

January 13, 2015

CPD Alaska, LLC
201 Arctic Slope Avenue
Anchorage, Alaska 99518

Attn: Mr. Stephen Wilson, Director QL

**RE: OCTOBER 2014 GROUNDWATER MONITORING, 459 WEST BLUFF DRIVE,
ANCHORAGE, ALASKA; ADEC FILE NO. 2100.38.321**

This report presents the results of Shannon & Wilson's October 2014 groundwater monitoring activities conducted at the CPD Alaska, LLC (Crowley) facility at 459 West Bluff Drive, Anchorage, Alaska. The 2014 groundwater monitoring activities were conducted by Shannon & Wilson, Inc. on October 23, 2014. Written authorization to proceed with the project was provided by Stephen Wilson, on January 30, 2014.

SITE AND PROJECT DESCRIPTION

Site Description

The Crowley facility is a fuel distribution terminal located in the Port of Anchorage, as shown on Figure 1. Elevation varies at the site by approximately 20 feet, generally sloping downward towards the northern portion of the site. The site contains 27 bulk fuel above-ground storage tanks (ASTs), pipelines, a rail loading rack, and office/warehouse/shop buildings. A pipeline linked to the Port of Anchorage valve yard, located 2,000 feet to the north, transfers petroleum products between the tank farm and oceangoing tankers/barges. This pipeline is the primary method of fuel delivery to and from the site. A lined detention pond and runoff basin are located in the northeastern portion of the site. A site plan is included as Figure 2.

Background

A site investigation conducted in 1987 identified soil and groundwater impacts at the site. Twenty-one monitoring wells (MW-1 through MW-21) were installed in 1989 on the site. The monitoring wells were sampled once in 1989, and annually from 1996 through 2009. The results indicate concentrations of gasoline range organics (GRO), diesel range organics (DRO), benzene, and ethylbenzene exceed Alaska Department of Environmental Conservation (ADEC) groundwater cleanup levels.

In a letter dated May 2010, the ADEC approved a groundwater monitoring program comprising annual sample collection from Monitoring Wells MW-1, MW-6B, MW13A, MW-14, and MW-19R. The remaining wells were decommissioned during the liner installation activities in 2011.

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Purpose and Objectives

The purpose of this work was to monitor trends in dissolved phase hydrocarbon concentration gradients and distribution across the site. The project objective consisted of sampling five groundwater monitoring wells: Wells MW-1, MW-6B, MW-13A, MW-14, and MW-19R. These wells have historically contained concentrations of GRO, DRO, RRO, benzene and/or ethylbenzene above the ADEC cleanup levels.

FIELD ACTIVITIES

Groundwater monitoring was performed on October 23, 2014. The water monitoring field effort consisted of depth to water measurements and sample collection at five monitoring wells. Copies of the field notes are included as Attachment 1.

Groundwater Sampling

Groundwater samples were collected from Wells MW-1, MW-6B, MW-13A, MW-14, and MW-19R on October 23, 2014. Depth to water measurements were taken with an electronic water level indicator prior to purging and sampling activities. The wells were purged and sampled using a low-flow groundwater sampling method with a submersible pump and disposable tubing. The wells were sampled when water quality parameters taken three to five minutes apart stabilized (three successive readings were within 10 percent for turbidity if greater than 10 NTUs; 0.1 standard unit for pH; and 3 percent for conductivity and temperature). Depth to water level and final water quality parameters measurements are summarized in Table 1.

For quality control purposes, one field duplicate sample, designated Sample MW-2, was collected from Well MW-1. The groundwater samples were transferred into laboratory-supplied containers in order from most volatile to least volatile and placed into chilled coolers for delivery to the project laboratory.

Purgewater from the monitoring wells was contained in one labeled 55-gallon drum and temporarily stored on site.

Groundwater Flow Direction

The October 2014 depth to water measurements and client-provided well survey data were used to interpret the groundwater flow direction. Groundwater elevations ranged from 32.16 feet above mean sea level (MSL) in Well MW-13A to 50.78 feet above MSL in Well MW-6B. Because of the well casing repair on Well MW-14 that took place in 2012, the elevation data for that well are not included in the groundwater flow calculations. The groundwater data indicate an overall flow direction to the west at a gradient of 1.7 percent. The groundwater elevations are generally within historical range, and the overall flow direction is consistent with historical data.

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Groundwater flow direction at the site is likely affected by multiple factors, including tidal influence, precipitation, and topography. Tidal effects appear to be the governing factor within 150 to 200 feet of Cook Inlet. These apparent tidal influences in the western portions of the property are likely contributing to fluctuations in flow direction and gradient in that area.

LABORATORY ANALYSES

Six groundwater samples, including one field duplicate, were submitted to SGS for analytical testing. The groundwater samples were analyzed for GRO by Alaska Method 101 (AK101), DRO by AK 102, RRO by AK 103, and BTEX by 8021B. Trip blank samples accompanied the analytical sample containers from and to the laboratory during the sampling events, and were tested for GRO and BTEX. The laboratory reports are provided in Attachment 2.

INVESTIGATION DERIVED WASTE

Investigation derived waste (IDW) from this project consisted of one 55-gallon drum of purgewater. Emerald of Alaska (Emerald) picked up the drum on December 12, 2014. A waste manifest by Emerald Alaska is included in Attachment 3.

DISCUSSION OF ANALYTICAL RESULTS

The reported contaminant concentrations in the groundwater were compared to the cleanup levels listed in Table C of 18 AAC 75.345 (October 2014). The analytical sample results and cleanup levels are listed in Table 2. Graphs of select constituents exceeding ADEC cleanup levels are included as Figure 3. A summary of historical groundwater data for the five monitoring wells is included in Table 3.

The following parameters exceed the ADEC cleanup levels in one or more wells sampled in October 2014:

- GRO concentrations in Wells MW-13A and MW-19R;
- DRO concentrations in Wells MW-6B, MW-13A, and MW-19R;
- RRO concentration in Well MW-13A;
- Benzene concentrations in each well except Well MW-14; and
- Ethylbenzene concentration in Well MW-13A.

Concentrations appear to be decreasing for each of the wells, as shown in Figure 3. Many of the concentrations reported in the wells were the lowest reported to date.

QUALITY ASSURANCE SUMMARY

SGS follows on-going quality assurance/quality control (QC) procedures to evaluate conformance to applicable ADEC data quality objectives (DQO). Internal laboratory controls to

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assess data quality for this project include surrogates, method blanks, matrix spikes (MS), and laboratory control sample/laboratory control sample duplicates (LCS/LCSD) to determine precision, accuracy, and matrix bias. If a DQO was not met, the project laboratory provides a report specific note identifying the problem in the Case Narrative section of their Laboratory Analysis Reports (See Attachment 2).

Shannon & Wilson's analytical data evaluation included a review of laboratory results for field duplicate Samples MW-1 and MW-2 to document the precision of the sampling and analytical process. The primary and duplicate sample results were compared using the calculated RPD values, as shown in Table 4. The RPD was not within the DQO of 30 percent for DRO, but the concentrations were within a factor of two so the data are considered usable.

Laboratory-prepared trip blanks accompanied the sample containers during transport during each sampling event. Benzene was detected in the trip blank from the October 23, 2014 sampling event. The benzene concentrations in the project samples are greater than ten times the trip blank concentration, therefore data quality is not affected.

Shannon & Wilson reviewed the SGS data deliverables and completed the ADEC's Laboratory Data Review Checklists (LDRC) for each work order, which are included in Attachment 2. Quality control discrepancies and the impact to data quality/usability are described in further detail in the LDRC. In our opinion, no non-conformances that would adversely impact data usability were noted.

SUMMARY/CONCLUSIONS

The October 2014 groundwater monitoring event included analytical groundwater sampling of five wells. Many of the concentrations in the wells were the lowest reported to date and appear to be decreasing. The next sampling event is scheduled for October 2015.

CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our clients and their representatives in the study of this site. The findings we have presented within this report are based on the limited sampling and analyses that we conducted. They should not be construed as a definite conclusion regarding the site's groundwater conditions. Therefore, the sampling and analyses performed can provide you with only our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur over time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

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Shannon & Wilson has prepared the documents in Attachment 4, "Important Information About Your Geotechnical/Environmental Report", to assist you and others in understanding the use and limitations of our reports. You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study, except with your permission or as required by law.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report please contact the undersigned.

We appreciate the opportunity to be of service. Please call Shayla Marshall or the undersigned at (907) 561-2120 with questions or comments concerning this report.

Sincerely,

SHANNON & WILSON, INC.



Laura Coulson
Environmental Chemist



Matthew Henry, P.E.
Vice President

Encl: Tables 1 through 4
Figure 1 through 3
Attachments 1 through 4

**TABLE 1
GROUNDWATER SAMPLING LOG**

	Monitoring Well Number				
	MW-1	MW-6B	MW-13A	MW-14	MW-19R
Water Level Measurement Data					
Date Water Level Measured	10/23/2014	10/23/2014	10/23/2014	10/23/2014	10/23/2014
Time Water Level Measured	9:35	10:45	10:11	10:26	10:00
MP Elevation, Feet (MSL)*	39.89	76.4	38.01	-	40.19
Depth to Water Below MP, Feet	7.08	25.62	5.85	4.57	5.90
Groundwater Elevation, Feet	32.81	50.78	32.16	-	34.29
Purging/Sampling Data					
Date Sampled	10/23/2014	10/23/2014	10/23/2014	10/23/2014	10/23/2014
Time Sampled	14:17	11:26	15:07	12:22	13:30
Depth to Water Below MP, Feet	7.08	25.62	5.85	4.57	5.90
Total Depth of Well Below MP, Feet	13.70	30.27	10.70	12.37	14.47
Water Column in Well, Feet	6.62	4.65	4.85	7.80	8.57
Gallons per Foot	0.65	0.65	0.65	0.65	0.16
Gallons in Well	4.30	3.02	3.15	5.07	1.37
Total Gallons Pumped/Bailed	1.7	2.5	1.5	1.7	3
Purging/Sampling Method	Sub. Pump	Sub. Pump	Sub. Pump	Sub. Pump	Sub. Pump
Diameter of Well Casing	4-inch	4-inch	4-inch	4-inch	2-inch
Water Quality Data					
Temperature, °C	8.4	3.3	7.9	2.8	7.0
Specific Conductance, µS/cm	3,999	821	598	442	606
pH, Standard Units	7.46	6.43	6.87	6.92	6.56
Turbidity, NTU	2.23	6.32	2.84	17.52	4.38
Remarks	Duplicate "MW-2" Low-flow	Low-flow	Hydrocarbon odor Low-flow	Hydrocarbon odor Low-flow	Hydrocarbon odor Low-flow

Notes:

Field Personnel: Laura Coulson

Water quality parameters were measured with Hanna and Hach water quality instruments.

* = Previous reports provided by the client indicate that MP elevations were surveyed in 2007 by Karabelnikoff Surveying.

MSL = Mean sea level

MP = Measuring point

µS/cm = Microsiemens per centimeter

NTU = Nephelometric Turbidity Units

mV = Millivolt

- = Well repaired in 2012 with new segment of casing. Measuring point elevation has been altered.

°C = Degrees Celsius

**TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS**

Parameter Tested	Method*	Cleanup Level**	Sample ID Number^ and Water Elevation in Feet above Mean Sea Level (See Table 1, Figure 2, and Attachment 2)							Trip Blank
			Monitoring Wells							
			MW-1 32.81	MW-2~ 32.81	MW-6B 50.78	MW-13A 32.16	MW-14 -	MW-19R 32.49	WTB -	
Gasoline Range Organics (GRO) - mg/L	AK101	2.2	0.867	0.884	1.18	5.56	0.641 J	5.31	<0.0500	
Diesel Range Organics (DRO) - mg/L	AK102	1.5	0.418 J	0.219	6.16	11.2	1.03	1.88	-	
Residual Range Organics (RRO) - mg/L	AK103	1.1	<0.250	<0.250	0.596	1.47	<0.250	0.416 J	-	
Volatile Organic Compounds (VOCs)										
Benzene - mg/L	EPA 8021B	0.005	0.205	0.214	0.0446	0.154	0.00498 J	0.0186	0.000150 J	
Toluene - mg/L	EPA 8021B	1.0	0.0121	0.0115	<0.00250	0.0297	<0.00500	0.00538 J	<0.000500	
Ethylbenzene - mg/L	EPA 8021B	0.7	0.0203	0.0202	0.0913	0.739	0.0422	0.0519	<0.001500	
Xylenes - mg/L	EPA 8021B	10	0.0275	0.0254	0.139	1.38	0.0767	0.139	<0.000500	

Notes:

- * = See Attachment 2 for compounds tested, methods, and laboratory reporting limits
- ** = Groundwater cleanup levels are listed in Table C, 18 AAC 75.345 (October 2014)
- ^ = Sample ID number preceded by "17453-004-" on the chain of custody form
- ~ = Duplicate of the Sample MW-1
- mg/L = Milligrams per liter
- = Not applicable or sample not tested for this analyte
- 0.205 = Reported concentration equals or exceeds the regulated cleanup level
- J = Analyte detected, but at a concentration less than the laboratory reporting limit
- QC = Quality control
- <0.000500 = Not detected above the laboratory reporting limit of 0.000500 mg/L

**TABLE 3
SUMMARY OF HISTORICAL GROUNDWATER DATA**

Monitoring Well	Sample Date	Groundwater Elevation (feet) MSL	Parameter Tested and Cleanup Level* in mg/L			
			GRO 2.2	DRO 1.5	RRO 1.1	Benzene 0.005
MW-1	06/09/04	32.32	3.50	2.00	-	0.720
	05/11/05	32.67	11.0	7.00	-	1.30
	05/16/06	32.58	16.0	5.40	-	1.50
	09/11/07	32.95	14.0	3.20	<0.380	2.10
	08/21/08~	32.87	14.5	4.00	-	1.52
	10/07/08	33.14	-	-	-	-
	08/18/09~	32.79	1.99	1.31	<0.385	0.656
	09/02/10	33.24	2.20	1.10	0.270	0.580
	10/07/11	32.58	3.67	1.13	0.283 J	0.707
	10/10/2012~	34.07	3.56	1.80	0.549	1.12
	10/22/13	33.40	2.31	0.876	0.252 J	0.663
	10/23/2014~	32.81	0.884	0.418 J	<0.250	0.214
	MW-6B	06/08/04	53.06	2.30	21.0	-
05/11/05		53.00	2.20	15.0	-	0.0900
05/15/06		52.58	2.30	23.0	-	0.0540
09/12/07		50.37	1.80	9.00	<0.380	0.0600
08/21/08		50.94	1.60	13.2	-	0.0472
10/08/08		50.75	-	-	<3.54	0.0461
08/19/09		50.30	1.52	13.0	1.45	0.0310
09/01/10		50.62	1.10	23.0	<3.50	0.0310
10/07/11		49.87	0.933	17.6	1.85	0.0175
10/10/12		52.25	1.27 J+	7.58	0.836	0.0232
10/22/13		53.00	2.05	7.64	0.683	0.0540
10/23/14		50.78	1.18	6.16	0.596	0.0446
MW-13A	06/08/04	31.49	19.0	20.0	-	0.460
	05/11/05	31.53	14.0	11.0	-	0.430
	05/16/06	31.28	15.0	22.0	-	0.330
	09/12/07	32.73	13.0	7.90	<0.410	0.400
	08/21/08	31.61	17.1	16.4	-	0.291
	10/09/08	32.32	-	-	<3.54	0.293
	08/18/09	32.31	9.73	10.3	1.35	0.232
	09/01/10~	32.46	8.70	18.0	<1.40	0.260
	10/7/2011~	31.59	8.62	16.7	2.98	0.248
	10/10/12	33.76	6.52	10.1	1.55	0.167
	10/22/13	32.77	7.15	11.3	1.48	0.208
	10/23/14	32.16	5.56	11.2	1.47	0.154
MW-14	06/08/04	33.36	4.70	11.0	-	0.011
	05/11/05	33.50	5.00	11.0	-	0.012
	05/15/06	33.81	5.20	15.0	-	0.018
	08/21/08	32.93	4.38	13.4	-	0.00804
	10/08/08	33.48	-	-	1.65	0.00715
	08/19/09	33.41	2.38	5.25	0.596	0.0021
	09/01/10	33.55	2.70	9.00	<0.780	0.0040
	10/07/11	32.51	2.64	8.44	1.18	0.00371
	10/26/12	-	1.56 J+	2.90	0.195 J	0.00723
	10/22/13	-	3.06	3.98	0.332 J	0.00731
	10/23/14	-	0.641 J	1.03	<0.250	0.00498 J

See Notes on Page 2

**TABLE 3
SUMMARY OF HISTORICAL GROUNDWATER DATA**

Monitoring Well	Sample Date	Groundwater Elevation (feet) MSL	Parameter Tested and Cleanup Level* in mg/L			
			GRO 2.2	DRO 1.5	RRO 1.1	Benzene 0.005
MW-19R	09/12/07	34.49	3.50	6.90	6.50	0.020
	08/21/08	34.24	5.16	4.19	-	0.00448
	10/08/08	34.26	-	-	1.09	0.00373
	08/18/09	35.09	4.01	1.92	<0.385	0.00530
	09/02/10	34.42	4.80	2.80	<0.350	0.00300
	10/07/11	33.89	6.05	3.92	1.07	0.00214
	10/10/12	35.59	3.25 J+	2.57	0.717	0.00159
	10/22/13~	35.10	5.04	3.01	0.348 J	0.00398
	10/23/14	32.49	5.31	1.88	0.416 J	0.0186

Notes:

- mg/L = milligrams per liter
- MSL = Mean sea level
- GRO = Gasoline range organics
- DRO = Diesel range organics
- RRO = Residual range organics
- 3.50** = Reported concentration equals or exceeds cleanup level
- = Not applicable or sample not tested for this analyte
- ~ = The higher concentrations between primary and duplicate samples are tabulated
- J = Analyte detected, but at a concentration less than the laboratory reporting limit
- J+ = Project result may be biased high due to surrogate failure (See LDRC, Attachment 2)
- J- = Project result may be biased low due to surrogate failure (See LDRC, Attachment 2)
- <0.380 = Analyte not detected at or above the laboratory reporting limit of 0.380 mg/L
- * = Groundwater cleanup levels are from Table C, 18 AAC 75.345 (October 2014)

Data prior to 2011 provided by ARCADIS

TABLE 4
QUALITY CONTROL DATA

Parameter Tested	Primary Sample MW-1	Duplicate Sample MW-2	Precision (RPD)	Precision QC Limit
Gasoline Range Organics (GRO) - mg/L	0.867	0.884	2%	30%
Diesel Range Organics (DRO) - mg/L	0.418 J	0.219	62%	30%
Residual Range Organics (RRO) - mg/L	<0.250	<0.250	25%	30%
Volatile Organic Compounds (VOCs)				
Benzene - mg/L	0.205	0.214	4%	30%
Toluene - mg/L	0.0121	0.0115	5%	30%
Ethylbenzene - mg/L	0.0203	0.0202	0%	30%
Xylenes - mg/L	0.0275	0.0254	8%	30%

Notes:

RPD = Relative percent difference

QC = Quality control

NA = RPD not calculated due to non-detectable results

mg/L = Milligrams per liter

62% = RPD is greater than the precision QC limit



Subject Property



Approximate scale

1 inch equals approximately 1/2 mile



Taken from
Anchorage A-8 NE Quadrangle
U.S. Geological Survey

459 West Bluff Drive Anchorage, Alaska
VICINITY MAP
January 2015
32-1-17453-006
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants
Fig. 1

LEGEND

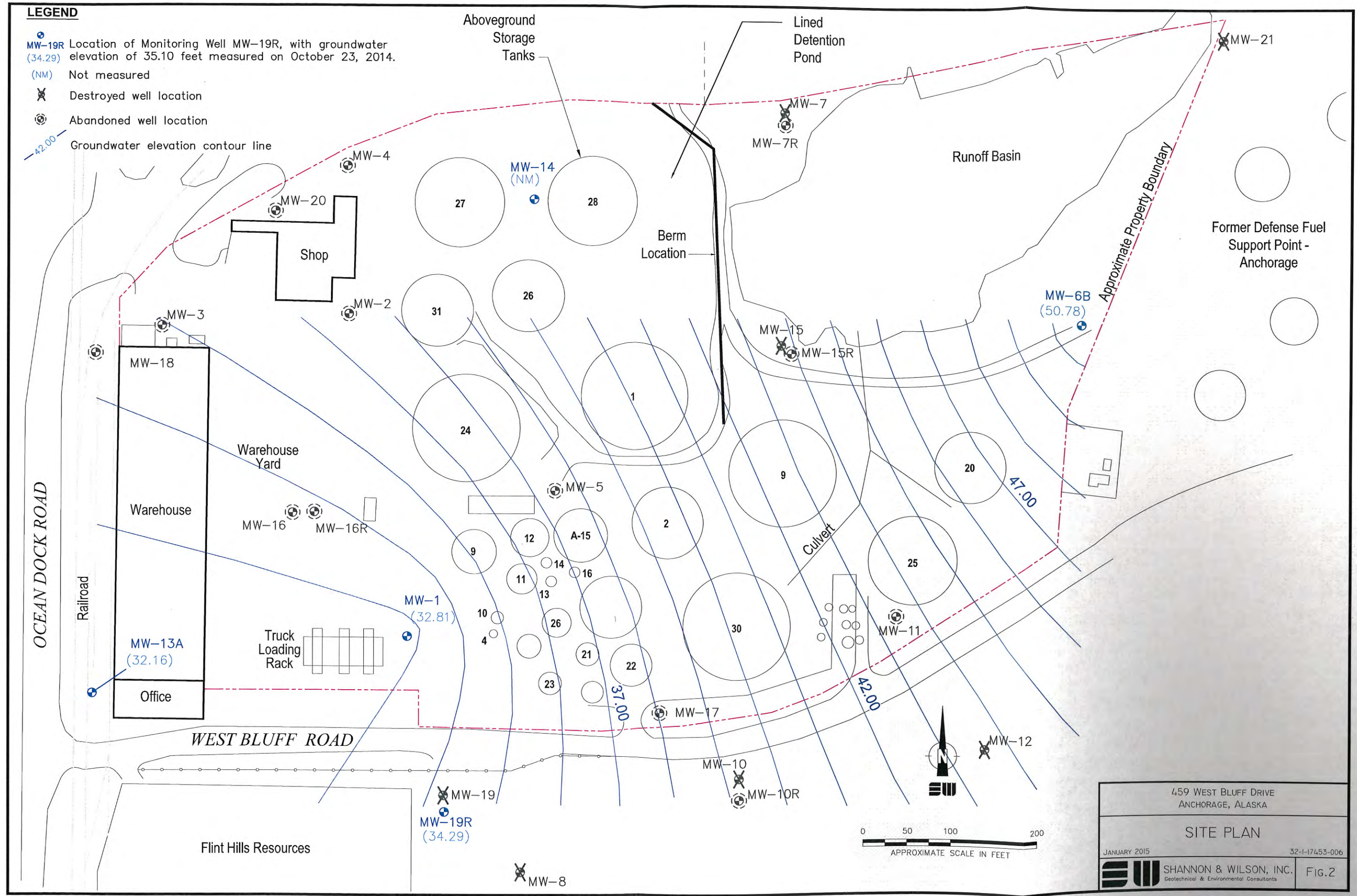
MW-19R Location of Monitoring Well MW-19R, with groundwater elevation of 35.10 feet measured on October 23, 2014.

(NM) Not measured

Destroyed well location

Abandoned well location

Groundwater elevation contour line



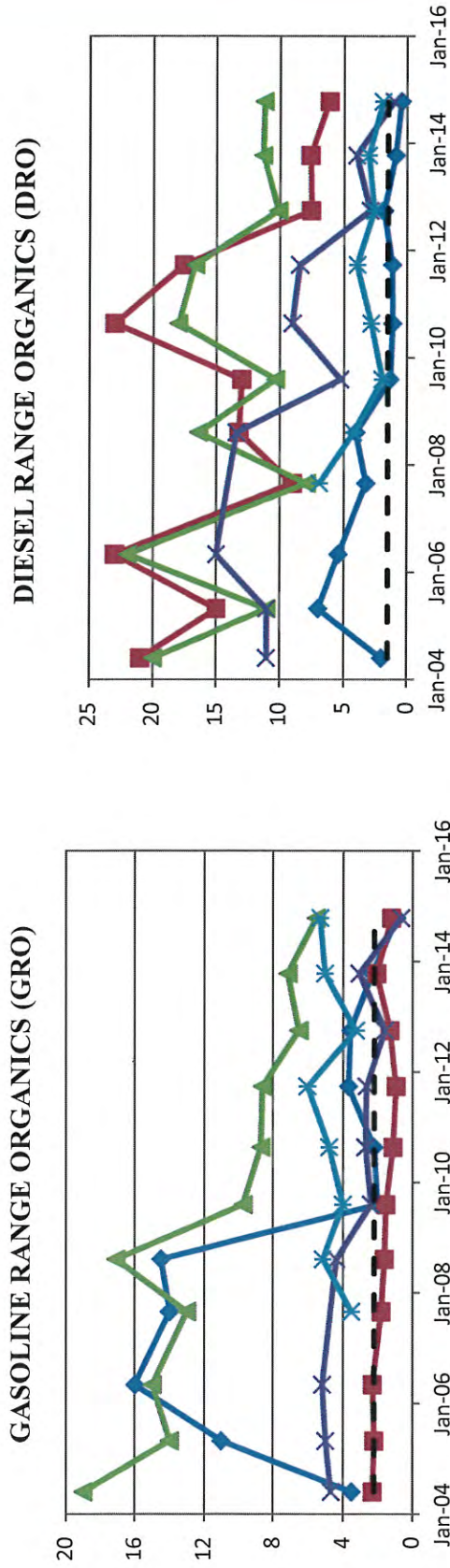
459 WEST BLUFF DRIVE
ANCHORAGE, ALASKA

SITE PLAN

JANUARY 2015 32-1-17453-006

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants FIG. 2

FIGURE 3
GRAPHS OF SELECT CONSTITUENTS IN MILLIGRAMS PER LITER



RESIDUAL RANGE ORGANICS (RRO)

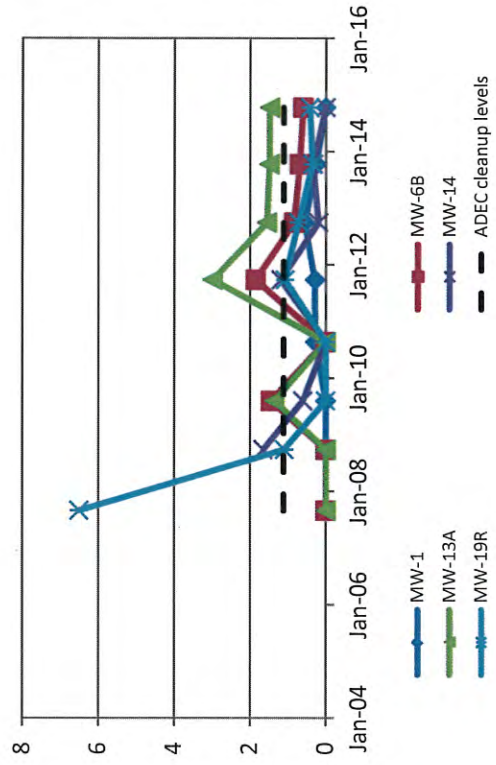
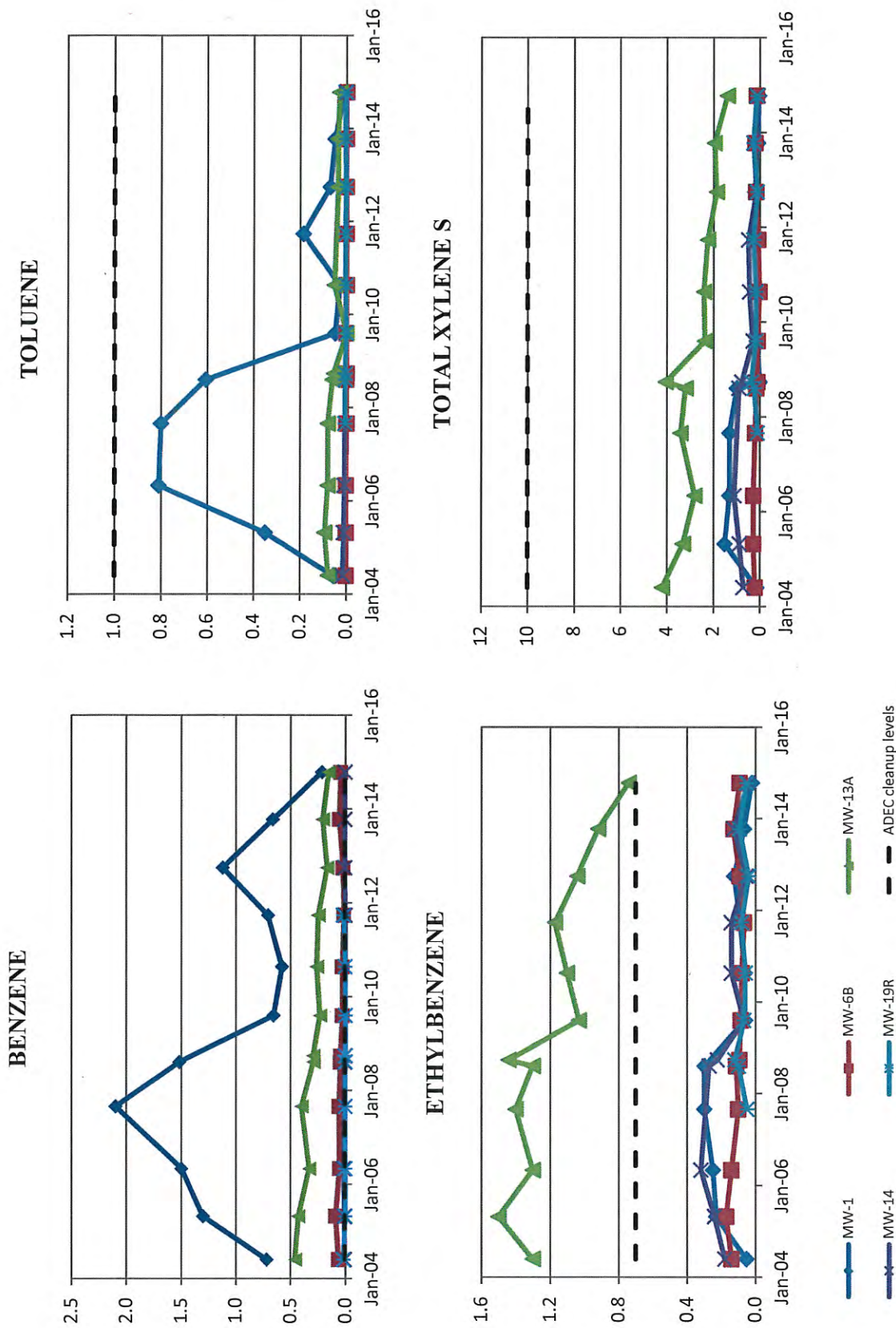


FIGURE 3
GRAPHS OF SELECT CONSITUENTS IN MILLIGRAMS PER LITER



ATTACHMENT 1
FIELD NOTES

LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 17453-6 Location: ~~17453~~ 459 W B. Rd. Weather: clear 30F
 Well No.: MW-6B
 Date: 10/23/14 Time Started: 1040 Time Completed: 1144
 Develop Date: _____ Develop End Time: _____ (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1045 Date of Depth Measurement: 10/23/14
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 4-inch Well Screen Interval: _____
 Total Depth of Well Below MP: 30.27 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 25.67
 Water Column in Well: 4.65 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.65
 Gallons in Well: 3.02 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/23/14 Time Started: 1100 Time Completed: 1133
 Three Well Volumes: 9.07 (Gallons in Well x 3)
 Gallons Purged: 2.5 Depth of Pump (generally 2 ft from bottom): 28
 Max. Drawdown (generally 0.3 ft): 0.4 Pump Rate: 0.3 - 0.4 L/min

Well Purged Dry: Yes No (If yes, use Well Purged Dry Log)

Time	Gallons	Pump Rate (L/min)	DTW (ft BMP)	Drawdown (ft)	Temp (°C)	Sp. Cond. (uS/cm)	DO: <u>lec</u> (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
1103	0.5	0.4	0.4	25.91	3.2	855		5.96		5.28
1107	1	0.4	0.3	25.8	3.6	830		6.30		7.97
1110	1.3	0.3	0.3	25.8	4.0	877 <u>lec</u>		6.29		8.06
1113	1.5	0.3	—	—	3.7	809 812		6.33		6.39
1116	2	0.4	0.3	25.8	3.1	821		6.38		4.60
1120	2.2	0.3	—	—	3.2	818		6.47		5.12

SAMPLING DATA

Odor: none Color: clear
 Sample Designation: MW-6B Time / Date: 1126 10/23/14
 QC Sample Designation: _____ Time / Date: _____
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Bladder Pump / Submersible Pump / Other: _____

Sampling Method: Bladder Pump / Submersible Pump / Other: _____

Water Quality Instruments Used/Manufacturer/Model Number hanna #1, turbidimeter #3

Calibration Info (Time, Ranges, etc) pH 4.01 & 7.01, 800 10/23/14

Remarks: _____

Sampling Personnel: lec

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Continued from previous page

Job No: 17453-6
 Well No.: MW-6B
 Date: 10/23/14

Location: 489 W Bluff Drive Site: Corday

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
<u>1123</u>	<u>2.5</u>	<u>0.3</u>	<u>28.8</u>	<u>0.3</u>	<u>3.3</u>	<u>671</u>		<u>6.43</u>		<u>6.32</u>

STABILIZATION PARAMETERS

	Interval (minutes)	Pump Rate (mL/min):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
ADEC (May 2010)	3 to 5	100 to 150	<0.0328	±3% or ±0.2	±3%	±10%	±0.1	±10	±10%
EPA (Jan. 2010)	5	50	<0.3	±3%	±3%	±10% or <0.5	±0.1	±10	±10% or <5 NTU

EPA guidance requires all parameters to stabilize for 3 consecutive readings before sampling. If not stable within 2 hours, collect sample.
 ADEC guidance requires 3 parameters (4 if using temperature) to stabilize for 3 consecutive readings before sampling.

LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 17453-6 Location: 459 W Bluff Dr Weather: clear 30F
 Well No.: MW-14
 Date: 10/23/14 Time Started: 1150 Time Completed: 1235
 Develop Date: _____ Develop End Time: _____ (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1026 Date of Depth Measurement: 10/23/14
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 4-inch Well Screen Interval: _____
 Total Depth of Well Below MP: 12.37 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 4.57
 Water Column in Well: 7.80 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.65
 Gallons in Well: 5.07 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/23/14 Time Started: 1203 Time Completed: 1230
 Three Well Volumes: 15.21 (Gallons in Well x 3)
 Gallons Purged: 1.7 Depth of Pump (generally 2 ft from bottom): 11
 Max. Drawdown (generally 0.3 ft): 0.03 Pump Rate: 0.3

Well Purged Dry: Yes No (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
1207	0.5	0.3	4.60	0.03	3.7	466		6.88		26.05
1210	0.8	0.3	—	—	3.2	447		6.92		19.23
1213 1214	1	0.3	4.55	0.02	3.0	442		6.89		17.44
1218	1.2	0.3	—	—	2.9	440		6.91		18.37
1221	1.5	0.3	4.55	0.02	2.8	442		6.92		17.52

SAMPLING DATA

Odor: nc Color: clear
 Sample Designation: MW-14 Time / Date: 1222 10/23/14
 QC Sample Designation: AW-15 lee Time / Date: _____
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Bladder Pump / Submersible Pump / Other: _____
 Sampling Method: Bladder Pump / Submersible Pump / Other: _____
 Water Quality Instruments Used/Manufacturer/Model Number hanna #1, turbidimeter #1
 Calibration Info (Time, Ranges, etc) pH 4.01 & 7.01 800 10/23/14
 Remarks: _____

Sampling Personnel: lee

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 17453-6 Location: 459 W Bluff Drive Weather: clear 30F
 Well No.: MW-19R
 Date: 10/23/14 Time Started: 1250 Time Completed: 1343
 Develop Date: _____ Develop End Time: _____ (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1000 Date of Depth Measurement: 10/23/14
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 2-inch Well Screen Interval: _____
 Total Depth of Well Below MP: 14.47 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 5.90
 Water Column in Well: 8.87 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 1.42 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/23/14 Time Started: 1258 Time Completed: 1335
 Three Well Volumes: 4.26 (Gallons in Well x 3)
 Gallons Purged: 3 Depth of Pump (generally 2 ft from bottom): 13
 Max. Drawdown (generally 0.3 ft): 0.3 Pump Rate: 0.3-0.4

Well Purged Dry: Yes No (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
1302	0.3	0.3	6.12	0.2	8.7	624		6.34		318.2
1305	0.6	0.3	6.70	0.3	7.7	558		6.44		151.4
1308	0.9	0.3-0.4	6.18	0.2	7.4	541		6.46		60.83
1311	1.2	0.3	—	—	7.2	556		6.49		41.96
1314	1.5	0.3	6.20	0.3	6.9	569		6.48		22.16
1317	1.8	0.3	—	—	7.0	562		6.53		12.90

SAMPLING DATA

Odor: hc Color: clear
 Sample Designation: MW-19R Time / Date: 1330 10/23/14
 QC Sample Designation: _____ Time / Date: _____
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Bladder Pump / Submersible Pump / Other: _____
 Sampling Method: Bladder Pump / Submersible Pump / Other: _____
 Water Quality Instruments Used/Manufacturer/Model Number hanna #1, turbidimeter #3
 Calibration Info (Time, Ranges, etc) 044018 301 800 10/23/14

Remarks: _____

Sampling Personnel: lcc

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

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LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Continued from previous page

Job No: 17453-6 Location: 951 W Bluff Dr Site: Crater
 Well No.: MW-19R
 Date: 10/28/14

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
1320	2	0.3	6.10	0.3	7.0	577		6.48		9.56
1323	2.2	0.3	—	—	7.2	595		6.51		5.38
1326	2.5	0.3	6.10	0.3	7.0	590		6.53		4.39
1329	2.7	0.3	—	—	7.0	606		6.56		4.38

STABILIZATION PARAMETERS

	Interval (minutes)	Pump Rate (mL/min):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
ADEC (May 2010)	3 to 5	100 to 150	<0.0328	±3% or ±0.2	±3%	±10%	±0.1	±10	±10%
EPA (Jan. 2010)	5	50	<0.3	±3%	±3%	±10% or <0.5	±0.1	±10	±10% or <5 NTU

EPA guidance requires all parameters to stabilize for 3 consecutive readings before sampling. If not stable within 2 hours, collect sample.

ADEC guidance requires 3 parameters (4 if using temperature) to stabilize for 3 consecutive readings before sampling.

LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 17453-006 Location: 459 W Bluff Drive Weather: clear 30F
 Well No.: MW-1
 Date: 10/23/14 Time Started: 1351 Time Completed: 1432
 Develop Date: _____ Develop End Time: _____ (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 935 Date of Depth Measurement: 10/23/14
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 4-inch Well Screen Interval: _____
 Total Depth of Well Below MP: 13.70 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 7.08
 Water Column in Well: 6.62 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.65
 Gallons in Well: 4.30 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/23/14 Time Started: 1358 Time Completed: 1427
 Three Well Volumes: 12.91 (Gallons in Well x 3)
 Gallons Purged: 1.7 Depth of Pump (generally 2 ft from bottom): 11
 Max. Drawdown (generally 0.3 ft): 0.13 Pump Rate: 0.3

Well Purged Dry: Yes No (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: <u>cc</u> (mg/L)	pH: (S.U.)	ORP: <u>cc</u> (mV)	Turb: (NTU)
<u>1340</u>	<u>0.2</u>	<u>0.3</u>	<u>7.15</u>	<u>0.03</u>	<u>9.4</u>	<u>3999</u>		<u>6.50</u>		<u>5.11</u>
<u>1404</u>	<u>0.5</u>	<u>0.3</u>	<u>7.25</u>	<u>0.13</u>	<u>8.5</u>	<u>3999</u>		<u>7.07</u>		<u>3.12</u>
<u>1407</u>	<u>0.7</u>	<u>0.3</u>	<u>7.25</u>	<u>0.13</u>	<u>8.6</u>	<u>3999</u>		<u>7.26</u>		<u>2.72</u>
<u>1410</u>	<u>1</u>	<u>0.3</u>	<u>—</u>	<u>—</u>	<u>8.3</u>	<u>3999</u>		<u>7.37</u>		<u>3.92</u>
<u>1413</u>	<u>1.2</u>	<u>0.3</u>	<u>7.25</u>	<u>0.13</u>	<u>8.3</u>	<u>3999</u>		<u>7.35</u>		<u>2.96</u>
<u>1416</u>	<u>1.5</u>	<u>0.3</u>	<u>—</u>	<u>—</u>	<u>8.4</u>	<u>3999</u>		<u>7.46</u>		<u>2.23</u>

SAMPLING DATA

Odor: none Color: slight yellow
 Sample Designation: MW-1 Time / Date: 1417 10/23/14
 QC Sample Designation: _____ MW-2 Time / Date: 1415 10/23/14
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Bladder Pump / Submersible Pump / Other: _____
 Sampling Method: Bladder Pump / Submersible Pump / Other: _____

Water Quality Instruments Used/Manufacturer/Model Number hanna #1, turbidimeter #3
 Calibration Info (Time, Ranges, etc) pH 4.01 & 7.01 800 10/23/14

Remarks: _____

Sampling Personnel: lec

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 17453-6 Location: 459 W Bluff Dr. Weather: clear 30F
 Well No.: MW-13A
 Date: 10/23/14 Time Started: 1435 Time Completed: 1520
 Develop Date: _____ Develop End Time: _____ (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1011 Date of Depth Measurement: 10/23/14
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 4-inch Well Screen Interval: _____
 Total Depth of Well Below MP: 10.70 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 5.85
 Water Column in Well: 4.25 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.65
 Gallons in Well: 3.15 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/23/14 Time Started: 1448 Time Completed: 1512
 Three Well Volumes: 9.46 (Gallons in Well x 3)
 Gallons Purged: 1.5 Depth of Pump (generally 2 ft from bottom): 8
 Max. Drawdown (generally 0.3 ft): 0.7 Pump Rate: 0.4 ^{gpc} 0.3

Well Purged Dry: Yes No (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
1451	0.2	0.4	5.96	0.09	9.5	697		7.65		2.63
1454	0.5	0.3	6.25	0.4	9.5	613		7.39		3.27
1457	0.8	0.2	6.36	0.5	7.9	600		7.1		2.24
1500	1	0.2	6.41	0.6	7.8	607		6.95		2.10
1503	1.1	0.2	6.47	0.6	7.9	591		6.82		7.19
1506	1.7	0.3	6.55	0.7	7.9	598		6.87		2.88

SAMPLING DATA

Odor: hc Color: clear
 Sample Designation: MW-13A Time / Date: 1507 10/23/14
 QC Sample Designation: _____ Time / Date: _____
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Bladder Pump / Submersible Pump / Other: _____
 Sampling Method: Bladder Pump / Submersible Pump / Other: _____
 Water Quality Instruments Used/Manufacturer/Model Number hanna #1, turbidimeter #3
 Calibration Info (Time, Ranges, etc) pH 9.01 & 7.01 900 10/23/14

Remarks: _____

Sampling Personnel: lec

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

ATTACHMENT 2
RESULTS OF ANALYTICAL TESTING BY
SGS NORTH AMERICA INC. OF ANCHORAGE, ALASKA
AND
ADEC LABORATORY DATA REVIEW CHECKLISTS

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks St., Ste 3
Anchorage, AK 99518
(907)561-2120

Report Number: **1145301**

Client Project: **32-1-17453-6 Crowley GW**

Dear Shayla Marshall,

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

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

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

Sincerely,
SGS North America Inc.


SGS North America Inc.
Environmental Services - Alaska Division
Project Manager

Victoria Pennick

2014.11.03

10:59:05 -09'00'

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Print Date: 10/31/2014 4:13:05PM

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., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

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

Detectable Results Summary

Client Sample ID: **MW-6B**
 Lab Sample ID: 1145301001
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	6.16	mg/L
Residual Range Organics	0.596	mg/L

Volatile Fuels

Benzene	44.6	ug/L
Ethylbenzene	91.3	ug/L
Gasoline Range Organics	1.18	mg/L
o-Xylene	3.47J	ug/L
P & M -Xylene	136	ug/L

Client Sample ID: **MW-14**
 Lab Sample ID: 1145301002
Semivolatile Organic Fuels
Volatile Fuels

Parameter	Result	Units
Diesel Range Organics	1.03	mg/L
Benzene	4.98J	ug/L
Ethylbenzene	42.2	ug/L
Gasoline Range Organics	0.641J	mg/L
o-Xylene	3.12J	ug/L
P & M -Xylene	73.6	ug/L

Client Sample ID: **MW-19R**
 Lab Sample ID: 1145301003
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	1.88	mg/L
Residual Range Organics	0.416J	mg/L

Volatile Fuels

Benzene	18.6	ug/L
Ethylbenzene	51.9	ug/L
Gasoline Range Organics	5.31	mg/L
o-Xylene	6.48J	ug/L
P & M -Xylene	133	ug/L
Toluene	5.38J	ug/L

Client Sample ID: **MW-1**
 Lab Sample ID: 1145301004
Semivolatile Organic Fuels
Volatile Fuels

Parameter	Result	Units
Diesel Range Organics	0.418J	mg/L
Benzene	205	ug/L
Ethylbenzene	20.3	ug/L
Gasoline Range Organics	0.867	mg/L
o-Xylene	2.97J	ug/L
P & M -Xylene	24.5	ug/L
Toluene	12.1	ug/L



Results of MW-6B

Client Sample ID: **MW-6B**
Client Project ID: **32-1-17453-6 Crowley GW**
Lab Sample ID: 1145301001
Lab Project ID: 1145301

Collection Date: 10/23/14 11:26
Received Date: 10/23/14 16:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	6.16	0.600	0.180	mg/L	1		10/29/14 21:42
Surrogates							
5a Androstane	68.8	50-150		%	1		10/29/14 21:42

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/29/14 21:42
Container ID: 1145301001-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.596	0.500	0.150	mg/L	1		10/29/14 21:42
Surrogates							
n-Triacontane-d62	76.2	50-150		%	1		10/29/14 21:42

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/29/14 21:42
Container ID: 1145301001-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 4:13:11PM



Results of MW-14

Client Sample ID: **MW-14**
Client Project ID: **32-1-17453-6 Crowley GW**
Lab Sample ID: 1145301002
Lab Project ID: 1145301

Collection Date: 10/23/14 12:22
Received Date: 10/23/14 16:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1.03	0.600	0.180	mg/L	1		10/29/14 22:03
Surrogates							
5a Androstane	65.2	50-150		%	1		10/29/14 22:03

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/29/14 22:03
Container ID: 1145301002-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.250 U	0.500	0.150	mg/L	1		10/29/14 22:03
Surrogates							
n-Triacontane-d62	70.6	50-150		%	1		10/29/14 22:03

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/29/14 22:03
Container ID: 1145301002-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



Results of MW-19R

Client Sample ID: **MW-19R**
Client Project ID: **32-1-17453-6 Crowley GW**
Lab Sample ID: 1145301003
Lab Project ID: 1145301

Collection Date: 10/23/14 13:30
Received Date: 10/23/14 16:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1.88	0.600	0.180	mg/L	1		10/29/14 22:24
Surrogates							
5a Androstane	64.1	50-150		%	1		10/29/14 22:24

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/29/14 22:24
Container ID: 1145301003-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.416 J	0.500	0.150	mg/L	1		10/29/14 22:24
Surrogates							
n-Triacontane-d62	69.4	50-150		%	1		10/29/14 22:24

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/29/14 22:24
Container ID: 1145301003-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 4:13:11PM



Results of MW-1

Client Sample ID: **MW-1**
Client Project ID: **32-1-17453-6 Crowley GW**
Lab Sample ID: 1145301004
Lab Project ID: 1145301

Collection Date: 10/23/14 14:17
Received Date: 10/23/14 16:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.418 J	0.600	0.180	mg/L	1		10/29/14 22:45
Surrogates							
5a Androstane	66.4	50-150		%	1		10/29/14 22:45

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/29/14 22:45
Container ID: 1145301004-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.250 U	0.500	0.150	mg/L	1		10/29/14 22:45
Surrogates							
n-Triacontane-d62	71.7	50-150		%	1		10/29/14 22:45

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/29/14 22:45
Container ID: 1145301004-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 4:13:11PM



Results of MW-2

Client Sample ID: MW-2
Client Project ID: 32-1-17453-6 Crowley GW
Lab Sample ID: 1145301005
Lab Project ID: 1145301

Collection Date: 10/23/14 14:20
Received Date: 10/23/14 16:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.219 J	0.600	0.180	mg/L	1		10/29/14 23:05
Surrogates							
5a Androstane	69	50-150		%	1		10/29/14 23:05

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/29/14 23:05
Container ID: 1145301005-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.250 U	0.500	0.150	mg/L	1		10/29/14 23:05
Surrogates							
n-Triacontane-d62	74.7	50-150		%	1		10/29/14 23:05

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/29/14 23:05
Container ID: 1145301005-D

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/14 08:15
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 4:13:11PM

Results of MW-13A

Client Sample ID: **MW-13A**
 Client Project ID: **32-1-17453-6 Crowley GW**
 Lab Sample ID: 1145301006
 Lab Project ID: 1145301

Collection Date: 10/23/14 15:07
 Received Date: 10/23/14 16:24
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	11.2	0.600	0.180	mg/L	1		10/29/14 23:26
Surrogates							
5a Androstane	73.9	50-150		%	1		10/29/14 23:26

Batch Information

Analytical Batch: XFC11657
 Analytical Method: AK102
 Analyst: MCM
 Analytical Date/Time: 10/29/14 23:26
 Container ID: 1145301006-D

Prep Batch: XXX32281
 Prep Method: SW3520C
 Prep Date/Time: 10/27/14 08:15
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	1.47	0.500	0.150	mg/L	1		10/29/14 23:26
Surrogates							
n-Triacontane-d62	76.9	50-150		%	1		10/29/14 23:26

Batch Information

Analytical Batch: XFC11657
 Analytical Method: AK103
 Analyst: MCM
 Analytical Date/Time: 10/29/14 23:26
 Container ID: 1145301006-D

Prep Batch: XXX32281
 Prep Method: SW3520C
 Prep Date/Time: 10/27/14 08:15
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL



202

Results of WTB

Client Sample ID: **WTB**
Client Project ID: **32-1-17453-6 Crowley GW**
Lab Sample ID: 1145301007
Lab Project ID: 1145301

Collection Date: 10/23/14 11:00
Received Date: 10/23/14 16:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		10/24/14 11:47
Surrogates							
4-Bromofluorobenzene	102	50-150		%	1		10/24/14 11:47

Batch Information

Analytical Batch: VFC12196
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/24/14 11:47
Container ID: 1145301007-A

Prep Batch: VXX26676
Prep Method: SW5030B
Prep Date/Time: 10/24/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.150 J	0.500	0.150	ug/L	1		10/24/14 11:47
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/24/14 11:47
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/24/14 11:47
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/24/14 11:47
Toluene	0.500 U	1.00	0.310	ug/L	1		10/24/14 11:47
Surrogates							
1,4-Difluorobenzene	102	77-115		%	1		10/24/14 11:47

Batch Information

Analytical Batch: VFC12196
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/24/14 11:47
Container ID: 1145301007-A

Prep Batch: VXX26676
Prep Method: SW5030B
Prep Date/Time: 10/24/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/31/2014 4:13:11PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1145301 [VXX26676]
 Blank Spike Lab ID: 1242118
 Date Analyzed: 10/24/2014 09:04

Spike Duplicate ID: LCSD for HBN 1145301 [VXX26676]
 Spike Duplicate Lab ID: 1242119
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1145301001, 1145301002, 1145301003, 1145301004, 1145301005, 1145301006, 1145301007

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.994	99	1.00	1.00	100	(60-120)	0.92	(< 20)
Surrogates									
4-Bromofluorobenzene	0.0500	113	113	0.0500	120	120	(50-150)	6.20	

Batch Information

Analytical Batch: **VFC12196**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX26676**
 Prep Method: **SW5030B**
 Prep Date/Time: **10/24/2014 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

Print Date: 10/31/2014 4:13:15PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1145301 [VXX26676]
 Blank Spike Lab ID: 1242116
 Date Analyzed: 10/24/2014 08:46

Spike Duplicate ID: LCSD for HBN 1145301
 [VXX26676]
 Spike Duplicate Lab ID: 1242117
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1145301001, 1145301002, 1145301003, 1145301004, 1145301005, 1145301006, 1145301007

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	98.0	98	100	101	101	(80-120)	3.40	(< 20)
Ethylbenzene	100	105	105	100	104	104	(75-125)	0.60	(< 20)
o-Xylene	100	106	106	100	103	103	(80-120)	3.10	(< 20)
P & M -Xylene	200	213	107	200	208	104	(75-130)	2.70	(< 20)
Toluene	100	104	104	100	103	103	(75-120)	0.43	(< 20)

Surrogates

1,4-Difluorobenzene	50	104	104	50	108	108	(77-115)	3.40	
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Batch Information

Analytical Batch: VFC12196
 Analytical Method: SW8021B
 Instrument: Agilent 7890A PID/FID
 Analyst: ST

Prep Batch: VXX26676
 Prep Method: SW5030B
 Prep Date/Time: 10/24/2014 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: 10/31/2014 4:13:19PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1145301 [XXX32281]
 Blank Spike Lab ID: 1242100
 Date Analyzed: 10/29/2014 18:16

Spike Duplicate ID: LCSD for HBN 1145301 [XXX32281]
 Spike Duplicate Lab ID: 1242101
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1145301001, 1145301002, 1145301003, 1145301004, 1145301005, 1145301006

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	15.9	79	20	17.0	85	(75-125)	7.20	(< 20)
Surrogates									
5a Androstane	0.4	76.2	76	0.4	80.8	81	(60-120)	5.80	

Batch Information

Analytical Batch: **XFC11657**
 Analytical Method: **AK102**
 Instrument: **HP 7890A FID SV E F**
 Analyst: **MCM**

Prep Batch: **XXX32281**
 Prep Method: **SW3520C**
 Prep Date/Time: **10/27/2014 08:15**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL



Blank Spike Summary

Blank Spike ID: LCS for HBN 1145301 [XXX32281]
Blank Spike Lab ID: 1242100
Date Analyzed: 10/29/2014 18:16

Spike Duplicate ID: LCSD for HBN 1145301 [XXX32281]
Spike Duplicate Lab ID: 1242101
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1145301001, 1145301002, 1145301003, 1145301004, 1145301005, 1145301006

Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	14.4	72	20	15.5	77	(60-120)	7.00	(< 20)
Surrogates									
n-Triacontane-d62	0.4	78.2	78	0.4	75.2	75	(60-120)	3.90	

Batch Information

Analytical Batch: XFC11657
Analytical Method: AK103
Instrument: HP 7890A FID SV E F
Analyst: MCM

Prep Batch: XXX32281
Prep Method: SW3520C
Prep Date/Time: 10/27/2014 08:15
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 10/31/2014 4:13:26PM



SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Notes:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No <u>N/A</u> <u>Yes</u> No	<input type="checkbox"/> Exemption permitted if sampler hand carries/delivers.
Temperature blank compliant* (i.e., 0-6°C after CF)? If >6°C, were samples collected <8 hours ago? If <0°C, were all sample containers ice free? Cooler ID: <u>1</u> @ <u>1.0</u> w/ Therm.ID: <u>240</u> Cooler ID: _____ @ _____ 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 temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled."	Yes No <u>N/A</u> Yes No <u>N/A</u> Yes No <u>N/A</u>	<input type="checkbox"/> Exemption permitted if chilled & collected <8 hrs ago. <i>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</i>
Delivery method (specify all that apply): USPS Lynden AK Air Alert Courier UPS FedEx RAVN C&D Delivery Carfile Pen Air Warp Speed Other: _____ → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Client (hand carried) Tracking/AB # or see attached or <u>N/A</u> Yes No <u>N/A</u>	
→ For samples received with payment, note amount (\$) and whether cash / check / CC (circle one) was received. → For samples received in FBKS , ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by:		
Were samples received within hold time? Do samples match COC* (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	<u>Yes</u> No N/A <u>Yes</u> No N/A <u>Yes</u> No N/A	<i>Note: Refer to form F-083 "Sample Guide" for hold times. Note: If times differ <1hr, record details and login per COC.</i>
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:	<u>Yes</u> No	
Were proper containers (type/mass/volume/preservative*) used? Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	<u>Yes</u> No N/A <u>Yes</u> No N/A <u>Yes</u> No N/A <u>Yes</u> No <u>N/A</u>	<input type="checkbox"/> Exemption permitted for metals (e.g., 200.8/6020A).
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 <u>No</u> N/A <u>Yes</u> No N/A	2mL HCl added to samples 4D+E, 5D+E Lot # LW09-0463-12-02
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)?	Yes No <u>N/A</u>	
For RUSH/SHORT Hold Time , were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No <u>N/A</u>	
For SITE-SPECIFIC QC , e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	Yes No <u>N/A</u>	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	<u>Yes</u> No N/A	SRF Completed by: <u>kmw</u> PM notified: <u>VLP</u> N/A
Was PEER REVIEW of sample numbering/labeling completed?	Yes No <u>N/A</u>	Peer Reviewed by: N/A

Additional notes (if applicable):

Sample 4 E Lid is MW-2, Label is MW-1
Sample 5E Lid is MW-1, Label is MW-2
Both Logged in per Label.

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

6. QC Samples

a. Method Blank

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

Yes / No

- ii. All method blank results less than LOQ? Yes / No

- iii. If above LOQ, what samples are affected? NA

- iv. Do the affected sample(s) have data flags? NA / Yes / No

If so, are the data flags clearly defined? NA / Yes / No

Comments:

- v. Data quality or usability affected? Explain. *N/A; Data quality not affected.*

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

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?

(LCS/LCSD required per AK methods, LCS required per SW846) *NA* / Yes / No

- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? NA / Yes / No

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages) Yes / No

Comments:

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) Yes / No

Comments:

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

Comments: *None of the project samples were affected.*

- vi. Do the affected samples(s) have data flags? NA / Yes / No

If so, are the data flags clearly defined? NA / Yes / No

- vii. Data quality or usability affected? Explain.

Comments: *N/A; data quality not affected.*

iv. Data quality or usability affected? Explain.

Comment: *Refer to Table 4 for summary of QC data. Data quality not affected because DRO concentrations are in the same order of magnitude in both samples.*

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

NA / Yes / No

Comment: *Limited scope of sampling and disposable tubing was used*

i. All results less than LOQ? **NA** / Yes / No

ii. If results are above LOQ, what samples are affected? **NA**

iii. Data quality or usability affected? Explain. **NA**

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

a. Are they defined and appropriate? **NA** / Yes / No

Comment: *No further qualifiers needed.*

ATTACHMENT 3
WASTE MANIFEST

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

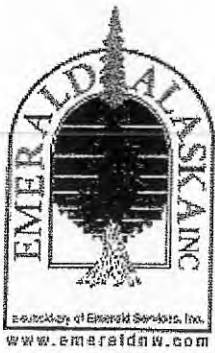
NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. E X E M P T	Manifest Document No. 2 3 8 5 9	2. Page 1 of 1
3. Generator Name and Site Address CROWLEY PETROLEUM DISTRIBUTION 201 ARCTIC SLOPE AVE ANCHORAGE, AK 99518		Site Address CROWLEY PETROLEUM-CHEVRON TERMIN DAN WIGGERS 459 W. BLUFF DRIVE ANCHORAGE, AK 99501		
4. Generator's Phone (907) 258-2306				
5. Transporter 1 Company Name EMERALD ALASKA, INC		6. US EPA ID Number A K R 0 0 0 0 0 4 1 8 4	A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number	B. Transporter 1 Phone (907) 258-1558	
9. Designated Facility Name and Site Address EMERALD ALASKA, INC. 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number A K R 0 0 0 0 0 4 1 8 4	C. State Transporter's ID	
			D. Transporter 2 Phone	
			E. State Facility's ID	
			F. Facility's Phone (907) 258-1558	
11. WASTE DESCRIPTION		Containers		13. Total Quantity
		No.	Type	14. Unit Wt./Vol.
a. MATERIAL NOT REGULATED BY D.O.T.		1	DM	250 P
b.				
c.				
d.				
G. Additional Descriptions for Materials Listed Above 1)EA0302 IDW DECON WATER		H. Handling Codes for Wastes Listed Above		
15. Special Handling Instructions and Additional Information I certify that this material is not regulated nor mixed with waste regulated as a Hazardous waste under 40CFR261 or TSCA regulated waste under 40CFR761. All used oil meets the definition under 40CFR279. Generator agrees to indemnify and hold harmless Emerald Alaska or its subsidiary for any damages, costs, attorneys and expert fees arising from or related to the above certification.				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name Mark Gilleland		Signature <i>Mark Gilleland</i>		Date Month Day Year 12 12 14
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name ROY C TRUDACE JR		Signature <i>ROY C TRUDACE JR</i>
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name		Signature
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name Patricia L Beasley		Signature <i>Patricia L Beasley</i>		Date Month Day Year 12 22 14

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: CROWLEY PETROLEUM-CHEVRON TERMINAL
459 W. BLUFF DRIVE
ANCHORAGE AK 99501

DISPOSAL FACILITY: EMERALD ALASKA, INC.
2020 VIKING DRIVE
ANCHORAGE AK 99501

EPA ID NUMBER: EXEMPT
MANIFEST/DOCUMENT #: 23859
DATE OF DISPOSAL/RECYCLE: 12/17/2014

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	IDW DECON WATER	1	DM	250	P

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits, and licenses on the date listed above.

PREPARED BY: PATRICIA BEASLEY

SIGNATURE:

Patricia Beasley

DATE: 12/22/2014

Your Local Partner for Recycling Environmental Services

425 Outer Springer Loop Road - Palmer, AK 99645 - (907) 258-1558 - Fax (907) 746-3651 - Toll Free (877) 375-504

ATTACHMENT 4
IMPORTANT INFORMATION ABOUT YOUR
GEOTECHNICAL/ENVIRONMENTAL REPORT



Date: January 2015
To: CPD Alaska, LLC
Re: 459 West Bluff Drive, Anchorage, Alaska

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors, which were considered in the development of the report, have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland