

March 28, 2018

Project No. 923-1000-002.R273

Mr. Bill Kombol
Palmer Coking Coal Company
31407 Highway 169
PO Box 10
Black Diamond, WA 98010

**RE: LANDSBURG MINE SITE
INTERIM GROUNDWATER MONITORING REPORT
NOVEMBER 2017 SAMPLING**

Dear Bill:

Golder Associates Inc. (Golder) completed an interim groundwater monitoring event at the Landsburg Mine Site during November 2017. Groundwater samples were collected from monitoring wells LMW-2, LMW-3, LMW-4, LMW-5, LMW-6, LMW-7, LMW-8, LMW-9, LMW-10, and LMW-11 (Figure 1). Monitoring wells LMW-2, LMW-4 and LMW-10 are completed to monitor shallow and deeper zones within the north end of the Rogers Coal Mine subsidence trench. Monitoring wells LMW-3, and LMW-5 are completed to monitor the shallow (~40 feet depth) and deeper zone (~250 feet depth), respectively, within the Rogers Coal Seam at the south end of the mine. Figure 2 presents a cross-section along the strike at the coal seam that also depicts the location of the monitoring wells. Monitoring well LMW-8 is receiving groundwater immediately before discharge from Portal 3 and the mine access incline at the south end of the Rogers Coal Mine. Surface water samples were collected from the north and south mine portals, Portal 2 and Portal 3, respectively. Groundwater samples were also collected from well LMW-9 and the deep well LMW-11, which monitor groundwater from within the Rogers Coal Mine near its south end. Wells LMW-9 and LMW-11 are receiving groundwater from near the top of the water table and near the bottom of the mine, respectively. Wells LMW-6 and LMW-7 monitor groundwater from the Frasier and Landsburg Coal Mines to the west and east of the Rogers Coal Mine, respectively.

Groundwater sampling was conducted in accordance with the *Compliance Monitoring Plan, Landsburg Mine Site* (Golder 2017)¹, and included the following activities:

- Measurement of static water levels at monitoring wells.
- Well purging to insure sample representativeness with the currently installed dedicated pumping systems.
- Measurement of field parameters including: pH, specific conductance, temperature, dissolved oxygen, redox potential (Eh), and turbidity.
- Collection of representative samples in appropriate containers; dissolved metals samples were field filtered (total metals were not). The dissolved metals samples were not analyzed.

¹ Golder Associates Inc. (Golder). 2017. Compliance Monitoring Plan, Landsburg Mine Site. Exhibit D of the Consent Decree, Redmond, Washington. June 7.



- Analyses of groundwater for volatile organic compounds (VOCs; United States Environmental Protection Agency [EPA] Method 8260C), semi-volatile organic compounds including 1,4-Dioxane (SVOCs, EPA Method 8270D), polychlorinated biphenyls (PCBs; EPA 8082A), pesticides (EPA 8081B), priority pollutant metals (EPA Method 6010C/200.8/7470A Series), and a petroleum hydrocarbon identification scan (NWTPH-HCID).

Appendix A presents the laboratory analytical reports for all analyses. Sampling activities were documented on Sample Integrity Data Sheets (SIDS). Copies of the completed SIDS are provided in Appendix B. Appendix C shows the validated data with added qualifiers. Table 1 presents groundwater depth measurements and elevations that were measured on November 27, 2017. Due to access issues on November 27, the water level in LMW-5 was measured on November 29, 2017 prior to sampling.

Following sample collection, all bottles were sealed, labeled, and placed in an iced cooler until delivery to the laboratory. All groundwater samples from monitoring wells were transported under chain-of-custody procedures to Analytical Resources Incorporated (ARI), of Tukwila, Washington, for analyses. Screening levels are based on maximum contaminant levels (MCLs) or State of Washington Model Toxics Control Act (MTCA) Method A or B groundwater cleanup levels, whichever value is less. In cases where an established MCL or Method A or B Cleanup Level does not exist, a similar (surrogate) compound regulatory screening level is identified for comparison.

The analytical results indicate no significant changes in groundwater conditions from those observed during the remedial investigation (RI) and on-going interim groundwater monitoring conducted since April 1994. Table 2 presents the field parameter measurements and laboratory analytical results for each groundwater sample. Laboratory analyses did not detect any PCBs, pesticides, or petroleum hydrocarbon (HCID) in any of the groundwater samples.

The laboratory data packages underwent data validation. Items of note are provided in a validation memorandum in Appendix C. In general, data were found to be acceptable with minor qualification. Carbon disulfide was detected in the method and trip blanks. Samples with carbon disulfide detections are qualified with U or J+ due to laboratory contamination. The laboratory control sample duplicate (LCSD) for 3-Nitroaniline had recovery below acceptance criteria, therefore samples have the UJ qualifier.

The parameters detected in groundwater or surface water samples during this sampling event were metals, acetone, carbon disulfide, and 1,4-Dioxane.

Metals were detected at concentrations that are naturally occurring, and were consistent with historic concentrations detected at the site. Several groundwater samples from site wells contained iron and manganese concentrations above State of Washington secondary drinking water levels (SMCLs) of 0.3 milligrams per liter (mg/L) and 0.05 mg/L, respectively, which are not health-based standards, but are protective of aesthetic qualities of water. Iron and manganese have been detected in mine groundwater above MTCA cleanup levels in every monitoring event at the site and are naturally occurring metals that are typically associated with groundwater from coal mines (Fuste et al. 1983)². The concentrations of iron and manganese detected during the November 2017 sampling event are similar to concentrations detected during the RI (Golder 1996)³ and the Interim Groundwater Sampling events previously conducted at the site.

The groundwater sample from the deep well (LMW-11) contained total arsenic at a concentration of 5.97 µg/L (0.00597 mg/L), which is less than the Washington State primary drinking water MCL (10 µg/L)

² Fuste, L.A., F.A. Packard, M.O. Fretwell, and D.P. Garland. 1983. Data Supplement To: Quality of Coal Mine Drainage in Washington, 1975-77. Open-File Report 83-205. Tacoma, Washington: US Geological Survey.

³ Golder Associates Inc. (Golder). 1996. Remedial Investigation and Feasibility Study for the Landsburg Mine Site. Landsburg PLP Steering Committee.

and greater than the MTCA Method A groundwater cleanup level (5 µg/L). Arsenic has been detected in groundwater from LMW-11 near or above MTCA cleanup levels during every monitoring event since LMW-11 was installed. Arsenic is also a naturally occurring metal commonly detectable in groundwater, especially in older more stagnant groundwater having low reduction-oxidation (REDOX) and dissolved oxygen levels. The MTCA groundwater cleanup level is based on typical groundwater background levels in the State of Washington. It is believed that the arsenic concentrations are naturally occurring deep within the mine where groundwater is more stagnant and its geochemistry may be different than shallow groundwater within the mine.

The acetone detections in LMW-2, Portal 2, and Portal 3 are estimated (J flagged). The trace level detections are estimated, because the detected concentrations were below the laboratory method reporting limit (MRL) but above the method detection limit (MDL). The acetone detections are significantly lower than the MTCA Method B groundwater cleanup level of 7200 µg/L. Acetone is a common laboratory contaminant, because it is used as a solvent in various laboratory methods.

Carbon disulfide was detected in LMW-10 at a concentration of 0.27 µg/L J+, which is considerably lower than the MTCA Method B groundwater cleanup level for carbon disulfide (800 µg/L). Carbon disulfide has been detected at these low levels in site groundwater in previous sampling events. The detection of carbon disulfide is attributed to being present in the coal bed material as a natural constituent.

1,4-Dioxane, was analyzed for the first time during the November 2017 sampling round. 1,4-Dioxane was detected in LMW-2 (2.0 µg/L) and LMW-4 (2.3 µg/L). 1,4-Dioxane was not detected in the Portal samples or in the other monitoring wells onsite. The low level detections of 1,4-Dioxane were confirmed by resampling LMW-2 and LMW-4 in February 2018. The resampling results were: LMW-2 (2.1 µg/L) and LMW-4 (2.3 µg/L). The detections are being addressed in cooperation with Ecology, and in accordance with the Cleanup Action Plan (Ecology 2017)⁴.

If you have any questions or require any additional information, please contact Gary Zimmerman at (425) 883-0777.

Sincerely,

GOLDER ASSOCIATES INC.


Joseph Miller
Project Geologist


Gary Zimmerman
Principal

JCM/GZ/sb

List of Tables

Table 1	Groundwater Elevation Data Collection November 27, 2017 Landsburg Mine Site
Table 2	November 2017 Groundwater Analytical Results Landsburg Mine Site

List of Figures

Figure 1	Groundwater Monitoring Locations
Figure 2	Cross-Section along Strike at Coal Seam

⁴ Washington Department of Ecology (Ecology). 2017. Final Cleanup Action Plan, Landsburg Mine Site. Bellevue, Washington. June 7.

List of Appendices

Appendix A	Laboratory Analytical Reports
Appendix B	Sample Integrity Data Sheets (SIDS)
Appendix C	November 2017 Landsburg Mine Site Water Quality Monitoring Data Validation and Quality Assurance / Quality Control Review Memorandum

TABLES

Table 1: Groundwater Elevation Data Collection November 27, 2017 Landsburg Mine Site

	UNITS	LMW-1	LMW-1a	LMW-2	LMW-3	LMW-4 ¹	LMW-5 ²	LMW-6	LMW-7 ¹	LMW-8	LMW-9	LMW-10	LMW-11	P-2	Water Drainage	Frazier Seam Tunnel
Water Depths																
Time of data collection		8:40 AM	8:27 AM	10:10 AM	9:24 AM	10:15 AM	12:27 PM	8:15 AM	10:28 AM	9:29 AM	9:14 AM	10:15 AM	9:30 AM	9:31 AM	NA	NA
Measured to Top of PVC	ft btc	130.32	130.16	6.17	11.74	7.57	13.08	28.85	210.47	3.34	99.05	0.01	156.87	6.36	NA	NA
Measured to Top of Monument	ft btm	131.13	130.39	6.88	12.56	8.30	13.77	29.62	211.03	4.34	99.35	0.15	157.24	6.74	NA	NA
Surveyed Elevation																
Top of PVC	ft asl	765.16	763.18	617.73	656.75	619.26	658.27	632.33	771.51	646.97	743.99	618.87	801.87	651.37	NA	NA
Top of Monument	ft asl	765.89	NC	618.29	657.48	619.85	658.87	633.00	771.88	NC	NC	NC	802.20	NC	NA	NA
Ground Level	ft asl	762.90	756.59	615.35	654.40	617.09	655.63	629.95	768.79	645.25	741.13	615.75	799.50	648.54	551.38	542.15
Corrected Water Elevation																
Using PVC elevation	ft asl	634.84	633.02	611.56	645.01	611.69	645.19	603.48	561.04	643.63	644.94	618.86	645.00	645.01	NA	NA
Using Monument elevation	ft asl	634.76	NA	611.41	644.92	611.55	645.10	603.38	560.85	NA	NA	NA	NA	NA	NA	NA

Notes:
¹ Data corrected to accommodate well inclination of 20° from vertical
² Depth to Water measured on November 29, 2017
NA = Not applicable
NC = Data not collected
ft btc = feet below top of casing
ft btm = feet below top of monument
ft asl = feet above sea level

Table 2: November 2017 Groundwater Analytical Results Landsburg Mine Site

ANALYTE	UNITS	LMW-2	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-7 Duplicate	LMW-8	LMW-9	LMW-10	LMW-11	Portal 2	Portal 3	Equipment Blank	Trip Blank
		11/30/2017	11/29/2017	11/30/2017	11/29/2017	11/28/2017	11/28/2017	11/28/2017	11/29/2017	11/29/2017	11/30/2017	11/28/207	11/30/2017	11/29/2017	11/29/2017	11/28/2017
Field Parameter																
pH	std	6.81	7.64	6.82	6.84	6.78	7.08	7.08	6.80	6.95	8.50	7.22	7.22	7.27	NA	NA
Conductivity	uS/cm	696	242.8	705	576	190.0	452.9	452.9	329.4	539	257.4	407.2	455.2	65.9	NA	NA
Dissolved Oxygen	mg/L	0.02	0.02	0.01	0.02	0.03	0.06	0.06	0.09	0.05	0.07	0.33	4.13	9.30	NA	NA
Temperature	°C	10.5	10.8	10.5	10.8	9.6	12.3	12.3	10.9	11.8	9.9	10.3	6.6	9.3	NA	NA
E _h	Rel mV	-123.2	-114.9	-201.0	-112.9	-56.7	-82.4	-82.4	-95.4	-93.3	-257.5	-79.0	175.9	29.9	NA	NA
Turbidity	NTU	0.41	0.27	0.46	2.09	0.6	0.82	0.82	5.3	0.14	0.41	0.58	2.77	1.02	NA	NA
Metals (Total)																
Aluminum	mg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Antimony	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	NA
Arsenic	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	NA
Barium	mg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.500	0.500 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
Beryllium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	NA
Cadmium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	NA
Calcium	mg/L	104	36.3	105	87.9	27.3	52.9	53.1	46.4	78.1	6.41	56.1	18.3	8.29	0.5 U	NA
Chromium	mg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Cobalt	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Copper	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	NA
Iron	mg/L	0.2 U	0.2 U	0.711	0.2 U	2.27	1.04	1.04	9.48	1.46	0.2 U	1.50	0.2 U	0.2 U	0.2 U	NA
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Magnesium	mg/L	64.3	14.8	64.5	49.4	13.5	24.4	24.5	24.2	42.3	2.84	26.3	14.9	4.19	1 U	NA
Manganese	mg/L	0.195	0.0656	0.169	0.225	0.0327	0.134	0.134	0.316	0.162	0.02 U	0.148	0.0829	0.02 U	0.02 U	NA
Mercury	mg/L	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	0.00002 U	NA
Nickel	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA
Potassium	mg/L	2.99	1.46	3.36	2.39	0.617	2.74	2.73	1.4	2.13	1.14	1.8	4.13	0.5 U	0.5 U	NA
Selenium	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	NA
Silver	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	NA
Sodium	mg/L	18.6	9.6	24.2	15.2	6.55	41.9	42.4	8.88	14.2	78.2	27.4	2.06	2.47	0.500 U	NA
Thallium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	NA
Vanadium	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	NA
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA



Table 2: November 2017 Groundwater Analytical Results Landsburg Mine Site

ANALYTE	UNITS	LMW-2	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-7 Duplicate	LMW-8	LMW-9	LMW-10	LMW-11	Portal 2	Portal 3	Equipment Blank	Trip Blank
		11/30/2017	11/29/2017	11/30/2017	11/29/2017	11/28/2017	11/28/2017	11/28/2017	11/29/2017	11/29/2017	11/30/2017	11/28/207	11/30/2017	11/29/2017	11/29/2017	11/28/2017
Volatile Organic Compounds (VOCs)																
Acetone	ug/L	2.14 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2.2 J	5 U	5 U	4.55 J	3.42 J	5 U	5 U
Acrolein	ug/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acrylonitrile	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromochloromethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromodichloromethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromoform	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromomethane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Sec-Butylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
tert-butylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Disulfide	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.27 J+	0.1 U	0.1 U	0.1 U	0.06 J,B
Carbon Tetrachloride	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloroform	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloromethane	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Chlorotoluene	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorotoluene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chlorodibromomethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromo-3-Chloropropane	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dibromoethane	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromomethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-Dichlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dichlorodifluoromethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Cis-1,2-Dichloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trans-1,2-Dichloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,2-Dichloropropane	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloropropene	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Cis-1,3-Dichloropropene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trans-1,3-Dichloropropene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Ethylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Hexachloro-1,3-butadiene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Hexanone	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-Isopropyltoluene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-Methyl-2-pentanone	ug/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Methylene Chloride	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
n-Propylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Styrene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-Tetrachloroethane	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U



Table 2: November 2017 Groundwater Analytical Results Landsburg Mine Site

ANALYTE	UNITS	LMW-2	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-7 Duplicate	LMW-8	LMW-9	LMW-10	LMW-11	Portal 2	Portal 3	Equipment Blank	Trip Blank
		11/30/2017	11/29/2017	11/30/2017	11/29/2017	11/28/2017	11/28/2017	11/28/2017	11/29/2017	11/29/2017	11/30/2017	11/28/2017	11/30/2017	11/29/2017	11/29/2017	11/28/2017
Tetrachloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.06 J	0.2 U
1,1,1-Trichloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichloropropane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-Trimethylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Chloride	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
m-Xylene & p-Xylene	ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Xylenes, Total	ug/L	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chloroethyl vinyl ether	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Iodomethane	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trans-1,4-Dichloro-2-butene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Acetate	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Semi-Volatile Organic Compounds (SVOCs)																
Total Benzofluoranthenes	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
Acenaphthene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Acenaphthylene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Anthracene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Benzo(a)anthracene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Benzo(a)pyrene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Benzo(ghi)perylene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Benzoic Acid	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA
Benzyl Alcohol	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
Bis(2-Chloroethoxy)Methane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
bis(2-chloroethyl)Ether	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Bis(2-chloroisopropyl)ether	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
bis(2-ethylhexyl)phthalate	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
4-Bromophenyl phenyl ether	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
butyl benzyl phthalate	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Carbazole	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
4-Chloroaniline	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
4-Chloro-3-Methylphenol	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
2-Chloronaphthalene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
2-Chlorophenol	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
4-Chlorophenyl phenyl ether	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
3 & 4-Methylphenol (m,p-Cresols)	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
2-Methylphenol (o-Cresol)	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Chrysene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Di-n-butyl phthalate	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Dibenz(a,h)anthracene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Dibenzofuran	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,2-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,3-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,4-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
3,3'-Dichlorobenzidine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
2,4-Dichlorophenol	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
Diethyl phthalate	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
2,4-Dimethylphenol	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
Dimethyl phthalate	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
4,6-Dinitro-2-Methylphenol	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
2,4-Dinitrophenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA



Table 2: November 2017 Groundwater Analytical Results Landsburg Mine Site

ANALYTE	UNITS	LMW-2	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-7 Duplicate	LMW-8	LMW-9	LMW-10	LMW-11	Portal 2	Portal 3	Equipment Blank	Trip Blank
		11/30/2017	11/29/2017	11/30/2017	11/29/2017	11/28/2017	11/28/2017	11/28/2017	11/29/2017	11/29/2017	11/30/2017	11/28/2017	11/30/2017	11/29/2017	11/29/2017	11/28/2017
2,4-Dinitrotoluene	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
2,6-Dinitrotoluene	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
1,4-Dioxane	ug/L	2.0	0.4 U	2.3	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NA
N-Nitrosodiphenylamine	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Fluoranthene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Fluorene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Hexachlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Hexachlorobutadiene	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
Hexachlorocyclopentadiene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
Hexachloroethane	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
Indeno(1,2,3-cd)pyrene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Isophorone	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1-Methylnaphthalene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
2-Methylnaphthalene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Naphthalene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
2-Nitroaniline	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
3-Nitroaniline	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
4-Nitroaniline	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
Nitrobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
2-Nitrophenol	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
4-Nitrophenol	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
N-Nitrosodi-n-propylamine	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Di-n-Octyl Phthalate	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Pentachlorophenol	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Phenanthrene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Phenol	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Pyrene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,2,4-Trichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
2,4,5-Trichlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
2,4,6-Trichlorophenol	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA
4-Methylphenol	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
2,2'-Oxybis(1-Chloropropane)	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Polychlorinated Biphenyls (PCBs)																
Aroclor 1016	µg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Aroclor 1221	µg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Aroclor 1232	µg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Aroclor 1242	µg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Aroclor 1248	µg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Aroclor 1254	µg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Aroclor 1260	µg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA
Pesticides																
Aldrin (2C)	µg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	NA
alpha-BHC (2C)	µg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	NA
beta-BHC (2C)	µg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	NA
delta-BHC (2C)	µg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	NA
gamma-BHC (2C)	µg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	NA
cis-Chlordane	µg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	NA
trans-Chlordane	µg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	NA
4,4'-DDD (2C)	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NA
4,4'-DDE (2C)	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NA
4,4'-DDT (2C)	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NA
Dieldrin (2C)	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NA
Endosulfan I (2C)	µg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	NA
Endosulfan II (2C)	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NA
Endosulfan sulfate (2C)	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NA
Endrin	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NA

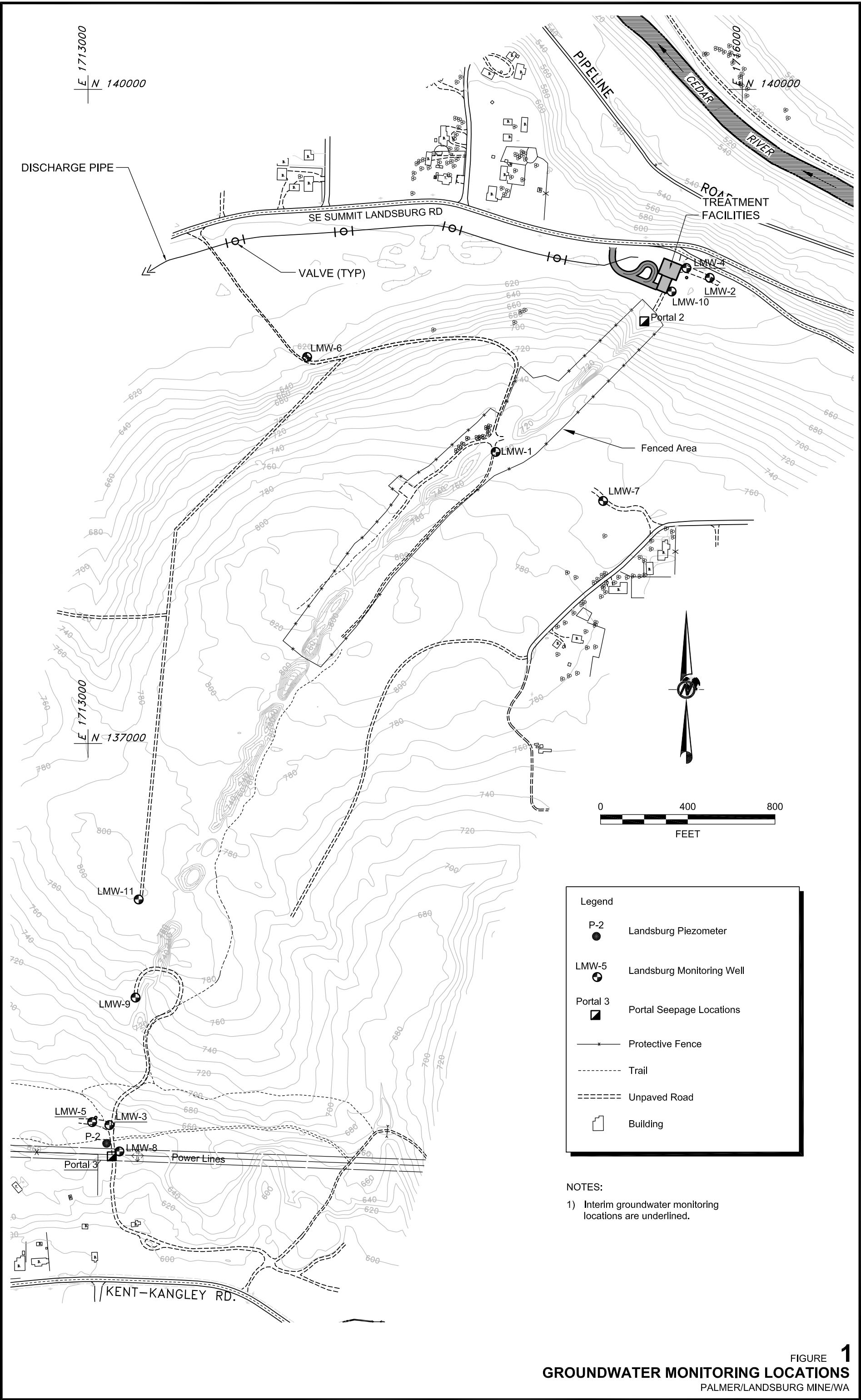
Table 2: November 2017 Groundwater Analytical Results Landsburg Mine Site

ANALYTE	UNITS	LMW-2	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-7 Duplicate	LMW-8	LMW-9	LMW-10	LMW-11	Portal 2		Portal 3		Equipment Blank	Trip Blank
		11/30/2017	11/29/2017	11/30/2017	11/29/2017	11/28/2017	11/28/2017	11/28/2017	11/29/2017	11/29/2017	11/30/2017	11/28/207	11/30/2017		11/29/2017		11/29/2017	11/28/2017
Endrin aldehyde (2C)	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 U		0.05 U	NA
Endrin ketone (2C)	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 U		0.05 U	NA
Heptachlor (2C)	µg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U		0.025 U		0.025 U	NA
Heptachlor epoxide (2C)	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 U		0.05 U	NA
Methoxychlor (2C)	µg/L	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U		0.25 U		0.25 U	NA
Toxaphene	µg/L	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U		1.25 U		1.25 U	NA
Hydrocarbon Identification																		
Diesel Range	mg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	NA
Gas Range	mg/L	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U		0.25 U		0.25 U	NA
Lube Oil	mg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U		1 U	NA

Notes:
NA = Not Analyzed
U - The analyte was not detected above the level of the reporting limit.
UJ - The analyte was not detected above the reporting limit and is estimated.
µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
Rel mV = relative millivolts
NTU = nephelometric turbidity unit
µg/L = micrograms per liter



FIGURES



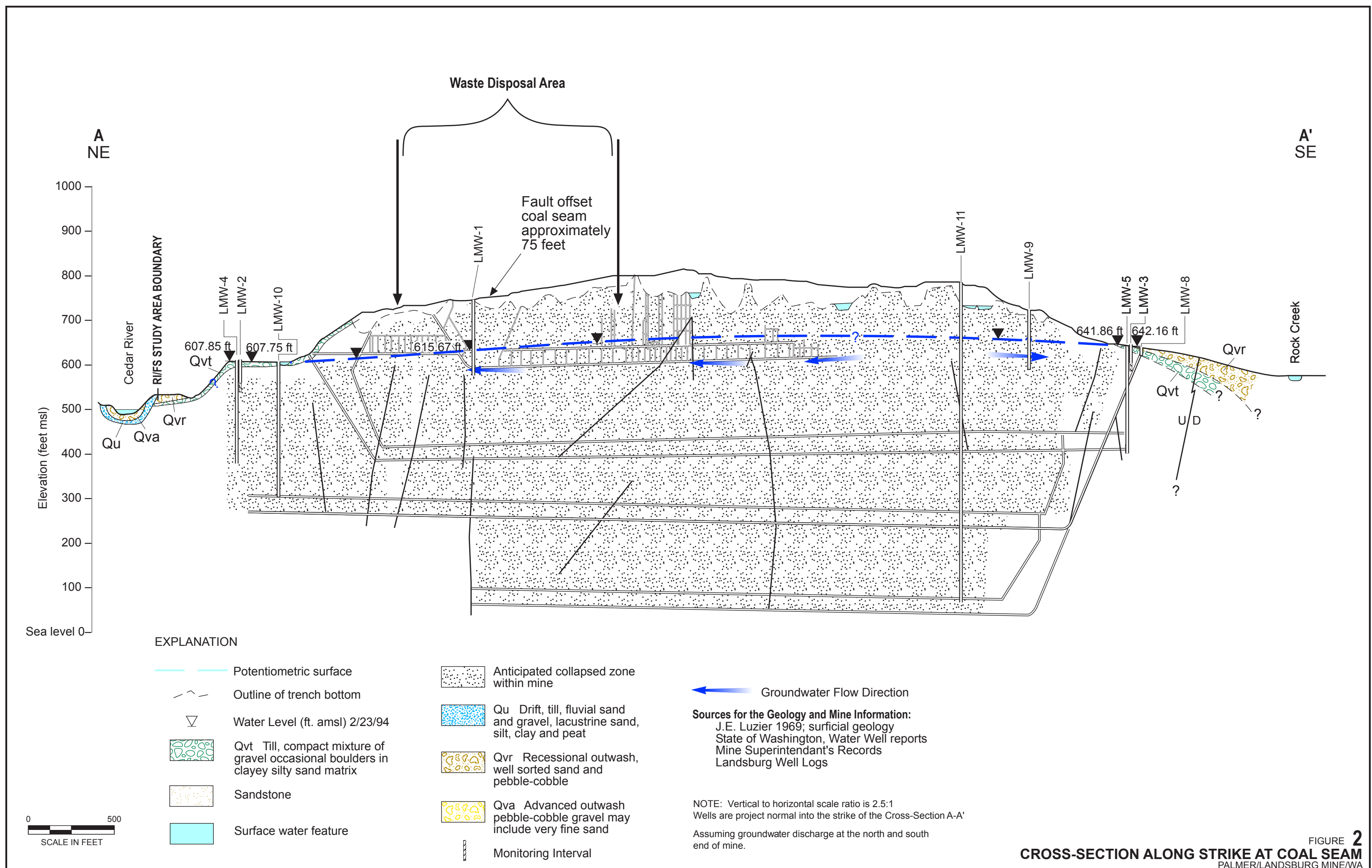


FIGURE 2
CROSS-SECTION ALONG STRIKE AT COAL SEAM
PALMER/LANDBURG MINE/WA

APPENDIX A
LABORATORY ANALYTICAL REPORTS



Analytical Resources, Incorporated
Analytical Chemists and Consultants

19 December 2017

Gary Zimmerman
Golder Associates
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333

RE: Landsburg

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
17L0001

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com



Page: 1 of 2

Date: 11/28/17 Ice Present? Yes

No. of Coolers: 1 Cooler Temps: 139/141

ARI Assigned Number: 17L0001

Turn-around Requested: Standard

ARI Client Company: Golder

Phone: 425-863-0777

Client Contact: Gary Zimmerman

Client Project Name: Landsburg

Client Project #: 923-1000-002 R273

Samplers: JM/5X

Sample ID	Date	Time	Matrix	No. Containers	VOC Client List	PCB (L) Residue	SVOC 8270 Client List	THH-Acid	THAL Total Metals	ATMLX Dissolved Metals	Notes/Comments
LMW-6-1117	11/28/17	0950	W	14	X	X	X	X	X	Hold	Field Filtered w/ 0.45um F. filter (please analyze under current MST folder)
LMW-11-1117		1200	W	14	X	X	X	X	X		
LMW-7-1117		1510	W	14	X	X	X	X	X		
LMW-7-1117-D		1520	W	14	X	X	X	X	X		
LMW-9-1117	11/29/17	0935	W	14	X	X	X	X	X		
LMW-3-1117		1140	W	14	X	X	X	X	X		
P-2-1117		1130	W	14	X	X	X	X	X		
LMW-5-1117		1320	W	14	X	X	X	X	X		
LMW-8-1117		1430	W	14	X	X	X	X	X		
EB-1117		1510	W	14	X	X	X	X	X		
Comments/Special Instructions					Relinquished by: (Signature) <u>[Signature]</u>	Relinquished by: (Signature) <u>[Signature]</u>	Relinquished by: (Signature) <u>[Signature]</u>	Relinquished by: (Signature) <u>[Signature]</u>	Relinquished by: (Signature) <u>[Signature]</u>	Relinquished by: (Signature) <u>[Signature]</u>	Relinquished by: (Signature) <u>[Signature]</u>
Ecology EIMEDD * Client Specific Rls + analyte list					Printed Name: <u>Joe Miller</u>	Printed Name: <u>Joe Miller</u>	Printed Name: <u>Joe Miller</u>	Printed Name: <u>Joe Miller</u>	Printed Name: <u>Joe Miller</u>	Printed Name: <u>Joe Miller</u>	Printed Name: <u>Joe Miller</u>
pls cc: jcmiller@golder.com g.zimmerman@golder.com					Company: <u>ARI</u>	Company: <u>ARI</u>	Company: <u>ARI</u>	Company: <u>ARI</u>	Company: <u>ARI</u>	Company: <u>ARI</u>	Company: <u>ARI</u>
					Date & Time: <u>11/30/17 1545</u>	Date & Time: <u>11/30/17 1545</u>	Date & Time: <u>11/30/17 1545</u>	Date & Time: <u>11/30/17 1545</u>	Date & Time: <u>11/30/17 1545</u>	Date & Time: <u>11/30/17 1545</u>	Date & Time: <u>11/30/17 1545</u>

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



WORK ORDER

17L0001

Client: Golder Associates

Project Manager: Kelly Bottem

Project: Landsburg

Project Number: Landsburg

Preservation Confirmation

Container ID	Container Type	pH
17L0001-01 A	VOA Vial, Clear, 40 mL, HCL	
17L0001-01 B	VOA Vial, Clear, 40 mL, HCL	
17L0001-01 C	VOA Vial, Clear, 40 mL, HCL	
17L0001-01 D	VOA Vial, Clear, 40 mL, HCL	
17L0001-01 E	VOA Vial, Clear, 40 mL, HCL	
17L0001-01 F	Glass NM, Amber, 1000 mL	
17L0001-01 G	Glass NM, Amber, 1000 mL	
17L0001-01 H	Glass NM, Amber, 1000 mL	
17L0001-01 I	Glass NM, Amber, 1000 mL	
17L0001-01 J	Glass NM, Amber, 1000 mL	
17L0001-01 K	Glass NM, Amber, 1000 mL	
17L0001-01 L	Glass NM, Amber, 1000 mL	
17L0001-01 M	HDPE NM, 500 mL, 1:1 HNO3	< 2
17L0001-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	< 2
17L0001-03 A	VOA Vial, Clear, 40 mL, HCL	
17L0001-03 B	VOA Vial, Clear, 40 mL, HCL	
17L0001-03 C	VOA Vial, Clear, 40 mL, HCL	
17L0001-03 D	VOA Vial, Clear, 40 mL, HCL	
17L0001-03 E	VOA Vial, Clear, 40 mL, HCL	
17L0001-03 F	Glass NM, Amber, 1000 mL	
17L0001-03 G	Glass NM, Amber, 1000 mL	
17L0001-03 H	Glass NM, Amber, 1000 mL	
17L0001-03 I	Glass NM, Amber, 1000 mL	
17L0001-03 J	Glass NM, Amber, 1000 mL	
17L0001-03 K	Glass NM, Amber, 1000 mL	
17L0001-03 L	Glass NM, Amber, 1000 mL	
17L0001-03 M	HDPE NM, 500 mL, 1:1 HNO3	< 2
17L0001-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	< 2
17L0001-05 A	VOA Vial, Clear, 40 mL, HCL	
17L0001-05 B	VOA Vial, Clear, 40 mL, HCL	
17L0001-05 C	VOA Vial, Clear, 40 mL, HCL	



WORK ORDER

17L0001

Client: Golder Associates

Project Manager: Kelly Bottem

Project: Landsburg

Project Number: Landsburg

17L0001-09 J	Glass NM, Amber, 1000 mL			
17L0001-09 K	Glass NM, Amber, 1000 mL			
17L0001-09 L	Glass NM, Amber, 1000 mL			
17L0001-09 M	HDPE NM, 500 mL, 1:1 HNO3	< 2	P	
17L0001-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	< 2	P	
17L0001-11 A	VOA Vial, Clear, 40 mL, HCL			
17L0001-11 B	VOA Vial, Clear, 40 mL, HCL			
17L0001-11 C	VOA Vial, Clear, 40 mL, HCL			
17L0001-11 D	VOA Vial, Clear, 40 mL, HCL			
17L0001-11 E sm	VOA Vial, Clear, 40 mL, HCL			
17L0001-11 F	Glass NM, Amber, 1000 mL			
17L0001-11 G	Glass NM, Amber, 1000 mL			
17L0001-11 H	Glass NM, Amber, 1000 mL			
17L0001-11 I	Glass NM, Amber, 1000 mL			
17L0001-11 J	Glass NM, Amber, 1000 mL			
17L0001-11 K	Glass NM, Amber, 1000 mL			
17L0001-11 L	Glass NM, Amber, 1000 mL			
17L0001-11 M	HDPE NM, 500 mL, 1:1 HNO3	< 2	P	
17L0001-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	< 2	P	
17L0001-13 A	VOA Vial, Clear, 40 mL, HCL			
17L0001-13 B	VOA Vial, Clear, 40 mL, HCL			
17L0001-13 C	VOA Vial, Clear, 40 mL, HCL			
17L0001-13 D	VOA Vial, Clear, 40 mL, HCL			
17L0001-13 E	VOA Vial, Clear, 40 mL, HCL			
17L0001-13 F	Glass NM, Amber, 1000 mL			
17L0001-13 G	Glass NM, Amber, 1000 mL			
17L0001-13 H	Glass NM, Amber, 1000 mL			
17L0001-13 I	Glass NM, Amber, 1000 mL			
17L0001-13 J	Glass NM, Amber, 1000 mL			
17L0001-13 K	Glass NM, Amber, 1000 mL			
17L0001-13 L	Glass NM, Amber, 1000 mL			
17L0001-13 M	HDPE NM, 500 mL, 1:1 HNO3	< 2	P	
17L0001-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	< 2	P	
17L0001-15 A 19	VOA Vial, Clear, 40 mL, HCL			



WORK ORDER

17L0001

Client: Golder Associates

Project Manager: Kelly Bottem

Project: Landsburg

Project Number: Landsburg

17L0001-19 H	Glass NM, Amber, 1000 mL		
17L0001-19 I	Glass NM, Amber, 1000 mL		
17L0001-19 J	Glass NM, Amber, 1000 mL		
17L0001-19 K	Glass NM, Amber, 1000 mL		
17L0001-19 L	Glass NM, Amber, 1000 mL		
17L0001-19 M	HDPE NM, 500 mL, 1:1 HNO3	< 2	p
17L0001-20 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	< 2	p
17L0001-21 A	VOA Vial, Clear, 40 mL, HCL		
17L0001-21 B	VOA Vial, Clear, 40 mL, HCL		
17L0001-21 C	VOA Vial, Clear, 40 mL, HCL		
17L0001-21 D	VOA Vial, Clear, 40 mL, HCL		
17L0001-21 E	VOA Vial, Clear, 40 mL, HCL		
17L0001-21 F	Glass NM, Amber, 1000 mL		
17L0001-21 G	Glass NM, Amber, 1000 mL		
17L0001-21 H	Glass NM, Amber, 1000 mL		
17L0001-21 I	Glass NM, Amber, 1000 mL		
17L0001-21 J	Glass NM, Amber, 1000 mL		
17L0001-21 K	Glass NM, Amber, 1000 mL		
17L0001-21 L	Glass NM, Amber, 1000 mL		
17L0001-21 M	HDPE NM, 500 mL, 1:1 HNO3	< 2	p
17L0001-22 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	< 2	p
17L0001-23 A	VOA Vial, Clear, 40 mL, HCL		
17L0001-23 B	VOA Vial, Clear, 40 mL, HCL		
17L0001-23 C	VOA Vial, Clear, 40 mL, HCL		
17L0001-23 D	VOA Vial, Clear, 40 mL, HCL		
17L0001-23 E	VOA Vial, Clear, 40 mL, HCL		
17L0001-23 F	Glass NM, Amber, 1000 mL		
17L0001-23 G	Glass NM, Amber, 1000 mL		
17L0001-23 H	Glass NM, Amber, 1000 mL		
17L0001-23 I	Glass NM, Amber, 1000 mL		
17L0001-23 J	Glass NM, Amber, 1000 mL		
17L0001-23 K	Glass NM, Amber, 1000 mL		
17L0001-23 L	Glass NM, Amber, 1000 mL		
17L0001-23 M	HDPE NM, 500 mL, 1:1 HNO3	< 2	p



WORK ORDER

17L0001

Client: Golder Associates

Project Manager: Kelly Bottem

Project: Landsburg

Project Number: Landsburg

17L0001-29 F VOA Vial, Amber, 40 mL, HCL

17L0001-29 G VOA Vial, Amber, 40 mL, HCL

17L0001-29 H *pb* VOA Vial, Amber, 40 mL, HCL

17L0001-29 I *pb* VOA Vial, Amber, 40 mL, HCL

17L0001-29 J VOA Vial, Amber, 40 mL, HCL

17L0001-29 K VOA Vial, Amber, 40 mL, HCL

17L0001-29 L *pb* VOA Vial, Amber, 40 mL, HCL

P = PASS

BT
Preservation Confirmed By

12/1/17
Date



Cooler Receipt Form

ARI Client: Golder

Project Name: Landsburg

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 17L0001

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: _____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 1005706

Cooler Accepted by: SRW Date: 11/30/2017 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI: NA 11/20/17

Was Sample Split by ARI: NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: BF Date: 12/01/17 Time: 910

** Notify Project Manager of discrepancies or concerns **

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

sample MW-10-1117 label: 0955, coc 0950
coc said 6 Trip blanks, there was 12

sample P-3-1117
(17L0001-23A)
Broke during
during logging
process - BF
12/1/17

By: BF Date: 11/2 BF 12/1/17

Small Air Bubbles = 2mm 	Peabubbles 2-4 mm 	LARGE AIR Bubbles > 4 mm 	Small → "sm" (< 2 mm) Peabubbles → "pb" (2 to < 4 mm) Large → "lg" (4 to < 6 mm) Headspace → "hs" (> 6 mm)
---------------------------------------	---------------------------------	--	---

Cooler #

Temp

3

4.3°C

8

3.9°C

9

0.3°C

4

3.3°C

2

3.1°C

1

0.6°C

11

0.7°C

7

2.1°C

5

1.7°C

6

-0.1°C

Temp Gun used: 11005206



Golder Associates
18300 NE Union Hill Road Suite 200
Redmond WA, 98052-3333

Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
LMW-6-1117	17L0001-01	Water	28-Nov-2017 09:50	30-Nov-2017 15:45
LMW-6-1117	17L0001-02	Water	28-Nov-2017 09:50	30-Nov-2017 15:45
LMW-11-1117	17L0001-03	Water	28-Nov-2017 12:00	30-Nov-2017 15:45
LMW-11-1117	17L0001-04	Water	28-Nov-2017 12:00	30-Nov-2017 15:45
LMW-7-1117	17L0001-05	Water	28-Nov-2017 15:10	30-Nov-2017 15:45
LMW-7-1117	17L0001-06	Water	28-Nov-2017 15:10	30-Nov-2017 15:45
LMW-7-1117-D	17L0001-07	Water	28-Nov-2017 15:20	30-Nov-2017 15:45
LMW-7-1117-D	17L0001-08	Water	28-Nov-2017 15:20	30-Nov-2017 15:45
LMW-9-1117	17L0001-09	Water	29-Nov-2017 09:35	30-Nov-2017 15:45
LMW-9-1117	17L0001-10	Water	29-Nov-2017 09:35	30-Nov-2017 15:45
LMW-3-1117	17L0001-11	Water	29-Nov-2017 11:40	30-Nov-2017 15:45
LMW-3-1117	17L0001-12	Water	29-Nov-2017 11:40	30-Nov-2017 15:45
P-2-1117	17L0001-13	Water	29-Nov-2017 11:30	30-Nov-2017 15:45
P-2-1117	17L0001-14	Water	29-Nov-2017 11:30	30-Nov-2017 15:45
LMW-5-1117	17L0001-15	Water	29-Nov-2017 13:20	30-Nov-2017 15:45
LMW-5-1117	17L0001-16	Water	29-Nov-2017 13:20	30-Nov-2017 15:45
LMW-8-1117	17L0001-17	Water	29-Nov-2017 14:30	30-Nov-2017 15:45
LMW-8-1117	17L0001-18	Water	29-Nov-2017 14:30	30-Nov-2017 15:45
EB-1117	17L0001-19	Water	29-Nov-2017 15:10	30-Nov-2017 15:45
EB-1117	17L0001-20	Water	29-Nov-2017 15:10	30-Nov-2017 15:45
LMW-10-1117	17L0001-21	Water	30-Nov-2017 09:50	30-Nov-2017 15:45
LMW-10-1117	17L0001-22	Water	30-Nov-2017 09:50	30-Nov-2017 15:45
P-3-1117	17L0001-23	Water	30-Nov-2017 10:20	30-Nov-2017 15:45
P-3-1117	17L0001-24	Water	30-Nov-2017 10:20	30-Nov-2017 15:45
LMW-2-1117	17L0001-25	Water	30-Nov-2017 12:30	30-Nov-2017 15:45
LMW-2-1117	17L0001-26	Water	30-Nov-2017 12:30	30-Nov-2017 15:45
LMW-4-1117	17L0001-27	Water	30-Nov-2017 14:10	30-Nov-2017 15:45
LMW-4-1117	17L0001-28	Water	30-Nov-2017 14:10	30-Nov-2017 15:45
Trip Blank	17L0001-29	Water	28-Nov-2017 14:10	30-Nov-2017 15:45



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Redmond WA, 98052-3333

Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Case Narrative

Sample receipt

Samples as listed on the preceding page were received December 15, 2017 under ARI workorder 17L0001. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatiles - EPA Method SW8260C

The samples were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The initial calibration verification (ICV) for NT2 on 12/5/07 is outside of control limits high for all associated LCS/LCSD "Q" flagged analytes with the exception of Iodomethane, which is outside of control limits low. Associated samples and QC that contain these analytes have been flagged with a "Q" qualifier. No further corrective action was taken.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

Method blank BFL0100 has Carbon Disulfide detected above the reporting limit. Associated detected results have been flagged with an "B" qualifier. The method blank also has various compounds detected below the reporting limits, but above the method detection limits. These analytes have been flagged with a "J" qualifier on the method blank. No further corrective action was taken.

The LCS/LCSD percent recoveries and RPD were within control limits.

Semivolatiles - EPA Method SW8270D

The samples were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The initial calibration verification (ICV) for NT6 on 12/11/17 is outside of control limits high for 2,4-Dinitrophenol. Associated samples and QC that contain this analyte have been flagged with a "Q" qualifier. No further corrective action was taken.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits. The LCSD has low percent recovery for 3-Nitroaniline. This is due to a low calibration bias. No corrective action was taken.



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19-Dec-2017 13:08

1,4-Dioxane- EPA Method SW8270D

The samples were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Hydrocarbon Identification (HCID) - WA-Ecology Method NW-HCID

The samples were extracted and analyzed within the recommended holding times.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

Pesticides - EPA Method SW8081A

The samples were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

The LCS has high percent recovery for Dieldrin. The LCSD has high percent recoveries for various compounds. All of the samples were non-detect for these compounds. No corrective action was taken.

PCB Aroclors - EPA Method SW8082A

The samples were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.



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19-Dec-2017 13:08

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Total Metals - EPA Method 6010C

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.

A matrix spike and duplicate were prepared in conjunction with sample LMW-6-1117. The matrix spike percent recoveries and duplicate RPD were within QC limits.

Total Metals - EPA Method 200.8

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.

A matrix spike and duplicate were prepared in conjunction with sample LMW-6-1117. The matrix spike percent recoveries and duplicate RPD were within QC limits.

Total Hg - EPA Method 7470/7471

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.

A matrix spike and duplicate were prepared in conjunction with sample LMW-6-1117. The matrix spike percent recovery and duplicate RPD were within QC limits.



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 09:50
Analyzed: 05-Dec-2017 15:44

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	0.05	ug/L	J, B
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/28/2017 09:50

Instrument: NT2

Analyzed: 05-Dec-2017 15:44

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 09:50
Analyzed: 05-Dec-2017 15:44

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	100	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	107	%	
Surrogate: Toluene-d8		80-120 %	94.5	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	91.4	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



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Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/28/2017 09:50

Instrument: NT6

Analyzed: 11-Dec-2017 14:36

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/28/2017 09:50

Instrument: NT6

Analyzed: 11-Dec-2017 14:36

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	53.5	%	
Surrogate: Phenol-d5			38-120 %	58.0	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	56.9	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	50.6	%	
Surrogate: Nitrobenzene-d5			27-120 %	59.0	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	52.8	%	



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Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/28/2017 09:50
Analyzed: 11-Dec-2017 14:36

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	55.6	%	
Surrogate: p-Terphenyl-d14		28-120 %	59.9	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				33.6-120 %	77.0	%	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/28/2017 09:50
Analyzed: 04-Dec-2017 14:56

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	89.2	%	
Surrogate: n-Triacontane			50-150 %	94.1	%	



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/28/2017 09:50
Analyzed: 13-Dec-2017 12:41

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	98.8	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	95.1	%	
Surrogate: Tetrachlorometaxylene			30-120 %	94.7	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	98.6	%	



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Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/28/2017 09:50
Analyzed: 12-Dec-2017 19:06

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0142 Sample Size: 1000 mL
Prepared: 07-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CFL0060 Initial Volume: 0.5 mL
Cleaned: 11-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CFL0058 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfur
Cleanup Batch: CFL0059 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	73.8	%	
Surrogate: Tetrachlorometaxylene			32-120 %	67.9	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	73.2	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	50.4	%	



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Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 11/28/2017 09:50

Instrument: ICPMS2

Analyzed: 12-Dec-2017 14:55

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/28/2017 09:50
Analyzed: 12-Dec-2017 14:55

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/28/2017 09:50
Analyzed: 06-Dec-2017 13:52

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051 Sample Size: 25 mL
Prepared: 04-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	27300	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	2270	ug/L	
Magnesium	7439-95-4	1	1000	13500	ug/L	
Manganese	7439-96-5	1	20.0	32.7	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	617	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	6550	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-6-1117
17L0001-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/28/2017 09:50
Analyzed: 11-Dec-2017 14:38

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 12:00
Analyzed: 05-Dec-2017 16:04

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	0.06	ug/L	J, B
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/28/2017 12:00

Instrument: NT2

Analyzed: 05-Dec-2017 16:04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 12:00
Analyzed: 05-Dec-2017 16:04

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	108	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	110	%	
Surrogate: Toluene-d8		80-120 %	95.4	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	91.8	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/28/2017 12:00

Instrument: NT6

Analyzed: 11-Dec-2017 15:09

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/28/2017 12:00

Instrument: NT6

Analyzed: 11-Dec-2017 15:09

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	63.5	%	
Surrogate: Phenol-d5			38-120 %	70.2	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	69.0	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	60.2	%	
Surrogate: Nitrobenzene-d5			27-120 %	70.4	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	60.7	%	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/28/2017 12:00
Analyzed: 11-Dec-2017 15:09

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	67.6	%	
Surrogate: p-Terphenyl-d14		28-120 %	71.7	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8			33.6-120 %	72.0	%		



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/28/2017 12:00
Analyzed: 04-Dec-2017 15:12

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	97.2	%	
Surrogate: n-Triacontane			50-150 %	101	%	



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/28/2017 12:00
Analyzed: 13-Dec-2017 12:59

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	116	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	112	%	
Surrogate: Tetrachlorometaxylene			30-120 %	86.7	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	88.7	%	



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/28/2017 12:00
Analyzed: 12-Dec-2017 19:27

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0142 Sample Size: 1000 mL
Prepared: 07-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CFL0060 Initial Volume: 0.5 mL
Cleaned: 11-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CFL0058 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfur
Cleanup Batch: CFL0059 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	79.6	%	
Surrogate: Tetrachlorometaxylene			32-120 %	72.9	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	82.8	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	53.2	%	



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8
Instrument: ICPMS2

Sampled: 11/28/2017 12:00
Analyzed: 12-Dec-2017 14:25

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/28/2017 12:00
Analyzed: 12-Dec-2017 14:25

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	5.97	ug/L	
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010C

Sampled: 11/28/2017 12:00

Instrument: ICP2

Analyzed: 12-Dec-2017 20:14

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051
Prepared: 04-Dec-2017

Sample Size: 25 mL
Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	56100	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	1500	ug/L	
Magnesium	7439-95-4	1	1000	26300	ug/L	
Manganese	7439-96-5	1	20.0	148	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	1800	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	27400	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-11-1117
17L0001-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/28/2017 12:00
Analyzed: 11-Dec-2017 14:46

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 15:10
Analyzed: 05-Dec-2017 16:24

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	0.04	ug/L	J, B
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/28/2017 15:10

Instrument: NT2

Analyzed: 05-Dec-2017 16:24

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 15:10
Analyzed: 05-Dec-2017 16:24

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	108	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	110	%	
Surrogate: Toluene-d8		80-120 %	95.7	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	92.9	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	104	%	



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Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/28/2017 15:10

Instrument: NT6

Analyzed: 11-Dec-2017 15:42

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/28/2017 15:10

Instrument: NT6

Analyzed: 11-Dec-2017 15:42

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	69.1	%	
Surrogate: Phenol-d5			38-120 %	74.6	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	73.1	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	62.0	%	
Surrogate: Nitrobenzene-d5			27-120 %	74.8	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	65.2	%	



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19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/28/2017 15:10
Analyzed: 11-Dec-2017 15:42

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	72.5	%	
Surrogate: p-Terphenyl-d14		28-120 %	79.5	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				33.6-120 %	86.3	%	



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Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/28/2017 15:10
Analyzed: 04-Dec-2017 15:29

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	91.0	%	
Surrogate: n-Triacontane			50-150 %	94.0	%	



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Project: Landsburg
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Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/28/2017 15:10
Analyzed: 13-Dec-2017 13:17

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	106	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	102	%	
Surrogate: Tetrachlorometaxylene			30-120 %	88.0	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	88.7	%	



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Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/28/2017 15:10
Analyzed: 12-Dec-2017 19:47

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BFL0142 Prepared: 07-Dec-2017	Sample Size: 1000 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CFL0060 Cleaned: 11-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CFL0058 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CFL0059 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	81.8	%	
Surrogate: Tetrachlorometaxylene			32-120 %	72.6	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	85.8	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	53.1	%	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8
Instrument: ICPMS2

Sampled: 11/28/2017 15:10
Analyzed: 12-Dec-2017 14:30

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
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Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/28/2017 15:10
Analyzed: 12-Dec-2017 14:30

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Project Number: 923-1000-002 R273
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Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/28/2017 15:10
Analyzed: 12-Dec-2017 20:18

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051
Prepared: 04-Dec-2017

Sample Size: 25 mL
Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	500	ug/L	
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	52900	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	1040	ug/L	
Magnesium	7439-95-4	1	1000	24400	ug/L	
Manganese	7439-96-5	1	20.0	134	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	2740	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	41900	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-7-1117
17L0001-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/28/2017 15:10
Analyzed: 11-Dec-2017 14:48

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 15:20
Analyzed: 05-Dec-2017 16:45

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	0.04	ug/L	J, B
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-7-1117-D

17L0001-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/28/2017 15:20

Instrument: NT2

Analyzed: 05-Dec-2017 16:45

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 15:20
Analyzed: 05-Dec-2017 16:45

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	108	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	113	%	
Surrogate: Toluene-d8		80-120 %	95.1	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	89.3	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	106	%	



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Reported:
19-Dec-2017 13:08

LMW-7-1117-D

17L0001-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/28/2017 15:20

Instrument: NT6

Analyzed: 11-Dec-2017 16:16

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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Project Number: 923-1000-002 R273
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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/28/2017 15:20

Instrument: NT6

Analyzed: 11-Dec-2017 16:16

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	57.5	%	
Surrogate: Phenol-d5			38-120 %	62.6	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	59.8	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	49.7	%	
Surrogate: Nitrobenzene-d5			27-120 %	62.5	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	56.0	%	



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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/28/2017 15:20
Analyzed: 11-Dec-2017 16:16

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	62.4	%	
Surrogate: p-Terphenyl-d14		28-120 %	65.4	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8			33.6-120 %	76.0	%		



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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/28/2017 15:20
Analyzed: 04-Dec-2017 15:45

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	92.8	%	
Surrogate: n-Triacontane			50-150 %	95.4	%	



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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/28/2017 15:20
Analyzed: 13-Dec-2017 13:35

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	117	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	112	%	
Surrogate: Tetrachlorometaxylene			30-120 %	93.6	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	94.7	%	



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Project Number: 923-1000-002 R273
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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/28/2017 15:20
Analyzed: 12-Dec-2017 20:07

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0142 Sample Size: 1000 mL
Prepared: 07-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CFL0060 Initial Volume: 0.5 mL
Cleaned: 11-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CFL0058 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfur
Cleanup Batch: CFL0059 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	81.7	%	
Surrogate: Tetrachlorometaxylene			32-120 %	73.0	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	84.7	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	53.8	%	



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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8
Instrument: ICPMS2

Sampled: 11/28/2017 15:20
Analyzed: 12-Dec-2017 14:35

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Project Number: 923-1000-002 R273
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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/28/2017 15:20
Analyzed: 12-Dec-2017 14:35

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/28/2017 15:20
Analyzed: 12-Dec-2017 20:22

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051
Prepared: 04-Dec-2017

Sample Size: 25 mL
Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	53100	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	1040	ug/L	
Magnesium	7439-95-4	1	1000	24500	ug/L	
Manganese	7439-96-5	1	20.0	134	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	2730	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	42400	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Project: Landsburg
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Reported:
19-Dec-2017 13:08

LMW-7-1117-D
17L0001-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/28/2017 15:20
Analyzed: 11-Dec-2017 14:57

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Project Number: 923-1000-002 R273
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Reported:
19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 09:35
Analyzed: 05-Dec-2017 17:05

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	2.20	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	0.04	ug/L	J, B
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/29/2017 09:35

Instrument: NT2

Analyzed: 05-Dec-2017 17:05

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 09:35
Analyzed: 05-Dec-2017 17:05

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	111	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	115	%	
Surrogate: Toluene-d8		80-120 %	95.8	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	89.0	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	106	%	



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Reported:
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LMW-9-1117
17L0001-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 09:35

Instrument: NT6

Analyzed: 11-Dec-2017 16:49

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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LMW-9-1117
17L0001-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 09:35

Instrument: NT6

Analyzed: 11-Dec-2017 16:49

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	64.8	%	
Surrogate: Phenol-d5			38-120 %	69.6	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	67.0	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	54.1	%	
Surrogate: Nitrobenzene-d5			27-120 %	70.9	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	58.0	%	



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19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/29/2017 09:35
Analyzed: 11-Dec-2017 16:49

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	70.1	%	
Surrogate: p-Terphenyl-d14		28-120 %	72.1	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				33.6-120 %	75.3	%	



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19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/29/2017 09:35
Analyzed: 04-Dec-2017 16:01

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	91.4	%	
Surrogate: n-Triacontane			50-150 %	82.1	%	



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19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/29/2017 09:35
Analyzed: 13-Dec-2017 13:53

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	108	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	104	%	
Surrogate: Tetrachlorometaxylene			30-120 %	86.1	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	86.8	%	



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19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/29/2017 09:35
Analyzed: 12-Dec-2017 20:27

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BFL0142 Prepared: 07-Dec-2017	Sample Size: 1000 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CFL0060 Cleaned: 11-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CFL0058 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CFL0059 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	81.1	%	
Surrogate: Tetrachlorometaxylene			32-120 %	67.3	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	77.0	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	48.6	%	



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19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8
Instrument: ICPMS2

Sampled: 11/29/2017 09:35
Analyzed: 12-Dec-2017 14:40

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/29/2017 09:35
Analyzed: 12-Dec-2017 14:40

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/29/2017 09:35
Analyzed: 12-Dec-2017 20:26

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051 Sample Size: 25 mL
Prepared: 04-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	78100	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	1460	ug/L	
Magnesium	7439-95-4	1	1000	42300	ug/L	
Manganese	7439-96-5	1	20.0	162	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	2130	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	14200	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-9-1117
17L0001-09 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/29/2017 09:35
Analyzed: 11-Dec-2017 15:00

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Reported:
19-Dec-2017 13:08

LMW-3-1117
17L0001-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 11:40
Analyzed: 05-Dec-2017 17:26

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-3-1117
17L0001-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/29/2017 11:40

Instrument: NT2

Analyzed: 05-Dec-2017 17:26

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-3-1117
17L0001-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 11:40
Analyzed: 05-Dec-2017 17:26

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	106	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	111	%	
Surrogate: Toluene-d8		80-120 %	95.2	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	89.0	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



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Reported:
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LMW-3-1117
17L0001-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 11:40

Instrument: NT6

Analyzed: 11-Dec-2017 17:22

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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LMW-3-1117
17L0001-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 11:40

Instrument: NT6

Analyzed: 11-Dec-2017 17:22

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	67.2	%	
Surrogate: Phenol-d5			38-120 %	71.1	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	69.9	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	51.2	%	
Surrogate: Nitrobenzene-d5			27-120 %	73.2	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	58.4	%	



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LMW-3-1117
17L0001-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/29/2017 11:40
Analyzed: 11-Dec-2017 17:22

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	70.8	%	
Surrogate: p-Terphenyl-d14		28-120 %	75.4	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8			33.6-120 %	79.5	%		



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19-Dec-2017 13:08

LMW-3-1117
17L0001-11 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/29/2017 11:40
Analyzed: 04-Dec-2017 16:17

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	90.4	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	95.1	%	



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19-Dec-2017 13:08

LMW-3-1117
17L0001-11 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/29/2017 11:40
Analyzed: 13-Dec-2017 14:11

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	84.7	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	82.4	%	
Surrogate: Tetrachlorometaxylene			30-120 %	82.4	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	84.1	%	



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LMW-3-1117
17L0001-11 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/29/2017 11:40
Analyzed: 12-Dec-2017 20:48

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BFL0142 Prepared: 07-Dec-2017	Sample Size: 1000 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CFL0060 Cleaned: 11-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CFL0058 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CFL0059 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	75.9	%	
Surrogate: Tetrachlorometaxylene			32-120 %	73.6	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	76.2	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	52.7	%	



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19-Dec-2017 13:08

LMW-3-1117
17L0001-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 11/29/2017 11:40

Instrument: ICPMS2

Analyzed: 12-Dec-2017 14:45

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Reported:
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LMW-3-1117
17L0001-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/29/2017 11:40
Analyzed: 12-Dec-2017 14:45

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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19-Dec-2017 13:08

LMW-3-1117
17L0001-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/29/2017 11:40
Analyzed: 12-Dec-2017 20:31

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051 Sample Size: 25 mL
Prepared: 04-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	36300	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	ND	ug/L	U
Magnesium	7439-95-4	1	1000	14800	ug/L	
Manganese	7439-96-5	1	20.0	65.6	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	1460	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	9600	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-3-1117
17L0001-11 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/29/2017 11:40
Analyzed: 11-Dec-2017 15:02

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 11:30
Analyzed: 05-Dec-2017 17:46

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	3.42	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/29/2017 11:30

Instrument: NT2

Analyzed: 05-Dec-2017 17:46

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 11:30
Analyzed: 05-Dec-2017 17:46

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	112	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	112	%	
Surrogate: Toluene-d8		80-120 %	93.6	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	92.7	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	104	%	



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Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 11:30

Instrument: NT6

Analyzed: 11-Dec-2017 17:54

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 11:30

Instrument: NT6

Analyzed: 11-Dec-2017 17:54

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	55.7	%	
Surrogate: Phenol-d5			38-120 %	55.5	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	59.4	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	46.5	%	
Surrogate: Nitrobenzene-d5			27-120 %	63.2	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	56.2	%	



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Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/29/2017 11:30
Analyzed: 11-Dec-2017 17:54

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	64.5	%	
Surrogate: p-Terphenyl-d14		28-120 %	64.9	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8			33.6-120 %	77.7	%		



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Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/29/2017 11:30
Analyzed: 04-Dec-2017 16:33

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	92.0	%	
Surrogate: n-Triacontane			50-150 %	94.8	%	



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Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/29/2017 11:30
Analyzed: 13-Dec-2017 14:29

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	119	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	115	%	
Surrogate: Tetrachlorometaxylene			30-120 %	98.9	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	102	%	



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Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/29/2017 11:30
Analyzed: 12-Dec-2017 21:08

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0142 Sample Size: 1000 mL
Prepared: 07-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CFL0060 Initial Volume: 0.5 mL
Cleaned: 11-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CFL0058 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfur
Cleanup Batch: CFL0059 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	86.4	%	
Surrogate: Tetrachlorometaxylene			32-120 %	71.9	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	80.5	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	51.7	%	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 11/29/2017 11:30

Instrument: ICPMS2

Analyzed: 12-Dec-2017 15:28

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/29/2017 11:30
Analyzed: 12-Dec-2017 15:28

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010C

Sampled: 11/29/2017 11:30

Instrument: ICP2

Analyzed: 12-Dec-2017 20:35

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051
Prepared: 04-Dec-2017

Sample Size: 25 mL
Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	8290	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	ND	ug/L	U
Magnesium	7439-95-4	1	1000	4190	ug/L	
Manganese	7439-96-5	1	20.0	ND	ug/L	U
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	ND	ug/L	U
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	2470	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

P-2-1117
17L0001-13 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/29/2017 11:30
Analyzed: 11-Dec-2017 15:05

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 13:20
Analyzed: 05-Dec-2017 18:06

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/29/2017 13:20

Instrument: NT2

Analyzed: 05-Dec-2017 18:06

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 13:20
Analyzed: 05-Dec-2017 18:06

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	112	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	114	%	
Surrogate: Toluene-d8		80-120 %	95.6	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	88.7	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	106	%	



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Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 13:20

Instrument: NT6

Analyzed: 11-Dec-2017 18:27

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 13:20

Instrument: NT6

Analyzed: 11-Dec-2017 18:27

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	59.1	%	
Surrogate: Phenol-d5			38-120 %	66.6	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	64.0	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	53.4	%	
Surrogate: Nitrobenzene-d5			27-120 %	66.8	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	61.2	%	



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Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/29/2017 13:20
Analyzed: 11-Dec-2017 18:27

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	70.9	%	
Surrogate: p-Terphenyl-d14		28-120 %	73.2	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8			33.6-120 %	81.8	%		



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/29/2017 13:20
Analyzed: 04-Dec-2017 16:49

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	92.7	%	
Surrogate: n-Triacontane			50-150 %	97.3	%	



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Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/29/2017 13:20
Analyzed: 13-Dec-2017 14:47

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	106	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	102	%	
Surrogate: Tetrachlorometaxylene			30-120 %	89.4	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	87.8	%	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/29/2017 13:20
Analyzed: 12-Dec-2017 22:09

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BFL0142 Prepared: 07-Dec-2017	Sample Size: 1000 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CFL0060 Cleaned: 11-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CFL0058 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CFL0059 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	83.8	%	
Surrogate: Tetrachlorometaxylene			32-120 %	67.4	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	85.5	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	51.6	%	



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Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8
Instrument: ICPMS2

Sampled: 11/29/2017 13:20
Analyzed: 12-Dec-2017 15:33

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/29/2017 13:20
Analyzed: 12-Dec-2017 15:33

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010C

Sampled: 11/29/2017 13:20

Instrument: ICP2

Analyzed: 12-Dec-2017 20:39

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051
Prepared: 04-Dec-2017

Sample Size: 25 mL
Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	87900	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	ND	ug/L	U
Magnesium	7439-95-4	1	1000	49400	ug/L	
Manganese	7439-96-5	1	20.0	225	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	2390	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	15200	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-5-1117
17L0001-15 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/29/2017 13:20
Analyzed: 11-Dec-2017 15:08

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 14:30
Analyzed: 05-Dec-2017 18:26

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	0.04	ug/L	J, B
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/29/2017 14:30

Instrument: NT2

Analyzed: 05-Dec-2017 18:26

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 14:30
Analyzed: 05-Dec-2017 18:26

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	112	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	114	%	
Surrogate: Toluene-d8		80-120 %	95.1	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	89.3	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	105	%	



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Reported:
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LMW-8-1117
17L0001-17 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 14:30

Instrument: NT6

Analyzed: 11-Dec-2017 19:00

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 14:30

Instrument: NT6

Analyzed: 11-Dec-2017 19:00

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	67.4	%	
Surrogate: Phenol-d5			38-120 %	71.4	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	70.5	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	57.9	%	
Surrogate: Nitrobenzene-d5			27-120 %	72.9	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	63.0	%	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/29/2017 14:30
Analyzed: 11-Dec-2017 19:00

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	69.4	%	
Surrogate: p-Terphenyl-d14		28-120 %	66.1	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				33.6-120 %	76.9	%	



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Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/29/2017 14:30
Analyzed: 04-Dec-2017 17:06

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	102	%	
Surrogate: n-Triacontane			50-150 %	105	%	



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/29/2017 14:30
Analyzed: 13-Dec-2017 15:05

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	120	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	116	%	
Surrogate: Tetrachlorometaxylene			30-120 %	89.4	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	92.2	%	



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Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/29/2017 14:30
Analyzed: 12-Dec-2017 22:29

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0142 Sample Size: 1000 mL
Prepared: 07-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CFL0060 Initial Volume: 0.5 mL
Cleaned: 11-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CFL0058 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfur
Cleanup Batch: CFL0059 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	72.1	%	
Surrogate: Tetrachlorometaxylene			32-120 %	65.0	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	74.5	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	47.5	%	



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Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8
Instrument: ICPMS2

Sampled: 11/29/2017 14:30
Analyzed: 12-Dec-2017 15:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/29/2017 14:30
Analyzed: 12-Dec-2017 15:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/29/2017 14:30
Analyzed: 12-Dec-2017 20:43

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051
Prepared: 04-Dec-2017

Sample Size: 25 mL
Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	46400	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	9480	ug/L	
Magnesium	7439-95-4	1	1000	24200	ug/L	
Manganese	7439-96-5	1	20.0	316	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	1400	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	8880	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-8-1117
17L0001-17 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/29/2017 14:30
Analyzed: 11-Dec-2017 15:10

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Project: Landsburg
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Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 15:10
Analyzed: 05-Dec-2017 18:47

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	0.06	ug/L	J



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/29/2017 15:10

Instrument: NT2

Analyzed: 05-Dec-2017 18:47

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/29/2017 15:10
Analyzed: 05-Dec-2017 18:47

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	113	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	118	%	
Surrogate: Toluene-d8		80-120 %	96.0	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	89.9	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



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Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 15:10

Instrument: NT6

Analyzed: 11-Dec-2017 19:33

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/29/2017 15:10

Instrument: NT6

Analyzed: 11-Dec-2017 19:33

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	61.3	%	
Surrogate: Phenol-d5			38-120 %	62.2	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	65.6	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	57.2	%	
Surrogate: Nitrobenzene-d5			27-120 %	69.0	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	62.1	%	



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19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/29/2017 15:10
Analyzed: 11-Dec-2017 19:33

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	67.8	%	
Surrogate: p-Terphenyl-d14		28-120 %	76.7	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8			33.6-120 %	77.9	%		



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Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/29/2017 15:10
Analyzed: 04-Dec-2017 17:54

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	96.4	%	
Surrogate: n-Triacontane			50-150 %	101	%	



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Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/29/2017 15:10
Analyzed: 13-Dec-2017 16:17

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	96.1	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	90.7	%	
Surrogate: Tetrachlorometaxylene			30-120 %	93.2	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	104	%	



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Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/29/2017 15:10
Analyzed: 12-Dec-2017 22:49

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0142 Sample Size: 1000 mL
Prepared: 07-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CFL0060 Initial Volume: 0.5 mL
Cleaned: 11-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CFL0058 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfur
Cleanup Batch: CFL0059 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	69.4	%	
Surrogate: Tetrachlorometaxylene			32-120 %	68.9	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	69.5	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	60.6	%	



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Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 11/29/2017 15:10

Instrument: ICPMS2

Analyzed: 12-Dec-2017 15:43

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Project Number: 923-1000-002 R273
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Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/29/2017 15:10
Analyzed: 12-Dec-2017 15:43

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/29/2017 15:10
Analyzed: 12-Dec-2017 20:47

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051 Sample Size: 25 mL
Prepared: 04-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	ND	ug/L	U
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	ND	ug/L	U
Magnesium	7439-95-4	1	1000	ND	ug/L	U
Manganese	7439-96-5	1	20.0	ND	ug/L	U
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	ND	ug/L	U
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	ND	ug/L	U
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

EB-1117
17L0001-19 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/29/2017 15:10
Analyzed: 11-Dec-2017 15:13

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/30/2017 09:50
Analyzed: 05-Dec-2017 19:08

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	0.27	ug/L	B
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/30/2017 09:50

Instrument: NT2

Analyzed: 05-Dec-2017 19:08

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/30/2017 09:50
Analyzed: 05-Dec-2017 19:08

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	116	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	115	%	
Surrogate: Toluene-d8		80-120 %	96.7	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	88.4	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	107	%	



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Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/30/2017 09:50

Instrument: NT6

Analyzed: 11-Dec-2017 20:06

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/30/2017 09:50

Instrument: NT6

Analyzed: 11-Dec-2017 20:06

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>			<i>33-120 %</i>	<i>64.5</i>	<i>%</i>	
<i>Surrogate: Phenol-d5</i>			<i>38-120 %</i>	<i>70.7</i>	<i>%</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>			<i>41-120 %</i>	<i>66.4</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>20-120 %</i>	<i>59.8</i>	<i>%</i>	
<i>Surrogate: Nitrobenzene-d5</i>			<i>27-120 %</i>	<i>70.0</i>	<i>%</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>			<i>33-120 %</i>	<i>65.3</i>	<i>%</i>	



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/30/2017 09:50
Analyzed: 11-Dec-2017 20:06

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	75.9	%	
Surrogate: p-Terphenyl-d14		28-120 %	74.6	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8			33.6-120 %	79.0	%		



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Reported:
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LMW-10-1117
17L0001-21 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/30/2017 09:50
Analyzed: 04-Dec-2017 18:10

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	94.7	%	
Surrogate: n-Triacontane			50-150 %	98.5	%	



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Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/30/2017 09:50
Analyzed: 13-Dec-2017 16:35

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	99.4	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	94.1	%	
Surrogate: Tetrachlorometaxylene			30-120 %	96.3	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	105	%	



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Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/30/2017 09:50
Analyzed: 12-Dec-2017 23:09

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BFL0142 Prepared: 07-Dec-2017	Sample Size: 1000 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CFL0060 Cleaned: 11-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CFL0058 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CFL0059 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	75.3	%	
Surrogate: Tetrachlorometaxylene			32-120 %	70.0	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	80.7	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	50.1	%	



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Metals and Metallic Compounds

Method: EPA 200.8
Instrument: ICPMS2

Sampled: 11/30/2017 09:50
Analyzed: 12-Dec-2017 15:48

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/30/2017 09:50
Analyzed: 12-Dec-2017 15:48

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/30/2017 09:50
Analyzed: 12-Dec-2017 20:51

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051 Sample Size: 25 mL
Prepared: 04-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	6410	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	ND	ug/L	U
Magnesium	7439-95-4	1	1000	2840	ug/L	
Manganese	7439-96-5	1	20.0	ND	ug/L	U
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	1140	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	78200	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-10-1117
17L0001-21 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/30/2017 09:50
Analyzed: 11-Dec-2017 15:16

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/30/2017 10:20
Analyzed: 05-Dec-2017 19:28

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	4.55	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/30/2017 10:20

Instrument: NT2

Analyzed: 05-Dec-2017 19:28

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/30/2017 10:20
Analyzed: 05-Dec-2017 19:28

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	112	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	116	%	
Surrogate: Toluene-d8		80-120 %	95.6	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	86.0	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	106	%	



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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/30/2017 10:20

Instrument: NT6

Analyzed: 11-Dec-2017 20:38

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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Project Number: 923-1000-002 R273
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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/30/2017 10:20

Instrument: NT6

Analyzed: 11-Dec-2017 20:38

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	68.7	%	
Surrogate: Phenol-d5			38-120 %	75.3	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	71.9	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	63.2	%	
Surrogate: Nitrobenzene-d5			27-120 %	72.0	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	68.4	%	



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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/30/2017 10:20
Analyzed: 11-Dec-2017 20:38

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	74.8	%	
Surrogate: p-Terphenyl-d14		28-120 %	71.5	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8			33.6-120 %	75.1	%		



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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/30/2017 10:20
Analyzed: 04-Dec-2017 14:40

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	90.4	%	
Surrogate: n-Triacontane			50-150 %	93.2	%	



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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/30/2017 10:20
Analyzed: 13-Dec-2017 16:53

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	106	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	99.6	%	
Surrogate: Tetrachlorometaxylene			30-120 %	83.6	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	84.1	%	



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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/30/2017 10:20
Analyzed: 12-Dec-2017 23:30

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0142 Sample Size: 1000 mL
Prepared: 07-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CFL0060 Initial Volume: 0.5 mL
Cleaned: 11-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CFL0058 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfur
Cleanup Batch: CFL0059 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	74.8	%	
Surrogate: Tetrachlorometaxylene			32-120 %	71.2	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	75.7	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	51.8	%	



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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 11/30/2017 10:20

Instrument: ICPMS2

Analyzed: 12-Dec-2017 15:53

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/30/2017 10:20
Analyzed: 12-Dec-2017 15:53

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/30/2017 10:20
Analyzed: 12-Dec-2017 21:04

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051 Sample Size: 25 mL
Prepared: 04-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	18300	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	ND	ug/L	U
Magnesium	7439-95-4	1	1000	14900	ug/L	
Manganese	7439-96-5	1	20.0	82.9	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	4130	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	2060	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Project: Landsburg
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Reported:
19-Dec-2017 13:08

P-3-1117
17L0001-23 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/30/2017 10:20
Analyzed: 11-Dec-2017 15:25

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Reported:
19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/30/2017 12:30
Analyzed: 05-Dec-2017 19:49

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	2.14	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/30/2017 12:30

Instrument: NT2

Analyzed: 05-Dec-2017 19:49

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/30/2017 12:30
Analyzed: 05-Dec-2017 19:49

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	117	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	115	%	
Surrogate: Toluene-d8		80-120 %	95.4	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	90.6	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	102	%	



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Reported:
19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/30/2017 12:30

Instrument: NT6

Analyzed: 11-Dec-2017 21:11

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/30/2017 12:30

Instrument: NT6

Analyzed: 11-Dec-2017 21:11

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	68.1	%	
Surrogate: Phenol-d5			38-120 %	72.8	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	68.7	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	62.3	%	
Surrogate: Nitrobenzene-d5			27-120 %	71.4	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	66.9	%	



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19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/30/2017 12:30
Analyzed: 11-Dec-2017 21:11

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	77.4	%	
Surrogate: p-Terphenyl-d14		28-120 %	75.0	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	2.0	ug/L	
Surrogate: 1,4-Dioxane-d8				33.6-120 %	73.7	%	



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19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/30/2017 12:30
Analyzed: 04-Dec-2017 18:26

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	88.3	%	
Surrogate: n-Triacontane			50-150 %	76.7	%	



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Reported:
19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/30/2017 12:30
Analyzed: 13-Dec-2017 17:11

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	117	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	111	%	
Surrogate: Tetrachlorometaxylene			30-120 %	94.7	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	93.7	%	



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19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/30/2017 12:30
Analyzed: 12-Dec-2017 23:50

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0142 Sample Size: 1000 mL
Prepared: 07-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CFL0060 Initial Volume: 0.5 mL
Cleaned: 11-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CFL0058 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Sulfur
Cleanup Batch: CFL0059 Initial Volume: 0.5 mL
Cleaned: 08-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	76.8	%	
Surrogate: Tetrachlorometaxylene			32-120 %	67.3	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	78.6	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	48.3	%	



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19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Metals and Metallic Compounds

Method: EPA 200.8
Instrument: ICPMS2

Sampled: 11/30/2017 12:30
Analyzed: 12-Dec-2017 15:58

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Reported:
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LMW-2-1117
17L0001-25 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/30/2017 12:30
Analyzed: 12-Dec-2017 15:58

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/30/2017 12:30
Analyzed: 12-Dec-2017 21:08

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051
Prepared: 04-Dec-2017

Sample Size: 25 mL
Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	104000	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	ND	ug/L	U
Magnesium	7439-95-4	1	1000	64300	ug/L	
Manganese	7439-96-5	1	20.0	195	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	2990	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	18600	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-2-1117
17L0001-25 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/30/2017 12:30
Analyzed: 11-Dec-2017 15:27

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-4-1117
17L0001-27 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/30/2017 14:10
Analyzed: 05-Dec-2017 20:09

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	0.05	ug/L	J, B
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-4-1117
17L0001-27 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/30/2017 14:10

Instrument: NT2

Analyzed: 05-Dec-2017 20:09

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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LMW-4-1117
17L0001-27 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/30/2017 14:10
Analyzed: 05-Dec-2017 20:09

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	115	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	116	%	
Surrogate: Toluene-d8		80-120 %	93.3	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	89.9	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	107	%	



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LMW-4-1117
17L0001-27 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/30/2017 14:10

Instrument: NT6

Analyzed: 11-Dec-2017 21:44

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0050 Sample Size: 500 mL
Prepared: 04-Dec-2017 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	1.0	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	1.0	ND	ug/L	U
2-Chlorophenol	95-57-8	1	1.0	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	1.0	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	1.0	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	2.0	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	1.0	ND	ug/L	U
2-Methylphenol	95-48-7	1	1.0	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	1.0	ND	ug/L	U
4-Methylphenol	106-44-5	1	2.0	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.0	ND	ug/L	U
Hexachloroethane	67-72-1	1	2.0	ND	ug/L	U
Nitrobenzene	98-95-3	1	1.0	ND	ug/L	U
Isophorone	78-59-1	1	1.0	ND	ug/L	U
2-Nitrophenol	88-75-5	1	3.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	3.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	1.0	ND	ug/L	U
Benzoic acid	65-85-0	1	20.0	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	3.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	1.0	ND	ug/L	U
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	5.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	3.0	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	5.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	3.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	5.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	1.0	ND	ug/L	U
2-Nitroaniline	88-74-4	1	3.0	ND	ug/L	U
Dimethylphthalate	131-11-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	3.0	ND	ug/L	U
3-Nitroaniline	99-09-2	1	3.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U



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LMW-4-1117
17L0001-27 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 11/30/2017 14:10

Instrument: NT6

Analyzed: 11-Dec-2017 21:44

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2,4-Dinitrophenol	51-28-5	1	20.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
4-Nitrophenol	100-02-7	1	10.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	3.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Diethyl phthalate	84-66-2	1	1.0	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	1.0	ND	ug/L	U
4-Nitroaniline	100-01-6	1	3.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	10.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	1.0	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	1.0	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	5.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	3.0	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
Benzofluoranthenes, Total		1	2.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
Surrogate: 2-Fluorophenol			33-120 %	64.6	%	
Surrogate: Phenol-d5			38-120 %	69.1	%	
Surrogate: 2-Chlorophenol-d4			41-120 %	68.1	%	
Surrogate: 1,2-Dichlorobenzene-d4			20-120 %	62.3	%	
Surrogate: Nitrobenzene-d5			27-120 %	70.7	%	
Surrogate: 2-Fluorobiphenyl			33-120 %	66.2	%	



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LMW-4-1117
17L0001-27 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D
Instrument: NT6

Sampled: 11/30/2017 14:10
Analyzed: 11-Dec-2017 21:44

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2,4,6-Tribromophenol		52-120 %	76.0	%	
Surrogate: p-Terphenyl-d14		28-120 %	75.3	%	

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BFL0079 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	2.3	ug/L	
Surrogate: 1,4-Dioxane-d8				33.6-120 %	76.4	%	



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LMW-4-1117
17L0001-27 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID
Instrument: FID3

Sampled: 11/30/2017 14:10
Analyzed: 04-Dec-2017 18:42

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0036 Sample Size: 500 mL
Prepared: 01-Dec-2017 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)		1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)		1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)		1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	89.3	%	
Surrogate: n-Triacontane			50-150 %	95.7	%	



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LMW-4-1117
17L0001-27 (Water)

Chlorinated Pesticides

Method: EPA 8081B
Instrument: ECD6

Sampled: 11/30/2017 14:10
Analyzed: 13-Dec-2017 17:29

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BFL0052 Sample Size: 500 mL
Prepared: 05-Dec-2017 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
alpha-BHC	319-84-6	1	0.025	ND	ug/L	U
beta-BHC	319-85-7	1	0.025	ND	ug/L	U
gamma-BHC (Lindane)	58-89-9	1	0.025	ND	ug/L	U
delta-BHC	319-86-8	1	0.025	ND	ug/L	U
Heptachlor	76-44-8	1	0.025	ND	ug/L	U
Aldrin	309-00-2	1	0.025	ND	ug/L	U
Heptachlor Epoxide	1024-57-3	1	0.050	ND	ug/L	U
trans-Chlordane (beta-Chlordane)	5103-74-2	1	0.025	ND	ug/L	U
cis-Chlordane (alpha-chlordane)	5103-71-9	1	0.025	ND	ug/L	U
Endosulfan I	959-98-8	1	0.025	ND	ug/L	U
4,4'-DDE	72-55-9	1	0.050	ND	ug/L	U
Dieldrin	60-57-1	1	0.050	ND	ug/L	U
Endrin	72-20-8	1	0.050	ND	ug/L	U
Endosulfan II	33213-65-9	1	0.050	ND	ug/L	U
4,4'-DDD	72-54-8	1	0.050	ND	ug/L	U
Endrin Aldehyde	7421-93-4	1	0.050	ND	ug/L	U
4,4'-DDT	50-29-3	1	0.050	ND	ug/L	U
Endosulfan Sulfate	1031-07-8	1	0.050	ND	ug/L	U
Endrin Ketone	53494-70-5	1	0.050	ND	ug/L	U
Methoxychlor	72-43-5	1	0.250	ND	ug/L	U
Toxaphene	8001-35-2	1	1.25	ND	ug/L	U
Surrogate: Decachlorobiphenyl			11-144 %	109	%	
Surrogate: Decachlorobiphenyl [2C]			11-144 %	102	%	
Surrogate: Tetrachlorometaxylene			30-120 %	85.8	%	
Surrogate: Tetrachlorometaxylene [2C]			30-120 %	86.0	%	



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LMW-4-1117
17L0001-27 (Water)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 11/30/2017 14:10
Analyzed: 13-Dec-2017 00:10

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BFL0142 Prepared: 07-Dec-2017	Sample Size: 1000 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CFL0060 Cleaned: 11-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CFL0058 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CFL0059 Cleaned: 08-Dec-2017	Initial Volume: 0.5 mL Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.010	ND	ug/L	U
Surrogate: Decachlorobiphenyl			29-120 %	58.1	%	
Surrogate: Tetrachlorometaxylene			32-120 %	63.4	%	
Surrogate: Decachlorobiphenyl [2C]			29-120 %	57.8	%	
Surrogate: Tetrachlorometaxylene [2C]			32-120 %	48.1	%	



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LMW-4-1117
17L0001-27 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 11/30/2017 14:10

Instrument: ICPMS2

Analyzed: 12-Dec-2017 16:03

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	3.00	ND	ug/L	U
Lead	7439-92-1	1	10.0	ND	ug/L	U
Thallium	7440-28-0	1	2.00	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-4-1117
17L0001-27 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2

Sampled: 11/30/2017 14:10
Analyzed: 12-Dec-2017 16:03

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BFL0118 Sample Size: 25 mL
Prepared: 06-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	ND	ug/L	U
Selenium	7782-49-2	1	5.00	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

LMW-4-1117
17L0001-27 (Water)

Metals and Metallic Compounds

Method: EPA 6010C
Instrument: ICP2

Sampled: 11/30/2017 14:10
Analyzed: 12-Dec-2017 21:13

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BFL0051 Sample Size: 25 mL
Prepared: 04-Dec-2017 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1000	ND	ug/L	U
Barium	7440-39-3	1	500	ND	ug/L	U
Beryllium	7440-41-7	1	2.0	ND	ug/L	U
Cadmium	7440-43-9	1	2.0	ND	ug/L	U
Calcium	7440-70-2	1	500	105000	ug/L	
Chromium	7440-47-3	1	1000	ND	ug/L	U
Cobalt	7440-48-4	1	10.0	ND	ug/L	U
Copper	7440-50-8	1	3.0	ND	ug/L	U
Iron	7439-89-6	1	200	711	ug/L	
Magnesium	7439-95-4	1	1000	64500	ug/L	
Manganese	7439-96-5	1	20.0	169	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	3360	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	24200	ug/L	
Vanadium	7440-62-2	1	3.0	ND	ug/L	U
Zinc	7440-66-6	1	20.0	ND	ug/L	U



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Reported:
19-Dec-2017 13:08

LMW-4-1117
17L0001-27 (Water)

Metals and Metallic Compounds

Method: EPA 7470A
Instrument: CETAC

Sampled: 11/30/2017 14:10
Analyzed: 11-Dec-2017 15:30

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BFL0120 Sample Size: 20 mL
Prepared: 06-Dec-2017 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	20	ND	ng/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Trip Blank
17L0001-29 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 14:10
Analyzed: 05-Dec-2017 15:23

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BFL0100 Sample Size: 10 mL
Prepared: 05-Dec-2017 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	2.50	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	0.50	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.10	0.06	ug/L	J, B
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.10	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	0.50	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U



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Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Trip Blank
17L0001-29 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 11/28/2017 14:10

Instrument: NT2

Analyzed: 05-Dec-2017 15:23

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.10	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.20	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.20	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.20	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Trip Blank
17L0001-29 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2

Sampled: 11/28/2017 14:10
Analyzed: 05-Dec-2017 15:23

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: Dibromofluoromethane		80-120 %	97.8	%	
Surrogate: 1,2-Dichloroethane-d4		80-129 %	107	%	
Surrogate: Toluene-d8		80-120 %	97.9	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	93.8	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	102	%	



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Volatile Organic Compounds - Quality Control

Batch BFL0100 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0100-BLK1)						Prepared: 05-Dec-2017 Analyzed: 05-Dec-2017 14:22					
Chloromethane	ND	0.09	0.50	ug/L							U
Vinyl Chloride	ND	0.06	0.10	ug/L							U
Bromomethane	ND	0.25	1.00	ug/L							U
Chloroethane	ND	0.09	0.20	ug/L							U
Trichlorofluoromethane	ND	0.04	0.20	ug/L							U
Acrolein	ND	2.48	2.50	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.04	0.20	ug/L							U
Acetone	ND	2.06	5.00	ug/L							U
1,1-Dichloroethene	ND	0.05	0.20	ug/L							U
Bromoethane	ND	0.04	0.20	ug/L							U
Iodomethane	ND	0.23	0.50	ug/L							U
Methylene Chloride	ND	0.49	1.00	ug/L							U
Acrylonitrile	ND	0.60	1.00	ug/L							U
Carbon Disulfide	0.13	0.04	0.10	ug/L							
trans-1,2-Dichloroethene	ND	0.05	0.20	ug/L							U
Vinyl Acetate	ND	0.07	0.20	ug/L							U
1,1-Dichloroethane	ND	0.05	0.20	ug/L							U
2-Butanone	ND	0.81	5.00	ug/L							U
2,2-Dichloropropane	ND	0.05	0.10	ug/L							U
cis-1,2-Dichloroethene	ND	0.04	0.20	ug/L							U
Chloroform	ND	0.03	0.20	ug/L							U
Bromochloromethane	ND	0.06	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.04	0.20	ug/L							U
1,1-Dichloropropene	ND	0.03	0.10	ug/L							U
Carbon tetrachloride	ND	0.04	0.20	ug/L							U
1,2-Dichloroethane	ND	0.07	0.20	ug/L							U
Benzene	ND	0.03	0.20	ug/L							U
Trichloroethene	ND	0.05	0.20	ug/L							U
1,2-Dichloropropane	ND	0.04	0.20	ug/L							U
Bromodichloromethane	ND	0.05	0.20	ug/L							U
Dibromomethane	ND	0.15	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	0.25	0.50	ug/L							U
4-Methyl-2-Pentanone	ND	0.97	2.50	ug/L							U
cis-1,3-Dichloropropene	ND	0.06	0.20	ug/L							U
Toluene	ND	0.04	0.20	ug/L							U



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Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Volatile Organic Compounds - Quality Control

Batch BFL0100 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0100-BLK1)						Prepared: 05-Dec-2017 Analyzed: 05-Dec-2017 14:22					
trans-1,3-Dichloropropene	ND	0.08	0.20	ug/L							U
2-Hexanone	ND	0.90	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.13	0.20	ug/L							U
1,3-Dichloropropane	ND	0.06	0.10	ug/L							U
Tetrachloroethene	ND	0.05	0.20	ug/L							U
Dibromochloromethane	ND	0.05	0.20	ug/L							U
1,2-Dibromoethane	ND	0.07	0.10	ug/L							U
Chlorobenzene	ND	0.02	0.20	ug/L							U
Ethylbenzene	ND	0.04	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.04	0.20	ug/L							U
m,p-Xylene	ND	0.05	0.40	ug/L							U
o-Xylene	ND	0.03	0.20	ug/L							U
Xylenes, total	ND	0.09	0.60	ug/L							U
Styrene	ND	0.05	0.20	ug/L							U
Bromoform	ND	0.06	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.06	0.10	ug/L							U
1,2,3-Trichloropropane	ND	0.13	0.20	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.32	1.00	ug/L							U
n-Propylbenzene	ND	0.02	0.20	ug/L							U
Bromobenzene	ND	0.06	0.20	ug/L							U
Isopropyl Benzene	ND	0.02	0.20	ug/L							U
2-Chlorotoluene	ND	0.02	0.10	ug/L							U
4-Chlorotoluene	ND	0.02	0.20	ug/L							U
t-Butylbenzene	ND	0.03	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.02	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.02	0.20	ug/L							U
s-Butylbenzene	ND	0.02	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.03	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.04	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.04	0.20	ug/L							U
n-Butylbenzene	0.03	0.02	0.20	ug/L							J
1,2-Dichlorobenzene	ND	0.04	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.37	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.11	0.50	ug/L							U
Hexachloro-1,3-Butadiene	0.11	0.07	0.20	ug/L							J



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Reported:
19-Dec-2017 13:08

Volatile Organic Compounds - Quality Control

Batch BFL0100 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0100-BLK1)											
						Prepared: 05-Dec-2017 Analyzed: 05-Dec-2017 14:22					
Naphthalene	ND	0.12	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.11	0.20	ug/L							U
Dichlorodifluoromethane	ND	0.05	0.20	ug/L							U
<i>Surrogate: Dibromofluoromethane</i>	5.08			ug/L	5.00		102	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.24			ug/L	5.00		105	80-129			
<i>Surrogate: Toluene-d8</i>	4.74			ug/L	5.00		94.8	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.69			ug/L	5.00		93.9	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.12			ug/L	5.00		102	80-120			
LCS (BFL0100-BS1)											
						Prepared: 05-Dec-2017 Analyzed: 05-Dec-2017 12:41					
Chloromethane	10.2	0.09	0.50	ug/L	10.0		102	60-138			
Vinyl Chloride	10.5	0.06	0.10	ug/L	10.0		105	66-133			
Bromomethane	9.44	0.25	1.00	ug/L	10.0		94.4	72-131			
Chloroethane	11.8	0.09	0.20	ug/L	10.0		118	60-155			
Trichlorofluoromethane	10.5	0.04	0.20	ug/L	10.0		105	80-129			
Acrolein	51.2	2.48	2.50	ug/L	50.0		102	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.4	0.04	0.20	ug/L	10.0		104	76-129			
Acetone	50.3	2.06	5.00	ug/L	50.0		101	58-142			
1,1-Dichloroethene	10.0	0.05	0.20	ug/L	10.0		100	69-135			
Bromoethane	9.72	0.04	0.20	ug/L	10.0		97.2	78-128			
Iodomethane	7.81	0.23	0.50	ug/L	10.0		78.1	56-147			Q
Methylene Chloride	10.2	0.49	1.00	ug/L	10.0		102	65-135			
Acrylonitrile	8.32	0.60	1.00	ug/L	10.0		83.2	64-134			
Carbon Disulfide	9.74	0.04	0.10	ug/L	10.0		97.4	78-125			B
trans-1,2-Dichloroethene	10.4	0.05	0.20	ug/L	10.0		104	78-128			
Vinyl Acetate	9.22	0.07	0.20	ug/L	10.0		92.2	55-138			
1,1-Dichloroethane	10.3	0.05	0.20	ug/L	10.0		103	76-124			
2-Butanone	52.7	0.81	5.00	ug/L	50.0		105	61-140			
2,2-Dichloropropane	10.5	0.05	0.10	ug/L	10.0		105	78-125			
cis-1,2-Dichloroethene	11.0	0.04	0.20	ug/L	10.0		110	80-121			
Chloroform	10.0	0.03	0.20	ug/L	10.0		100	80-122			
Bromochloromethane	10.4	0.06	0.20	ug/L	10.0		104	80-121			
1,1,1-Trichloroethane	10.1	0.04	0.20	ug/L	10.0		101	79-123			
1,1-Dichloropropene	11.7	0.03	0.10	ug/L	10.0		117	80-120			
Carbon tetrachloride	10.4	0.04	0.20	ug/L	10.0		104	53-137			



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Volatile Organic Compounds - Quality Control

Batch BFL0100 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFL0100-BS1)						Prepared: 05-Dec-2017 Analyzed: 05-Dec-2017 12:41					
1,2-Dichloroethane	9.77	0.07	0.20	ug/L	10.0		97.7	75-123			
Benzene	11.0	0.03	0.20	ug/L	10.0		110	80-120			
Trichloroethene	10.5	0.05	0.20	ug/L	10.0		105	80-120			
1,2-Dichloropropane	10.7	0.04	0.20	ug/L	10.0		107	80-120			
Bromodichloromethane	10.5	0.05	0.20	ug/L	10.0		105	80-121			
Dibromomethane	10.6	0.15	0.20	ug/L	10.0		106	80-120			
2-Chloroethyl vinyl ether	9.19	0.25	0.50	ug/L	10.0		91.9	74-127			
4-Methyl-2-Pentanone	56.7	0.97	2.50	ug/L	50.0		113	67-133			
cis-1,3-Dichloropropene	11.5	0.06	0.20	ug/L	10.0		115	80-124			
Toluene	10.7	0.04	0.20	ug/L	10.0		107	80-120			
trans-1,3-Dichloropropene	11.2	0.08	0.20	ug/L	10.0		112	71-127			
2-Hexanone	55.8	0.90	5.00	ug/L	50.0		112	69-133			
1,1,2-Trichloroethane	10.6	0.13	0.20	ug/L	10.0		106	80-121			
1,3-Dichloropropane	11.2	0.06	0.10	ug/L	10.0		112	80-120			
Tetrachloroethene	10.5	0.05	0.20	ug/L	10.0		105	80-120			
Dibromochloromethane	10.8	0.05	0.20	ug/L	10.0		108	65-135			
1,2-Dibromoethane	11.3	0.07	0.10	ug/L	10.0		113	80-121			
Chlorobenzene	10.4	0.02	0.20	ug/L	10.0		104	80-120			
Ethylbenzene	10.9	0.04	0.20	ug/L	10.0		109	80-120			
1,1,1,2-Tetrachloroethane	10.5	0.04	0.20	ug/L	10.0		105	80-120			
m,p-Xylene	23.1	0.05	0.40	ug/L	20.0		116	80-121			
o-Xylene	11.8	0.03	0.20	ug/L	10.0		118	80-121			
Xylenes, total	34.9	0.09	0.60	ug/L	30.0		116	76-127			
Styrene	12.1	0.05	0.20	ug/L	10.0		121	80-124			Q
Bromoform	10.7	0.06	0.20	ug/L	10.0		107	51-134			
1,1,2,2-Tetrachloroethane	10.5	0.06	0.10	ug/L	10.0		105	77-123			
1,2,3-Trichloropropane	10.6	0.13	0.20	ug/L	10.0		106	76-125			
trans-1,4-Dichloro 2-Butene	9.91	0.32	1.00	ug/L	10.0		99.1	55-129			
n-Propylbenzene	11.7	0.02	0.20	ug/L	10.0		117	78-130			
Bromobenzene	10.6	0.06	0.20	ug/L	10.0		106	80-120			
Isopropyl Benzene	12.0	0.02	0.20	ug/L	10.0		120	80-128			
2-Chlorotoluene	11.3	0.02	0.10	ug/L	10.0		113	78-122			
4-Chlorotoluene	11.6	0.02	0.20	ug/L	10.0		116	80-121			
t-Butylbenzene	11.8	0.03	0.20	ug/L	10.0		118	78-125			
1,3,5-Trimethylbenzene	12.0	0.02	0.20	ug/L	10.0		120	80-129			



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Volatile Organic Compounds - Quality Control

Batch BFL0100 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFL0100-BS1)											
						Prepared: 05-Dec-2017 Analyzed: 05-Dec-2017 12:41					
1,2,4-Trimethylbenzene	12.0	0.02	0.20	ug/L	10.0		120	80-127			
s-Butylbenzene	12.1	0.02	0.20	ug/L	10.0		121	78-129			Q
4-Isopropyl Toluene	12.3	0.03	0.20	ug/L	10.0		123	79-130			Q
1,3-Dichlorobenzene	11.0	0.04	0.20	ug/L	10.0		110	80-120			
1,4-Dichlorobenzene	10.3	0.04	0.20	ug/L	10.0		103	80-120			
n-Butylbenzene	12.4	0.02	0.20	ug/L	10.0		124	74-129			Q
1,2-Dichlorobenzene	10.5	0.04	0.20	ug/L	10.0		105	80-120			
1,2-Dibromo-3-chloropropane	10.7	0.37	0.50	ug/L	10.0		107	62-123			
1,2,4-Trichlorobenzene	11.7	0.11	0.50	ug/L	10.0		117	64-124			
Hexachloro-1,3-Butadiene	10.8	0.07	0.20	ug/L	10.0		108	58-123			
Naphthalene	11.5	0.12	0.50	ug/L	10.0		115	50-134			
1,2,3-Trichlorobenzene	11.6	0.11	0.20	ug/L	10.0		116	49-133			
Dichlorodifluoromethane	10.8	0.05	0.20	ug/L	10.0		108	48-147			
Surrogate: Dibromofluoromethane	4.77			ug/L	5.00		95.4	80-120			
Surrogate: 1,2-Dichloroethane-d4	4.69			ug/L	5.00		93.9	80-129			
Surrogate: Toluene-d8	5.12			ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	5.12			ug/L	5.00		102	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.02			ug/L	5.00		100	80-120			
LCS Dup (BFL0100-BSD1)											
						Prepared: 05-Dec-2017 Analyzed: 05-Dec-2017 13:42					
Chloromethane	9.72	0.09	0.50	ug/L	10.0		97.2	60-138	4.81	30	
Vinyl Chloride	10.2	0.06	0.10	ug/L	10.0		102	66-133	2.51	30	
Bromomethane	9.17	0.25	1.00	ug/L	10.0		91.7	72-131	2.97	30	
Chloroethane	11.3	0.09	0.20	ug/L	10.0		113	60-155	4.27	30	
Trichlorofluoromethane	10.2	0.04	0.20	ug/L	10.0		102	80-129	3.17	30	
Acrolein	50.6	2.48	2.50	ug/L	50.0		101	52-144	1.09	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.99	0.04	0.20	ug/L	10.0		99.9	76-129	3.58	30	
Acetone	51.3	2.06	5.00	ug/L	50.0		103	58-142	1.91	30	
1,1-Dichloroethene	9.89	0.05	0.20	ug/L	10.0		98.9	69-135	1.15	30	
Bromoethane	9.48	0.04	0.20	ug/L	10.0		94.8	78-128	2.56	30	
Iodomethane	10.0	0.23	0.50	ug/L	10.0		100	56-147	25.10	30	Q
Methylene Chloride	9.86	0.49	1.00	ug/L	10.0		98.6	65-135	3.38	30	
Acrylonitrile	8.00	0.60	1.00	ug/L	10.0		80.0	64-134	3.92	30	
Carbon Disulfide	9.64	0.04	0.10	ug/L	10.0		96.4	78-125	1.01	30	B
trans-1,2-Dichloroethene	10.2	0.05	0.20	ug/L	10.0		102	78-128	1.86	30	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Volatile Organic Compounds - Quality Control

Batch BFL0100 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BFL0100-BSD1)						Prepared: 05-Dec-2017 Analyzed: 05-Dec-2017 13:42					
Vinyl Acetate	9.25	0.07	0.20	ug/L	10.0		92.5	55-138	0.41	30	
1,1-Dichloroethane	10.2	0.05	0.20	ug/L	10.0		102	76-124	1.25	30	
2-Butanone	54.1	0.81	5.00	ug/L	50.0		108	61-140	2.60	30	
2,2-Dichloropropane	10.1	0.05	0.10	ug/L	10.0		101	78-125	4.25	30	
cis-1,2-Dichloroethene	10.3	0.04	0.20	ug/L	10.0		103	80-121	6.40	30	
Chloroform	9.88	0.03	0.20	ug/L	10.0		98.8	80-122	1.14	30	
Bromochloromethane	10.1	0.06	0.20	ug/L	10.0		101	80-121	3.10	30	
1,1,1-Trichloroethane	9.82	0.04	0.20	ug/L	10.0		98.2	79-123	3.10	30	
1,1-Dichloropropene	11.4	0.03	0.10	ug/L	10.0		114	80-120	2.34	30	
Carbon tetrachloride	10.1	0.04	0.20	ug/L	10.0		101	53-137	3.20	30	
1,2-Dichloroethane	9.61	0.07	0.20	ug/L	10.0		96.1	75-123	1.62	30	
Benzene	10.7	0.03	0.20	ug/L	10.0		107	80-120	2.79	30	
Trichloroethene	10.1	0.05	0.20	ug/L	10.0		101	80-120	3.52	30	
1,2-Dichloropropane	10.3	0.04	0.20	ug/L	10.0		103	80-120	3.82	30	
Bromodichloromethane	10.0	0.05	0.20	ug/L	10.0		100	80-121	4.51	30	
Dibromomethane	10.3	0.15	0.20	ug/L	10.0		103	80-120	2.88	30	
2-Chloroethyl vinyl ether	8.94	0.25	0.50	ug/L	10.0		89.4	74-127	2.76	30	
4-Methyl-2-Pentanone	56.2	0.97	2.50	ug/L	50.0		112	67-133	0.86	30	
cis-1,3-Dichloropropene	11.1	0.06	0.20	ug/L	10.0		111	80-124	3.68	30	
Toluene	10.3	0.04	0.20	ug/L	10.0		103	80-120	3.09	30	
trans-1,3-Dichloropropene	10.7	0.08	0.20	ug/L	10.0		107	71-127	4.87	30	
2-Hexanone	54.6	0.90	5.00	ug/L	50.0		109	69-133	2.09	30	
1,1,2-Trichloroethane	10.2	0.13	0.20	ug/L	10.0		102	80-121	4.20	30	
1,3-Dichloropropane	11.0	0.06	0.10	ug/L	10.0		110	80-120	2.18	30	
Tetrachloroethene	10.1	0.05	0.20	ug/L	10.0		101	80-120	3.96	30	
Dibromochloromethane	10.4	0.05	0.20	ug/L	10.0		104	65-135	3.47	30	
1,2-Dibromoethane	10.9	0.07	0.10	ug/L	10.0		109	80-121	3.48	30	
Chlorobenzene	10.0	0.02	0.20	ug/L	10.0		100	80-120	4.19	30	
Ethylbenzene	10.7	0.04	0.20	ug/L	10.0		107	80-120	1.97	30	
1,1,1,2-Tetrachloroethane	10.2	0.04	0.20	ug/L	10.0		102	80-120	2.19	30	
m,p-Xylene	22.6	0.05	0.40	ug/L	20.0		113	80-121	2.44	30	
o-Xylene	11.6	0.03	0.20	ug/L	10.0		116	80-121	1.88	30	
Xylenes, total	34.1	0.09	0.60	ug/L	30.0		114	76-127	2.25	30	
Styrene	11.7	0.05	0.20	ug/L	10.0		117	80-124	3.22	30	Q
Bromoform	10.3	0.06	0.20	ug/L	10.0		103	51-134	4.27	30	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Volatile Organic Compounds - Quality Control

Batch BFL0100 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BFL0100-BSD1)						Prepared: 05-Dec-2017 Analyzed: 05-Dec-2017 13:42					
1,1,2,2-Tetrachloroethane	10.0	0.06	0.10	ug/L	10.0		100	77-123	4.70	30	
1,2,3-Trichloropropane	10.2	0.13	0.20	ug/L	10.0		102	76-125	3.11	30	
trans-1,4-Dichloro 2-Butene	9.77	0.32	1.00	ug/L	10.0		97.7	55-129	1.44	30	
n-Propylbenzene	11.2	0.02	0.20	ug/L	10.0		112	78-130	4.90	30	
Bromobenzene	10.2	0.06	0.20	ug/L	10.0		102	80-120	3.71	30	
Isopropyl Benzene	11.4	0.02	0.20	ug/L	10.0		114	80-128	4.68	30	
2-Chlorotoluene	10.8	0.02	0.10	ug/L	10.0		108	78-122	3.88	30	
4-Chlorotoluene	10.9	0.02	0.20	ug/L	10.0		109	80-121	6.24	30	
t-Butylbenzene	11.3	0.03	0.20	ug/L	10.0		113	78-125	4.47	30	
1,3,5-Trimethylbenzene	11.3	0.02	0.20	ug/L	10.0		113	80-129	5.86	30	
1,2,4-Trimethylbenzene	11.5	0.02	0.20	ug/L	10.0		115	80-127	4.22	30	
s-Butylbenzene	11.5	0.02	0.20	ug/L	10.0		115	78-129	5.26	30	Q
4-Isopropyl Toluene	11.6	0.03	0.20	ug/L	10.0		116	79-130	6.05	30	Q
1,3-Dichlorobenzene	10.4	0.04	0.20	ug/L	10.0		104	80-120	5.49	30	
1,4-Dichlorobenzene	9.89	0.04	0.20	ug/L	10.0		98.9	80-120	4.07	30	
n-Butylbenzene	11.5	0.02	0.20	ug/L	10.0		115	74-129	8.25	30	Q
1,2-Dichlorobenzene	10.1	0.04	0.20	ug/L	10.0		101	80-120	4.27	30	
1,2-Dibromo-3-chloropropane	10.2	0.37	0.50	ug/L	10.0		102	62-123	4.16	30	
1,2,4-Trichlorobenzene	11.0	0.11	0.50	ug/L	10.0		110	64-124	6.50	30	
Hexachloro-1,3-Butadiene	10.4	0.07	0.20	ug/L	10.0		104	58-123	3.32	30	
Naphthalene	11.2	0.12	0.50	ug/L	10.0		112	50-134	2.04	30	
1,2,3-Trichlorobenzene	11.1	0.11	0.20	ug/L	10.0		111	49-133	4.26	30	
Dichlorodifluoromethane	10.5	0.05	0.20	ug/L	10.0		105	48-147	2.56	30	
Surrogate: Dibromofluoromethane	4.82			ug/L	5.00		96.5	80-120			
Surrogate: 1,2-Dichloroethane-d4	4.71			ug/L	5.00		94.3	80-129			
Surrogate: Toluene-d8	5.01			ug/L	5.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	5.11			ug/L	5.00		102	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.92			ug/L	5.00		98.4	80-120			



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Semivolatile Organic Compounds - Quality Control

Batch BFL0050 - EPA 3520C (Liq Liq)

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0050-BLK1)		Prepared: 04-Dec-2017 Analyzed: 11-Dec-2017 12:56								
Phenol	ND	1.0	ug/L							U
bis(2-chloroethyl) ether	ND	1.0	ug/L							U
2-Chlorophenol	ND	1.0	ug/L							U
1,3-Dichlorobenzene	ND	1.0	ug/L							U
1,4-Dichlorobenzene	ND	1.0	ug/L							U
Benzyl Alcohol	ND	2.0	ug/L							U
1,2-Dichlorobenzene	ND	1.0	ug/L							U
2-Methylphenol	ND	1.0	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	1.0	ug/L							U
4-Methylphenol	ND	2.0	ug/L							U
N-Nitroso-di-n-Propylamine	ND	1.0	ug/L							U
Hexachloroethane	ND	2.0	ug/L							U
Nitrobenzene	ND	1.0	ug/L							U
Isophorone	ND	1.0	ug/L							U
2-Nitrophenol	ND	3.0	ug/L							U
2,4-Dimethylphenol	ND	3.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	1.0	ug/L							U
Benzoic acid	ND	20.0	ug/L							U
2,4-Dichlorophenol	ND	3.0	ug/L							U
1,2,4-Trichlorobenzene	ND	1.0	ug/L							U
Naphthalene	ND	1.0	ug/L							U
4-Chloroaniline	ND	5.0	ug/L							U
Hexachlorobutadiene	ND	3.0	ug/L							U
4-Chloro-3-Methylphenol	ND	3.0	ug/L							U
2-Methylnaphthalene	ND	1.0	ug/L							U
Hexachlorocyclopentadiene	ND	5.0	ug/L							U
2,4,6-Trichlorophenol	ND	3.0	ug/L							U
2,4,5-Trichlorophenol	ND	5.0	ug/L							U
2-Chloronaphthalene	ND	1.0	ug/L							U
2-Nitroaniline	ND	3.0	ug/L							U
Dimethylphthalate	ND	1.0	ug/L							U
Acenaphthylene	ND	1.0	ug/L							U
2,6-Dinitrotoluene	ND	3.0	ug/L							U
3-Nitroaniline	ND	3.0	ug/L							U
Acenaphthene	ND	1.0	ug/L							U



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
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Semivolatile Organic Compounds - Quality Control

Batch BFL0050 - EPA 3520C (Liq Liq)

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0050-BLK1)		Prepared: 04-Dec-2017 Analyzed: 11-Dec-2017 12:56								
2,4-Dinitrophenol	ND	20.0	ug/L							U
Dibenzofuran	ND	1.0	ug/L							U
4-Nitrophenol	ND	10.0	ug/L							U
2,4-Dinitrotoluene	ND	3.0	ug/L							U
Fluorene	ND	1.0	ug/L							U
Diethyl phthalate	ND	1.0	ug/L							U
4-Chlorophenylphenyl ether	ND	1.0	ug/L							U
4-Nitroaniline	ND	3.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	10.0	ug/L							U
N-Nitrosodiphenylamine	ND	1.0	ug/L							U
4-Bromophenyl phenyl ether	ND	1.0	ug/L							U
Hexachlorobenzene	ND	1.0	ug/L							U
Pentachlorophenol	ND	10.0	ug/L							U
Phenanthrene	ND	1.0	ug/L							U
Anthracene	ND	1.0	ug/L							U
Carbazole	ND	1.0	ug/L							U
Di-n-Butylphthalate	ND	1.0	ug/L							U
Fluoranthene	ND	1.0	ug/L							U
Pyrene	ND	1.0	ug/L							U
Butylbenzylphthalate	ND	1.0	ug/L							U
Benzo(a)anthracene	ND	1.0	ug/L							U
3,3'-Dichlorobenzidine	ND	5.0	ug/L							U
Chrysene	ND	1.0	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	3.0	ug/L							U
Di-n-Octylphthalate	ND	1.0	ug/L							U
Benzo(a)pyrene	ND	1.0	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	1.0	ug/L							U
Dibenzo(a,h)anthracene	ND	1.0	ug/L							U
Benzo(g,h,i)perylene	ND	1.0	ug/L							U
Benzo(a)fluoranthene, Total	ND	2.0	ug/L							U
1-Methylnaphthalene	ND	1.0	ug/L							U
Surrogate: 2-Fluorophenol	25.7		ug/L	37.5		68.6	33-120			
Surrogate: Phenol-d5	28.1		ug/L	37.5		74.9	38-120			
Surrogate: 2-Chlorophenol-d4	27.5		ug/L	37.5		73.3	41-120			
Surrogate: 1,2-Dichlorobenzene-d4	15.7		ug/L	25.0		62.7	20-120			



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Reported:
19-Dec-2017 13:08

Semivolatile Organic Compounds - Quality Control

Batch BFL0050 - EPA 3520C (Liq Liq)

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0050-BLK1)		Prepared: 04-Dec-2017 Analyzed: 11-Dec-2017 12:56								
Surrogate: Nitrobenzene-d5	18.9		ug/L	25.0		75.7	27-120			
Surrogate: 2-Fluorobiphenyl	17.3		ug/L	25.0		69.1	33-120			
Surrogate: 2,4,6-Tribromophenol	29.1		ug/L	37.5		77.6	52-120			
Surrogate: p-Terphenyl-d14	20.3		ug/L	25.0		81.1	28-120			
LCS (BFL0050-BS1)		Prepared: 04-Dec-2017 Analyzed: 11-Dec-2017 13:30								
Phenol	14.5	1.0	ug/L	25.0		58.0	35-120			
bis(2-chloroethyl) ether	15.2	1.0	ug/L	25.0		60.7	46.5-120			
2-Chlorophenol	14.3	1.0	ug/L	25.0		57.1	48-120			
1,3-Dichlorobenzene	12.0	1.0	ug/L	25.0		47.9	34.2-120			
1,4-Dichlorobenzene	12.2	1.0	ug/L	25.0		48.7	36-120			
Benzyl Alcohol	15.1	2.0	ug/L	25.0		60.2	27.4-120			
1,2-Dichlorobenzene	12.6	1.0	ug/L	25.0		50.2	38.4-120			
2-Methylphenol	14.5	1.0	ug/L	25.0		58.1	47.8-120			
2,2'-Oxybis(1-chloropropane)	17.3	1.0	ug/L	25.0		69.2	40.4-120			
4-Methylphenol	16.0	2.0	ug/L	25.0		64.2	52.3-120			
N-Nitroso-di-n-Propylamine	16.6	1.0	ug/L	25.0		66.4	51.4-120			
Hexachloroethane	11.6	2.0	ug/L	25.0		46.6	29.5-120			
Nitrobenzene	16.0	1.0	ug/L	25.0		64.0	51.5-120			
Isophorone	20.6	1.0	ug/L	25.0		82.4	62.3-128			
2-Nitrophenol	15.9	3.0	ug/L	25.0		63.7	58.6-124			
2,4-Dimethylphenol	35.5	3.0	ug/L	75.0		47.3	38.5-120			
Bis(2-Chloroethoxy)methane	17.4	1.0	ug/L	25.0		69.7	52.9-120			
Benzoic acid	108	20.0	ug/L	138		78.6	38.2-120			
2,4-Dichlorophenol	42.7	3.0	ug/L	75.0		57.0	43.6-120			
1,2,4-Trichlorobenzene	12.7	1.0	ug/L	25.0		50.7	38.6-120			
Naphthalene	13.4	1.0	ug/L	25.0		53.5	40.5-120			
4-Chloroaniline	35.8	5.0	ug/L	75.0		47.7	42.7-120			
Hexachlorobutadiene	10.8	3.0	ug/L	25.0		43.4	32.3-120			
4-Chloro-3-Methylphenol	47.8	3.0	ug/L	75.0		63.7	51.9-120			
2-Methylnaphthalene	14.0	1.0	ug/L	25.0		55.9	47.3-120			
Hexachlorocyclopentadiene	44.5	5.0	ug/L	75.0		59.3	23.3-120			
2,4,6-Trichlorophenol	48.4	3.0	ug/L	75.0		64.5	47-120			
2,4,5-Trichlorophenol	49.5	5.0	ug/L	75.0		66.0	48.4-120			
2-Chloronaphthalene	16.0	1.0	ug/L	25.0		63.8	47.7-123			



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Semivolatile Organic Compounds - Quality Control

Batch BFL0050 - EPA 3520C (Liq Liq)

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFL0050-BS1)		Prepared: 04-Dec-2017 Analyzed: 11-Dec-2017 13:30								
2-Nitroaniline	52.4	3.0	ug/L	75.0		69.8	56.8-120			
Dimethylphthalate	21.5	1.0	ug/L	25.0		85.8	65.2-125			
Acenaphthylene	17.9	1.0	ug/L	25.0		71.4	44.1-120			
2,6-Dinitrotoluene	60.4	3.0	ug/L	75.0		80.5	69.3-140			
3-Nitroaniline	50.2	3.0	ug/L	75.0		66.9	60.9-120			
Acenaphthene	17.8	1.0	ug/L	25.0		71.3	50.4-120			
2,4-Dinitrophenol	136	20.0	ug/L	138		98.8	33.7-183			Q
Dibenzofuran	17.3	1.0	ug/L	25.0		69.0	49.9-120			
4-Nitrophenol	60.7	10.0	ug/L	75.0		81.0	50.2-136			
2,4-Dinitrotoluene	57.8	3.0	ug/L	75.0		77.1	66.8-132			
Fluorene	18.5	1.0	ug/L	25.0		74.0	57.8-120			
Diethyl phthalate	21.5	1.0	ug/L	25.0		85.9	68.1-120			
4-Chlorophenylphenyl ether	19.0	1.0	ug/L	25.0		76.2	59.1-127			
4-Nitroaniline	55.5	3.0	ug/L	75.0		74.0	56-122			
4,6-Dinitro-2-methylphenol	127	10.0	ug/L	138		92.7	37.9-162			
N-Nitrosodiphenylamine	16.7	1.0	ug/L	25.0		66.6	59.6-120			
4-Bromophenyl phenyl ether	18.1	1.0	ug/L	25.0		72.6	59.6-120			
Hexachlorobenzene	17.0	1.0	ug/L	25.0		68.0	53.7-120			
Pentachlorophenol	64.8	10.0	ug/L	75.0		86.4	40.3-128			
Phenanthrene	18.8	1.0	ug/L	25.0		75.1	58.8-120			
Anthracene	16.9	1.0	ug/L	25.0		67.6	60.5-120			
Carbazole	16.8	1.0	ug/L	25.0		67.1	59.7-120			
Di-n-Butylphthalate	22.6	1.0	ug/L	25.0		90.3	71-120			
Fluoranthene	20.4	1.0	ug/L	25.0		81.7	66.7-120			
Pyrene	21.0	1.0	ug/L	25.0		84.1	62.7-127			
Butylbenzylphthalate	23.7	1.0	ug/L	25.0		94.8	67.4-128			
Benzo(a)anthracene	22.5	1.0	ug/L	25.0		90.1	58.3-128			
3,3'-Dichlorobenzidine	49.7	5.0	ug/L	75.0		66.3	34.1-120			
Chrysene	22.0	1.0	ug/L	25.0		87.9	58.9-120			
bis(2-Ethylhexyl)phthalate	21.0	3.0	ug/L	25.0		83.9	68.3-123			
Di-n-Octylphthalate	21.3	1.0	ug/L	25.0		85.4	61.5-120			
Benzo(a)pyrene	22.2	1.0	ug/L	25.0		88.7	70.6-120			
Indeno(1,2,3-cd)pyrene	21.5	1.0	ug/L	25.0		86.1	46.5-120			
Dibenzo(a,h)anthracene	22.7	1.0	ug/L	25.0		90.9	49.6-120			
Benzo(g,h,i)perylene	20.5	1.0	ug/L	25.0		81.9	37-120			



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Semivolatile Organic Compounds - Quality Control

Batch BFL0050 - EPA 3520C (Liq Liq)

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFL0050-BS1) Prepared: 04-Dec-2017 Analyzed: 11-Dec-2017 13:30										
Benzofluoranthenes, Total	44.3	2.0	ug/L	50.0		88.5	66.5-120			
1-Methylnaphthalene	15.7	1.0	ug/L	25.0		62.7	46.9-120			
Surrogate: 2-Fluorophenol	21.4		ug/L	37.5		57.2	33-120			
Surrogate: Phenol-d5	23.7		ug/L	37.5		63.1	38-120			
Surrogate: 2-Chlorophenol-d4	22.9		ug/L	37.5		61.2	41-120			
Surrogate: 1,2-Dichlorobenzene-d4	12.4		ug/L	25.0		49.7	20-120			
Surrogate: Nitrobenzene-d5	16.0		ug/L	25.0		63.9	27-120			
Surrogate: 2-Fluorobiphenyl	15.9		ug/L	25.0		63.8	33-120			
Surrogate: 2,4,6-Tribromophenol	30.0		ug/L	37.5		80.0	52-120			
Surrogate: p-Terphenyl-d14	21.1		ug/L	25.0		84.4	28-120			
LCS Dup (BFL0050-BSD1) Prepared: 04-Dec-2017 Analyzed: 11-Dec-2017 14:03										
Phenol	15.2	1.0	ug/L	25.0		60.8	35-120	4.73	30	
bis(2-chloroethyl) ether	15.7	1.0	ug/L	25.0		62.6	46.5-120	3.12	30	
2-Chlorophenol	14.8	1.0	ug/L	25.0		59.2	48-120	3.62	30	
1,3-Dichlorobenzene	12.0	1.0	ug/L	25.0		47.9	34.2-120	0.13	30	
1,4-Dichlorobenzene	12.3	1.0	ug/L	25.0		49.1	36-120	0.88	30	
Benzyl Alcohol	15.0	2.0	ug/L	25.0		60.0	27.4-120	0.33	30	
1,2-Dichlorobenzene	12.9	1.0	ug/L	25.0		51.4	38.4-120	2.43	30	
2-Methylphenol	15.1	1.0	ug/L	25.0		60.5	47.8-120	4.11	30	
2,2'-Oxybis(1-chloropropane)	17.8	1.0	ug/L	25.0		71.4	40.4-120	3.08	30	
4-Methylphenol	16.8	2.0	ug/L	25.0		67.2	52.3-120	4.61	30	
N-Nitroso-di-n-Propylamine	16.6	1.0	ug/L	25.0		66.4	51.4-120	0.11	30	
Hexachloroethane	11.4	2.0	ug/L	25.0		45.5	29.5-120	2.40	30	
Nitrobenzene	16.9	1.0	ug/L	25.0		67.4	51.5-120	5.27	30	
Isophorone	20.1	1.0	ug/L	25.0		80.3	62.3-128	2.58	30	
2-Nitrophenol	16.4	3.0	ug/L	25.0		65.4	58.6-124	2.72	30	
2,4-Dimethylphenol	34.1	3.0	ug/L	75.0		45.4	38.5-120	4.16	30	
Bis(2-Chloroethoxy)methane	17.3	1.0	ug/L	25.0		69.4	52.9-120	0.53	30	
Benzoic acid	103	20.0	ug/L	138		74.8	38.2-120	5.00	30	
2,4-Dichlorophenol	44.0	3.0	ug/L	75.0		58.7	43.6-120	2.96	30	
1,2,4-Trichlorobenzene	13.0	1.0	ug/L	25.0		51.9	38.6-120	2.17	30	
Naphthalene	13.7	1.0	ug/L	25.0		55.0	40.5-120	2.78	30	
4-Chloroaniline	32.3	5.0	ug/L	75.0		43.0	42.7-120	10.30	30	
Hexachlorobutadiene	10.7	3.0	ug/L	25.0		42.7	32.3-120	1.57	30	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
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Semivolatile Organic Compounds - Quality Control

Batch BFL0050 - EPA 3520C (Liq Liq)

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BFL0050-BSD1)		Prepared: 04-Dec-2017 Analyzed: 11-Dec-2017 14:03								
4-Chloro-3-Methylphenol	48.1	3.0	ug/L	75.0		64.2	51.9-120	0.70	30	
2-Methylnaphthalene	14.3	1.0	ug/L	25.0		57.4	47.3-120	2.65	30	
Hexachlorocyclopentadiene	45.1	5.0	ug/L	75.0		60.1	23.3-120	1.27	30	
2,4,6-Trichlorophenol	49.4	3.0	ug/L	75.0		65.8	47-120	2.05	30	
2,4,5-Trichlorophenol	50.6	5.0	ug/L	75.0		67.5	48.4-120	2.26	30	
2-Chloronaphthalene	16.0	1.0	ug/L	25.0		64.0	47.7-123	0.30	30	
2-Nitroaniline	51.2	3.0	ug/L	75.0		68.2	56.8-120	2.34	30	
Dimethylphthalate	19.8	1.0	ug/L	25.0		79.1	65.2-125	8.07	30	
Acenaphthylene	17.7	1.0	ug/L	25.0		70.6	44.1-120	1.14	30	
2,6-Dinitrotoluene	57.9	3.0	ug/L	75.0		77.3	69.3-140	4.17	30	
3-Nitroaniline	45.3	3.0	ug/L	75.0		60.4	60.9-120	10.20	30	*
Acenaphthene	17.9	1.0	ug/L	25.0		71.7	50.4-120	0.51	30	
2,4-Dinitrophenol	130	20.0	ug/L	138		94.3	33.7-183	4.76	30	Q
Dibenzofuran	16.9	1.0	ug/L	25.0		67.6	49.9-120	2.09	30	
4-Nitrophenol	53.5	10.0	ug/L	75.0		71.3	50.2-136	12.80	30	
2,4-Dinitrotoluene	54.5	3.0	ug/L	75.0		72.7	66.8-132	5.84	30	
Fluorene	18.4	1.0	ug/L	25.0		73.5	57.8-120	0.60	30	
Diethyl phthalate	19.5	1.0	ug/L	25.0		77.9	68.1-120	9.78	30	
4-Chlorophenylphenyl ether	18.6	1.0	ug/L	25.0		74.4	59.1-127	2.31	30	
4-Nitroaniline	48.7	3.0	ug/L	75.0		65.0	56-122	13.00	30	
4,6-Dinitro-2-methylphenol	119	10.0	ug/L	138		86.3	37.9-162	7.13	30	
N-Nitrosodiphenylamine	15.9	1.0	ug/L	25.0		63.6	59.6-120	4.68	30	
4-Bromophenyl phenyl ether	17.3	1.0	ug/L	25.0		69.3	59.6-120	4.59	30	
Hexachlorobenzene	16.6	1.0	ug/L	25.0		66.5	53.7-120	2.29	30	
Pentachlorophenol	60.4	10.0	ug/L	75.0		80.5	40.3-128	7.05	30	
Phenanthrene	18.1	1.0	ug/L	25.0		72.5	58.8-120	3.57	30	
Anthracene	16.2	1.0	ug/L	25.0		64.8	60.5-120	4.26	30	
Carbazole	15.6	1.0	ug/L	25.0		62.6	59.7-120	7.01	30	
Di-n-Butylphthalate	19.7	1.0	ug/L	25.0		78.7	71-120	13.70	30	
Fluoranthene	18.5	1.0	ug/L	25.0		73.9	66.7-120	10.10	30	
Pyrene	19.0	1.0	ug/L	25.0		76.1	62.7-127	9.91	30	
Butylbenzylphthalate	20.3	1.0	ug/L	25.0		81.4	67.4-128	15.30	30	
Benzo(a)anthracene	19.7	1.0	ug/L	25.0		78.7	58.3-128	13.50	30	
3,3'-Dichlorobenzidine	37.6	5.0	ug/L	75.0		50.1	34.1-120	27.80	30	
Chrysene	19.3	1.0	ug/L	25.0		77.4	58.9-120	12.70	30	



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Semivolatile Organic Compounds - Quality Control

Batch BFL0050 - EPA 3520C (Liq Liq)

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BFL0050-BSD1)		Prepared: 04-Dec-2017 Analyzed: 11-Dec-2017 14:03								
bis(2-Ethylhexyl)phthalate	18.7	3.0	ug/L	25.0		75.0	68.3-123	11.30	30	
Di-n-Octylphthalate	18.8	1.0	ug/L	25.0		75.1	61.5-120	12.80	30	
Benzo(a)pyrene	19.8	1.0	ug/L	25.0		79.1	70.6-120	11.50	30	
Indeno(1,2,3-cd)pyrene	19.0	1.0	ug/L	25.0		75.9	46.5-120	12.50	30	
Dibenzo(a,h)anthracene	20.0	1.0	ug/L	25.0		80.1	49.6-120	12.60	30	
Benzo(g,h,i)perylene	18.6	1.0	ug/L	25.0		74.3	37-120	9.72	30	
Benzo(a)fluoranthene, Total	39.7	2.0	ug/L	50.0		79.3	66.5-120	11.00	30	
1-Methylnaphthalene	15.9	1.0	ug/L	25.0		63.8	46.9-120	1.75	30	
Surrogate: 2-Fluorophenol	22.3		ug/L	37.5		59.4	33-120			
Surrogate: Phenol-d5	24.1		ug/L	37.5		64.3	38-120			
Surrogate: 2-Chlorophenol-d4	23.2		ug/L	37.5		61.8	41-120			
Surrogate: 1,2-Dichlorobenzene-d4	12.2		ug/L	25.0		48.8	20-120			
Surrogate: Nitrobenzene-d5	16.2		ug/L	25.0		64.8	27-120			
Surrogate: 2-Fluorobiphenyl	15.5		ug/L	25.0		62.2	33-120			
Surrogate: 2,4,6-Tribromophenol	28.4		ug/L	37.5		75.6	52-120			
Surrogate: p-Terphenyl-d14	18.5		ug/L	25.0		73.8	28-120			



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Semivolatile Organic Compounds - Quality Control

Batch BFL0079 - EPA 3520C (Liq Liq)

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0079-BLK1) Prepared: 05-Dec-2017 Analyzed: 08-Dec-2017 12:56											
1,4-Dioxane	ND	0.2	0.4	ug/L							U
Surrogate: 1,4-Dioxane-d8	39.8			ug/L	50.0		79.5	33.6-120			
LCS (BFL0079-BS1) Prepared: 05-Dec-2017 Analyzed: 08-Dec-2017 13:29											
1,4-Dioxane	39.2	0.2	0.4	ug/L	50.0		78.5	39.9-120			
Surrogate: 1,4-Dioxane-d8	38.9			ug/L	50.0		77.8	33.6-120			
LCS Dup (BFL0079-BSD1) Prepared: 05-Dec-2017 Analyzed: 08-Dec-2017 14:02											
1,4-Dioxane	43.1	0.2	0.4	ug/L	50.0		86.2	39.9-120	9.42	30	
Surrogate: 1,4-Dioxane-d8	40.8			ug/L	50.0		81.6	33.6-120			



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Petroleum Hydrocarbons - Quality Control

Batch BFL0036 - EPA 3510C SepF

Instrument: FID3 Analyst: ML

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0036-BLK1)		Prepared: 01-Dec-2017 Analyzed: 04-Dec-2017 18:59								
Gasoline Range Organics (Tol-C12)	ND	0.25	mg/L							U
Diesel Range Organics (C12-C24)	ND	0.50	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	1.00	mg/L							U
Surrogate: o-Terphenyl	0.389		mg/L	0.450		86.4	50-150			
Surrogate: n-Triacontane	0.408		mg/L	0.450		90.7	50-150			



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Project Manager: Gary Zimmerman

Reported:
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Chlorinated Pesticides - Quality Control

Batch BFL0052 - EPA 3510C SepF

Instrument: ECD6 Analyst: YZ/JR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0052-BLK1)		Prepared: 05-Dec-2017 Analyzed: 13-Dec-2017 11:47								
alpha-BHC	ND	0.025	ug/L							U
beta-BHC	ND	0.025	ug/L							U
gamma-BHC (Lindane)	ND	0.025	ug/L							U
delta-BHC	ND	0.025	ug/L							U
Heptachlor	ND	0.025	ug/L							U
Aldrin	ND	0.025	ug/L							U
Heptachlor Epoxide	ND	0.050	ug/L							U
trans-Chlordane (beta-Chlordane)	ND	0.025	ug/L							U
cis-Chlordane (alpha-chlordane)	ND	0.025	ug/L							U
Endosulfan I	ND	0.025	ug/L							U
4,4'-DDE	ND	0.050	ug/L							U
Dieldrin	ND	0.050	ug/L							U
Endrin	ND	0.050	ug/L							U
Endosulfan II	ND	0.050	ug/L							U
4,4'-DDD	ND	0.050	ug/L							U
Endrin Aldehyde	ND	0.050	ug/L							U
4,4'-DDT	ND	0.050	ug/L							U
Endosulfan Sulfate	ND	0.050	ug/L							U
Endrin Ketone	ND	0.050	ug/L							U
Methoxychlor	ND	0.250	ug/L							U
Toxaphene	ND	1.25	ug/L							U
Surrogate: Decachlorobiphenyl	0.390		ug/L	0.400		97.6	11-144			
Surrogate: Decachlorobiphenyl [2C]	0.375		ug/L	0.400		93.7	11-144			
Surrogate: Tetrachlorometaxylene	0.370		ug/L	0.400		92.5	30-120			
Surrogate: Tetrachlorometaxylene [2C]	0.376		ug/L	0.400		93.9	30-120			

LCS (BFL0052-BS1)		Prepared: 05-Dec-2017 Analyzed: 13-Dec-2017 12:06								
alpha-BHC	0.225	0.025	ug/L	0.200		113	57-120			
beta-BHC	0.227	0.025	ug/L	0.200		113	59-120			
gamma-BHC (Lindane)	0.229	0.025	ug/L	0.200		114	62-120			
delta-BHC	0.219	0.025	ug/L	0.200		109	15-145			
Heptachlor	0.216	0.025	ug/L	0.200		108	54-120			
Aldrin	0.217	0.025	ug/L	0.200		108	47-120			
Heptachlor Epoxide	0.237	0.050	ug/L	0.200		118	63-120			
trans-Chlordane (beta-Chlordane)	0.238	0.025	ug/L	0.200		119	63-120			



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Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Chlorinated Pesticides - Quality Control

Batch BFL0052 - EPA 3510C SepF

Instrument: ECD6 Analyst: YZ/JR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFL0052-BS1) Prepared: 05-Dec-2017 Analyzed: 13-Dec-2017 12:06										
cis-Chlordane (alpha-chlordane)	0.234	0.025	ug/L	0.200		117	60-120			
Endosulfan I	0.238	0.025	ug/L	0.200		119	58-121			
4,4'-DDE	0.479	0.050	ug/L	0.400		120	69-128			
Dieldrin	0.482	0.050	ug/L	0.400		121	62-120			*
Endrin	0.420	0.050	ug/L	0.400		105	64-120			
Endosulfan II	0.422	0.050	ug/L	0.400		106	64-120			
4,4'-DDD	0.434	0.050	ug/L	0.400		109	63-120			
Endrin Aldehyde	0.379	0.050	ug/L	0.400		94.8	41-120			
4,4'-DDT	0.437	0.050	ug/L	0.400		109	57-124			
Endosulfan Sulfate	0.418	0.050	ug/L	0.400		104	47-120			
Endrin Ketone	0.438	0.050	ug/L	0.400		109	58-120			
Methoxychlor	2.26	0.250	ug/L	2.00		113	56-120			
Surrogate: Decachlorobiphenyl	0.377		ug/L	0.400		94.2	11-144			
Surrogate: Decachlorobiphenyl [2C]	0.363		ug/L	0.400		90.8	11-144			
Surrogate: Tetrachlorometaxylene	0.369		ug/L	0.400		92.3	30-120			
Surrogate: Tetrachlorometaxylene [2C]	0.377		ug/L	0.400		94.2	30-120			
LCS Dup (BFL0052-BSD1) Prepared: 05-Dec-2017 Analyzed: 13-Dec-2017 12:23										
alpha-BHC	0.242	0.025	ug/L	0.200		121	57-120	6.97	30	*
beta-BHC	0.243	0.025	ug/L	0.200		121	59-120	6.78	30	*
gamma-BHC (Lindane)	0.244	0.025	ug/L	0.200		122	62-120	6.41	30	*
delta-BHC	0.236	0.025	ug/L	0.200		118	15-145	7.60	30	
Heptachlor	0.225	0.025	ug/L	0.200		112	54-120	3.93	30	
Aldrin	0.221	0.025	ug/L	0.200		110	47-120	1.77	30	
Heptachlor Epoxide	0.253	0.050	ug/L	0.200		127	63-120	6.64	30	*
trans-Chlordane (beta-Chlordane)	0.252	0.025	ug/L	0.200		126	63-120	5.74	30	*
cis-Chlordane (alpha-chlordane)	0.249	0.025	ug/L	0.200		125	60-120	6.20	30	*
Endosulfan I	0.255	0.025	ug/L	0.200		127	58-121	6.76	30	*
4,4'-DDE	0.507	0.050	ug/L	0.400		127	69-128	5.70	30	
Dieldrin	0.517	0.050	ug/L	0.400		129	62-120	7.02	30	*
Endrin	0.440	0.050	ug/L	0.400		110	64-120	4.80	30	
Endosulfan II	0.451	0.050	ug/L	0.400		113	64-120	6.61	30	
4,4'-DDD	0.463	0.050	ug/L	0.400		116	63-120	6.42	30	
Endrin Aldehyde	0.414	0.050	ug/L	0.400		104	41-120	8.82	30	
4,4'-DDT	0.466	0.050	ug/L	0.400		117	57-124	6.37	30	



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Chlorinated Pesticides - Quality Control

Batch BFL0052 - EPA 3510C SepF

Instrument: ECD6 Analyst: YZ/JR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BFL0052-BSD1)		Prepared: 05-Dec-2017 Analyzed: 13-Dec-2017 12:23							
Endosulfan Sulfate	0.449	0.050	ug/L	0.400		112 47-120	7.31	30	
Endrin Ketone	0.475	0.050	ug/L	0.400		119 58-120	8.12	30	
Methoxychlor	2.41	0.250	ug/L	2.00		120 56-120	6.29	30	
Surrogate: Decachlorobiphenyl	0.380		ug/L	0.400		95.0 11-144			
Surrogate: Decachlorobiphenyl [2C]	0.365		ug/L	0.400		91.2 11-144			
Surrogate: Tetrachlorometaxylene	0.385		ug/L	0.400		96.1 30-120			
Surrogate: Tetrachlorometaxylene [2C]	0.397		ug/L	0.400		99.2 30-120			



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Reported:
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Aroclor PCB - Quality Control

Batch BFL0142 - EPA 3510C SepF

Instrument: ECD5 Analyst: JR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0142-BLK1) Prepared: 07-Dec-2017 Analyzed: 12-Dec-2017 18:06										
Aroclor 1016	ND	0.010	ug/L							U
Aroclor 1221	ND	0.010	ug/L							U
Aroclor 1232	ND	0.010	ug/L							U
Aroclor 1242	ND	0.010	ug/L							U
Aroclor 1248	ND	0.010	ug/L							U
Aroclor 1254	ND	0.010	ug/L							U
Aroclor 1260	ND	0.010	ug/L							U
Surrogate: Decachlorobiphenyl	0.0178		ug/L	0.0200		88.8	29-120			
Surrogate: Tetrachlorometaxylene	0.0146		ug/L	0.0200		72.8	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0171		ug/L	0.0200		85.7	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0108		ug/L	0.0200		54.2	32-120			
LCS (BFL0142-BS1) Prepared: 07-Dec-2017 Analyzed: 12-Dec-2017 18:26										
Aroclor 1016	0.047	0.010	ug/L	0.0500		93.2	54-120			
Aroclor 1260	0.042	0.010	ug/L	0.0500		83.5	51-128			
Surrogate: Decachlorobiphenyl	0.0138		ug/L	0.0200		69.1	29-120			
Surrogate: Tetrachlorometaxylene	0.0140		ug/L	0.0200		69.9	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0143		ug/L	0.0200		71.6	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.00997		ug/L	0.0200		49.9	32-120			
LCS Dup (BFL0142-BSD1) Prepared: 07-Dec-2017 Analyzed: 12-Dec-2017 18:46										
Aroclor 1016	0.042	0.010	ug/L	0.0500		84.1	54-120	10.30	30	
Aroclor 1260	0.035	0.010	ug/L	0.0500		70.0	51-128	17.60	30	
Surrogate: Decachlorobiphenyl	0.0118		ug/L	0.0200		58.9	29-120			
Surrogate: Tetrachlorometaxylene	0.0127		ug/L	0.0200		63.5	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0123		ug/L	0.0200		61.4	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.00905		ug/L	0.0200		45.3	32-120			



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Reported:
19-Dec-2017 13:08

Metals and Metallic Compounds - Quality Control

Batch BFL0051 - TWC EPA 3010A

Instrument: ICP2 Analyst: TCH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0051-BLK1) Prepared: 04-Dec-2017 Analyzed: 06-Dec-2017 13:36										
Aluminum	ND	1000	ug/L							U
Barium	ND	500	ug/L							U
Beryllium	ND	2.0	ug/L							U
Cadmium	ND	2.0	ug/L							U
Calcium	ND	500	ug/L							U
Chromium	ND	1000	ug/L							U
Cobalt	ND	10.0	ug/L							U
Copper	ND	3.0	ug/L							U
Iron	ND	200	ug/L							U
Magnesium	ND	1000	ug/L							U
Manganese	ND	20.0	ug/L							U
Nickel	ND	20.0	ug/L							U
Silver	ND	3.0	ug/L							U
Sodium	ND	500	ug/L							U
Sodium	ND	500	ug/L							U
Vanadium	ND	3.0	ug/L							U
Zinc	ND	20.0	ug/L							U

Blank (BFL0051-BLK2) Prepared: 04-Dec-2017 Analyzed: 14-Dec-2017 11:53										
Potassium	ND	500	ug/L							U

LCS (BFL0051-BS1) Prepared: 04-Dec-2017 Analyzed: 06-Dec-2017 14:00										
Aluminum	2010	1000	ug/L	2000		101	80-120			
Barium	2060	500	ug/L	2000		103	80-120			
Beryllium	499	2.0	ug/L	500		99.9	80-120			
Cadmium	492	2.0	ug/L	500		98.4	80-120			
Calcium	9770	500	ug/L	10000		97.7	80-120			
Chromium	ND	1000	ug/L	500		103	80-120			U
Cobalt	500	10.0	ug/L	500		100	80-120			
Copper	508	3.0	ug/L	500		102	80-120			
Iron	2000	200	ug/L	2000		100	80-120			
Magnesium	10100	1000	ug/L	10000		101	80-120			
Manganese	482	20.0	ug/L	500		96.4	80-120			
Nickel	511	20.0	ug/L	500		102	80-120			
Silver	531	3.0	ug/L	500		106	80-120			



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Metals and Metallic Compounds - Quality Control

Batch BFL0051 - TWC EPA 3010A

Instrument: ICP2 Analyst: TCH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFL0051-BS1) Prepared: 04-Dec-2017 Analyzed: 06-Dec-2017 14:00										
Sodium	9440	500	ug/L	10000		94.4	80-120			
Sodium	10300	500	ug/L	10000		103	80-120			
Vanadium	511	3.0	ug/L	500		102	80-120			
Zinc	495	20.0	ug/L	500		98.9	80-120			
LCS (BFL0051-BS2) Prepared: 04-Dec-2017 Analyzed: 14-Dec-2017 12:10										
Potassium	9320	500	ug/L	10000		93.2	80-120			
Duplicate (BFL0051-DUP1) Source: 17L0001-01 Prepared: 04-Dec-2017 Analyzed: 06-Dec-2017 13:48										
Aluminum	ND	1000	ug/L		ND					U
Barium	ND	500	ug/L		ND					U
Beryllium	ND	2.0	ug/L		ND					U
Cadmium	ND	2.0	ug/L		ND					U
Calcium	27000	500	ug/L		27300			0.92	20	
Chromium	ND	1000	ug/L		ND					U
Cobalt	ND	10.0	ug/L		ND					U
Copper	ND	3.0	ug/L		ND					U
Iron	2260	200	ug/L		2270			0.26	20	
Magnesium	13300	1000	ug/L		13500			0.86	20	
Manganese	32.3	20.0	ug/L		32.7			1.30	20	
Nickel	ND	20.0	ug/L		ND					U
Silver	ND	3.0	ug/L		ND					U
Sodium	6540	500	ug/L		6550			0.17	20	
Vanadium	ND	3.0	ug/L		ND					U
Zinc	ND	20.0	ug/L		ND					U
Duplicate (BFL0051-DUP2) Source: 17L0001-01 Prepared: 04-Dec-2017 Analyzed: 14-Dec-2017 11:57										
Potassium	640	500	ug/L		617			3.66	20	
Matrix Spike (BFL0051-MS1) Source: 17L0001-01 Prepared: 04-Dec-2017 Analyzed: 06-Dec-2017 13:56										
Aluminum	2040	1000	ug/L	2000	ND	102	75-125			
Barium	2160	500	ug/L	2000	ND	102	75-125			
Beryllium	501	2.0	ug/L	500	ND	100	75-125			
Cadmium	493	2.0	ug/L	500	ND	98.7	75-125			
Calcium	36500	500	ug/L	10000	27300	92.6	75-125			
Chromium	ND	1000	ug/L	500	ND	103	75-125			U



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19-Dec-2017 13:08

Metals and Metallic Compounds - Quality Control

Batch BFL0051 - TWC EPA 3010A

Instrument: ICP2 Analyst: TCH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BFL0051-MS1)		Source: 17L0001-01		Prepared: 04-Dec-2017 Analyzed: 06-Dec-2017 13:56						
Cobalt	492	10.0	ug/L	500	ND	98.5	75-125			
Copper	513	3.0	ug/L	500	ND	103	75-125			
Iron	4200	200	ug/L	2000	2270	96.6	75-125			
Magnesium	22900	1000	ug/L	10000	13500	94.6	75-125			
Manganese	508	20.0	ug/L	500	32.7	95.1	75-125			
Nickel	500	20.0	ug/L	500	ND	100	75-125			
Silver	535	3.0	ug/L	500	ND	107	75-125			
Sodium	17000	500	ug/L	10000	6550	104	75-125			
Vanadium	514	3.0	ug/L	500	ND	103	75-125			
Zinc	487	20.0	ug/L	500	ND	96.8	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BFL0051-MS2)		Source: 17L0001-01		Prepared: 04-Dec-2017 Analyzed: 14-Dec-2017 12:05						
Potassium	10300	500	ug/L	10000	617	97.0	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Reported:
19-Dec-2017 13:08

Metals and Metallic Compounds - Quality Control

Batch BFL0118 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: TCH

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0118-BLK1)			Prepared: 06-Dec-2017 Analyzed: 12-Dec-2017 15:23								
Antimony	121	ND	3.00	ug/L							U
Antimony	123	ND	3.00	ug/L							U
Lead	208	ND	10.0	ug/L							U
Thallium	205	ND	2.00	ug/L							U
Arsenic	75a	ND	3.00	ug/L							U
Selenium	78	ND	5.00	ug/L							U
LCS (BFL0118-BS1)			Prepared: 06-Dec-2017 Analyzed: 12-Dec-2017 15:05								
Antimony	121	27.7	3.00	ug/L	25.0		111	80-120			
Antimony	123	27.2	3.00	ug/L	25.0		109	80-120			
Lead	208	27.1	10.0	ug/L	25.0		108	80-120			
Thallium	205	26.8	2.00	ug/L	25.0		107	80-120			
Arsenic	75a	24.8	3.00	ug/L	25.0		99.3	80-120			
Selenium	78	81.3	5.00	ug/L	80.0		102	80-120			
Duplicate (BFL0118-DUP1)			Source: 17L0001-01		Prepared: 06-Dec-2017 Analyzed: 12-Dec-2017 14:50						
Antimony	121	ND	3.00	ug/L		ND					U
Lead	208	ND	10.0	ug/L		ND					U
Thallium	205	ND	2.00	ug/L		ND					U
Arsenic	75a	ND	3.00	ug/L		ND					U
Selenium	78	ND	5.00	ug/L		ND					U
Matrix Spike (BFL0118-MS1)			Source: 17L0001-01		Prepared: 06-Dec-2017 Analyzed: 12-Dec-2017 15:00						
Antimony	121	25.8	3.00	ug/L	25.0	ND	103	75-125			
Lead	208	24.4	10.0	ug/L	25.0	ND	97.4	75-125			
Thallium	205	24.4	2.00	ug/L	25.0	ND	97.8	75-125			
Arsenic	75a	26.2	3.00	ug/L	25.0	ND	105	75-125			
Selenium	78	83.4	5.00	ug/L	80.0	ND	104	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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19-Dec-2017 13:08

Metals and Metallic Compounds - Quality Control

Batch BFL0120 - TLM EPA 7470A low level

Instrument: CETAC Analyst: MCB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BFL0120-BLK1)		Prepared: 06-Dec-2017 Analyzed: 11-Dec-2017 14:32							
Mercury	ND	20	ng/L						U
LCS (BFL0120-BS1)		Prepared: 06-Dec-2017 Analyzed: 11-Dec-2017 14:35							
Mercury	201	20	ng/L	200	101	80-120			
Duplicate (BFL0120-DUP1)		Source: 17L0001-01 Prepared: 06-Dec-2017 Analyzed: 11-Dec-2017 14:40							
Mercury	ND	20	ng/L		ND				U
Matrix Spike (BFL0120-MS1)		Source: 17L0001-01 Prepared: 06-Dec-2017 Analyzed: 11-Dec-2017 14:43							
Mercury	105	20	ng/L	100	ND	105	75-125		

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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19-Dec-2017 13:08

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Thallium-205	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Selenium-78	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 6010C in Water	
Silver	WADOE,NELAP,DoD-ELAP
Aluminum	WADOE,NELAP,DoD-ELAP
Barium	WADOE,NELAP,DoD-ELAP,ADEC
Beryllium	WADOE,NELAP,DoD-ELAP
Calcium	WADOE,NELAP,DoD-ELAP
Cadmium	WADOE,NELAP,DoD-ELAP,ADEC
Cobalt	WADOE,NELAP,DoD-ELAP
Chromium	WADOE,NELAP,DoD-ELAP,ADEC
Copper	WADOE,NELAP,DoD-ELAP
Iron	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Magnesium	WADOE,NELAP,DoD-ELAP
Manganese	WADOE,NELAP,DoD-ELAP
Sodium	WADOE,NELAP,DoD-ELAP
Sodium-1	DoD-ELAP
Nickel	WADOE,NELAP,DoD-ELAP,ADEC
Vanadium	WADOE,NELAP,DoD-ELAP,ADEC
Zinc	WADOE,NELAP,DoD-ELAP
EPA 7470A in Water	
Mercury	WADOE,NELAP,DoD-ELAP,CALAP
EPA 8081B in Water	
alpha-BHC	WADOE,DoD-ELAP,NELAP,CALAP
alpha-BHC [2C]	WADOE,DoD-ELAP,NELAP,CALAP
beta-BHC	WADOE,DoD-ELAP,NELAP,CALAP
beta-BHC [2C]	WADOE,DoD-ELAP,NELAP,CALAP
gamma-BHC (Lindane)	WADOE,DoD-ELAP,NELAP,CALAP
gamma-BHC (Lindane) [2C]	WADOE,DoD-ELAP,NELAP,CALAP



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delta-BHC	WADOE,DoD-ELAP,NELAP,CALAP
delta-BHC [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Heptachlor	WADOE,DoD-ELAP,NELAP,CALAP
Heptachlor [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Aldrin	WADOE,DoD-ELAP,NELAP,CALAP
Aldrin [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Heptachlor Epoxide	WADOE,DoD-ELAP,NELAP,CALAP
Heptachlor Epoxide [2C]	WADOE,DoD-ELAP,NELAP,CALAP
trans-Chlordane (beta-Chlordane)	WADOE,DoD-ELAP,NELAP,CALAP
trans-Chlordane (beta-Chlordane) [2C]	WADOE,DoD-ELAP,NELAP,CALAP
cis-Chlordane (alpha-chlordane)	WADOE,DoD-ELAP,NELAP,CALAP
cis-Chlordane (alpha-chlordane) [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Endosulfan I	WADOE,DoD-ELAP,NELAP,CALAP
Endosulfan I [2C]	WADOE,DoD-ELAP,NELAP,CALAP
4,4'-DDE	WADOE,DoD-ELAP,NELAP,CALAP
4,4'-DDE [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Dieldrin	WADOE,DoD-ELAP,NELAP,CALAP
Dieldrin [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Endrin	WADOE,DoD-ELAP,NELAP,CALAP
Endrin [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Endosulfan II	WADOE,DoD-ELAP,NELAP,CALAP
Endosulfan II [2C]	WADOE,DoD-ELAP,NELAP,CALAP
4,4'-DDD	WADOE,DoD-ELAP,NELAP,CALAP
4,4'-DDD [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Endrin Aldehyde	WADOE,DoD-ELAP,NELAP,CALAP
Endrin Aldehyde [2C]	WADOE,DoD-ELAP,NELAP,CALAP
4,4'-DDT	WADOE,DoD-ELAP,NELAP,CALAP
4,4'-DDT [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Endosulfan Sulfate	WADOE,DoD-ELAP,NELAP,CALAP
Endosulfan Sulfate [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Endrin Ketone	WADOE,DoD-ELAP,NELAP,CALAP
Endrin Ketone [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Methoxychlor	WADOE,DoD-ELAP,NELAP,CALAP
Methoxychlor [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Hexachlorobutadiene	WADOE,DoD-ELAP,NELAP,CALAP
Hexachlorobutadiene [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Hexachlorobenzene	WADOE,DoD-ELAP,NELAP,CALAP
Hexachlorobenzene [2C]	WADOE,DoD-ELAP,NELAP,CALAP
2,4'-DDE	WADOE,DoD-ELAP,NELAP,CALAP
2,4'-DDE [2C]	WADOE,DoD-ELAP,NELAP,CALAP



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18300 NE Union Hill Road Suite 200
Redmond WA, 98052-3333

Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

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19-Dec-2017 13:08

2,4'-DDD	WADOE,DoD-ELAP,NELAP,CALAP
2,4'-DDD [2C]	WADOE,DoD-ELAP,NELAP,CALAP
2,4'-DDT	WADOE,DoD-ELAP,NELAP,CALAP
2,4'-DDT [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Oxychlordane	WADOE,DoD-ELAP,NELAP,CALAP
Oxychlordane [2C]	WADOE,DoD-ELAP,NELAP,CALAP
cis-Nonachlor	WADOE,DoD-ELAP,NELAP,CALAP
cis-Nonachlor [2C]	WADOE,DoD-ELAP,NELAP,CALAP
trans-Nonachlor	WADOE,DoD-ELAP,NELAP,CALAP
trans-Nonachlor [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Mirex	WADOE,DoD-ELAP,NELAP,CALAP
Mirex [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Hexachloroethane	WADOE,DoD-ELAP,NELAP,CALAP
Hexachloroethane [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Toxaphene	WADOE,DoD-ELAP,NELAP,CALAP
Toxaphene [2C]	WADOE,DoD-ELAP,NELAP,CALAP
Chlordane, technical	WADOE,DoD-ELAP,NELAP,CALAP
Chlordane, technical [2C]	WADOE,DoD-ELAP,NELAP,CALAP

EPA 8082A in Water

Aroclor 1016	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1260	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1268 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC

EPA 8260C in Water

Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
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Redmond WA, 98052-3333

Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE



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18300 NE Union Hill Road Suite 200
Redmond WA, 98052-3333

Project: Landsburg
Project Number: 923-1000-002 R273
Project Manager: Gary Zimmerman

Reported:
19-Dec-2017 13:08

1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8270D in Water

1,4-Dioxane	WADOE,NELAP,DoD-ELAP
Phenol	CALAP,WADOE,DoD-ELAP,NELAP
bis(2-chloroethyl) ether	CALAP,WADOE,DoD-ELAP,NELAP
2-Chlorophenol	CALAP,WADOE,DoD-ELAP,NELAP



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18300 NE Union Hill Road Suite 200
Redmond WA, 98052-3333

Project: Landsburg

Project Number: 923-1000-002 R273

Project Manager: Gary Zimmerman

Reported:

19-Dec-2017 13:08

1,3-Dichlorobenzene	CALAP,WADOE,DoD-ELAP,NELAP
1,4-Dichlorobenzene	CALAP,WADOE,DoD-ELAP,NELAP
Benzyl Alcohol	CALAP,WADOE,DoD-ELAP,NELAP
1,2-Dichlorobenzene	CALAP,WADOE,DoD-ELAP,NELAP
2-Methylphenol	CALAP,WADOE,DoD-ELAP,NELAP
4-Methylphenol	CALAP,WADOE,DoD-ELAP,NELAP
N-Nitroso-di-n-Propylamine	CALAP,WADOE,DoD-ELAP,NELAP
Hexachloroethane	CALAP,WADOE,DoD-ELAP,NELAP
Nitrobenzene	CALAP,WADOE,DoD-ELAP,NELAP
Isophorone	CALAP,WADOE,DoD-ELAP,NELAP
2-Nitrophenol	CALAP,WADOE,DoD-ELAP,NELAP
2,4-Dimethylphenol	CALAP,WADOE,DoD-ELAP,NELAP
Bis(2-Chloroethoxy)methane	CALAP,WADOE,DoD-ELAP,NELAP
Benzoic acid	CALAP,WADOE,DoD-ELAP,NELAP
2,4-Dichlorophenol	CALAP,WADOE,DoD-ELAP,NELAP
1,2,4-Trichlorobenzene	CALAP,WADOE,DoD-ELAP,NELAP
Naphthalene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
4-Chloroaniline	CALAP,WADOE,DoD-ELAP,NELAP
Hexachlorobutadiene	CALAP,WADOE,DoD-ELAP,NELAP
4-Chloro-3-Methylphenol	CALAP,WADOE,DoD-ELAP,NELAP
2-Methylnaphthalene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Hexachlorocyclopentadiene	CALAP,WADOE,DoD-ELAP,NELAP
2,4,6-Trichlorophenol	CALAP,WADOE,DoD-ELAP,NELAP
2,4,5-Trichlorophenol	CALAP,WADOE,DoD-ELAP,NELAP
2-Chloronaphthalene	CALAP,WADOE,DoD-ELAP,NELAP
2-Nitroaniline	CALAP,WADOE,DoD-ELAP,NELAP
Dimethylphthalate	CALAP,WADOE,DoD-ELAP,NELAP
Acenaphthylene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
2,6-Dinitrotoluene	CALAP,WADOE,DoD-ELAP,NELAP
3-Nitroaniline	CALAP,WADOE,DoD-ELAP,NELAP
Acenaphthene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
2,4-Dinitrophenol	CALAP,WADOE,DoD-ELAP,NELAP
Dibenzofuran	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
4-Nitrophenol	CALAP,WADOE,DoD-ELAP,NELAP
2,4-Dinitrotoluene	CALAP,WADOE,DoD-ELAP,NELAP
Fluorene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Diethyl phthalate	CALAP,WADOE,DoD-ELAP,NELAP
4-Chlorophenylphenyl ether	CALAP,WADOE,DoD-ELAP,NELAP
4-Nitroaniline	CALAP,WADOE,DoD-ELAP,NELAP
4,6-Dinitro-2-methylphenol	CALAP,WADOE,DoD-ELAP,NELAP



Golder Associates

18300 NE Union Hill Road Suite 200

Redmond WA, 98052-3333

Project: Landsburg

Project Number: 923-1000-002 R273

Project Manager: Gary Zimmerman

Reported:

19-Dec-2017 13:08

4-Bromophenyl phenyl ether	CALAP,WADOE,DoD-ELAP,NELAP
Hexachlorobenzene	CALAP,WADOE,DoD-ELAP,NELAP
Pentachlorophenol	CALAP,WADOE,DoD-ELAP,NELAP
Phenanthrene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Anthracene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Carbazole	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Di-n-Butylphthalate	CALAP,WADOE,DoD-ELAP,NELAP
Fluoranthene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Pyrene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Butylbenzylphthalate	CALAP,WADOE,DoD-ELAP,NELAP
Benzo(a)anthracene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Chrysene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
bis(2-Ethylhexyl)phthalate	CALAP,WADOE,DoD-ELAP,NELAP
Di-n-Octylphthalate	CALAP,WADOE,DoD-ELAP,NELAP
Benzo(b)fluoranthene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Benzo(k)fluoranthene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Benzo(a)pyrene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Indeno(1,2,3-cd)pyrene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Dibenzo(a,h)anthracene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Benzo(g,h,i)perylene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Benzofluoranthenes, Total	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
1-Methylnaphthalene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
N-Nitrosodimethylamine	CALAP,WADOE,DoD-ELAP,NELAP
Aniline	CALAP,WADOE,DoD-ELAP,NELAP
Benzidine	CALAP,WADOE,DoD-ELAP,NELAP
Retene	CALAP,WADOE,ADEC,DoD-ELAP,NELAP
Perylene	CALAP,WADOE,ADEC
Pyridine	CALAP,WADOE,DoD-ELAP,NELAP
N-Nitrosomethylethylamine	CALAP
2,6-Dichlorophenol	CALAP,WADOE
alpha-Terpineol	CALAP,WADOE,DoD-ELAP,NELAP
1,4-Dioxane	CALAP,WADOE,DoD-ELAP,NELAP
2,3,4,6-Tetrachlorophenol	CALAP,WADOE,DoD-ELAP
Triphenyl Phosphate	CALAP,WADOE,DoD-ELAP,NELAP
Butyl Diphenyl Phosphate	CALAP,WADOE,DoD-ELAP,NELAP
Dibutyl Phenyl Phosphate	CALAP,WADOE,DoD-ELAP,NELAP
Tributyl Phosphate	CALAP,WADOE,DoD-ELAP,NELAP
Butylated Hydroxytoluene	CALAP,WADOE,DoD-ELAP,NELAP
Azobenzene (1,2-DP-Hydrazine)	CALAP,WADOE,DoD-ELAP,NELAP
Tetrachloroguaiacol	CALAP,WADOE,DoD-ELAP



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18300 NE Union Hill Road Suite 200

Redmond WA, 98052-3333

Project: Landsburg

Project Number: 923-1000-002 R273

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Reported:

19-Dec-2017 13:08

3,4,5-Trichloroguaiacol	CALAP,WADOE,DoD-ELAP
3,4,6-Trichloroguaiacol	CALAP,WADOE,DoD-ELAP
4,5,6-Trichloroguaiacol	CALAP,WADOE,DoD-ELAP
Guaiacol	CALAP,WADOE,DoD-ELAP
1,2,4,5-Tetrachlorobenzene	CALAP,WADOE,DoD-ELAP,NELAP

NWTPH-HCID in Water

Gasoline Range Organics (Tol-C12)	NELAP,DoD-ELAP,WADOE
Diesel Range Organics (C12-C24)	NELAP,DoD-ELAP,WADOE
Motor Oil Range Organics (C24-C38)	NELAP,DoD-ELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	UST-033	05/11/2018
CALAP	California Department of Public Health CAELAP	2748	02/28/2018
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/07/2019
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006	05/11/2018
WADOE	WA Dept of Ecology	C558	06/30/2018
WA-DW	Ecology - Drinking Water	C558	06/30/2018



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Project: Landsburg
Project Number: 923-1000-002 R273
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Reported:
19-Dec-2017 13:08

Notes and Definitions

U	This analyte is not detected above the applicable reporting or detection limit.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
P1	The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
M	Estimated value for a GC/MS analyte detected and confirmed by an analyst but with low spectral match parameters.
J	Estimated concentration value detected below the reporting limit.
H	Hold time violation - Hold time was exceeded.
D	The reported value is from a dilution
B	This analyte was detected in the method blank.
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, Incorporated
Analytical Chemists and Consultants

12 February 2018

Gary Zimmerman
Golder Associates
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333

RE: Landsburg

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
18B0137

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com



Page: 1	of 1
Date: 2/4/13	Ice Present?
No. of Coolers:	Cooler Temps: 6.1

ARI Assigned Number: 1050137	Turn-around Requested: Results by 1000 2/14/18
ARI Client Company: Golder	Phone: 425-883-0777
Client Contact: G. Zimmerman	
Client Project Name: Landsburg	
Client Project #: 923-1000-002	Samplers: J.M./L.R.

[illegible]

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co- signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
12-Feb-2018 15:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
LMW-FB-0218	18B0137-01	Water	09-Feb-2018 09:20	09-Feb-2018 12:10
LMW-2-0218	18B0137-02	Water	09-Feb-2018 09:15	09-Feb-2018 12:10
LMW-4-0218	18B0137-03	Water	09-Feb-2018 11:00	09-Feb-2018 12:10



Golder Associates

18300 NE Union Hill Road Suite 200

Redmond WA, 98052-3333

Project: Landsburg

Project Number: 923-1000-002

Project Manager: Gary Zimmerman

Reported:

12-Feb-2018 15:27

Case Narrative

1,4-Dioxane- EPA Method SW8270D

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.



Analytical Resources,
Incorporated
Analytical Chemists and
Consultants

Cooler Receipt Form

ARI Client: Golder

Project Name: Landsbury

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 18B0137

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? _____

YES

NO

Were custody papers included with the cooler? _____

YES

NO

Were custody papers properly filled out (ink, signed, etc.) _____

YES

NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: 12:10

6.1

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: D005206

Cooler Accepted by: [Signature] Date: 02/09/18 Time: 12:10

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? _____

YES

NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? _____

NA

YES

NO

Were all bottles sealed in individual plastic bags? _____

YES

NO

Did all bottles arrive in good condition (unbroken)? _____

YES

NO

Were all bottle labels complete and legible? _____

YES

NO

Did the number of containers listed on COC match with the number of containers received? _____

YES

NO

Did all bottle labels and tags agree with custody papers? _____

YES

NO

Were all bottles used correct for the requested analyses? _____

YES

NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...

NA

YES

NO

Were all VOC vials free of air bubbles? _____

NA

YES

NO

Was sufficient amount of sample sent in each bottle? _____

YES

NO

Date VOC Trip Blank was made at ARI: _____

NA

Was Sample Split by ARI: NA YES Date/Time: _____ Equipment: _____ Split by: _____

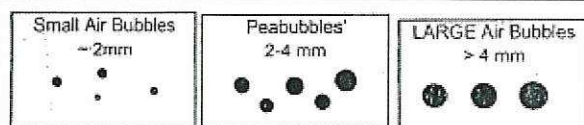
Samples Logged by: SEF Date: 2/9/18 Time: 1250

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Small → "sm" (< 2 mm)

Peabubbles → "pb" (2 to < 4 mm)

Large → "lg" (4 to < 6 mm)

Headspace → "hs" (> 6 mm)



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Project: Landsburg
Project Number: 923-1000-002
Project Manager: Gary Zimmerman

Reported:
12-Feb-2018 15:27

LMW-FB-0218
18B0137-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 02/09/2018 09:20

Instrument: NT12

Analyzed: 12-Feb-2018 13:27

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGB0224 Sample Size: 500 mL
Prepared: 09-Feb-2018 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	ND	ug/L	U
Surrogate: 1,4-Dioxane-d8				33.6-120 %	69.8	%	



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Project: Landsburg
Project Number: 923-1000-002
Project Manager: Gary Zimmerman

Reported:
12-Feb-2018 15:27

LMW-2-0218
18B0137-02 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 02/09/2018 09:15

Instrument: NT12

Analyzed: 12-Feb-2018 14:01

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGB0224 Sample Size: 500 mL
Prepared: 09-Feb-2018 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	2.1	ug/L	
Surrogate: 1,4-Dioxane-d8				33.6-120 %	85.7	%	



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Project: Landsburg
Project Number: 923-1000-002
Project Manager: Gary Zimmerman

Reported:
12-Feb-2018 15:27

LMW-4-0218
18B0137-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D

Sampled: 02/09/2018 11:00

Instrument: NT12

Analyzed: 12-Feb-2018 14:36

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGB0224 Sample Size: 500 mL
Prepared: 09-Feb-2018 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.2	0.4	2.3	ug/L	
Surrogate: 1,4-Dioxane-d8				33.6-120 %	87.4	%	



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Project: Landsburg
Project Number: 923-1000-002
Project Manager: Gary Zimmerman

Reported:
12-Feb-2018 15:27

Semivolatile Organic Compounds - Quality Control

Batch BGB0224 - EPA 3520C (Liq Liq)

Instrument: NT12 Analyst: JZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BGB0224-BLK1)										
					Prepared: 09-Feb-2018 Analyzed: 12-Feb-2018 12:19					
1,4-Dioxane	ND	0.2	0.4	ug/L						U
Surrogate: 1,4-Dioxane-d8	47.2			ug/L	50.0		94.4	33.6-120		
LCS (BGB0224-BS1)										
					Prepared: 09-Feb-2018 Analyzed: 12-Feb-2018 12:53					
1,4-Dioxane	46.2	0.2	0.4	ug/L	50.0		92.4	39.9-120		
Surrogate: 1,4-Dioxane-d8	47.2			ug/L	50.0		94.3	33.6-120		



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Project: Landsburg
Project Number: 923-1000-002
Project Manager: Gary Zimmerman

Reported:
12-Feb-2018 15:27

Certified Analyses included in this Report

Analyte	Certifications		
EPA 8270D in Water			
1,4-Dioxane	WADOE,NELAP,DoD-ELAP		
Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	UST-033	05/11/2018
CALAP	California Department of Public Health CAELAP	2748	02/28/2018
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/07/2019
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006	05/11/2018
WADOE	WA Dept of Ecology	C558	06/30/2018
WA-DW	Ecology - Drinking Water	C558	06/30/2018



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Project: Landsburg

Project Number: 923-1000-002

Project Manager: Gary Zimmerman

Reported:

12-Feb-2018 15:27

Notes and Definitions

U	This analyte is not detected above the applicable reporting or detection limit.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

APPENDIX B
SAMPLE INTEGRITY DATA SHEETS (SIDS)

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002
 Site Location Ravensdale, WA Sample ID LMW-2-1117
 Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 11/30/17 Time 1230

Media Water Station LMW-2

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - ~~6.0~~ ^{6.03} ft below TOC (monument at elev. X) (bottom at 38.1 ft bgs, 4-in casing) 1122

Screen Interval - 27.9-38.1 ft bgs Monument: 2.94 ags

Sand Pack Interval - 24.8-38.1 ft bgs (8-in hole) (~7.8 gal/sand pack vol)

Packer Depth - NA (~22.3 gal/casing vol) (~30.1 gal/total well vol)

Sample Description Sulfur Odor, Clear

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
4 - 500 ml ¹⁶ 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/30/17

Supervisor (signature) [Signature] Date 12-1-17

FIELD PARAMETERS SHEET

Well ID 641-2
 Date 11/30/17
 Time Begin Purge 1128
 Time Collect Sample 1230

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rel mV
—	1140	—	6.75	697	10.5	0.45	1.05	-51.2
—	1145	—	6.81	697	10.5	0.13	0.97	-89.7
—	1150	—	6.81	696	10.5	0.08	1.02	-102.2
—	1155	—	6.81	696	10.5	0.06	0.99	-105.2
—	1200	—	6.81	697	10.5	0.05	0.69	-111.2
—	1205	—	6.81	697	10.5	0.04	0.89	-114.0
—	1210	—	6.81	697	10.5	0.03	0.35	-117.4
—	1215	—	6.81	697	10.5	0.03	0.36	-119.2
—	1220	—	6.81	697	10.5	0.02	0.39	-121.3
—	1225	—	6.81	696	10.5	0.02	0.41	-123.2

Comments:

100 HT

$$\frac{5 \text{ gal}}{3 \text{ min}} = 1.66 \text{ gpm} \Rightarrow \frac{30 \text{ gal/well}}{1.66} = 18 \text{ min/well} \times 3 = 55 \text{ min}$$

Sampler's Initials

[Signature]

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002
 Site Location Ravensdale, WA Sample ID LMW-3-1117
 Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 11/29/17 Time 1140

Media Water Station LMW-3

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - 11.55 ft below TOC (monument at elev. X) (bottom at 64.8 ft bgs, 4-in casing) @ 1027

Screen Interval - 49.8-64.8 ft bgs Monument: 3.08 ags

Sand Pack Interval - 47.1-64.8 ft bgs (8-in hole) (~10.4 gal/sand pack)

Packer Depth - 39.33 ft bgs (~36.1 gal/casing vol) (~16.6 gal/packer casing volume)

(~27.0 gal/total well vol below packer)

Sample Description Clear No Odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 500 ml, 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/29/17

Supervisor (signature) [Signature] Date 12-1-17

FIELD PARAMETERS SHEET

Well ID LMH-3
Date 11/29/17
Time Begin Purge 1035
Time Collect Sample 1140

[illegible]

Comments:

Pressure 110 psi
Cured at 131 Hz

$$\frac{59 \text{ gal}}{4 \text{ min}} = 1.25 \text{ gpm} \rightarrow \frac{27.0 \text{ g cl/mol}}{1.25 \text{ gpm}} = 21.6 \frac{\text{mol}}{\text{min}} \times 3 = 65 \text{ min purge}$$

Sampler's Initials JX

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002
 Site Location Ravensdale, WA Sample ID LMW-4-1117
 Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 11/30/17 Time 1410

Media Water Station LMW-4

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - 7.91 ft below TOC (monument at elev. X) (bottom at 209.7 ft bgs, 4-in casing) @ 1248

Screen Interval - 195-209.7 ft bgs Monument: 2.76 ags

Sand Pack Interval - 189-209.7 ft bgs (8-in hole) (~12.3 gal/sand pack)

Packer Depth - 187.3 ft bgs (~133.3 gal/casing vol) (~14.6 gal/packer casing volume)

(~26.9 gal/total well vol below packer)

** Depths corrected for 70° inclination

Sample Description Sulfur odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 1/4 - 500 ml, 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOGs	Glass Amber	none

Sampler (signature) [Signature] Date 11/30/17

Supervisor (signature) [Signature] Date 12-1-17

FIELD PARAMETERS SHEET

Well ID LMW-4
 Date 11/30/17
 Time Begin Purge 1250
 Time Collect Sample 1410

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rel mV
-	1300	-	6.81	973	10.5	0.25	0.74	-83.3
-	1310	-	6.84	704	10.5	0.06	0.56	-135.1
-	1320	-	6.83	706	10.5	0.13	0.47	-157.1
-	1330	-	6.83	706	10.5	0.02	0.75	-166.6
-	1340	-	6.83	705	10.5	0.01	0.47	-172.4
-	1350	-	6.83	706	10.5	0.01	0.50	-152.3
-	1400	-	6.82	705	10.5	0.01	0.52	-193.6
-	1405	-	6.82	705	10.5	0.01	0.46	-201.0

Comments:

Packer 140 psi
 Grundfos 110 Hz

$$\frac{5 \text{ gal}}{4.5 \text{ min}} = 1.11 \text{ gpm}$$

$$\frac{27 \text{ gal / well volume}}{1.11} = 24.3 \text{ min/well} \times 3$$

= 75 min
 purge

Sampler's Initials

[Signature]

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002
 Site Location Ravensdale, WA Sample ID LMW-5-1117
 Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 11/26/17 Time 1320

Media Water Station LMW-5

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - 13.05 ft below TOC (monument at elev. X) (bottom at 241.8 ft bgs, 4-in casing) / 227

Screen Interval - 231.8-241.8 ft bgs Monument: 3.24 ags

Sand Pack Interval - 231.8-241.8 ft bgs (8-in hole) (~5.9 gal/sand pack)

Packer Depth - 222.11 ft bgs (~150.8 gal/casing vol) (~12.9 gal/packer casing volume)

(~18.7 gal/total well vol below packer)

Sample Description Clear No Odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 500 ml 4 - 500 ml, 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/29/17

Supervisor (signature) [Signature] Date 12-1-17

FIELD PARAMETERS SHEET

Well ID LMW-5
 Date 11/28/17
 Time Begin Purge 1235
 Time Collect Sample 1320

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rel mV
—	1245	—	6.84	574	10.8	0.12	0.71	-79.4
—	1250	—	6.84	574	10.8	0.07	0.75	-90.2
—	1255	—	6.84	575	10.8	0.05	1.06	-98.2
—	1300	—	6.84	576	10.8	0.03	1.65	-106.2
—	1305	—	6.84	575	10.8	0.03	1.79	-109.1
—	1310	—	6.84	574	10.8	0.02	2.22	-111.4
—	1315	—	6.84	576	10.8	0.02	2.09	-112.9

Comments: Packer 130psi PID 0.0

Grundfos 138Hz

$$\frac{5 \text{ gal}}{5.5 \text{ min}} = 0.91 \text{ gpm} \approx 1.43 \text{ gpm} \Rightarrow \frac{19 \text{ gal/well}}{1.43 \text{ gpm}} = 13.3 \frac{\text{min}}{\text{well}} \times 3 \approx 40 \text{ min}$$

Sampler's Initials AMX

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002

Site Location Ravensdale, WA Sample ID LMW-6-1117

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 11/28/17 Time 0950

Media Water Station LMW-6

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - 28.28 ft below TOC (monument at elev. X) (bottom at 105.9 ft bgs, 4-in casing) C 0850

Screen Interval - 90.9-105.9 ft bgs Monument: 3.05 ags

Sand Pack Interval - 82.5-105.9 ft bgs (8-in hole) (~13.7 gal/sand pack)

Packer Depth - 81.22 ft bgs (~53 gal/casing vol) (~16.1 gal/packer casing volume)

(~29.9 gal/total well vol below packer)

Sample Description Clog - No Odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 500 ml, 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/28/17

Supervisor (signature) [Signature] Date 12-1-17

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002
 Site Location Ravensdale, WA Sample ID LMW-7-1117, LMW-7-1117-D
 Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Pump Grundfos

Date 11/28/17 Time 1510/1520

Media Water Station LMW-7

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL -223.70 ft below TOC (monument at elev. X) (bottom at 253.7 ft bgs, 4-in casing) 1326

Screen Interval -239.6-253.7 ft bgs Monument: 3.09 ags

Sand Pack Interval -NA

Packer Depth -NA (~28.3 gal/casing vol) ** Depths corrected for 70° inclination

Sample Description Clear No Ode

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
6 – 40 mL	VOA	VOA Vial	HCl
2 – 500 ml	Total Metals	HDPE	HNO3 (non)
2 – 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
2 – 500 ml 8 – 500 ml, 4 – 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
4 – 1 Liter, 4 – 1 Liter	PCBs/Pest	Glass Amber	none
4 – 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/28/17

Supervisor (signature) [Signature] Date 12-1-17

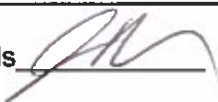
FIELD PARAMETERS SHEET

Well ID LMW 7
 Date 11/28/17
 Time Begin Purge 1336
 Time Collect Sample 1500/1520

Water Level feet bmp	Time	Volume Purged	pH	Conductivity uS/cm	Temp. °C	DO mg/L	Turbidity NTU	Eh Rel mV
—	1350	—	7.08	441.2	12.2	0.34	1.71	-72.4
—	1400	—	7.19	446.7	12.3	0.19	1.18	-72.7
—	1410	—	7.14	431.5	12.3	0.36	0.36	-76.7
—	1420	—	7.12	438.2	12.3	0.10	0.33	-78.5
—	1430	—	7.11	441.6	12.3	0.09	0.15	-79.8
—	1440	—	7.09	446.2	12.3	0.07	0.14	-81.8
—	1450	—	7.09	446.2	12.3	0.06	0.57	-82.2
—	1500	—	7.08	452.9	12.3	0.05	0.82	-82.4

Comments: Groundfos 34511E

$$\frac{59\text{ gal}}{4.67\text{ min}} = 1.07 \text{ gal/min} \quad \frac{28.3 \text{ gal/min}}{1.07 \text{ gal/min}} = 26.4 \text{ min/hall} \times 3 = 80 \text{ min/hall}$$

Sampler's Initials 

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002
 Site Location Ravensdale, WA Sample ID LMW-8-1117
 Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Dedicated Tubing and Peristaltic Pump, Bailer for VOC samples

Date 11/29/17 Time 1430

Media Water Station LMW-8

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - 334 ft below TOC (PVC at black notch) (bottom at 13 ft bgs, 2-in casing) 21345

Screen Interval - 8-13 ft bgs PVC stickup: 1.72 ags

Sand Pack Interval - 6-13 ft bgs (8-in hole) (~5.1 gal/sand pack)

Packer Depth - NA (~1.9 gal/casing vol) (~7.0 gal/total well vol)

Sample Description clear No Oils

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 500 ml 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/29/17

Supervisor (signature) [Signature] Date 12-1-17

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002
 Site Location Ravensdale, WA Sample ID LMW-9-1117
 Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Pump Grundfos and Dedicated Tubing

Date 11/29/17 Time 0435

Media Water Station LMW-9

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - 48.85 ft below TOC (PVC at black notch) (bottom at 159 ft bgs, 2-in casing) 0829

Screen Interval - 149-159 ft bgs PVC stickup: 2.86 ags

Sand Pack Interval - 143.5-159 ft bgs (8-in hole) (~11.4 gal/sand pack)

Packer Depth - NA (~10.2 gal/casing vol) (~21.6 gal/total well vol)

Sample Description Clear No Odor initial purge had small white flecks (PVC?)

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 500 ml , 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/29/17

Supervisor (signature) [Signature] Date 12-1-17

FIELD PARAMETERS SHEET

Well ID LMH-9
Date 11/29/17
Time Begin Purge 0849
Time Collect Sample 0935

[illegible]

Comments: Grandfosc 333Hz

$$\frac{5 \text{ gal}}{3.5 \text{ min}} = 1.43 \text{ gal/min} \Rightarrow \frac{21.6 \text{ gal/well}}{1.43 \text{ gpm}} = 15.1 \text{ min/well} \times 3 = 46 \text{ min/purse}$$

Sampler's Initials AM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002

Site Location Ravensdale, WA Sample ID LMW-10-1117

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler OED Bladder

Date 11/30/17 Time 0955

Media Water Station LMW-10

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - 0.00 ft below TOC (PVC) (bottom at 289 ft bgs, 4-in casing) 00910

Screen Interval - 267-289 ft bgs PVC stickup: 3.12 ags

Sand Pack Interval - 258-289 ft bgs (9-in hole) (~18.2 gal/sand pack)

Packer Depth - NA (~191 gal/casing vol) (~209 gal/total well vol)

Sample Description Clear No Odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 500 ml , 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/30/17

Supervisor (signature) [Signature] Date 12-1-17

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002

Site Location Ravensdale, WA Sample ID LMW-11-1117

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Pump Grundfos and OED Bladder

Date 11/28/17 Time 1200

Media Water Station LMW-11

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - 156.87 ft below TOC (PVC) (bottom at 707 ft bgs, 4-in casing) 102

Screen Interval - 696-707 ft bgs PVC stickup: 2.70 ags

Sand Pack Interval - 688-707 ft bgs (8-in hole) (~11.2 gal/sand pack)

Packer Depth - NA (~360.4 gal/casing vol) (~371.6 gal/total well vol)

Sample Description Clear Slight Sulfur Odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 500 ml , 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/28/17

Supervisor (signature) [Signature] Date 12-1-17

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002
 Site Location Ravensdale, WA Sample ID LMW-EB-1117
 Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Peristaltic Pump with new tubing

Date 11/29/17 Time 1510

Media Water Station LMW-8-1117

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - NA ft below TOC (PVC)

Sample Description lab provided DI

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 1/4 - 500 ml, 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/29/17

Supervisor (signature) [Signature] Date 12-1-17

FIELD PARAMETERS SHEET

Well ID EB
Date 11/29/17
Time Begin Purge
Time Collect Sample 1510

[illegible]

Comments:

Pumped loop provided DI through New tubing & Filter (dissolved metals)

Sampler's Initials

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002
 Site Location Ravensdale, WA Sample ID ~~LMW-~~ P-2-1117
 Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Peristaltic Pump with new tubing

Date 11/29/17 Time 1130
 Media Water Station ~~LMW-~~ South Portal

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - ft below TOC (PVC) Surface water

Sample Description Clear No Odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 - 40 mL	VOA	VOA Vial	HCl
1 - 500 ml	Total Metals	HDPE	HNO3 (non)
1 - 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
1 - 500 ml , 2 - 40 ml	TPH-HCID	Glass Amber, VOA Vial	HCl
2 - 1 Liter, 2 - 1 Liter	PCBs/Pest	Glass Amber	none
2 - 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/29/17

Supervisor (signature) [Signature] Date 12-1-17

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-002

Site Location Ravensdale, WA Sample ID ~~LMW~~ P-3-1117

Sampling Location Groundwater Monitoring Well End of dedicated sampling tube

Technical Procedure Reference(s) TP-1.4-6A, TP-1.2-20, TP-1.2-23

Type of Sampler Peristaltic Pump with new tubing

Date 11/30/17 Time 1020

Media Water Station ~~LMW~~ North Portal

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL - ft below TOC (PVC)

Sample Description Clear No Odor

Field Measurements on Sample (pH, conductivity, etc.)

SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
3 – 40 mL	VOA	VOA Vial	HCl
1 – 500 ml	Total Metals	HDPE	HNO3 (non)
1 – 500 ml	Dissolved Metals	HDPE	HNO3 (filter)
<u>1-500 ml, 2 – 40 ml</u>	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 1 Liter, 2 – 1 Liter	PCBs/Pest	Glass Amber	none
2 – 1 Liter	SVOCs	Glass Amber	none

Sampler (signature) [Signature] Date 11/30/17

Supervisor (signature) [Signature] Date 12-1-17

APPENDIX C
NOVEMBER 2017 LANDSBURG MINE SITE WATER QUALITY MONITORING DATA
VALIDATION AND QUALITY ASSURANCE / QUALITY CONTROL REVIEW MEMORANDUM

TECHNICAL MEMORANDUM

Date: February 13, 2018

Project No.: 923-1000-002.R273

To: Bill Kombol

Company: Palmer Coking Coal Company

From: Jason Yabandeh, Staff Environmental Chemist

Email: jyabandeh@golder.com

**RE: LANDSBURG MINE SITE NOVEMBER 2017 DATA VALIDATION & QUALITY ASSURANCE /
QUALITY CONTROL REVIEW**

This Data Usability Summary Report (DUSR) presents the findings of the data quality assessment performed on the analyses of water samples collected November 28 through November 30, 2017 and water samples that were re-collected February 9, 2018 in Landsburg Mine Site in Washington (Site) as part of the Landsburg Groundwater sampling project. Samples in the laboratory sample delivery group (SDG) as indicated in Table 1 were reviewed in this DUSR to identify quality issues which could affect the use of the sample data for decision making purposes.

A total of fifteen (15) water samples (this includes one field duplicate, one trip blank, and one equipment blank) were collected by Golder Associates Inc. (Golder) in November. A total of three (3) water samples (this includes one field blank) were re-collected by Golder in February. Samples were analyzed by Analytical Resources Inc. of Tukwila, Washington for the following parameters (note that the re-collected samples were only analyzed for 1,4-Dioxane):

- Volatile organic compounds (VOCs) by United States Environmental Protection Agency (EPA) SW-846 method 8260C;
- Semivolatile Organic Compounds (SVOCs) by EPA SW-846 method 8270D;
- Polychlorinated Biphenyls (PCBs) by EPA SW-846 method 8082A;
- Chlorinated Pesticides by EPA SW-846 method 8081B;
- Northwest Total Petroleum Hydrocarbon Identification Scan (NWTPH-HCID) by NWTPH-HCID Method; and,
- Total Metals by EPA SW-846 method 6010C and EPA method 200.8; and total mercury by EPA SW-846 method 7470A.

Samples were analyzed in accordance with procedures described in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA SW-846, 3rd edition; methods 8260C, 8270D, 8082A, 8081B, 6010C, and 7470A), EPA Methods for Chemical Analysis of Water and Wastes (MCAWW) method 200.8, and for Northwest Total Petroleum Hydrocarbon Methods. Quality assurance / quality control (QA/QC) reviews of laboratory data were performed in the laboratory in accordance with the laboratory quality assurance program plan.

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The data validation QA/QC review focused primarily on laboratory result summary sheets and quality control data to ensure that work plan data quality objectives were met for the project. Data validation was conducted in accordance with the criteria outlined in the National Function Guidelines for Inorganic Review (EPA 2017) and National Functional Guidelines for Organic Review (EPA 2017), modified to include method specific requirements of the laboratory and laboratory standard operating procedures (SOPs). Where there was a discrepancy between the QC criteria in the Guidelines and the QC criterion established in the analytic methodology, method-specific criteria, the QAPP, or professional judgment was used.

In general, chemical results for the samples collected at the Site were evaluated on the basis of laboratory preservation, hold times, lab and field blank contamination, outlying precision or accuracy parameters, or on the basis of professional judgment. The following definitions provide brief explanations of the qualifiers which may have been assigned to data during the data validation process.

Data Qualifier Definitions

J+	The result is an estimated quantity, but the may be biased high.
U	The constituent was analyzed for, but was not detected above the reported sample quantitation limit.
UJ	The constituent was not detected; the associated quantitation limit is an estimated value because quality control criteria were not met.

The validation level for the data is Tier 2A, and included the following:

- Data Package Completeness
- Verification of required deliverables
- Evaluation of holding times
- Laboratory narrative evaluation
- Evaluation and qualification of quality control elements for: Surrogates, Matrix Spike, Laboratory Control samples, Laboratory Duplicates, Method Blanks, and Field Blank and Field Duplicate evaluation as applicable
- Evaluation of detection limits

Raw data was not provided and calibration elements, including Gas Chromatograph (GC) instrument tuning and performance check, initial and continuing calibration, internal standard performance, and compound identification, were not evaluated unless information was provided by the lab in the case narratives. Data review and validation was performed by an experienced quality assurance chemist independent of the analytical laboratory and not directly involved in the project. Data qualifiers that were applied by the laboratory have been removed from the data summary report sheets, when applicable, and superseded by data validation qualifiers. Overall, the data review showed that data are acceptable for use except where

indicated by data qualifiers. For details about the data validation, refer to the data validation checklist in Attachment A. Table 2 is a summary of the qualifiers applied to the data.

Tables

Table 1	Sample Collection and Analysis Summary
Table 2	Qualifier Summary Table

Attachments

Attachment A Level 2A Data Validation Checklists

References

United States Environmental Protection Agency (EPA). 2017. USEPA Contract Laboratory Program, National Functional Guidelines for Inorganic Superfund Methods Data Review. OLEM 9355.0-135. EPA-540-R-2017-001, January.

EPA. 2017. USEPA Contract Laboratory Program, National Functional Guidelines for Organic Superfund Methods Data Review. OLEM 9355.0-136. EPA-540-R-2017-002, January.

USEPA. 2015. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846. Third Edition. Washington DC: USEPA Office of Solid Waste. Available on the Web at: <https://www.epa.gov/hw-sw846> (accessed January 5, 2017).

USEPA, Methods for Chemical Analysis of Water and Wastes (MCAWW), Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Cincinnati, Ohio, accessed at URL <https://www.epa.gov/cwa-methods/approved-cwa-test-methods-metals> (accessed January 5, 2017)

TABLES

Sample Collection and Analysis Summary
Landsburg Groundwater Monitoring - November 2017 and February 2018

SDG	Field Identification	Collection Date	Location	Lab Identification	Matrix	QC Samples	Analyses						
							VOCs by SW8260C	SVOCs by SW8270D	PCBs by SW8082A	Pesticides by SW8081B	TPH Scan by NWTPH-HCID	Total Metals by 6010C and 200.8	Total Mercury by SW7470A
17L0001	LMW-6-1117	11/28/2017	LMW-6	17L0001-01	Water	-	X	X	X	X	X	X	X
17L0001	LMW-11-1117	11/28/2017	LMW-11	17L0001-03	Water	-	X	X	X	X	X	X	X
17L0001	LMW-7-1117	11/28/2017	LMW-7	17L0001-05	Water	-	X	X	X	X	X	X	X
17L0001	LMW-7-1117-D	11/28/2017	LMW-7	17L0001-07	Water	FD (LMW-7-1117)	X	X	X	X	X	X	X
17L0001	LMW-9-1117	11/29/2017	LMW-9	17L0001-09	Water	-	X	X	X	X	X	X	X
17L0001	LMW-3-1117	11/29/2017	LMW-3	17L0001-11	Water	-	X	X	X	X	X	X	X
17L0001	P-2-1117*	11/29/2017	P-2*	17L0001-13	Water	-	X	X	X	X	X	X	X
17L0001	LMW-5-1117	11/29/2017	LMW-5	17L0001-15	Water	-	X	X	X	X	X	X	X
17L0001	LMW-8-1117	11/29/2017	LMW-8	17L0001-17	Water	-	X	X	X	X	X	X	X
17L0001	EB-1117	11/29/2017	LMW-8	17L0001-19	Water	EB (LMW-8-1117)	X	X	X	X	X	X	X
17L0001	LMW-10-1117	11/30/2017	LMW-10	17L0001-21	Water	-	X	X	X	X	X	X	X
17L0001	P-3-1117**	11/30/2017	P-3**	17L0001-23	Water	-	X	X	X	X	X	X	X
17L0001	LMW-2-1117	11/30/2017	LMW-2	17L0001-25	Water	-	X	X	X	X	X	X	X
17L0001	LMW-4-1117	11/30/2017	LMW-4	17L0001-27	Water	-	X	X	X	X	X	X	X
17L0001	Trip Blank	11/28/2017	-	17L0001-29	Water	TB	X						
18B0137	LMW-FB-0218***	2/9/2018	LMW-2	18B0137-01	Water	FB (LMW-2-0218)		X					
18B0137	LMW-2-0218***	2/9/2018	LMW-2	18B0137-02	Water	-		X					
18B0137	LMW-4-0218***	2/9/2018	LMW-4	18B0137-03	Water	-		X					

Notes:

All analyses performed by ARI Laboratories

*Correct Field ID is "Portal-3-1117". Correct Location is "Portal 3".

**Correct Field ID is "Portal-2-1117". Correct Location is "Portal 2".

***Samples analyzed only for 1,4-Dioxane by SW8270D

Abbreviations:

EB - Equipment Blank

FB - Field Blank

FD - Field Duplicate

MS - Matrix Spike

MSD - Matrix Spike Duplicate

PCBs - Polychlorinated Biphenyls

QC - Quality Control

SDG - Sample Delivery Group

SVOCs - Semivolatile Organic Compounds

TB - Trip Blank

TPH - Total Petroleum Hydrocarbon

VOCs - Volatile Organic Compounds

Qualifier Summary Table
Landsburg Groundwater Monitoring - November 2017 and February 2018

SDG	Sample Name	Constituent	New Result	New RL	Qualifier	Reason
17L0001	LMW-6-1117	Carbon Disulfide	0.1	-	U	Method blank contamination
17L0001	LMW-11-1117	Carbon Disulfide	0.1	-	U	Method blank contamination
17L0001	LMW-7-1117	Carbon Disulfide	0.1	-	U	Method blank contamination
17L0001	LMW-7-1117-D	Carbon Disulfide	0.1	-	U	Method blank contamination
17L0001	LMW-9-1117	Carbon Disulfide	0.1	-	U	Method blank contamination
17L0001	LMW-8-1117	Carbon Disulfide	0.1	-	U	Method blank contamination
17L0001	LMW-10-1117	Carbon Disulfide	-	-	J+	Method blank contamination
17L0001	LMW-4-1117	Carbon Disulfide	0.1	-	U	Method blank contamination
17L0001	LMW-6-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-11-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-7-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-7-1117-D	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-9-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-3-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	P-2-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-5-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-8-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-10-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	P-3-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-2-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria
17L0001	LMW-4-1117	3-Nitroaniline	-	-	UJ	LCSD recovery below acceptance criteria

Abbreviations

LCSD - Laboratory Control Sample Duplicate

RL - Reporting Limit

SDG - Sample Delivery Group

Qualifier Definitions

J+ - estimated, high bias

U - non detect

UJ - estimated, non-detect

ATTACHMENT A
LEVEL 2A DATA VALIDATION CHECKLIST

DATA REVIEW CHECKLIST - QA LEVEL II

Reviewing Company: Golder Associates

Project Manager: Gary Zimmerman

Project Name: Landsburg Groundwater 2017-11

Project Number: 923-1000-002.R273

Reviewer: Jason Yabandeh

Validation Date: January 22, 2018

Reviewed by: _____

Review Date: _____

Laboratory: Analytical Resources, Inc (Tukwila, WA)

SDG #: 17L0001

Analytical Method (type and no.): See Table 1

Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other _____

Work Plan or QAPP reference: Compliance Monitoring Plan and QAPP for Landsburg Mine Site (Exhibit D, to the Consent Decree, 2017).

Applicable Data Validation Guidance: National Functional Guidelines for Organic and Inorganic Review (USEPA 2017).

Sample Information: See Table 1 (attached)

Field/COC Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	☒	☐	☐	_____
b) Sampling team indicated?	☒	☐	☐	_____
c) Sample location noted?	☒	☐	☐	_____
d) Sample type indicated (grab/composite)?	☒	☐	☐	<u>Grab</u>
e) Field QC noted?	☒	☐	☐	<u>Field duplicate, equipment blank, trip blank</u>
f) Field parameters collected (note types)?	☒	☐	☐	_____
g) Was the COC signed by both field and laboratory personnel?	☒	☐	☐	_____
h) Were samples received in good condition?	☐	☒	☐	<u>See notes 1, 2, 3, and 4</u>
i) Were the correct preservatives used?	☒	☐	☐	_____
j) Was the sample cooler temperature within QC limits?	☒	☐	☐	_____

Laboratory Case Narrative

a) Does the laboratory narrative indicate deficiencies? ☒ ☐ ☐ See notes _____

Note Deficiencies:

- Certain analytes in the ICV were outside of QC criteria in the VOC and SVOC analyses.
- Certain analytes were detected in the VOCs method blank.
- Certain LCS/LCSD recoveries were outside of QC limits in the SVOC and pesticide analyses.

These issues are addressed in the appropriate sections below.

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Was the correct method used?	☒	☐	☐	_____
b) Were hold times met for sample pretreatment?	☒	☐	☐	_____
c) Were hold times met for sample analysis?	☒	☐	☐	_____
d) Were appropriate reporting limits achieved?	☒	☐	☐	_____
e) Were any sample dilutions noted?	☐	☒	☐	_____
f) Were any matrix problems noted?	☐	☒	☐	_____

DATA REVIEW CHECKLIST - QA LEVEL II

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☒	☐	☐	<u>See note 5</u>
b) Were analytes detected in the field blank(s)?	☐	☐	☒	
c) Were analytes detected in the equipment blank(s)?	☒	☐	☐	<u>See note 5</u>
d) Were analytes detected in the trip blank(s)?	☒	☐	☐	<u>See note 5</u>
e) Were analytes detected in the storage blank(s)?	☐	☐	☒	
Surrogate (System Monitoring) Compounds	YES	NO	NA	COMMENTS
a) Were surrogate compounds added to all samples?	☒	☐	☐	
b) Were recoveries within control limits?	☒	☐	☐	
c) Were surrogate recoveries not calculated due to dilutions?	☐	☒	☐	
d) Were recoveries not calculated due to interference?	☐	☒	☐	
Laboratory Control Sample	YES	NO	NA	COMMENTS
a) Was a LCS analyzed at the appropriate frequency?	☒	☐	☐	
b) Were the proper compounds included in the LCS?	☒	☐	☐	
c) Was the LCS accuracy criteria met?	☐	☒	☐	<u>See note 6</u>
Matrix Spike/Matrix Spike Duplicate	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☒	☐	☐	<u>Metals only</u>
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☒	☐	
b) Was MSD accuracy criteria met?	☒	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☒	☐	
c) Were MS/MSD precision criteria met?	☒	☐	☐	
Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☒	☐	☐	<u>See Table 1</u>
b) Were field dup. precision criteria met (20%)?	☒	☐	☐	<u>All RPDs are <20% or results are <5x RL</u>
c) Were lab duplicates analyzed (note original and duplicate samples)?	☒	☐	☐	<u>Metals only</u>
d) Were lab dup. precision criteria met (Note RPD)?	☒	☐	☐	
ICP Serial Dilution (SD)	YES	NO	NA	COMMENTS
a) Was an ICP SD analyzed once per SDG?	☐	☐	☒	
b) Was the ICP SD criteria met?	☐	☐	☒	
Overall Evaluation	YES	NO	NA	COMMENTS
a) Were there any other technical problems not previously addressed?	☒	☐	☐	<u>See notes 7 and 8</u>
b) Checked for transcription errors?	☒	☐	☐	
c) Do target analytes fall within calibration ranges?	☒	☐	☐	
d) Data are acceptable and usable except as noted?	☒	☐	☐	

DATA REVIEW CHECKLIST - QA LEVEL II

Comments/Notes:

1. The lab noted that some sample VOA vials were received with headspace bubbles less than 6 mm in diameter. Bubbles of this size are not known to adversely affect VOC recovery. No further action necessary other than to note.
2. The lab noted on the Cooler Receipt Form that sample time for LMW-10-1117 was written as 0950 on the COC and 0955 on the bottle labels. When discrepancies in sample time exist between the COC and bottle labels, the lab defers to the COC for sample log in purposes. However, according to the Sample Integrity Data Sheet for LMW-10-1117, the correct sample time is 0955. The sample time should be corrected in the database.
3. The lab noted on the Cooler Receipt Form that 12 trip blank vials were received, while the COC only indicated 6. No further action necessary other than to note.
4. The lab noted on the Cooler Receipt Form that one bottle for sample P-3-1117 broke during the lab's log in procedure. There was still sufficient sample volume to perform all analyses. No further action necessary other than to note.
5. See table below for a summary of method, trip, and equipment blank contamination. Following the Guidelines and using professional judgment, when the blank contamination is greater than the RL, associated detections that are greater than the RL but less than 10x the blank contamination are qualified as estimated with high bias (J+), while associated detections that are less than the RL are qualified as non-detect (U) at the RL and associated non-detections do not require qualification. When the blank contamination is less than the RL, associated non-detections do not require qualification.

Blank ID	Method	Analyte	Result (µg/L)	Qualifier	RL (µg/L)
BFL0100-BLK1	SW8260C	Carbon Disulfide	0.13		0.10
BFL0100-BLK1	SW8260C	n-Butylbenzene	0.03	J	0.20
BFL0100-BLK1	SW8260C	Hexachlorobutadiene	0.11	J	0.20
Trip Blank	SW8260C	Carbon Disulfide	0.06	J,B	0.10
EB-1117	SW8260C	Toluene	0.06	J	0.20

6. See table below for a summary of LCS/LCSD recoveries that are outside of QC criteria. Following the Guidelines and using professional judgment, when LCS/LCSD recovery is below acceptance criteria, associated non-detections are qualified as estimated (UJ). When LCS/LCSD recovery is above acceptance criteria, associated non-detections do not require qualification.

LCS/LCSD ID	Method	Analyte	Recovery (%)	Recovery Limits (%)	RPD (%)	RPD Limit (%)
BFL0050-BS1 / BSD1	SW8270D	3-Nitroaniline	66.9 / 60.4	60.9-120	10.20	30
BFL0052-BS1 / BSD1	SW8081B	alpha-BHC	113 / 121	57-120	6.97	30
BFL0052-BS1 / BSD1	SW8081B	beta-BHC	113 / 121	59-120	6.78	30
BFL0052-BS1 / BSD1	SW8081B	Lindane	114 / 122	62-120	6.41	30
BFL0052-BS1 / BSD1	SW8081B	Heptachlor Epoxide	118 / 127	63-120	6.64	30
BFL0052-BS1 / BSD1	SW8081B	trans-Chlordane	119 / 126	63-120	5.74	30
BFL0052-BS1 / BSD1	SW8081B	cis-Chlordane	117 / 125	60-120	6.20	30
BFL0052-BS1 / BSD1	SW8081B	Endosulfan I	119 / 127	58-121	6.76	30
BFL0052-BS1 / BSD1	SW8081B	Dieldrin	121 / 129	62-120	7.02	30

7. The lab notes in the case narrative that the VOC and SVOC ICV recoveries were outside of control limits for some analytes. Review of calibration data is outside of the scope of a level II validation, and the calibration summaries were not provided by the lab as part of this data package. Using professional judgment, the ICV information provided in the case narrative was reviewed only to determine if serious deficiencies warranting data rejection were present. No rejection of data is required. Remove all "Q" qualifiers applied to primary samples.
8. See table below for a summary of samples that were named incorrectly during collection. Note that for the purpose of clarity samples are referred to by their original names in this data validation. The sample names should be corrected prior to database upload.

Original Sample Name	Correct Sample Name
P-2-1117	Portal-3-1117
P-3-1117	Portal 2-1117

Data Qualification: See Table 2.

DATA REVIEW CHECKLIST - QA LEVEL II

Definitions:

SDG: Sample Delivery Group	QC: Quality Control
COC: Chain of Custody	QAPP: Quality Assurance Project Plan
VOC: Volatile Organic Compound	SVOC: Semivolatile Organic Compound
TCL: Target Compound List	PCB: Polychlorinated Biphenyl
%D: Percent Difference	RPD: Relative Percent Difference
LCS: Laboratory Control Sample	RSD: Relative Standard Deviation
MS/MSD: Matrix Spike/Matrix Spike Duplicate	CRDL: Contract Required Quantitation Limit
MDL: Method Detection Limit	RL: Reporting Limit
%R: Percent Recovery	PEM: Performance Evaluation Mixture
CC: Continuing Calibration	SPCC: System Performance Check Compound
RRF: Relative Response Factor	RT: Retention Time
TCLP: Toxicity Characteristic Leaching Procedure	LOQ: Limit of Quantitation

DATA REVIEW CHECKLIST - QA LEVEL II

Reviewing Company: Golder Associates

Project Manager: Gary Zimmerman

Project Name: Landsburg GW Resample 2018-02

Project Number: 923-1000-002.R273

Reviewer: Jason Yabandeh

Validation Date: February 13, 2018

Reviewed by: _____

Review Date: _____

Laboratory: Analytical Resources, Inc (Tukwila, WA)

SDG #: 18B0137

Analytical Method (type and no.): See Table 1

Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other _____

Work Plan or QAPP reference: Compliance Monitoring Plan and QAPP for Landsburg Mine Site (Exhibit D, to the Consent Decree, 2017).

Applicable Data Validation Guidance: National Functional Guidelines for Organic and Inorganic Review (USEPA 2017).

Sample Information: See Table 1 (attached)

Field/COC Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	☒	☐	☐	
b) Sampling team indicated?	☒	☐	☐	
c) Sample location noted?	☒	☐	☐	
d) Sample type indicated (grab/composite)?	☒	☐	☐	<u>Grab</u>
e) Field QC noted?	☒	☐	☐	<u>Field blank</u>
f) Field parameters collected (note types)?	☒	☐	☐	
g) Was the COC signed by both field and laboratory personnel?	☒	☐	☐	
h) Were samples received in good condition?	☒	☐	☐	
i) Were the correct preservatives used?	☒	☐	☐	
j) Was the sample cooler temperature within QC limits?	☐	☒	☐	<u>See note 1</u>

Laboratory Case Narrative

a) Does the laboratory narrative indicate deficiencies? ☐ YES ☒ NO ☐ NA _____

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Was the correct method used?	☒	☐	☐	
b) Were hold times met for sample pretreatment?	☒	☐	☐	
c) Were hold times met for sample analysis?	☒	☐	☐	
d) Were appropriate reporting limits achieved?	☒	☐	☐	
e) Were any sample dilutions noted?	☐	☒	☐	
f) Were any matrix problems noted?	☐	☒	☐	

DATA REVIEW CHECKLIST - QA LEVEL II

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☐	☒	☐	
b) Were analytes detected in the field blank(s)?	☐	☒	☐	
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	
e) Were analytes detected in the storage blank(s)?	☐	☐	☒	
Surrogate (System Monitoring) Compounds	YES	NO	NA	COMMENTS
a) Were surrogate compounds added to all samples?	☒	☐	☐	
b) Were recoveries within control limits?	☒	☐	☐	
c) Were surrogate recoveries not calculated due to dilutions?	☐	☒	☐	
d) Were recoveries not calculated due to interference?	☐	☒	☐	
Laboratory Control Sample	YES	NO	NA	COMMENTS
a) Was a LCS analyzed at the appropriate frequency?	☒	☐	☐	
b) Were the proper compounds included in the LCS?	☒	☐	☐	
c) Was the LCS accuracy criteria met?	☒	☐	☐	
Matrix Spike/Matrix Spike Duplicate	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☐	☐	☒	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
b) Was MSD accuracy criteria met?	☐	☐	☒	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
c) Were MS/MSD precision criteria met?	☐	☐	☒	
Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☐	☒	☐	
b) Were field dup. precision criteria met (Note RPD)?	☐	☐	☒	
c) Were lab duplicates analyzed (note original and duplicate samples)?	☐	☒	☐	
d) Were lab dup. precision criteria met (Note RPD)?	☐	☐	☒	
ICP Serial Dilution (SD)	YES	NO	NA	COMMENTS
a) Was an ICP SD analyzed once per SDG?	☐	☐	☒	
b) Was the ICP SD criteria met?	☐	☐	☒	
Overall Evaluation	YES	NO	NA	COMMENTS
a) Were there any other technical problems not previously addressed?	☐	☒	☐	
b) Checked for transcription errors?	☒	☐	☐	
c) Do target analytes fall within calibration ranges?	☒	☐	☐	
d) Data are acceptable and usable except as noted?	☒	☐	☐	

DATA REVIEW CHECKLIST - QA LEVEL II

Comments/Notes:

1. The lab notes on the cooler receipt form that the sample cooler was received at 6.1°C, which slightly exceeds the recommended storage temperature of 0-6°C. The cooler packed with ice was delivered to the laboratory within three hours of sample collection, which indicates that the samples did not have time to cool entirely. Following the Guidelines and using professional judgment, no qualification is necessary.

Data Qualification: No qualifiers applied; see Table 2.

Definitions:

SDG: Sample Delivery Group	QC: Quality Control
COC: Chain of Custody	QAPP: Quality Assurance Project Plan
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