

Memorandum

Date: June 23, 2015

To: Dennis Harwood, Contract Manager, ADEC Grant Lidren, Project Manager, ADEC

From: Ahtna Engineering Services, LLC

Subject: Focused Groundwater Characterization, Alaska Real Estate Parking Lot, Anchorage, Alaska

Ahtna Engineering Services (Ahtna) is providing the Alaska Department of Environmental Conservation (ADEC) with this memorandum documenting additional characterization activities and results for the Alaska Real Estate Parking Lot site in Anchorage, Alaska. Notice to Proceed 18-8036-01-008D modified the existing scope of work as follows:

- Acquire historical aerial photographs for review of potential up-gradient sources,
- Sample ML&P MW-B-3 for volatile organic compounds (VOCs),
- Sample new monitoring wells GMW-13, GMW-14, GMW-15, and MW-28 for petroleum constituents: diesel range organics (DRO), gasoline range organics (GRO), and benzene/toluene/ethylbenzene/xylenes (BTEX),
- Sample surface water at the base of the bluff for VOCs, and
- Sample two monitoring wells in the Alaska Railroad Corporation (ARRC) Groundwater 2/3 plume for VOCs. The ARRC Groundwater 2/3 plume was identified in 2008 by CH2M Hill and is located south of Ship Creek.

Prior to the modification of the scope of work described above, Ahtna deployed three levelloggers and one barologger in May 2014 in three groundwater monitoring wells: DPB24, 4GMW-14, and MW-12S. The dataloggers were retrieved and downloaded on April 21, 2015. A summary of the data results is presented below.

Ahtna sampled the groundwater monitoring wells identified above on April 21 and 22, 2015. The samples were delivered to TestAmerica Laboratories (TestAmerica) in Anchorage, Alaska on April 22, and the analytical report was received on May 4.

Four historical aerial photographs of the site were purchased from Quantum Spatial of Anchorage, Alaska. The years represented by the aerial photographs include 1950, 1964, 1977, and 1994. The images were submitted to Grant Lidren, ADEC, via CD in April 2015. The aerial photographs are not discussed further in this memorandum.

The surface water seep samples proposed for the bluff near the intersection of Ingra Street and East 1st Avenue were unable to be collected because the seep was entirely enclosed within a new fence during the April 2015 field activities.

Figure 1 shows the location for the elements of the scope of work.

METHODOLOGY

All field activities and notes were recorded in a field notebook by personnel while performing the sampling. The scanned pages are available in Attachment A.

Groundwater elevation was monitored using dataloggers, including three levelloggers and one barologger. The dataloggers were deployed in May 2014 into three wells: MW-12S, DPB24, and 4GMW-14. The barologger was initially deployed below the water table and was adjusted in July 2014 to ensure that it would remain above the water level, recording current barometric pressure in the area. The depth to water was recorded when the dataloggers were retrieved to relate the pressure data to a specific depth.

The groundwater sampling was conducted using low-flow purge and sample techniques with a peristaltic pump. Dedicated sample tubing was used for each well. Flow rates were kept between 0.1 and 0.5 liters per minute. Groundwater drawdown during purging and sampling did not exceed 0.3 feet, and was monitored by routinely measuring the depth to groundwater. Water quality parameters were recorded every three to five minutes until four of the five parameters stabilized based on the following criteria:

- pH stable within 0.1 pH units;
- Temperature stable within 0.2 degrees Celsius (°C);
- Conductivity stable within 3 percent (%);
- Oxidation-reduction potential (ORP) stable within 10 millivolts; or
- Dissolved oxygen (DO) stable within 10%.

The parameters were recorded on groundwater sampling data sheets, provided in Attachment B. After stabilization, the water quality meter was disconnected, and groundwater samples were collected directly from sample tubing. The analytical program was as follows:

- ML&P MW-B-3, AKRRMW-22, and AKRRMW-24S: VOCs by EPA Method 8260, and
- GMW-13, GMW-14, GMW-15, and MW-28: GRO by AK-101, DRO by AK-102, and BTEX by EPA Method 8021.

VOC and GRO/BTEX samples were collected into 40-milliliter vials pre-preserved with hydrochloric acid. The vial was filled completely such that a positive meniscus formed and no air (i.e., headspace) was present in the vial. The cap was secured and the bottle inverted, tapped firmly, and checked for the presence of air bubbles. DRO samples were collected into 125-milliliter bottles pre-preserved with hydrochloric acid. All sample containers were kept cool following sample collection and submitted to TestAmerica for analysis.

MONITORING AND ANALYTICAL RESULTS

The following subsections summarize the results of monitoring and sampling.

Monitoring Well Sampling

As mentioned previously, three wells were sampled for VOCs and four wells were sampled for petroleum hydrocarbons. Several field parameters were monitored during the sampling process. Temperature of the water was generally low, between 1.20 and 4.97 Celsius (°C). The water was neutral to slightly acidic, with a pH range of 5.98 to 7.06. Conductivity measurements ranged from 316 microSiemens per centimeter (μ S/cm) to 659 μ S/cm. ORP was negative at every well, between -55 millivolts (mV) and -12 mV. DO was below 1.0 milligrams per liter (mg/L) for five of the seven wells, with the remaining two only slightly above, at 1.11 and 1.64 mg/L. The water sampled was clear, with turbidity ranging from 0.25 to 6.41 nephelometric turbidity units (NTU). All water samples had a clear appearance and a petroleum odor. Table 1 summarizes the water quality parameters for each well.

Monitoring Well	Date	Time	Water Level (ft BTOC)	Total Depth (ft BTOC)	Temperature (°C)	pH (pH units)	Conductivity (μS/cm ⁾	ORP (mV)	DO (mg/L)	Turbidity (NTU)
GMW-13-GW	4/21/2015	10:15	8.84	12.46	2.82	6.76	659	-12	0.29	1.02
MW-B-3-GW	4/21/2015	11:45	5.91	12.79	3.67	6.49	397	-22	0.48	4.74
4GMW-15-GW	4/21/2015	13:05	5.98	8.95	4.97	5.98	365	-24	0.54	1.30
4GMW-14-GW	4/21/2015	16:00	6.13	12.97	3.93	6.49	658	-55	0.27	0.25
AKRRMW-22-GW	4/22/2015	9:50	4.56	6.97	2.70	7.03	497	-52	1.11	6.41
AKRRMW-24S-GW	4/22/2015	10:40	4.16	6.02	1.20	6.96	316	-13	0.47	0.34
MW-28-GW	4/22/2015	11:25	9.59	11.89	2.37	7.06	646	-24	1.64	0.38

Note:

ft BTOC = feet below top of casing

 $^{\circ}C = degrees \ Celsius$

 μ S/cm = microSiemens per centimeter

mV = millivolts

mg/L = micrograms per liter

NTU = nephelometric turbidity units

VOC Sampling

Each well was analyzed for 60 different VOCs, most of which were not detected in any of the wells. Eight compounds were detected in one or more wells. The complete lab report is available in Attachment C. The following is a summary of the detections.

• Dichlorodifluoromethane (Freon 12) was detected at AKRRMW-22 and AKRRMW-24S.

- Isopropylbenzene, n-propylbenzene, sec-butylbenzene, 4-isopropyltoluene, and n-butylbenzene were detected in AKRRMW-22.
- 1,2,4-Trimethylbenzene and naphthalene were detected at AKRRMW-22 and MW-B-3.
- No chlorinated alkenes were detected in any of the wells.

No cleanup levels were exceeded for any of the detected parameters. Table 2 summarizes the detected concentrations.

Well ID	Sample ID	Freon-12	Isopropylbenzene	N-Propylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	4-Isopropyltoluene	n-Butylbenzene	Naphthalene
AVDDMW 22	15-AREPL-AKRRMW- 220-GW	2.7	6.6	11	5.1	5.6	4.2	7.3	32
AKKKWW-22	15-AREPL-AKRRMW-22- GW	2.6	6.5	11	4.8	5.5	4.0	7.1	30
MW-B-3	15-AREPL-MW-B-3-GW	U (2.0)	U (2.0)	U (3.0)	6.2	U (3.0)	U (3.0)	U (3.0)	4.7
AKRRMW- 24S	15-AREPL-AKRRMW- 245-GW	13.0	U (2.0)	U (3.0)	U (3.0)	U (3.0)	U (3.0)	U (3.0)	U (2.0)
	ADEC Cleanup Levels	7,300	3,700	370	1,800	370		370	730

Table 2: Groundwater Sampling VOC Detectable Results in µg/L

Note:

Samples were collected April 21-22, 2015

Units are micrograms per liter (µg/L)

Cleanup levels are from 18 AAC 75.345 Table C

Data in parentheses are practical quantitation limit (PQL)

Pink highlighting and bold text indicates the result is greater than cleanup level

U - Analyte not detected

All other VOCs tested were not detected in any samples

Petroleum Hydrocarbon Sampling

Four wells were sampled and analyzed for petroleum hydrocarbons, including BTEX, GRO, and DRO. In general, BTEX parameters were not detected in any wells, with the exception of m,p-xylenes in 4GMW-14. GRO and DRO were detected in all four wells. Two wells exceeded the DRO cleanup level of 1,500 μ g/L: 4GMW-13 (1,600 μ g/L) and 4GMW-14 (2,100 μ g/L). Table 3 below summarizes all sampling results. The laboratory results for GRO and DRO are included on Figure 1. It is important to note that GRO did not exceed any cleanup standard, but as it was regularly detected, the figure presents a spatial comparison of concentrations for the four wells analyzed.

Well ID	Sample ID	Benzene	Toluene	Ethylbenzene	m-Xylene & p-Xylene	o-Xylene	GRO	DRO
4CMW 12	15-AREPL- 4GMW-13-GW	U (2.0)	U (2.0)	U (3.0)	U (3.0)	U (2.0)	170	1,600
4010100-115	15-AREPL- 4GMW-16-GW	U (2.0)	U (2.0)	U (3.0)	U (3.0)	U (2.0)	130	1,200
4GMW-14	15-AREPL- 4GMW-14-GW	U (2.0)	U (2.0)	U (3.0)	3.2	U (2.0)	720	2,100
4GMW-15	15-AREPL- 4GMW-15-GW	U (2.0)	U (2.0)	U (3.0)	U (3.0)	U (2.0)	450	1,300
MW-28	15-AREPL- MW-28-GW	U (2.0)	U (2.0)	U (3.0)	U (3.0)	U (2.0)	840 QL	830
ADE	C Cleanup Levels	5	1,000	700	10,0	00	2,200	1,500

Table 3: Groundwater Sampling Petroleum Hydrocarbon Results in µg/L

Note:

Samples were collected April 21-22, 2015

Units are micrograms per liter (μ g/L)

Cleanup levels are from 18 AAC 75.345 Table C

Data in parentheses are practical quantitation limit (PQL)

Pink highlighting and bold text indicates the result is greater than cleanup level

QL - Low bias due to a failed matrix spike duplicate recovery

U - Analyte not detected

Data Quality Review

The laboratory data received from TestAmerica was review according to ADEC protocol. The Data Quality Review Checklist is included as Attachment D. The data review found that all data are considered usable for the purposes of this memorandum. One sample, 15-AREPL-MW-28-GW, contains a qualifier of "QL" on the GRO result due to failed accuracy criteria.

Groundwater Levels

Figure 2 shows groundwater elevation contours for April 2015. These contours show that groundwater in the area at the time of sampling was flowing to the northwest.

The dataloggers were deployed in May 2014 to obtain continuous groundwater elevation data. The barologger was originally deploy below the water level and was repositioned in July 2014. The loggers were retrieved in April 2015. The groundwater data were corrected using the barologger data and depth to water measurements. The usable data, between July 2014 and April 2015, represent nine months of continuous monitoring.

The available data were used to calculate flow direction and gradient for the duration of the datalogger deployment. On average, the groundwater in the area flows to the northwest (310 degrees) at a gradient of 0.007 feet/feet (ft/ft). The direction varied between approximately 290 degrees, or west-northwest, (observed in February 2015) and 317 degrees, or northwest, (observed in September 2014). The range and frequency of flow direction is presented in Figure 3, which demonstrates that the flow had little variation and continuously flowed to the northwest. The gradient ranged from 0.006 ft/ft (September 2014) to 0.007 ft/ft (February 2015). Over the

nine month monitoring period, the gradient gradually increased and the flow shifted slightly northward. The groundwater elevation monitoring data are included in Attachment E.

In general, the groundwater gradient decreases as groundwater elevation increases in the area. Additionally, there were hydrological events between January and March 2015 that demonstrated interesting behavior in the area groundwater. During these events, groundwater elevations rose, indicating an influx of water into the system. The groundwater gradient during these periods decreased and the flow direction shifted to a west-northwest flow.

The groundwater elevation measurements were also compared to a USGS stream gauge on Ship Creek which measure discharge and stage. The elevation of the stream generally followed the same trends as groundwater in the area, with the exception of a few high-stage events in the winter and spring (Figure 4). These high stages may be related to higher discharge events; however, the stream discharge could not be measured during this time due to ice on the creek.

CONCLUSIONS

Groundwater sampling in April 2015 shows that VOC concentrations in the three wells sampled were generally below detection limits, with few parameters detected at low concentrations and no detection of chlorinated ethenes. Therefore, the known plume of chlorinated ethenes around 4GMW-14 and MW-28 does not appear to extend to other locations or be influenced by other sources near the sampled wells. Petroleum hydrocarbon contamination exists in the area, with DRO concentrations above cleanup levels at the two upgradient wells (4GMW-13 and 4GMW-14) of the four wells sampled for petroleum hydrocarbons.

The groundwater elevation, gradient, and flow direction are fairly consistent, with an average gradient of approximately 0.007 ft/ft flowing to the northwest. The surface water elevation recorded in Ship Creek appears to correlate with the groundwater elevations measured with the dataloggers, demonstrating a close hydrological connection between Ship Creek and groundwater.

Attachments

Attachment A	Field Notes
Attachment B	Groundwater Sampling Forms
Attachment C	Laboratory Report
Attachment D	Data Quality Review Checklist
Attachment E	Groundwater Gradient and Direction Calculations

Figures

Figure 1	April 2015 GRO and DRO Concentrations
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- Figure 2 April 2015 Groundwater Elevation
- Figure 3 Groundwater Flow Direction
- Figure 4 Groundwater and Ship Creek Elevation

FIGURES









ATTACHMENT A

FIELD NOTES

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Name Ahtna Engineering Services

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Project <u>Alaska Real Estate</u> ADEC

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AGE	REFERENCE	DATE
GeoTek Alaska Glenn	569.5900	
Emerald Alaska Maria	258 · 1 558	
Ship Creek RV Lo	t 277.0877	
John Saan	ull 720.7240	
	· · · · · · · · · · · · · · · · · · ·	
	1.04	

0.S A.	tewart Geilich	20266.008 Ak Real Estate	5 7 14 50°, Partly Cloud
1000	Pepart office	for site.	
	Will start by	drilling well 4	GMW-15 inside
	the boundary	of ship Cree	KRY Lot.
1015	Meet with Ge	oTek Alaska d	Irillers Glenn
	and Logan.	Discuss plan.	
	Meet with J	hn Saari, the	operator of
	Ship Creek	RN Lot to con	from access.
	No utilitie	s designated i	n area around
	proposed 49	MW-15.	
1030	Bauge well	MW-28 on th	e comer (stick-up)
	Depth to wat	er (DTW) is 8.	88' from Toc.
	DTW = 6.06	fromground	surface.
	Gauge well	DPB24 near R	V Lot office bldg.
	DTW = 6.55	from Toc ut	ground surface.
	casing is or	ily 1-inch diam	eter. Tubing in
	urell.		1
1045	Set up Color.7	lec test kit for	screening soils.
1100	conduct her	with and safet	y briefing and
	Daily tail	pate meeting w	ithteam.
	label drum	for soil autting	s as non haz
	waste. Set	up PID for air m	omitoring.
1115	Begin dvilli	ng wai 4GMW-	15. Drill down to
	5 bas with	DT45 tooling. 1	Retrieve soil in
	plastic sleev	cfrom 5-70'	and 10-15' bas.
	- ola Ste	15/1/14 -	- Retain the Rain

2	A. Gevlich ARREALESTATE 517/14	D. Stewart 20246.008 5/7/14 3 A. Geilich AK Real Estate 5/7/14 3
Cont.	Soil is sandy gravel with fuel impacts observed by odor # color. (bonng log) Color Tec screening samples collected at 6.5'- Oppm	1410 To MW-1 and uncover. PVC full of dikt/bentonite. Dig out around the concrete apron. Remove steel mount. Backfill with native material + pca gravel
×	10'-Oppm 14'-Oppm. 11'-1 ppm Confining Layer at 10.5'bgs. Set well 4-9'bgs. (well construction log) screen.	1500 To MW-4 and uncover. AVC nearly full of direr/bentonite. Backfill ~30 ft. with bentonite chips hydrated in place. Dig out around the monument and apvon. Apponstrangely made of cold patch. Remove
t	Excess cuttings placed in 55-gal drum Labelled non-hazardous and placed	1515 TO MW-2 and uncover. PVC nearly full
3 5	Done with well completion and off-site for Lunch. Get 2 additional drums from GeoTek Alaska shop.	ort around mount and apron. toron of cold patch. Remore mount Backfill
1415	Back to 4th & Gambell parking lot. Uncover <u>MW-3</u> . Unable to Knock out Well bottom because well is nearly full	Since no PVC tempored from the ground, no hazardous waste generated. Monuments taken as debris for disposal by Geotex.
•	of dirt/bentonite. Fill up remaining ~7 Ft. with bentonite chips hydrated in place. Take out steel mount and backfil with native material.	1530 Finish up daily quantities with drillers. Off site for the day.
	GPS coordinate collected before decomm.	Rite in the Rain

4 0.9 A.	Stewart 20266.008 Beilich NK Real Estate 51814	0.º	Stewart 20266.008 Geilich AK Replestate	5.8.14 5
0815	Leave office for site.	A 1415	Beain drilling 46-MW-14 Drill	down to 5'hrs
1	Neet up with GeoTex drifers Glenn and Logan		Recover soil from 5-15 bes.	unable to
	Check out site for well 4GMW-12. In fromt of		retrieve soil from 5-10' samo	le hamel
	Grubstake Realty driveway. No late lity		Callect from and of pancel	AV AT 13.5'
	Omflicts.		(see boring log).	ing our is the
	Set up colorTer and get drill ing situated.		Well Screen B-13-000 8.5-13	3.5'
0915	Gothin Daily Tailgate Safety meeting.	1630	Finish drill ing and setting we	4. Start m
0930	Begin an lling 4GMW-12. Drill down to 15'		completions of both wells in	Plush
5	with no recovery. Recover soil from 15-20'		mounts in concrete.	
	Water~ (8' Sample to 30'. Heaving Sands.		All soil cuttings placed in drum	1 Labelled
	Gay tagged at 30'. (see boking Log)		non hazardous and left on	sile new
	Willsof will screen from 24-29'. (see well		telephone pole on west sid	le of Inan
- 49	construction log.)	•	at the intersection with 151/1	varehouse.
1300	Jinish well 45MW-12.		NO purpe or decon water gen	crated.
. Pir	Mobilize to 46 MW-13. Set up on spot		All other 1000 - gloves, paper-	towels, plastic,
	Nearty utilities, but no conflicts.		bags, etc placed in 2 garba	at bags for
1330	Begin aniling 46MW-13. Dull down to 5		disposal at Anchorage regio	mal Landfill.
	with no recovery. Recover soil 5-20'.	1700.	Off site for the day.	
	Unable to get sieve from sample		1) 1 1	
	barrel for 5-10'section. Collect from end			
	of barrel. Clay at 15. (see boring log).		11 5.8.14	
	Well screen 8.5-13.5' bgs.		A that	
400	Will finish mount and concrete cater.		4 A	
	Move to 4GMW-14.			
	den thent 5/8/14			De D

0. stewart 20266,008 6 A Geilich ZOZEG.008 5/9/Ar Alk Real Estate AK Real Estate 5/13/13 D Hickory 0840 At office. Calibrater UST. Sevial NO: 04. F10639 AD 1240 - Arrive at site, discuss plan -ptt initial final to survey monitoring wells - Conduct Health & Suffey 4.00 3,72 Meeting PH - Surveying data will be collected 7.00 F 7.13 9.99 9.86 in note book by D Hickey. off site for Jay. Survey will ORP 240.0 261.4 1715 spec. cond 1.428 be finished another day 1.413 98.790 100% DO. on site mul-7 940 O. Stewart, E. Freitas DEDTH TOWATER 36.7' 1000 Begin pumping. 1018 Parametics stable collect 1045 sample, NOTE: O. Stewart on site at offsite. Go to dump water, VIC 1630 to collect sample of meb to mw-6. drummed soil cuttings 1130 for waste disposal on'ste mw-6. 1134 14-AKRE-Cuttings. not enough time 1147 tu SUMPR. off site 46

S.Fr	20266.008	E Freitas 20266.008 Eliziu
8 5. 17.	eitus AK Real Estat 5/13/14	S. Fox AK Real Estate
1230	on site MandP with S. For	• 1530 Parametris stabilize.
1235	Arrive at MW-129	COLLECT (141-AREPL-MW13-GW)
1250	Begin pumping	1600 pumped purge work?
1300	Tubing NO naw. Changed	into fanks
	Out tubing.	 1620 Amve at mw-b
1310	Began pumping	1630 Take DIW.
1324	Began field parameters	1646 Start purge
	DTW= 6.3	1404 taxameters stabilize.
1350	Parameters stabilize,	• 1708 COLLECT
	collect sample	• 14-AKEPL-MIVUO-OVV
	(14-AKREPL-MWI2S-GW	any any
1400	measure DTW for	Auplicate III- AR-DI = MANNOR GIU
	datalogger, DIW = 6.5	THE DE TOUR SE DE VOC CON
	There was a bitos	• Duplicate is or the orning.
	Transie writigen went	• 1820 GEE SUD
	Cup, Submact US	1825 Dump purche instruction
	provin depins because	drums
	of woll and	1900 Return to office
1430	OFF-site mab to mW-13	Place samples of sample
	Well is Western nost	• mage.
1.00	of two wells	
1450	Begin punding	
1505	Begn measuring	
Con Con	field parameters =	Rite in the Rain.

12 A Gelich 5/13/14 13/14 A Gelich 1207 stop purge. 8 gallons remared from well 0930 - arrive at 46 MW-12 1210. decon pump. Read water level= same - decon pump with alconor & wata Contraction of the as previous. ringe 1230 Move to surveying activity u/ - Constat. Health & Softey nonting Dylan Hickey, Survey data in separate 0944 - Take water level DTW= 18.73 Ft DT 60 + 10 moll = 28.55 + notebook. 1500 End survey Besin development 9.82 ft nator mell, = 1.67 gollons 9+ 46 MW-14 Development to proceed to 16.7 gallars DTW= 5.93 Ft 7.22 feet Heo which is 10 well volumes DT better well = 13.15 FA 1.23 pellons incom 0959 start purge with submersible pump 6 Development to proceed to 12.3 sellens 1053 stop puge at 23 gallors. water Beging finge & purge begining to clear last few gallans 1505 - take water level scalings. some as above 1517 Stop puise, remove 13 Sellons 1055 1530 leave hell - being purge water to accumulation area 1535 arrive at well 46 MW-15 = arrive at 46 MW-13 1135 1543 Ghuit purse DTW= 5.31 Pt 1546 Stop purse DTBotton= 9.17 Ft depth to water = 8.51 ft -1546 Stop purse depth to bottom well= 1269 Fr decon leave site 3.86 Ft unter all cirive at drum 0.65 gellers in cl. water in casing = 418 st Well volume: 0.71 gel 1555 7.1 gallons = 10 well wolving 1603 Sher use area to dispose - deren punp of PPE & pige water 1201 - Start purge / Surge - observe heavy fuel odo- sheen/small droplets at fuel, water rolor = black Summer of the Rete in the Rain

A Geitich 14 AGold 5/14/14 E Freitas 5/14/14 15 E. Freiths Parameter stabilize. 1245 (01/2ct Sample mw8-GW) [14-(14-AREDL-DP024 GW) and 1330 OFF-site, Junch Qup 14-AREPL-MW80loop - Arrive at well DPB24 and set up - take water level \$ 1400 Check MW10, Car is on DTW= 6.57 Ft top of well and will need to mare to sample DTouse = 11.82 FJ COLUMN T begin purge and brigh taking water 1018 move to 46mw-12, take 1410 quality parameters w/ VST 1047 Finish purgin & collect sumple 14-AKREPL-DP1324-GW AG Water level. ck The Contractory of DTW = 18.681 TP = 28.57' 14-AREPL- DPBZ4-GW 1427 Begin purpe with baddy THE OWNER OF well purged with peristaltic pump quality pavameters with yst. due to I ich diameter casing 10.57 install data loge- 11. 37 Pt -1451 Parandeters stable below top of casing. Move to well MW-8 take water incer DTW = 43 57 Ft 1125 Collect (14-AKEPL-4GMW12-GW clean up sik, 1216+0 1520 zdup MW-28 move to Dapth to base = 46.92 Ft DTW= 8.851 sand over-Flaving around casing. Apparts to 1525 (COM) TD= 11,17' have gove down well and bottom of cell Begin 1548 pumping and felt soft. -Begin purge with blasder pump taking parameters 1216 - collect water quality parameter using bladder pemp and USI. with YST Rite in the Rain.



-	1				-	-	-	
18 AGe	ilch	5/15/14						19
7 r	οχ ·	113/14	11.15 4.1			-	1710	
0830	calibrate	VST					1043	begin pursing by bladder pump
	initial	112	final				1210	nearly free odor & sheen noted
pH	1111-14		11163 1				1710	- Collect gample 14-MKEYL- TGMAU3 Q
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lon se	t. op at	uoll A	- 46 M	w-15				well MW-10
1026	start p	rurge at	460 MC	/min			1530	set up at Mw -10
1054	stop f	Dutge coll	ing VSZ	in Sings,			1550	Begin puise of MW-10 of bladder
32	rollect	Sanple	14- ARE	PL-46 Mu	1-15-6W			pump
A State	for	IOC, M	NA, CS	IA.			1612	collard sample 14- AREPL-MW-10-GW
1130	tecon	equipment,	change a	bladder,	more	-		Secon equipment
	to neo	+ well					1642	Scop of F waste & PPE at accumulation
1140	talk a	to printi	ing busine	s about	rowing			aren
	Truck of	n top of	hell	MW-10.	w;11		1701	leave site
12.4.	try	o move	betore en	d at day	1			
1210	set y	p at u	vel 46	MW-13				
		1						10



22 A Geilich 5/22/14 1480 - on site at 4th/banbell to meet uf Grant Lidren af ADER t Emerald Maska to coordinate disposel of drums. 1440 - Grant Lidren on site. Grant signs disposel paperwork for I drum PPE, I drum soil 2 drums purse water. 1500 Emerald removes drums from site 23 ---1111 AG AG Rite in the Rain

²⁴ 7/2	2/ 14 A Geitch	6/12/14	25
1425	on site at ship creek RU bet to retrieve data logger seriel # of DP1324 #= 0047016879	1300 most bern at ML&P the got GPS coordinates of	2 Ja tailage Prince
	was 11.37 Ft btor	- toka wat - load reading at Mi	4105=726Ft BTOL
1475	off site	- download data from logger serv - collect GPS constrates for t 1335 Leave MLTP	1 # =0022029089 mizs & Muls
		1340- Collect GPS raoid natos So- AKI	RR MWZ4,
		HKRK MW -25 + HKRR MU	-22
		405 More to UPD 24 DIW	
		1420 nove to 46 Mur. H DTI townland tata from bard	J = 7.96 Ft lager and
		1445 leave site	
	16		AG
			Rite in the Rain.

4/21/15 Aberlich SFor 40.F 0415 On site Check surface water seep lich it 0425 fore, Water porded of Flowing Set up at 46MW-13. Start 0950 Purge & roard water putity roadings 1015 Collect sample 15-AREPL-46MW-13-6W 15-AREPL-116MAV-16-6W 11+ 1040 and dup 1040 Leave site, bo to MW-B-3 w/ Lena Seville of MKP Big'a puije at MW-B-3 1055 1145 Collect Sumple 15-AREPL-MW-B-3 GW Remove data logger From well 1120 MW-125 at 1120. Water level is 7.02 Ft Broc set up at 46MW-15 4GMW-15 1230 collect sumple 15-AREFL-Min 13-34-Civ 1305 1815 Remove Juta losse. From well DFB24 at 1315. Wate: level 13742 Ft Broc Remove data logger & buro lagger 1325 From well 4 Conw-14. Water level .? 6.13 Ft 695 1350 start purse at 4GMN-14 Rite in the Rain

4/22/15 AK Reul Estate 40-E A bedich Stor 1415 Collect sumple 15-AREPL-46MW-14-605 1435 Leave Site For Jay \$900 en gite. check well MWB09-AI. Has been covered m/ 1sphalt -Will supple AKRR MW -ZZ instead. 8935 Stuit prige at ARRR MW-22 0450 collect sample 15-AREPL + AKERR MW-ZZ-GW And duplicate 15-AREPL-AKER MW-ZZO-GW dup time = 1025 1010 Move to well AKRR MW-245 TO=6.02 - Check AKRR-MW- 5 TD= 12.08 F+ 1020 shart purge at AKRR MW-245 1040 collect gample 15 AREPL - AKRA MW - 245 - GW 110 start proper at MW-28 1125 collect sample 15-AREPL-MW-28-GW TIN 1140 clean up. off site, will return w/ enerald Alaska to pick up purge noter.

ATTACHMENT B

GROUNDWATER SAMPLING FORMS
A	ineering			GRO	UNDWA F	ATER SAN ORM	/IPLING	PROJ NUMI	ECT BER:	WELL NUM 46Mb	лвея: /-/4	;	SHEET:
PROJECT NAME	AKRe.	1 Est	ute		V	VELL CONDITION	Sand	1		NOMINAL DIAMETER	O.D.	I.D.	VOLUME (GAL/LIN FT
CLIENT	ADE	ic			D	AMAGE PRESENT	NU			1"	1.315"	1.049"	0.04
DATE	4/21	115				DEPTH TO BASE (FROM TOC)	12.	97		1.5"	1.9"	1. 610 "	0.11
SITE	4GM	11-1	4		D	EPTH TO WATER	6.03	A6 6.12	3	(2°)	2.375"	2.067"	0.17
GEOLOGIST	A be	lch	SFUR		Н	EIGHT OF WATER	19	4		3"	3.5"	3.068"	0.38
WEATHER/	40-4	5 6	2011.	cled.		WELL VOLUME		111	(el	4"	4.5"	4.026"	0.66
WIND .	lish	t			3	WELL VOLUMES		116	2-1				0.00
						SAMPLING DA	TA	3.70	921				
SAMPLE TYPE PRODUCT, OTI	(GW, HER):		Gw										
SAMPLE COLLE	CTED	Bailer			Tour		eristal +		Other C	nacih:			
MADE OF	. –	-				ip, Type. <u>7</u>		·	- Other, S	pecity			
	-		s Steel		PVC								
		leflon		0-		osable LDPE			Other, S	pecify:			
PROCEDUR	E:	AI	comer 1	DI	vater								
(color, free pro thickness, od turbidity)	duct or,		lear, pe	toloum	ode -					-0			
					FIELD WAT	ERQUALITY	ARAIVIETERS						
	Pursed Volume	Durge Rote	T	Denvi Denvi	Temperature	3%	10%	0.1	10 mV	10%			
Time	LGett Lite	(mL/min)	Water Level	(ft)	(°C)	μs/cm) ^c	0.0. (mg/L)	рН	ORP (mV)	Turbidity (NTU)	Cole	ы	Odor
1350	0	300	6.14	0.01	1121	start p	urge	t a i		1050	Clerk	/	potister
HOU	3				3.86	652	0.54	6.26	-51.0	1.08			
1405	4.5		4		3.70	659	0.40	6.40	-60.5	0.59			
1410	6	 -			3.73	658	0 30	6.47	-60 5	0.70			
1415	13	· · · ·			2.97	653	0.21	6.49	-51.5	0.25			
												+	
							OPMATION						
nple ID 5 - AREI	Рі- 4СМ	w -14.	Civ _	^{Time} 1415	Analyi DRO	RRO GRO BTEX	PAH VOCS PI	EST HERB EST HERB		Sampling N	otes:		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
			-										

En				GRO	UNDW/ F	ATER SAN ORM	MPLING	PRO. NUM	JECT BER:	MW- B	MBER:		SHEET: of
PROJECT NAM	NE AK E	141				WELL CONDITION	Saul			NOMINAL	0.0.	10	VOLUI
CLIENT	ADEX	~				DAMAGE PRESENT	00 0	site (DIAMETER	1.315*	1.040*	(GAL/LIN
DATE	4/211	15	-			DEPTH TO BASE	10 10	70		1.5"	1.0	1.610"	0.04
SITE	MW ·	B.3				DEPTH TO WATER				6	2.5	2.0578	0.11
GEOLOGIST	Ahit	1. 6	En	•	H	(FROM TOC) IEIGHT OF WATER	17 -	<u> </u>		<u></u>	2.375	2.067"	0.17
WEATHER/	- (10)	<u>-1)</u> (i. :	rux_				14.7	9		5"	3.5"	3.068"	0.3
WIND	<u>40 (</u>						Z.17	<u>7 gul</u>		4"	4.5"	4.026*	0.66
	Vish	1				SAMPLING C	6.5	52					
SAMPLE TYP	PE (GW,		1	111		SAMPLING D	AIA		_				
SAMPLE COL	LECTED			~	-								
WITH		Bailer			<u>X</u> Pun	np, Type:	Reistal tic		Other, Sp	pecify:			
MADE C	DF:	Stainles	s Steel		PVC								
	_	- Teflon			X) Disr	osable I DPF			Other C-	acif			
					/0 010				ouner. St	Jechty:			
SAMPLING (DECON	et.	. 07						-	•			
SAMPLING (PROCEDU SAMPLE DESCI	DECON IRE:	Atronex	+ PI	hate-									
SAMPLING (PROCEDU SAMPLE DESCI (color, free p	DECON IRE: RIPTION: roduct	<u>atronex</u> reen	+ PI	vate-	nater	r; pet	roloun	n odo					
SAMPLING D PROCEDU SAMPLE DESCI (color, free p thickness, d turbidit	DECON IRE: RIPTION: $\$ roduct $\$ pdor, v)	Altonux Neen	+ PI on p	uate- uvge	nater	r; pet	roloun	000					
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, d turbidit	DECON IRE: RIPTION: raduct pdor, v)	alconox reen	+ PI on p	wate- uvgl	Mater FIELD WAT	rer quality f	ro Lour	n odo	iv				
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, (turbidit	DECON IRE: RIPTION: roduct bdor, v)	ationix reen	+ PI on p	uate- VYGL	Mater FIELD WAT	rer quality f	ro Lour	rements (3 musi	be stable)				
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, d turbidit	DECON IRE: roduct odor, V Purged Volume roch i. bo	Alconox Len	+ PI Sh P Water Level	UN gl Draw Down	FIELD WAT	FER QUALITY F	PARAMETERS	rements (3 must	i be stable) 10 mV ORP	10% Turbidity		T	
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, turbidit	DECON IRE: roduct sodor, v) Purged Volume (Sat) i. it.	Purge Rate (mL/min) 2.50	+ PI Sh P Water Level	Late- Vgl Draw Down (ft)	FIELD WAT	FER QUALITY F	PARAMETERS	rements (3 must	be stable) 10 mV ORP (mV)	10% Turbidity (NTU)	Colo	pr	Odor
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, d turbidit	Purged Volume	Purge Rate (mL/min) 250 250	+ PI Sh P Water Level 5.17	Draw Down (ft)	FIELD WAT	FER QUALITY F 3% Spec. Cond. (µS/cm) ^c 1 + PUM & 3 2	PARAMETERS	со rements (3 must 0.1 рн -3 3, 74	10 estable) 10 mV 0RP (mV) -176.2	10% Turbidity (NTU)	colo Clei	Dr .	Odor Petroj
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, turbidit	Purged Volume (Gat) L. h. J J J J J J J J J J J J J	Alconox Veen Purge Rate (mL/min) 250 250 1	+ PI Sh P Water Level 5.17	UNGL Draw Down (R) 0:06	FIELD WAT	FER QUALITY F Spec. Cond. (μs/cm) ^c γ + ρυμ 632 624	PARAMETERS	rements (3 must 0.1 рн 3.74 3.46	be stable) 10 mV ORP (mV) -1 Z 6 2 -1 37 1	10% Turbidity (NTU) 7.0% (1.31	Cole Cless	Dr.	Odor Petar
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, i turbidit	DECON IRE: roduct podor, y Purged Volume (Gat) $i \cdot k^{-1}$ 0 $i \cdot 25$ $4 \cdot 2.5$ $3 \cdot 75$ $5 \cdot 75$	Purge Rate (mL/min) 250 250	+ PI Sh P Water Level 5.17	Draw Down (ft)	FIELD WAT FIELD WAT Temperature (°C) 51/2 3.82 3.92 3.92 3.92 3.92	FER QUALITY F Spec. Cond. (µS/cm) ^c 1 PUM 632 624 558	PARAMETERS itabilization Requir 10% D.O. (mg/L) P 7.17 1.31 0:69	со rements (3 must 0.1 рн 3,74 3,74 3,46 7,78	10 estable) 10 mV ORP (mV) -1 Z 6. 2 - 1 37. 1 - 1 27, 6	10% Turbidity (NTU) 7.0% 1.31 7.37	Cole	Dr .	Odo Petro
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, (turbidit Time [0 55 1100 1105 1110 1115	DECON IRE: roduct $\leq V$ purged Volume $(Gat) i \cdot k$ δ $i \cdot 25$ $4 \cdot 2.5$ $3 \cdot 75$ $5 \cdot 00$ $(a \cdot 25)$	Purge Rate (mL/min) 2.50 2.50	+ PI Sh P Water Level 5.17	Draw Down (ft)	FIELD WAT FIELD WAT Temperature (°C) 5/2 3.82 3.92 3.92 3.97 3.77 3.77	$FER QUALITY F \begin{array}{c} & & & \\ \hline \\ \hline$	PARAMETERS Tabilitzation Require 10% D.O. (mg/L) 7 7.17 1.31 0:69 i.02	rements (3 must 0.1 рн 3.74 8.46 7.78 7.08	be stable) 10 mV ORP (mV) -126.2 -137.1 -71.0	10% Turbidity (NTU) 7.0% 1.31 7.37 1.0.0	Cole Clei	or	Odor Petro,
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, turbidit Time [0 55 1105 1105 1105 1115 1120	DECON IRE: roduct $\leq V$ purged Volume (Gat) i.k 0 1.25 4.2.5 3.75 5.00 0.25 7.5	Purge Rate (mL/min) 250 250	+ PI Sh P Water Level	Draw Down (ft)	FIELD WAT FIELD WAT Temperature (°C) 5/2 3.92 3.92 3.97 3.77 3.93 2.32	Free QUALITY Free for the second state of th	PARAMETERS Tabilization Require 10% D.O. (mg/L) P 3.17 1.31 0.69 1.02 0.76 0.76	со rements (3 must 0.1 рн 3.74 3.74 7.78 7.08 7.08 6.66	be stable) 10 mV ORP (mV) -126.2 -137.1 -127.6 -71.0 -64.0	10% Turbidity (NTU) 7.09 9.31 9.37 10.0 (2.42	colo Clei	Dr	Odon Petro,
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, o turbidit Time [0 55 1105 1105 1105 1105 1120 1125 1130	DECON IRE:	Purge Rate (mL/min) 2.50 2.50	+ PI Sh P Water Level 5.97	Draw Down (ft)	FIELD WAT FIELD WAT Temperature (°C) 51/2 3.87 3.92 3.97 3.77 3.93 3.77 3.93 3.72 3.001	$FR QUALITY F TER QUALITY F 3% Spec. Cond. (\muS/cm)cit$ $pum632624558530994405440$	PARAMETERS itabilization Requir 10% D.0. (mg/L) P 7.17 1.31 0.69 1.02 0.76 0.85 0.85	соде rements (3 must 0.1 рн 3.74 3.74 7.78 7.08 6.05 6.05	10 estable) 10 mV ORP (mV) -126.2 -137.1 -127.6 -71.0 -64.0 -45.1 -25.0	10% Turbidity (NTU) 7.0% 1.31 7.37 10.0 (2.42 9.05	Cole Clei	2)7 	odor Petro,
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, d turbidit Time 10 55 1100 1105 1100 1125 1120 1125 1130 1135	DECON IRE: roduct Stronged Stronge	Purge Rate (mL/min) 2.50 2.50	+ PI Sh P Water Level	Draw Down (ft)	Temperature (°C) 5/2 3.92 3.92 3.92 3.77 3.77 3.77 3.77 3.72 3.64 3.67	$FR QUALITY F FR QUALITY F FR QUALITY F Spec. Cond. (\mu S/cm)^{c} F PUM 632 624 530 794 530 794 405 -405 -40 420$	PARAMETERS Tabilitzation Requir 10% D.O. (mg/L) 7 7.17 1.31 0:69 1.02 0.76 0.85 0,67 0.64	сово rements (3 must 0.1 рн 3.74 3.74 3.46 7.78 7.08 6.05 6.19	be stable) 10 mV ORP (mV) -126.2 -137.1 -127.6 -71.0 -64.0 -45.1 -32.8 -21.9	10% Turbidity (NTU) 7.09 1.31 1.37 10.0 12.42 9.05 (6.21 8.00	Cole C le :	Dr	Odor Peta
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, (turbidit Time [0 55 1100 1105 1105 1125 1125 1125 1130 1135 1140	DECON IRE: roduct fodor, v Purged Volume (Gat) i.k 0 1.25 4.2.5 3.75 5.00 0.25 7.5 8.75 10.0 11.25	Purge Rate (mL/min) 250	+ PI Stip	Late- Vgl Draw Down (R) 0:06	FIELD WAT FIELD WAT Temperature (°C) 5/2 3.92 3.92 3.92 3.97 3.93 3.77 3.93 3.72 3.62	FER QUALITY F Spec. Cond. (μs/cm) ^c 1 μs/cm) ^c 1 μs/cm) ^c 2 μ 3% 5 μ 5 μ 5 μ 5 μ 5 μ 5 μ 5 μ 5 μ	PARAMETERS Tabilization Require 10% $0.0.$ (mg/L) 2 3.17 1.31 0.69 0.76 0.85 0.67 0.54 0.54 0.54	сов rements (3 must 0.1 рн 3.46 7.75 7.08 6.66 6.05 6.19 6.35 6.46	be stable) 10 mV ORP (mV) -126.2 -137.1 -127,6 -71.0 -64.0 -451 -32.8 -21.9 -15.4	10% Turbidity (NTU) 7.09 1.31 9.31 1.37 10.0 1.2.42 9.03 (0.21 8.00 (1.2)	Cole Clei	or	Odor Petro
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, i turbidit Time [0 55 1100 1107 1100 1115 1120 1125 1120 1125 1130 1135 1140 1145	DECON IRE: roduct purged Volume [Gat] i.k 0 1.25 4.2.5 3.75 5.00 6.25 7.5 8.75 10.0 11.25 12.50	Purge Rate (mL/min) 250 250	+ PI Sh P Water Level	Draw Down (ft)	FIELD WAT FIELD WAT FIELD WAT 7.82 3.92 3.92 3.92 3.92 3.77 3.77 3.77 3.77 3.93 3.77 3.93 3.72 3.64 3.62 3.60 3.60	$ \begin{array}{c} $	PARAMETERS 10% D.O. (mg/l) 7 7 7 7 7 7 7 7	содо rements (3 must 0.1 рн 3.74 3.74 3.46 7.78 7.08 6.05 6.19 6.35 6.48 6.48 6.46	be stable) 10 mV ORP (mV) -126.2 -137.1 -127.6 -32.8 -21.9 -18.4 -22.11	10% Turbidity (NTU) 7.09 1.31 1.37 10.0 12.42 9.65 6.21 8.60 4.58 4.74	Cole Clei, ,		Odor Petro
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, d turbidit Time [0:55 1100 1105 1100 1125 1120 1125 1120 1125 1130 1125 1130 1125 1130 1125	DECON IRE: roduct Sdor, V Purged Volume [Gat] i.k D I. 25 4 2.5 3.75 5.00 0.25 7.5 8.75 10.0 11.25 12.50	Purge Rate (mL/min) 2.50 2.50	+ PI Sh P Water Level 5.17	Late- Vgl Draw Down (ft) 0:06	Temperature (°C) 3.82 3.93 3.77 3.93 3.72 3.62 3.62	$ \begin{array}{c} $	PARAMETERS Tabilitzation Requir 10% D.O. (mg/L) 7 7.17 1.31 0.69 1.02 0.76 0.85 0.65 0.65 0.54 0.54 0.47 0.47 0.47 0.47 0.47 0.47	с rements (3 must 0.1 рн 3.74 3.74 5.46 7.75 7.08 6.05 6.19 6.35 6.48 6.49	be stable) 10 mV ORP (mV) -126.2 -137.1 -127.6 -71.0 -64.0 -45.1 -32.8 -21.9 -18.4 -22.0	10% Turbidity (NTU) 7.09 1.31 9.31 7.57 10.0 (2.42 9.05 (6.21 8.00 4.58 4.74	Cole <i>C</i> le <u>(</u> , _		Odon Petro,
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, i turbidit Time [0:55 1100 1105 1100 1115 1120 1120 1125 1130 1125 1130 1125 1130 1135	DECON IRE: roduct purged Volume [Gat] i.k D 1.25 4.25 3.75 5.00 6.25 7.5 8.75 10.0 11.25 12.50	Purge Rate (mL/min) 250 250	+ PI Sh P Water Level	<u>icat</u> <u>V</u> <u>J</u> <u>c</u> Draw Down (ft) <u>0</u> . U <u>C</u>	FIELD WAT FIELD WAT Temperature (°C) 5/2 3.92 3.92 3.92 3.92 3.97 3.77 3.93 3.77 3.93 3.77 3.93 3.77 3.93 3.77 3.93 3.77 3.93 3.64 3.62 3.60 3.67 ANALYTICA	i peti IER QUALITY F 3% spec. Cond. (µS/cm) ^c i i 03'2 624 538 530 994 405 440 420 410 397 AL SAMPLE INF	PARAMETERS Stabilization Require 10% D.O. (mg/l) P 3.17 1.31 0.69 0.76 0.85 0.67 0.541 0.541 0.541 0.541 0.47 0.47 0.47 0.47 0.47 0.485	$\begin{array}{c} & & & \\ & &$	be stable) 10 mV ORP (mV) -126.2 -137.1 -127.6 -32.8 -21.9 -21.9 -18.4 -22.0	10% Turbidity (NTU) 7.09 1.31 1.37 10.0 12.42 9.65 6.21 8.60 4.58 4.58 4.74	Colo Clei, ,		Odor Petro
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, d turbidit Time [0:55 1100 1105 1100 1125 1120 1125 1120 1125 1130 1125 1130 1125 1130 1125 1130 1125 1130 1125	DECON IRE: roduct SV Sdor, V Purged Volume [Gat] Lik 0 1.25 4.25 4.25 4.25 5.00 6.25 7.5 5.00 6.25 7.5 8.75 10.0 11.25 12.50	Purge Rate (mL/min) 2.50 2.50	+ PI Sh P Water Level	Draw Down (ft) D: UG	FIELD WAT FIELD WAT Temperature (°C) 5 Kz 3 BZ 3 CH 3 BZ 3 CH 3 BZ 3 CH 3	TER QUALITY F TER QUALITY F 3% Spec. Cond. $(\mu S/cm)^{c}$ 1 + PUM 632 624 558 530 994 405 410 410 397 AL SAMPLE INF	PARAMETERS itabilization Requir 10% D.O. (mg/L) 7 7.17 1.31 0.69 1.02 0.76 0.85 0.67 0.51 0.47 0.51 0.47 0.47 0.45 O.51 0.47 0.45 O.51 0.47 0.45 O.51 0.47 0.45 O.51 0.47 0.45 O.51 0.51	$\begin{array}{c} & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ &$	10 mV 10 mV ORP (mV) -126.2 -137.1 -127,6 -71.0 -64.0 -45.1 -32.8 -21.9 -15.4 -22.0	$ \begin{array}{c} 10\% \\ Turbidity \\ (NTU) \\ \hline 7.0\% \\ $			Odou Petro,
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, (turbidit Time [0 55 1100 1105 1100 1125 1120 1125 1120 1125 1120 1125 1130 1125 1130 1125 1130 1125 1130 1125 1130 1125 1130 1125	DECON IRE: roduct $\leq V$ purged Volume $(Gat) i \cdot k$ 0 1.25 4.25 4.25 4.25 5.00 6.25 7.5 8.75 10.0 11.25 12.50 RL - MW-1	Purge Rate (mL/min) 250 250	+ PI Sh P Water Level	<u>и</u> а†е- <u>V</u> 92 Draw Down (ft) 0:06 1 1 1 1 1 45	Temperature (°C) 5/2 3.92 3.92 3.77 3.77 3.77 3.72 3.72 3.62 3.62 3.62 3.60 5.67 ANALYTICA Analyt DRO	TER QUALITY F 3% Spec. Cond. (μ S/cm) ^c 1 + pum 632 624 558 530 794 405 470 420 410 347 AL SAMPLE INF RRO GRO BTEX	PARAMETERS Tabilization Requir 10% D.O. (mg/L) 2 3.17 1.31 0.69 1.32 0.76 0.85 0.85 0.85 0.67 0.54 0.54 0.54 0.54 0.54 0.47 0.47 0.45 O.54 0.47 0.45 O.67 0.47 0.45 O.85 O.67 0.54 0.47 0.45 O.85 O.67 0.47 0.47 0.45 O.85 O.85 O.85 O.67 0.47 0.47 0.45 O.85 O.85 O.67 0.45 ORMATION	сово rements (3 must 0.1 рн 3.46 7.78 7.08 6.46 6.49 6.49 5.48 6.49	be stable) 10 mV ORP (mV) -126.2 137.1 -127,6 -71.0 -64.0 -451 -32.8 -21.9 -18.4 -22.0	10% Turbidity (NTU) 7.09 1.31 9.37 10.0 (2.42 9.65 (6.21 8.60 4.58 4.24 5.4 Sampling No. 5.4	Colo Cle:, ptes: 7-1// 6	or black	Odo Petro Petro

Eng	ntna	GRO	UNDW	ATER SA ORM	MPLING	PRC	DJECT MBER:	WELL NUI 46 MW	MBER:		SHEET:
PROJECT NAM	HK Reul Estate	£		WELL CONDITION	1200	ł		NOMINAL	0.D.	I.D.	VOLUME
CLIENT	ADEC			DAMAGE PRESENT		,		1"	1.315"	1.049"	(GAL/LIN FT) 0.04
DATE	- 4/21/15			DEPTH TO BASE (FROM TOC)	12-	46		1.5"	1.9"	1.610"	0.11
SITE	-46MW-13			DEPTH TO WATER	80	24		2"	2.375"	2.067*	0.17
GEOLOGIST	AGelich S Fox			HEIGHT OF WATER	Z	1-7		3"	3.5"	2.007	0.17
WEATHER/ TEMPERATURE	Partly Clandy L	e) · F		WELL VOLUME	01				3.5	3.000	0.38
WIND	1:41	<u>v</u> .		3 WELL VOLUMES		1 4.1		4	4.5"	4.026"	0.66
	(eu)			SAMPLING D	ATA	07					
PRODUCT, OT	(GW, (HER):										
SAMPLE COLLI WITH:	Bailer		+ Pur	nn Type Pe	15 staltic		0.1			· · · · ·	
MADE OF			<u></u> ru	np, rype: <u></u>			_Other, S	Specify:			
			PVC								
SAMPLING DE PROCEDUR	con E: Atknort	wate - 1 PT	Dist	oosable LDPE		_	_Other, S	pecify:			
SAMPLE DESCRI	PTION:		-/								
thickness, oc	lor,										
turbidity)			FIELD WAT	FER QUALITY	PARAMETER						
	Liter				Stabilization Requi	rements (3 mus	t be stable)				
Time	Purged Volume Purge Rate Water L	Draw Down	Temperature	3% Spec. Cond.	10% D.O.	0.1	10 mV ORP	10% Turbidity			
0450	0 500 9.8	(ft) 6 0.07	(°C) 1.78	(µS/cm) ^c	(mg/L)	рн	(mV)	(NTU)	Colo	r	Odor
0955	0-525		2.74	667	0.72	6.62	-35 2	244	Clex.r		Petroleur
1000		- - <i> </i>	2.76	660	0.42	6.68	-27.5	1.95			
1010	2.010	+	2.81	659	0.27	6.72	-213	2.37			
1015	2515		2.82	659	0.29	671	-12,1	1.02		-+-	
								1.0-		-+	
					 			╉───┼		\rightarrow	
										-+-	
			ANALYTICA	L SAMPLE IN	FORMATION						
ample ID 15 - ARF P	- 41. May 13 17 100	Time	Analyt	es (2)				Sampling No	tes:		
IF MALL		1015	DRO I	RRO SRO STEN	PAH VOCs PE	ST HERB					
S-ARE PL	-46MW-16-GW	1040	ORO I	RRO GRO STEX	PAH VOCS PE	ST HERB					
			DRO I	RO GRO BTEX	PAH VOCs PE	ST HERB					
-	and the second secon	and the second states	-				_				

Eng	ntna	9		GRO	UNDW F	ATER SAI ORM	MPLING	PRO NUM	JECT 1BER:	WELL NUI 46.MW	MBER: -15		SHEET:
PRÖJECT NAMI	AK I	Ceul E	state			WELL CONDITION	sia	a)		NOMINAL	O.D.	I.D.	
CLIENT	APE	<u> </u>				DAMAGE PRESENT	1	0		1"	1.315*	1.049"	0.04
DATE	4/21/	15				DEPTH TO BASE (FROM TOC)	8.95	_		1.5"	1.9"	1. 610 "	0.11
SITE	46mw	15				(FROM TOC)	5.98	3		(2")	2.375"	2.067"	0.17
GEOLOGIST	A Cil.	ch S	Fux		H	EIGHT OF WATER COLUMN	3.0	3		[▲] 3"	3.5"	3.068"	0.38
WEATHER/ TEMPERATURE	15°F	Sun.	21/			WELL VOLUME	051	101		4 "	4.5"	4.026"	0.65
WIND	10		,			WELL VOLUMES	1.50	- 2-1					0.00
SAMPLETYPE	(GW,	C		-		SAMPLING D	ATA					7	and the second
PRODUCT, OT	THER):	Gi	W										
SAMPLE COLL WITH:	ECTED	Bailer			<u> </u>	np, Type: <u>P</u> c	static		Other. S	pecify:			
MADE OF	P.	Stainles	s Steel		 PVc			_	,				
		- Teflon			Disc	osable I DPF			Other S	no ifi			
SAMPLING DE	ECON	Alenar	+ 12T	i, ut a						pechy			
SAMPLE DESCRI	IPTION:	e in	-1	unter		·····							
(color, free pro thickness, or	oduct dor,		lea 1		P.		· ····						
turbidity)			and and a second								_		
					HELD WAT		ARAMETERS						
Time	Purged Volume	Purge Rate	·	Draw Down	Temperature	3% Spec. Cond.	10%	0.1	10 mV	10%			
1235	(Gat)Liter	(mL/min) 350	Water Level	(ft)	(°C)	(µS/cm) ^c	(mg/L)	pH	(mV)	(NTU)	Colo	r	Odor
12:40	1.35	350	6.00	0.02	4.73	7 76	7.67	6.25	-355	40 1	<i>c</i> 12		07
1245	35				4.48	372	1.11	6.24	-33.9	13.17	(184)	-	poristery
1252	5.65				4.42	373	0.72	6.33	-42.6	5.84			
1300	8.75				4.44	373	057	6.16	-32.8	6.60			/
1705	10.5	1			4.97	365	0.54	5.98	-21.	1.30	_/	-+	- (
											t		
												-+	
					ANALYTICA	L SAMPLE INF	ORMATION						
iample ID 15-ARE	FE-46A	<u>1w-15-</u>	Civ -	time 1305	Analyt DRO DRO	es RRO GRO BTEX RRO GRO BTEX	PAH VOCS PE	ST HERB		Sampling No	otes:		
					DRO I	RRO GRO BTEX	PAH VOCs PE	ST HERB					

A		2		GRO	UNDW	ATER SAI	MPLING	PRO	JECT 1BER:	WELL NUM	ABER:	,	SHEET:
PROJECT NAM	1e <u>AK</u>	Real	Estate	,		WELL CONDITION	500 d			NOMINAL	O.D.	1.D.	
CLIENT	<u>HDEC</u>	-				DAMAGE PRESENT	Non	C		1"	1.315"	1.049"	0.04
DATE	4/:	22/15		_		DEPTH TO BASE (FROM TOC)	6.9	7 7	4	1.5"	1.9"	1.610"	0.11
SITE	AK Re	al En	AKRI	RMW-Z	2	DEPTH TO WATER (FROM TOC)	4.56	; •	C4	22	2.375"	2.067"	0.17
GEOLOGIST	AG	e,lich	5 Fo	x		HEIGHT OF WATER COLUMN	2.4	1	F+	3"	3.5"	3.068"	0.38
WEATHER/ TEMPERATUR	E clurty	35-	40° F			WELL VOLUME	0,4	71 .	901	4"	4.5°	4.026"	0.66
WIND	None					3 WELL VOLUMES		2	Ja I	•	L		
SAMPLE TH	E (GW					SAMPLING D	ATA		-				
PRODUCT, C	THER):	GW											
SAMPLE COL	LECTED	Bailer			1 Pur		cish Itic		Other 6				
MADE C)F:	-	. ()		<u></u>			-	- Other, S	pecny:			
	-	_Stainles:	s Steel		PV(
		retion			/ Dis	posable LDPE			Other, S	pecify:			
SAMPLING D	ECON	- /.								1.1.1			
SAMPLING C PROCEDU	DECON URE:	Alun	Øb t	DI m	iter			-	- /-				
SAMPLING C PROCEDU SAMPLE DESCF (color, free p	DECON IRE:	Alun	Øb t	DI no	iter	sheen a	as ent						
SAMPLING (PROCEDU SAMPLE DESCF (color, free p thickness, c	DECON RE: RIPTION: roduct odor,	Alun Clear	10 x t	D <u>I</u> w Fislern	ster oder,	sheen p	res ent		-				
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, c turbidity	RIPTION: roduct ador, r)	Alun Clear	10 x + ; P ^{er}	D <u>I w</u> Fisles a	ode - ,	Sheen p	ras ent						
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, c turbidity	DECON IRE: RIPTION: roduct Ddor, r)	Alun Clear	82 t	DI w Frolewn	field wa	Sheen p	PARAMETERS	amonts (2 mu	the stable)				
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, (turbidity	DECON IRE:	Alun Clear Purge Rate	10 p +	DI un Froles A	fer fer FIELD WA	Sheen pr TER QUALITY	PARAMETERS	ements (3 mus	t be stable) 10 mV	10%			
SAMPLING (PROCEDU iAMPLE DESCI (color, free p thickness, i <u>turbidit</u> Time	DECON IRE: RIPTION: roduct ndor, r) Purged Volume (Gan)	Alun Clear Purge Rate (mL/min)	Water Level	DI kr Froleo A Draw Down (ft)	FIELD WA	Sheen pr TER QUALITY	PARAMETERS Stabilization Requir 10% D.O. (mg/L)	ements (3 mus 0.1 pH	it be stable) 10 mV ORP (mV)	10% Turbidity (NTU)	Cole	Dr.	Odor
SAMPLING (PROCEDU iAMPLE DESCI (color, free p thickness, i <u>turbidit</u> Time <u>0935</u> 79440	Purged Volume (Gan)&	Alun Clear Purge Rate (mL/min) 300	Water Level 4.60	DI 44 Froles A Draw Down (ft) 0.04	FIELD WA	Sheen p. TER QUALITY 3% Spec. Cond. (us/cm) ^c 492	PARAMETERS Stabilization Requir 10% D.O. (mg/L) 3. 2. /	ements (3 mus 0.1 pH <i>G</i> . 79	t be stable) 10 mV ORP (mV) - 37. 2	10% Turbidity (NTU) 1/58.4	Cold 6104	or - 7	Odor Petalera
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, (<u>turbidit</u> Time 0935 9940 2945	Percon RE: RIPTION: roduct ndor, r) Purged Volume (Gar) C C C C C S	Alun Clear Purge Rate (mL/min) 300	Water Level 4.60	DI w froleo A Draw Down (ft) 0.04	FIELD WA Temperature (°C) 2.52 2.65 2.66	Sheen p TER QUALITY 3% Spec. Cond. (µS/cm) ^c 492 493 493	PARAMETERS Stabilization Requir 10% D.O. (mg/L) 3. 2 / (ements (3 mus 0.1 pH 6. 79 6. 91	t be stable) 10 mV ORP (mV) - 37. 2 -56.6	10% Turbidity (NTU) 158.4 Z1.8	cold 6704 1	ər - 7	Odor Petroleura
SAMPLING (PROCEDU AMPLE DESCI (color, free p thickness, i turbidit	Purged Volume (Suf)2 (S	Alun Clear Purge Rate (ml/min) 390	Water Level 4.60	DI W Froles A Draw Down (ft) 0.04	FIELD WA FIELD WA Temperature (°C) 2.52 2.65 2.66 2.70	Sheen p TER QUALITY 3% Spec. Cond. (µS/cm) ^c 492 493 495 495 497	PARAMETERS Stabilization Requir 10% D.O. (mg/L) 3. 2 / 1.77 1.71 1.21	ements (3 mu 0.1 pH G. 79 G. 91 7.01 7.03	t be stable) 10 mV ORP (mV) - 37. 2 -56.6 -55.0 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.4	Colo Groa I Clea	or - 7	Odor Petalera
SAMPLING (PROCEDU AMPLE DESCI (color, free p thickness, (turbidit Time 2935 2940 2945 2950	Purged Volume (Gar) 6 1.5 7 1.5	Alun Clear Purge Rate (mL/min) 300	Water Level 4.60	DI 41 Froles A Draw Down (ft) 0.04	FIELD WA FIELD WA Temperature (°C) 2.52 2.65 2.66 2.70	5heen p TER QUALITY 3% Spec. Cond. (µ5/cm) ^c 492 493 495 497	PARAMETERS Stabilization Requir 10% D.0. (mg/L) 3.21 1.77 1.71 1.11	етепts (3 mu 0.1 рн 6. 79 6. 91 7.01 7.03	t be stable) 10 mV 0RP (mV) - 37. 7 -56.6 -55.0 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.41	Cold Groa I C / Ca I	ər - 7	Odor Petrokern
SAMPLING (PROCEDU AMPLE DESCI (color, free p thickness, i turbidit	Purged Volume (Gut) 2 1.5 	Alun Clear Purge Rate (mL/min) 390	Water Level 4.60	DI W Froles A	FIELD WA FIELD WA Temperature (°C) 2.52 2.65 2.66 2.70	Sheen p TER QUALITY 3% Spec. Cond. (µ5/cm) ^c 492 493 495 495 497	PARAMETERS Stabilization Requir 10% D.O. (mg/L) 3. 2 / 1.77 (-7 / 1. []	етепts (3 mus 0.1 рн С. 79 С. 99 7.0 1 7.0 3	t be stable) 10 mV ORP (mV) - 37. 7 -56.6 -55.0 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.4]	Colo Groa 1 C / Pa 1	or 2	Odor Petrokena
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, u turbidit	Purged Volume (Sart) & 0 / . 5 2 / . 5	Alun Clear Purge Rate (mL/min) 300	Water Level 4.60	DI 44 Froles A Draw Down (ft) 0.04	FIELD WA FIELD WA Temperature (°C) 2.52 2.65 2.66 2.70	5heen p. TER QUALITY 3% Spec. Cond. (µ5/cm) ^c 492 497 495 497	PARAMETERS Stabilization Requir 10% D.0. (mg/L) 3.21 1.77 1.71 1.11	етепts (3 mu 0.1 рн 6. 79 6. 91 7.01 7.03	t be stable) 10 mV 0RP (mV) -37. 7 -56.6 -55.0 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.41	Cold Groa I C / Ca I	3r - 7 - 1 	Odor Petrokern
SAMPLING (PROCEDU Color, free p thickness, i turbidit	Purged Volume (Gan) & 7 1.5 7 4.5	Alun Clear Purge Rate (mL/min) 390	Water Level 4.60	DI un Froles A	fer fer FIELD WA Temperature (°C) 2.52 2.65 2.66 2.70	Sheen p. TER QUALITY 3% Spec. Cond. (µ5/cm) ^c 492 493 495 497	PARAMETERS Stabilization Requir 10% D.O. (mg/L) 3. 2 / 1. 7 7 1. 7 1 1. 1 1	ements (3 mu 0.1 pH 6. 79 6.99 7.01 7.03	t be stable) 10 mV ORP (mV) - 37. 7 -56.6 -55.0 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.41	Cold Groa 1 C / Pe 1	or 	Odor Petroleuro
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, u turbidit	Purged Volume (Suf) 2 0 1.5 7 4.5 7 4.5	Alun Clear Purge Rate (mL/min) 700	Water Level 4.60	DI 44 Froles A Draw Down (ft) 0.04	field wa FIELD WA Temperature ('C) 2.52 2.65 2.66 2.70	5heen p. TER QUALITY 3% Spec. Cond. (µ5/cm) ^c 492 493 495 497	PARAMETERS Stabilization Requir 10% D.0. (mg/L) 3.21 1.77 1.71 1.11	етепts (3 mu 0.1 рн 6. 79 6. 91 7.0 1 7.0 3	t be stable) 10 mV 0RP (mV) -37. 7 -56.6 -55.0 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.41	Cold Groa I C / Ca I	3r - 7 - 1 	Odor Petrokera
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, i turbidit Time 0935 0940 0945 0950	Purged Volume (Gut) 2 	Alwa Clear Purge Rate (mL/min) 390	Water Level 4.60	DI un Froles A	fer fer FIELD WA Temperature (°C) 2.52 2.65 2.66 2.70	Sheen p. TER QUALITY 3% Spec. Cond. (uS/cm) ^c 492 493 495 497	PARAMETERS Stabilization Requir 10% D.O. (mg/L) 3. 2 / /-7 / /-7 / /-7 / /-1 /	ements (3 mu 0.1 pH 6. 79 6.99 7.01 7.03	t be stable) 10 mV ORP (mV) - 37. 7 -56.6 -55.0 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.41	Cold Groa 1 C / Pe 1		Odor Petroleuro
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, u turbidit Time 0935 0940 0935 0940 09450	Percon RE: RIPTION: roduct pdor, r) Purged Volume (Gar)& 0 1.5 7 4.5	Alwa Clea - Purge Rate (mL/min) 300	6 2 f 7 2 1 Water Level 4.60	DI W Froles A	FIELD WA FIELD WA Temperature (°C) 2.52 2.65 2.66 2.70 ANALYTIC	Sheen provide the second state of the second s	PARAMETERS Stabilization Requir 10% D.0. (mg/L) 3.21 1.77 1.71 1.11 FORMATION	ements (3 mus 0.1 pH G. 79 G. 99 7.01 7.03	t be stable) 10 mV 0RP (mV) - 37. 7 -56.6 -55.0 -51.7	10% Turbidity (NTU) /58.4 Z/.8 97.03 6.4]	Cold Groa I Clea I		Odor Petrokern
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, i turbidit Time 0935 0940 0945 0950	Percon RE: IIPTION: roduct roduct 0 1.5 7 4.5 	Alwa Clear Purge Rate (mL/min) 390	Ø⊅ † ;	DI W Froles A	FIELD WA FIELD WA Temperature (°C) 2.52 2.65 2.66 2.70 ANALYTIC Analy	Sheen p TER QUALITY 3% Spec. Cond. (µS/cm) ^c 492 493 495 495 497 495 497 AL SAMPLE IN rtes	PARAMETERS Stabilization Requir 10% D.O. (mg/L) 3. 2 / /-77 /-7 / /-7 / I. [] FORMATION	ements (3 mu 0.1 pH C. 79 (6.99 7.0) 7.03	t be stable) 10 mV ORP (mV) - 37. 7 -56.6 -55.0 -51.7	10% Turbidity (NTU) 158.4 21.8 97.03 6.41			Odor Petrolesson
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, i turbidit	Percon RE: AIPTION: roduct purged Volume (Gar)& 0 1.5 7 4.5 REPL - AKK	Alwa Clear Purge Rate (mL/min) 300	Ø≥ †	DI W Froles A	FIELD WA FIELD WA Temperature (°C) 2.52 2.65 2.66 2.70 ANALYTIC Analy DRO	Sheen provide the second state of the second s	PARAMETERS Stabilization Requir 10% D.0. (mg/L) 3.21 1.77 1.71 1.71 1.11 FORMATION	етепts (3 mus 0.1 рн С. 79 С. 79 С. 99 7.0 1 7.0 3	t be stable) 10 mV 0RP (mV) - 37. ? -56.6 -55.0 -51.7	10% Turbidity (NTU) 7.58.4 27.8 97.03 6.41	Cold Grow I Clean I		Odor Petrokera
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, i turbidit 7 Time 0935 0940 0945 0950	Percon RE: IIPTION: roduct roduct Purged Volume (gar) 2 0 1.5 3 4.5 4.5 REPL - AKK	Alwa Clear Purge Rate (mL/min) 300 1 200 1 200 200 200 200 200 200 200 2	10 2 + + 1727 Water Level 4.60 1 - - - - - - - - - - - - -	DI 44 Froles A Draw Down (ft) 0.04 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FIELD WA FIELD WA Temperature (°C) 2.52 2.65 2.65 2.66 2.70 ANALYTIC Analy DRO	Sheen p TER QUALITY 3% Spec. Cond. (us/cm) ^c 492 493 495 495 497 AL SAMPLE IN rtes RRO GRO BTES	PARAMETERS Stabilization Requir 10% D.O. (mg/L) 3. 2. 1 1. 7 7 1. 7 1 1. 1 1 FORMATION (PAH (VOCS) PE	ements (3 mus 0.1 pH C. 79 G. 91 7.01 7.03	t be stable) 10 mV ORP (mV) - 37. ? -56.6 -55.0 -51.7 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.41			Odor Petroleur
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, i turbidit Time 0935 0940 0945 0940 0945 0950	Percon RE: RIPTION: roduct purged Volume (gar)2 0 1.5 3 4.5 4.5 REPL - AKK EPL - AKK	Alwa Clear Purge Rate (mL/min) 300	10 t 1727 Water Level 4.60 1 - - - - - - - - - - - - -	DI 44 Froles A Draw Down (ft) 0.04 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FIELD WA FIELD WA Temperature ('C) 2.52 2.65 2.66 2.70 ANALYTIC Analy DRO DRO	Sheen provide the second state of the second s	PARAMETERS Stabilization Requir 10% D.O. (mg/L) 3.21 1.77 1.71 1.71 1.11 FORMATION C PAH (VOCS PE	ements (3 mus 0.1 pH G. 79 G. 91 7.03 7.03	t be stable) 10 mV 0RP (mV) -37. 7 -56.6 -55.0 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.41	Cold Grow I Clean I		Odor Peterkens
SAMPLING (PROCEDU SAMPLE DESCI (color, free p thickness, i turbidit 7 1 0935 0940 0945 0940 0945 0950	Percon RE: IIPTION: roduct roduct Purged Volume (gan)2 0 1.5 7 4.5 7 4.5 REPL - AKK EPL - AKK CHUPI.icy	Alwn Clear Purge Rate (ml/min) 300 1 30 1 300 1 1 30 1 1 1 1	Water Level 4.60 4.60 22-6w -220 - 6	DI W Froles A Draw Down (ft) 0.04 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FIELD WA FIELD WA Temperature (°C) 2.52 2.65 2.65 2.66 2.70 ANALYTIC Analy DRO S DRO	Sheen p TER QUALITY 3% Spec. Cond. (us/cm) ^C 492 493 495 497 495 497 497 497 497 497 497 497 497	PARAMETERS Stabilization Requir 10% D.O. mg/L) 3. 2. 1 1. 7 7 1. 7 1 1. 11 FORMATION C PAH (VOCS) PE	ements (3 mu) 0.1 pH C. 79 G. 91 7.0 1 7.0 3	t be stable) 10 mV ORP (mV) - 37. ? -56.6 -55.0 -51.7 -51.7	10% Turbidity (NTU) 158.4 21.8 9.03 6.41			Odor Petrokera

Eng	ntna ineering	9		GRO	UNDWA	TER SAN	APLING	PROJ NUM	ECT BER:	WELL NUR AKRRMU	nber: √-74 9		SHEET:
PROJECT NAME	AK	Rea/	Estate		v	ELL CONDITION	10 mell	plug		NOMINAL DIAMETER	O.D.	I.D.	VOLUN (GAL/LIN
CLIENT	ADe	ic			D	AMAGE PRESENT	ciser has	frest j	ckd	1"	1.315"	1.049"	0.04
DATE	4/2	2/15				DEPTH TO BASE (FROM TOC)	6.0	2	7	1.5"	1.9"	1.610"	0.11
SITE	ÄKRI	R AW	-245		D	EPTH TO WATER (FROM TOC)	4.1	6		(j")	2.375"	2.067"	0.17
GEOLOGIST	Ac	seilict	4 5	FOD	HI	IGHT OF WATER COLUMN	1.8	6		3"	3.5°	3.068 [×]	0.38
WEATHER/ EMPERATURE	40	۰F	Clouty					32		4 "	4.5*	4.026"	0.66
WIND	Л	012			3	WELL VOLUMES	0,	96	~		I		
						SAMPLING DA	ATA						
PRODUCT, OT	(GW, HER):	6.	N										
SAMPLE COLLI WITH: MADE OF	CTED —	Bailer	.		Pum	p, Type:	: 9 tattic		_Other,	Specify:			
	-	_Stainles	is Steel		PVC								
	CON					osable LDPE			Other,	Specify:			
PROCEDUR	E:	HIG	DADE +	DI w	nte-								
AMPLE DESCRI	PTION: duct												
thickness, oc turbidity)	or,												
					FIELD WAT	ER QUALITY F	PARAMETERS						
							itabilization Requir	ements (3 mus	t be stable)		56	5	
Time	Purged Volume	Purge Rate	e Water Level	Draw Down	Temperature	Spec. Cond.	D.O.	0.1 pH	10 mV ORP	10% Turbidity	/ Col		Orler
1020	0	350	4.22	0.06	1.65	(µS/cm)* 329	(mg/L)	6.62	(mV)	(NTU)	- 6 cm		Odda
1025	1.75			1	1.20	324	1.15	6.80	3.6	9.96	1)
10 30	5.25	\vdash		┝──┦──	1.07	323	0.72	G.91	-6.4	1.33	cleu	~	-
1040	7		+		120	3/6	0.61	6.97	-15.0 -B A	1.48	\vdash		
					le.			<u>[9.]</u>	17.0	0.11			
										-			
					ANALYTICA	L SAMPLE IN	FORMATION						
mple ID				Time	Analyt	es				Sampling N	otes:		
5- AREE	- AKRA	7 MW -:	7115- (SW	1040	DRO (
				1.10		AND GRO BIEA	PAR VUCS PE	SI HERB					
					DRO	RRO GRO BTEX	PAH VOCs PE	ST HERB					
					- DRO	RO GRO BTEX	PAH VOCs PE	ST HERB					
								1.1				_	

Engine	na			GRO	UNDWA F(TER SAN ORM	/IPLING	PROJ	ECT BER:	WELL NUN MW-29	ABER:		SHEET:
PROJECT NAME	flK	Real	Estate		v	VELL CONDITION	6000			NOMINAL	O.D.	I.D.	
CLIENT	ADE	C			D	AMAGE PRESENT	NONE	,		1"	1.315"	1.049"	0.04
DATE	4/22	2				DEPTH TO BASE (FROM TOC)	11	81		1.5"	1.9"	1.610"	0.11
SITE	Mw-	28			D	EPTH TO WATER	9,5	9		(2")	2.375"	2.067"	0.17
GEOLÓGIST	A Geil	ich	GEAN		н	EIGHT OF WATER				3"	3.5"	3.068"	0.38
	120	45"	F							4 "	4.5*	4.026"	0.56
WIND	16 19 -	77 0			3	WELL VOLUMES					4.5	4.020	0.00
	- <u> </u>					SAMPLING DA	TA				-		
SAMPLE TYPE (GW, PRODUCT, OTHER):			Gu										
SAMPLE COLLECTED	<u></u>	0-11-1			h -		2 intil	•					
WITH:		Baller			<u></u> Pum	p, Type:	211719171	c	Other, Sp	pecify:			
MADE OF:	:	Stainless	Steel	*	PVC	·							
		Teflon											
	_	1 en on 1 -				osable LDPE			Other, Sp	becity:			
SAMPLING DECON													
PROCEDURE:		Hle	Onco	+ DI	hate-								
PROCEDURE:		Hle	01610	+ DI	unter		<u></u>						
PROCEDURE: AMPLE DESCRIPTION (color, free product	:	<u> </u>	en c	+ DI	nate/			· · · · · · · · · · · · · · · · · · ·		÷			
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor,	:	All Cl	Chr Chr	+ DI	unte-								
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, <u>turbidity</u>)	2	Ala Cl	er -	+ DI	hate/								
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, turbidity)	:	All Cl	10 n 6 10 ch /	+ DI	hate /	ER QUALITY F	PARAMETERS						
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, turbidity)	2		18 n 6 10 (c. /	+ 01	hate /	ER QUALITY F	ARAMETERS	rements (3 must	be stable) 10 mV	10%			
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, <u>turbidity</u>) Time	ed Volume	HIC Cl	Water Level	+ DJ	FIELD WAT	ER QUALITY P 3% Spec. Cond.	PARAMETERS tabilization Require 10% D.O.	rements (3 must	be stable) 10 mV ORP	10% Turbidity	Col	or	Odor
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, <u>turbidity</u>) Time Purge	ed Volume	Purge Rate (mL/min) 300	(Un 6 10 (L / Water Level 9 , 6 1	+ DI Draw Down (ft) $\dot{O}_{1} \circ \vec{L}$	FIELD WAT	ER QUALITY F 3% Spec. Cond. (µS/cm) ^c	ARAMETERS tabilization Requir 10% D.O. (mg/L) 777	rements (3 must 0.1 pH	be stable) 10 mV ORP (mV) 20 C	10% Turbidity (NTU)	Col	or	Odor
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge (10 1145	ed Volume (Gat) L 2 1.5	Purge Rate (mL/min) 300	(8 n 6 10 (6 / Water Level 9 , 6 1	+ DJ Draw Down (ft) Ö:02 1	FIELD WAT	ER QUALITY F 3% Spec. Cond. (μS/cm) ^c 6 3 7 6 4 7	PARAMETERS tabilization Requili 10% D.O. (mg/L) 2,72 2,36	rements (3 must 0.1 рн 6.82 7.05	be stable) 10 mV ORP (mV) 30.5	10% Turbidity (NTU) 4. %	col Col	or e –	Odor Petrale
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge [[10 []10 []15 []10	ed Volume (Gat) / 2 1.5	Purge Rate (mL/min) 300	Water Level	+ <i>D</i> J Draw Down (ft) <i>O</i> : <i>O</i> Z 	FIELD WAT Temperature (°C) Z.SO Z.45 Z.95	ER QUALITY P 3% Spec. Cond. (µ\$/cm) ^c 6 3 7 6 4 7 6 4 7	ARAMETERS tabilization Require 10% D.O. (mg/L) 2.72 2.36 7.12	rements (3 must 0.1 pH 6.82 7.05 7.06	be stable) 10 mV ORP (mV) 30.5 /6.1 21.5	10% Turbidity (NTU) 4.1 1.00 0.78	Col	or e	Odor Pe steele
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge (10 1/15 1/25 4	ed Volume (Gat) L 2 1_5 5 5	Purge Rate (mL/min) 300	Water Level	+ DI Draw Down (ft) 0,02 1	FIELD WAT Temperature (°C) 2.50 2.45 2.37	ER QUALITY F 3% Spec. Cond. (µ\$/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6	ARAMETERS tabilization Requil 10% D.O. (mg/L) 2.72 2.36 2.12 1.64	rements (3 must 0.1 рн 6.82 7.05 7.06 7.06	be stable) 10 mV ORP (mV) 30.5 -/6.1 -21.5 -24.1	10% Turbidity (NTU) 4.9 1.00 0.78 0.38	сы <i>с е</i>	or 2	Odor Pr stale
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge (100 1115 1115 1125 1125 1125 1	ed Volume (Gatty L 7 1.5 3	Purge Rate (mL/min) 300	Water Level	+ DJ Draw Down (ft) 0:02 1	FIELD WAT FIELD WAT Temperature (°C) 2.50 2.45 2.35 2.37	ER QUALITY F 3% Spec. Cond. (µS/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6	PARAMETERS tabilization Requil 10% D.O. (mg/L) 2.72 2.36 2.12 1.64	етепts (3 must 0.1 рн 6. 82 7. 05 7. 06 7. 06	be stable) 10 mV ORP (mV) 30.5 16.1 21.5 24.1	10% Turbidity (NTU) 4.94 1.00 0.78 0.38	Col C / 0	or 2	Odor Petrale
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge [[10 []10 []15 []125 []125 []	d Volume (Gaty 2 7 7 7 8 5 8		Water Level 9, 41	+ DJ Draw Down (ft) 0:02 1 -	FIELD WAT FIELD WAT Temperature (°C) Z.45 Z.45 Z.37	ER QUALITY P 3% Spec. Cond. (µS/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6	PARAMETERS tabilization Requil 10% D.O. (mg/L) 2.72 2.36 7.12 1.64	rements (3 must 0.1 рн 6.82 7.05 7.06 7.06	be stable) 10 mV ORP (mV) 30.5 /6.1 21.5 24.1	10% Turbidity (NTU) 4.9A 1.00 0.78 0.38	col Col	or &	Odor Pr t cole
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge (10 1145 1320 1325 4	ed Volume (Gat) / 7 7 3 6 5	Purge Rate (mL/min) 300	Water Level	+ DJ Draw Down (ft) 0:02 1 	FIELD WAT	ER QUALITY P 3% Spec. Cond. (µ\$/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6	ARAMETERS tabilization Requil 10% D.O. (mg/L) 2.72 2.36 2.12 1.64	rements (3 must 0.1 pH 6.82 7.05 7.06 7.06	be stable) 10 mV ORP (mV) 30.5 /6./ 21.5 24.1	10% Turbidity (NTU) 4.9 1.00 0.78 0.38	со с / с	or 2	Odor Pe \$ cele
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge (100 1115 1120 1125 4 1125 4 1125 4 1125 4	ed Volume (Gatty L 7 7 7 8 . 5	Purge Rate (mL/min) 300	Water Level	+ DJ Draw Down (ft) 0:02 1 	FIELD WAT	ER QUALITY F 3% Spec. Cond. (µS/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6	PARAMETERS tabilization Requil 10% D.O. (mg/L) 2.72 2.36 7.12 1.64	rements (3 must 0.1 рН 6. 82 7. 06 7. 06	be stable) 10 mV ORP (mV) 30-5 /6. 21.5 -214.	10% Turbidity (NTU) 4.34 1.00 0.78 0.38	Col <i>C</i> / <i>e</i> /		Odor Pr 1 rate
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge [[10 []10 []15 []125 []125 []	ed Volume (Gatty 2 7 7 3 4.5		Water Level 9, 41	+ DJ Draw Down (ft) 0:02 1 	FIELD WAT	ER QUALITY P 3% Spec. Cond. (µS/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6	PARAMETERS tabilization Requil 10% D.O. (mg/L) 2.72 2.36 2.12 1.64	rements (3 must 0.1 рн 6.82 7.05 7.06 7.06	be stable) 10 mV ORP (mV) 30.5 	10% Turbidity (NTU) 4.5A 1.00 0.78 0.38	Col C / e		Odor Pr f role
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge [[10] [1]15] []125]	ed Volume (Gat) / 77	Purge Rate (mL/min) 300	Water Level	+ DJ Draw Down (ft) 0,02 1 	FIELD WAT	ER QUALITY P 3% Spec. Cond. (µ\$/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6	ARAMETERS tabilization Requil 10% D.O. (mg/L) 2.72 2.36 7.12 1.64	rements (3 must 0.1 pH 6.82 7.05 7.06 7.06	be stable) 10 mV ORP (mV) 30.5 /6./ 21.5 214.1	10% Turbidity (NTU) 4.99 1.00 0.78 0.38			Odor Pr % refe
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge (110 (115 1120 1125 4 1125 112	ed Volume (Gat) L 7 7 7 8 8 8	Purge Rate (mL/min) 300	Water Level	+ DJ Draw Down (ft) Ö (O Z 1 - - - - - - - - - - - - -	FIELD WAT	ER QUALITY F 3% Spec. Cond. (µS/cm) ^C 6 4 7 6 4 7 6 4 6	PARAMETERS tabilization Requir 10% D.O. (mg/L) 2.72 2.36 7.12 1.64	rements (3 must 0.1 рН 6. 82 7. 06 7. 06	be stable) 10 mV ORP (mV) 30.5 /6. 21.5 -214.	10% Turbidity (NTU) 4.34 1.00 0.78 0.38			
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge [[10 [] [1]5 [] []25 [] []25 [] []25 []	ed Volume (Gat) / 7 7 7 8 5 8		Water Level 9, 41	+ DJ	FIELD WAT	ER QUALITY P 3% Spec. Cond. (µS/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6	PARAMETERS tabilization Requil 10% D.O. (mg/L) 2.72 2.36 2.12 1.64	rements (3 must 0.1 рн 6.82 7.05 7.06 7.06	be stable) 10 mV ORP (mV) 30.5 76.1 21.5 24.1	10% Turbidity (NTU) 4.9A 1.00 0.78 0.38			
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge (1000 1145 1125	ed Volume (Gat) / 7	HIG Cl Purge Rate (mL/min) 300	Water Level 9, 61	+ DJ	FIELD WAT	ER QUALITY P 3% Spec. Cond. (µ\$/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6 4 6 4 6	PARAMETERS tabilization Requil 10% D.O. (mg/L) 2.72 2.36 7.64 	rements (3 must 0.1 pH 6.82 7.05 7.06 7.06	be stable) 10 mV ORP (mV) 30.5 -21.5 -24.1	10% Turbidity (NTU) 4-9 0.78 0.38	Col		Odor Pr f refe
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge [[10 0 [1]15 0 [1]125 4 [1]25 4	ed Volume (Gat) L 2 1.5 3 4.5 4.5	HIG CI Purge Rate (mL/min) 300 1 - 6W	Water Level 9, 61	+ DJ	FIELD WAT FIELD WAT Temperature (°C) 2.5°O 2.45 2.35 2.37 ANALYTICA Analyt	ER QUALITY F 3% Spec. Cond. (µS/cm) ^C 6 3 7 6 4 7 6 4 7 6 4 6 SI SAMPLE INI es RRO 680 PEE	PARAMETERS tabilization Requir 10% D.O. (mg/L) 2.72 2.36 2.12 1.64 	rements (3 must 0.1 pH 6.82 7.05 7.06 7.06	be stable) 10 mV ORP (mV) 30.5 /6. 21.5 -214.	10% Turbidity (NTU) 4.34 7.00 0.78 0.38	Col Clea		
PROCEDURE: AMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge (1000000000000000000000000000000000000	ed Volume (Gat) L 2 1-5 5 5 5 5 5 5 7 7 7 7 7 7 7 7 7 7 7 7 7		Water Level 9, 61	+ DJ	FIELD WAT	ER QUALITY F 3% Spec. Cond. (µS/cm) ^C 647 647 647 646 SAMPLE INI es RRO GRO BTES	PARAMETERS tabilization Requir 10% D.O. (mg/L) 2.72 2.36 2.12 1.64 CORMATION	ements (3 must 0.1 pH 6.82 7.05 7.06 7.06	be stable) 10 mV ORP (mV) 30.5 16.1 21.5 24.1	10% Turbidity (NTU) 4.74 1.00 0.78 0.38	Col		
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge [[10 [2] [1] 2 [2] [1] 2 [2] [1] 2 [2] [1] 2 [2] [1] 2 [2]	ed Volume (Gatr <u>/</u> 2 1.5 3 4.5 4.5 4.5 4.5		Water Level 9, 41	+ DJ	FIELD WAT	ER QUALITY P 3% Spec. Cond. (µS/cm) ^c 6 3 7 6 4 7 6 4 7 6 4 6 AL SAMPLE INI es RRO GRO BTEX	PARAMETERS tabilization Require D.O. (mg/L) 2.72 2.36 2.12 1.64 ORMATION PAH VOCS PI	EST HERB	be stable) 10 mV ORP (mV) 30.5 76.1 21.5 -24.1	10% Turbidity (NTU) 4.5A 7.00 0.78 0.38	col		
PROCEDURE: SAMPLE DESCRIPTION (color, free product thickness, odor, turbidity) Time Purge [[10] [110] [115] [115] [1120] [1125] [1120] [1125] [1120] [1125] [1120] [1	ed Valume (Gatr / _ 2 1.5 3 4.5 4.5 4.5		Water Level 9, 41	+ DJ	FIELD WAT	ER QUALITY P 3% Spec. Cond. (µ\$/cm) ^c 6.37 647 647 646 SA 7 646 SA 7 646 SA 7 646 SA 7 647 646 SA 7 647 646 SA 7 647 647 646 SA 7 647 646 SA 7 647 647 646 SA 7 647 646 SA 7 647 646 SA 7 647 647 646 SA 7 647 647 647 647 647 647 647 64	PARAMETERS tabilization Require D.O. (mg/L) 2.72 2.36 2.12 1.64 CRMATION PAH VOCS PI PAH VOCS PI	EST HERB	be stable) 10 mV ORP (mV) 30.5 /6. 21.5 24. 	10% Turbidity (NTU) 4.94 7.00 0.78 0.38	col		

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ATTACHMENT C

LABORATORY REPORT

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Anchorage 2000 West International Airport Road Suite A10 Anchorage, AK 99502-1119 Tel: (907)563-9200

TestAmerica Job ID: 230-467-1

Client Project/Site: AK Real Estate

For:

Ahtna Engineering Services LLC 1896 Marika Road, suite * Fairbanks, Alaska 99709

Attn: Andrew Weller



Authorized for release by: 5/4/2015 10:07:23 AM

Kelly Garretts, Project Manager II (253)248-4961 kelly.garretts@testamericainc.com

Have a Question?

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Visit us at: www.testamericainc.com

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Review your project results through

TotalAccess

The

Expert

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-			0.0

GC/MS VOA

Qualifier	Qualifier Description	
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.	
*	LCS or LCSD is outside acceptance limits.	
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.	
E	Result exceeded calibration range.	
GC Semi VOA		
0		

Qualifier	Qualitier Description
Y	The chromatographic response resembles a typical fuel pattern.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.	
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis	
%R	Percent Recovery	
CFL	Contains Free Liquid	
CNF	Contains no Free Liquid	
DER	Duplicate error ratio (normalized absolute difference)	
Dil Fac	Dilution Factor	13
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample	
DLC	Decision level concentration	
MDA	Minimum detectable activity	
EDL	Estimated Detection Limit	
MDC	Minimum detectable concentration	
MDL	Method Detection Limit	
ML	Minimum Level (Dioxin)	
NC	Not Calculated	
ND	Not detected at the reporting limit (or MDL or EDL if shown)	
PQL	Practical Quantitation Limit	
QC	Quality Control	
RER	Relative error ratio	
RL	Reporting Limit or Requested Limit (Radiochemistry)	
RPD	Relative Percent Difference, a measure of the relative difference between two points	
TEF	Toxicity Equivalent Factor (Dioxin)	
TEQ	Toxicity Equivalent Quotient (Dioxin)	

Job ID: 230-467-1

Laboratory: TestAmerica Anchorage

Narrative

Job Narrative 230-467-1

Comments

No additional comments.

Receipt

The samples were received on 4/22/2015 3:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C.

GC/MS VOA

Method 8260C: The continuing calibration verification (CCV) associated with batch 188126 recovered above the upper control limit for multi analyte. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCVIS 580-188126/2).

Method 8260C: The laboratory control sample (LCS) for batch 188126 recovered outside control limits for the following analytes: Dichlorobromomethane. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method 8260C: The following samples were reanalyzed due to a potential high bias of naphthalene during the original analysis.

15-AREPL-MW-B-3-GW (230-467-4), 15-AREPL-AKRRMW-22-GW (230-467-8) and 15-AREPL-AKRRMW-220-GW (230-467-9)

Method AK101: The continuing calibration verification (CCV) associated with batch 188124 recovered above the upper control limit for C6-C10. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCV 580-188124/43).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Methods AK102 & 103: In analysis batch 580-188090, the following samples from prep batch 580-188080 contained a hydrocarbon pattern in the diesel range; however, the elution pattern was earlier than the typical diesel fuel pattern used by the laboratory for quantitative purposes: 15-AREPL-4GMW-14-GW (230-467-3) and 15-AREPL-4GMW-15-GW (230-467-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample ID: 15-AREPL-	4GMW-13-0	W					La	ab Sample II	D: 230-467-
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Gasoline Range Organics (GRO)	0.17		0.060		mg/L	1	_	AK101	Total/NA
-C6-C10									
DRO (nC10- <nc25) _</nc25) 	1.6	Y	0.10		mg/L	1		AK102 & 103	Total/NA
Client Sample ID: 15-AREPL	4GMW-16-0	W					La	ab Sample II	D: 230-467-2
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Gasoline Range Organics (GRO)	0.13		0.060		mg/L	1	_	AK101	Total/NA
-C6-C10									
DRO (nC10- <nc25) _</nc25) 	1.5	Y	0.099		mg/L	1		AK102 & 103	Total/NA
Client Sample ID: 15-AREPL	-4GMW-14-0	W					La	ab Sample II	D: 230-467-3
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
m-Xylene & p-Xylene	3.2		3.0		ug/L	1	_	8260B	Total/NA
Gasoline Range Organics (GRO)	0.72		0.060		mg/L	1		AK101	Total/NA
-C6-C10									
DRO (nC10- <nc25) </nc25) 	2.1	Y	0.10		mg/L	1		AK102 & 103	Total/NA
Client Sample ID: 15-AREPL	-MW-B-3-GV	V					L	ab Sample II	D: 230-467-4
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2,4-Trimethylbenzene	6.2		3.0		ug/L	1	_	8260C	Total/NA
Naphthalene - RA	4.7		2.0		ug/L	1		8260C	Total/NA
Client Sample ID: 15-AREPL-	-4GMW-15-0	W					La	ab Sample II	D: 230-467-
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Gasoline Range Organics (GRO)	0.45		0.060		mg/L	1	_	AK101	Total/NA
-C6-C10									
DRO (nC10- <nc25) </nc25) 	1.3	Y	0.11		mg/L	1		AK102 & 103	Total/NA
Client Sample ID: 15-AREPL	тв						L	ab Sample II	D: 230-467-6
No Detections.									
Client Sample ID: 15-AREPL-	-MW-28-GW						La	ab Sample II	D: 230-467-7
_ Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Gasoline Range Organics (GRO)	0.84		0.060		mg/L	1	_	AK101	Total/NA
-C6-C10					-				
DRO (nC10- <nc25) </nc25) 	0.83	Y	0.098		mg/L	1		AK102 & 103	Total/NA
Client Sample ID: 15-AREPL	AKRRMW-2	2-GW					L	ab Sample II	D: 230-467-8
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	2.6		2.0		ug/L	1	_	8260C	Total/NA
Isopropylbenzene	6.5		2.0		ug/L	1		8260C	Total/NA
N-Propylbenzene	11		3.0		ug/L	1		8260C	Total/NA
1,2,4-Trimethylbenzene	4.8		3.0		ug/L	1		8260C	Total/NA
sec-Butylbenzene	5.5		3.0		ug/L	1		8260C	Total/NA
4-Isopropyltoluene	4.0		3.0		ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Anchorage

Lab Sample ID: 230-467-8

Lab Sample ID: 230-467-9

Client Sample ID: 15-AREPL-AKRRMW-22-GW (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Туре
n-Butylbenzene	7.1		3.0		ug/L	1	_	8260C	Total/NA
Naphthalene - RA	30		2.0		ug/L	1		8260C	Total/NA

Client Sample ID: 15-AREPL-AKRRMW-220-GW

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	2.7		2.0		ug/L	1	_	8260C	Total/NA
Isopropylbenzene	6.6		2.0		ug/L	1		8260C	Total/NA
N-Propylbenzene	11		3.0		ug/L	1		8260C	Total/NA
1,2,4-Trimethylbenzene	5.1		3.0		ug/L	1		8260C	Total/NA
sec-Butylbenzene	5.6		3.0		ug/L	1		8260C	Total/NA
4-Isopropyltoluene	4.2		3.0		ug/L	1		8260C	Total/NA
n-Butylbenzene	7.3		3.0		ug/L	1		8260C	Total/NA
Naphthalene - RA	32		2.0		ug/L	1		8260C	Total/NA
Client Sample ID: 15-ARE	PL-AKRRMW-2	45-GW				L	.at	Sample	ID: 230-467-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	13		2.0		ug/L	1	_	8260C	 Total/NA

RL

2.0

2.0

3.0

3.0

2.0

Limits

85 - 120

MDL Unit

ug/L

ug/L

ug/L

ug/L

ug/L

D

Prepared

Prepared

Date Collected: 04/21/15 10:15

Date Received: 04/22/15 15:00

Analyte

Benzene

Toluene

o-Xylene

Surrogate

Ethylbenzene

m-Xylene & p-Xylene

Toluene-d8 (Surr)

Client Sample ID: 15-AREPL-4GMW-13-GW

Method: 8260B - Volatile Organic Compounds (GC/MS)

Result Qualifier

ND

ND

ND

ND

ND

%Recovery Qualifier

99

Lab Sample ID: 230-467-1

Analyzed

04/29/15 19:59

04/29/15 19:59

04/29/15 19:59

04/29/15 19:59

04/29/15 19:59

Analyzed

04/29/15 19:59

Lab Sample ID: 230-467-2

Matrix: Water

Matrix: Water

Dil Fac

1

1

1

1

1

1

Dil Fac

2 3 4 5 6 7 8 9 10 11

12 13 14

Trifluorotoluene (Surr)	104		70 - 136					04/29/15 19:59	1
	.07		76 - 100					04/20/15 10:50	
4-Bromonuorobenzene (Surr)	90		75 - 120					04/29/15 19.59	/
Dibromofluoromethane (Surr)	107		85 - 115					04/29/15 19:59	1
1,2-Dichloroethane-d4 (Surr)	98		70 - 120					04/29/15 19:59	1
Method: AK101 - Alaska - Gasolin	e Range Orga	anics (GC/N	IS)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	0.17		0.060		mg/L			05/02/15 16:02	1
-C6-C10									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		50 - 150					05/02/15 16:02	1
4-Bromofluorobenzene (Surr)	100		50 - 150					05/02/15 16:02	1
Method: AK102 & 103 - Alaska - Di	iesel Range (Organics &	Residual Range	Organio	s (GC)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10- <nc25)< td=""><td>1.6</td><td>Y</td><td>0.10</td><td></td><td>mg/L</td><td></td><td>04/28/15 17:02</td><td>04/29/15 19:15</td><td>1</td></nc25)<>	1.6	Y	0.10		mg/L		04/28/15 17:02	04/29/15 19:15	1
Surrogate	%Recoverv	Qualifier	Limits				Prepared	Analyzed	Dil Fac
0								-	

Client Sample ID: 15-AREPL-4GMW-16-GW Date Collected: 04/21/15 10:40 Date Received: 04/22/15 15:00

Method: 8260B - Volatile C	Organic Compounds	(GC/MS)						
Analyte	Result	Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0	ug/L			04/29/15 20:26	1
Toluene	ND		2.0	ug/L			04/29/15 20:26	1
Ethylbenzene	ND		3.0	ug/L			04/29/15 20:26	1
m-Xylene & p-Xylene	ND		3.0	ug/L			04/29/15 20:26	1
o-Xylene	ND		2.0	ug/L			04/29/15 20:26	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac

-	-		
Toluene-d8 (Surr)	95	85 - 120	04/29/15 20:26 1
Trifluorotoluene (Surr)	102	70 - 136	04/29/15 20:26 1
4-Bromofluorobenzene (Surr)	95	75 - 120	04/29/15 20:26 1
Dibromofluoromethane (Surr)	100	85 - 115	04/29/15 20:26 1
1,2-Dichloroethane-d4 (Surr)	97	70 - 120	04/29/15 20:26 1
-			

Wethod: AK101 - Alaska - Gasolin	le Range Organics (GC/M	5)					
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	0.13	0.060	mg/L			05/02/15 16:55	1
-C6-C10							

		Clien	t Sample R	esults	5					
Client: Ahtna Engineering Services Project/Site: AK Real Estate	LLC		-				TestAm	erica Job ID: 23	0-467-1	2
Client Sample ID: 15-AREPL	-4GMW-16-0	W					Lab Sa	mple ID: 230	-467-2	
Date Collected: 04/21/15 10:40 Date Received: 04/22/15 15:00								Matrix	c: Water	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
Trifluorotoluene (Surr)	99		50 - 150					05/02/15 16:55	1	J
4-Bromofluorobenzene (Surr)	99		50 - 150					05/02/15 16:55	1	6
Method: AK102 & 103 - Alaska - I Analyte	Diesel Range C Result	Organics & Qualifier	Residual Range RL	e Organio MDL	c <mark>s (GC)</mark> Unit	D	Prepared	Analyzed	Dil Fac	7
DRO (nC10- <nc25)< td=""><td>1.5</td><td>Y</td><td>0.099</td><td></td><td>mg/L</td><td></td><td>04/28/15 17:02</td><td>04/29/15 19:33</td><td>1</td><td></td></nc25)<>	1.5	Y	0.099		mg/L		04/28/15 17:02	04/29/15 19:33	1	
Surrogate	%Recovery	Qualifier	l imits				Prenared	Analyzed	Dil Fac	8
o-Terphenyl			50 - 150				04/28/15 17:02	04/29/15 19:33	1	
			001700				0 // 20/ 10 11/.02	0 #20 10 10:00		9
Client Sample ID: 15-AREPL	-4GMW-14-0	W					Lab Sa	mple ID: 230	-467-3	
Date Collected: 04/21/15 14:15 Date Received: 04/22/15 15:00								Matrix	c: Water	
Method: 8260B - Volatile Organic	Compounds ((GC/MS)				_	_ .			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Benzene	ND		2.0		ug/L			04/29/15 20:53	1	4.0
Toluene	ND		2.0		ug/L			04/29/15 20:53	1	13
Etnyibenzene	ND		3.0		ug/L			04/29/15 20:53	· · · · · · · · · · · · ·	
o-Xylene	3.2 ND		3.0 2.0		ug/L ug/L			04/29/15 20:53 04/29/15 20:53	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
Toluene-d8 (Surr)	100		85 - 120					04/29/15 20:53	1	
Trifluorotoluene (Surr)	106		70 - 136					04/29/15 20:53	1	
4-Bromofluorobenzene (Surr)	97		75 - 120					04/29/15 20:53	1	
Dibromofluoromethane (Surr)	105		85 - 115					04/29/15 20:53	1	
1,2-Dichloroethane-d4 (Surr)	100		70 - 120					04/29/15 20:53	1	
Method: AK101 - Alaska - Gasoli Analyte	ne Range Orga Result	anics (GC/N Qualifier	IS) RI	МП	Unit	п	Prepared	Analyzed	Dil Fac	
Gasoline Range Organics (GRO)	0.72		0.060		mg/L			05/02/15 17:21	1	
-C6-C10	~~ -						_ ,			
Surrogate	- %Recovery	Qualifier					Prepared	Analyzed		
4-Bromofluorobenzene (Surr)	105		50 - 150 50 - 150					05/02/15 17:21	1	
Method: AK102 & 103 - Alaska - I	Diesel Range (Organics &	Residual Range	e Organie	cs (GC)					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
DRO (nC10- <nc25)< td=""><td>2.1</td><td>Y</td><td>0.10</td><td></td><td>mg/L</td><td></td><td>04/28/15 17:02</td><td>04/29/15 19:51</td><td>1</td><td></td></nc25)<>	2.1	Y	0.10		mg/L		04/28/15 17:02	04/29/15 19:51	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
o-Terphenyl	80		50 - 150				04/28/15 17:02	04/29/15 19:51	1	
Client Sample ID: 15-AREPL	-MW-B-3-GV	V					Lab Sa	mple ID: 230	-467-4	
Date Collected: 04/21/15 11:45 Date Received: 04/22/15 15:00								Matrix	c: Water	
Mothod: 92600 Volatile Organia	Compounded									
Analyte		Qualifier	RI	וחא	Unit	п	Prenared	Analyzed	Dil Fac	
Dichlorodifluoromethane			20					04/29/15 21:20	1	
			2.0		~g. L			5 5/ 10 _ 1.20		

1,3-Dichlorobenzene

Client Sample ID: 15-AREPL-MW-B-3-GW Date Collected: 04/21/15 11:45 Date Received: 04/22/15 15:00

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

TestAmerica	Job	ID:	230-46	7-1
1000 110100	000	ю.	200 40	

Lab Sample ID: 230-467-4 Matrix: Water

	1	0
	1	
	1	
	1	
	1	
	1	
	1	
	1	
	1	
	1	13
	1	
	1	
	1	

Analyte	Result	Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Chloromethane	ND		5.0	ug/L			04/29/15 21:20	1
Vinyl chloride	ND		1.0	ug/L			04/29/15 21:20	1
Bromomethane	ND		5.0	ug/L			04/29/15 21:20	1
Chloroethane	ND		5.0	ug/L			04/29/15 21:20	1
Trichlorofluoromethane	ND		3.0	ug/L			04/29/15 21:20	1
1,1-Dichloroethene	ND		2.0	ug/L			04/29/15 21:20	1
Methylene Chloride	ND		5.0	ug/L			04/29/15 21:20	1
trans-1,2-Dichloroethene	ND		1.0	ug/L			04/29/15 21:20	1
1,1-Dichloroethane	ND		2.0	ug/L			04/29/15 21:20	1
2,2-Dichloropropane	ND		3.0	ug/L			04/29/15 21:20	1
cis-1,2-Dichloroethene	ND		1.0	ug/L			04/29/15 21:20	1
Bromochloromethane	ND		2.0	ug/L			04/29/15 21:20	1
Chloroform	ND		1.0	ug/L			04/29/15 21:20	1
1,1,1-Trichloroethane	ND		3.0	ug/L			04/29/15 21:20	1
Carbon tetrachloride	ND		3.0	ug/L			04/29/15 21:20	1
1,1-Dichloropropene	ND		3.0	ug/L			04/29/15 21:20	1
Benzene	ND		2.0	ug/L			04/29/15 21:20	1
1,2-Dichloroethane	ND		1.0	ug/L			04/29/15 21:20	1
Trichloroethene	ND		3.0	ug/L			04/29/15 21:20	1
1,2-Dichloropropane	ND		1.0	ug/L			04/29/15 21:20	1
Dibromomethane	ND	٨	1.0	ug/L			04/29/15 21:20	1
Bromodichloromethane	ND	* ^	2.0	ug/L			04/29/15 21:20	1
cis-1,3-Dichloropropene	ND		1.0	ug/L			04/29/15 21:20	1
Toluene	ND		2.0	ug/L			04/29/15 21:20	1
trans-1,3-Dichloropropene	ND	٨	1.0	ug/L			04/29/15 21:20	1
1,1,2-Trichloroethane	ND	٨	1.0	ug/L			04/29/15 21:20	1
Tetrachloroethene	ND		3.0	ug/L			04/29/15 21:20	1
1,3-Dichloropropane	ND	٨	1.0	ug/L			04/29/15 21:20	1
Dibromochloromethane	ND	٨	1.0	ug/L			04/29/15 21:20	1
1,2-Dibromoethane	ND	٨	1.0	ug/L			04/29/15 21:20	1
Chlorobenzene	ND		2.0	ug/L			04/29/15 21:20	1
Ethylbenzene	ND		3.0	ug/L			04/29/15 21:20	1
1,1,1,2-Tetrachloroethane	ND		2.0	ug/L			04/29/15 21:20	1
1,1,2,2-Tetrachloroethane	ND	٨	1.0	ug/L			04/29/15 21:20	1
m-Xylene & p-Xylene	ND		3.0	ug/L			04/29/15 21:20	1
o-Xylene	ND		2.0	ug/L			04/29/15 21:20	1
Styrene	ND		5.0	ug/L			04/29/15 21:20	1
Bromoform	ND	٨	1.0	ug/L			04/29/15 21:20	1
Isopropylbenzene	ND		2.0	ug/L			04/29/15 21:20	1
Bromobenzene	ND		2.0	ug/L			04/29/15 21:20	1
N-Propylbenzene	ND		3.0	ug/L			04/29/15 21:20	1
1,2,3-Trichloropropane	ND	٨	2.0	ug/L			04/29/15 21:20	1
2-Chlorotoluene	ND		3.0	ug/L			04/29/15 21:20	1
1,3,5-Trimethylbenzene	ND		3.0	ug/L			04/29/15 21:20	1
4-Chlorotoluene	ND		2.0	ug/L			04/29/15 21:20	1
t-Butylbenzene	ND		3.0	ug/L			04/29/15 21:20	1
1,2,4-Trimethylbenzene	6.2		3.0	ug/L			04/29/15 21:20	1
sec-Butylbenzene	ND		3.0	ug/L			04/29/15 21:20	1

TestAmerica Anchorage

04/29/15 21:20

2.0

ug/L

ND

1

-C6-C10

Client Sample ID: 15-AREPL-MW-B-3-GW Date Collected: 04/21/15 11:45 Date Received: 04/22/15 15:00

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared			
4-Isopropyltoluene	ND		3.0		ug/L					
1 4-Dichlorobenzene	ND		20		ua/l					

1,4-Dichlorobenzene	ND	2.0	ug/L	04/29/15 21:20	[`] 1
n-Butylbenzene	ND	3.0	ug/L	04/29/15 21:20	1
1,2-Dichlorobenzene	ND	2.0	ug/L	04/29/15 21:20	1
1,2-Dibromo-3-Chloropropane	ND ^	2.0	ug/L	04/29/15 21:20	1
1,2,4-Trichlorobenzene	ND	1.0	ug/L	04/29/15 21:20	1
1,2,3-Trichlorobenzene	ND	2.0	ug/L	04/29/15 21:20	1
Hexachlorobutadiene	ND	2.0	ug/L	04/29/15 21:20	1
Methyl tert-butyl ether	ND ^	1.0	ug/L	04/29/15 21:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		85 - 120		04/29/15 21:20	1
4-Bromofluorobenzene (Surr)	92		75 - 120		04/29/15 21:20	1
Dibromofluoromethane (Surr)	104		85 - 115		04/29/15 21:20	1
Trifluorotoluene (Surr)	102		70 - 136		04/29/15 21:20	1
1,2-Dichloroethane-d4 (Surr)	93		70 - 120		04/29/15 21:20	1

Method: 8260C - Volatile Organic Compounds by GC/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	4.7		2.0		ug/L			05/01/15 18:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		85 - 120					05/01/15 18:23	1
4-Bromofluorobenzene (Surr)	104		75 _ 120					05/01/15 18:23	1
Dibromofluoromethane (Surr)	108		85 _ 115					05/01/15 18:23	1
Trifluorotoluene (Surr)	94		70 - 136					05/01/15 18:23	1
1,2-Dichloroethane-d4 (Surr)	112		70 _ 120					05/01/15 18:23	1

Client Sample ID: 15-AREPL-4GMW-15-GW Date Collected: 04/21/15 13:05 Date Received: 04/22/15 15:00

Method: 8260B - Volatile Organi	c Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/L			04/29/15 21:46	1
Toluene	ND		2.0		ug/L			04/29/15 21:46	1
Ethylbenzene	ND		3.0		ug/L			04/29/15 21:46	1
m-Xylene & p-Xylene	ND		3.0		ug/L			04/29/15 21:46	1
o-Xylene	ND		2.0		ug/L			04/29/15 21:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		85 - 120			-		04/29/15 21:46	1
Trifluorotoluene (Surr)	99		70 - 136					04/29/15 21:46	1
4-Bromofluorobenzene (Surr)	94		75 - 120					04/29/15 21:46	1
Dibromofluoromethane (Surr)	104		85 - 115					04/29/15 21:46	1
1,2-Dichloroethane-d4 (Surr)	96		70 - 120					04/29/15 21:46	1
- Method: AK101 - Alaska - Gasol	ine Range Orga	anics (GC/N	IS)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	0.45		0.060		mg/L			05/02/15 17:48	1

6

13

Lab Sample ID: 230-467-5 Matrix: Water

Lab Sample ID: 230-467-4

Analyzed

04/29/15 21:20

Matrix: Water

Dil Fac

1

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5/4/2015

		Clie	nt Sample R	esults					
Client: Ahtna Engineering Services Project/Site: AK Real Estate	S LLC					TestAm	erica Job ID: 23	80-467-1	2
Client Sample ID: 15-AREPI	4GMW-15-0	W				Lab Sa	ample ID: 230 Matrix)-467-5	
Date Received: 04/22/15 15:00							mann		
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	5
Trifluorotoluene (Surr)	103		50 _ 150				05/02/15 17:48	1	J
4-Bromofluorobenzene (Surr)	95		50 - 150				05/02/15 17:48	1	6
Method: AK102 & 103 - Alaska - Analyte	Diesel Range (Result	Organics 8 Qualifier	Residual Range RL	Organics (GC) MDL Unit	D	Prepared	Analyzed	Dil Fac	7
DRO (nC10- <nc25)< td=""><td>1.3</td><td>Y</td><td>0.11</td><td>mg/L</td><td></td><td>04/28/15 17:02</td><td>04/29/15 20:09</td><td>1</td><td></td></nc25)<>	1.3	Y	0.11	mg/L		04/28/15 17:02	04/29/15 20:09	1	
Surrogate	%Recoverv	Qualifier	l imits			Prepared	Analyzed	Dil Fac	8
o-Terphenyl			50 - 150			04/28/15 17:02	04/29/15 20:09	1	Q
Client Sample ID: 15-AREPI Date Collected: 04/21/15 12:00	L-TB					Lab Sa	ample ID: 230 Matrix)-467-6 k: Water	10
Date Received: 04/22/15 15:00									
Method: 8260C - Volatile Organ Analyte	ic Compounds Result	by GC/MS Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac	
Dichlorodifluoromethane	ND		2.0	ug/L			04/29/15 19:33	1	
Chloromethane	ND		5.0	ug/L			04/29/15 19:33	1	13
Vinyl chloride	ND		1.0	ug/L			04/29/15 19:33	1	
Bromomethane	ND		5.0	ug/L			04/29/15 19:33	1	
Chloroethane	ND		5.0	ug/L			04/29/15 19:33	1	
Trichlorofluoromethane	ND		3.0	ug/L			04/29/15 19:33	1	
1,1-Dichloroethene	ND		2.0	ug/L			04/29/15 19:33	1	
Methylene Chloride	ND		5.0	ug/L			04/29/15 19:33	1	
trans-1,2-Dichloroethene	ND		1.0	ug/L			04/29/15 19:33	1	
1,1-Dichloroethane	ND		2.0	ug/L			04/29/15 19:33	1	
2,2-Dichloropropane	ND		3.0	ug/L			04/29/15 19:33	1	
cis-1,2-Dichloroethene	ND		1.0	ug/L			04/29/15 19:33	1	
Bromochloromethane	ND		2.0	ug/L			04/29/15 19:33	1	
Chloroform	ND		1.0	ug/L			04/29/15 19:33	1	
1,1,1-Trichloroethane	ND		3.0	ug/L			04/29/15 19:33	1	
Carbon tetrachloride	ND		3.0	ug/L			04/29/15 19:33	1	
1,1-Dichloropropene	ND		3.0	ug/L			04/29/15 19:33	1	
Benzene	ND		2.0	ug/L			04/29/15 19:33	1	
1,2-Dichloroethane	ND		1.0	ug/L			04/29/15 19:33	1	
	ND		3.0	ug/L			04/29/15 19:33	1	
1,2-Dichloropropane	ND	• • • • • • • • • • •	1.0	ug/L			04/29/15 19:33	1	
Dibromometnane	ND	* *	1.0	ug/L			04/29/15 19:33	1	
	ND	~ ^	2.0	ug/L			04/29/15 19:33	1	
	ND		1.0	ug/L			04/29/10 19:33	۲ ۲	
trans_1 3-Dichloropropopo		^	2.0	ug/L			04/20/15 10:00	1	
		^	1.0	ug/L			04/20/15 10.33	1	
Tetrachloroethene			۲.U ۵.I	ug/L			04/20/15 10.22	· · · · · · · · · · · · · · · · · · ·	
1 3-Dichloropropane		^	1.0	ug/L			04/20/15 10.33	1	
Dibromochloromethane		^	1.0	ug/L			04/29/15 10 33	1	
1 2-Dibromoethane			1.0	ug/L			04/20/15 10:33		
Chlorobenzene	םוא שוי		2.0	ug/L			04/29/15 19:33	1	
Ethylbenzene	חוא		2.0	ug/L			04/29/15 10:33	1	
1 1 1 2-Tetrachloroethane			2.0	ug/L			04/29/15 19:33	· · · · · · · · · · · · · · · · · · ·	
1,1,2,2-Tetrachloroethane	ND	٨	1.0	ug/L			04/29/15 19:33	1	

Client Sample ID: 15-AREPL-TB Date Collected: 04/21/15 12:00

Date Received: 04/22/15 15:00

Analyte	Result	Qualifier	RL	MDL U	Unit	D	Prepared	Analyzed	Dil Fac
m-Xylene & p-Xylene	ND		3.0		ug/L		-	04/29/15 19:33	1
o-Xylene	ND		2.0		ug/L			04/29/15 19:33	1
Styrene	ND		5.0	L	ug/L			04/29/15 19:33	1
Bromoform	ND	٨	1.0	L	ug/L			04/29/15 19:33	1
sopropylbenzene	ND		2.0	ι	ug/L			04/29/15 19:33	1
Bromobenzene	ND		2.0	ι	ug/L			04/29/15 19:33	1
J-Propylbenzene	ND		3.0	ι	ug/L			04/29/15 19:33	1
,2,3-Trichloropropane	ND	^	2.0	L	ug/L			04/29/15 19:33	1
2-Chlorotoluene	ND		3.0	ι	ug/L			04/29/15 19:33	1
,3,5-Trimethylbenzene	ND		3.0	ι	ug/L			04/29/15 19:33	1
-Chlorotoluene	ND		2.0	L	ug/L			04/29/15 19:33	1
Butylbenzene	ND		3.0	ι	ug/L			04/29/15 19:33	1
,2,4-Trimethylbenzene	ND		3.0	ι	ug/L			04/29/15 19:33	1
ec-Butylbenzene	ND		3.0	L	ug/L			04/29/15 19:33	1
,3-Dichlorobenzene	ND		2.0	ι	ug/L			04/29/15 19:33	1
-Isopropyltoluene	ND		3.0	ι	ug/L			04/29/15 19:33	1
,4-Dichlorobenzene	ND		2.0	ι	ug/L			04/29/15 19:33	1
n-Butylbenzene	ND		3.0	ι	ug/L			04/29/15 19:33	1
,2-Dichlorobenzene	ND		2.0	ι	ug/L			04/29/15 19:33	1
,2-Dibromo-3-Chloropropane	ND	Λ	2.0	L	ug/L			04/29/15 19:33	1
,2,4-Trichlorobenzene	ND		1.0	L	ug/L			04/29/15 19:33	1
,2,3-Trichlorobenzene	ND		2.0	ι	ug/L			04/29/15 19:33	1
lexachlorobutadiene	ND		2.0	L	ug/L			04/29/15 19:33	1
laphthalene	ND	^	2.0	L	ug/L			04/29/15 19:33	1
Methyl tert-butyl ether	ND	٨	1.0	ι	ug/L			04/29/15 19:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		85 - 120		04/29/15 19:33	1
4-Bromofluorobenzene (Surr)	92		75 - 120		04/29/15 19:33	1
Dibromofluoromethane (Surr)	104		85 - 115		04/29/15 19:33	1
Trifluorotoluene (Surr)	103		70 - 136		04/29/15 19:33	1
1,2-Dichloroethane-d4 (Surr)	97		70 - 120		04/29/15 19:33	1

Method:	AK101	- Alaska	- Gasoline	Range	Orga	nics	(GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		0.060		mg/L			04/29/15 19:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	103		50 - 150					04/29/15 19:33	1
4-Bromofluorobenzene (Surr)	92		50 - 150					04/29/15 19:33	1

Client Sample ID: 15-AREPL-MW-28-GW Date Collected: 04/22/15 11:25

Date Received: 04/22/15 15:00

Method: 8260B - Volatile Orga	lethod: 8260B - Volatile Organic Compounds (GC/MS)									
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac			
Benzene	ND	2.0	ug/L			04/29/15 17:46	1			
Toluene	ND	2.0	ug/L			04/29/15 17:46	1			
Ethylbenzene	ND	3.0	ug/L			04/29/15 17:46	1			

TestAmerica Anchorage

Lab Sample ID: 230-467-7

TestAmerica Job ID: 230-467-1

Lab Sample ID: 230-467-6

Matrix: Water

Matrix: Water

Client Sample ID: 15-AREPL-MW-28-GW Date Collected: 04/22/15 11:25

Date Received: 04/22/15 15:00

Method: 8260B - Volatile O	rganic Compounds	(GC/MS) (Co	ontinued)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m-Xylene & p-Xylene	ND		3.0		ug/L			04/29/15 17:46	1
o-Xylene	ND		2.0		ug/L			04/29/15 17:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		85 - 120			-		04/29/15 17:46	1

Trifluorotoluene (Surr)	101	70 - 136	04/29/15 17:46
4-Bromofluorobenzene (Surr)	98	75 - 120	04/29/15 17:46
Dibromofluoromethane (Surr)	100	85 - 115	04/29/15 17:46
1,2-Dichloroethane-d4 (Surr)	103	70 - 120	04/29/15 17:46

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	0.84		0.060		mg/L			04/29/15 17:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	101		50 _ 150			-		04/29/15 17:46	1
4-Bromofluorobenzene (Surr)	98		50 - 150					04/29/15 17:46	1

Mothod:	AK102 &	103 - Alaska	- Diesel Range	Organics &	Rosidual	Range	Organice	(GC)
wethod:	AN102 &	103 - Alaska	- Diesel Rande	Urganics &	Residual	Rande u	Urdanics	(G

Analyte DRO (nC10- <nc25)< th=""><th>Result</th><th>Qualifier Y</th><th>RL 0.098</th><th>MDL</th><th>Unit mg/L</th><th> <u>D</u></th><th>Prepared 04/28/15 17:02</th><th>Analyzed 04/29/15 20:27</th><th>Dil Fac</th></nc25)<>	Result	Qualifier Y	RL 0.098	MDL	Unit mg/L	<u>D</u>	Prepared 04/28/15 17:02	Analyzed 04/29/15 20:27	Dil Fac
Surrogate o-Terphenyl	%Recovery 80	Qualifier	Limits				Prepared 04/28/15 17:02	Analyzed 04/29/15 20:27	Dil Fac

Client Sample ID: 15-AREPL-AKRRMW-22-GW

Date Collected: 04/22/15 09:50

4-Bromofluorobenzene (Surr)

Date Received: 04/22/15 15:00

Method: 8260C - Volatile Orgar	nic Compounds b	by GC/MS						
Analyte	Result	Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	2.6		2.0	ug/L			04/29/15 22:13	1
Chloromethane	ND		5.0	ug/L			04/29/15 22:13	1
Vinyl chloride	ND		1.0	ug/L			04/29/15 22:13	1
Bromomethane	ND		5.0	ug/L			04/29/15 22:13	1
Chloroethane	ND		5.0	ug/L			04/29/15 22:13	1
Trichlorofluoromethane	ND		3.0	ug/L			04/29/15 22:13	1
1,1-Dichloroethene	ND		2.0	ug/L			04/29/15 22:13	1
Methylene Chloride	ND		5.0	ug/L			04/29/15 22:13	1
trans-1,2-Dichloroethene	ND		1.0	ug/L			04/29/15 22:13	1
1,1-Dichloroethane	ND		2.0	ug/L			04/29/15 22:13	1
2,2-Dichloropropane	ND		3.0	ug/L			04/29/15 22:13	1
cis-1,2-Dichloroethene	ND		1.0	ug/L			04/29/15 22:13	1
Bromochloromethane	ND		2.0	ug/L			04/29/15 22:13	1
Chloroform	ND		1.0	ug/L			04/29/15 22:13	1
1,1,1-Trichloroethane	ND		3.0	ug/L			04/29/15 22:13	1
Carbon tetrachloride	ND		3.0	ug/L			04/29/15 22:13	1
1,1-Dichloropropene	ND		3.0	ug/L			04/29/15 22:13	1
Benzene	ND		2.0	ug/L			04/29/15 22:13	1
1,2-Dichloroethane	ND		1.0	ug/L			04/29/15 22:13	1

TestAmerica Anchorage

Lab Sample ID: 230-467-8

Matrix: Water

Lab Sample ID: 230-467-7 Matrix: Water

TestAmerica Job ID: 230-467-1

1

Trifluorotoluene (Surr)

1,2-Dichloroethane-d4 (Surr)

Client Sample ID: 15-AREPL-AKRRMW-22-GW Date Collected: 04/22/15 09:50 Date Received: 04/22/15 15:00

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 230-467-8 Matrix: Water

5 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		3.0		ug/L			04/29/15 22:13	1
1,2-Dichloropropane	ND		1.0		ug/L			04/29/15 22:13	1
Dibromomethane	ND	٨	1.0		ug/L			04/29/15 22:13	1
Bromodichloromethane	ND	* ^	2.0		ug/L			04/29/15 22:13	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			04/29/15 22:13	1
Toluene	ND		2.0		ug/L			04/29/15 22:13	1
trans-1,3-Dichloropropene	ND	٨	1.0		ug/L			04/29/15 22:13	1
1,1,2-Trichloroethane	ND	٨	1.0		ug/L			04/29/15 22:13	1
Tetrachloroethene	ND		3.0		ug/L			04/29/15 22:13	1
1,3-Dichloropropane	ND	٨	1.0		ug/L			04/29/15 22:13	1
Dibromochloromethane	ND	٨	1.0		ug/L			04/29/15 22:13	1
1,2-Dibromoethane	ND	٨	1.0		ug/L			04/29/15 22:13	1
Chlorobenzene	ND		2.0		ug/L			04/29/15 22:13	1
Ethylbenzene	ND		3.0		ug/L			04/29/15 22:13	1
1,1,1,2-Tetrachloroethane	ND		2.0		ug/L			04/29/15 22:13	1
1,1,2,2-Tetrachloroethane	ND	٨	1.0		ug/L			04/29/15 22:13	1
m-Xylene & p-Xylene	ND		3.0		ug/L			04/29/15 22:13	1
o-Xylene	ND		2.0		ug/L			04/29/15 22:13	1
Styrene	ND		5.0		ug/L			04/29/15 22:13	1
Bromoform	ND	٨	1.0		ug/L			04/29/15 22:13	1
Isopropylbenzene	6.5		2.0		ug/L			04/29/15 22:13	1
Bromobenzene	ND		2.0		ug/L			04/29/15 22:13	1
N-Propylbenzene	11		3.0		ug/L			04/29/15 22:13	1
1,2,3-Trichloropropane	ND	٨	2.0		ug/L			04/29/15 22:13	1
2-Chlorotoluene	ND		3.0		ug/L			04/29/15 22:13	1
1,3,5-Trimethylbenzene	ND		3.0		ug/L			04/29/15 22:13	1
4-Chlorotoluene	ND		2.0		ug/L			04/29/15 22:13	1
t-Butylbenzene	ND		3.0		ug/L			04/29/15 22:13	1
1,2,4-Trimethylbenzene	4.8		3.0		ug/L			04/29/15 22:13	1
sec-Butylbenzene	5.5		3.0		ug/L			04/29/15 22:13	1
1,3-Dichlorobenzene	ND		2.0		ug/L			04/29/15 22:13	1
4-IsopropyItoluene	4.0		3.0		ug/L			04/29/15 22:13	1
1,4-Dichlorobenzene	ND		2.0		ug/L			04/29/15 22:13	1
n-Butylbenzene	7.1		3.0		ug/L			04/29/15 22:13	1
1,2-Dichlorobenzene	ND		2.0		ug/L			04/29/15 22:13	1
1,2-Dibromo-3-Chloropropane	ND	٨	2.0		ug/L			04/29/15 22:13	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			04/29/15 22:13	1
1,2,3-Trichlorobenzene	ND		2.0		ug/L			04/29/15 22:13	1
Hexachlorobutadiene	ND		2.0		ug/L			04/29/15 22:13	1
Methyl tert-butyl ether	ND	٨	1.0		ug/L			04/29/15 22:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		85 - 120			-		04/29/15 22:13	1
4-Bromofluorobenzene (Surr)	94		75 - 120					04/29/15 22:13	1
Dibromofluoromethane (Surr)	108		85 - 115					04/29/15 22:13	1

04/29/15 22:13

04/29/15 22:13

70 - 136

70 - 120

111

95

1

1

Client Sample ID: 15-AREPL-AKRRMW-22-GW Date Collected: 04/22/15 09:50

Date Received: 04/22/15 15:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	30		2.0		ug/L			05/01/15 18:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		85 - 120			-		05/01/15 18:49	1
4-Bromofluorobenzene (Surr)	111		75 - 120					05/01/15 18:49	1
Dibromofluoromethane (Surr)	111		85 - 115					05/01/15 18:49	1
Trifluorotoluene (Surr)	93		70 - 136					05/01/15 18:49	1
1.2-Dichloroethane-d4 (Surr)	113		70 - 120					05/01/15 18:49	1

Client Sample ID: 15-AREPL-AKRRMW-220-GW Date Collected: 04/22/15 10:25

Date Received: 04/22/15 15:00

Method: 8260C - Volatile Organ Analyte	nic Compounds b Result	oy GC/MS Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	2.7		2.0		ug/L			04/29/15 22:40	1
Chloromethane	ND		5.0		ug/L			04/29/15 22:40	1
Vinyl chloride	ND		1.0		ug/L			04/29/15 22:40	1
Bromomethane	ND		5.0		ug/L			04/29/15 22:40	1
Chloroethane	ND		5.0		ug/L			04/29/15 22:40	1
Trichlorofluoromethane	ND		3.0		ug/L			04/29/15 22:40	1
1,1-Dichloroethene	ND		2.0		ug/L			04/29/15 22:40	1
Methylene Chloride	ND		5.0		ug/L			04/29/15 22:40	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			04/29/15 22:40	1
1,1-Dichloroethane	ND		2.0		ug/L			04/29/15 22:40	1
2,2-Dichloropropane	ND		3.0		ug/L			04/29/15 22:40	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			04/29/15 22:40	1
Bromochloromethane	ND		2.0		ug/L			04/29/15 22:40	1
Chloroform	ND		1.0		ug/L			04/29/15 22:40	1
1,1,1-Trichloroethane	ND		3.0		ug/L			04/29/15 22:40	1
Carbon tetrachloride	ND		3.0		ug/L			04/29/15 22:40	1
1,1-Dichloropropene	ND		3.0		ug/L			04/29/15 22:40	1
Benzene	ND		2.0		ug/L			04/29/15 22:40	1
1,2-Dichloroethane	ND		1.0		ug/L			04/29/15 22:40	1
Trichloroethene	ND		3.0		ug/L			04/29/15 22:40	1
1,2-Dichloropropane	ND		1.0		ug/L			04/29/15 22:40	1
Dibromomethane	ND	٨	1.0		ug/L			04/29/15 22:40	1
Bromodichloromethane	ND	* ^	2.0		ug/L			04/29/15 22:40	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			04/29/15 22:40	1
Toluene	ND		2.0		ug/L			04/29/15 22:40	1
trans-1,3-Dichloropropene	ND	٨	1.0		ug/L			04/29/15 22:40	1
1,1,2-Trichloroethane	ND	٨	1.0		ug/L			04/29/15 22:40	1
Tetrachloroethene	ND		3.0		ug/L			04/29/15 22:40	1
1,3-Dichloropropane	ND	٨	1.0		ug/L			04/29/15 22:40	1
Dibromochloromethane	ND	٨	1.0		ug/L			04/29/15 22:40	1
1,2-Dibromoethane	ND	^	1.0		ug/L			04/29/15 22:40	1
Chlorobenzene	ND		2.0		ug/L			04/29/15 22:40	1
Ethylbenzene	ND		3.0		ug/L			04/29/15 22:40	1
1,1,1,2-Tetrachloroethane	ND		2.0		ug/L			04/29/15 22:40	1
1,1,2,2-Tetrachloroethane	ND	٨	1.0		ug/L			04/29/15 22:40	1

5/4/2015

Lab Sample ID: 230-467-8

Lab Sample ID: 230-467-9

2 3 4 5 6 7 8 9

Matrix: Water

Matrix: Water

Client Sample ID: 15-AREPL-AKRRMW-220-GW Date Collected: 04/22/15 10:25 Date Received: 04/22/15 15:00

Lab Sample ID: 230-467-9 Matrix: Water

Method: 8260C - Volatile Orga	nic Compounds	by GC/MS (Continued)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m-Xylene & p-Xylene	ND		3.0		ug/L			04/29/15 22:40	1
o-Xylene	ND		2.0		ug/L			04/29/15 22:40	1
Styrene	ND		5.0		ug/L			04/29/15 22:40	1
Bromoform	ND	٨	1.0		ug/L			04/29/15 22:40	1
Isopropylbenzene	6.6		2.0		ug/L			04/29/15 22:40	1
Bromobenzene	ND		2.0		ug/L			04/29/15 22:40	1
N-Propylbenzene	11		3.0		ug/L			04/29/15 22:40	1
1,2,3-Trichloropropane	ND	٨	2.0		ug/L			04/29/15 22:40	1
2-Chlorotoluene	ND		3.0		ug/L			04/29/15 22:40	1
1,3,5-Trimethylbenzene	ND		3.0		ug/L			04/29/15 22:40	1
4-Chlorotoluene	ND		2.0		ug/L			04/29/15 22:40	1
t-Butylbenzene	ND		3.0		ug/L			04/29/15 22:40	1
1,2,4-Trimethylbenzene	5.1		3.0		ug/L			04/29/15 22:40	1
sec-Butylbenzene	5.6		3.0		ug/L			04/29/15 22:40	1
1,3-Dichlorobenzene	ND		2.0		ug/L			04/29/15 22:40	1
4-IsopropyItoluene	4.2		3.0		ug/L			04/29/15 22:40	1
1,4-Dichlorobenzene	ND		2.0		ug/L			04/29/15 22:40	1
n-Butylbenzene	7.3		3.0		ug/L			04/29/15 22:40	1
1,2-Dichlorobenzene	ND		2.0		ug/L			04/29/15 22:40	1
1,2-Dibromo-3-Chloropropane	ND	٨	2.0		ug/L			04/29/15 22:40	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			04/29/15 22:40	1
1,2,3-Trichlorobenzene	ND		2.0		ug/L			04/29/15 22:40	1
Hexachlorobutadiene	ND		2.0		ug/L			04/29/15 22:40	1
Methyl tert-butyl ether	ND	٨	1.0		ug/L			04/29/15 22:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

=				
Toluene-d8 (Surr)	101	85 - 120	04/29/15 22:40	1
4-Bromofluorobenzene (Surr)	92	75 - 120	04/29/15 22:40	1
Dibromofluoromethane (Surr)	107	85 - 115	04/29/15 22:40	1
Trifluorotoluene (Surr)	102	70 - 136	04/29/15 22:40	1
1,2-Dichloroethane-d4 (Surr)	96	70 - 120	04/29/15 22:40	1
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Trifluorotoluene (Surr) 1,2-Dichloroethane-d4 (Surr)	92 107 102 96	75 - 120 85 - 115 70 - 136 70 - 120	04/29/15 22:40 04/29/15 22:40 04/29/15 22:40 04/29/15 22:40	1 1 1 1

Method: 8260C - Volatile Orga	anic Compounds	by GC/MS -	RA			
Analyte	Result	Qualifier	RL	MDL	Unit	D
Naphthalene	32		2.0		ug/L	
Surrogate	%Recovery	Qualifier	Limits			
Toluene-d8 (Surr)	103		85 - 120			_
	110		75 400			

Toluene-d8 (Surr)	103	85 - 120	05/01/15 19:16	1
4-Bromofluorobenzene (Surr)	110	75 - 120	05/01/15 19:16	1
Dibromofluoromethane (Surr)	112	85 - 115	05/01/15 19:16	1
Trifluorotoluene (Surr)	95	70 - 136	05/01/15 19:16	1
1,2-Dichloroethane-d4 (Surr)	116	70 - 120	05/01/15 19:16	1

Client Sample ID: 15-AREPL-AKRRMW-245-GW Date Collected: 04/22/15 10:40 Date Received: 04/22/15 15:00

Method: 8260C - Volatile Organic Compounds by GC/MS										
Analyte	Result	Qualifier	RL	MDL	Unit	D)	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	13		2.0		ug/L				04/29/15 23:06	1

TestAmerica Anchorage

Analyzed

05/01/15 19:16

Analyzed

Lab Sample ID: 230-467-10

Prepared

Prepared

Dil Fac

Dil Fac

1

Matrix: Water

Client Sample ID: 15-AREPL-AKRRMW-245-GW Date Collected: 04/22/15 10:40 Date Received: 04/22/15 15:00

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 230-467-10 Matrix: Water

Analyte	Result	Qualifier	RL	MDL Unit	D Prepared	Analyzed	Dil Fac
Chloromethane	ND		5.0	ug/L		04/29/15 23:06	1
Vinyl chloride	ND		1.0	ug/L		04/29/15 23:06	1
Bromomethane	ND		5.0	ug/L		04/29/15 23:06	1
Chloroethane	ND		5.0	ug/L		04/29/15 23:06	1
Trichlorofluoromethane	ND		3.0	ug/L		04/29/15 23:06	1
1,1-Dichloroethene	ND		2.0	ug/L		04/29/15 23:06	1
Methylene Chloride	ND		5.0	ug/L		04/29/15 23:06	1
trans-1,2-Dichloroethene	ND		1.0	ug/L		04/29/15 23:06	1
1,1-Dichloroethane	ND		2.0	ug/L		04/29/15 23:06	1
2,2-Dichloropropane	ND		3.0	ug/L		04/29/15 23:06	1
cis-1,2-Dichloroethene	ND		1.0	ug/L		04/29/15 23:06	1
Bromochloromethane	ND		2.0	ug/L		04/29/15 23:06	1
Chloroform	ND		1.0	ug/L		04/29/15 23:06	1
1,1,1-Trichloroethane	ND		3.0	ug/L		04/29/15 23:06	1
Carbon tetrachloride	ND		3.0	ug/L		04/29/15 23:06	1
1,1-Dichloropropene	ND		3.0	ug/L		04/29/15 23:06	1
Benzene	ND		2.0	ug/L		04/29/15 23:06	1
1,2-Dichloroethane	ND		1.0	ug/L		04/29/15 23:06	1
Trichloroethene	ND		3.0	ug/L		04/29/15 23:06	1
1,2-Dichloropropane	ND		1.0	ug/L		04/29/15 23:06	1
Dibromomethane	ND	Λ	1.0	ug/L		04/29/15 23:06	1
Bromodichloromethane	ND	* ^	2.0	ug/L		04/29/15 23:06	1
cis-1,3-Dichloropropene	ND		1.0	ug/L		04/29/15 23:06	1
Toluene	ND		2.0	ug/L		04/29/15 23:06	1
trans-1,3-Dichloropropene	ND	٨	1.0	ug/L		04/29/15 23:06	1
1,1,2-Trichloroethane	ND	٨	1.0	ug/L		04/29/15 23:06	1
Tetrachloroethene	ND		3.0	ug/L		04/29/15 23:06	1
1,3-Dichloropropane	ND	٨	1.0	ug/L		04/29/15 23:06	1
Dibromochloromethane	ND	٨	1.0	ug/L		04/29/15 23:06	1
1,2-Dibromoethane	ND	Λ	1.0	ug/L		04/29/15 23:06	
Chlorobenzene	ND		2.0	ug/L		04/29/15 23:06	1
Ethylbenzene	ND		3.0	ug/L		04/29/15 23:06	1
1.1.1.2-Tetrachloroethane	ND		2.0	ua/L		04/29/15 23:06	
1.1.2.2-Tetrachloroethane	ND	٨	1.0	ua/L		04/29/15 23:06	1
m-Xylene & p-Xylene	ND		3.0	ug/L		04/29/15 23:06	1
o-Xylene	ND		2.0	ug/L		04/29/15 23:06	
Styrene	ND		5.0	ua/L		04/29/15 23:06	1
Bromoform	ND	٨	1.0	ua/L		04/29/15 23:06	1
Isopropylbenzene	ND		2.0	ua/L		04/29/15 23:06	
Bromobenzene	ND		2.0	ug/L		04/29/15 23:06	1
N-Propylbenzene	ND		3.0	ug/L		04/29/15 23:06	1
1 2 3-Trichloropropane	ND	Λ	20	ug/l		04/29/15 23:06	
2-Chlorotoluene	ND		3.0	ug/l		04/29/15 23:06	1
1 3 5-Trimethylbenzene	ND		3.0	ug/L		04/29/15 23:06	1
4-Chlorotoluene	ND		2.0	ug/l		04/29/15 23:06	
t-Butylbenzene			3.0	ug/L		04/29/15 23:06	' 1
1 2 4-Trimethylbenzene			3.0	ug/L		04/29/15 23:06	' 1
sec-Butylbenzene			3.0	ug/L		04/29/15 23:06	· · · · · · · · · · · · · · · · · · ·
1.3-Dichlorobenzene			2.0	ug/L		04/29/15 23:06	' 1
.,	110		L .V	~ <u>~</u> ~		J J. I J _ J. J U	

RL

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1.0

Limits

85 - 120

75 - 120

85 - 115

70 - 136

70 - 120

MDL Unit

ug/L

D

Prepared

Prepared

Analyte

4-Isopropyltoluene

n-Butylbenzene

1,4-Dichlorobenzene

1,2-Dichlorobenzene

1,2,4-Trichlorobenzene

1,2,3-Trichlorobenzene

Hexachlorobutadiene

Methyl tert-butyl ether

Toluene-d8 (Surr)

Trifluorotoluene (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

1,2-Dichloroethane-d4 (Surr)

Naphthalene

Surrogate

1,2-Dibromo-3-Chloropropane

Client Sample ID: 15-AREPL-AKRRMW-245-GW Date Collected: 04/22/15 10:40 Date Received: 04/22/15 15:00

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Result Qualifier

ND

103

93

108

106

93

%Recovery

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Qualifier

Lab Sample ID: 230-467-10 Matrix: Water

Analyzed

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

Analyzed

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

04/29/15 23:06

6

Dil Fac

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Dil Fac

Prep Type: Total/NA

Prep Type: Total/NA

				Percent Su	rrogate Reco	very (Acce
		TOL	TFT	BFB	DBFM	12DCE
Lab Sample ID	Client Sample ID	(85-120)	(70-136)	(75-120)	(85-115)	(70-120)
230-467-1	15-AREPL-4GMW-13-GW	99	104	95	107	98
230-467-2	15-AREPL-4GMW-16-GW	95	102	95	100	97
230-467-3	15-AREPL-4GMW-14-GW	100	106	97	105	100
230-467-5	15-AREPL-4GMW-15-GW	98	99	94	104	96
230-467-7	15-AREPL-MW-28-GW	94	101	98	100	103
LCS 580-188125/5	Lab Control Sample	98	103	95	109	108
LCSD 580-188125/6	Lab Control Sample Dup	98	104	99	101	99
MB 580-188125/4	Method Blank	95	89	96	109	114

Surrogate Legend

Matrix: Water

TOL = Toluene-d8 (Surr)

TFT = Trifluorotoluene (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

_		Percent Surrogate Recovery (Acceptance Limits)						
		TOL	BFB	DBFM	TFT	12DCE		
Lab Sample ID	Client Sample ID	(85-120)	(75-120)	(85-115)	(70-136)	(70-120)		
230-467-4	15-AREPL-MW-B-3-GW	99	92	104	102	93		
230-467-4 - RA	15-AREPL-MW-B-3-GW	104	104	108	94	112		
230-467-6	15-AREPL-TB	94	92	104	103	97		
230-467-8	15-AREPL-AKRRMW-22-GW	101	94	108	111	95		
230-467-8 - RA	15-AREPL-AKRRMW-22-GW	102	111	111	93	113		
230-467-9	15-AREPL-AKRRMW-220-GW	101	92	107	102	96		
230-467-9 - RA	15-AREPL-AKRRMW-220-GW	103	110	112	95	116		
230-467-10	15-AREPL-AKRRMW-245-GW	103	93	108	106	93		
LCS 580-188126/5	Lab Control Sample	98	95	109	103	108		
LCS 580-188362/5	Lab Control Sample	108	98	101	97	107		
LCSD 580-188126/6	Lab Control Sample Dup	98	99	101	104	99		
LCSD 580-188362/6	Lab Control Sample Dup	100	106	107	98	105		
MB 580-188126/4	Method Blank	95	96	109	89	114		
MB 580-188362/4	Method Blank	103	102	105	98	108		

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TFT = Trifluorotoluene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

Prep Type: Total/NA

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

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				Percent Surrogate Recovery (Acceptance Limits)	
		TFT	BFB		
_ab Sample ID	Client Sample ID	(50-150)	(50-150)		
230-467-1	15-AREPL-4GMW-13-GW	102	100		-
230-467-2	15-AREPL-4GMW-16-GW	99	99		
230-467-3	15-AREPL-4GMW-14-GW	105	100		
230-467-5	15-AREPL-4GMW-15-GW	103	95		
230-467-6	15-AREPL-TB	103	92		
230-467-7	15-AREPL-MW-28-GW	101	98		
230-467-7 MS	15-AREPL-MW-28-GW	103	95		
230-467-7 MSD	15-AREPL-MW-28-GW	104	96		
-CS 580-188124/27	Lab Control Sample	100	96		
CS 580-188437/9	Lab Control Sample	105	95		
_CSD 580-188124/28	Lab Control Sample Dup	99	94		
CSD 580-188437/10	Lab Control Sample Dup	105	97		
MB 580-188124/4	Method Blank	89	96		
MB 580-188437/6	Method Blank	102	95		
Surrogate Legend					
TFT = Trifluorotoluene (Surr)				
BFB = 4-Bromofluorobe	nzene (Surr)				

Matrix: Water Prep Type: Total/NA Percent Surrogate Recovery (Acceptance Limits) ОТРН Client Sample ID (50-150) Lab Sample ID 230-467-1 15-AREPL-4GMW-13-GW 77 230-467-2 15-AREPL-4GMW-16-GW 81 230-467-3 15-AREPL-4GMW-14-GW 80 230-467-5 76 15-AREPL-4GMW-15-GW 230-467-7 15-AREPL-MW-28-GW 80 LCS 580-188080/2-A Lab Control Sample 82 LCSD 580-188080/3-A Lab Control Sample Dup 83 MB 580-188080/1-A Method Blank 77 Surrogate Legend OTPH = o-Terphenyl

Lab Sample ID: MB 580-188125/4

Matrix: Water

Analyte

Benzene

Toluene

o-Xylene

Surrogate

Toluene-d8 (Surr)

Trifluorotoluene (Surr)

4-Bromofluorobenzene (Surr)

Ethylbenzene

m-Xylene & p-Xylene

Analysis Batch: 188125

Client Sample ID: Method Blank

Analyzed

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

Analyzed

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

Prep Type: Total/NA

Prep Type: Total/NA

Client Sample ID: Lab Control Sample

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Dil Fac

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Dil Fac

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Dibromofluoromethane (Surr) 1,2-Dichloroethane-d4 (Surr)

Lab Sample ID: LCS 580-188125/5 Matrix: Water Analysis Batch: 188125

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	20.0	21.0		ug/L		105	80 - 120	
Toluene	20.0	19.4		ug/L		97	75 _ 120	
Ethylbenzene	20.0	20.2		ug/L		101	75 - 125	
m-Xylene & p-Xylene	20.0	20.8		ug/L		104	75 - 130	
o-Xylene	20.0	21.0		ug/L		105	80 - 120	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	98		85 - 120
Trifluorotoluene (Surr)	103		70 - 136
4-Bromofluorobenzene (Surr)	95		75 - 120
Dibromofluoromethane (Surr)	109		85 - 115
1,2-Dichloroethane-d4 (Surr)	108		70 - 120

Lab Sample ID: LCSD 580-188125/6 Matrix: Water

Analysis Batch: 188125

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	20.0	21.1		ug/L		106	80 - 120	1	30
Toluene	20.0	19.9		ug/L		100	75 _ 120	3	30
Ethylbenzene	20.0	20.3		ug/L		102	75 - 125	1	30
m-Xylene & p-Xylene	20.0	20.8		ug/L		104	75 _ 130	0	30
o-Xvlene	20.0	20.6		ua/L		103	80 - 120	2	30

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	98		85 - 120
Trifluorotoluene (Surr)	104		70 - 136
4-Bromofluorobenzene (Surr)	99		75 _ 120
Dibromofluoromethane (Surr)	101		85 - 115

TestAmerica Anchorage

-	 	 	-	 -	

RL

2.0

2.0

3.0

3.0

2.0

Limits

85 - 120

70 - 136

75 - 120

85 - 115

70 - 120

MDL Unit

ug/L

ug/L

ug/L

ug/L

ug/L

D

Prepared

Prepared

Method: 8260B - Volatile Organic Compounds (GC/MS)

MB MB Result Qualifier

ND

ND

ND

ND

ND

95

89

96

109

114

%Recovery

MB MB

Qualifier

Page	21	of 42	

Lab Sample ID: LCSD 580-188125/6

Client Sample ID: Lab Control Sample Dup

5

Method: 8260B - Volatile Organic Compounds	(GC/MS) (Continued)
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•	LCSD L	CSD								
Surrogate	- <u>%Recovery</u> Q	ualifier	Limits							
1,2-Dicnioroetnane-04 (Surr)	99		70 - 120							
vietnod: 8260C - volatile	Organic Com	pounds b	by GC/IVIS							
Lab Sample ID: MB 580-1881	26/4							Client S	ample ID: Metho	d Blank
Matrix: Water									Prep Type: 1	Total/NA
Analysis Batch: 188126										
	N	IB MB								
Analyte	Res	ult Qualifier		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	N	ND		2.0		ug/L			04/29/15 15:31	1
Chloromethane	١	ND		5.0		ug/L			04/29/15 15:31	1
Vinyl chloride	Ν	ND		1.0		ug/L			04/29/15 15:31	1
Bromomethane	Ν	ND		5.0		ug/L			04/29/15 15:31	1
Chloroethane	Ν	ND		5.0		ug/L			04/29/15 15:31	1
Trichlorofluoromethane	Ν	ND		3.0		ug/L			04/29/15 15:31	1
1,1-Dichloroethene	Ν	١D		2.0		ug/L			04/29/15 15:31	1
Methylene Chloride	Ν	ND		5.0		ug/L			04/29/15 15:31	1
trans-1,2-Dichloroethene	Ν	ND		1.0		ug/L			04/29/15 15:31	1
1,1-Dichloroethane	Ν	۱D		2.0		ug/L			04/29/15 15:31	1
2,2-Dichloropropane	Ν	١D		3.0		ug/L			04/29/15 15:31	1
cis-1,2-Dichloroethene	Ν	١D		1.0		ug/L			04/29/15 15:31	1
Bromochloromethane	N	١D		2.0		ug/L			04/29/15 15:31	1
Chloroform	Ν	١D		1.0		ug/L			04/29/15 15:31	1
1,1,1-Trichloroethane	Ν	ND		3.0		ug/L			04/29/15 15:31	1
Carbon tetrachloride	N	١D		3.0		ug/L			04/29/15 15:31	1
1,1-Dichloropropene	Ν	ND		3.0		ug/L			04/29/15 15:31	1
Benzene	Ν	ND		2.0		ug/L			04/29/15 15:31	1
1,2-Dichloroethane	N	١D		1.0		ug/L			04/29/15 15:31	1
Trichloroethene	Ν	ND		3.0		ug/L			04/29/15 15:31	1
1,2-Dichloropropane	Ν	ND		1.0		ug/L			04/29/15 15:31	1
Dibromomethane	Ν	ND ^		1.0		ug/L			04/29/15 15:31	1
Bromodichloromethane	Ν	ND ^		2.0		ug/L			04/29/15 15:31	1
cis-1,3-Dichloropropene	Ν	ND		1.0		ug/L			04/29/15 15:31	1
Toluene	1	ND		2.0		ug/L			04/29/15 15:31	1
trans-1,3-Dichloropropene	Ν	ND ^		1.0		ug/L			04/29/15 15:31	1
1,1,2-Trichloroethane	Ν	ND ^		1.0		ug/L			04/29/15 15:31	1
Tetrachloroethene	Ν	ND		3.0		ug/L			04/29/15 15:31	1
1,3-Dichloropropane	Ν	ND ^		1.0		ug/L			04/29/15 15:31	1
Dibromochloromethane	Ν	ND ^		1.0		ug/L			04/29/15 15:31	1
1,2-Dibromoethane		ND ^		1.0		ug/L			04/29/15 15:31	1
Chlorobenzene	Ν	ND		2.0		ug/L			04/29/15 15:31	1
Ethylbenzene	Ν	١D		3.0		ug/L			04/29/15 15:31	1
1,1,1,2-Tetrachloroethane	Ν	ND		2.0		ug/L			04/29/15 15:31	1
1,1,2,2-Tetrachloroethane	Ν	ND ^		1.0		ug/L			04/29/15 15:31	1
m-Xylene & p-Xylene	Ν	١D		3.0		ug/L			04/29/15 15:31	1
o-Xylene	Ν	ND		2.0		ug/L			04/29/15 15:31	1
Styrene	Ν	١D		5.0		ug/L			04/29/15 15:31	1
						-				

RL

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MDL Unit

ug/L

D

Prepared

Lab Sample ID: MB 580-188126/4

Analysis Batch: 188126

Matrix: Water

Isopropylbenzene

N-Propylbenzene

2-Chlorotoluene

4-Chlorotoluene

t-Butylbenzene

sec-Butylbenzene

4-Isopropyltoluene

n-Butylbenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,2-Dichlorobenzene

1,2-Dibromo-3-Chloropropane

1,2,3-Trichloropropane

1,3,5-Trimethylbenzene

1,2,4-Trimethylbenzene

Bromobenzene

Analyte

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

MB MB Result Qualifier

ND

114

Client Sample ID: Method Blank

Analyzed

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

04/29/15 15:31

Prep Type: Total/NA

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04/29/15 15:31 04/29/15 15:31 04/29/15 15:31 04/29/15 15:31 04/29/15 15:31

1,2,4-Trichlorobenzene	ND		1.0	ug/L		04/29/15 15:31	1
1,2,3-Trichlorobenzene	ND		2.0	ug/L		04/29/15 15:31	1
Hexachlorobutadiene	ND		2.0	ug/L		04/29/15 15:31	1
Naphthalene	ND	٨	2.0	ug/L		04/29/15 15:31	1
Methyl tert-butyl ether	ND	٨	1.0	ug/L		04/29/15 15:31	1
	МВ	МВ					
Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		85 - 120			04/29/15 15:31	1
4-Bromofluorobenzene (Surr)	96		75 - 120			04/29/15 15:31	1
Dibromofluoromethane (Surr)	109		85 - 115			04/29/15 15:31	1
Trifluorotoluene (Surr)	89		70 - 136			04/29/15 15:31	1

Lab Sample ID: LCS 580-188126/5 Matrix: Water

Client Sample ID: Lab Control Sample Prep Type: Total/NA

04/29/15 15:31

Analysis Batch: 188126

1,2-Dichloroethane-d4 (Surr)

	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Dichlorodifluoromethane	20.0	23.2		ug/L		116	30 - 155
Chloromethane	20.0	20.9		ug/L		105	40 _ 125
Vinyl chloride	20.0	20.9		ug/L		105	50 - 145
Bromomethane	20.0	23.2		ug/L		116	30 - 145
Chloroethane	20.0	20.5		ug/L		103	60 - 135
Trichlorofluoromethane	20.0	23.4		ug/L		117	60 - 145
1,1-Dichloroethene	20.0	20.6		ug/L		103	70 - 130
Methylene Chloride	20.0	21.7		ug/L		109	55 - 140
trans-1,2-Dichloroethene	20.0	22.2		ug/L		111	60 - 140
1,1-Dichloroethane	20.0	21.1		ug/L		106	70 - 135
2,2-Dichloropropane	20.0	23.9		ug/L		119	70 - 135
cis-1,2-Dichloroethene	20.0	22.3		ug/L		111	70 - 125
Bromochloromethane	20.0	23.3		ug/L		116	65 - 130
Chloroform	20.0	23.6		ug/L		118	65 - 135

70 - 120

Prep Type: Total/NA

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Client Sample ID: Lab Control Sample

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-188126/5

Matrix: W	later	
Analysis	Batch:	188126

Analysis Batch. 100120	Snike	1.05	LCS				%Rec	
Analyte		Result	Qualifier	Unit	р	%Rec	l imits	
1.1.1-Trichloroethane	20.0	23.6				118	65 - 130	
Carbon tetrachloride	20.0	24.3		ua/L		121	65 ₋ 140	
1,1-Dichloropropene	20.0	23.9		ug/L		120	75 ₋ 130	
Benzene	20.0	21.0		ug/L		105	80 - 120	
1,2-Dichloroethane	20.0	22.6		ug/L		113	70 ₋ 130	
Trichloroethene	20.0	23.2		ug/L		116	70 - 125	
1,2-Dichloropropane	20.0	20.1		ug/L		100	75 - 125	
Dibromomethane	20.0	23.1	٨	ug/L		115	75 ₋ 125	
Bromodichloromethane	20.0	24.2	* ^	ug/L		121	75 - 120	
cis-1,3-Dichloropropene	20.0	21.6		ug/L		108	70 - 130	
Toluene	20.0	19.4		ug/L		97	75 - 120	
trans-1,3-Dichloropropene	20.0	23.7	٨	ug/L		118	55 _ 140	
1,1,2-Trichloroethane	20.0	21.7	٨	ug/L		108	75 - 125	
Tetrachloroethene	20.0	22.9		ug/L		115	45 _ 150	
1,3-Dichloropropane	20.0	20.3	٨	ug/L		101	75 _ 125	
Dibromochloromethane	20.0	23.4	٨	ug/L		117	60 - 135	
1,2-Dibromoethane	20.0	22.0	٨	ug/L		110	80 - 120	
Chlorobenzene	20.0	20.2		ug/L		101	80 - 120	
Ethylbenzene	20.0	20.2		ug/L		101	75 - 125	
1,1,1,2-Tetrachloroethane	20.0	23.7		ug/L		119	80 - 130	
1,1,2,2-Tetrachloroethane	20.0	23.0	٨	ug/L		115	65 - 130	
m-Xylene & p-Xylene	20.0	20.8		ug/L		104	75 _ 130	
o-Xylene	20.0	21.0		ug/L		105	80 - 120	
Styrene	20.0	20.2		ug/L		101	65 _ 135	
Bromoform	20.0	22.0	٨	ug/L		110	70 - 130	
Isopropylbenzene	20.0	21.7		ug/L		108	75 - 125	
Bromobenzene	20.0	20.1		ug/L		101	75 - 125	
N-Propylbenzene	20.0	20.8		ug/L		104	70 - 130	
1,2,3-Trichloropropane	20.0	22.8	٨	ug/L		114	75 - 125	
2-Chlorotoluene	20.0	21.0		ug/L		105	75 _ 125	
1,3,5-Trimethylbenzene	20.0	20.4		ug/L		102	75 - 130	
4-Chlorotoluene	20.0	19.6		ug/L		98	75 - 130	
t-Butylbenzene	20.0	21.7		ug/L		108	70 - 130	
1,2,4-Trimethylbenzene	20.0	19.9		ug/L		100	75 - 130	
sec-Butylbenzene	20.0	20.6		ug/L		103	70 - 125	
1,3-Dichlorobenzene	20.0	20.6		ug/L		103	75 - 125	
4-Isopropyltoluene	20.0	20.3		ug/L		101	/5 - 130	
	20.0	20.5		ug/L		102	75 - 125	
n-Butylbenzene	20.0	20.7		ug/L		104	70 - 135	
1,2-Dichlorobenzene	20.0	21.3	Δ	ug/L		106	70 - 120	
	20.0	23.0		ug/L		115	50 - 130 65 425	
	20.0	21.5		ug/L		107	05 - 135 55 - 140	
	20.0	21.4		ug/L		107	55 - 140	
	20.0	20.5	٨	ug/L		102	50 - 140	
Naphulaelle	20.0	22.9	^	ug/L		114	55 - 14U	
weinyi tert-dutyi ether	20.0	23.3		ug/L		116	05 - 125	

Limits

85 - 120

75 - 120

85 - 115

70_136

70 - 120

Lab Sample ID: LCS 580-188126/5

Matrix: Water

Toluene-d8 (Surr)

Surrogate

Analysis Batch: 188126

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

1,2-Dichloroethane-d4 (Surr)

Trifluorotoluene (Surr)

Prep Type: Total/NA

Prep Type: Total/NA

Client Sample ID: Lab Control Sample

Client Sample ID: Lab Control Sample Dup

5 8

Lab Sample ID: LCSD 580-188126/6 Matrix: Water Analysis Batch: 188126

-	Spike	LCSD	D LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Dichlorodifluoromethane	20.0	21.1		ug/L		105	30 - 155	10	30
Chloromethane	20.0	19.4		ug/L		97	40 - 125	7	30
Vinyl chloride	20.0	19.3		ug/L		97	50 _ 145	8	30
Bromomethane	20.0	21.5		ug/L		107	30 - 145	8	30
Chloroethane	20.0	19.3		ug/L		97	60 - 135	6	30
Trichlorofluoromethane	20.0	20.7		ug/L		103	60 _ 145	13	30
1,1-Dichloroethene	20.0	20.6		ug/L		103	70 - 130	0	30
Methylene Chloride	20.0	20.6		ug/L		103	55 _ 140	5	30
trans-1,2-Dichloroethene	20.0	21.5		ug/L		108	60 _ 140	3	30
1,1-Dichloroethane	20.0	20.2		ug/L		101	70 - 135	5	30
2,2-Dichloropropane	20.0	22.3		ug/L		111	70 - 135	7	30
cis-1,2-Dichloroethene	20.0	21.4		ug/L		107	70 - 125	4	30
Bromochloromethane	20.0	22.5		ug/L		113	65 _ 130	3	30
Chloroform	20.0	22.5		ug/L		112	65 - 135	5	30
1,1,1-Trichloroethane	20.0	22.5		ug/L		112	65 _ 130	5	30
Carbon tetrachloride	20.0	23.4		ug/L		117	65 _ 140	3	30
1,1-Dichloropropene	20.0	24.1		ug/L		120	75 - 130	1	30
Benzene	20.0	21.1		ug/L		106	80 - 120	1	30
1,2-Dichloroethane	20.0	21.8		ug/L		109	70 - 130	3	30
Trichloroethene	20.0	23.8		ug/L		119	70 _ 125	3	30
1,2-Dichloropropane	20.0	20.4		ug/L		102	75 _ 125	1	30
Dibromomethane	20.0	22.7	٨	ug/L		114	75 _ 125	2	30
Bromodichloromethane	20.0	23.9	^	ug/L		120	75 _ 120	1	30
cis-1,3-Dichloropropene	20.0	23.0		ug/L		115	70 - 130	6	30
Toluene	20.0	19.9		ug/L		100	75 _ 120	3	30
trans-1,3-Dichloropropene	20.0	26.3	^	ug/L		131	55 ₋ 140	10	30
1,1,2-Trichloroethane	20.0	22.3	^	ug/L		112	75 - 125	3	30
Tetrachloroethene	20.0	23.9		ug/L		119	45 _ 150	4	30
1,3-Dichloropropane	20.0	21.6	^	ug/L		108	75 - 125	6	30
Dibromochloromethane	20.0	23.8	^	ug/L		119	60 - 135	2	30
1,2-Dibromoethane	20.0	23.6	٨	ug/L		118	80 - 120	7	30
Chlorobenzene	20.0	21.1		ug/L		106	80 - 120	5	30
Ethylbenzene	20.0	20.3		ug/L		102	75 _ 125	1	30
1,1,1,2-Tetrachloroethane	20.0	22.8		ug/L		114	80 - 130	4	30
1,1,2,2-Tetrachloroethane	20.0	22.5	^	ug/L		113	65 - 130	2	30
m-Xylene & p-Xylene	20.0	20.8		ug/L		104	75 - 130	0	30
o-Xylene	20.0	20.6		ug/L		103	80 - 120	2	30

TestAmerica Anchorage

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

LCS LCS

%Recovery Qualifier

98

95

109

103

108

Prep Type: Total/NA

5

8

9

Client Sample ID: Lab Control Sample Dup

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-188126/6

Matrix: Water Analysis Batch: 188126

Analysis Datch. 100120									
	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Styrene	20.0	20.7		ug/L		104	65 - 135	3	30
Bromoform	20.0	22.7	٨	ug/L		113	70 - 130	3	30
Isopropylbenzene	20.0	21.5		ug/L		108	75 _ 125	1	30
Bromobenzene	20.0	21.2		ug/L		106	75 - 125	5	30
N-Propylbenzene	20.0	21.9		ug/L		109	70 - 130	5	30
1,2,3-Trichloropropane	20.0	22.4	٨	ug/L		112	75 - 125	2	30
2-Chlorotoluene	20.0	21.3		ug/L		107	75 - 125	1	30
1,3,5-Trimethylbenzene	20.0	21.1		ug/L		105	75 - 130	3	30
4-Chlorotoluene	20.0	20.4		ug/L		102	75 - 130	4	30
t-Butylbenzene	20.0	23.1		ug/L		116	70 - 130	7	30
1,2,4-Trimethylbenzene	20.0	20.7		ug/L		104	75 - 130	4	30
sec-Butylbenzene	20.0	21.8		ug/L		109	70 - 125	6	30
1,3-Dichlorobenzene	20.0	21.3		ug/L		107	75 - 125	4	30
4-Isopropyltoluene	20.0	21.4		ug/L		107	75 - 130	6	30
1,4-Dichlorobenzene	20.0	21.5		ug/L		107	75 - 125	5	30
n-Butylbenzene	20.0	21.6		ug/L		108	70 - 135	4	30
1,2-Dichlorobenzene	20.0	21.6		ug/L		108	70 - 120	1	30
1,2-Dibromo-3-Chloropropane	20.0	23.9	٨	ug/L		119	50 - 130	4	30
1,2,4-Trichlorobenzene	20.0	22.3		ug/L		112	65 - 135	4	30
1,2,3-Trichlorobenzene	20.0	22.2		ug/L		111	55 - 140	4	30
Hexachlorobutadiene	20.0	23.2		ug/L		116	50 - 140	13	30
Naphthalene	20.0	23.4	۸	ug/L		117	55 - 140	2	30
Methyl tert-butyl ether	20.0	21.8	٨	ug/L		109	65 ₋ 125	7	30

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	98		85 - 120
4-Bromofluorobenzene (Surr)	99		75 - 120
Dibromofluoromethane (Surr)	101		85 - 115
Trifluorotoluene (Surr)	104		70 - 136
1,2-Dichloroethane-d4 (Surr)	99		70 - 120

Lab Sample ID: MB 580-188362/4 Matrix: Water

Analysis Batch: 188362

-	MB	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		2.0		ug/L			05/01/15 11:34	1
	МВ	МВ							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		85 - 120			_		05/01/15 11:34	1
4-Bromofluorobenzene (Surr)	102		75 - 120					05/01/15 11:34	1
Dibromofluoromethane (Surr)	105		85 - 115					05/01/15 11:34	1
Trifluorotoluene (Surr)	98		70 - 136					05/01/15 11:34	1
1,2-Dichloroethane-d4 (Surr)	108		70 - 120					05/01/15 11:34	1

Client Sample ID: Method Blank

Prep Type: Total/NA
Dibromofluoromethane (Surr)

1,2-Dichloroethane-d4 (Surr)

Trifluorotoluene (Surr)

8 9

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-18 Matrix: Water	8362/5						Client	Sample	ID: Lab Co Prep T	ontrol Sa ype: To	ample al/NA
Analysis Batch: 188362											
			Spike	LCS	LCS				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Naphthalene			20.0	21.1		ug/L		106	55 _ 140		
	LCS	LCS									
Surrogate	%Recovery	Qualifier	Limits								
Toluene-d8 (Surr)	108		85 - 120								
4-Bromofluorobenzene (Surr)	98		75 - 120								
Dibromofluoromethane (Surr)	101		85 - 115								
Trifluorotoluene (Surr)	97		70 _ 136								
1,2-Dichloroethane-d4 (Surr)	107		70 - 120								
Lab Sample ID: LCSD 580-1	88362/6					Clie	ent Sam	nle ID:	l ab Contro	l Sampl	e Dup
Matrix: Water									Pren T	vne: To	
Analysis Batch: 188362										,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
·····,···			Spike	LCSD	LCSD				%Rec.		RPD
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Naphthalene			20.0	23.9		ug/L		120	55 - 140	12	30
	LCSD	LCSD									
Surrogate	%Recovery	Qualifier	Limits								
Toluene-d8 (Surr)	100		85 - 120								
4-Bromofluorobenzene (Surr)	106		75 - 120								

85 - 115

70 - 136

70 - 120

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

107

98

105

Lab Sample ID: MB 580-188124/4												Client S	ample ID: Meth	od Blank
Analysis Batch: 188124													Fiep Type.	TUtal/INA
Analysis Batch. 100124		мв	мв											
Analyte	Re	sult	Qualifier		RL		MDL	Unit		D	Р	repared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10		ND			0.060			mg/L					04/29/15 15:31	1
		ΜВ	МВ											
Surrogate	%Recov	rery	Qualifier	Lin	nits						P	repared	Analyzed	Dil Fac
Trifluorotoluene (Surr)		89		50	- 150					-			04/29/15 15:31	1
4-Bromofluorobenzene (Surr)		96		50	- 150								04/29/15 15:31	1
- Lab Sample ID: LCS 580-188124/2	7									CI	ient	Sample	ID: Lab Contro	ol Sample
Matrix: Water													Prep Type:	Total/NA
Analysis Batch: 188124														
				Spike		LCS	LCS						%Rec.	
Analyte				Added		Result	Qua	lifier	Unit		D	%Rec	Limits	
Gasoline Range Organics (GRO)				0.200		0.228			mg/L		_	114	60 - 120	
-C6-C10														
	LCS	LCS												
Surrogate	%Recovery	Qual	lifier	Limits										
Trifluorotoluene (Surr)	100			50 - 150	_									

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS) (Continued)

Lab Sample ID: LCS 580-188124/27

Client Sample ID: Lab Control Sample

2 3 4 5 6 7 8 9

Matrix: Water													Prep	Type: T	otal/NA
Analysis Batch: 188124															
	105	105													
Surrogate	%Recoverv	Qua	lifier	Limits											
4-Bromofluorobenzene (Surr)	96			50 - 150	-										
Lab Sample ID: LCSD 580-18812	24/28								C	lient S	am	ple ID:	Lab Conti	ol Sam	ple Dup
Matrix: Water													Prep	Type: T	otal/NA
Analysis Batch: 188124															
				Spike		LCSD	LCS	D					%Rec.		RPD
Analyte				Added		Result	Qual	lifier	Unit		D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO) -C6-C10				0.200		0.230			mg/L		_	115	60 - 120	1	20
	LCSD	LCS	D												
Surrogate	%Recovery	Qua	lifier	Limits											
Trifluorotoluene (Surr)	99			50 - 150	-										
4-Bromofluorobenzene (Surr)	94			50 - 150											
Lab Sample ID: 230-467-7 MS										Clien	it S	ample I	D: 15-ARE	PL-MW	-28-GW
Analysis Batch: 188124													Tieb	Type. I	
Analysis Datch. 100124	Sample	Sam	nple	Spike		MS	MS						%Rec.		
Analyte	Result	Qua	lifier	Added		Result	Qual	lifier	Unit		D	%Rec	Limits		
Gasoline Range Organics (GRO) -C6-C10	0.84			0.200		1.00	E4		mg/L		_	80	60 - 120		
	MS	мs													
Surrogate	%Recoverv	Qua	lifier	Limits											
Trifluorotoluene (Surr)	103			50 - 150	-										
4-Bromofluorobenzene (Surr)	95			50 - 150											
-															
Lab Sample ID: 230-467-7 MSD Matrix: Water										Clien	it Sa	ample I	D: 15-ARE Prep	PL-MW Type: T	-28-GW otal/NA
Analysis Batch: 188124															
	Sample	Sam	ple	Spike		MSD	MSD)					%Rec.		RPD
Analyte	Result	Qua	lifier	Added		Result	Qual	lifier	Unit		D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO) -C6-C10	0.84			0.200		0.960	4		mg/L			58	60 - 120	5	20
	MSD	MSE)												
Surrogate	%Recovery	Qua	lifier	Limits											
Trifluorotoluene (Surr)	104			50 _ 150	-										
4-Bromofluorobenzene (Surr)	96			50 - 150											
- Lab Sample ID: MB 580-188437/	6											Client S	Sample ID	: Metho	d Blank
Matrix: Water													Prep	Type: T	otal/NA
Analysis Batch: 188437															
-		ΜВ	MB												
Analyte	R	esult	Qualifier		RL		MDL	Unit		D	Pr	repared	Anal	yzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10		ND			0.060			mg/L					05/02/1	5 11:36	1
		MВ	МВ												
Surrogate	%Reco	very	Qualifier	Lin	nits						Pi	repared	Anal	yzed	Dil Fac
Trifluorotoluene (Surr)		102		50 -	. 150					_			05/02/1	5 11:36	1

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS) (Continued)

Lab Sample ID: MB 580-188437/6

3 4 5

Client Sample ID: Method Blank Prep Type: Total/NA	

Matrix: Water									Prep T	ype: To	tal/NA
Analysis Batch: 188437											
	л	IB MB									
Surrogate	%Recove	ery Qualifier	Limits				P	repared	Analyz	ed	Dil Fac
4-Bromofluorobenzene (Surr)		95	50 - 150						05/02/15	11:36	1
Lab Sample ID: LCS 580-1884	37/9						Client	Sample	e ID: Lab Co	ontrol S	ample
Matrix: Water									Prep T	ype: To	tal/NA
Analysis Batch: 188437											
			Spike	LCS	LCS				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Gasoline Range Organics (GRO)			0.200	0.174		mg/L		87	60 - 120		
-C6-C10											
	LCS L	cs									
Surrogate	%Recovery Q	ualifier	Limits								
Trifluorotoluene (Surr)	105		50 - 150								
4-Bromofluorobenzene (Surr)	95		50 - 150								
Lab Sample ID: LCSD 580-188	3437/10					Clie	ent Sam	ple ID:	Lab Contro	ol Sampl	e Dup
Matrix: Water								· · · ·	Prep T	ype: To	tal/NA
Analysis Batch: 188437											
			Spike	LCSD	LCSD				%Rec.		RPD
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)			0.200	0.185		mg/L		92	60 - 120	6	20
-C6-C10											
	LCSD L	CSD									
Surrogate	%Recovery Q	ualifier	Limits								
Trifluorotoluene (Surr)	105		50 - 150								
4-Bromofluorobenzene (Surr)	97		50 - 150								

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Lab Sample ID: MB 580-188080/1-/ Matrix: Water Analysis Batch: 188090	A	ИВ М	ИB									Client Sa	ample ID: Met Prep Type Prep Bato	nod Blank : Total/NA h: 188080
Analyte	Res	ult C	ualifier		RL		MDL	Unit		D	Р	repared	Analyzed	Dil Fac
DRO (nC10- <nc25)< th=""><th></th><th>ND</th><th></th><th></th><th>0.10</th><th></th><th></th><th>mg/L</th><th></th><th></th><th>04/2</th><th>8/15 17:02</th><th>04/29/15 18:20</th><th>$\frac{-2.1140}{1}$</th></nc25)<>		ND			0.10			mg/L			04/2	8/15 17:02	04/29/15 18:20	$\frac{-2.1140}{1}$
		ив м	//B											
Surrogate	%Recov	ery G	Qualifier	Limi	ts						Р	repared	Analyzed	Dil Fac
o-Terphenyl		77		50 - 1	150						04/2	8/15 17:02	04/29/15 18:20	0 1
 Lab Sample ID: LCS 580-188080/2	- A									С	lient	Sample	ID: Lab Contr	ol Sample
Matrix: Water												•	Prep Type	: Total/NA
Analysis Batch: 188090													Prep Bato	h: 188080
· · ·				Spike		LCS	LCS						%Rec.	
Analyte				Added		Result	Qua	lifier	Unit		D	%Rec	Limits	
DRO (nC10- <nc25)< td=""><td></td><td></td><td></td><td>4.00</td><td></td><td>3.47</td><td></td><td></td><td>mg/L</td><td></td><td></td><td>87</td><td>75 - 125</td><td></td></nc25)<>				4.00		3.47			mg/L			87	75 - 125	
	LCS I	.cs												
Surrogate %	Recovery	Qualifi	ier	Limits										
o-Terphenyl	82			50 - 150										

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) (Continued)

Lab Sample ID: LCSD 580-188 Matrix: Water Analysis Batch: 188090	Client Sample ID: Lab Control Sample Prep Type: Tot Prep Batch: 10						e Dup tal/NA 88080				
			Spike	LCSD	LCSD				%Rec.		RPD
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
DRO (nC10- <nc25)< td=""><td></td><td></td><td>4.00</td><td>3.50</td><td></td><td>mg/L</td><td></td><td>87</td><td>75 ₋ 125</td><td>1</td><td>20</td></nc25)<>			4.00	3.50		mg/L		87	75 ₋ 125	1	20
	LCSD	LCSD									
Surrogate	%Recovery	Qualifier	Limits								
o-Terphenyl	83		50 - 150								

GC/MS VOA

Analysis Batch: 188124

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-467-6	15-AREPL-TB	Total/NA	Water	AK101	
230-467-7	15-AREPL-MW-28-GW	Total/NA	Water	AK101	
230-467-7 MS	15-AREPL-MW-28-GW	Total/NA	Water	AK101	
230-467-7 MSD	15-AREPL-MW-28-GW	Total/NA	Water	AK101	
LCS 580-188124/27	Lab Control Sample	Total/NA	Water	AK101	
LCSD 580-188124/28	Lab Control Sample Dup	Total/NA	Water	AK101	
MB 580-188124/4	Method Blank	Total/NA	Water	AK101	
Analysis Batch: 18812	5				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-467-1	15-AREPL-4GMW-13-GW	Total/NA	Water	8260B	
230-467-2	15-AREPL-4GMW-16-GW	Total/NA	Water	8260B	
230-467-3	15-AREPL-4GMW-14-GW	Total/NA	Water	8260B	
230-467-5	15-AREPL-4GMW-15-GW	Total/NA	Water	8260B	
230-467-7	15-AREPL-MW-28-GW	Total/NA	Water	8260B	
LCS 580-188125/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 580-188125/6	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 580-188125/4	Method Blank	Total/NA	Water	8260B	
Analysis Batch: 18812	6				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch

230-467-4	15-AREPL-MW-B-3-GW	Total/NA	Water	8260C	
230-467-6	15-AREPL-TB	Total/NA	Water	8260C	
230-467-8	15-AREPL-AKRRMW-22-GW	Total/NA	Water	8260C	
230-467-9	15-AREPL-AKRRMW-220-GW	Total/NA	Water	8260C	
230-467-10	15-AREPL-AKRRMW-245-GW	Total/NA	Water	8260C	
LCS 580-188126/5	Lab Control Sample	Total/NA	Water	8260C	
LCSD 580-188126/6	Lab Control Sample Dup	Total/NA	Water	8260C	
MB 580-188126/4	Method Blank	Total/NA	Water	8260C	

Analysis Batch: 188362

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-467-4 - RA	15-AREPL-MW-B-3-GW	Total/NA	Water	8260C	
230-467-8 - RA	15-AREPL-AKRRMW-22-GW	Total/NA	Water	8260C	
230-467-9 - RA	15-AREPL-AKRRMW-220-GW	Total/NA	Water	8260C	
LCS 580-188362/5	Lab Control Sample	Total/NA	Water	8260C	
LCSD 580-188362/6	Lab Control Sample Dup	Total/NA	Water	8260C	
MB 580-188362/4	Method Blank	Total/NA	Water	8260C	

Analysis Batch: 188437

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-467-1	15-AREPL-4GMW-13-GW	Total/NA	Water	AK101	
230-467-2	15-AREPL-4GMW-16-GW	Total/NA	Water	AK101	
230-467-3	15-AREPL-4GMW-14-GW	Total/NA	Water	AK101	
230-467-5	15-AREPL-4GMW-15-GW	Total/NA	Water	AK101	
LCS 580-188437/9	Lab Control Sample	Total/NA	Water	AK101	
LCSD 580-188437/10	Lab Control Sample Dup	Total/NA	Water	AK101	
MB 580-188437/6	Method Blank	Total/NA	Water	AK101	

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Prep Batch: 188080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-467-1	15-AREPL-4GMW-13-GW	Total/NA	Water	3510C	
230-467-2	15-AREPL-4GMW-16-GW	Total/NA	Water	3510C	
230-467-3	15-AREPL-4GMW-14-GW	Total/NA	Water	3510C	
230-467-5	15-AREPL-4GMW-15-GW	Total/NA	Water	3510C	
230-467-7	15-AREPL-MW-28-GW	Total/NA	Water	3510C	
LCS 580-188080/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 580-188080/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	
MB 580-188080/1-A	Method Blank	Total/NA	Water	3510C	
Analysis Batch: 188090) Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
230-467-1	15-AREPL-4GMW-13-GW	Total/NA	Water	AK102 & 103	188080
230-467-2	15-AREPL-4GMW-16-GW	Total/NA	Water	AK102 & 103	188080
230-467-3	15-AREPL-4GMW-14-GW	Total/NA	Water	AK102 & 103	188080
230-467-5	15-AREPL-4GMW-15-GW	Total/NA	Water	AK102 & 103	188080
230-467-7	15-AREPL-MW-28-GW	Total/NA	Water	AK102 & 103	188080
LCS 580-188080/2-A	Lab Control Sample	Total/NA	Water	AK102 & 103	188080
LCSD 580-188080/3-A	Lab Control Sample Dup	Total/NA	Water	AK102 & 103	188080
MB 580-188080/1-A	Method Blank	Total/NA	Water	AK102 & 103	188080

				Lab Chr	onicle			
lient: Ahtna Er roiect/Site: AK	ngineering Ser Real Estate	vices LLC						TestAmerica Job ID: 230-467-1
-,								
lient Sampl	le ID: 15-AR : 04/21/15 10:1	EPL-4GMW-13	3-GW					Lab Sample ID: 230-467-1 Matrix: Water
ate Received:	04/22/15 15:0	0						
-	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
	Analysis	8260B		1	188125	04/29/15 19:59	TL1	TAL SEA
I otal/NA	Analysis	AK101		1	188437	05/02/15 16:02	IL1	TAL SEA
Total/NA	Prep	3510C		4	188080	04/28/15 17:02	RBL	TAL SEA
lotal/NA	Analysis	AK102 & 103		1	188090	04/29/15 19:15	EKK	TAL SEA
lient Sampl	le ID: 15-AR	EPL-4GMW-16	6-GW					Lab Sample ID: 230-467-2
ate Collected:	: 04/21/15 10:4	10						Matrix: Water
ate Received:	04/22/15 15:0	0						
	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	188125	04/29/15 20:26	TL1	TAL SEA
Total/NA	Analysis	AK101		1	188437	05/02/15 16:55	TL1	TAL SEA
						04/00/45 47 00	וחח	TAL SEA
Total/NA	Prep	3510C			188080	04/28/15 17:02	RBL	TAL SLA
Total/NA Total/NA	Prep Analysis	3510C AK102 & 103		1	188080 188090	04/28/15 17:02 04/29/15 19:33	EKK	TAL SEA
Total/NA Total/NA	Prep Analysis	3510C AK102 & 103	4-GW	1	188080 188090	04/29/15 17:02	EKK	TAL SEA
Total/NA Total/NA Client Sampl Date Collected:	Prep Analysis le ID: 15-AR : 04/21/15 14:1	3510C AK102 & 103 CEPL-4GMW-14	4-GW	1	188080 188090	04/29/15 17:02	EKK	TAL SEA Lab Sample ID: 230-467-3 Matrix: Water
Total/NA Total/NA Client Sampl Date Collected: Date Received:	Prep Analysis le ID: 15-AR : 04/21/15 14:1 : 04/22/15 15:0	3510C AK102 & 103 REPL-4GMW-14	4-GW	1	188080	04/29/15 17:02	EKK	TAL SEA Lab Sample ID: 230-467-3 Matrix: Water
Total/NA Total/NA Client Sampl Date Collected: Date Received:	Prep Analysis le ID: 15-AR : 04/21/15 14:1 : 04/22/15 15:0 Batch	3510C AK102 & 103 EPL-4GMW-14 I5 00 Batch	1-GW	1 Dilution	188080 188090 Batch	04/28/15 17:02 04/29/15 19:33 Prepared	EKK	TAL SEA Lab Sample ID: 230-467-3 Matrix: Water
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type	Prep Analysis le ID: 15-AR : 04/21/15 14:1 : 04/22/15 15:0 Batch Type	3510C AK102 & 103 EPL-4GMW-14 5 00 Batch Method	1-GW	1 Dilution Factor	188080 188090 Batch Number	04/28/15 17:02 04/29/15 19:33 Prepared or Analyzed	Analyst	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA	Prep Analysis le ID: 15-AR : 04/21/15 14:1 : 04/22/15 15:0 Batch Type Analysis	3510C AK102 & 103 REPL-4GMW-14 5 00 Batch Method 8260B	1-GW	1 Dilution Factor 1	188080 188090 Batch Number 188125	Prepared or Analyzed 04/29/15 20:53	Analyst TL1	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA	Prep Analysis le ID: 15-AR : 04/21/15 14:1 : 04/22/15 15:0 Batch Type Analysis Analysis	3510C AK102 & 103 CEPL-4GMW-14 5 00 Batch Batch 8260B AK101	1-GW	1 Dilution Factor 1 1	188080 188090 Batch Number 188125 188437	Prepared or Analyzed 04/29/15 20:53 05/02/15 17:21	Analyst TL1 TL1	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water - Lab TAL SEA TAL SEA
Total/NA Total/NA Client Sampl Pate Collected: Prep Type Total/NA Total/NA Total/NA	Prep Analysis	3510C AK102 & 103 EPL-4GMW-14 5 00 Batch 8260B AK101 3510C	4-GW	1 Dilution Factor 1 1	188080 188090 Batch Number 188125 188437 188080	Prepared or Analyzed 04/29/15 19:33 of Analyzed 04/29/15 20:53 05/02/15 17:21 04/28/15 17:02	Analyst TL1 TL1 RBL	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water - Lab TAL SEA TAL SEA TAL SEA
Total/NA Total/NA Client Sampl Date Collected: Date Received: Date Received: Total/NA Total/NA Total/NA	Prep Analysis le ID: 15-AR : 04/21/15 14:1 04/22/15 15:0 Batch Type Analysis Prep Analysis	3510C AK102 & 103 EPL-4GMW-14 5 00 Batch Method 8260B AK101 3510C AK102 & 103	1-GW	1 Dilution Factor 1 1 1	188080 188090 Batch Number 188125 188437 188080 188090	Prepared or Analyzed 04/29/15 19:33 04/29/15 19:33 04/29/15 20:53 05/02/15 17:21 04/28/15 17:02 04/29/15 19:51	Analyst TL1 TL1 RBL EKK	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water - Lab TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA Total/NA Total/NA	Prep Analysis le ID: 15-AR : 04/21/15 14:1 : 04/22/15 15:0 Batch Type Analysis Prep Analysis Prep Analysis	3510C AK102 & 103 EPL-4GMW-14 5 0 Batch Method 8260B AK101 3510C AK102 & 103 EPL-MW-B-3-6	4-GW	1 Dilution Factor 1 1 1	188080 188090 Batch Number 188125 188437 188080 188090	Prepared or Analyzed 04/29/15 19:33 04/29/15 19:33 04/29/15 20:53 05/02/15 17:21 04/28/15 17:02 04/29/15 19:51	Analyst TL1 TL1 RBL EKK	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water - Lab TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA
Total/NA Total/NA Client Sampl Date Collected: Date Received: Date Received: Total/NA Total/NA Total/NA Total/NA Client Sampl	Prep Analysis le ID: 15-AR : 04/21/15 14:1 04/22/15 15:0 Batch Type Analysis Prep Analysis Prep Analysis Prep Analysis	3510C AK102 & 103 EPL-4GMW-14 5 00 Batch Method 8260B AK101 3510C AK102 & 103 EPL-MW-B-3-0	1-GW	1 Dilution Factor 1 1 1	188080 188090 Batch Number 188125 188437 188080 188090	Prepared or Analyzed 04/29/15 19:33 04/29/15 19:33 04/29/15 20:53 05/02/15 17:21 04/28/15 17:02 04/29/15 19:51	Analyst TL1 TL1 RBL EKK	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water - Lab TAL SEA TAL SEA
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA Total/NA Total/NA Client Sampl Date Collected: Date Received:	Prep Analysis le ID: 15-AR : 04/21/15 14:1 : 04/22/15 15:0 Batch Type Analysis Prep Analysis Prep Analysis le ID: 15-AR : 04/21/15 11:4 : 04/22/15 15:0	3510C AK102 & 103 REPL-4GMW-14 5 00 Batch Method 8260B AK101 3510C AK102 & 103 REPL-MW-B-3-0 15	4-GW	1 Dilution Factor 1 1 1	188080 188090 Batch Number 188125 188437 188080 188090	Prepared or Analyzed 04/29/15 19:33 04/29/15 19:33 04/29/15 20:53 05/02/15 17:21 04/28/15 17:02 04/29/15 19:51	Analyst TL1 TL1 RBL EKK	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water TAL SEA TAL SEA
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA Total/NA Client Sampl Date Collected: Date Received:	Prep Analysis le ID: 15-AR : 04/21/15 14:1 : 04/22/15 15:0 Batch Type Analysis Analysis Prep Analysis le ID: 15-AR : 04/21/15 11:4 : 04/22/15 15:0 Batch	3510C AK102 & 103 EPL-4GMW-14 5 00 Batch Method 8260B AK101 3510C AK102 & 103 EPL-MW-B-3-0 5 00 Batch	4-GW	1 Dilution Factor 1 1 1 1 Dilution	188080 188090 Batch Number 188125 188437 188080 188090 188090 Batch	Prepared or Analyzed 04/29/15 19:33 04/29/15 19:33 05/02/15 20:53 05/02/15 17:21 04/28/15 17:02 04/29/15 19:51 Prepared	Analyst TL1 TL1 RBL EKK	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water - Lab TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type	Prep Analysis le ID: 15-AR : 04/21/15 14:1 : 04/22/15 15:0 Batch Type Analysis Prep Analysis Prep Analysis Prep Analysis Ie ID: 15-AR : 04/21/15 11:4 : 04/22/15 15:0 Batch Type	3510C AK102 & 103 EPL-4GMW-14 5 00 Batch Method 3510C AK101 3510C AK102 & 103 EPL-MW-B-3-0 I5 00 Batch Method	4-GW Run	1 Dilution Factor 1 1 1 1 Dilution Factor	188080 188090 Batch Number 188125 188437 188080 188090 188090 Batch Number	Prepared 04/29/15 19:33 04/29/15 19:33 04/29/15 20:53 05/02/15 17:21 04/29/15 17:02 04/29/15 19:51 Prepared or Analyzed	Analyst TL1 TL1 RBL EKK Analyst	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water Matrix: Water TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA Lab Sample ID: 230-467-4 Matrix: Water Lab
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA Total/NA Client Sampl Date Collected: Date Received: Date Received: Dat	Prep Analysis le ID: 15-AR : 04/21/15 14:1 04/22/15 15:0 Batch Type Analysis Prep Analysis Prep Analysis le ID: 15-AR : 04/21/15 11:4 04/22/15 15:0 Batch Type Analysis	3510C AK102 & 103 EPL-4GMW-14 5 00 Batch Method 8260B AK101 3510C AK102 & 103 EPL-MW-B-3-0 5 00 Batch Method 8260C	4-GW Run GW Run	1 Dilution Factor 1 1 1 1 1 Dilution Factor 1	188080 188090 Batch Number 188125 188437 188080 188090 188090 Batch Number 188126	04/28/15 17:02 04/29/15 19:33 Prepared or Analyzed 04/29/15 20:53 05/02/15 17:21 04/29/15 17:02 04/29/15 19:51 Prepared or Analyzed 04/29/15 19:51	Analyst TL1 TL1 RBL EKK Analyst TL1	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water - Lab TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA - Lab Sample ID: 230-467-4 Matrix: Water
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA Total/NA Cotal/NA Collected: Date Collected: Date Received: Date Receiv	Prep Analysis le ID: 15-AR : 04/21/15 14:1 04/22/15 15:0 Batch Type Analysis Prep Analysis le ID: 15-AR : 04/21/15 11:4 : 04/22/15 15:0 Batch Type Analysis Analysis Analysis	3510C AK102 & 103 EPL-4GMW-14 5 0 Batch Method 3510C AK101 3510C AK102 & 103 EPL-MW-B-3-C 5 0 Batch Method 8260C 8260C 8260C	A-GW Run GW Run Run RA	1 Dilution Factor 1 1 1 1 1 1 1 1 1 1 1 1 1	188080 188090 Batch Number 188125 188437 188080 188090 188090 Batch Number 188126 188362	Prepared or Analyzed 04/29/15 19:33 04/29/15 19:33 05/02/15 17:21 04/29/15 17:21 04/29/15 17:22 04/29/15 19:51 Prepared or Analyzed 04/29/15 21:20 05/01/15 18:23	Analyst TL1 TL1 RBL EKK Analyst TL1 TL1 TL1	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water Matrix: Water - Lab TAL SEA TAL SEA TAL SEA Lab Sample ID: 230-467-4 Matrix: Water - Lab TAL SEA TAL SEA
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA Total/NA	Prep Analysis le ID: 15-AR : 04/21/15 14:1 04/22/15 15:0 Batch Type Analysis Prep Analysis Prep Analysis le ID: 15-AR : 04/21/15 11:4 04/22/15 15:0 Batch Type Analysis Analysis	3510C AK102 & 103 EPL-4GMW-14 5 0 Batch Method 3510C AK101 3510C AK102 & 103 EPL-MW-B-3-C 15 0 Batch Method 8260C 8260C 8260C	4-GW Run GW Run RA	1 Dilution Factor 1 1 1 1 1 1 Dilution Factor 1 1	188080 188090 Batch Number 188125 188437 188080 188090 188090 Batch Number 188126 188362	Prepared of/29/15 04/29/15 19:33 04/29/15 04/29/15 05/02/15 04/29/15 04/29/15 04/29/15 04/29/15 04/29/15 04/29/15 04/29/15 04/29/15 04/29/15 04/29/15 05/01/15 05/01/15 05/01/15 18:23	Analyst TL1 TL1 RBL EKK Analyst TL1 TL1 TL1 TL1	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water - Lab TAL SEA TAL SEA TAL SEA TAL SEA Lab Sample ID: 230-467-4 Matrix: Water - Lab TAL SEA TAL SEA TAL SEA
Total/NA Total/NA Client Sampl Date Collected: Date Received: Prep Type Total/NA Total/NA Total/NA Client Sampl Date Collected: Date Received: Date Received: Dat	Prep Analysis le ID: 15-AR : 04/21/15 14:1 04/22/15 15:0 Batch Type Analysis Prep Analysis Prep Analysis le ID: 15-AR : 04/21/15 11:4 04/22/15 15:0 Batch Type Analysis Analysis le ID: 15-AR	3510C AK102 & 103 EPL-4GMW-14 5 00 Batch Method 3510C AK101 3510C AK102 & 103 EPL-MW-B-3-0 5 00 Batch Method 8260C 8260C 8260C	A-GW Run Run Run Ra S-GW	1 Dilution Factor 1 1 1 1 1 1 Dilution Factor 1 1	188080 188090 Batch Number 188125 188437 188080 188090 188090 Batch Number 188126 188362	Prepared or Analyzed 04/29/15 19:33 04/29/15 19:33 05/02/15 17:21 04/29/15 17:21 04/29/15 17:22 04/29/15 19:51 Prepared or Analyzed 04/29/15 21:20 05/01/15 18:23	Analyst TL1 TL1 RBL EKK Analyst TL1 TL1 TL1	TAL SEA TAL SEA Lab Sample ID: 230-467-3 Matrix: Water - Lab TAL SEA TAL SEA TAL SEA TAL SEA TAL SEA Lab Sample ID: 230-467-4 Matrix: Water Lab Sample ID: 230-467-5

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	188125	04/29/15 21:46	TL1	TAL SEA
Total/NA	Analysis	AK101		1	188437	05/02/15 17:48	TL1	TAL SEA
Total/NA	Prep	3510C			188080	04/28/15 17:02	RBL	TAL SEA
Total/NA	Analysis	AK102 & 103		1	188090	04/29/15 20:09	EKK	TAL SEA

Client Sample ID: 15-AREPL-TB

Lab Sample ID: 230-467-6

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Date Collected Date Received:	: 04/21/15 12:(: 04/22/15 15:()0)0							Matrix: Wate
Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260C			188126	04/29/15 19:33	TL1	TAL SEA	
Total/NA	Analysis	AK101		1	188124	04/29/15 19:33	TL1	TAL SEA	
Client Samp	le ID: 15-AF	EPL-MW-28-G	W					Lab Sam	ole ID: 230-467-
Date Collected Date Received:	: 04/22/15 11:2 : 04/22/15 15:0	25)0							Matrix: Wate
_	Batch	Batch		Dilution	Batch	Prepared			
Ргер Туре	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260B		1	188125	04/29/15 17:46	TL1	TAL SEA	
Total/NA	Analysis	AK101		1	188124	04/29/15 17:46	TL1	TAL SEA	
Total/NA	Prep	3510C			188080	04/28/15 17:02	RBL	TAL SEA	
Total/NA	Analysis	AK102 & 103		1	188090	04/29/15 20:27	EKK	TAL SEA	
Client Samp	le ID: 15-AF	REPL-AKRRMV	V-22-GW					Lab Sam	ole ID: 230-467-
Date Collected	: 04/22/15 09: : 04/22/15 15:0	50)0							Matrix: Wate
_	Batch	Batch		Dilution	Batch	Prepared			
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260C		1	188126	04/29/15 22:13	TL1	TAL SEA	
Total/NA	Analysis	8260C	RA	1	188362	05/01/15 18:49	TL1	TAL SEA	
Client Samp Date Collected Date Received:	le ID: 15-AF : 04/22/15 10:2 : 04/22/15 15:0	REPL-AKRRMV 25 00	V-220-GW					Lab Sam	ole ID: 230-467- Matrix: Wate
_	Batch	Batch		Dilution	Batch	Prepared			
	_		_						

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	188126	04/29/15 22:40	TL1	TAL SEA
Total/NA	Analysis	8260C	RA	1	188362	05/01/15 19:16	TL1	TAL SEA

Client Sample ID: 15-AREPL-AKRRMW-245-GW Date Collected: 04/22/15 10:40 Date Received: 04/22/15 15:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	188126	04/29/15 23:06	TL1	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Lab Sample ID: 230-467-10

Matrix: Water

EPA Region

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Certification ID

AK00975

UST-067

Laboratory: TestAmerica Anchorage The certifications listed below are applicable to this report.

Expiration Date

06-30-15

06-16-15

1 2 3 4 5 6 7 8 9 10 11 12 13 13 14

Alaska (UST) State Program

Authority

Alaska

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Program

State Program

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-02-16
California	State Program	9	2901	01-31-17
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-15
US Fish & Wildlife	Federal		LE192332-0	02-28-16
USDA	Federal		P330-11-00222	04-08-17
Washington	State Program	10	C553	02-17-16

Method Summary

Client: Ahtna Engineering Services LLC Project/Site: AK Real Estate

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Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SEA
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SEA
AK101	Alaska - Gasoline Range Organics (GC/MS)	ADEC	TAL SEA
AK102 & 103	Alaska - Diesel Range Organics & Residual Range Organics (GC)	ADEC	TAL SEA

Protocol References:

ADEC = Alaska Department of Environmental Conservation

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Sample Summary

Matrix

Water

Client: Ahtna Engineering Services LLC Project/Site: AK Real Estate

Client Sample ID

15-AREPL-TB

15-AREPL-4GMW-13-GW

15-AREPL-4GMW-16-GW

15-AREPL-4GMW-14-GW

15-AREPL-4GMW-15-GW

15-AREPL-AKRRMW-22-GW

15-AREPL-AKRRMW-220-GW

15-AREPL-AKRRMW-245-GW

15-AREPL-MW-B-3-GW

15-AREPL-MW-28-GW

Lab Sample ID

230-467-1

230-467-2

230-467-3

230-467-4

230-467-5

230-467-6

230-467-7

230-467-8

230-467-9

230-467-10

TestAmerica Job ID: 230-467-1

Received

04/22/15 15:00

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04/22/15 15:00

04/22/15 15:00

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04/22/15 15:00

04/22/15 15:00

04/22/15 15:00

Collected

04/21/15 10:15

04/21/15 10:40

04/21/15 14:15

04/21/15 11:45

04/21/15 13:05

04/21/15 12:00

04/22/15 11:25

04/22/15 09:50

04/22/15 10:25

04/22/15 10:40

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TestAmerica	
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THE LEADER IN ENVIRONMENTAL TESTING	
	CHAIN OF CUSTODY REPORT

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FAX 924-9290 FAX 906-9210 FAX 563-9210

509-924-9200 503-906-9200 907-563-9200

		Ŭ	CHAIN O	F CUSTO	DY REPORT		Work Order	-#: 230-467	
CLIENT: Abtra Encirering			INVOICE TO	2. ALI			TUR	NAROUND REQUES	5
REPORT TO: A Alex Cellich ageilich and in	ک م			rintra	Englacer ng			in Business Days *	
ADDRESS: 110 W 35 th Ave Suite 200A								ic & Inorganic Analyses	7
PHONE: 427 646 2469 FAX:			P.O. NUMBE	R: 20266	.008.01.05		STD: Petro	eum Hydrocarbon Analyses]
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5 to 11 51/12/12 M9-2-9-MW-70 BXY-51 *		\times					W 3		ЪО
=15-ARER-45-64-15-64 4/21/15 1305	х Х		×				N N		05
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715-AREPL-MW-28-6W 41/22/15 1125	x X		4				N S		67
* 15-AKER-AKRR MN-22-6W 4/22/12 0950		×					W 3		08
,15-ARER_AKR MW-220-6W 4/22/15 1025		×					W 3		01
015-AREPL PAKRAMW-245-6W 4/22/15 1046		\times					W 3		10
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Page 38 of 42

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Client: Ahtna Engineering Services LLC

Login Number: 467 List Number: 1

Creator: Pilch, Andrew C

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.4 C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Number: 230-467-1

List Source: TestAmerica Anchorage

Client: Ahtna Engineering Services LLC

Login Number: 467 List Number: 2 Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.2°C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	False	Preservation labels on samples match COC
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

List Source: TestAmerica Seattle

List Creation: 04/24/15 12:46 PM

Client: Ahtna Engineering Services LLC

Login Number: 467 List Number: 3 Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.2°C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Number: 230-467-1

List Source: TestAmerica Seattle

List Creation: 04/24/15 12:56 PM

ATTACHMENT D

DATA QUALITY REVIEW CHECKLIST

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DATA QUALITY REVIEW SUMMARY

Date:	May 26, 2015
Project:	Alaska Real Estate 2015 Sampling Activities
Laboratory:	TestAmerica, Inc.
Work Order:	230-467-1
Analysis:	AK102/103, AK101, 8260B

Reviewer Name:	Emily Freitas
Reviewer Title:	Project Chemist

INTRODUCTION

Table 1 lists the field sample numbers, corresponding laboratory numbers, requested analyses, and identifies quality control (QC) samples.

Field Sample ID	Lab Sample ID	Analyses Dequested	Quality Control
Field Sample ID	Sample ID	Analyses Requested	Quanty Control
15-AREPL-4GMW-13-GW	230-467-1	GRO, BTEX, DRO	
15-AREPL-4GMW-16-GW	230-467-2	GRO, BTEX, DRO	
15-AREPL-4GMW-14-GW	230-467-3	GRO, BTEX, DRO	
15-AREPL-MW-B-3-GW	230-467-4	VOC	
15-AREPL-4GMW-15-GW	230-467-5	GRO, BTEX, DRO	
15-AREPL-TB	230-467-6	GRO, BTEX, VOC	Trip Blank
15-AREPL-MW-28-GW	230-467-7	GRO, BTEX, DRO	
15-AREPL-AKRRMW-22-GW	230-467-8	VOC	
15-AREPL-AKRRMW-220-GW	230-467-9	VOC	
15-AREPL-AKRRMW-245-GW	230-467-10	VOC	

TABLE 1: WORK ORDER OVERVIEW

Key:

DRO diesel-range organics

GRO gasoline range organics

BTEX benzene, toluene, ethylbenzene, xylenes

DATA QUALIFIER DEFINITIONS

For the purpose of this data quality review (DQR), the following code letters and associated definitions are provided for use by the project chemist to summarize the data quality.

VOC

volatile organic compounds

- R Reported value is "rejected." Resampling or reanalysis may be necessary to verify the presence or absence of the compound.
- Q Analyte result is considered an estimated value with uncertain bias due to a QC failure. "QL" indicates a low bias and "QH" indicates a high bias.

- J Analyte result is considered an estimated value because the level is below the laboratory limit of quantitation (LOQ) but above the DL (detection limit).
- B Method blank associated with the analyte result contained a detection above the method detection limit.

DATA REVIEW

This DQR follows the guidelines as provided in the Alaska Department of Environmental Conservation (ADEC) Technical Memorandum *Environmental Laboratory Data and Quality Assurance Requirements* (2009) and includes a review, where appropriate, of the following parameters:

- Data completeness
- Chain of Custody (CoC) and Cooler Receipt Forms
- Holding times and preservation
- Analytical reporting limits (RL) and method detection limits (MDL)
- Blank analysis results
- Surrogate recoveries (organics only)
- Field duplicates
- Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
- Matrix spike (MS) and matrix spike duplicate (MSD) results

Each analysis that was performed is evaluated in the following subsections of this report, and only the criteria exceedances that impact data qualification or require assessment beyond laboratory documentation are discussed.

The data review for this DQR was conducted in accordance with the

- USEPA document "Test Methods for Evaluating Solid Wastes, SW-846, revision 6" (February, 2007 and updates),
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic (October, 1994) and Organic (October, 1999) Review,

Sample Receipt Conditions

Samples were submitted to TestAmerica in Anchorage, AK. Ten groundwater samples, including one trip blank, were submitted in one cooler under intact custody seals in one laboratory batch on April 22, 2015. Samples were transferred from TestAmerica Anchorage to TestAmerica Seattle in Tacoma, WA. The samples are reported under TestAmerica work order 230-467-1. All samples were received with proper preservation and in good condition but just outside the ADEC's recommended temperatures of $4\pm2^{\circ}$ C at 1.4° C in Anchorage and 1.2° C in Tacoma.

Holding Times and Preservatives

Holding time and preservative criteria were met and no qualifications were made based on these parameters.

Precision

Field Duplicates

Precision was assessed by calculating the relative percent differences (RPD) between the primary and duplicate field samples, the laboratory control samples (LCS), and the matrix spike (MS) samples. The RPD for LCS and MS were calculated and reported by the laboratory.

Sample 15-AREPL-AKRRMW-22-GW was collected as a duplicate of 15-AREPL-AKRRMW-220-GW. Sample 15-AREPL-4GMW-16-GW was collected as a duplicate of 15-AREPL-4GMW-13-GW. This meets the data quality objective (DQO) of 10% for samples.

Sample RPDs are calculated between field duplicate and primary sample results to assess sources of variability arising from the field sampling protocol and distribution of the target analytes within the sample matrix. RPDs were calculated for the primary and duplicate field samples when both results are detected above the reporting limit using the following equation.

$$\left[\frac{(R_1 - R_2)}{(R_1 + R_2)}\right] X \ 100$$

Where R_1 = Sample Concentration and R_2 = Field Duplicate Concentration

RPDs for samples and associated duplicates can be viewed in Table 2 below.

IADLE 2. NI D FUK FIELD DUPLICATES	TABLE 2:	RPD FOR	FIELD	DUPLICATES
------------------------------------	----------	----------------	-------	------------

		15-AREPL-AKRRMW- 220-GW	15-AREPL-AKRRMW- 22-GW	RPD	
Analyte	Units	Primary	Duplicate	≤30%	Flag
Dichlorodifluoromethane	ug/L	2.7	2.6	4	
Isopropylbenzene	ug/L	6.6	6.5	2	
n-Propylbenznene	ug/L	11	11	0	
1,2,4-Trimethylbenzene	ug/L	5.1	4.8	6	
sec-Butylbenzene	ug/L	5.6	5.5	2	
4-Isopropyltoluene	ug/L	4.2	4.0	5	
n-Butylbenzene	ug/L	7.3	7.1	3	
Naphthalene	ug/L	32	30	6	
		15-AREPL-4GMW-13- CW	15-AREPL-4GMW-16- CW	DDD	
Analyte	Units	Primary	Duplicate	$\leq 30\%$	Flag
GRO	mg/L	0.17	0.13	27	
DRO	mg/L	1.6	1.2	29	

Key:

GRO gasoline-range organics

DRO diesel-range organics ug/L micrograms per liter mg/L

RPD relative percent difference milligrams per litere

No RPDs between the primary and duplicate samples were above the recommended limits therefore no qualifications were made based on this.

Laboratory Control Samples/Duplicates and Matrix Spike/Duplicates

The LCS/LCSD RPDs were within control limits.

All MS/MSD RPDs were within control limits.

Accuracy

Laboratory Control Samples/Duplicates and Matrix Spike/Duplicates and Internal Standards

In LCS 580-188126/5, Bromodichloromethane was recovered above control limits. No qualifications were made based on this because no associated analytes were detected.

MSD 230-467-7 was recovered below control limits for GRO. A qualifier of "QL" was applied to the GRO result for sample 230-476-7 to indicate a low bias due to a failed MSD recovery.

Surrogate Percent Recoveries

All surrogate percent recoveries were within the established control limits. No qualifications were made based on this.

Representativeness

All samples were collected using standardized sampling methods in accordance with the work plans. Samples collected are considered representative of soil conditions and meet DQOs discussed in the work plan.

Comparability

Samples in this work order were analyzed at the TestAmerica laboratory in Anchorage, Alaska. The results, methods, procedures, quantitation units and data presentation format of the work order are comparable in quality and data validity.

Completeness

All data necessary to complete a level II data validation on this work order was provided. No samples were rejected therefore, the data are considered 100% complete and usable. This exceeds the 85% minimum completeness goal suggested by ADEC.

Sensitivity

All results are evaluated to the method reporting limits. No reporting limits were adjusted for dilutions. No qualifications were made based on reporting limits exceeding the applicable ADEC site groundwater cleanup levels.

One trip blank was submitted within this work order. No analytes were detected above the reporting limit in the trip blank.

The method blanks (MB) were analyzed at the required frequencies of one per matrix, analysis, and 20 samples. No analytes were detected in the method blanks. The continuing calibration verification (CCV) recovery for batches 188126 and 188124 were recovered above control limits for multiple analytes. All associated sample analytes were non-detect therefore, data usability was not considered impacted.

OVERALL ASSESSMENT

Based on the review completed on the one laboratory work order data, all data are considered usable for the purpose of evaluating the presence or absence and magnitude of the suspected site contaminants. One sample, 15-AREPL-MW-28-GW, contains a qualifier of "QL" on the GRO result due to failed accuracy criteria. The ADEC checklist associated with this work order is attached.

Laboratory Data Review Checklist

Completed by: Emily Freitas				
Title: Date: 5/26/2015				
CS Report Name: Technical Memo Report Date: 5/4/2015				
Consultant Firm: Ahtna Engineering Services LLC				
Laboratory Name: Test America Anchorage Laboratory Report Number: 230-467-1				
ADEC File Number: ADEC RecKey Number:				
 Laboratory Laboratory				
Test America Anchorage and TestAmerica Seattle are ADEC approved laboratories.				
 b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved? Yes No NA (Please explain.) 				
Samples were transferred from TestAmerica Anchorage to Test America Seattle.				
 2. <u>Chain of Custody (COC)</u> a. COC information completed, signed, and dated (including released/received by)? ∑Yes ∑ No ∑NA (Please explain.) Comments: 				
COC information was completed correctly.				
b. Correct analyses requested? Xes No NA (Please explain.) Comments:				
Correct analyses were requested				
 3. <u>Laboratory Sample Receipt Documentation</u> a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)? □Yes ⋈ No □NA (Please explain.) Comments: 				
Samples were received at TestAmerica Anchorage with a cooler temperature of 1.4°C and 1.2°C at TestAmerica Seattle.				

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

Version 2.7

	Yes No NA (Please explain.) Comments:
	c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
	Sample condition documented. There were no errors in sample 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 NA (Please explain.)
	The coolers were received outside the acceptable temperature range
	e. Data quality or usability affected? (Please explain.) Comments:
	Data quality or usability would have potentially been impacted by the unacceptable temperature upon sample receipt. The temperature range for sample preservation is generally established to maintain groundwater in a condidition that would minimize the loss of volatile compounds from the water, and minimize the potential loss of contaminants through biodegradation, as low temperatures are documented to diminish or mitigate these factors. The lack of ice on the samples at receipt confirmed no additional moisture was present and biodegradation was unlikely to have occurred as a result of the lower temperature.
. <u>Ca</u>	<u>se Narrative</u> a. Present and understandable? ∑Yes ☐ No ☐NA (Please explain.) Comments:
	 b. Discrepancies, errors or QC failures identified by the lab? Yes No NA (Please explain.) Comments:
	QC errors were identified by the lab.
	c. Were all corrective actions documented? Xes No NA (Please explain.) Comments:
	All corrective actions were documented. Where corrective actions were not necessary, laboratory actions of reporting data were documented.
	d. What is the effect on data quality/usability according to the case narrative? Comments:
	Data usability was not affected by the case narrative.
5. <u>Saı</u>	a. Correct analyses performed/reported as requested on COC?

Yes	No NA (Please explain.)	Comments:
b. All applica ⊠Yes	ble holding times met?	Comments:
All applicable	le holding times were met.	
c. All soils re	eported on a dry weight basis?	Comments:
No soil samp	bles were submitted within this work order.	
d. Are the rep project?	ported PQLs less than the Cleanup Level or	the minimum required detection level for th
⊠Yes	No NA (Please explain.)	Comments:
e. Data qualit	ty or usability affected?	Comments:
Data quality	or usability was not affected by the sample	e results reported.
C Samples		
<u>C Samples</u> a. Method Bl i. On ⊠Yes	ank e method blank reported per matrix, analys No NA (Please explain.)	is and 20 samples? Comments:
<u>C Samples</u> a. Method Bl i. On ⊠Yes ii. All ⊠Yes	ank e method blank reported per matrix, analys No NA (Please explain.) method blank results less than PQL? No NA (Please explain.)	is and 20 samples? Comments: Comments:
C Samples a. Method Bl i. On ⊠Yes ii. All ⊠Yes Method blan verification(C for multiple a	ank e method blank reported per matrix, analys No NA (Please explain.) method blank results less than PQL? No NA (Please explain.) ks did not contain detections above the rep CCV) recovery for batches 188126 and 188 malytes.	is and 20 samples? Comments: Comments: orting limits. The continuing calibration 2124 were recovered above control limits
C Samples a. Method Bl i. On ⊠Yes ii. All ⊠Yes Method blan verification(C for multiple a iii. If a	ank e method blank reported per matrix, analys No NA (Please explain.) method blank results less than PQL? No NA (Please explain.) ks did not contain detections above the rep CCV) recovery for batches 188126 and 188 malytes.	is and 20 samples? Comments: Comments: orting limits. The continuing calibration 0124 were recovered above control limits Comments:
C Samples a. Method Bl i. On ⊠Yes ii. All ⊠Yes Method blan verification(C for multiple a iii. If a No sample re	ank e method blank reported per matrix, analys D No NA (Please explain.) method blank results less than PQL? No NA (Please explain.) ks did not contain detections above the rep CCV) recovery for batches 188126 and 188 malytes. bove PQL, what samples are affected? esults were affected. Detections were below	is and 20 samples? Comments: Comments: orting limits. The continuing calibration 2124 were recovered above control limits Comments: v the recommended limits.
C Samples a. Method Bl i. On ⊠Yes ii. All ⊠Yes Method blan verification(C for multiple a iii. If a No sample re iv. Do ⊠Yes	ank e method blank reported per matrix, analys No NA (Please explain.) method blank results less than PQL? No NA (Please explain.) ks did not contain detections above the rep CCV) recovery for batches 188126 and 188 malytes. bove PQL, what samples are affected? esults were affected. Detections were below the affected sample(s) have data flags and No NA (Please explain.)	is and 20 samples? Comments: Comments: orting limits. The continuing calibration 0124 were recovered above control limits Comments: v the recommended limits. if so, are the data flags clearly defined? Comments:
C Samples a. Method Bl i. On ⊠Yes ii. All ⊠Yes Method blan verification(C for multiple a iii. If a No sample re iv. Do ⊠Yes No data flags	ank e method blank reported per matrix, analys DNA (Please explain.) method blank results less than PQL? No DNA (Please explain.) ks did not contain detections above the rep CCV) recovery for batches 188126 and 188 malytes. bove PQL, what samples are affected? esults were affected. Detections were below the affected sample(s) have data flags and No DNA (Please explain.) s were applied based on method blank dete	is and 20 samples? Comments: Comments: orting limits. The continuing calibration of 24 were recovered above control limits Comments: w the recommended limits. if so, are the data flags clearly defined? Comments: ctions or CCV results.

6.

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

Comments:

Data usability is not affected

- b. Laboratory Control Sample/Duplicate (LCS/LCSD)
 - Organics One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
 Yes No NA (Please explain.)

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

Yes No NA (Please explain.)

Comments:

No metals or inorganic analyses were requested.

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

MSD 230-467-7 was recovered below control limits for GRO. All additional %R's were within recommended limits.In LCS 580-188126/5, Bromodichloromethane was recovered above control limits.

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

All RPDs were within established control limits.

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

A qualifier of "QL" was placed on the GRO result for sample 230-467-7 due to a low MSD recovery. No samples were affected by the high LCS recovery because no associated samples contained detetions above the reporting limit.

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

The affected sample was flagged "QL" indicating that it is biased. This information can be viewed in the report.

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

Sample results were sensitive and accurate enough to accomplish the project objectives.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples? \forall Yes \Box No \Box NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

 \bigtriangledown Yes \square No \square NA (Please explain.) Comments:

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

 \bigvee Yes \square No \square NA (Please explain.)

Comments:

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

Data quality was not affected by surrogate results.

- 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.)

 \forall Yes \Box No \Box NA (Please explain.) Comments:

One groundwater trip blank was submitted.

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) Comments:

 \bigtriangledown Yes \square No \square NA (Please explain.)

The trip blank was transported in the cooler with the samples.

iii. All results less than PQL?

Yes No NA (Please explain.)	Comments:
iv. If above PQL, what samples are affected?	Comments:
v. Data quality or usability affected? (Please exp	lain.) Comments:
Data quality was not affected by the trip blank.	
e. Field Duplicate	
i. One field duplicate submitted per matrix, analy Yes No NA (Please explain.)	ysis and 10 project samples? Comments:
Ten samples were submitted within this SDG including AREPL-AKRRMW-220-GW was submitted with duplic Primary sample 15-AREPL-4GMW-13-GW was submit GW.	two duplicate pairs. Primary sample 15- cate 15-AREPL-AKRRMW-22-GW. tted with duplicate 15-AREPL-4GMW-16-
ii. Submitted blind to lab? ⊠Yes □ No □NA (Please explain.)	Comments:
iii. Precision – All relative percent differences (R) (Recommended: 30% water, 50% soil)	PD) less than specified DQOs?
RPD (%) = Absolute value of: (R_1-R_2)	100
$((R_1+R_2)/2)$ Where R_1 = Sample Concentration R_2 = Field Duplicate Concentration \square Yes \square No \square NA (Please explain.)	Comments:
iv. Data quality or usability affected? (Use the con	mment box to explain why or why not.) Comments:
All results were below the recommended RPD levels an	d therefore, no qualifications were made.

f. Decontamination or Equipment Blank (If not used explain why).

No equipment blank necessary. Disposable equipment was used.

	\Box Yes \Box No \Box NA (Please explain.)	Comments:
	 All results less than PQL? ∑Yes □ No □NA (Please explain.) 	Comments:
	ii. If above PQL, what samples are affected?	
		Comments:
NA.		
	iii. Data quality or usability affected? (Please e	explain.)
		Comments:
No.		
<u>Other Dat</u> a. De	ta Flags/Qualifiers (ACOE, AFCEE, Lab Specifi efined and appropriate?	<u>c, etc.)</u>
	⊠Yes ∐ No ∐NA (Please explain.)	Comments:
Lab-sp in the c	pecific qualifiers identifying the nature of the san case narrative. Additional qualifiers have been de	pples and laboratory QC errors are defined fined in the report and analytical tables.

7.

ATTACHMENT E

GROUNDWATER GRADIENT AND DIRECTION CALCULATIONS

(on accompanying CD only)

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