PBW

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January 30, 2018
PBW Project No. 1862

Mr. James Fish
Alaska Department of Environmental Conservation
Division of Spill Prevention and Response
610 University Avenue
Fairbanks, AK 99709

Subject: Kiewit Infrastructure West Co., Fairbanks, AK – 2050 Peger Road Site, 2017 Data Collection Update to Alaska Department of Environmental Conservation ADEC File No. 102.38.164/ADEC Hazard ID: 25680

Dear Mr. Fish,

Pastor, Behling & Wheeler, LLC (PBW), on behalf of Kiewit Infrastructure West Co. (Kiewit) is pleased to provide the following update on the site investigation activities and data evaluation at the Kiewit 2050 Peger Road, Fairbanks, Alaska Site (the Site). Additional investigation activities were conducted to address comments raised by the Alaska Department of Environmental Conservation (ADEC) in an email dated March 24, 2017. In that email, the ADEC provided additional guidance on developing the Method 3, specifically the ADEC Contaminated Site Program Technical Memorandum *Determining the Fraction of Organic Carbon (foc) for Methods Three and Four* (March 6, 2017). PBW prepared a brief scope of work in an email to ADEC dated August 18, 2017 detailing the planned sampling activities to address the *f*oc sampling at the Site. The proposed sampling was approved by the ADEC in an email dated August 18, 2017, and the field investigation was conducted in September 2017. During the investigation, soil borings were also drilled and sampled near the two areas where total petroleum hydrocarbons (TPH) diesel-range organics (DRO) concentrations in soils exceeded the Maximum Allowable Concentration (MAC) of 12,500 mg/kg. The objective of the DRO sampling was to refine and verify the extent of DRO concentrations in soil that exceeded the MAC. Groundwater samples were also collected from the Site monitoring wells in October 2017 during the seasonal high groundwater period. Details of the field activities and results are summarized below.

FIELD ACTIVITIES

Field activities were completed by Nortech on behalf of Kiewit in September 2017. Soil samples were collected using either direct push technology (DPT) or hand augers. Locations of the soil borings are shown on Figure 1.

FOC Soil Sampling
Nortech oversaw the drilling and sampling of four boring locations (BH-47, BH-48, BH-49, and BH-50 (Figure 1)) located east of the 4-Bay Building on September 13, 2017. The soil samples were collected from each boring and analyzed for organic carbon. The sampling program was conducted in accordance with the ADEC Contaminated Site Program Technical Memorandum *Determining the Fraction of Organic Carbon (foc) for Methods Three and Four* (March 6, 2017). Per the PBW email dated August 18, 2017, two soil samples were collected from each soil boring at the following intervals since the DRO contamination extends to or below the seasonal high groundwater level:

- a shallow sample collected within the vadose zone (either 2.5-5 ft bgs or 5-7.5 ft bgs) and
- a deeper sample collected at the groundwater interface (either 5-7.5 ft bgs or 10-12.5 ft bgs).

A total of eight soil samples were collected and submitted to SGS in Anchorage, Alaska and analyzed for modified total organic carbon (TOC) (in triplicate) using the Method SW9060_Mod in accordance with ADEC guidance (March 2017). The TOC data were then used to evaluate the percentage of *f*oc in the soils at the Site. The analytical report for the TOC analyses is provided in Attachment A and the data are summarized on Table 1.

DRO Soil Sampling
As detailed in the Site Characterization Report Addendum (PBW, 2016), there were two areas near the former source areas where DRO concentrations were detected above the ADEC DRO MAC of 12,500 mg/kg. The two areas, as shown on the attached Figure 2, were represented by three soil samples: samples BH1 (15,600 mg/kg) and BH6 (12,900 mg/kg) near the 4-Bay Building; and soil sample FDL-11 (17,000 mg/kg) near the former fuel delivery lines west of the 4-Bay Building.

To evaluate the extent of the DRO concentrations in previous soils boring that were above the MAC, four additional DPT soil borings (BH-51, BH-52, BH-53, and BH-54) were advanced west of the 4-Bay Building on September 13, 2017. One soil sample per boring was collected (four normal samples and one duplicate) and analyzed for DRO by AK102 Analytical Method. Soil samples were collected from each boring where the highest PID reading or visual staining was observed. If no PID readings or staining was observed, a sample from immediately above the saturated zone was collected and submitted for analyses. Four hand auger samples (three normal samples and one duplicate) were collected at 2.5 ft bgs from three locations (BH55, BH56, and BH57) near soil boring FDL-11 on September 26, 2017 and analyzed for DRO by AK102 Method. The soil samples collected were submitted to SGS for analysis.

Soil DRO analytical results are presented on Table 2. All soil cuttings and investigation-derived wastes were placed in drums for proper disposal pending profiling with an approved disposal facility.

Groundwater Sampling
In response to the ADEC email dated March 24, 2017, Kiewit scheduled to conduct two groundwater sampling events at the Site. The first of the two events was conducted in September 2017 during the seasonal high groundwater event. Nortech measured the groundwater elevations and collected groundwater samples from monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5 on September 26-27, 2017. Nortech collected samples using low-flow sampling techniques in accordance with the ADEC guidance. One duplicate sample, equipment blank, and trip blank were collected as part of the field sampling program. Groundwater samples were submitted to SGS in Anchorage, Alaska for laboratory analysis for the following analytes:

- Benzene, toluene, ethylbenzene, and xylene (BTEX) by EPA 8021B
- Gasoline-range organics (GRO) by AK 101;
- DRO by AK 102;
- Residual range organics (RRO) by AK 103; and
- Polycyclic aromatic hydrocarbons (PAHs) by EPA 8270SIM

The analytical report for the groundwater samples in provided in Attachment B. In addition to the groundwater sampling, the monitoring wells were re-surveyed by a licensed, professional surveyor on October 6, 2017. The groundwater elevations and survey elevations are summarized on Table 3.

DATA EVALUATION

foc Soil Data Evaluation
Following the ADEC Guidance (March 2017), PBW developed a site-specific *f*oc by calculating the 95% lower confidence level (LCL) of the mean for the data collected in September 2017 (Table 1). Since the soil lithology was relatively similar for the two intervals sampled, PBW proposes to calculate a 95% LCL on the entire data set. The 95% LCL calculated for the foc using the TOC data is 0.489%. Details of the statistical analysis are provided in Attachment C.

Proposed Method 3 Site-Specific Data/Petroleum Cleanup Levels
As detailed in the SCR Addendum (PBW, May 2016), PBW developed Method 3 Alternative Cleanup Levels (ACLs) for site-specific chemicals of concern (COCs) (DRO, GRO, 1,2,4-trimethylbenzene, 1-methylnaphthalene, and 2-methylnaphthalene) using the ADEC Cumulative Risk Calculator and provided the information in the February 13, 2017 letter. The ADEC email dated March 24, 2017 stated that the Method 3 ACLs proposed would need to be updated with the recently revised soil and groundwater cleanup levels and equations that became effective November 6, 2016. The ADEC also stated that the *f*oc value from one sample used to calculate the Method 3 levels was not consistent with the ADEC guidance.

PBW reviewed the ADEC guidance and proposes to develop site-specific petroleum cleanup levels. The site-specific petroleum cleanup levels were developed using the ADEC Petroleum Cleanup Level Calculator with the following site-specific parameters:

- PBW proposes to change the Organic Carbon Content of Soil from the default value of 0.001 g/g to 0.00489 g/g (or 0.489%) based on the 95% LCL calculated using the TOC analytical data previously discussed.
- The calculated mean value for hydraulic conductivity (K) for the uppermost groundwater bearing zone is 420 meters per year (m/yr) (details provided in the February 13, 2017 letter). Therefore, PBW proposes to use that value for K instead of the default value for K of 876 m/yr.
- PBW proposes to use default values for the other parameters.

The proposed resulting DRO petroleum cleanup levels are provided in Attachment D.

For soils at the Site, PBW also evaluated Method 3 Cleanup Levels assuming the commercial/industrial land use scenario in accordance with 18 AAC 75.340(e) using the most recent soil cleanup levels and calculators provided on the ADEC Contaminated Sites website (http://dec.alaska.gov/spar/csp/Calculators.htm). As detailed in the Site Characterization Report – Addendum dated May 5, 2016, the current and future land use is assumed to be and remain commercial/industrial. PBW used the site-specific *f*oc (95% LCL) in soils in the calculation for Outdoor Worker Cleanup Levels for the site-related COCs. The proposed calculated Method 3 Cleanup Levels for soils (not including migration to groundwater pathway) are provided in Attachment E. However, the soil analytical data were compared to Method 2 Human Health Cleanup Levels, as provided on Table 4. Once the ADEC approves use of the Method 3 values, the summary table will be updated with the Method 3 Human Health Cleanup Levels.

For groundwater at the Site, the 2016 ADEC Method 2 Cleanup Levels for Migration to Groundwater listed in 18 AAC 75.341 Table B1 were used to evaluate the concentrations of the primary COCs at the Site (Table 5). Based on the 2016 Migration to Groundwater Cleanup Levels, there are additional COCs in soils at concentrations that indicate a risk for migration to groundwater that prior to 2016 were not

considered a risk to impact groundwater. However, as discussed in the groundwater data review, the groundwater concentrations indicate that the contaminants in soil are protective of groundwater and will not lead to a migration of COCs in groundwater.

DRO Soil Data Evaluation
The additional soil samples that was collected in September 2017 (BH51 through BH57) had DRO detections that were less than the ADEC MAC of 12,500 mg/kg. Based on the additional sampling, the estimated area near the Former Used Oil AST where soil concentrations are greater than the MAC is approximately 100 ft^2 and the area near the former Fuel Delivery Lines is approximately 25 ft^2 (5 feet x 5 feet), indicating the areas where the MAC exceedances are relatively small in size. The DRO MAC exceedances near the Former Used Oil AST are in the 7.5 feet to 10 feet bgs range, which is within the groundwater smear zone for the Site (i.e., depth to groundwater at MW-3 has ranged from about 6.4 feet to 10.2 feet bgs).

ADEC guidance states that the MAC should not be exceeded unless a demonstration is made under Method Three or Method Four that the petroleum hydrocarbons *"will not migrate and will not pose a significant risk to human health, safety, or welfare, or to the environment; free product must be recovered as required by 18 AAC 75.325(f)"* (ADEC Guidance Document – Cleanup Levels Guidance for Levels 2 and 3 – DRAFT (April 2017)). The concern would be that soil concentrations above the MAC could indicate the potential for non-aqueous phase liquid (NAPL) being mobile in the vadose zone. However, given the small areas (less than 100 ft^2 in total area) where these DRO concentrations above the MAC have been detected, and that the MAC exceedances near the Former Used Oil AST are trapped within the groundwater smear zone and no significant NAPL has been measured in MW-3 (measured as a "sheen", Table 3) immediately adjacent to this area, the amount of residual NAPL in the soils is likely minimal and does not pose a risk for mobile NAPL.

Groundwater Data Review
PBW prepared a groundwater potentiometric surface map using the groundwater elevation data collected in September 2017 (Figure 3). The groundwater gradient is to the northwest, which is consistent with the previous monitoring events. Groundwater analytical data compared to the ADEC November 6, 2016 groundwater cleanup levels are presented in Table 6. The following COCs were detected in September 2017 above the new groundwater cleanup levels:

- DRO concentrations exceeded its respective Method 2 Cleanup Level of 1.5 mg/L in samples collected from MW-2 (6.16 mg/L) and MW-3 (6.42 mg/L). Figure 4 shows DRO concentrations over time. DRO concentrations were detected above the groundwater Cleanup Levels in monitoring wells MW-2 and MW-3; however, the concentrations detected are less than the historical highs at each well. DRO concentrations appear to be overall decreasing in MW-2, with a slight increase in MW-3.
- Naphthalene concentrations exceeded the Method 2 Cleanup Level of 0.0017 mg/L (previous Cleanup Level was 0.730 mg/L) in monitoring well MW-2 at 0.0312 mg/L.

The groundwater concentrations for the site COCs are presented on Figure 5. Kiewit plans to conduct another groundwater sampling event in the Spring of 2018. After that event, the groundwater trends for the seasonal high and seasonal low events will be evaluated separately using the Mann-Kendall analysis. With the 2016 groundwater cleanup levels being used, COC 1,2,4-Trimethylbenzene will also be analyzed in the groundwater samples collected in the Spring 2018.

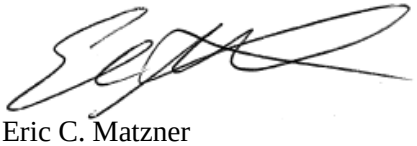
RECOMMENDATIONS

Following ADEC review of the *f*oc calculation and statistical evaluation for the DRO concentrations in soil, PBW proposes to prepare the Response Action Plan for the Site to include the following:

- Finalize the ADEC-approved Method 3 Cleanup Levels for soils at the Site using the 2016 Human Health Cleanup criteria; and
- Draft Equitable Servitude documentation as recording institutional controls proposed for the property for groundwater restrictions and restrictions on soil excavation within the property. We have assumed that with the institutional control preventing groundwater use at the Site, the Migration to Groundwater pathway would not be considered complete, thereby removing that pathway from further consideration upon ADEC approval.

Please do not hesitate to contact me at eric.matzner@pbwllc.com or 512-671-3434 if you have any questions or concerns.

Sincerely,
PASTOR, BEHLING & WHEELER, LLC



Eric C. Matzner
Associate Hydrogeologist

TABLES

TABLE 1
SUMMARY OF ORGANIC CARBON RESULTS

KIEWIT INFRASTRUCTURE WEST CO. - 2050 PEGER ROAD SITE

Sample ID	Depth	Date	TOC(%)	TOC2 (%)	TOC3 (%)	Lithology
BH47	5-7.5	9/13/2017	0.405	0.375	0.548	mixed sandy silt, very fine sand
	10-12.5	9/13/2017	0.15	0.118	1.1	coarse sand with gravel
BH48	2.5-5	9/13/2017	1.5	1.29	1.2	sand with silt lenses
	5-7.5	9/13/2017	0.176	0.19	0.204	silty sand
BH49	2.5-5	9/13/2017	2.43	1.93	2.22	silty sand
	5-7.5	9/13/2017	0.127	0.297	0.349	silty sand
BH50	2.5-5	9/13/2017	0.191	0.241	0.23	sandy silt
	5-7.5	9/13/2017	0.696	0.348	0.268	silty sand to sandy silt

95% Lower Confidence Level:	0.489%
(see statistics in Attachment C)	

TABLE 2
DRO SOIL CONCENTRATIONS NEAR AREAS WITH MAXIMUM ALLOWABLE EXCEEDANCES
KIEWIT INFRASTRUCTURE WEST CO. - 2050 PEGER ROAD, FAIRBANKS, ALASKA

Source Area	Location ID:	Sample Date:	Sample Interval:	TPH-DRO
				12,500
Former Used Oil AST Excavation - Base	BH1-3-0718	18-Jul-12	8-10	**15,600**
	BH1-4-0718 (Dup)	18-Jul-12	8-10	**13,700**
	BH6-4-0718	18-Jul-12	7.5-10	**12,900**
	BH51	13-Sep-17	7.5-10	6,890
	BH510 (Dup)	13-Sep-17	7.5-10	8,690
Former Fuel Delivery Line	FDL-11-0915	15-Sep-10	2	**17,000**
	BH52	13-Sep-17	7.5-10	4,310
	BH53	13-Sep-17	7.5-10	6,300
	BH54	13-Sep-17	7.5-10	6,670
	BH-55	25-Sep-17	2.5	<12.4
	BH-155 (Dup)	25-Sep-17	2.5	<12.2
	BH-56	25-Sep-17	2.5	32.6
	BH-57	25-Sep-17	2.5	895

Notes:
Values in mg/kg
Highlighted values exceed the Maximum Allowable Concentration for DRO of 12,500 mg/kg

TABLE 3
MONITORING WELL GROUNDWATER MEASUREMENTS
KIEWIT INFRASTRUCTURE WEST CO. - 2050 PEGER ROAD, FAIRBANKS, ALASKA

WELL ID	TOP OF CASING ELEVATION (FT SSRP)	SCREENED INTERVAL (FT BGS)	DATE	DEPTH TO NAPL (FT BTOC)	DEPTH TO GROUNDWATER (FT BTOC)	GROUNDWATER ELEVATION (FT SSRP)	Notes
MW-1	99.66	5 - 15	10/16/2012	---	9.40	90.26	
	99.66		7/2/2014	---	8.25	91.41	
	99.66		10/16/2014	---	8.03	91.63	
	99.66		4/27/2015	---	10.47	89.19	
	99.66		9/2/2015	---	8.21	91.45	
	99.66		8/25/2016	---	6.83	92.83	
	437.66		9/26/2017	---	9.57	428.09	Survey conducted 10-6-17
MW-2	98.52	4 - 14	10/16/2012	Sheen	8.50	90.02	
	98.52		7/2/2014	6.68	6.82	91.70	
	98.52		8/8/2014	---	5.33	93.19	
	98.52		10/16/2014	6.56	7.06	91.46	
	98.52		4/27/2015	Sheen	9.19	89.33	
	98.52		9/2/2015	Sheen	7.08	91.44	
	98.52		8/25/2016	Sheen	5.71	92.81	
	436.06		9/26/2017	Sheen	8.15	427.91	Survey conducted 10-6-17
MW-3	99.08	4 - 14	10/16/2012	Sheen	9.10	89.98	
	99.08		7/2/2014	---	7.56	91.52	
	99.08		10/16/2014	---	7.71	91.37	
	99.08		4/27/2015	Sheen	10.20	88.88	
	99.08		9/2/2015	---	7.63	91.45	
	99.08		8/25/2016	Sheen	6.35	92.73	
	436.32		9/26/2017	Sheen	8.49	427.83	Survey conducted 10-6-17
MW-4	99.81	5 - 15	10/16/2012	---	10.10	89.71	
	99.81		7/2/2014	---	8.36	91.45	
	99.81		10/16/2014	---	8.78	91.03	
	99.81		4/27/2015	---	11.23	88.58	
	99.81		9/2/2015	---	8.90	90.91	
	99.81		8/25/2016	---	7.52	92.29	
	437.37		9/26/2017	---	9.69	427.68	Survey conducted 10-6-17
MW-5	99.72	5 - 15	10/16/2012	---	9.90	89.82	
	99.72		7/2/2014	---	8.13	91.59	
	99.72		10/16/2014	---	8.49	91.23	
	99.72		4/27/2015	---	11.10	88.62	
	99.72		9/2/2015	---	8.42	91.30	
	99.72		8/25/2016	---	7.18	92.54	
	437.37		9/26/2017	---	9.64	427.73	Survey conducted 10-6-17

Notes:
1. SSRP - Site-specific reference point (southwest corner of 4-Bay building arbitrary eleavtion of 100.0 ft)
2. BGS - below ground surface
3. BTOC - below top of casing
3. --- - No non-aqueous phase liquids (NAPL) detected
4. NAPL - non-aqueous phase liquids

TABLE 4
SUMMARY OF SOIL SAMPLING RESULTS - HUMAN HEATH CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				Former Used Oil AST Excavation - Base						Former Used Oil AST Excavation - Sidewalls					
Location ID:			ADEC 2016	CFS1-0811	CFS2-0811	CFS3-0811	BH1-3-0718	BH1-4-0718	BH6-4-0718	CFS4-0811	CFS5-0811	CFS6-0811	CFS7-0811	CFS8-0811	CFS9-0811
Sample Date:			Human Health	11-Aug-10	11-Aug-10	11-Aug-10	18-Jul-12	18-Jul-12	18-Jul-12	11-Aug-10	11-Aug-10	11-Aug-10	11-Aug-10	11-Aug-10	11-Aug-10
Sample Interval:			Cleanup Criteria	8	7.5	8	8-10	8-10	7.5-10	7.5	7	7	7	4	8
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons															
TPH-GRO	---	AK 101	5,200	<33	<38	<23	---	---	---	<27	<43	<3.4	<3.5	<24	<31
TPH-DRO	---	AK 102	10,300	**11,000**	3,000	8,400	**15,600**	**13,700**	**12,900**	7,600	9,200	<10	<11	**11,000**	**13,000**
TPH-RRO	---	AK 103	10,000	450	<210	<210	<748	342	183	<210	<230	<21	<22	**36,000**	340
Volatile Organic Compounds															
Benzene	71-43-2	8260B/8021B	11	<0.15	<0.18	<0.13	0.142J	0.148J	0.0562	<0.15	<0.17	<0.028	<0.034	<0.04	<0.17
Butylbenzene, sec-	135-98-8	8260B	28	2.0	0.58	0.38	1.56	1.57	0.843	<0.15	1.3	<0.028	<0.034	<0.04	2.7
Ethylbenzene	100-41-4	8260	49	1.4	0.35	0.17	1.33	1.38	0.906	<0.15	0.59	<0.028	<0.034	<0.04	2.2
Isopropylbenzene	98-82-8	8260B	5.6	1.2	0.36	0.17	1.02	1.08	0.549	<0.15	0.53	<0.028	<0.034	<0.04	1.7
Toluene	108-88-3	8260B/8021B	200	<0.77	<0.92	<0.63	0.249J	<0.264	<0.284	<0.76	<0.87	<0.14	<0.17	<0.2	<0.86
Trimethylbenzene, 1,2,4-	95-63-6	8260B	43	28	9	14	29.4	28	31.7	13	16	0.058	<0.034	0.086	**47**
Trimethylbenzene, 1,3,5-	108-67-8	8260B	37	10	3	4.8	8.73	8.19	10.6	5.6	5.4	<0.028	<0.034	1.8	14
Xylenes	1330-20-7	8260B	57	7.4	1.44	2.96	5.18	5.17	13.9	1.36	2.45	<0.056	<0.067	0.39	10.4
Semi-Volatile Organic Compounds															
Acenaphthene	83-32-9	8270D/SIM	4600	1.8	---	---	<0.0716	<0.172	---	1.1	---	---	---	---	1.2
Anthracene	120-12-7	8270D/SIM	23000	0.39	---	---	0.204	<0.172	---	0.17	---	---	---	---	0.63
Fluorene	86-73-7	8270D/SIM	3100	6.9	---	---	1.49	10.1J	---	3.6	---	---	---	---	7
Methylnaphthalene, 1-	90-12-0	8270D/SIM	68	40	---	---	13.9	62.9	---	21	---	---	---	---	41
Methylnaphthalene, 2-	91-57-6	8270D/SIM	310	67	---	---	22.5	**103**	---	34	---	---	---	---	70
Naphthalene	91-20-3	8260B/8270D SIM	29	22	7	8.5	**33.3**	**34**	**32.9**	12	16	0.11	0.037	0.38	**30**
Phenanthrene	85-01-8	8270D/SIM	2,300	7.2	---	---	1.96	11.8J	---	3.7	---	---	---	---	7.7
Pyrene	129-00-0	8270D/SIM	2,300	0.21	---	---	0.348	0.381	---	0.095	---	---	---	---	0.28

Notes:
1. Sampling locations shown on Figure 1.
2. Human Health cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria are *italic/highlight* type.
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 4
SUMMARY OF SOIL SAMPLING RESULTS - HUMAN HEATH CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				Adjacent to Former Used Oil AST										Adjacent to Former Used Oil AST						
Location ID:			ADEC 2016	BH7-4-0718	BH13-4-0718	BH14-4-0718	BH15-3-0718	BH16-3-0718	BH17-3-0718	BH25-4-0719	SB05-1014	SB06-1014	SB08-1015	SB09-1015	SB09-1015	SB10-1015	SB10-1015	SB10-1015	SB11-1015	SB11-1015
Sample Date:			Human Health	18-Jul-12	18-Jul-12	18-Jul-12	18-Jul-12	18-Jul-12	18-Jul-12	19-Jul-12	14-Oct-14	14-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14
Sample Interval:			Cleanup Criteria	7.5-10	7.5-10	7.5-10	7.5-10	5-7.5	5-7.5	7.5-10	10-12.5	7.5-10	0-2	0-2	10-12.5	0-2	5-7.5	10-12.5	0-2	12.5-15
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																				
TPH-GRO	---	AK 101	5,200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TPH-DRO	---	AK 102	10,300	11.3J	9,420	6,560	**10,900**	15.5J	9.13J	7,740	2,910	8,590	<0.0077	0.0325	4.41	<0.00714	6.94	4.31	<0.00663	1.79
TPH-RRO	---	AK 103	10,000	<13.8	143	112	122	30.4	23.4J	85	---	---	0.0771	0.224	<0.0266	0.0352	<0.0266	<0.0255	<0.00663	<0.0262
Volatile Organic Compounds																				
Benzene	71-43-2	8260B/8021B	11	0.0183	0.108J	0.0916J	0.0864J	0.0141J	0.0163J	0.0822J	---	---	<0.00646	<0.00482	<0.2	<0.00608	<0.179	<0.0751	<0.00458	<0.00339
Butylbenzene, sec-	135-98-8	8260B	28	0.177	2.9	1.72	2.2	<0.0266	<0.0318	0.46	---	---	<0.0129	<0.00965	1.73	<0.0122	<0.357	1.82	<0.00916	0.303
Ethylbenzene	100-41-4	8260	49	0.167	3.34	2.34	1.62	0.0282J	0.0337J	0.252J	---	---	<0.0129	<0.00965	1.36	<0.0122	<0.357	1.2	<0.00916	0.107
Isopropylbenzene	98-82-8	8260B	5.6	0.116	1.68	1.24	1.17	0.0324J	0.0388J	0.258J	---	---	<0.0129	<0.00965	<0.4	<0.0122	<0.357	0.881	<0.00916	0.109
Toluene	108-88-3	8260B/8021B	200	0.0254J	0.31	0.292	0.161J	0.0299J	0.0352J	0.175J	---	---	<0.0129	<0.00965	<0.4	<0.0122	<0.357	<0.15	<0.00916	<0.00678
Trimethylbenzene, 1,2,4-	95-63-6	8260B	43	1.48J	**73.8**	**55.2**	40.9	0.0388J	0.0786J	34.9	---	---	<0.0248	<0.0186	37	<0.0234	41.7	7.22	<0.0176	4.79
Trimethylbenzene, 1,3,5-	108-67-8	8260B	37	1.18	20.3	10.3	11	0.0333J	0.0556	22.2	---	---	<0.0129	<0.00965	9.41	0.0122	13.4	10	<0.00916	1.17
Xylenes	1330-20-7	8260B	57	1.29	28.9	14.4	11.3	0.0896J	0.115J	10.4	---	---	<0.0378	<0.0282	10.9	<0.0355	7.38	9.73	<0.0268	0.68
Semi-Volatile Organic Compounds																				
Acenaphthene	83-32-9	8270D/SIM	4600	---	---	---	---	---	---	---	---	---	<0.00185	<0.00855	<0.161	<0.00169	<0.0768	<0.16	<0.00162	<0.157
Anthracene	120-12-7	8270D/SIM	23000	---	---	---	---	---	---	---	---	---	<0.00185	<0.00855	<0.161	<0.00169	<0.0768	<0.16	<0.00162	<0.157
Fluorene	86-73-7	8270D/SIM	3100	---	---	---	---	---	---	---	---	---	<0.00185	<0.00855	1.74	<0.00169	0.605	3.03	<0.00162	1.13
Methylnaphthalene, 1-	90-12-0	8270D/SIM	68	---	---	---	---	---	---	---	---	---	<0.00185	<0.00855	16.3	0.00668	9.57	23.3	<0.00162	4.6
Methylnaphthalene, 2-	91-57-6	8270D/SIM	310	---	---	---	---	---	---	---	---	---	<0.00185	<0.00855	**23**	0.00999	10.6	**35.6**	<0.00162	7.05
Naphthalene	91-20-3	8260B/8270D SIM	29	1.57J	14.8	14.5	20.8	0.0435J	0.0577J	12.4	---	---	<0.0248	<0.0186	8.79	<0.0234	5.01	13.9	<0.0176	2.19
Phenanthrene	85-01-8	8270D/SIM	2,300	---	---	---	---	---	---	---	---	---	<0.00185	<0.00855	1.92	<0.00169	0.763	3.41	<0.00162	1.45
Pyrene	129-00-0	8270D/SIM	2,300	---	---	---	---	---	---	---	---	---	<0.00185	<0.00855	0.103	<0.00169	0.0601	<0.16	<0.00162	0.0464

Notes:
1. Sampling locations shown on Figure 1.
2. Human Health cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria are *it*
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 4
SUMMARY OF SOIL SAMPLING RESULTS - HUMAN HEATH CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				Adjacent to Former Fuel Delivery Line									Fuel Delivery Line								
Location ID:			ADEC 2016	BH27-4-0719	BH28-3-0719	BH29-3-0719	BH30-4-0912	SB01-1014	SB02-1014	SB03-1014	SB04-1014	SB04-2-1014	FDL-1-0915	FDL-2-0915	FDL-2A-0915	FDL-3-0915	FDL-4-0915	FDL-5-0915	FDL-6-0915	FDL-7-0915	FDL-8-0915
Sample Date:			Human Health	19-Jul-12	19-Jul-12	19-Jul-12	09-Oct-12	14-Oct-14	14-Oct-14	14-Oct-14	14-Oct-14	14-Oct-14	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10
Sample Interval:			Cleanup Criteria	7.5-10	7.5-10	7.5-10	7.5-10	12.5-15	10-12.5	10-12.5	10-12.5	10-12.5	4	6	6	6	6	3	3	3	3
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																					
TPH-GRO	---	AK 101	5,200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TPH-DRO	---	AK 102	10,300	10,100	12.3J	957	<14	378	<9.14	9,360	4,450	4,490	1,900	3,900	3,200	6,700	3,900	1,000	5,500	660	6,800
TPH-RRO	---	AK 103	10,000	97.7	44.8	18.1J	<28	---	---	---	---	---	49	<210	<210	250	<210	<20	<220	150	290
Volatile Organic Compounds																					
Benzene	71-43-2	8260B/8021B	11	0.0866J	0.0166J	0.0102J	<0.048	---	---	---	---	---	---	<0.11	<0.11	---	---	---	---	---	---
Butylbenzene, sec-	135-98-8	8260B	28	<0.164	<0.0314	<0.0199	<0.048	---	---	---	---	---	---	0.24	0.24	---	---	---	---	---	---
Ethylbenzene	100-41-4	8260	49	0.417	0.0368J	0.0217J	<0.048	---	---	---	---	---	---	0.18	0.16	---	---	---	---	---	---
Isopropylbenzene	98-82-8	8260B	5.6	0.336	0.0403J	0.0249J	<0.048	---	---	---	---	---	---	0.14	0.13	---	---	---	---	---	---
Toluene	108-88-3	8260B/8021B	200	0.186J	0.0348J	0.022J	<0.24	---	---	---	---	---	---	<0.53	<0.55	---	---	---	---	---	---
Trimethylbenzene, 1,2,4-	95-63-6	8260B	43	17.8	0.147	0.0652	<0.048	---	---	---	---	---	---	20	18	---	---	---	---	---	---
Trimethylbenzene, 1,3,5-	108-67-8	8260B	37	16.7	0.066	0.047	<0.048	---	---	---	---	---	---	17	14	---	---	---	---	---	---
Xylenes	1330-20-7	8260B	57	2.98	0.134J	0.0728J	<0.096	---	---	---	---	---	---	12.4	9.3	---	---	---	---	---	---
Semi-Volatile Organic Compounds																					
Acenaphthene	83-32-9	8270D/SIM	4600	---	---	---	---	---	---	---	---	---	---	0.26	0.26	---	---	---	---	---	---
Anthracene	120-12-7	8270D/SIM	23000	---	---	---	---	---	---	---	---	---	---	0.045	0.042	---	---	---	---	---	---
Fluorene	86-73-7	8270D/SIM	3100	---	---	---	---	---	---	---	---	---	---	0.52	0.45	---	---	---	---	---	---
Methylnaphthalene, 1-	90-12-0	8270D/SIM	68	---	---	---	---	---	---	---	---	---	---	23	17	---	---	---	---	---	---
Methylnaphthalene, 2-	91-57-6	8270D/SIM	310	---	---	---	---	---	---	---	---	---	---	14	7.6	---	---	---	---	---	---
Naphthalene	91-20-3	8260B/8270D SIM	29	14.4	0.117	0.0885	<0.048	---	---	---	---	---	---	4	3.7	---	---	---	---	---	---
Phenanthrene	85-01-8	8270D/SIM	2,300	---	---	---	---	---	---	---	---	---	---	0.52	0.46	---	---	---	---	---	---
Pyrene	129-00-0	8270D/SIM	2,300	---	---	---	---	---	---	---	---	---	---	0.051	0.04	---	---	---	---	---	---

Notes:
1. Sampling locations shown on Figure 1.
2. Human Health cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria are *it*
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 4
SUMMARY OF SOIL SAMPLING RESULTS - HUMAN HEATH CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				Fuel Delivery Line							East of 4-Bay Building					
Location ID:			ADEC 2016	FDL-9-0915	FDL-10-0915	FDL-11-0915	BH24-4-0719	BH24-5-0719	SB07-1015/TSP07	SB07-1015/TSP07	SB12-1015	SB12-1015	SB12-2-1015	SB13-1015	SB13-1015	SB13-1015
Sample Date:			Human Health	15-Sep-10	15-Sep-10	15-Sep-10	19-Jul-12	19-Jul-12	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14
Sample Interval:			Cleanup Criteria	4	3	2	7.5-10	7.5-10	0-2.5	7.5-10	0-2	10-12.5	10-12.5	0-2	8.5-10	10-12.5
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																
TPH-GRO	---	AK 101	5,200	---	---	---	---	---	---	---	---	---	---	---	---	---
TPH-DRO	---	AK 102	10,300	7,200	5,600	**17,000**	7,380	6,300	91.5	5,840	<6.36	<7.67	<7.66	46.2	---	<8.01
TPH-RRO	---	AK 103	10,000	<220	<230	450	<266	<132	85.8	<26.4	57.9	<7.67	<7.66	326	---	<8.01
Volatile Organic Compounds																
Benzene	71-43-2	8260B/8021B	11	---	---	---	0.0716J	0.0643J	<0.00716	*<0.156*	<0.0035	<0.00646	<0.00604	<0.00366	---	<0.00721
Butylbenzene, sec-	135-98-8	8260B	28	---	---	---	2.53	2.2	<0.0143	1.77	<0.00701	<0.0129	<0.0121	<0.00732	---	<0.0144
Ethylbenzene	100-41-4	8260	49	---	---	---	1.5	1.61	<0.0143	1.05	<0.00701	<0.0129	<0.0121	<0.00732	---	<0.0144
Isopropylbenzene	98-82-8	8260B	5.6	---	---	---	1.33	1.35	<0.0143	<0.312	<0.00701	<0.0129	<0.0121	<0.00732	---	<0.0144
Toluene	108-88-3	8260B/8021B	200	---	---	---	0.193J	0.182J	<0.0143	<0.312	<0.00701	<0.0129	<0.0121	<0.00732	---	<0.0144
Trimethylbenzene, 1,2,4-	95-63-6	8260B	43	---	---	---	**62.4**	**61.7**	<0.0275	**54.9**	<0.0135	<0.0249	<0.0232	<0.0141	---	<0.0277
Trimethylbenzene, 1,3,5-	108-67-8	8260B	37	---	---	---	20.4	20.3	<0.0143	16.8	<0.00701	<0.0129	<0.0121	<0.00732	---	<0.0144
Xylenes	1330-20-7	8260B	57	---	---	---	38.8	38.5	<0.0419	11	<0.0205	<0.0378	<0.0353	<0.0214	---	<0.0421
Semi-Volatile Organic Compounds																
Acenaphthene	83-32-9	8270D/SIM	4600	---	---	---	<0.161	<0.157	<0.00186	<0.158	<0.00154	<0.00183	<0.00186	<0.00768	---	<0.00194
Anthracene	120-12-7	8270D/SIM	23000	---	---	---	<0.161	<0.157	<0.00186	<0.158	<0.00154	<0.00183	<0.00186	<0.00768	---	<0.00194
Fluorene	86-73-7	8270D/SIM	3100	---	---	---	0.981	0.865	<0.00186	0.567	<0.00154	<0.00183	<0.00186	<0.00768	---	<0.00194
Methylnaphthalene, 1-	90-12-0	8270D/SIM	68	---	---	---	26.7	22	<0.00186	11.3	<0.00154	<0.00183	<0.00186	<0.00768	---	<0.00194
Methylnaphthalene, 2-	91-57-6	8270D/SIM	310	---	---	---	31	28.5	<0.00186	15.4	<0.00154	<0.00183	0.00735	<0.00768	---	<0.00194
Naphthalene	91-20-3	8260B/8270D SIM	29	---	---	---	19.5	18.6	<0.0275	8.04	<0.0135	<0.0249	<0.0232	<0.0141	---	<0.0277
Phenanthrene	85-01-8	8270D/SIM	2,300	---	---	---	1.12	0.999	<0.00186	0.708	<0.00154	<0.00183	<0.00186	<0.00768	---	<0.00194
Pyrene	129-00-0	8270D/SIM	2,300	---	---	---	0.0632	0.0572	<0.00186	0.0396	<0.00154	<0.00183	<0.00186	<0.00768	---	<0.00194

Notes:
1. Sampling locations shown on Figure 1.
2. Human Health cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria are *ita*
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 4
SUMMARY OF SOIL SAMPLING RESULTS - HUMAN HEATH CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				Off-Site														
Location ID:			ADEC 2016	BH31-3-1012	BH31-4-1012	BH32-2-1012	BH33-5-1012	BH34-4-1012	BH34-5-1012	BH35-4-1012	BH35	BH36	BH37	BH38	BH39	BH40	BH41
Sample Date:			Human Health	10-Oct-12	10-Oct-12	10-Oct-12	10-Oct-12	10-Oct-12	10-Oct-12	10-Oct-12	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15
Sample Interval:			Cleanup Criteria	10-15	15-20	10-12.5	10-15	10-16	15-20	10-15	5-6	7.5-10	7.5-10	11	10-10.5	10-10.5	9-10.5
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																	
TPH-GRO	---	AK 101	5,200	---	---	---	---	---	---	---	13 J	8.88 J	**3,300**	**9,690**	**6,130**	**9,370**	**7,800**
TPH-DRO	---	AK 102	10,300	830	<13	<11	<11	970	<12	<11	1.58 J	0.628 J	165	465	404	444	596
TPH-RRO	---	AK 103	10,000	<22	<26	<22	<23	<22	<24	<23	20.4 J	< 6.32	39.2	405 J	41.7	55.4	40.3
Volatile Organic Compounds																	
Benzene	71-43-2	8260B/8021B	11	<0.019	<0.034	<0.027	<0.03	<0.12	<0.033	<0.026	---	---	<0.0683	---	<0.00481	---	<0.00506
Butylbenzene, sec-	135-98-8	8260B	28	0.19	<0.034	<0.027	<0.03	1.3	<0.033	<0.026	---	---	<0.137	---	0.602	---	1.24
Ethylbenzene	100-41-4	8260	49	<0.019	<0.034	<0.027	<0.03	<0.12	<0.033	<0.026	---	---	<0.137	---	0.352	---	0.372
Isopropylbenzene	98-82-8	8260B	5.6	<0.019	<0.034	<0.027	<0.03	0.37	<0.033	<0.026	---	---	<0.137	---	0.251	---	0.35
Toluene	108-88-3	8260B/8021B	200	<0.094	<0.17	<0.13	<0.15	<0.61	<0.17	<0.13	---	---	<0.137	---	<0.00961	---	<0.0101
Trimethylbenzene, 1,2,4-	95-63-6	8260B	43	<0.019	<0.034	<0.027	<0.03	12	<0.033	<0.026	---	---	22.3	---	26.6	---	**45.9**
Trimethylbenzene, 1,3,5-	108-67-8	8260B	37	<0.019	<0.034	<0.027	<0.03	2.8	<0.033	<0.026	---	---	9.44	---	16.1	---	21.9
Xylenes	1330-20-7	8260B	57	<0.038	<0.067	<0.053	<0.059	<0.24	<0.067	<0.051	---	---	2.71	---	4.51	---	8.37 J
Semi-Volatile Organic Compounds																	
Acenaphthene	83-32-9	8270D/SIM	4600	---	---	---	---	---	---	---	---	---	0.413 J	---	<1.66	---	<2.08
Anthracene	120-12-7	8270D/SIM	23000	---	---	---	---	---	---	---	---	---	<0.317	---	<1.66	---	<2.08
Fluorene	86-73-7	8270D/SIM	3100	---	---	---	---	---	---	---	---	---	1.07	---	<1.66	---	<2.08
Methylnaphthalene, 1-	90-12-0	8270D/SIM	68	---	---	---	---	---	---	---	---	---	8.18	---	18	---	16.1
Methylnaphthalene, 2-	91-57-6	8270D/SIM	310	---	---	---	---	---	---	---	---	---	9.8	---	23.1	---	19.6
Naphthalene	91-20-3	8260B/8270D SIM	29	<0.019	<0.034	<0.027	<0.03	<0.12	<0.033	<0.026	---	---	3.23	---	9.4	---	7.82
Phenanthrene	85-01-8	8270D/SIM	2,300	---	---	---	---	---	---	---	---	---	1.26	---	1.93 J	---	<2.08
Pyrene	129-00-0	8270D/SIM	2,300	---	---	---	---	---	---	---	---	---	<0.317	---	<1.66	---	<2.08

Notes:
1. Sampling locations shown on Figure 1.
2. Human Health cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria are *ita*
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 4
SUMMARY OF SOIL SAMPLING RESULTS - HUMAN HEATH CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

											Permanent Wells					
Location ID:			ADEC 2016 Human Health Cleanup Criteria	BH42	BH43	BH44	BH45	BH46	BH55/ BH37 DUP	BH56/ BH40 DUP	MW1-4-0912	MW2-2-0912	MW4-4-1012	MW5-5-1112	MW5-6-1112	MW5-11-1112
Sample Date:				22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	09-Oct-12	09-Oct-12	10-Oct-12	11-Oct-12	11-Oct-12	11-Oct-12
Sample Interval:				12	10	11	10-11	9.5-10.5	7.5-10	10-10.5	7.5-10	10-15	10-15	10-12.5	10-12.5	30-35
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																
TPH-GRO	---	AK 101	5,200	440	**1,470**	**5,460**	11.4 J	40	**5,290**	**9,800**	---	---	---	---	---	---
TPH-DRO	---	AK 102	10,300	30.2	92.9 J	211	1.03 J	0.952 J	216	295	<13	---	<12	48	<14	<11
TPH-RRO	---	AK 103	10,000	8.47 J	11.9 J	35	19.1 J	8.27 J	50.6	73.3	<26	---	<25	40	<28	<22
Volatile Organic Compounds																
Benzene	71-43-2	8260B/8021B	11	---	<0.0398	---	---	---	<0.0895	---	<0.037	<0.12	<0.036	<0.05	<0.04	<0.00089
Butylbenzene, sec-	135-98-8	8260B	28	---	1.2	---	---	---	<0.179	---	<0.037	0.46	<0.036	0.22	0.058	<0.00089
Ethylbenzene	100-41-4	8260	49	---	<0.0795	---	---	---	<0.179	---	<0.037	0.29	<0.036	0.066	<0.04	<0.00089
Isopropylbenzene	98-82-8	8260B	5.6	---	0.367	---	---	---	<0.179	---	<0.037	0.2	<0.036	0.13	0.049	<0.00089
Toluene	108-88-3	8260B/8021B	200	---	<0.0795	---	---	---	<0.179	---	<0.19	<0.62	<0.18	<0.25	<0.2	<0.0044
Trimethylbenzene, 1,2,4-	95-63-6	8260B	43	---	18.9	---	---	---	25.9	---	<0.037	21	<0.036	1.5	0.62	<0.00089
Trimethylbenzene, 1,3,5-	108-67-8	8260B	37	---	5.78	---	---	---	10.8	---	<0.037	7.7	<0.036	0.35	0.13	<0.00089
Xylenes	1330-20-7	8260B	57	---	<0.232	---	---	---	2.92	---	<0.074	11.4	<0.072	0.15	0.087	<0.0018
Semi-Volatile Organic Compounds																
Acenaphthene	83-32-9	8270D/SIM	4600	---	<0.418	---	---	---	<1.57	---	---	---	---	<0.01	<0.0092	---
Anthracene	120-12-7	8270D/SIM	23000	---	<0.418	---	---	---	<1.57	---	---	---	---	<0.01	<0.0092	---
Fluorene	86-73-7	8270D/SIM	3100	---	<0.418	---	---	---	<1.57	---	---	---	---	<0.01	<0.0092	---
Methylnaphthalene, 1-	90-12-0	8270D/SIM	68	---	1.71	---	---	---	8.61	---	---	---	---	0.13	0.072	---
Methylnaphthalene, 2-	91-57-6	8270D/SIM	310	---	1.97	---	---	---	10.5	---	---	---	---	0.13	0.069	---
Naphthalene	91-20-3	8260B/8270D SIM	29	---	<0.418	---	---	---	3.58 J	---	<0.037	5.7	<0.036	0.13	0.077	<0.00089
Phenanthrene	85-01-8	8270D/SIM	2,300	---	<0.418	---	---	---	<1.57	---	---	---	---	<0.01	<0.0092	---
Pyrene	129-00-0	8270D/SIM	2,300	---	<0.418	---	---	---	<1.57	---	---	---	---	<0.01	<0.0092	---

Notes:
1. Sampling locations shown on Figure 1.
2. Human Health cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria are *it*
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 5
SUMMARY OF SOIL SAMPLING RESULTS - MIGRATION TO GROUNDWATER CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				Former Used Oil AST Excavation - Base						Former Used Oil AST Excavation - Sidewalls						
Location ID: Sample Date: Sample Interval:			ADEC 2016 Migration to Groundwater Cleanup Criteria	CFS1-0811 11-Aug-10 8	CFS2-0811 11-Aug-10 7.5	CFS3-0811 11-Aug-10 8	BH1-3-0718 18-Jul-12 8-10	BH1-4-0718 18-Jul-12 8-10	BH6-4-0718 18-Jul-12 7.5-10	CFS4-0811 11-Aug-10 7.5	CFS5-0811 11-Aug-10 7	CFS6-0811 11-Aug-10 7	CFS7-0811 11-Aug-10 7	CFS8-0811 11-Aug-10 4	CFS9-0811 11-Aug-10 8	BH7-4-0718 18-Jul-12 7.5-10
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																
TPH-GRO	---	AK 101	580	<33	<38	<23	---	---	---	<27	<43	<3.4	<3.5	<24	<31	---
TPH-DRO	---	AK 102	550	**11,000**	**3,000**	**8,400**	**15,600**	**13,700**	**12,900**	**7,600**	**9,200**	<10	<11	**11,000**	**13,000**	11.3J
TPH-RRO	---	AK 103	24,000	450	<210	<210	<748	342	183	<210	<230	<21	<22	**36,000**	340	<13.8
Volatile Organic Compounds																
Benzene	71-43-2	8260B/8021B	0.022	*<0.15*	*<0.18*	*<0.13*	**0.142J**	**0.148J**	**0.0562**	*<0.15*	*<0.17*	*<0.028*	*<0.034*	*<0.04*	*<0.17*	0.0183
Butylbenzene, sec-	135-98-8	8260B	42	2.0	0.58	0.38	1.56	1.57	0.843	<0.15	1.3	<0.028	<0.034	<0.04	2.7	0.177
Ethylbenzene	100-41-4	8260	0.13	*1.4*	*0.35*	*0.17*	*1.33*	*1.38*	*0.906*	*<0.15*	*0.59*	<0.028	<0.034	<0.04	*2.2*	*0.167*
Isopropylbenzene	98-82-8	8260B	5.6	1.2	0.36	0.17	1.02	1.08	0.549	<0.15	0.53	<0.028	<0.034	<0.04	1.7	0.116
Toluene	108-88-3	8260B/8021B	6.7	<0.77	<0.92	<0.63	0.249J	<0.264	<0.284	<0.76	<0.87	<0.14	<0.17	<0.2	<0.86	0.0254J
Trimethylbenzene, 1,2,4-	95-63-6	8260B	0.16	**28**	**9**	**14**	**29.4**	**28**	**31.7**	**13**	**16**	0.058	<0.034	0.086	**47**	**1.48J**
Trimethylbenzene, 1,3,5-	108-67-8	8260B	1.3	**10**	**3**	**4.8**	**8.73**	**8.19**	**10.6**	**5.6**	**5.4**	<0.028	<0.034	**1.8**	**14**	1.18
Xylenes	1330-20-7	8260B	1.5	**7.4**	1.44	**2.96**	**5.18**	**5.17**	**13.9**	1.36	**2.45**	<0.056	<0.067	0.39	**10.4**	1.29
Semi-Volatile Organic Compounds																
Acenaphthene	83-32-9	8270D/SIM	37	1.8	---	---	<0.0716	<0.172	---	1.1	---	---	---	---	1.2	---
Anthracene	120-12-7	8270D/SIM	390	0.39	---	---	0.204	<0.172	---	0.17	---	---	---	---	0.63	---
Fluorene	86-73-7	8270D/SIM	36	6.9	---	---	1.49	10.1J	---	3.6	---	---	---	---	7	---
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.41	**40**	---	---	**13.9**	**62.9**	---	**21**	---	---	---	---	**41**	---
Methylnaphthalene, 2-	91-57-6	8270D/SIM	1.3	**67**	---	---	**22.5**	**103**	---	**34**	---	---	---	---	**70**	---
Naphthalene	91-20-3	8260B/8270D SIM	0.038	**22**	**7**	**8.5**	**33.3**	**34**	**32.9**	**12**	**16**	**0.11**	0.037	**0.38**	**30**	**1.57J**
Phenanthrene	85-01-8	8270D/SIM	39	7.2	---	---	1.96	11.8J	---	3.7	---	---	---	---	7.7	---
Pyrene	129-00-0	8270D/SIM	87	0.21	---	---	0.348	0.381	---	0.095	---	---	---	---	0.28	---

Notes:
1. Sampling locations shown on Figure 1.
2. Migration to Groundwater cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria are *italic/highlight* type.
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 5
SUMMARY OF SOIL SAMPLING RESULTS - MIGRATION TO GROUNDWATER CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				Adjacent to Former Used Oil AST										Adjacent to Former Used Oil AST				
Location ID:			ADEC 2016 Migration to Groundwater Cleanup Criteria	BH13-4-0718	BH14-4-0718	BH15-3-0718	BH16-3-0718	BH17-3-0718	BH25-4-0719	SB05-1014	SB06-1014	SB08-1015	SB09-1015	SB09-1015	SB10-1015	SB10-1015	SB10-1015
Sample Date:				18-Jul-12	18-Jul-12	18-Jul-12	18-Jul-12	18-Jul-12	19-Jul-12	14-Oct-14	14-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14
Sample Interval:				7.5-10	7.5-10	7.5-10	5-7.5	5-7.5	7.5-10	10-12.5	7.5-10	0-2	0-2	10-12.5	0-2	5-7.5	10-12.5
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																	
TPH-GRO	---	AK 101	580	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TPH-DRO	---	AK 102	550	**9,420**	**6,560**	**10,900**	15.5J	9.13J	**7,740**	**2,910**	**8,590**	<0.0077	0.0325	4.41	<0.00714	6.94	4.31
TPH-RRO	---	AK 103	24,000	143	112	122	30.4	23.4J	85	---	---	0.0771	0.224	<0.0266	0.0352	<0.0266	<0.0255
Volatile Organic Compounds																	
Benzene	71-43-2	8260B/8021B	0.022	**0.108J**	**0.0916J**	**0.0864J**	0.0141J	0.0163J	**0.0822J**	---	---	<0.00646	<0.00482	**<0.2**	<0.00608	<0.179	<0.0751
Butylbenzene, sec-	135-98-8	8260B	42	2.9	1.72	2.2	<0.0266	<0.0318	0.46	---	---	<0.0129	<0.00965	1.73	<0.0122	<0.357	1.82
Ethylbenzene	100-41-4	8260	0.13	*3.34*	*2.34*	*1.62*	0.0282J	0.0337J	*0.252J*	---	---	<0.0129	<0.00965	*1.36*	<0.0122	*<0.357*	*1.2*
Isopropylbenzene	98-82-8	8260B	5.6	1.68	1.24	1.17	0.0324J	0.0388J	0.258J	---	---	<0.0129	<0.00965	<0.4	<0.0122	<0.357	0.881
Toluene	108-88-3	8260B/8021B	6.7	0.31	0.292	0.161J	0.0299J	0.0352J	0.175J	---	---	<0.0129	<0.00965	<0.4	<0.0122	<0.357	<0.15
Trimethylbenzene, 1,2,4-	95-63-6	8260B	0.16	**73.8**	**55.2**	**40.9**	0.0388J	0.0786J	**34.9**	---	---	<0.0248	<0.0186	**37**	<0.0234	**41.7**	**7.22**
Trimethylbenzene, 1,3,5-	108-67-8	8260B	1.3	**20.3**	**10.3**	**11**	0.0333J	0.0556	**22.2**	---	---	<0.0129	<0.00965	**9.41**	0.0122	**13.4**	**10**
Xylenes	1330-20-7	8260B	1.5	**28.9**	**14.4**	**11.3**	0.0896J	0.115J	**10.4**	---	---	<0.0378	<0.0282	**10.9**	<0.0355	**7.38**	**9.73**
Semi-Volatile Organic Compounds																	
Acenaphthene	83-32-9	8270D/SIM	37	---	---	---	---	---	---	---	---	<0.00185	<0.00855	<0.161	<0.00169	<0.0768	<0.16
Anthracene	120-12-7	8270D/SIM	390	---	---	---	---	---	---	---	---	<0.00185	<0.00855	<0.161	<0.00169	<0.0768	<0.16
Fluorene	86-73-7	8270D/SIM	36	---	---	---	---	---	---	---	---	<0.00185	<0.00855	1.74	<0.00169	0.605	3.03
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.41	---	---	---	---	---	---	---	---	<0.00185	<0.00855	**16.3**	0.00668	**9.57**	**23.3**
Methylnaphthalene, 2-	91-57-6	8270D/SIM	1.3	---	---	---	---	---	---	---	---	<0.00185	<0.00855	**23**	0.00999	**10.6**	**35.6**
Naphthalene	91-20-3	8260B/8270D SIM	0.038	**14.8**	**14.5**	**20.8**	**0.0435J**	**0.0577J**	**12.4**	---	---	<0.0248	<0.0186	**8.79**	<0.0234	**5.01**	**13.9**
Phenanthrene	85-01-8	8270D/SIM	39	---	---	---	---	---	---	---	---	<0.00185	<0.00855	1.92	<0.00169	0.763	3.41
Pyrene	129-00-0	8270D/SIM	87	---	---	---	---	---	---	---	---	<0.00185	<0.00855	0.103	<0.00169	0.0601	<0.16

Notes:
1. Sampling locations shown on Figure 1.
2. Migration to Groundwater cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria a
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 5
SUMMARY OF SOIL SAMPLING RESULTS - MIGRATION TO GROUNDWATER CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

						Adjacent to Former Fuel Delivery Line											
Location ID:			ADEC 2016 Migration to Groundwater Cleanup Criteria	SB11-1015	SB11-1015	BH27-4-0719	BH28-3-0719	BH29-3-0719	BH30-4-0912	SB01-1014	SB02-1014	SB03-1014	SB04-1014	SB04-2-1014	FDL-1-0915	FDL-2-0915	FDL-2A-0915
Sample Date:				15-Oct-14	15-Oct-14	19-Jul-12	19-Jul-12	19-Jul-12	09-Oct-12	14-Oct-14	14-Oct-14	14-Oct-14	14-Oct-14	14-Oct-14	15-Sep-10	15-Sep-10	15-Sep-10
Sample Interval:				0-2	12.5-15	7.5-10	7.5-10	7.5-10	7.5-10	12.5-15	10-12.5	10-12.5	10-12.5	10-12.5	4	6	6
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																	
TPH-GRO	---	AK 101	580	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TPH-DRO	---	AK 102	550	<0.00663	1.79	**10,100**	12.3J	**957**	<14	378	<9.14	**9,360**	**4,450**	**4,490**	**1,900**	**3,900**	**3,200**
TPH-RRO	---	AK 103	24,000	<0.00663	<0.0262	97.7	44.8	18.1J	<28	---	---	---	---	---	49	<210	<210
Volatile Organic Compounds																	
Benzene	71-43-2	8260B/8021B	0.022	<0.00458	<0.00339	**0.0866J**	0.0166J	0.0102J	*<0.048*	---	---	---	---	---	---	*<0.11*	*<0.11*
Butylbenzene, sec-	135-98-8	8260B	42	<0.00916	0.303	<0.164	<0.0314	<0.0199	<0.048	---	---	---	---	---	---	0.24	0.24
Ethylbenzene	100-41-4	8260	0.13	<0.00916	0.107	*0.417*	0.0368J	0.0217J	<0.048	---	---	---	---	---	---	*0.18*	*0.16*
Isopropylbenzene	98-82-8	8260B	5.6	<0.00916	0.109	0.336	0.0403J	0.0249J	<0.048	---	---	---	---	---	---	0.14	0.13
Toluene	108-88-3	8260B/8021B	6.7	<0.00916	<0.00678	0.186J	0.0348J	0.022J	<0.24	---	---	---	---	---	---	<0.53	<0.55
Trimethylbenzene, 1,2,4-	95-63-6	8260B	0.16	<0.0176	**4.79**	**17.8**	0.147	0.0652	<0.048	---	---	---	---	---	---	**20**	**18**
Trimethylbenzene, 1,3,5-	108-67-8	8260B	1.3	<0.00916	1.17	**16.7**	0.066	0.047	<0.048	---	---	---	---	---	---	**17**	**14**
Xylenes	1330-20-7	8260B	1.5	<0.0268	0.68	**2.98**	0.134J	0.0728J	<0.096	---	---	---	---	---	---	**12.4**	**9.3**
Semi-Volatile Organic Compounds																	
Acenaphthene	83-32-9	8270D/SIM	37	<0.00162	<0.157	---	---	---	---	---	---	---	---	---	---	0.26	0.26
Anthracene	120-12-7	8270D/SIM	390	<0.00162	<0.157	---	---	---	---	---	---	---	---	---	---	0.045	0.042
Fluorene	86-73-7	8270D/SIM	36	<0.00162	1.13	---	---	---	---	---	---	---	---	---	---	0.52	0.45
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.41	<0.00162	**4.6**	---	---	---	---	---	---	---	---	---	---	**23**	**17**
Methylnaphthalene, 2-	91-57-6	8270D/SIM	1.3	<0.00162	**7.05**	---	---	---	---	---	---	---	---	---	---	**14**	**7.6**
Naphthalene	91-20-3	8260B/8270D SIM	0.038	<0.0176	**2.19**	**14.4**	**0.117**	**0.0885**	**<0.048**	---	---	---	---	---	---	**4**	**3.7**
Phenanthrene	85-01-8	8270D/SIM	39	<0.00162	1.45	---	---	---	---	---	---	---	---	---	---	0.52	0.46
Pyrene	129-00-0	8270D/SIM	87	<0.00162	0.0464	---	---	---	---	---	---	---	---	---	---	0.051	0.04

Notes:
1. Sampling locations shown on Figure 1.
2. Migration to Groundwater cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria a
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 5
SUMMARY OF SOIL SAMPLING RESULTS - MIGRATION TO GROUNDWATER CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				Fuel Delivery Line						Fuel Delivery Line								
Location ID:			ADEC 2016 Migration to Groundwater Cleanup Criteria	FDL-3-0915	FDL-4-0915	FDL-5-0915	FDL-6-0915	FDL-7-0915	FDL-8-0915	FDL-9-0915	FDL-10-0915	FDL-11-0915	BH24-4-0719	BH24-5-0719	SB07-1015/TSP07	SB07-1015/TSP07	SB12-1015	SB12-1015
Sample Date:				15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	19-Jul-12	19-Jul-12	15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14
Sample Interval:				6	6	3	3	3	3	4	3	2	7.5-10	7.5-10	0-2.5	7.5-10	0-2	10-12.5
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																		
TPH-GRO	---	AK 101	580	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TPH-DRO	---	AK 102	550	**6,700**	**3,900**	**1,000**	**5,500**	**660**	**6,800**	**7,200**	**5,600**	**17,000**	**7,380**	**6,300**	91.5	**5,840**	<6.36	<7.67
TPH-RRO	---	AK 103	24,000	250	<210	<20	<220	150	290	<220	<230	450	<266	<132	85.8	<26.4	57.9	<7.67
Volatile Organic Compounds																		
Benzene	71-43-2	8260B/8021B	0.022	---	---	---	---	---	---	---	---	---	**0.0716J**	**0.0643J**	<0.00716	*<0.156*	<0.0035	<0.00646
Butylbenzene, sec-	135-98-8	8260B	42	---	---	---	---	---	---	---	---	---	2.53	2.2	<0.0143	1.77	<0.00701	<0.0129
Ethylbenzene	100-41-4	8260	0.13	---	---	---	---	---	---	---	---	---	*1.5*	*1.61*	<0.0143	*1.05*	<0.00701	<0.0129
Isopropylbenzene	98-82-8	8260B	5.6	---	---	---	---	---	---	---	---	---	1.33	1.35	<0.0143	<0.312	<0.00701	<0.0129
Toluene	108-88-3	8260B/8021B	6.7	---	---	---	---	---	---	---	---	---	0.193J	0.182J	<0.0143	<0.312	<0.00701	<0.0129
Trimethylbenzene, 1,2,4-	95-63-6	8260B	0.16	---	---	---	---	---	---	---	---	---	**62.4**	**61.7**	<0.0275	**54.9**	<0.0135	<0.0249
Trimethylbenzene, 1,3,5-	108-67-8	8260B	1.3	---	---	---	---	---	---	---	---	---	**20.4**	**20.3**	<0.0143	**16.8**	<0.00701	<0.0129
Xylenes	1330-20-7	8260B	1.5	---	---	---	---	---	---	---	---	---	**38.8**	**38.5**	<0.0419	**11**	<0.0205	<0.0378
Semi-Volatile Organic Compounds																		
Acenaphthene	83-32-9	8270D/SIM	37	---	---	---	---	---	---	---	---	---	<0.161	<0.157	<0.00186	<0.158	<0.00154	<0.00183
Anthracene	120-12-7	8270D/SIM	390	---	---	---	---	---	---	---	---	---	<0.161	<0.157	<0.00186	<0.158	<0.00154	<0.00183
Fluorene	86-73-7	8270D/SIM	36	---	---	---	---	---	---	---	---	---	0.981	0.865	<0.00186	0.567	<0.00154	<0.00183
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.41	---	---	---	---	---	---	---	---	---	**26.7**	**22**	<0.00186	**11.3**	<0.00154	<0.00183
Methylnaphthalene, 2-	91-57-6	8270D/SIM	1.3	---	---	---	---	---	---	---	---	---	**31**	**28.5**	<0.00186	**15.4**	<0.00154	<0.00183
Naphthalene	91-20-3	8260B/8270D SIM	0.038	---	---	---	---	---	---	---	---	---	**19.5**	**18.6**	<0.0275	**8.04**	<0.0135	<0.0249
Phenanthrene	85-01-8	8270D/SIM	39	---	---	---	---	---	---	---	---	---	1.12	0.999	<0.00186	0.708	<0.00154	<0.00183
Pyrene	129-00-0	8270D/SIM	87	---	---	---	---	---	---	---	---	---	0.0632	0.0572	<0.00186	0.0396	<0.00154	<0.00183

Notes:
1. Sampling locations shown on Figure 1.
2. Migration to Groundwater cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria a
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 5
SUMMARY OF SOIL SAMPLING RESULTS - MIGRATION TO GROUNDWATER CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				East of 4-Bay Building														
Location ID:			ADEC 2016 Migration to Groundwater Cleanup Criteria	SB12-2-1015	SB13-1015	SB13-1015	SB13-1015	BH31-3-1012	BH31-4-1012	BH32-2-1012	BH33-5-1012	BH34-4-1012	BH34-5-1012	BH35-4-1012	BH35	BH36	BH37
Sample Date:				15-Oct-14	15-Oct-14	15-Oct-14	15-Oct-14	10-Oct-12	10-Oct-12	10-Oct-12	10-Oct-12	10-Oct-12	10-Oct-12	10-Oct-12	22-Jun-15	22-Jun-15	22-Jun-15
Sample Interval:				10-12.5	0-2	8.5-10	10-12.5	10-15	15-20	10-12.5	10-15	10-16	15-20	10-15	5-6	7.5-10	7.5-10
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																	
TPH-GRO	---	AK 101	580	---	---	---	---	---	---	---	---	---	---	---	13 J	8.88 J	**3,300**
TPH-DRO	---	AK 102	550	<7.66	46.2	---	<8.01	**830**	<13	<11	<11	**970**	<12	<11	1.58 J	0.628 J	165
TPH-RRO	---	AK 103	24,000	<7.66	326	---	<8.01	<22	<26	<22	<23	<22	<24	<23	20.4 J	< 6.32	39.2
Volatile Organic Compounds																	
Benzene	71-43-2	8260B/8021B	0.022	<0.00604	<0.00366	---	<0.00721	<0.019	*<0.034*	*<0.027*	*<0.03*	*<0.12*	*<0.033*	*<0.026*	---	---	<0.0683
Butylbenzene, sec-	135-98-8	8260B	42	<0.0121	<0.00732	---	<0.0144	0.19	<0.034	<0.027	<0.03	1.3	<0.033	<0.026	---	---	<0.137
Ethylbenzene	100-41-4	8260	0.13	<0.0121	<0.00732	---	<0.0144	<0.019	<0.034	<0.027	<0.03	<0.12	<0.033	<0.026	---	---	<0.137
Isopropylbenzene	98-82-8	8260B	5.6	<0.0121	<0.00732	---	<0.0144	<0.019	<0.034	<0.027	<0.03	0.37	<0.033	<0.026	---	---	<0.137
Toluene	108-88-3	8260B/8021B	6.7	<0.0121	<0.00732	---	<0.0144	<0.094	<0.17	<0.13	<0.15	<0.61	<0.17	<0.13	---	---	<0.137
Trimethylbenzene, 1,2,4-	95-63-6	8260B	0.16	<0.0232	<0.0141	---	<0.0277	<0.019	<0.034	<0.027	<0.03	**12**	<0.033	<0.026	---	---	**22.3**
Trimethylbenzene, 1,3,5-	108-67-8	8260B	1.3	<0.0121	<0.00732	---	<0.0144	<0.019	<0.034	<0.027	<0.03	**2.8**	<0.033	<0.026	---	---	**9.44**
Xylenes	1330-20-7	8260B	1.5	<0.0353	<0.0214	---	<0.0421	<0.038	<0.067	<0.053	<0.059	<0.24	<0.067	<0.051	---	---	**2.71**
Semi-Volatile Organic Compounds																	
Acenaphthene	83-32-9	8270D/SIM	37	<0.00186	<0.00768	---	<0.00194	---	---	---	---	---	---	---	---	---	0.413 J
Anthracene	120-12-7	8270D/SIM	390	<0.00186	<0.00768	---	<0.00194	---	---	---	---	---	---	---	---	---	<0.317
Fluorene	86-73-7	8270D/SIM	36	<0.00186	<0.00768	---	<0.00194	---	---	---	---	---	---	---	---	---	1.07
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.41	<0.00186	<0.00768	---	<0.00194	---	---	---	---	---	---	---	---	---	**8.18**
Methylnaphthalene, 2-	91-57-6	8270D/SIM	1.3	0.00735	<0.00768	---	<0.00194	---	---	---	---	---	---	---	---	---	**9.8**
Naphthalene	91-20-3	8260B/8270D SIM	0.038	<0.0232	<0.0141	---	<0.0277	<0.019	<0.034	<0.027	<0.03	**<0.12**	<0.033	<0.026	---	---	**3.23**
Phenanthrene	85-01-8	8270D/SIM	39	<0.00186	<0.00768	---	<0.00194	---	---	---	---	---	---	---	---	---	1.26
Pyrene	129-00-0	8270D/SIM	87	<0.00186	<0.00768	---	<0.00194	---	---	---	---	---	---	---	---	---	<0.317

Notes:
1. Sampling locations shown on Figure 1.
2. Migration to Groundwater cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria a
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 5
SUMMARY OF SOIL SAMPLING RESULTS - MIGRATION TO GROUNDWATER CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

				Off-Site											Permane		
Location ID:			ADEC 2016 Migration to Groundwater Cleanup Criteria	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH55/ BH37 DUP	BH56/ BH40 DUP	MW1-4-0912	MW2-2-0912	MW4-4-1012
Sample Date:				22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	22-Jun-15	09-Oct-12	09-Oct-12	10-Oct-12
Sample Interval:				11	10-10.5	10-10.5	9-10.5	12	10	11	10-11	9.5-10.5	7.5-10	10-10.5	7.5-10	10-15	10-15
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons																	
TPH-GRO	---	AK 101	580	**9,690**	**6,130**	**9,370**	**7,800**	440	**1,470**	**5,460**	11.4 J	40	**5,290**	**9,800**	---	---	---
TPH-DRO	---	AK 102	550	465	404	444	596	30.2	92.9 J	211	1.03 J	0.952 J	216	295	<13	---	<12
TPH-RRO	---	AK 103	24,000	405 J	41.7	55.4	40.3	8.47 J	11.9 J	35	19.1 J	8.27 J	50.6	73.3	<26	---	<25
Volatile Organic Compounds																	
Benzene	71-43-2	8260B/8021B	0.022	---	<0.00481	---	<0.00506	---	<0.0398	---	---	---	<0.0895	---	*<0.037*	*<0.12*	*<0.036*
Butylbenzene, sec-	135-98-8	8260B	42	---	0.602	---	1.24	---	1.2	---	---	---	<0.179	---	<0.037	0.46	<0.036
Ethylbenzene	100-41-4	8260	0.13	---	0.352	---	0.372	---	<0.0795	---	---	---	<0.179	---	<0.037	*0.29*	<0.036
Isopropylbenzene	98-82-8	8260B	5.6	---	0.251	---	0.35	---	0.367	---	---	---	<0.179	---	<0.037	0.2	<0.036
Toluene	108-88-3	8260B/8021B	6.7	---	<0.00961	---	<0.0101	---	<0.0795	---	---	---	<0.179	---	<0.19	<0.62	<0.18
Trimethylbenzene, 1,2,4-	95-63-6	8260B	0.16	---	**26.6**	---	**45.9**	---	**18.9**	---	---	---	**25.9**	---	<0.037	**21**	<0.036
Trimethylbenzene, 1,3,5-	108-67-8	8260B	1.3	---	**16.1**	---	**21.9**	---	**5.78**	---	---	---	**10.8**	---	<0.037	**7.7**	<0.036
Xylenes	1330-20-7	8260B	1.5	---	**4.51**	---	**8.37 J**	---	<0.232	---	---	---	**2.92**	---	<0.074	**11.4**	<0.072
Semi-Volatile Organic Compounds																	
Acenaphthene	83-32-9	8270D/SIM	37	---	<1.66	---	<2.08	---	<0.418	---	---	---	<1.57	---	---	---	---
Anthracene	120-12-7	8270D/SIM	390	---	<1.66	---	<2.08	---	<0.418	---	---	---	<1.57	---	---	---	---
Fluorene	86-73-7	8270D/SIM	36	---	<1.66	---	<2.08	---	<0.418	---	---	---	<1.57	---	---	---	---
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.41	---	**18**	---	**16.1**	---	**1.71**	---	---	---	**8.61**	---	---	---	---
Methylnaphthalene, 2-	91-57-6	8270D/SIM	1.3	---	**23.1**	---	**19.6**	---	**1.97**	---	---	---	**10.5**	---	---	---	---
Naphthalene	91-20-3	8260B/8270D SIM	0.038	---	**9.4**	---	**7.82**	---	<0.418	---	---	---	**3.58 J**	---	<0.037	**5.7**	<0.036
Phenanthrene	85-01-8	8270D/SIM	39	---	1.93 J	---	<2.08	---	<0.418	---	---	---	<1.57	---	---	---	---
Pyrene	129-00-0	8270D/SIM	87	---	<1.66	---	<2.08	---	<0.418	---	---	---	<1.57	---	---	---	---

Notes:
1. Sampling locations shown on Figure 1.
2. Migration to Groundwater cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria a
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 5
SUMMARY OF SOIL SAMPLING RESULTS - MIGRATION TO GROUNDWATER CLEANUP LEVELS

Kiewit Infrastructure West Co., Fairbanks, Alaska

Location ID:			ADEC 2016 Migration to Groundwater Cleanup Criteria	nt Wells		
Sample Date:				MW5-5-1112 11-Oct-12	MW5-6-1112 11-Oct-12	MW5-11-1112 11-Oct-12
Sample Interval:				10-12.5	10-12.5	30-35
Constituent	CAS	Method	mg/kg	mg/kg	mg/kg	mg/kg
Total Petroleum Hydrocarbons						
TPH-GRO	---	AK 101	580	---	---	---
TPH-DRO	---	AK 102	550	48	<14	<11
TPH-RRO	---	AK 103	24,000	40	<28	<22
Volatile Organic Compounds						
Benzene	71-43-2	8260B/8021B	0.022	*<0.05*	*<0.04*	<0.00089
Butylbenzene, sec-	135-98-8	8260B	42	0.22	0.058	<0.00089
Ethylbenzene	100-41-4	8260	0.13	0.066	<0.04	<0.00089
Isopropylbenzene	98-82-8	8260B	5.6	0.13	0.049	<0.00089
Toluene	108-88-3	8260B/8021B	6.7	<0.25	<0.2	<0.0044
Trimethylbenzene, 1,2,4-	95-63-6	8260B	0.16	**1.5**	**0.62**	<0.00089
Trimethylbenzene, 1,3,5-	108-67-8	8260B	1.3	0.35	0.13	<0.00089
Xylenes	1330-20-7	8260B	1.5	0.15	0.087	<0.0018
Semi-Volatile Organic Compounds						
Acenaphthene	83-32-9	8270D/SIM	37	<0.01	<0.0092	---
Anthracene	120-12-7	8270D/SIM	390	<0.01	<0.0092	---
Fluorene	86-73-7	8270D/SIM	36	<0.01	<0.0092	---
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.41	0.13	0.072	---
Methylnaphthalene, 2-	91-57-6	8270D/SIM	1.3	0.13	0.069	---
Naphthalene	91-20-3	8260B/8270D SIM	0.038	**0.13**	**0.077**	<0.00089
Phenanthrene	85-01-8	8270D/SIM	39	<0.01	<0.0092	---
Pyrene	129-00-0	8270D/SIM	87	<0.01	<0.0092	---

Notes:
1. Sampling locations shown on Figure 1.
2. Migration to Groundwater cleanup criteria based on 18AAC 75.341, Method 2, Under 40-Inch Zone
3. Concentrations >ADEC Method 3 Cleanup Criteria are **bold/highlight** type.
4. Limits of Quantitation (LOQs)/Non-detect concentrations >ADEC Cleanup Criteria a
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 6
SUMMARY OF GROUNDWATER SAMPLING RESULTS
Kiewit Infrastructure West Co., Fairbanks, Alaska

				MW-1								
		Location ID[1]: Sample Date:	ADEC Cleanup Criteria[2]	MW1-1016 16-Oct-12	MW-1 02-Jul-14	MW-1 24-Jul-14	MW-11 (MW1-DUP) 24-Jul-14	MW-1 16-Oct-14	MW-1 27-Apr-15	MW-1 02-Sep-15	MW-1 25-Aug-16	MW-1 26-Sep-17
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Petroleum Hydrocarbons												
TPH-GRO		AK 101	2.2	<0.1	---	---	---	---	<0.031	---	0.031	<0.031
TPH-DRO		AK 102	1.5	<0.24	<0.6	<0.6	<0.6	<0.6	0.203 J	1.07	0.407 J	<0.176
TPH-RRO		AK 103	1.1	---	<0.5	<0.5	<0.5	<0.5	0.162 J	<0.144	0.199 J	<0.147
BTEX/VOCs												
Benzene	71-43-2	8260C	0.005	<0.0002	<0.0004	<0.0004	<0.0004	<0.00012	<0.00012	<0.00015	<0.00015	<0.00015
Toluene	108-88-3	8260C	1	<0.001	<0.001	<0.001	<0.001	<0.00031	<0.00031	<0.00031	<0.00031	<0.00031
Ethylbenze	100-41-4	8260C	0.7	<0.0002	<0.001	<0.001	<0.001	<0.00031	<0.00031	<0.00031	<0.00031	<0.00031
Xylenes	1330-20-7	8260C	10	<0.0004	<0.003	<0.003	<0.003	<0.001	<0.00093	<0.00093	<0.00093	0.00074 J
Trimethylbenzene, 1,2,4-	95-63-6	8260C	0.015	<0.0002	<0.001	<0.001	<0.001	<0.00031	---	---	---	---
Semi-Volatile Organic Compounds												
Acenaphthene	83-32-9	8270D/SIM	0.53	<0.000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Acenaphthylene	208-96-8	8270D/SIM	0.26	<0.000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Anthracene	120-12-7	8270D/SIM	0.043	<0.000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Benz-a-anthracene	56-55-3	8270D/SIM	0.0012	<0.0000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Benzo-a-pyrene	50-32-8	8270D/SIM	0.000034	<0.0000098	**<0.00005**	**<0.00005**	**<0.00005**	<0.0000155	<0.000015	<0.00000391	<0.00000585	<0.00000608
Benzo-b-fluoranthene	205-99-2	8270D/SIM	0.00034	<0.0000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Benzo-g,h,i-perylene	191-24-2	8270D/SIM	0.00026	<0.0000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Benzo-j,k-fluoranthene	207-08-9	8270D/SIM	0.0008	<0.0000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Chrysene	218-01-9	8270D/SIM	0.002	<0.0000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Dibenz-a,h-anthracene	53-70-3	8270D/SIM	0.000034	<0.0000098	**<0.00005**	**<0.00005**	**<0.00005**	<0.0000155	<0.000015	<0.00000391	<0.00000945	<0.00000608
Fluoranthene	206-44-0	8270D/SIM	0.26	<0.000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000236	<0.0000147
Fluorene	86-73-7	8270D/SIM	0.29	<0.000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Indeno-1,2,3-cd-pyrene	193-39-5	8270D/SIM	0.00019	<0.0000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.011	<0.000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Methylnaphthalene, 2-	91-57-6	8270D/SIM	0.036	<0.000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147
Naphthalene	91-20-3	8270D SIM	0.0017	<0.000098	<0.0001	<0.0001	<0.0001	**<0.0031**	<0.000031	<0.00000807	<0.0000292	<0.0000304
Phenanthrene	85-01-8	8270D/SIM	0.17	<0.000098	<0.00005	<0.00005	<0.00005	<0.0000155	0.0000157 J	<0.00000391	<0.0000142	<0.0000147
Pyrene	129-00-0	8270D/SIM	0.12	<0.000098	<0.00005	<0.00005	<0.00005	<0.0000155	<0.000015	<0.00000391	<0.0000142	<0.0000147

Notes:

1. Sampling locations shown on Figure 3.
2. Groundwater cleanup criteria based on 18AAC 75.345 Table C (as ammended through November 7, 2017)
3. Concentrations >ADEC Cleanup Criteria are ***bold/highlight*** type.
4. Limits of Quantitation (LOQs)/Non-detected concentrations >ADEC Cleanup Criteria are *italic/highlight* type.
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 6
SUMMARY OF GROUNDWATER SAMPLING RESULTS
Kiewit Infrastructure West Co., Fairbanks, Alaska

				MW-2								
		Location ID[1]: Sample Date:	ADEC Cleanup Criteria[2]	MW2-1016 17-Oct-12	MW11-1016 (MW2 DUP) 16-Oct-12	MW-2 08-Aug-14	MW12 (MW2 DUP) 08-Aug-14	MW-2 27-Apr-15	MW-2 02-Sep-15	MW-6 (MW-2 DUP) 02-Sep-15	MW-2 25-Aug-16	MW-2 26-Sep-17
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Petroleum Hydrocarbons												
TPH-GRO		AK 101	2.2	**2.7**	**3.2**	---	---	0.67	---	---	0.7	1.11
TPH-DRO		AK 102	1.5	**12**	**21**	**15.2**	**14.5**	**4.46**	**1.53**	1.44	**13**	**6.16**
TPH-RRO		AK 103	1.1	---	---	**1.31**	**1.40**	0.3 J	<0.144	<0.144	<0.692	0.361 J
BTEX/VOCs												
Benzene	71-43-2	8260C	0.005	<0.002	<0.004	0.00067	<0.0004	<0.00012	<0.00015	<0.00015	0.0003 J	0.0004 J
Toluene	108-88-3	8260C	1	<0.01	<0.02	<0.001	<0.001	<0.00031	<0.00031	<0.00031	<0.00031	0.00402
Ethylbenzene	100-41-4	8260C	0.7	<0.064	<0.081	0.0409	0.0398	0.011	0.0251	0.0233	0.0185	0.0155
Xylenes	1330-20-7	8260C	10	0.0114	<0.74	0.23	0.191	0.1448	0.202	0.184	0.1435	0.388
Trimethylbenzene, 1,2,4-	95-63-6	8260C	0.015	**0.68**	**0.75**	**0.347**	**0.336**	---	---	---	---	---
Semi-Volatile Organic Compounds												
Acenaphthene	83-32-9	8270D/SIM	0.53	0.0019	0.0013	<0.000448	<0.000315	0.0012	0.0000913	0.0000786	0.000783	0.000988
Acenaphthylene	208-96-8	8270D/SIM	0.26	<0.0019	<0.00047	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.0000142	<0.0000155
Anthracene	120-12-7	8270D/SIM	0.043	<0.00048	<0.00047	<0.0000515	<0.0000521	0.000294	<0.00000391	<0.00000391	<0.0000142	<0.0000155
Benz-a-anthracene	56-55-3	8270D/SIM	0.0012	<0.000048	<0.000047	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.0000142	<0.0000155
Benzo-a-pyrene	50-32-8	8270D/SIM	0.000034	**<0.000048**	**<0.000047**	<0.0000515	<0.0000521	**<0.0000785**	<0.00000391	<0.00000391	<0.00000585	<0.0000064
Benzo-b-fluoranthene	205-99-2	8270D/SIM	0.00034	<0.000048	<0.000047	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.0000142	<0.0000155
Benzo-g,h,i-perylene	191-24-2	8270D/SIM	0.00026	<0.000048	<0.000047	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.0000142	<0.0000155
Benzo-j,k-fluoranthene	207-08-9	8270D/SIM	0.0008	<0.000048	<0.000047	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.0000142	<0.0000155
Chrysene	218-01-9	8270D/SIM	0.002	<0.000048	<0.000047	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.0000142	<0.0000155
Dibenz-a,h-anthracene	53-70-3	8270D/SIM	0.000034	<0.000048	**<0.000047**	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.00000585	<0.0000064
Fluoranthene	206-44-0	8270D/SIM	0.26	<0.00048	<0.00047	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.0000142	<0.0000155
Fluorene	86-73-7	8270D/SIM	0.29	0.0037	0.0023	<0.00136	<0.00102	0.00202	0.000268	0.000248	0.00149	0.00109
Indeno-1,2,3-cd-pyrene	193-39-5	8270D/SIM	0.00019	<0.000048	<0.000047	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.0000142	<0.0000155
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.011	**0.061**	**0.03**	**<0.0232**	**<0.0154**	**0.0261**	0.00263	0.00228	**0.0118**	0.0237
Methylnaphthalene, 2-	91-57-6	8270D/SIM	0.036	0.083	0.038	<0.0125	<0.0057	0.00797	0.00248	0.00215	0.0899	0.00708
Naphthalene	91-20-3	8270D SIM	0.0017	**0.082**	**0.25**	<0.1	**<0.0202**	**0.0171**	**0.00368**	**0.00328**	0.0113	**0.0312**
Phenanthrene	85-01-8	8270D/SIM	0.17	0.0027	0.0013	<0.000638	<0.000456	0.00105	0.000141	0.000106	0.00103	0.000432
Pyrene	129-00-0	8270D/SIM	0.12	<0.00048	<0.00047	<0.0000515	<0.0000521	<0.0000785	<0.00000391	<0.00000391	<0.0000142	<0.0000155

Notes:

1. Sampling locations shown on Figure 3.
2. Groundwater cleanup criteria based on 18AAC 75.345 Table C (as ammended through November 7, 2017)
3. Concentrations >ADEC Cleanup Criteria are ***bold/highlight*** type.
4. Limits of Quantitation (LOQs)/Non-detected concentrations >ADEC Cleanup Criteria are *italic/highlight* type.
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 6
SUMMARY OF GROUNDWATER SAMPLING RESULTS
Kiewit Infrastructure West Co., Fairbanks, Alaska

				MW-3						
		Location ID[1]:	ADEC Cleanup Criteria[2]	MW3-1016	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3
		Sample Date:		16-Oct-12	02-Jul-14	16-Oct-14	27-Apr-15	02-Sep-15	25-Aug-16	26-Sep-17
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Petroleum Hydrocarbons										
TPH-GRO		AK 101	2.2	0.58	---	---	0.104	---	0.136	0.164
TPH-DRO		AK 102	1.5	**6.6**	**14.6**	**17.2**	1.47	**4.04**	**3.74**	**6.42**
TPH-RRO		AK 103	1.1	---	**2.53**	**3.04**	0.242 J	<0.144	0.413 J	0.462 J
BTEX/VOCs										
Benzene	71-43-2	8260C	0.005	0.0031	0.00147	**0.00653**	0.00265	0.00286	0.00364	0.00477
Toluene	108-88-3	8260C	1	<0.002	<0.001	0.0192	0.00041 J	<0.00031	0.00054 J	<0.00035
Ethylbenze	100-41-4	8260C	0.7	0.011	0.00299	0.00315	0.00128	0.00165	0.00212	0.00282
Xylenes	1330-20-7	8260C	10	0.08	0.00618	0.037	<0.00767	0.00893	0.00951	0.01497
Trimethylbenzene, 1,2,4-	95-63-6	8260C	0.015	**0.16**	0.00589	**0.0518**	---	---	---	---
Semi-Volatile Organic Compounds										
Acenaphthene	83-32-9	8270D/SIM	0.53	<0.0027	<0.000528	<0.000306	0.000339	0.0000401	0.000402	<0.0000154
Acenaphthylene	208-96-8	8270D/SIM	0.26	<0.00054	<0.0005	<0.000306	<0.0000155	<0.00000391	<0.0000147	<0.0000154
Anthracene	120-12-7	8270D/SIM	0.043	<0.0005	<0.0005	<0.000306	0.0000582	<0.00000391	<0.0000147	<0.0000154
Benz-a-anthracene	56-55-3	8270D/SIM	0.0012	<0.000052	<0.00005	<0.0000153	<0.0000155	<0.00000391	<0.0000147	<0.0000154
Benzo-a-pyrene	50-32-8	8270D/SIM	0.000034	**<0.00005**	**<0.00005**	<0.0000153	<0.0000155	<0.00000391	<0.00000608	<0.00000635
Benzo-b-fluoranthene	205-99-2	8270D/SIM	0.00034	<0.00005	<0.00005	<0.0000153	<0.0000155	<0.00000391	<0.0000147	<0.0000154
Benzo-g,h,i-perylene	191-24-2	8270D/SIM	0.00026	<0.00005	<0.00005	<0.0000153	<0.0000155	<0.00000391	<0.0000147	<0.0000154
Benzo-j,k-fluoranthene	207-08-9	8270D/SIM	0.0008	<0.00005	<0.00005	<0.0000153	<0.0000155	<0.00000391	<0.0000147	<0.0000154
Chrysene	218-01-9	8270D/SIM	0.002	<0.00005	<0.00005	<0.0000153	<0.0000155	<0.00000391	<0.0000147	<0.0000154
Dibenz-a,h-anthracene	53-70-3	8270D/SIM	0.000034	<0.00005	<0.00005	<0.0000153	<0.0000155	<0.00000391	<0.00000608	<0.00000635
Fluoranthene	206-44-0	8270D/SIM	0.26	<0.0005	<0.00005	<0.0000153	<0.0000155	<0.00000391	<0.0000147	<0.0000154
Fluorene	86-73-7	8270D/SIM	0.29	<0.0071	<0.000562	<0.00148	0.000747	<0.00000391	<0.0000147	<0.0000154
Indeno-1,2,3-cd-pyrene	193-39-5	8270D/SIM	0.00019	<0.00005	<0.00005	<0.0000153	<0.0000155	<0.00000391	<0.0000147	<0.0000154
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.011	**<0.057**	<0.000725	<0.00628	0.0013	0.000028	<0.0000147	<0.0000154
Methylnaphthalene, 2-	91-57-6	8270D/SIM	0.036	<0.088	<0.0005	<0.00447	0.000247	0.0000164	<0.0000147	<0.0000154
Naphthalene	91-20-3	8270D SIM	0.0017	**<0.12**	**<0.00438**	**<0.0391**	0.00166	0.000193	0.000195	<0.0000318
Phenanthrene	85-01-8	8270D/SIM	0.17	<0.0044	<0.0005	<0.000306	0.0000769	<0.00000391	<0.0000147	<0.0000154
Pyrene	129-00-0	8270D/SIM	0.12	<0.0005	<0.000057	<0.0000153	0.0000277 J	<0.00000391	<0.0000515	<0.0000154

Notes:

1. Sampling locations shown on Figure 3.
2. Groundwater cleanup criteria based on 18AAC 75.345 Table C (as ammended through November 7, 2017)
3. Concentrations >ADEC Cleanup Criteria are ***bold/highlight*** type.
4. Limits of Quantitation (LOQs)/Non-detected concentrations >ADEC Cleanup Criteria are *italic/highlight* type.
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 6
SUMMARY OF GROUNDWATER SAMPLING RESULTS
Kiewit Infrastructure West Co., Fairbanks, Alaska

				MW-4						
		Location ID[1]:	ADEC Cleanup Criteria[2]	MW4-1016	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4
		Sample Date:		16-Oct-12	03-Jul-14	16-Oct-14	27-Apr-15	02-Sep-15	25-Aug-16	26-Sep-17
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Petroleum Hydrocarbons										
TPH-GRO		AK 101	2.2	<0.1	---	---	0.0318 J	---	0.0326 J	<0.031
TPH-DRO		AK 102	1.5	0.59	<0.6	1.12	**1.72**	0.994	1.15	0.769
TPH-RRO		AK 103	1.1	---	0.533	0.947	0.371 J	<0.144	0.25 J	0.316 J
BTEX/VOCs										
Benzene	71-43-2	8260C	0.005	<0.0002	0.0008	<0.00012	0.0003 J	<0.00015	0.00023 J	0.00051
Toluene	108-88-3	8260C	1	<0.001	<0.001	<0.00031	<0.00031	<0.00031	<0.00031	0.00055 J
Ethylbenze	100-41-4	8260C	0.7	<0.0002	<0.001	<0.00031	<0.00031	<0.00031	<0.00031	0.00036 J
Xylenes	1330-20-7	8260C	10	<0.0004	0.0036	<0.001	<0.00093	<0.00093	<0.00093	0.00171 J
Trimethylbenzene, 1,2,4-	95-63-6	8260C	0.015	0.00036	0.00539	<0.00031	---	---	---	---
Semi-Volatile Organic Compounds										
Acenaphthene	83-32-9	8270D/SIM	0.53	<0.00014	<0.0000884	<0.0000153	0.000129	0.0000341	0.000211	0.0000587
Acenaphthylene	208-96-8	8270D/SIM	0.26	<0.0001	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Anthracene	120-12-7	8270D/SIM	0.043	<0.0001	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Benz-a-anthracene	56-55-3	8270D/SIM	0.0012	<0.00005	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Benzo-a-pyrene	50-32-8	8270D/SIM	0.000034	**<0.00005**	**<0.0000524**	<0.0000153	<0.0000155	<0.00000391	<0.00000585	<0.00000596
Benzo-b-fluoranthene	205-99-2	8270D/SIM	0.00034	<0.00005	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Benzo-g,h,i-perylene	191-24-2	8270D/SIM	0.00026	<0.00005	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Benzo-j,k-fluoranthene	207-08-9	8270D/SIM	0.0008	<0.00005	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Chrysene	218-01-9	8270D/SIM	0.002	<0.00005	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Dibenz-a,h-anthracene	53-70-3	8270D/SIM	0.000034	<0.00005	**<0.0000524**	<0.0000153	<0.0000155	<0.00000391	<0.0000585	<0.00000596
Fluoranthene	206-44-0	8270D/SIM	0.26	<0.0001	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Fluorene	86-73-7	8270D/SIM	0.29	<0.00029	<0.000161	<0.0000876	0.000213	0.0000613	0.000203	0.000117
Indeno-1,2,3-cd-pyrene	193-39-5	8270D/SIM	0.00019	<0.00005	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.011	<0.00028	<0.0000954	<0.0000153	0.0000371 J	<0.00000391	0.0000259	<0.0000144
Methylnaphthalene, 2-	91-57-6	8270D/SIM	0.036	<0.00036	<0.0000524	<0.0000153	0.0000174 J	<0.00000391	0.0000284	<0.0000144
Naphthalene	91-20-3	8270D SIM	0.0017	<0.00022	<0.000231	**<0.0031**	0.000192	<0.00000807	<0.0000292	<0.0000298
Phenanthrene	85-01-8	8270D/SIM	0.17	<0.0001	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144
Pyrene	129-00-0	8270D/SIM	0.12	<0.0001	<0.0000524	<0.0000153	<0.0000155	<0.00000391	<0.0000142	<0.0000144

Notes:

1. Sampling locations shown on Figure 3.
2. Groundwater cleanup criteria based on 18AAC 75.345 Table C (as ammended through November 7, 2017)
3. Concentrations >ADEC Cleanup Criteria are ***bold/highlight*** type.
4. Limits of Quantitation (LOQs)/Non-detected concentrations >ADEC Cleanup Criteria are *italic/highlight* type.
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

TABLE 6
SUMMARY OF GROUNDWATER SAMPLING RESULTS
Kiewit Infrastructure West Co., Fairbanks, Alaska

				MW-5								
		Location ID[1]: Sample Date:	ADEC Cleanup Criteria[2]	MW5-1016 16-Oct-12	MW-5 02-Jul-14	MW-5 16-Oct-14	MW-5 27-Apr-15	MW-52 (MW5 DUP) 27-Apr-15	MW-5 02-Sep-15	MW-5 25-Aug-16	MW-5 26-Sep-17	MW-55 (MW-5 DUP) 27-Sep-17
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Petroleum Hydrocarbons												
TPH-GRO		AK 101	2.2	<0.1	---	---	<0.031	0.0449 J	---	<0.031	<0.031	<0.031
TPH-DRO		AK 102	1.5	0.24	<0.6	<0.6	<0.18	<0.18	<0.173	0.277	<0.176	<0.17
TPH-RRO		AK 103	1.1	---	<0.5	<0.5	<0.15	<0.15	<0.144	<0.144	<0.147	<0.142
BTEX/VOCs												
Benzene	71-43-2	8260C	0.005	<0.0002	<0.0004	<0.00012	<0.00012	<0.00012	<0.00015	<0.00015	<0.00015	<0.00015
Toluene	108-88-3	8260C	1	<0.001	<0.001	<0.00031	<0.00031	<0.00031	<0.00031	<0.00031	<0.00031	<0.00031
Ethylbenze	100-41-4	8260C	0.7	<0.0002	<0.001	<0.00031	<0.00031	<0.00031	<0.00031	<0.00031	<0.00031	<0.00031
Xylenes	1330-20-7	8260C	10	<0.0004	<0.003	<0.001	<0.00093	<0.00093	<0.00093	<0.00093	<0.00062	0.00076 J
Trimethylbenzene, 1,2,4-	95-63-6	8260C	0.015	<0.0002	<0.001	<0.00031	---	---	---	---	---	---
Semi-Volatile Organic Compounds												
Acenaphthene	83-32-9	8270D/SIM	0.53	<0.000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Acenaphthylene	208-96-8	8270D/SIM	0.26	<0.000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Anthracene	120-12-7	8270D/SIM	0.043	<0.000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Benz-a-anthracene	56-55-3	8270D/SIM	0.0012	<0.0000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Benzo-a-pyrene	50-32-8	8270D/SIM	0.000034	<0.0000097	**<0.00005**	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.00000574	<0.00000608	<0.0000062
Benzo-b-fluoranthene	205-99-2	8270D/SIM	0.00034	<0.0000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Benzo-g,h,i-perylene	191-24-2	8270D/SIM	0.00026	<0.0000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Benzo-j,k-fluoranthene	207-08-9	8270D/SIM	0.0008	<0.0000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Chrysene	218-01-9	8270D/SIM	0.002	<0.0000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Dibenz-a,h-anthracene	53-70-3	8270D/SIM	0.000034	<0.0000097	**<0.00005**	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.00000574	<0.00000608	<0.0000062
Fluoranthene	206-44-0	8270D/SIM	0.26	<0.000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Fluorene	86-73-7	8270D/SIM	0.29	<0.000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Indeno-1,2,3-cd-pyrene	193-39-5	8270D/SIM	0.00019	<0.0000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Methylnaphthalene, 1-	90-12-0	8270D/SIM	0.011	<0.000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Methylnaphthalene, 2-	91-57-6	8270D/SIM	0.036	<0.000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Naphthalene	91-20-3	8270D SIM	0.0017	<0.000097	<0.0001	**<0.0031**	<0.0000316	<0.0000316	<0.00000807	<0.0000287	<0.0000304	<0.000031
Phenanthrene	85-01-8	8270D/SIM	0.17	<0.000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015
Pyrene	129-00-0	8270D/SIM	0.12	<0.000097	<0.00005	<0.000015	<0.0000153	<0.0000153	<0.00000391	<0.0000139	<0.0000147	<0.000015

Notes:

1. Sampling locations shown on Figure 3.
2. Groundwater cleanup criteria based on 18AAC 75.345 Table C (as ammended through November 7, 2017)
3. Concentrations >ADEC Cleanup Criteria are ***bold/highlight*** type.
4. Limits of Quantitation (LOQs)/Non-detected concentrations >ADEC Cleanup Criteria are *italic/highlight* type.
5. J = Estimated value.
6. < = Compound not detected at the specified detection limit.
7. --- = not analyzed

FIGURES

EXPLANATION

- Approx. Property Boundary
- Approx. Soil Sample Location (Analytical Data)
- Soil Boring/Temporary Monitoring Well Location
- Soil Boring for TOC Analysis (Sept. 2017)
- Approx. Monitoring Well Location
- Former Used-Oil AST Excavation (Aug./Sept. 2010)
- Former Septic Tank & Fuel Delivery Line Excavation (Aug./Sept. 2010)

N

Approx. Scale in Feet

0 10 20

KIEWIT INFRASTRUCTURE WEST CO.

2050 PEGER ROAD SITE
FAIRBANKS, ALASKA

Figure 1

SOIL BORING LOCATION MAP

PROJECT: 1862	BY: BZH	REVISIONS
DATE: DEC., 2017	CHECKED: ECM	

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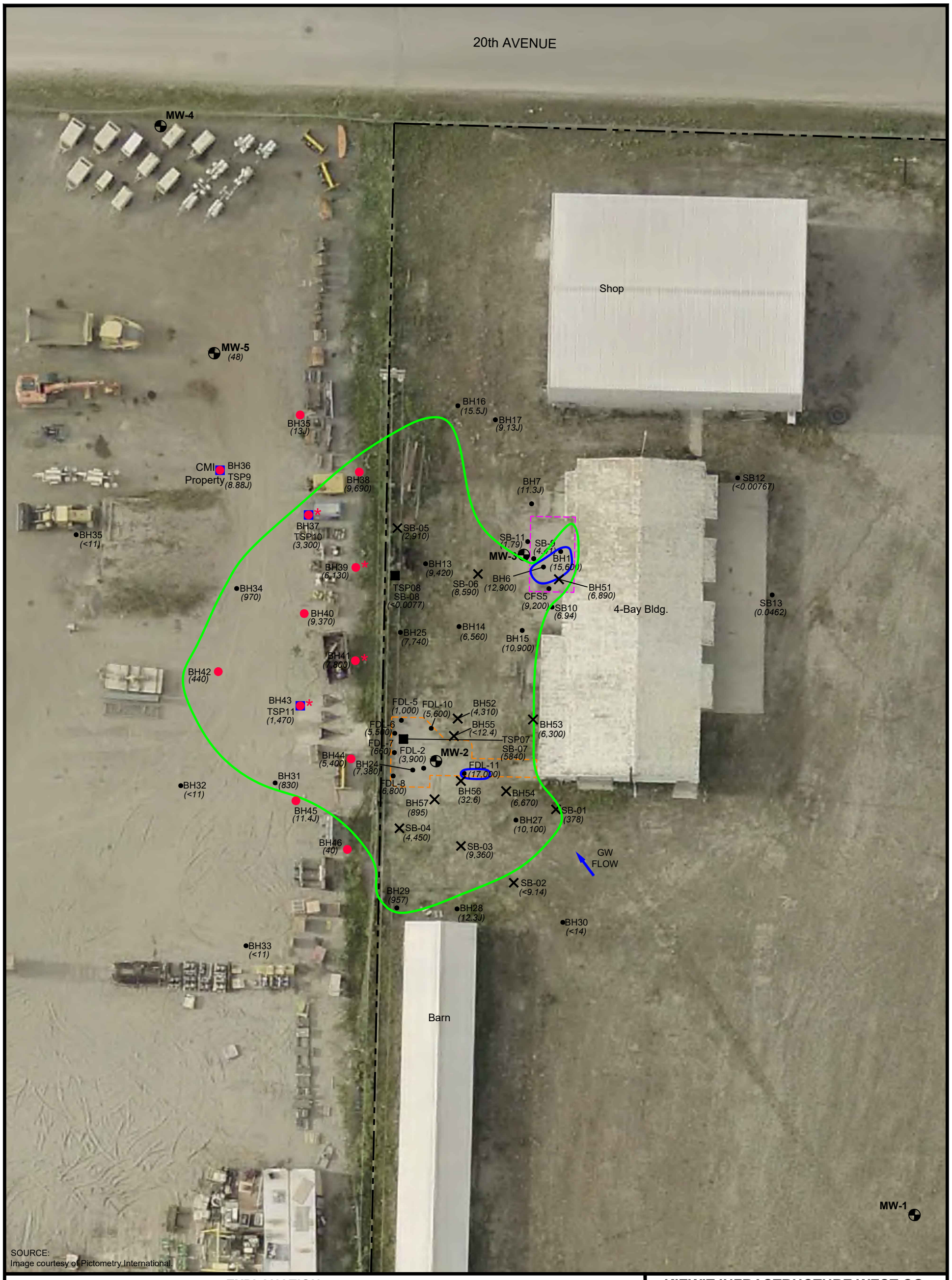

EXPLANATION

- Approx. Property Boundary
- Approx. Soil Sample Location (Analytical Data)
- (830) DRO Concentration (mg/kg)
- Approx. Monitoring Well Location
- Former Used-Oil AST Excavation (Aug./Sept. 2010)
- Former Septic Tank & Fuel Delivery Line Excavation (Aug./Sept. 2010)
- Off-SiteTemporary Well Location
- Exceeds Method 2 Cleanup DRO Criteria (250 mg/kg)
- Exceeds DRO Maximum Allowable Concentrations (12,500 mg/kg)
- Soil Boring For DRO Analysis
- Soil Boring/Temporary Monitoring Well Location
- Off-Site Soil Boring For DRO Analysis
- Selected samples analyzed for VOCs (8260) & SVOCs (8270)

N

Approx. Scale in Feet

0 10 20

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Figure 2

SOIL DRO CONCENTRATIONS

PROJECT: 1862	BY: AJD	REVISIONS
DATE: DEC., 2017	CHECKED: ECM	

PASTOR, BEHLING & WHEELER, LLC

CONSULTING ENGINEERS AND SCIENTISTS

EXPLANATION

- Approx. Property Boundary
- Approx. Monitoring Well Location
- Former Used-Oil AST Excavation
- Former Septic Tank & Fuel Delivery Line Excavation
- (428.09) Water-Level Elevation (Ft NAVD)
- 428 Potentiometric Contour (Ft NAVD) C.I.= 0.1 Ft
- Approx. Groundwater Flow Direction

N

Approx. Scale in Feet

0 30 60

SOURCE:
Image courtesy of Pictometry International.

KIEWIT INFRASTRUCTURE WEST CO.
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FAIRBANKS, ALASKA

Figure 3

POTENTIOMETRIC SURFACE MAP SEPTEMBER 2017

PROJECT: 1862	BY: BZH	REVISIONS
DATE: DEC., 2017	CHECKED: ECM	

PASTOR, BEHLING & WHEELER, LLC
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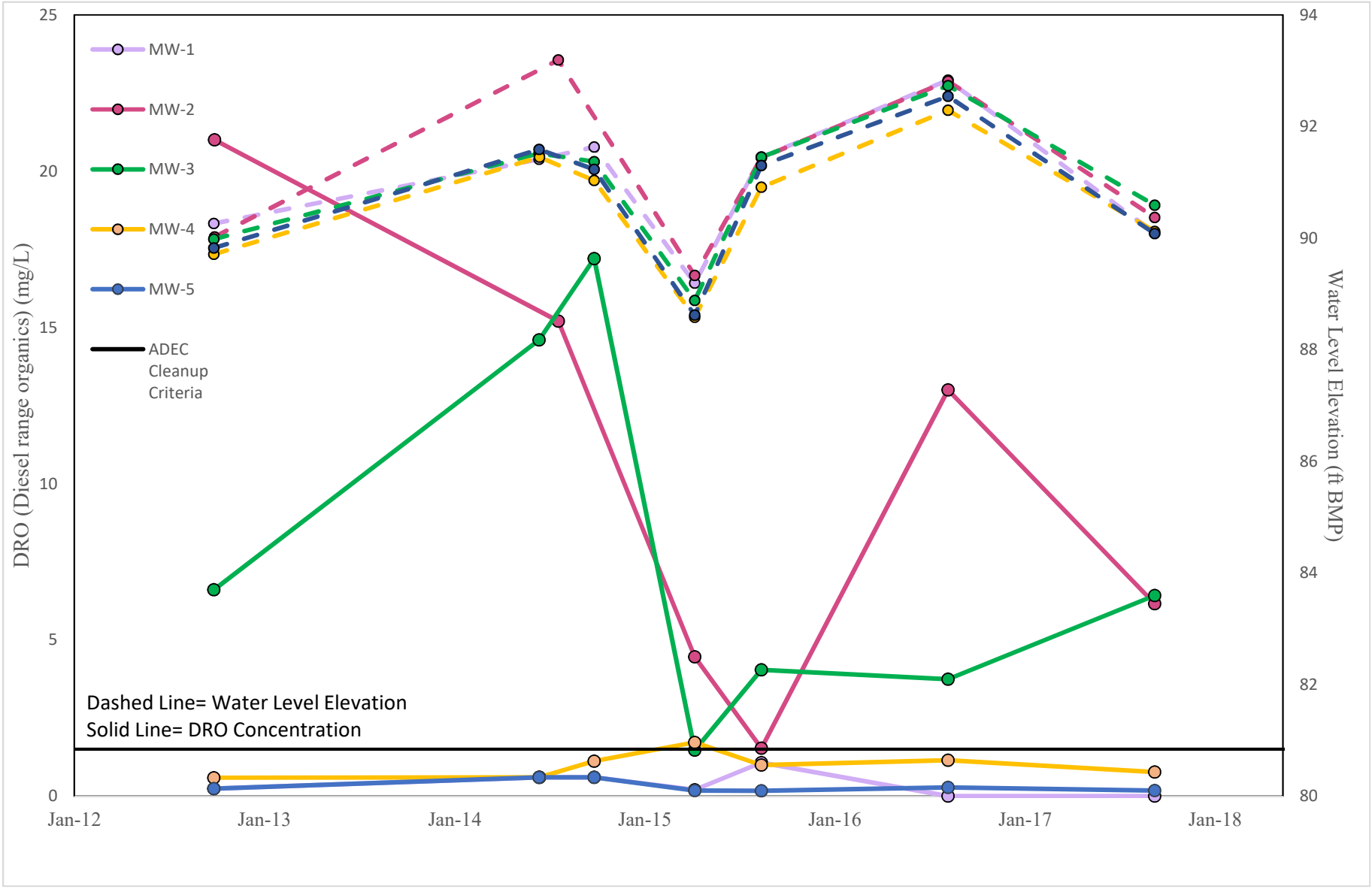
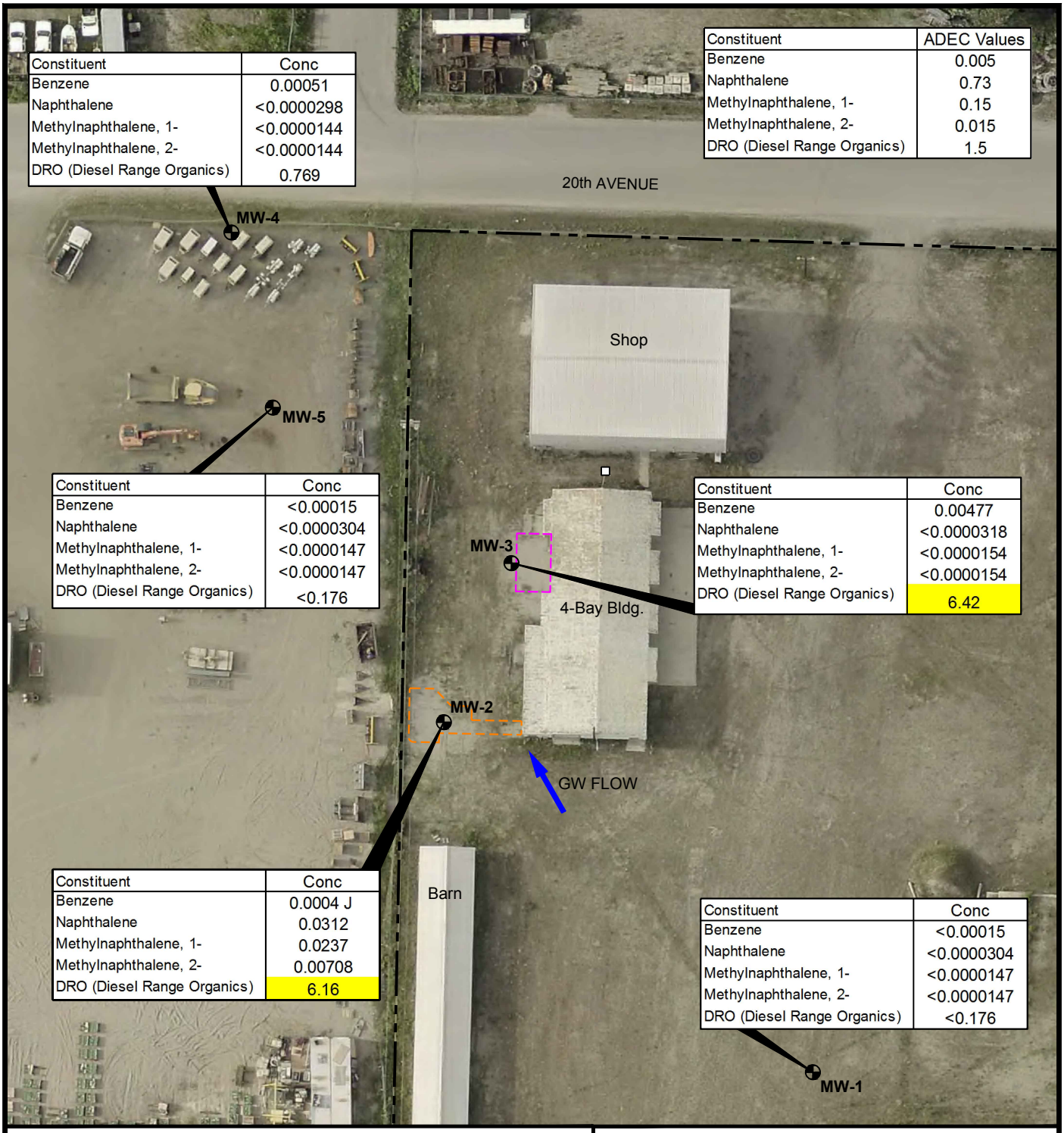
FIGURE 4
DRO CONCENTRATIONS AND GROUNDWATER ELEVATIONS OVER TIME
KIEWIT INFRASTRUCTURE WEST CO. - 2050 PEGER ROAD, FAIRBANKS, ALASKA





Constituent	Conc
Benzene	0.00051
Naphthalene	<0.0000298
Methylnaphthalene, 1-	<0.0000144
Methylnaphthalene, 2-	<0.0000144
DRO (Diesel Range Organics)	0.769

Constituent	ADEC Values
Benzene	0.005
Naphthalene	0.73
Methylnaphthalene, 1-	0.15
Methylnaphthalene, 2-	0.015
DRO (Diesel Range Organics)	1.5

Constituent	Conc
Benzene	<0.00015
Naphthalene	<0.0000304
Methylnaphthalene, 1-	<0.0000147
Methylnaphthalene, 2-	<0.0000147
DRO (Diesel Range Organics)	<0.176

Constituent	Conc
Benzene	0.00477
Naphthalene	<0.0000318
Methylnaphthalene, 1-	<0.0000154
Methylnaphthalene, 2-	<0.0000154
DRO (Diesel Range Organics)	6.42

Constituent	Conc
Benzene	0.0004 J
Naphthalene	0.0312
Methylnaphthalene, 1-	0.0237
Methylnaphthalene, 2-	0.00708
DRO (Diesel Range Organics)	6.16

Constituent	Conc
Benzene	<0.00015
Naphthalene	<0.0000304
Methylnaphthalene, 1-	<0.0000147
Methylnaphthalene, 2-	<0.0000147
DRO (Diesel Range Organics)	<0.176

NOTE:
1. Highlighted values exceed ADEC Groundwater Cleanup Levels.
2. Values in mg/L.

EXPLANATION

- Approx. Property Boundary
- Approx. Monitoring Well Location (Sept. 2015)
- Water Well (Not In Use)
- Off-Site Temporary Well Location (Sept. 2015)
- Former Used-Oil AST Excavation
- Former Septic Tank & Fuel Delivery Line Excavation

N

Approx. Scale in Feet

0 30 60

SOURCE:
Image courtesy of Pictometry International.

KIEWIT INFRASTRUCTURE WEST CO.
2050 PEGER ROAD SITE
FAIRBANKS, ALASKA

Figure 5

GROUNDWATER CONCENTRATION MAP (SEPTEMBER 2017)

PROJECT: 1862	BY: BZH	REVISIONS
DATE: DEC., 2017	CHECKED: ECM	

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CONSULTING ENGINEERS AND SCIENTISTS

ATTACHMENT A

TOTAL ORGANIC CARBON SAMPLE ANALYTICAL REPORT

Laboratory Report of Analysis

To: Nortech
2400 College Rd.
Fairbanks, AK 99709
(907)388-8671

Report Number: **1178376**

Client Project: **Kiewit Soil Invest.**

Dear Susan Vogt,

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

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

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

Sincerely,
SGS North America Inc.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

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

Case Narrative

SGS Client: **Nortech**
SGS Project: **1178376**
Project Name/Site: **Kiewit Soil Invest.**
Project Contact: **Susan Vogt**

Refer to sample receipt form for information on sample condition.

BH51 (7.5-10) (1178376009) PS

AK102 - Surrogate recovery for 5a-androstane (0%) does not meet QC criteria due to sample dilution (40X).

BH510 (7.5-10) (1178376010) PS

AK102 - Surrogate recovery for 5a-androstane (0%) does not meet QC criteria due to sample dilution (40X).

BH52 (7.5-10) (1178376011) PS

AK102 - Surrogate recovery for 5a-androstane (0%) does not meet QC criteria due to sample dilution (20X).

BH53 (7.5-10) (1178376012) PS

AK102 - Surrogate recovery for 5a-androstane (0%) does not meet QC criteria due to sample dilution (40X).

BH54 (7.5-10) (1178376013) PS

AK102 - Surrogate recovery for 5a-androstane (0%) does not meet QC criteria due to sample dilution (40X).

1178376001MS (1413755) MS

9060A Mod - Total Organic Carbon - MS recovery (49.8%) is outside of QC criteria. Refer to LCS for accuracy requirements.

1178376005MS (1414339) MS

9060A Mod - Total Organic Carbon - MS recovery (-134%) is outside of QC criteria. Refer to LCS for accuracy requirements.

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

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Laboratory Qualifiers

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

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
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
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
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
BH47 (5-7.5)	1178376001	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH47 (10-12.5)	1178376002	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH48 (2.5-5)	1178376003	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH48 (5-7.5)	1178376004	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH49 (2.5-5)	1178376005	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH49 (5-7.5)	1178376006	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH50 (2.5-5)	1178376007	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH50 (5-7.5)	1178376008	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH51 (7.5-10)	1178376009	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH510 (7.5-10)	1178376010	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH52 (7.5-10)	1178376011	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH53 (7.5-10)	1178376012	09/13/2017	09/15/2017	Soil/Solid (dry weight)
BH54 (7.5-10)	1178376013	09/13/2017	09/15/2017	Soil/Solid (dry weight)

Method	Method Description
AK102	Diesel Range Organics (S)
SM21 2540G	Percent Solids SM2540G
SW9060A-Mod	Total Organic Carbon-M in Triplicate (S)

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Detectable Results Summary

Client Sample ID: **BH47 (5-7.5)**
Lab Sample ID: 1178376001
Waters Department

Parameter	Result	Units
Total Organic Carbon	0.405	%
Total Organic Carbon 2	0.375	%
Total Organic Carbon 3	0.548	%

Client Sample ID: **BH47 (10-12.5)**
Lab Sample ID: 1178376002
Waters Department

Parameter	Result	Units
Total Organic Carbon	0.150	%
Total Organic Carbon 2	0.118	%
Total Organic Carbon 3	1.10	%

Client Sample ID: **BH48 (2.5-5)**
Lab Sample ID: 1178376003
Waters Department

Parameter	Result	Units
Total Organic Carbon	1.50	%
Total Organic Carbon 2	1.29	%
Total Organic Carbon 3	1.20	%

Client Sample ID: **BH48 (5-7.5)**
Lab Sample ID: 1178376004
Waters Department

Parameter	Result	Units
Total Organic Carbon	0.176	%
Total Organic Carbon 2	0.190	%
Total Organic Carbon 3	0.204	%

Client Sample ID: **BH49 (2.5-5)**
Lab Sample ID: 1178376005
Waters Department

Parameter	Result	Units
Total Organic Carbon	2.43	%
Total Organic Carbon 2	1.93	%
Total Organic Carbon 3	2.22	%

Client Sample ID: **BH49 (5-7.5)**
Lab Sample ID: 1178376006
Waters Department

Parameter	Result	Units
Total Organic Carbon	0.127	%
Total Organic Carbon 2	0.297	%
Total Organic Carbon 3	0.349	%

Client Sample ID: **BH50 (2.5-5)**
Lab Sample ID: 1178376007
Waters Department

Parameter	Result	Units
Total Organic Carbon	0.191	%
Total Organic Carbon 2	0.241	%
Total Organic Carbon 3	0.230	%

Client Sample ID: **BH50 (5-7.5)**
Lab Sample ID: 1178376008
Waters Department

Parameter	Result	Units
Total Organic Carbon	0.696	%
Total Organic Carbon 2	0.348	%
Total Organic Carbon 3	0.268	%

Client Sample ID: **BH51 (7.5-10)**
Lab Sample ID: 1178376009
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	6890	mg/Kg

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Detectable Results Summary

Client Sample ID: **BH510 (7.5-10)**
Lab Sample ID: 1178376010

Semivolatile Organic Fuels	Parameter	Result	Units
	Diesel Range Organics	8690	mg/Kg

Client Sample ID: **BH52 (7.5-10)**
Lab Sample ID: 1178376011

Semivolatile Organic Fuels	Parameter	Result	Units
	Diesel Range Organics	4310	mg/Kg

Client Sample ID: **BH53 (7.5-10)**
Lab Sample ID: 1178376012

Semivolatile Organic Fuels	Parameter	Result	Units
	Diesel Range Organics	6300	mg/Kg

Client Sample ID: **BH54 (7.5-10)**
Lab Sample ID: 1178376013

Semivolatile Organic Fuels	Parameter	Result	Units
	Diesel Range Organics	6670	mg/Kg

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Results of **BH47 (5-7.5)**

Client Sample ID: **BH47 (5-7.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376001
Lab Project ID: 1178376

Collection Date: 09/13/17 09:25
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):80.2
Location:

Results by

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
TOC Trip, Average	0.443		0.0600	0.0180	%	1		09/18/17 11:05

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/18/17 11:05
Container ID: 1178376001-A

Prep Batch: WXX12004
Prep Method: METHOD
Prep Date/Time: 09/18/17 10:00
Prep Initial Wt./Vol.: 519.1 mg
Prep Extract Vol: 1 mL

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Results of **BH47 (5-7.5)**

Client Sample ID: **BH47 (5-7.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376001
Lab Project ID: 1178376

Collection Date: 09/13/17 09:25
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):80.2
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Total Organic Carbon	0.405		0.0600	0.0180	%	1		09/18/17 11:05
Total Organic Carbon 2	0.375		0.0600	0.0180	%	1		09/18/17 11:05
Total Organic Carbon 3	0.548		0.0600	0.0180	%	1		09/18/17 11:05

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/18/17 11:05
Container ID: 1178376001-A

Prep Batch: WXX12004
Prep Method: METHOD
Prep Date/Time: 09/18/17 10:00
Prep Initial Wt./Vol.: 519.1 mg
Prep Extract Vol: 1 mL

Print Date: 09/21/2017 3:35:10PM

J flagging is activated

Results of **BH47 (10-12.5)**

Client Sample ID: **BH47 (10-12.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376002
Lab Project ID: 1178376

Collection Date: 09/13/17 09:27
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):82.8
Location:

Results by

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
TOC Trip, Average	0.454		0.0562	0.0169	%	1		09/18/17 12:04

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/18/17 12:04
Container ID: 1178376002-A

Prep Batch: WXX12004
Prep Method: METHOD
Prep Date/Time: 09/18/17 10:00
Prep Initial Wt./Vol.: 537 mg
Prep Extract Vol: 1 mL

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Results of **BH47 (10-12.5)**

Client Sample ID: **BH47 (10-12.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376002
Lab Project ID: 1178376

Collection Date: 09/13/17 09:27
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):82.8
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Total Organic Carbon	0.150		0.0562	0.0169	%	1		09/18/17 12:04
Total Organic Carbon 2	0.118		0.0562	0.0169	%	1		09/18/17 12:04
Total Organic Carbon 3	1.10		0.0562	0.0169	%	1		09/18/17 12:04

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/18/17 12:04
Container ID: 1178376002-A

Prep Batch: WXX12004
Prep Method: METHOD
Prep Date/Time: 09/18/17 10:00
Prep Initial Wt./Vol.: 537 mg
Prep Extract Vol: 1 mL

Results of **BH48 (2.5-5)**

Client Sample ID: **BH48 (2.5-5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376003
Lab Project ID: 1178376

Collection Date: 09/13/17 09:58
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):79.0
Location:

Results by

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
TOC Trip, Average	1.33		0.0617	0.0185	%	1		09/18/17 12:39

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/18/17 12:39
Container ID: 1178376003-A

Prep Batch: WXX12004
Prep Method: METHOD
Prep Date/Time: 09/18/17 10:00
Prep Initial Wt./Vol.: 513.2 mg
Prep Extract Vol: 1 mL

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Results of **BH48 (2.5-5)**

Client Sample ID: **BH48 (2.5-5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376003
Lab Project ID: 1178376

Collection Date: 09/13/17 09:58
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):79.0
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Total Organic Carbon	1.50		0.0617	0.0185	%	1		09/18/17 12:39
Total Organic Carbon 2	1.29		0.0617	0.0185	%	1		09/18/17 12:39
Total Organic Carbon 3	1.20		0.0617	0.0185	%	1		09/18/17 12:39

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/18/17 12:39
Container ID: 1178376003-A

Prep Batch: WXX12004
Prep Method: METHOD
Prep Date/Time: 09/18/17 10:00
Prep Initial Wt./Vol.: 513.2 mg
Prep Extract Vol: 1 mL

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Results of **BH48 (5-7.5)**

Client Sample ID: **BH48 (5-7.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376004
Lab Project ID: 1178376

Collection Date: 09/13/17 09:59
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):73.4
Location:

Results by

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
TOC Trip, Average	0.190		0.0637	0.0191	%	1		09/18/17 13:15

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/18/17 13:15
Container ID: 1178376004-A

Prep Batch: WXX12004
Prep Method: METHOD
Prep Date/Time: 09/18/17 10:00
Prep Initial Wt./Vol.: 534.4 mg
Prep Extract Vol: 1 mL

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Results of **BH48 (5-7.5)**

Client Sample ID: **BH48 (5-7.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376004
Lab Project ID: 1178376

Collection Date: 09/13/17 09:59
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):73.4
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Total Organic Carbon	0.176		0.0637	0.0191	%	1		09/18/17 13:15
Total Organic Carbon 2	0.190		0.0637	0.0191	%	1		09/18/17 13:15
Total Organic Carbon 3	0.204		0.0637	0.0191	%	1		09/18/17 13:15

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/18/17 13:15
Container ID: 1178376004-A

Prep Batch: WXX12004
Prep Method: METHOD
Prep Date/Time: 09/18/17 10:00
Prep Initial Wt./Vol.: 534.4 mg
Prep Extract Vol: 1 mL

Results of **BH49 (2.5-5)**

Client Sample ID: **BH49 (2.5-5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376005
Lab Project ID: 1178376

Collection Date: 09/13/17 10:25
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):74.3
Location:

Results by

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
TOC Trip, Average	2.19		0.0632	0.0190	%	1		09/19/17 11:50

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/19/17 11:50
Container ID: 1178376005-A

Prep Batch: WXX12010
Prep Method: METHOD
Prep Date/Time: 09/19/17 10:00
Prep Initial Wt./Vol.: 532.6 mg
Prep Extract Vol: 1 mL

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Results of **BH49 (2.5-5)**

Client Sample ID: **BH49 (2.5-5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376005
Lab Project ID: 1178376

Collection Date: 09/13/17 10:25
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):74.3
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Total Organic Carbon	2.43		0.0632	0.0190	%	1		09/19/17 11:50
Total Organic Carbon 2	1.93		0.0632	0.0190	%	1		09/19/17 11:50
Total Organic Carbon 3	2.22		0.0632	0.0190	%	1		09/19/17 11:50

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/19/17 11:50
Container ID: 1178376005-A

Prep Batch: WXX12010
Prep Method: METHOD
Prep Date/Time: 09/19/17 10:00
Prep Initial Wt./Vol.: 532.6 mg
Prep Extract Vol: 1 mL

Results of **BH49 (5-7.5)**

Client Sample ID: **BH49 (5-7.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376006
Lab Project ID: 1178376

Collection Date: 09/13/17 10:26
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):73.0
Location:

Results by

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
TOC Trip, Average	0.257		0.0570	0.0171	%	1		09/19/17 12:46

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/19/17 12:46
Container ID: 1178376006-A

Prep Batch: WXX12010
Prep Method: METHOD
Prep Date/Time: 09/19/17 10:00
Prep Initial Wt./Vol.: 601.2 mg
Prep Extract Vol: 1 mL

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Results of **BH49 (5-7.5)**

Client Sample ID: **BH49 (5-7.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376006
Lab Project ID: 1178376

Collection Date: 09/13/17 10:26
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):73.0
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Total Organic Carbon	0.127		0.0570	0.0171	%	1		09/19/17 12:46
Total Organic Carbon 2	0.297		0.0570	0.0171	%	1		09/19/17 12:46
Total Organic Carbon 3	0.349		0.0570	0.0171	%	1		09/19/17 12:46

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/19/17 12:46
Container ID: 1178376006-A

Prep Batch: WXX12010
Prep Method: METHOD
Prep Date/Time: 09/19/17 10:00
Prep Initial Wt./Vol.: 601.2 mg
Prep Extract Vol: 1 mL

Results of **BH50 (2.5-5)**

Client Sample ID: **BH50 (2.5-5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376007
Lab Project ID: 1178376

Collection Date: 09/13/17 10:50
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
TOC Trip, Average	0.221		0.0537	0.0161	%	1		09/19/17 15:30

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/19/17 15:30
Container ID: 1178376007-A

Prep Batch: WXX12010
Prep Method: METHOD
Prep Date/Time: 09/19/17 10:00
Prep Initial Wt./Vol.: 543.5 mg
Prep Extract Vol: 1 mL

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Results of **BH50 (2.5-5)**

Client Sample ID: **BH50 (2.5-5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376007
Lab Project ID: 1178376

Collection Date: 09/13/17 10:50
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Total Organic Carbon	0.191		0.0537	0.0161	%	1		09/19/17 15:30
Total Organic Carbon 2	0.241		0.0537	0.0161	%	1		09/19/17 15:30
Total Organic Carbon 3	0.230		0.0537	0.0161	%	1		09/19/17 15:30

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/19/17 15:30
Container ID: 1178376007-A

Prep Batch: WXX12010
Prep Method: METHOD
Prep Date/Time: 09/19/17 10:00
Prep Initial Wt./Vol.: 543.5 mg
Prep Extract Vol: 1 mL

Results of **BH50 (5-7.5)**

Client Sample ID: **BH50 (5-7.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376008
Lab Project ID: 1178376

Collection Date: 09/13/17 10:49
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):70.1
Location:

Results by

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
TOC Trip, Average	0.437		0.0697	0.0209	%	1		09/19/17 16:07

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/19/17 16:07
Container ID: 1178376008-A

Prep Batch: WXX12010
Prep Method: METHOD
Prep Date/Time: 09/19/17 10:00
Prep Initial Wt./Vol.: 511.5 mg
Prep Extract Vol: 1 mL

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Results of **BH50 (5-7.5)**

Client Sample ID: **BH50 (5-7.5)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376008
Lab Project ID: 1178376

Collection Date: 09/13/17 10:49
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):70.1
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Total Organic Carbon	0.696		0.0697	0.0209	%	1		09/19/17 16:07
Total Organic Carbon 2	0.348		0.0697	0.0209	%	1		09/19/17 16:07
Total Organic Carbon 3	0.268		0.0697	0.0209	%	1		09/19/17 16:07

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Analyst: K.W
Analytical Date/Time: 09/19/17 16:07
Container ID: 1178376008-A

Prep Batch: WXX12010
Prep Method: METHOD
Prep Date/Time: 09/19/17 10:00
Prep Initial Wt./Vol.: 511.5 mg
Prep Extract Vol: 1 mL

Results of **BH51 (7.5-10)**

Client Sample ID: **BH51 (7.5-10)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376009
Lab Project ID: 1178376

Collection Date: 09/13/17 11:15
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):96.0
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	6890		832	258	mg/Kg	40		09/21/17 03:09
Surrogates								
5a Androstane (surr)	0	*	50-150		%	40		09/21/17 03:09

Batch Information

Analytical Batch: XFC13815
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 09/21/17 03:09
Container ID: 1178376009-A

Prep Batch: XXX38468
Prep Method: SW3550C
Prep Date/Time: 09/19/17 11:51
Prep Initial Wt./Vol.: 30.06 g
Prep Extract Vol: 1 mL

Results of **BH510 (7.5-10)**

Client Sample ID: **BH510 (7.5-10)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376010
Lab Project ID: 1178376

Collection Date: 09/13/17 11:17
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):95.6
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	8690		837	259	mg/Kg	40		09/21/17 03:19
Surrogates								
5a Androstane (surr)	0	*	50-150		%	40		09/21/17 03:19

Batch Information

Analytical Batch: XFC13815
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 09/21/17 03:19
Container ID: 1178376010-A

Prep Batch: XXX38468
Prep Method: SW3550C
Prep Date/Time: 09/19/17 11:51
Prep Initial Wt./Vol.: 30.01 g
Prep Extract Vol: 1 mL

Results of **BH52 (7.5-10)**

Client Sample ID: **BH52 (7.5-10)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376011
Lab Project ID: 1178376

Collection Date: 09/13/17 12:01
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	4310		424	131	mg/Kg	20		09/21/17 03:29
Surrogates								
5a Androstane (surr)	0	*	50-150		%	20		09/21/17 03:29

Batch Information

Analytical Batch: XFC13815
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 09/21/17 03:29
Container ID: 1178376011-A

Prep Batch: XXX38468
Prep Method: SW3550C
Prep Date/Time: 09/19/17 11:51
Prep Initial Wt./Vol.: 30.187 g
Prep Extract Vol: 1 mL

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Results of **BH53 (7.5-10)**

Client Sample ID: **BH53 (7.5-10)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376012
Lab Project ID: 1178376

Collection Date: 09/13/17 12:06
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):93.4
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	6300		855	265	mg/Kg	40		09/21/17 03:38
Surrogates								
5a Androstane (surr)	0	*	50-150		%	40		09/21/17 03:38

Batch Information

Analytical Batch: XFC13815
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 09/21/17 03:38
Container ID: 1178376012-A

Prep Batch: XXX38468
Prep Method: SW3550C
Prep Date/Time: 09/19/17 11:51
Prep Initial Wt./Vol.: 30.059 g
Prep Extract Vol: 1 mL

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Results of **BH54 (7.5-10)**

Client Sample ID: **BH54 (7.5-10)**
Client Project ID: **Kiewit Soil Invest.**
Lab Sample ID: 1178376013
Lab Project ID: 1178376

Collection Date: 09/13/17 12:08
Received Date: 09/15/17 10:10
Matrix: Soil/Solid (dry weight)
Solids (%):94.1
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	6670		847	263	mg/Kg	40		09/21/17 03:48
Surrogates								
5a Androstane (surr)	0	*	50-150		%	40		09/21/17 03:48

Batch Information

Analytical Batch: XFC13815
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 09/21/17 03:48
Container ID: 1178376013-A

Prep Batch: XXX38468
Prep Method: SW3550C
Prep Date/Time: 09/19/17 11:51
Prep Initial Wt./Vol.: 30.101 g
Prep Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1768739 [SPT/10311]
Blank Lab ID: 1414020

Matrix: Soil/Solid (dry weight)

QC for Samples:
1178376001, 1178376002, 1178376003, 1178376004, 1178376005, 1178376006, 1178376007, 1178376008, 1178376009, 1178376010, 1178376011, 1178376012, 1178376013

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT10311
Analytical Method: SM21 2540G
Instrument:
Analyst: CNB
Analytical Date/Time: 9/18/2017 4:42:00PM

Duplicate Sample Summary

Original Sample ID: 1176619007
Duplicate Sample ID: 1414023
QC for Samples:

Analysis Date: 09/18/2017 16:42
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	93.5	92.4	%	1.20	(< 15)

Batch Information

Analytical Batch: SPT10311
Analytical Method: SM21 2540G
Instrument:
Analyst: CNB

Print Date: 09/21/2017 3:35:13PM

Duplicate Sample Summary

Original Sample ID: 1176640010
Duplicate Sample ID: 1414024

Analysis Date: 09/18/2017 16:42
Matrix: Soil/Solid (dry weight)

QC for Samples:

1178376001, 1178376002, 1178376003, 1178376004, 1178376005, 1178376006, 1178376007, 1178376008, 1178376009, 1178376010, 1178376011, 1178376012, 1178376013

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	91.3	91.1	%	0.25	(< 15)

Batch Information

Analytical Batch: SPT10311
Analytical Method: SM21 2540G
Instrument:
Analyst: CNB

Print Date: 09/21/2017 3:35:13PM

Duplicate Sample Summary

Original Sample ID: 1178379002
Duplicate Sample ID: 1414025

Analysis Date: 09/18/2017 16:42
Matrix: Soil/Solid (dry weight)

QC for Samples:

1178376001, 1178376002, 1178376003, 1178376004, 1178376005, 1178376006, 1178376007, 1178376008, 1178376009, 1178376010, 1178376011, 1178376012, 1178376013

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	81.0	81.6	%	0.68	(< 15)

Batch Information

Analytical Batch: SPT10311
Analytical Method: SM21 2540G
Instrument:
Analyst: CNB

Print Date: 09/21/2017 3:35:13PM

Method Blank

Blank ID: MB for HBN 1768698 [WXX/12004]
Blank Lab ID: 1413752

Matrix: Soil/Solid (dry weight)

QC for Samples:
1178376001, 1178376002, 1178376003, 1178376004

Results by **SW9060A-Mod**

Parameter	Results	LOQ/CL	DL	Units
Total Organic Carbon	0.0250U	0.0500	0.0150	%

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Instrument: TOC Analyzer
Analyst: K.W
Analytical Date/Time: 9/18/2017 10:23:31AM

Prep Batch: WXX12004
Prep Method: METHOD
Prep Date/Time: 9/18/2017 10:00:00AM
Prep Initial Wt./Vol.: 500 mg
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1178376 [WXX12004]
Blank Spike Lab ID: 1413753
Date Analyzed: 09/18/2017 10:37

Spike Duplicate ID: LCSD for HBN 1178376 [WXX12004]
Spike Duplicate Lab ID: 1413754
Matrix: Soil/Solid (dry weight)

QC for Samples: 1178376001, 1178376002, 1178376003, 1178376004

Results by **SW9060A-Mod**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Total Organic Carbon	3.35	3.44	103	3.35	3.48	104	(75-125)	1.30	(< 25)

Batch Information

Analytical Batch: **WTC2733**
Analytical Method: **SW9060A-Mod**
Instrument: **TOC Analyzer**
Analyst: **K.W**

Prep Batch: **WXX12004**
Prep Method: **METHOD**
Prep Date/Time: **09/18/2017 10:00**
Spike Init Wt./Vol.: 3.35 % Extract Vol: 1 mL
Dupe Init Wt./Vol.: 3.35 % Extract Vol: 1 mL

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Matrix Spike Summary

Original Sample ID: 1178376001
MS Sample ID: 1413755 MS
MSD Sample ID:

Analysis Date: 09/18/2017 11:05
Analysis Date: 09/18/2017 11:45
Analysis Date:
Matrix: Soil/Solid (dry weight)

QC for Samples: 1178376001, 1178376002, 1178376003, 1178376004

Results by **SW9060A-Mod**

		Matrix Spike (%)				Spike Duplicate (%)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Total Organic Carbon	0.405	0.218	0.514	50	*				75-125		

Batch Information

Analytical Batch: WTC2733
Analytical Method: SW9060A-Mod
Instrument: TOC Analyzer
Analyst: K.W
Analytical Date/Time: 9/18/2017 11:45:56AM

Prep Batch: WXX12004
Prep Method: TOC Soils Prep (S)
Prep Date/Time: 9/18/2017 10:00:00AM
Prep Initial Wt./Vol.: 572.40mg
Prep Extract Vol: 1.00mL

Print Date: 09/21/2017 3:35:19PM

Method Blank

Blank ID: MB for HBN 1768806 [WXX/12010]
Blank Lab ID: 1414336

Matrix: Soil/Solid (dry weight)

QC for Samples:
1178376005, 1178376006, 1178376007, 1178376008

Results by **SW9060A-Mod**

Parameter	Results	LOQ/CL	DL	Units
Total Organic Carbon	0.0250U	0.0500	0.0150	%

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Instrument: TOC Analyzer
Analyst: K.W
Analytical Date/Time: 9/19/2017 10:51:04AM

Prep Batch: WXX12010
Prep Method: METHOD
Prep Date/Time: 9/19/2017 10:00:00AM
Prep Initial Wt./Vol.: 500 mg
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1178376 [WXX12010]
Blank Spike Lab ID: 1414337
Date Analyzed: 09/19/2017 11:20

Spike Duplicate ID: LCSD for HBN 1178376 [WXX12010]
Spike Duplicate Lab ID: 1414338
Matrix: Soil/Solid (dry weight)

QC for Samples: 1178376005, 1178376006, 1178376007, 1178376008

Results by **SW9060A-Mod**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Total Organic Carbon	3.35	3.35	100	3.35	3.29	98	(75-125)	1.90	(< 25)

Batch Information

Analytical Batch: **WTC2735**
Analytical Method: **SW9060A-Mod**
Instrument: **TOC Analyzer**
Analyst: **K.W**

Prep Batch: **WXX12010**
Prep Method: **METHOD**
Prep Date/Time: **09/19/2017 10:00**
Spike Init Wt./Vol.: 3.35 % Extract Vol: 1 mL
Dupe Init Wt./Vol.: 3.35 % Extract Vol: 1 mL

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Matrix Spike Summary

Original Sample ID: 1178376005
MS Sample ID: 1414339 MS
MSD Sample ID:

Analysis Date: 09/19/2017 11:50
Analysis Date: 09/19/2017 12:30
Analysis Date:
Matrix: Soil/Solid (dry weight)

QC for Samples: 1178376005, 1178376006, 1178376007, 1178376008

Results by **SW9060A-Mod**

		Matrix Spike (%)			Spike Duplicate (%)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Total Organic Carbon	2.43	0.244	2.10	-134 *				75-125		

Batch Information

Analytical Batch: WTC2735
Analytical Method: SW9060A-Mod
Instrument: TOC Analyzer
Analyst: K.W
Analytical Date/Time: 9/19/2017 12:30:34PM

Prep Batch: WXX12010
Prep Method: TOC Soils Prep (S)
Prep Date/Time: 9/19/2017 10:00:00AM
Prep Initial Wt./Vol.: 552.50mg
Prep Extract Vol: 1.00mL

Print Date: 09/21/2017 3:35:24PM

Method Blank

Blank ID: MB for HBN 1768767 [XXX/38468]
Blank Lab ID: 1414159

Matrix: Soil/Solid (dry weight)

QC for Samples:
1178376009, 1178376010, 1178376011, 1178376012, 1178376013

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	79.5	60-120		%

Batch Information

Analytical Batch: XFC13811
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: JMG
Analytical Date/Time: 9/19/2017 8:32:00PM

Prep Batch: XXX38468
Prep Method: SW3550C
Prep Date/Time: 9/19/2017 11:51:45AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1178376 [XXX38468]
Blank Spike Lab ID: 1414160
Date Analyzed: 09/19/2017 20:42

Spike Duplicate ID: LCSD for HBN 1178376 [XXX38468]
Spike Duplicate Lab ID: 1414161
Matrix: Soil/Solid (dry weight)

QC for Samples: 1178376009, 1178376010, 1178376011, 1178376012, 1178376013

Results by **AK102**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	167	153	92	167	148	89	(75-125)	3.20	(< 20)
Surrogates									
5a Androstane (surr)	3.33	102	102	3.33	102	102	(60-120)	0.47	

Batch Information

Analytical Batch: **XFC13811**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **JMG**

Prep Batch: **XXX38468**
Prep Method: **SW3550C**
Prep Date/Time: **09/19/2017 11:51**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

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CH 1178376

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virgina	Kentucky

www.us.sgs.com

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

Section 1

CLIENT: Nortech

CONTACT: Susan Vogt PHONE NO: 907-452-5688

PROJECT NAME: Kiewit soil invest. PROJECT/ PWSID/ PERMIT#: 17-1047

REPORTS TO: S.vogt E-MAIL: svogt@nortecheng.com

INVOICE TO: Nortech QUOTE #:

P.O. #: 17-1047

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 Incre-mental Soils	Preservative: FOC - Fractional organic carbon 9060-mod	Preservative: none	Preservative: DRO - AK102	Preservative: none	REMARKS/ LOC ID
1A	BH 47 (5-7.5)	9/13/17	0925	soil	1	grab	X				FOC method ID
2A	BH 47 (10-12.5)		0927		1		X				9060-mod
3A	BH 48 (2.5-5)		0958		1		X				
4A	BH 48 (5-7.5)		0959		1		X				
5A	BH 49 (2.5-5)		1025		1		X				
6A	BH 49 (5-7.5)		1026		1		X				
7A	BH 50 (2.5-5)		1050		1		X				
8A	BH 50 (5-7.5)		1049		1		X				
9A	BH 51 (7.5-10)		1115		1			X			
10A	BH 510 (7.5-10)		1117		1			X			

Section 5

	Date	Time		
Relinquished By: (1)	9/13/17	1647	Received By:	9/13/17 1647
Relinquished By: (2)	9/14/17	1600	Received By:	
Relinquished By: (3)			Received By:	
Relinquished By: (4)	9/15/17	1010	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: 4.6

or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) HD

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

http://www.sgs.com/terms-and-conditions

ArC: 1.1 D4z

CS: 1F, 1B

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1178376

ORD

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virgina	Kentucky

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

Section 1

CLIENT:

CONTACT: PHONE NO:

PROJECT NAME: PROJECT/ PWSID/ PERMIT#: 17-1047

REPORTS TO: E-MAIL:

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

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	Section 3 # CONTAINERS	Type C = COMP G = GRAB MI = Multi Incre-mental Soils	Preservative: none	Preservative: DRO-AK102	REMARKS/ LOC ID
11A	BH52 (7.5-10)	9/13/17	1201	Soil	1	grab		X	
12A	BH53 (7.5-10)	9/13/17	1206	↓	1	↓		X	
13A	BH54 (7.5-10)	9/13/17	1208	↓	1	↓		X	

Section 5

	Date	Time		
Relinquished By: (1)	9/13/17	1647	Received By:	9/13/17 1647
Relinquished By: (2)	9/14/17	1600	Received By:	
Relinquished By: (3)	Date	Time	Received By:	
Relinquished By: (4)	9/15/17	1010	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: 4.6

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

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1178376

FAIRBANKS SAMPLE RECEIPT FORM

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

Review Criteria:	Condition:	Comments/Actions Taken
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No (N/A) (Yes) No N/A	☒*Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C) *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 4.6 w/Therm. ID: D23 Cooler ID:____ @____ w/Therm. ID:____ Cooler ID:____ @____ w/Therm. ID:____ Cooler ID:____ @____ w/Therm. ID:____ Cooler ID:____ @____ w/Therm. ID:____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank and "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note ambient ( ) or chilled ( ). Please check one.	(Yes) No Yes No (N/A) Yes No (N/A)	□*Exemption permitted if chilled & collected <8hrs ago* *Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.*
Delivery Method: (Client (hand carried)) Other:____	Tracking/AB# : Or see attached (Or N/A)	
→For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
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	*Note: some samples are sent to Anchorage without inspection by SGS Fairbanks personnel.*
Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(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) Yes No (N/A)	

Additional notes (if applicable):

Profile #: 337594

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

e-Sample Receipt Form

SGS Workorder #: **1178376**

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes	1 Front 1 Back
COC accompanied samples?	Yes	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 1.1 °C Therm. ID: D42
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	Yes	
		N/A ***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	Yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	

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

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1178376001-A	No Preservative Required	OK			
1178376002-A	No Preservative Required	OK			
1178376003-A	No Preservative Required	OK			
1178376004-A	No Preservative Required	OK			
1178376005-A	No Preservative Required	OK			
1178376006-A	No Preservative Required	OK			
1178376007-A	No Preservative Required	OK			
1178376008-A	No Preservative Required	OK			
1178376009-A	No Preservative Required	OK			
1178376010-A	No Preservative Required	OK			
1178376011-A	No Preservative Required	OK			
1178376012-A	No Preservative Required	OK			
1178376013-A	No Preservative Required	OK			

Container Condition Glossary

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

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM- The container was received damaged.
FR- The container was received frozen and not usable for Bacteria or BOD analyses.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

ATTACHMENT B

SEPTEMBER 2017 GROUNDWATER ANALYTICAL REPORTS

Laboratory Report of Analysis

To: Nortech
2400 College Rd.
Fairbanks, AK 99709
(907)388-8671

Report Number: **1178438**

Client Project: **Kiewit Groundwater Sampling**

Dear Susan Vogt,

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

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

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

Sincerely,
SGS North America Inc.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

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

Case Narrative

SGS Client: **Nortech**
SGS Project: **1178438**
Project Name/Site: **Kiewit Groundwater Sampling**
Project Contact: **Susan Vogt**

Refer to sample receipt form for information on sample condition.

MW-3 (1178438003) PS

8270D SIM - PAH surrogate recovery for 2-methylnaphthalene-d10 (28.2%) does not meet QC criteria. Sample was re-extracted past hold time and surrogates were double-spiked. The corrected surrogate recoveries were within QC criteria. In-hold data reported.

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

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Laboratory Qualifiers

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

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are **AK00971 DW Chemistry (Provisionally Certified as of 10/12/2017) & Microbiology (Provisionally Certified as of 9/21/2017)** & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
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
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
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-1	1178438001	09/26/2017	09/29/2017	Water (Surface, Eff., Ground)
MW-2	1178438002	09/26/2017	09/29/2017	Water (Surface, Eff., Ground)
MW-3	1178438003	09/26/2017	09/29/2017	Water (Surface, Eff., Ground)
MW-4	1178438004	09/26/2017	09/29/2017	Water (Surface, Eff., Ground)
MW-5	1178438005	09/26/2017	09/29/2017	Water (Surface, Eff., Ground)
MW-55	1178438006	09/26/2017	09/29/2017	Water (Surface, Eff., Ground)
EB-Kiewit	1178438007	09/26/2017	09/29/2017	Water (Surface, Eff., Ground)
TB-Kiewit	1178438008	09/26/2017	09/29/2017	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water

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Detectable Results Summary

Client Sample ID: **MW-1**
Lab Sample ID: 1178438001

	Parameter	Result	Units
Volatile Fuels	P & M -Xylene	0.740J	ug/L

Client Sample ID: **MW-2**
Lab Sample ID: 1178438002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	23.7	ug/L
	2-Methylnaphthalene	7.08	ug/L
	Acenaphthene	0.988	ug/L
	Fluorene	1.09	ug/L
	Naphthalene	31.2	ug/L
	Phenanthrene	0.432	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	6.16	mg/L
	Residual Range Organics	0.361J	mg/L
Volatile Fuels	Benzene	0.400J	ug/L
	Ethylbenzene	15.5	ug/L
	Gasoline Range Organics	1.11	mg/L
	o-Xylene	178	ug/L
	P & M -Xylene	210	ug/L
	Toluene	4.02	ug/L

Client Sample ID: **MW-3**
Lab Sample ID: 1178438003

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	6.42	mg/L
	Residual Range Organics	0.462J	mg/L
Volatile Fuels	Benzene	4.77	ug/L
	Ethylbenzene	2.82	ug/L
	Gasoline Range Organics	0.164	mg/L
	o-Xylene	6.85	ug/L
	P & M -Xylene	8.12	ug/L
	Toluene	0.350J	ug/L

Client Sample ID: **MW-4**
Lab Sample ID: 1178438004

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Acenaphthene	0.0587	ug/L
	Fluorene	0.117	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	0.769	mg/L
	Residual Range Organics	0.316J	mg/L
Volatile Fuels	Benzene	0.510	ug/L
	Ethylbenzene	0.360J	ug/L
	o-Xylene	0.380J	ug/L
	P & M -Xylene	1.33J	ug/L
	Toluene	0.550J	ug/L

Client Sample ID: **MW-55**
Lab Sample ID: 1178438006

	Parameter	Result	Units
Volatile Fuels	P & M -Xylene	0.760J	ug/L

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Results of **MW-1**

Client Sample ID: **MW-1**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438001
Lab Project ID: 1178438

Collection Date: 09/26/17 12:58
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
2-Methylnaphthalene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Acenaphthene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		10/16/17 02:43
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		10/16/17 02:43
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Fluorene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Naphthalene	0.0490	U	0.0980	0.0304	ug/L	1		10/16/17 02:43
Phenanthrene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 02:43
Surrogates								
2-Methylnaphthalene-d10 (surr)	64.5		47-106		%	1		10/16/17 02:43
Fluoranthene-d10 (surr)	64.5		24-116		%	1		10/16/17 02:43

Batch Information

Analytical Batch: XMS10483
Analytical Method: 8270D SIM LV (PAH)
Analyst: NRB
Analytical Date/Time: 10/16/17 02:43
Container ID: 1178438001-F

Prep Batch: XXX38560
Prep Method: SW3520C
Prep Date/Time: 10/01/17 08:08
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **MW-1**

Client Sample ID: **MW-1**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438001
Lab Project ID: 1178438

Collection Date: 09/26/17 12:58
Received Date: 09/29/17 16:18
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	0.294	U	0.588	0.176	mg/L	1		10/06/17 20:25
Surrogates								
5a Androstane (surr)	78		50-150		%	1		10/06/17 20:25

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/06/17 20:25
Container ID: 1178438001-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.245	U	0.490	0.147	mg/L	1		10/06/17 20:25
Surrogates								
n-Triacontane-d62 (surr)	86.8		50-150		%	1		10/06/17 20:25

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/06/17 20:25
Container ID: 1178438001-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **MW-1**

Client Sample ID: **MW-1**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438001
Lab Project ID: 1178438

Collection Date: 09/26/17 12:58
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		10/04/17 18:34
Surrogates								
4-Bromofluorobenzene (surr)	72.2		50-150		%	1		10/04/17 18:34

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/17 18:34
Container ID: 1178438001-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 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	0.250 U		0.500	0.150	ug/L	1		10/04/17 18:34
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/04/17 18:34
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/04/17 18:34
P & M -Xylene	0.740 J		2.00	0.620	ug/L	1		10/04/17 18:34
Toluene	0.500 U		1.00	0.310	ug/L	1		10/04/17 18:34
Surrogates								
1,4-Difluorobenzene (surr)	90.9		77-115		%	1		10/04/17 18:34

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/04/17 18:34
Container ID: 1178438001-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-2**

Client Sample ID: **MW-2**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438002
Lab Project ID: 1178438

Collection Date: 09/26/17 12:20
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	23.7		0.258	0.0775	ug/L	5		10/16/17 18:56
2-Methylnaphthalene	7.08		0.0517	0.0155	ug/L	1		10/16/17 03:04
Acenaphthene	0.988		0.0517	0.0155	ug/L	1		10/16/17 03:04
Acenaphthylene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Anthracene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Benzo(a)Anthracene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Benzo[a]pyrene	0.0104 U		0.0207	0.00640	ug/L	1		10/16/17 03:04
Benzo[b]Fluoranthene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Benzo[g,h,i]perylene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Benzo[k]fluoranthene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Chrysene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Dibenzo[a,h]anthracene	0.0104 U		0.0207	0.00640	ug/L	1		10/16/17 03:04
Fluoranthene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Fluorene	1.09		0.0517	0.0155	ug/L	1		10/16/17 03:04
Indeno[1,2,3-c,d] pyrene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Naphthalene	31.2		0.517	0.160	ug/L	5		10/16/17 18:56
Phenanthrene	0.432		0.0517	0.0155	ug/L	1		10/16/17 03:04
Pyrene	0.0259 U		0.0517	0.0155	ug/L	1		10/16/17 03:04
Surrogates								
2-Methylnaphthalene-d10 (surr)	67.7		47-106		%	1		10/16/17 03:04
Fluoranthene-d10 (surr)	64.7		24-116		%	1		10/16/17 03:04

Batch Information

Analytical Batch: XMS10483
Analytical Method: 8270D SIM LV (PAH)
Analyst: NRB
Analytical Date/Time: 10/16/17 03:04
Container ID: 1178438002-F

Prep Batch: XXX38560
Prep Method: SW3520C
Prep Date/Time: 10/01/17 08:08
Prep Initial Wt./Vol.: 242 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS10486
Analytical Method: 8270D SIM LV (PAH)
Analyst: NRB
Analytical Date/Time: 10/16/17 18:56
Container ID: 1178438002-F

Prep Batch: XXX38560
Prep Method: SW3520C
Prep Date/Time: 10/01/17 08:08
Prep Initial Wt./Vol.: 242 mL
Prep Extract Vol: 1 mL

Results of **MW-2**

Client Sample ID: **MW-2**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438002
Lab Project ID: 1178438

Collection Date: 09/26/17 12:20
Received Date: 09/29/17 16:18
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	6.16		0.556	0.167	mg/L	1		10/06/17 20:46
Surrogates								
5a Androstane (surr)	84.3		50-150		%	1		10/06/17 20:46

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/06/17 20:46
Container ID: 1178438002-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.361	J	0.463	0.139	mg/L	1		10/06/17 20:46
Surrogates								
n-Triacontane-d62 (surr)	88		50-150		%	1		10/06/17 20:46

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/06/17 20:46
Container ID: 1178438002-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of **MW-2**

Client Sample ID: **MW-2**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438002
Lab Project ID: 1178438

Collection Date: 09/26/17 12:20
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.11		0.100	0.0310	mg/L	1		10/04/17 18:53
Surrogates								
4-Bromofluorobenzene (surr)	126		50-150		%	1		10/04/17 18:53

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/17 18:53
Container ID: 1178438002-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 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	0.400	J	0.500	0.150	ug/L	1		10/04/17 18:53
Ethylbenzene	15.5		1.00	0.310	ug/L	1		10/04/17 18:53
o-Xylene	178		1.00	0.310	ug/L	1		10/04/17 18:53
P & M -Xylene	210		2.00	0.620	ug/L	1		10/04/17 18:53
Toluene	4.02		1.00	0.310	ug/L	1		10/04/17 18:53
Surrogates								
1,4-Difluorobenzene (surr)	84.7		77-115		%	1		10/04/17 18:53

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/04/17 18:53
Container ID: 1178438002-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-3**

Client Sample ID: **MW-3**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438003
Lab Project ID: 1178438

Collection Date: 09/26/17 11:20
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
2-Methylnaphthalene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Acenaphthene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Acenaphthylene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Anthracene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Benzo(a)Anthracene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Benzo[a]pyrene	0.0103 U		0.0205	0.00635	ug/L	1		10/16/17 03:24
Benzo[b]Fluoranthene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Benzo[g,h,i]perylene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Benzo[k]fluoranthene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Chrysene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Dibenzo[a,h]anthracene	0.0103 U		0.0205	0.00635	ug/L	1		10/16/17 03:24
Fluoranthene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Fluorene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Indeno[1,2,3-c,d] pyrene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Naphthalene	0.0510 U		0.102	0.0318	ug/L	1		10/16/17 03:24
Phenanthrene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Pyrene	0.0256 U		0.0512	0.0154	ug/L	1		10/16/17 03:24
Surrogates								
2-Methylnaphthalene-d10 (surr)	28.2	*	47-106		%	1		10/16/17 03:24
Fluoranthene-d10 (surr)	46.7		24-116		%	1		10/16/17 03:24

Batch Information

Analytical Batch: XMS10483
Analytical Method: 8270D SIM LV (PAH)
Analyst: NRB
Analytical Date/Time: 10/16/17 03:24
Container ID: 1178438003-F

Prep Batch: XXX38560
Prep Method: SW3520C
Prep Date/Time: 10/01/17 08:08
Prep Initial Wt./Vol.: 244 mL
Prep Extract Vol: 1 mL

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Results of **MW-3**

Client Sample ID: **MW-3**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438003
Lab Project ID: 1178438

Collection Date: 09/26/17 11:20
Received Date: 09/29/17 16:18
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	6.42		0.620	0.186	mg/L	1		10/06/17 21:06
Surrogates								
5a Androstane (surr)	86.8		50-150		%	1		10/06/17 21:06

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/06/17 21:06
Container ID: 1178438003-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 242 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.462	J	0.517	0.155	mg/L	1		10/06/17 21:06
Surrogates								
n-Triacontane-d62 (surr)	90.6		50-150		%	1		10/06/17 21:06

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/06/17 21:06
Container ID: 1178438003-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 242 mL
Prep Extract Vol: 1 mL

Results of **MW-3**

Client Sample ID: **MW-3**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438003
Lab Project ID: 1178438

Collection Date: 09/26/17 11:20
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.164		0.100	0.0310	mg/L	1		10/04/17 19:12
Surrogates								
4-Bromofluorobenzene (surr)	82.6		50-150		%	1		10/04/17 19:12

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/17 19:12
Container ID: 1178438003-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 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	4.77		0.500	0.150	ug/L	1		10/04/17 19:12
Ethylbenzene	2.82		1.00	0.310	ug/L	1		10/04/17 19:12
o-Xylene	6.85		1.00	0.310	ug/L	1		10/04/17 19:12
P & M -Xylene	8.12		2.00	0.620	ug/L	1		10/04/17 19:12
Toluene	0.350	J	1.00	0.310	ug/L	1		10/04/17 19:12
Surrogates								
1,4-Difluorobenzene (surr)	86.3		77-115		%	1		10/04/17 19:12

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/04/17 19:12
Container ID: 1178438003-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-4**

Client Sample ID: **MW-4**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438004
Lab Project ID: 1178438

Collection Date: 09/26/17 11:44
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
2-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Acenaphthene	0.0587		0.0481	0.0144	ug/L	1		10/16/17 03:44
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		10/16/17 03:44
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		10/16/17 03:44
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Fluorene	0.117		0.0481	0.0144	ug/L	1		10/16/17 03:44
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Naphthalene	0.0481	U	0.0962	0.0298	ug/L	1		10/16/17 03:44
Phenanthrene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 03:44
Surrogates								
2-Methylnaphthalene-d10 (surr)	55.7		47-106		%	1		10/16/17 03:44
Fluoranthene-d10 (surr)	56.4		24-116		%	1		10/16/17 03:44

Batch Information

Analytical Batch: XMS10483
Analytical Method: 8270D SIM LV (PAH)
Analyst: NRB
Analytical Date/Time: 10/16/17 03:44
Container ID: 1178438004-F

Prep Batch: XXX38560
Prep Method: SW3520C
Prep Date/Time: 10/01/17 08:08
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **MW-4**

Client Sample ID: **MW-4**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438004
Lab Project ID: 1178438

Collection Date: 09/26/17 11:44
Received Date: 09/29/17 16:18
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	0.769		0.625	0.188	mg/L	1		10/06/17 21:27
Surrogates								
5a Androstane (surr)	88.2		50-150		%	1		10/06/17 21:27

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/06/17 21:27
Container ID: 1178438004-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.316	J	0.521	0.156	mg/L	1		10/06/17 21:27
Surrogates								
n-Triacontane-d62 (surr)	94.1		50-150		%	1		10/06/17 21:27

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/06/17 21:27
Container ID: 1178438004-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Results of **MW-4**

Client Sample ID: **MW-4**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438004
Lab Project ID: 1178438

Collection Date: 09/26/17 11:44
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		10/04/17 20:29
Surrogates								
4-Bromofluorobenzene (surr)	76.2		50-150		%	1		10/04/17 20:29

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/17 20:29
Container ID: 1178438004-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 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		10/04/17 20:29
Ethylbenzene	0.360	J	1.00	0.310	ug/L	1		10/04/17 20:29
o-Xylene	0.380	J	1.00	0.310	ug/L	1		10/04/17 20:29
P & M -Xylene	1.33	J	2.00	0.620	ug/L	1		10/04/17 20:29
Toluene	0.550	J	1.00	0.310	ug/L	1		10/04/17 20:29
Surrogates								
1,4-Difluorobenzene (surr)	89.9		77-115		%	1		10/04/17 20:29

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/04/17 20:29
Container ID: 1178438004-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-5**

Client Sample ID: **MW-5**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438005
Lab Project ID: 1178438

Collection Date: 09/26/17 13:35
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
2-Methylnaphthalene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Acenaphthene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		10/16/17 04:05
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		10/16/17 04:05
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Fluorene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Naphthalene	0.0490	U	0.0980	0.0304	ug/L	1		10/16/17 04:05
Phenanthrene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		10/16/17 04:05
Surrogates								
2-Methylnaphthalene-d10 (surr)	61.5		47-106		%	1		10/16/17 04:05
Fluoranthene-d10 (surr)	61.9		24-116		%	1		10/16/17 04:05

Batch Information

Analytical Batch: XMS10483
Analytical Method: 8270D SIM LV (PAH)
Analyst: NRB
Analytical Date/Time: 10/16/17 04:05
Container ID: 1178438005-F

Prep Batch: XXX38560
Prep Method: SW3520C
Prep Date/Time: 10/01/17 08:08
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **MW-5**

Client Sample ID: **MW-5**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438005
Lab Project ID: 1178438

Collection Date: 09/26/17 13:35
Received Date: 09/29/17 16:18
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	0.294	U	0.588	0.176	mg/L	1		10/06/17 21:48
Surrogates								
5a Androstane (surr)	88.2		50-150		%	1		10/06/17 21:48

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/06/17 21:48
Container ID: 1178438005-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.245	U	0.490	0.147	mg/L	1		10/06/17 21:48
Surrogates								
n-Triacontane-d62 (surr)	96.6		50-150		%	1		10/06/17 21:48

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/06/17 21:48
Container ID: 1178438005-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **MW-5**

Client Sample ID: **MW-5**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438005
Lab Project ID: 1178438

Collection Date: 09/26/17 13:35
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		10/04/17 20:48
Surrogates								
4-Bromofluorobenzene (surr)	78		50-150		%	1		10/04/17 20:48

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/17 20:48
Container ID: 1178438005-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 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	0.250 U		0.500	0.150	ug/L	1		10/04/17 20:48
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/04/17 20:48
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/04/17 20:48
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/04/17 20:48
Toluene	0.500 U		1.00	0.310	ug/L	1		10/04/17 20:48
Surrogates								
1,4-Difluorobenzene (surr)	89		77-115		%	1		10/04/17 20:48

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/04/17 20:48
Container ID: 1178438005-A

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/04/17 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-55**

Client Sample ID: **MW-55**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438006
Lab Project ID: 1178438

Collection Date: 09/26/17 13:40
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
2-Methylnaphthalene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Acenaphthene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Acenaphthylene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Benzo(a)Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	ug/L	1		10/16/17 04:25
Benzo[b]Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Chrysene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	ug/L	1		10/16/17 04:25
Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Fluorene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Naphthalene	0.0500	U	0.100	0.0310	ug/L	1		10/16/17 04:25
Phenanthrene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Pyrene	0.0250	U	0.0500	0.0150	ug/L	1		10/16/17 04:25
Surrogates								
2-Methylnaphthalene-d10 (surr)	60.4		47-106		%	1		10/16/17 04:25
Fluoranthene-d10 (surr)	61.6		24-116		%	1		10/16/17 04:25

Batch Information

Analytical Batch: XMS10483
Analytical Method: 8270D SIM LV (PAH)
Analyst: NRB
Analytical Date/Time: 10/16/17 04:25
Container ID: 1178438006-F

Prep Batch: XXX38560
Prep Method: SW3520C
Prep Date/Time: 10/01/17 08:08
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Results of **MW-55**

Client Sample ID: **MW-55**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438006
Lab Project ID: 1178438

Collection Date: 09/26/17 13:40
Received Date: 09/29/17 16:18
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	0.283	U	0.566	0.170	mg/L	1		10/06/17 22:09
Surrogates								
5a Androstane (surr)	87.3		50-150		%	1		10/06/17 22:09

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/06/17 22:09
Container ID: 1178438006-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.236	U	0.472	0.142	mg/L	1		10/06/17 22:09
Surrogates								
n-Triacontane-d62 (surr)	97.6		50-150		%	1		10/06/17 22:09

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/06/17 22:09
Container ID: 1178438006-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Results of **MW-55**

Client Sample ID: **MW-55**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438006
Lab Project ID: 1178438

Collection Date: 09/26/17 13:40
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		10/04/17 23:20
Surrogates								
4-Bromofluorobenzene (surr)	74.2		50-150		%	1		10/04/17 23:20

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/17 23:20
Container ID: 1178438006-A

Prep Batch: VXX31432
Prep Method: SW5030B
Prep Date/Time: 10/04/17 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	0.250 U		0.500	0.150	ug/L	1		10/04/17 23:20
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/04/17 23:20
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/04/17 23:20
P & M -Xylene	0.760 J		2.00	0.620	ug/L	1		10/04/17 23:20
Toluene	0.500 U		1.00	0.310	ug/L	1		10/04/17 23:20
Surrogates								
1,4-Difluorobenzene (surr)	91.4		77-115		%	1		10/04/17 23:20

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/04/17 23:20
Container ID: 1178438006-A

Prep Batch: VXX31432
Prep Method: SW5030B
Prep Date/Time: 10/04/17 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **EB-Kiewit**

Client Sample ID: **EB-Kiewit**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438007
Lab Project ID: 1178438

Collection Date: 09/26/17 13:12
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
2-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Acenaphthene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		10/16/17 04:46
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		10/16/17 04:46
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Fluorene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Naphthalene	0.0481	U	0.0962	0.0298	ug/L	1		10/16/17 04:46
Phenanthrene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		10/16/17 04:46
Surrogates								
2-Methylnaphthalene-d10 (surr)	60.8		47-106		%	1		10/16/17 04:46
Fluoranthene-d10 (surr)	62.5		24-116		%	1		10/16/17 04:46

Batch Information

Analytical Batch: XMS10483
Analytical Method: 8270D SIM LV (PAH)
Analyst: NRB
Analytical Date/Time: 10/16/17 04:46
Container ID: 1178438007-F

Prep Batch: XXX38560
Prep Method: SW3520C
Prep Date/Time: 10/01/17 08:08
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **EB-Kiewit**

Client Sample ID: **EB-Kiewit**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438007
Lab Project ID: 1178438

Collection Date: 09/26/17 13:12
Received Date: 09/29/17 16:18
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	0.300	U	0.600	0.180	mg/L	1		10/06/17 22:30
Surrogates								
5a Androstane (surr)	91.8		50-150		%	1		10/06/17 22:30

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/06/17 22:30
Container ID: 1178438007-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
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		10/06/17 22:30
Surrogates								
n-Triacontane-d62 (surr)	100		50-150		%	1		10/06/17 22:30

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/06/17 22:30
Container ID: 1178438007-D

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/03/17 08:17
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Results of **EB-Kiewit**

Client Sample ID: **EB-Kiewit**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438007
Lab Project ID: 1178438

Collection Date: 09/26/17 13:12
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		10/04/17 23:39
Surrogates								
4-Bromofluorobenzene (surr)	74.7		50-150		%	1		10/04/17 23:39

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/17 23:39
Container ID: 1178438007-A

Prep Batch: VXX31432
Prep Method: SW5030B
Prep Date/Time: 10/04/17 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	0.250 U		0.500	0.150	ug/L	1		10/04/17 23:39
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/04/17 23:39
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/04/17 23:39
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/04/17 23:39
Toluene	0.500 U		1.00	0.310	ug/L	1		10/04/17 23:39
Surrogates								
1,4-Difluorobenzene (surr)	90.5		77-115		%	1		10/04/17 23:39

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/04/17 23:39
Container ID: 1178438007-A

Prep Batch: VXX31432
Prep Method: SW5030B
Prep Date/Time: 10/04/17 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **TB-Kiewit**

Client Sample ID: **TB-Kiewit**
Client Project ID: **Kiewit Groundwater Sampling**
Lab Sample ID: 1178438008
Lab Project ID: 1178438

Collection Date: 09/26/17 12:00
Received Date: 09/29/17 16:18
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		10/04/17 22:04
Surrogates								
4-Bromofluorobenzene (surr)	74.8		50-150		%	1		10/04/17 22:04

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/17 22:04
Container ID: 1178438008-A

Prep Batch: VXX31432
Prep Method: SW5030B
Prep Date/Time: 10/04/17 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	0.250 U		0.500	0.150	ug/L	1		10/04/17 22:04
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/04/17 22:04
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/04/17 22:04
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/04/17 22:04
Toluene	0.500 U		1.00	0.310	ug/L	1		10/04/17 22:04
Surrogates								
1,4-Difluorobenzene (surr)	89.6		77-115		%	1		10/04/17 22:04

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/04/17 22:04
Container ID: 1178438008-A

Prep Batch: VXX31432
Prep Method: SW5030B
Prep Date/Time: 10/04/17 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1769638 [VXX/31431]
Blank Lab ID: 1417983

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1178438001, 1178438002, 1178438003, 1178438004, 1178438005

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	75	50-150		%

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/4/2017 12:32:00PM

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/4/2017 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 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 1178438 [VXX31431]
Blank Spike Lab ID: 1417986
Date Analyzed: 10/04/2017 13:29

Spike Duplicate ID: LCSD for HBN 1178438 [VXX31431]
Spike Duplicate Lab ID: 1417987
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1178438001, 1178438002, 1178438003, 1178438004, 1178438005

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	0.982	98	1.00	0.965	97	(60-120)	1.80	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	85.4	85	0.0500	83.3	83	(50-150)	2.50	

Batch Information

Analytical Batch: **VFC13921**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX31431**
Prep Method: **SW5030B**
Prep Date/Time: **10/04/2017 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 1769638 [VXX/31431]
Blank Lab ID: 1417983

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1178438001, 1178438002, 1178438003, 1178438004, 1178438005

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	89.5	77-115		%

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/4/2017 12:32:00PM

Prep Batch: VXX31431
Prep Method: SW5030B
Prep Date/Time: 10/4/2017 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 1178438 [VXX31431]
Blank Spike Lab ID: 1417984
Date Analyzed: 10/04/2017 13:10

Spike Duplicate ID: LCSD for HBN 1178438 [VXX31431]
Spike Duplicate Lab ID: 1417985
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1178438001, 1178438002, 1178438003, 1178438004, 1178438005

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	95.7	96	100	114	114	(80-120)	17.30	(< 20)
Ethylbenzene	100	91.7	92	100	109	109	(75-125)	17.10	(< 20)
o-Xylene	100	89.4	89	100	107	107	(80-120)	18.30	(< 20)
P & M -Xylene	200	179	90	200	216	108	(75-130)	18.50	(< 20)
Toluene	100	97.2	97	100	114	114	(75-120)	15.70	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	101	101	50	101	101	(77-115)	0.55	

Batch Information

Analytical Batch: **VFC13921**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX31431**
Prep Method: **SW5030B**
Prep Date/Time: **10/04/2017 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 1769639 [VXX/31432]
Blank Lab ID: 1417988

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1178438006, 1178438007, 1178438008

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	72.5	50-150		%

Batch Information

Analytical Batch: VFC13921
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/4/2017 9:45:00PM

Prep Batch: VXX31432
Prep Method: SW5030B
Prep Date/Time: 10/4/2017 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1178438 [VXX31432]
Blank Spike Lab ID: 1417991
Date Analyzed: 10/05/2017 02:50

Spike Duplicate ID: LCSD for HBN 1178438 [VXX31432]
Spike Duplicate Lab ID: 1417992
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1178438006, 1178438007, 1178438008

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	0.955	96	1.00	0.943	94	(60-120)	1.20	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	80.2	80	0.0500	83.2	83	(50-150)	3.70	

Batch Information

Analytical Batch: **VFC13921**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX31432**
Prep Method: **SW5030B**
Prep Date/Time: **10/04/2017 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 1769639 [VXX/31432]
Blank Lab ID: 1417988

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1178438006, 1178438007, 1178438008

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	89.9	77-115		%

Batch Information

Analytical Batch: VFC13921
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/4/2017 9:45:00PM

Prep Batch: VXX31432
Prep Method: SW5030B
Prep Date/Time: 10/4/2017 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 1178438 [VXX31432]
Blank Spike Lab ID: 1417989
Date Analyzed: 10/05/2017 02:31

Spike Duplicate ID: LCSD for HBN 1178438 [VXX31432]
Spike Duplicate Lab ID: 1417990
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1178438006, 1178438007, 1178438008

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	112	112	100	106	106	(80-120)	5.20	(< 20)
Ethylbenzene	100	107	107	100	102	102	(75-125)	5.00	(< 20)
o-Xylene	100	107	107	100	99.1	99	(80-120)	7.40	(< 20)
P & M -Xylene	200	213	107	200	201	100	(75-130)	6.00	(< 20)
Toluene	100	112	112	100	107	107	(75-120)	4.30	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	101	101	50	102	102	(77-115)	0.79	

Batch Information

Analytical Batch: **VFC13921**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX31432**
Prep Method: **SW5030B**
Prep Date/Time: **10/04/2017 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 1769385 [XXX/38560]
Blank Lab ID: 1417099

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1178438001, 1178438002, 1178438003, 1178438004, 1178438005, 1178438006, 1178438007

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	67.5	47-106		%
Fluoranthene-d10 (surr)	68.7	24-116		%

Batch Information

Analytical Batch: XMS10480
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: NRB
Analytical Date/Time: 10/15/2017 9:22:00AM

Prep Batch: XXX38560
Prep Method: SW3520C
Prep Date/Time: 10/1/2017 8:08:27AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1178438 [XXX38560]
Blank Spike Lab ID: 1417100
Date Analyzed: 10/15/2017 09:42

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1178438001, 1178438002, 1178438003, 1178438004, 1178438005, 1178438006, 1178438007

Results by **8270D SIM LV (PAH)**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	2	1.36	68	(41-115)
2-Methylnaphthalene	2	1.25	62	(39-114)
Acenaphthene	2	1.36	68	(48-114)
Acenaphthylene	2	1.48	74	(35-121)
Anthracene	2	1.57	78	(53-119)
Benzo(a)Anthracene	2	1.57	79	(59-120)
Benzo[a]pyrene	2	1.48	74	(53-120)
Benzo[b]Fluoranthene	2	1.58	79	(53-126)
Benzo[g,h,i]perylene	2	1.36	68	(44-128)
Benzo[k]fluoranthene	2	1.53	76	(54-125)
Chrysene	2	1.55	77	(57-120)
Dibenzo[a,h]anthracene	2	1.22	61	(44-131)
Fluoranthene	2	1.41	71	(58-120)
Fluorene	2	1.47	74	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.47	73	(48-130)
Naphthalene	2	1.30	65	(43-114)
Phenanthrene	2	1.57	79	(53-115)
Pyrene	2	1.50	75	(53-121)
Surrogates				
2-Methylnaphthalene-d10 (surr)	2	64.6	65	(47-106)
Fluoranthene-d10 (surr)	2	65.2	65	(24-116)

Batch Information

Analytical Batch: **XMS10480**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **NRB**

Prep Batch: **XXX38560**
Prep Method: **SW3520C**
Prep Date/Time: **10/01/2017 08:08**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1176978005
MS Sample ID: 1417112 MS
MSD Sample ID: 1417113 MSD

Analysis Date: 10/15/2017 10:03
Analysis Date: 10/15/2017 10:23
Analysis Date: 10/15/2017 10:43
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1178438001, 1178438002, 1178438003, 1178438004, 1178438005, 1178438006, 1178438007

Results by **8270D SIM LV (PAH)**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	0.0282U	2.08	1.42	68	2.17	1.62	74	41-115	13.10	(< 20)
2-Methylnaphthalene	0.0282U	2.08	1.32	63	2.17	1.48	68	39-114	11.40	(< 20)
Acenaphthene	0.0282U	2.08	1.42	68	2.17	1.60	74	48-114	11.60	(< 20)
Acenaphthylene	0.0282U	2.08	1.54	74	2.17	1.73	79	35-121	11.50	(< 20)
Anthracene	0.0282U	2.08	1.62	78	2.17	1.79	82	53-119	9.90	(< 20)
Benzo(a)Anthracene	0.0282U	2.08	1.47	71	2.17	1.63	75	59-120	10.30	(< 20)
Benzo[a]pyrene	0.0113U	2.08	1.27	61	2.17	1.43	66	53-120	11.60	(< 20)
Benzo[b]Fluoranthene	0.0282U	2.08	1.38	66	2.17	1.50	69	53-126	8.40	(< 20)
Benzo[g,h,i]perylene	0.0282U	2.08	1.16	56	2.17	1.30	60	44-128	11.70	(< 20)
Benzo[k]fluoranthene	0.0282U	2.08	1.34	64	2.17	1.56	72	54-125	15.50	(< 20)
Chrysene	0.0282U	2.08	1.47	70	2.17	1.65	76	57-120	11.90	(< 20)
Dibenzo[a,h]anthracene	0.0113U	2.08	1.08	52	2.17	1.22	56	44-131	12.70	(< 20)
Fluoranthene	0.0282U	2.08	1.41	68	2.17	1.58	73	58-120	11.30	(< 20)
Fluorene	0.0282U	2.08	1.54	74	2.17	1.72	79	50-118	11.40	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0282U	2.08	1.14	55	2.17	1.29	60	48-130	12.80	(< 20)
Naphthalene	0.0565U	2.08	1.34	65	2.17	1.52	70	43-114	12.40	(< 20)
Phenanthrene	0.0282U	2.08	1.63	78	2.17	1.83	84	53-115	11.70	(< 20)
Pyrene	0.0282U	2.08	1.49	72	2.17	1.68	77	53-121	12.00	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		2.08	1.32	63	2.17	1.50	69	47-106	12.60	
Fluoranthene-d10 (surr)		2.08	1.32	63	2.17	1.48	68	24-116	11.90	

Batch Information

Analytical Batch: XMS10480
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: NRB
Analytical Date/Time: 10/15/2017 10:23:00AM

Prep Batch: XXX38560
Prep Method: 3520 Liq/Liq Ext for 8270 PAH SIM LV
Prep Date/Time: 10/1/2017 8:08:27AM
Prep Initial Wt./Vol.: 240.00mL
Prep Extract Vol: 1.00mL

Print Date: 10/26/2017 8:31:08AM

Method Blank

Blank ID: MB for HBN 1769456 [XXX/38570]
Blank Lab ID: 1417397

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1178438001, 1178438002, 1178438003, 1178438004, 1178438005, 1178438006, 1178438007

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	88.2	60-120		%

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK102
Instrument: HP 7890A FID SV E F
Analyst: JMG
Analytical Date/Time: 10/6/2017 2:53:00PM

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/3/2017 8:17:47AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1178438 [XXX38570]
Blank Spike Lab ID: 1417398
Date Analyzed: 10/06/2017 15:13

Spike Duplicate ID: LCSD for HBN 1178438 [XXX38570]
Spike Duplicate Lab ID: 1417399
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1178438001, 1178438002, 1178438003, 1178438004, 1178438005, 1178438006, 1178438007

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	18.4	92	20	17.5	87	(75-125)	5.10	(< 20)
Surrogates									
5a Androstane (surr)	0.4	88.2	88	0.4	76.5	77	(60-120)	14.30	

Batch Information

Analytical Batch: **XFC13862**
Analytical Method: **AK102**
Instrument: **HP 7890A FID SV E F**
Analyst: **JMG**

Prep Batch: **XXX38570**
Prep Method: **SW3520C**
Prep Date/Time: **10/03/2017 08:17**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1769456 [XXX/38570]
Blank Lab ID: 1417397

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1178438001, 1178438002, 1178438003, 1178438004, 1178438005, 1178438006, 1178438007

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	95.1	60-120		%

Batch Information

Analytical Batch: XFC13862
Analytical Method: AK103
Instrument: HP 7890A FID SV E F
Analyst: JMG
Analytical Date/Time: 10/6/2017 2:53:00PM

Prep Batch: XXX38570
Prep Method: SW3520C
Prep Date/Time: 10/3/2017 8:17:47AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1178438 [XXX38570]
Blank Spike Lab ID: 1417398
Date Analyzed: 10/06/2017 15:13

Spike Duplicate ID: LCSD for HBN 1178438 [XXX38570]
Spike Duplicate Lab ID: 1417399
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1178438001, 1178438002, 1178438003, 1178438004, 1178438005, 1178438006, 1178438007

Results by **AK103**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	20	17.8	89	20	17.4	87	(60-120)	2.50	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	81.3	81	0.4	73.5	74	(60-120)	10.10	

Batch Information

Analytical Batch: **XFC13862**
Analytical Method: **AK103**
Instrument: **HP 7890A FID SV E F**
Analyst: **JMG**

Prep Batch: **XXX38570**
Prep Method: **SW3520C**
Prep Date/Time: **10/03/2017 08:17**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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CHA

1178438

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virginia	Kentucky

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

Section 1

CLIENT: Nortech

CONTACT: Susan Vogt PHONE NO: 907-452-5688

PROJECT NAME: Kiewit Groundwater Sampling PROJECT/ PWSID/ PERMIT#: 17-1047

REPORTS TO: Susan Vogt E-MAIL: svogt@nortechengg.com

INVOICE TO: Nortech QUOTE #:

P.O. #: 17-1047

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	Section 3 # CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: HCl	HCl	HCl	HCl	None					REMARKS/ LOC ID
							RRO-AK103	DRO-AK102	GRO-AK101	BTEX-EPA8021B	PAH-EPA8270D SIMS					
1 A-G	MW-1	9/26/17	1258	Water	7	Grab	X	X	X	X	X					
2 A-G	MW-2	9/27/17	1220		7		X	X	X	X	X					
3 A-G	MW-3	9/27/17	1120		7		X	X	X	X	X					
4 A-G	MW-4	9/26/17	1144		7		X	X	X	X	X					
5 A-G	MW-5	9/26/17	1335		7		X	X	X	X	X					
6 A-G	MW-55	9/26/17	1340		7		X	X	X	X	X					
7 A-G	EB-Kiewit	9/26/17	1312		7		X	X	X	X	X					
8 A-D	TB-Kiewit	9/26/17	1200	Water	—	Lab Prep			X	X						Trip Blank

Section 5

	Date	Time		
Relinquished By: (1) Scott M. Russell	9/28/17	1312	Received By:	9/28/17 1312
Relinquished By: (2)	9/28/17	1536	Received By:	
Relinquished By: (3)	Date	Time	Received By:	
Relinquished By: (4)	9/29/17	16:18	Received For Laboratory By:	

Section 4

DOD Project? Yes (No)

Cooler ID: N2

Data Deliverable Requirements:

Requested Turnaround Time and/or Special Instructions:

Standard TAT

Temp Blank °C: 1.0

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

http://www.sgs.com/terms-and-conditions

ANC: 1F, 1B

ANC: 1.4 #D10

SGS

1178438

FAIRBANKS SAMPLE RECEIPT FORM

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

Review Criteria:	Condition:	Comments/Actions Taken
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No (N/A) (Yes) No N/A	□*Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C) *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 1.0 w/Therm. ID: D23 Cooler ID:____ @____ w/Therm. ID:____ Cooler ID:____ @____ w/Therm. ID:____ Cooler ID:____ @____ w/Therm. ID:____ Cooler ID:____ @____ w/Therm. ID:____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank and "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note ambient ( ) or chilled ( ). Please check one.	(Yes) No Yes No (N/A) Yes No (N/A)	□*Exemption permitted if chilled & collected <8hrs ago* ***Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.***
Delivery Method: ~~Client (hand carried)~~ Other:____	Tracking/AB# : Or see attached Or N/A	
→For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
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	***Note: some samples are sent to Anchorage without inspection by SGS Fairbanks personnel.***
Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(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~~ Yes No (N/A)	

Additional notes (if applicable):

Profile #: 337594

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

e-Sample Receipt Form

SGS Workorder #: **1178438**

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		n/a Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	yes	1-F, 1-B
COC accompanied samples?	yes	
n/a **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	yes	Cooler ID: 1 @ 1.4 °C Therm. ID: D10
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
If >6°C, were samples collected <8 hours ago?	n/a	
If <0°C, were sample containers ice free?	n/a	
If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	yes	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	yes	
		n/a ***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	yes	
Were all soil VOAs field extracted with MeOH+BFB?	n/A	

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

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1178438001-A	HCL to pH < 2	OK	1178438007-A	HCL to pH < 2	OK
1178438001-B	HCL to pH < 2	OK	1178438007-B	HCL to pH < 2	OK
1178438001-C	HCL to pH < 2	OK	1178438007-C	HCL to pH < 2	OK
1178438001-D	HCL to pH < 2	OK	1178438007-D	HCL to pH < 2	OK
1178438001-E	HCL to pH < 2	OK	1178438007-E	HCL to pH < 2	OK
1178438001-F	No Preservative Required	OK	1178438007-F	No Preservative Required	OK
1178438001-G	No Preservative Required	OK	1178438007-G	No Preservative Required	OK
1178438002-A	HCL to pH < 2	OK	1178438008-A	HCL to pH < 2	OK
1178438002-B	HCL to pH < 2	OK	1178438008-B	HCL to pH < 2	OK
1178438002-C	HCL to pH < 2	OK	1178438008-C	HCL to pH < 2	OK
1178438002-D	HCL to pH < 2	OK	1178438008-D	HCL to pH < 2	OK
1178438002-E	HCL to pH < 2	OK			
1178438002-F	No Preservative Required	OK			
1178438002-G	No Preservative Required	OK			
1178438003-A	HCL to pH < 2	OK			
1178438003-B	HCL to pH < 2	OK			
1178438003-C	HCL to pH < 2	OK			
1178438003-D	HCL to pH < 2	OK			
1178438003-E	HCL to pH < 2	OK			
1178438003-F	No Preservative Required	OK			
1178438003-G	No Preservative Required	OK			
1178438004-A	HCL to pH < 2	OK			
1178438004-B	HCL to pH < 2	OK			
1178438004-C	HCL to pH < 2	OK			
1178438004-D	HCL to pH < 2	OK			
1178438004-E	HCL to pH < 2	OK			
1178438004-F	No Preservative Required	OK			
1178438004-G	No Preservative Required	OK			
1178438005-A	HCL to pH < 2	OK			
1178438005-B	HCL to pH < 2	OK			
1178438005-C	HCL to pH < 2	OK			
1178438005-D	HCL to pH < 2	OK			
1178438005-E	HCL to pH < 2	OK			
1178438005-F	No Preservative Required	OK			
1178438005-G	No Preservative Required	OK			
1178438006-A	HCL to pH < 2	OK			
1178438006-B	HCL to pH < 2	OK			
1178438006-C	HCL to pH < 2	OK			
1178438006-D	HCL to pH < 2	OK			
1178438006-E	HCL to pH < 2	OK			
1178438006-F	No Preservative Required	OK			
1178438006-G	No Preservative Required	OK			

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition

Container Condition Glossary

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

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM- The container was received damaged.
FR- The container was received frozen and not usable for Bacteria or BOD analyses.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Laboratory Data Review Checklist

Completed By:

William Watts

Title:

Project Manager

Date:

November 10, 2017

CS Report Name:

Kiewit Pacific Company – 2050 Peger Road

Report Date:

October 26, 2017

Consultant Firm:

NORTECH, Inc.

Laboratory Name:

SGS North America Inc.

Laboratory Report Number:

1178438

ADEC File Number:

102.38.164

Hazard Identification Number:

1178438

1. Laboratory

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

   ☑ Yes ☐ No 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 Comments:

   Samples were analyzed by SGS North America Inc. in Anchorage, Alaska.

2. Chain of Custody (CoC)

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

   ☑ Yes ☐ No Comments:

   b. Correct Analyses requested?

   ☑ Yes ☐ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ☑ Yes ☐ No Comments:

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

   ☑ Yes ☐ No Comments:

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

   ☑ Yes ☐ No Comments:

   The samples were received by the laboratory in good condition.

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

☑ Yes ☐ No Comments:

There were no discrepancies identified on the laboratory sample receipt checklist.

e. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

4. Case Narrative

a. Present and understandable?

☑ Yes ☐ No Comments:

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

☑ Yes ☐ No Comments:

According to the case narrative, analytical sample MW-3 had a low surrogate recovery for 2-methylnaphthalene-d10 which does not meet laboratory recovery. The sample was re-extracted after hold-time and surrogates were double-spiked. The corrected surrogate recovery for the out-of-hold analysis was within QC criteria. The in-hold data is reported.

c. Were all corrective actions documented?

☑ Yes ☐ No Comments:

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

Comments:

The case narrative does not state any effect upon data quality or usability.

5. Samples Results

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

☑ Yes ☐ No Comments:

b. All applicable holding times met?

☑ Yes ☐ No Comments:

c. All soils reported on a dry weight basis?

☐ Yes ☒ No Comments:

There were no soil samples submitted with this work order.

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

☒ Yes ☐ No Comments:

e. Data quality or usability affected?

☒ Yes ☐ No Comments:

Data quality or usability are not affected.

6. QC Samples

a. Method Blank

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

☒ Yes ☐ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

☒ Yes ☐ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

All method blank results were less than LOQ.

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

☐ Yes ☒ No Comments:

No samples are affected, no flags were applied to QC results.

v. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

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

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

☐ Yes ☒ No Comments:

Analytical methods BTEX, DRO, GRO, and RRO have LCS/LCSD results. PAH does have an LCS but no LCSD is reported in this work order.

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

☐ Yes ☒ No Comments:

No metal or inorganic analyses were requested with this work order.

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

☒ Yes ☐ No Comments:

An LCS/LCSD RPD for PAH is not calculable. The MS/MSD for PAH meets RPD criteria.

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

Comments:

The %R and RPD were within acceptable limits.

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

☐ Yes ☒ No Comments:

No project samples are affected.

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

Comments:

Data quality or usability are not affected.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☑ Yes ☐ No 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 Comments:

Sample MW-3 (1178438003)
8270D SIM – The PAH surrogate recovery for 2-methylnaphthalene-d10 (28.2%) did not meet laboratory quality control criteria (47–106%). The surrogate recovery for fluoranthene-d10 does meet laboratory quality control criteria. The sample was re-extracted past hold time and surrogates were double-spiked. The corrected surrogate recoveries were within laboratory quality control criteria. The in-hold data are reported.

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

☐ Yes ☑ No Comments:

Sample results for MW-3 were not flagged by the laboratory.

iv. Data quality or usability affected?

Comments:

The PAH results for sample MW-3 are reported as non-detected and there is no effect upon reported data due to one low surrogate recovery of in-hold analysis.

Data quality or usability for the remaining analytical results are not affected.

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 Comments:

A trip blank was included, *TB-Kiewit*, for BTEX and GRO analyses.

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 Comments:

iii. All results less than LOQ?

☒ Yes ☐ No Comments:

iv. If above LOQ, what samples are affected?

Comments:

No samples are affected, the results were less than LOQ.

v. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

e. Field Duplicate

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

☒ Yes ☐ No Comments:

ii. Submitted blind to lab?

☒ Yes ☐ No Comments:

Sample duplicate pair *MW-5/MW-55* were submitted with this work order.

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

RPD (%) = 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 Comments:

Duplicate results were non-detect for the requested analysis, an RPD is not calculable, however the results are comparable.

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

Comments:

Data quality or usability are not affected.

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

☑ Yes ☐ No ☐ Not Applicable

EB-Kiewit was submitted for BTEX, DRO, GRO, PAH and RRO.

i. All results less than LOQ?

☑ Yes ☐ No Comments:

ii. If above LOQ, what samples are affected?

Comments:

No samples are affected, the results were less than LOQ.

iii. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

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

a. Defined and appropriate?

☐ Yes ☑ No Comments:

There are no other data flags or qualifications for this work order.

ATTACHMENT C

95% LCL ORGANIC CARBON STATISTICS

---------- **All Samples - Lognormal LCL (H-statistic)** ----------

---

Results of Distribution Parameter Estimation

Assumed Distribution: Lognormal

Estimated Parameter(s): mean = 0.6737563

cv = 1.1160778

Estimation Method: mvue

Data: toc.data$DETorND

Sample Size: 24

Confidence Interval for: mean

Confidence Interval Method: Land

Confidence Interval Type: lower

Confidence Level: 95%

Confidence Interval: LCL = 0.4884674

UCL = Inf

1				**Background Statistics for Uncensored Full Data Sets**								
2			**User Selected Options**									
3			Date/Time of Computation	ProUCL 5.112/11/2017 8:57:42 AM								
4			From File	C:\Users\User\Desktop\PBW\Kiewit - DRO\output\proucl rawdata 20171211.xls								
5			Full Precision	OFF								
6			Confidence Coefficient	95%								
7			Coverage	95%								
8			New or Future K Observations	1								
9			Number of Bootstrap Operations	2000								
10												
11	**DETorND - all TOC samples**											
12												
13	**General Statistics**											
14						Total Number of Observations	24			Number of Distinct Observations	24	
15						Minimum	0.118			First Quartile	0.201	
16						Second Largest	2.22			Median	0.349	
17						Maximum	2.43			Third Quartile	1.125	
18						Mean	0.691			SD	0.706	
19						Coefficient of Variation	1.022			Skewness	1.373	
20						Mean of logged Data	-0.827			SD of logged Data	0.957	
21												
22						**Critical Values for Background Threshold Values (BTVs)**							
23						Tolerance Factor K (For UTL)	2.309			d2max (for USL)	2.644	
24												
25						**Normal GOF Test**						
26						Shapiro Wilk Test Statistic	0.769			**Shapiro Wilk GOF Test**		
27						5% Shapiro Wilk Critical Value	0.916			Data Not Normal at 5% Significance Level		
28						Lilliefors Test Statistic	0.282			**Lilliefors GOF Test**		
29						5% Lilliefors Critical Value	0.177			Data Not Normal at 5% Significance Level		
30						**Data Not Normal at 5% Significance Level**						
31												
32						**Background Statistics Assuming Normal Distribution**						
33						95% UTL with 95% Coverage	2.321			90% Percentile (z)	1.596	
34						95% UPL (t)	1.926			95% Percentile (z)	1.852	
35						95% USL	2.558			99% Percentile (z)	2.333	
36												
37						**Gamma GOF Test**						
38						A-D Test Statistic	1.196			**Anderson-Darling Gamma GOF Test**		
39						5% A-D Critical Value	0.767			Data Not Gamma Distributed at 5% Significance Level		
40						K-S Test Statistic	0.216			**Kolmogorov-Smirnov Gamma GOF Test**		
41						5% K-S Critical Value	0.182			Data Not Gamma Distributed at 5% Significance Level		
42						**Data Not Gamma Distributed at 5% Significance Level**						
43												
44						**Gamma Statistics**						
45						k hat (MLE)	1.234			k star (bias corrected MLE)	1.108	
46						Theta hat (MLE)	0.56			Theta star (bias corrected MLE)	0.624	
47						nu hat (MLE)	59.24			nu star (bias corrected)	53.16	
48						MLE Mean (bias corrected)	0.691			MLE Sd (bias corrected)	0.657	
49												
50						**Background Statistics Assuming Gamma Distribution**						
51						95% Wilson Hilferty (WH) Approx. Gamma UPL	2.054			90% Percentile	1.551	
52						95% Hawkins Wixley (HW) Approx. Gamma UPL	2.099			95% Percentile	1.997	

53	95% WH Approx. Gamma UTL with 95% Coverage					2.877	99% Percentile					3.024
54	95% HW Approx. Gamma UTL with 95% Coverage					3.046						
55	95% WH USL					3.462	95% HW USL					3.748
56												
57	**Lognormal GOF Test**											
58	Shapiro Wilk Test Statistic					0.916	**Shapiro Wilk Lognormal GOF Test**					
59	5% Shapiro Wilk Critical Value					0.916	Data Not Lognormal at 5% Significance Level					
60	Lilliefors Test Statistic					0.157	**Lilliefors Lognormal GOF Test**					
61	5% Lilliefors Critical Value					0.177	Data appear Lognormal at 5% Significance Level					
62	**Data appear Approximate Lognormal at 5% Significance Level**											
63												
64	**Background Statistics assuming Lognormal Distribution**											
65	95% UTL with 95% Coverage					3.991	90% Percentile (z)					1.492
66	95% UPL (t)					2.335	95% Percentile (z)					2.113
67	95% USL					5.499	99% Percentile (z)					4.057
68												
69	**Nonparametric Distribution Free Background Statistics**											
70	**Data appear Approximate Lognormal at 5% Significance Level**											
71												
72	**Nonparametric Upper Limits for Background Threshold Values**											
73	Order of Statistic, r					24	95% UTL with 95% Coverage					2.43
74	Approx, f used to compute achieved CC					1.263	Approximate Actual Confidence Coefficient achieved by UTL					0.708
75							Approximate Sample Size needed to achieve specified CC					59
76	95% Percentile Bootstrap UTL with 95% Coverage					2.43	95% BCA Bootstrap UTL with 95% Coverage					2.43
77	95% UPL					2.378	90% Percentile					1.801
78	90% Chebyshev UPL					2.853	95% Percentile					2.177
79	95% Chebyshev UPL					3.832	99% Percentile					2.382
80	95% USL					2.43						
81												
82	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
83	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
84	and consists of observations collected from clean unimpacted locations.											
85	The use of USL tends to provide a balance between false positives and false negatives provided the data											
86	represents a background data set and when many onsite observations need to be compared with the BTV.											
87												

ATTACHMENT D

PROPOSED PETROLEUM HYDROCARBON CLEAN-UP LEVELS

Petroleum Cleanup Level Calculator

Kiewit 2050 Peger Road

Site zone and exposure scenario: Under 40-inch Zone - Commercial/Industrial Exposures

Cleanup Level Calculations 12/21/2017

Chemical	CAS	Type	Calculations		
DRO Aliphatic		Organic Non-Carcinogenic Petroleum	Ingestion Indoor Worker:	204000	mg/kg
			Ingestion Outdoor Worker:	102000	mg/kg
			Inhalation Cleanup Level:	61500	mg/kg
			Groundwater Cleanup Level:	3.7	mg/L
			Migration to Groundwater:	32800	mg/kg
DRO Aromatic		Organic Non-Carcinogenic Petroleum	Ingestion Indoor Worker:	81800	mg/kg
			Ingestion Outdoor Worker:	40900	mg/kg
			Inhalation Cleanup Level:	18900	mg/kg
			Groundwater Cleanup Level:	1.5	mg/L
			Migration to Groundwater:	450	mg/kg
DRO (Total)		Organic Non-Carcinogenic Petroleum	Ingestion Indoor Worker:	205000	mg/kg
			Ingestion Outdoor Worker:	102000	mg/kg
			Inhalation Cleanup Level:	47300	mg/kg
			Groundwater Cleanup Level:	1.5	mg/L
			Migration to Groundwater:	1100	mg/kg

Please Note

Chemical	Notes
DRO Aliphatic	The Maximum Allowable DRO Aliphatic concentration is 10000 mg/kg
DRO Aromatic	The Maximum Allowable DRO Aromatic concentration is 5000 mg/kg
DRO (Total)	The Maximum Allowable DRO concentration is 12500 mg/kg

The parameters used to calculate the above cleanup levels and the parameters' default values are as follows:

Volatilization Pathway Parameters

Symbol	Description	Value	Default	Units
ρ_b	Dry soil bulk density	1.5	1.5	g/cm^3
n	Total soil porosity	0.434	0.434	L_{pore}/L_{soil}
Θ_w	Water-filled soil porosity	0.15	0.15	L_{water}/L_{soil}
Θ_a	Air-filled soil porosity	0.284	0.284	L_{air}/L_{soil}
w	Average soil moisture content	0.1	0.1	g_{water}/g_{soil}
f_{oc}	Organic carbon content of soil	0.00489	0.001	g/g

Groundwater Pathway Parameters

Symbol	Description	Value	Default	Units

Θ_w	Water-filled soil porosity	0.3	0.3	L_{water}/L_{soil}
Θ_a	Air-filled soil porosity	0.13	0.13	L_{air}/L_{soil}
w	Average soil moisture content	0.1	0.1	g_{water}/g_{soil}
K	Aquifer hydraulic conductivity	420	876	m/yr
i	Hydraulic gradient	0.002	0.002	m/m
L	Source length parallel to groundwater flow	32	32	m
I	Infiltration rate	0.13	0.13	m/yr
d_a	Aquifer thickness	10	10	m

ATTACHMENT E

METHOD 3 HUMAN-HEALTH CLEANUP LEVELS

Site-specific

Outdoor Worker Equation Inputs for Soil (<40" Precipitation Zone)

Variable	Value
TR (target cancer risk) unitless	1.0E-5
THQ (target hazard quotient) unitless	1
AT_{ow} (averaging time)	365
$EF_{ow<40"}$ (exposure frequency) d/yr	225
ED_{ow} (exposure duration) yr	25
ET_{ow} (exposure time) hr	8
LT (lifetime) yr	70
BW_{ow} (body weight)	80
IRS_{ow} (soil ingestion rate) mg/day	100
AF_{ow} (skin adherence factor - adult) mg/cm ^{2}	0.12
SA_{ow} (skin surface area - adult) cm ^{2}/day	3527
A_c (acres)	0.5
Q/C_{wp} (g/m^2-s per kg/m^3)	93.7736
PEF (particulate emission factor) m ^{3}/kg	1.36E+09
A (PEF Dispersion Constant)	16.2302
B (PEF Dispersion Constant)	18.7762
C (PEF Dispersion Constant)	216.108
V (fraction of vegetative cover) unitless	0.5
U_m (mean annual wind speed) m/s	4.69
U_t (equivalent threshold value)	11.32
F(x) (function dependent on U_m/U_t) unitless	0.194
A_c (acres)	0.5
Q/C_{wp} (g/m^2-s per kg/m^3)	93.7736
foc (fraction organic carbon in soil) g/g	0.00235
p_b (dry soil bulk density) g/cm ^{3}	1.5
p_s (soil particle density) g/cm ^{3}	2.65
θ $_w$ (water-filled soil porosity) L_{water}/L_{soil}	0.15
θ $_a$ (air-filled soil porosity) L_{air}/L_{soil}	0.28396
n (total soil porosity) L_{pore}/L_{soil}	0.43396
T (exposure interval) s	819936000
A (VF Dispersion Constant)	16.2302
B (VF Dispersion Constant)	18.7762
C (VF Dispersion Constant)	216.108

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Site-specific

Outdoor Worker Cleanup Levels Calculator for Soil (<40" Precipitation Zone)

ca=Cancer, nc=Noncancer, ca* (Where nc CL < 100 x ca CL), ca** (Where nc CL < 10 x ca CL),
max=CL exceeds ceiling limit (see User's Guide), sat=CL exceeds csat, sol=CL exceeds Solubility
I=IRIS; D=Drinking Water/Health Advisory Goals; P=PPRTV; A=ATSDR; C=Cal EPA; X=APPENDIX PPRTV SCREEN; H=HEAST; S=SURROGATE

Substitution for threshold maximum in soil has been enabled.

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF (mg/kg-day) $^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m ^{3})$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m ^{3})	Chronic RfC Ref	GIABS	ABS
Acenaphthene	83-32-9	No	Yes	-		-		6.00E-02	I	-		1	0.13
Anthracene	120-12-7	No	Yes	-		-		3.00E-01	I	-		1	0.13
Benzene	71-43-2	No	Yes	5.50E-02	I	7.80E-06	I	4.00E-03	I	3.00E-02	I	1	-
Butylbenzene, sec-	135-98-8	No	Yes	-		-		1.00E-01	X	-		1	-
Cumene	98-82-8	No	Yes	-		-		1.00E-01	I	4.00E-01	I	1	-
Ethylbenzene	100-41-4	No	Yes	1.10E-02	C	2.50E-06	C	1.00E-01	I	1.00E+00	I	1	-
Fluorene	86-73-7	No	Yes	-		-		4.00E-02	I	-		1	0.13
Methylnaphthalene, 1-	90-12-0	No	Yes	2.90E-02	P	-		7.00E-02	A	-		1	0.13
Methylnaphthalene, 2-	91-57-6	No	Yes	-		-		4.00E-03	I	-		1	0.13
Naphthalene	91-20-3	No	Yes	-		3.40E-05	C	2.00E-02	I	3.00E-03	I	1	0.13
Phenanthrene	85-01-8	No	Yes	-		-		3.00E-02	S	-		1	0.13
Pyrene	129-00-0	No	Yes	-		-		3.00E-02	I	-		1	0.13
Toluene	108-88-3	No	Yes	-		-		8.00E-02	I	5.00E+00	I	1	-
Trimethylbenzene, 1,2,4-	95-63-6	No	Yes	-		-		-		7.00E-03	P	1	-
Trimethylbenzene, 1,3,5-	108-67-8	No	Yes	-		-		1.00E-02	X	-		1	-
Xylenes	1330-20-7	No	Yes	-		-		2.00E-01	I	1.00E-01	I	1	-

Site-specific

Outdoor Worker Cleanup Levels Calculator for Soil (<40" Precipitation Zone)

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I=IRIS; D=Drinking Water/Health Advisory Goals; P=PPRTV; A=ATSDR; C=Cal EPA; X=APPENDIX PPRTV SCREEN; H=HEAST; S=SURROGATE

Substitution for threshold maximum in soil has been enabled.

Chemical	RBA	D_{ia} (cm^2/s)	D_{iw} (cm^2/s)	Volatilization Factor (m^3/kg)	H`	Soil Saturation Concentration (mg/kg)	Water Solubility (mg/L)	Particulate Emission Factor (m^3/kg)
Acenaphthene	1.00E+00	5.06E-02	8.33E-06	121396.468037465	0.00752248569092	-	3.9	1360000000
Anthracene	1.00E+00	3.90E-02	7.85E-06	450881.868712733	0.00227309893704	-	0.0434	1360000000
Benzene	1.00E+00	8.95E-02	1.03E-05	3359.31612373049	0.22690106295993	869.195765227788	1790	1360000000
Butylbenzene, sec-	1.00E+00	5.28E-02	7.34E-06	6466.29752867479	0.71954210956663	59.207547597258	17.6	1360000000
Cumene	1.00E+00	6.03E-02	7.86E-06	5518.59654052433	0.47015535568274	112.107539700823	61.3	1360000000
Ethylbenzene	1.00E+00	6.85E-02	8.46E-06	5087.86150618503	0.3221586263287	204.375462272147	169	1360000000
Fluorene	1.00E+00	4.40E-02	7.89E-06	242328.159382283	0.00393295175797	-	1.69	1360000000
Methylnaphthalene, 1-	1.00E+00	5.28E-02	7.85E-06	50711.0140044319	0.02101390024529	155.955275060707	25.8	1360000000
Methylnaphthalene, 2-	1.00E+00	5.24E-02	7.78E-06	50183.0720563651	0.02117743254292	-	24.6	1360000000
Naphthalene	1.00E+00	6.05E-02	8.38E-06	40218.9565352316	0.01798855273916	-	31	1360000000
Phenanthrene	1.00E+00	3.45E-02	6.69E-06	554321.105248288	0.00172935404742	-	1.15	1360000000
Pyrene	1.00E+00	2.78E-02	7.25E-06	2048296.97899641	0.00048650858544	-	0.135	1360000000
Toluene	1.00E+00	7.78E-02	9.20E-06	3958.69870535591	0.27146361406377	368.755078151108	526	1360000000
Trimethylbenzene, 1,2,4-	1.00E+00	6.07E-02	7.92E-06	7011.89614703549	0.25183973834832	90.7029783275737	57	1360000000
Trimethylbenzene, 1,3,5-	1.00E+00	6.02E-02	7.84E-06	5882.84672220485	0.3585445625511	76.2914621084301	48.2	1360000000
Xylenes	1.00E+00	6.85E-02	8.46E-06	5169.39009218698	0.2710547833197	111.419555985282	106	1360000000

Site-specific

Outdoor Worker Cleanup Levels Calculator for Soil (<40" Precipitation Zone)

ca=Cancer, nc=Noncancer, ca* (Where nc CL < 100 x ca CL), ca** (Where nc CL < 10 x ca CL),
max=CL exceeds ceiling limit (see User's Guide), sat=CL exceeds csat, sol=CL exceeds Solubility
I=IRIS; D=Drinking Water/Health Advisory Goals; P=PPRTV; A=ATSDR; C=Cal EPA; X=APPENDIX PPRTV SCREEN; H=HEAST; S=SURROGATE

Substitution for threshold maximum in soil has been enabled.

Chemical	Ingestion CL TR=1.0E-5 (mg/kg)	Dermal CL TR=1.0E-5 (mg/kg)	Inhalation CL TR=1.0E-5 (mg/kg)	Carcinogenic CL TR=1.0E-5 (mg/kg)	Ingestion CL HQ=1 (mg/kg)	Dermal CL HQ=1 (mg/kg)	Inhalation CL HQ=1 (mg/kg)	Noncarcinogenic CL HI=1 (mg/kg)	Cleanup Level (mg/kg)
Acenaphthene	-	-	-	-	7.79E+04	1.42E+05	-	5.02E+04	5.0E+04 nc
Anthracene	-	-	-	-	3.89E+05	7.08E+05	-	1.00E+05	1.0E+05 Smax
Benzene	6.61E+02	-	5.87E+01	5.39E+01	5.19E+03	-	4.90E+02	4.48E+02	5.4E+01 ca**
Butylbenzene, sec-	-	-	-	-	1.30E+05	-	-	1.00E+05	5.9E+01 ca**
Cumene	-	-	-	-	1.30E+05	-	1.07E+04	9.92E+03	1.1E+02 ca**
Ethylbenzene	3.30E+03	-	2.77E+02	2.56E+02	1.30E+05	-	2.48E+04	2.08E+04	2.0E+02 ca**
Fluorene	-	-	-	-	5.19E+04	9.43E+04	-	3.35E+04	3.3E+04 nc
Methylnaphthalene, 1-	1.25E+03	2.28E+03	-	8.08E+02	9.08E+04	1.65E+05	-	5.86E+04	1.6E+02 nc
Methylnaphthalene, 2-	-	-	-	-	5.19E+03	9.43E+03	-	3.35E+03	3.3E+03 nc
Naphthalene	-	-	1.61E+02	1.61E+02	2.60E+04	4.72E+04	5.87E+02	5.67E+02	1.6E+02 ca**
Phenanthrene	-	-	-	-	3.89E+04	7.08E+04	-	2.51E+04	2.5E+04 nc
Pyrene	-	-	-	-	3.89E+04	7.08E+04	-	2.51E+04	2.5E+04 nc
Toluene	-	-	-	-	1.04E+05	-	9.63E+04	5.00E+04	3.7E+02 nc
Trimethylbenzene, 1,2,4-	-	-	-	-	-	-	2.39E+02	2.39E+02	9.1E+01 nc
Trimethylbenzene, 1,3,5-	-	-	-	-	1.30E+04	-	-	1.30E+04	7.6E+01 nc
Xylenes	-	-	-	-	2.60E+05	-	2.52E+03	2.49E+03	1.1E+02 nc

Site-specific

Outdoor Worker Risk for Soil (<40" Precipitation Zone)

Chemical	Ingestion SF (mg/kg-day) $^{-1}$	SFO Ref	Inhalation Unit Risk (ug/m ^{3})$^{-1}$	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m ^{3})	Chronic RfC Ref	GIABS	ABS	RBA	D_{ia} (cm ^{2}/s)	D_{iw} (cm ^{2}/s)
Acenaphthene	-		-		6.00E-02	I	-		1	0.13	1.00E+00	5.06E-02	8.33E-06
Anthracene	-		-		3.00E-01	I	-		1	0.13	1.00E+00	3.90E-02	7.85E-06
Benzene	5.50E-02	I	7.80E-06	I	4.00E-03	I	3.00E-02	I	1	-	1.00E+00	8.95E-02	1.03E-05
Butylbenzene, sec-	-		-		1.00E-01	X	-		1	-	1.00E+00	5.28E-02	7.34E-06
Cumene	-		-		1.00E-01	I	4.00E-01	I	1	-	1.00E+00	6.03E-02	7.86E-06
Ethylbenzene	1.10E-02	C	2.50E-06	C	1.00E-01	I	1.00E+00	I	1	-	1.00E+00	6.85E-02	8.46E-06
Fluorene	-		-		4.00E-02	I	-		1	0.13	1.00E+00	4.40E-02	7.89E-06
Methylnaphthalene, 1-	2.90E-02	P	-		7.00E-02	A	-		1	0.13	1.00E+00	5.28E-02	7.85E-06
Methylnaphthalene, 2-	-		-		4.00E-03	I	-		1	0.13	1.00E+00	5.24E-02	7.78E-06
Naphthalene	-		3.40E-05	C	2.00E-02	I	3.00E-03	I	1	0.13	1.00E+00	6.05E-02	8.38E-06
Phenanthrene	-		-		3.00E-02	S	-		1	0.13	1.00E+00	3.45E-02	6.69E-06
Pyrene	-		-		3.00E-02	I	-		1	0.13	1.00E+00	2.78E-02	7.25E-06
Toluene	-		-		8.00E-02	I	5.00E+00	I	1	-	1.00E+00	7.78E-02	9.20E-06
Trimethylbenzene, 1,2,4-	-		-		-		7.00E-03	P	1	-	1.00E+00	6.07E-02	7.92E-06
Trimethylbenzene, 1,3,5-	-		-		1.00E-02	X	-		1	-	1.00E+00	6.02E-02	7.84E-06
Xylenes	-		-		2.00E-01	I	1.00E-01	I	1	-	1.00E+00	6.85E-02	8.46E-06
*Total Risk	-		-		-		-		-	-	-	-	-

Site-specific

Outdoor Worker Risk for Soil (<40" Precipitation Zone)

Chemical	Volatilization Factor (m^3/kg)	H`	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Concentration (mg/kg)	Ingestion Risk TR=1.0E-5	Dermal Risk TR=1.0E-5
Acenaphthene	121396.468037465	0.00752248569092	-	1360000000	2.08	-	-
Anthracene	450881.868712733	0.00227309893704	-	1360000000	2.08	-	-
Benzene	3359.31612373049	0.22690106295993	869.195765227788	1360000000	0.2	3.0271526418786E-9	-
Butylbenzene, sec-	6466.29752867479	0.71954210956663	59.207547597258	1360000000	2.9	-	-
Cumene	5518.59654052433	0.47015535568274	112.107539700823	1360000000	1.7	-	-
Ethylbenzene	5087.86150618503	0.3221586263287	204.375462272147	1360000000	3.34	1.0110689823874E-8	-
Fluorene	242328.159382283	0.00393295175797	-	1360000000	10.1	-	-
Methylnaphthalene, 1-	50711.0140044319	0.02101390024529	155.955275060707	1360000000	62.9	5.0198446673189E-7	2.7619787740949E-7
Methylnaphthalene, 2-	50183.0720563651	0.02117743254292	-	1360000000	103	-	-
Naphthalene	40218.9565352316	0.01798855273916	-	1360000000	34	-	-
Phenanthrene	554321.105248288	0.00172935404742	-	1360000000	11.8	-	-
Pyrene	2048296.97899641	0.00048650858544	-	1360000000	2.08	-	-
Toluene	3958.69870535591	0.27146361406377	368.755078151108	1360000000	0.92	-	-
Trimethylbenzene, 1,2,4-	7011.89614703549	0.25183973834832	90.7029783275737	1360000000	73.8	-	-
Trimethylbenzene, 1,3,5-	5882.84672220485	0.3585445625511	76.2914621084301	1360000000	22.2	-	-
Xylenes	5169.39009218698	0.2710547833197	111.419555985282	1360000000	38.8	-	-
*Total Risk	-	-	-	-	-	5.1512230919765E-7	2.7619787740949E-7

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Outdoor Worker Risk for Soil (<40" Precipitation Zone)

Chemical	Inhalation Risk TR=1.0E-5	Carcinogenic Risk TR=1.0E-5	Ingestion Risk HQ=1	Dermal Risk HQ=1	Inhalation Risk HQ=1	Noncarcinogenic Risk HI=1
Acenaphthene	-	-	0.00002671232876	0.00001469744383	-	0.0000414097726
Anthracene	-	-	5.3424657534246E-6	2.9394887671232E-6	-	8.2819545205479E-6
Benzene	3.4078868306589E-8	3.7106020948467E-8	0.00003852739726	-	0.00040778133016	0.00044630872742
Butylbenzene, sec-	-	-	0.00002234589041	-	-	0.00002234589041
Cumene	-	-	0.00001309931506	-	0.00015824516404	0.00017134447911
Ethylbenzene	1.2043790341085E-7	1.3054859323472E-7	0.00002573630136	-	0.00013489045182	0.00016062675319
Fluorene	-	-	0.00019456335616	0.00010705109332	-	0.00030161444948
Methylnaphthalene, 1-	-	7.7818234414139E-7	0.0006923923679	0.00038096258953	-	0.00107335495743
Methylnaphthalene, 2-	-	-	0.01984160958904	0.0109170916952	-	0.03075870128424
Naphthalene	2.1093577647275E-6	2.1093577647275E-6	0.00130993150684	0.00072074003424	0.05790393863957	0.05993461018067
Phenanthrene	-	-	0.00030308219178	0.0001667594589	-	0.00046984165068
Pyrene	-	-	0.00005342465753	0.00002939488767	-	0.0000828195452
Toluene	-	-	8.861301369863E-6	-	9.5506963385194E-6	0.0000184119977
Trimethylbenzene, 1,2,4-	-	-	-	-	0.30895375981196	0.30895375981196
Trimethylbenzene, 1,3,5-	-	-	0.00171061643835	-	-	0.00171061643835
Xylenes	-	-	0.00014948630136	-	0.01542277309622	0.01557225939759
**Total Risk*	*2.2638745364449E-6*	*3.055194723052E-6*	*0.024395731409*	*0.01233963669148*	*0.38299093919013*	*0.41972630729061*

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