

September 5, 2019

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RESTORATION

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Subject: Report for Groundwater Sampling at Tesoro-Olson Gas Service #2 (Former)
854 East 36th Ave., Anchorage, AK 99503. ADEC File # 2100.26.073

Ms. Passmore:

Restoration Science & Engineering, LLC (RSE) is providing the following report for groundwater sampling of five monitoring wells at the former Tesoro-Olson Gas Service #2 located at 854 East 36th Ave., Anchorage, AK 99503. The site location is shown in Figure 1 of Attachment A. This site is listed under file 2100.26.073 in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database. The work described in this report was conducted over a single field day on July 26, 2019. The primary source area was removed in 1995, with the exception of potential impacted soil remaining underneath the building foundation. Concentrations have attenuated significantly since 1995 with nominal exceedances reported in 2019 that are not believed to pose a threat to human health or the environment based upon the use of the property as a parking lot and van storage facility. As no further remedial action is possible without removal of the building, RSE requests this site be moved into closure with institutional controls.

SITE OVERVIEW

The Former Olson's Gas Service #2 is located at Lot 19, Block 1, Central City Subdivision. The fuel service business stopped operations in March 1995, after an onsite underground storage tank (UST) failed a tank tightness test. Several businesses have occupied the site since the closure of the fuel service station. The property was most recently operated as Alaska Car & Van Rentals and is owned by the Shageluk regional native corporation, Zho-Tse, Inc.

The site was initially investigated in the fall of 1987 after a suspected petroleum release. Three monitoring wells (B1MW, B2MW, B3MW) were installed onsite in 1992 and analytical results revealed evidence of subsurface hydrocarbon impacts in the vicinity of the USTs and dispenser island. In July 1995, three USTs (two 12,000-gallon unleaded gasoline tanks and one 2,000-gallon diesel tank) and the two associated dispenser islands were removed (GE&ET, 1995a). During UST removal, additional petroleum hydrocarbon contamination was discovered, and an oil and hazardous materials incident notification was sent to ADEC that day. Loose fitting joints appeared

to be the source of the contamination. In addition to the UST system, 800 tons of contaminated soil was removed for offsite treatment. Areas of soil were not accessible for removal due to proximity to the building foundation. (GE&ET, 1995a).

Three additional monitoring wells consisting of one onsite well (G5), and two offsite wells (G4 and G6) were installed in September of 1995 (GE&ET, 1995b). Groundwater flow direction was observed to the northwest and depth to groundwater was generally around 9 feet below ground surface (bgs). Groundwater sampling showed the onsite and offsite downgradient wells had the highest levels of hydrocarbon impacts. Onsite wells B1MW, B2MW, and G5 showed detectable levels of benzene as did offsite well G4. Well B3MW, located upgradient, exhibited the lowest levels of hydrocarbons onsite. Monitoring well G6 yielded non-detectable levels of benzene and appeared to define the southwestern edge of the contaminant plume (GE&ET, 1995c). In December 1995, three new wells were installed off property and sampled. In June and July of 1997, a Soil Vapor Extraction (SVE) and Air Sparge (AS) system were installed and operational. The system operated intermittently until April of 2009 (ADEC CS File). Additional offsite wells were installed, and contaminated material was reportedly removed from Lots 7 & 8 downgradient of the subject property during site construction activities (per R. Weimer 2019).

RSE conducted site reconnaissance on June 5, 2019 in attempt to identify project-associated monitoring wells both on- and offsite. This effort identified remaining eight wells (see Attachment A for mapping). RSE spoke with the previous ADEC Project Manager for the site, Robert Weimer. Mr. Weimer informed RSE that the offsite wells that were not identified in the reconnaissance effort were likely removed during the construction of a strip mall (Block 5, Lot 7) and hotel (Block 5, Lot 5A). Wells G-6, G-7, and G-8 were previously proposed for decommissioning due to low or non-detect sample results and to date have not been decommissioned. Based on this information, on July 26, 2019, RSE collected groundwater samples from four (4) onsite wells (OB1MW, OB2MW, OB3MW, and G5) and one offsite well (G4). RSE did not sample the wells previously approved for decommissioning.

Well summary:

- Onsite Wells (sampled): OB1MW, OB3MW, OB2MW, G5
- Offsite Wells (sampled): G4
- Removed or Destroyed Wells (not to be sampled): G9, B1MW, B2MW, B3MW
- Wells Previously Approved for Decommissioning (not to be sampled): G6, G7, G8

This approach was proposed in a work plan dated June 11, 2019, and approved by the ADEC on July 22, 2019. All known wells are shown on Figure 2 of Attachment A. Wells subject to sampling under this program are shown with corresponding data in Figure 3.

OBJECTIVES

The work conducted under this effort sought to provide additional groundwater monitoring data for the wells located at the former Tesoro-Olson Gas Service #2 and acquire up-to-date groundwater data to evaluate current risk exposure pathways. Based upon the results, the data support a change of status to closure with institutional controls.

GROUNDWATER SAMPLING

Based upon the results of previous investigations, RSE identified contaminants of potential concern (COPCs) as provided in Table 1:

Table 1. Contaminants of Potential Concern

COPC	Matrix	COPC Abbreviation	ADEC-Approved Lab Method	ADEC Table C Groundwater Cleanup
Gasoline Range Organics	Water	GRO	AK 101	2.2 mg/L
Diesel Range Organics	Water	DRO	AK 102	1.5 mg/L
Benzene	Water	Collectively referred to as BTEX*	EPA 8260	4.6 ug/L
Toluene	Water			1,100 ug/L
Ethylbenzene	Water			15 ug/L
Total Xylenes	Water			190 ug/L
Petroleum Volatile Organic Compounds	Water	Petro VOCs	EPA 8260	Varies
Polycyclic Aromatic Hydrocarbons	Water	PAH SIMS	EPA 8270D	Varies

*Included within the Petro VOC suite

Select photographs of the field effort are provided in Attachment C. A copy of the field notes and water quality logs are provided in Attachment D.

RSE first examined the condition of each well; no evidence of compromise was identified to the wells slated for sampling under this work. The depth to water ranged between 9.43 feet bgs and 10.12 feet bgs. RSE purged three well volumes from each well using a low-flow submersible pump, except at well locations G5 and OB1MW which went dry following one purge volume. These wells were allowed to recharge to 80% of their initial levels, and then were sampled from the infiltrated water. Water quality parameters were monitored using a YSI 556; results are provided as Table 1 of Attachment B. No sheen or odors were observed on purge water.

RSE re-measured the depth to groundwater following purging and prior to sampling with a water level indicator. Monitoring well purging and sampling was informed by EPA Low Flow (minimal

draw down) Groundwater Sampling Procedures (EPA/540/S-95/504, April 1996). Water samples were collected using a positive-pressure submersible pump set to a low flow rate during purging and sampling. The target flow rate during low flow purging and sampling was less than 0.5 L/min (8 gallons per hour). This rate was attainable during the sampling effort.

One sample was collected from each well. All five wells were sampled for DRO, GRO, PAHs, and Petro VOCs. A duplicate sample was submitted to the laboratory for quality control purposes from well OB1MW to provide additional data from the well that historically yielded the greatest impacts. A discussion of duplicate results and quality control is provided subsequently in this report.

The water samples were collected using new, dedicated tubing. The water level indicator and other equipment that was not disposable or dedicated was decontaminated with an Alconox wash and a distilled water rinse. As water samples are collected, care was taken to minimize volatile loss by excessive turbulence or air mixing. Field personnel attempted to avoid spilling or over-diluting acid sample preservatives, but did receive from the laboratory a report that sample G5 was overdiluted; discussion of this is provided in the quality control section of this report. Water samples were placed directly into method specific containers and stored in a clean, chilled sample cooler. Samples were received at a temperature of 2.8° C. Coolers were transported under chain-of-custody to ADEC-approved laboratory, SGS North America located in Anchorage, Alaska. Table 2, shows the containers, preservation, and holding times for the groundwater samples:

Table 2. Containers, Preservation, and Holding Times for Groundwater Samples

COPC	Matrix	Lab Method	Sample Container	Preservation	Holding Time
DRO	Water	AK 102	1x 250 mL glass Teflon-lined cap	HCl 0 – 6° C	7 days to extract, <40 days to analysis
GRO	Water	AK 103	3x40 ml Volatile organic analysis (VOA) vials, minimize headspace	HCl 0 – 6° C	14 days
PETRO VOCs	Water	EPA 8260	3x40 mL Volatile organic analysis (VOA) vials, minimize headspace	HCl 0 – 6° C	14 days
PAH SIMS	Water	EPA 8270D	1 Liter amber jar with Teflon-lined cap	0 – 6° C	14 days to extract, <40 days to analysis

The submersible pump was decontaminated using Alconox and distilled water between sampling at each well. Decontamination consisted of a three-step process with the final rinse consisting of pumping at least ½ gallon of fresh distilled water through the pump. No rinseate blank was proposed in the work plan and none were collected. In the June 2019 work plan, RSE established the sampling order based upon known relative contamination concentrations: OB3MW, OB2MW,

G5, G4, OB1MW. Data generated in July 2019 indicate that this is the appropriate order by increasing concentrations of hydrocarbons.

INVESTIGATIVE DERIVED WASTE

Consumables including spent tubing and gloves were placed into a trash receptacle for disposal. Non-consumables such as the submersible pump were decontaminated using Alconox and water between sampling at each well, as described above. Tubing for water samples was dedicated to each well and disposed of following use. Data do not indicate that cross contamination occurred between samples at this site.

As no sheen or odor was observed on the purge water, RSE treated the purge water and decontamination water with a granular activated carbon (GAC) filter at the conclusion of sampling. Treated water was discharged into a vegetated strip onsite in accordance with the work plan. No IDW remains onsite at this time.

QUALITY ASSURANCE AND QUALITY CONTROL

RSE collected each sample in general accordance with applicable ADEC regulation and guidance documents. Blind duplicate samples were collected at a frequency of 10%, on blind duplicate sample submitted from the historically most contaminated well, OB1MW. Relative percent difference calculations for this duplicate set were below the recommended data quality objectives (7% GRO and 12% DRO compared to an objective of 50% or less).

RSE submitted one trip blank the sample cooler. No detections were reported on the trip blank.

Two pH issues were noted by the laboratory: one concerning an overdiluted VOA vial with a pH of above 2, and the second concerning unpreserved DRO jars due to a laboratory preparation oversight. Both of these issues were resolved telephonically with the laboratory on August 16, 2019. The laboratory project manager, Chuck Homestead, opined that due to the short time elapsed between collecting the samples and processing the samples, there was no effect on the quality or usability of the data.

RSE has completed the ADEC Laboratory Review checklist for the laboratory report received. It has been included as Attachment E. No data quality issues were noted such that would affect the data for its intended purpose.

RESULTS

Tabulated results are provided in Attachment B. The complete laboratory data package is provided in Attachment F.

Monitoring well OB1MW yielded the most elevated concentrations of hydrocarbons. Exceedances were reported of up to 3.41 mg/L GRO compared to a cleanup standard of 2.2 mg/L. Additional exceedances were reported for 1,2,4 and 1,3,5 trimethylbenzene, and naphthalene.

Monitoring well OB2MW, located near the southwest corner of the building, was below action standards for GRO, but did report an exceedance of DRO at 2.78 mg/L compared to a cleanup standard of 1.5 mg/L. Multiple PAH analytes were also reported in excess of action standards; however, all VOCs were below.

At monitoring well G5, located on the west property boundary, DRO and GRO were both below cleanup standards. However, similar to OB1MW, this location reported exceedances for 1,2,4 and 1,3,5 methylbenzene, and naphthalene. A nominal exceedance of ethylbenzene was also reported at this location, with a concentration of 22.1 ug/L compared to 15 ug/L.

A downgradient well, monitoring well OB3MW situated on the southeast side of the subject property building, was nondetect for all analytes.

The off-property well, G4, was below cleanup standards for DRO and GRO, but similar to onsite wells yielded exceedances of 1,2,4 and 1,3,5 trimethylbenzene, naphthalene, and ethylbenzene. The concentrations reported for these VOCs were significantly attenuated at this location compared to the nearest downgradient well, OB1MW. By manner of comparison, 1,2,4 trimethylbenzene was 323 ug/L at OB1MW and reduced to 125 ug/L at G4; 1,3,5 trimethylbenzene was 128 ug/L at OB1MW and 68.8 ug/L at G4; and, naphthalene was 21 ug/L at OB1MW and 15.1 at G4.

Table 3, on the following page, provides a comparison of three monitoring events since removal of the UST system in 1995 showing reductions in hydrocarbon concentrations by orders of magnitude. Note that this table does not provide a complete history of all monitoring events, but three selected from the primary years of activity at the site.

Table 3. Historic Data Comparison

Well ID	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	GRO (mg/L)
OB1	9/22/95 ¹	1,220	13,100	4,320	16,480	76.9
	12/30/98 ²	463	12,600	454	23.03	78
	7/26/19	1.67	2.97	12.4	46.9	3.41
OB2	9/22/95	270	189	1,020	4,439	14.9
	12/30/98	1.79	ND	3.08	3.2	.10
	7/26/19	0.140	ND	1.21	ND	0.0669
OB3	9/22/95	87.6	4.01	18.2	80.5	1.33
	12/30/98	ND	ND	ND	4.17	0.067
	7/26/19	ND	ND	ND	ND	ND
G4	9/22/95	1,450	266	770	3,160	15.0
	12/30/98	563	6.07	594	1,922	6.7
	7/26/19	4.28	ND	17.2	174	1.48
G5	9/22/95	116	105	1,070	2,772	11.4
	12/30/98	30.1	ND	533	1,266	8.8
	7/26/19	0.48	0.34	22.1	70.7	1.05

¹GE&ET, 1996²GE&ET, 1999

CONCLUSIONS & RECOMMENDATIONS

Results of the 2019 field sampling program indicate that hydrocarbon impacts to groundwater remain at the subject property in excess of Table C standards. However, a comparison of data to historic levels shows dramatic reductions in hydrocarbon concentrations indicating that removal of the source area was successful at creating conditions for natural attenuation. As a point of demonstration, benzene concentrations ranged up to 1,450 ug/L in 1995 and was considered the primary contaminant of concern; in 2019, the highest reported value was 4.28 ug/L and below actionable standards.

With the USTs removed and over 800 tons of contaminated soil hauled offsite in 1995, the primary source area is considered removed from this site. Impacted soil remaining under the building foundation is not accessible without removal of the structure. Documented levels of groundwater impacts do not demonstrate a threat to human health or the environment under current site use as a parking lot and van rental facility. As such, RSE is recommending closure with institutional controls for ADEC File No. 2100.26.073.

Please contact Arran Forbes at (907) 278-1023 if you have any questions or comments. The Responsible Party is requesting an accelerated review of this report, if possible, to facilitate a potential real estate transaction.

This report was prepared by an ADEC-Qualified Environmental Professional in accordance with 18 AAC 75.

Arran Forbes

Arran Forbes

RESTORATION SCIENCE & ENGINEERING, LLC

Attachment A:	Figures
Attachment B:	Data Tables
Attachment C:	Select Site Photographs
Attachment D:	Copy of Field Notes
Attachment E:	Quality Review Checklist
Attachment F	SGS Laboratory Data Package

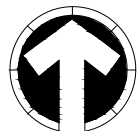
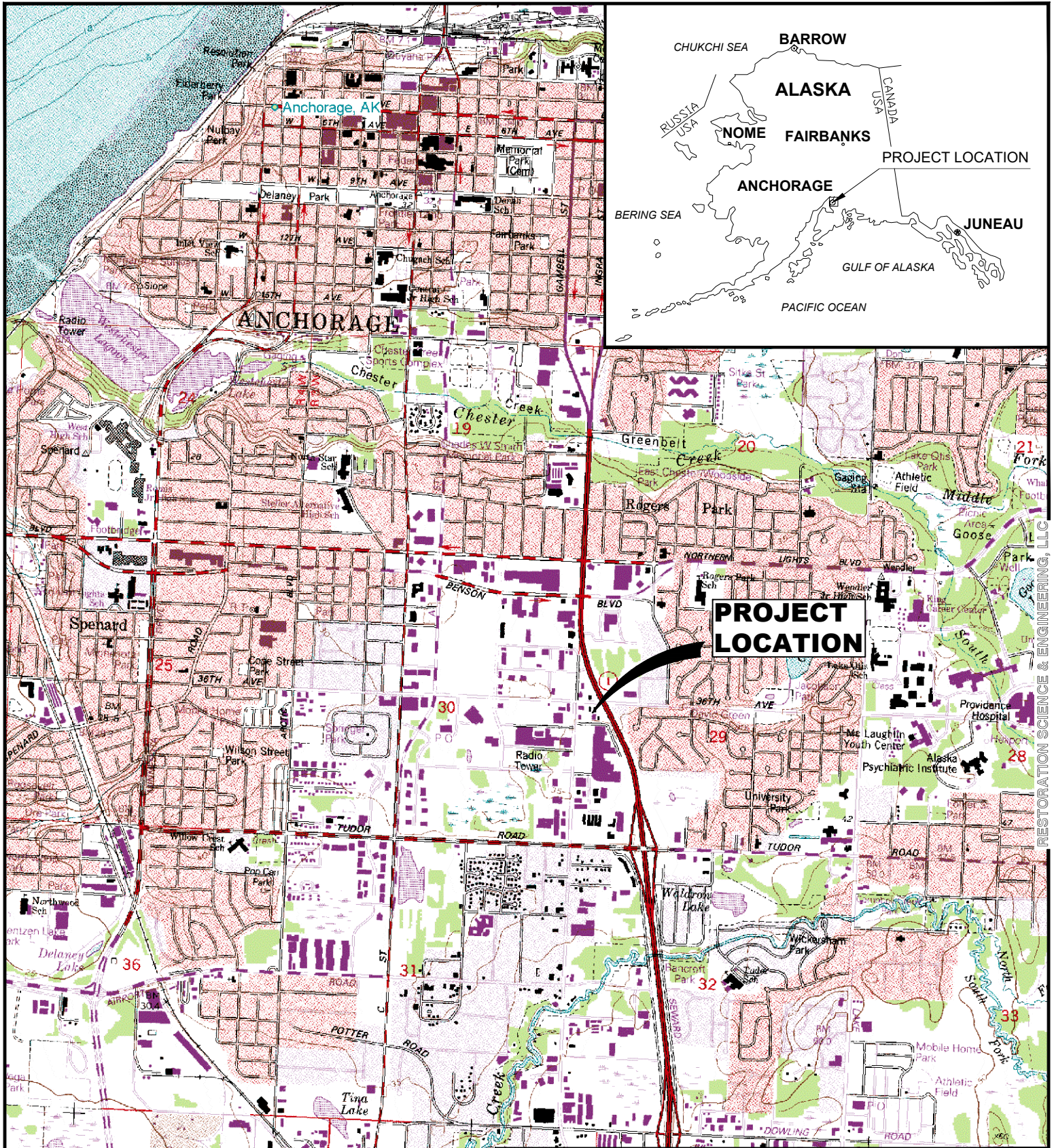
References

- State of Alaska Department of Environmental Conservation (ADEC).
<http://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/SiteReport/23371>. Accessed June 10, 2019
- (GE&ET, 1995a) Gilfilian Engineering & Environmental Testing, Inc, 1995. Release investigation for Olson's Gas Services #2. August 1, 1995.
- (GE&ET, 1995b) Gilfilian Engineering & Environmental Testing, Inc, 1995. Quarterly Status Report, Olson's Gas Services, ADEC UST Facility I.D. #2287 & #2288. October 18, 1995.
- (GE&ET, 1995c) Gilfilian Engineering & Environmental Testing, Inc, 1995. Release Investigation and Quarterly Ground Water Monitoring. November 15, 1995.
- (GE&ET, 1996) Gilfilian Engineering & Environmental Testing, Inc, 1999. September 1995 Quarterly Groundwater Monitoring Report. December 20, 1996.
- (GE&ET, 1999) Gilfilian Engineering & Environmental Testing, Inc, 1999. December 1998 Monitoring Event. February 16, 1999.

Appendix A:

Figures





N.T.S.

**ZHO-TSE INC. TESORO OLSON GAS SERVICE # 2
GROUNDWATER SAMPLING**

VICINITY MAP

ANCHORAGE, ALASKA

JOB NO: 18-1942
DATE: 9.5.2019

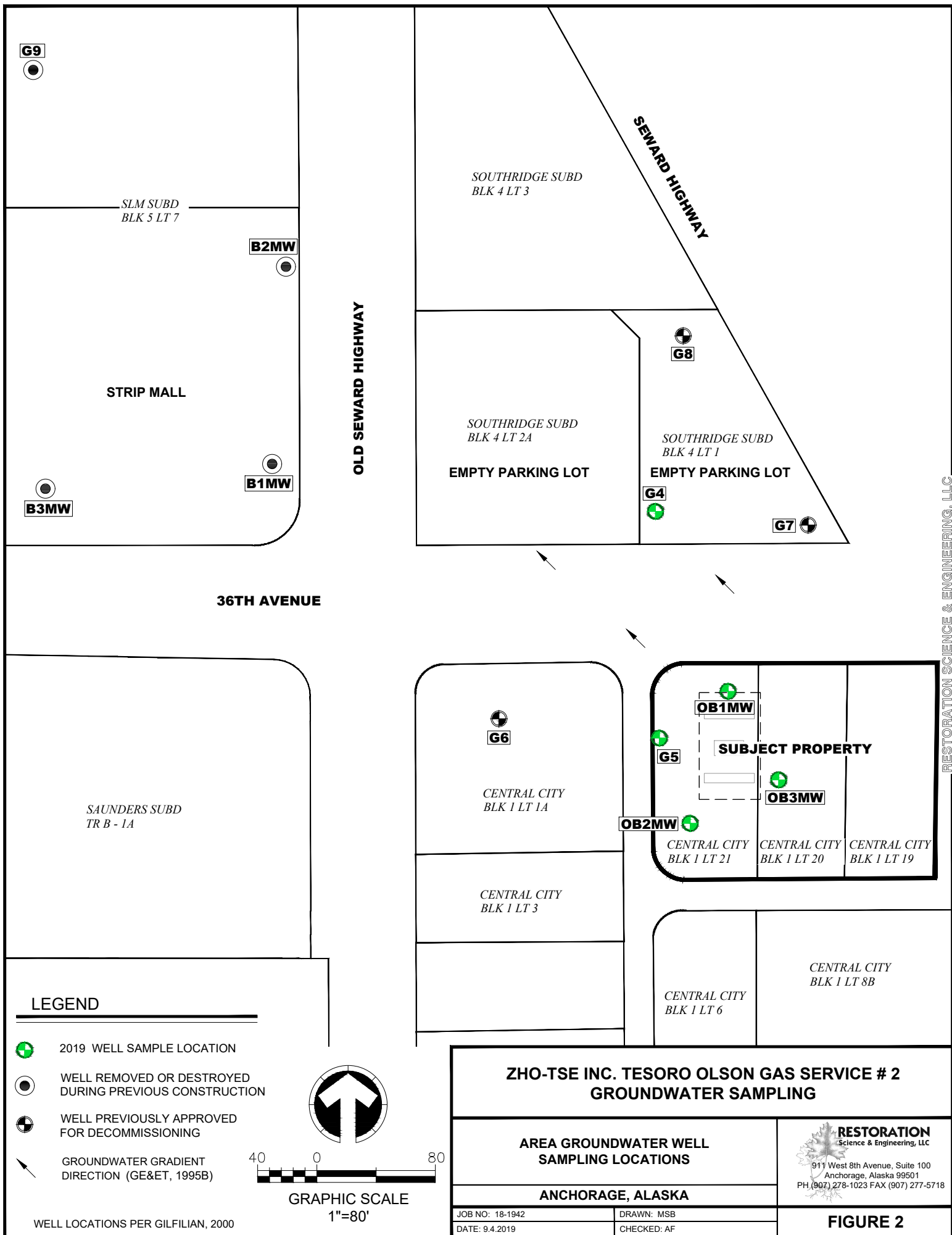
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CHECKED: AF

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FIGURE 1

RESTORATION SCIENCE & ENGINEERING, LLC



G9

SLM SUBD
BLK 5 LT 7

B2MW

STRIP MALL

B1MW

B3MW

OLD SEWARD HIGHWAY

SOUTHRIDGE SUBD
BLK 4 LT 3

SEWARD HIGHWAY

G8

SOUTHRIDGE SUBD
BLK 4 LT 2A

EMPTY PARKING LOT

SOUTHRIDGE SUBD
BLK 4 LT 1

EMPTY PARKING LOT

G4

G7

36TH AVENUE

SAUNDERS SUBD
TR B - 1A

G6

CENTRAL CITY
BLK 1 LT 1A

CENTRAL CITY
BLK 1 LT 3

OB2MW

OB1MW

SUBJECT PROPERTY

OB3MW

CENTRAL CITY
BLK 1 LT 21

CENTRAL CITY
BLK 1 LT 20

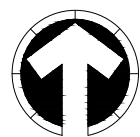
CENTRAL CITY
BLK 1 LT 19

CENTRAL CITY
BLK 1 LT 6

CENTRAL CITY
BLK 1 LT 8B

LEGEND

- 2019 WELL SAMPLE LOCATION
- WELL REMOVED OR DESTROYED DURING PREVIOUS CONSTRUCTION
- WELL PREVIOUSLY APPROVED FOR DECOMMISSIONING
- GROUNDWATER GRADIENT DIRECTION (GE&ET, 1995B)



GRAPHIC SCALE
1"=80'

WELL LOCATIONS PER GILFILIAN, 2000

**ZHO-TSE INC. TESORO OLSON GAS SERVICE # 2
GROUNDWATER SAMPLING**

**AREA GROUNDWATER WELL
SAMPLING LOCATIONS**

ANCHORAGE, ALASKA

JOB NO: 18-1942
DATE: 9.4.2019

DRAWN: MSB
CHECKED: AF

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FIGURE 2

OLD SEWARD HIGHWAY

SOUTHRIDGE SUBD
BLK 4 LT 2A
EMPTY PARKING LOT

G8



SOUTHRIDGE SUBD
BLK 4 LT 1
EMPTY PARKING LOT

SEWARD HIGHWAY

G4
1,2,4 TRIMETHYLBENZENE: 115 µg/L
NAPHTHALENE: 5.76 µg/L
ETHYLBENZENE: 17.2 µg/L



G7



NOTES:

1. ONLY EXCEEDANCES OF TABLE C CLEANUP LEVELS ARE PRESENTED ON THIS FIGURE. SEE TABLES FOR COMPLETE DATA.
2. WHERE PRIMARY AND DUPLICATE RESULTS DIFFER, THE HIGHER OF THE 2 VALUES IS SHOWN.
3. WHERE METHOD 8260 AND 8270 RESULTS DIFFER, THE HIGHER OF THE 2 CONCENTRATIONS IS SHOWN.

36TH AVENUE

G6



CENTRAL CITY
BLK 1 LT 1A

G5
1,2,4 TRIMETHYLBENZENE: 125 µg/L
1,3,5 TRIMETHYLBENZENE: 68.8 µg/L
NAPHTHALENE: 15.1 µg/L
ETHYLBENZENE: 22.1 µg/L



OB2MW
DRO: 2.78 mg/L
MULTIPLE PAH ANALYTES



CENTRAL CITY
BLK 1 LT 3

OB1MW

GRO: 3.41 mg/L

1,2,4 TRIMETHYLBENZENE: 323 µg/L

1,3,5 TRIMETHYLBENZENE: 128 µg/L

NAPHTHALENE: 21 µg/L



OB3MW

NO DETECTIONS



SUBJECT PROPERTY

CENTRAL CITY
BLK 1 LT 21

CENTRAL CITY
BLK 1 LT 20

CENTRAL CITY
BLK 1 LT 19

LEGEND



2019 WELL SAMPLE LOCATION



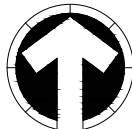
WELL REMOVED OR DESTROYED DURING PREVIOUS CONSTRUCTION



WELL PREVIOUSLY APPROVED FOR DECOMMISSIONING



GROUNDWATER GRADIENT DIRECTION (GE&ET, 1995B)



GRAPHIC SCALE
1"=80'

WELL LOCATIONS PER GILFILIAN, 2000

ZHO-TSE INC. TESORO OLSON GAS SERVICE # 2
GROUNDWATER SAMPLING

AREA GROUNDWATER WELL
SAMPLING LOCATIONS

ANCHORAGE, ALASKA

JOB NO: 18-1942

DRAWN: MSB

DATE: 9.4.2019

CHECKED: AF



FIGURE 3

RESTORATION SCIENCE & ENGINEERING, LLC

Appendix B: Tabulated Data

**TABLE 1
GROUNDWATER QUALITY PARAMETERS
ZHO TSE INC TESORO OLSON 36TH STREET GW MONITORING**

MONITORING WELL WATER QUALITY FIELD PARAMETERS											
LOCATION	DATE	DEPTH TO WATER (START)	DEPTH TO BOTTOM	DEPTH TO WATER (FINAL)	VOLUME PURGED	TEMP	pH	CONDUCTIVITY	O ₂	ORP	COMMENTS
		(FEET)	(FEET)	(FEET)	(GALLONS)	(C)	(pH Units)	(uS/cm)	(mg/L)	(mV)	
OB3MW-726	7/26/2019	9.47	14.5	9.6	0.9	15.55	6.56	439	2.94	160.3	No Sheen
				9.86	0.9	11.02	6.01	241	2.07	153.8	
				9.44	0.9	10.16	5.99	205	1.65	157.4	
G5-726	7/26/2019	10.12	14.34	DRY	0.72	9.85	6.85	332	2.02	-61.4	-
				DRY	0.72	9.22	6.64	327	3.4	-88.2	
				DRY	0.72	8.88	6.59	335	0.66	-89.7	
G4-726	7/26/2019	9.43	13.84	9.44	0.75	10.6	6.00	602	1.73	-22.3	Initially Brown, purged to cloudy peach-yellow with brown hue
				9.45	0.75	10.53	6.10	-	1.4	-55.3	
				9.45	0.75	10.39	6.18	-	1.37	-69.6	
OB1MW-726	7/26/2019	9.9	14.1	9.94	0.71	9.02	6.68	37.2	3.99	-144.3	-
				10.02	0.71	8.55	6.62	108.2	12.6	-177	
				10.02	0.71	8.38	6.67	102.2	11.85	-95.90	
OB2MW-726	7/26/2019	9.59	13.31	DRY	0.6	10.75	5.94	323	2.20	26.3	No Recharge after purge of first well volume, Sample

NOTES:

- 1) Water quality measurements performed using a YSI Model 556 Water Quality Meter.
- 2) Purging of well was done with a peristaltic pump.
- 3) "mS/cm" means "millisiemens per centimeter"; "µS/cm" means "micro Siemens per centimeter"; "ppt" means "parts per thousand"; "mV" means "millivolts"; "mg/L" means "milligram per liter"; "gal" means "gallon"; "°C" means "degrees Celsius", "ppt" = parts per thousand.
- 4) Water levels are collected before any purging of the monitoring wells.
- 5) Water levels are measured with a Solinst water level indicator.

TABLE 2
HYDROCARBONS IN GROUNDWATER
ZHO TSE INC TESORO OLSON 36TH STREET GW MONITORING

HYDROCARBONS IN GROUNDWATER				
SAMPLE ID	DATE	GASOLINE RANGE ORGANICS (mg/L)	DIESEL RANGE ORGANICS (mg/L)	SGS WORK ORDER
OB3MW-726	7/26/2019	<i>0.0500 U</i>	<i>0.294 U</i>	1194197
G5-726	7/26/2019	1.05	0.592	
G4-726	7/26/2019	1.48	0.343 J	
OB1MW-726	7/26/2019	3.19	1.2	
OB0MW-726 (DUP)	7/26/2019	3.41	1.35	
OB2MW-726	7/26/2019	0.0669 J	2.78	
Trip Blank	7/26/2019	<i>0.0500 U</i>	<i>n/a</i>	
ADEC GROUNDWATER TABLE C CLEANUP LEVELS		2.2	1.5	

NOTES:

Gasoline Range Organics (GRO) samples analyzed by AK Method 101.

Diesel Range Organics (DRO) samples analyzed by AK Method 102.

2) "mg/L" means "milligrams per liter".

3) **Bold** font indicates the analyte was detected above the detection limit (DL).

4) *Italicized* font with a U-flag indicates the analyte was not detected at the DL; the value presented is the limit of detection.

5) J flag indicates the result is an estimated value.

6) Yellow highlighting indicates the analyte was detected above the ADEC Table C Groundwater Cleanup Level.

7) OB0MW-726 is a blind duplicate of OB1MW-726

**TABLE 3
 PETROLEUM VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER
 ZHO TSE INC TESORO OLSON 36TH STREET GW MONITORING**

PETROLEUM VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER								
SAMPLE ID	OB3MW-726	G5-726	G4-726	OB1MW-726	OB0MW-726	OB2MW-726	Trip Blank	ADEC TABLE C GROUNDWATER CLEANUP LEVELS (ug/L)
Date	7/26/2019							
SGS Work Order	1194197							
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
1,2,4-Trimethylbenzene	0.500 U	125	115	323	278	1.93	0.500 U	56
1,2-Dibromoethane	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.075
1,2-Dichloroethane	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.7
1,3,5-Trimethylbenzene	0.500 U	68.8	13.3	128	126	0.590 J	0.500 U	60
Benzene	0.200 U	0.48	4.28	1.67	1.44	0.140 J	0.200 U	4.6
Ethylbenzene	0.500 U	22.1	17.2	12.4	10.6	1.21	0.500 U	15
Isopropylbenzene (Cumene)	0.500 U	29	21.9	46.3	42.4	1.18	0.500 U	450
Methyl-t-butyl ether	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	140
Naphthalene	0.500 U	15.1	5.76	21	17.8	1.08	0.500 U	1.7
P & M -Xylene	1.00 U	68.5	173	36.6	28.2	1.00 U	1.00 U	See Total Xylenes
Toluene	0.500 U	0.340 J	0.500 U	2.97	2.37	0.500 U	0.500 U	1,100
Xylenes (total)	1.50 U	70.7	174	46.9	35.8	1.50 U	1.50 U	190
n-Butylbenzene	0.500 U	5.32	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	1,000
o-Xylene	0.500 U	2.26	0.870 J	10.4	7.61	0.500 U	0.500 U	See Total Xylenes
sec-Butylbenzene	0.500 U	6.71	2.38	0.500 U	0.500 U	0.350 J	0.500 U	2,000
tert-Butylbenzene	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	690

NOTES:

- 1) Petro Volatile Organic Compounds (Petro-VOC) analyses by Method Petro SW8260.
- 2) "ug/L" means "micrograms per liter".
- 3) **Bold** font indicates the analyte was detected above the laboratory Detection Limit (DL).
- 4) *Italicized* font with a U-qualifier indicates the analyte was not detected above the DL; the value presented is the limit of detection.
- 5) J flag indicates the result is an estimated value.
- 6) Yellow highlighting indicates the analyte was detected above the ADEC Table C Groundwater Cleanup Level.

TABLE 4
POLYNUCLEAR AROMATICS CONCENTRATIONS IN GROUNDWATER
ZHO TSE INC TESORO OLSON 36TH STREET GW MONITORING

PETROLEUM VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER							ADEC TABLE C GROUNDWATER CLEANUP LEVELS (ug/L)
SAMPLE ID	OB3MW-726	G5-726	G4-726	OB1MW-726	OB0MW-726	OB2MW-726	
Date	7/26/2019						
SGS Work Order	1194197						
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
1-Methylnaphthalene	0.0240 U	3.56	0.376	6.72	8.54	0.0250 U	11
2-Methylnaphthalene	0.0240 U	3.1	0.0250 J	2.00	5.03	0.0892	36
Acenaphthene	0.0240 U	0.0248 U	0.0245 U	0.135	0.123	0.78	530
Acenaphthylene	0.0240 U	0.0248 U	0.0245 U	0.0245 U	0.0254 U	0.283	260
Anthracene	0.0240 U	0.0248 U	0.0245 U	0.0245 U	0.0254 U	2.78	43
Benzo(a)Anthracene	0.0240 U	0.0248 U	0.0245 U	0.0245 U	0.0254 U	21.6	--
Benzo[a]pyrene	0.00960 U	0.00990 U	0.00980 U	0.00980 U	0.0101 U	28.8	0.25
Benzo[b]Fluoranthene	0.0240 U	0.0248 U	0.0245 U	0.0245 U	0.0254 U	49.1	2.5
Benzo[g,h,i]perylene	0.0240 U	0.0248 U	0.0245 U	0.0245 U	0.0254 U	26.8	0.26
Benzo[k]fluoranthene	0.0240 U	0.0248 U	0.0245 U	0.0245 U	0.0254 U	14.7	0.80
Chrysene	0.0240 U	0.0248 U	0.0245 U	0.0245 U	0.0254 U	33.4	2.0
Dibenzo[a,h]anthracene	0.00960 U	0.00990 U	0.00980 U	0.00980 U	0.0101 U	4.99	0.25
Fluoranthene	0.0240 U	0.0248 U	0.0245 U	0.0245 U	0.0254 U	73.1	260
Fluorene	0.0240 U	0.0248 U	0.0245 U	0.277	0.279	1.02	290
Indeno[1,2,3-c,d] pyrene	0.0240 U	0.0248 U	0.0245 U	0.0245 U	0.0254 U	23.9	0.19
Naphthalene	0.0481 U	12.2	3.61	6.47	6.56	0.3	1.7
Phenanthrene	0.0240 U	0.0248 U	0.0245 U	0.0707	0.104	25.1	170
Pyrene	0.0240 U	0.0248 U	0.0245 U	0.0287 J	0.0254 U	53.3	120

NOTES:

- 1) Petro Volatile Organic Compounds (Petro-VOC) analyses by Method Petro SW8260.
- 2) "ug/L" means "micrograms per liter".
- 3) **Bold** font indicates the analyte was detected above the laboratory Detection Limit (DL).
- 4) *Italicized* font with a U-qualifier indicates the analyte was not detected above the DL; the value presented is the limit of detection.
- 5) J flag indicates the result is an estimated value.
- 6) Yellow highlighting indicates the analyte was detected above the ADEC Table C Groundwater Cleanup Level.

Appendix C:
Select Site Photographs





OB3MW



G4



G5 (stick up)



OB1MW

Appendix D:
Copy of Field Notes



18-1942 - ZHO TSE INC

1

TESORO OLSON 36th STREET

SANDI - 243-4444

JUNE 5th 2019

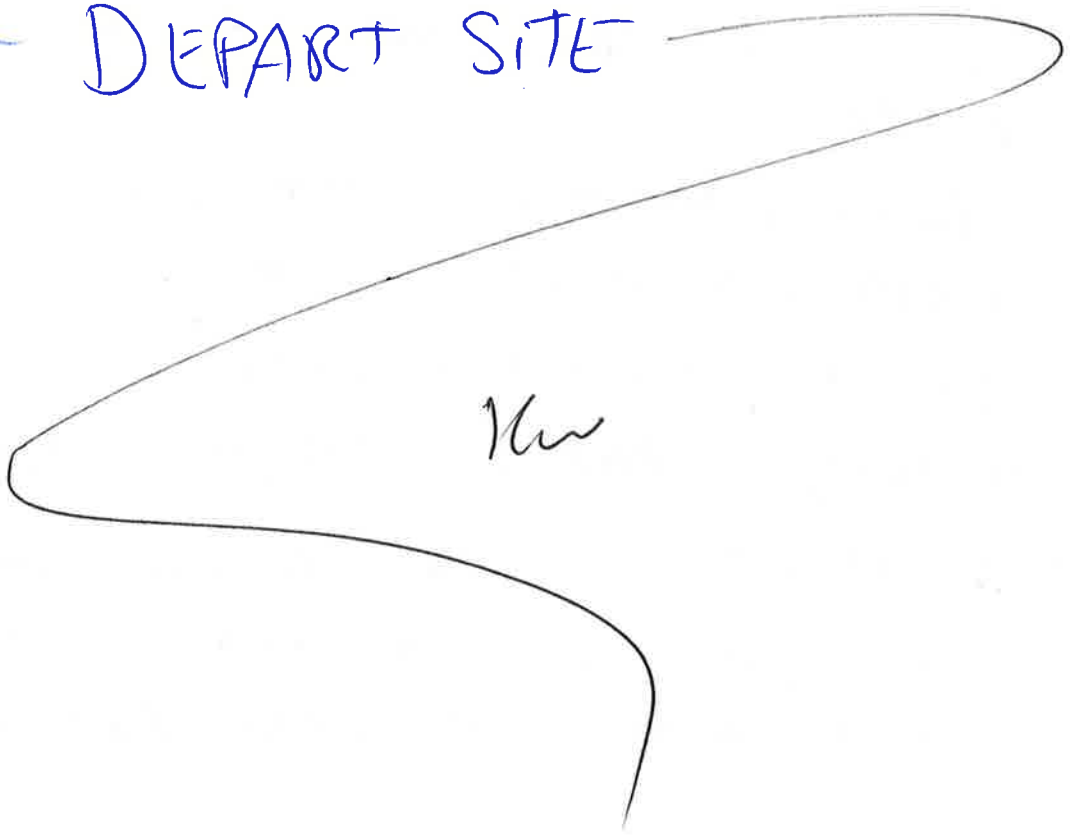
@ 0900 - AT SITE, WAIT ON SANDI

- BEGIN RECON FOR OFF SITE WELLS.
- 0910 - MEET SANDI AT GATE, LOCATE OBZMW - 1" METAL CASING
DTW=8.70', TD=14.76' - WELL #1
- 0940 - FOUND OBZMW - WEST OF WELL #1
- 0952 - AT WELL #2 FOUND WEST OF OBZMW
- 1013 - MW#3 - 1" METAL CASING
JUST OFF SW CORNER OF WEST BUILDING.
- 1021 - BEGIN WALK AROUND AND COUNT WELLS + MARK ON FIGURE
- 1042 - IDENTIFIED - 11 NEW WELLS ON SITE + 4 KNOW, + THREE OFF SITE, 66, 64, 68
- DEPART SITE FOR GPS + DECON BULLETS
- 1213 - BACK ON SITE WITH MAP TO MAKE FIELD FIGURES OF WELL LOCATIONS.

@ 1336 - 11 NEW WELLS LOCATED ON Z
6/5/19 SITE PLUS 4 KNOWN (~~15~~ 15 WELLS
18-1942 ONSITE TOTAL, LOCATED G6,
G8, G7, G4. (4 WELLS OFFSITE)

- UNABLE TO OPEN G6 (ASPHALT
AROUND CAP, CAP HAS S SIDED
BRASS BOLT IN MIDDLE,
G7 IS SAME BUT POPED IT OPEN,
G4 IS SAME BUT WITH CAP,
DID NOT OPEN G4 (NEED SOCKET)
G8 LOCATED WITH TWIST LID.

- DEPART SITE

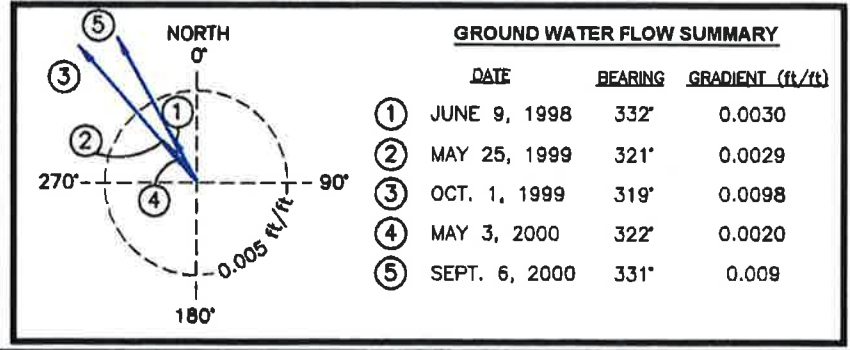
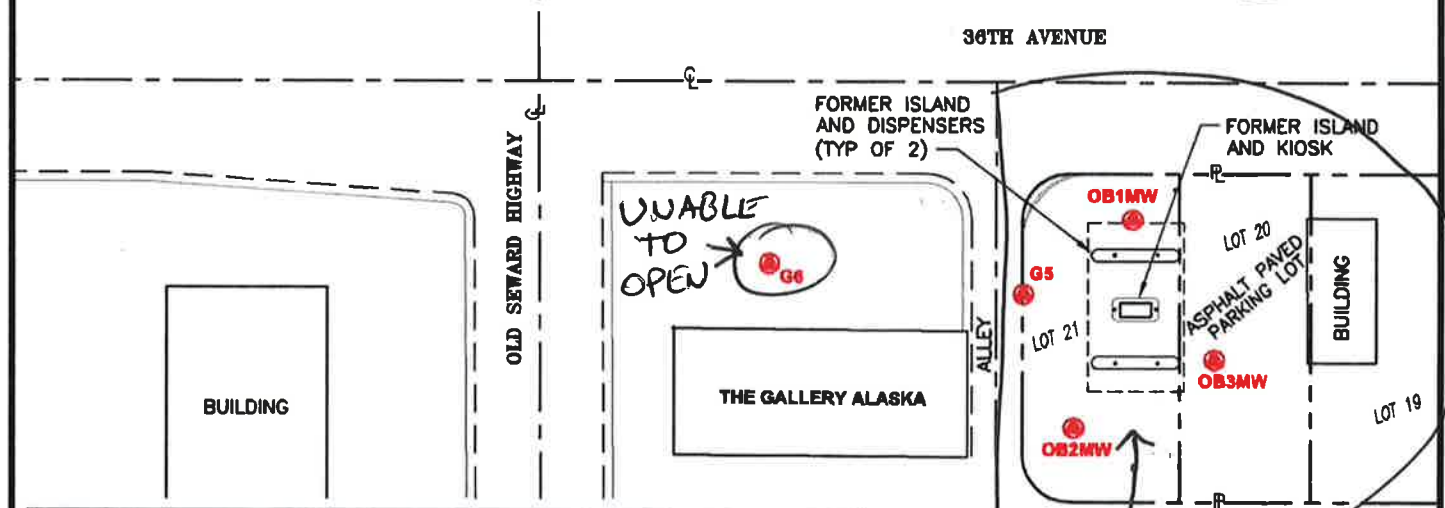
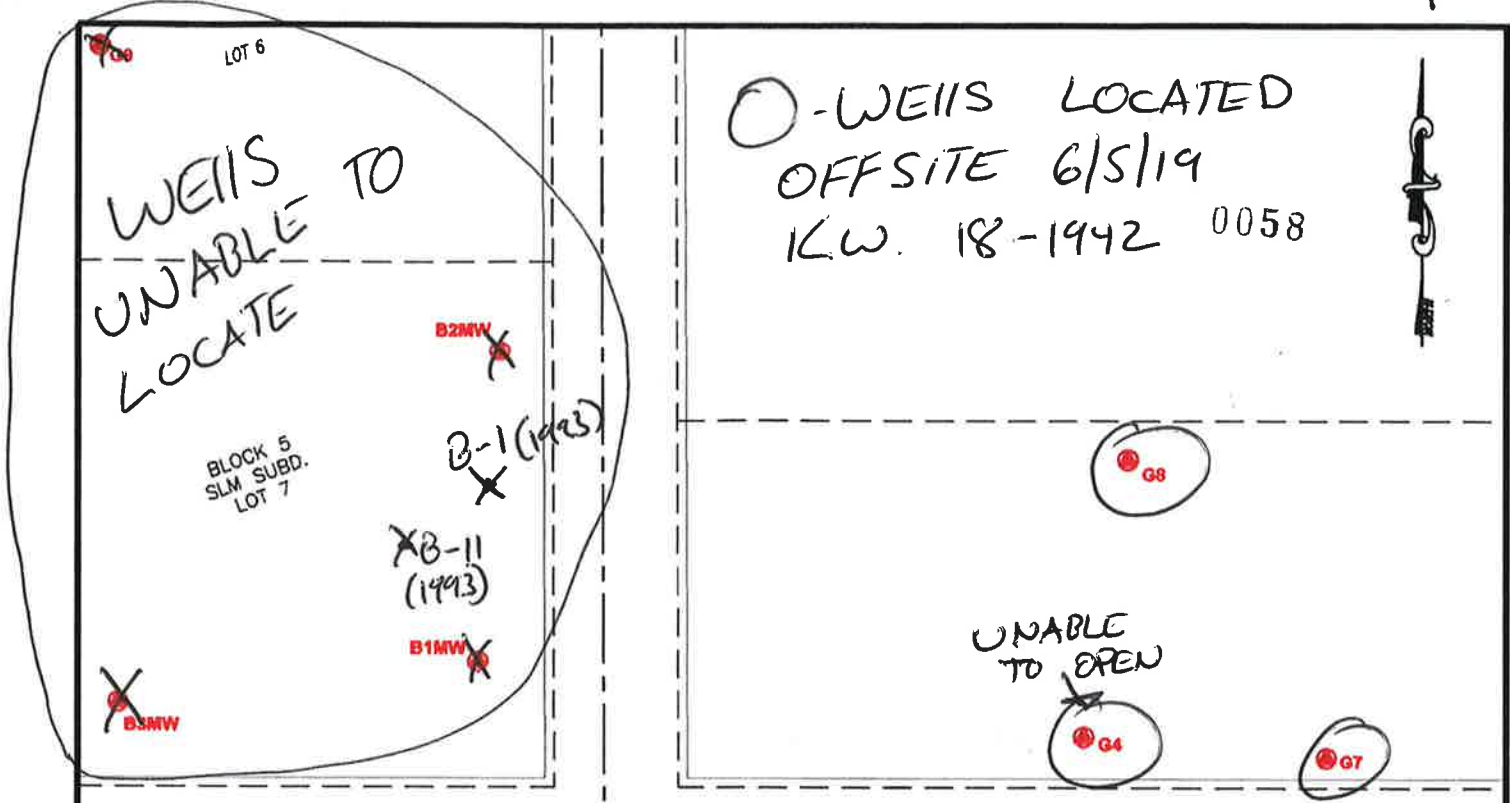


WELLS ONSITE 6/5/19

KLW.

18-1942





LEGEND

- P— PROPERTY LINE
- MONITORING WELL

WELLS IN SITE SEE PAGE #3

APPROX. SCALE IN FEET

PATH: (CHWS) C:\PROJECTS\91051 PLOT: PLUMES.CTB

FIGURE I

SITE PLAN

Gilfilian Engineering & Environmental Testing, Inc.
 2605 Denali Street, Suite 203
 Anchorage, Alaska 99503

OLSON'S GAS SERVICE No. 2
ADEC UST FACILITY I.D. #2287
 845 EAST 36TH AVENUE
 ANCHORAGE, ALASKA

PROJECT No.: 91051 FILE: 91051F1.DWG
 DATE: 8/26/00 DRAWN BY: CEH
 SCALE: AS SHOWN CHECKED BY: GMD

INCH

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SINCE 1916



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Rite in the Rain

ALL-WEATHER

FIELD

Nº 353N

ZHO TSE
18-1942

18-1442 KW 7/26/19

1600 - SAMPLE 002 MW

002 MW 706 AT 1600

TOC - TOP OF CASING.

SURVEY

002

~~5.48~~
5.48

G5

6.65

5" stickup (6.23)

~~003~~~~5.75~~
-417~~004~~ 003

5.75

G4

7.88

RESET

002

4.77

G5

5.96 -417 (5.543)

~~001~~~~6.22~~

001

6.22

7/26/19 KW

RSE GROUNDWATER SAMPLING FORM

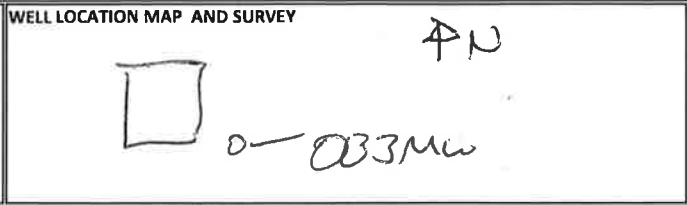
DATE: 7/26/19 WEATHER: OVERCAST 70°F

PROJECT NAME: ZHO TSE
PROJECT NO.: 18-1942

SITE LOCATION:
WELL NUMBER: 003 MW

SAMPLER: Ku
COMPANY:
CONTACT #:

WATER COLUMN INFORMATION
A) TOTAL DEPTH OF WELL (FT): 14.50
B) DEPTH TO WATER FROM TOC (FT): 9.47
C) COLUMN OF WATER IN WELL (FT): 5.03
*row "A" value minus row "B" value



PURGE INFORMATION
1-in = XX GAL/FT
2-IN = 0.17 GAL/FT
D) GALLONS PER FOOT OF 2-INCH SCREEN: 5.03
E) COLUMN OF WATER IN WELL (FT): 8.551
*value from row "C" in previous section
F) VOLUME OF WATER IN WELL (GAL): 8.551
*row "D" value multiplied by row "E" value
TOTAL VOLUME REMOVED (GAL): X3 = 2.5

PURGE METHOD: TYPHOON
SUBMERGIBLE
*e.g. peristaltic or bladder pump, Bailer

WATER OBSERVATIONS
CLOUDY PEACH YELLOW
BROWN HUE.

WATER LEVEL AND FIELD PARAMETERS
INSTRUMENT: 556
*e.g. YSI 63, YSI 556, other

TIME	DTW	DRAW-DOWN (-) / RECHARGE (+)	GALLONS REMOVED	TEMP. (°C)	pH (pH Units)	CONDUCTIVITY (mS/cm)	SP. CONDUCTANCE (mS/cm)	SALINITY (ppt)	TURBIDITY (NTU)	O ₂ (mg/L)	ORP REDOX (mV)
1025	9.50	—	—								
1050	9.60	—	.9	15.55	6.56	439	535	—	—	2.94	160.3
1056	9.86	—	.9	11.02	6.07	241	329	—	—	2.07	153.8
1102	4.99	—	.9	10.16	5.99	205	286	—	—	1.65	157.4

Odor or Sheen Observed? 2.7
Notes: NO SHEEN

SAMPLE INFORMATION (Also See Lab COC)

SAMPLE ID	DATE:	TIME	SAMPLER

SAMPLE ID: 003 MW 726
FIELD DUPLICATE: _____
EQUIPMENT BLANK: _____
TRIP BLANK: _____

LAB ANALYSIS REQUESTED:

COMMENTS:

OB2mw

RSE GROUNDWATER SAMPLING FORM

DATE: 7/26/9 WEATHER:

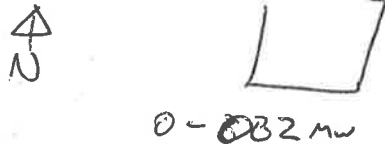
PROJECT NAME: ZHO SBE
PROJECT NO.:

SITE LOCATION: WELL NUMBER: OB2mw
SAMPLER: COMPANY: CONTACT #:

WATER COLUMN INFORMATION

A) TOTAL DEPTH OF WELL (FT): 13.31
B) DEPTH TO WATER FROM TOC (FT): 9.59
C) COLUMN OF WATER IN WELL (FT): 3.72
*row "A" value minus row "B" value

WELL LOCATION MAP AND SURVEY



PURGE INFORMATION

D) GALLONS PER FOOT OF 2-INCH SCREEN: .17
E) COLUMN OF WATER IN WELL (FT): 3.72
*value from row "C" in previous section
F) VOLUME OF WATER IN WELL (GAL): 1.63 x 3 = 1.89
*row "D" value multiplied by row "E" value
TOTAL VOLUME REMOVED (GAL):

1-in = XX GAL/FT PURGE METHOD:
2-IN = 0.17 GAL/FT *e.g. peristaltic or bladder pump, Bailer

WATER OBSERVATIONS

Empty box for water observations.

WATER LEVEL AND FIELD PARAMETERS

INSTRUMENT:
*e.g. YSI 63, YSI 556, other

TIME	DTW	DRAW-DOWN (-)/ RECHARGE (+)	GALLONS REMOVED	TEMP. (°C)	pH (pH Units)	CONDUCTIVITY (mS/cm)	SP. CONDUCTANCE (mS/cm)	SALINITY (ppt)	TURBIDITY (NTU)	O ₂ (mg/L)	ORP REDOX (mV)
1149											
1153	DRY		.6	10.74	5.44	323	443	-	-	2.70	26.3
1200	11.65		0								
1437	9.59	POOR	RECHARGE								

Odor or Sheen Observed?
Notes:

SAMPLE INFORMATION (Also See Lab COC)

SAMPLE ID	DATE:	TIME	SAMPLER

SAMPLE ID: _____
FIELD DUPLICATE: _____
EQUIPMENT BLANK: _____
TRIP BLANK: _____

LAB ANALYSIS REQUESTED:

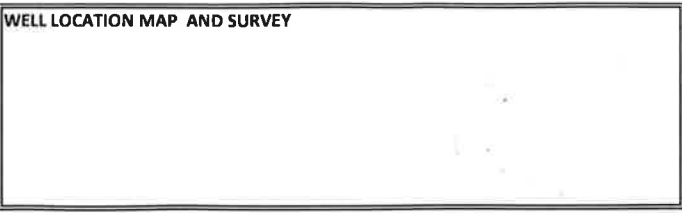
COMMENTS:

WELL PUMPED DRY, NO RECHARGE, WILL MOVE TO DIFFERENT WELL, RETURN. (ONLY ENOUGH TO FILL TUBE)

RSE GROUNDWATER SAMPLING FORM

DATE: 7/26/19 WEATHER: _____

PROJECT NAME: _____ SITE LOCATION: 65' SAMPLER: _____
 PROJECT NO.: _____ WELL NUMBER: 65 COMPANY: _____
 CONTACT #: _____

<p>WATER COLUMN INFORMATION</p> <p>A) TOTAL DEPTH OF WELL (FT): <u>14.34</u></p> <p>B) DEPTH TO WATER FROM TOC (FT): <u>10.12</u></p> <p>C) COLUMN OF WATER IN WELL (FT): <u>4.22</u> <small>*row "A" value minus row "B" value</small></p>	<p>WELL LOCATION MAP AND SURVEY</p> 
---	---

PURGE INFORMATION 1-in = XX GAL/FT PURGE METHOD: _____
 2-IN = 0.17 GAL/FT

D) GALLONS PER FOOT OF 2-INCH SCREEN: _____ *e.g. peristaltic or bladder pump, Bailer

E) COLUMN OF WATER IN WELL (FT): _____ **WATER OBSERVATIONS**

*value from row "C" in previous section

F) VOLUME OF WATER IN WELL (GAL): 0.71 x 3 = 2.13

*row "D" value multiplied by row "E" value

TOTAL VOLUME REMOVED (GAL): _____

WATER LEVEL AND FIELD PARAMETERS

INSTRUMENT: _____
 *e.g. YSI 63, YSI 556, other

TIME	DTW	DRAW-DOWN (-) / RECHARGE (+)	GALLONS REMOVED	TEMP. (°C)	pH (pH Units)	CONDUCTIVITY (mS/cm)	SP. CONDUCTANCE (mS/cm)	SALINITY (ppt)	TURBIDITY (NTU)	O ₂ (mg/L)	ORP REDOX (mV)
1220											
1222	NA	DRY	.72	9.85	6.85	332	467			2.02	-61.4
1228	NA	DRY	.72	9.72	6.64	327	469			3.40	-88.2
1331	NA	DRY	.72	8.88	6.59	423 335	423			1.66	-88.7

Odor or Sheen Observed?
 Notes: water initially was black. Cleared up by 1st well volume.

SAMPLE INFORMATION (Also See Lab COC)

SAMPLE ID	DATE:	TIME	SAMPLER	SAMPLE ID: _____
				FIELD DUPLICATE: _____
				EQUIPMENT BLANK: _____

LAB ANALYSIS REQUESTED: _____ TRIP BLANK: _____

COMMENTS: _____

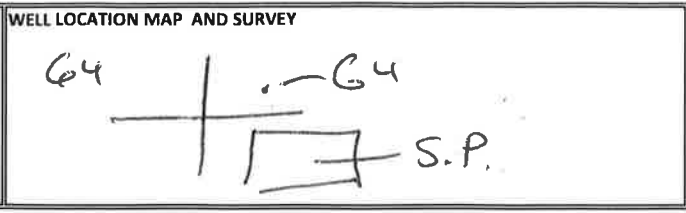
64

RSE GROUNDWATER SAMPLING FORM

DATE: 7/26 WEATHER: _____

PROJECT NAME: _____ SITE LOCATION: _____ SAMPLER: _____
PROJECT NO.: _____ WELL NUMBER: _____ COMPANY: _____
CONTACT #: _____

WATER COLUMN INFORMATION
A) TOTAL DEPTH OF WELL (FT): 13.84
B) DEPTH TO WATER FROM TOC (FT): 9.43
C) COLUMN OF WATER IN WELL (FT): 4.41
*row "A" value minus row "B" value



PURGE INFORMATION
1-IN = XX GAL/FT PURGE METHOD: _____
2-IN = 0.17 GAL/FT

D) GALLONS PER FOOT OF 2-INCH SCREEN: _____
E) COLUMN OF WATER IN WELL (FT): 0.75 x 3 = 2.25
*value from row "C" in previous section

*e.g. peristaltic or bladder pump, Bailer
WATER OBSERVATIONS

water initially brown - purged to cloudy
peach yellow with brown hue

F) VOLUME OF WATER IN WELL (GAL): _____
*row "D" value multiplied by row "E" value
TOTAL VOLUME REMOVED (GAL): _____

WATER LEVEL AND FIELD PARAMETERS

INSTRUMENT: _____
*e.g. YSI 63, YSI 556, other

TIME	DTW	DRAW-DOWN (-) / RECHARGE (+)	GALLONS REMOVED	TEMP. (°C)	pH (pH Units)	CONDUCTIVITY (mS/cm)	SP. CONDUCTANCE (mS/cm)	SALINITY (ppt)	TURBIDITY (NTU)	O ₂ (mg/L)	REDOX (mV)
1316											
1318	7.44		0.75	10.60	6.00	602	831			1.73	-22.3
1321	7.45			10.53	6.10	12.6	558			1.40	-55.3
1324	7.45			10.39	6.18	13.4	517			1.37	-69.6

Odor or Sheen Observed?
Notes:

SAMPLE INFORMATION (Also See Lab COC)

SAMPLE ID	DATE:	TIME	SAMPLER	SAMPLE ID:

				FIELD DUPLICATE: _____
				EQUIPMENT BLANK: _____
				TRIP BLANK: _____

LAB ANALYSIS REQUESTED:

COMMENTS:

RSE GROUNDWATER SAMPLING FORM

DATE: 7/26/19 WEATHER: _____

PROJECT NAME: _____ SITE LOCATION: _____ SAMPLER: _____
 PROJECT NO.: _____ WELL NUMBER: 081MW COMPANY: _____
 CONTACT #: _____

WATER COLUMN INFORMATION

A) TOTAL DEPTH OF WELL (FT): 14.10
 B) DEPTH TO WATER FROM TOC (FT): 9.90
 C) COLUMN OF WATER IN WELL (FT): 4.20
 *row "A" value minus row "B" value

WELL LOCATION MAP AND SURVEY

PURGE INFORMATION

1-in = XX GAL/FT PURGE METHOD: _____
 2-IN = 0.17 GAL/FT
 D) GALLONS PER FOOT OF 2-INCH SCREEN: _____ *e.g. peristaltic or bladder pump, Bailer
 E) COLUMN OF WATER IN WELL (FT): _____
 *value from row "C" in previous section

WATER OBSERVATIONS
Strong fuel odor.

F) VOLUME OF WATER IN WELL (GAL): 0.71 x 3 = 2.13
 *row "D" value multiplied by row "E" value
 TOTAL VOLUME REMOVED (GAL): _____

WATER LEVEL AND FIELD PARAMETERS

INSTRUMENT: _____
 *e.g. YSI 63, YSI 556, other

TIME	DTW	DRAW-DOWN (-) / RECHARGE (+)	GALLONS REMOVED	TEMP. (°C)	pH (pH Units)	CONDUCTIVITY (mS/cm)	SP. CONDUCTANCE (mS/cm)	SALINITY (ppt)	TURBIDITY (NTU)	O ₂ (mg/L)	ORP REDOX (mV)
1400											
1403	9.94			9.02	6.68	37.2	263			3.99	144.3
1406	10.02			8.55	6.62	108.2	243			12.60	-177.0
1409				8.38	6.67	102.2	217			11.55	-95.90

Odor or Sheen Observed?
 Notes:

SAMPLE INFORMATION (Also See Lab COC)

SAMPLE ID	DATE:	TIME	SAMPLER

SAMPLE ID: _____
 FIELD DUPLICATE: _____
 EQUIPMENT BLANK: _____
 TRIP BLANK: _____

LAB ANALYSIS REQUESTED:

 COMMENTS:

Appendix E:
Quality Review Checklist

i. Laboratory Data Review Checklist

Completed By:

Kyle Wiseman, Restoration Science & Engineering

Title:

Qualified Environmental Professional

Date:

8/16/2019

CS Report Name:

Tesoro-Olson Gas Service #2 (Former), 854 East 36th Ave., Anchorage, AK 99503.
ADEC File # 2100.26.073

Report Date:

08/09/2019

Consultant Firm:

Restoration Science & Engineering, LLC

Laboratory Name:

SGS North America Inc. Anchorage, AK

Laboratory Report Number:

1194197

ADEC File Number:

ADEC File #2100.26.073

Hazard Identification Number:

23371

2. Laboratory

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

 Yes No

Comments:

Preformed at SGS North America Inc. Anchorage, AK

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

 Yes No

Comments:

Sample were not transferred

3. Chain of Custody (CoC)

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

 Yes No

Comments:

CoC completed correctly

- b. Correct Analyses requested?

 Yes No

Comments:

Correct Analyses requested

4. Laboratory Sample Receipt Documentation

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

 Yes No

Comments:

Cooler documented at 2.8° C

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

 Yes No

Comments:

The DRO samples were received at the laboratory unpreserved due to laboratory error. The samples were preserved upon receipt.

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

 Yes No

Comments:

Samples in good condition

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

Yes No

Comments:

The DRO samples were received at the laboratory unpreserved due to laboratory error. The samples were preserved upon receipt.

- e. Data quality or usability affected?

Comments:

Data quality and usability unaffected

5. Case Narrative

- a. Present and understandable?

Yes No

Comments:

Case Narrative included on page 2 of report

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

Yes No

Comments:

Surrogate recovery for 3 GRO samples did not meet QC criteria. One GRO sample had a pH greater than 2.

- c. Were all corrective actions documented?

Yes No

Comments:

Corrective actions Documented

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

Comments:

No affect of data or usability

6. Samples Results

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

Yes No

Comments:

Correct analyses preformed

- b. All applicable holding times met?

Yes No

Comments:

All holding times met

c. All soils reported on a dry weight basis?

Yes No

Comments:

No soils submitted

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

Yes No

Comments:

All LOQs less than Cleanup level

e. Data quality or usability affected?

Yes No

Comments:

Data quality or usability unaffected

7. QC Samples

a. Method Blank

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

Yes No

Comments:

Method Blanks reported

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

Yes No

Comments:

Method blank results less than LOQ

iii. If above LOQ, what samples are affected?

Comments:

Method blank results less than LOQ, Samples not affected

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

Yes No

Comments:

Method blank results less than LOQ, Samples not affected

v. Data quality or usability affected?

Comments:

Data quality or usability unaffected

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

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

Yes No

Comments:

LCS/LCSD reported

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

Yes No

Comments:

No metals or inorganics included in analytical suite.

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

Yes No

Comments:

Percent recoveries (%R) reported and within method or laboratory 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

Comments:

Relative percent differences (RPD) reported and less than method or laboratory limits

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

Comments:

%R or RPD is inside of acceptable limits

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

Yes No

Comments:

Samples not affected

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

Comments:

Data quality or usability unaffected

c. Surrogates – Organics Only

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

Yes No

Comments:

Surrogate recoveries reported

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

Yes No

Comments:

Surrogate recovery for three GRO samples did not meet QC criteria

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

Yes No

Comments:

Data flags clearly defined

iv. Data quality or usability affected?

Comments:

Data quality or usability unaffected

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

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

Yes No

Comments:

Correct trip blanks reported

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No

Comments:

Cooler clearly indicated

iii. All results less than LOQ?

Yes No

Comments:

Trip blanks results less than LOQ

iv. If above LOQ, what samples are affected?

Comments:

No Trip Blanks above LOQ

v. Data quality or usability affected?

Comments:

Data quality or usability unaffected

e. Field Duplicate

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

Yes No

Comments:

Field duplicate submitted

ii. Submitted blind to lab?

Yes No

Comments:

Submitted blind to the lab

iii. Precision – All relative percent differences (RPD) less than specified DQOs?

(Recommended: 30% water, 50% soil)

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No

Comments:

RPD for GRO is 6.66%, RPD for DRO is 11.76 %, all RPD less than specified DQOs

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

Comments:

Data quality or usability unaffected

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

Yes No Not Applicable

No Decontamination or Equipment Blank

i. All results less than LOQ?

Yes No

Comments:

No Decontamination or Equipment Blank

ii. If above LOQ, what samples are affected?

Comments:

No Decontamination or Equipment Blank

iii. Data quality or usability affected?

Comments:

Data quality or usability unaffected

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

a. Defined and appropriate?

Yes No

Comments:

Flags Defined

Appendix F:
SGS Laboratory Data Package





Laboratory Report of Analysis

To: Restoration Science & Eng
911 West 8th Ave Suite 100
Anchorage, AK 99501

Report Number: **1194197**

Client Project: **18-1942 ZHOTSE**

Dear Kyle Wiseman,

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

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

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

Sincerely,
SGS North America Inc.

Chuck Homestead
Project Manager
Charles.Homestead@sgs.com

Date

Revised Report: Case narrative updated.

Case Narrative

SGS Client: **Restoration Science & Eng**

SGS Project: **1194197**

Project Name/Site: **18-1942 ZHOTSE**

Project Contact: **Kyle Wiseman**

Refer to sample receipt form for information on sample condition.

65726 (1194197002) PS

AK101 - Sample has a pH greater than 2.

64726 (1194197003) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.

OB1MW726 (1194197004) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.

OB0MW726 (1194197005) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.

DRO Analysis: The DRO samples were received at the laboratory unpreserved due to laboratory error.

The samples were preserved upon receipt.

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

Print Date: 08/09/2019 10:42:57AM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
8270D SIM LV (PAH)				
1194197006	OB2MW726	XMS11608	Benzo[k]fluoranthene	RP
1194197006	OB2MW726	XMS11602	Dibenzo[a,h]anthracene	RP
SW8260C				
1194197002	65726	VMS19267	n-Butylbenzene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 08/09/2019 10:42:58AM

Laboratory Qualifiers

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

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification, and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

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

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
OB3MW726	1194197001	07/26/2019	07/29/2019	Water (Surface, Eff., Ground)
65726	1194197002	07/26/2019	07/29/2019	Water (Surface, Eff., Ground)
64726	1194197003	07/26/2019	07/29/2019	Water (Surface, Eff., Ground)
OB1MW726	1194197004	07/26/2019	07/29/2019	Water (Surface, Eff., Ground)
OB0MW726	1194197005	07/26/2019	07/29/2019	Water (Surface, Eff., Ground)
OB2MW726	1194197006	07/26/2019	07/29/2019	Water (Surface, Eff., Ground)
Trip Blank	1194197007	07/26/2019	07/29/2019	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK102	DRO Low Volume (W)
AK101	Gasoline Range Organics (W)
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 08/09/2019 10:43:00AM

Detectable Results Summary

Client Sample ID: **65726**

Lab Sample ID: 1194197002

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	3.56	ug/L
2-Methylnaphthalene	3.10	ug/L
Naphthalene	12.2	ug/L
Semivolatile Organic Fuels		
Diesel Range Organics	0.592	mg/L
Volatile Fuels		
Gasoline Range Organics	1.05	mg/L
Volatile GC/MS- Petroleum VOC Group		
1,2,4-Trimethylbenzene	125	ug/L
1,3,5-Trimethylbenzene	68.8	ug/L
Benzene	0.480	ug/L
Ethylbenzene	22.1	ug/L
Isopropylbenzene (Cumene)	29.0	ug/L
Naphthalene	15.1	ug/L
n-Butylbenzene	5.32	ug/L
o-Xylene	2.26	ug/L
P & M -Xylene	68.5	ug/L
sec-Butylbenzene	6.71	ug/L
Toluene	0.340J	ug/L
Xylenes (total)	70.7	ug/L

Client Sample ID: **64726**

Lab Sample ID: 1194197003

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.376	ug/L
2-Methylnaphthalene	0.0250J	ug/L
Naphthalene	3.61	ug/L
Semivolatile Organic Fuels		
Diesel Range Organics	0.343J	mg/L
Volatile Fuels		
Gasoline Range Organics	1.48	mg/L
Volatile GC/MS- Petroleum VOC Group		
1,2,4-Trimethylbenzene	115	ug/L
1,3,5-Trimethylbenzene	13.3	ug/L
Benzene	4.28	ug/L
Ethylbenzene	17.2	ug/L
Isopropylbenzene (Cumene)	21.9	ug/L
Naphthalene	5.76	ug/L
o-Xylene	0.870J	ug/L
P & M -Xylene	173	ug/L
sec-Butylbenzene	2.38	ug/L
Xylenes (total)	174	ug/L

Detectable Results Summary

Client Sample ID: **OB1MW726**

Lab Sample ID: 1194197004

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	6.72	ug/L
2-Methylnaphthalene	2.00	ug/L
Acenaphthene	0.135	ug/L
Fluorene	0.277	ug/L
Naphthalene	6.47	ug/L
Phenanthrene	0.0707	ug/L
Pyrene	0.0287J	ug/L

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

Diesel Range Organics	1.20	mg/L
Gasoline Range Organics	3.19	mg/L
1,2,4-Trimethylbenzene	323	ug/L
1,3,5-Trimethylbenzene	128	ug/L
Benzene	1.67	ug/L
Ethylbenzene	12.4	ug/L
Isopropylbenzene (Cumene)	46.3	ug/L
Naphthalene	21.0	ug/L
o-Xylene	10.4	ug/L
P & M -Xylene	36.6	ug/L
Toluene	2.97	ug/L
Xylenes (total)	46.9	ug/L

Client Sample ID: **OB0MW726**

Lab Sample ID: 1194197005

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	8.54	ug/L
2-Methylnaphthalene	5.03	ug/L
Acenaphthene	0.123	ug/L
Fluorene	0.279	ug/L
Naphthalene	6.56	ug/L
Phenanthrene	0.104	ug/L

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

Diesel Range Organics	1.35	mg/L
Gasoline Range Organics	3.41	mg/L
1,2,4-Trimethylbenzene	278	ug/L
1,3,5-Trimethylbenzene	126	ug/L
Benzene	1.44	ug/L
Ethylbenzene	10.6	ug/L
Isopropylbenzene (Cumene)	42.4	ug/L
Naphthalene	17.8	ug/L
o-Xylene	7.61	ug/L
P & M -Xylene	28.2	ug/L
Toluene	2.37	ug/L
Xylenes (total)	35.8	ug/L

Detectable Results Summary

Client Sample ID: **OB2MW726**

Lab Sample ID: 1194197006

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
2-Methylnaphthalene	0.0892	ug/L
Acenaphthene	0.780	ug/L
Acenaphthylene	0.283	ug/L
Anthracene	2.78	ug/L
Benzo(a)Anthracene	21.6	ug/L
Benzo[a]pyrene	28.8	ug/L
Benzo[b]Fluoranthene	49.1	ug/L
Benzo[g,h,i]perylene	26.8	ug/L
Benzo[k]fluoranthene	14.7	ug/L
Chrysene	33.4	ug/L
Dibenzo[a,h]anthracene	4.99	ug/L
Fluoranthene	73.1	ug/L
Fluorene	1.02	ug/L
Indeno[1,2,3-c,d] pyrene	23.9	ug/L
Naphthalene	0.300	ug/L
Phenanthrene	25.1	ug/L
Pyrene	53.3	ug/L
Semivolatile Organic Fuels		
Diesel Range Organics	2.78	mg/L
Volatile Fuels		
Gasoline Range Organics	0.0669J	mg/L
Volatile GC/MS- Petroleum VOC Group		
1,2,4-Trimethylbenzene	1.93	ug/L
1,3,5-Trimethylbenzene	0.590J	ug/L
Benzene	0.140J	ug/L
Ethylbenzene	1.21	ug/L
Isopropylbenzene (Cumene)	1.18	ug/L
Naphthalene	1.08	ug/L
sec-Butylbenzene	0.350J	ug/L



Results of **OB3MW726**

Client Sample ID: **OB3MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197001
Lab Project ID: 1194197

Collection Date: 07/26/19 11:05
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
2-Methylnaphthalene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Acenaphthene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Acenaphthylene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Benzo(a)Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Benzo[a]pyrene	0.00960 U	0.0192	0.00596	ug/L	1		08/04/19 18:48
Benzo[b]Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Benzo[g,h,i]perylene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Benzo[k]fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Chrysene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Dibenzo[a,h]anthracene	0.00960 U	0.0192	0.00596	ug/L	1		08/04/19 18:48
Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Fluorene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Indeno[1,2,3-c,d] pyrene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Naphthalene	0.0481 U	0.0962	0.0298	ug/L	1		08/04/19 18:48
Phenanthrene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Pyrene	0.0240 U	0.0481	0.0144	ug/L	1		08/04/19 18:48
Surrogates							
2-Methylnaphthalene-d10 (surr)	51.6	47-106		%	1		08/04/19 18:48
Fluoranthene-d10 (surr)	50.3	24-116		%	1		08/04/19 18:48

Batch Information

Analytical Batch: XMS11596
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/04/19 18:48
Container ID: 1194197001-I

Prep Batch: XXX41892
Prep Method: SW3520C
Prep Date/Time: 07/31/19 09:50
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of **OB3MW726**

Client Sample ID: **OB3MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197001
Lab Project ID: 1194197

Collection Date: 07/26/19 11:05
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.294 U	0.588	0.176	mg/L	1		08/08/19 01:46
Surrogates							
5a Androstane (surr)	77.7	50-150		%	1		08/08/19 01:46

Batch Information

Analytical Batch: XFC15224
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/08/19 01:46
Container ID: 1194197001-G

Prep Batch: XXX41951
Prep Method: SW3520C
Prep Date/Time: 08/07/19 08:50
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of **OB3MW726**

Client Sample ID: **OB3MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197001
Lab Project ID: 1194197

Collection Date: 07/26/19 11:05
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		08/01/19 21:24
Surrogates							
4-Bromofluorobenzene (surr)	72.8	50-150		%	1		08/01/19 21:24

Batch Information

Analytical Batch: VFC14856
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/01/19 21:24
Container ID: 1194197001-A

Prep Batch: VXX34561
Prep Method: SW5030B
Prep Date/Time: 08/01/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of **OB3MW726**

Client Sample ID: **OB3MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197001
Lab Project ID: 1194197

Collection Date: 07/26/19 11:05
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/05/19 18:23
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		08/05/19 18:23
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/19 18:23
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/05/19 18:23
Naphthalene	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/19 18:23
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/19 18:23
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/19 18:23
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		08/05/19 18:23
4-Bromofluorobenzene (surr)	95.8	85-114		%	1		08/05/19 18:23
Toluene-d8 (surr)	98.3	89-112		%	1		08/05/19 18:23

Batch Information

Analytical Batch: VMS19267
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/05/19 18:23
Container ID: 1194197001-D

Prep Batch: VXX34588
Prep Method: SW5030B
Prep Date/Time: 08/05/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 65726

Client Sample ID: 65726
Client Project ID: 18-1942 ZHOTSE
Lab Sample ID: 1194197002
Lab Project ID: 1194197

Collection Date: 07/26/19 12:35
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various PAHs and their concentrations.

Batch Information

Analytical Batch: XMS11602
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/05/19 17:55
Container ID: 1194197002-I

Prep Batch: XXX41899
Prep Method: SW3520C
Prep Date/Time: 08/01/19 08:09
Prep Initial Wt./Vol.: 252 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11608
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/06/19 19:47
Container ID: 1194197002-I

Prep Batch: XXX41899
Prep Method: SW3520C
Prep Date/Time: 08/01/19 08:09
Prep Initial Wt./Vol.: 252 mL
Prep Extract Vol: 1 mL



Results of **65726**

Client Sample ID: **65726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197002
Lab Project ID: 1194197

Collection Date: 07/26/19 12:35
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.592		0.588	0.176	mg/L	1		08/08/19 01:56
Surrogates								
5a Androstane (surr)	78.7		50-150		%	1		08/08/19 01:56

Batch Information

Analytical Batch: XFC15224
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/08/19 01:56
Container ID: 1194197002-G

Prep Batch: XXX41951
Prep Method: SW3520C
Prep Date/Time: 08/07/19 08:50
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of **65726**

Client Sample ID: **65726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197002
Lab Project ID: 1194197

Collection Date: 07/26/19 12:35
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.05	0.100	0.0310	mg/L	1		08/01/19 21:41
Surrogates							
4-Bromofluorobenzene (surr)	97.1	50-150		%	1		08/01/19 21:41

Batch Information

Analytical Batch: VFC14856
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/01/19 21:41
Container ID: 1194197002-A

Prep Batch: VXX34561
Prep Method: SW5030B
Prep Date/Time: 08/01/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 65726

Client Sample ID: 65726
Client Project ID: 18-1942 ZHOTSE
Lab Sample ID: 1194197002
Lab Project ID: 1194197

Collection Date: 07/26/19 12:35
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS- Petroleum VOC Group

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include 1,2,4-Trimethylbenzene, 1,2-Dibromoethane, 1,2-Dichloroethane, 1,3,5-Trimethylbenzene, Benzene, Ethylbenzene, Isopropylbenzene (Cumene), Methyl-t-butyl ether, Naphthalene, n-Butylbenzene, o-Xylene, P & M -Xylene, sec-Butylbenzene, tert-Butylbenzene, Toluene, Xylenes (total), and Surrogates (1,2-Dichloroethane-D4, 4-Bromofluorobenzene, Toluene-d8).

Batch Information

Analytical Batch: VMS19267
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/05/19 18:37
Container ID: 1194197002-D

Prep Batch: VXX34588
Prep Method: SW5030B
Prep Date/Time: 08/05/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19269
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/06/19 19:17
Container ID: 1194197002-D

Prep Batch: VXX34593
Prep Method: SW5030B
Prep Date/Time: 08/06/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 64726

Client Sample ID: 64726
Client Project ID: 18-1942 ZHOTSE
Lab Sample ID: 1194197003
Lab Project ID: 1194197

Collection Date: 07/26/19 13:30
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11602
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/05/19 18:16
Container ID: 1194197003-I

Prep Batch: XXX41899
Prep Method: SW3520C
Prep Date/Time: 08/01/19 08:09
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of **64726**

Client Sample ID: **64726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197003
Lab Project ID: 1194197

Collection Date: 07/26/19 13:30
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.343 J	0.588	0.176	mg/L	1		08/08/19 02:05
Surrogates							
5a Androstane (surr)	78.3	50-150		%	1		08/08/19 02:05

Batch Information

Analytical Batch: XFC15224
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/08/19 02:05
Container ID: 1194197003-G

Prep Batch: XXX41951
Prep Method: SW3520C
Prep Date/Time: 08/07/19 08:50
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of 64726

Client Sample ID: **64726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197003
Lab Project ID: 1194197

Collection Date: 07/26/19 13:30
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.48		0.100	0.0310	mg/L	1		08/01/19 21:59
Surrogates								
4-Bromofluorobenzene (surr)	177	*	50-150		%	1		08/01/19 21:59

Batch Information

Analytical Batch: VFC14856
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/01/19 21:59
Container ID: 1194197003-A

Prep Batch: VXX34561
Prep Method: SW5030B
Prep Date/Time: 08/01/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 64726

Client Sample ID: 64726
Client Project ID: 18-1942 ZHOTSE
Lab Sample ID: 1194197003
Lab Project ID: 1194197

Collection Date: 07/26/19 13:30
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS- Petroleum VOC Group

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various petroleum VOCs like 1,2,4-Trimethylbenzene, Benzene, and Xylenes, along with Surrogates.

Batch Information

Analytical Batch: VMS19267
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/05/19 18:52
Container ID: 1194197003-D

Prep Batch: VXX34588
Prep Method: SW5030B
Prep Date/Time: 08/05/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of **OB1MW726**

Client Sample ID: **OB1MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197004
Lab Project ID: 1194197

Collection Date: 07/26/19 14:10
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	6.72	0.0490	0.0147	ug/L	1		08/05/19 18:36
2-Methylnaphthalene	2.00	0.0490	0.0147	ug/L	1		08/05/19 18:36
Acenaphthene	0.135	0.0490	0.0147	ug/L	1		08/05/19 18:36
Acenaphthylene	0.0245 U	0.0490	0.0147	ug/L	1		08/05/19 18:36
Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		08/05/19 18:36
Benzo(a)Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		08/05/19 18:36
Benzo[a]pyrene	0.00980 U	0.0196	0.00608	ug/L	1		08/05/19 18:36
Benzo[b]Fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		08/05/19 18:36
Benzo[g,h,i]perylene	0.0245 U	0.0490	0.0147	ug/L	1		08/05/19 18:36
Benzo[k]fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		08/05/19 18:36
Chrysene	0.0245 U	0.0490	0.0147	ug/L	1		08/05/19 18:36
Dibenzo[a,h]anthracene	0.00980 U	0.0196	0.00608	ug/L	1		08/05/19 18:36
Fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		08/05/19 18:36
Fluorene	0.277	0.0490	0.0147	ug/L	1		08/05/19 18:36
Indeno[1,2,3-c,d] pyrene	0.0245 U	0.0490	0.0147	ug/L	1		08/05/19 18:36
Naphthalene	6.47	0.0980	0.0304	ug/L	1		08/05/19 18:36
Phenanthrene	0.0707	0.0490	0.0147	ug/L	1		08/05/19 18:36
Pyrene	0.0287 J	0.0490	0.0147	ug/L	1		08/05/19 18:36
Surrogates							
2-Methylnaphthalene-d10 (surr)	54.7	47-106		%	1		08/05/19 18:36
Fluoranthene-d10 (surr)	48.8	24-116		%	1		08/05/19 18:36

Batch Information

Analytical Batch: XMS11602
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/05/19 18:36
Container ID: 1194197004-I

Prep Batch: XXX41899
Prep Method: SW3520C
Prep Date/Time: 08/01/19 08:09
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of **OB1MW726**

Client Sample ID: **OB1MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197004
Lab Project ID: 1194197

Collection Date: 07/26/19 14:10
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1.20		0.566	0.170	mg/L	1		08/08/19 02:15
Surrogates								
5a Androstane (surr)	78.6		50-150		%	1		08/08/19 02:15

Batch Information

Analytical Batch: XFC15224
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/08/19 02:15
Container ID: 1194197004-G

Prep Batch: XXX41951
Prep Method: SW3520C
Prep Date/Time: 08/07/19 08:50
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL



Results of **OB1MW726**

Client Sample ID: **OB1MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197004
Lab Project ID: 1194197

Collection Date: 07/26/19 14:10
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	3.19		0.100	0.0310	mg/L	1		08/01/19 22:16
Surrogates								
4-Bromofluorobenzene (surr)	275	*	50-150		%	1		08/01/19 22:16

Batch Information

Analytical Batch: VFC14856
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/01/19 22:16
Container ID: 1194197004-A

Prep Batch: VXX34561
Prep Method: SW5030B
Prep Date/Time: 08/01/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of OB1MW726

Client Sample ID: **OB1MW726**
 Client Project ID: **18-1942 ZHOTSE**
 Lab Sample ID: 1194197004
 Lab Project ID: 1194197

Collection Date: 07/26/19 14:10
 Received Date: 07/29/19 12:46
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS- Petroleum VOC Group

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2,4-Trimethylbenzene	323	5.00	1.55	ug/L	5		08/06/19 19:32
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/05/19 19:07
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		08/05/19 19:07
1,3,5-Trimethylbenzene	128	1.00	0.310	ug/L	1		08/05/19 19:07
Benzene	1.67	0.400	0.120	ug/L	1		08/05/19 19:07
Ethylbenzene	12.4	1.00	0.310	ug/L	1		08/05/19 19:07
Isopropylbenzene (Cumene)	46.3	1.00	0.310	ug/L	1		08/05/19 19:07
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/05/19 19:07
Naphthalene	21.0	1.00	0.310	ug/L	1		08/05/19 19:07
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:07
o-Xylene	10.4	1.00	0.310	ug/L	1		08/05/19 19:07
P & M -Xylene	36.6	2.00	0.620	ug/L	1		08/05/19 19:07
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:07
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:07
Toluene	2.97	1.00	0.310	ug/L	1		08/05/19 19:07
Xylenes (total)	46.9	3.00	1.00	ug/L	1		08/05/19 19:07
Surrogates							
1,2-Dichloroethane-D4 (surr)	100	81-118		%	1		08/05/19 19:07
4-Bromofluorobenzene (surr)	105	85-114		%	1		08/05/19 19:07
Toluene-d8 (surr)	99.9	89-112		%	1		08/05/19 19:07

Batch Information

Analytical Batch: VMS19267
 Analytical Method: SW8260C
 Analyst: CMC
 Analytical Date/Time: 08/05/19 19:07
 Container ID: 1194197004-D

Prep Batch: VXX34588
 Prep Method: SW5030B
 Prep Date/Time: 08/05/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS19269
 Analytical Method: SW8260C
 Analyst: CMC
 Analytical Date/Time: 08/06/19 19:32
 Container ID: 1194197004-D

Prep Batch: VXX34593
 Prep Method: SW5030B
 Prep Date/Time: 08/06/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **OB0MW726**

Client Sample ID: **OB0MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197005
Lab Project ID: 1194197

Collection Date: 07/26/19 14:15
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	8.54	0.0508	0.0152	ug/L	1		08/05/19 18:57
2-Methylnaphthalene	5.03	0.0508	0.0152	ug/L	1		08/05/19 18:57
Acenaphthene	0.123	0.0508	0.0152	ug/L	1		08/05/19 18:57
Acenaphthylene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Anthracene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Benzo(a)Anthracene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Benzo[a]pyrene	0.0101 U	0.0203	0.00630	ug/L	1		08/05/19 18:57
Benzo[b]Fluoranthene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Benzo[g,h,i]perylene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Benzo[k]fluoranthene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Chrysene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Dibenzo[a,h]anthracene	0.0101 U	0.0203	0.00630	ug/L	1		08/05/19 18:57
Fluoranthene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Fluorene	0.279	0.0508	0.0152	ug/L	1		08/05/19 18:57
Indeno[1,2,3-c,d] pyrene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Naphthalene	6.56	0.102	0.0315	ug/L	1		08/05/19 18:57
Phenanthrene	0.104	0.0508	0.0152	ug/L	1		08/05/19 18:57
Pyrene	0.0254 U	0.0508	0.0152	ug/L	1		08/05/19 18:57
Surrogates							
2-Methylnaphthalene-d10 (surr)	53.5	47-106		%	1		08/05/19 18:57
Fluoranthene-d10 (surr)	53	24-116		%	1		08/05/19 18:57

Batch Information

Analytical Batch: XMS11602
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/05/19 18:57
Container ID: 1194197005-I

Prep Batch: XXX41899
Prep Method: SW3520C
Prep Date/Time: 08/01/19 08:09
Prep Initial Wt./Vol.: 246 mL
Prep Extract Vol: 1 mL



Results of **OB0MW726**

Client Sample ID: **OB0MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197005
Lab Project ID: 1194197

Collection Date: 07/26/19 14:15
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1.35	0.566	0.170	mg/L	1		08/08/19 02:24
Surrogates							
5a Androstane (surr)	81.3	50-150		%	1		08/08/19 02:24

Batch Information

Analytical Batch: XFC15224
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/08/19 02:24
Container ID: 1194197005-G

Prep Batch: XXX41951
Prep Method: SW3520C
Prep Date/Time: 08/07/19 08:50
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL



Results of **OB0MW726**

Client Sample ID: **OB0MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197005
Lab Project ID: 1194197

Collection Date: 07/26/19 14:15
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	3.41		0.100	0.0310	mg/L	1		08/01/19 22:34
Surrogates								
4-Bromofluorobenzene (surr)	299	*	50-150		%	1		08/01/19 22:34

Batch Information

Analytical Batch: VFC14856
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/01/19 22:34
Container ID: 1194197005-A

Prep Batch: VXX34561
Prep Method: SW5030B
Prep Date/Time: 08/01/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of **OB0MW726**

Client Sample ID: **OB0MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197005
Lab Project ID: 1194197

Collection Date: 07/26/19 14:15
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2,4-Trimethylbenzene	278	5.00	1.55	ug/L	5		08/06/19 19:47
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/05/19 19:22
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		08/05/19 19:22
1,3,5-Trimethylbenzene	126	1.00	0.310	ug/L	1		08/05/19 19:22
Benzene	1.44	0.400	0.120	ug/L	1		08/05/19 19:22
Ethylbenzene	10.6	1.00	0.310	ug/L	1		08/05/19 19:22
Isopropylbenzene (Cumene)	42.4	1.00	0.310	ug/L	1		08/05/19 19:22
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/05/19 19:22
Naphthalene	17.8	1.00	0.310	ug/L	1		08/05/19 19:22
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:22
o-Xylene	7.61	1.00	0.310	ug/L	1		08/05/19 19:22
P & M -Xylene	28.2	2.00	0.620	ug/L	1		08/05/19 19:22
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:22
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:22
Toluene	2.37	1.00	0.310	ug/L	1		08/05/19 19:22
Xylenes (total)	35.8	3.00	1.00	ug/L	1		08/05/19 19:22
Surrogates							
1,2-Dichloroethane-D4 (surr)	99.1	81-118		%	1		08/05/19 19:22
4-Bromofluorobenzene (surr)	108	85-114		%	1		08/05/19 19:22
Toluene-d8 (surr)	99.7	89-112		%	1		08/05/19 19:22

Batch Information

Analytical Batch: VMS19267
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/05/19 19:22
Container ID: 1194197005-D

Prep Batch: VXX34588
Prep Method: SW5030B
Prep Date/Time: 08/05/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19269
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/06/19 19:47
Container ID: 1194197005-D

Prep Batch: VXX34593
Prep Method: SW5030B
Prep Date/Time: 08/06/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of **OB2MW726**

Client Sample ID: **OB2MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197006
Lab Project ID: 1194197

Collection Date: 07/26/19 16:00
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		08/05/19 19:17
2-Methylnaphthalene	0.0892	0.0500	0.0150	ug/L	1		08/05/19 19:17
Acenaphthene	0.780	0.0500	0.0150	ug/L	1		08/05/19 19:17
Acenaphthylene	0.283	0.0500	0.0150	ug/L	1		08/05/19 19:17
Anthracene	2.78	0.0500	0.0150	ug/L	1		08/05/19 19:17
Benzo(a)Anthracene	21.6	1.00	0.300	ug/L	20		08/06/19 20:08
Benzo[a]pyrene	28.8	0.400	0.124	ug/L	20		08/06/19 20:08
Benzo[b]Fluoranthene	49.1	1.00	0.300	ug/L	20		08/06/19 20:08
Benzo[g,h,i]perylene	26.8	1.00	0.300	ug/L	20		08/06/19 20:08
Benzo[k]fluoranthene	14.7	1.00	0.300	ug/L	20		08/06/19 20:08
Chrysene	33.4	1.00	0.300	ug/L	20		08/06/19 20:08
Dibenzo[a,h]anthracene	4.99	0.0200	0.00620	ug/L	1		08/05/19 19:17
Fluoranthene	73.1	1.00	0.300	ug/L	20		08/06/19 20:08
Fluorene	1.02	0.0500	0.0150	ug/L	1		08/05/19 19:17
Indeno[1,2,3-c,d] pyrene	23.9	1.00	0.300	ug/L	20		08/06/19 20:08
Naphthalene	0.300	0.100	0.0310	ug/L	1		08/05/19 19:17
Phenanthrene	25.1	1.00	0.300	ug/L	20		08/06/19 20:08
Pyrene	53.3	1.00	0.300	ug/L	20		08/06/19 20:08
Surrogates							
2-Methylnaphthalene-d10 (surr)	49.5	47-106		%	1		08/05/19 19:17
Fluoranthene-d10 (surr)	33.3	24-116		%	1		08/05/19 19:17

Batch Information

Analytical Batch: XMS11602
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/05/19 19:17
Container ID: 1194197006-I

Prep Batch: XXX41899
Prep Method: SW3520C
Prep Date/Time: 08/01/19 08:09
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11608
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/06/19 20:08
Container ID: 1194197006-I

Prep Batch: XXX41899
Prep Method: SW3520C
Prep Date/Time: 08/01/19 08:09
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



Results of OB2MW726

Client Sample ID: **OB2MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197006
Lab Project ID: 1194197

Collection Date: 07/26/19 16:00
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	2.78		0.714	0.214	mg/L	1		08/08/19 02:34
Surrogates								
5a Androstane (surr)	72		50-150		%	1		08/08/19 02:34

Batch Information

Analytical Batch: XFC15224
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/08/19 02:34
Container ID: 1194197006-G

Prep Batch: XXX41951
Prep Method: SW3520C
Prep Date/Time: 08/07/19 08:50
Prep Initial Wt./Vol.: 210 mL
Prep Extract Vol: 1 mL



Results of **OB2MW726**

Client Sample ID: **OB2MW726**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197006
Lab Project ID: 1194197

Collection Date: 07/26/19 16:00
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0669 J	0.100	0.0310	mg/L	1		08/01/19 22:52
Surrogates							
4-Bromofluorobenzene (surr)	88.3	50-150		%	1		08/01/19 22:52

Batch Information

Analytical Batch: VFC14856
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/01/19 22:52
Container ID: 1194197006-A

Prep Batch: VXX34561
Prep Method: SW5030B
Prep Date/Time: 08/01/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of OB2MW726

Client Sample ID: **OB2MW726**
 Client Project ID: **18-1942 ZHOTSE**
 Lab Sample ID: 1194197006
 Lab Project ID: 1194197

Collection Date: 07/26/19 16:00
 Received Date: 07/29/19 12:46
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS- Petroleum VOC Group

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2,4-Trimethylbenzene	1.93	1.00	0.310	ug/L	1		08/06/19 20:16
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/05/19 19:37
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		08/05/19 19:37
1,3,5-Trimethylbenzene	0.590 J	1.00	0.310	ug/L	1		08/06/19 20:16
Benzene	0.140 J	0.400	0.120	ug/L	1		08/05/19 19:37
Ethylbenzene	1.21	1.00	0.310	ug/L	1		08/05/19 19:37
Isopropylbenzene (Cumene)	1.18	1.00	0.310	ug/L	1		08/05/19 19:37
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/05/19 19:37
Naphthalene	1.08	1.00	0.310	ug/L	1		08/05/19 19:37
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:37
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:37
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/19 19:37
sec-Butylbenzene	0.350 J	1.00	0.310	ug/L	1		08/05/19 19:37
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:37
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/19 19:37
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/19 19:37
Surrogates							
1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		08/05/19 19:37
4-Bromofluorobenzene (surr)	97.3	85-114		%	1		08/05/19 19:37
Toluene-d8 (surr)	97.6	89-112		%	1		08/05/19 19:37

Batch Information

Analytical Batch: VMS19267
 Analytical Method: SW8260C
 Analyst: CMC
 Analytical Date/Time: 08/05/19 19:37
 Container ID: 1194197006-D

Prep Batch: VXX34588
 Prep Method: SW5030B
 Prep Date/Time: 08/05/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS19269
 Analytical Method: SW8260C
 Analyst: CMC
 Analytical Date/Time: 08/06/19 20:16
 Container ID: 1194197006-D

Prep Batch: VXX34593
 Prep Method: SW5030B
 Prep Date/Time: 08/06/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **18-1942 ZHOTSE**
Lab Sample ID: 1194197007
Lab Project ID: 1194197

Collection Date: 07/26/19 11:05
Received Date: 07/29/19 12:46
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		08/01/19 19:55
Surrogates							
4-Bromofluorobenzene (surr)	73	50-150		%	1		08/01/19 19:55

Batch Information

Analytical Batch: VFC14856
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/01/19 19:55
Container ID: 1194197007-A

Prep Batch: VXX34561
Prep Method: SW5030B
Prep Date/Time: 08/01/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **18-1942 ZHOTSE**
 Lab Sample ID: 1194197007
 Lab Project ID: 1194197

Collection Date: 07/26/19 11:05
 Received Date: 07/29/19 12:46
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS- Petroleum VOC Group

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/05/19 16:08
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		08/05/19 16:08
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/19 16:08
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/05/19 16:08
Naphthalene	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/19 16:08
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/19 16:08
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/19 16:08
Surrogates							
1,2-Dichloroethane-D4 (surr)	107	81-118		%	1		08/05/19 16:08
4-Bromofluorobenzene (surr)	99.3	85-114		%	1		08/05/19 16:08
Toluene-d8 (surr)	98.6	89-112		%	1		08/05/19 16:08

Batch Information

Analytical Batch: VMS19267
 Analytical Method: SW8260C
 Analyst: CMC
 Analytical Date/Time: 08/05/19 16:08
 Container ID: 1194197007-A

Prep Batch: VXX34588
 Prep Method: SW5030B
 Prep Date/Time: 08/05/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1797328 [VXX/34561]
Blank Lab ID: 1522973

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1194197001, 1194197002, 1194197003, 1194197004, 1194197005, 1194197006, 1194197007

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	73.5	50-150		%

Batch Information

Analytical Batch: VFC14856
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: NRB
Analytical Date/Time: 8/1/2019 7:20:00PM

Prep Batch: VXX34561
Prep Method: SW5030B
Prep Date/Time: 8/1/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/09/2019 10:43:03AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1194197 [VXX34561]
Blank Spike Lab ID: 1522976
Date Analyzed: 08/02/2019 00:37

Spike Duplicate ID: LCSD for HBN 1194197 [VXX34561]
Spike Duplicate Lab ID: 1522977
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194197001, 1194197002, 1194197003, 1194197004, 1194197005, 1194197006, 1194197007

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.962	96	1.00	0.955	96	(60-120)	0.78	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	76.6	77	0.0500	78.4	78	(50-150)	2.30	
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Batch Information

Analytical Batch: VFC14856
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: NRB

Prep Batch: VXX34561
Prep Method: SW5030B
Prep Date/Time: 08/01/2019 06:00
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 08/09/2019 10:43:05AM



Method Blank

Blank ID: MB for HBN 1797493 [VXX/34588]
Blank Lab ID: 1523664

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1194197001, 1194197002, 1194197003, 1194197004, 1194197005, 1194197006, 1194197007

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L

Surrogates

1,2-Dichloroethane-D4 (surr)	106	81-118	%
4-Bromofluorobenzene (surr)	98	85-114	%
Toluene-d8 (surr)	98.9	89-112	%

Batch Information

Analytical Batch: VMS19267
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: CMC
Analytical Date/Time: 8/5/2019 2:31:00PM

Prep Batch: VXX34588
Prep Method: SW5030B
Prep Date/Time: 8/5/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/09/2019 10:43:07AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1194197 [VXX34588]
 Blank Spike Lab ID: 1523665
 Date Analyzed: 08/05/2019 14:46

Spike Duplicate ID: LCSD for HBN 1194197 [VXX34588]
 Spike Duplicate Lab ID: 1523666
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194197001, 1194197002, 1194197003, 1194197004, 1194197005, 1194197006, 1194197007

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2,4-Trimethylbenzene	30	30.0	100	30	28.8	96	(79-124)	4.10	(< 20)
1,2-Dibromoethane	30	28.6	95	30	28.6	95	(77-121)	0.11	(< 20)
1,2-Dichloroethane	30	27.9	93	30	27.8	93	(73-128)	0.65	(< 20)
1,3,5-Trimethylbenzene	30	28.9	96	30	28.2	94	(75-124)	2.30	(< 20)
Benzene	30	26.6	89	30	26.2	87	(79-120)	1.60	(< 20)
Ethylbenzene	30	26.8	89	30	26.6	89	(79-121)	0.75	(< 20)
Isopropylbenzene (Cumene)	30	28.1	94	30	28.1	94	(72-131)	0.07	(< 20)
Methyl-t-butyl ether	45	43.3	96	45	43.2	96	(71-124)	0.09	(< 20)
Naphthalene	30	24.5	82	30	25.7	86	(61-128)	4.80	(< 20)
n-Butylbenzene	30	28.9	96	30	28.1	94	(75-128)	2.70	(< 20)
o-Xylene	30	26.6	89	30	26.7	89	(78-122)	0.23	(< 20)
P & M -Xylene	60	53.4	89	60	53.4	89	(80-121)	0.02	(< 20)
sec-Butylbenzene	30	28.9	96	30	27.9	93	(77-126)	3.60	(< 20)
tert-Butylbenzene	30	29.7	99	30	28.8	96	(78-124)	3.40	(< 20)
Toluene	30	25.7	86	30	25.2	84	(80-121)	2.10	(< 20)
Xylenes (total)	90	80.0	89	90	80.0	89	(79-121)	0.06	(< 20)

Surrogates

1,2-Dichloroethane-D4 (surr)	30	101	101	30	102	102	(81-118)	0.49	
4-Bromofluorobenzene (surr)	30	99	99	30	98.9	99	(85-114)	0.10	
Toluene-d8 (surr)	30	98.7	99	30	98.9	99	(89-112)	0.24	

Batch Information

Analytical Batch: VMS19267
 Analytical Method: SW8260C
 Instrument: VPA 780/5975 GC/MS
 Analyst: CMC

Prep Batch: VXX34588
 Prep Method: SW5030B
 Prep Date/Time: 08/05/2019 06:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/09/2019 10:43:08AM



Method Blank

Blank ID: MB for HBN 1797554 [VXX/34593]

Blank Lab ID: 1523943

QC for Samples:

1194197002, 1194197004, 1194197005, 1194197006

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	107	81-118		%
4-Bromofluorobenzene (surr)	97.7	85-114		%
Toluene-d8 (surr)	97.7	89-112		%

Batch Information

Analytical Batch: VMS19269
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: CMC
Analytical Date/Time: 8/6/2019 1:56:00PM

Prep Batch: VXX34593
Prep Method: SW5030B
Prep Date/Time: 8/6/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/09/2019 10:43:09AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1194197 [VXX34593]
 Blank Spike Lab ID: 1523944
 Date Analyzed: 08/06/2019 14:11

Spike Duplicate ID: LCSD for HBN 1194197 [VXX34593]
 Spike Duplicate Lab ID: 1523945
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194197002, 1194197004, 1194197005, 1194197006

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2,4-Trimethylbenzene	30	28.6	95	30	28.2	94	(79-124)	1.30	(< 20)
1,3,5-Trimethylbenzene	30	28.3	94	30	26.7	89	(75-124)	5.60	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	104	104	30	102	102	(81-118)	1.60	
4-Bromofluorobenzene (surr)	30	98.3	98	30	99.3	99	(85-114)	0.94	
Toluene-d8 (surr)	30	97.6	98	30	98.8	99	(89-112)	1.30	

Batch Information

Analytical Batch: **VMS19269**
 Analytical Method: **SW8260C**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **CMC**

Prep Batch: **VXX34593**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/06/2019 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1797189 [XXX/41892]
Blank Lab ID: 1522395

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1194197001

Results by 8270D SIM LV (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	73.9	47-106		%
Fluoranthene-d10 (surr)	79.3	24-116		%

Batch Information

Analytical Batch: XMS11596
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: DSD
Analytical Date/Time: 8/4/2019 2:42:00PM

Prep Batch: XXX41892
Prep Method: SW3520C
Prep Date/Time: 7/31/2019 9:50:53AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 08/09/2019 10:43:11AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1194197 [XXX41892]

Blank Spike Lab ID: 1522396

Date Analyzed: 08/04/2019 15:03

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194197001

Results by 8270D SIM LV (PAH)

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	2	1.60	80	(41-115)
2-Methylnaphthalene	2	1.60	80	(39-114)
Acenaphthene	2	1.49	75	(48-114)
Acenaphthylene	2	1.65	83	(35-121)
Anthracene	2	1.55	78	(53-119)
Benzo(a)Anthracene	2	1.64	82	(59-120)
Benzo[a]pyrene	2	1.58	79	(53-120)
Benzo[b]Fluoranthene	2	1.67	84	(53-126)
Benzo[g,h,i]perylene	2	1.42	71	(44-128)
Benzo[k]fluoranthene	2	1.54	77	(54-125)
Chrysene	2	1.62	81	(57-120)
Dibenzo[a,h]anthracene	2	1.27	64	(44-131)
Fluoranthene	2	1.69	84	(58-120)
Fluorene	2	1.60	80	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.57	78	(48-130)
Naphthalene	2	1.60	80	(43-114)
Phenanthrene	2	1.53	77	(53-115)
Pyrene	2	1.78	89	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2	70.1	70	(47-106)
Fluoranthene-d10 (surr)	2	76.7	77	(24-116)

Batch Information

Analytical Batch: XMS11596

Analytical Method: 8270D SIM LV (PAH)

Instrument: Agilent GC 7890B/5977A SWA

Analyst: DSD

Prep Batch: XXX41892

Prep Method: SW3520C

Prep Date/Time: 07/31/2019 09:50

Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 08/09/2019 10:43:12AM



Matrix Spike Summary

Original Sample ID: 1194187007
 MS Sample ID: 1522397 MS
 MSD Sample ID: 1522398 MSD

Analysis Date: 08/04/2019 17:06
 Analysis Date: 08/04/2019 17:26
 Analysis Date: 08/04/2019 17:47
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194197001

Results by 8270D SIM LV (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.0227U	1.82	1.57	86	1.82	1.50	83	41-115	4.60	(< 20)
2-Methylnaphthalene	0.0227U	1.82	1.58	87	1.82	1.50	83	39-114	4.70	(< 20)
Acenaphthene	0.0227U	1.82	1.49	82	1.82	1.40	77	48-114	6.30	(< 20)
Acenaphthylene	0.0227U	1.82	1.62	89	1.82	1.54	85	35-121	4.80	(< 20)
Anthracene	0.0227U	1.82	1.48	81	1.82	1.41	78	53-119	4.60	(< 20)
Benzo(a)Anthracene	0.0227U	1.82	1.55	85	1.82	1.44	79	59-120	7.10	(< 20)
Benzo(a)pyrene	0.00910U	1.82	1.39	77	1.82	1.27	70	53-120	9.10	(< 20)
Benzo(b)Fluoranthene	0.0227U	1.82	1.49	82	1.82	1.37	75	53-126	8.30	(< 20)
Benzo(g,h,i)perylene	0.0227U	1.82	1.18	65	1.82	1.04	57	44-128	12.40	(< 20)
Benzo(k)fluoranthene	0.0227U	1.82	1.38	76	1.82	1.27	70	54-125	8.40	(< 20)
Chrysene	0.0227U	1.82	1.57	86	1.82	1.47	81	57-120	6.50	(< 20)
Dibenzo(a,h)anthracene	0.00910U	1.82	1.06	58	1.82	0.932	51	44-131	13.10	(< 20)
Fluoranthene	0.0227U	1.82	1.67	92	1.82	1.54	85	58-120	8.40	(< 20)
Fluorene	0.0227U	1.82	1.58	87	1.82	1.49	82	50-118	6.30	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0227U	1.82	1.19	66	1.82	1.07	59	48-130	10.50	(< 20)
Naphthalene	0.0454U	1.82	1.57	86	1.82	1.49	82	43-114	5.30	(< 20)
Phenanthrene	0.0227U	1.82	1.49	82	1.82	1.41	78	53-115	5.30	(< 20)
Pyrene	0.0244J	1.82	1.75	95	1.82	1.60	87	53-121	8.50	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.82	1.37	76	1.82	1.31	72	47-106	4.60	
Fluoranthene-d10 (surr)		1.82	1.5	82	1.82	1.42	78	24-116	5.10	

Batch Information

Analytical Batch: XMS11596
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 8/4/2019 5:26:00PM

Prep Batch: XXX41892
 Prep Method: 3520 Liq/Liq Ext for 8270 PAH SIM LV
 Prep Date/Time: 7/31/2019 9:50:53AM
 Prep Initial Wt./Vol.: 275.00mL
 Prep Extract Vol: 1.00mL

Print Date: 08/09/2019 10:43:13AM



Method Blank

Blank ID: MB for HBN 1797252 [XXX/41899]
Blank Lab ID: 1522664

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1194197002, 1194197003, 1194197004, 1194197005, 1194197006

Results by 8270D SIM LV (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	63.9	47-106		%
Fluoranthene-d10 (surr)	65.7	24-116		%

Batch Information

Analytical Batch: XMS11602
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: DSD
Analytical Date/Time: 8/5/2019 3:32:00PM

Prep Batch: XXX41899
Prep Method: SW3520C
Prep Date/Time: 8/1/2019 8:09:11AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 08/09/2019 10:43:14AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1194197 [XXX41899]

Blank Spike Lab ID: 1522665

Date Analyzed: 08/05/2019 15:52

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194197002, 1194197003, 1194197004, 1194197005, 1194197006

Results by 8270D SIM LV (PAH)

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	2	1.49	75	(41-115)
2-Methylnaphthalene	2	1.53	77	(39-114)
Acenaphthene	2	1.43	72	(48-114)
Acenaphthylene	2	1.56	78	(35-121)
Anthracene	2	1.51	76	(53-119)
Benzo(a)Anthracene	2	1.56	78	(59-120)
Benzo[a]pyrene	2	1.52	76	(53-120)
Benzo[b]Fluoranthene	2	1.55	77	(53-126)
Benzo[g,h,i]perylene	2	1.36	68	(44-128)
Benzo[k]fluoranthene	2	1.53	77	(54-125)
Chrysene	2	1.57	78	(57-120)
Dibenzo[a,h]anthracene	2	1.29	64	(44-131)
Fluoranthene	2	1.64	82	(58-120)
Fluorene	2	1.52	76	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.49	75	(48-130)
Naphthalene	2	1.54	77	(43-114)
Phenanthrene	2	1.47	74	(53-115)
Pyrene	2	1.74	87	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2	66	66	(47-106)
Fluoranthene-d10 (surr)	2	71.3	71	(24-116)

Batch Information

Analytical Batch: XMS11602

Analytical Method: 8270D SIM LV (PAH)

Instrument: Agilent GC 7890B/5977A SWA

Analyst: DSD

Prep Batch: XXX41899

Prep Method: SW3520C

Prep Date/Time: 08/01/2019 08:09

Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 08/09/2019 10:43:15AM



Matrix Spike Summary

Original Sample ID: 1194261001
 MS Sample ID: 1522666 MS
 MSD Sample ID: 1522667 MSD

Analysis Date: 08/05/2019 21:41
 Analysis Date: 08/05/2019 22:02
 Analysis Date: 08/05/2019 22:22
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194197002, 1194197003, 1194197004, 1194197005, 1194197006

Results by 8270D SIM LV (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL		
		Spike	Result	Rec (%)	Spike	Result	Rec (%)					
Acenaphthene	0.0543U	2.17	1.18	54	2.12	1.58	75	48-114	29.50	* (< 20)		
Acenaphthylene	0.0543U	2.17	1.34	62	2.12	1.79	84	35-121	28.60	* (< 20)		
Anthracene	0.0543U	2.17	1.16	53	2.12	1.56	74	53-119	29.50	* (< 20)		
Benzo(a)Anthracene	0.0543U	2.17	.992	46	*	2.12	1.30	61	59-120	27.00	* (< 20)	
Benzo[a]pyrene	0.0217U	2.17	.769	35	*	2.12	0.998	47	*	53-120	25.90	* (< 20)
Benzo[b]Fluoranthene	0.0543U	2.17	.823	38	*	2.12	1.11	52	*	53-126	29.40	* (< 20)
Benzo[g,h,i]perylene	0.0543U	2.17	.633	29	*	2.12	0.820	39	*	44-128	25.80	* (< 20)
Benzo[k]fluoranthene	0.0543U	2.17	.798	37	*	2.12	0.975	46	*	54-125	19.90	(< 20)
Chrysene	0.0543U	2.17	1.01	46	*	2.12	1.33	63		57-120	27.50	* (< 20)
Dibenzo[a,h]anthracene	0.0217U	2.17	.596	27	*	2.12	0.794	38	*	44-131	28.40	* (< 20)
Fluoranthene	0.0543U	2.17	1.19	55	*	2.12	1.56	74		58-120	27.30	* (< 20)
Fluorene	0.0543U	2.17	1.27	58		2.12	1.71	81		50-118	29.90	* (< 20)
Indeno[1,2,3-c,d] pyrene	0.0543U	2.17	.663	31	*	2.12	0.859	41	*	48-130	25.80	* (< 20)
Naphthalene	0.109U	2.17	1.29	59		2.12	1.72	81		43-114	28.20	* (< 20)
Phenanthrene	0.0543U	2.17	1.18	54		2.12	1.61	76		53-115	31.00	* (< 20)
Pyrene	0.0543U	2.17	1.22	56		2.12	1.65	78		53-121	29.80	* (< 20)
Surrogates												
2-Methylnaphthalene-d10 (surr)		2.17	1.12	51		2.12	1.50	71		47-106	28.90	
Fluoranthene-d10 (surr)		2.17	1.03	47		2.12	1.37	65		24-116	28.50	

Batch Information

Analytical Batch: XMS11602
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 8/5/2019 10:02:00PM

Prep Batch: XXX41899
 Prep Method: 3520 Liq/Liq Ext for 8270 PAH SIM LV
 Prep Date/Time: 8/1/2019 8:09:11AM
 Prep Initial Wt./Vol.: 230.00mL
 Prep Extract Vol: 1.00mL

Print Date: 08/09/2019 10:43:16AM



Method Blank

Blank ID: MB for HBN 1797538 [XXX/41951]
Blank Lab ID: 1523870

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1194197001, 1194197002, 1194197003, 1194197004, 1194197005, 1194197006

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	85.4	60-120		%

Batch Information

Analytical Batch: XFC15224
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: VDL
Analytical Date/Time: 8/7/2019 10:34:00PM

Prep Batch: XXX41951
Prep Method: SW3520C
Prep Date/Time: 8/7/2019 8:50:45AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 08/09/2019 10:43:17AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1194197 [XXX41951]
 Blank Spike Lab ID: 1523871
 Date Analyzed: 08/07/2019 22:43

Spike Duplicate ID: LCSD for HBN 1194197
 [XXX41951]
 Spike Duplicate Lab ID: 1523872
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194197001, 1194197002, 1194197003, 1194197004, 1194197005, 1194197006

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	18.9	94	20	19.2	96	(75-125)	1.70	(< 20)
Surrogates									
5a Androstane (surr)	0.4	88.3	88	0.4	88.6	89	(60-120)	0.42	

Batch Information

Analytical Batch: **XFC15224**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **VDL**

Prep Batch: **XXX41951**
 Prep Method: **SW3520C**
 Prep Date/Time: **08/07/2019 08:50**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 08/09/2019 10:43:18AM



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1194197



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CLIENT: RESTORATION SCIENCE, LLC

CONTACT: KYLE
PHONE NO: 278 1023

PROJECT NAME: ZHO TSE
PWSID/PERMIT#: 18-1942

REPORTS TO: KYLE
E-MAIL: KWISEMAN@RESTORATIONSCIENCE.COM

INVOICE TO: RSE
QUOTE #: 18-1942
P.O. #: 18-1942

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

Section 3		Preservative					REMARKS/ LOC ID
#	Type	Alc 1	Alc 2	Ac	Ac	Ac	
1	6	X	X	X	X	X	
2	6	X	X	X	X	X	
3	6	X	X	X	X	X	
4	6	X	X	X	X	X	
5	6	X	X	X	X	X	
6	6	X	X	X	X	X	
7	6	X	X	X	X	X	
8	6	X	X	X	X	X	
9	6	X	X	X	X	X	
10	6	X	X	X	X	X	
11	6	X	X	X	X	X	
12	6	X	X	X	X	X	
13	6	X	X	X	X	X	
14	6	X	X	X	X	X	
15	6	X	X	X	X	X	
16	6	X	X	X	X	X	
17	6	X	X	X	X	X	
18	6	X	X	X	X	X	
19	6	X	X	X	X	X	
20	6	X	X	X	X	X	
21	6	X	X	X	X	X	
22	6	X	X	X	X	X	
23	6	X	X	X	X	X	
24	6	X	X	X	X	X	
25	6	X	X	X	X	X	
26	6	X	X	X	X	X	
27	6	X	X	X	X	X	
28	6	X	X	X	X	X	
29	6	X	X	X	X	X	
30	6	X	X	X	X	X	
31	6	X	X	X	X	X	
32	6	X	X	X	X	X	
33	6	X	X	X	X	X	
34	6	X	X	X	X	X	
35	6	X	X	X	X	X	
36	6	X	X	X	X	X	
37	6	X	X	X	X	X	
38	6	X	X	X	X	X	
39	6	X	X	X	X	X	
40	6	X	X	X	X	X	
41	6	X	X	X	X	X	
42	6	X	X	X	X	X	
43	6	X	X	X	X	X	
44	6	X	X	X	X	X	
45	6	X	X	X	X	X	
46	6	X	X	X	X	X	
47	6	X	X	X	X	X	
48	6	X	X	X	X	X	
49	6	X	X	X	X	X	
50	6	X	X	X	X	X	
51	6	X	X	X	X	X	
52	6	X	X	X	X	X	
53	6	X	X	X	X	X	
54	6	X	X	X	X	X	
55	6	X	X	X	X	X	
56	6	X	X	X	X	X	
57	6	X	X	X	X	X	
58	6	X	X	X	X	X	
59	6	X	X	X	X	X	
60	6	X	X	X	X	X	
61	6	X	X	X	X	X	
62	6	X	X	X	X	X	
63	6	X	X	X	X	X	
64	6	X	X	X	X	X	
65	6	X	X	X	X	X	
66	6	X	X	X	X	X	
67	6	X	X	X	X	X	
68	6	X	X	X	X	X	
69	6	X	X	X	X	X	
70	6	X	X	X	X	X	
71	6	X	X	X	X	X	
72	6	X	X	X	X	X	
73	6	X	X	X	X	X	
74	6	X	X	X	X	X	
75	6	X	X	X	X	X	
76	6	X	X	X	X	X	
77	6	X	X	X	X	X	
78	6	X	X	X	X	X	
79	6	X	X	X	X	X	
80	6	X	X	X	X	X	
81	6	X	X	X	X	X	
82	6	X	X	X	X	X	
83	6	X	X	X	X	X	
84	6	X	X	X	X	X	
85	6	X	X	X	X	X	
86	6	X	X	X	X	X	
87	6	X	X	X	X	X	
88	6	X	X	X	X	X	
89	6	X	X	X	X	X	
90	6	X	X	X	X	X	
91	6	X	X	X	X	X	
92	6	X	X	X	X	X	
93	6	X	X	X	X	X	
94	6	X	X	X	X	X	
95	6	X	X	X	X	X	
96	6	X	X	X	X	X	
97	6	X	X	X	X	X	
98	6	X	X	X	X	X	
99	6	X	X	X	X	X	
100	6	X	X	X	X	X	

Section 4
Cooler ID: 7/26/19
DOD Project? Yes No
Data Deliverable Requirements: REGULAR

Section 5
Requested Turnaround Time and/or Special Instructions: REGULAR
Temp Blank °C: 2.8/0.50
Chain of Custody Seal: (Circle) INTACT (A) BROKEN (B) ABSENT
Temp Blank °C: 2.8/0.50
or Ambient []
Requested Turnaround Time and/or Special Instructions: REGULAR
Temp Blank °C: 2.8/0.50
Chain of Custody Seal: (Circle) INTACT (A) BROKEN (B) ABSENT
Temp Blank °C: 2.8/0.50
or Ambient []
Requested Turnaround Time and/or Special Instructions: REGULAR

Relinquished By: (1) [Signature]
Relinquished By: (2) [Signature]
Relinquished By: (3) [Signature]
Relinquished By: (4) [Signature]

Received By: [Signature]
Received By: [Signature]
Received By: [Signature]
Received For Laboratory By: [Signature]



e-Sample Receipt Form

SGS Workorder #:

1194197



1 1 9 4 1 9 7

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	Yes	1F 1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 2.8 °C Therm. ID: D50
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))	Yes	
<input type="checkbox"/> ***Exemption permitted for metals (e.g, 200.8/6020A).		
Were proper containers (type/mass/volume/preservative***) used?	No	Dro container received not preserved. Preserved in house with 2 mL HCl lot #LW09-0463-15-12 per CGH
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1194197001-A	HCL to pH < 2	OK			
1194197001-B	HCL to pH < 2	OK			
1194197001-C	HCL to pH < 2	OK			
1194197001-D	HCL to pH < 2	OK			
1194197001-E	HCL to pH < 2	OK			
1194197001-F	HCL to pH < 2	OK			
1194197001-G	HCL to pH < 2	OK			
1194197001-H	HCL to pH < 2	OK			
1194197001-I	No Preservative Required	OK			
1194197001-J	No Preservative Required	OK			
1194197002-A	HCL to pH < 2	OK			
1194197002-B	HCL to pH < 2	OK			
1194197002-C	HCL to pH < 2	OK			
1194197002-D	HCL to pH < 2	OK			
1194197002-E	HCL to pH < 2	OK			
1194197002-F	HCL to pH < 2	OK			
1194197002-G	HCL to pH < 2	OK			
1194197002-H	HCL to pH < 2	OK			
1194197002-I	No Preservative Required	OK			
1194197002-J	No Preservative Required	OK			
1194197003-A	HCL to pH < 2	OK			
1194197003-B	HCL to pH < 2	OK			
1194197003-C	HCL to pH < 2	OK			
1194197003-D	HCL to pH < 2	OK			
1194197003-E	HCL to pH < 2	OK			
1194197003-F	HCL to pH < 2	OK			
1194197003-G	HCL to pH < 2	OK			
1194197003-H	HCL to pH < 2	OK			
1194197003-I	No Preservative Required	OK			
1194197003-J	No Preservative Required	OK			
1194197004-A	HCL to pH < 2	OK			
1194197004-B	HCL to pH < 2	OK			
1194197004-C	HCL to pH < 2	OK			
1194197004-D	HCL to pH < 2	OK			
1194197004-E	HCL to pH < 2	OK			
1194197004-F	HCL to pH < 2	OK			
1194197004-G	HCL to pH < 2	OK			
1194197004-H	HCL to pH < 2	OK			
1194197004-I	No Preservative Required	OK			
1194197004-J	No Preservative Required	OK			
1194197005-A	HCL to pH < 2	OK			
1194197005-B	HCL to pH < 2	OK			
1194197005-C	HCL to pH < 2	OK			
1194197005-D	HCL to pH < 2	OK			
1194197005-E	HCL to pH < 2	OK			
1194197005-F	HCL to pH < 2	OK			
1194197005-G	HCL to pH < 2	OK			
1194197005-H	HCL to pH < 2	OK			

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1194197005-I	No Preservative Required	OK			
1194197005-J	No Preservative Required	OK			
1194197006-A	HCL to pH < 2	OK			
1194197006-B	HCL to pH < 2	OK			
1194197006-C	HCL to pH < 2	OK			
1194197006-D	HCL to pH < 2	OK			
1194197006-E	HCL to pH < 2	OK			
1194197006-F	HCL to pH < 2	OK			
1194197006-G	HCL to pH < 2	OK			
1194197006-H	HCL to pH < 2	OK			
1194197006-I	No Preservative Required	OK			
1194197006-J	No Preservative Required	OK			
1194197007-A	HCL to pH < 2	OK			
1194197007-B	HCL to pH < 2	OK			
1194197007-C	HCL to pH < 2	OK			
1194197007-D	HCL to pH < 2	OK			
1194197007-E	HCL to pH < 2	OK			
1194197007-F	HCL to pH < 2	OK			

Container Condition Glossary

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

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

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

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.