rmconsult.com

R&M CONSULTANTS, INC.

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July 28, 2014 R&M No. 1771.03

Grant Lidren
Alaska Department of Environmental Conservation
Contaminated Sites Program
555 Cordova Street
Anchorage, Alaska 99501

RE: Groundwater Monitoring Report
Tract H, Port of Anchorage Addition 1
ADEC File #2100.38.535
Anchorage, Alaska

Dear Mr. Lidren:

The following report provides the results of the groundwater monitoring effort performed by R&M Consultants, Inc. (R&M) at the Port of Anchorage (Port) in Anchorage, Alaska. The work was conducted to address site characterization activities requested by the Alaska Department of Environmental Conservation (ADEC) to support the recent listing of the Port within the ADEC Contaminated Sites Database.

In their 20 November 2012 letter to the Port, ADEC identified the need for additional site characterization to determine the extent of contamination and the potential for migration (ADEC, 2012). Specifically, it was requested that the Port attempt to locate and sample six wells that were installed at the Port during an investigation in the 1990s. The current status of these wells was unknown at the time of the letter.

BACKGROUND

The Port is located in an industrial area of Anchorage, bordered by Cook Inlet to the west, Joint Base Elmendorf-Richardson to the north and east, and bulk fuel facilities to the south. The Port provides facilities for the movement of containerized freight, iron and steel products, wood products, bulk petroleum, and cement. Current Port facilities include two petroleum, oil, and lubricant (POL) transfer terminals, a POL pipeline valve yard, three cargo ship terminals, container cranes, equipment and material staging yards, vehicle transit areas, an administrative building with associated vehicle parking areas, a Security Center, and a maintenance facility.

The Port was listed in November, 2012 in the ADEC Contaminated Sites Database (File No. 2100.38.535). Existing soil and groundwater contamination in various areas of Port property can be attributed to historical releases from pipelines and tank farms dating back to the 1964 Great Alaska Earthquake. As a result, several areas of hydrocarbon contamination have been identified on Port property during excavation activities for utility projects. ADEC requested that the Port conduct an investigation to roughly delineate the extent of contamination and evaluate the potential migration of contaminants into Cook Inlet (ADEC, 2012). The following report summarizes groundwater monitoring activities as outlined in the *Groundwater Monitoring Work Plan, Tract H, Port of Anchorage Addition 1* (R&M, 2013).

GROUNDWATER FLOW DIRECTION

With the exception of a few areas of grassed landscaped areas and vegetated drainage ditches (as well as partially constructed elements of the pending expansion project), the Port is entirely paved. Groundwater is generally shallow, tidally influenced, and flows west/northwest towards Cook Inlet.

Monitoring well elevations were surveyed in April 2014 to determine current groundwater elevations. The water levels in the wells were measured prior to sampling to allow determination of the approximate groundwater elevation and flow direction (Attachment A, Table 1). The interpreted direction of groundwater flow is generally to the west and northwest (Attachment B, Figure 1).

MONITORING WELL OBSERVATIONS, MAINTENANCE, DECOMMISSIONING, AND SAMPLING

As stated in the Work Plan (R&M, 2013), five of the six wells were located in variable states of repair; monitoring well MW-12B-1 was not located and therefore no further action was conducted. Monitoring wells MW-12B-2 and MW-6D-1 were found with the well covers intact, but they could not be removed. Monitoring wells MW-A-1 and MW-C-1 were located; the well covers were not intact but the well heads were capped and locked. Monitoring well MW-3A-1 was located in very poor condition was approved by ADEC for decommissioning. Discovery Drilling, Inc. was contracted to assist with monitoring well repair and decommissioning as needed. The covers and monuments for monitoring wells MW-12B-2, MW-6D-1, MW-A-1, and MW-C-1 were replaced on 29 August 2013 and 6 September 2013. In order to repair the wells, the pavement surrounding the existing monuments was slightly dug out with a shovel and/or jackhammer so that the monuments could be completely withdrawn from the ground. Once removed, a bolt cutter was used to remove the lock which held the slip cap over the top of monitoring wells MW-A-1 and MW-C-1. Upon removal of the caps, there appeared to be no indication that surface water had infiltrated the well. The four monitoring wells were fitted with new Morrison-style monuments and new well caps. Sand and pea gravel was used to fill the voids and cold patch was used to transition to the surrounding pavement.

Monitoring well MW-3A-1 was decommissioned on 29 August 2013 in accordance with the ADEC document *Monitoring Well Guidance* (November, 2011) adopted by reference in 18 AAC 75 and 18 AAC 78. A truck-mounted drilling rig was utilized to remove the well casing once the end cap was punctured. Bentonite was added as the well casing was withdrawn, however the casing broke within approximately eight feet of the ground surface and the well could not be completely removed. The remainder of the well was filled with bentonite and hydrated; the top two feet of the vacated well were filled with pea gravel and covered with cold patch asphalt to blend with the surrounding pavement.

All groundwater sampling was performed in accordance with the procedures in ADEC's *Draft Field Sampling Guidance* (May, 2010). Prior to purging and sampling, the groundwater levels and well depths for each monitoring well were measured with a water level indicator precise to 0.01 feet. The water level indicator was decontaminated between wells by soaking in a diluted phosphate solution (Alconox) and rinsing first with potable then deionized water. Water levels were compared with 2014 survey elevations and are presented in Table 1 (Attachment A). No free product was encountered in the wells, however a slight hydrocarbon sheen and odor was observed in groundwater from monitoring well MW-6D-1.

Each monitoring well was purged up to three well volumes utilizing polyethylene bailers. Purge water was collected in 5-gallon buckets and transported to 55-gallon drums staged near the Port maintenance facility until laboratory analysis was complete. Water that exceeds the site-specific ADEC cleanup levels is planned for disposal by Emerald Services, Inc.

Groundwater samples were submitted to SGS for laboratory analyses of the following:

- Gasoline Range Organics (GRO) by Alaska Method 101
- Diesel Range Organics (DRO) by Alaska Method 102
- Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) by EPA 8021B

LABORATORY ANALYTICAL RESULTS

All water samples were submitted to SGS on 19 September 2013. SGS is an Environmental Protection Agency (EPA) and ADEC approved laboratory. Standard Chain-of-Custody procedures for laboratory samples were followed. The temperature blank included in the sample cooler registered at 4°C ± 2°C upon submittal to SGS. Laboratory analytical results were received on 1 October 2013 (Attachment C). Groundwater laboratory analytical results are presented in Table 2 (Attachment A).

Benzene was detected in groundwater collected from monitoring well MW-6D-1 at 0.0358 mg/L, which exceeds ADEC cleanup standards. GRO, ethylbenzene, xylene, and DRO was also detected in groundwater from monitoring well MW-6D-1 but below applicable cleanup levels.

DRO was detected below cleanup levels in monitoring well MW-A-1. Benzene was detected below cleanup levels in groundwater from monitoring well MW-12B-2. Toluene was not detected in any groundwater samples.

QUALITY ASSURANCE/ QUALITY CONTROL

Duplicate samples were obtained at a rate of one per ten samples. One duplicate groundwater sample was collected from MW-12B-2 on 19 September 2013 and submitted in the same manner as the regular samples; the duplicate sample was labeled MW-12B-2D. Analytical results for contaminants were in good agreement between the normal and the duplicate groundwater samples; both samples were non-detect for all analytes except for benzene.

A trip blank for AK101/EPA8021B was prepared by the laboratory, taken to the site and handled like all other samples. No GRO or BTEX constituents were detected in the trip blank, indicating that handling and ambient conditions did not contribute to levels of contamination detected in some samples. Method blanks were prepared and analyzed by SGS for all parameters. No analytes were detected at the practical quantitation limit (PQL) for any method blank parameter. An ADEC laboratory data review checklist was completed and is included with this report (Attachment C).

SUMMARY AND CONCLUSIONS

The purpose of this sampling effort has been to delineate the extent of contamination and to evaluate the potential for contaminants to migrate into Cook Inlet (ADEC, 2012). Most detectable analytical results fall well below ADEC cleanup levels with the exception of monitoring well MW-6D-1 where only benzene exceeds ADEC cleanup levels. Contamination appears to be localized near monitoring well MW-6D-1 which is farthest from the shoreline. Analytical results from the three wells located along the shoreline are all non-detect or contaminant levels fall below ADEC cleanup standards indicating that contamination is not migrating into and affecting Cook Inlet.

Based on the information presented herein, an additional round of groundwater sampling to include analysis for GRO, DRO, and BTEX is recommended for monitoring wells MW-12B-2, MW-C-1, MW-6D-1, and MW-A-1 to ensure that contaminant levels near monitoring well MW-6D-1 are attenuating and that contamination is not migrating towards Cook Inlet. The additional sampling is recommended for September 2014.

CLOSURE

This brief letter report has been prepared for the exclusive use of the Port of Anchorage and their representatives in the study of this site. The findings presented within this report are based on limited sampling and laboratory analyses conducted by R&M. Since opinions of conditions prevailing on a particular site must be based on the work authorized by the client, all findings/data must be construed as representative of the site at a particular moment in time and the result of services performed within the scope, limitations, and cost of the work requested. Changes in the conditions of this site may occur with the passage of time and may be due to natural processes or the works of man. In addition, changes in government codes, either State or Federal regulations or laws, may occur. Due to such changes, which are beyond our control, observations and recommendations applicable to this site may need to be revised wholly or in part from time to time.

R&M Consultants, Inc. performed this work in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No warranty, express or implied, beyond exercise of reasonable care and professional diligence, is made.

Should you require additional information regarding the investigation or this report, please contact us.

Sincerely,

R&M CONSULTANTS, INC.

Kristi M. McLean, LEED AP BD+C
Environmental Specialist

Reviewed by:

Kevin J. Pendergast, C.P.G., P.E.
Group Manager – Environmental and Planning

Attachment A: Tables
Attachment B: Figure 1
Attachment C: Analytical Results and Laboratory Data Review Checklist

cc: Todd Cowles, P.E., Port of Anchorage

REFERENCES

Alaska Department of Environmental Conservation (ADEC, 2012). Letter dated 20 November 2012 from ADEC addressed to Todd Cowles, Port of Anchorage, Re: Port of Anchorage Groundwater Monitoring.

R&M Consultants, Inc. (R&M, 2013)." Groundwater Monitoring Work Plan, Tract H, Port of Anchorage Addition 1, Anchorage, Alaska." June, 2013.

ATTACHMENT A

TABLES

TABLE 1
GROUNDWATER ELEVATIONS

Monitoring Well ID	Date	Top of Casing Elevation (feet) (1)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-12B-2	9/18/13	35.84	7.34	28.50
MW-C-1	9/18/13	36.31	13.11	23.20
MW-6D-1	9/18/13	36.87	2.71	34.16
MW-A-1	9/18/13	37.12	7.20	29.92

(1) Monitoring wells were surveyed on April 23, 2014. Elevations are referenced to Mean Lower Low Water (MLLW) based on USACE monument S. End.

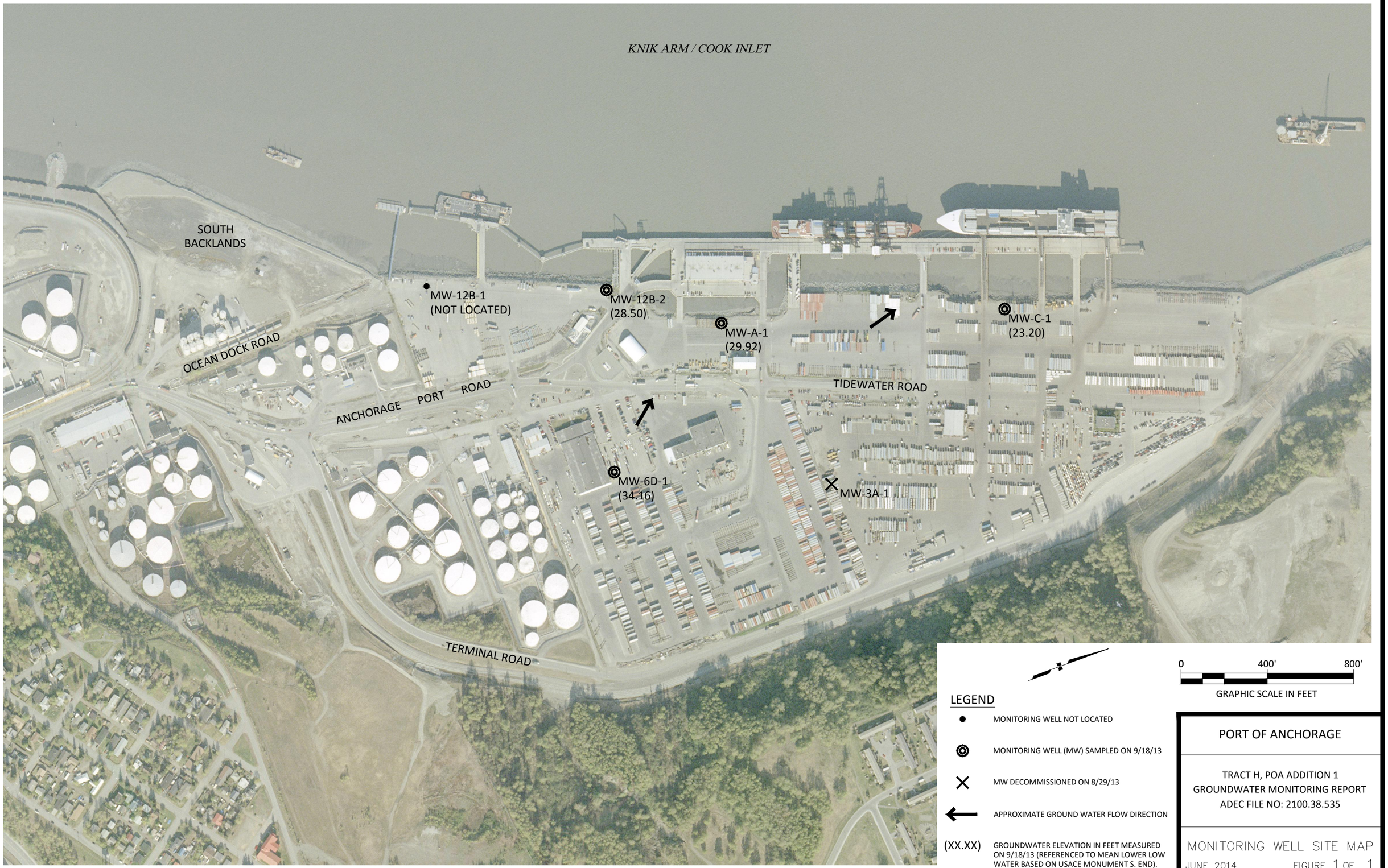
TABLE 2
LABORATORY ANALYTICAL RESULTS
GROUNDWATER SAMPLES
SEPTEMBER 18, 2013

Monitoring Well ID	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)
Cleanup Levels [1]	0.005	1.0	0.7	10.0	2.2	1.5
MW-12B-2	0.000510	ND	ND	ND	ND	ND
MW-12B-2D [2]	ND	ND	ND	ND	ND	ND
MW-C-1	ND	ND	ND	ND	ND	ND
MW-6D-1	0.0358	ND	0.0129	0.0980	0.829	0.883
MW-A-1	ND	ND	ND	ND	ND	0.793

[1] Cleanup levels for BTEX, GRO, and DRO have been specified in Table C, Groundwater Cleanup Levels (18 AAC 75.345, April 8, 2012).
[2] Duplicate sample collected from MW-12B-2.
NOTE: Shaded cells indicate that analyte was detected above cleanup levels.

ATTACHMENT B

Monitoring Well Site Map FIGURE 1



LEGEND

- MONITORING WELL NOT LOCATED
- MONITORING WELL (MW) SAMPLED ON 9/18/13
- MW DECOMMISSIONED ON 8/29/13
- APPROXIMATE GROUND WATER FLOW DIRECTION
- (XX.XX) GROUNDWATER ELEVATION IN FEET MEASURED ON 9/18/13 (REFERENCED TO MEAN LOWER LOW WATER BASED ON USACE MONUMENT S. END).

0 400' 800'

GRAPHIC SCALE IN FEET

PORT OF ANCHORAGE

TRACT H, POA ADDITION 1
GROUNDWATER MONITORING REPORT
ADEC FILE NO: 2100.38.535

MONITORING WELL SITE MAP

JUNE 2014 FIGURE 1 OF 1

Z:\project\1771.03 MOA POA 2011 Term Year 3\Earth\Task 75 - POA Contaminated Site\ACAD\1771.03 - Report Site Map.dwg

Plotted 6/30/2014 2:10 PM by Patrick Hewlett

ATTACHMENT C

ANALYTICAL RESULTS

SGS North America Inc., Laboratory Data Report

Laboratory Data Review Checklist

SGS

Laboratory Report of Analysis

To: R & M Consultants Inc
9101 Vanguard Dr
Anchorage, AK 99507
(907)646-9682

Report Number: **1134574**

Client Project: **POA Tract H Addition 1**

Dear Kevin Pendergast,

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

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

Steven Crupi
2013.10.01
16:09:43 -08'00'

Steve Crupi Date
Project Manager
steven.crupi@sgs.com

Print Date: 10/01/2013 8:36:56AM

Case Narrative

SGS Client: **R & M Consultants Inc**
SGS Project: **1134574**
Project Name/Site: **POA Tract H Addition 1**
Project Contact: **Kevin Pendergast**

Refer to sample receipt form for information on sample condition.

MW-6D-1 (1134574004) PS

AK102 - The pattern is consistent with a weathered gasoline.

MW-A-1 (1134574005) PS

AK102 - Unknown hydrocarbon with several peaks is present.

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

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

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

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

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

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

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

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW-12B-2	1134574001	09/18/2013	09/18/2013	Water (Surface, Eff., Ground)
MW-12B-2D	1134574002	09/18/2013	09/18/2013	Water (Surface, Eff., Ground)
MW-C-1	1134574003	09/18/2013	09/18/2013	Water (Surface, Eff., Ground)
MW-6D-1	1134574004	09/18/2013	09/18/2013	Water (Surface, Eff., Ground)
MW-A-1	1134574005	09/18/2013	09/18/2013	Water (Surface, Eff., Ground)
Trip Blank	1134574006	09/18/2013	09/18/2013	Water (Surface, Eff., Ground)

Method	Method Description
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	Diesel Range Organics (W)
AK102	DRO Low Volume (W)

Detectable Results Summary

Client Sample ID: **MW-12B-2**
Lab Sample ID: 1134574001

Volatile Fuels

Parameter	Result	Units
Benzene	0.510	ug/L

Client Sample ID: **MW-6D-1**
Lab Sample ID: 1134574004

Semivolatile Organic Fuels
Volatile Fuels

Parameter	Result	Units
Diesel Range Organics	0.883	mg/L
Benzene	35.8	ug/L
Ethylbenzene	12.9	ug/L
Gasoline Range Organics	0.829	mg/L
o-Xylene	4.18	ug/L
P & M -Xylene	93.8	ug/L

Client Sample ID: **MW-A-1**
Lab Sample ID: 1134574005

Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	0.793	mg/L

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Results of **MW-12B-2**

Client Sample ID: **MW-12B-2**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574001
Lab Project ID: 1134574

Collection Date: 09/18/13 10:17
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.600	U	0.600	0.180	mg/L	1		09/25/13 03:25
Surrogates								
5a Androstane	91.7		50-150		%	1		09/25/13 03:25

Batch Information

Analytical Batch: XFC11087
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/25/13 03:25
Container ID: 1134574001-D

Prep Batch: XXX29979
Prep Method: SW3520C
Prep Date/Time: 09/22/13 09:35
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 10/01/2013 8:36:59AM

Results of **MW-12B-2**

Client Sample ID: **MW-12B-2**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574001
Lab Project ID: 1134574

Collection Date: 09/18/13 10:17
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		09/19/13 17:47
Surrogates								
4-Bromofluorobenzene	83.2		50-150		%	1		09/19/13 17:47

Batch Information

Analytical Batch: VFC11633
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/19/13 17:47
Container ID: 1134574001-B

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 09/19/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.510		0.500	0.150	ug/L	1		09/19/13 17:47
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		09/19/13 17:47
o-Xylene	1.00	U	1.00	0.310	ug/L	1		09/19/13 17:47
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		09/19/13 17:47
Toluene	1.00	U	1.00	0.310	ug/L	1		09/19/13 17:47
Surrogates								
1,4-Difluorobenzene	94.8		77-115		%	1		09/19/13 17:47

Batch Information

Analytical Batch: VFC11633
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/19/13 17:47
Container ID: 1134574001-B

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 09/19/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **MW-12B-2D**

Client Sample ID: **MW-12B-2D**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574002
Lab Project ID: 1134574

Collection Date: 09/18/13 10:27
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.600	U	0.600	0.180	mg/L	1		09/25/13 03:45
Surrogates								
5a Androstane	87.9		50-150		%	1		09/25/13 03:45

Batch Information

Analytical Batch: XFC11087
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/25/13 03:45
Container ID: 1134574002-D

Prep Batch: XXX29979
Prep Method: SW3520C
Prep Date/Time: 09/22/13 09:35
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

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Results of **MW-12B-2D**

Client Sample ID: **MW-12B-2D**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574002
Lab Project ID: 1134574

Collection Date: 09/18/13 10:27
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		09/19/13 18:05
Surrogates								
4-Bromofluorobenzene	86		50-150		%	1		09/19/13 18:05

Batch Information

Analytical Batch: VFC11633
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/19/13 18:05
Container ID: 1134574002-B

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 09/19/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		09/19/13 18:05
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		09/19/13 18:05
o-Xylene	1.00	U	1.00	0.310	ug/L	1		09/19/13 18:05
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		09/19/13 18:05
Toluene	1.00	U	1.00	0.310	ug/L	1		09/19/13 18:05
Surrogates								
1,4-Difluorobenzene	95.2		77-115		%	1		09/19/13 18:05

Batch Information

Analytical Batch: VFC11633
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/19/13 18:05
Container ID: 1134574002-B

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 09/19/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **MW-C-1**

Client Sample ID: **MW-C-1**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574003
Lab Project ID: 1134574

Collection Date: 09/18/13 12:19
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.545	U	0.545	0.164	mg/L	1		09/27/13 17:52
Surrogates								
5a Androstane	72.9		50-150		%	1		09/27/13 17:52

Batch Information

Analytical Batch: XFC11093
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/27/13 17:52
Container ID: 1134574003-D

Prep Batch: XXX30012
Prep Method: SW3520C
Prep Date/Time: 09/26/13 09:15
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
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Results of **MW-C-1**

Client Sample ID: **MW-C-1**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574003
Lab Project ID: 1134574

Collection Date: 09/18/13 12:19
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		09/19/13 16:52
Surrogates								
4-Bromofluorobenzene	84.1		50-150		%	1		09/19/13 16:52

Batch Information

Analytical Batch: VFC11633
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/19/13 16:52
Container ID: 1134574003-A

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 09/19/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		09/19/13 16:52
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		09/19/13 16:52
o-Xylene	1.00	U	1.00	0.310	ug/L	1		09/19/13 16:52
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		09/19/13 16:52
Toluene	1.00	U	1.00	0.310	ug/L	1		09/19/13 16:52
Surrogates								
1,4-Difluorobenzene	95.5		77-115		%	1		09/19/13 16:52

Batch Information

Analytical Batch: VFC11633
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/19/13 16:52
Container ID: 1134574003-A

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 09/19/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **MW-6D-1**

Client Sample ID: **MW-6D-1**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574004
Lab Project ID: 1134574

Collection Date: 09/18/13 11:31
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.883		0.600	0.180	mg/L	1		09/25/13 04:06
Surrogates								
5a Androstane	93.8		50-150		%	1		09/25/13 04:06

Batch Information

Analytical Batch: XFC11087
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/25/13 04:06
Container ID: 1134574004-D

Prep Batch: XXX29979
Prep Method: SW3520C
Prep Date/Time: 09/22/13 09:35
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

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Results of **MW-6D-1**

Client Sample ID: **MW-6D-1**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574004
Lab Project ID: 1134574

Collection Date: 09/18/13 11:31
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.829		0.100	0.0310	mg/L	1		09/20/13 09:49
Surrogates								
4-Bromofluorobenzene	121		50-150		%	1		09/20/13 09:49

Batch Information

Analytical Batch: VFC11635
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/20/13 09:49
Container ID: 1134574004-A

Prep Batch: VXX25215
Prep Method: SW5030B
Prep Date/Time: 09/20/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	35.8		0.500	0.150	ug/L	1		09/20/13 09:49
Ethylbenzene	12.9		1.00	0.310	ug/L	1		09/20/13 09:49
o-Xylene	4.18		1.00	0.310	ug/L	1		09/20/13 09:49
P & M -Xylene	93.8		2.00	0.620	ug/L	1		09/20/13 09:49
Toluene	1.00	U	1.00	0.310	ug/L	1		09/20/13 09:49
Surrogates								
1,4-Difluorobenzene	101		77-115		%	1		09/20/13 09:49

Batch Information

Analytical Batch: VFC11635
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/20/13 09:49
Container ID: 1134574004-A

Prep Batch: VXX25215
Prep Method: SW5030B
Prep Date/Time: 09/20/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/01/2013 8:36:59AM

Results of **MW-A-1**

Client Sample ID: **MW-A-1**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574005
Lab Project ID: 1134574

Collection Date: 09/18/13 13:48
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.793		0.600	0.180	mg/L	1		09/25/13 04:27
Surrogates								
5a Androstane	87.8		50-150		%	1		09/25/13 04:27

Batch Information

Analytical Batch: XFC11087
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/25/13 04:27
Container ID: 1134574005-D

Prep Batch: XXX29979
Prep Method: SW3520C
Prep Date/Time: 09/22/13 09:35
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

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Results of **MW-A-1**

Client Sample ID: **MW-A-1**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574005
Lab Project ID: 1134574

Collection Date: 09/18/13 13:48
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		09/20/13 10:07
Surrogates								
4-Bromofluorobenzene	95.6		50-150		%	1		09/20/13 10:07

Batch Information

Analytical Batch: VFC11635
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/20/13 10:07
Container ID: 1134574005-A

Prep Batch: VXX25215
Prep Method: SW5030B
Prep Date/Time: 09/20/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		09/20/13 10:07
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		09/20/13 10:07
o-Xylene	1.00	U	1.00	0.310	ug/L	1		09/20/13 10:07
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		09/20/13 10:07
Toluene	1.00	U	1.00	0.310	ug/L	1		09/20/13 10:07
Surrogates								
1,4-Difluorobenzene	89		77-115		%	1		09/20/13 10:07

Batch Information

Analytical Batch: VFC11635
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/20/13 10:07
Container ID: 1134574005-A

Prep Batch: VXX25215
Prep Method: SW5030B
Prep Date/Time: 09/20/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **POA Tract H Addition 1**
Lab Sample ID: 1134574006
Lab Project ID: 1134574

Collection Date: 09/18/13 10:17
Received Date: 09/18/13 15:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		09/19/13 15:38
Surrogates								
4-Bromofluorobenzene	84.1		50-150		%	1		09/19/13 15:38

Batch Information

Analytical Batch: VFC11633
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/19/13 15:38
Container ID: 1134574006-A

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 09/19/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		09/19/13 15:38
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		09/19/13 15:38
o-Xylene	1.00	U	1.00	0.310	ug/L	1		09/19/13 15:38
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		09/19/13 15:38
Toluene	1.00	U	1.00	0.310	ug/L	1		09/19/13 15:38
Surrogates								
1,4-Difluorobenzene	95.3		77-115		%	1		09/19/13 15:38

Batch Information

Analytical Batch: VFC11633
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/19/13 15:38
Container ID: 1134574006-A

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 09/19/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1485164 [VXX/25211]
Blank Lab ID: 1179525

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1134574001, 1134574002, 1134574003, 1134574006

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0620U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene	86.1	50-150		%

Batch Information

Analytical Batch: VFC11633
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/19/2013 9:37:00AM

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 9/19/2013 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Anti-Foam Blank

Blank ID: AFB for HBN 1485164 [VXX/25211
Blank Lab ID: 1179530

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1134574001, 1134574002, 1134574003, 1134574006

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0620U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene	80.7			%

Batch Information

Analytical Batch: VFC11633
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/19/2013 6:42:00PM

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 9/19/2013 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/01/2013 8:37:00AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1134574 [VXX25211]
Blank Spike Lab ID: 1179528
Date Analyzed: 09/19/2013 10:32

Spike Duplicate ID: LCSD for HBN 1134574 [VXX25211]
Spike Duplicate Lab ID: 1179529
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134574001, 1134574002, 1134574003, 1134574006

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	1.10	110	1.00	1.03	103	(60-120)	6.50	(< 20)
Surrogates									
4-Bromofluorobenzene	0.0500	89.5	90	0.0500	82.5	83	(50-150)	8.10	

Batch Information

Analytical Batch: **VFC11633**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX25211**
Prep Method: **SW5030B**
Prep Date/Time: **09/19/2013 08:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1485164 [VXX/25211]
Blank Lab ID: 1179525

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1134574001, 1134574002, 1134574003, 1134574006

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene	95.1	77-115		%

Batch Information

Analytical Batch: VFC11633
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/19/2013 9:37:00AM

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 9/19/2013 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Anti-Foam Blank

Blank ID: AFB for HBN 1485164 [VXX/25211
Blank Lab ID: 1179530

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1134574001, 1134574002, 1134574003, 1134574006

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene	96.1			%

Batch Information

Analytical Batch: VFC11633
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/19/2013 6:42:00PM

Prep Batch: VXX25211
Prep Method: SW5030B
Prep Date/Time: 9/19/2013 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134574 [VXX25211]
Blank Spike Lab ID: 1179526
Date Analyzed: 09/19/2013 10:14

Spike Duplicate ID: LCSD for HBN 1134574 [VXX25211]
Spike Duplicate Lab ID: 1179527
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134574001, 1134574002, 1134574003, 1134574006

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	104	104	100	112	112	(80-120)	7.40	(< 20)
Ethylbenzene	100	106	106	100	113	113	(75-125)	6.00	(< 20)
o-Xylene	100	103	103	100	108	108	(80-120)	4.20	(< 20)
P & M -Xylene	200	209	105	200	220	110	(75-130)	5.20	(< 20)
Toluene	100	106	106	100	115	115	(75-120)	7.50	(< 20)
Surrogates									
1,4-Difluorobenzene	50	99.8	100	50	100	100	(77-115)	0.56	

Batch Information

Analytical Batch: **VFC11633**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX25211**
Prep Method: **SW5030B**
Prep Date/Time: **09/19/2013 08:00**
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1485224 [VXX/25215]
Blank Lab ID: 1179773

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1134574004, 1134574005

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0620U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene	89.6	50-150		%

Batch Information

Analytical Batch: VFC11635
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/20/2013 8:35:00AM

Prep Batch: VXX25215
Prep Method: SW5030B
Prep Date/Time: 9/20/2013 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1134574 [VXX25215]
Blank Spike Lab ID: 1179776
Date Analyzed: 09/20/2013 09:31

Spike Duplicate ID: LCSD for HBN 1134574 [VXX25215]
Spike Duplicate Lab ID: 1179777
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134574004, 1134574005

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	0.909	91	1.00	0.963	96	(60-120)	5.70	(< 20)
Surrogates									
4-Bromofluorobenzene	0.0500	95.4	95	0.0500	97.5	98	(50-150)	2.20	

Batch Information

Analytical Batch: **VFC11635**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX25215**
Prep Method: **SW5030B**
Prep Date/Time: **09/20/2013 08:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1485224 [VXX/25215]
Blank Lab ID: 1179773

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1134574004, 1134574005

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene	92.4	77-115		%

Batch Information

Analytical Batch: VFC11635
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/20/2013 8:35:00AM

Prep Batch: VXX25215
Prep Method: SW5030B
Prep Date/Time: 9/20/2013 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134574 [VXX25215]
Blank Spike Lab ID: 1179774
Date Analyzed: 09/20/2013 09:12

Spike Duplicate ID: LCSD for HBN 1134574 [VXX25215]
Spike Duplicate Lab ID: 1179775
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134574004, 1134574005

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	92.0	92	100	86.6	87	(80-120)	6.10	(< 20)
Ethylbenzene	100	102	102	100	99.0	99	(75-125)	3.40	(< 20)
o-Xylene	100	99.1	99	100	96.5	97	(80-120)	2.60	(< 20)
P & M -Xylene	200	204	102	200	198	99	(75-130)	3.10	(< 20)
Toluene	100	104	104	100	101	101	(75-120)	3.80	(< 20)
Surrogates									
1,4-Difluorobenzene	50	93.1	93	50	92.5	93	(77-115)	0.69	

Batch Information

Analytical Batch: **VFC11635**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX25215**
Prep Method: **SW5030B**
Prep Date/Time: **09/20/2013 08:00**
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1485561 [XXX/29979]
Blank Lab ID: 1179983

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1134574001, 1134574002, 1134574004, 1134574005

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.360U	0.600	0.180	mg/L
Surrogates				
5a Androstane	94.7	60-120		%

Batch Information

Analytical Batch: XFC11084
Analytical Method: AK102
Instrument: HP 7890A FID SV E R
Analyst: EAB
Analytical Date/Time: 9/23/2013 4:56:00PM

Prep Batch: XXX29979
Prep Method: SW3520C
Prep Date/Time: 9/22/2013 9:35:00AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134574 [XXX29979]
Blank Spike Lab ID: 1179984
Date Analyzed: 09/23/2013 17:17

Spike Duplicate ID: LCSD for HBN 1134574 [XXX29979]
Spike Duplicate Lab ID: 1179985
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134574001, 1134574002, 1134574004, 1134574005

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	5	5.44	109	5	5.04	101	(75-125)	7.50	(< 20)
Surrogates									
5a Androstane	0.1	99.7	100	0.1	92.5	93	(60-120)	7.50	

Batch Information

Analytical Batch: **XFC11084**
Analytical Method: **AK102**
Instrument: **HP 7890A FID SV E R**
Analyst: **EAB**

Prep Batch: **XXX29979**
Prep Method: **SW3520C**
Prep Date/Time: **09/22/2013 09:35**
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1486378 [XXX/30012]
Blank Lab ID: 1181190

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1134574003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.360U	0.600	0.180	mg/L
Surrogates				
5a Androstane	87.7	60-120		%

Batch Information

Analytical Batch: XFC11093
Analytical Method: AK102
Instrument: HP 7890A FID SV E R
Analyst: EAB
Analytical Date/Time: 9/27/2013 2:48:00PM

Prep Batch: XXX30012
Prep Method: SW3520C
Prep Date/Time: 9/26/2013 9:15:00AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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

Blank Spike Summary

Blank Spike ID: LCS for HBN 1134574 [XXX30012]
Blank Spike Lab ID: 1181191
Date Analyzed: 09/27/2013 15:08

Spike Duplicate ID: LCSD for HBN 1134574 [XXX30012]
Spike Duplicate Lab ID: 1181192
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134574003

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	19.1	96	20	19.1	95	(75-125)	0.06	(< 20)
Surrogates									
5a Androstane	0.4	89.5	90	0.4	88.8	89	(60-120)	0.76	

Batch Information

Analytical Batch: **XFC11093**
Analytical Method: **AK102**
Instrument: **HP 7890A FID SV E R**
Analyst: **EAB**

Prep Batch: **XXX30012**
Prep Method: **SW3520C**
Prep Date/Time: **09/26/2013 09:15**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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

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SGS North America Inc.
CHAIN OF CUSTODY RECORD

1134574

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

Page 1 of 1

Section 1

CLIENT: R+M Consultants

CONTACT: Kristi McLean PHONE NO: 646.9689

PROJECT NAME: POA Tract H Addition 1 PROJECT/ PWSID/ PERMIT#: 1771.03.75

REPORTS TO: McLean E-MAIL: kmclean@rmconsult.com

INVOICE TO: McLean QUOTE #: 1771.03.75 P.O. #:

Section 3

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: HCl / BTEX 8021B	HCl / GRO AK101	HCl / DRO AK102							REMARKS/ LOC ID
(1) A-E	MW-12B-2	9/18/13	10:17	Aqu	5	G	X	X	X							Remove sediment if possible
(2) A-E	MW-12B-2D	9/18/13	10:27	Aqu	5	G	X	X	X							
(3) A-E	MW-C-1	9/18/13	12:19	Aqu	5	G	X	X	X							
(4) A-E	MW-6D-1	9/18/13	11:31	Aqu	5	G	X	X	X							
(5) A-E	MW-A-1	9/18/13	13:48	Aqu	5	G	X	X	X							
(6) A-C																

Section 5

Relinquished By:	Date	Time	Received By:
(1)	9/18/13	15:50	
(2)			
(3)			
(4)	09/18/13	15:50	Received For Laboratory By:

Section 4

DOD Project? Yes No

Cooler ID:

Data Deliverable Requirements:

Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: 4.5 /#240 or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

F083-Kit_Request_and_COC_Templates-Blank
Revised 2013-03-24

SGS

1134574

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No (N/A) (Yes) No N/A	
Temperature blank compliant* (i.e., 0-6°C after CF)? ** Note: Exemption permitted for chilled samples collected less than 8 hours ago.* Cooler ID: 1 @ 4.5 w/ Therm.ID: 240 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ *Note: If non-compliant, use form FS-0029 to document affected samples/analyses.* If samples are received without a temperature blank, the "cooler 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." **If temperature(s) <0°C, were all sample containers ice free?**	(Yes) No N/A Yes No (N/A)	
Delivery method (specify all that apply): (Client) USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Note ABN/ tracking # See Attached or (N/A) Yes No (N/A)	
→ For samples received with payment, note amount ($) and cash / check / CC **(circle one)** or note: (N/A) → For samples **received in FBKS**, ANCH staff will verify all criteria are reviewed.		SRF Initiated by: SLC N/A
Were samples received within hold time? *Note: Refer to form F-083 "Sample Guide" for hold time information.* Do samples **match COC*** (i.e., sample IDs, dates/times collected)? ** Note: Exemption permitted if times differ <1hr; in that case, use times on COC.* Were analyses requested unambiguous?	(Yes) No N/A (Yes) No N/A (Yes) No N/A	
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): (Bubble Wrap) Separate plastic bags Vermiculite Other:	(Yes) No N/A	
Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB?	(Yes) No N/A Yes No (N/A)	
Were **proper containers** (type/mass/volume/preservative*) used? ** Note: Exemption permitted for waters to be analyzed for metals.* Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(Yes) No N/A (Yes) No N/A	
For **special handling** (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No (N/A)	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	(Yes) No N/A Yes No (N/A)	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No (N/A)	
For **SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP**, were containers / paperwork flagged accordingly?	Yes No (N/A)	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No (N/A)	SRF Completed by: SLC 9/18/15 PM = N/A
Was **PEER REVIEW** of ***sample numbering/labeling completed?***	Yes No (N/A)	Peer Reviewed by: N/A
Additional notes (if applicable):		

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

Laboratory Data Review Checklist

Completed by:	Kristi McLean		
Title:	Environmental Specialist	Date:	Jun 30, 2014
CS Report Name:	POA Tract H Addition 1	Report Date:	Oct 1, 2013
Consultant Firm:	R&M Consultants, Inc.		
Laboratory Name:	SGS North America, Inc.	Laboratory Report Number:	1134574
ADEC File Number:	2100.38.535	ADEC RecKey Number:	HazID 25938

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

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

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

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

2. Chain of Custody (COC)

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

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

b. Correct analyses requested?

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

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

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

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

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

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

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

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

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

No discrepancies were documented.

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

Comments:

There were no documented discrepancies that would affect data quality or usability.

4. Case Narrative

a. Present and understandable?

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

b. Discrepancies, errors or QC failures identified by the lab?

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

None were identified by the lab

c. Were all corrective actions documented?

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

There were no corrective actions documented

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

Comments:

The case narrative did not identify an effect on data quality/usability.

5. Samples Results

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

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

b. All applicable holding times met?

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

c. All soils reported on a dry weight basis?

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

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

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

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

Comments:

NA

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

(•) 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:

NA

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

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

No samples were affected

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

No samples were affected

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

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

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

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

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

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

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

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

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

NA

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

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

No data flags were identified.

vii. Data quality or usability affected? (Please explain) Comments:

NA

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 defined?

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

No sample results had failed surrogate recoveries

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

No sample results had failed surrogate recoveries

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

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

◉ Yes ○ No ○ 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:

Only one cooler was required to transport the samples and was therefore not indicated on the COC.

iii. All results less than PQL?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

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

Comments:

NA

e. Field Duplicate

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

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

ii. Submitted blind to lab?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

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

All RPD = 0% except for Benzene = 200%

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

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

f. Decontamination or Equipment Blank (if applicable)

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

No decontamination/equipment blank was submitted.

i. All results less than PQL?

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

ii. If above PQL, what samples are affected?

Comments:

NA

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

Comments:

NA

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

a. Defined and appropriate?

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

No data flags/qualifiers were identified.

Reset Form