Milepost 205 Richardson Highway Spill 2015 Groundwater Monitoring Well Report

Mile 205 Richardson Highway, Alaska

June 2016

Prepared for:

Big States Logistics Inc.

Prepared by:

Alaska Resources and Environmental Services, LLC.



284 Topside Drive Fairbanks, AK 99712

fil Greekom

^{*} Lyle Gresehover Project Manager/Geologist

Prepared by:

INTRODUCTION

This report was prepared on behalf of Big State Logistics Inc., who has contracted with Alaska Resources & Environmental Services (ARES) to perform the groundwater investigation associated with the petroleum release of diesel fuel as detailed in the ARES Release Investigation / Phase II ESA dated April 2010. The release occurred at milepost 205 of the Richardson highway. The ADEC file ID number for this site is 140.38.052. The work described in this report was conducted as described in the ADEC approved Work Plan submitted in March 2009.

The objective of our work was to obtain groundwater sample data near the site of a former petroleum release in order to access the impacts to groundwater and to evaluate the extent of groundwater migration. Groundwater samples were collected from monitoring wells MW-1 through MW-6 that were installed in March 2009. All groundwater samples were collected from monitoring wells in general accordance with ADEC Oil and Other Hazardous Substances Pollution Control Regulations (18 AAC 75 – amended June 17, 2015).

The ADEC file # for the site is 140.38.052.

SITE BACKGROUND

Site Description

The petroleum release occurred on State of Alaska owned property located at Mile 205 Richardson Highway within the State of Alaska Department of Transportation (D.O..T.) right-of-way (ROW) corridor (Figure 1,2). The D.O.T. manages the ROW which is 150' from road centerline. Lands outside of the D.O.T. corridor are owned and managed by Department of Interior Bureau of Land Management (BLM).

Lands in the vicinity of the spill are undeveloped. The GPS coordinates for the spill site is N 63° 15.447', W -145 ° 41.118'. The elevation of the site is approximately 2800' above mean sea level according to topographical map of the area.

History

On December 30, 2008 a tanker truck owned and operated by Big State Logistics Inc., (BSL) was involved in an accident at milepost 205 on the Richardson highway (Appendix A, Figure 1). A fuel trailer separated from the tanker truck, overturned and came to rest in a ditch on the east side of the highway. No injuries were reported. The trailer released all of the approximately 4,000-gallons of #2 Diesel fuel it contained onto the ground surface.

Initial cleanup attempts took place January 19, 2009. A total of 140 cubic yards of contaminated soil/ snow was transported to OIT, Moose Creek facility for thermal remediation.

In March 2009 ARES conducted a groundwater investigation that included the installation of six permanent groundwater monitoring wells. Monitoring well locations can be found in Appendix A, Figure 2.

Groundwater samples have been collected from the spill site on an annual basis since 2009 to confirm site conditions and monitor the contaminant plume.

Topography

The United States Geological Survey (USGS) Mt. Hayes quad (B-4) provides topographic map coverage of the site (Figure 1). The subject property is located in the foothills of the Alaska Range within the Tanana-Kuskokwim Lowland physiographic province. Summit Lake occupies the broad valley to the south, a basin scooped out by glaciers and damned by alluvial debris deposited by Falls Creek at the basin's north end. Based upon the topographic map of the Mt Hayes Quadrangle, the site elevation is approximately 2800 feet above the mean sea level.

Regional Hydrology

The Delta River is the dominant influence on ground-water flow in the subject area. Two discharge peaks characterize the Delta River: spring snowmelt runoff and summer glacial melt (mid-late July). The stage of nearby water bodies such as Phelan Creek typically rises and falls in response to stage changes of the Delta River. The depth to groundwater varies in response to these controlling factors. Based on interpretation of USGS data, regional groundwater flow direction is generally to the north-northwest. However, the direction of flow may vary depending upon the stage of the Delta River. The seasonal high groundwater table for the surrounding area is unknown at this time.

The subject property is situated approximately 200 feet east of Phelan Creek a tributary to the Delta River and approximately 4 miles north of Summit Lake.

Site Hydrology

Groundwater was encountered at approximately 4 - 4.5 feet bgs in all boreholes during the subsurface investigation conducted in March 2009 at Milepost 205 Richardson Highway. The regional water table was considered normal for the time of year. Based on groundwater data from nearby monitoring wells, the groundwater direction flows to the 5.5 degrees east of north with a fairly steep hydraulic gradient (< 0.0088 vertical ft/horizontal ft).

GROUNDWATER SAMPLING

Scope of Work

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

• Collected groundwater samples from monitoring wells MW-1 through MW-6. A duplicate sample from MW-1 was collected for QA/QC purposes. Samples were analyzed for diesel range organics (DRO) by method AK 102 and benzene,

toluene, ethylbenzene and xylenes (BTEX) constituents by method EPA 8021B and;

• Data review and report preparation.

Sampling Method

The monitoring well was developed, purged and sampled in accordance with the *UST Procedures Manual* (November, 2002), the ADEC *Draft Field Sampling Guidance* (May 2010), and standard procedures. A peristaltic pump with new disposable polyethylene tubing and new nitrile gloves were used during the sampling event. Before sampling, the groundwater elevation was measured to 0.010 feet using a Heron Model D-T Interface Meter. Well volume was then calculated, and at least three times the well volume was purged prior to sampling. Recharge rates were observed during purging, and water levels measurements taken following sampling. Water parameters were recorded to include temperature, pH, conductivity, turbidity, dissolved oxygen, and salinity using a Horiba Water Meter Model U-10.

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

Purge water was placed in drums and stored at an off-site location pending laboratory results. Groundwater samples were collected from MW-1 through MW-6 on September 01, 2015. A blind duplicate sample was collected from monitoring well MW-1 for quality assurance/quality control purposes.

Field Observations

Purge water was brown and slightly cloudy in appearance with the exception of purge water from monitoring well MW-1 which was clear. No odor or visible sheen was observed in groundwater collected from the monitoring wells during sampling activities.

Analytical Results

The monitoring wells were sampled and analyzed for DRO by method AK102 and BTEX by method 8021B. A summary of groundwater analytical results are shown in Table 1. The summary table also includes historical analytical results for comparative purposes with the current sampling event. Complete laboratory results are included in Appendix B.

				v	esuits Summ ethod 8021B		Alaska Method
Sample Location	Sample ID	Date Sampled	Benzene in mg/L	Toluene in mg/L	Ethyl- benzene in mg/L	Total xylenes in mg/L	AK 102 DRO in mg/L
	MW1-0309	03/24/09	ND	0.598	0.204	1.190	5.23
	MW1-0909	10/04/09	0.0461	.0284	0.120	0.843	46.7
	MW1-0910	09/25/10	0.00142	0.0439	0.0551	0.266	126
	MW1-0711	07/20/11	0.000610	0.0125	0.0210	0.291	59.8
	MW1-0912	09/23/12	ND	0.0132	.0109	0.1311	3.19
	MW1-0712*	07/31/13	ND	0.00292	0.00175	0.0552	48.4
MW-1	DUP-W-0712* Blind Field Duplicate Sample to MW1-0712	07/31/13	ND	0.00387	0.00382	0.0635	42.9
	MW1-0914	09/10/14	ND	0.0016	0.00032 J	0.0093	0.84
	DUP-W-0914 Blind Field Duplicate Sample to MW1-0914	09/10/14	ND	0.00025 J	0.00043 J	0.011	0.96
	MW1-0915	09/1/15	0.000350 J	ND	0.000430 J	0.00493 J	1.8
	DUP-W-0915 Blind Field Duplicate Sample to MW1-0915	09/01/15	ND	ND	0.000380 J	0.00444	1.31
	MW2-0309	03/24/09	0.00120	0.0166	0.00540	.0475	0.471
	DUP-W-0309 Blind Field Duplicate Sample to MW2-0309	03/24/09	.00137	.0181	.00601	.0505	ND
	MW2-0909	10/04/09	ND	.0266	.0528	.388	1210
	MWDUP-0909 Blind Field Duplicate Sample to MW2-0909	10/04/09	ND	.0228	.0503	.373	555
MW-2	MW2-0910	09/25/10	ND	ND	0.00223	0.0218	27.1
	MW2-0711	07/20/11	ND	ND	ND	ND	9.14
	MW2-0912	09/23/12	ND	ND	ND	ND	0.725
	MW2-0712*	07/31/13	ND	ND	0.000675	ND	6.92
	MW2-0914	09/10/14	ND	ND	ND	ND	7.6
	MW1-0915	09/01/15	0.000320 J	ND	ND	ND	9.60
1	ADEC Cleanup Level		0.005	1.0	0.7	10.0	1.5

 Table 1

 Historical Groundwater Analytical Results Summary

Results above ADEC cleanup levels are highlighted and bold.

¹ Title 18 of the Alaska Administrative Code, Chapter 75. Section 345. Table C. June 2015 revision.

ND = Not detected at the MRL (Method Reporting Limit).

Results above ADEC Regulatory Limit in Bold.

* = samples with the suffix "-0712" were collected in 2013

Sample		Date			thod 8021B		Alaska Method AK 102
Location	Sample ID	Sampled	Benzene in mg/L	Toluene in mg/L	Ethyl- benzene in mg/L	Total xylenes in mg/L	DRO in mg/L
	MW3-0309	03/24/09	ND	ND	ND	ND	ND
	MW3-0909	10/04/09	ND	ND	ND	ND	0.725
	MW3-0910	09/25/10	ND	ND	ND	ND	ND
	MW3-0711	07/20/11	ND	ND	ND	ND	ND
MW-3	DUP-W-0711 Blind Field Duplicate Sample to MW3-0711	07/20/11	ND	ND	ND	ND	ND
	MW3-0912	09/23/12	ND	ND	ND	ND	0.0154
	MW3-0712*	07/31/13	ND	ND	ND	ND	ND
	MW3-0914	09/10/14	ND	ND	ND	ND	ND
	MW3-0915	09/01/15	0.000310 J	ND	ND	ND	ND
	MW4-0309	03/24/09	0.000610	0.00616	0.00231	0.0102	ND
	MW4-0909	10/04/09	ND	0.00563	0.0283	.224	108
	MW4-0910	09/25/10	ND	ND	ND	0.00759	14.1
MW-4	MW4-0711	07/20/11	ND	ND	ND	ND	6.84
1 VI VV -4	MW4-0912	09/23/12	ND	ND	ND	ND	2.39
	MW4-0712*	07/31/13	ND	ND	ND	ND	3.36
	MW4-0914	09/10/14	ND	0.00049 J	0.00021 J	0.00065 J	2.3
	MW4-0915	09/01/15	ND	ND	ND	0.000920 J	18.9
	ADEC Cleanup Level	1	0.005	1.0	0.7	10.0	1.5

 Table 1 Continued

 Historical Groundwater Analytical Results Summary

Results above ADEC cleanup levels are highlighted and bold.

¹ Title 18 of the Alaska Administrative Code, Chapter 75. Section 345. Table C. June 2015 revision.

ND = Not detected at the MRL (Method Reporting Limit).

Results above ADEC Regulatory Limit in Bold.

* = samples with the suffix "-0712" were collected in 2013

Sample		Date			ethod 8021B	<u> </u>	Alaska Method AK 102
Location	Sample ID	Sampled	Benzene in mg/L	Toluene in mg/L	Ethyl- benzene in mg/L	Total xylenes in mg/L	DRO in mg/L
	MW5-0309	03/24/09	ND	ND	ND	ND	ND
	MW5-0909	10/04/09	ND	ND	ND	ND	ND
	MW5-0910	09/25/10	ND	ND	ND	ND	ND
MW-5	DUP Blind Field Duplicate Sample to MW5-0910	09/25/10	ND	ND	ND	ND	ND
101 00 5	MW5-0711	07/20/11	ND	ND	ND	ND	ND
	MW5-0912	09/23/12	ND	ND	ND	ND	ND
	MW5-0712*	7/31/13	ND	ND	ND	ND	ND
	MW5-0914	09/10/14	ND	ND	ND	ND	ND
	MW5-0915	09/01/15	ND	ND	ND	ND	0.201 J
	MW6-0309	03/24/09	ND	ND	ND	ND	ND
	MW6-0909	10/04/09	ND	ND	ND	ND	ND
	MW6-0910	09/25/10	ND	ND	ND	ND	ND
MW-6	MW6-0711	07/20/11	ND	ND	ND	ND	ND
	MW6-0912	09/23/12	ND	ND	ND	ND	0.454
	MW6-0712*	7/31/13	ND	ND	ND	ND	ND
	MW6-0914	09/10/14	ND	ND	ND	ND	ND
	MW6-0915	09/01/15	ND	ND	ND	ND	ND
	ADEC Cleanup Level	1	0.005	1.0	0.7	10.0	1.5

Table 1 ContinuedHistorical Groundwater Analytical Results Summary

Results above ADEC cleanup levels are highlighted and bold.

¹ Title 18 of the Alaska Administrative Code, Chapter 75. Section 345. Table C. June 2015 revision.

ND = Not detected at the MRL (Method Reporting Limit).

Results above ADEC Regulatory Limit in Bold.

* = samples with the suffix "-0712" were collected in 2013

Analytical results indicate that MW-1, MW-2 and MW-4 remain above ADEC target cleanup levels for DRO. Additionally the level of DRO in the above wells has increased as compared to recent sampling events. All other results, for all other analytes, are below ADEC cleanup level or non-detectable at reporting limits. A graphical summary of DRO results over time is presented in Appendix C for wells MW-1, MW-2, and MW-4.

All samples were analyzed for GRO by AK 101 in 2015. No detections of GRO were identified over the PQL. For clarity sake the historical summary table was not updated to show the results of the GRO analysis.

Quality Assurance / Quality Control

Field quality control (QC) procedures for this project included the collection and analysis of a field duplicate and trip blank, which accompanied the samples in the field. One field duplicate (DUP-W-0915) was collected for quality control purposes. Sample ID DUP-W-0915 was a blind duplicate to MW1-0915. The QC sample was analyzed to assess the

quality of sample collection and handling, as well as the accuracy and precision of the laboratory's analytical procedures.

Precision, expressed as the relative percent difference (RPD) between field duplicate sample results, is an indication of the consistency of sampling, sample handling, preservation, and laboratory analysis. As required by the 18 AAC 78 and the <u>UST</u> <u>Procedures Manual</u>, field quality control sampling consisted of 10% field duplicates and 5% trip blanks.

The following blind field duplicates and associated RPD calculations are as follows:

Sample ID / Duplicate ID	Matrix	Compound	Sample Concentration (mg/kg)	Duplicate Concentration (mg/kg)	RPD
MW1-0915 /		Ethylbenzene	0.000430 J	0.000380 J	12.3
DUP-W-0915	Water	Total xylenes	0.00493 J	0.00444	10.5
DUI-W-0913		DRO	1.8	1.31	31.5

Table 2: Relative Percent Difference Calculations

Given two sample concentrations (X and Y) the formula to determine RPD is the absolute value of the following: $\left[\left((X - Y) / (X + Y) \right) / 2 \right] * 100 = RPD$

Results above ADEC recommended range in Bold.

The recommended range for RPD for water analysis is < 30%. The RPD's for duplicates collected as part of this investigation fell within the acceptable range or were not calculable, with the exception of DRO. Data quality is affected. Results for DRO should be viewed qualitatively rather than quantitatively.

Analysis of the trip blanks showed no analytes above the practical quantitation limit (PQL). Thus, there is no indication that cross-contamination among samples occurred.

The ADEC Environmental Laboratory Data Quality Assurance Requirements (ADEC 2009) and United States Environmental Protection Agency (EPA) National Functional Guidelines for Superfund Organic Methods Data Review (EPA 2008) were followed in this site investigation. The data were reviewed to determine the data quality and to evaluate potential impact on the usability of the data. The review was performed using Level II reports that were provided by Test America, Inc. laboratory of Anchorage, AK. The analytical laboratory reports and chain-of-custody records is included in Appendix B.

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

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

Laboratory Report Number: 1158584

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

• The calculated RPD for the blind field duplicate had one analyte (DRO) above the RPD limit of 30% in water. The calculated RPD for DRO was 31.5%. Results for DRO should be viewed qualitatively rather than quantitatively.

Laboratory quality assurance included the procedures outlined in the laboratory's ADECapproved standard operating procedures documentation. As presented in the laboratory report's QC summary sheet, the laboratory QC parameters fell within the acceptable limits.

Conclusions and Recommendations

Based on past trend analysis, the 2012 sampling event appears to be an outlier, possibly due to a change in hydraulic conditions at the time of sampling.

Source area monitoring well MW-1 and hydraulically down-gradient monitoring well MW-2 showed a slight increase in DRO levels since the previous sampling event. Hydraulically down-gradient monitoring well MW-4 showed a significant increase in DRO levels since the previous sampling event. The levels of DRO in groundwater overall have decreased since the monitoring wells were installed in 2009.

Monitoring wells MW-1, MW-2, and MW-4 remain above ADEC regulated levels for DRO in groundwater. DRO in groundwater ranged from non-detect to 18.9 mg/L. The ADEC cleanup for DRO in groundwater is 1.5 mg/L. Monitoring wells MW-3, MW-5, and MW-6 all show results below the PQL for all sampled analytes. All monitoring wells with detectible DRO results are located on the east side of the highway.

The contaminant plume appears to have moved down gradient towards MW-4, and has increased in concentration for the previous sampling event. Additional sampling events will be required to determine if the contaminant plume is continuing to increase in size and concentration at leading edge of the contaminant plume.

ARES recommends the following:

• Levels of DRO have not stabilized or established a decreasing trend at this time. Annual Monitoring of wells MW-1 through MW-6 should continue for DRO and BTEX analysis until the contaminant plume is following a decreasing trend. If a decreasing trend is established, the monitoring frequency should be reduced or eliminated pending ADEC approval.

Limitations

This report presents the analytical results from a limited number of groundwater samples, and should not be construed as a comprehensive study of groundwater quality at the site. The samples were intended to evaluate the presence or absence of contaminants at the

locations selected. Detectable levels of petroleum hydrocarbons may be present at other locations. It was also not the intent of our sampling and testing to detect the presence of groundwater affected by contaminants other than those for which laboratory analysis were preformed. No conclusions can be drawn on the presence or absence of other contaminants. This is not a geotechnical study.

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

This report was prepared for the exclusive use of Big State Logistics Inc., and their representatives. If it is made available to others, it should be for information on factual data only and not as a warranty of subsurface conditions.

Qualifications & Signature of Environmental Professional

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

Sincerely,

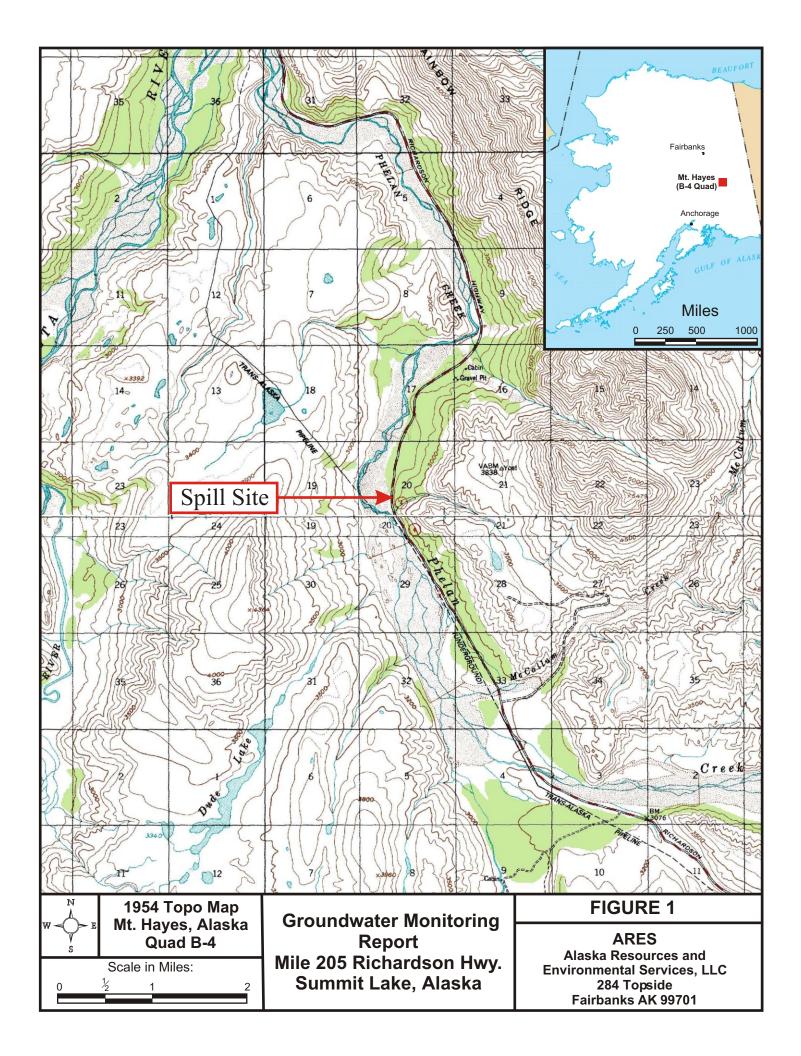
Tyle Great -

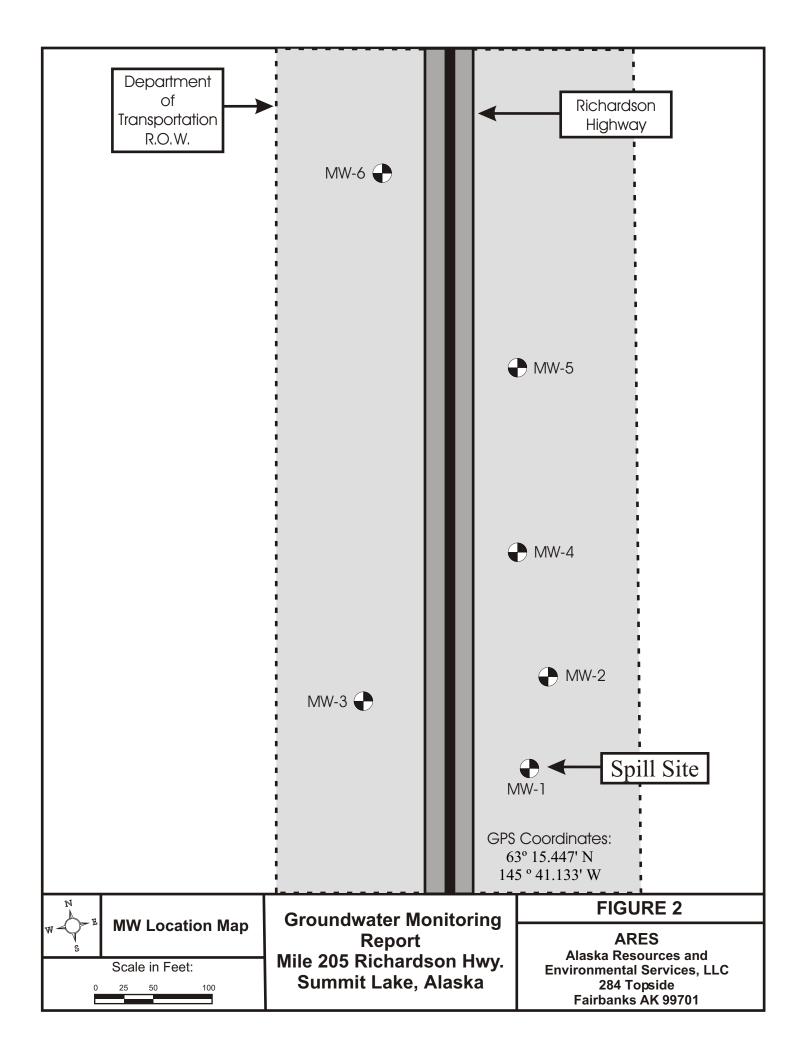
Lyle Gresehover Project Manager Alaska Resources and Environmental Services, LLC

Enclosure:

Appendix A – Figure 1 (Area map), Figure 2 (Well location map). Appendix B – Alaska Analytical laboratory results and ADEC QA/QC analytical lab checklist. Appendix C – Graphical summary of DRO results over time

Appendix A Figures





Appendix B Analytical Results & ADEC Lab Quality Checklist



Laboratory Report of Analysis

To: Alaska Resources + Env. Svcs P.O. Box 83050 Fairbanks, AK 99708 (907)374-3226

Report Number: 1158584

Client Project: 205 Richardson Hwy.

Dear Lyle Gresehover,

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

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

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

Sincerely, SGS North America Inc.

Jennifer Dawkins Project Manager Date

Print Date: 09/22/2015 1:47:01PM

SGS North America Inc.

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



Case Narrative

SGS Client: Alaska Resources + Env. Svcs SGS Project: 1158584 Project Name/Site: 205 Richardson Hwy. Project Contact: Lyle Gresehover

Refer to sample receipt form for information on sample condition.

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

Print Date: 09/22/2015 1:47:02PM

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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 <<u>http://www.sgs.com/en/Terms-and-Conditions.aspx></u>. Attention is drawn to the limitation of liability, indenmification and jurisdiction issues defined therein.

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

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

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

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
В	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
Μ	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.
Sample summaries which i All DRO/RRO analyses are	nclude a result for "Total Solids" have already been adjusted for moisture content.

Print Date: 09/22/2015 1:47:04PM

Note:



	٤	Sample Summary	,	
Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW1-0915	1158584001	09/01/2015	09/03/2015	Water (Surface, Eff., Ground)
MW2-0915	1158584002	09/01/2015	09/03/2015	Water (Surface, Eff., Ground)
MW3-0915	1158584003	09/01/2015	09/03/2015	Water (Surface, Eff., Ground)
MW4-0915	1158584004	09/01/2015	09/03/2015	Water (Surface, Eff., Ground)
MW5-0915	1158584005	09/01/2015	09/03/2015	Water (Surface, Eff., Ground)
MW6-0915	1158584006	09/01/2015	09/03/2015	Water (Surface, Eff., Ground)
Dup-W-0915	1158584007	09/01/2015	09/03/2015	Water (Surface, Eff., Ground)
Trip Blank	1158584008	09/01/2015	09/03/2015	Water (Surface, Eff., Ground)

Method AK101 SW8021B AK102

Method Description

AK101/8021 Combo. AK101/8021 Combo. DRO Low Volume (W)

Print Date: 09/22/2015 1:47:05PM

SGS North America Inc.



Client Sample ID: MW1-0915

Lab Sample ID: 1158584001 Parameter Result Units **Diesel Range Organics** 1.80 mg/L Semivolatile Organic Fuels Benzene 0.350J ug/L Volatile Fuels Ethylbenzene 0.430J ug/L **Gasoline Range Organics** 0.0990J mg/L 3.93 o-Xylene ug/L P & M -Xylene 1.00J ug/L Client Sample ID: MW2-0915 Lab Sample ID: 1158584002 Parameter Result <u>Units</u> **Diesel Range Organics** 9.60 mg/L Semivolatile Organic Fuels 0.320J **Volatile Fuels** Benzene ug/L **Gasoline Range Organics** 0.0454J mg/L Client Sample ID: MW3-0915 Lab Sample ID: 1158584003 Parameter Result Units 0.310J **Volatile Fuels** Benzene ug/L Client Sample ID: MW4-0915 Lab Sample ID: 1158584004 Parameter Result Units Semivolatile Organic Fuels **Diesel Range Organics** 18.9 mg/L Gasoline Range Organics 0.0765J mg/L **Volatile Fuels** o-Xylene 0.920J ug/L Client Sample ID: MW5-0915 Lab Sample ID: 1158584005 Parameter Result Units **Diesel Range Organics** 0.201J mg/L Semivolatile Organic Fuels Gasoline Range Organics 0.0648J Volatile Fuels mg/L

Parameter

Parameter

o-Xylene

Parameter

Benzene

Ethylbenzene

P & M -Xylene

Gasoline Range Organics

Diesel Range Organics

Gasoline Range Organics

Detectable Results Summary

Client Sample ID: MW6-0915 Lab Sample ID: 1158584006 Volatile Fuels

Client Sample ID: Dup-W-0915 Lab Sample ID: 1158584007 Semivolatile Organic Fuels

Volatile Fuels

Client Sample ID: Trip Blank Lab Sample ID: 1158584008 **Volatile Fuels**

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

Result

Result

0.380J

0.119

3.61

0.830J

Result

0.310J

1.31

0.0715J

Units

mg/L

Units

mg/L

ug/L

mg/L

ug/L

ug/L

Units

ug/L

Print Date: 09/22/2015 1:47:06PM

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Results of MW1-0915

Collection Date: 09/01/15 12:00 Client Sample ID: MW1-0915 Received Date: 09/03/15 09:25 Client Project ID: 205 Richardson Hwy. Matrix: Water (Surface, Eff., Ground) Lab Sample ID: 1158584001 Lab Project ID: 1158584 Solids (%): Location: Results by Semivolatile Organic Fuels Allowable Parameter Result Qual <u>Units</u> DF LOQ/CL DL **Diesel Range Organics** 1.80 0.536 0.161 mg/L 1 Surrogates 93.8 50-150 % 1 5a Androstane (surr) **Batch Information**

Analytical Batch: XFC12091 Analytical Method: AK102 Analyst: KJO Analytical Date/Time: 09/16/15 05:53 Container ID: 1158584001-A

Prep Batch: XXX34131 Prep Method: SW3520C Prep Date/Time: 09/14/15 09:50 Prep Initial Wt./Vol.: 280 mL Prep Extract Vol: 1 mL

Limits

Date Analyzed

09/16/15 05:53

09/16/15 05:53

Print Date: 09/22/2015 1:47:07PM

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Baselits by Volatile Fuels Parameter Result Q Gasoline Range Organics 0.0990 J Surrogates 90.7 Batch Information 90.7 Batch Information Analytical Batch: VFC12652 Analytical Method: AK101 Analytical Date/Time: 09/13/15 06:05 Container ID: 1158584001-C Result Q Parameter Result Q Benzene 0.350 J	ual <u>LOQ/C</u> 0.100 50-150	0.0310	d: SW5030E	<u>DF</u> 1 1	<u>Allowable</u> Limits	<u>Date Analyze</u> 09/13/15 06:0 09/13/15 06:0
Gasoline Range Organics 0.0990 J Surrogates 4-Bromofluorobenzene (surr) 90.7 Batch Information Analytical Batch: VFC12652 Analytical Method: AK101 Analyst: CRD Analytical Date/Time: 09/13/15 06:05 Container ID: 1158584001-C Parameter Result Q	0.100	0.0310 Prep Batch: Prep Method Prep Date/T	mg/L % VXX27884 d: SW5030E	1		09/13/15 06:0
Gasoline Range Organics 0.0990 J Surrogates 4-Bromofluorobenzene (surr) 90.7 Batch Information 90.7 Analytical Batch: VFC12652 Analytical Method: AK101 Analytical Date/Time: 09/13/15 06:05 Container ID: 1158584001-C Parameter Result Q	0.100	0.0310 Prep Batch: Prep Method Prep Date/T	mg/L % VXX27884 d: SW5030E	1	Limits	09/13/15 06:0
Surrogates 4-Bromofluorobenzene (surr) 90.7 Batch Information Analytical Batch: VFC12652 Analytical Method: AK101 Analytical Date/Time: 09/13/15 06:05 Container ID: 1158584001-C Parameter		Prep Batch: Prep Method Prep Date/T	% VXX27884 d: SW5030E	1		
4-Bromofluorobenzene (surr) 90.7 Batch Information Analytical Batch: VFC12652 Analytical Method: AK101 Analyst: CRD Analytical Date/Time: 09/13/15 06:05 Container ID: 1158584001-C Parameter Result Q	50-150	Prep Batch: Prep Method Prep Date/T	VXX27884 d: SW5030E			09/13/15 06:0
Batch Information Analytical Batch: VFC12652 Analytical Method: AK101 Analyst: CRD Analytical Date/Time: 09/13/15 06:05 Container ID: 1158584001-C	50-150	Prep Batch: Prep Method Prep Date/T	VXX27884 d: SW5030E			09/13/13 00.
Analytical Batch: VFC12652 Analytical Method: AK101 Analyst: CRD Analytical Date/Time: 09/13/15 06:05 Container ID: 1158584001-C Parameter Result Q		Prep Metho Prep Date/T	d: SW5030E	3		
Analytical Method: AK101 Analyst: CRD Analytical Date/Time: 09/13/15 06:05 Container ID: 1158584001-C Parameter Result Q		Prep Metho Prep Date/T	d: SW5030E	2		
		Prep Extract	Vt./Vol.: 5 m	15 08:00		
					Allowable	
Benzene 0.350 J			<u>Units</u>	<u>DF</u>	Limits	Date Analyze
EU U 0 100 i	0.500	0.150	ug/L	1		09/13/15 06:
Ethylbenzene 0.430 J o-Xvlene 3.93	1.00 1.00	0.310 0.310	ug/L ug/L	1 1		09/13/15 06: 09/13/15 06:
o-Xylene 3.93 P & M -Xylene 1.00 J	2.00	0.620	ug/L ug/L	1		09/13/15 06:
Toluene 0.500 U		0.310	ug/L	1		09/13/15 06:
			- 5			
turrogates 1,4-Difluorobenzene (surr) 85	77-115		%	1		09/13/15 06:
Batch Information						
Analytical Batch: VFC12652 Analytical Method: SW8021B Analyst: CRD Analytical Date/Time: 09/13/15 06:05 Container ID: 1158584001-C		Prep Batch: Prep Method Prep Date/T Prep Initial V Prep Extract	d: SW5030E ïme: 09/12/ [,] Vt./Vol.: 5 m	15 08:00		

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Results of MW2-0915

Collection Date: 09/01/15 12:35 Client Sample ID: MW2-0915 Received Date: 09/03/15 09:25 Client Project ID: 205 Richardson Hwy. Matrix: Water (Surface, Eff., Ground) Lab Sample ID: 1158584002 Lab Project ID: 1158584 Solids (%): Location: Results by Semivolatile Organic Fuels Allowable Parameter Result Qual <u>Units</u> DF LOQ/CL DL Limits Date Analyzed **Diesel Range Organics** 9.60 0.536 0.161 mg/L 1 09/16/15 17:28 Surrogates 96.5 50-150 % 1 09/16/15 17:28 5a Androstane (surr) **Batch Information** Analytical Batch: XFC12090 Prep Batch: XXX34131 Analytical Method: AK102 Prep Method: SW3520C Prep Date/Time: 09/14/15 09:50 Analyst: KJO Analytical Date/Time: 09/16/15 17:28 Prep Initial Wt./Vol.: 280 mL Container ID: 1158584002-A Prep Extract Vol: 1 mL

Print Date: 09/22/2015 1:47:07PM

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Client Sample ID: MW2-0915 Client Project ID: 205 Richardson Hy Lab Sample ID: 1158584002 Lab Project ID: 1158584	wy.	F	Collection Da Received Dat Matrix: Wate Solids (%): ∟ocation:	te: 09/03/	15 09:25	ound)	
Results by Volatile Fuels							
Parameter	Result Qual	LOQ/CL	וח	Units	DF	Allowable Limits	Date Analyze
Gasoline Range Organics	0.0454 J	0.100	<u>DL</u> 0.0310	mg/L	<u>DF</u> 1	LIIIIIIS	09/13/15 06:2
urrogates 4-Bromofluorobenzene (surr)	88.9	50-150		%	1		09/13/15 06:2
	00.9	50-150		70			09/10/10 00.2
Batch Information							
Analytical Batch: VFC12652 Analytical Method: AK101 Analyst: CRD Analytical Date/Time: 09/13/15 06:24 Container ID: 1158584002-C			Prep Batch: ' Prep Method: Prep Date/Tir Prep Initial W Prep Extract '	: SW5030E me: 09/12/1 /t./Vol.: 5 m	15 08:00		
						Allowable	
Parameter Parameter	Result Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Limits</u>	Date Analyze
Benzene Ethylbenzene	0.320 J 0.500 U	0.500 1.00	0.150 0.310	ug/L ug/L	1 1		09/13/15 06:2 09/13/15 06:2
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/13/15 06:2
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/13/15 06:2
Toluene	0.500 U	1.00	0.310	ug/L	1		09/13/15 06:2
	-			0			
urrogates 1,4-Difluorobenzene (surr)	80.9	77-115		%	1		09/13/15 06:2
Batch Information Analytical Batch: VFC12652 Analytical Method: SW8021B Analyst: CRD Analytical Date/Time: 09/13/15 06:24 Container ID: 1158584002-C			Prep Batch: ' Prep Method: Prep Date/Tir Prep Initial W Prep Extract '	: SW5030E me: 09/12/1 /t./Vol.: 5 m	15 08:00		

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Results of MW3-0915 Collection Date: 09/01/15 13:00 Client Sample ID: MW3-0915 Received Date: 09/03/15 09:25 Client Project ID: 205 Richardson Hwy. Matrix: Water (Surface, Eff., Ground) Lab Sample ID: 1158584003 Lab Project ID: 1158584 Solids (%): Location: Results by Semivolatile Organic Fuels Allowable Parameter Result Qual <u>Units</u> DF LOQ/CL DL Limits Date Analyzed **Diesel Range Organics** 0.268 U 0.536 0.161 mg/L 1 09/16/15 17:49 Surrogates 5a Androstane (surr) 92 50-150 % 1 09/16/15 17:49 **Batch Information** Analytical Batch: XFC12090 Prep Batch: XXX34131 Analytical Method: AK102 Prep Method: SW3520C Prep Date/Time: 09/14/15 09:50 Analyst: KJO Analytical Date/Time: 09/16/15 17:49 Prep Initial Wt./Vol.: 280 mL Container ID: 1158584003-A Prep Extract Vol: 1 mL

Print Date: 09/22/2015 1:47:07PM

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Client Sample ID: MW3-0915 Client Project ID: 205 Richardson .ab Sample ID: 1158584003 .ab Project ID: 1158584	Hwy.	 	Collection Da Received Dat Matrix: Wate Solids (%): Location:	te: 09/03/	15 09:25		
Results by Volatile Fuels							
Devenue et ex	Descript Origin		DI	l laite	DE	Allowable	Data Analyza
<u>Parameter</u> Gasoline Range Organics	<u>Result Qual</u> 0.0500 U	<u>LOQ/CL</u> 0.100	<u>DL</u> 0.0310	<u>Units</u> mg/L	<u>DF</u> 1	<u>Limits</u>	Date Analyzed
	0.00000	0.100	0.0010	iiig/2	·		
ırrogates I-Bromofluorobenzene (surr)	82.4	50-150		%	1		09/13/15 06:4
	02.4	50-150		70	I		09/13/15 00.4
Batch Information							
Analytical Batch: VFC12652 Analytical Method: AK101 Analyst: CRD Analytical Date/Time: 09/13/15 06:4 Container ID: 1158584003-C	3		Prep Batch: Prep Method: Prep Date/Tir Prep Initial W Prep Extract	: SW5030E me: 09/12/ [,] ′t./Vol.: 5 m	15 08:00		
						Allowable	
Parameter	Result Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Limits</u>	Date Analyze
Benzene	0.310 J	0.500	0.150	ug/L	1		09/13/15 06:4
Ethylbenzene	0.500 U 0.500 U	1.00 1.00	0.310 0.310	ug/L	1 1		09/13/15 06:4 09/13/15 06:4
⊳-Xylene 2 & M -Xylene	1.00 U	2.00	0.620	ug/L ug/L	1		09/13/15 06:4
oluene	0.500 U	1.00	0.310	ug/L	1		09/13/15 06:4
				- 9. –			
Irrogates ,4-Difluorobenzene (surr)	83.1	77-115		%	1		09/13/15 06:4
,4-Dinuorobenzene (surr)	03.1	77-115		70	I		09/13/15 00.4
Batch Information							
Analytical Batch: VFC12652 Analytical Method: SW8021B Analyst: CRD Analytical Date/Time: 09/13/15 06:4 Container ID: 1158584003-C	3		Prep Batch: Prep Method: Prep Date/Tir Prep Initial W Prep Extract	: SW5030E me: 09/12/′ ′t./Vol.: 5 m	15 08:00		

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Results of MW4-0915 Collection Date: 09/01/15 13:40 Client Sample ID: MW4-0915 Received Date: 09/03/15 09:25 Client Project ID: 205 Richardson Hwy. Matrix: Water (Surface, Eff., Ground) Lab Sample ID: 1158584004 Lab Project ID: 1158584 Solids (%): Location: Results by Semivolatile Organic Fuels Allowable Parameter Result Qual <u>Units</u> DF LOQ/CL DL Limits Date Analyzed **Diesel Range Organics** 18.9 0.536 0.161 mg/L 1 09/16/15 18:09 Surrogates 88.1 50-150 % 1 09/16/15 18:09 5a Androstane (surr) **Batch Information** Analytical Batch: XFC12090 Prep Batch: XXX34131 Analytical Method: AK102 Prep Method: SW3520C Prep Date/Time: 09/14/15 09:50 Analyst: KJO Analytical Date/Time: 09/16/15 18:09 Prep Initial Wt./Vol.: 280 mL Container ID: 1158584004-A Prep Extract Vol: 1 mL

Print Date: 09/22/2015 1:47:07PM

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Client Sample ID: MW4-0915 Client Project ID: 205 Richardson H Lab Sample ID: 1158584004 Lab Project ID: 1158584	wy.	Collection Date: 09/01/15 13:40 Received Date: 09/03/15 09:25 Matrix: Water (Surface, Eff., Ground) Solids (%): Location:						
Results by Volatile Fuels								
Parameter	Result Qual	LOQ/CL	DL	Units	DF	<u>Allowable</u> Limits	Date Analyzed	
Gasoline Range Organics	0.0765 J	0.100	0.0310	mg/L	1	Linits	09/13/15 13:02	
Surrogates				Ū				
4-Bromofluorobenzene (surr)	85.4	50-150		%	1		09/13/15 13:02	
. ,								
Batch Information								
Analytical Batch: VFC12657 Analytical Method: AK101 Analyst: CRD Analytical Date/Time: 09/13/15 13:02 Container ID: 1158584004-C			Prep Batch: Prep Method: Prep Date/Tir Prep Initial W Prep Extract	: SW5030E me: 09/13/1 /t./Vol.: 5 m	15 08:00			
						Allowable		
Parameter	Result Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Limits</u>	Date Analyzed	
Benzene	0.250 U	0.500	0.150	ug/L	1		09/13/15 13:02	
Ethylbenzene o-Xylene	0.500 U 0.920 J	1.00 1.00	0.310 0.310	ug/L ug/L	1 1		09/13/15 13:02 09/13/15 13:02	
P & M -Xylene	0.920 J 1.00 U	2.00	0.620	ug/L	1		09/13/15 13:02	
Toluene	0.500 U	1.00	0.310	ug/L	1		09/13/15 13:02	
	-			0				
Surrogates 1,4-Difluorobenzene (surr)	89.8	77-115		%	1		09/13/15 13:02	
Batch Information Analytical Batch: VFC12657 Analytical Method: SW8021B Analyst: CRD Analytical Date/Time: 09/13/15 13:02			Prep Batch: ' Prep Method: Prep Date/Tir Prep Initial W Prep Extract '	: SW5030E me: 09/13/1 /t./Vol.: 5 m	15 08:00			

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Results of MW5-0915 Collection Date: 09/01/15 14:10 Client Sample ID: MW5-0915 Received Date: 09/03/15 09:25 Client Project ID: 205 Richardson Hwy. Matrix: Water (Surface, Eff., Ground) Lab Sample ID: 1158584005 Lab Project ID: 1158584 Solids (%): Location: Results by Semivolatile Organic Fuels Allowable Parameter Result Qual <u>Units</u> DF LOQ/CL DL Limits Date Analyzed **Diesel Range Organics** 0.201 J 0.536 0.161 mg/L 1 09/16/15 18:30 Surrogates 5a Androstane (surr) 86.5 50-150 % 1 09/16/15 18:30 **Batch Information** Analytical Batch: XFC12090 Prep Batch: XXX34131 Analytical Method: AK102 Prep Method: SW3520C Prep Date/Time: 09/14/15 09:50 Analyst: KJO Analytical Date/Time: 09/16/15 18:30 Prep Initial Wt./Vol.: 280 mL Container ID: 1158584005-A Prep Extract Vol: 1 mL

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Qual LOQ/ J 0.100 50-15 Qual LOQ/ J 0.500 J 1.00	0 0.03	Units 10 mg/L % tch: VXX2788 ethod: SW503 ite/Time: 09/1 tial Wt./Vol.: 5 tract Vol: 5 m	1 1 89 30B 3/15 08:00 5 mL	<u>Allowable</u> Limits	Date Analyzed 09/13/15 12:2 09/13/15 12:2
ע ס.100 50-15 <u>Qual</u> <u>LOQ/</u> ע ס.500	0 0.03	10 mg/L % tch: VXX2784 ethod: SW503 te/Time: 09/1 tial Wt./Vol.: 5	1 1 89 30B 3/15 08:00 5 mL		09/13/15 12:2
50-15 <u>Qual LOQ/</u> J 0.500	50 Prep Ba Prep M Prep Da Prep In Prep Es	% tch: VXX2788 ethod: SW503 ite/Time: 09/1 tial Wt./Vol.: 5	1 89 30B 3/15 08:00 5 mL		
<u>Qual</u> <u>LOQ/</u> J 0.500	Prep Ba Prep M Prep Da Prep In Prep Ex	tch: VXX2788 ethod: SW503 te/Time: 09/1 tial Wt./Vol.: 5	89 80B 3/15 08:00 5 mL		09/13/15 12:2
J 0.500	Prep M Prep Da Prep In Prep E	ethod: SW503 ite/Time: 09/1 tial Wt./Vol.: 5	30B 3/15 08:00 5 mL		
J 0.500	Prep M Prep Da Prep In Prep E	ethod: SW503 ite/Time: 09/1 tial Wt./Vol.: 5	30B 3/15 08:00 5 mL		
J 0.500					
J 0.500		1.1		Allowable	Data Arabasa
-		0 ug/L	<u>DF</u> 1	<u>Limits</u>	Date Analyzed
	, 0.10 0.3	-	1		09/13/15 12:2
J 1.00	0.3	-	1		09/13/15 12:2
2.00 ل	0.62	-	1		09/13/15 12:2
J 1.00	0.3	0 ug/L	1		09/13/15 12:2
77-11	15	%	1		09/13/15 12:2
	Prep M Prep Da Prep In	ethod: SW503 ite/Time: 09/1 tial Wt./Vol.: 5	30B 3/15 08:00 5 mL		
	ا.00	J 1.00 0.31 77-115 Prep Ba Prep Me Prep Da Prep Ini	J 1.00 0.310 ug/L 77-115 % Prep Batch: VXX278 Prep Method: SW503 Prep Date/Time: 09/1 Prep Initial Wt./Vol.: 5	J 1.00 0.310 ug/L 1	J 1.00 0.310 ug/L 1 77-115 % 1 Prep Batch: VXX27889 Prep Method: SW5030B Prep Date/Time: 09/13/15 08:00 Prep Initial Wt./Vol.: 5 mL



Results of MW6-0915 Collection Date: 09/01/15 14:40 Client Sample ID: MW6-0915 Received Date: 09/03/15 09:25 Client Project ID: 205 Richardson Hwy. Matrix: Water (Surface, Eff., Ground) Lab Sample ID: 1158584006 Lab Project ID: 1158584 Solids (%): Location: Results by Semivolatile Organic Fuels Allowable Parameter Result Qual <u>Units</u> DF LOQ/CL DL Limits Date Analyzed **Diesel Range Organics** 0.268 U 0.536 0.161 mg/L 1 09/16/15 18:51 Surrogates 88.9 50-150 % 1 09/16/15 18:51 5a Androstane (surr) **Batch Information** Analytical Batch: XFC12090 Prep Batch: XXX34131 Analytical Method: AK102 Prep Method: SW3520C Prep Date/Time: 09/14/15 09:50 Analyst: KJO Analytical Date/Time: 09/16/15 18:51 Prep Initial Wt./Vol.: 280 mL Container ID: 1158584006-A Prep Extract Vol: 1 mL

Print Date: 09/22/2015 1:47:07PM

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Client Sample ID: MW6-0915 Client Project ID: 205 Richardson H Lab Sample ID: 1158584006 Lab Project ID: 1158584	wy.	Collection Date: 09/01/15 14:40 Received Date: 09/03/15 09:25 Matrix: Water (Surface, Eff., Ground) Solids (%): Location:					
Results by Volatile Fuels							
Parameter	<u>Result Qual</u>	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyze
Gasoline Range Organics	0.0715 J	0.100	0.0310	mg/L	1		09/13/15 12:4
Surrogates				0			
4-Bromofluorobenzene (surr)	80.1	50-150		%	1		09/13/15 12:4
	00.1	00 100		70	·		00/10/10 12.
Batch Information							
Analytical Batch: VFC12657 Analytical Method: AK101 Analyst: CRD Analytical Date/Time: 09/13/15 12:43 Container ID: 1158584006-C			Prep Batch: Prep Method: Prep Date/Tir Prep Initial W Prep Extract	: SW5030E me: 09/13/′ ′t./Vol.: 5 m	15 08:00		
						Allowable	
Parameter Benzene	Result Qual	<u>LOQ/CL</u> 0.500	<u>DL</u> 0.150	<u>Units</u>	<u>DF</u> 1	<u>Limits</u>	Date Analyze 09/13/15 12:4
Ethylbenzene	0.250 U 0.500 U	1.00	0.150	ug/L ug/L	1		09/13/15 12:4
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/13/15 12:4
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/13/15 12:4
Toluene	0.500 U	1.00	0.310	ug/L	1		09/13/15 12:4
Surrogates							
1,4-Difluorobenzene (surr)	90	77-115		%	1		09/13/15 12:4
Batch Information							
Analytical Batch: VFC12657 Analytical Method: SW8021B Analyst: CRD Analytical Date/Time: 09/13/15 12:43 Container ID: 1158584006-C			Prep Batch: Prep Method: Prep Date/Tir Prep Initial W Prep Extract	: SW5030E me: 09/13/′ ′t./Vol.: 5 m	15 08:00		

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Results of Dup-W-0915							
Client Sample ID: Dup-W-0915 Client Project ID: 205 Richardson Hw Lab Sample ID: 1158584007 Lab Project ID: 1158584	Collection Date: 09/01/15 15:20 Received Date: 09/03/15 09:25 Matrix: Water (Surface, Eff., Ground) Solids (%): Location:						
Results by Semivolatile Organic Fuel	5						
<u>Parameter</u> Diesel Range Organics	Result Qual 1.31	<u>LOQ/CL</u> 0.536	<u>DL</u> 0.161	<u>Units</u> mg/L	<u>DF</u> 1	<u>Allowable</u> <u>Limits</u>	Date Analyzed 09/16/15 19:12
Surrogates							
5a Androstane (surr)	93.8	50-150		%	1		09/16/15 19:12
Batch Information Analytical Batch: XFC12090 Analytical Method: AK102 Analyst: KJO Analytical Date/Time: 09/16/15 19:12 Container ID: 1158584007-A		F	Prep Batch: Prep Method Prep Date/Ti Prep Initial V Prep Extract	: SW35200 me: 09/14/1 /t./Vol.: 280	15 09:50		

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Results of Dup-W-0915 Collection Date: 09/01/15 15:20 Client Sample ID: Dup-W-0915 Received Date: 09/03/15 09:25 Client Project ID: 205 Richardson Hwy. Lab Sample ID: 1158584007 Matrix: Water (Surface, Eff., Ground) Lab Project ID: 1158584 Solids (%): Location: Results by Volatile Fuels Allowable Result Qual Parameter LOQ/CL DL <u>Units</u> DF Limits Date Analyzed Gasoline Range Organics 0.119 0.100 0.0310 mg/L 1 09/13/15 13:21 Surrogates 4-Bromofluorobenzene (surr) 88.4 50-150 % 1 09/13/15 13:21 **Batch Information** Analytical Batch: VFC12657 Prep Batch: VXX27889 Analytical Method: AK101 Prep Method: SW5030B Analyst: CRD Prep Date/Time: 09/13/15 08:00 Analytical Date/Time: 09/13/15 13:21 Prep Initial Wt./Vol.: 5 mL Container ID: 1158584007-C Prep Extract Vol: 5 mL Allowable Parameter Result Qual LOQ/CL DL Units DF Limits Date Analyzed Benzene 0.500 0.150 ug/L 0.250 U 09/13/15 13:21 1 Ethylbenzene 1.00 0.310 0.380 J ug/L 1 09/13/15 13:21 o-Xylene 3.61 1.00 0.310 1 ug/L 09/13/15 13:21 P & M -Xylene 0.830 J 2.00 0.620 ug/L 1 09/13/15 13:21 Toluene 0.500 U 1.00 0.310 ug/L 1 09/13/15 13:21 Surrogates 1,4-Difluorobenzene (surr) 93 77-115 % 1 09/13/15 13:21 **Batch Information** Analytical Batch: VFC12657 Prep Batch: VXX27889 Analytical Method: SW8021B Prep Method: SW5030B Analyst: CRD Prep Date/Time: 09/13/15 08:00 Analytical Date/Time: 09/13/15 13:21 Prep Initial Wt./Vol.: 5 mL Container ID: 1158584007-C Prep Extract Vol: 5 mL

Results of Trip Blank Client Sample ID: Trip Blank Client Project ID: 205 Richardson Hwy.		Collection Date: 09/01/15 07:00 Received Date: 09/03/15 09:25 Matrix: Water (Surface, Eff., Ground) Solids (%):							
Lab Sample ID: 1158584008 Lab Project ID: 1158584									
			ocation:						
Results by Volatile Fuels									
-	D H Q H				55	Allowable			
Parameter	Result Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	DF	<u>Limits</u>	Date Analyze		
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		09/12/15 23:2		
Surrogates									
4-Bromofluorobenzene (surr)	85.5	50-150		%	1		09/12/15 23:2		
Batch Information									
		r	Dran Databy	VVV27004					
Analytical Batch: VFC12652 Analytical Method: AK101			Prep Batch: Prep Method:		3				
Analyst: CRD			Prep Date/Tir						
Analytical Date/Time: 09/12/15 23:27			Prep Initial W		L				
Container ID: 1158584008-A		ŀ	Prep Extract	Vol: 5 mL					
						Allowable			
Parameter	Result Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	<u>DF</u>	Limits	Date Analyze		
Benzene	0.310 J	0.500	0.150	ug/L	1		09/12/15 23:2		
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/12/15 23:2		
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/12/15 23:2		
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/12/15 23:2		
Toluene	0.500 U	1.00	0.310	ug/L	1		09/12/15 23:2		
Surrogates									
1,4-Difluorobenzene (surr)	85.6	77-115		%	1		09/12/15 23:2		
Batch Information									
		r	Prep Batch:	VVV07004					
Analytical Batch: VFC12652 Analytical Method: SW8021B			Prep Method:		3				
Analyst: CRD			Prep Date/Tir						
Analytical Date/Time: 09/12/15 23:27			Prep Initial W		L				
Container ID: 1158584008-A		ŀ	Prep Extract	Vol: 5 mL					

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Method Blank Blank ID: MB for HBN 1720 Blank Lab ID: 1290429	Matrix: Water (Surface, Eff., Ground)						
QC for Samples: 1158584001, 1158584002, 11	58584003, 1158584008						
Results by AK101)					
Parameter Gasoline Range Organics	<u>Results</u> 0.0344J	<u>LOQ/CL</u> 0.100	<u>DL</u> 0.0310	<u>Units</u> mg/L			
Surrogates 4-Bromofluorobenzene (surr)	86.9	50-150		%			
Batch Information							
Analytical Batch: VFC1265 Analytical Method: AK101 Instrument: Agilent 7890 P Analyst: CRD Analytical Date/Time: 9/12	ID/FID	Prep Met Prep Date Prep Initia	ch: VXX27884 hod: SW5030 e/Time: 9/12/2 al Wt./Vol.: 5 ract Vol: 5 mL	IB 2015 8:00:00AM mL			

Print Date: 09/22/2015 1:47:10PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1158584 [VXX27884] Blank Spike Lab ID: 1290432 Date Analyzed: 09/12/2015 22:29 Spike Duplicate ID: LCSD for HBN 1158584 [VXX27884] Spike Duplicate Lab ID: 1290433 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1158584001, 1158584002, 1158584003, 1158584008

Results by AK101										
	E	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>Spike</u>	<u>Result</u>	<u>Rec (%)</u>	CL	<u>RPD (%)</u>	RPD CL	
Gasoline Range Organics	1.00	0.970	97	1.00	0.928	93	(60-120)	4.50	(< 20)	
Surrogates										
4-Bromofluorobenzene (surr)	0.0500	83.9	84	0.0500	86.7	87	(50-150)	3.30		
Batch Information										
Analytical Batch: VFC12652	Prep Batch: VXX27884									
Analytical Method: AK101		Prep Method: SW5030B								
Instrument: Agilent 7890 PID/	FID									
Analyst: CRD		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: 09/22/2015 1:47:12PM

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Method Blank

Blank ID: MB for HBN 1720256 [VXX/27884] Blank Lab ID: 1290429 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1158584001, 1158584003, 1158584003, 1158584008

Results by SW8021B

Parameter	<u>Results</u>	LOQ/CL	<u>DL</u>	<u>Units</u>
Benzene	0.320J	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)	85.6	77-115		%

Batch Information

Analytical Batch: VFC12652 Analytical Method: SW8021B Instrument: Agilent 7890 PID/FID Analyst: CRD Analytical Date/Time: 9/12/2015 11:07:00PM Prep Batch: VXX27884 Prep Method: SW5030B Prep Date/Time: 9/12/2015 8:00:00AM Prep Initial Wt./Vol.: 5 mL Prep Extract Vol: 5 mL

Print Date: 09/22/2015 1:47:14PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1158584 [VXX27884] Blank Spike Lab ID: 1290430 Date Analyzed: 09/12/2015 22:10 Spike Duplicate ID: LCSD for HBN 1158584 [VXX27884] Spike Duplicate Lab ID: 1290431 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1158584001, 1158584002, 1158584003, 1158584008

		Blank Spike	e (ug/L)	:	Spike Dupli	cate (ug/L)			
<u>Parameter</u>	Spike	Result	<u>Rec (%)</u>	Spike	Result	<u>Rec (%)</u>	CL	<u>RPD (%)</u>	RPD CL
Benzene	100	110	110	100	110	110	(80-120)	0.23	(< 20)
Ethylbenzene	100	105	105	100	106	106	(75-125)	1.40	(< 20)
o-Xylene	100	101	101	100	103	103	(80-120)	2.00	(< 20)
P & M -Xylene	200	206	103	200	211	105	(75-130)	2.30	(< 20)
Toluene	100	106	106	100	109	109	(75-120)	2.20	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	92	92	50	92.7	93	(77-115)	0.76	
Batch Information									

Analytical Batch: VFC12652 Analytical Method: SW8021B Instrument: Agilent 7890 PID/FID Analyst: CRD Prep Batch: VXX27884 Prep Method: SW5030B Prep Date/Time: 09/12/2015 08:00 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Print Date: 09/22/2015 1:47:16PM

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Blank ID: MB for HBN 1720261 [VXX/27889] Blank Lab ID: 1290456 QC for Samples: 1158584004, 1158584005, 1158584006, 115858		:: Water (Surfa	ice, Eff., Ground)	
Results by AK101 Parameter Results Gasoline Range Organics 0.0779J	<u>LOQ/CL</u> 0.100	<u>DL</u> 0.0310	<u>Units</u> mg/L	
urrogates 4-Bromofluorobenzene (surr) 87.1	50-150	0.0010	%	
Analytical Batch: VFC12657 Analytical Method: AK101 Instrument: Agilent 7890A PID/FID Analyst: CRD Analytical Date/Time: 9/13/2015 10:29:00AM	Prep Me Prep Dat Prep Initi	tch: VXX27889 thod: SW50301 te/Time: 9/13/2 ial Wt./Vol.: 5 r ract Vol: 5 mL	3 015 8:00:00AM	

Print Date: 09/22/2015 1:47:18PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1158584 [VXX27889] Blank Spike Lab ID: 1290459 Date Analyzed: 09/13/2015 11:26 Spike Duplicate ID: LCSD for HBN 1158584 [VXX27889] Spike Duplicate Lab ID: 1290460 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1158584004, 1158584005, 1158584006, 1158584007

Results by AK101									
	E	Blank Spike	e (mg/L)	S	pike Duplic	cate (mg/L)			
Parameter	<u>Spike</u>	Result	<u>Rec (%)</u>	Spike	<u>Result</u>	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Gasoline Range Organics	1.00	1.04	104	1.00	1.00	100	(60-120)	3.10	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	87.3	87	0.0500	82	82	(50-150)	6.20	
Batch Information									
Analytical Batch: VFC12657				Prep	Batch: V	XX27889			
Analytical Method: AK101					Method:				
Instrument: Agilent 7890A PII	D/FID					e: 09/13/201			
Analyst: CRD							g/L Extract \ g/L Extract V		
				Dup	e mit vvt./v	01 1.00 110	yre extract v	UL STIL	

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Method Blank

Blank ID: MB for HBN 1720261 [VXX/27889] Blank Lab ID: 1290456 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1158584004, 1158584005, 1158584006, 1158584007

Results by SW8021B					
Parameter	<u>Results</u>	LOQ/CL	<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)	89.9	77-115		%	

Batch Information

Analytical Batch: VFC12657 Analytical Method: SW8021B Instrument: Agilent 7890A PID/FID Analyst: CRD Analytical Date/Time: 9/13/2015 10:29:00AM Prep Batch: VXX27889 Prep Method: SW5030B Prep Date/Time: 9/13/2015 8:00:00AM Prep Initial Wt./Vol.: 5 mL Prep Extract Vol: 5 mL

Print Date: 09/22/2015 1:47:22PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1158584 [VXX27889] Blank Spike Lab ID: 1290457 Date Analyzed: 09/13/2015 11:07 Spike Duplicate ID: LCSD for HBN 1158584 [VXX27889] Spike Duplicate Lab ID: 1290458 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1158584004, 1158584005, 1158584006, 1158584007

		Blank Spike	e (ug/L)	5	Spike Dupli	cate (ug/L)			
<u>Parameter</u>	Spike	Result	<u>Rec (%)</u>	<u>Spike</u>	Result	Rec (%)	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Benzene	100	105	105	100	106	106	(80-120)	1.20	(< 20)
Ethylbenzene	100	102	102	100	102	102	(75-125)	0.12	(< 20)
o-Xylene	100	96.6	97	100	95.6	96	(80-120)	1.00	(< 20)
P & M -Xylene	200	197	98	200	197	98	(75-130)	0.00	(< 20)
Toluene	100	98.4	98	100	99.4	99	(75-120)	1.10	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	94.5	95	50	93.9	94	(77-115)	0.68	

Analytical Batch: VFC12657 Analytical Method: SW8021B Instrument: Agilent 7890A PID/FID Analyst: CRD Prep Batch: VXX27889 Prep Method: SW5030B Prep Date/Time: 09/13/2015 08:00 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Print Date: 09/22/2015 1:47:24PM

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Method Blank					
Blank ID: MB for HBN 172 Blank Lab ID: 1290566	20283 [XXX/34131]	Matrix	: Water (Surfa	ce, Eff., Ground)	
QC for Samples: 1158584001, 1158584002, 1	1158584003, 1158584004, 115	58584005, 1158584006	, 1158584007		
Results by AK102)			
Parameter	Results	LOQ/CL	<u>DL</u>	<u>Units</u>	
Diesel Range Organics	0.300U	0.600	0.180	mg/L	
Surrogates					
5a Androstane (surr)	91.8	60-120		%	
Batch Information					
Analytical Batch: XFC12	091	Prep Bat	tch: XXX34131		
Analytical Method: AK10	2	Prep Me	thod: SW35200	5	
Instrument: HP 7890A	FID SV E R	Prep Dat	te/Time: 9/14/2	015 9:50:04AM	
				S	
Analyst: KJO Analytical Date/Time: 9/1			ial Wt./Vol.: 250 tract Vol: 1 mL	J ML	

Print Date: 09/22/2015 1:47:26PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1158584 [XXX34131] Blank Spike Lab ID: 1290567 Date Analyzed: 09/16/2015 00:43 Spike Duplicate ID: LCSD for HBN 1158584 [XXX34131] Spike Duplicate Lab ID: 1290568 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1158584001, 1158584002, 1158584003, 1158584004, 1158584005, 1158584006, 1158584007

Results by AK102									
		Blank Spike	e (mg/L)	5	Spike Duplic	cate (mg/L)			
Parameter	Spike	Result	<u>Rec (%)</u>	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Diesel Range Organics	20	19.7	99	20	18.3	92	(75-125)	7.30	(< 20)
Surrogates									
5a Androstane (surr)	0.4	91.6	92	0.4	85.6	86	(60-120)	6.80	
Batch Information									
Analytical Batch: XFC1209	1			Pre	p Batch: X	XX34131			
Analytical Method: AK102					p Method:				
Instrument: HP 7890A	FID SV E R					e: 09/14/201			
Analyst: KJO						0	Extract Vo		
				Dup	e Init Wt./V	/ol.: 20 mg/L	Extract Vol	: 1 mL	

Print Date: 09/22/2015 1:47:28PM

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FAIRBANKS SAMPLE RECEIPT FORM

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

· · · · ·	· · · ·			/
Review Criteria:		onditi		, /Comments/Actions Taken
Were custody seals intact? Note # & location, if applicable.	/ Yes	No	N/A	Exemption permitted if sampler hand
COC accompanied samples?	Yes	No	N/A	carries/delivers.
Temperature blank compliant* (i.e., 0-6°C)	Yes	No		DExemption permitted if chilled &
If >6°C, were samples collected <8 hours ago?	Yes	No	SN/A	collected <8hrs ago
If <0°C, were all sample containers ice free?	Yes	No	(N/A)	
Cooler ID:@_1.4w/Therm. ID:				
Cooler ID:@w/Therm. ID:				
Cooler ID:@w/Therm. ID:				
Cooler ID:@w/Therm. ID:				
Cooler ID:@w/Therm. ID:				
If samples are received without a temperature blank, the "cooler temperature" will be				
documented in lieu of the temperature blank and "COOLER TEMP" will be noted to				Note: Identify containers received at
the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled"				non-compliant temperature. Use form
				FS-0029 if more space is needed.
Delivery Method: Client (hand carried) Other:			AB# :	
			ched	
		Dr N/	4	
\rightarrow For samples received with payment, note amount (\$) and where	ether cash /	/ chec	k / CC (cir	cle one) was received.
Were samples in good condition (no leaks/cracks/breakage)?	Yes	No	N/A	Note: some samples are sent to
Packing material used (specify all that apply): Bubble Wrap	\sim			Anchorage without inspection by SGS
Separate plastic bags Vermiculite Other:				Fairbanks personnel.
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	¥es	No	N/A	
For RUSH/SHORT Hold Time, were COC/Bottles flagged	Yes	No	(N/A)	
accordingly? Was Rush/Short HT email sent, if applicable?	Yes	No	(N/A)	
Additional notes (if applicable):				

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



1158584



SAMPLE RECEIPT FORM

Review Criteria:	Yes	N/A	No	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable.	\checkmark			Exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	$\mathbf{\nabla}$			1F, 1B
Temperature blank compliant* (i.e., 0-6°C after CF)?				Exemption permitted if chilled & collected <8 hrs ago.
If >6 °C, were samples collected <8 hours ago?			Ц	
If <0 °C, were all sample containers ice free?		\checkmark		
Cooler ID: @ 2.1 w/ Therm.ID: D2 Cooler ID: @ w/ Therm.ID: Cooler ID: @ w/ Therm.ID: Cooler ID: @ w/ Therm.ID:				
Cooler ID: (a) W/ Therm.ID:				
Cooler ID: @ w/ Therm ID:				
Cooler ID: @ w/ Therm.ID: Cooler ID: @ w/ Therm.ID:				
If samples are received <u>without</u> 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				Note: Identify containers received at non-compliant
temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled."				temperature. Use form FS-0029 if more space is needed.
Delivery method (specify all that apply): Client (hand carried)				
USPS Lynden AK Air Alert Courier UPS FedEx RAVN C&D Delivery				
Carlile Pen Air Warp Speed Other:				
→ For WO# with airbills, was the WO# & airbill				
info recorded in the Front Counter eLog?		\checkmark		
	Yes	N/A	No	
Were samples received within hold time?	\checkmark			Note: Refer to form F-083 "Sample Guide" for hold times.
Do samples match COC* (i.e., sample IDs, dates/times collected)?				<i>Note: If times differ <1hr, record details and login per COC.</i>
Were analyses requested unambiguous?				
Were samples in good condition (no leaks/cracks/breakage)?			\Box	
Packing material used (specify all that apply): Bubble Wrap				
Separate plastic bags Vermiculite Other:				Exemption permitted for metals (e.g., 200.8/6020A).
Were proper containers (type/mass/volume/preservative*) used? Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		H	H	<i>Exemption permitted for metals (e.g., 200.8/0020A).</i>
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)?		H	H	
Were all soil VOAs field extracted with MeOH+BFB?		7	H	
For preserved waters (other than VOA vials, LL-Mercury or				
microbiological analyses), was pH verified and compliant ?	\checkmark			
If pH was adjusted, were bottles flagged (i.e., stickers)?		$\mathbf{\nabla}$		
For special handling (e.g., "MI" soils, foreign soils, lab filter for				
dissolved, lab extract for volatiles, Ref Lab, limited volume),			_	
were bottles/paperwork flagged (e.g., sticker)?		\checkmark		
For RUSH/SHORT Hold Time, were COC/Bottles flagged			_	
accordingly? Was Rush/Short HT email sent, if applicable?		\checkmark		
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were				
containers / paperwork flagged accordingly?		\checkmark		
For any question answered "No," has the PM been notified and				SRF Completed by: D.C 09/03/2015 PM notified:
the problem resolved (or paperwork put in their bin)? Was PEER REVIEW of <i>sample numbering/labeling completed</i> ?			+	PM notified: Peer Reviewed by: EDJ
	\checkmark			I CO REVIEWED DY. EDJ
Additional notes (if applicable):				

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



Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1158584001-A	HCL to pH < 2	OK			
1158584001-В	HCL to $pH < 2$	OK			
1158584001-C	HCL to $pH < 2$	OK			
1158584001-D	HCL to pH < 2	OK			
1158584001-Е	HCL to pH < 2	OK			
1158584002-A	HCL to pH < 2	OK			
1158584002-В	HCL to pH < 2	OK			
1158584002-С	HCL to pH < 2	OK			
1158584002-D	HCL to pH < 2	OK			
1158584002-Е	HCL to pH < 2	OK			
1158584003-A	HCL to pH < 2	OK			
1158584003-В	HCL to pH < 2	OK			
1158584003-С	HCL to pH < 2	OK			
1158584003-D	HCL to pH < 2	OK			
1158584003-Е	HCL to pH < 2	OK			
1158584004-A	HCL to pH < 2	OK			
1158584004-В	HCL to pH < 2	OK			
1158584004-C	HCL to pH < 2	OK			
1158584004-D	HCL to pH < 2	OK			
1158584004-Е	HCL to pH < 2	OK			
1158584005-A	HCL to $pH < 2$	OK			
1158584005-В	HCL to pH < 2	OK			
1158584005-C	HCL to pH < 2	OK			
1158584005-D	HCL to pH < 2	OK			
1158584005-Е	HCL to pH < 2	OK			
1158584006-A	HCL to pH < 2	OK			
1158584006-В	HCL to pH < 2	OK			
1158584006-C	HCL to pH < 2	OK			
1158584006-D	HCL to pH < 2	OK			
1158584006-Е	HCL to pH < 2	OK			
1158584007-A	HCL to pH < 2	OK			
1158584007-В	HCL to pH < 2	OK			
1158584007-С	HCL to pH < 2	OK			
1158584007-D	HCL to pH < 2	OK			
1158584007-Е	HCL to pH < 2	OK			
1158584008-A	HCL to pH < 2	OK			
1158584008-В	HCL to pH < 2	OK			
1158584008-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 than an inappropriate container was submitted.

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

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.

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

Laboratory Data Review Checklist

Completed by:	Jason Gresehover
	Environmental Specialist Date: June 1, 2016
Title:	Environmental Specialist Date: June 1, 2016
CS Report Name:	GW MW Report MP 205 Rich. BSL Report Date: June, 2016
Consultant Firm:	Alaska Resources and Environmental Services
Laboratory Name	SGS Laboratory Report Number: 1158584
ADEC File Num	er: 140.38.052 ADEC RecKey Number:
	ADEC CS approved laboratory receive and <u>perform</u> all of the submitted sample analyses? Yes No NA (Please explain.) Comments:
labora	amples were transferred to another "network" laboratory or sub-contracted to an alternate ory, was the laboratory performing the analyses ADEC CS approved? Yes No NA (Please explain.)Comments:ples were not subcontracted or transferred.
	nformation completed, signed, and dated (including released/received by)? Yes No NA (Please explain.) Comments:
	t analyses requested? Yes No NA (Please explain.) Comments:
GRO an	alysis was not required for this project, however GRO analysis was requested on the COC.
a. Sampl	mple Receipt Documentatione/cooler temperature documented and within range at receipt $(4^\circ \pm 2^\circ C)$?YesNoNA (Please explain.)Comments:
Volati	e preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, e Chlorinated Solvents, etc.)? es No NA (Please explain.) Comments:
	ro man (i lease explain.) Comments.

	c.	Sample cono Yes	dition d No	locumented – broken, leaking (Meth NA (Please explain.)	anol), zero headspace (VOC vials)? Comments:
	1	No adverse co	ondition	s were noted.	
	d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missi samples, etc.?				acceptable range, insufficient or missing
		Yes	No	NA (Please explain.)	Comments:
	1	No discrepanc	cies wei	re identifed.	
	e.	Data quality	or usa	bility affected? (Please explain.)	Comments:
	Ν	N/A; see abov	e.		
4.		<u>Narrative</u> Present and Yes	underst No	tandable? NA (Please explain.)	Comments:
	b.	Discrepancie Yes	es, erro No	rs or QC failures identified by the la NA (Please explain.)	ub? Comments:
	с.	Were all cor Yes	rective No	actions documented? NA (Please explain.)	Comments:
No corrective actions were required.					
	d.	What is the	effect o	on data quality/usability according to	the case narrative? Comments:
The case narrative does not discuss any effects on data quality or usability.				ality or usability.	
5.	-	es Results Correct anal Yes	yses pe No	erformed/reported as requested on C NA (Please explain.)	OC? Comments:
	b.	All applicab Yes	le hold No	ing times met? NA (Please explain.)	Comments:

 c. All soils reported on a dry weight basis? Yes No NA (Please explain.) 	Comments:				
Only water samples were submitted for this project.					
Are the reported PQLs less than the Cleanup Level or the minimum required detection level for t project?					
Yes No NA (Please explain.)	Comments:				
e. Data quality or usability affected?					
	Comments:				
No data quality or usability affected.					
Samples					
a. Method Blank	ais and 20 somelas?				
i. One method blank reported per matrix, analy Yes No NA (Please explain.)	Comments:				
ii. All method blank results less than PQL?					
Yes No NA (Please explain.)	Comments:				
iii. If above PQL, what samples are affected?	Comments:				
	Comments:				
N/A; see above.					
iv. Do the affected sample(s) have data flags and	d if so, are the data flags clearly defined?				
Yes No NA (Please explain.)	Comments:				
All results were less than the PQL.					
. Data quality of usability offected? (Diassa en	ralain)				
v. Data quality or usability affected? (Please ex	Comments:				
N/A; see above.					
1,11, 500 000,00					
b. Laboratory Control Sample/Duplicate (LCS/LCSD)					
i Organica One I CS/I CSD reported per met	riv analysis and 20 samplas? (LCS/LCSD				
 Organics – One LCS/LCSD reported per mat required per AK methods, LCS required per S 					

Yes No NA (Please explain.) Comments:

6.

- ii. Metals/Inorganics one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
- Yes No NA (Please explain.) Comments:

No metals or inorganic samples were collected or analyzed for this sampling event.

- 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/MSD, 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:

N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined? Yes No NA (Please explain.) Comments:

All RPD's and %R were within acceptable limits.

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

N/A; see above.

- c. Surrogates Organics Only
 - i. Are surrogate recoveries reported for organic analyses field, QC and laboratory samples? Yes No NA (Please explain.) Comments:
 - ii. Accuracy All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
 - Yes No NA (Please explain.) Comments:

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

Yes	No	NA (Please explain.)
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Comments:

No surrogate recovery failures were reported.

iv. Data quality or usability affected? (Use the comment box to explain.) Comments:

N/A; see above.

- d. Trip blank Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and</u> <u>Soil</u>
 - i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
 Yes No NA (Please explain.)
 Comments:
 - ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
 Yes No NA (Please explain.)
 Comments:

All samples were shipped in a single cooler.

iii. All results less than PQL? Yes No NA (Please explain.)

Comments:

GRO was detected below the PQL.

iv. If above PQL, what samples are affected?

Comments:

N/A; no analytes were above the PQL in the trip blank.

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

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples? Yes No NA (Please explain.) Comments:

ii. Sut Yes	omitted No	blind to lab? NA (Please explain	.)	Comments:
		All relative percent of nded: 30% water, 50%		D) less than specified DQOs?
RP	D (%) =	Absolute value of:		100
			$((R_1+R_2)/2)$	
		R_1 = Sample Concen R_2 = Field Duplicate		
Yes	No	NA (Please explain		Comments:
Calculations	for RPI	D for DRO were at 31	.5% slightly ab	ove the 30% limit.
iv. Dat	a qualit	y or usability affected	l? (Use the com	ment box to explain why or why not.)
				Comments:
Data quality quantitatively		ed. Results for DRO	should be view	ved qualitatively rather than
f Decenter	nation	n Equinment Plenk ([f not used own]	loin why)
		or Equipment Blank (I	-	
Yes	No	NA (Please explain		Comments:
No equipment	t blank v	was required for this s	ampling event.	
i. All	results	less than PQL?		
Yes	No	NA (Please explain	.)	Comments:
ii. If a	bove PO	QL, what samples are	affected?	
		C ,		Comments:
N/A				
		1 11 00 00	10 (D1 1	• 、
iii. Dat	a qualit	y or usability affected	I? (Please expla	
· · · · · · · · · · · · · · · · · · ·				Comments:
N/A				
		rs (ACOE, AFCEE, L	ab Specific, et	<u>c.)</u>
a. Defined an Yes	No	NA (Please explain	.)	Comments:

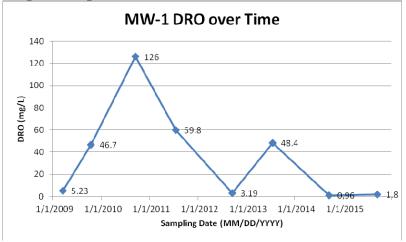
Appendix C Graphical Summary of DRO results over time

Monitoring Well MW-1

Date	MW-1		
	DRO		
	(mg/L)		
3/24/2009	5.23		
10/4/2009	46.7		
9/25/2010	126		
7/20/2011	59.8		
9/23/2012	3.19		
7/31/2013	48.4		
9/10/2014	0.96		
9/1/2015	1.8		

DRO levels in MW-1 over time



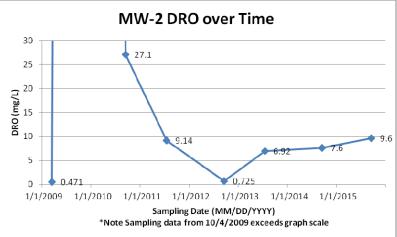


Monitoring Well MW-2

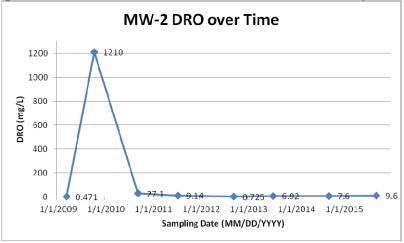
DRO levels in MW-2 over time

Date	MW-2
	DRO
	(mg/L)
3/24/2009	0.471
10/4/2009	1210
9/25/2010	27.1
7/20/2011	9.14
9/23/2012	0.725
7/31/2013	6.92
9/10/2014	7.6
9/1/2015	9.6

Graphical representation of DRO levels in MW-2 over time with y-axis zoomed to show recent sampling events clearly



Graphical representation of DRO levels in MW-2 over time with y-axis zoomed out

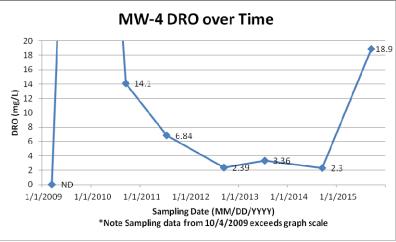


Monitoring Well MW-4

DRO levels in MW-4 over time

	MW-4
Date	DRO
	(mg/L)
3/24/2009	ND
10/4/2009	108
9/25/2010	14.1
7/20/2011	6.84
9/23/2012	2.39
7/31/2013	3.36
9/10/2014	2.3
9/1/2015	18.9

Graphical representation of DRO levels in MW-4 over time with y-axis zoomed to show recent sampling events clearly



Graphical representation of DRO levels in MW-4 over time with y-axis zoomed out

