



October 8, 2018

Mr. Grant Lidren  
Alaska Department of Environmental Conservation-SPAR  
555 Cordova St.  
Anchorage, AK 99501

**RE: 2018 Groundwater Monitoring at the ML&P Transformer Shop; 1130 E. First Ave., Anchorage, Alaska (Hazard ID: 23842)**

Dear Mr. Lidren:

This report presents the results of the 2018 groundwater monitoring conducted at the Municipal Light and Power's (ML&P) Transformer Shop Site at 1130 E. First Avenue (formerly 1201 E. Third Ave.), in Anchorage, Alaska. The Site is listed with the Alaska Department of Environmental Conservation (ADEC) as File # 2100.26.302, Record Key # 90210001102, and Hazard ID 23842. The petroleum hydrocarbon contamination in the groundwater is attributed to leaking underground storage tanks removed in 1989. All of the groundwater monitoring wells are flush-mounted and located in an asphalt paved lot adjacent to the Transformer Shop Building (Figures 1 and 2). The sampling activities were conducted in accordance with the ADEC 2018 Work Plan Addendum \*SLR 2018) which is an addendum to the 2002 Work Plan, ML&P 2002).

### **2018 Groundwater Sampling**

SLR International Corporation (SLR) personnel collected groundwater samples at four monitoring wells (MW-5, MW-6, MW-7, and MW-9) on July 31 and August 3, 2018. The sampling effort was completed by Brett Woelber and Nick Wells, who meet the criteria of ADEC-qualified environmental professionals and samplers per 18 AAC 75.333. Groundwater sampling forms documenting the sampling of the wells are included in Appendix E of this report. A photograph log is also included documenting the site conditions during the sampling event (Appendix A).

Prior to the collection of the groundwater samples, the water levels in all wells were measured using an electronic water level indicator. With the exception of monitoring well MW-9 (discussed below) groundwater samples were collected using a low-flow sampling method by means of a peristaltic pump. The low-flow sampling method has been used for the annual monitoring at the site since 2011. The low-flow sampling method consists of purging at a low flow rate (between 0.05 and 0.5 liters per minute [L/min]), while maintaining a drawdown of less than 0.3 feet, if possible. During the purging, up to six water quality parameters are measured (temperature, pH, conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity) at three to five minute intervals. Water quality parameters are considered stable when three consecutive readings of at least three parameters (or four if temperature is used) are within:

- $\pm 3\%$  for temperature (minimum of  $\pm 0.2$  ° C),
- $\pm 0.1$  for pH,
- $\pm 3\%$  for conductivity,
- $\pm 10$  mv for ORP,
- $\pm 10\%$  for DO, and
- $\pm 10\%$  for turbidity.

All monitoring wells except MW-9 sustained near constant water levels during purging, at flow rates of 0.2 to 0.3 L/min. While purging, the water quality parameters were measured using a YSI 556 multi-parameter instrument. Turbidity was measured qualitatively (low, medium, or high). Stability criteria were met for all wells except MW-9. Water level data and final water quality parameters are presented in Table 1. Purge water generated during sampling activities was placed in labeled containers and disposed of by ML&P following the receipt of analytical results.

MW-9 has typically been a poor yielding well, which has repeatedly gone dry when purging and attempting to achieve stable parameters, even at very low flow rates. Since 2015, the standard sampling protocol for MW-9 is to purge the well dry and collect samples at least 24 hours later. On July 30, sampling was attempted at MW-9 using the low-flow technique. However, drawdown at MW-9 exceeded low-flow criteria (0.33 feet) and well purge was ended. On July 31, MW-9 was intentionally purged dry without attempting to achieve stable parameters. A total of 5.0 gallons of water were purged on July 30 and July 31. The water in the well was as allowed to recover for approximately 72 hours and analytical samples were collected on August 3 without additional purging. At that time, the water level well had recovered approximately 80%. Water quality parameters were measured on August 3 concurrent with sampling.

### Laboratory Analyses

Groundwater samples were collected from the four monitoring wells, including a duplicate sample from well MW-9, and submitted to SGS North America in Anchorage using chain-of-custody procedures. All of the groundwater samples were analyzed for DRO by Method AK 102, GRO by Method AK101, BTEX by Method SW8260C. In addition, MW-9 samples were analyzed for the full list of Volatile Organic Compounds by SW8260C and polycyclic aromatic hydrocarbons (PAH) by 8270D LV. The full-list VOCs and PAHs were added to the analytical suite in 2018 per the request of ADEC and subsequent Work Plan Addendum (SLR 2018).

Analytical data was reviewed for consistency with the *ADEC Technical Memorandum, Environmental Laboratory Data and Quality Assurance Requirements* (ADEC 2009). Appendices B, C, and D contain a Data Quality Assessment (DQA), ADEC Laboratory Data Review Checklist, and the laboratory analytical data package. Based on the DQA, the data were considered to be of good quality and acceptable for use with the noted qualifications. No data were rejected.

### Analytical Results

The 2018 analytical results are provided in Table 2 and Figure 2. Table 3 provides a summary of current and historical analytical results for DRO, GRO, Benzene, and Total BTEX analytes. The results were screened against the current ADEC ground water cleanup levels (18 AAC

75.345, Table C, revised September 2018). Of the four wells sampled, monitoring well MW-9 was the only well with detected concentrations above applicable groundwater cleanup levels.

Groundwater cleanup levels in MW-9 were exceeded for GRO, DRO, benzene, ethylbenzene, total xylenes, 1,2,4-Trimethylbenzene, 1,2-Dichloroethane and naphthalene as shown on Table 2. In MW-9, GRO was detected at 3.25 mg/L in the primary sample and 2.59 mg/L in the duplicate, which was slightly higher than the groundwater cleanup level of 2.2 mg/L. Concentrations of DRO were 2.69 mg/L and 2.84 mg/L in the duplicate, which were slightly greater than the groundwater cleanup level of 1.5 mg/L. Benzene was 1.3 milligrams per liter (mg/L) in the primary sample and 1.2 mg/L in the duplicate, which was significantly greater than the groundwater cleanup level of 0.0046 mg/L. Ethylbenzene was detected at 0.0645 mg/L in the primary sample and 0.0668 mg/L in the duplicate, which was slightly higher than the groundwater cleanup level of 0.015 mg/L. Total xylenes was detected at 0.456 mg/L in the primary sample and 0.244 mg/L in the duplicate, which was slightly higher than the groundwater cleanup level of 0.19 mg/L. 1,2,4-Trimethylbenzene was 0.191 mg/L in the primary sample and 0.14 mg/L in the duplicate, which was greater than the groundwater cleanup level of 0.015 mg/L. 1,2-Dichloroethane was 0.00965 mg/L in the primary sample and 0.00663 mg/L in the duplicate, which was greater than the groundwater cleanup level of 0.0017 mg/L. Naphthalene was 0.068 mg/L in the primary sample and 0.0438 mg/L in the duplicate when analyzed by SW8260C, and was 0.0161 mg/L in the primary sample and 0.015 mg/L in the duplicate when analyzed by SW8270D, which was greater than the groundwater cleanup level of 0.0017 mg/L. All sample results for perchloroethylene (PCE) and related daughter products including trichloroethylene (TCE) and vinyl chloride were below detection limits.

Samples from monitoring wells MW-5, MW-6, and MW-7 had contaminant concentrations well below groundwater cleanup levels. MW-5, MW-6, and MW-7 contained detectable but trace levels of DRO (concentrations were between the detection limit (DL) and limit of quantitation (LOQ)). This is consistent with the historical data set, and indicates the plume of petroleum hydrocarbon-impacted groundwater is localized around MW-9. MW-9 is located where the former USTs were removed, and is the presumed source area. Wells MW-7 and MW-6 are located less than 150 feet down gradient from MW-9, and show essentially no petroleum hydrocarbon-impacted groundwater.

Monitoring well MW-9 has historically contained the highest concentrations of BTEX, GRO and DRO (Table 3). The concentration of these analytes in MW-9 was slightly higher in 2018 than 2016, but continues a long-term declining trend in contaminant concentrations. Based on the groundwater monitoring conducted since May 2000, the long term trend has been a gradual decline for these contaminants of concern.

A plot of historical data from monitoring well MW-9 shows the long term trend of contamination at the Site (Figure 3). A primary and a duplicate sample have been taken beginning in 2011 and at each sampling event thereafter, and the higher of the two results were plotted on the figure. As illustrated by the data plot, contamination levels in MW-9 have been decreasing gradually since the early 2000s, with occasional oscillations. In 2003, a large increase in DRO may have been the result of free product in the sample. In 2013 and 2014, samples were taken without prior purging of the well, which seem to have produced anomalous results. A change in sampling method in 2011 from purging three volumes with a bailer to low-flow sampling with a

peristaltic pump does not seem to have created a measurable bias in sample data. As noted, since 2015 the sampling protocol for MW-9 has been to purge the well dry and collect the sample approximately 24 -72 hours later which has produced consistent data set for comparison with respect to sampling methodology.

Groundwater data was also compared against ADEC's vapor intrusion target level for the vapor intrusion pathway for commercial site use as defined by *Vapor Intrusion Guidance for Contaminated Sites* (ADEC, 2017). The target levels for benzene and 1,2,4-Trimethylbenzene were exceeded in the water sample from MW-9 as shown on Table 2.

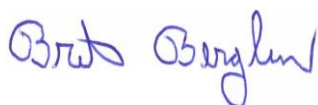
### **Conclusions and Recommendations**

The groundwater monitoring at the Transformer Shop Site indicates that petroleum hydrocarbons in the groundwater are decreasing over time but still exceed ADEC groundwater cleanup levels at one monitoring well (MW-9). In 2018, DRO, GRO, total xylenes, 1,2-Dichloroethane, ethylbenzene, and naphthalene were slightly above the groundwater cleanup level, while benzene and 1,2,4-Trimethylbenzene were significantly above the groundwater cleanup level. Based on the monitoring well network, the extent of petroleum hydrocarbon impacted groundwater is small and localized around MW-9, and the plume is steady state or decreasing. There is minimal groundwater movement in the immediate area of the plume, as evidenced by the poor recharge in MW-9. This further supports the conclusion that the plume will not migrate, and will slowly degrade with time, as is shown in Figure 3.

In accordance with the April 13, 2017 letter from ADEC to ML&P, the groundwater monitoring schedule at the transformer shop was changed from annual to biennial (every two years, on even numbered years). The next monitoring event is scheduled for 2020.

If you have any questions or concerns, please contact Bret Berglund (SLR, 907-563-2128) or Yelena Saville (ML&P, 907-263-5273).

Sincerely,



Bret Berglund  
Project Manager, C.P.G.

CC: Yelena Saville, ML&P

## References

Municipal Light and Power (ML&P) 2002. Work Plan for Groundwater Monitoring at 1201 E. 3<sup>rd</sup> Ave. Anchorage; File #L69.07, Fac ID #1420, Event ID #133, Reckey # 90210001102. August 26. Note: The site address is now referred to as 1130 E. First Avenue.

SLR International Corporation (SLR). 2018. Work Plan Addendum for Groundwater Monitoring at the ML&P Transformer Shop; 1130 E. First Ave., Anchorage, Alaska (Hazard ID: 23842). July 9.

## Attachments

Table 1 2018 Water Sampling Log

Table 2 2018 Groundwater Sample Results

Table 3 Historical Groundwater Analytical Results

Figure 1 Site Vicinity Map

Figure 2 Site Map with 2018 Groundwater Sampling Results for GRO, DRO, and BTEX

Figure 3 Historical Groundwater GRO, DRO, and BTEX Concentrations in MW-9

## Appendices

A Photograph Log

B Data Quality Assessment

C ADEC Laboratory Data Review Checklist

D SGS Laboratory Data Reports

E Groundwater Sampling Forms

**TABLE 1 - 2018 WATER SAMPLING LOG  
ML&P TRANSFORMER SHOP**

Well Number <sup>1,2,3</sup>	MW-5 TS	MW-6 TS	MW-7 TS	MW-9 TS
<b><u>Water Level &amp; Well Purging Data</u></b>				
Date Water Level Measured	7/31/2018	7/31/2018	7/31/2018	7/31/2018
Time Water Level Measured	8:30	10:50	12:30	9:35
TOC Elevation, ft	Unknown	Unknown	49.23	51.23
Depth to Water Below TOC, ft	5.10	15.49	17.27	4.26
Water Level Elevation, ft	NC	NC	31.96	46.97
Depth of Well Below Top of Casing, ft	13.80	21.19	21.00	8.79
Water Column in Well, ft	8.70	5.70	3.73	4.53
Diameter of Well Casing, inch	2	2	2	2
Gallons per Foot	0.163	0.163	0.163	0.163
Gallons in Well	1.42	0.93	0.61	0.74
Total Gallons Purged (Low Flow)	1.6	1.6	1.1	5.0
<b><u>Sampling/Water Parameters</u></b>				
Date Sampled	7/31/2018	7/31/2018	7/31/2018	8/3/2018
Time Sampled	9:15	11:30	13:00	9:00
Temperature, C	10.5	8.93	10.52	15.59
Specific Conductance, $\mu$ S/cm	794	887	1198	957
Turbidity (NTU)	Low	Low	Low	Low
pH	7.38	6.79	6.78	6.03
Dissolved Oxygen, mg/L	6.38	0.39	1.08	5.95
Sample Number	MW-5 TS	MW-6 TS	MW-7 TS	MW-9 TS, MW-99 TS (duplicate)

**Abbreviations:**

C Celsius

ft feet

mg/L milligrams per liter

NC Not calculated (TOC elevation not known).

$\mu$ S/cm microsiemens per centimeter

TOC Top of casing

**Notes**

1 Sampled By SLR: Brett Woelber and Nick Wells

2 All wells were purged and sampled using the low-flow method with a peristaltic pump, except for MW-9. MW-9 was purged dry on 7/31/18, and was sampled 72 hours later on 8/3/2018 without additional purging. Water level recovered 80%.

3 All wells are flush-mounted in paved areas surrounding the Transformer Shop.

Table 2 - Transformer Shop: 2018 Groundwater Results

Compound in milligrams per Liter (mg/L)	Screening Criteria		Sample Location <sup>3</sup>					Trip Blank
	18 AAC 75, Table C Groundwater Cleanup Level (mg/L) <sup>1</sup>	Vapor Intrusion Target Level for Groundwater, Commercial Site Use <sup>2</sup> (mg/L)	MW-5 TS	MW-6 TS	MW-7 TS	Primary: MW-9 TS	Duplicate: MW-99 TS	Trip Blank
			31-Jul-18 1184186001	31-Jul-18 1184186002	31-Jul-18 1184186003	03-Aug-18 1184186004	03-Aug-18 1184186005	03-Aug-18 1184186006
			Conc. <sup>4</sup>	Conc. <sup>4</sup>	Conc. <sup>4</sup>	Conc. <sup>4</sup>	Conc. <sup>4</sup>	Conc. <sup>4</sup>
<b>Fuels (AK101 and 102)</b>								
Gasoline Range Organics	2.2	--	[0.05] U	[0.05] U	[0.05] U	<b>3.25</b>	<b>2.59 Q+</b>	[0.05] U
Diesel Range Organics	1.5	--	0.208 J	0.419 J	0.276 J	<b>2.69</b>	<b>2.84</b>	--
<b>VOCs (SW8260C)</b>								
1,1,1,2-Tetrachloroethane	0.0057	0.16	--	--	--	[0.00025] U	[0.00025] U	[0.00025] U
1,1,1-Trichloroethane	8	31	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,1,2,2-Tetrachloroethane	0.00076	0.14	--	--	--	[0.00025] U	[0.00025] U	[0.00025] U
1,1,2-Trichloroethane	0.00041	0.026	--	--	--	[0.0002] U	[0.0002] U	[0.0002] U
1,1-Dichloroethane	0.028	0.33	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,1-Dichloroethene	0.28	0.82	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,1-Dichloropropene	--	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,2,3-Trichlorobenzene	0.007	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,2,3-Trichloropropane	0.0000075	0.094	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,2,4-Trichlorobenzene	0.004	0.15	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,2,4-Trimethylbenzene <sup>5</sup>	0.015	<b>0.12</b>	--	--	--	<b>0.191 Q</b>	<b>0.14 Q</b>	[0.0005] U
1,2-Dibromo-3-chloropropane	--	--	--	--	--	[0.005] U	[0.005] U	[0.005] U
1,2-Dibromoethane	0.000075	0.0077	--	--	--	[0.0000375] U	[0.0000375] U	[0.0000375] U
1,2-Dichlorobenzene	0.3	11	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,2-Dichloroethane	0.0017	0.098	--	--	--	<b>0.00965 Q</b>	<b>0.00663 Q</b>	[0.00025] U
1,2-Dichloropropane	0.0044	0.11	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,3,5-Trimethylbenzene <sup>6</sup>	0.12	--	--	--	--	0.0537 Q	0.0318 Q	[0.0005] U
1,3-Dichlorobenzene	0.3	8.1	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
1,3-Dichloropropane	--	--	--	--	--	[0.00025] U	[0.00025] U	[0.00025] U
1,4-Dichlorobenzene	0.0048	0.11	--	--	--	[0.00025] U	[0.00025] U	[0.00025] U
2,2-Dichloropropane	--	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
2-Butanone (MEK)	5.6	9400	--	--	--	0.104 Q	0.0727 Q	[0.005] U
2-Chlorotoluene	--	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
2-Hexanone	0.038	34	--	--	--	0.0129 Q	0.00707 J, Q	[0.005] U
4-Chlorotoluene	--	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
4-Isopropyltoluene	--	--	--	--	--	0.00857 J	0.00588 Q	[0.0005] U
4-Methyl-2-pentanone (MIBK)	6.3	2300	--	--	--	0.00639 J	0.0042 J	[0.005] U
Benzene <sup>5</sup>	0.0046	<b>0.069</b>	[0.0002] U	[0.0002] U	[0.0002] U	<b>1.3</b>	<b>1.2</b>	[0.0002] U
Bromobenzene	0.062	2.6	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Bromochloromethane	--	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Bromodichloromethane	0.0013	0.038	--	--	--	[0.00025] U	[0.00025] U	[0.00025] U
Bromoform	0.033	5.1	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Bromomethane	0.0075	0.073	--	--	--	[0.0025] UJ	[0.0025] UJ	[0.0025] UJ
Carbon disulfide	0.81	5.2	--	--	--	[0.005] U	[0.005] U	[0.005] U
Carbon tetrachloride	0.0046	0.018	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Chlorobenzene	0.078	1.7	--	--	--	[0.00025] U	[0.00025] U	[0.00025] U
Chloroethane	21.0	97.0	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Chloroform	0.0022	0.036	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Chloromethane	0.19	1.1	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
cis-1,2-Dichloroethene	0.036	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
cis-1,3-Dichloropropene	0.0047	--	--	--	--	[0.00025] U	[0.00025] U	[0.00025] U
Dibromochloromethane	0.0087	--	--	--	--	[0.00025] U	[0.00025] U	[0.00025] U
Dibromomethane	0.0083	0.52	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Dichlorodifluoromethane	0.2	0.031	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Ethylbenzene <sup>5</sup>	0.015	0.15	[0.0005] U	[0.0005] U	[0.0005] U	<b>0.0645</b>	<b>0.0668</b>	[0.0005] U
Freon-113	55	--	--	--	--	[0.005] U	[0.005] U	[0.005] U
Hexachlorobutadiene	0.0014	0.013	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Isopropylbenzene (Cumene)	0.45	3.7	--	--	--	0.00325 Q	0.00481 Q	[0.0005] U
Methylene chloride	0.11	20	--	--	--	[0.0025] U	[0.0025] U	[0.0025] U
Methyl-t-butyl ether	0.14	20	--	--	--	[0.005] U	[0.005] U	[0.005] U
Naphthalene <sup>5</sup>	0.0017	0.2	--	--	--	<b>0.068 Q</b>	<b>0.0438 Q</b>	[0.0005] U
n-Butylbenzene <sup>6</sup>	1.00	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
n-Propylbenzene <sup>6</sup>	0.66	10	--	--	--	0.00581 Q	0.00913 Q	[0.0005] U
o-Xylene	--	--	[0.0005] UJ	[0.0005] UJ	[0.0005] UJ	0.0158 Q	0.0104 Q	[0.0005] U
P & M -Xylene	--	--	[0.001] UJ	[0.001] UJ	[0.001] UJ	<b>0.44 Q</b>	<b>0.233 Q</b>	[0.001] U
sec-Butylbenzene <sup>6</sup>	2.00	--	--	--	--	[0.0005] U	0.00061 J	[0.0005] U
Styrene	1.2	39	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
tert-Butylbenzene <sup>6</sup>	0.69	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Tetrachloroethene	0.041	0.24	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Toluene <sup>5</sup>	1.1	81	[0.0005] U	[0.0005] U	[0.0005] U	0.0214	0.0129	[0.0005] U
trans-1,2-Dichloroethene	0.36	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
trans-1,3-Dichloropropene	0.0047	0.21	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Trichloroethene	0.0028	0.021	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Trichlorofluoromethane	5.2	--	--	--	--	[0.0005] U	[0.0005] U	[0.0005] U
Vinyl acetate	0.41	42	--	--	--	[0.005] U	[0.005] U	[0.005] U
Vinyl chloride	0.00019	0.025	--	--	--	[0.000075] U	[0.000075] U	[0.000075] U
Xylenes (total) <sup>5b</sup>	0.19	1.6	[0.001] UJ	[0.001] UJ	[0.001] UJ	<b>0.456 Q</b>	<b>0.244 Q</b>	[0.0015] U

Table 2 - Transformer Shop: 2018 Groundwater Results

Compound in milligrams per Liter (mg/L)	Screening Criteria		Sample Location <sup>3</sup>					Trip Blank
	18 AAC 75, Table C Groundwater Cleanup Level (mg/L) <sup>1</sup>	Vapor Intrusion Target Level for Groundwater, Commercial Site Use <sup>2</sup> (mg/L)	MW-5 TS	MW-6 TS	MW-7 TS	Primary: MW-9 TS	Duplicate: MW-99 TS	Trip Blank
			31-Jul-18 1184186001	31-Jul-18 1184186002	31-Jul-18 1184186003	03-Aug-18 1184186004	03-Aug-18 1184186005	03-Aug-18 1184186006
			Conc. <sup>4</sup>	Conc. <sup>4</sup>	Conc. <sup>4</sup>	Conc. <sup>4</sup>	Conc. <sup>4</sup>	Conc. <sup>4</sup>
<b>PAH SIM (SW8270D LV)</b>								
1-Methylnaphthalene <sup>5</sup>	0.011	--	--	--	--	0.00605	0.0059	--
2-Methylnaphthalene <sup>5</sup>	0.036	--	--	--	--	0.000348 Q	0.00104 Q	--
Acenaphthene <sup>6</sup>	0.53	--	--	--	--	0.000206	0.000179	--
Fluorene <sup>5</sup>	0.29	--	--	--	--	0.000186	0.000169	--
Naphthalene <sup>5</sup>	0.0017	0.2	--	--	--	<b>0.0161</b>	<b>0.015</b>	--
Phenanthrene <sup>6</sup>	0.17	--	--	--	--	[0.0000252] U	0.0000358 J	--

**Yellow and Bold** Value exceeds Method Two cleanup level

**Shaded Blue** Groundwater result for this analyte exceeds the ADEC vapor intrusion target level for groundwater (commercial site use).

**Notes:**

- 1 - The cleanup level corresponds to those listed in 18 AAC 75.345, Method Two, Table C, Groundwater Cleanup Levels (ADEC, September 29, 2018).
- 2 - The level corresponds to the target level listed in ADEC Vapor Intrusion Guidance for Contaminated Sites (January 2017), Appendix F.
- 3 - The sample type, field sample identification number, date collected, and laboratory sample identification number are provided.
- 4 - For detected results, the sample result is listed in this column. For undetectable results, the Limit of Detection (LOD) is listed in brackets in this column. Associated flag(s) are shown to the right.
- 5 - Total values were the summation of detected compounds only. If compounds were not detected, then the highest LOD was listed.
- 6 - The ADEC Vapor Intrusion Guidance for Contaminated Sites (January 2017), Appendix F, states these chemicals should be investigated as chemicals of potential concern for vapor intrusion when petroleum is present.

**Data Flags**

- J Estimated concentration between the LOQ and DL.
- Q The result is estimated, due to a laboratory quality control failure or a matrix effect. Where applicable, a "+" or "-" was appended to indicate a high or low bias.
- U Nondetect, LOD is shown in brackets.
- UJ The analyte was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

**Abbreviations**

- Not applicable or screening criteria does not exist for this compound
- AAC Alaska Administrative Code
- ADEC Alaska Department of Environmental Conservation
- AK Alaska
- DL detection limit
- LOD limit of detection
- LOQ limit of quantitation
- LV low volume
- mg/L milligrams per liter
- PAH polycyclic aromatic hydrocarbons
- SIM selective ion monitoring
- VOCs volatile organic compounds



**TABLE 3 - HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
ML&P TRANSFORMER SHOP**

Compound (mg/L)		DRO	GRO	Benzene	Total BTEX
September 2018 Cleanup Level (18 AAC 75.345, Table C)		1.5	2.2	0.0046	--
Monitoring Well	Date <sup>1</sup>				
MW-3	8/27/1998	0.206	--	--	--
	12/31/1998	0.669	--	--	--
	3/19/1999	ND [0.333]	--	--	--
	6/23/1999	0.427	--	--	--
	9/30/1999	<b>4.42</b>	--	--	--
	2/2/2000	ND [0.395]	ND [0.0900]	ND [0.00050]	--
	5/26/2000	0.700	ND [0.0900]	ND [0.00050]	--
	8/25/2000	0.622	ND [0.0900]	ND [0.00050]	0.0194
	12/1/2000	ND [0.326]	ND [0.0900]	ND [0.00050]	0.00303
	6/24/2004	ND [0.300]	ND [0.0900]	ND [0.00050]	ND
	6/15/2005	ND [0.337]	ND [0.0900]	ND [0.00050]	ND
	8/3/2006	0.465	ND [0.100]	ND [0.00050]	ND
	8/1/2007	ND [0.357]	ND [0.100]	ND [0.00050]	ND
	7/10/2008	0.495 B	ND [0.100]	ND [0.00050]	ND
	7/29/2010	ND [0.574]	ND [0.062]	ND [0.0003]	ND
	6/23/2011	ND [0.266]	ND [0.031]	0.00029 J	0.00029 J
	6/22/2012	ND [0.382]	ND [0.0620]	ND [0.0003]	ND
7/12/2013	ND [0.360]	ND [0.0620]	ND [0.0003]	ND	
6/25/2014	Well damaged, not sampled.				
MW-5	7/16/2004	0.352	ND [0.0900]	ND [0.00050]	ND
	6/15/2005	ND [0.333]	ND [0.0900]	ND [0.00050]	ND
	8/2/2006	ND [0.370]	ND [0.100]	ND [0.00050]	ND
	8/1/2007	ND [0.328]	ND [0.100]	ND [0.00050]	ND
	7/11/2008	0.276 J, B	ND [0.100]	ND [0.00050]	ND
	7/29/2010	ND [0.526]	ND [0.062]	ND [0.0003]	ND
	6/22/2011	ND [0.266]	ND [0.031]	ND [0.00015]	ND
	6/22/2012	ND [0.392]	ND [0.0620]	0.00016 J	0.00016 J
	7/11/2013	0.236 J	ND [0.0620]	ND [0.0003]	ND
	6/25/2014	ND [0.308]	ND [0.0500]	ND [0.00025]	ND
	6/25/2015	0.423 J	ND [0.05]	ND [0.00025]	ND
	6/15/2016	ND [0.294]	ND [0.05]	ND [0.0002]	ND
7/31/2018	0.208 J	ND [0.05]	ND [0.0002]	ND	
MW-6	8/27/1998	0.282	--	--	--
	12/31/1998	0.759	--	--	--
	3/19/1999	1.21	--	--	--
	6/23/1999	<b>2.17</b>	--	--	--
	9/30/1999	1.43	--	--	--
	2/2/2000	0.419	ND [0.0900]	ND [0.00050]	ND
	5/26/2000	ND [0.674]	ND [0.0900]	ND [0.00050]	ND
	8/25/2000	ND [0.323]	ND [0.0900]	ND [0.00050]	ND
	12/1/2000	1.29	ND [0.0900]	ND [0.00050]	ND
	6/24/2004	ND [0.366]	ND [0.0900]	ND [0.00050]	ND
	6/15/2005	ND [0.333]	ND [0.0900]	ND [0.00050]	ND
	8/3/2006	ND [0.366]	ND [0.100]	ND [0.00050]	ND
	8/1/2007	0.519	ND [0.100]	ND [0.00050]	ND
	7/11/2008	0.407 B	ND [0.100]	ND [0.00050]	ND
	7/29/2010	ND [0.544]	ND [0.062]	ND [0.0003]	ND
	6/22/2011	ND [0.260]	ND [0.031] QN	ND [0.00015]	ND
	6/21/2012	ND [0.378]	ND [0.0620]	ND [0.0003]	ND
	7/12/2013	0.185 J	ND [0.0620]	ND [0.0003]	ND
	6/25/2014	0.189 J	ND [0.0500]	ND [0.00025]	ND
	6/25/2015	0.223 J	ND [0.05]	ND [0.00025]	ND
6/15/2016	0.191 J	ND [0.05]	ND [0.0002]	ND	
7/31/2018	0.419 J	ND [0.05]	ND [0.0002]	ND	

**TABLE 3, Continued - HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
ML&P TRANSFORMER SHOP**

Compound (mg/L)		DRO	GRO	Benzene	Total BTEX
<b>Nov 2016 Cleanup Level (18 AAC 75.345, Table C)</b>		<b>1.5</b>	<b>2.2</b>	<b>0.0046</b>	<b>--</b>
Monitoring Well	Date				
MW-7	8/27/1998	ND [0.104]	--	--	--
	12/31/1998	0.158	--	--	--
	3/19/1999	ND [0.309]	--	--	--
	6/23/1999	ND [0.297]	--	--	--
	9/30/1999	ND [0.319]	--	--	--
	2/2/2000	ND [0.357]	ND [0.0900]	ND [0.00050]	ND
	5/26/2000	ND [0.674]	ND [0.0900]	ND [0.00050]	ND
	8/25/2000	ND [0.333]	ND [0.0900]	ND [0.00050]	ND
	12/1/2000	ND [0.330]	ND [0.0900]	ND [0.00050]	ND
	6/24/2004	ND [0.361]	ND [0.0900]	ND [0.00050]	ND
	6/15/2005	ND [0.375]	ND [0.0900]	ND [0.00050]	ND
	8/3/2006	ND [0.368]	ND [0.100]	ND [0.00050]	ND
	8/1/2007	ND [0.321]	ND [0.100]	ND [0.00050]	ND
	7/11/2008	ND [0.621] B	ND [0.100]	ND [0.00050]	ND
	7/29/2010	ND [0.538]	ND [0.062]	ND [0.0003]	ND
	6/23/2011	ND [0.266]	ND [0.031]	0.00035 J	0.00035 J
	6/21/2012	ND [0.378]	ND [0.0620]	ND [0.0003]	ND
	7/11/2013	0.465 J	ND [0.0620]	ND [0.0003]	ND
6/25/2014	0.211 J	ND [0.0500]	ND [0.00025]	ND	
6/25/2015	0.878	ND [0.05]	ND [0.00025]	ND	
6/15/2016	ND [0.3]	ND [0.05]	ND [0.0002]	0.00055 J	
7/31/2018	0.276 J	ND [0.05]	ND [0.0002]	ND	
MW-8	6/23/1999	<b>7.53</b>	0.25	<b>0.103</b>	0.109
	9/30/1999	<b>5.34</b>	0.22	<b>0.0599</b>	0.0759
	2/2/2000	<b>12</b>	0.33	<b>0.172</b>	0.177
	5/26/2000	<b>4.73</b>	0.94	<b>0.473</b>	0.473
	9/13/2002 <sup>2</sup>	<b>3.06</b>	0.464	<b>0.0158</b>	0.160
	12/4/2002	<b>2.31</b>	1.40	<b>0.00677</b>	0.449
	3/20/2003	<b>3.02</b>	1.04	<b>0.00489</b>	0.364
	6/26/2003	<b>4.78</b>	0.862	<b>0.726</b>	0.762
9/23/2003	<b>2.37</b>	1.410	<b>0.019</b>	0.7762	

**TABLE 3, Continued - HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
ML&P TRANSFORMER SHOP**

Compound (mg/L)		DRO	GRO	Benzene	Total BTEX
Nov 2016 Cleanup Level (18 AAC 75.345, Table C)		1.5	2.2	0.0046	--
Monitoring Well	Date				
MW-9 <sup>4</sup>	5/26/2000	18.8	31	7.97	19.8
	8/25/2000	36.1	47.6	3.42	21.4
	12/1/2000	11.92	44.9	3.3	6.55
	9/13/2002 <sup>2</sup>	6.11	15.1	3.36	5.94
	12/4/2002	8.03	9.76	2.44	3.52
	3/20/2003	3.39	9.67	1.82	3.38
	6/26/2003	61.2	10.2	3.84	6.97
	9/23/2003	7.47	14.1	4.95	9.25
	6/24/2004	6.33	17.7	3.89	7.40
	6/15/2005	4.51	13.4	3.50	5.81
	8/3/2006	2.23	5.53	2.01	3.20
	8/1/2007	8.22	9.99	1.93	3.74
	7/11/2008	4.81	15.4	4.14	8.26
	7/30/2010	5.44	14.2	6.01 Q+	8.49
	6/23/2011	5.25/4.07	11.2/11.8	3.94/4.10	5.71/5.80
	6/21/2012	5.09/3.89	14.5/16.2	4.97/5.12	7.18 QN/7.99 QN
	7/11/2013 <sup>3</sup>	0.871 QN /1.75 QN	8.31 QN/15.9 QN	2.14 QN/5.62 QN	3.47 QN/7.94 QN
	7/12/2013	2.61	--	--	--
	6/25/2014 <sup>3</sup>	2.63/1.97	17.1 QN/2.87 QN	6.16 QN/0.996 QN	8.79 QN/1.45 QN
6/25/2015	3.22/2.83	12.5/9.85	3.62 QH/2.79 QH	5.24 QH/4.24 QH	
6/15/2016	2.16/2.38	2.34/2.52	0.645/0.5	0.8609 MN/0.7033 MN	
8/3/2018	2.69/2.84	3.25/2.59 Q+	1.3/1.2	1.8419 Q/ 1.5237 Q	

**Notes:**

1. Sampling method prior to 2011 was purging 3 casing volumes with a bailer, followed by sample collection with a bailer. Starting in 2011, the sampling method switched to a low-flow sampling technique with purging and sampling performed with a peristaltic pump and tubing.
2. Analytical results are suspected to have been mislabeled or switched for monitoring wells MW-8 and MW-9 during sampling handling of 9/13/2002 samples. Analytical results in this table have been placed in corrected locations.
3. Monitoring well MW-9 sample was collected without prior purging in 2013 and 2014
4. MW-9 is a poor producer of groundwater and typically was purged dry when trying to achieve standard parameters using a low-flow sampling technique. Since 2015, the standard sampling protocol for MW-9 is to purge the well dry and collect the sample approximately 24 -72 hours later. Water level recovery has been on the order of 40 to 80% at the time of sampling.

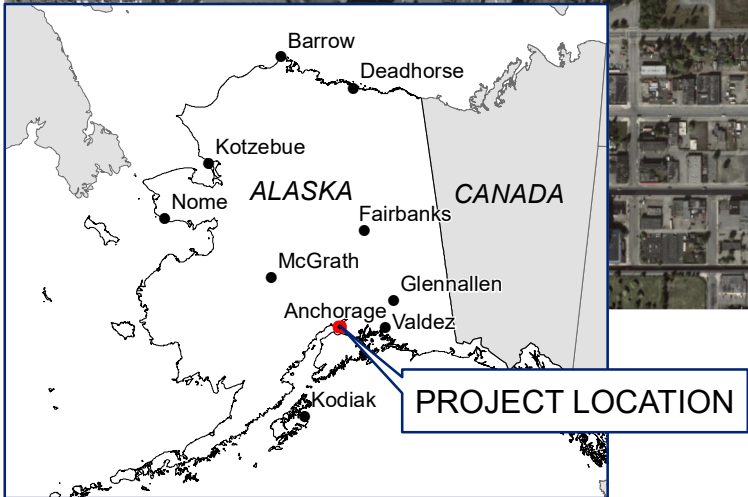
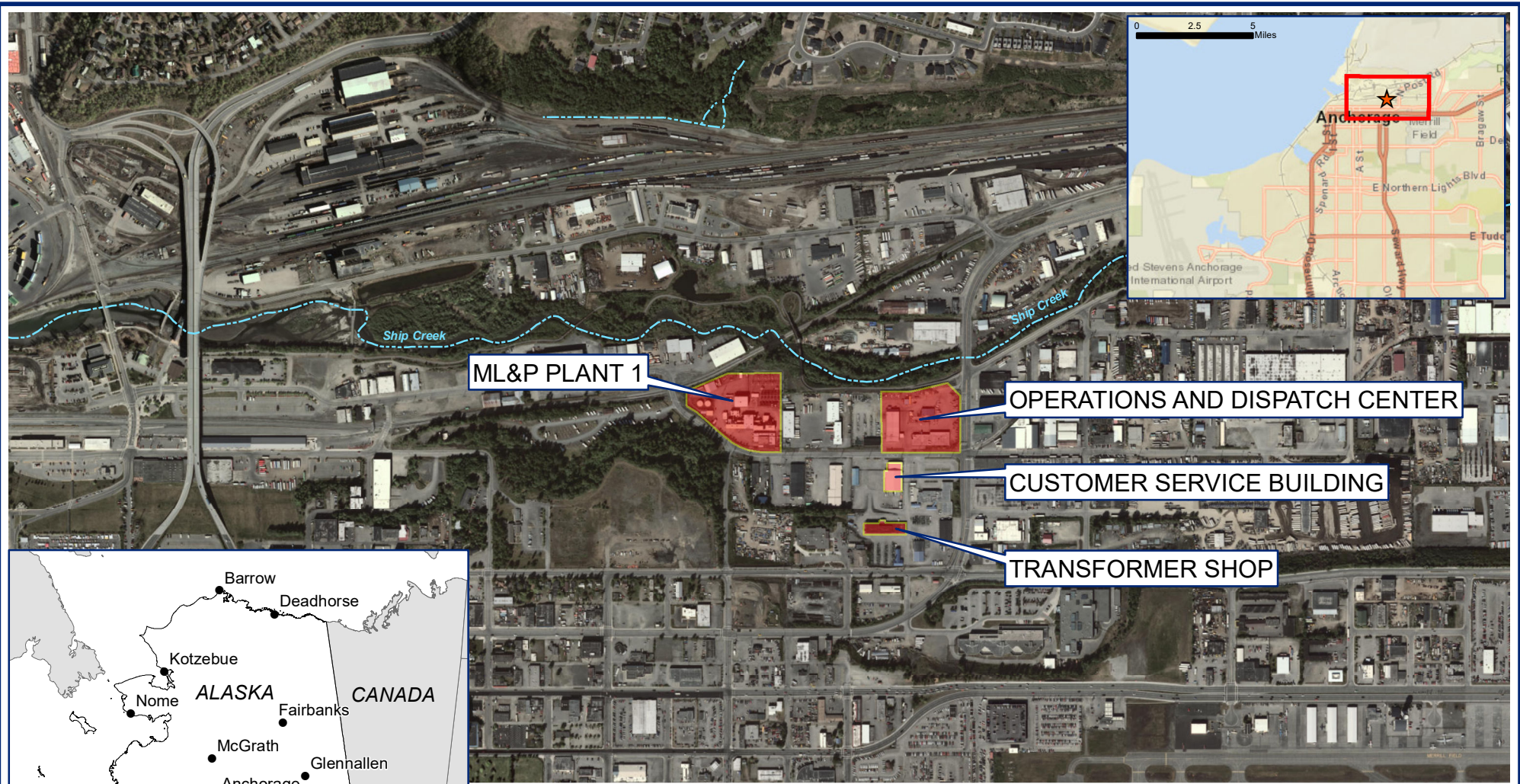
**Coding**

- 0.377 / 0.364 Primary sample concentration followed by duplicate sample concentration
- 4.81** Bold and Shaded - Concentration exceeded the 18 AAC 75.345, Table C groundwater cleanup level (September 2018).
- ND [0.0900] Analyte not detected above the practical quantitation limit (limit of quantitation, or LOQ). Data prior to 2012 analytes were not detect above the Detection Limit (DL).

**Abbreviations:**

- AAC Alaska Administration Code
- B Compound was positively identified in the trip blank or method blank.
- BTEX benzene, toluene, ethylbenzene, and total xylenes
- DRO diesel range organics
- J Compound was positively identified, above the detection limit, but below the Limit of Quantitation
- GRO gasoline range organics
- Q The quantitation is an estimate. An "H/+", "L/-", or "N" indicates a potential high, low, or unknown bias respectively
- mg/L milligrams/liter
- M The quantitation is an estimate due to a sample matrix quality control failure. An "H", "L", or "N" indicates a potential high, low, or unknown bias respectively.
- ND not detected
- Sample not analyzed for parameter

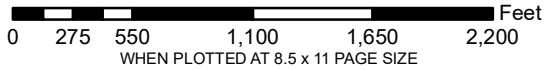




Site  
**TRANSFORMER SHOP**  
**MUNICIPAL LIGHT AND POWER**  
**1130 EAST 1ST AVENUE**  
**ANCHORAGE, ALASKA**

Report  
**2018 GROUNDWATER SAMPLING**

Drawing  
**SITE VICINITY MAP**



THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY.  
 ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.



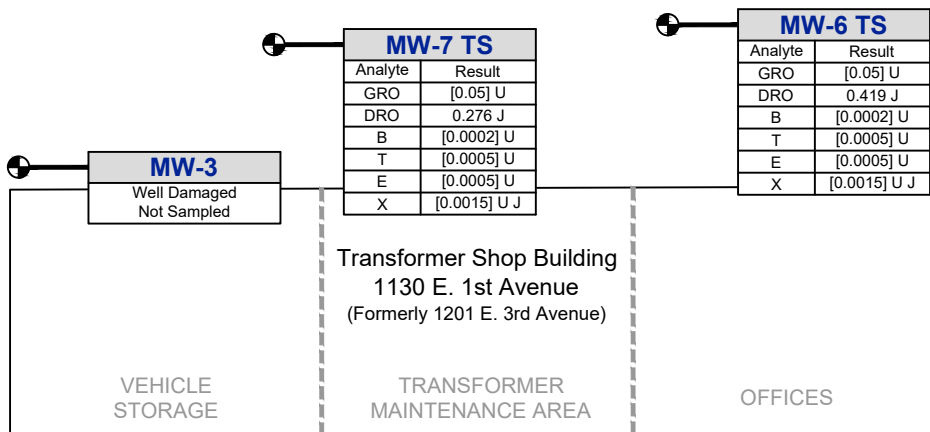
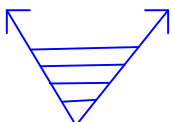
Drawing **October 2018**  
 File Name **F1 Transformer Shop Bldg\_18.mxd**

Scale **1 in = 880 feet**  
 Project No. **105.00528.18001**

Fig. No. **1**



Historical Groundwater Flow Direction (Approximate)

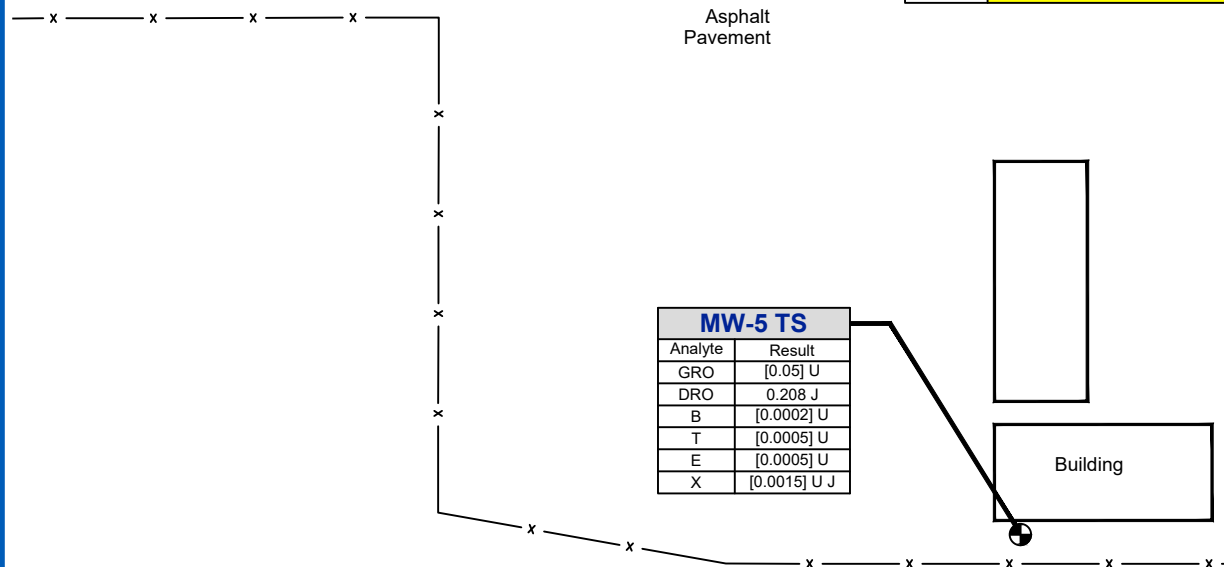


MW-9 TS / MW-99 TS	
Analyte	Result
GRO	3.25 / 2.59 Q+ DUP
DRO	2.69 / 2.84 DUP
B	1.3 / 1.2 DUP
T	0.0214 / 0.0129 DUP
E	0.0645 / 0.0668 DUP
X	0.456 Q / 0.244 Q DUP

MW-5 TS	
Analyte	Result
GRO	[0.05] U
DRO	0.208 J
B	[0.0002] U
T	[0.0005] U
E	[0.0005] U
X	[0.0015] U J

Legend	
	GROUNDWATER MONITORING WELL
	GROUNDWATER MONITORING WELL - SAMPLING DISCONTINUED IN 2003
— x —	CHAIN-LINK FENCE

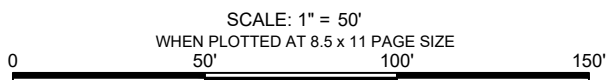
Sampling Results Guidelines	
<b>AAC</b>	ALASKA ADMINISTRATIVE CODE
<b>ADEC</b>	ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
<b>DRO</b>	DIESEL RANGE ORGANICS
<b>GRO</b>	GASOLINE RANGE ORGANICS
<b>B</b>	BENZENE
<b>T</b>	TOLUENE
<b>E</b>	ETHYLBENZENE
<b>X</b>	TOTAL XYLENES
<b>DUP</b>	DUPLICATE SAMPLE
<b>J</b>	ESTIMATED CONCENTRATION BETWEEN THE LOQ AND DL.
<b>Q</b>	THE RESULT IS ESTIMATED, DUE TO A LABORATORY QUALITY CONTROL FAILURE OR A MATRIX EFFECT. WHERE APPLICABLE, A "+" OR "-" WAS APPENDED TO INDICATE A HIGH OR LOW BIAS.
<b>U</b>	NONDETECT, LOD IS SHOWN IN BRACKETS
<b>UJ</b>	THE ANALYTE WAS NOT DETECTED. THE REPORTED QUANTITATION LIMIT IS APPROXIMATE AND MAY BE INACCURATE OR IMPRECISE.
<b>LOD</b>	LIMIT OF DETECTION
<b>LOQ</b>	LIMIT OF QUANTITATION
<b>DL</b>	DETECTION LIMIT
<b>0.00249</b>	SAMPLE HAS <b>EXCEEDED</b> ADEC CLEANUP LEVEL LISTED IN 18 AAC 75.345 TABLE C [NOVEMBER 2017]
<b>0.005</b>	SAMPLE <b>DOES NOT EXCEED</b> ADEC CLEANUP LEVEL LISTED IN 18 AAC 75.345 TABLE C [NOVEMBER 2017]



Site  
**TRANSFORMER SHOP  
 ML&P 1130 E. 1ST AVENUE  
 (FORMERLY 1201 E. 3RD AVENUE)  
 ANCHORAGE, ALASKA**

Report  
**2018 GROUNDWATER SAMPLING**

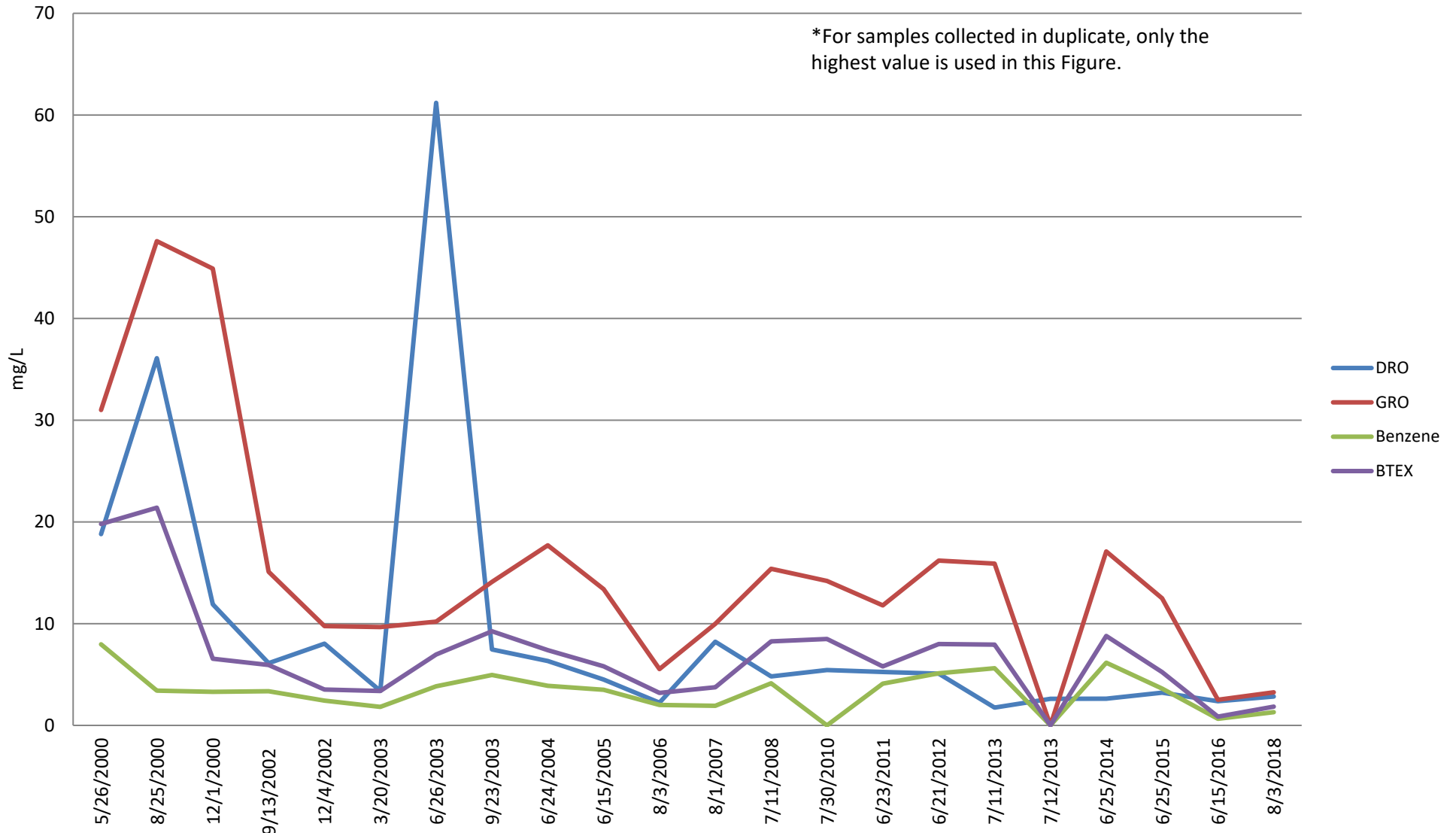
Drawing  
**2018 GROUNDWATER SAMPLING RESULTS FOR  
 GRO, DRO, AND BTEX**



THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

Date	October 2018	Scale	1" = 50 Feet	Fig. No.	2
File Name	F2 Trans Shop GW Results_18	Project No.	105.00528.18001		

### Historical Concentrations of GRO, DRO, and BTEX in Monitoring Well MW-9



**Figure 3 – Historical Concentrations in MW-9**

ML&P Transformer Shop  
2018 Groundwater Monitoring Report

Project No.: 105.00528.18001

**Appendix A**  
**Photograph Log**






**Photo 1:** Monitoring Well MW-5 TS, located under the stairs, being purged prior to sampling.



**Photo 2:** Monitoring Well MW-9 TS as it was being purged on 7/30/18. The well was not sampled until 8/3/18, after being purged dry on 7/31/18. The well is located south of the Transformer Shop.

	<p>Transformer Shop Groundwater Sampling ML&amp;P Anchorage, Alaska</p>
<p>SITE PHOTOGRAPHS July 31 2018</p>	<p>Job No: 105.00528.18001</p>





**Photo 3:**

MW-6 TS site prior to purging. Location is near top of ramp north of Transformer Shop.



**Photo 4:**

Monitoring Well MW-7 TS as it is being purged. Location is north of Transformer Shop.

## **Appendix B**

### **Data Quality Assessment**

**LABORATORY DATA  
QUALITY ASSURANCE REVIEW  
ML&P**

**2018 GROUNDWATER MONITORING  
AT THE ML&P TRANSFORMER SHOP  
(1130 EAST 1<sup>ST</sup> AVE., ANCHORAGE, AK)**

**OCTOBER 2018**

Prepared by: Nicholas Wells  
Reviewed by: Jennifer McLean

SLR Project Number: 105.00528.18001  
ADEC Number: 2100.26.302  
ADEC Hazard ID: 23842

SLR International Corporation  
2700 Gambell Street, Suite 200  
Anchorage, AK 99503

## ACRONYMS AND ABBREVIATIONS

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AAC	Alaska Administrative Code
AK	Alaska
ADEC	Alaska Department of Environmental Conservation
BTEX	benzene, toluene, ethylbenzene, xylenes
°C	degrees Celsius
CCV	continuing calibration verification
COC	chain of custody
DL	detection limit
DRO	diesel range organics
EDD	electronic data deliverable
GRO	gasoline range organics
LCL	lower control limit
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
LV	low volume
MS	matrix spike
MSD	matrix spike duplicate
NA	not applicable
NFG	National Functional Guidelines
PAH	polynuclear aromatic hydrocarbons
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
QA	quality assurance
QAR	quality assurance review
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
SIM	selective ion monitoring
SLR	SLR International Corporation
SGS	SGS North America, Inc.
UCL	upper control limit
µg/L	micrograms per liter
USEPA	United States Environmental Protection Agency
VOCs	volatile organic compounds

This report summarizes a review of analytical data for samples collected on July 31, 2018 and August 3, 2018 in support of ML&P Transformer Shop Area groundwater monitoring activities. Samples were collected by SLR International Corporation (SLR). SGS North America, Inc (SGS) provided analytical support to the project. SGS maintains a current Alaska Department of Environmental Conservation (ADEC) Contaminated Sites approval number (UST-005) for analytical methods of interest, as applicable. Table 1 provides a summary of the work order, sample receipt, analytical methods, and analytes.

**Table 1 Sample Summary**

SDG	Date Collected	Date Received by Laboratory	Temp. Blank	Matrix	Analytical Method	Analyte	Trip Blank <sup>1</sup>
1184186	7/31/2018, 8/3/2018	8/3/2018	-0.2°C	GW	SW8260C SW8260C AK101 AK102 SW8270D LV	VOCs BTEX GRO DRO PAH SIM	Required Required Required NA NA

**Notes:**

1 – This type of sample requires a trip blank to be included in the cooler, with the trip blank noted on the chain of custody.

**Acronyms:**

- °C – degrees Celsius
- BTEX – benzene, toluene, ethylbenzene, and total xylenes
- DRO – diesel range organics
- GRO – gasoline range organics
- GW – groundwater
- PAH – polynuclear aromatic hydrocarbons
- SDG – sample delivery group
- SIM – selective ion monitoring
- VOCs – volatile organic compounds

The laboratory final report was presented as a Level II deliverable and included documentation of the delivery group chain-of-custody (COC) and sample receipt condition. A Microsoft Access compatible electronic data deliverable (EDD) was also provided. The PDF laboratory report is provided electronically as Appendix D.

## Quality Assurance Program

A quality assurance (QA) program was followed for this project that addressed project administration, sampling, quality control (QC), and data review. SLR adhered to required and established sampling and COC protocols. The selected laboratory maintains an internal quality assurance program and standard operating procedures.

The analytical data was reviewed for consistency with any project-specific requirements in the Work Plan Addendum (SLR 2018), ADEC Technical Memorandum *Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling* (ADEC 2017a), National Functional Guidelines (NFG, United States Environmental Protection Agency [USEPA] 2014), analytical method criteria, and laboratory criteria. An ADEC Laboratory Data Review Checklist was completed for the SDG, and is included as Appendix C. A review for any anomalies to the project requirements for precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS) are noted in this QAR, and any data qualifications discussed.

The data review included the following, as applicable:

- Reviewing COC records for completeness, signatures, and dates;
- Identifying any sample receipt or preservation anomalies that could impact data quality;
- Verifying that QC blanks (e.g., field blanks, equipment blanks, trip blanks, etc.) were properly prepared, identified, and analyzed;
- Evaluating whether laboratory reporting limits met project goals; Reviewing calibration verification recoveries, to include confirming that the laboratory did not identify that any Calibration Verification (CCV) recoveries or other calibration related criteria were outside applicable acceptance limits;
- Verifying that surrogate analyses were within recovery acceptance limits;
- Verifying that Laboratory Control Samples (LCS) and Laboratory Control Sample Duplicates (LCSD), and Matrix Spike (MS) and Matrix Spike Duplicate (MSD), were within recovery acceptance limits;
- Evaluating the result relative percent difference (RPD) between primary and duplicate field samples, LCS/LCSD, MS/MSD, and laboratory duplicates; and
- Providing an overall assessment of laboratory data quality and qualifying sample results if necessary.

## Data Qualifications

As part of this QAR, qualifiers were applied to datum as determined necessary based on specified criteria or professional judgement. In all cases, the basis for qualification and the applied data flag are discussed in this QAR. Table 2 provides a list of potential qualifiers (i.e., flags). These data flags were appended to the data as appropriate.

**Table 2 Data Qualifiers**

Lab Qualifier (Flag)	NFG Qualifier (Flag)	Equivalent Project Qualifier (Flag) <sup>1,2</sup>	Definition
U	U	<b>U</b>	The analyte was analyzed for, but was not detected above the limit of detection (LOD). This qualifier is appended by the laboratory.
J	NJ	<b>J</b>	The analyte has been “tentatively” or “presumptively” identified as present and the associated numerical value is the estimated concentration in the sample between the limit of quantitation (LOQ) and the Detection Limit (DL). This qualifier is appended by the laboratory.
--	J	<b>Q</b>	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample, due to one or more laboratory quality control criteria failures (e.g., LCS recovery, surrogate spike recovery) or a matrix effect. Where applicable, a “+” or “-” was appended to indicate a high or low bias, respectively.
--	UJ	<b>UJ</b>	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
--	R	R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
--	--	<b>B</b>	Blank contamination: The analyte was positively identified in the blank (e.g., trip blank and/or method blank) associated with the sample and the concentration reported for the sample was less than five times that of the blank (ten times for metals and common laboratory contaminants methylene chloride and acetone). Where applicable, “U” was appended prior to the “B” to indicate the blank detection is greater than the sample detection and the result is likely a false positive.

**Notes:**

1 - Flags were appended to the data where applicable. The table presents laboratory, NFG and project equivalent qualifiers.

2 - Only flags in **bold** were applicable and appended to data for this project.

A discussion of the project data quality relative to PARCCS goals and summary of any anomalies or failures requiring data qualifiers follows.

## Data Validation

### Data Packages

The data package was checked for transcription errors, omissions, or other anomalies. No issues were noted with regards to the data package.

### Sample Receipt

The sample receipt documentation was checked for anomalies. No issues were noted with regards to the receipt of samples, except as noted below.

- On the COC, the temperature blank was listed as -0.2°C, but the Sample Receipt Form noted 0.2°C. The discrepancy was likely due to a transcription error. No evidence of freezing was noted on the Sample Receipt Form; therefore, data was considered not impacted.
- The trip blank was noted on the COC as having a collection date and time of August 3, 2018 at 0500, when the earliest sample was collected on July 31, 2018 at 0915. The trip blank accompanied sample containers and samples at all times during transit from and to the laboratory and in the field. Data was not impacted.

### Holding Times and Preservation

Samples were appropriately preserved and were submitted to SGS. Sample analyses were conducted within holding time criteria. No issues were noted with regards to sample preservation.

### Laboratory Method Blanks

Laboratory method blanks were analyzed at the appropriate frequencies. Analytes were not detected at or above the limit of detection (LOD) in any method blanks.

### Trip Blanks

One trip blank was analyzed for VOCs by Method SW8260C and GRO by Method AK101. All BTEX analytes are included in the VOC list, so an additional trip blank for BTEX by Method SW8260C was not required. Analytes were not detected at or above the LOD in the trip blank.

### Reporting Limits

For non-detectable results, LODs were compared to applicable regulatory criteria for the site. LODs were compared to 18 Alaska Administrative Code (AAC) 75.345 Table C, *Groundwater Cleanup Levels* (ADEC, 2018). Except as noted in Table 2 of the report, all analytes with results of non-detect had LODs at or below applicable regulatory criteria.

Only the LODs for 1,2,3-trichloropropane by Method SW8260C, for samples MW-9 TS and duplicate MW-99 TS, did not meet ADEC cleanup levels. This was due to typical laboratory methodology limitations. For this compound it is not possible to state with certainty the absence of target analyte below the laboratory LOD, but above the ADEC cleanup level. 1,2,3-trichloropropane data is limited in usability for that purpose. Data usability was considered minimally impacted, and all data was usable without qualification.



### **Calibration Verifications**

CCVs were analyzed at the appropriate frequencies. CCV data was included only in the EDD, not in the case narrative. All CCV recoveries were within acceptable limits as reviewed in the EDD, except as noted below.

- For Method SW8260C, the CCV recovered outside acceptable limits for two analytes. The dichlorodifluoromethane recovery of 126% and the bromomethane recovery of 47% exceeded acceptable control limits of 80-120%. Associated samples were MW-9 TS, MW-99 TS, and the trip blank. For dichlorodifluoromethane, since a high bias was indicated, and all associated sample results were undetectable, data was not impacted. All data was usable without qualification. For bromomethane, the LCS and LCSD also recovered below the acceptable lower control limit (LCL). Refer to the LCS and LCSD section of this QAR for data qualifications.

### **Internal Standards**

No internal standards were noted in the case narrative as being outside of acceptance limits. Internal standard performance was not otherwise presented in the report or in the electronic data deliverable. Internal standards criteria were considered met.

### **Surrogate Recovery Results**

Surrogate analysis was performed at the required frequencies. All surrogate recoveries were within analytical method and SGS percent recovery acceptance limits, except as noted below.

- For Method AK101, 4-bromofluorobenzene surrogate recovered at 269%, above the acceptable upper control limit of 150% in sample MW-99 TS. This sample was analyzed at a five-fold dilution and was noted by the laboratory as having matrix interference, both of which likely contributed to the surrogate recovery exceedance. The GRO result for sample MW-99 TS was qualified "Q+" and should be considered potentially biased high. However, sample MW-99 TS, with a GRO result of 2.59 mg/L, was a field duplicate of MW9-TS, which had a GRO result of 3.25 mg/L. Both the primary and duplicate were above the applicable ADEC cleanup level of 2.2 mg/L. Data was considered minimally impacted, and all data was usable as qualified.

### **Laboratory Control Samples and Laboratory Control Duplicate Samples done**

LCS and LCSDs were analyzed at the appropriate frequencies. All LCS and LCSD recoveries and RPDs were within acceptable limits, except as noted below.

- For Method SW8260C, bromomethane recovered at 47% and 51% in the LCS and LCSD, below the LCL of 53%. Associated samples were MW-9 TS, MW-99 TS, and the trip blank. Bromomethane results for samples MW-9 TS, MW-99 TS, and the trip blank were qualified with a "UJ" and should be considered un-detectable values with possibly inaccurate LODs. The LODs of 0.0025 mg/L were one-third that of the ADEC cleanup level of 0.0075 mg/L. Data usability was not impacted.

### **Matrix Spike and Matrix Spike Duplicate Samples**

MS and MSDs were analyzed at the appropriate frequencies. All MS/MSD recoveries and RPDs were within acceptable limits.

## Field Duplicates

The field duplicate sample frequency is presented in Table 3. Parent sample and field duplicates are presented in Table 4. For all methods and analytes, the duplicate frequency satisfied the requirement of one per 10 samples or less per matrix and analyte. A duplicate was not submitted for BTEX by Method SW8260C, as a duplicate for the full VOCs by Method SW8260C was submitted, which includes the BTEX analytes. Field duplicates were submitted blind to the laboratory.

All parent sample/field duplicate RPDs were within the ADEC required 30% for waters, except as noted in Table 5 with chronologically associated samples listed in the table footnotes. Parent sample/duplicate results were qualified as shown in the table. To err on the conservative, impacted analytes for all chronologically associated field samples, listed in the Table 5 footnotes, were also qualified. Detected results were qualified “Q” and non-detect results were qualified “UJ.” Associated trip blank data were not listed in the footnotes, nor qualified, as the trip blank, prepared in the laboratory, was considered unaffected by field precision.

In all cases, either both the parent sample and duplicate results were below, or both parent sample and duplicate results were above, the applicable ADEC cleanup level; therefore, data usability was not impacted.

Regarding field associated samples, in all instances laboratory precision was established by either an LCS/LCSD or an MS/MSD pair with RPDs within acceptable limits, thus the impact to data was considered minimal. Associated field samples, MW-5 TS, MW-6 TS, and MW-7 TS were analyzed for BTEX by SW8260C, thus only xylenes were affected by field precision exceedances. All associated samples had xylene results of undetectable, and were qualified “UJ” with LODs over 1000-fold below the applicable cleanup level. All data was usable as qualified.

Parent sample/field duplicate pairs with both results below the LOQ were considered acceptable without qualification.

**Table 3 Field Duplicate Count**

Number of Primary Samples	Number of Field Duplicates	Method	Analytes
4	1	AK101	GRO
4	1	AK 102	DRO
3	1	SW8260C	BTEX <sup>1</sup>
1	1	SW8260C	VOCs
1	1	SW8270D LV	PAH SIM

**Notes:**

1 – BTEX are included in the VOCs analyte list.

**Table 4 Parent Samples and Field Duplicates**

Matrix	Parent Sample	Field Duplicate	Method	Analytes
Groundwater	MW-9 TS	MW-99 TS	SW8260C AK101 AK102 SW8270D LV	BTEX/VOCs GRO DRO PAH SIM

**Table 5 Field Duplicate RPD Exceedances**

Method	Analyte	Primary: MW-9 TS	Duplicate: MW-99 TS	RPD (%)	Flag	ADEC Cleanup Level (mg/L) <sup>1</sup>
		Result (mg/L)	Result (mg/L)			
SW8260C	1,2,4-Trimethylbenzene	<b>0.191</b>	<b>0.14</b>	31	Q	0.015
	1,2-Dichloroethane	0.00965	0.00663	37	Q	0.0017
	1,3,5-Trimethylbenzene	0.0537	0.0318	51	Q	0.12
	2-Butanone (MEK)	0.104	0.0727	35	Q	5.6
	2-Hexanone	0.0129	0.00707J	58	Q	0.038
	4-Isopropyltoluene	0.00857	0.00588	37	Q	NA
	Isopropylbenzene (Cumene)	0.00325	0.00481	39	Q	0.45
	Naphthalene	<b>0.068</b>	<b>0.0438</b>	43	Q	0.0017
	n-Propylbenzene	0.00581	0.00913	44	Q	0.66
	o-Xylene	0.0158	0.0104	41	Q	NA
	P & M -Xylene	0.44	0.233	62	Q	NA
	Toluene	0.0214	0.0129	50	Q	1.1
Xylenes (total)	<b>0.456</b>	<b>0.244</b>	61	Q	0.19	
SW8270D LV	2-Methylnaphthalene	0.000348	0.00104	100	Q	0.036

**Bold** indicates an exceedance of ADEC criteria.

**Notes:**

1 – Limits shown are 18 AAC 75, Table C (ADEC, 2018).

2 – Samples chronologically associated with this parent sample field duplicate pair were MW-5 TS, MW-6 TS, and MW-7 TS.

**Laboratory Duplicate Samples**

No laboratory duplicates were analyzed in association with these samples.

**Overall Assessment**

This data were considered of good quality acceptable for use with the noted qualifications. No data were rejected.

**Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity Summary**

- Precision: Precision goals were met, except as noted in the Field Duplicates section.
- Accuracy: Accuracy goals were met, except as noted in the CCV, LCS/LCSD, and Surrogate Recovery sections.
- Representativeness: Representativeness goals were met. The samples were collected from usual locations.
- Comparability: Comparability goals were met. The same laboratory and methods were used.
- Completeness: Completeness goals were met. The data were 100% complete with respect to analysis.
- Sensitivity: Sensitivity goals were met, except as noted in the Reporting Limits section.

## References

ADEC. 2017a. ADEC Technical Memorandum *Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling*. March.

ADEC. 2018. 18 AAC 75, *Oil and Other Hazardous Substances Pollution Control*. September 29.

SLR International Corporation (SLR). 2018. *Work Plan Addendum for Groundwater Monitoring at the ML&P Transformer Shop*. July 9.

U.S. Environmental Protection Agency (USEPA). 2014. *National Functional Guidelines for Superfund Organic Methods Data Review*. August.

## **Appendix C**

### **ADEC Laboratory Data Review Checklist**

## Laboratory Data Review Checklist

Completed by:

Nicholas Wells

Title:

Staff Engineer

Date:

10/01/2018

CS Report Name:

ML&P Transformer Shop, 1130 E. 1st

Report Date:

August 16, 2018

Consultant Firm:

SLR International Corporation

Laboratory Name:

SGS North America. Inc

Laboratory Report Number:

1184186

ADEC File Number:

2100.26.302

Hazard Identification Number:

23842

1. Laboratory

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

Yes  No                      Comments:

All analyses were conducted at SGS North America, Inc., Anchorage. SGS is ADEC CS approved, certificate number UST-005

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:

Not applicable. All analyses were conducted at SGS, Anchorage.

2. Chain of Custody (COC)

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

Yes  No                      Comments:

b. Correct analyses requested?

Yes  No                      Comments:

3. Laboratory Sample Receipt Documentation

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

Yes  No                      Comments:

On the COC, the temperature blank was listed as -0.2°C, but the Sample Receipt Form noted 0.2°C.

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

Yes  No                      Comments:

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

Yes  No                      Comments:

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.?

The trip blank was noted on the COC as having a collection date and time of August 3, 2018 at 0500, when the earliest sample was collected on July 31, 2018 at 0915.

Yes  No

Comments:

e. Data quality or usability affected?

Comments:

The trip blank accompanied sample containers and samples at all times during transit from and to the laboratory and in the field. Data was not impacted.  
Regarding receipt temperature, the discrepancy was likely due to a transcription error. No evidence of freezing was noted on the Sample Receipt Form; therefore, data was considered not impacted.

#### 4. Case Narrative

a. Present and understandable?

Yes  No

Comments:

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

Yes  No

Comments:

c. Were all corrective actions documented?

Yes  No

Comments:

No corrective actions were necessary.

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

Comments:

No impact.

#### 5. Samples Results

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

Yes  No

Comments:

b. All applicable holding times met?

Yes  No

Comments:

c. All soils reported on a dry weight basis?

Yes  No

Comments:

Not applicable. Only water samples were analyzed.



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

Yes  No

Comments:

Only the LODs for 1,2,3-trichloropropane by Method SW8260C, for samples MW-9 TS and duplicate MW-99 TS, did not meet ADEC cleanup levels. This was due to typical laboratory methodology limitations.

e. Data quality or usability affected?

Comments:

For this compound it is not possible to state with certainty the absence of target analyte below the laboratory LOD, but above the ADEC cleanup level. 1,2,3-trichloropropane data is limited in usability for that purpose. Data usability was considered minimally impacted, and all data was usable without qualification.

## 6. QC Samples

a. Method Blank

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

Yes  No

Comments:

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

Yes  No

Comments:

iii. If above LOQ, what samples are affected?

Comments:

Not applicable.

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

Yes  No

Comments:

No data were affected.

v. Data quality or usability affected?

Comments:

No impact.

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:

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

Yes  No

Comments:

No inorganics were analyzed.

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:

CCV: For Method SW8260C, one CCV recovered outside acceptable limits for two analytes. The dichlorodifluoromethane recovery of 126% and the bromomethane recovery of 47% exceeded acceptable control limits of 80-120%.

LCS/LCSD: For Method SW8260C, bromomethane recovered at 47% and 51% in the LCS and LCSD, below the lower control limit of 53%.

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:

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

Comments:

CCV: Associated samples were MW-9 TS, MW-99 TS, and the trip blank.

LCS/LCSD: Associated samples were MW-9 TS, MW-99 TS, and the trip blank.

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

Yes  No

Comments:

CCV: For dichlorodifluoromethane, since a high bias was indicated, and all associated sample results were undetectable, data was not impacted. All data was usable without qualification.

LCS/LCSD: Bromomethane results for samples MW-9 TS, MW-99 TS, and the trip blank were qualified with a “UJ” and should be considered un-detectable values with possibly inaccurate LODs.

vii. Data quality or usability affected?

Comments:

Bromomethane LODs for affected samples were 0.0025 mg/L, one-third that of the ADEC cleanup level of 0.0075 mg/L. Data usability was not impacted.

c. Surrogates – Organics Only

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

Yes  No

Comments:

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

Yes  No                      Comments:

For Method AK101, 4-bromofluorobenzene surrogate recovered at 269%, above the acceptable upper control limit of 150% in sample MW-99 TS. This sample was analyzed at a five-fold dilution and was noted by the laboratory as having matrix interference, both of which likely contributed to the surrogate recovery exceedance.

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

Yes  No                      Comments:

The GRO result for sample MW-99 TS was qualified “Q+” and should be considered potentially biased high.

- iv. Data quality or usability affected?

Comments:

Sample MW-99 TS, with a GRO result of 2.59 mg/L, was a field duplicate of MW9-TS, which had a GRO result of 3.25 mg/L. Both results were above the ADEC cleanup level of 2.2 mg/L. Data was considered minimally impacted, and all data was usable as qualified.

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

- i. One trip blank reported per matrix, analysis and cooler?

Yes  No                      Comments:

One trip blank was analyzed for VOCs by Method SW8260C and GRO by Method AK101. All BTEX analytes are included in the VOC list, so an additional trip blank for BTEX by Method SW8260C was not required.

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

Yes  No                      Comments:

- iii. All results less than LOQ?

Yes  No                      Comments:

Analytes were not detected at or above the LOD in the trip blank.

- iv. If above LOQ, what samples are affected?

Comments:

Not applicable

v. Data quality or usability affected?

Comments:

No impact

e. Field Duplicate

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

Yes  No

Comments:

A duplicate was not submitted for BTEX by Method SW8260C, as a duplicate for the full VOCs by Method SW8260C was submitted, which includes the BTEX analytes.

ii. Submitted blind to lab?

Yes  No

Comments:

Sample MW-99 TS was a duplicate of Sample MW-9 TS.

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:

Table 5 of the QAR lists RPD exceedances.

iv. Data quality or usability affected?

Comments:

Affected parent sample/duplicate results were qualified “Q” and should be considered estimated values with unknown bias. To err on the conservative, impacted analytes for all chronologically associated field samples, MW-5 TS, MW-6 TS, and MW-7 TS, were also qualified. Associated non-detect results were qualified “UJ,” and should be considered undetectable results with approximate or inaccurate LODs. Associated trip blank data were not listed in the footnotes, nor qualified, as the trip blank, prepared in the laboratory, was considered unaffected by field precision.

In all cases, either both the parent sample and duplicate results were below, or both parent sample and duplicate results were above, the applicable ADEC cleanup level; therefore, data usability was not impacted,

In all instances laboratory precision was established by either an LCS/LCSD or an MS/MSD pair with RPDs within acceptable limits, thus the impact to data was considered minimal. Associated field samples, MW-5 TS, MW-6 TS, and MW-7 TS were analyzed for BTEX by SW8260C, thus only xylene results were affected by field precision exceedances. All associated samples had xylene results of undetectable with LODs over 1000-fold below the applicable cleanup level. All data was usable as qualified.

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

Yes    No    Not Applicable

i. All results less than LOQ?

Yes    No   Comments:

Not applicable

ii. If above LOQ, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected?

Comments:

No impact

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

a. Defined and appropriate?

Yes    No   Comments:

## **Appendix D**

### **SGS Laboratory Data Reports**



## Laboratory Report of Analysis

To: SLR Alaska-Anchorage  
2700 Gambell Street, Suite 200  
Anchorage, AK 99503  
907-222-1112

Report Number: **1184186**

Client Project: **105.00528.18001 MLP Transform**

Dear Bret Berglund,

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 Justin 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.

---

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com

Date

## Case Narrative

SGS Client: **SLR Alaska-Anchorage**  
SGS Project: **1184186**  
Project Name/Site: **105.00528.18001 MLP Transform**  
Project Contact: **Bret Berglund**

Refer to sample receipt form for information on sample condition.

### **MW-99 TS (1184186005) PS**

AK101 - Surrogate recovery for 4-bromofluorobenzene ( 269 %) does not meet QC criteria due to matrix interference.

\*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: 08/16/2018 12:02:30PM



### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>8270D SIM LV (PAH)</b>				
1184186005	MW-99 TS	XMS10961	Phenanthrene	BLC

#### 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: 08/16/2018 12:02:31PM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, 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 (Provisionally Certified as of 06/11/2018 for Mercury by EPA245.1, Beryllium and Copper by EPA200.8) & 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). 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>
MW-5 TS	1184186001	07/31/2018	08/03/2018	Water (Surface, Eff., Ground)
MW-6 TS	1184186002	07/31/2018	08/03/2018	Water (Surface, Eff., Ground)
MW-7 TS	1184186003	07/31/2018	08/03/2018	Water (Surface, Eff., Ground)
MW-9 TS	1184186004	08/03/2018	08/03/2018	Water (Surface, Eff., Ground)
MW-99 TS	1184186005	08/03/2018	08/03/2018	Water (Surface, Eff., Ground)
Trip Blank	1184186006	08/03/2018	08/03/2018	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)
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 08/16/2018 12:02:33PM

### Detectable Results Summary

Client Sample ID: **MW-5 TS**

Lab Sample ID: 1184186001

**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.208J	mg/L

Client Sample ID: **MW-6 TS**

Lab Sample ID: 1184186002

**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.419J	mg/L

Client Sample ID: **MW-7 TS**

Lab Sample ID: 1184186003

**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.276J	mg/L

Client Sample ID: **MW-9 TS**

Lab Sample ID: 1184186004

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	6.05	ug/L
2-Methylnaphthalene	0.348	ug/L
Acenaphthene	0.206	ug/L
Fluorene	0.186	ug/L
Naphthalene	16.1	ug/L

**Semivolatile Organic Fuels**

Diesel Range Organics	2.69	mg/L
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**Volatile Fuels**

Gasoline Range Organics	3.25	mg/L
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**Volatile GC/MS**

1,2,4-Trimethylbenzene	191	ug/L
1,2-Dichloroethane	9.65	ug/L
1,3,5-Trimethylbenzene	53.7	ug/L
2-Butanone (MEK)	104	ug/L
2-Hexanone	12.9	ug/L
4-Isopropyltoluene	8.57	ug/L
4-Methyl-2-pentanone (MIBK)	6.39J	ug/L
Benzene	1300	ug/L
Ethylbenzene	64.5	ug/L
Isopropylbenzene (Cumene)	3.25	ug/L
Naphthalene	68.0	ug/L
n-Propylbenzene	5.81	ug/L
o-Xylene	15.8	ug/L
P & M -Xylene	440	ug/L
Toluene	21.4	ug/L
Xylenes (total)	456	ug/L

### Detectable Results Summary

Client Sample ID: **MW-99 TS**

Lab Sample ID: 1184186005

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	5.90	ug/L
2-Methylnaphthalene	1.04	ug/L
Acenaphthene	0.179	ug/L
Fluorene	0.169	ug/L
Naphthalene	15.0	ug/L
Phenanthrene	0.0358J	ug/L

**Semivolatile Organic Fuels**

**Volatile Fuels**

**Volatile GC/MS**

Diesel Range Organics	2.84	mg/L
Gasoline Range Organics	2.59	mg/L
1,2,4-Trimethylbenzene	140	ug/L
1,2-Dichloroethane	6.63	ug/L
1,3,5-Trimethylbenzene	31.8	ug/L
2-Butanone (MEK)	72.7	ug/L
2-Hexanone	7.07J	ug/L
4-Isopropyltoluene	5.88	ug/L
4-Methyl-2-pentanone (MIBK)	4.20J	ug/L
Benzene	1200	ug/L
Ethylbenzene	66.8	ug/L
Isopropylbenzene (Cumene)	4.81	ug/L
Naphthalene	43.8	ug/L
n-Propylbenzene	9.13	ug/L
o-Xylene	10.4	ug/L
P & M -Xylene	233	ug/L
sec-Butylbenzene	0.610J	ug/L
Toluene	12.9	ug/L
Xylenes (total)	244	ug/L

Print Date: 08/16/2018 12:02:34PM

## Results of MW-5 TS

Client Sample ID: **MW-5 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186001  
 Lab Project ID: 1184186

Collection Date: 07/31/18 09:15  
 Received Date: 08/03/18 10:23  
 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	0.208 J	0.615	0.184	mg/L	1		08/06/18 11:37
<b>Surrogates</b>							
5a Androstane (surr)	80.2	50-150		%	1		08/06/18 11:37

## Batch Information

Analytical Batch: XFC14453  
 Analytical Method: AK102  
 Analyst: CMS  
 Analytical Date/Time: 08/06/18 11:37  
 Container ID: 1184186001-G

Prep Batch: XXX40094  
 Prep Method: SW3520C  
 Prep Date/Time: 08/04/18 08:08  
 Prep Initial Wt./Vol.: 244 mL  
 Prep Extract Vol: 1 mL



**Results of MW-5 TS**

Client Sample ID: **MW-5 TS**  
Client Project ID: **105.00528.18001 MLP Transform**  
Lab Sample ID: 1184186001  
Lab Project ID: 1184186

Collection Date: 07/31/18 09:15  
Received Date: 08/03/18 10:23  
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		08/05/18 08:00
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	74.3	50-150		%	1		08/05/18 08:00

**Batch Information**

Analytical Batch: VFC14325  
Analytical Method: AK101  
Analyst: ST  
Analytical Date/Time: 08/05/18 08:00  
Container ID: 1184186001-D

Prep Batch: VXX32796  
Prep Method: SW5030B  
Prep Date/Time: 08/04/18 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of MW-5 TS

Client Sample ID: MW-5 TS
Client Project ID: 105.00528.18001 MLP Transform
Lab Sample ID: 1184186001
Lab Project ID: 1184186

Collection Date: 07/31/18 09:15
Received Date: 08/03/18 10:23
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total), and Surrogates (1,2-Dichloroethane-D4, 4-Bromofluorobenzene, Toluene-d8).

Batch Information

Analytical Batch: VMS18132
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 08/06/18 18:08
Container ID: 1184186001-A

Prep Batch: VXX32813
Prep Method: SW5030B
Prep Date/Time: 08/06/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



## Results of MW-6 TS

Client Sample ID: **MW-6 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186002  
 Lab Project ID: 1184186

Collection Date: 07/31/18 11:30  
 Received Date: 08/03/18 10:23  
 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	0.419 J	0.600	0.180	mg/L	1		08/06/18 11:47
<b>Surrogates</b>							
5a Androstane (surr)	78.5	50-150		%	1		08/06/18 11:47

## Batch Information

Analytical Batch: XFC14453  
 Analytical Method: AK102  
 Analyst: CMS  
 Analytical Date/Time: 08/06/18 11:47  
 Container ID: 1184186002-G

Prep Batch: XXX40094  
 Prep Method: SW3520C  
 Prep Date/Time: 08/04/18 08:08  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL

## Results of MW-6 TS

Client Sample ID: **MW-6 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186002  
 Lab Project ID: 1184186

Collection Date: 07/31/18 11:30  
 Received Date: 08/03/18 10:23  
 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		08/05/18 08:18
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	74.9	50-150		%	1		08/05/18 08:18

## Batch Information

Analytical Batch: VFC14325  
 Analytical Method: AK101  
 Analyst: ST  
 Analytical Date/Time: 08/05/18 08:18  
 Container ID: 1184186002-D

Prep Batch: VXX32796  
 Prep Method: SW5030B  
 Prep Date/Time: 08/04/18 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of MW-6 TS

Client Sample ID: **MW-6 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186002  
 Lab Project ID: 1184186

Collection Date: 07/31/18 11:30  
 Received Date: 08/03/18 10:23  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Volatile 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>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/06/18 18:25
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 18:25
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/06/18 18:25
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/06/18 18:25
Toluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 18:25
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/06/18 18:25
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		08/06/18 18:25
4-Bromofluorobenzene (surr)	100	85-114		%	1		08/06/18 18:25
Toluene-d8 (surr)	101	89-112		%	1		08/06/18 18:25

## Batch Information

Analytical Batch: VMS18132  
 Analytical Method: SW8260C  
 Analyst: FDR  
 Analytical Date/Time: 08/06/18 18:25  
 Container ID: 1184186002-A

Prep Batch: VXX32813  
 Prep Method: SW5030B  
 Prep Date/Time: 08/06/18 00:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of MW-7 TS

Client Sample ID: **MW-7 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186003  
 Lab Project ID: 1184186

Collection Date: 07/31/18 13:00  
 Received Date: 08/03/18 10:23  
 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	0.276 J	0.625	0.188	mg/L	1		08/06/18 11:56
<b>Surrogates</b>							
5a Androstane (surr)	79.2	50-150		%	1		08/06/18 11:56

## Batch Information

Analytical Batch: XFC14453  
 Analytical Method: AK102  
 Analyst: CMS  
 Analytical Date/Time: 08/06/18 11:56  
 Container ID: 1184186003-G

Prep Batch: XXX40094  
 Prep Method: SW3520C  
 Prep Date/Time: 08/04/18 08:08  
 Prep Initial Wt./Vol.: 240 mL  
 Prep Extract Vol: 1 mL

## Results of MW-7 TS

Client Sample ID: **MW-7 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186003  
 Lab Project ID: 1184186

Collection Date: 07/31/18 13:00  
 Received Date: 08/03/18 10:23  
 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		08/05/18 08:36
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	74.2	50-150		%	1		08/05/18 08:36

## Batch Information

Analytical Batch: VFC14325  
 Analytical Method: AK101  
 Analyst: ST  
 Analytical Date/Time: 08/05/18 08:36  
 Container ID: 1184186003-D

Prep Batch: VXX32796  
 Prep Method: SW5030B  
 Prep Date/Time: 08/04/18 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



### Results of MW-7 TS

Client Sample ID: **MW-7 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186003  
 Lab Project ID: 1184186

Collection Date: 07/31/18 13:00  
 Received Date: 08/03/18 10:23  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile 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>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/06/18 18:42
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 18:42
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/06/18 18:42
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/06/18 18:42
Toluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 18:42
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/06/18 18:42
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		08/06/18 18:42
4-Bromofluorobenzene (surr)	102	85-114		%	1		08/06/18 18:42
Toluene-d8 (surr)	100	89-112		%	1		08/06/18 18:42

### Batch Information

Analytical Batch: VMS18132  
 Analytical Method: SW8260C  
 Analyst: FDR  
 Analytical Date/Time: 08/06/18 18:42  
 Container ID: 1184186003-A

Prep Batch: VXX32813  
 Prep Method: SW5030B  
 Prep Date/Time: 08/06/18 00:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



**Results of MW-9 TS**

Client Sample ID: **MW-9 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186004  
 Lab Project ID: 1184186

Collection Date: 08/03/18 09:00  
 Received Date: 08/03/18 10:23  
 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	6.05	0.0504	0.0151	ug/L	1		08/10/18 17:06
2-Methylnaphthalene	0.348	0.0504	0.0151	ug/L	1		08/10/18 17:06
Acenaphthene	0.206	0.0504	0.0151	ug/L	1		08/10/18 17:06
Acenaphthylene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Anthracene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Benzo(a)Anthracene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Benzo[a]pyrene	0.0101 U	0.0202	0.00625	ug/L	1		08/10/18 17:06
Benzo[b]Fluoranthene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Benzo[g,h,i]perylene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Benzo[k]fluoranthene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Chrysene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Dibenzo[a,h]anthracene	0.0101 U	0.0202	0.00625	ug/L	1		08/10/18 17:06
Fluoranthene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Fluorene	0.186	0.0504	0.0151	ug/L	1		08/10/18 17:06
Indeno[1,2,3-c,d] pyrene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Naphthalene	16.1	0.504	0.156	ug/L	5		08/14/18 13:32
Phenanthrene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
Pyrene	0.0252 U	0.0504	0.0151	ug/L	1		08/10/18 17:06
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	81.8	47-106		%	1		08/10/18 17:06
Fluoranthene-d10 (surr)	92.2	24-116		%	1		08/10/18 17:06

**Batch Information**

Analytical Batch: XMS10971  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: DSD  
 Analytical Date/Time: 08/14/18 13:32  
 Container ID: 1184186004-I

Prep Batch: XXX40096  
 Prep Method: SW3520C  
 Prep Date/Time: 08/05/18 08:05  
 Prep Initial Wt./Vol.: 248 mL  
 Prep Extract Vol: 1 mL

Analytical Batch: XMS10961  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: BMZ  
 Analytical Date/Time: 08/10/18 17:06  
 Container ID: 1184186004-I

Prep Batch: XXX40096  
 Prep Method: SW3520C  
 Prep Date/Time: 08/05/18 08:05  
 Prep Initial Wt./Vol.: 248 mL  
 Prep Extract Vol: 1 mL



## Results of MW-9 TS

Client Sample ID: **MW-9 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186004  
 Lab Project ID: 1184186

Collection Date: 08/03/18 09:00  
 Received Date: 08/03/18 10:23  
 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	2.69	0.625	0.188	mg/L	1		08/06/18 12:06
<b>Surrogates</b>							
5a Androstane (surr)	76.6	50-150		%	1		08/06/18 12:06

## Batch Information

Analytical Batch: XFC14453  
 Analytical Method: AK102  
 Analyst: CMS  
 Analytical Date/Time: 08/06/18 12:06  
 Container ID: 1184186004-G

Prep Batch: XXX40094  
 Prep Method: SW3520C  
 Prep Date/Time: 08/04/18 08:08  
 Prep Initial Wt./Vol.: 240 mL  
 Prep Extract Vol: 1 mL

## Results of MW-9 TS

Client Sample ID: **MW-9 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186004  
 Lab Project ID: 1184186

Collection Date: 08/03/18 09:00  
 Received Date: 08/03/18 10:23  
 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	3.25	0.100	0.0310	mg/L	1		08/05/18 08:54
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	92.1	50-150		%	1		08/05/18 08:54

## Batch Information

Analytical Batch: VFC14325  
 Analytical Method: AK101  
 Analyst: ST  
 Analytical Date/Time: 08/05/18 08:54  
 Container ID: 1184186004-D

Prep Batch: VXX32796  
 Prep Method: SW5030B  
 Prep Date/Time: 08/04/18 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



**Results of MW-9 TS**

Client Sample ID: **MW-9 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186004  
 Lab Project ID: 1184186

Collection Date: 08/03/18 09:00  
 Received Date: 08/03/18 10:23  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

**Results by Volatile 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>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 19:52
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 19:52
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		08/06/18 19:52
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,2,4-Trimethylbenzene	191	1.00	0.310	ug/L	1		08/06/18 19:52
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		08/06/18 19:52
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/06/18 19:52
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,2-Dichloroethane	9.65	0.500	0.150	ug/L	1		08/06/18 19:52
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,3,5-Trimethylbenzene	53.7	1.00	0.310	ug/L	1		08/06/18 19:52
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		08/06/18 19:52
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		08/06/18 19:52
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
2-Butanone (MEK)	104	10.0	3.10	ug/L	1		08/06/18 19:52
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
2-Hexanone	12.9	10.0	3.10	ug/L	1		08/06/18 19:52
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
4-Isopropyltoluene	8.57	1.00	0.310	ug/L	1		08/06/18 19:52
4-Methyl-2-pentanone (MIBK)	6.39 J	10.0	3.10	ug/L	1		08/06/18 19:52
Benzene	1300	4.00	1.20	ug/L	10		08/06/18 19:17
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 19:52
Bromoform	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Bromomethane	2.50 U	5.00	1.50	ug/L	1		08/06/18 19:52
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		08/06/18 19:52
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		08/06/18 19:52
Chloroethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52

Print Date: 08/16/2018 12:02:36PM

J flagging is activated



**Results of MW-9 TS**

Client Sample ID: **MW-9 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186004  
 Lab Project ID: 1184186

Collection Date: 08/03/18 09:00  
 Received Date: 08/03/18 10:23  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

**Results by Volatile 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>
Chloroform	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Chloromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		08/06/18 19:52
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 19:52
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Ethylbenzene	64.5	1.00	0.310	ug/L	1		08/06/18 19:52
Freon-113	5.00 U	10.0	3.10	ug/L	1		08/06/18 19:52
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Isopropylbenzene (Cumene)	3.25	1.00	0.310	ug/L	1		08/06/18 19:52
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		08/06/18 19:52
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/06/18 19:52
Naphthalene	68.0	1.00	0.310	ug/L	1		08/06/18 19:52
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
n-Propylbenzene	5.81	1.00	0.310	ug/L	1		08/06/18 19:52
o-Xylene	15.8	1.00	0.310	ug/L	1		08/06/18 19:52
P & M -Xylene	440	20.0	6.20	ug/L	10		08/06/18 19:17
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Styrene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Toluene	21.4	1.00	0.310	ug/L	1		08/06/18 19:52
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 19:52
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		08/06/18 19:52
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		08/06/18 19:52
Xylenes (total)	456	30.0	10.0	ug/L	10		08/06/18 19:17
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	95.9	81-118		%	1		08/06/18 19:52
4-Bromofluorobenzene (surr)	98.2	85-114		%	1		08/06/18 19:52
Toluene-d8 (surr)	101	89-112		%	1		08/06/18 19:52

## Results of MW-9 TS

Client Sample ID: **MW-9 TS**  
Client Project ID: **105.00528.18001 MLP Transform**  
Lab Sample ID: 1184186004  
Lab Project ID: 1184186

Collection Date: 08/03/18 09:00  
Received Date: 08/03/18 10:23  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS18132  
Analytical Method: SW8260C  
Analyst: FDR  
Analytical Date/Time: 08/06/18 19:17  
Container ID: 1184186004-A

Prep Batch: VXX32813  
Prep Method: SW5030B  
Prep Date/Time: 08/06/18 00:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Analytical Batch: VMS18132  
Analytical Method: SW8260C  
Analyst: FDR  
Analytical Date/Time: 08/06/18 19:52  
Container ID: 1184186004-A

Prep Batch: VXX32813  
Prep Method: SW5030B  
Prep Date/Time: 08/06/18 00:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



**Results of MW-99 TS**

Client Sample ID: **MW-99 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186005  
 Lab Project ID: 1184186

Collection Date: 08/03/18 06:00  
 Received Date: 08/03/18 10:23  
 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	5.90	0.0543	0.0163	ug/L	1		08/10/18 17:26
2-Methylnaphthalene	1.04	0.0543	0.0163	ug/L	1		08/10/18 17:26
Acenaphthene	0.179	0.0543	0.0163	ug/L	1		08/10/18 17:26
Acenaphthylene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
Anthracene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
Benzo(a)Anthracene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
Benzo[a]pyrene	0.0109 U	0.0217	0.00674	ug/L	1		08/10/18 17:26
Benzo[b]Fluoranthene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
Benzo[g,h,i]perylene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
Benzo[k]fluoranthene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
Chrysene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
Dibenzo[a,h]anthracene	0.0109 U	0.0217	0.00674	ug/L	1		08/10/18 17:26
Fluoranthene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
Fluorene	0.169	0.0543	0.0163	ug/L	1		08/10/18 17:26
Indeno[1,2,3-c,d] pyrene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
Naphthalene	15.0	0.543	0.168	ug/L	5		08/14/18 13:52
Phenanthrene	0.0358 J	0.0543	0.0163	ug/L	1		08/10/18 17:26
Pyrene	0.0272 U	0.0543	0.0163	ug/L	1		08/10/18 17:26
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	72	47-106		%	1		08/10/18 17:26
Fluoranthene-d10 (surr)	76.6	24-116		%	1		08/10/18 17:26

**Batch Information**

Analytical Batch: XMS10971  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: DSD  
 Analytical Date/Time: 08/14/18 13:52  
 Container ID: 1184186005-I

Prep Batch: XXX40096  
 Prep Method: SW3520C  
 Prep Date/Time: 08/05/18 08:05  
 Prep Initial Wt./Vol.: 230 mL  
 Prep Extract Vol: 1 mL

Analytical Batch: XMS10961  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: BMZ  
 Analytical Date/Time: 08/10/18 17:26  
 Container ID: 1184186005-I

Prep Batch: XXX40096  
 Prep Method: SW3520C  
 Prep Date/Time: 08/05/18 08:05  
 Prep Initial Wt./Vol.: 230 mL  
 Prep Extract Vol: 1 mL

## Results of MW-99 TS

Client Sample ID: **MW-99 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186005  
 Lab Project ID: 1184186

Collection Date: 08/03/18 06:00  
 Received Date: 08/03/18 10:23  
 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	2.84	0.600	0.180	mg/L	1		08/06/18 12:16
<b>Surrogates</b>							
5a Androstane (surr)	76.8	50-150		%	1		08/06/18 12:16

## Batch Information

Analytical Batch: XFC14453  
 Analytical Method: AK102  
 Analyst: CMS  
 Analytical Date/Time: 08/06/18 12:16  
 Container ID: 1184186005-G

Prep Batch: XXX40094  
 Prep Method: SW3520C  
 Prep Date/Time: 08/04/18 08:08  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL

## Results of MW-99 TS

Client Sample ID: **MW-99 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186005  
 Lab Project ID: 1184186

Collection Date: 08/03/18 06:00  
 Received Date: 08/03/18 10:23  
 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	2.59		0.500	0.155	mg/L	5		08/07/18 14:24
<b>Surrogates</b>								
4-Bromofluorobenzene (surr)	269	*	50-150		%	5		08/07/18 14:24

## Batch Information

Analytical Batch: VFC14329  
 Analytical Method: AK101  
 Analyst: ST  
 Analytical Date/Time: 08/07/18 14:24  
 Container ID: 1184186005-E

Prep Batch: VXX32820  
 Prep Method: SW5030B  
 Prep Date/Time: 08/06/18 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL





**Results of MW-99 TS**

Client Sample ID: **MW-99 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186005  
 Lab Project ID: 1184186

Collection Date: 08/03/18 06:00  
 Received Date: 08/03/18 10:23  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

**Results by Volatile 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>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 20:09
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 20:09
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		08/06/18 20:09
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,2,4-Trimethylbenzene	140	1.00	0.310	ug/L	1		08/06/18 20:09
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		08/06/18 20:09
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/06/18 20:09
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,2-Dichloroethane	6.63	0.500	0.150	ug/L	1		08/06/18 20:09
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,3,5-Trimethylbenzene	31.8	1.00	0.310	ug/L	1		08/06/18 20:09
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		08/06/18 20:09
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		08/06/18 20:09
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
2-Butanone (MEK)	72.7	10.0	3.10	ug/L	1		08/06/18 20:09
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
2-Hexanone	7.07 J	10.0	3.10	ug/L	1		08/06/18 20:09
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
4-Isopropyltoluene	5.88	1.00	0.310	ug/L	1		08/06/18 20:09
4-Methyl-2-pentanone (MIBK)	4.20 J	10.0	3.10	ug/L	1		08/06/18 20:09
Benzene	1200	4.00	1.20	ug/L	10		08/06/18 19:34
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 20:09
Bromoform	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Bromomethane	2.50 U	5.00	1.50	ug/L	1		08/06/18 20:09
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		08/06/18 20:09
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		08/06/18 20:09
Chloroethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09

Print Date: 08/16/2018 12:02:36PM

J flagging is activated



**Results of MW-99 TS**

Client Sample ID: **MW-99 TS**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186005  
 Lab Project ID: 1184186

Collection Date: 08/03/18 06:00  
 Received Date: 08/03/18 10:23  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

**Results by Volatile 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>
Chloroform	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Chloromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		08/06/18 20:09
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 20:09
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Ethylbenzene	66.8	1.00	0.310	ug/L	1		08/06/18 20:09
Freon-113	5.00 U	10.0	3.10	ug/L	1		08/06/18 20:09
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Isopropylbenzene (Cumene)	4.81	1.00	0.310	ug/L	1		08/06/18 20:09
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		08/06/18 20:09
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/06/18 20:09
Naphthalene	43.8	1.00	0.310	ug/L	1		08/06/18 20:09
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
n-Propylbenzene	9.13	1.00	0.310	ug/L	1		08/06/18 20:09
o-Xylene	10.4	1.00	0.310	ug/L	1		08/06/18 20:09
P & M -Xylene	233	2.00	0.620	ug/L	1		08/06/18 20:09
sec-Butylbenzene	0.610 J	1.00	0.310	ug/L	1		08/06/18 20:09
Styrene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Toluene	12.9	1.00	0.310	ug/L	1		08/06/18 20:09
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 20:09
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		08/06/18 20:09
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		08/06/18 20:09
Xylenes (total)	244	3.00	1.00	ug/L	1		08/06/18 20:09
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	97.9	81-118		%	1		08/06/18 20:09
4-Bromofluorobenzene (surr)	101	85-114		%	1		08/06/18 20:09
Toluene-d8 (surr)	100	89-112		%	1		08/06/18 20:09

## Results of MW-99 TS

Client Sample ID: **MW-99 TS**  
Client Project ID: **105.00528.18001 MLP Transform**  
Lab Sample ID: 1184186005  
Lab Project ID: 1184186

Collection Date: 08/03/18 06:00  
Received Date: 08/03/18 10:23  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS18132  
Analytical Method: SW8260C  
Analyst: FDR  
Analytical Date/Time: 08/06/18 19:34  
Container ID: 1184186005-A

Prep Batch: VXX32813  
Prep Method: SW5030B  
Prep Date/Time: 08/06/18 00:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Analytical Batch: VMS18132  
Analytical Method: SW8260C  
Analyst: FDR  
Analytical Date/Time: 08/06/18 20:09  
Container ID: 1184186005-A

Prep Batch: VXX32813  
Prep Method: SW5030B  
Prep Date/Time: 08/06/18 00:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

## Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186006  
 Lab Project ID: 1184186

Collection Date: 08/03/18 05:00  
 Received Date: 08/03/18 10:23  
 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		08/05/18 07:24
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	76.1	50-150		%	1		08/05/18 07:24

## Batch Information

Analytical Batch: VFC14325  
 Analytical Method: AK101  
 Analyst: ST  
 Analytical Date/Time: 08/05/18 07:24  
 Container ID: 1184186006-D

Prep Batch: VXX32796  
 Prep Method: SW5030B  
 Prep Date/Time: 08/04/18 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186006  
 Lab Project ID: 1184186

Collection Date: 08/03/18 05:00  
 Received Date: 08/03/18 10:23  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile 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>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 16:58
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 16:58
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		08/06/18 16:58
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		08/06/18 16:58
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/06/18 16:58
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 16:58
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		08/06/18 16:58
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		08/06/18 16:58
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		08/06/18 16:58
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		08/06/18 16:58
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		08/06/18 16:58
Benzene	0.200 U	0.400	0.120	ug/L	1		08/06/18 16:58
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 16:58
Bromoform	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Bromomethane	2.50 U	5.00	1.50	ug/L	1		08/06/18 16:58
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		08/06/18 16:58
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		08/06/18 16:58
Chloroethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58

Print Date: 08/16/2018 12:02:36PM

J flagging is activated



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **105.00528.18001 MLP Transform**  
 Lab Sample ID: 1184186006  
 Lab Project ID: 1184186

Collection Date: 08/03/18 05:00  
 Received Date: 08/03/18 10:23  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile 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>
Chloroform	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Chloromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		08/06/18 16:58
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		08/06/18 16:58
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Freon-113	5.00 U	10.0	3.10	ug/L	1		08/06/18 16:58
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		08/06/18 16:58
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/06/18 16:58
Naphthalene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/06/18 16:58
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Styrene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Toluene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		08/06/18 16:58
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		08/06/18 16:58
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		08/06/18 16:58
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/06/18 16:58
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		08/06/18 16:58
4-Bromofluorobenzene (surr)	101	85-114		%	1		08/06/18 16:58
Toluene-d8 (surr)	99.2	89-112		%	1		08/06/18 16:58

## Results of Trip Blank

Client Sample ID: **Trip Blank**  
Client Project ID: **105.00528.18001 MLP Transform**  
Lab Sample ID: 1184186006  
Lab Project ID: 1184186

Collection Date: 08/03/18 05:00  
Received Date: 08/03/18 10:23  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS18132  
Analytical Method: SW8260C  
Analyst: FDR  
Analytical Date/Time: 08/06/18 16:58  
Container ID: 1184186006-A

Prep Batch: VXX32813  
Prep Method: SW5030B  
Prep Date/Time: 08/06/18 00:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1783673 [VXX/32796]  
 Blank Lab ID: 1464640

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1184186001, 1184186002, 1184186003, 1184186004, 1184186006

## 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
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	79.7	50-150		%

## Batch Information

Analytical Batch: VFC14325  
 Analytical Method: AK101  
 Instrument: Agilent 7890A PID/FID  
 Analyst: ST  
 Analytical Date/Time: 8/4/2018 9:13:00PM

Prep Batch: VXX32796  
 Prep Method: SW5030B  
 Prep Date/Time: 8/4/2018 8:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 08/16/2018 12:02:38PM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1184186 [VXX32796]  
 Blank Spike Lab ID: 1464643  
 Date Analyzed: 08/05/2018 04:25

Spike Duplicate ID: LCSD for HBN 1184186 [VXX32796]  
 Spike Duplicate Lab ID: 1464644  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184186001, 1184186002, 1184186003, 1184186004, 1184186006

## 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	0.927	93	1.00	0.921	92	( 60-120 )	0.67	(< 20 )

### Surrogates

4-Bromofluorobenzene (surr)	0.0500	84.5	85	0.0500	81.9	82	( 50-150 )	3.10	
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## Batch Information

Analytical Batch: **VFC14325**  
 Analytical Method: **AK101**  
 Instrument: **Agilent 7890A PID/FID**  
 Analyst: **ST**

Prep Batch: **VXX32796**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **08/04/2018 08:00**  
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 08/16/2018 12:02:40PM



### Method Blank

Blank ID: MB for HBN 1783769 [VXX/32813]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1465053

QC for Samples:

1184186001, 1184186002, 1184186003, 1184186004, 1184186005, 1184186006

### Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 08/16/2018 12:02:41PM

## Method Blank

Blank ID: MB for HBN 1783769 [VXX/32813]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1465053

QC for Samples:

1184186001, 1184186002, 1184186003, 1184186004, 1184186005, 1184186006

## Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	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
n-Propylbenzene	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
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	101	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	100	89-112		%

Print Date: 08/16/2018 12:02:41PM



**Method Blank**

Blank ID: MB for HBN 1783769 [VXX/32813]  
Blank Lab ID: 1465053

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1184186001, 1184186002, 1184186003, 1184186004, 1184186005, 1184186006

**Results by SW8260C**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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**Batch Information**

Analytical Batch: VMS18132  
Analytical Method: SW8260C  
Instrument: VPA 780/5975 GC/MS  
Analyst: FDR  
Analytical Date/Time: 8/6/2018 1:54:00PM

Prep Batch: VXX32813  
Prep Method: SW5030B  
Prep Date/Time: 8/6/2018 12:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 08/16/2018 12:02:41PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1184186 [VXX32813]  
 Blank Spike Lab ID: 1465054  
 Date Analyzed: 08/06/2018 14:57

Spike Duplicate ID: LCSD for HBN 1184186 [VXX32813]  
 Spike Duplicate Lab ID: 1465055  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184186001, 1184186002, 1184186003, 1184186004, 1184186005, 1184186006

## Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	32.1	107	30	31.9	106	( 78-124 )	0.69	(< 20 )
1,1,1-Trichloroethane	30	31.6	105	30	30.7	102	( 74-131 )	2.70	(< 20 )
1,1,2,2-Tetrachloroethane	30	30.4	101	30	31.1	104	( 71-121 )	2.40	(< 20 )
1,1,2-Trichloroethane	30	30.6	102	30	30.4	101	( 80-119 )	0.59	(< 20 )
1,1-Dichloroethane	30	30.6	102	30	29.8	99	( 77-125 )	2.70	(< 20 )
1,1-Dichloroethene	30	31.0	103	30	29.9	100	( 71-131 )	3.60	(< 20 )
1,1-Dichloropropene	30	31.3	104	30	30.4	101	( 79-125 )	2.90	(< 20 )
1,2,3-Trichlorobenzene	30	28.4	95	30	32.1	107	( 69-129 )	12.40	(< 20 )
1,2,3-Trichloropropane	30	29.9	100	30	30.9	103	( 73-122 )	3.30	(< 20 )
1,2,4-Trichlorobenzene	30	30.5	102	30	31.8	106	( 69-130 )	4.00	(< 20 )
1,2,4-Trimethylbenzene	30	32.7	109	30	31.9	106	( 79-124 )	2.50	(< 20 )
1,2-Dibromo-3-chloropropane	30	29.0	97	30	32.9	110	( 62-128 )	12.50	(< 20 )
1,2-Dibromoethane	30	31.3	104	30	31.2	104	( 77-121 )	0.26	(< 20 )
1,2-Dichlorobenzene	30	31.1	104	30	30.8	103	( 80-119 )	1.10	(< 20 )
1,2-Dichloroethane	30	28.6	95	30	28.0	93	( 73-128 )	2.00	(< 20 )
1,2-Dichloropropane	30	31.5	105	30	30.1	100	( 78-122 )	4.40	(< 20 )
1,3,5-Trimethylbenzene	30	32.5	108	30	31.5	105	( 75-124 )	3.20	(< 20 )
1,3-Dichlorobenzene	30	32.2	107	30	31.0	103	( 80-119 )	3.70	(< 20 )
1,3-Dichloropropane	30	30.9	103	30	30.5	102	( 80-119 )	1.40	(< 20 )
1,4-Dichlorobenzene	30	31.4	105	30	30.9	103	( 79-118 )	1.60	(< 20 )
2,2-Dichloropropane	30	34.1	114	30	33.1	110	( 60-139 )	3.20	(< 20 )
2-Butanone (MEK)	90	80.6	90	90	92.3	103	( 56-143 )	13.50	(< 20 )
2-Chlorotoluene	30	31.7	106	30	31.0	103	( 79-122 )	2.10	(< 20 )
2-Hexanone	90	92.2	102	90	102	113	( 57-139 )	9.80	(< 20 )
4-Chlorotoluene	30	32.3	108	30	31.5	105	( 78-122 )	2.50	(< 20 )
4-Isopropyltoluene	30	33.8	113	30	32.4	108	( 77-127 )	4.20	(< 20 )
4-Methyl-2-pentanone (MIBK)	90	93.8	104	90	99.8	111	( 67-130 )	6.20	(< 20 )
Benzene	30	30.6	102	30	30.0	100	( 79-120 )	1.90	(< 20 )
Bromobenzene	30	30.9	103	30	30.3	101	( 80-120 )	2.10	(< 20 )
Bromochloromethane	30	31.2	104	30	30.1	100	( 78-123 )	3.60	(< 20 )
Bromodichloromethane	30	31.6	105	30	30.8	103	( 79-125 )	2.40	(< 20 )
Bromoform	30	32.6	109	30	32.6	109	( 66-130 )	0.18	(< 20 )
Bromomethane	30	14.0	47	* 30	15.3	51	* ( 53-141 )	8.80	(< 20 )
Carbon disulfide	45	46.7	104	45	44.8	100	( 64-133 )	4.00	(< 20 )

Print Date: 08/16/2018 12:02:42PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1184186 [VXX32813]  
 Blank Spike Lab ID: 1465054  
 Date Analyzed: 08/06/2018 14:57

Spike Duplicate ID: LCSD for HBN 1184186 [VXX32813]  
 Spike Duplicate Lab ID: 1465055  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184186001, 1184186002, 1184186003, 1184186004, 1184186005, 1184186006

## Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	32.2	107	30	31.2	104	( 72-136 )	3.30	(< 20 )
Chlorobenzene	30	30.2	101	30	29.6	99	( 82-118 )	1.70	(< 20 )
Chloroethane	30	30.8	103	30	30.0	100	( 60-138 )	2.50	(< 20 )
Chloroform	30	30.1	100	30	29.6	99	( 79-124 )	1.80	(< 20 )
Chloromethane	30	27.0	90	30	26.8	90	( 50-139 )	0.41	(< 20 )
cis-1,2-Dichloroethene	30	30.7	102	30	29.8	99	( 78-123 )	2.90	(< 20 )
cis-1,3-Dichloropropene	30	33.2	111	30	32.4	108	( 75-124 )	2.20	(< 20 )
Dibromochloromethane	30	32.3	108	30	32.0	107	( 74-126 )	0.96	(< 20 )
Dibromomethane	30	30.8	103	30	29.8	99	( 79-123 )	3.20	(< 20 )
Dichlorodifluoromethane	30	37.9	126	30	35.7	119	( 32-152 )	6.20	(< 20 )
Ethylbenzene	30	31.3	104	30	30.8	103	( 79-121 )	1.50	(< 20 )
Freon-113	45	47.8	106	45	46.4	103	( 70-136 )	3.10	(< 20 )
Hexachlorobutadiene	30	32.9	110	30	31.4	105	( 66-134 )	4.60	(< 20 )
Isopropylbenzene (Cumene)	30	32.4	108	30	31.5	105	( 72-131 )	2.90	(< 20 )
Methylene chloride	30	29.5	98	30	28.6	95	( 74-124 )	3.20	(< 20 )
Methyl-t-butyl ether	45	46.0	102	45	45.6	101	( 71-124 )	0.83	(< 20 )
Naphthalene	30	28.0	93	30	33.9	113	( 61-128 )	19.10	(< 20 )
n-Butylbenzene	30	34.2	114	30	32.3	108	( 75-128 )	5.80	(< 20 )
n-Propylbenzene	30	32.7	109	30	31.6	105	( 76-126 )	3.30	(< 20 )
o-Xylene	30	31.3	104	30	30.9	103	( 78-122 )	1.60	(< 20 )
P & M -Xylene	60	63.7	106	60	62.6	104	( 80-121 )	1.70	(< 20 )
sec-Butylbenzene	30	33.1	110	30	31.6	105	( 77-126 )	4.70	(< 20 )
Styrene	30	32.6	109	30	31.9	106	( 78-123 )	2.40	(< 20 )
tert-Butylbenzene	30	32.9	110	30	31.6	105	( 78-124 )	4.00	(< 20 )
Tetrachloroethene	30	31.7	106	30	31.2	104	( 74-129 )	1.70	(< 20 )
Toluene	30	30.0	100	30	29.4	98	( 80-121 )	1.90	(< 20 )
trans-1,2-Dichloroethene	30	30.6	102	30	29.6	99	( 75-124 )	3.20	(< 20 )
trans-1,3-Dichloropropene	30	34.1	114	30	33.3	111	( 73-127 )	2.10	(< 20 )
Trichloroethene	30	30.7	102	30	30.1	100	( 79-123 )	1.90	(< 20 )
Trichlorofluoromethane	30	31.6	105	30	30.7	102	( 65-141 )	2.70	(< 20 )
Vinyl acetate	30	33.6	112	30	33.8	113	( 54-146 )	0.47	(< 20 )
Vinyl chloride	30	31.9	106	30	30.7	102	( 58-137 )	4.00	(< 20 )
Xylenes (total)	90	95.0	106	90	93.4	104	( 79-121 )	1.70	(< 20 )

Print Date: 08/16/2018 12:02:42PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1184186 [VXX32813]  
 Blank Spike Lab ID: 1465054  
 Date Analyzed: 08/06/2018 14:57

Spike Duplicate ID: LCSD for HBN 1184186 [VXX32813]  
 Spike Duplicate Lab ID: 1465055  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184186001, 1184186002, 1184186003, 1184186004, 1184186005, 1184186006

## Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
<b>Surrogates</b>									
1,2-Dichloroethane-D4 (surr)	30	96.9	97	30	97.9	98	( 81-118 )	0.99	
4-Bromofluorobenzene (surr)	30	100	100	30	99.8	100	( 85-114 )	0.30	
Toluene-d8 (surr)	30	101	101	30	100	100	( 89-112 )	0.33	

## Batch Information

Analytical Batch: **VMS18132**  
 Analytical Method: **SW8260C**  
 Instrument: **VPA 780/5975 GC/MS**  
 Analyst: **FDR**

Prep Batch: **VXX32813**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **08/06/2018 00:00**  
 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 1783826 [VXX/32820]  
 Blank Lab ID: 1465283

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1184186005

## 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
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	79.6	50-150		%

## Batch Information

Analytical Batch: VFC14329  
 Analytical Method: AK101  
 Instrument: Agilent 7890A PID/FID  
 Analyst: ST  
 Analytical Date/Time: 8/6/2018 3:53:00PM

Prep Batch: VXX32820  
 Prep Method: SW5030B  
 Prep Date/Time: 8/6/2018 8:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 08/16/2018 12:02:43PM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1184186 [VXX32820]  
 Blank Spike Lab ID: 1465286  
 Date Analyzed: 08/07/2018 05:24

Spike Duplicate ID: LCSD for HBN 1184186 [VXX32820]  
 Spike Duplicate Lab ID: 1465287  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184186005

## 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	0.917	92	1.00	0.899	90	( 60-120 )	2.00	(< 20 )

### Surrogates

4-Bromofluorobenzene (surr)	0.0500	83	83	0.0500	85.8	86	( 50-150 )	3.30	
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## Batch Information

Analytical Batch: **VFC14329**  
 Analytical Method: **AK101**  
 Instrument: **Agilent 7890A PID/FID**  
 Analyst: **ST**

Prep Batch: **VXX32820**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **08/06/2018 08:00**  
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 08/16/2018 12:02:45PM

## Method Blank

Blank ID: MB for HBN 1783655 [XXX/40094]  
 Blank Lab ID: 1464550

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1184186001, 1184186002, 1184186003, 1184186004, 1184186005

## 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
<b>Surrogates</b>				
5a Androstane (surr)	84.4	60-120		%

## Batch Information

Analytical Batch: XFC14453  
 Analytical Method: AK102  
 Instrument: Agilent 7890B R  
 Analyst: CMS  
 Analytical Date/Time: 8/6/2018 9:02:00AM

Prep Batch: XXX40094  
 Prep Method: SW3520C  
 Prep Date/Time: 8/4/2018 8:08:27AM  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL

Print Date: 08/16/2018 12:02:47PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1184186 [XXX40094]  
 Blank Spike Lab ID: 1464551  
 Date Analyzed: 08/06/2018 09:11

Spike Duplicate ID: LCSD for HBN 1184186  
 [XXX40094]  
 Spike Duplicate Lab ID: 1464552  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184186001, 1184186002, 1184186003, 1184186004, 1184186005

## 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	18.6	93	20	16.3	82	( 75-125 )	13.00	(< 20 )

### Surrogates

5a Androstane (surr)	0.4	105	105	0.4	95.1	95	( 60-120 )	9.50	
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## Batch Information

Analytical Batch: **XFC14453**  
 Analytical Method: **AK102**  
 Instrument: **Agilent 7890B R**  
 Analyst: **CMS**

Prep Batch: **XXX40094**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **08/04/2018 08:08**  
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 08/16/2018 12:02:48PM

## Method Blank

Blank ID: MB for HBN 1783667 [XXX/40096]

Blank Lab ID: 1464613

QC for Samples:

1184186004, 1184186005

Matrix: Water (Surface, Eff., Ground)

## 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
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	76.8	47-106		%
Fluoranthene-d10 (surr)	101	24-116		%

## Batch Information

Analytical Batch: XMS10961  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: DSD  
 Analytical Date/Time: 8/10/2018 11:37:00AM

Prep Batch: XXX40096  
 Prep Method: SW3520C  
 Prep Date/Time: 8/5/2018 8:05:04AM  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL

Print Date: 08/16/2018 12:02:50PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1184186 [XXX40096]

Blank Spike Lab ID: 1464614

Date Analyzed: 08/10/2018 11:58

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184186004, 1184186005

## Results by 8270D SIM LV (PAH)

### Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	2	1.87	94	( 41-115 )
2-Methylnaphthalene	2	1.75	88	( 39-114 )
Acenaphthene	2	1.99	100	( 48-114 )
Acenaphthylene	2	1.83	92	( 35-121 )
Anthracene	2	1.71	85	( 53-119 )
Benzo(a)Anthracene	2	1.88	94	( 59-120 )
Benzo[a]pyrene	2	1.65	83	( 53-120 )
Benzo[b]Fluoranthene	2	1.87	94	( 53-126 )
Benzo[g,h,i]perylene	2	1.66	83	( 44-128 )
Benzo[k]fluoranthene	2	1.98	99	( 54-125 )
Chrysene	2	2.08	104	( 57-120 )
Dibenzo[a,h]anthracene	2	1.53	77	( 44-131 )
Fluoranthene	2	2.17	109	( 58-120 )
Fluorene	2	1.72	86	( 50-118 )
Indeno[1,2,3-c,d] pyrene	2	1.67	84	( 48-130 )
Naphthalene	2	1.96	98	( 43-114 )
Phenanthrene	2	1.65	83	( 53-115 )
Pyrene	2	2.21	111	( 53-121 )

### Surrogates

2-Methylnaphthalene-d10 (surr)	2	87	87	( 47-106 )
Fluoranthene-d10 (surr)	2	102	102	( 24-116 )

## Batch Information

Analytical Batch: XMS10961

Analytical Method: 8270D SIM LV (PAH)

Instrument: Agilent GC 7890B/5977A SWA

Analyst: DSD

Prep Batch: XXX40096

Prep Method: SW3520C

Prep Date/Time: 08/05/2018 08:05

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

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1184182006  
 MS Sample ID: 1464615 MS  
 MSD Sample ID: 1464616 MSD

Analysis Date: 08/10/2018 12:39  
 Analysis Date: 08/10/2018 12:59  
 Analysis Date: 08/10/2018 13:20  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184186004, 1184186005

## 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	0.0232U	1.85	1.79	97	1.85	1.67	90	41-115	7.20	(< 20 )
2-Methylnaphthalene	0.0232U	1.85	1.67	90	1.85	1.57	85	39-114	5.80	(< 20 )
Acenaphthene	0.0232U	1.85	1.8	97	1.85	1.76	95	48-114	2.30	(< 20 )
Acenaphthylene	0.0232U	1.85	1.72	93	1.85	1.66	90	35-121	4.00	(< 20 )
Anthracene	0.0232U	1.85	1.49	80	1.85	1.44	78	53-119	3.30	(< 20 )
Benzo(a)Anthracene	0.0232U	1.85	1.6	87	1.85	1.51	82	59-120	5.80	(< 20 )
Benzo(a)pyrene	0.00925U	1.85	1.29	70	1.85	1.23	66	53-120	4.80	(< 20 )
Benzo(b)Fluoranthene	0.0232U	1.85	1.34	73	1.85	1.45	78	53-126	7.50	(< 20 )
Benzo(g,h,i)perylene	0.0232U	1.85	1.11	60	1.85	1.04	56	44-128	6.40	(< 20 )
Benzo(k)fluoranthene	0.0232U	1.85	1.39	75	1.85	1.48	80	54-125	6.30	(< 20 )
Chrysene	0.0232U	1.85	1.74	94	1.85	1.74	94	57-120	0.09	(< 20 )
Dibenzo(a,h)anthracene	0.00925U	1.85	.988	53	1.85	0.932	50	44-131	5.80	(< 20 )
Fluoranthene	0.0232U	1.85	1.94	105	1.85	1.81	98	58-120	6.70	(< 20 )
Fluorene	0.0232U	1.85	1.64	89	1.85	1.52	82	50-118	7.30	(< 20 )
Indeno[1,2,3-c,d] pyrene	0.0232U	1.85	1.06	57	1.85	0.997	54	48-130	5.90	(< 20 )
Naphthalene	0.0463U	1.85	1.92	104	1.85	1.79	97	43-114	6.80	(< 20 )
Phenanthrene	0.0232U	1.85	1.49	80	1.85	1.37	74	53-115	8.60	(< 20 )
Pyrene	0.0232U	1.85	2.02	109	1.85	1.93	104	53-121	5.00	(< 20 )
<b>Surrogates</b>										
2-Methylnaphthalene-d10 (surr)		1.85	1.67	90	1.85	1.57	85	47-106	6.30	
Fluoranthene-d10 (surr)		1.85	1.84	99	1.85	1.68	91	24-116	9.00	

## Batch Information

Analytical Batch: XMS10961  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: DSD  
 Analytical Date/Time: 8/10/2018 12:59:00PM

Prep Batch: XXX40096  
 Prep Method: 3520 Liq/Liq Ext for 8270 PAH SIM LV  
 Prep Date/Time: 8/5/2018 8:05:04AM  
 Prep Initial Wt./Vol.: 270.00mL  
 Prep Extract Vol: 1.00mL



SGS North America Inc.  
CHAIN OF CUSTODY RECORD

1184186



REVIEWED *NIC*

CLIENT: SLR International					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.					Page 1 of 1									
CONTACT: Brett Woelber					PHONE NO: 222-1112					Section 3									
PROJECT NAME: MLBP Transformer Shop					PROJECT PWSID/ PERMIT#: 105.00528.18001 T0351					Preservative									
REPORTS TO: Bret Berglund					E-MAIL: bberglund@slrconsulting.com														
INVOICE TO: SLR					QUOTE #: P.O. #:														
RESERVED for lab use	SAMPLE IDENTIFICATION		DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	#	CONTAINER	Type	VOLs Full List	HCl	HCl	HCl	HCl						REMARKS/ LOC ID
① A-H	MW-5 TS		7/31/18	09:15	GW	8	G			X	X	X							
② A-H	MW-6 TS		7/31/18	11:30	GW	8	G			X	X	X							
③ A-H	MW-7 TS		7/31/18	13:00	GW	8	G			X	X	X							
④ A-J	MW-9 TS		8/3/18	09:00	GW	10	G	X		X	X	X	X						
⑤ A-J	MW-99 TS		8/3/18	06:00	GW	10	G	X		X	X	X	X						
⑥ A-F	Trip Blank		8/3/18	05:00	Water	1		X		X									
Relinquished By: (1)			Date	Time	Received By:			Section 4		DOD Project? Yes <input type="radio"/> No <input checked="" type="radio"/>		Data Deliverable Requirements:							
<i>Wm Wm</i>			8/3/18	10:23	<i>[Signature]</i>			Cooler ID:		Requested Turnaround Time and/or Special Instructions:									
Relinquished By: (2)			Date	Time	Received By:					Standard									
Relinquished By: (3)			Date	Time	Received By:														
Relinquished By: (4)			Date	Time	Received For Laboratory By:			Temp Blank °C: -0.2 D25		Chain of Custody Seal: (Circle)									
<i>[Signature]</i>			8/3/18	10:23	<i>Ni Horn</i>			or Ambient [ ]		INTACT <input type="checkbox"/> BROKEN <input type="checkbox"/> <u>ABSENT</u> <i>HP</i>									
								(See attached Sample Receipt Form)		(See attached Sample Receipt Form)									



**SGS North America Inc.**

200 W. Potter Dr., 3180 Peger Rd. Ste.  
Anchorage, AK 99518 (ph) 190, Fairbanks, AK  
907-562-2343, (fax) 907-561- 99709 (ph) 907-474-  
5301 8656

1184186



Request

Client pickup Date: **7/30/2018** Time: **08:00**

Be sure to ask if client will ship by ground (DOT) or air carrier (IATA)

- Deliver to client: \_\_\_\_\_
- Ship by/Air Carrier: \_\_\_\_\_
- Airbill Number: \_\_\_\_\_
- Date to ship by: \_\_\_\_\_
- Notes: \_\_\_\_\_
- Kit request taken by: JAN Date: July 25, 2018
- Kit prepared by: NIC Date: 7/27/18
- Kit (including lid tightness for pres'd bottles) checked by: JS Date: 7/27/18
- Kit packed & shipped by: NIC Date: 7/27/18

Does a Profile exist in LIMS? If not, please send a request for new profile built.

Client Name: SLR Consulting

Ordered By: \_\_\_\_\_ Phone #: \_\_\_\_\_

Email: bwoelber@slrconsulting.com; bberglund@slrconsulting.com

Project Name: ML&P Transformer Shop GW\_R1 Project/Permit#: \_\_\_\_\_

Quote #: \_\_\_\_\_ Profile #: \_\_\_\_\_

Delivery Address: \_\_\_\_\_

Filename: SKIT\_SLR Consulting\_ML&P Transformer Shop GW\_R \*Required Items

No.	Matrix	Analysis	Container Size & Type		Pres.	Bottle Lot #	Preservative Lot #	Hold Time	# QC Bottles	Total Bottles
6	Water	AK101/8021 - GRO/BTEX	3 x 40 mL	VOA	HCl			14 d	0	18
6	Water	AK102 - DRO	2 x 250 mL	Amber	HCl			14 d	0	12
3	Water	8260C - VOC	3 x 40 mL	VOA	HCl			14 d	0	9
3	Water	8270D SIM - PAH	2 x 250 mL	Amber	None			7 d	0	6

- Pack for Shipping via **ground** (DOT)
- Pack for Shipping via **air carrier** (IATA)
- Temperature Blank (**circle one**: 120-ml OR 500-ml)
- Soil VOA Trip Blank - Lot#:
- Water VOA Trip Blank - Lot#:
- 524 VOA Trip Blank - Lot#:
- Low Level Mercury Trip Blank- Lot#:
- Coolers
- Gel Ice
- Bubble Wrap
- Labels
- Custody Seals
- SGS COCs - **Circle req'd format**:  Blank COC  DW COC  COC initiated by PM (attached)
- Send additional instructions/documents (**Note to PM**: Be sure to attach copy of requested form.)
- Total # includes bottles for % Solids
- Track all Lot#? (Required for DOD)
- Foreign Soil

**Other Notes/Reminders for Kit Prep:**

**2 x Water Trip Blanks**

- Attention Client/Sampler:**
- Do not rinse container; be aware of any acid preservative in container.
  - Fill container, but do not overfill (except volatile waters).
  - Label the container with your sample ID as well as the date/time of collection.
  - Fill out the Chain of Custody.
  - Add frozen gel packs or ice to your cooler & pack to prevent breakage.
- Charges may be invoiced for bottles which are unused or improperly used. If you have any questions concerning this sample kit, please contact your Project Manager for assistance. Thank you.**

**\*This will email a copy of this form for confirmation to the client email and save the form to the network. This should not be**





1184186



Returned Bottles Inventory

Name of individual returning bottles: \_\_\_\_\_

Date Received: 8/3/18

Client Name: SLR Consulting

Received by: ACT

Project Name: ML+P Transformer Shop

SGS PM: JAN

<b>HDPE/Nalgene:</b>	1-L	
	500-ml	
	250-ml or 8-oz	
	125-ml or 4-oz	
	60-ml or 2-oz	
	other	
<b>amber glass:</b>	1-L	
	500-ml	
	250-ml or 8-oz	4 bottles @ \$4 ea.
	125-ml or 4-oz with or without septa	
	40-ml VOA vial	15 vials @ \$4 ea.
	other	
<b>Subtotal:</b>		

Note: Returned bottles (regardless of size/pres.) are billed back at \$4/bottle unless otherwise quoted.

Amount to Invoice Client \$: 76.00

WO#: 1184186



e-Sample Receipt Form

SGS Workorder #:

1184186



1 1 8 4 1 8 6

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
<b>Chain of Custody / Temperature Requirements</b>		<b>YES</b> Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	
COC accompanied samples?	YES	
<input type="checkbox"/> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	YES	Cooler ID: 1 @ 0.2 °C Therm. ID: D25
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
<p>If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank &amp; "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".</p> <p>Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.</p>		
<b>Holding Time / Documentation / Sample Condition Requirements</b>		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	YES	
Do samples <b>match COC</b> ** (i.e., sample IDs, dates/times collected)?	YES	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	YES	
Were proper containers (type/mass/volume/preservative***) used?	YES	<b>YES</b> ***Exemption permitted for metals (e.g. 200.8/6020A).
<b>Volatile / LL-Hg Requirements</b>		
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	
<b>Note to Client:</b> 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>
1184186001-A	HCL to pH < 2	OK			
1184186001-B	HCL to pH < 2	OK			
1184186001-C	HCL to pH < 2	OK			
1184186001-D	HCL to pH < 2	OK			
1184186001-E	HCL to pH < 2	OK			
1184186001-F	HCL to pH < 2	OK			
1184186001-G	HCL to pH < 2	OK			
1184186001-H	HCL to pH < 2	OK			
1184186002-A	HCL to pH < 2	OK			
1184186002-B	HCL to pH < 2	OK			
1184186002-C	HCL to pH < 2	OK			
1184186002-D	HCL to pH < 2	OK			
1184186002-E	HCL to pH < 2	OK			
1184186002-F	HCL to pH < 2	OK			
1184186002-G	HCL to pH < 2	OK			
1184186002-H	HCL to pH < 2	OK			
1184186003-A	HCL to pH < 2	OK			
1184186003-B	HCL to pH < 2	OK			
1184186003-C	HCL to pH < 2	OK			
1184186003-D	HCL to pH < 2	OK			
1184186003-E	HCL to pH < 2	OK			
1184186003-F	HCL to pH < 2	OK			
1184186003-G	HCL to pH < 2	OK			
1184186003-H	HCL to pH < 2	OK			
1184186004-A	HCL to pH < 2	OK			
1184186004-B	HCL to pH < 2	OK			
1184186004-C	HCL to pH < 2	OK			
1184186004-D	HCL to pH < 2	OK			
1184186004-E	HCL to pH < 2	OK			
1184186004-F	HCL to pH < 2	OK			
1184186004-G	HCL to pH < 2	OK			
1184186004-H	HCL to pH < 2	OK			
1184186004-I	No Preservative Required	OK			
1184186004-J	No Preservative Required	OK			
1184186005-A	HCL to pH < 2	OK			
1184186005-B	HCL to pH < 2	OK			
1184186005-C	HCL to pH < 2	OK			
1184186005-D	HCL to pH < 2	OK			
1184186005-E	HCL to pH < 2	OK			
1184186005-F	HCL to pH < 2	OK			
1184186005-G	HCL to pH < 2	OK			
1184186005-H	HCL to pH < 2	OK			
1184186005-I	No Preservative Required	OK			
1184186005-J	No Preservative Required	OK			
1184186006-A	HCL to pH < 2	OK			
1184186006-B	HCL to pH < 2	OK			
1184186006-C	HCL to pH < 2	OK			
1184186006-D	HCL to pH < 2	OK			
1184186006-E	HCL to pH < 2	OK			
1184186006-F	HCL to pH < 2	OK			

Container Id

Preservative

Container  
Condition

Container Id

Preservative

Container  
Condition

#### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates that 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.

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.

## **Appendix E**

### **Groundwater Sampling Forms**



# Groundwater Sampling Form

Site/Client Name: <u>ML&amp;P Environmental Support</u>	Well ID: <u>MW-5 TS</u>
Project #: <u>105,00528,18001 T 0351</u>	Sample ID: <u>MW-5 TS</u>
Sampled By: <u>N. Wells, B. Woelber</u>	Sample Time: <u>0915</u> Sample Date: <u>7/31/18</u>
Weather Conditions: <u>Sunny</u>	Duplicate ID: <u>—</u>
Sampling Method: <input type="checkbox"/> Low Flow <input type="checkbox"/> Other _____	MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

<b>Well Information</b>	
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary	Well Diameter: <u>2</u> in. Screen Interval: _____ ft BGS to _____ ft BGS
Well Condition: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)	Stickup <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; if yes, _____ ft above ground

<b>Gauging/Purging Information</b>	
Depth to Water (ft BTOC): <u>5.10</u>	Tubing/Pump Depth (ft. BTOC): _____
Total Depth (ft BTOC): _____	Purge Start Time (24-hr) <u>0838</u>
Depth to Product (ft. BTOC) <u>—</u>	Purge End Time (24-hr) <u>0910</u>
Product Thickness (ft) <u>—</u>	Total Purge Time (min) _____

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) \_\_\_\_\_ X 0.25 = \_\_\_\_\_ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.;

Min. purge volume if required: purge volume (gal) = volume of water/ft \_\_\_\_\_ (gal/ft) X Water column thickness \_\_\_\_\_ (ft) X # of casing volumes \_\_\_\_\_ = \_\_\_\_\_ gal

Well Diameter - gal/ft	1" - 0.041 gal/ft	2" - 0.163 gal/ft	4" - 0.653 gal/ft	6" - 1.469 gal/ft
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**Water Quality Parameters**  
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

Time (24-hr)	Flow Rate (liter/minute)	Purge Volume (gal)	Temp (°C) (± 3%)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	ORP (mV) (± 10mV)	pH (± 0.1)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max <u>0.32</u> ft)
0839		1/4	9.65	1107	8.15	214.2	7.05	L	5.16	0.06
0844		1	9.61	865	6.18	213.1	7.13	L	5.19	0.09
0844		2	9.78	807	6.03	215.0	7.16	L	5.22	0.12
0854		3	10.02	796	5.90	218.9	7.22	L	5.23	0.13
0859		4	10.29	798	5.98	221.5	7.31	L	5.25	0.15
0904		5	10.41	796	6.38	219.4	7.36	L	5.25	0.15
0909		6	10.50	794	6.38	216.9	7.38	L	5.25	0.15
Parameter Stable (Check applicable)			✓	✓	✓	✓	✓			

Sample Color: None Sample Odor: None Sheen: None

Analytical Sampling		
Analyses	Check Applicable	Comments
BTEX 8260	✓	
GRO AK101	✓	
DRO AK102	✓	

**Notes:**

Equipment: Pump Type Pegasus Peristaltic Tubing (Type/Length) teflon lined Bailer Type —

Water Level Meter Slope Indicator Multi-Parameter Meter (Make/SN#) YSI 556 MPS

Turbidity Meter (Make/SN#) — Filter Lot # —

Purge Water Handling:  Discharged to surface  Containerized  Treated (how?) \_\_\_\_\_



# Groundwater Sampling Form

Site/Client Name: <u>MLP Environmental Support</u>	Well ID: <u>MW-6 TS</u>
Project #: <u>105.00528.18001 T0351</u>	Sample ID: <u>MW-6 TS</u>
Sampled By: <u>B. Woelber, N. Wells</u>	Sample Time: <u>11:30</u> Sample Date: <u>7/31/18</u>
Weather Conditions: <u>Sunny</u>	Duplicate ID: <u>---</u>
Sampling Method: <input checked="" type="checkbox"/> Low Flow <input type="checkbox"/> Other _____	MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Well Information	
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary	Well Diameter: <u>2</u> in. Screen Interval: _____ ft BGS to _____ ft BGS
Well Condition: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)	Stickup <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; If yes, _____ ft above ground

Gauging/Purging Information	
Depth to Water (ft BTOC): <u>15.49</u>	Tubing/Pump Depth (ft. BTOC): _____
Total Depth (ft BTOC): <u>21.19</u>	Purge Start Time (24-hr) <u>1052</u>
Depth to Product (ft. BTOC) _____	Purge End Time (24-hr) <u>11:25</u>
Product Thickness (ft) _____	Total Purge Time (min) _____

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) \_\_\_\_\_ X 0.25 = \_\_\_\_\_ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required:  $\text{purge volume (gal)} = \text{volume of water/ft (gal/ft)} \times \text{Water column thickness (ft)} \times \text{\# of casing volumes} = \text{gal}$

Well Diameter - gal/ft	1" - 0.041 gal/ft	2" - 0.163 gal/ft	4" - 0.653 gal/ft	6" - 1.469 gal/ft
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**Water Quality Parameters**  
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

Time (24-hr)	Flow Rate (liter/minute)	Purge Volume (gal)	Temp (°C) (± 3%)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	ORP (mV) (± 10mV)	pH (± 0.1)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max _____ ft)
		<u>L</u>								<u>0.33</u>
<u>1054</u>		<u>1/4</u>	<u>9.65</u>	<u>132</u>	<u>5.01</u>	<u>54.0</u>	<u>6.63</u>	<u>M</u>	<u>15.48</u>	<u>0.03</u>
<u>1059</u>		<u>1</u>	<u>9.38</u>	<u>907</u>	<u>0.83</u>	<u>20.2</u>	<u>6.76</u>	<u>M</u>	<u>15.52</u>	<u>0.03</u>
<u>1104</u>		<u>2</u>	<u>9.02</u>	<u>895</u>	<u>0.68</u>	<u>11.1</u>	<u>6.79</u>	<u>M</u>	<u>15.52</u>	<u>0.03</u>
<u>1109</u>		<u>3</u>	<u>8.92</u>	<u>890</u>	<u>0.58</u>	<u>-6.7</u>	<u>6.80</u>	<u>M</u>	<u>15.52</u>	<u>0.03</u>
<u>1114</u>		<u>4</u>	<u>8.91</u>	<u>888</u>	<u>0.47</u>	<u>-15.3</u>	<u>6.80</u>	<u>L</u>	<u>15.52</u>	<u>0.03</u>
<u>1119</u>		<u>5</u>	<u>8.94</u>	<u>888</u>	<u>0.43</u>	<u>-18.6</u>	<u>6.79</u>	<u>L</u>	<u>15.52</u>	<u>0.03</u>
<u>1124</u>		<u>6</u>	<u>8.93</u>	<u>887</u>	<u>0.39</u>	<u>-22.4</u>	<u>6.79</u>	<u>L</u>	<u>15.52</u>	<u>0.03</u>
Parameter Stable (Check applicable)			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				

Sample Color: Clear with brown/red particles Sample Odor: None Sheen: None

Analyses	Check Applicable	Comments
<u>BTEX 8260</u>	<input checked="" type="checkbox"/>	
<u>GRO AK101</u>	<input checked="" type="checkbox"/>	
<u>DRO AK102</u>	<input checked="" type="checkbox"/>	

**Notes:**

Equipment: Pump Type Pegasus Peristaltic Tubing (Type/Length) teflon lined Bailer Type ---

Water Level Meter Slope Indicator Multi-Parameter Meter (Make/SN#) YSI 556 MPS

Turbidity Meter (Make/SN#) --- Filter Lot # ---

Purge Water Handling:  Discharged to surface  Containerized  Treated (how?) \_\_\_\_\_



# Groundwater Sampling Form

Site/Client Name: <u>MLDP Environmental Support</u>	Well ID: <u>MW-7 TS</u>
Project #: <u>105.00928.18001 T0351</u>	Sample ID: <u>MW-7 TS</u>
Sampled By: <u>B. Woelber, N. Wells</u>	Sample Time: <u>1300</u> Sample Date: <u>7/31/18</u>
Weather Conditions: <u>Sunny</u>	Duplicate ID: <u>-</u>
Sampling Method: <input checked="" type="checkbox"/> Low Flow <input type="checkbox"/> Other _____	MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

<b>Well Information</b>	
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary	Well Diameter: <u>2</u> in. Screen Interval: _____ ft BGS to _____ ft BGS
Well Condition: <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)	Stickup <input type="checkbox"/> Yes <input type="checkbox"/> No; If yes, _____ ft above ground

<b>Gauging/Purging Information</b>	
Depth to Water (ft BTOC): <u>17.27</u>	Tubing/Pump Depth (ft. BTOC): _____
Total Depth (ft BTOC): _____	Purge Start Time (24-hr) <u>1230</u>
Depth to Product (ft. BTOC) <u>-</u>	Purge End Time (24-hr) <u>1255</u>
Product Thickness (ft) <u>-</u>	Total Purge Time (min) <u>25</u>

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) \_\_\_\_\_ X 0.25 = \_\_\_\_\_ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/ft \_\_\_\_\_ (gal/ft) X Water column thickness \_\_\_\_\_ (ft) X # of casing volumes \_\_\_\_\_ = \_\_\_\_\_ gal

Well Diameter - gal/ft	1" - 0.041 gal/ft	2" - 0.163 gal/ft	4" - 0.653 gal/ft	6" - 1.469 gal/ft
------------------------	-------------------	-------------------	-------------------	-------------------

**Water Quality Parameters**  
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

Time (24-hr)	Flow Rate (liter/minute)	Purge Volume (gal)	Temp (°C) (± 3%)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	ORP (mV) (± 10mV)	pH (± 0.1)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max _____ ft)
		<u>L</u>								<u>0.33</u>
<u>1234</u>		<u>1/4</u>	<u>11.53</u>	<u>1249</u>	<u>4.21</u>	<u>45.2</u>	<u>6.85</u>	<u>H</u>	<u>17.30</u>	<u>0.03</u>
<u>1239</u>		<u>1</u>	<u>11.23</u>	<u>1210</u>	<u>1.22</u>	<u>34.8</u>	<u>6.76</u>	<u>L</u>	<u>17.30</u>	<u>0.03</u>
<u>1244</u>		<u>2</u>	<u>10.76</u>	<u>1198</u>	<u>0.94</u>	<u>34.1</u>	<u>6.78</u>	<u>L</u>	<u>17.32</u>	<u>0.05</u>
<u>1249</u>		<u>3</u>	<u>10.53</u>	<u>1198</u>	<u>1.01</u>	<u>35.1</u>	<u>6.78</u>	<u>L</u>	<u>17.32</u>	<u>0.05</u>
<u>1254</u>		<u>4</u>	<u>10.52</u>	<u>1198</u>	<u>1.08</u>	<u>36.8</u>	<u>6.78</u>	<u>L</u>	<u>17.32</u>	<u>0.05</u>
Parameter Stable (Check applicable)			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				

Sample Color: None Sample Odor: None Sheen: None

Analyses	Check Applicable	Comments
BTEX <u>g260</u>	<input checked="" type="checkbox"/>	
GRO <u>AK101</u>	<input checked="" type="checkbox"/>	
DRO <u>AK102</u>	<input checked="" type="checkbox"/>	

Notes:

Equipment: Pump Type Pegasus Peristaltic Tubing (Type/Length) teflon lined Bailer Type -

Water Level Meter Slope indicator Multi-Parameter Meter (Make/SN#) YSI 556 MPS

Turbidity Meter (Make/SN#) - Filter Lot # -

Purge Water Handling:  Discharged to surface  Containerized  Treated (how?) \_\_\_\_\_





## Groundwater Sampling Form

Site/Client Name: <u>ML + P Environmental Support</u>		Well ID: <u>MW-9</u>								
Project #: <u>105.00528.18001, T 0351</u>		Sample ID: <u>MW-9</u>								
Sampled By: <u>B. Woelber</u>		Sample Time: <u>-</u>	Sample Date: <u>7/30/18</u>							
Weather Conditions: <u>cloudy</u>		Duplicate ID: <u>-</u>								
Sampling Method: <input type="checkbox"/> Low Flow <input checked="" type="checkbox"/> Other <u>Purge, 80% recovery</u>		MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
Well Information										
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		Well Diameter: <u>2</u> in.	Screen Interval: _____ ft BGS to _____ ft BGS							
Well Condition: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)		Stickup <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; if yes, _____ ft above ground								
Gauging/Purging Information										
Depth to Water (ft BTOC): <u>4.26</u>		Tubing/Pump Depth (ft. BTOC): _____								
Total Depth (ft BTOC): <u>8.79</u>		Purge Start Time (24-hr) <u>0930-32w 0939</u>								
Depth to Product (ft. BTOC) <u>-</u>		Purge End Time (24-hr) <u>1008</u>								
Product Thickness (ft) <u>-</u>		Total Purge Time (min) <u>30</u>								
<b>LOW FLOW:</b> Max Draw Down = (Tubing Depth - Top of Screen Depth) _____ X 0.25 = _____ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.;										
<b>Min. purge volume if required:</b> purge volume (gal) = volume of water/ft _____ (gal/ft) X Water column thickness _____ (ft) X # of casing volumes _____ = _____ gal										
Well Diameter - gal/ft		1" - 0.041 gal/ft	2" - 0.163 gal/ft							
		4" - 0.653 gal/ft	6" - 1.469 gal/ft							
Water Quality Parameters										
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])										
Time (24-hr)	Flow Rate (liter/minute) <u>ML/min</u>	Purge Volume (gal) <u>L</u>	Temp (°C) (± 3%)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	ORP (mV) (± 10mV)	pH (± 0.1)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max _____ ft)
0939	300	1/4	15.23	1.780	5.59	200.3	7.07	M	4.57	0.31
0946	300	3/4	14.43	2.002	0.30	57.3	7.17	L	4.81	0.55
0949	600	2	15.12	1.343	0.60	-32.1	6.79	L	5.27	1.01
0952	600	3 1/2	15.79	1.230	0.29	-27.1	6.71	L	5.62	1.36
0956	600	5	15.84	1.241	0.29	-32.9	6.72	L	5.90	1.64
1000	600	6 1/2	15.59	1.287	0.28	-53.6	6.81	L	6.31	2.05
1004	600	8	15.16	1.372	0.23	-73.3	6.95	L	6.70	2.44
1008	600	9 1/2	14.86	1.441	0.23	-87.9	7.07	L	7.02	2.76
<b>END PURGE, NO SAMPLE, ALLOW TO REBOUND</b>										
Parameter Stable (Check applicable)										
Sample Color: <u>cl</u>			Sample Odor:			Sheen:				
Analytical Sampling										
Analyses	Check Applicable	Comments								
<b>Notes:</b> <u>0.163 gal/ft x 4.53 x 3 = 2.22 gal = 8.4 L for three well</u> <u>End purge on 7/30 at 1008. Will sample by low-flow on 7/31. volumes</u>										
<b>Equipment:</b> Pump Type <u>Pegasus Peristaltic</u> Tubing (Type/Length) <u>teflon lined</u> Bailer Type _____ Water Level Meter <u>Slope Indicator</u> Multi-Parameter Meter (Make/SN#) <u>Ysi 556 MPS</u> Turbidity Meter (Make/SN#) _____ Filter Lot # _____										
<b>Purge Water Handling:</b> <input type="checkbox"/> Discharged to surface <input checked="" type="checkbox"/> Containerized <input type="checkbox"/> Treated (how?) _____										



### Groundwater Sampling Form

<b>Site/Client Name:</b> MLTP Transformer Shop	<b>Well ID:</b> MW-9 TS
<b>Project #:</b> 105-00528.18001 T0351	<b>Sample ID:</b> —
<b>Sampled By:</b> B. Woelber, N. Wells	<b>Sample Time:</b> — <span style="float:right"><b>Sample Date:</b> <sup>12W</sup> 8-7/3/18</span>
<b>Weather Conditions:</b> Sunny	<b>Duplicate ID:</b> —
<b>Sampling Method:</b> <input type="checkbox"/> Low Flow <input checked="" type="checkbox"/> Other	<b>MS/MSD</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>Trip Blank Required:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

**Well Information**

<b>Well Type:</b> <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary	<b>Well Diameter:</b> 2 in.	<b>Screen Interval:</b> _____ ft BGS to _____ ft BGS
<b>Well Condition:</b> <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)	<b>Stickup:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; if yes, _____ ft above ground	

**Gauging/Purging Information**

<b>Depth to Water (ft BTOC):</b> 6.12 bgs(TOC)	<b>Tubing/Pump Depth (ft. BTOC):</b> _____
<b>Total Depth (ft. BTOC):</b> 8.79	<b>Purge Start Time (24-hr):</b> 0941
<b>Depth to Product (ft. BTOC):</b> —	<b>Purge End Time (24-hr):</b> 1040
<b>Product Thickness (ft):</b> —	<b>Total Purge Time (min):</b> 59

**LOW FLOW:** **Max Draw Down** = (Tubing Depth - Top of Screen Depth) \_\_\_\_\_ X 0.25 = \_\_\_\_\_ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft;

**Min. purge volume if required:** purge volume (gal) = volume of water/ft \_\_\_\_\_ (gal/ft) X Water column thickness \_\_\_\_\_ (ft) X # of casing volumes \_\_\_\_\_ = \_\_\_\_\_ gal

Well Diameter - gal/ft	1" - 0.041 gal/ft	2" - 0.163 gal/ft	4" - 0.653 gal/ft	6" - 1.469 gal/ft
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**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

Time (24-hr)	Flow Rate (liter/minute)	Purge Volume (gal)	Temp (°C) (± 3%)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	ORP (mV) (± 10mV)	pH (± 0.1)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max _____ ft)
0941	—	—	—	—	—	—	—	—	6.12	—
1040	—	—	—	—	—	—	—	—	8.79	2.67

Parameter Stable (Check applicable)

<b>Sample Color:</b> _____	<b>Sample Odor:</b> _____	<b>Sheen:</b> _____
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Analytical Sampling		
Analyses	Check Applicable	Comments

**Notes:** Well purged entirely dry, and will be allowed to rebound 80% before sampling.

**Equipment:** Pump Type Pegasus Peristaltic Tubing (Type/Length) teflon-lined Bailer Type —

Water Level Meter Slope Indicator Multi-Parameter Meter (Make/SN#) —

Turbidity Meter (Make/SN#) — Filter Lot # —

**Purge Water Handling:**  Discharged to surface  Containerized  Treated (how?) \_\_\_\_\_



# Water Parameter Meter Calibration Log



Date: 7/30/18 Time: 0907 Calibration By: B. Waelber  
 Meter Manufacturer and Identification #: YSI

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00	7.00	VO1	7/30/18	12/2019	7.03	7.00	± 0.10
	4.00	4.00	WX1	7/30/18	03/2020	3.87	4.00	± 0.10
	10.00	10.03	WY2	7/30/18	02/2020	9.98	10.03	± 0.10
Sp Cond (mS/cm)	1.413	1.359	W1A	10/3/17	05/2019	1.005	1.359	± 10%
ORP (mV)	240	240	9099	4/10/18	07/2020	250.6	240	-----
DO*	—	—	—	—	—	96.4%	101.4%	± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)

\* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

Date: 7/31/18 Time: 0750 Calibration By: N. Wells  
 Meter Manufacturer and Identification #: \_\_\_\_\_

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00	7.00	VO1	7/30/18	12/2019	7.03	7.00	± 0.10
	4.00	4.01	WX1	7/30/18	03/2020	4.06	4.01	± 0.10
	10.00	10.06	WY2	7/30/18	02/2020	9.97	10.06	± 0.10
Sp Cond (mS/cm)	1.413	1.386	W1A	10/3/17	05/2019	1.008	1.386	± 10%
ORP (mV)	240	240	9099	4/10/18	07/2020	235.6	240	-----
DO*	—	—	—	—	—	108.4%	101.0%	± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)

\* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

Date: 8/3/18 Time: 0750 Calibration By: N. Wells  
 Meter Manufacturer and Identification #: \_\_\_\_\_

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00	7.01	VO1	7/30/18	12/2019	7.07	7.01	± 0.10
	4.00	4.00	WX1	7/30/18	03/2020	3.92	4.00	± 0.10
	10.00	10.06	WY2	7/30/18	02/2020	10.09	10.07	± 0.10
Sp Cond (mS/cm)	1.413	1.278	W1A	10/3/17	05/2019	1.265	1.278	± 10%
ORP (mV)	240	240	9539	4/13/17	11/2020	241.0	240.0	-----
DO*	—	—	—	—	—	93.9	99.0	± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)

\* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Calibration By: \_\_\_\_\_  
 Meter Manufacturer and Identification #: \_\_\_\_\_