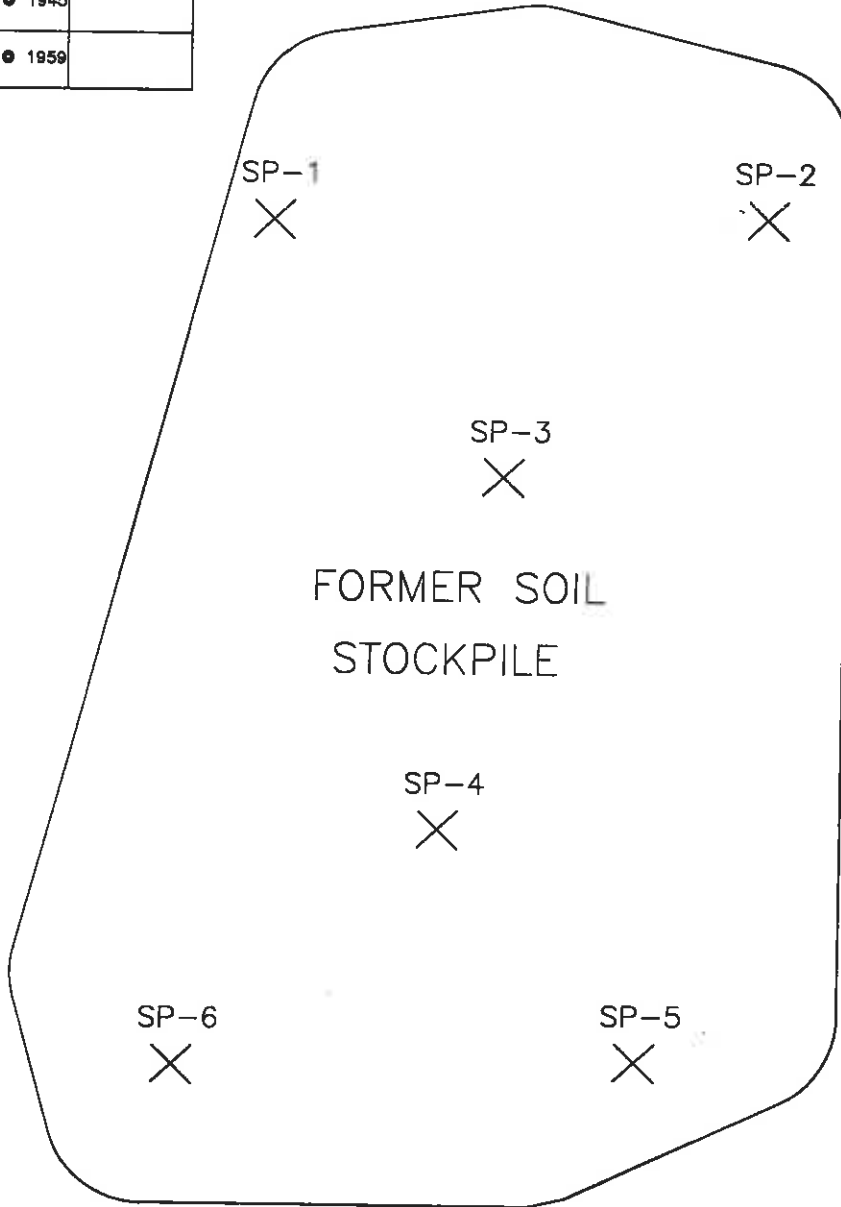
DATE: NOV. 2016
 DRAWN: RT
 CHKD: AT
 SCALE: 1"=15'
 PROJ #: 16-162

KASILOF RIVERVIEW
 APPROXIMATE FINAL SOIL SPREAD
 SOIL SAMPLE LOCATIONS

SHEET
 2
 OF
 4

10-07-16

SAMPLE NUMBER	SAMPLE TIME	SAMPLE DEPTH	SAMPLE PID (PPM)	LABORATORY ANALYSIS
SP-1	1857	0"-18"	3.0 ● 1907	
SP-2	1905	0"-13"	4.1 ● 1915	10-09-16 DRO/GRO/BTEX 0"-13"
SP-3	1918	0"-13"	0.8 ● 1925	
SP-4	1922	0"-18"	4.5 ● 1932	10-09-16 DRO/GRO/BTEX 0"-18"
SP-5	1935	0"-13"	0.0 ● 1945	
SP-6	1949	0"-14"	4.9 ● 1959	



APPROXIMATE
SAMPLE LOCATION MAP

SCALE: 1"=10'

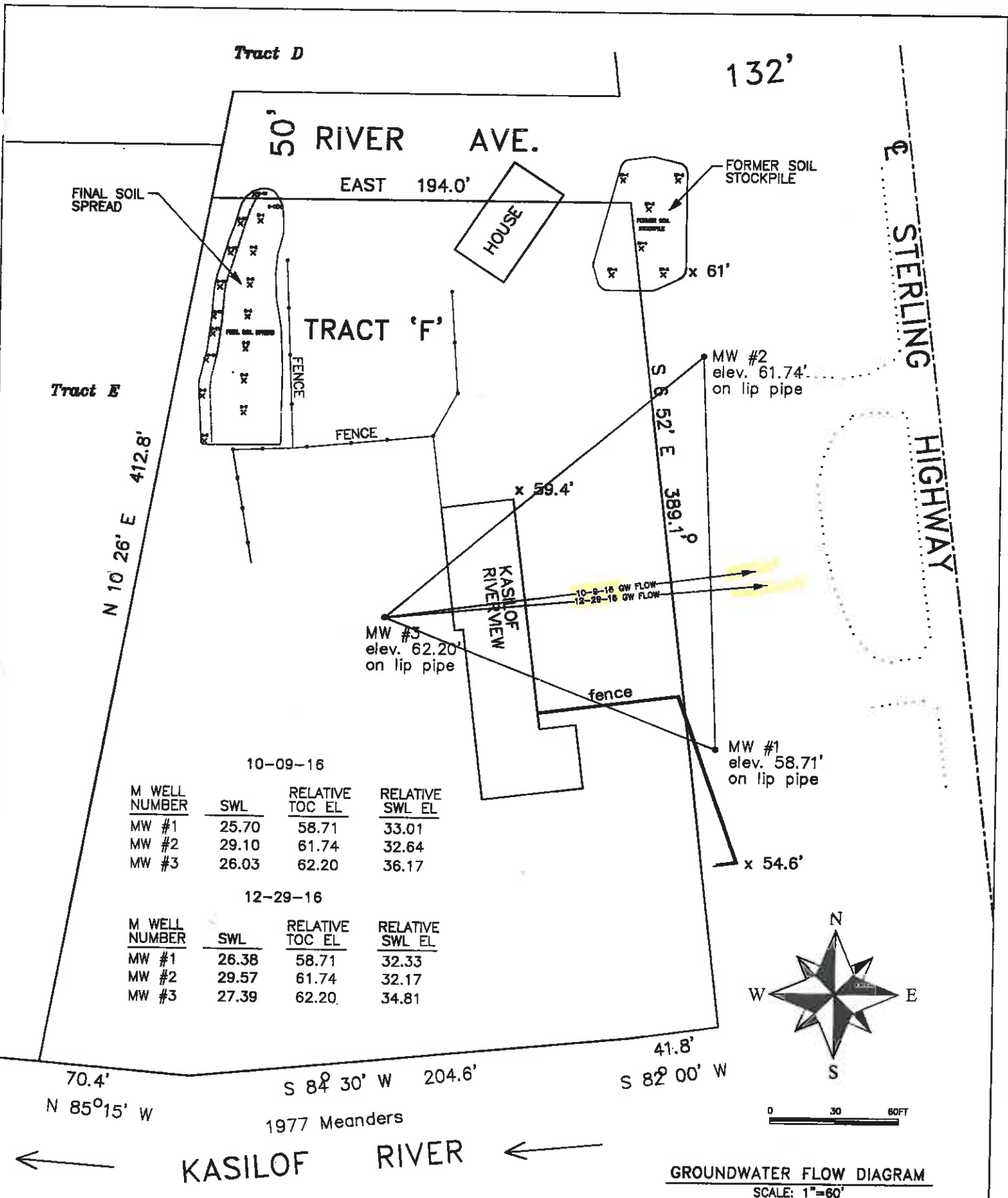
ALASKA CONSULTING AND ENVIRONMENTAL ENGINEERING
ARNE K. TIKKA, P.E.

P.O. BOX 2324 SOLDOTNA, ALASKA 99669
(907) 262-3197

DATE: NOV. 2016
DRAWN: RT
CHKD: AT
SCALE: 1"=10'
PROJ #: 16-162

KASILOF RIVERVIEW
APPROXIMATE BASE OF FORMER STOCKPILE
SOIL SAMPLE LOCATIONS

SHEET
3
OF
4



10-09-16

M WELL NUMBER	SWL	RELATIVE TOC EL	RELATIVE SWL EL
MW #1	25.70	58.71	33.01
MW #2	29.10	61.74	32.64
MW #3	26.03	62.20	36.17

12-29-16

M WELL NUMBER	SWL	RELATIVE TOC EL	RELATIVE SWL EL
MW #1	26.38	58.71	32.33
MW #2	29.57	61.74	32.17
MW #3	27.39	62.20	34.81

GROUNDWATER FLOW DIAGRAM
SCALE: 1"=60'

ALASKA CONSULTING AND ENVIRONMENTAL ENGINEERING
ARNE K. TIKKA, P.E.
P.O. BOX 2324 SOLDOTNA, ALASKA 99669
(907) 262-3197

DATE: JAN. 2017
DRAWN: AT
CHKD: AT
SCALE: 1"=15'
PROJ #: 16-162

KASILOF RIVERVIEW
GROUNDWATER FLOW DIAGRAM
FOR 10-9-16 AND 12-29-16

SHEET
4
OF
4

**Table 1: Soil Analytical Results Summary
Kasilof Riverview
2016 Final Soil Spread Location Soil Sample Results**

Sample #	Sample Depth	Gasoline Range Organics (mg/Kg) ¹	Diesel Range Organics (mg/Kg) ²
S1	3.0 ft	2.49	32.7
S3	1.0 ft	4.91	56.0
S5	3.0 ft	2.88	19.8J
S6	3.0 ft	2.31J	17.0J
S13	1.0 ft	2.58	7.17J
SP2/SP 4	0-18"	1.27J	74.0
Method 1 Cleanup Levels		50*	100*
Method 2 Cleanup Levels	Ingestion	1400	10250
	Inhalation	1400	10250
	Migration to GW	300	250

5 samples for 3400

one composite sample under prior soil stockpile.

* These Method 1 Cleanup Levels are typical Category A levels from Matrix Score, Table A1, 18 AAC 75.341.

Sample #	Sample Depth	Aromatic Volatile Organics (BTEX) mg/Kg ³			
		Benzene	Toluene	Ethyl-Benzene	Xylenes
S1	3.0 ft	0.00403J	0.0289	0.0187J	0.239
S3	1.0 ft	0.0102J	0.0475	0.0675	0.418
S5	3.0 ft	0.00593J	0.0320	0.0197J	0.227
S6	3.0 ft	0.00649J	0.0283	ND	0.071
S13	1.0 ft	0.0122	0.0504	0.0266	0.143
SP2/SP4	0-18"	0.00724J	0.00702J	0.0129J	0.034
Method 2 Cleanup Levels	Ingestion	290	20300	10000	203000
	Inhalation	9	180	89	81
	Migration to GW	0.02	5.4	5.5	78

¹Gasoline Range Organics (GRO) by Alaska Method 101

² Diesel Range Organics (DRO) by Alaska Method 102

³ Aromatic Volatile Organics (BTEX) by SW8021B

**Table 2: Water Analytical Results Summary
Kasilof Riverview
2016 Monitor Well Water Sampling Results**

	Well	Gasoline Range Organics (mg/L) ¹	Diesel Range Organics (mg/L) ²
	MW-1	0.139	0.415J
	MW-2	ND	0.266J
	MW-3	ND	0.405J
Table C Cleanup Levels		1.3	1.5

	Well	Aromatic Volatile Organics (BTEX) ug/L ³			
		Benzene	Toluene	Ethyl-Benzene	Xylenes
	MW-1	53.6	ND	0.540J	ND
	MW-2	ND	ND	ND	ND
	MW-3	ND	ND	ND	ND
Table C Groundwater Cleanup Levels		5 4.6	1000	700	10,000

¹ Gasoline Range Organic (GRO) by Alaska Method AK 101

² Diesel Range Organics (DRO) by Alaska Method AK102

³ Aromatic Volatile Organics (BTEX) by SW8021B

Attachment A
Laboratory Analytical Report

January 5, 2017, Report to P. Horwath/ADEC
Kasilof Riverview, ADEC Spill #93230015402
Final Stockpile Spread and Former Stockpile Soil Sampling and Monitor Well Sampling

Alaska Consulting and
Environmental Engineering
Project No. 16-162



Laboratory Report of Analysis

To: A.C.E. Engineering
P.O. Box 2324
Soldotna, AK 99669
(907)398-8193

Report Number: **1166092**

Client Project: **Kasilof Riverview**

Dear Arne Tikka,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest 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.



Alaska Division Project Manager

Forest Taylor

2016.10.25

17:05:10

-08'00'

Forest Taylor
Project Manager
Forest.Taylor@sgs.com

Date

Print Date: 10/25/2016 3:23:34PM

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

Member of SGS Group



Case Narrative

SGS Client: **A.C.E. Engineering**
SGS Project: **1166092**
Project Name/Site: **Kasilof Riverview**
Project Contact: **Arne Tikka**

Refer to sample receipt form for information on sample condition.

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

Print Date: 10/25/2016 3:23:36PM

SGS North America Inc.

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

Member of SGS Group



Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCC/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

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

Print Date: 10/25/2016 3:23:37PM

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

Member of SGS Group



Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
S1/3.0'	1166092001	10/09/2016	10/11/2016	Soil/Solid (dry weight)
S3/1.0'	1166092002	10/09/2016	10/11/2016	Soil/Solid (dry weight)
S5/3.0'	1166092003	10/09/2016	10/11/2016	Soil/Solid (dry weight)
S6/3.0'	1166092004	10/09/2016	10/11/2016	Soil/Solid (dry weight)
S13/1.0'	1166092005	10/09/2016	10/11/2016	Soil/Solid (dry weight)
SP2/SP4	1166092006	10/09/2016	10/11/2016	Soil/Solid (dry weight)
SP6	1166092007	10/09/2016	10/11/2016	Soil/Solid (dry weight)
Trip Blank	1166092008	10/09/2016	10/11/2016	Soil/Solid (dry weight)
MW#3	1166092009	10/09/2016	10/11/2016	Water (Surface, Eff., Ground)
MW#2	1166092010	10/09/2016	10/11/2016	Water (Surface, Eff., Ground)
MW#1	1166092011	10/09/2016	10/11/2016	Water (Surface, Eff., Ground)
Trip Blank	1166092012	10/09/2016	10/11/2016	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK101	AK101/8021 Combo. (S)
SW8021B	AK101/8021 Combo. (S)
AK102	Diesel Range Organics (S)
AK102	DRO Low Volume (W)
SM21 2540G	Percent Solids SM2540G

Print Date: 10/25/2016 3:23:38PM

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

Member of SGS Group



Detectable Results Summary

Client Sample ID: **S1/3.0'**
Lab Sample ID: 1166092001
Semivolatile Organic Fuels
Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	32.7	mg/Kg
Benzene	4.03J	ug/Kg 22
Ethylbenzene	18.7J	ug/Kg 130
Gasoline Range Organics	2.49	mg/Kg
o-Xylene	104	ug/Kg } 1,500
P & M -Xylene	135	ug/Kg
Toluene	28.9	ug/Kg 6,700

Client Sample ID: **S3/1.0'**
Lab Sample ID: 1166092002
Semivolatile Organic Fuels
Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	56.0	mg/Kg
Benzene	10.2J	ug/Kg
Ethylbenzene	67.5	ug/Kg
Gasoline Range Organics	4.91	mg/Kg
o-Xylene	75.3	ug/Kg
P & M -Xylene	343	ug/Kg
Toluene	47.5	ug/Kg

Client Sample ID: **S5/3.0'**
Lab Sample ID: 1166092003
Semivolatile Organic Fuels
Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	19.8J	mg/Kg
Benzene	5.93J	ug/Kg
Ethylbenzene	19.7J	ug/Kg
Gasoline Range Organics	2.88	mg/Kg
o-Xylene	104	ug/Kg
P & M -Xylene	123	ug/Kg
Toluene	32.0	ug/Kg

Client Sample ID: **S6/3.0'**
Lab Sample ID: 1166092004
Semivolatile Organic Fuels
Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	17.0J	mg/Kg
Benzene	6.49J	ug/Kg
Gasoline Range Organics	2.31J	mg/Kg
o-Xylene	27.8	ug/Kg
P & M -Xylene	43.1J	ug/Kg
Toluene	28.3	ug/Kg

Client Sample ID: **S13/1.0'**
Lab Sample ID: 1166092005
Semivolatile Organic Fuels
Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	7.17J	mg/Kg
Benzene	12.2	ug/Kg
Ethylbenzene	26.6	ug/Kg
Gasoline Range Organics	2.58	mg/Kg
o-Xylene	45.8	ug/Kg
P & M -Xylene	96.7	ug/Kg
Toluene	50.4	ug/Kg

Print Date: 10/25/2016 3:23:39PM

SGS North America Inc.

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

Member of SGS Group



Detectable Results Summary

Client Sample ID: **SP2/SP4**
Lab Sample ID: 1166092006
Semivolatile Organic Fuels
Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	74.0	mg/Kg
Benzene	7.24J	ug/Kg
Ethylbenzene	12.9J	ug/Kg
Gasoline Range Organics	1.27J	mg/Kg
o-Xylene	9.22J	ug/Kg
P & M -Xylene	24.4J	ug/Kg
Toluene	7.02J	ug/Kg

Client Sample ID: **SP6**
Lab Sample ID: 1166092007
Semivolatile Organic Fuels
Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	24.7	mg/Kg
Gasoline Range Organics	1.05J	mg/Kg

Client Sample ID: **Trip Blank**
Lab Sample ID: 1166092008
Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	1.18J	mg/Kg

Client Sample ID: **MW#3**
Lab Sample ID: 1166092009
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.405J	mg/L

Client Sample ID: **MW#2**
Lab Sample ID: 1166092010
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.286J	mg/L

Client Sample ID: **MW#1**
Lab Sample ID: 1166092011
Semivolatile Organic Fuels
Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.415J	mg/L
Benzene	53.6	ug/L
Ethylbenzene	0.540J	ug/L
Gasoline Range Organics	0.139	mg/L

4.6



Results of S1/3.0'

Client Sample ID **S1/3.0'**
Client Project ID **Kasilof Riverview**
Lab Sample ID 1166092001
Lab Project ID 1166092

Collection Date 10/09/16 16 20
Received Date 10/11/16 12 56
Matrix Soil/Solid (dry weight)
Solids (%) 88.2
Location

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	32.7		22.3	6.92	mg/Kg	1		10/16/16 23:17
Surrogates								
5a Androstane (surr)	78.9		50-150		%	†		10/16/16 23:17

Batch Information

Analytical Batch: XFC12989
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/16/16 23:17
Container ID: 1166092001-A

Prep Batch: XXX36523
Prep Method: SW3550C
Prep Date/Time: 10/13/16 21:14
Prep Initial Wt./Vol.: 30.461 g
Prep Extract Vol: 1 mL



Results of S1/3.0'

Client Sample ID S1/3.0'
Client Project ID Kasilof Riverview
Lab Sample ID 1166092001
Lab Project ID 1166092

Collection Date 10/09/16 16:20
Received Date 10/11/16 12:56
Matrix Soil/Solid (dry weight)
Solids (%) 88.2
Location

Results by Volatile Fuels

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.49		2.12	0.637	mg/Kg	1		10/21/16 19:15
Surrogates								
4-Bromofluorobenzene (surr)	115		50-150		%	1		10/21/16 19:15

Batch Information

Analytical Batch: VFC13398
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/21/16 19:15
Container ID: 1166092001-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 16:20
Prep Initial Wt./Vol.: 97.503 g
Prep Extract Vol: 36.5169 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	4.03	J	10.6	3.40	ug/Kg	1		10/21/16 19:15
Ethylbenzene	18.7	J	21.2	6.63	ug/Kg	1		10/21/16 19:15
o-Xylene	104		21.2	6.63	ug/Kg	1		10/21/16 19:15
P & M -Xylene	135		42.5	12.7	ug/Kg	1		10/21/16 19:15
Toluene	28.9		21.2	6.63	ug/Kg	1		10/21/16 19:15
Surrogates								
1,4-Difluorobenzene (surr)	88.8		72-119		%	1		10/21/16 19:15

Batch Information

Analytical Batch: VFC13398
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/21/16 19:15
Container ID: 1166092001-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 16:20
Prep Initial Wt./Vol.: 97.503 g
Prep Extract Vol: 36.5169 mL



Results of S3/1.0'

Client Sample ID **S3/1.0'**
Client Project ID **Kasilof Riverview**
Lab Sample ID 1166092002
Lab Project ID 1166092

Collection Date 10/09/16 16:30
Received Date 10/11/16 12:56
Matrix Soil/Solid (dry weight)
Solids (%) 90.7
Location

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	56.0		21.9	6.79	mg/Kg	1		10/16/16 23:26
Surrogates								
5a Androstane (surr)	86.1		50-150		%	1		10/16/16 23:26

Batch Information

Analytical Batch: XFC12969
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/16/16 23:26
Container ID: 1166092002-A

Prep Batch: XXX36523
Prep Method: SW3550C
Prep Date/Time: 10/13/16 21:14
Prep Initial Wt./Vol.: 30.191 g
Prep Extract Vol: 1 mL



Results of S3/1.0'

Client Sample ID: S3/1.0'
Client Project ID: Kaslof Riverview
Lab Sample ID: 1166092002
Lab Project ID: 1166092

Collection Date: 10/09/16 16:30
Received Date: 10/11/16 12:56
Matrix: Soil/Solid (dry weight)
Solids (%): 90.7
Location:

Results by Volatile Fuels

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	4.91		2.36	0.708	mg/Kg	1		10/21/16 19:34
Surrogates								
4-Bromofluorobenzene (surr)	123		50-150		%	1		10/21/16 19:34

Batch Information

Analytical Batch: VFC13398
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/21/16 19:34
Container ID: 1166092002-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 16:30
Prep Initial Wt./Vol.: 74.634 g
Prep Extract Vol: 31.9601 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	10.2	J	11.8	3.78	ug/Kg	1		10/21/16 19:34
Ethylbenzene	67.5		23.6	7.37	ug/Kg	1		10/21/16 19:34
o-Xylene	75.3		23.6	7.37	ug/Kg	1		10/21/16 19:34
P & M -Xylene	343		47.2	14.2	ug/Kg	1		10/21/16 19:34
Toluene	47.5		23.6	7.37	ug/Kg	1		10/21/16 19:34
Surrogates								
1,4-Difluorobenzene (surr)	86.3		72-119		%	1		10/21/16 19:34

Batch Information

Analytical Batch: VFC13398
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/21/16 19:34
Container ID: 1166092002-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 16:30
Prep Initial Wt./Vol.: 74.634 g
Prep Extract Vol: 31.9601 mL



Results of S5/3.0*

Client Sample ID **S5/3.0***
Client Project ID **Kasilof Riverview**
Lab Sample ID 1166092003
Lab Project ID 1166092

Collection Date 10/09/16 16 40
Received Date 10/11/16 12 56
Matrix Soil/Solid (dry weight)
Solids (%) 88.6
Location

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	19.8 J	22.5	6.96	mg/Kg	1		10/16/16 23:36
Surrogates							
5a Androstane (surr)	76.8	50-150		%	1		10/16/16 23:36

Batch Information

Analytical Batch: XFC12989
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/16/16 23:36
Container ID: 1166092003-A

Prep Batch: XXX36523
Prep Method: SW3550C
Prep Date/Time: 10/13/16 21:14
Prep Initial Wt./Vol.: 30.171 g
Prep Extract Vol: 1 mL



Results of S5/3.0'

Client Sample ID **S5/3.0'**
Client Project ID **Kasilof Riverview**
Lab Sample ID 1166092003
Lab Project ID 1166092

Collection Date 10/09/16 16:40
Received Date 10/11/16 12:56
Matrx Soil/Solid (dry weight)
Solids (%) 88.6
Location

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.88	2.37	0.711	mg/Kg	1		10/21/16 19:53
Surrogates							
4-Bromofluorobenzene (surr)	111	50-150		%	1		10/21/16 19:53

Batch Information

Analytical Batch: VFC13398
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/21/16 19:53
Container ID: 1166092003-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 16:40
Prep Initial Wt./Vol.: 81.882 g
Prep Extract Vol: 34.3722 mL

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	5.93 J	11.9	3.79	ug/Kg	1		10/21/16 19:53
Ethylbenzene	19.7 J	23.7	7.39	ug/Kg	1		10/21/16 19:53
o-Xylene	104	23.7	7.39	ug/Kg	1		10/21/16 19:53
P & M -Xylene	123	47.4	14.2	ug/Kg	1		10/21/16 19:53
Toluene	32.0	23.7	7.39	ug/Kg	1		10/21/16 19:53
Surrogates							
1,4-Difluorobenzene (surr)	89	72-119		%	1		10/21/16 19:53

Batch Information

Analytical Batch: VFC13398
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/21/16 19:53
Container ID: 1166092003-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 16:40
Prep Initial Wt./Vol.: 81.882 g
Prep Extract Vol: 34.3722 mL



Results of S6/3.0'

Client Sample ID **S6/3.0'**
Client Project ID **Kasilof Riverview**
Lab Sample ID 1166092004
Lab Project ID 1166092

Collection Date 10/09/16 16:52
Received Date 10/11/16 12:56
Matrix Soil/Solid (dry weight)
Solids (%) 88.1
Location

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	17.0 J	22.4	6.94	mg/Kg	1		10/16/16 23:46
Surrogates							
5a Androstane (surr)	76.9	50-150		%	1		10/16/16 23:46

Batch Information

Analytical Batch: XFC12969
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/16/16 23:46
Container ID: 1166092004-A

Prep Batch: XXX36523
Prep Method: SW3550C
Prep Date/Time: 10/13/16 21:14
Prep Initial Wt./Vol.: 30.4 g
Prep Extract Vol: 1 mL



Results of S6/3.0'

Client Sample ID S6/3.0'
Client Project ID Kaslof Riverview
Lab Sample ID 1166092004
Lab Project ID 1166092

Collection Date 10/09/16 16:52
Received Date 10/11/16 12:56
Matrix Soil/Solid (dry weight)
Solids (%) 88.1
Location

Results by Volatile Fuels

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.31	J	2.60	0.779	mg/Kg	1		10/21/16 18:45

Surrogates

4-Bromofluorobenzene (surr)	113		50-150		%	1		10/21/16 18:45
-----------------------------	-----	--	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: VFC13404
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/21/16 18:45
Container ID: 1166092004-B

Prep Batch: VXX29822
Prep Method: SW5035A
Prep Date/Time: 10/09/16 16:52
Prep Initial Wt./Vol.: 73.852 g
Prep Extract Vol: 33.7806 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	6.49	J	13.0	4.15	ug/Kg	1		10/21/16 18:45
Ethylbenzene	13.0	U	26.0	8.10	ug/Kg	1		10/21/16 18:45
o-Xylene	27.8		26.0	8.10	ug/Kg	1		10/21/16 18:45
P & M -Xylene	43.1	J	51.9	15.6	ug/Kg	1		10/21/16 18:45
Toluene	28.3		26.0	8.10	ug/Kg	1		10/21/16 18:45

Surrogates

1,4-Difluorobenzene (surr)	85.3		72-119		%	1		10/21/16 18:45
----------------------------	------	--	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: VFC13404
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/21/16 18:45
Container ID: 1166092004-B

Prep Batch: VXX29822
Prep Method: SW5035A
Prep Date/Time: 10/09/16 16:52
Prep Initial Wt./Vol.: 73.852 g
Prep Extract Vol: 33.7806 mL



Results of S13/1.0'

Client Sample ID: **S13/1.0'**
Client Project ID: **Kasilof Riverview**
Lab Sample ID: 1166092005
Lab Project ID: 1166092

Collection Date: 10/09/16 17:05
Received Date: 10/11/16 12:56
Matrix: Soil/Solid (dry weight)
Solids (%): 86.6
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	7.17	J	23.0	7.14	mg/Kg	1		10/16/16 23:56
Surrogates								
5a Androstane (surr)	83.6		50-150		%	1		10/16/16 23:56

Batch Information

Analytical Batch: XFC12989
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/16/16 23:56
Container ID: 1166092005-A

Prep Batch: XXX36523
Prep Method: SW3550C
Prep Date/Time: 10/13/16 21:14
Prep Initial Wt./Vol.: 30.085 g
Prep Extract Vol: 1 mL



Results of S13/1.0'

Client Sample ID S13/1.0'
Client Project ID Kaslof Riverview
Lab Sample ID 1166092005
Lab Project ID 1166092

Collection Date 10/09/16 17:05
Received Date 10/11/16 12:56
Matrix Soil/Solid (dry weight)
Solids (%) 86.6
Location

Results by Volatile Fuels

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.58		2.44	0.731	mg/Kg	1		10/21/16 20:12
Surrogates								
4-Bromofluorobenzene (surr)	109		50-150		%	1		10/21/16 20:12

Batch Information

Analytical Batch: VFC13398
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/21/16 20:12
Container ID: 1166092005-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 17:05
Prep Initial Wt./Vol.: 86.853 g
Prep Extract Vol: 36.6529 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	12.2		12.2	3.90	ug/Kg	1		10/21/16 20:12
Ethylbenzene	26.6		24.4	7.60	ug/Kg	1		10/21/16 20:12
o-Xylene	45.8		24.4	7.60	ug/Kg	1		10/21/16 20:12
P & M -Xylene	96.7		48.7	14.6	ug/Kg	1		10/21/16 20:12
Toluene	50.4		24.4	7.60	ug/Kg	1		10/21/16 20:12
Surrogates								
1,4-Difluorobenzene (surr)	90.4		72-119		%	1		10/21/16 20:12

Batch Information

Analytical Batch: VFC13398
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/21/16 20:12
Container ID: 1166092005-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 17:05
Prep Initial Wt./Vol.: 86.853 g
Prep Extract Vol: 36.6529 mL



Results of SP2/SP4

Client Sample ID **SP2/SP4**
Client Project ID **Kasilof Review**
Lab Sample ID 1166092006
Lab Project ID 1166092

Collection Date 10/09/16 17:15
Received Date 10/11/16 12:56
Matrix Soil/Solid (dry weight)
Solids (%) 92.6
Location

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	74.0		21.6	6.68	mg/Kg	1		10/19/16 00:30
Surrogates								
5a Androstane (surr)	89.4		50-150		%	1		10/19/16 00:30

Batch Information

Analytical Batch: XFC12982
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/19/16 00:30
Container ID: 1166092006-A

Prep Batch: XXX36523
Prep Method: SW3550C
Prep Date/Time: 10/13/16 21:14
Prep Initial Wt./Vol.: 30.066 g
Prep Extract Vol: 1 mL



Results of SP2/SP4

Client Sample ID: SP2/SP4
Client Project ID: Kasilof Riverview
Lab Sample ID: 1166092006
Lab Project ID: 1166092

Collection Date: 10/09/16 17:15
Received Date: 10/11/16 12:56
Matrix: Soil/Solid (dry weight)
Solids (%): 92.6
Location:

Results by Volatile Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.27 J	2.19	0.658	mg/Kg	1		10/21/16 20:31
Surrogates							
4-Bromofluorobenzene (surr)	98.7	50-150		%	1		10/21/16 20:31

Batch Information

Analytical Batch: VFC13398
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/21/16 20:31
Container ID: 1166092006-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 17:15
Prep Initial Wt./Vol.: 75.286 g
Prep Extract Vol: 30.5923 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	7.24 J	11.0	3.51	ug/Kg	1		10/21/16 20:31
Ethylbenzene	12.9 J	21.9	6.85	ug/Kg	1		10/21/16 20:31
o-Xylene	9.22 J	21.9	6.85	ug/Kg	1		10/21/16 20:31
P & M -Xylene	24.4 J	43.9	13.2	ug/Kg	1		10/21/16 20:31
Toluene	7.02 J	21.9	6.85	ug/Kg	1		10/21/16 20:31
Surrogates							
1,4-Difluorobenzene (surr)	92.1	72-119		%	1		10/21/16 20:31

Batch Information

Analytical Batch: VFC13398
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/21/16 20:31
Container ID: 1166092006-B

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/09/16 17:15
Prep Initial Wt./Vol.: 75.286 g
Prep Extract Vol: 30.5923 mL



Results of SP6

Client Sample ID: **SP6**
Client Project ID: **Kasilof Riverview**
Lab Sample ID: 1166092007
Lab Project ID: 1166092

Collection Date: 10/09/16 17:20
Received Date: 10/11/16 12:56
Matrix: Soil/Solid (dry weight)
Solids (%): 91.1
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	24.7		21.8	6.76	mg/Kg	1		10/17/16 00:15
Surrogates								
5a Androstane (surr)	83		50-150		%	1		10/17/16 00:15

Batch Information

Analytical Batch: XFC12969
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/17/16 00:15
Container ID: 1166092007-A

Prep Batch: XXX36523
Prep Method: SW3550C
Prep Date/Time: 10/13/16 21:14
Prep Initial Wt./Vol.: 30.207 g
Prep Extract Vol: 1 mL



Results of SP6

Client Sample ID **SP6**
Client Project ID **Kasilof Riverview**
Lab Sample ID **1166092007**
Lab Project ID **1166092**

Collection Date **10/09/16 17:20**
Received Date **10/11/16 12:56**
Matrix **Soil/Solid (dry weight)**
Solids (%) **91.1**
Location

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.05 J	2.57	0.771	mg/Kg	1		10/21/16 19:41

Surrogates

4-Bromofluorobenzene (surr)	104	50-150		%	1		10/21/16 19:41
-----------------------------	-----	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: **VFC13404**
Analytical Method: **AK101**
Analyst: **ST**
Analytical Date/Time: **10/21/16 19:41**
Container ID: **1166092007-B**

Prep Batch: **VXX29822**
Prep Method: **SW5035A**
Prep Date/Time: **10/09/16 17:20**
Prep Initial Wt./Vol.: **65.811 g**
Prep Extract Vol: **30.8251 mL**

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	6.40 U	12.8	4.11	ug/Kg	1		10/21/16 19:41
Ethylbenzene	12.9 U	25.7	8.02	ug/Kg	1		10/21/16 19:41
o-Xylene	12.9 U	25.7	8.02	ug/Kg	1		10/21/16 19:41
P & M -Xylene	25.7 U	51.4	15.4	ug/Kg	1		10/21/16 19:41
Toluene	12.9 U	25.7	8.02	ug/Kg	1		10/21/16 19:41

Surrogates

1,4-Difluorobenzene (surr)	87.3	72-119		%	1		10/21/16 19:41
----------------------------	------	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: **VFC13404**
Analytical Method: **SW8021B**
Analyst: **ST**
Analytical Date/Time: **10/21/16 19:41**
Container ID: **1166092007-B**

Prep Batch: **VXX29822**
Prep Method: **SW5035A**
Prep Date/Time: **10/09/16 17:20**
Prep Initial Wt./Vol.: **65.811 g**
Prep Extract Vol: **30.8251 mL**



Results of Trip Blank

Client Sample ID **Trip Blank**
 Client Project ID **Kasilof Riverview**
 Lab Sample ID 1166092008
 Lab Project ID 1166092

Collection Date 10/09/16 16:20
 Received Date 10/11/16 12:56
 Matrix Soil/Solid (dry weight)
 Solids (%)
 Location

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.18 J	2.56	0.767	mg/Kg	1		10/21/16 14:30
Surrogates							
4-Bromofluorobenzene (surr)	91.1	50-150		%	1		10/21/16 14:30

Batch Information

Analytical Batch: VFC13398
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 10/21/16 14:30
 Container ID: 1166092008-A

Prep Batch: VXX29821
 Prep Method: SW5035A
 Prep Date/Time: 10/09/16 16:20
 Prep Initial Wt./Vol.: 48.892 g
 Prep Extract Vol: 25 mL

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	6.40 U	12.8	4.09	ug/Kg	1		10/21/16 14:30
Ethylbenzene	12.8 U	25.6	7.98	ug/Kg	1		10/21/16 14:30
o-Xylene	12.8 U	25.6	7.98	ug/Kg	1		10/21/16 14:30
P & M -Xylene	25.6 U	51.1	15.3	ug/Kg	1		10/21/16 14:30
Toluene	12.8 U	25.6	7.98	ug/Kg	1		10/21/16 14:30
Surrogates							
1,4-Difluorobenzene (surr)	82.4	72-119		%	1		10/21/16 14:30

Batch Information

Analytical Batch: VFC13398
 Analytical Method: SW8021B
 Analyst: ST
 Analytical Date/Time: 10/21/16 14:30
 Container ID: 1166092008-A

Prep Batch: VXX29821
 Prep Method: SW5035A
 Prep Date/Time: 10/09/16 16:20
 Prep Initial Wt./Vol.: 48.892 g
 Prep Extract Vol: 25 mL



Results of MW#3

Client Sample ID **MW#3**
Client Project ID **Kasilof Riverview**
Lab Sample ID 1166092009
Lab Project ID 1166092

Collection Date 10/09/16 17 35
Received Date 10/11/16 12 56
Matrix Water (Surface, Eff, Ground)
Solids (%)
Location

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.405 J	0.545	0.164	mg/L	1		10/20/16 17:44
Surrogates							
5a Androstane (surr)	88.8	50-150		%	1		10/20/16 17:44

Batch Information

Analytical Batch: XFC12999
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/20/16 17:44
Container ID: 1166092009-D

Prep Batch: XXX36568
Prep Method: SW3520C
Prep Date/Time: 10/20/16 08:33
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL



Results of MW#3

Client Sample ID MW#3
Client Project ID Kasilof Riverview
Lab Sample ID 1166092009
Lab Project ID 1166092

Collection Date 10/09/16 17 35
Received Date 10/11/16 12 56
Matrix Water (Surface, Eff , Ground)
Solids (%)
Location

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		10/20/16 04:31
Surrogates							
4-Bromofluorobenzene (surr)	103	50-150		%	1		10/20/16 04:31

Batch Information

Analytical Batch: VFC13394
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/20/16 04:31
Container ID: 1166092009-A

Prep Batch: VXX29806
Prep Method: SW5030B
Prep Date/Time: 10/19/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		10/20/16 04:31
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/20/16 04:31
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/20/16 04:31
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/20/16 04:31
Toluene	0.500 U	1.00	0.310	ug/L	1		10/20/16 04:31
Surrogates							
1,4-Difluorobenzene (surr)	91.8	77-115		%	1		10/20/16 04:31

Batch Information

Analytical Batch: VFC13394
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/20/16 04:31
Container ID: 1166092009-A

Prep Batch: VXX29806
Prep Method: SW5030B
Prep Date/Time: 10/19/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW#2

Client Sample ID **MW#2**
Client Project ID **Kasilof Riverview**
Lab Sample ID 1166092010
Lab Project ID 1166092

Collection Date 10/09/16 17:50
Received Date 10/11/16 12:56
Matrix Water (Surface, Eff., Ground)
Solids (%)
Location

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.286	J	0.556	0.167	mg/L	1		10/20/16 17:54
Surrogates								
5a Androstane (surr)	83.5		50-150		%	1		10/20/16 17:54

Batch Information

Analytical Batch: XFC12999
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/20/16 17:54
Container ID: 1166092010-D

Prep Batch: XXX36568
Prep Method: SW3520C
Prep Date/Time: 10/20/16 08:33
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL



Results of MW#2

Client Sample ID **MW#2**
Client Project ID **Kasilof Riverview**
Lab Sample ID 1166092010
Lab Project ID 1166092

Collection Date 10/09/16 17 50
Received Date 10/11/16 12 56
Matrix Water (Surface, Eff., Ground)
Solids (%)
Location

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		10/20/16 04:49

Surrogates

4-Bromofluorobenzene (surr)	103	50-150		%	1		10/20/16 04:49
-----------------------------	-----	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: VFC13394
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/20/16 04:49
Container ID: 1166092010-A

Prep Batch: VXX29806
Prep Method: SW5030B
Prep Date/Time: 10/19/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		10/20/16 04:49
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/20/16 04:49
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/20/16 04:49
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/20/16 04:49
Toluene	0.500 U	1.00	0.310	ug/L	1		10/20/16 04:49

Surrogates

1,4-Difluorobenzene (surr)	90.2	77-115		%	1		10/20/16 04:49
----------------------------	------	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: VFC13394
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/20/16 04:49
Container ID: 1166092010-A

Prep Batch: VXX29806
Prep Method: SW5030B
Prep Date/Time: 10/19/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW#1

Client Sample ID **MW#1**
Client Project ID **Kasilof Riverview**
Lab Sample ID: 1166092011
Lab Project ID: 1166092

Collection Date: 10/09/16 18:35
Received Date: 10/11/16 12:56
Matrix: Water (Surface, Eff., Ground)
Solids (%)
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.415 J	0.545	0.164	mg/L	1		10/20/16 18:04
Surrogates							
5a Androstane (surr)	84.7	50-150		%	1		10/20/16 18:04

Batch Information

Analytical Batch: XFC12999
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/20/16 18:04
Container ID: 1166092011-D

Prep Batch: XXX36568
Prep Method: SW3520C
Prep Date/Time: 10/20/16 08:33
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL



Results of MW#1

Client Sample ID MW#1
Client Project ID Kastlof Riverview
Lab Sample ID 1166092011
Lab Project ID 1166092

Collection Date 10/09/16 18 35
Received Date 10/11/16 12 56
Matrix Water (Surface, Eff., Ground)
Solids (%)
Location

Results by Volatile Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.139	0.100	0.0310	mg/L	1		10/22/16 22:56
Surrogates							
4-Bromofluorobenzene (surr)	110	50-150		%	1		10/22/16 22:56

Batch Information

Analytical Batch: VFC13406
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/22/16 22:56
Container ID: 1166092011-A

Prep Batch: VXX29830
Prep Method: SW5030B
Prep Date/Time: 10/22/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	53.6	0.500	0.150	ug/L	1		10/22/16 22:56
Ethylbenzene	0.540 J	1.00	0.310	ug/L	1		10/22/16 22:56
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/22/16 22:56
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/22/16 22:56
Toluene	0.500 U	1.00	0.310	ug/L	1		10/22/16 22:56
Surrogates							
1,4-Difluorobenzene (surr)	91.8	77-115		%	1		10/22/16 22:56

Batch Information

Analytical Batch: VFC13406
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/22/16 22:56
Container ID: 1166092011-A

Prep Batch: VXX29830
Prep Method: SW5030B
Prep Date/Time: 10/22/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

OK

Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **Kasilof Riverview**
 Lab Sample ID: 1166092012
 Lab Project ID: 1166092

Collection Date: 10/09/16 17:35
 Received Date: 10/11/16 12:56
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		10/20/16 08:14
Surrogates							
4-Bromofluorobenzene (surr)	103	50-150		%	1		10/20/16 08:14

Batch Information

Analytical Batch: VFC13394
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 10/20/16 08:14
 Container ID: 1166092012-A

Prep Batch: VXX29808
 Prep Method: SW5030B
 Prep Date/Time: 10/19/16 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U	0.500	0.150	ug/L	1		10/20/16 08:14
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/20/16 08:14
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/20/16 08:14
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/20/16 08:14
Toluene	0.500 U	1.00	0.310	ug/L	1		10/20/16 08:14
Surrogates							
1,4-Difluorobenzene (surr)	94	77-115		%	1		10/20/16 08:14

Batch Information

Analytical Batch: VFC13394
 Analytical Method: SW8021B
 Analyst: ST
 Analytical Date/Time: 10/20/16 08:14
 Container ID: 1166092012-A

Prep Batch: VXX29808
 Prep Method: SW5030B
 Prep Date/Time: 10/19/16 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1745696 [SPT/10022]
Blank Lab ID: 1358889

Matrix: Soil/Solid (dry weight)

QC for Samples:

1166092001, 1166092002, 1166092003, 1166092004, 1166092005, 1166092006, 1166092007

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10022
Analytical Method: SM21 2540G
Instrument:
Analyst: RJA
Analytical Date/Time: 10/13/2016 4:31:00PM

Print Date: 10/25/2016 3:23:44PM

SGS North America Inc.

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

Member of SGS Group



Duplicate Sample Summary

Original Sample ID 1166120004

Analysis Date 10/13/2016 16:31

Duplicate Sample ID 1358890

Matrix Soil/Solid (dry weight)

QC for Samples

1166092001, 1166092002, 1166092003, 1166092004, 1166092005, 1166092006, 1166092007

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	91.4	91.4	%	0.09	(< 15)

Batch Information

Analytical Batch: SPT10022

Analytical Method: SM21 2540G

Instrument:

Analyst: RJA

Print Date: 10/25/2016 3:23:45PM

SGS North America Inc.

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

Member of SGS Group



Method Blank

Blank ID: MB for HBN 1746215 [VXX/29806]
Blank Lab ID: 1360340

Matrix: Water (Surface, Eff., Ground)

QC for Samples
1166092009, 1166092010, 1166092012

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	103	50-150		%

Batch Information

Analytical Batch: VFC13394
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/20/2016 11:16:00AM

Prep Batch: VXX29806
Prep Method: SW5030B
Prep Date/Time: 10/19/2016 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/25/2016 3:23:48PM

SGS North America Inc.

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

Member of SGS Group



Blank Spike Summary

Blank Spike ID LCS for HBN 1166092 [VXX29806]
Blank Spike Lab ID 1360343
Date Analyzed 10/19/2016 22:02

Spike Duplicate ID LCSD for HBN 1166092
[VXX29806]
Spike Duplicate Lab ID 1360344
Matrix Water (Surface, Eff, Ground)

QC for Samples 1166092009, 1166092010, 1166092012

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.970	97	1.00	0.990	99	(60-120)	2.00	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	112	112	0.0500	112	112	(50-150)	0.09	

Batch Information

Analytical Batch: VFC13394
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST

Prep Batch: VXX29806
Prep Method: SW5030B
Prep Date/Time: 10/19/2016 06:00
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 10/25/2016 3:23:50PM

SGS North America Inc.

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

Member of SGS Group



Method Blank

Blank ID MB for HBN 1746215 [VXX/29806]
Blank Lab ID 1360340

Matrix Water (Surface, Eff., Ground)

QC for Samples:
1166092009, 1166092010, 1166092012

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.220J	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.380J	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	90.6	77-115		%

Batch Information

Analytical Batch: VFC13394
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/20/2016 11:16:00AM

Prep Batch: VXX29806
Prep Method: SW5030B
Prep Date/Time: 10/19/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/25/2016 3:23:51PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1166092 [VXX29806]
Blank Spike Lab ID: 1360341
Date Analyzed: 10/19/2016 21:44

Spike Duplicate ID: LCSD for HBN 1166092 [VXX29806]
Spike Duplicate Lab ID: 1360342
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1166092009, 1166092010, 1166092012

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	97.5	98	100	97.8	98	(80-120)	0.30	(< 20)
Ethylbenzene	100	98.3	98	100	98.9	99	(75-125)	0.54	(< 20)
o-Xylene	100	87.4	87	100	92.7	93	(80-120)	5.90	(< 20)
P & M -Xylene	200	178	89	200	188	94	(75-130)	5.40	(< 20)
Toluene	100	106	106	100	104	104	(75-120)	2.80	(< 20)

Surrogates

1,4-Difluorobenzene (surr)	50	95.1	95	50	98.6	99	(77-115)	3.60	
----------------------------	----	------	----	----	------	----	----------	------	--

Batch Information

Analytical Batch: VFC13394
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST

Prep Batch: VXX29806
Prep Method: SW5030B
Prep Date/Time: 10/19/2016 06:00
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Print Date: 10/25/2016 3:23:53PM



Method Blank

Blank ID: MB for HBN 1746351 [VXX/29821]
Blank Lab ID: 1360928

Matrix: Soil/Solid (dry weight)

QC for Samples:
1166092001, 1166092002, 1166092003, 1166092005, 1166092006, 1166092008

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	2.05J	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	96.6	50-150		%

Batch Information

Analytical Batch: VFC13398
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/21/2016 12:54:00PM

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/20/2016 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/25/2016 3:23:55PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1166092 [VXX29821]
Blank Spike Lab ID: 1360931
Date Analyzed: 10/21/2016 12:16

Spike Duplicate ID: LCSD for HBN 1166092 [VXX29821]
Spike Duplicate Lab ID: 1360932
Matrix: Soil/Solid (dry weight)

QC for Samples: 1166092001, 1166092002, 1166092003, 1166092005, 1166092006, 1166092008

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	10.5	84	12.5	11.2	90	(60-120)	6.80	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	97.3	97	1.25	95.2	95	(50-150)	2.30	

Batch Information

Analytical Batch: VFC13398
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/20/2016 00:30
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 10/25/2016 3:23:58PM



Method Blank

Blank ID MB for HBN 1746351 [VXX/29821]
Blank Lab ID 1360928

Matrix Soil/Solid (dry weight)

QC for Samples
1166092001, 1166092002, 1166092003, 1166092005, 1166092006, 1166092008

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	6.00J	12.5	4.00	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
Toluene	16.0J	25.0	7.80	ug/Kg
Surrogates				
1,4-Difluorobenzene (surr)	90.9	72-119		%

Batch Information

Analytical Batch: VFC13398
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/21/2016 12:54:00PM

Prep Batch: VXX29821
Prep Method: SW5035A
Prep Date/Time: 10/20/2016 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/25/2016 3:24:00PM



Blank Spike Summary

Blank Spike ID LCS for HBN 1166092 [VXX29821]
Blank Spike Lab ID 1360929
Date Analyzed 10/21/2016 11 38

Spike Duplicate ID LCSD for HBN 1166092
[VXX29821]
Spike Duplicate Lab ID 1360930
Matrix Soil/Solid (dry weight)

QC for Samples 1166092001, 1166092002, 1166092003, 1166092005, 1166092006, 1166092008

Results by SW8021B

Parameter	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	1250	1310	105	1250	1290	103	(75-125)	1.40	(< 20)
Ethylbenzene	1250	1280	103	1250	1310	105	(75-125)	2.10	(< 20)
o-Xylene	1250	1260	100	1250	1270	101	(75-125)	1.10	(< 20)
P & M -Xylene	2500	2550	102	2500	2590	104	(80-125)	1.80	(< 20)
Toluene	1250	1310	105	1250	1300	104	(70-125)	0.29	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	1250	88.7	89	1250	94.1	94	(72-119)	5.90	

Batch Information

Analytical Batch: VFC13398
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST

Prep Batch: VXX29821
Prep Method: SW5036A
Prep Date/Time: 10/20/2016 00:30
Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Print Date: 10/25/2016 3:24:02PM

SGS North America Inc.

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

Member of SGS Group



Matrix Spike Summary

Original Sample ID 1168703009
MS Sample ID 1360933 MS
MSD Sample ID 1360934 MSD

Analysis Date 10/21/2016 15:46
Analysis Date 10/21/2016 16:05
Analysis Date 10/21/2016 16:24
Matrix Soil/Solid (dry weight)

QC for Samples 1166092001, 1166092002, 1166092003, 1166092005, 1166092006, 1166092008

Results by SW8021B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	6.86J	830	914	109	830	870	104	75-125	5.10	(< 20)
Ethylbenzene	10.4U	830	868	105	830	815	98	75-125	6.30	(< 20)
o-Xylene	10.4U	830	843	102	830	785	95	75-125	7.20	(< 20)
P & M -Xylene	20.8U	1659	1735	105	1659	1616	97	80-125	7.40	(< 20)
Toluene	16.4J	830	863	102	830	826	98	70-125	4.40	(< 20)
Surrogates										
1,4-Difluorobenzene (surr)		830	780	94	830	770	93	72-119	1.30	

Batch Information

Analytical Batch: VFC13398
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/21/2016 4:05:00PM

Prep Batch: VXX29821
Prep Method: AK101 Extraction (S)
Prep Date/Time: 10/20/2016 12:30:00AM
Prep Initial Wt./Vol.: 81.72g
Prep Extract Vol: 25.00mL

Print Date: 10/25/2016 3:24:04PM

SGS North America Inc.

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

Member of SGS Group



Method Blank

Blank ID MB for HBN 1746352 [VXX/29822]

Matrix Soil/Solid (dry weight)

Blank Lab ID 1360935

QC for Samples

1166092004, 1166092007

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.796J	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	104	50-150		%

Batch Information

Analytical Batch: VFC13404

Prep Batch: VXX29822

Analytical Method: AK101

Prep Method: SW5035A

Instrument: Agilent 7890A PID/FID

Prep Date/Time: 10/21/2016 12:30:00AM

Analyst: ST

Prep Initial Wt./Vol.: 50 g

Analytical Date/Time: 10/21/2016 3:58:00PM

Prep Extract Vol: 25 mL

Print Date: 10/25/2016 3:24:05PM

SGS North America Inc.

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

Member of SGS Group



Blank Spike Summary

Blank Spike ID: LCS for HBN 1166092 [VXX29822]
Blank Spike Lab ID: 1360938
Date Analyzed: 10/21/2016 15:21

Spike Duplicate ID: LCSD for HBN 1166092 [VXX29822]
Spike Duplicate Lab ID: 1360939
Matrix: Soil/Solid (dry weight)

QC for Samples: 1166092004, 1166092007

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Gasoline Range Organics	12.5	12.2	98	12.5	13.1	105	(60-120)	7.30	(< 20)	
Surrogates										
4-Bromofluorobenzene (surr)	1.25	108	108	1.25	111	111	(50-150)	3.00		

Batch Information

Analytical Batch: VFC13404
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST

Prep Batch: VXX29822
Prep Method: SW5035A
Prep Date/Time: 10/21/2016 00:30
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 10/25/2016 3:24:07PM

SGS North America Inc.

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

Member of SGS Group



Method Blank

Blank ID MB for HBN 1746352 [VXX/29822]
Blank Lab ID 1360935

Matrix Soil/Solid (dry weight)

QC for Samples
1166092004, 1166092007

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	9.25J	12.5	4.00	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
Toluene	14.3J	25.0	7.80	ug/Kg
Surrogates				
1,4-Difluorobenzene (surr)	88	72-119		%

Batch Information

Analytical Batch: VFC13404
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/21/2016 3:58:00PM

Prep Batch: VXX29822
Prep Method: SW5035A
Prep Date/Time: 10/21/2016 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/25/2016 3:24:09PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1166092 [VXX29822]
Blank Spike Lab ID: 1360936
Date Analyzed: 10/21/2016 14:45

Spike Duplicate ID: LCSD for HBN 1166092 [VXX29822]
Spike Duplicate Lab ID: 1360937
Matrix: Soil/Solid (dry weight)

QC for Samples: 1166092004, 1166092007

Results by SW8021B

Parameter	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	1250	1210	97	1250	1260	101	(75-125)	4.20	(< 20)
Ethylbenzene	1250	1200	96	1250	1270	101	(75-125)	5.00	(< 20)
o-Xylene	1250	1140	91	1250	1260	101	(75-125)	10.30	(< 20)
P & M -Xylene	2500	2330	93	2500	2570	103	(80-125)	9.90	(< 20)
Toluene	1250	1250	100	1250	1250	100	(70-125)	0.06	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	1250	90.6	91	1250	93	93	(72-119)	2.60	

Batch Information

Analytical Batch: VFC13404
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST

Prep Batch: VXX29822
Prep Method: SW5035A
Prep Date/Time: 10/21/2016 00:30
Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Print Date: 10/25/2016 3:24:11PM

SGS North America Inc.

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

Member of SGS Group



Matrix Spike Summary

Original Sample ID 1166092004
MS Sample ID 1360940 MS
MSD Sample ID 1360941 MSD

Analysis Date 10/21/2016 18 45
Analysis Date 10/21/2016 19 04
Analysis Date 10/21/2016 19 22
Matrix Soil/Solid (dry weight)

QC for Samples 1166092004, 1166092007

Results by SW8021B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	6.49J	960	963	100	960	946	98	75-125	1.80	(< 20)
Ethylbenzene	13.0U	960	969	101	960	944	98	75-125	2.50	(< 20)
o-Xylene	27.8	960	933	94	960	859	87	75-125	8.30	(< 20)
P & M -Xylene	43.1J	1918	1918	98	1918	1771	90	80-125	8.20	(< 20)
Toluene	28.3	960	999	101	960	1011	102	70-125	1.30	(< 20)
Surrogates										
1,4-Difluorobenzene (surr)		960	871	91	960	872	91	72-119	0.18	

Batch Information

Analytical Batch: VFC13404
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/21/2016 7:04:00PM

Prep Batch: VXX29822
Prep Method: AK101 Extraction (S)
Prep Date/Time: 10/21/2016 12:30:00AM
Prep Initial Wt./Vol.: 73.85g
Prep Extract Vol: 25.00mL

Print Date: 10/25/2016 3:24:13PM

SGS North America Inc.

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

Member of SGS Group



Method Blank

Blank ID MB for HBN 1746476 [VXX/29830]

Matrix Water (Surface, Eff., Ground)

Blank Lab ID 1360977

QC for Samples
1166092011

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	105	50-150		%

Batch Information

Analytical Batch: VFC13406
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/22/2016 9:42:00PM

Prep Batch: VXX29830
Prep Method: SW5030B
Prep Date/Time: 10/22/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/25/2016 3:24:13PM

SGS North America Inc.

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

Member of SGS Group



Blank Spike Summary

Blank Spike ID LCS for HBN 1166092 [VXX29830]
Blank Spike Lab ID 1360980
Date Analyzed 10/22/2016 21 05

Spike Duplicate ID LCSD for HBN 1166092
[VXX29830]
Spike Duplicate Lab ID 1360981
Matrix Water (Surface, Eff, Ground)

QC for Samples 1166092011

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.992	99	1.00	0.938	94	(60-120)	5.60	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	110	110	0.0500	110	110	(50-150)	0.25	

Batch Information

Analytical Batch: VFC13406
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST

Prep Batch: VXX29830
Prep Method: SW5030B
Prep Date/Time: 10/22/2016 06:00
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 10/25/2016 3:24:15PM

SGS North America Inc.

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

Member of SGS Group



Method Blank

Blank ID: MB for HBN 1746476 [VXX/29830]
Blank Lab ID: 1360977

Matrix: Water (Surface, Eff, Ground)

QC for Samples:
1166092011

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	87.8	77-115		%

Batch Information

Analytical Batch: VFC13406
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/22/2016 9:42:00PM

Prep Batch: VXX29830
Prep Method: SW5030B
Prep Date/Time: 10/22/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/25/2016 3:24:17PM

SGS North America Inc.

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

Member of SGS Group



Blank Spike Summary

Blank Spike ID: LCS for HBN 1166092 [VXX29830]
Blank Spike Lab ID: 1360978
Date Analyzed: 10/22/2016 20:46

Spike Duplicate ID: LCSD for HBN 1166092 [VXX29830]
Spike Duplicate Lab ID: 1360979
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1166092011

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	105	105	100	104	104	(80-120)	1.70	(< 20)
Ethylbenzene	100	108	108	100	107	107	(75-125)	1.30	(< 20)
o-Xylene	100	106	106	100	105	105	(80-120)	1.30	(< 20)
P & M -Xylene	200	216	108	200	213	106	(75-130)	1.60	(< 20)
Toluene	100	108	108	100	107	107	(75-120)	1.30	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	97.4	97	50	96.7	97	(77-115)	0.72	

Batch Information

Analytical Batch: VFC13406
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST

Prep Batch: VXX29830
Prep Method: SW8030B
Prep Date/Time: 10/22/2016 06:00
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Print Date: 10/25/2016 3:24:19PM

SGS North America Inc.

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

Member of SGS Group



Method Blank

Blank ID: MB for HBN 1745648 [XXX/36523]
Blank Lab ID: 1358828

Matrix: Soil/Solid (dry weight)

QC for Samples:
1166092001, 1166092002, 1166092003, 1166092004, 1166092005, 1166092006, 1166092007

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	76.1	60-120		%

Batch Information

Analytical Batch: XFC12969
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CRA
Analytical Date/Time: 10/16/2016 9:49:00PM

Prep Batch: XXX36523
Prep Method: SW3550C
Prep Date/Time: 10/13/2016 9:14:04PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 10/25/2016 3:24:23PM

SGS North America Inc.

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

Member of SGS Group



Blank Spike Summary

Blank Spike ID LCS for HBN 1166092 [XXX36523]
Blank Spike Lab ID 1358829
Date Analyzed 10/17/2016 10:08

Spike Duplicate ID LCSD for HBN 1166092
[XXX36523]
Spike Duplicate Lab ID 1358830
Matrix Soil/Solid (dry weight)

QC for Samples 1166092001, 1166092002, 1166092003, 1166092004, 1166092005, 1166092006, 1166092007

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Diesel Range Organics	167	125	75	* 167	132	79	(75-125)	5.10	(< 20)	
Surrogates										
5a Androstane (surr)	3.33	85.9	86	3.33	90.2	90	(60-120)	4.80		

Batch Information

Analytical Batch: XFC12968
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CRA

Prep Batch: XXX36523
Prep Method: SW3550C
Prep Date/Time: 10/13/2016 21:14
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 10/25/2016 3:24:25PM

SGS North America Inc.

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

Member of SGS Group



Method Blank

Blank ID: MB for HBN 1746209 [XXX/36568]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1360312

QC for Samples:

1166092009, 1166092010, 1166092011

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	90	60-120		%

Batch Information

Analytical Batch: XFC12999

Prep Batch: XXX36568

Analytical Method: AK102

Prep Method: SW3520C

Instrument: Agilent 7890B F

Prep Date/Time: 10/20/2016 8:33:02AM

Analyst: CRA

Prep Initial Wt./Vol.: 250 mL

Analytical Date/Time: 10/20/2016 5:15:00PM

Prep Extract Vol: 1 mL

Print Date: 10/25/2016 3:24:26PM

SGS North America Inc.

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

Member of SGS Group



Blank Spike Summary

Blank Spike ID LCS for HBN 1166092 [XXX36568]
Blank Spike Lab ID 1360313
Date Analyzed 10/20/2016 17:24

Spike Duplicate ID LCSD for HBN 1166092
[XXX36568]
Spike Duplicate Lab ID 1360314
Matrix: Water (Surface, Eff, Ground)

QC for Samples 1166092009, 1166092010, 1166092011

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	18.9	94	20	19.1	96	(75-125)	1.30	(< 20)
Surrogates									
5a Androstane (surr)	0.4	108	108	0.4	110	110	(60-120)	2.10	

Batch Information

Analytical Batch: XFC12999
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CRA

Prep Batch: XXX36568
Prep Method: SW3520C
Prep Date/Time: 10/20/2016 08:33
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 10/25/2016 3:24:32PM



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1166092



Locations Nationwide
 Alaska Maryland
 New Jersey New York
 North Carolina Indiana
 West Virginia Kentucky
www.us.sgs.com

CLIENT: ACE ENGINEERING

CONTACT: ARNE TIKA PHONE NO: 907-398-8193

PROJECT NAME: KASLOF RIVERVIEW

REPORTS TO: ACE ENGR. E-MAIL: aceengineering@alaska.net

INVOICE TO: ACE ENGR. QUOTE#: 342822 P.O.#:

Section 1

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

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE	#	Type	Preservative	REMARKS/LOC ID
1	DAB S1/3.0'	10-9-16	1620	SOIL	2	G		
2	DAB S3/1.0'	10-9-16	1630	SOIL	2	G		
3	DAB S5/3.0'	10-9-16	1640	SOIL	2	G		
4	DAB S6/3.0'	10-9-16	1652	SOIL	2	G		
5	DAB S13/1.0'	10-9-16	1705	SOIL	2	G		
6	DAB SP2/SP4	10-9-16	1715	SOIL	2	G		
7	DAB SP6	10-9-16	1720	SOIL	2	G		
8	TRIP BLANK	PW-7-517						

Section 3

Section 4

Section 5

Relinquished By: (1) *Arne Tika*

Relinquished By: (2) _____

Relinquished By: (3) _____

Relinquished By: (4) *Arne Tika*

Received By: _____

Received By: _____

Received By: _____

Received For Laboratory By: *Arne Tika*

Temp Blank °C: 0.3 #D12 or Ambient []

Chain of Custody Seal: (Circle) **INTACT** BROKEN ABSENT

Requested Turnaround Time and/or Special Instructions: **NORMAL TA**

Section 4 DOD Project? Yes No

Cooler ID: **L1**

Data Deliverable Requirements:



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1166092



Locations Nationwide
aska
Maryland
New Jersey
New York
North Carolina
Indiana
Kentucky
West Virginia
www.us.sgs.com

CLIENT: ACE ENGINEERING
 CONTACT: ARNE TIKKA
 PROJECT NAME: KASLOF
 REPORTS TO: ACE ENG
 INVOICE TO: ACE ENG

PHONE NO: 907-398-8193
 PROJECT/PERMIT#:
 E-MAIL: aceengineering@alaska.net
 QUOTE #: 342822
 P.O. #:

RESERVED for lab use

RESERVED	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	Type	#	CONTAINER	Section 3	Section 4	Section 5
	QAE MW #3	10-9-16	1735	WATER	G	5	✓	DRD/AK 102	✓	GRAB/STRK 00218
	QAE MW #2	10-9-16	1750	WATER	G	5	✓			
	QAE MW #1	10-9-16	1835	WATER	G	5	✓			
	QDA-C TRIP BLANK	10-7-16								

Section 2

Relinquished By: (1) *Arne Tikka*
 Relinquished By: (2) _____
 Relinquished By: (3) _____
 Relinquished By: (4) _____

Date: 10-11-16 0930
 Date: _____
 Date: _____
 Date: 10/11/16 12:56

Section 5

Section 4 DOD Project? Yes (No) No
 Data Deliverable Requirements: L1
 Cooler ID: _____
 Requested Turnaround Time and/or Special Instructions: NORMAL TA

Section 3
 Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.
 Preservative

REMARKS/ LOC ID

Temp Blank °C: _____ or Ambient []
 Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
 (See attached Sample Receipt Form) (See attached Sample Receipt Form)

Page 2 of 2

AIRPORT OF DEPARTURE ENA 10/11/16 10:19 090363

808 7161033

Frgt

SHIPPER'S NAME, ADDRESS & PHONE ACE ENGINEERING ACE ENGINEERI		SHIPPER'S ACCOUNT NUMBER 9072623197	NOT AIR WAYBILL (AIR CONSIGNMENT NOTE) Ravn ALASKA 4700 Old International Airport Road Anchorage, Alaska 99502
CONSIGNEE'S NAME, ADDRESS & PHONE SGS LABS 200 WEST POTTER RD ANCHORAGE AK 99518		CONSIGNEE'S ACCOUNT NUMBER 9075622343	It is agreed that the goods described herein are accepted in apparent good order and condition (except as noted) for carriage SUBJECT TO THE CONDITIONS OF CONTRACT AS LISTED IN THE COMPANIES TARIFFS. THE SHIPPER'S ATTENTION IS DRAWN TO THE NOTICE CONCERNING CARRIERS' LIMITATION OF LIABILITY. Shipper may increase such limitation of liability by declaring a higher value for carriage and paying a supplemental charge if required.
ISSUING CARRIER'S AGENT NAME, CITY & PHONE		ALSO NOTIFY NAME & ADDRESS	

AGENT'S IATA CODE	ACCOUNT NO.	ACCOUNTING INFORMATION 7155532
AIRPORT OF DEPARTURE Kenai	Declared Value \$ 0.00	Insured Amount \$ 0.00

BY FIRST

AIRPORT OF DESTINATION
Anchorage

COMMENTS

No. of Pieces Recd	Gross Weight	kg	lb	Rate Class	Commodity Item No.	Chargeable Weight	Rate/Charge	Total	Nature and Quantity of Goods
1	46	1.	M			1	\$29.18	\$29.18	lab samples CHILL
1	46							\$29.18	



PREPAID \$29.18	WEIGHT CHARGE	COLLECT	OTHER CHARGES AND DESCRIPTION	
\$0.00	VALUATION CHARGE		AMOUNT	DESCRIPTION
\$1.82	FEDERAL EXCISE TAX			
\$0.00	TOTAL OTHER CHARGES DUE AGENT			
\$0.00	TOTAL OTHER CHARGES DUE CARRIER			
\$31.00	TOTAL PREPAID	TOTAL COLLECT		



HAZMAT
No

STATION NUMBERS
ANCHORAGE - (907) 243-2781
ANIAK - (907) 875-4572
BARROW - (907) 832-4300
BETHEL - (907) 543-3825
DEADHORSE - (907) 889-8222

FAIRBANKS - (907) 450-7260
GALENA - (907) 656-1875
KOTZEBUE - (907) 442-5020
NOME - (907) 443-7695
ST. MARYS - (907) 438-2247
UNALASKA - (907) 824-3695

Shipper certifies that the particulars on the face hereof are correct, agrees to the CONDITIONS AS LISTED IN THE COMPANIES TARIFFS, accepts that carrier's liability is limited as stated in the companies tariffs and accepts such value unless a higher value for carriage is declared on the face hereof subject to an additional charge and that insofar as any part of the consignment contains restricted articles, such part is described by name and is in proper condition for carriage by air according to applicable national governmental regulations, and for international shipments, the current International Air Transport Association's Restricted Articles Regulations.

Paid By Shipper
Printed Name and Title _____
Signature _____

Printed at 10:22:10 on 10/11/2016 at ENA-FRTMGR 10.106.2.15

Consignee Copy



e-SAMPLE RECEIPT FORM

1166092



Review Criteria	Y/N (yes/no)	Exceptions Noted below
Were Custody Seals intact? Note # & location	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	<input checked="" type="checkbox"/> Y	1-F
<input type="checkbox"/> **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)	<input checked="" type="checkbox"/> Y	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> Y	Cooler ID: 1 @ 03 °C Therm ID: D12
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?	<input type="checkbox"/>	
If <0°C, were sample containers ice free?	<input type="checkbox"/>	
If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.		
Note: Refer to form F-083 "Sample Guide" for hold times.		
Were samples received within hold time?	<input checked="" type="checkbox"/> Y	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/> Y	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	<input checked="" type="checkbox"/> Y	
BTEX by 8021 per FT.		
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> ***Exemption permitted for metals (e.g. 200.8/6020A).
IF APPLICABLE		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/> Y	
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/> Y	
Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/> Y	
Note to Client: Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1166092001-A	No Preservative Required	OK			
1166092001-B	Methanol field pres. 4 C	OK			
1166092002-A	No Preservative Required	OK			
1166092002-B	Methanol field pres. 4 C	OK			
1166092003-A	No Preservative Required	OK			
1166092003-B	Methanol field pres. 4 C	OK			
1166092004-A	No Preservative Required	OK			
1166092004-B	Methanol field pres. 4 C	OK			
1166092005-A	No Preservative Required	OK			
1166092005-B	Methanol field pres. 4 C	OK			
1166092006-A	No Preservative Required	OK			
1166092006-B	Methanol field pres. 4 C	OK			
1166092007-A	No Preservative Required	OK			
1166092007-B	Methanol field pres. 4 C	OK			
1166092008-A	Methanol field pres. 4 C	OK			
1166092009-A	HCL to pH < 2	OK			
1166092009-B	HCL to pH < 2	OK			
1166092009-C	HCL to pH < 2	OK			
1166092009-D	HCL to pH < 2	OK			
1166092009-E	HCL to pH < 2	OK			
1166092010-A	HCL to pH < 2	OK			
1166092010-B	HCL to pH < 2	OK			
1166092010-C	HCL to pH < 2	OK			
1166092010-D	HCL to pH < 2	OK			
1166092010-E	HCL to pH < 2	OK			
1166092011-A	HCL to pH < 2	OK			
1166092011-B	HCL to pH < 2	OK			
1166092011-C	HCL to pH < 2	OK			
1166092011-D	HCL to pH < 2	OK			
1166092011-E	HCL to pH < 2	OK			
1166092012-A	HCL to pH < 2	OK			
1166092012-B	HCL to pH < 2	OK			
1166092012-C	HCL to pH < 2	OK			

Container Id

Preservative

Container
Condition

Container Id

Preservative

Container
Condition

Container Condition Glossary

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

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

10/11/2016