August 14, 2018 Project No. 923-1000.005.2000

Mr. Bill Kombol
Landsburg PLP Group
31407 Highway 169
PO Box 10
Black Diamond, WA 98010

LANDSBURG MINE SITE INTERIM GROUNDWATER MONITORING REPORT MAY 2018 SAMPLING

Dear Bill,

Golder Associates Inc. (Golder) completed an interim groundwater monitoring event at the Landsburg Mine Site during May 2018. 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, LMW-11, LMW-12 and LMW-13R (Figure 1). Monitoring wells LMW-2, LMW-4, LMW-10, LMW-12 and LMW-13R are completed to monitor shallow, middle, and deeper zones within the north end of the Rogers Coal Mine subsidence trench. LMW-12 and LMW-13R were installed in spring 2018 as sentinel wells at the north portal 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. 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 substantial 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 with the currently installed dedicated pumping systems to insure sample representativeness.

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

- 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 are not filtered). The dissolved metals samples are archived and are only analyzed if the total metals results are significantly different from historical results detected at the Site.
- Analyses of groundwater for volatile organic compounds (VOCs; United States Environmental Protection Agency [EPA] Method 8260C), 1,4-Dioxane (EPA Method 8270D), 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. Field sampling activities were documented on Sample Integrity Data Sheets (SIDS). Copies of the completed SIDS are provided in Appendix B. Appendix C provides the validated data with added qualifiers. Table 1 presents groundwater depth measurements and elevations that were measured on May 21, 2018.

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.

Table 2 presents the field parameter measurements and laboratory analytical results for each groundwater sample. Laboratory analyses did not detect any 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 and acetone were detected in the equipment and trip blanks. Toluene, 4-Isopropyl toluene, and n-butylbenzene were detected in the method and trip blanks. Samples with carbon disulfide, acetone, toluene, 4-isopropyl toluene, and n-butyl benzene detections are qualified with U or J+ due to laboratory contamination. The surrogate recovery for 1,4-Dioxane in the LMW-10 sample was below acceptance criteria and the compound was not detected in the well, therefore the sample has the UJ qualifier. Data qualifiers are defined in the Appendix C data validation memorandum.

The parameters detected in groundwater samples during this sampling event were metals, acetone, carbon disulfide, 1,4-Dioxane, 2-Butanone, 1,1-Dichloroethane, and Chloromethane.

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 May 2018 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 5.39 µg/L (0.00539 mg/L), which is less than the Washington State primary drinking water MCL (10 µg/L) 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.

Acetone was detection in LMW-13R at a concentration of 5.24 µg/L, and was estimated high-biased (J+ flagged) due to the detection of acetone in the equipment and trip blank samples. 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 0.18 g/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.

Chloromethane was tentatively detected in LMW-8 at a concentration of 0.1 µg/L estimated (J-flagged). The trace level detection is estimated, because the detected concentration was well below the laboratory method reporting limit (MRL) but above the MDL. Chloromethane does not have MTCA groundwater cleanup concentration, but the Environmental Protection Agency (EPA) Regional Screening Level for Residential tapwater is 1,900 µg/L.

1,4-Dioxane was detected in LMW-2 (1.8 µg/L), LMW-4 (1.5 µg/L), and LMW-12 (1.5 µg/L). 1,4-Dioxane was not detected in any other monitoring wells. The low level detections of 1,4-dioxane were present in LMW-2 and LMW-4 in the November 2017 sampling event, which is the first time the compound was tested for at the Site. May 2018 was the first time LMW-12 was sampled. The 1,4-dioxane detections are being addressed under the direction of Ecology.

2-Butanone, commonly referred to as methyl ethyl ketone (MEK), was detected in LMW-13R at a concentration of 5.47 µg/L. The 2-butanone detection is significantly lower than the MTCA Method B groundwater cleanup level of 4800 µg/L. The LMW-13R well was recently installed with a freshly painted monument. A fresh paint odor was observed by the field staff outside of the well but not in the well. 2-Butanone is a common volatile component of paints.

[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.

1,1-Dichloroethane was detected in LMW-12 concentration of 0.21 µg/L. The trace detection was just above the laboratory reporting limit of 0.20 µg/L, and is less than the MTCA Method B groundwater cleanup level of 7.68 µg/L.

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

Sincerely,

Golder Associates Inc.

Joe Miller
Project Geologist

Gary Zimmerman
Principal

JCM/GZ/sb

Attachments: Table 1: Groundwater Elevation Data Collection May 21, 2018 Landsburg Mine Site
Table 2: May 2018 Groundwater Analytical Results Landsburg Mine Site
Figure 1: Groundwater Monitoring Locations
Figure 2: Cross-Section along Strike at Coal Seam
Appendix A: Laboratory Analytical Reports
Appendix B: Sample Integrity Data Sheets (SIDS)
Appendix C: May 2018 Landsburg Mine Site Water Quality Monitoring Data Validation and Quality Assurance / Quality Control Review Memorandum

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Tables

Table 1: Groundwater Elevation Data Collection May 21, 2018 Landsburg Mine Site

	UNITS	LMW-1	LMW-1a	LMW-2	LMW-3	LMW-4[1]	LMW-5	LMW-6	LMW-7[1]	LMW-8	LMW-9	LMW-10	LMW-11	LMW-12[2]	LMW-13R[2]	P-2	Water Drainage	Frazier Seam Tunnel
Water Depths																		
Time of data collection		9:26 AM	9:20 AM	10:37 AM	8:30 AM	10:32 AM	9:39 AM	9:45 AM	10:05 AM	8:50 AM	8:18 AM	10:29 AM	8:07 AM	10:20 AM	10:23 AM	8:45 AM		
Measured to Top of PVC	ft btc	141.86	140.10	7.53	12.05	9.03	13.62	24.38	207.98	4.27	99.43	0.10	157.27	9.41	9.94	6.65	NA	NA
Measured to Top of Monument	ft btm	142.68	140.32	8.25	12.73	9.74	14.33	25.15	208.55	5.27	99.72	0.3	157.65	NC	NC	7.02	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	NC	NC	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	NC	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	NC	NC	648.54	551.38	542.15
Corrected Water Elevation																		
Using PVC elevation	ft asl	**623.30**	**623.08**	**610.20**	**644.70**	**610.23**	**644.65**	**607.95**	**563.53**	**642.70**	**644.56**	**618.77**	**644.60**	NC	NC	**644.72**	NA	NA
Using Monument elevation	ft asl	623.21	NA	610.04	644.75	610.11	644.54	607.85	563.33	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
[1] Data corrected to accommodate well inclination of 20° from vertical
[2] Not Yet Surveyed
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: May 2018 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	LMW-12	LMW-13R	Equipment Blank	Trip Blank
		5/24/2018	5/23/2018	5/24/2018	5/23/2018	5/22/2018	5/22/2018	5/22/2018	5/23/2018	5/23/2018	5/22/2018	5/22/2018	5/23/2018	5/23/2018	5/24/2018	5/24/2018
Field Parameter																
pH	stnd	6.98	7.22	7.00	7.05	7.86	7.84	-	6.96	7.00	8.95	8.02	7.03	7.32	-	-
Conductivity	uS/cm	732	251	735	600	172	419	-	478	576	259	412	773	741	-	-
Dissolved Oxygen	mg/L	0.06	0.19	0.15	0.38	0.13	0.19	-	0.30	0.19	0.10	0.47	0.16	0.17	-	-
Temperature	^{o}C	10.7	10.9	10.6	11.0	9.7	12.6	-	12.2	12.1	11.6	11.4	12.0	11.4	-	-
E_h	Rel mV	20.9	14.5	-9.8	15.0	3.1	-0.9	-	-17.1	-31.6	13.6	-36.3	-33.9	-34.6	-	-
Turbidity	NTU	0.71	0.15	0.27	0.34	0.46	0.24	-	0.60	0.44	0.35	0.29	14.0	13	-	-
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	**0.00539**	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	0.5 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
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	**105**	**36.4**	**104**	**90.5**	**25.1**	**53.2**	**53.8**	**62.6**	**81.8**	**6.55**	**59.0**	**95.8**	**91.5**	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	0.0087	NA
Iron	mg/L	0.2 U	0.2 U	**0.305**	0.2 U	**2.02**	**1.08**	**1.09**	**15.1**	**1.54**	0.2 U	**1.79**	**22.3**	**3.8**	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	**65.0**	**14.7**	**62.3**	**50.4**	**12.3**	**24.2**	**24.4**	**33.0**	**43.7**	**2.85**	**27.8**	**63.4**	**42.8**	1 U	NA
Manganese	mg/L	**0.178**	**0.055**	**0.125**	**0.238**	**0.0296**	**0.132**	**0.133**	**0.478**	**0.169**	0.02 U	**0.151**	**0.798**	**0.104** 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	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	0.02000 U	NA
Potassium	mg/L	**3.33**	**1.64**	**3.69**	**2.62**	**0.644**	**2.89**	**2.87**	**1.85**	**2.38**	**1.23**	**2.08**	**3.89**	**3.73** 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	**17.6**	**9.69**	**32.6**	**13.9**	**6.35**	**36.3**	**36.5**	**9.97**	**13.7**	**78.2**	**30**	**16.5**	**60.6**	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
Volatile Organic Compounds (VOCs)																
Acetone	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	**5.24 J+**	**2.98 J**	**2.19 J**
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	**5.47**	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	0.05 J
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	**0.18 J+**	0.1 U	0.1 U	0.1 U	**0.04 J**	**0.06 J**
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
1-Chlorohexane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
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	**0.1 J**	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

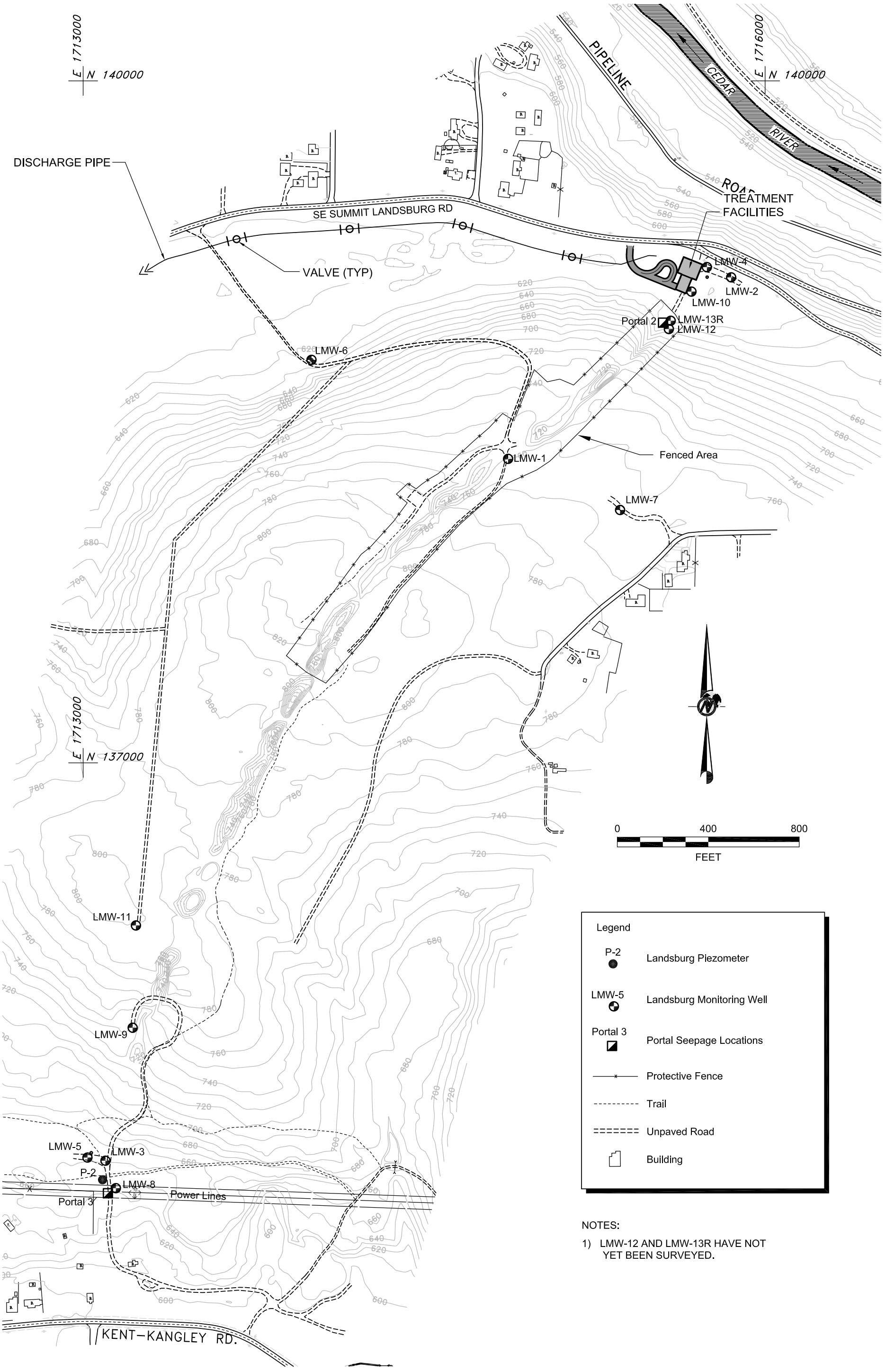
Table 2: May 2018 Groundwater Analytical Results Landsburg Mine Site

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	LMW-12	LMW-13R	Equipment Blank	Trip Blank
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	**0.04 J**
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	**0.21**	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
Methyl tert-butyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Hexanone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
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	**0.03 J**
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	**0.65 J**	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
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	**0.07 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	0.1 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
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
1,3,5-Trichlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
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)																
1,4-Dioxane	ug/L	**1.8**	0.4 U	**1.5**	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 UJ	0.4 U	**1.5**	0.4 U	0.4 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

Table 2: May 2018 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		LMW-12		LMW-13R		Equipment Blank		Trip Blank	
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 Range	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	

Figures



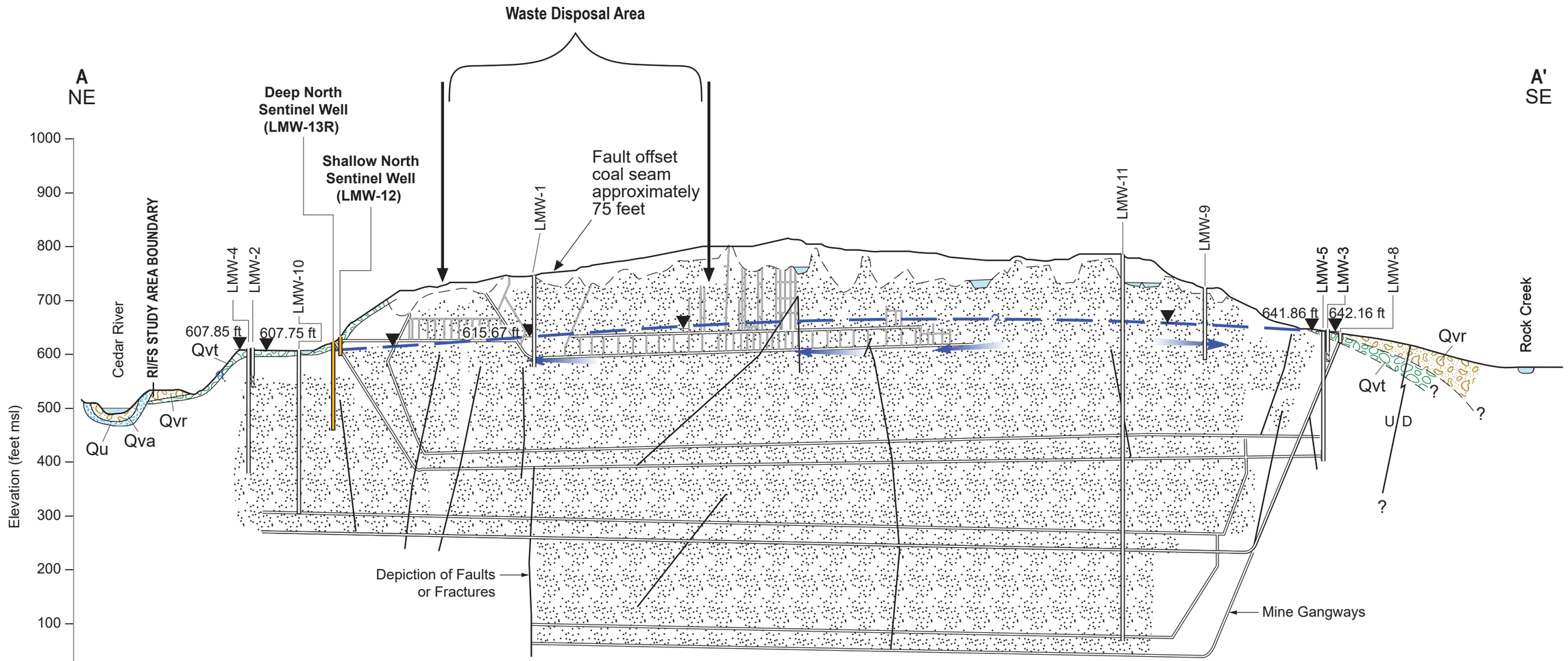
NOTES:

1) LMW-12 AND LMW-13R HAVE NOT YET BEEN SURVEYED.

FIGURE **1**

GROUNDWATER MONITORING LOCATIONS

PALMER/LANDSBURG MINE/WA



EXPLANATION

- Potentiometric surface
- Outline of trench bottom
- Water Level (ft. amsl) 2/23/94
- Qvt Till, compact mixture of gravel occasional boulders in clayey silty sand matrix
- Sandstone
- Surface water feature

0 500
FEET

- Anticipated collapsed zone within mine
- Qu Drift, till, fluvial sand and gravel, lacustrine sand, silt, clay and peat
- Qvr Recessional outwash, well sorted sand and pebble-cobble
- Qva Advanced outwash pebble-cobble gravel may include very fine sand
- Monitoring Interval

Groundwater Flow Direction

Sources for the Geology and Mine Information:
J.E. Luzier 1969; surficial geology
State of Washington, Water Well reports
Mine Superintendant's Records
Landsburg Well Logs

NOTE: Vertical to horizontal scale ratio is 2.5:1
Wells are project normal into the strike of the Cross-Section A-A'

Assuming groundwater discharge at the north and south end of mine.

LMW-12 and LMW-13R have not yet been surveyed.

CLIENT
LANDSBURG PLP GROUP

CONSULTANT
GOLDER

YYYY-MM-DD	2018-06-15
PREPARED	REDMOND
DESIGN	
REVIEW	
APPROVED	

PROJECT
LANDSBURG MINE SITE

TITLE
CROSS-SECTION ALONG STRIKE AT COAL SEAM
CROSS-SECTION A-A'

PROJECT No.	PHASE	FIGURE
923-1000	005	2

G:\Palmer Coking Coal Co\Landsburg Mine WA\99_PROJECTS\923100002_Ph1_Remediation\R154102_PRODUCTION\INDD\923100_002_R154_002.indd

APPENDIX A

Laboratory Analytical Reports

Analytical Resources, Incorporated
Analytical Chemists and Consultants

07 June 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)	Associated SDG ID(s)
18E0350	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.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 18E0350	Turn-around Requested: Standard
ARI Client Company: Golder	Phone: 425-883-0777
Client Contact: Gary Zimmerman	
Client Project Name: Lundsburg	
Client Project #: 923-1000-002 R273	Samplers: JM/AW

Page: 1 of 2	
Date: 5/22/18-5/24/18	Ice Present? Yes
No. of Coolers: 8	Cooler Temps: Intemp

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: VOC Client List	TPH-HCID	TAML Total Metals	TAML * Dissolved Metals	1,4-Dioxane (8270-D)				Notes/Comments
LMW-11-0518	5/22/18	1020	w	13	X	X	X	Hold	X				* Field Filtered w/.45µm Filter p/s analyze under Current MSA btwn ARI + Golder
LMW-6-0518	5/22/18	1210	w	13	X	X	X		X				
LMW-7-0518	5/22/18	1355	w	13	X	X	X		X				
LMW-7-0518-D	5/22/18	1405	w	13	X	X	X		X				
LMW-10-0518	5/22/18	1530	w	13	X	X	X		X				
LMW-9-0518	5/23/18	0930	w	13	X	X	X		X				
LMW-3-0518	5/23/18	1100	w	13	X	X	X		X				
LMW-5-0518	5/23/18	1215	w	13	X	X	X		X				
LMW-8-0518	5/23/18	1325	w	13	X	X	X		X				
LMW-12-05/8	5/23/18	1450	w	13	X	X	X		X				

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
- Client Specific RLs - Ecology EIM EDD pls cc jcmiller@golder.com	(Signature) Joe Miller	(Signature) Jacob Hagler	(Signature)	(Signature)
	Printed Name: Joe Miller	Printed Name: Jacob Hagler	Printed Name:	Printed Name:
	Company: Golder	Company: ARI	Company:	Company:
	Date & Time: 5/24/18 1300	Date & Time: 05/24/18 1300	Date & Time:	Date & Time:

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.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 18E0350	Turn-around Requested: Standard
ARI Client Company: Golder	Phone: 425-883-0777
Client Contact: Gary Zimmerman	
Client Project Name: Landsburg	
Client Project #: 923-1000-002 R273	Samplers: JM/AW

Page: 2 of 2

Date: 5/22/18 - 5/24/18 | Ice Present? Yes

No. of Coolers: 8 | Cooler Temps: In temp

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: VOC Client List	TPH-HCID	TAML Total Metals	TAML * Dissolved Metals	1,4-Dioxane (8270-D)				Notes/Comments
LMW-13 0518	5/23/18	1600	W	13	X	X	X	Hold	X				* Metals Field Filtered w/ 0.45µm Filter. Pls analyze under current MSA w/ Golder
LMW-2-0518	5/24/18	0925	W	13	X	X	X		X				
EB-0518	5/24/18	0945	W	11	X	X	X		X				No Dx Follow up Volume
LMW-4-0518	5/24/18	1100	W	13	X	X	X		X				
TRIP BLANK	—	—	W	9	X	~~X~~ JM	~~X~~ JM						

Comments/Special Instructions
- Client Specific RLs -
Ecology EIM EDD
pls cc: jcmiller@golder.com

	Relinquished by:	Received by:	Relinquished by:	Received by:
(Signature)				
Printed Name:	Joe Miller	Jacob Walter		
Company:	Golder	ARI		
Date & Time:	5/24/18 1300	05/24/18 1300		

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.

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
LMW-11-0518	18E0350-01	Water	22-May-2018 10:20	24-May-2018 13:00
LMW-6-0518	18E0350-03	Water	22-May-2018 12:10	24-May-2018 13:00
LMW-7-0518	18E0350-05	Water	22-May-2018 13:55	24-May-2018 13:00
LMW-7-0518-D	18E0350-07	Water	22-May-2018 14:05	24-May-2018 13:00
LMW-10-0518	18E0350-09	Water	22-May-2018 15:30	24-May-2018 13:00
LMW-9-0518	18E0350-11	Water	23-May-2018 09:30	24-May-2018 13:00
LMW-3-0518	18E0350-13	Water	23-May-2018 11:00	24-May-2018 13:00
LMW-5-0518	18E0350-15	Water	23-May-2018 12:15	24-May-2018 13:00
LMW-8-0518	18E0350-17	Water	23-May-2018 13:25	24-May-2018 13:00
LMW-12-0518	18E0350-19	Water	23-May-2018 14:50	24-May-2018 13:00
LMW-13R-0518	18E0350-21	Water	23-May-2018 16:00	24-May-2018 13:00
LMW-2-0518	18E0350-23	Water	24-May-2018 09:25	24-May-2018 13:00
EB-0518	18E0350-25	Water	24-May-2018 09:45	24-May-2018 13:00
LMW-4-0518	18E0350-27	Water	24-May-2018 11:00	24-May-2018 13:00
TRIP BLANK	18E0350-29	Water	22-May-2018 00:00	24-May-2018 13:00

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Case Narrative

Sample receipt

Samples as listed on the preceding page were received May 24, 2018 under ARI work order 18E0350. For details regarding sample
receipt, please refer to the Cooler Receipt Form.

Volatiles - EPA Method SW8260C

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements except Chloroethane which was out of control high in the ICV.
All samples which contain analyte have been flagged with a "Q" qualifier.

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/LCSD percent recoveries and RPD were within control limits except Choroethane RPD which was out of control high
and is flagged within the QC section of this report.

Samples 18E0350-07 and 18E0350-23 were analyzed from vials that contained peabubbles.

Samples 18E0350-15 and 18E0350-21 were analyzed from vials that contained large air bubbles and Samples 18E0350-01, 18E0350-09 and 18E0350-19 were analyzed from vials that contained headspace at the time of analysis.

1,4-Dioxane- EPA Method SW8270D

The sample(s) were extracted and analyzed within the recommended holding times except 18E0350-09RE1. Sample -09 was analyzed initially which resulted
in low surrogate recovery. The sample was then re-analyzed outside of holding time. Both sets of data have been reported.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except 18E0350-09. The sample was re-analyzed and re-extracted
outside of the holding time. Both sets of data have been reported.

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Total Metals - EPA Methods 200.8 and 6010C

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Duplicate RPD were within control limits.

The Matrix Spike percent recoveries were within control limits.

Total Hg - EPA Method 7470/7471

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Duplicate RPD were within control limits.

The Matrix Spike percent recoveries were within control limits.

Gas/Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-HCID

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

The LCS percent recoveries were within control limits.

WORK ORDER

18E0350

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

Preservation Confirmation

Container ID	Container Type	pH
18E0350-01 A	Glass NM, Amber, 500 mL	
18E0350-01 B	Glass NM, Amber, 500 mL	
18E0350-01 C	Glass NM, Amber, 500 mL	
18E0350-01 D	Glass NM, Amber, 500 mL	
18E0350-01 E	Glass NM, Amber, 500 mL	
18E0350-01 F	Glass NM, Amber, 500 mL	
18E0350-01 G	HDPE NM, 500 mL, 1:1 HNO3	LL pass
18E0350-01 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-01 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-01 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-01 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-01 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL pass
18E0350-03 A	Glass NM, Amber, 500 mL	
18E0350-03 B	Glass NM, Amber, 500 mL	
18E0350-03 C	Glass NM, Amber, 500 mL	
18E0350-03 D	Glass NM, Amber, 500 mL	
18E0350-03 E	Glass NM, Amber, 500 mL	
18E0350-03 F	Glass NM, Amber, 500 mL	
18E0350-03 G	HDPE NM, 500 mL, 1:1 HNO3	LL pass
18E0350-03 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-03 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-03 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-03 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-03 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL pass
18E0350-05 A	Glass NM, Amber, 500 mL	
18E0350-05 B	Glass NM, Amber, 500 mL	
18E0350-05 C	Glass NM, Amber, 500 mL	
18E0350-05 D	Glass NM, Amber, 500 mL	
18E0350-05 E	Glass NM, Amber, 500 mL	
18E0350-05 F	Glass NM, Amber, 500 mL	
18E0350-05 G	HDPE NM, 500 mL, 1:1 HNO3	LL pass
18E0350-05 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-05 I	VOA Vial, Clear, 40 mL, HCL	

Reviewed By

Date

WORK ORDER

18E0350

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Landsburg | **Project Number:** Landsburg

18E0350-05 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-05 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-05 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL pass
18E0350-07 A	Glass NM, Amber, 500 mL	
18E0350-07 B	Glass NM, Amber, 500 mL	
18E0350-07 C	Glass NM, Amber, 500 mL	
18E0350-07 D	Glass NM, Amber, 500 mL	
18E0350-07 E	Glass NM, Amber, 500 mL	
18E0350-07 F	Glass NM, Amber, 500 mL	
18E0350-07 G	HDPE NM, 500 mL, 1:1 HNO3	LL pass
18E0350-07 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-07 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-07 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-07 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-07 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL pass
18E0350-09 A	Glass NM, Amber, 500 mL	
18E0350-09 B	Glass NM, Amber, 500 mL	
18E0350-09 C	Glass NM, Amber, 500 mL	
18E0350-09 D	Glass NM, Amber, 500 mL	
18E0350-09 E	Glass NM, Amber, 500 mL	
18E0350-09 F	Glass NM, Amber, 500 mL	
18E0350-09 G	HDPE NM, 500 mL, 1:1 HNO3	LL pass
18E0350-09 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-09 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-09 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-09 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-09 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL pass
18E0350-11 A	Glass NM, Amber, 500 mL	
18E0350-11 B	Glass NM, Amber, 500 mL	
18E0350-11 C	Glass NM, Amber, 500 mL	
18E0350-11 D	Glass NM, Amber, 500 mL	
18E0350-11 E	Glass NM, Amber, 500 mL	
18E0350-11 F	Glass NM, Amber, 500 mL	
18E0350-11 G	HDPE NM, 500 mL, 1:1 HNO3	LL pass

Reviewed By

Date

WORK ORDER

18E0350

Client: Golder Associates	**Project Manager: Kelly Bottem**
Project: Landsburg	**Project Number: Landsburg**

18E0350-11 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-11 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-11 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-11 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-11 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL pass
18E0350-13 A	Glass NM, Amber, 500 mL	
18E0350-13 B	Glass NM, Amber, 500 mL	
18E0350-13 C	Glass NM, Amber, 500 mL	
18E0350-13 D	Glass NM, Amber, 500 mL	
18E0350-13 E	Glass NM, Amber, 500 mL	
18E0350-13 F	Glass NM, Amber, 500 mL	
18E0350-13 G	HDPE NM, 500 mL, 1:1 HNO3	LL pass
18E0350-13 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-13 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-13 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-13 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-13 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL pass
18E0350-15 A	Glass NM, Amber, 500 mL	
18E0350-15 B	Glass NM, Amber, 500 mL	
18E0350-15 C	Glass NM, Amber, 500 mL	
18E0350-15 D	Glass NM, Amber, 500 mL	
18E0350-15 E	Glass NM, Amber, 500 mL	
18E0350-15 F	Glass NM, Amber, 500 mL	
18E0350-15 G	HDPE NM, 500 mL, 1:1 HNO3	LL pass
18E0350-15 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-15 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-15 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-15 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-15 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL pass
18E0350-17 A	Glass NM, Amber, 500 mL	
18E0350-17 B	Glass NM, Amber, 500 mL	
18E0350-17 C	Glass NM, Amber, 500 mL	
18E0350-17 D	Glass NM, Amber, 500 mL	
18E0350-17 E	Glass NM, Amber, 500 mL	

Reviewed By

Date

WORK ORDER

18E0350

Client: Golder Associates	**Project Manager: Kelly Bottem**
Project: Landsburg	**Project Number: Landsburg**

18E0350-17 F	Glass NM, Amber, 500 mL	
18E0350-17 G	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
18E0350-17 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-17 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-17 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-17 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-17 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-18 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
18E0350-19 A	Glass NM, Amber, 500 mL	
18E0350-19 B	Glass NM, Amber, 500 mL	
18E0350-19 C	Glass NM, Amber, 500 mL	
18E0350-19 D	Glass NM, Amber, 500 mL	
18E0350-19 E	Glass NM, Amber, 500 mL	
18E0350-19 F	Glass NM, Amber, 500 mL	
18E0350-19 G	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
18E0350-19 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-19 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-19 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-19 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-19 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-20 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
18E0350-21 A	Glass NM, Amber, 500 mL	
18E0350-21 B	Glass NM, Amber, 500 mL	
18E0350-21 C	Glass NM, Amber, 500 mL	
18E0350-21 D	Glass NM, Amber, 500 mL	
18E0350-21 E	Glass NM, Amber, 500 mL	
18E0350-21 F	Glass NM, Amber, 500 mL	
18E0350-21 G	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
18E0350-21 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-21 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-21 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-21 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-21 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-22 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
18E0350-23 A	Glass NM, Amber, 500 mL	
18E0350-23 B	Glass NM, Amber, 500 mL	
18E0350-23 C	Glass NM, Amber, 500 mL	

Reviewed By

Date

WORK ORDER

18E0350

Client: Golder Associates	**Project Manager: Kelly Bottem**
Project: Landsburg	**Project Number: Landsburg**

18E0350-23 D	Glass NM, Amber, 500 mL	
18E0350-23 E	Glass NM, Amber, 500 mL	
18E0350-23 F	Glass NM, Amber, 500 mL	
18E0350-23 G	HDPE NM, 500 mL, 1:1 HNO3	>2 Fail
18E0350-23 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-23 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-23 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-23 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-23 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-24 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
18E0350-25 A	Glass NM, Amber, 500 mL	
18E0350-25 B	Glass NM, Amber, 500 mL	
18E0350-25 C	Glass NM, Amber, 500 mL	
18E0350-25 D	Glass NM, Amber, 500 mL	
18E0350-25 E	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
18E0350-25 F	VOA Vial, Clear, 40 mL, HCL	
18E0350-25 G	VOA Vial, Clear, 40 mL, HCL	
18E0350-25 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-25 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-25 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-26 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
18E0350-27 A	Glass NM, Amber, 500 mL	
18E0350-27 B	Glass NM, Amber, 500 mL	
18E0350-27 C	Glass NM, Amber, 500 mL	
18E0350-27 D	Glass NM, Amber, 500 mL	
18E0350-27 E	Glass NM, Amber, 500 mL	
18E0350-27 F	Glass NM, Amber, 500 mL	
18E0350-27 G	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
18E0350-27 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-27 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-27 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-27 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-27 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-28 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
18E0350-29 A	VOA Vial, Clear, 40 mL, HCL	
18E0350-29 B	VOA Vial, Clear, 40 mL, HCL	
18E0350-29 C	VOA Vial, Clear, 40 mL, HCL	

Reviewed By

Date

WORK ORDER

18E0350

Client: Golder Associates	**Project Manager: Kelly Bottem**
Project: Landsburg	**Project Number: Landsburg**

18E0350-29 D	VOA Vial, Clear, 40 mL, HCL
18E0350-29 E	VOA Vial, Clear, 40 mL, HCL
18E0350-29 F	VOA Vial, Clear, 40 mL, HCL
18E0350-29 G	VOA Vial, Clear, 40 mL, HCL
18E0350-29 H	VOA Vial, Clear, 40 mL, HCL
18E0350-29 I	VOA Vial, Clear, 40 mL, HCL

Sef — Preservation Confirmed By

5/24/18 — Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder

Project Name: _____

COC No(s): _____ NA

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

Assigned ARI Job No: 18E0350

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) 4.2°C (1) 1.3°C (2) 2.3°C (3) 3.0°C (4) 0.7°C (5) 0.9°C (6) 2.5°C > 3.2°C (8)
Time: 1300

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: D0052O6

Cooler Accepted by: SSW Date: 05/24/18 Time: 1300

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 5/17/18

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

Samples Logged by: Sef Date: 5/24/18 Time: 1508

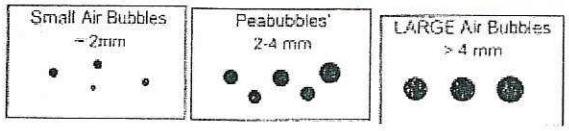
*** Notify Project Manager of discrepancies or concerns ***

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

Additional Notes, Discrepancies, & Resolutions:

Air bubbles marked on pres. sheet

By: Sef Date: 5/24/18



Small → "sm" (< 2 mm)

Peabubbles → "pb" (2 to < 4 mm)

Large → "lg" (4 to < 6 mm)

Headspace → "hs" (> 6 mm)

WORK ORDER

18E0350

Client: Golder Associates	**Project Manager:** Kelly Bottem
Project: Landsburg	**Project Number:** Landsburg

18E0350-23 D	Glass NM, Amber, 500 mL	
18E0350-23 E	Glass NM, Amber, 500 mL	
18E0350-23 F	Glass NM, Amber, 500 mL	
18E0350-23 G	HDPE NM, 500 mL, 1:1 HNO3	>2 Fail
18E0350-23 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-23 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-23 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-23 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-23 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-24 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
18E0350-25 A	Glass NM, Amber, 500 mL	
18E0350-25 B	Glass NM, Amber, 500 mL	
18E0350-25 C	Glass NM, Amber, 500 mL	
18E0350-25 D	Glass NM, Amber, 500 mL	
18E0350-25 E	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
18E0350-25 F	VOA Vial, Clear, 40 mL, HCL	
18E0350-25 G	VOA Vial, Clear, 40 mL, HCL	
18E0350-25 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-25 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-25 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-26 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
18E0350-27 A	Glass NM, Amber, 500 mL	
18E0350-27 B	Glass NM, Amber, 500 mL	
18E0350-27 C	Glass NM, Amber, 500 mL	
18E0350-27 D	Glass NM, Amber, 500 mL	
18E0350-27 E	Glass NM, Amber, 500 mL	
18E0350-27 F	Glass NM, Amber, 500 mL	
18E0350-27 G	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
18E0350-27 H	VOA Vial, Clear, 40 mL, HCL	
18E0350-27 I	VOA Vial, Clear, 40 mL, HCL	
18E0350-27 J	VOA Vial, Clear, 40 mL, HCL	
18E0350-27 K	VOA Vial, Clear, 40 mL, HCL	
18E0350-27 L	VOA Vial, Clear, 40 mL, HCL	
18E0350-28 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
18E0350-29 A	VOA Vial, Clear, 40 mL, HCL	
18E0350-29 B	VOA Vial, Clear, 40 mL, HCL	
18E0350-29 C	VOA Vial, Clear, 40 mL, HCL	

preserved 5/30/18 DP

Reviewed By

Date

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-11-0518

18E0350-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 10:20

Instrument: NT2 — Analyzed: 30-May-2018 14:38

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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
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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-11-0518

18E0350-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 10:20

Instrument: NT2 — Analyzed: 30-May-2018 14:38

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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	**0.03**	ug/L	J
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
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
Surrogate: Dibromofluoromethane				*80-120 %*	*101*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*103*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-11-0518

18E0350-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 10:20

Instrument: NT2 — Analyzed: 30-May-2018 14:38

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*98.9*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*94.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*99.3*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-11-0518

18E0350-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2018 10:20

Instrument: NT12 — Analyzed: 04-Jun-2018 17:46

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*69.3*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-11-0518

18E0350-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2018 10:20

Instrument: FID4 — Analyzed: 25-May-2018 23:20

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*53.9*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*62.8*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-11-0518

18E0350-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2018 10:20

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:52

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-11-0518

18E0350-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2018 10:20

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:52

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	3.00	**5.39**	ug/L	
Selenium	7782-49-2	1	5.00	ND	ug/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-11-0518

18E0350-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2018 10:20

Instrument: ICP2 — Analyzed: 25-May-2018 12:54

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**59000**	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	**1790**	ug/L	
Magnesium	7439-95-4	1	1000	**27800**	ug/L	
Manganese	7439-96-5	1	20.0	**151**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**2080**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**30000**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-11-0518

18E0350-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2018 10:20

Instrument: CETAC — Analyzed: 31-May-2018 10:12

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — Final Volume: 20 mL

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-6-0518

18E0350-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 12:10

Instrument: NT2 — Analyzed: 30-May-2018 14:58

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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
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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-6-0518

18E0350-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 12:10

Instrument: NT2 — Analyzed: 30-May-2018 14:58

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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	**0.03**	ug/L	J
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
Surrogate: Dibromofluoromethane				*80-120 %*	*105*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*110*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-6-0518

18E0350-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 12:10

Instrument: NT2 — Analyzed: 30-May-2018 14:58

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*97.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*94.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-6-0518

18E0350-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2018 12:10

Instrument: NT12 — Analyzed: 04-Jun-2018 18:20

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*78.4*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-6-0518

18E0350-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2018 12:10

Instrument: FID4 — Analyzed: 25-May-2018 23:41

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*83.2*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*90.4*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-6-0518

18E0350-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2018 12:10

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:19

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-6-0518

18E0350-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2018 12:10

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:19

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-6-0518

18E0350-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2018 12:10

Instrument: ICP2 — Analyzed: 25-May-2018 15:03

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**25100**	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	**2020**	ug/L	
Magnesium	7439-95-4	1	1000	**12300**	ug/L	
Manganese	7439-96-5	1	20.0	**29.6**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**644**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**6350**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-6-0518

18E0350-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2018 12:10

Instrument: CETAC — Analyzed: 31-May-2018 10:20

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — Final Volume: 20 mL

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518

18E0350-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 13:55

Instrument: NT2 — Analyzed: 30-May-2018 15:18

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.47**	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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518

18E0350-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 13:55

Instrument: NT2 — Analyzed: 30-May-2018 15:18

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*108*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*108*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518

18E0350-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 13:55

Instrument: NT2 — Analyzed: 30-May-2018 15:18

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*98.6*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*90.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*101*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518

18E0350-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2018 13:55

Instrument: NT12 — Analyzed: 04-Jun-2018 18:53

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*73.7*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518

18E0350-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2018 13:55

Instrument: FID4 — Analyzed: 26-May-2018 00:02

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*83.1*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*81.2*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518

18E0350-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2018 13:55

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:24

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518

18E0350-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2018 13:55

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:24

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518

18E0350-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2018 13:55

Instrument: ICP2 — Analyzed: 25-May-2018 15:07

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**53200**	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	**1080**	ug/L	
Magnesium	7439-95-4	1	1000	**24200**	ug/L	
Manganese	7439-96-5	1	20.0	**132**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**2890**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**36300**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518

18E0350-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2018 13:55

Instrument: CETAC — Analyzed: 31-May-2018 10:23

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518-D

18E0350-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 14:05

Instrument: NT2 — Analyzed: 30-May-2018 15:39

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**3.00**	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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518-D

18E0350-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 14:05

Instrument: NT2 — Analyzed: 30-May-2018 15:39

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*108*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*109*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518-D

18E0350-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 14:05

Instrument: NT2 — Analyzed: 30-May-2018 15:39

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*99.0*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*92.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*101*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518-D

18E0350-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2018 14:05

Instrument: NT12 — Analyzed: 04-Jun-2018 19:27

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*68.2*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518-D

18E0350-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2018 14:05

Instrument: FID4 — Analyzed: 26-May-2018 00:23

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*79.8*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*87.0*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518-D

18E0350-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2018 14:05

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:29

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518-D

18E0350-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2018 14:05

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:29

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518-D

18E0350-07 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2018 14:05

Instrument: ICP2 — Analyzed: 25-May-2018 15:11

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**53800**	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	**1090**	ug/L	
Magnesium	7439-95-4	1	1000	**24400**	ug/L	
Manganese	7439-96-5	1	20.0	**133**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**2870**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**36500**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-7-0518-D

18E0350-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2018 14:05

Instrument: CETAC — Analyzed: 31-May-2018 10:25

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — Final Volume: 20 mL

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 15:30

Instrument: NT2 — Analyzed: 30-May-2018 15:59

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.84**	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	**0.18**	ug/L	
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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 15:30

Instrument: NT2 — Analyzed: 30-May-2018 15:59

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*107*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*108*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 15:30

Instrument: NT2 — Analyzed: 30-May-2018 15:59

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*96.8*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*93.1*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2018 15:30

Instrument: NT12 — Analyzed: 04-Jun-2018 20:01

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*23.2*	*%*	*

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/22/2018 15:30

Instrument: FID4 — Analyzed: 26-May-2018 00:44

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*79.0*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*81.5*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/22/2018 15:30

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:33

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/22/2018 15:30

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:33

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/22/2018 15:30

Instrument: ICP2 — Analyzed: 25-May-2018 15:15

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**6550**	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	**2850**	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	**1230**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/22/2018 15:30

Instrument: CETAC — Analyzed: 31-May-2018 10:28

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — Final Volume: 20 mL

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-10-0518

18E0350-09RE1 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/22/2018 15:30

Instrument: NT12 — Analyzed: 06-Jun-2018 16:42

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGF0044 — Sample Size: 500 mL
Prepared: 05-Jun-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	H, U
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*75.3*	*%*	H

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-9-0518

18E0350-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 09:30

Instrument: NT2 — Analyzed: 30-May-2018 16:20

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.25**	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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-9-0518

18E0350-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 09:30

Instrument: NT2 — Analyzed: 30-May-2018 16:20

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*106*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*113*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-9-0518

18E0350-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 09:30

Instrument: NT2 — Analyzed: 30-May-2018 16:20

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*96.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*90.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-9-0518

18E0350-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/23/2018 09:30

Instrument: NT12 — Analyzed: 04-Jun-2018 20:34

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*76.6*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-9-0518

18E0350-11 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/23/2018 09:30

Instrument: FID4 — Analyzed: 26-May-2018 01:04

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*76.1*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*79.2*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-9-0518

18E0350-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/23/2018 09:30

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-9-0518

18E0350-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/23/2018 09:30

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-9-0518

18E0350-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/23/2018 09:30

Instrument: ICP2 — Analyzed: 25-May-2018 15:19

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**81800**	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	**1540**	ug/L	
Magnesium	7439-95-4	1	1000	**43700**	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	**2380**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**13700**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-9-0518

18E0350-11 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/23/2018 09:30

Instrument: CETAC — Analyzed: 31-May-2018 10:31

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-3-0518

18E0350-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 11:00

Instrument: NT2 — Analyzed: 30-May-2018 16:40

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.11**	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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-3-0518

18E0350-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 11:00

Instrument: NT2 — Analyzed: 30-May-2018 16:40

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*107*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*110*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-3-0518

18E0350-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 11:00

Instrument: NT2 — Analyzed: 30-May-2018 16:40

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*95.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*93.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*101*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-3-0518

18E0350-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/23/2018 11:00

Instrument: NT12 — Analyzed: 04-Jun-2018 21:08

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*74.8*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-3-0518

18E0350-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/23/2018 11:00

Instrument: FID4 — Analyzed: 26-May-2018 01:25

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*74.4*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*82.6*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-3-0518

18E0350-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/23/2018 11:00

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:43

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-3-0518

18E0350-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/23/2018 11:00

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 16:43

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-3-0518

18E0350-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/23/2018 11:00

Instrument: ICP2 — Analyzed: 25-May-2018 15:24

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**36400**	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	**14700**	ug/L	
Manganese	7439-96-5	1	20.0	**55.0**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**1640**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**9690**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-3-0518

18E0350-13 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/23/2018 11:00

Instrument: CETAC — Analyzed: 31-May-2018 10:40

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-5-0518

18E0350-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 12:15

Instrument: NT2 — Analyzed: 30-May-2018 17:00

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.52**	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	**0.08**	ug/L	J
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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-5-0518

18E0350-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 12:15

Instrument: NT2 — Analyzed: 30-May-2018 17:00

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*106*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*111*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-5-0518

18E0350-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 12:15

Instrument: NT2 — Analyzed: 30-May-2018 17:00

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*96.4*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*94.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-5-0518

18E0350-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/23/2018 12:15

Instrument: NT12 — Analyzed: 04-Jun-2018 21:42

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*70.4*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-5-0518

18E0350-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/23/2018 12:15

Instrument: FID4 — Analyzed: 26-May-2018 01:46

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*86.4*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*90.0*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-5-0518

18E0350-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/23/2018 12:15

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:30

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-5-0518

18E0350-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/23/2018 12:15

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:30

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-5-0518

18E0350-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/23/2018 12:15

Instrument: ICP2 — Analyzed: 25-May-2018 15:28

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**90500**	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	**50400**	ug/L	
Manganese	7439-96-5	1	20.0	**238**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**2620**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**13900**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-5-0518

18E0350-15 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/23/2018 12:15

Instrument: CETAC — Analyzed: 31-May-2018 10:42

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — Final Volume: 20 mL

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-8-0518

18E0350-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 13:25

Instrument: NT2 — Analyzed: 30-May-2018 17:21

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	**0.10**	ug/L	J
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	**2.39**	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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-8-0518

18E0350-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 13:25

Instrument: NT2 — Analyzed: 30-May-2018 17:21

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*108*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*111*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-8-0518

18E0350-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 13:25

Instrument: NT2 — Analyzed: 30-May-2018 17:21

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*97.6*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*92.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*101*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-8-0518

18E0350-17 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/23/2018 13:25

Instrument: NT12 — Analyzed: 04-Jun-2018 22:15

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*62.0*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-8-0518

18E0350-17 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/23/2018 13:25

Instrument: FID4 — Analyzed: 26-May-2018 02:48

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*86.3*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*85.6*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-8-0518

18E0350-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/23/2018 13:25

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:34

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-8-0518

18E0350-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/23/2018 13:25

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:34

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-8-0518

18E0350-17 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/23/2018 13:25

Instrument: ICP2 — Analyzed: 25-May-2018 15:55

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**62600**	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	**15100**	ug/L	
Magnesium	7439-95-4	1	1000	**33000**	ug/L	
Manganese	7439-96-5	1	20.0	**478**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**1850**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**9970**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-8-0518

18E0350-17 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/23/2018 13:25

Instrument: CETAC — Analyzed: 31-May-2018 10:45

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — Final Volume: 20 mL

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-12-0518

18E0350-19 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 14:50

Instrument: NT2 — Analyzed: 30-May-2018 17:41

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.90**	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	**0.21**	ug/L	
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	**0.04**	ug/L	J
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-12-0518

18E0350-19 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 14:50

Instrument: NT2 — Analyzed: 30-May-2018 17:41

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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	**0.15**	ug/L	J
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
Surrogate: Dibromofluoromethane				*80-120 %*	*109*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*112*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-12-0518

18E0350-19 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 14:50

Instrument: NT2 — Analyzed: 30-May-2018 17:41

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*97.5*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*93.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-12-0518

18E0350-19 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/23/2018 14:50

Instrument: NT12 — Analyzed: 04-Jun-2018 22:49

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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	**1.5**	ug/L	
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*63.5*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-12-0518

18E0350-19 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/23/2018 14:50

Instrument: FID4 — Analyzed: 26-May-2018 03:09

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-12-0518

18E0350-19 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/23/2018 14:50

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:39

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-12-0518

18E0350-19 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/23/2018 14:50

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:39

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-12-0518

18E0350-19 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/23/2018 14:50

Instrument: ICP2 — Analyzed: 25-May-2018 15:59

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**95800**	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	**22300**	ug/L	
Magnesium	7439-95-4	1	1000	**63400**	ug/L	
Manganese	7439-96-5	1	20.0	**798**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**3890**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**16500**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-12-0518

18E0350-19 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/23/2018 14:50

Instrument: CETAC — Analyzed: 31-May-2018 10:48

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — Final Volume: 20 mL

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-13R-0518

18E0350-21 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 16:00

Instrument: NT2 — Analyzed: 30-May-2018 18:02

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**5.24**	ug/L	
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
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	**5.47**	ug/L	
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	**0.05**	ug/L	J
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-13R-0518

18E0350-21 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 16:00

Instrument: NT2 — Analyzed: 30-May-2018 18:02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*107*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*110*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-13R-0518

18E0350-21 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/23/2018 16:00

Instrument: NT2 — Analyzed: 30-May-2018 18:02

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*97.5*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*92.5*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-13R-0518

18E0350-21 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/23/2018 16:00

Instrument: NT12 — Analyzed: 04-Jun-2018 23:22

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*72.1*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-13R-0518

18E0350-21 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/23/2018 16:00

Instrument: FID4 — Analyzed: 26-May-2018 03:30

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*71.4*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*74.8*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-13R-0518

18E0350-21 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/23/2018 16:00

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:44

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-13R-0518

18E0350-21 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/23/2018 16:00

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:44

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-13R-0518

18E0350-21 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/23/2018 16:00

Instrument: ICP2 — Analyzed: 25-May-2018 15:32

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**91500**	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	**3800**	ug/L	
Magnesium	7439-95-4	1	1000	**42800**	ug/L	
Manganese	7439-96-5	1	20.0	**104**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**3730**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**60600**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-13R-0518

18E0350-21 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/23/2018 16:00

Instrument: CETAC — Analyzed: 31-May-2018 10:50

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — Final Volume: 20 mL

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-2-0518

18E0350-23 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/24/2018 09:25

Instrument: NT2 — Analyzed: 30-May-2018 18:22

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.79**	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	**0.09**	ug/L	J
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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-2-0518

18E0350-23 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/24/2018 09:25

Instrument: NT2 — Analyzed: 30-May-2018 18:22

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*110*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*113*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-2-0518

18E0350-23 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/24/2018 09:25

Instrument: NT2 — Analyzed: 30-May-2018 18:22

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*99.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*91.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*103*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-2-0518

18E0350-23 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/24/2018 09:25

Instrument: NT12 — Analyzed: 04-Jun-2018 23:56

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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	**1.8**	ug/L	
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*70.0*	*%*	

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Golder Associates	Project: Landsburg	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-2-0518

18E0350-23 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/24/2018 09:25

Instrument: FID4 — Analyzed: 26-May-2018 03:50

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*89.8*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-2-0518

18E0350-23 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/24/2018 09:25

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:48

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-2-0518

18E0350-23 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/24/2018 09:25

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 17:48

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-2-0518

18E0350-23 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/24/2018 09:25

Instrument: ICP2 — Analyzed: 25-May-2018 15:36

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	ND	ug/L	U
Magnesium	7439-95-4	1	1000	**65000**	ug/L	
Manganese	7439-96-5	1	20.0	**178**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**3330**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**17600**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-2-0518

18E0350-23 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/24/2018 09:25

Instrument: CETAC — Analyzed: 31-May-2018 10:53

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

EB-0518

18E0350-25 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/24/2018 09:45

Instrument: NT2 — Analyzed: 30-May-2018 18:43

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.98**	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	**0.65**	ug/L	J
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
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	**0.07**	ug/L	J
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

EB-0518

18E0350-25 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/24/2018 09:45

Instrument: NT2 — Analyzed: 30-May-2018 18:43

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*109*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*112*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

EB-0518

18E0350-25 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/24/2018 09:45

Instrument: NT2 — Analyzed: 30-May-2018 18:43

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*97.7*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*93.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

EB-0518

18E0350-25 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/24/2018 09:45

Instrument: NT12 — Analyzed: 05-Jun-2018 00:30

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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 %*	*56.9*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

EB-0518

18E0350-25 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/24/2018 09:45

Instrument: FID4 — Analyzed: 26-May-2018 04:11

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*88.6*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*79.6*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

EB-0518

18E0350-25 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/24/2018 09:45

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 18:27

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

EB-0518

18E0350-25 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/24/2018 09:45

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 18:27

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

EB-0518

18E0350-25 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/24/2018 09:45

Instrument: ICP2 — Analyzed: 25-May-2018 15:40

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**8.7**	ug/L	
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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

EB-0518

18E0350-25 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/24/2018 09:45

Instrument: CETAC — Analyzed: 31-May-2018 10:56

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-4-0518

18E0350-27 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/24/2018 11:00

Instrument: NT2 — Analyzed: 30-May-2018 19:03

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.39**	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	**0.08**	ug/L	J
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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-4-0518

18E0350-27 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/24/2018 11:00

Instrument: NT2 — Analyzed: 30-May-2018 19:03

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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
Surrogate: Dibromofluoromethane				*80-120 %*	*110*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*113*	*%*	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-4-0518

18E0350-27 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/24/2018 11:00

Instrument: NT2 — Analyzed: 30-May-2018 19:03

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*97.0*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*92.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*104*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-4-0518

18E0350-27 (Water)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 05/24/2018 11:00

Instrument: NT12 — Analyzed: 05-Jun-2018 01:03

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BGE0681 — Sample Size: 500 mL
Prepared: 25-May-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	**1.5**	ug/L	
Surrogate: 1,4-Dioxane-d8				*33.6-120 %*	*59.5*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-4-0518

18E0350-27 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 05/24/2018 11:00

Instrument: FID4 — Analyzed: 26-May-2018 04:32

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGE0655 — Sample Size: 500 mL
Prepared: 25-May-2018 — 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 %*	*68.1*	*%*	
Surrogate: n-Triacontane			*50-150 %*	*62.8*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-4-0518

18E0350-27 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 05/24/2018 11:00

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 18:31

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-4-0518

18E0350-27 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/24/2018 11:00

Instrument: ICPMS2 — Analyzed: 05-Jun-2018 18:31

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BGE0660 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-4-0518

18E0350-27 (Water)

Metals and Metallic Compounds

Method: EPA 6010C — Sampled: 05/24/2018 11:00

Instrument: ICP2 — Analyzed: 25-May-2018 16:04

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BGE0656 — Sample Size: 25 mL
Prepared: 25-May-2018 — 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	**305**	ug/L	
Magnesium	7439-95-4	1	1000	**62300**	ug/L	
Manganese	7439-96-5	1	20.0	**125**	ug/L	
Nickel	7440-02-0	1	20.0	ND	ug/L	U
Potassium	7440-09-7	1	500	**3690**	ug/L	
Silver	7440-22-4	1	3.0	ND	ug/L	U
Sodium	7440-23-5	1	500	**32600**	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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

LMW-4-0518

18E0350-27 (Water)

Metals and Metallic Compounds

Method: EPA 7470A — Sampled: 05/24/2018 11:00

Instrument: CETAC — Analyzed: 31-May-2018 10:58

Sample Preparation: Preparation Method: TLM EPA 7470A low level
Preparation Batch: BGE0726 — Sample Size: 20 mL
Prepared: 30-May-2018 — 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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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

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18E0350-29 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 00:00

Instrument: NT2 — Analyzed: 30-May-2018 13:57

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BGE0730 — Sample Size: 10 mL
Prepared: 30-May-2018 — 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	**2.19**	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	**0.06**	ug/L	J
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
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

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18E0350-29 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 00:00

Instrument: NT2 — Analyzed: 30-May-2018 13:57

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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	**0.03**	ug/L	J
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	**0.04**	ug/L	J
n-Butylbenzene	104-51-8	1	0.02	0.20	**0.05**	ug/L	J
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
Surrogate: Dibromofluoromethane				*80-120 %*	*102*	*%*	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*106*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

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18E0350-29 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/22/2018 00:00

Instrument: NT2 — Analyzed: 30-May-2018 13:57

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: Toluene-d8		*80-120 %*	*97.2*	*%*	
Surrogate: 4-Bromofluorobenzene		*80-120 %*	*92.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4		*80-120 %*	*102*	*%*	

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Volatile Organic Compounds - Quality Control

Batch BGE0730 - 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 (BGE0730-BLK1)				Prepared: 30-May-2018 Analyzed: 30-May-2018 13:37							
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	ND	0.04	0.10	ug/L							U
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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Volatile Organic Compounds - Quality Control

Batch BGE0730 - 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 (BGE0730-BLK1)				Prepared: 30-May-2018 Analyzed: 30-May-2018 13:37							
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	0.02	0.02	0.20	ug/L							J
2-Chlorotoluene	0.03	0.02	0.10	ug/L							J
4-Chlorotoluene	ND	0.02	0.20	ug/L							U
t-Butylbenzene	0.04	0.03	0.20	ug/L							J
1,3,5-Trimethylbenzene	ND	0.02	0.20	ug/L							U
1,2,4-Trimethylbenzene	0.03	0.02	0.20	ug/L							J
s-Butylbenzene	0.03	0.02	0.20	ug/L							J
4-Isopropyl Toluene	0.04	0.03	0.20	ug/L							J
1,3-Dichlorobenzene	0.05	0.04	0.20	ug/L							J
1,4-Dichlorobenzene	0.07	0.04	0.20	ug/L							J
n-Butylbenzene	0.06	0.02	0.20	ug/L							J
1,2-Dichlorobenzene	0.05	0.04	0.20	ug/L							J
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	0.10	0.07	0.20	ug/L							J

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Volatile Organic Compounds - Quality Control

Batch BGE0730 - 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 (BGE0730-BLK1)				Prepared: 30-May-2018 Analyzed: 30-May-2018 13:37							
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
Surrogate: Dibromofluoromethane	5.05			ug/L	*5.00*		*101*	*80-120*			
Surrogate: 1,2-Dichloroethane-d4	5.01			ug/L	*5.00*		*100*	*80-129*			
Surrogate: Toluene-d8	4.87			ug/L	*5.00*		*97.4*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.73			ug/L	*5.00*		*94.6*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.93			ug/L	*5.00*		*98.6*	*80-120*			
LCS (BGE0730-BS1)				Prepared: 30-May-2018 Analyzed: 30-May-2018 12:11							
Chloromethane	8.95	0.09	0.50	ug/L	10.0		89.5	60-138			
Vinyl Chloride	10.2	0.06	0.10	ug/L	10.0		102	66-133			
Bromomethane	10.0	0.25	1.00	ug/L	10.0		100	72-131			
Chloroethane	12.9	0.09	0.20	ug/L	10.0		129	60-155			Q
Trichlorofluoromethane	9.52	0.04	0.20	ug/L	10.0		95.2	80-129			
Acrolein	48.2	2.48	2.50	ug/L	50.0		96.4	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.7	0.04	0.20	ug/L	10.0		107	76-129			
Acetone	46.9	2.06	5.00	ug/L	50.0		93.7	58-142			
1,1-Dichloroethene	10.0	0.05	0.20	ug/L	10.0		100	69-135			
Bromoethane	10.1	0.04	0.20	ug/L	10.0		101	78-128			
Iodomethane	9.72	0.23	0.50	ug/L	10.0		97.2	56-147			
Methylene Chloride	9.98	0.49	1.00	ug/L	10.0		99.8	65-135			
Acrylonitrile	8.14	0.60	1.00	ug/L	10.0		81.4	64-134			
Carbon Disulfide	9.72	0.04	0.10	ug/L	10.0		97.2	78-125			
trans-1,2-Dichloroethene	9.79	0.05	0.20	ug/L	10.0		97.9	78-128			
Vinyl Acetate	8.42	0.07	0.20	ug/L	10.0		84.2	55-138			
1,1-Dichloroethane	9.95	0.05	0.20	ug/L	10.0		99.5	76-124			
2-Butanone	48.4	0.81	5.00	ug/L	50.0		96.8	61-140			
2,2-Dichloropropane	10.4	0.05	0.10	ug/L	10.0		104	78-125			
cis-1,2-Dichloroethene	10.1	0.04	0.20	ug/L	10.0		101	80-121			
Chloroform	10.1	0.03	0.20	ug/L	10.0		101	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	10.4	0.03	0.10	ug/L	10.0		104	80-120			
Carbon tetrachloride	10.2	0.04	0.20	ug/L	10.0		102	53-137			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Volatile Organic Compounds - Quality Control

Batch BGE0730 - 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 (BGE0730-BS1)					Prepared: 30-May-2018 Analyzed: 30-May-2018 12:11						
1,2-Dichloroethane	9.75	0.07	0.20	ug/L	10.0		97.5	75-123			
Benzene	9.98	0.03	0.20	ug/L	10.0		99.8	80-120			
Trichloroethene	10.1	0.05	0.20	ug/L	10.0		101	80-120			
1,2-Dichloropropane	10.1	0.04	0.20	ug/L	10.0		101	80-120			
Bromodichloromethane	10.3	0.05	0.20	ug/L	10.0		103	80-121			
Dibromomethane	9.78	0.15	0.20	ug/L	10.0		97.8	80-120			
2-Chloroethyl vinyl ether	8.13	0.25	0.50	ug/L	10.0		81.3	74-127			
4-Methyl-2-Pentanone	49.2	0.97	2.50	ug/L	50.0		98.5	67-133			
cis-1,3-Dichloropropene	9.23	0.06	0.20	ug/L	10.0		92.3	80-124			
Toluene	10.1	0.04	0.20	ug/L	10.0		101	80-120			
trans-1,3-Dichloropropene	9.00	0.08	0.20	ug/L	10.0		90.0	71-127			
2-Hexanone	45.9	0.90	5.00	ug/L	50.0		91.8	69-133			
1,1,2-Trichloroethane	9.93	0.13	0.20	ug/L	10.0		99.3	80-121			
1,3-Dichloropropane	9.97	0.06	0.10	ug/L	10.0		99.7	80-120			
Tetrachloroethene	10.1	0.05	0.20	ug/L	10.0		101	80-120			
Dibromochloromethane	10.1	0.05	0.20	ug/L	10.0		101	65-135			
1,2-Dibromoethane	9.09	0.07	0.10	ug/L	10.0		90.9	80-121			
Chlorobenzene	9.97	0.02	0.20	ug/L	10.0		99.7	80-120			
Ethylbenzene	10.0	0.04	0.20	ug/L	10.0		100	80-120			
1,1,1,2-Tetrachloroethane	10.1	0.04	0.20	ug/L	10.0		101	80-120			
m,p-Xylene	21.0	0.05	0.40	ug/L	20.0		105	80-121			
o-Xylene	10.4	0.03	0.20	ug/L	10.0		104	80-121			
Xylenes, total	31.4	0.09	0.60	ug/L	30.0		105	76-127			
Styrene	10.9	0.05	0.20	ug/L	10.0		109	80-124			
Bromoform	8.48	0.06	0.20	ug/L	10.0		84.8	51-134			
1,1,2,2-Tetrachloroethane	9.80	0.06	0.10	ug/L	10.0		98.0	77-123			
1,2,3-Trichloropropane	10.3	0.13	0.20	ug/L	10.0		103	76-125			
trans-1,4-Dichloro 2-Butene	8.07	0.32	1.00	ug/L	10.0		80.7	55-129			
n-Propylbenzene	11.0	0.02	0.20	ug/L	10.0		110	78-130			
Bromobenzene	10.2	0.06	0.20	ug/L	10.0		102	80-120			
Isopropyl Benzene	11.0	0.02	0.20	ug/L	10.0		110	80-128			
2-Chlorotoluene	10.2	0.02	0.10	ug/L	10.0		102	78-122			
4-Chlorotoluene	10.7	0.02	0.20	ug/L	10.0		107	80-121			
t-Butylbenzene	10.7	0.03	0.20	ug/L	10.0		107	78-125			
1,3,5-Trimethylbenzene	10.8	0.02	0.20	ug/L	10.0		108	80-129			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Volatile Organic Compounds - Quality Control

Batch BGE0730 - 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 (BGE0730-BS1)					Prepared: 30-May-2018 Analyzed: 30-May-2018 12:11						
1,2,4-Trimethylbenzene	11.0	0.02	0.20	ug/L	10.0		110	80-127			
s-Butylbenzene	11.0	0.02	0.20	ug/L	10.0		110	78-129			
4-Isopropyl Toluene	11.3	0.03	0.20	ug/L	10.0		113	79-130			
1,3-Dichlorobenzene	10.3	0.04	0.20	ug/L	10.0		103	80-120			
1,4-Dichlorobenzene	9.80	0.04	0.20	ug/L	10.0		98.0	80-120			
n-Butylbenzene	11.6	0.02	0.20	ug/L	10.0		116	74-129			
1,2-Dichlorobenzene	10.0	0.04	0.20	ug/L	10.0		100	80-120			
1,2-Dibromo-3-chloropropane	8.37	0.37	0.50	ug/L	10.0		83.7	62-123			
1,2,4-Trichlorobenzene	10.7	0.11	0.50	ug/L	10.0		107	64-124			
Hexachloro-1,3-Butadiene	11.1	0.07	0.20	ug/L	10.0		111	58-123			
Naphthalene	9.72	0.12	0.50	ug/L	10.0		97.2	50-134			
1,2,3-Trichlorobenzene	10.6	0.11	0.20	ug/L	10.0		106	49-133			
Dichlorodifluoromethane	9.46	0.05	0.20	ug/L	10.0		94.6	48-147			
Surrogate: Dibromofluoromethane	5.04			ug/L	*5.00*		*101*	*80-120*			
Surrogate: 1,2-Dichloroethane-d4	4.90			ug/L	*5.00*		*98.0*	*80-129*			
Surrogate: Toluene-d8	5.08			ug/L	*5.00*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.02			ug/L	*5.00*		*100*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.06			ug/L	*5.00*		*101*	*80-120*			
LCS Dup (BGE0730-BSD1)					Prepared: 30-May-2018 Analyzed: 30-May-2018 12:31						
Chloromethane	9.54	0.09	0.50	ug/L	10.0		95.4	60-138	6.35	30	
Vinyl Chloride	10.8	0.06	0.10	ug/L	10.0		108	66-133	5.02	30	
Bromomethane	10.5	0.25	1.00	ug/L	10.0		105	72-131	4.80	30	
Chloroethane	8.30	0.09	0.20	ug/L	10.0		83.0	60-155	43.20	30	*, Q
Trichlorofluoromethane	9.93	0.04	0.20	ug/L	10.0		99.3	80-129	4.27	30	
Acrolein	53.3	2.48	2.50	ug/L	50.0		107	52-144	10.20	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.1	0.04	0.20	ug/L	10.0		111	76-129	3.87	30	
Acetone	51.1	2.06	5.00	ug/L	50.0		102	58-142	8.65	30	
1,1-Dichloroethene	10.5	0.05	0.20	ug/L	10.0		105	69-135	4.18	30	
Bromoethane	10.1	0.04	0.20	ug/L	10.0		101	78-128	0.80	30	
Iodomethane	10.1	0.23	0.50	ug/L	10.0		101	56-147	4.08	30	
Methylene Chloride	10.5	0.49	1.00	ug/L	10.0		105	65-135	5.09	30	
Acrylonitrile	9.84	0.60	1.00	ug/L	10.0		98.4	64-134	18.90	30	
Carbon Disulfide	10.2	0.04	0.10	ug/L	10.0		102	78-125	4.36	30	
trans-1,2-Dichloroethene	10.3	0.05	0.20	ug/L	10.0		103	78-128	4.97	30	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Volatile Organic Compounds - Quality Control

Batch BGE0730 - 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 (BGE0730-BSD1)	Prepared: 30-May-2018 Analyzed: 30-May-2018 12:31										
Vinyl Acetate	9.29	0.07	0.20	ug/L	10.0		92.9	55-138	9.85	30	
1,1-Dichloroethane	10.5	0.05	0.20	ug/L	10.0		105	76-124	5.48	30	
2-Butanone	56.2	0.81	5.00	ug/L	50.0		112	61-140	14.90	30	
2,2-Dichloropropane	11.0	0.05	0.10	ug/L	10.0		110	78-125	5.76	30	
cis-1,2-Dichloroethene	10.7	0.04	0.20	ug/L	10.0		107	80-121	5.48	30	
Chloroform	10.8	0.03	0.20	ug/L	10.0		108	80-122	6.14	30	
Bromochloromethane	11.3	0.06	0.20	ug/L	10.0		113	80-121	8.06	30	
1,1,1-Trichloroethane	10.5	0.04	0.20	ug/L	10.0		105	79-123	4.01	30	
1,1-Dichloropropene	10.9	0.03	0.10	ug/L	10.0		109	80-120	5.20	30	
Carbon tetrachloride	10.9	0.04	0.20	ug/L	10.0		109	53-137	6.93	30	
1,2-Dichloroethane	10.3	0.07	0.20	ug/L	10.0		103	75-123	5.76	30	
Benzene	10.6	0.03	0.20	ug/L	10.0		106	80-120	5.80	30	
Trichloroethene	10.7	0.05	0.20	ug/L	10.0		107	80-120	5.83	30	
1,2-Dichloropropane	10.8	0.04	0.20	ug/L	10.0		108	80-120	5.86	30	
Bromodichloromethane	10.8	0.05	0.20	ug/L	10.0		108	80-121	4.28	30	
Dibromomethane	10.8	0.15	0.20	ug/L	10.0		108	80-120	9.91	30	
2-Chloroethyl vinyl ether	9.40	0.25	0.50	ug/L	10.0		94.0	74-127	14.50	30	
4-Methyl-2-Pentanone	58.5	0.97	2.50	ug/L	50.0		117	67-133	17.20	30	
cis-1,3-Dichloropropene	9.84	0.06	0.20	ug/L	10.0		98.4	80-124	6.49	30	
Toluene	10.6	0.04	0.20	ug/L	10.0		106	80-120	5.43	30	
trans-1,3-Dichloropropene	9.85	0.08	0.20	ug/L	10.0		98.5	71-127	9.00	30	
2-Hexanone	54.7	0.90	5.00	ug/L	50.0		109	69-133	17.40	30	
1,1,2-Trichloroethane	11.0	0.13	0.20	ug/L	10.0		110	80-121	10.10	30	
1,3-Dichloropropane	10.9	0.06	0.10	ug/L	10.0		109	80-120	9.35	30	
Tetrachloroethene	10.6	0.05	0.20	ug/L	10.0		106	80-120	4.97	30	
Dibromochloromethane	11.0	0.05	0.20	ug/L	10.0		110	65-135	8.05	30	
1,2-Dibromoethane	10.1	0.07	0.10	ug/L	10.0		101	80-121	10.40	30	
Chlorobenzene	10.5	0.02	0.20	ug/L	10.0		105	80-120	4.95	30	
Ethylbenzene	10.5	0.04	0.20	ug/L	10.0		105	80-120	4.39	30	
1,1,1,2-Tetrachloroethane	10.6	0.04	0.20	ug/L	10.0		106	80-120	5.24	30	
m,p-Xylene	22.2	0.05	0.40	ug/L	20.0		111	80-121	5.39	30	
o-Xylene	10.9	0.03	0.20	ug/L	10.0		109	80-121	4.49	30	
Xylenes, total	33.1	0.09	0.60	ug/L	30.0		110	76-127	5.09	30	
Styrene	11.4	0.05	0.20	ug/L	10.0		114	80-124	4.80	30	
Bromoform	9.21	0.06	0.20	ug/L	10.0		92.1	51-134	8.28	30	

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Volatile Organic Compounds - Quality Control

Batch BGE0730 - 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 (BGE0730-BSD1)	Prepared: 30-May-2018 Analyzed: 30-May-2018 12:31										
1,1,2,2-Tetrachloroethane	10.7	0.06	0.10	ug/L	10.0		107	77-123	8.92	30	
1,2,3-Trichloropropane	11.3	0.13	0.20	ug/L	10.0		113	76-125	9.17	30	
trans-1,4-Dichloro 2-Butene	8.93	0.32	1.00	ug/L	10.0		89.3	55-129	10.10	30	
n-Propylbenzene	11.3	0.02	0.20	ug/L	10.0		113	78-130	2.56	30	
Bromobenzene	10.6	0.06	0.20	ug/L	10.0		106	80-120	4.25	30	
Isopropyl Benzene	11.3	0.02	0.20	ug/L	10.0		113	80-128	3.50	30	
2-Chlorotoluene	10.6	0.02	0.10	ug/L	10.0		106	78-122	3.26	30	
4-Chlorotoluene	11.1	0.02	0.20	ug/L	10.0		111	80-121	4.12	30	
t-Butylbenzene	11.2	0.03	0.20	ug/L	10.0		112	78-125	4.86	30	
1,3,5-Trimethylbenzene	11.2	0.02	0.20	ug/L	10.0		112	80-129	3.46	30	
1,2,4-Trimethylbenzene	11.3	0.02	0.20	ug/L	10.0		113	80-127	2.74	30	
s-Butylbenzene	11.4	0.02	0.20	ug/L	10.0		114	78-129	3.87	30	
4-Isopropyl Toluene	11.6	0.03	0.20	ug/L	10.0		116	79-130	2.77	30	
1,3-Dichlorobenzene	10.7	0.04	0.20	ug/L	10.0		107	80-120	3.56	30	
1,4-Dichlorobenzene	10.4	0.04	0.20	ug/L	10.0		104	80-120	5.53	30	
n-Butylbenzene	11.8	0.02	0.20	ug/L	10.0		118	74-129	1.85	30	
1,2-Dichlorobenzene	10.6	0.04	0.20	ug/L	10.0		106	80-120	5.61	30	
1,2-Dibromo-3-chloropropane	9.79	0.37	0.50	ug/L	10.0		97.9	62-123	15.60	30	
1,2,4-Trichlorobenzene	11.4	0.11	0.50	ug/L	10.0		114	64-124	6.26	30	
Hexachloro-1,3-Butadiene	11.4	0.07	0.20	ug/L	10.0		114	58-123	2.68	30	
Naphthalene	10.7	0.12	0.50	ug/L	10.0		107	50-134	9.69	30	
1,2,3-Trichlorobenzene	11.4	0.11	0.20	ug/L	10.0		114	49-133	6.89	30	
Dichlorodifluoromethane	9.65	0.05	0.20	ug/L	10.0		96.5	48-147	2.02	30	
Surrogate: Dibromofluoromethane	5.09			ug/L	*5.00*		*102*	*80-120*			
Surrogate: 1,2-Dichloroethane-d4	5.04			ug/L	*5.00*		*101*	*80-129*			
Surrogate: Toluene-d8	5.02			ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.03			ug/L	*5.00*		*101*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.03			ug/L	*5.00*		*101*	*80-120*			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Semivolatile Organic Compounds - Quality Control

Batch BGE0681 - EPA 3520C (Liq Liq)

Instrument: NT12 Analyst: JZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGE0681-BLK1)				Prepared: 25-May-2018 Analyzed: 04-Jun-2018 16:05							
1,4-Dioxane	ND	0.2	0.4	ug/L							U
Surrogate: 1,4-Dioxane-d8	28.4			ug/L	*50.0*		*56.8*	*33.6-120*			
LCS (BGE0681-BS1)				Prepared: 25-May-2018 Analyzed: 04-Jun-2018 16:39							
1,4-Dioxane	32.9	0.2	0.4	ug/L	50.0		65.8	39.9-120			
Surrogate: 1,4-Dioxane-d8	35.8			ug/L	*50.0*		*71.7*	*33.6-120*			
LCS Dup (BGE0681-BSD1)				Prepared: 25-May-2018 Analyzed: 04-Jun-2018 17:12							
1,4-Dioxane	36.0	0.2	0.4	ug/L	50.0		72.1	39.9-120	9.06	30	
Surrogate: 1,4-Dioxane-d8	37.9			ug/L	*50.0*		*75.9*	*33.6-120*			

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Semivolatile Organic Compounds - Quality Control

Batch BGF0044 - EPA 3520C (Liq Liq)

Instrument: NT12 Analyst: JZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGF0044-BLK1)				Prepared: 05-Jun-2018 Analyzed: 06-Jun-2018 15:34							
1,4-Dioxane	ND	0.2	0.4	ug/L							U
Surrogate: 1,4-Dioxane-d8	38.1			ug/L	*50.0*		*76.1*	*33.6-120*			
LCS (BGF0044-BS1)				Prepared: 05-Jun-2018 Analyzed: 06-Jun-2018 16:08							
1,4-Dioxane	32.9	0.2	0.4	ug/L	50.0		65.7	39.9-120			
Surrogate: 1,4-Dioxane-d8	36.2			ug/L	*50.0*		*72.3*	*33.6-120*			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Petroleum Hydrocarbons - Quality Control

Batch BGE0655 - EPA 3510C SepF

Instrument: FID4 Analyst: JGR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGE0655-BLK1)				Prepared: 25-May-2018 Analyzed: 25-May-2018 22:39						
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	0.517		mg/L	*0.450*		*115*	*50-150*			
Surrogate: n-Triacontane	0.433		mg/L	*0.450*		*96.1*	*50-150*			

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Metals and Metallic Compounds - Quality Control

Batch BGE0656 - 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 (BGE0656-BLK1)				Prepared: 25-May-2018 Analyzed: 25-May-2018 12:24						
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
Potassium	ND	500	ug/L							U
Silver	ND	3.0	ug/L							U
Sodium	ND	500	ug/L							U
Vanadium	ND	3.0	ug/L							U
Zinc	ND	20.0	ug/L							U
LCS (BGE0656-BS1)				Prepared: 25-May-2018 Analyzed: 25-May-2018 13:02						
Aluminum	2060	1000	ug/L	2000		103	80-120			
Barium	2120	500	ug/L	2000		106	80-120			
Beryllium	502	2.0	ug/L	500		100	80-120			
Cadmium	507	2.0	ug/L	500		101	80-120			
Calcium	10100	500	ug/L	10000		101	80-120			
Chromium	520	1000	ug/L	500		104	80-120			U
Cobalt	514	10.0	ug/L	500		103	80-120			
Copper	510	3.0	ug/L	500		102	80-120			
Iron	2060	200	ug/L	2000		103	80-120			
Magnesium	10500	1000	ug/L	10000		105	80-120			
Manganese	492	20.0	ug/L	500		98.3	80-120			
Nickel	511	20.0	ug/L	500		102	80-120			
Potassium	10200	500	ug/L	10000		102	80-120			
Silver	546	3.0	ug/L	500		109	80-120			
Sodium	10100	500	ug/L	10000		101	80-120			
Vanadium	523	3.0	ug/L	500		105	80-120			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Metals and Metallic Compounds - Quality Control

Batch BGE0656 - 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 (BGE0656-BS1)				Prepared: 25-May-2018 Analyzed: 25-May-2018 13:02						
Zinc	501	20.0	ug/L	500		100	80-120			
Duplicate (BGE0656-DUP1)		**Source: 18E0350-01**		Prepared: 25-May-2018 Analyzed: 25-May-2018 12:50						
Aluminum	ND	1000	ug/L		ND					U
Barium	346	500	ug/L		347			0.39	20	U
Beryllium	ND	2.0	ug/L		ND					U
Cadmium	ND	2.0	ug/L		ND					U
Calcium	59000	500	ug/L		59000			0.03	20	
Chromium	ND	1000	ug/L		1.5					U
Cobalt	1.5	10.0	ug/L		1.5			0.37	20	U
Copper	ND	3.0	ug/L		0.7					U
Iron	1780	200	ug/L		1790			0.45	20	
Magnesium	27900	1000	ug/L		27800			0.44	20	
Manganese	151	20.0	ug/L		151			0.09	20	
Nickel	ND	20.0	ug/L		ND					U
Potassium	2100	500	ug/L		2080			0.96	20	
Silver	ND	3.0	ug/L		ND					U
Sodium	30200	500	ug/L		30000			0.93	20	
Vanadium	ND	3.0	ug/L		ND					U
Zinc	ND	20.0	ug/L		ND					U
Matrix Spike (BGE0656-MS1)		**Source: 18E0350-01**		Prepared: 25-May-2018 Analyzed: 25-May-2018 12:58						
Aluminum	2100	1000	ug/L	2000	ND	105	75-125			
Barium	2480	500	ug/L	2000	347	106	75-125			
Beryllium	497	2.0	ug/L	500	ND	99.3	75-125			
Cadmium	503	2.0	ug/L	500	ND	101	75-125			
Calcium	67400	500	ug/L	10000	59000	84.2	75-125			
Chromium	526	1000	ug/L	500	1.5	105	75-125			U
Cobalt	499	10.0	ug/L	500	1.5	99.6	75-125			
Copper	511	3.0	ug/L	500	0.7	102	75-125			
Iron	3820	200	ug/L	2000	1790	102	75-125			
Magnesium	36700	1000	ug/L	10000	27800	89.4	75-125			
Manganese	635	20.0	ug/L	500	151	96.7	75-125			
Nickel	509	20.0	ug/L	500	ND	102	75-125			
Potassium	12400	500	ug/L	10000	2080	103	75-125			

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Metals and Metallic Compounds - Quality Control

Batch BGE0656 - 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 (BGE0656-MS1)	**Source: 18E0350-01**		Prepared: 25-May-2018 Analyzed: 25-May-2018 12:58							
Silver	459	3.0	ug/L	500	ND	91.7	75-125			
Sodium	39900	500	ug/L	10000	30000	99.7	75-125			
Vanadium	519	3.0	ug/L	500	ND	104	75-125			
Zinc	502	20.0	ug/L	500	ND	100	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Metals and Metallic Compounds - Quality Control

Batch BGE0660 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGE0660-BLK1)					Prepared: 25-May-2018 Analyzed: 05-Jun-2018 15:17						
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 (BGE0660-BS1)					Prepared: 25-May-2018 Analyzed: 05-Jun-2018 15:54						
Antimony	121	26.2	3.00	ug/L	25.0		105	80-120			
Antimony	123	26.6	3.00	ug/L	25.0		106	80-120			
Lead	208	27.3	10.0	ug/L	25.0		109	80-120			
Thallium	205	28.1	2.00	ug/L	25.0		113	80-120			
Arsenic	75a	25.9	3.00	ug/L	25.0		104	80-120			
Selenium	78	88.7	5.00	ug/L	80.0		111	80-120			
Duplicate (BGE0660-DUP1)			**Source: 18E0350-01**		Prepared: 25-May-2018 Analyzed: 05-Jun-2018 16:47						
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	5.29	3.00	ug/L		5.39			1.91	20	
Selenium	78	ND	5.00	ug/L		ND					U
Matrix Spike (BGE0660-MS1)			**Source: 18E0350-01**		Prepared: 25-May-2018 Analyzed: 05-Jun-2018 16:57						
Antimony	121	28.0	3.00	ug/L	25.0	ND	112	75-125			
Lead	208	25.8	10.0	ug/L	25.0	ND	103	75-125			
Thallium	205	26.4	2.00	ug/L	25.0	ND	106	75-125			
Arsenic	75a	31.7	3.00	ug/L	25.0	5.39	105	75-125			
Selenium	78	84.9	5.00	ug/L	80.0	ND	106	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Metals and Metallic Compounds - Quality Control

Batch BGE0726 - TLM EPA 7470A low level

Instrument: CETAC Analyst: DP

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGE0726-BLK1)				Prepared: 30-May-2018 Analyzed: 31-May-2018 10:07						
Mercury	ND	20	ng/L							U
LCS (BGE0726-BS1)				Prepared: 30-May-2018 Analyzed: 31-May-2018 10:09						
Mercury	222	20	ng/L	200		111	80-120			
Duplicate (BGE0726-DUP1)	**Source: 18E0350-01**			Prepared: 30-May-2018 Analyzed: 31-May-2018 10:15						
Mercury	ND	20	ng/L		ND					U
Matrix Spike (BGE0726-MS1)	**Source: 18E0350-01**			Prepared: 30-May-2018 Analyzed: 31-May-2018 10:17						
Mercury	111	20	ng/L	100	ND	111	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

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 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
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

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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
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

Golder Associates	Project: Landsburg	
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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

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

Golder Associates	Project: Landsburg	
18300 NE Union Hill Road Suite 200	Project Number: Landsburg	**Reported:**
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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	02/07/2019
CALAP	California Department of Public Health CAELAP	2748	06/30/2018
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/07/2019
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-011	05/12/2019
WADOE	WA Dept of Ecology	C558	06/30/2018
WA-DW	Ecology - Drinking Water	C558	06/30/2018

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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	07-Jun-2018 10:52

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
H	Hold time violation - Hold time was exceeded.
J	Estimated concentration value detected below the reporting 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)
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- 0518

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 5/24/18 **Time** 0925

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 – 7.66 ft below TOC (inner PVC at elev. X) (bottom at 38.1 ft bgs, 4-in casing)

Screen Interval – 27.9-38.1 ft bgs Monument: 2.94 ags Inner PVC: 2.38 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 Silty Oil

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, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/24/18

Supervisor (signature) [signature] **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-2
Date 5/24/18
Time Begin Purge 0840
Time Collect Sample 0925

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
—	0850	10.62	6.84	731	0.21	+21.1	1.26
—	0855	10.67	6.91	734	0.24	+16.5	0.67
—	0900	10.69	6.95	732	0.30	+20.8	0.58
—	0905	10.69	6.97	730	0.26	+21.1	0.26
—	0910	10.70	6.96	732	0.18	+22.0	0.23
—	0915	10.69	6.98	730	0.06	+21.1	0.27
—	0920	10.69	6.98	732	0.06	+20.9	0.71

Comments:

73.5 Hz

$\frac{5\,gal}{5.5\,min} = 0.9\,gpm$

Sampler's Initials JN

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-3- 0518

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 5/23/18 **Time** 1100

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 – 12.08 ft below TOC (inner PVC at elev. X) (bottom at 64.8 ft bgs, 4-in casing)

Screen Interval – 49.8-64.8 ft bgs Monument: 3.08 ags Inner PVC: 2.35 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

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, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/23/18

Supervisor (signature) _____ **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-3
Date 5/23/18
Time Begin Purge 1016
Time Collect Sample 1100

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
—	1016	10.91	7.13	243	0.29	+36.5	0.51
—	1021	10.91	6.95	243	0.21	+31.9	0.26
—	1026	10.91	6.73	243	0.19	+30.1	0.43
—	1031	10.91	6.81	246	0.20	+30.8	0.20
—	1036	10.91	7.05	248	0.18	+22.5	0.50
—	1041	10.92	7.10	249	0.16	+19.1	0.58
—	1046	10.91	7.23	249	0.19	+16.1	0.37
—	1051	10.91	7.26	251	0.19	+14.0	0.16
—	1056	10.90	7.22	251	0.19	+14.5	0.15

Comments: Packer 110psi
Grundfos 133

$\frac{5 gal}{4.25 min} = 1.18 gpm$

Sampler's Initials

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-4-0518

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 5/24/18 **Time** 1100

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 – 9.76 @1013 ft below TOC (inner PVC at elev. X) (bottom at 209.7 ft bgs, 4-in casing)

Screen Interval – 195-209.7 ft bgs Monument: 2.76 ags Inner PVC: 2.17 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)
4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/24/18

Supervisor (signature) _____ **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID MW-4
Date 5/24/18
Time Begin Purge 1022
Time Collect Sample 1100

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
–	1032	10.49	6.91	736	0.34	+9.6	0.45
–	1037	10.51	6.98	738	0.19	-5.2	0.40
–	1042	10.52	7.00	738	0.14	-9.6	0.33
–	1047	10.53	7.01	736	0.18	-8.8	0.28
–	1052	10.54	7.01	735	0.16	-13.0	0.39
–	1057	10.55	7.00	735	0.15	-9.8	0.27

Comments:
83 Hz
5 gal / 7.5 min = 0.667 gpm

Sampler's Initials

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-5- 05/8

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 5/23/18 **Time** 1215

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 – 13.63 ft below TOC (inner PVC at elev. X) (bottom at 241.8 ft bgs, 4-in casing)

Screen Interval – 231.8-241.8 ft bgs Monument: 3.24 ags Inner PVC: 2.64 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

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, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/23/18

Supervisor (signature) _____ **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-5
Date 5/23/18
Time Begin Purge 1130
Time Collect Sample 1215

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
—	1140	10.93	7.25	601	0.17	+14.7	0.39
—	1145	10.96	7.18	600	0.15	+13.6	0.22
	1150	10.96	7.14	600	0.37	+14.1	0.54
	1155	10.96	7.11	599	0.40	+14.6	0.48
	1200	10.95	7.07	595	0.40	+15.3	0.26
	1205	10.96	7.06	596	0.39	+15.4	0.40
	1210	10.96	7.05	600	0.38	+15.0	0.34
	~~12~~						

Comments: Packer 130psi
Grundfos 135 Hte

5gal / 4min 1.25gpm

Sampler's Initials

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-6- 0515

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 5/22/18 **Time** 1210

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 – 24.52 ft below TOC (inner PVC at elev. X) (bottom at 105.9 ft bgs, 4-in casing) e.l. 1105.04 5/23

Screen Interval – 90.9-105.9 ft bgs Monument: 3.05 ags Inner PVC: 2.38 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 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, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/22/18

Supervisor (signature) _____ **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-6
Date 5/22/18
Time Begin Purge 1122
Time Collect Sample 1210

Water Level feet bmp	Time	Temp. °C	pH ☆	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
—	1140	9.66	7.89	171	0.14	+7.2	2.04
	1145	9.66	7.86	171	0.13	+10.0	0.92
	1150	9.66	7.87	171	0.13	+8.2	0.88
	1155	9.69	7.88	171	0.12	+1.9	0.93
	1200	9.70	7.88	171	0.13	+3.6	0.68
	1205	9.71	7.86	172	0.13	+3.1	0.46

Comments:

Packer 110

Grundfos 20S

☆ pH meter Reads High during calcheck after sampling

5gal / ~2.5min 2gpm

30gal/well / 2gpm = 15min/well 4Smin

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-7-05/8, LMW-7-05/8D

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 5/22/18 **Time** 1355/1405

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 – 22.22 (12.50) ft below TOC (inner PVC at elev. X) (bottom at 253.7 ft bgs, 4-in casing)

Screen Interval – 239.6-253.7 ft bgs Monument: 3.09 ags Inner PVC: 2.72 ags

Sand Pack Interval – NA

Packer Depth – NA (~28.3 gal/casing vol) ** Depths corrected for 70° inclination

Sample Description Clear

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)
8 – 500 mL, 4 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
4 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/22/18

Supervisor (signature) _____ **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-7
Date 5/22/18
Time Begin Purge 1259
Time Collect Sample 1355 / 1405

Water Level feet bmp	Time	Temp. °C	pH ☆	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
—	1325	12.55	7.89	401	0.26	+1.0	0.93
—	1330	12.53	7.87	404	0.23	+0.2	0.43
—	1335	12.52	7.86	407	0.21	-0.1	0.47
—	1340	12.54	7.85	411	0.20	-0.3	0.37
—	1345	12.55	7.85	414	0.19	-0.6	0.30
—	1350	12.55	7.84	419	0.19	-0.7	0.24

Comments:
Grundfos 341 Htz
☆ pH Reads high during Post sampling Cal check

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-8- 0518

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 5/23/18 **Time** 1325

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 – 4.46 ft below TOC (PVC at black notch) 1235 (bottom at 13 ft bgs, 2-in casing)

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

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, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/23/18

Supervisor (signature) [signature] **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-8A
Date 5/23/18
Time Begin Purge 1240
Time Collect Sample 1325

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
7.09	1250	12.37	7.13	425	0.64	-17.0	0.76
7.24	1255	12.35	7.11	461	0.42	-15.7	0.55
7.37	1300	12.27	7.10	468	0.68	-15.6	0.61
7.48	1305	12.16	7.08	472	0.68	-15.8	0.41
7.51	1310	12.17	7.03	474	0.64	-16.2	0.55
7.55	1315	12.20	7.00	476	0.72	-16.8	0.61
7.55	1320	12.21	6.96	478	0.30	-17.1	0.60

Comments:

350ml/min Reduced to 260ml/min @1247

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-9-05/8

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 5/23/18 **Time** 0930

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 – 99.45 ft below TOC (PVC at black notch) (bottom at 159 ft bgs, 2-in casing)

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

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, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/23/18

Supervisor (signature) [signature] **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-4
Date 5/23/18
Time Begin Purge 0852
Time Collect Sample 0930

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
	0902	12.07	6.93	576	0.27	-38.5	0.99
	0907	12.06	6.97	576	0.22	-36.6	0.30
	0912	12.07	6.99	576	0.19	-34.2	0.16
	0917	12.07	7.00	575	0.20	-32.5	0.54
	0922	12.07	6.98	574	0.19	-31.6	0.33
	0927	12.08	7.00	576	0.19	-31.6	0.44

Comments: Grundfos 330Htc

5gal / 3.75min

Sampler's Initials

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-10-0518

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 QED Bladder

Date 5/22/18 **Time** 1530

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 0.80 @ 1445 ft below TOC (PVC) (bottom at 289 ft bgs, 4-in casing)

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)
4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/22/18

Supervisor (signature) _____ **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-10
Date 5/22/18
Time Begin Purge 1452
Time Collect Sample 1530

Water Level feet bmp	Time	Temp. °C	pH ☆	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
2.18	1502	11.71	8.94	262	0.15	+14.2	0.92
3.04	1507	11.68	8.96	261	0.12	+5.4	0.38
3.71	1512	11.70	8.96	261	0.11	+17.6	0.61
4.41	1517	11.70	8.94	261	0.10	+15.5	0.55
5.15	1522	11.64	8.96	259	0.10	+12.8	0.18
5.80	1527	11.56	8.95	259	0.10	+13.6	0.35

Comments:

TANK 110psi
throttle 40psi
CID 50
CPM 2
Rate ~500ml/min

☆ pH Meter Reads High during cal check after sampling

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-11- 0518

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 QED Bladder

Date 5/22/18 **Time** 1020

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 – 15.27 ft below TOC (PVC) (bottom at 707 ft bgs, 4-in casing)

Screen Interval – 696-707 ft bgs PVC stickup: 2.37 ags Outer metal Casing: 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 Initial Purge - Had 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)
4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/22/18

Supervisor (signature) _____ **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-11
Date 5/22/18
Time Begin Purge 0915 / 0935
Time Collect Sample 1020

Water Level feet bmp	Time	Temp. °C	pH ☆	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
—	0945	11.48	7.84	390	2.06	-21.6	1.52
—	0950	11.36	7.93	400	1.04	-28.0	0.57
—	0955	11.34	7.98	411	0.71	-33.8	1.16
—	1000	11.33	7.98	414	0.58	-34.0	0.63
—	1005	11.34	7.99	415	0.56	-37.1	0.45
—	100	11.41	8.00	413	0.50	-36.3	0.32
—	1015	11.43	8.02	412	0.47	-36.3	0.29

Comments:

0915: Start Grundfos pump ~170' Pump Controller 400Hz pump rate 5gal/5min 30psi

☆ pH Meter reads High during post sampling cal check

0935: Start Bladder pump
Tank 110psi LID 40
Throttle 110psi CPM 1

Sampler's Initials

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-12-0518

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 QED Bladder

Date 5/23/18 **Time** 1450

Media Water **Station** LMW-12

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 9.53 @ 1400

Screen Interval – 15-25

Sand Pack Interval – 11-25

Packer Depth – NA

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)
4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/23/18

Supervisor (signature) [signature] **Date** 5-29-18

FIELD PARAMETERS SHEET

Well ID LMW-12
Date 5/23/18
Time Begin Purge 1404
Time Collect Sample 1450

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
9.55	1414	11.58	7.10	734	0.22	-33.7	6.45
9.55	1419	11.62	7.06	737	0.20	-32.9	11.1
9.55	1424	11.56	7.05	740	0.18	-34.6	10.9
9.55	1429	11.85	7.04	758	0.19	-35.6	14.2
9.55	1434	11.96	7.04	775	0.20	-36.4	16.6
9.55	1439	12.37	7.02	785	0.19	-35.6	13.2
9.55	1444	11.96	7.03	773	0.16	-33.9	14.0

Comments:
Throttle ~18psi
CID 47
CPM 2
Tank 110
Purge 400 ml/min
Dump Flow through cell after @ 1429 to help Reduce turbidity

Sampler's Initials

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** LMW-13R - 0518

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 QED Bladder

Date 5/23/18 **Time** 1600

Media Water **Station** LMW-13

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – 10.05

Screen Interval – 140-115

Sand Pack Interval – 150-110

Packer Depth – NA

Sample Description Cloudy + 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)
4 – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) _____ **Date** 5/23/18

Supervisor (signature) _____ **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID LMW-BR
Date 5/23/18
Time Begin Purge 1511
Time Collect Sample 1600

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU
10.29	1521	11.75	7.34	745	0.33	-38.8	50.7
10.38	1526	11.72	7.33	746	0.27	-34.5	16.9
10.35	1531	11.58	7.33	745	0.28	-35.1	71.1
10.35	1536	11.56	7.32	746	0.21	-34.8	42.0
10.37	1541	11.46	7.32	745	0.19	-34.7	27.1
10.35	1546	11.43	7.32	743	0.18	-35.8	23.0
10.35	1551	11.47	7.32	743	0.17	-36.5	17.7
10.35	1556	11.39	7.32	741	0.17	-34.6	13.0

Comments:

Tank 110psi 450 cpm
Throttle 35psi
CPM 2
CID 48

Sampler's Initials JM

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-002

Site Location Ravensdale, WA **Sample ID** EB

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 QED Bladder~~ Peristaltic Pump

Date 5/24/18 **Time** 0945

Media Water **Station** LMW~~-11~~ 2

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL – NA

Screen Interval – NA

Sand Pack Interval – NA

Packer Depth – NA

Sample Description Lab provided DI through New tubing and pc pump Dissolved metals filtered

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)
2 ~~4~~ – 500 mL, 2 – 40 mL	TPH-HCID	Glass Amber, VOA Vial	HCl
2 – 500 mL	1,4-Dioxane	Glass Amber	none

Sampler (signature) [signature] **Date** 5/24/18

Supervisor (signature) [signature] **Date** 5-25-18

FIELD PARAMETERS SHEET

Well ID EB-0518
Date 5/24/18
Time Begin Purge 0945
Time Collect Sample 0945

Water Level feet bmp	Time	Temp. °C	pH	Conductivity uS/cm	DO mg/L	Eh Rel mV	Turbidity NTU

Comments:
No Parameters collected New tubing with lab provided DI water

Sampler's Initials JH

APPENDIX C

May 2018 Landsburg Mine Site Water Quality Monitoring Data Validation and Quality Assurance / Quality Control Review Memorandum

TECHNICAL MEMORANDUM

Date:	June 18, 2018	**Project No.:**	923-1000-005.2000
To:	Bill Kombol	**Company:**	Palmer Coking Coal Company
From:	Jason Yabandeh, Staff Environmental Chemist		
Email:	jyabandeh@golder.com		

RE: LANDSBURG MINE SITE MAY 2018 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 May 22 through May 24, 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 May. Samples were analyzed by Analytical Resources Inc. of Tukwila, Washington for the following parameters:

- Volatile organic compounds (VOCs) by United States Environmental Protection Agency (EPA) SW-846 method 8260C;
- 1,4-Dioxane by EPA SW-846 method 8270D;
- 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, 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.

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

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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

Table 1
Sample Collection and Analysis Summary
Landsburg Groundwater Monitoring - May 2018

							Analyses				
SDG	Field Identification	Collection Date	Location	Lab Identification	Matrix	QC Samples	VOCs by	1,4-Dioxane by SW8270D	TPH Scan by NWTPH-HCID	Total Metals by 6010C and 200.8	Total Mercury by SW7470A
18E0350	LMW-11-0518	5/22/2018	LMW-11	18E0350-01	Water	--	X	X	X	X	X
18E0350	LMW-6-0518	5/22/2018	LMW-6	18E0350-03	Water	--	X	X	X	X	X
18E0350	LMW-7-0518	5/22/2018	LMW-7	18E0350-05	Water	--	X	X	X	X	X
18E0350	LMW-7-0518-D	5/22/2018	LMW-7	18E0350-07	Water	FD (LMW-7-0518)	X	X	X	X	X
18E0350	LMW-10-0518	5/22/2018	LMW-10	18E0350-09	Water	--	X	X	X	X	X
18E0350	LMW-9-0518	5/23/2018	LMW-9	18E0350-11	Water	--	X	X	X	X	X
18E0350	LMW-3-0518	5/23/2018	LMW-3	18E0350-13	Water	--	X	X	X	X	X
18E0350	LMW-5-0518	5/23/2018	LMW-5	18E0350-15	Water	--	X	X	X	X	X
18E0350	LMW-8-0518	5/23/2018	LMW-8	18E0350-17	Water	--	X	X	X	X	X
18E0350	LMW-12-0518	5/23/2018	LMW-12	18E0350-19	Water	--	X	X	X	X	X
18E0350	LMW-13R-0518	5/23/2018	LMW-13R	18E0350-21	Water	--	X	X	X	X	X
18E0350	LMW-2-0518	5/24/2018	LMW-2	18E0350-23	Water	--	X	X	X	X	X
18E0350	EB-0518	5/24/2018	EB	18E0350-25	Water	EB (LMW-2-0518)	X	X	X	X	X
18E0350	LMW-4-0518	5/24/2018	LMW-4	18E0350-27	Water	--	X	X	X	X	X
18E0350	TRIP BLANK	5/22/2018	--	18E0350-29	Water	TB	X				

Notes:
All analyses performed by ARI Laboratories

Abbreviations:
EB - Equipment 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 - May 2018

SDG	Sample Name	Constituent	New Result	New RL	Qualifier	Reason
18E0350	LMW-12-0518	4-Isopropyl Toluene	0.2	--	U	Method and trip blank contamination
18E0350	LMW-7-0518	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-7-0518-D	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-10-0518	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-9-0518	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-3-0518	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-5-0518	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-8-0518	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-12-0518	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-13R-0518	Acetone	--	--	J+	Equipment and trip blank contamination
18E0350	LMW-2-0518	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-4-0518	Acetone	5	--	U	Equipment and trip blank contamination
18E0350	LMW-11-0518	Carbon Disulfide	0.1	--	U	Equipment and trip blank contamination
18E0350	LMW-6-0518	Carbon Disulfide	0.1	--	U	Equipment and trip blank contamination
18E0350	LMW-5-0518	Carbon Disulfide	0.1	--	U	Equipment and trip blank contamination
18E0350	LMW-13R-0518	Carbon Disulfide	0.1	--	U	Equipment and trip blank contamination
18E0350	LMW-2-0518	Carbon Disulfide	0.1	--	U	Equipment and trip blank contamination
18E0350	LMW-4-0518	Carbon Disulfide	0.1	--	U	Equipment and trip blank contamination
18E0350	LMW-10-0518	Carbon Disulfide	--	--	J+	Equipment and trip blank contamination
18E0350	LMW-11-0518	n-Butylbenzene	0.2	--	U	Method and trip blank contamination
18E0350	LMW-6-0518	n-Butylbenzene	0.2	--	U	Method and trip blank contamination
18E0350	LMW-12-0518	Toluene	0.2	--	U	Method and trip blank contamination
18E0350	LMW-13R-0518	Toluene	0.2	--	U	Method and trip blank contamination
18E0350	LMW-10-0518	1,4-Dioxane	--	--	UJ	Surrogate recovery below QC limits

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 2018-05
Project Number: 923-1000-005.2000
Reviewer: Jason Yabandeh
Validation Date: June 18, 2018
Reviewed by:
Review Date:
Laboratory: Analytical Resources, Inc (Tukwila, WA)
SDG #: 18E0350
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)?	☒	☐	☐	Grab
e) Field QC noted?	☒	☐	☐	Field duplicate, equipment blank, trip blank
f) Field parameters collected (note types)?	☒	☐	☐	
g) Was the COC signed by both field and laboratory personnel?	☒	☐	☐	
h) Were samples received in good condition?	☐	☒	☐	See notes 1 and 2
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 1, 3, and 5-7

Note Deficiencies:

- Certain analytes in the ICV were outside of QC limits.
- Certain LCS/LCSD recoveries and RPDs were outside of QC limits.
- Certain surrogate recoveries were outside of QC limits.
- Certain samples were analyzed outside of hold time.
- Certain samples were analyzed from VOA vials that contained air bubbles.

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?	☐	☒	☐	See 3
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)?	☒	☐	☐	See note 4
b) Were analytes detected in the field blank(s)?	☐	☐	☒	
c) Were analytes detected in the equipment blank(s)?	☒	☐	☐	See note 4
d) Were analytes detected in the trip blank(s)?	☒	☐	☐	See note 4
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?	☐	☒	☐	See note 5
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?	☐	☒	☐	See note 6

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)?	☒	☐	☐	See Table 1
b) Were field dup. precision criteria met (20%)?	☒	☐	☐	All RPDs are <20% or results are <5x RL
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?	☒	☐	☐	See note 7
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. Bubbles that are less than 5% of total sample volume are not known to adversely affect VOC recovery. No further action necessary other than to note.

2. The lab noted that the metals bottle for sample LMW-2-0518 was received with pH>2. The laboratory adjusted the sample pH to be less than 2 upon receipt. No further action necessary other than to note.

3. The laboratory re-extracted and reanalyzed sample LMW-10-0518 for 1,4-dioxane outside of hold time because the surrogate recovery in the original analysis was below QC limits. The sample was re-extracted 14 days after collection, which exceeds the extraction hold time of 7 days. The 1,4-dioxane result should be reported from the original analysis and qualified as discussed in note 5.

4. 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 less than the RL, associated detections that are less than the RL are qualified as non-detect (U) at the RL, while associated detections that are greater than the RL and non-detections do not require qualification. Using professional judgment, the acetone detection in sample LM-13R-0518 is qualified as estimated with high bias (J+) because the result is less than 2x the equipment blank contamination.

Blank ID	Method	Analyte	Result (µg/L)	Qualifier	RL (µg/L)
BGE0730-BLK1	SW8260C	Isopropyl Benzene	0.02	J	0.2
BGE0730-BLK1	SW8260C	2-Chlorotoluene	0.03	J	0.1
BGE0730-BLK1	SW8260C	tert-butylbenzene	0.04	J	0.2
BGE0730-BLK1	SW8260C	1,2,4-Trimethylbenzene	0.03	J	0.2
BGE0730-BLK1	SW8260C	Sec-Butylbenzene	0.03	J	0.2
BGE0730-BLK1	SW8260C	4-Isopropyl Toluene	0.04	J	0.2
BGE0730-BLK1	SW8260C	1,3-Dichlorobenzene	0.05	J	0.2
BGE0730-BLK1	SW8260C	1,4-Dichlorobenzene	0.07	J	0.2
BGE0730-BLK1	SW8260C	n-Butylbenzene	0.06	J	0.2
BGE0730-BLK1	SW8260C	1,2-Dichlorobenzene	0.05	J	0.2
BGE0730-BLK1	SW8260C	Hexachlorobutadiene	0.1	J	0.2
EB-0518	SW8260C	Acetone	2.98	J	5
EB-0518	SW8260C	Methylene Chloride	0.65	J	1
EB-0518	SW8260C	Carbon Disulfide	0.04	J	0.1
EB-0518	SW8260C	Toluene	0.07	J	0.2
TRIP BLANK	SW8260C	Acetone	2.19	J	5
TRIP BLANK	SW8260C	Carbon Disulfide	0.06	J	0.1
TRIP BLANK	SW8260C	4-Isopropyl Toluene	0.03	J	0.2
TRIP BLANK	SW8260C	1,4-Dichlorobenzene	0.04	J	0.2
TRIP BLANK	SW8260C	n-Butylbenzene	0.05	J	0.2

5. See table below for a summary of surrogate recoveries that are outside of QC limits. Following the Guidelines, when surrogate recoveries are below QC limits, associated non-detections are qualified as estimated (UJ).

Sample ID	Method	Analyte	Recovery (%)	QC Limits (%)
LMW-10-0518	SW8270D	1,4-Dioxane	23.2	33.6-120

6. See table below for a summary of LCS/LCSD RPDs that are outside of QC criteria. Following the Guidelines and using professional judgment, when LCS/LCSD RPD is outside of acceptance criteria, associated non-detections do not require qualification.

LCS/LCSD ID	Method	Analyte	Recovery (%)	Recovery Limits (%)	RPD (%)	RPD Limit (%)
BGE0730-BS1 / -BSD1	SW8260C	Chloroethane	129 / 83.0	60-155	43.20	30

7. The lab notes in the case narrative that the VOC 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.

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