



REPORT

Compliance Monitoring Report September 2024 Groundwater Sampling *Landsburg Mine Site*

Submitted to:

Washington Department of Ecology

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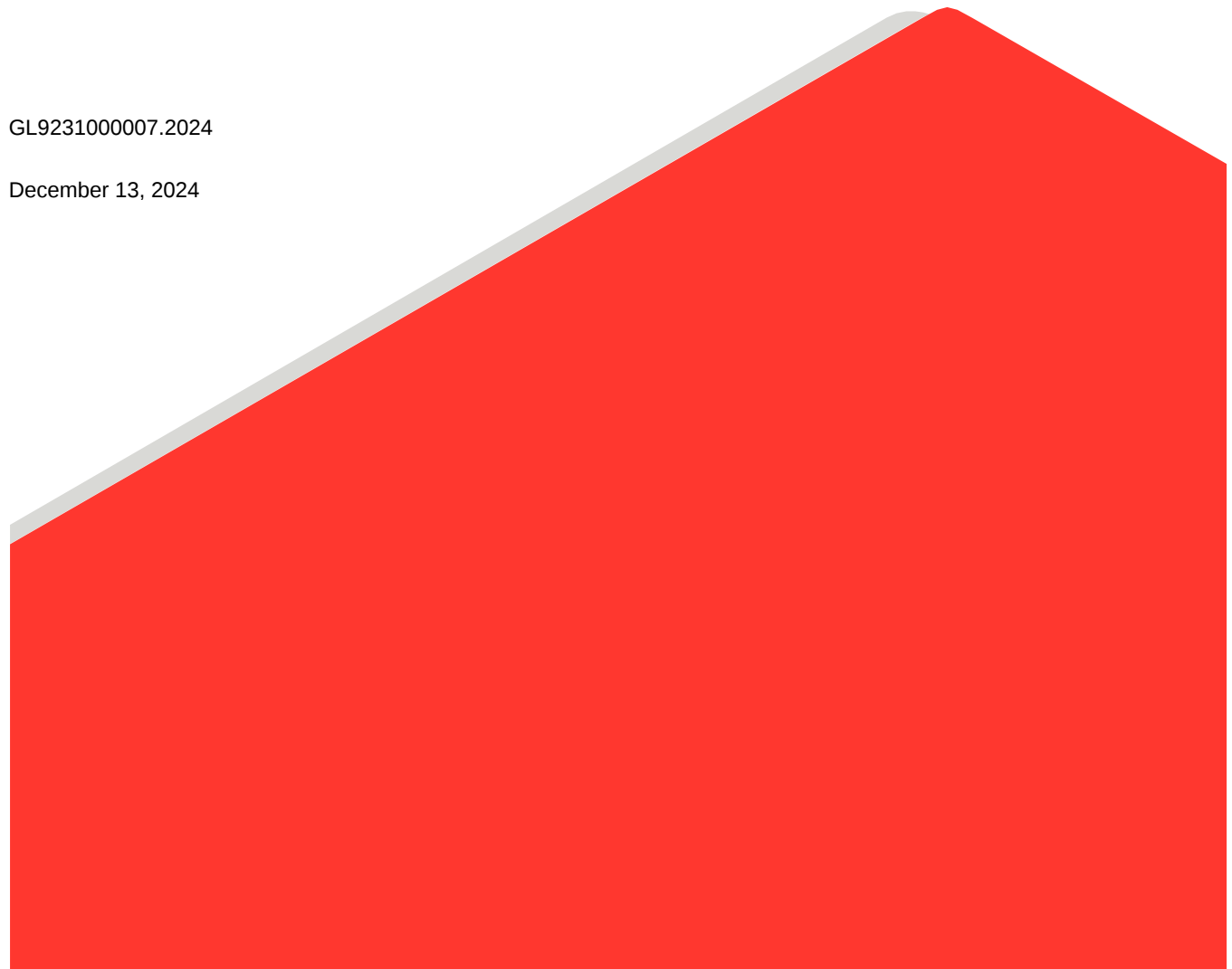
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Distribution List

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1.0 INTRODUCTION

The Compliance Monitoring Plan (CMP) (Ecology 2017) describes the long-term confirmational monitoring required after remediation actions are completed at the Landsburg Mine Site (the Site). Additional groundwater monitoring requirements are specified in the Amendment to the Cleanup Action Plan (CAP) (Ecology 2021). This report presents the results of the September 2024 confirmational monitoring event, which is the second semi-annual sampling event completed in 2024.

The fall semi-annual event was conducted on September 9 to 12, 2024 and included collecting groundwater samples 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, LMW-13R, LMW-14, and LMW-15.

Sampling of the off-Site Private Well, the Landsburg Estates Well, was also scheduled to occur during this sampling round, but repeated attempts to contact the property owner were unsuccessful and the well was not sampled. Attempts to contact the homeowner included emails and cell phone calls. This private well has been sampled several times in the past, including in 2021 and 2022, with no analytes detected above drinking water standards.

Figure 1 presents the locations of the monitoring wells. Figure 2 presents a cross-section along the strike at the coal seam that also depicts the location of the monitoring wells. 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. Monitoring wells LMW-3, LMW-5, LMW-8, LMW-9, LMW-11, LMW-14, and LMW-15 are completed to monitor shallow, middle, and deeper zones along the southern half of the Rogers Coal Mine. 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.

2.0 SAMPLING ACTIVITIES

Groundwater sampling was conducted in accordance with the CMP (Ecology 2017), and included the following activities:

- Measurement of static water levels at monitoring wells.
- Well purging with the dedicated pumping systems installed in each well to ensure sample representativeness.
- Measurement of field parameters including: pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity.
- Collection of representative samples in appropriate containers provided by the analytical laboratory.
- Analyses of groundwater samples for the following parameters:
 - Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) USEPA Method 8260D
 - Total Petroleum Hydrocarbons (TPHs) by NWTPH-HCID
 - Total Metals by USEPA SW-846 Method 200.8 and SW-846 6010D
 - Total Mercury by USEPA SW-846 Method 7470A

Appendix A presents the laboratory analytical data validation report with added data qualifiers noted. Appendix B presents the laboratory analytical data. Field sampling activities were documented on Sample Integrity Data Sheets (SIDS), provided in Appendix C.

Following sample collection, all bottles were sealed, labeled, and placed in an iced cooler until delivery to the laboratory. Groundwater samples were transported under chain-of-custody procedures to Analytical Resources LLC (ARI), of Tukwila, Washington, for analyses.

The laboratory data packages underwent data validation. Items of note are provided in a validation memorandum in Appendix A. In general, data were found to be acceptable with minor qualification, with the following exception: the analytical result for 2-chloroethyl vinyl ether for LMW-4-0924 was rejected. The matrix spike/ matrix spike duplicate (MS/MSD) results were non-detect and the calculated percent recovery of the associated MS/MSD did not recover. Following guidelines and using professional judgment, the non-detect result for 2-chloroethyl vinyl ether for LMW-4-0924 was rejected. 2-chloroethyl vinyl ether has never been detected at the Site.

Acetone was reported in the field duplicate sample LMW-2-0924-D, but the parent sample was non-detect. Acetone is a solvent used in laboratories and is a common laboratory contaminant detected in samples and blanks. Using professional judgement and historical standings, the field duplicate sample was qualified as W (non-detect).

Data qualifiers are defined, and all data qualifiers assigned under the data validation process are presented in Appendix A data validation memorandum.

Table 1 presents depths to groundwater measured during the event and calculated static water level elevations. Table 2 presents the field parameter measurements and laboratory analytical results for each groundwater sample at the Site.

3.0 RESULTS

The September 2024 groundwater monitoring results are summarized below:

- Laboratory analyses did not detect TPH above the laboratory reporting limits in any of the groundwater samples.
- There were no VOCs detected in groundwater above the trigger level concentrations prescribed in the CMP (Ecology 2017). The following VOC was detected above its respective laboratory reporting limit:
 - Acetone was detected in LMW-3, LMW-6, and LMW-8. Acetone is a known common laboratory contaminant and has been irregularly detected in different wells and occasionally in the field blank, indicating that the detections are due to laboratory contamination and not representative of Site groundwater. The highest acetone concentration reported during this sample round was 8.5 ug/L in well LMW-6. The groundwater cleanup level for acetone is 7,200 ug/L.
- Metals detected in groundwater samples during the current sampling round include the following:
 - The groundwater samples from LMW-2, LMW-4, LMW-5, LMW-6, LMW-7, LMW-9, LMW-11, LMW-13, LMW-14, and LMW-15 contained iron concentrations above the laboratory reporting limit, but below the MTCA Method B cleanup level of 11 milligrams per liter (mg/L). The groundwater samples from LMW-8 and LMW-12 contained iron concentrations slightly above the MTCA cleanup level. Iron is a naturally occurring metal that is commonly associated with groundwater from coal mines (Fuste et al. 1983). The

concentrations of iron reported during the September 2024 sampling event are within the range of typical concentrations reported during previous groundwater monitoring events at the Site.

- The groundwater sample from LMW-11 contained total arsenic at a concentration of 0.00857 mg/L. Arsenic in LMW-11 is slightly above the MTCA Method A groundwater cleanup level (0.005 mg/L) but less than the Washington State primary drinking water maximum contaminant level (MCL) (0.01 mg/L). Arsenic was also detected in groundwater from LMW-8 and LMW-15 at concentrations of 0.00304 mg/L and 0.00356 mg/L, respectively, which are below both the MTCA Method A groundwater cleanup level and the Washington State primary drinking water MCL. Studies conducted by the Washington State Department of Ecology determined that natural background concentrations of arsenic in groundwaters within the Puget Sound region is 0.008 mg/L (Ecology 2022). Arsenic has been detected in groundwater from LMW-11 near or below natural background and slightly above MTCA cleanup levels during every monitoring event since LMW-11 was installed. LMW-11 is screened within the deepest portions of the Rogers coal seam, where the groundwater is naturally reducing with low reduction-oxidation (redox) potential and low dissolved oxygen levels. Arsenic is a naturally occurring metal commonly detectable in groundwater, especially in groundwater having low redox and dissolved oxygen levels.

4.0 NEXT SAMPLING EVENT

The next compliance monitoring event is a semi-annual monitoring event scheduled for March 2025, and will include sampling of all Site groundwater monitoring wells: LMW-2 through LMW-15.

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5.0 REFERENCES

- 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.
- Washington State Department of Ecology (Ecology). 2017. Exhibit D of the Consent Decree – Compliance Monitoring Plan Landsburg Mine Site MTCA Remediation Project, Ravensdale, Washington. Prepared by WSP. June 7.
- Ecology. 2021. Amendment to Cleanup Action Plan Landsburg Mine Site MTCA Remediation Project, Ravensdale, Washington. March 26.
- Ecology. 2022. Natural Background Groundwater Arsenic Concentrations in Washington State, Study Results, by Charles San Juan. January 2022.
- WSP. 2023. 1,4-Dioxane Trend Analysis and Groundwater Monitoring Frequency at the Landsburg Mine Site. May.

Tables

Table 1: Groundwater Elevation Data, Landsburg Mine Site, September 9, 2024

	LMW-1	LMW-2	LMW-3	LMW-4 ¹	LMW-5	LMW-6	LMW-7 ¹	LMW-8	LMW-9	LMW-10	LMW-11	LMW-12	LMW-13R	LMW-14 ¹	LMW-15 ²
Water Depths															
Date of data collection	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/10/2024
Time of data collection	11:25 AM	2:20 PM	12:54 PM	2:25 PM	12:49 PM	11:06 AM	1:26 PM	12:42 PM	1:07 PM	2:05 PM	12:07 PM	12:20 PM	10:23 AM	11:39 AM	10:27 AM
Measured to Top of PVC (ft btc)	143.58	10.34	13.73	13.32	15.21	38.98	214.13	5.09	100.26	0.60	152.18	11.85	12.46	161.12	152.18
Surveyed Elevation															
Top of PVC (ft NAVD88)	765.36	617.79	656.75	619.27	658.27	632.33	771.51	646.97	743.99	618.98	802.19	625.35	625.86	805.12	796.46
Top of Monument (ft NAVD88)	766.16	618.38	657.48	619.89	658.87	633.00	771.88	NC	NC	619.10	802.51	625.49	625.91	805.14	796.61
Ground Level (ft NAVD88)	763.02	614.92	654.40	617.37	655.63	629.95	768.79	645.25	741.13	615.78	799.89	621.90	622.07	802.22	792.64
Corrected Water Elevation															
Using PVC elevation (ft NAVD88)	621.78	607.45	643.02	605.95	643.06	593.35	557.38	641.88	643.73	618.38	650.01	613.50	613.40	644.00	644.28

Notes:
¹ Data corrected to accommodate well inclination from vertical
² Groundwater Level from the Sample Integrity Data Sheet
NA = Not applicable
NC = Data not collected
ft btc = feet below top of casing
ft NAVD88 = elevation in feet NAVD88

Table 2: September 2024 Groundwater Analytical Results Landsburg Mine Site

ANALYTE	UNITS	LMW-2	LMW-2 Duplicate	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10	LMW-11	LMW-12	LMW-13R	LMW-14	LMW-15	Field Blank	Trip Blank
		9/12/2024	9/12/2024	9/11/2024	9/12/2024	9/11/2024	9/11/2024	9/11/2024	9/11/2024	9/10/2024	9/9/2024	9/10/2024	9/9/2024	9/9/2024	9/10/2024	9/10/2024	9/11/2024	-
Field Parameter																		
Temperature	°C	11	-	11.4	10.8	10.7	10	13.8	13.6	10.7	11.3	10.4	10.8	10.7	11.1	9.9	-	-
pH	stdn	6.48	-	7.4	6.76	6.79	6.38	7.34	6.72	7.03	8.39	6.79	6.21	6.86	6.51	7.1	-	-
Specific Conductance	uS/cm	1022	-	318	1054	641	263.8	448.5	604	667	389.8	591	453.2	981	1032	539	-	-
Dissolved Oxygen	mg/L	7.88	-	7.3	6.96	6.85	7.65	6.31	5.51	6.34	5.31	7.28	5.53	5.75	5.92	6.09	-	-
ORP	mV	161.5	-	180.6	170	184.8	181.8	123.9	63.9	78.5	22	134.5	45.1	110.5	58.4	40.2	-	-
Turbidity	NTU	1.04	-	0.37	0.5	0.44	1.29	2.83	0.8	0.88	0.87	0.38	2.86	1.74	1.33	0.97	-	-
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	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	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	0.00304	0.003 U	0.003 U	0.00857	0.003 U	0.003 U	0.003 U	0.00356	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	0.5 U	0.5 U	NA
Beryllium	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	0.01 U	0.01 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	0.002 U	0.002 U	NA
Calcium	mg/L	108	111	34.8	105	77.4	25.8	30.8	70.7	73.7	6.53	55.7	57.6	83	127	59.8	0.5 U	NA
Chromium	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	0.01 U	0.01 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	0.01 U	0.01 U	NA
Copper	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	NA
Iron	mg/L	0.238	0.253	0.2 U	1.39	0.319	1.63	0.429	13.4	1.34	0.2 U	0.439	12	1.5	9.97	3.92	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	0.01 U	0.01 U	NA
Magnesium	mg/L	65.1	67.2	14.7	62.1	41.4	13.2	14	38.6	38.8	2.87	24.9	33	38.6	58.6	25.7	0.5 U	NA
Manganese	mg/L	0.211	0.216	0.01 U	0.121	0.189	0.0176	0.0288	0.476	0.154	0.01 U	0.159	0.809	0.0239	0.581	0.342	0.01 U	NA
Mercury	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	NA
Nickel	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	0.01 U	0.01 U	NA
Potassium	mg/L	3.37	3.44	1.59	3.78	2.3	0.602	2.16	2.09	2.18	1.19	1.92	2.61	2.94	3.45	1.84	0.5 U	NA
Selenium	mg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	NA
Silver	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	0.005 U	0.005 U	NA
Sodium	mg/L	18.9	19.6	9.37	37.8	13.3	6.5	46.5	12.8	12.9	80.3	22.2	6.51	70.5	9.88	12.5	0.5 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	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	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	0.02 U	0.02 U	NA
Volatile Organic Compounds (VOCs)																		
Acetone	ug/L	5 U	5.95 W	7.28	5 U	5 U	8.6	5 U	5.49	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acrolein	ug/L	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
Acrylonitrile	ug/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
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	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	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	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	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	1 U	1 U
methyl ethyl ketone	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	5 U	5 U
n-Butylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Sec-Butylbenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	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	0.2 U	0.2 U
Carbon Disulfide	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	0.2 U	0.2 U
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	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	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	0.2 U	0.2 U
2-Chloroethyl vinyl ether	ug/L	1 UJ	1 UJ	1 UJ	1 R	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
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	0.2 U	0.2 U

Table 2: September 2024 Groundwater Analytical Results Landsburg Mine Site

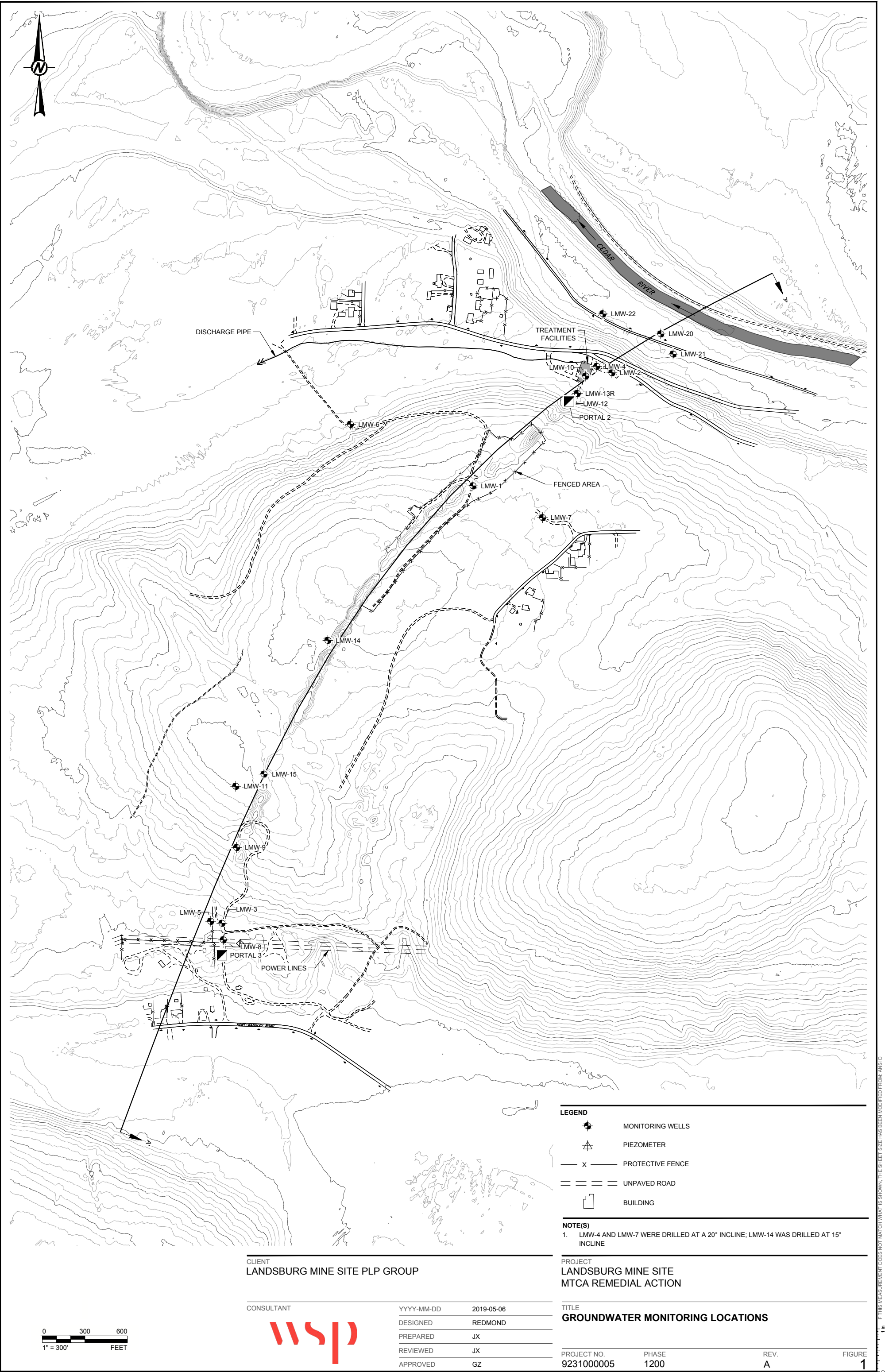
ANALYTE	UNITS	LMW-2	LMW-2 Duplicate	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10	LMW-11	LMW-12	LMW-13R	LMW-14	LMW-15	Field Blank	Trip Blank
		9/12/2024	9/12/2024	9/11/2024	9/12/2024	9/11/2024	9/11/2024	9/11/2024	9/11/2024	9/10/2024	9/9/2024	9/10/2024	9/9/2024	9/9/2024	9/10/2024	9/10/2024	9/11/2024	-
Chloromethane	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	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	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	0.2 U	0.2 U
Dichlorodifluoromethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromo-3-Chloropropane	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylene Dibromide	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	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	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	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	0.2 U	0.2 U
1,4-Dichlorobenzene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 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	1 U	1 U
1,1-Dichloroethane	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	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	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	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	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	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	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	0.1 U	0.1 U
2,2-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	0.2 U	0.2 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	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	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	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	0.2 U	0.2 U
Hexachlorobutadiene	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	0.5 U	0.5 U
2-Hexanone	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iodomethane	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	1 U	1 U
Cumene (isopropyl 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	0.2 U	0.2 U
p-Isopropyltoluene	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Methylene Chloride	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl isobutyl ketone	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	2.5 U	2.5 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	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	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	0.2 U	0.2 U
1,2,3-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	0.5 U	0.5 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	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	0.2 U	0.2 U
1,1,2,2-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	0.2 U	0.2 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	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	0.2 U	0.2 U	0.2 U	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	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	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	0.2 U	0.2 U
CFC-113	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	0.2 U	0.2 U
1,2,3-Trichloropropane	ug/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	0.25 U	0.25 U	0.25 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	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	0.2 U	0.2 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	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	0.1 U	0.1 U
m, 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	0.4 U	0.4 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	0.2 U	0.2 U

Table 2: September 2024 Groundwater Analytical Results Landsburg Mine Site

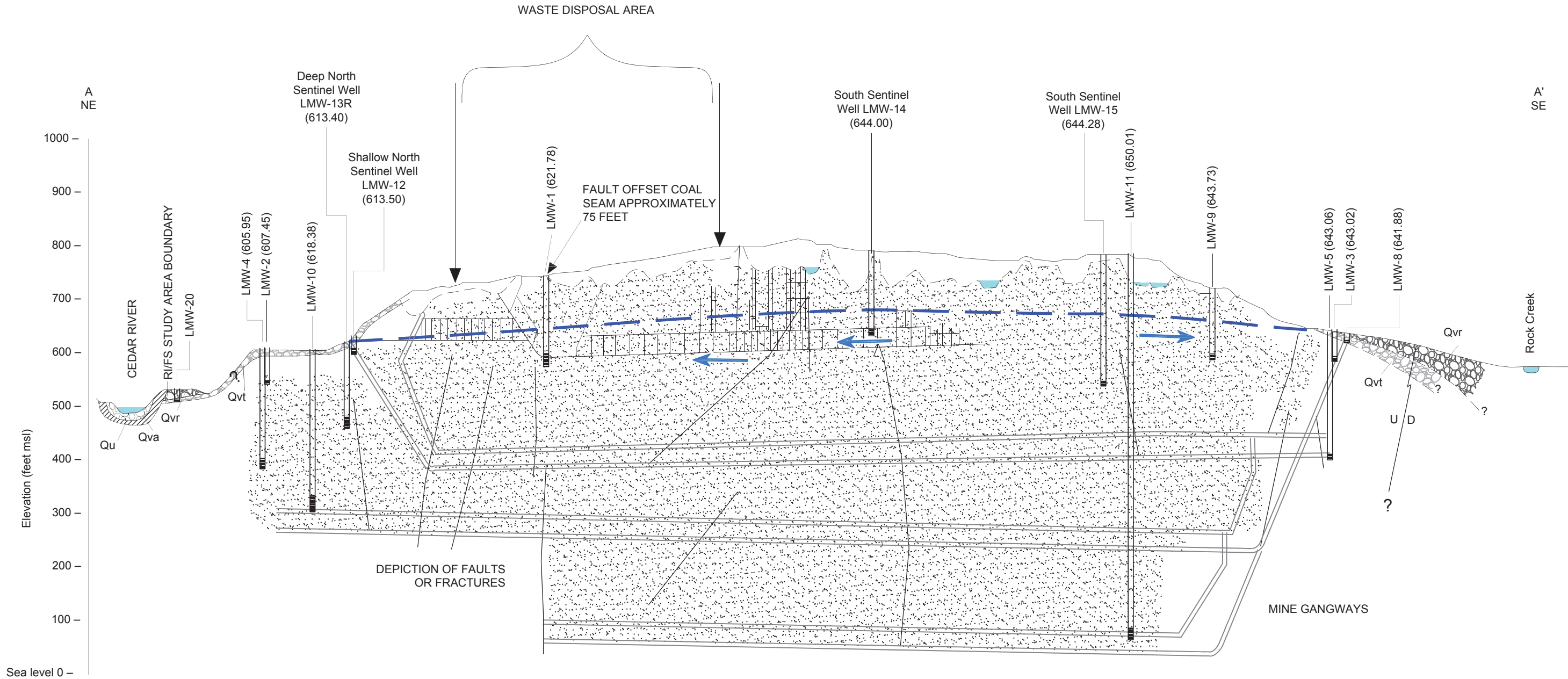
ANALYTE	UNITS	LMW-2	LMW-2 Duplicate	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10	LMW-11	LMW-12	LMW-13R	LMW-14	LMW-15	Field Blank	Trip Blank
		9/12/2024	9/12/2024	9/11/2024	9/12/2024	9/11/2024	9/11/2024	9/11/2024	9/11/2024	9/10/2024	9/9/2024	9/10/2024	9/9/2024	9/9/2024	9/10/2024	9/10/2024	9/11/2024	-
Semi-Volatile Organic Compounds (SVOCs)																		
1,4-Dioxane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	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	0.5 U	0.5 U	NA
Gas Range	mg/L	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	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	1 U	1 U	NA

Notes:
U - Analyte was not detected above the Reporting Limit (RL).
J - Analyte was detected above the Method Detection Limit (MDL) but below the RL.
R - Analytical result is unusable because certain data quality criteria were not met.
W - Considered non-detect, see data validation narrative.
Bold values indicate detections above the RL.
NA - Not Applicable

Figures



Path: \\wsp-pblan-net\US-CentralData\USX-C300\geomatics\Project\GL923100007_EnvRem2024_GW-Monitoring\02_PROD\CD\GL923100007_001.dwg | File Name: GL923100007_2024_001.dwg | Last Edited By: ustf00741 | Date: 2024-11-25 | Time: 2:38:46 PM | Printed By: ustf00741 | Date: 2024-11-25 | Time: 2:39:42 PM



LEGEND

POTENTIOMETRIC SURFACE

OUTLINE OF TRENCH BOTTOM

LMW-2 (610.69) WELL ID (WATER LEVEL IN FT. AMSL)

Qvt TILL, COMPACT MIXTURE OF GRAVEL OCCASIONAL BOULDERS IN CLAYEY SILTY SAND MATRIX

SANDSTONE

SURFACE WATER FEATURE EPHEMERAL INSIDE THE TRENCH

ANTICIPATED COLLAPSED ZONE WITHIN MINE

Qu DRIFT, TILL, FLUVIAL SAND AND GRAVEL, LACUSTRINE SAND, SILT, CLAY AND PEAT

Qvr RECESSONAL OUTWASH, WELL SORTED SAND AND PEBBLE-COBBLE

Qva ADVANCED OUTWASH PEBBLE-COBBLE GRAVEL MAY INCLUDE VERY FINE SAND

MONITORING INTERVAL

GROUNDWATER FLOW DIRECTION

REFERENCE(S)

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(S)

1. VERTICAL TO HORIZONTAL SCALE RATIO IS 2.5:1 WELLS ARE PROJECT NORMAL INTO THE STRIKE OF THE CROSS-SECTION A-A'

CLIENT
LANDSBURG PLP GROUP

CONSULTANT



YYYY-MM-DD 2024-11-25

DESIGNED AP

PREPARED TR

REVIEWED GZ

APPROVED GZ

PROJECT
LANDSBURG MINE SITE

TITLE
CROSS-SECTION ALONG STRIKE AT COAL SEAM - SEPTEMBER 9, 2024
CROSS-SECTION A-A'

PROJECT NO.
GL9231000007

PHASE
2024

REV.
A

FIGURE
2

0 500
FEET

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

APPENDIX A

**Laboratory Analytical Report Data Validation
and Quality Assurance / Quality Control
Review Memorandum**



TECHNICAL MEMORANDUM

DATE December 13, 2024

Project No. GL923-1000-007.2024

TO Bill Kombol
Palmer Coking Coal Company

FROM Gary Zimmerman (WSP)

EMAIL gary.zimmerman@wsp.com

LANDSBURG MINE SITE SEPTEMBER 2024 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 on September 9 to 12, 2024 at the 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 that could affect the use of the sample data for decision making purposes.

Fourteen water samples, one field duplicate sample, one field blank, and one trip blank were collected by WSP. Samples were analyzed by Analytical Resources Inc. of Tukwila, Washington for the following parameters:

- Volatile Organic Compounds (VOCs) following United States Environmental Protection Agency (USEPA) USEPA SW-8461 Method 8260D, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- Northwest Total Petroleum Hydrocarbons – Hydrocarbon Identification Scan by NWTPH-HCID
- Total Metals by USEPA SW-846 Method 200.8 and SW-846 6010D
- Total Mercury by USEPA SW-846 Method 7470A

Quality assurance / quality control (QA/QC) reviews of laboratory data were performed in the laboratory in accordance with the laboratory quality assurance program plan (QAPP). The data validation QA/QC review focused primarily on laboratory results 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 Functional Guidelines for Organic Review (USEPA 2020a²) and Inorganic Review (USEPA 2020b³), modified to include method-specific

¹ USEPA. 2020. Test methods for evaluating solid waste, physical/chemical methods (SW-846): 3rd edition, and subsequent updates, Environmental Protection Agency, National Center for Environmental Publications, Cincinnati, Ohio, accessed at URL <http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>

² United States Environmental Protection Agency (USEPA). 2020a. National Functional Guidelines for Organic Superfund Methods Data Review. OLEM 9240.0-51. EPA-540-R-20-005, November.

³ USEPA. 2020b. National Functional Guidelines for Inorganic Superfund Methods Data Review. OLEM 9240.0-66. EPA-542-R-20-006, November.

requirements of the laboratory, and laboratory standard operating procedures. 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 based on laboratory preservation, hold times, laboratory and field blank contamination, outlying precision or accuracy parameters, or based on professional judgment. The following definitions provide brief explanations of the qualifiers that may have been assigned to data during the data validation process.

Data Qualifier Definitions

- J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- UJ The analyte was analyzed for but was not detected. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- U The analyte was analyzed for but was not detected.
- R The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
- B The analyte was not detected in the method blank.
- W Considered non-detect; see further data validation narrative

The validation level for the data is Tier 2A, and includes the following:

- Data package completeness assessment
- Verification of required deliverables
- Evaluation of holding times
- Laboratory narrative evaluation
- Evaluation and qualification of QC elements for surrogates, matrix spike samples, laboratory control samples, blanks (method, equipment, and trip blank) laboratory duplicate samples, and field duplicate samples
- Evaluation of detection limits

Raw data and calibration elements, including GC instrument tuning and performance check, initial and continuing calibration, internal standard performance, and analyte identification, were not provided by the lab. Data review and validation was performed by an experienced QA personnel 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 for 2-chloroethyl vinyl ether. The MS/MSD results were non-detect and the calculated percent recovery of the associated MS/MSD did not recover.

Following Guidelines and using professional judgment, the results for 2-chloroethyl vinyl ether were rejected (R) in LMW-4. 2-chloroethyl vinyl ether was not detected during the September 2024 sampling round and has never been detected at the Site. Other minor data qualifiers were also reported as detailed in Attachment B.

The laboratory analyzed 2-chloroethyl vinyl ether, acrolein, and acrylonitrile from the preserved volatile organic analysis (VOA) vials. Due to the acid-labile nature of analytes 2-chloroethyl vinyl ether, acrolein and acrylonitrile, when samples were collected in acid-preserved vials but all associated LCS/LCSDs were within or above QC criteria, the associated non-detect results for these three analytes were qualified as estimated (UJ) due to possible acid degradation, except for 2-chloroethyl vinyl ether, the results for which were rejected in LMW-4 as noted above. 2-chloroethyl vinyl ether, acrolein, and acrylonitrile were not detected during the September 2024 sampling round and have never been detected at the Site.

The laboratory applied B-qualifiers to the sodium results of batch QCs and samples analyzed by method 6010D. The result for sodium in the associated method blank, BMI0532-BLK1, is not detected at a concentration above the reporting limit, so qualification based on the laboratory-applied B-qualifiers was not necessary. Laboratory B-qualifiers were removed. Laboratory-applied U-qualifiers were retained unless other qualifications were indicated as noted above.

Qualifier Summary Table (Table 2) is included with the qualifiers applied. For details about the data validation, refer to the data validation checklist in Attachment A. The following bulleted items highlight comments and/or qualifications to specific parameters:

- A data completeness of 99% was achieved, which exceeds the QAPP stipulated completeness goal of 90%.

Attachments

Attachment A Tables

Table 1: Sample Collection and Analysis Summary Landsburg Mine Water Sampling Investigation September 2024

Table 2: Qualifier Summary Table Landsburg Mine Water Sampling Investigation September 2024

Table 3: MS/MSD Recoveries

Table 4: LCS/LCSD Recoveries

Attachment B Level 2A Data Validation Checklist

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ATTACHMENT A

Tables

Table 1: Sample Collection and Analysis Summary
Semi-Annual Groundwater Sampling - September 2024

SDG	Field Identification	Collection Date	Lab Identification	Matrix	QC Samples	Analyses/Parameters					
						VOCs by 8260D	Total Priority Metal (6010D)	NWTPH HCID	TPH-DX+TPH-GX	Metals (200.8 UCT-KED, 200.8)	Mercury (7470A)
24I0252	LMW-12-0924	9/9/2024	24I0252-01	GW	-	X	X	X	X	X	X
24I0252	LMW-13R-0924	9/9/2024	24I0252-02	GW	-	X	X	X	X	X	X
24I0252	LMW-10-0924	9/9/2024	24I0252-03	GW	-	X	X	X	X	X	X
24I0252	LMW-11-0924	9/10/2024	24I0252-04	GW	-	X	X	X	X	X	X
24I0252	LMW-15-0924	9/10/2024	24I0252-05	GW	-	X	X	X	X	X	X
24I0252	LMW-14-0924	9/10/2024	24I0252-06	GW	-	X	X	X	X	X	X
24I0252	LMW-9-0924	9/10/2024	24I0252-07	GW	-	X	X	X	X	X	X
24I0252	LMW-6-0924	9/11/2024	24I0252-08	GW	-	X	X	X	X	X	X
24I0252	LMW-3-0924	9/11/2024	24I0252-09	GW	-	X	X	X	X	X	X
24I0252	LMW-5-0924	9/11/2024	24I0252-10	GW	-	X	X	X	X	X	X
24I0252	LMW-FB-0924	9/11/2024	24I0252-11	WQ	FB	X	X	X	X	X	X
24I0252	LMW-8-0924	9/11/2024	24I0252-12	GW	-	X	X	X	X	X	X
24I0252	LMW-7-0924	9/11/2024	24I0252-13	GW	-	X	X	X	X	X	X
24I0252	LMW-2-0924	9/12/2024	24I0252-14	GW	-	X	X	X	X	X	X
24I0252	LMW-2-0924-D	9/12/2024	24I0252-15	GW	FD (LMW-2-0924)	X	X	X	X	X	X
24I0252	LMW-4-0924	9/12/2024	24I0252-16	GW	MS/MSD	X	X	X	X	X	X
24I0252	Trip Blank	9/9/2024	24I0252-17	WQ	TB	X	-	-	-	-	-

Abbreviations:

GW: Groundwater
WQ: Water quality
VOCs: Volatile Organic Compounds
SIM: Selective Ion Monitoring
NWTPH: Northwest Total Petroleum Hydrocarbons
HCID: Hydrocarbon Identification
MS/MSD: Matrix Spike/Matrix Spike Duplicate
FB: Field Blank
TB: Trip Blank
FD: Field Duplicate
SDG: Sample Delivery Group

Notes:

All analyses performed by Analytical Resources, Incorporated (ARI), Tukwila WA.

Table 2: Qualifier Summary Table**Semi-Annual Groundwater Sampling - September 2024**

SDG	Sample Name	Constituent	New Result	New MDL	New RL	Qualifier	Reason
24I0252	LMW-4-0924	2-chloroethyl vinyl ether	--	--	--	R	MS/MSD %R below lower control limit (not recovered); Improper sample preservation
24I0252	All samples	Acrolein	--	--	--	UJ	Improper sample preservation
24I0252	All samples	Acrylonitrile	--	--	--	UJ	Improper sample preservation
24I0252	All samples	2-Chloroethyl vinyl ether	--	--	--	UJ	Improper sample preservation
24I0252	LMW-4-0924	Acrolein	--	--	--	UJ	MS/MSD %R below lower control limit; Improper sample preservation
24I0252	LMW-2-0924-D	Acetone	--	--	--	W	Non-detect, see data validation narrative
All SDGs	All Samples	All Results	--	--	--	--	Laboratory applied U-qualifiers are retained unless other qualifications are indicated in this table. All other laboratory qualifiers are removed.

Abbreviations:

MDL - Method Detection Limit
MS - Matrix Spike
MSD - Matrix Spike Duplicate
RL - Reporting Limit
SDG - Sample Delivery Group
%R - Percent Recovery

Qualifier Definitions:

UJ: Non-Detect Result, RL is estimated
R: Result is rejected and considered unusable
W: Considered non-detect see lab narrative

Table 3: MS/MSD Recoveries

Semi-Annual Groundwater Sampling - September 2024

SDG	Sample Name	Parameter	Analyte	MS/MSD %R	RPD	%R/RPD Criteria	Sample>4x spike value
24I0252	LMW-4-0924	8260D	Acrolein	30.3/37.9	22.3	52-190/30	No
24I0252	LMW-4-0924	8260D	2-Chloroethyl vinyl ether	0/0	0	64-120/--	No
24I0252	LMW-4-0924	6010D	Calcium	62.7/46.0	1.52	75-125/30	Yes
24I0252	LMW-4-0924	6010D	Magnesium	74.7/65.6	1.32	75-125/30	Yes
24I0252	LMW-12-0924	6010D	Calcium	65.4/65.8	0.06	75-125/30	Yes
24I0252	LMW-12-0924	6010D	Iron	73.6/80.4	1.01	75-125/30	No

Abbreviations:

MS - Matrix Spike

MSD - Matrix Spike Duplicate

SDG - Sample Delivery Group

%R - Percent Recovery

RPD - Relative Percent Difference

Table 4: LCS/LCSD MS/MSD Recoveries
Semi-Annual Groundwater Sampling - September 2024

LMW-4-0924		Organics		RPD Value 35					
CAS (optional)	Analyte	<u>Parent Sample</u>		<u>Duplicate Sample</u>		Abs Diff	RPD	Criteria	Qualifier
		Result	QL	Result	QL				
	Calcium	105	0.5	102	0.5	3.000	2.899	RPD	OK
	Iron	1.39	0.2	1.34	0.2	0.050	3.663	RPD	OK
	Magnesium	62.1	0.5	59.8	0.5	2.300	3.774	RPD	OK
	Manganese	0.121	0.01	0.118	0.01	0.003	2.510	RPD	OK
	Potassium	3.78	0.5	3.69	0.5	0.090	2.410	RPD	OK
	Sodium	37.8	0.5	36.4	0.5	1.400	3.774	RPD	OK

LMW-12-0924		Organics		RPD Value 35					
CAS (optional)	Analyte	<u>Parent Sample</u>		<u>Duplicate Sample</u>		Abs Diff	RPD	Criteria	Qualifier
		Result	QL	Result	QL				
	Calcium	57.6	0.5	55.5	0.5	2.100	3.714	RPD	OK
	Iron	12	0.2	11.9	0.2	0.100	0.837	RPD	OK
	Magnesium	33	0.5	32	0.5	1.000	3.077	RPD	OK
	Manganese	0.809	0.01	0.776	0.01	0.033	4.164	RPD	OK
	Potassium	2.61	0.5	2.55	0.5	0.060	2.326	RPD	OK
	Sodium	6.51	0.5	6.3	0.5	0.210	3.279	RPD	OK

ATTACHMENT B

Level 2A Data Validation Checklist

QA LEVEL 2A - DATA VERIFICATION/DATA VALIDATION CHECKLIST

Project Name: Landsburg Groundwater

Project Number/Phase/Task: US-WSP-
GL9231000007-Palmer/Landsburg 2021 Env Rem/
GL9231000007 Task 2024.LBR-GW Mont&Report Lbr

Reviewing Company: WSP

Project Manager: Gary Zimmerman

Data Evaluator: Christopher Swan

Data Evaluation Date: 11/7/2024

Checked by: Michael Shadle

Review Date: November 8, 2024

Laboratory: Analytical Resources, Inc., Tukwila, WA

Lab SDG #: 24I0252

Matrix: ☒ Aqueous ☐ Soil ☐ Sediment ☐ Waste ☐ Air ☐ Other:

Analytical Methods: See Table 1.

Sample Information: See Table 1.

Work Plan or QAPP: Compliance Monitoring Plan and QAPP for Landsburg Mine Site (Exhibit D, to the Consent Decree, 2017).

Data Validation Guidance: National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005, November 2020 and National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA-EPA-542-R-20-006, November 2020.

COC and Sample Receipt	YES	NO	NA	COMMENT
a) COC complete and correct?	☒	☐		
b) COC documents release of custody (signed and dated)?	☒	☐		
c) Field QC types provided (note types)?	☒	☐	☐	FB, FD, TB, MS/MSD
d) Did the cooler contents match the COC?	☒	☐		
e) Were samples received in good condition?	☒	☐		
f) Were cooler temperatures within control limits?	☒	☐		

Data Package Information	YES	NO	NA	COMMENT
a) Laboratory name and location documented?	☒	☐		
b) All samples on COC reported in data package?	☒	☐		
c) Requested analytical methods used?	☒	☐		
d) Requested sample preparation methods used?	☒	☐	☐	
e) Requested analyte list reported?	☒	☐		
f) Requested units reported?	☒	☐	☐	
g) Did the laboratory define the qualifiers used?	☒	☐		
h) Data package contains all information necessary to complete the data quality review?	☒	☐		

Analytical Assessment	YES	NO	NA	COMMENT
a) Solid samples reported on a dry-weight basis?	☐	☐	☒	
b) Were solid samples percent moisture criteria acceptable?	☐	☐	☒	
c) Were sample dilutions noted?	☐	☒		
d) Were detected concentrations less than the QL qualified by the laboratory?	☐	☒		

Analytical Assessment	YES	NO	NA	COMMENT
e) Were detected concentrations above the calibration range reported by the laboratory?	☐	☒		
f) Did the laboratory satisfy the requested sensitivity requirements?	☒	☐		
Laboratory Case Narrative	YES	NO	NA	COMMENT
a) Do the laboratory narrative or laboratory qualifiers indicate deficiencies?	☒	☐	☐	See Notes below
b) Were all deficiencies noted in the laboratory qualifiers or narrative?	☒	☐	☐	
Sample Preservation and Holding Time	YES	NO	NA	COMMENT
a) Were samples properly preserved?	☒	☐		See Note 1
b) Were holding times met for sample preparation?	☒	☐	☐	
c) Were holding times met for sample analysis?	☒	☐		
Blanks	YES	NO	NA	COMMENTS
a) Were blanks analyzed at the appropriate frequency?	☒	☐		
b) Were any analytes detected in the associated preparation/method blank?	☐	☒		See Note 2
c) Were any analytes detected in the associated trip blanks?	☐	☒	☐	
d) Were any analytes detected in the associated field or equipment/rinsate blanks?	☐	☒	☐	
e) Were any analytes detected in the associated storage blanks?	☐	☐	☒	
Surrogates or Deuterated Monitoring Compounds	YES	NO	NA	COMMENTS
a) Were the correct surrogate compounds added to each sample?	☒	☐	☐	
b) Were surrogate recoveries within control limits?	☒	☐	☐	
c) If not, were samples analyzed at dilution factors of 20x or greater?	☐	☐	☒	
LCS/LCSD	YES	NO	NA	COMMENTS
a) Were LCS/LCSD reported at the appropriate frequency?	☒	☐		
b) Were proper analytes included in the LCS/LCSD?	☒	☐		
c) Were LCS/LCSD recoveries within control limits?	☒	☐		
d) Were RPD values within control limits (if LCSD was analyzed)?	☒	☐	☐	
MS/MSDs	YES	NO	NA	COMMENTS
a) Were project-specific MS (and MSD) reported?	☒	☐		LMW-4-0924
b) Were proper analytes reported in the MS/MSD?	☒	☐	☐	

MS/MSDs	YES	NO	NA	COMMENTS
c) Were project-specific MS/MSD recoveries within control limits?	☐	☒	☐	See Note 3
d) If not, were sample concentrations greater than 4x the spiking concentration?	☒	☐	☐	See Note 3
e) Was the RPD or absolute difference within control limits (if project-specific MSD analyzed)?	☒	☐	☐	
f) Were project-specific post-digestion spikes analyzed?	☐	☐	☒	
g) Were project-specific post-digestion spike recoveries within control limits?	☐	☐	☒	

Duplicates	YES	NO	NA	COMMENTS
a) Were project-specific laboratory duplicates reported?	☒	☐	☐	
b) Was laboratory duplicate RPD or absolute difference criteria acceptable?	☒	☐	☐	
c) Were field duplicates reported?	☒	☐	☐	LMW-2-0924/LMW-2-0924-D
d) Was field duplicate RPD or absolute difference criteria acceptable?	☒	☐	☐	

ICP Serial Dilution (SD)	YES	NO	NA	COMMENTS
a) Was project-specific ICP SD data provided?	☐	☐	☒	
b) Were project-specific ICP SD within acceptable criteria?	☐	☐	☒	

Overall Evaluation	YES	NO	NA	COMMENTS
a) Were there any other technical problems not previously addressed?	☒	☐	☐	See Note 4
b) Were data acceptable and usable, except where noted?	☒	☐	☐	

Comments/Notes:

1. Samples for analysis of 2-chloroethyl vinyl ether, acrolein, and acrylonitrile were collected in preserved VOA vials and the recoveries were potentially lost due to the acid-labile nature of these compounds. Specifically, acrolein and acrylonitrile need to be preserved in sodium thiosulfate at a pH range between 4 to 5. Following Guidelines and using professional judgement, non-detects are qualified as 'UJ'.
2. The laboratory applied B-qualifiers to the sodium results of batch QCs and samples analyzed by method 6010D. The result for sodium in the associated method blank, BMI0532-BLK1, isn't detected at a concentration above the reporting limit, so qualification based on the laboratory applied B-qualifiers was not necessary.
3. MS/MSD recoveries were outside of acceptance criteria for select analytes as indicated in Table 3. Using professional judgment, when only one QC indicator (MS/MSD/RPD) did not meet QC criteria, qualification was not required. If the parent sample concentration was four times greater than the spiking concentration, no qualification was required.

The MS/MSD results for 2-chloroethyl vinyl ether were non-detect and the lab did not calculate both the recoveries and the RPD. Samples were collected in preserved VOA vials and the recovery was most likely lost due to the acid-labile nature of 2-chloroethyl vinyl ether. Following Guidelines and using professional judgment, when the MS/MSD results were non-detect and the calculated percent recovery of the associated MS/MSD did not recover, the associated non-detect results were rejected (R). When the MS/MSD recoveries were less than the lower acceptance limit, the non-detect result in the parent sample was qualified as estimated (UJ).

4. In field duplicate sample LMW-2-0924-D, there was a detection for acetone, but the parent sample was non-detect. There was suspicion that there was laboratory contamination. Using professional judgement and historical standings, the field duplicate sample will be considered non-detect and qualified as W.

Data qualification: See Table 2.

APPENDIX B

Laboratory Analytical Report



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

23 October 2024

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

RE: Landsburg (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)
24I0252

Associated SDG ID(s)
N/A

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

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

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

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



Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 240252		Turn-around Requested: Standard		Date: 9/12/24		 Analytical Resources, Incorporated Analytical Chemists and Consultants 4611 South 134th Place, Suite 100 Tukwila, WA 98168 206-695-6200 206-695-6201 (fax)															
ARI Client Company: WSP		Phone: 425-883-0777		Page: 1 of 3																	
Client Contact: Gary Zimmerman/Autumn Pearson				No. of Coolers: Cooler Temps:																	
Client Project Name: Landsburg 2024-09 Sampling				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="6">Analysis Requested</th> <th>Notes/Comments</th> </tr> <tr> <th>VOCs</th> <th>1,4-Dioxane</th> <th>Total Priority Metal</th> <th>TPH-HCID (NWTPH)</th> <th>TPH-DX + TPH-Gx (HOLD)</th> <th></th> <th>Analyze in accordance with MSA between WSP and ARI Ecology EIM EDD</th> </tr> </table>				Analysis Requested						Notes/Comments	VOCs	1,4-Dioxane	Total Priority Metal	TPH-HCID (NWTPH)	TPH-DX + TPH-Gx (HOLD)		Analyze in accordance with MSA between WSP and ARI Ecology EIM EDD
Analysis Requested								Notes/Comments													
VOCs	1,4-Dioxane	Total Priority Metal	TPH-HCID (NWTPH)	TPH-DX + TPH-Gx (HOLD)		Analyze in accordance with MSA between WSP and ARI Ecology EIM EDD															
Client Project #: GL9231000007.2024		Samplers: AP + TK																			
Sample ID	Date	Time	Matrix	No. Containers																	
LMW-12-0924	9/9/24	1310	W	10	X		X														
LMW-13R-0924	↓	1130	↓	10	X		X														
LMW-10-0924	↓	1450	↓	10	X		X														
Comments/Special Instructions HOLD TPH FOLLOW-UPS. CLIENT SPECIFIC RLs/Analyte List				Relinquished by: (Signature) 		Received by: (Signature) 															
				Printed Name: Autumn Pearson		Printed Name: Sofia Cervantes															
				Company: WSP		Company: ARI															
				Date & Time: 9/12/24 1252		Date & Time: 09/12/24 12:52															

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, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 24J0252		Turn-around Requested: Standard		Date: 9/12/24		Analytical Resources, Incorporated Analytical Chemists and Consultants 4611 South 134th Place, Suite 100 Tukwila, WA 98168 206-695-6200 206-695-6201 (fax)															
ARI Client Company: WSP		Phone: 425-883-0777		Page: 2 of 3																	
Client Contact: Gary Zimmerman/Autumn Pearson				No. of Coolers: Cooler Temps:																	
Client Project Name: Landsburg 2024-09 Sampling				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="6">Analysis Requested</th> <th>Notes/Comments</th> </tr> <tr> <th>VOCs</th> <th>1,4-Dioxane</th> <th>Total Priority Metal</th> <th>TPH-HCID (NWTPH)</th> <th>TPH-DX + TPH-Gx (HOLD)</th> <th></th> <th>Analyze in accordance with MSA between WSP and ARI Ecology EIM EDD</th> </tr> </table>				Analysis Requested						Notes/Comments	VOCs	1,4-Dioxane	Total Priority Metal	TPH-HCID (NWTPH)	TPH-DX + TPH-Gx (HOLD)		Analyze in accordance with MSA between WSP and ARI Ecology EIM EDD
Analysis Requested								Notes/Comments													
VOCs	1,4-Dioxane	Total Priority Metal	TPH-HCID (NWTPH)	TPH-DX + TPH-Gx (HOLD)		Analyze in accordance with MSA between WSP and ARI Ecology EIM EDD															
Client Project #: GL9231000007.2024		Samplers: AP + TK																			
Sample ID	Date	Time	Matrix	No. Containers																	
LMW-11-0924	9/10/24	0945	W	10	X		X														
LMW-15-0924	↓	1120	↓	↓	X		X														
LMW-14-0924	↓	1230	↓	↓	X		X														
LMW-9-0924	↓	1410	↓	↓	X		X														
LMW-6-0924	9/11/24	0935	↓	↓	X		X														
LMW-3-0924	↓	1055	↓	↓	X		X														
LMW-5-0924	↓	1140	↓	↓	X		X														
LMW-FB-0924	↓	1230	↓	↓	X		X														
LMW-8-0924	↓	1245	↓	↓	X		X														
LMW-7-0924	↓	1415	↓	↓	X		X														
Comments/Special Instructions HOLD TPH FOLLOW-UPS. CLIENT SPECIFIC RLs/Analyte List				Relinquished by: (Signature) <i>[Signature]</i>		Received by: (Signature) <i>[Signature]</i>															
				Printed Name: Autumn Pearson		Printed Name: Johia Cervantes															
				Company: WSP		Company: ARI															
				Date & Time: 9/12/24 1252		Date & Time: 9/12/24 12:52															

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: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: <u>24D052</u>		Turn-around Requested: <u>Standard</u>		Date: <u>9/12/24</u>		 Analytical Resources, Incorporated Analytical Chemists and Consultants 4611 South 134th Place, Suite 100 Tukwila, WA 98168 206-695-6200 206-695-6201 (fax)					
ARI Client Company: <u>WSP</u>		Phone: <u>425-883-0777</u>		Page: <u>3</u> of <u>3</u>							
Client Contact: <u>Gary Zimmerman/Autumn Pearson</u>				No. of Coolers: <u> </u> Cooler Temps: <u> </u>							
Client Project Name: <u>Landsburg 2024-09 Sampling</u>				Analysis Requested				Notes/Comments			
Client Project #: <u>GL9231000007.2024</u>		Samplers: <u>AP + TK</u>		VOCs	1,4-Dioxane	Total Priority Metal	TPH-HCID (NWTPH)		TPH-DX + TPH-GX (HOLD)		
Sample ID	Date	Time	Matrix	No. Containers							
<u>LMW-2-0924</u>	<u>9/12/24</u>	<u>0955</u>	<u>W</u>	<u>10</u>	<u>X</u>		<u>X</u>	<u>X</u>			
<u>LMW-2-0924-D</u>	<u>↓</u>	<u>1000</u>	<u>↓</u>	<u>10</u>	<u>X</u>		<u>X</u>	<u>X</u>			
<u>LMW-4-0924</u>	<u>↓</u>	<u>1120</u>	<u>↓</u>	<u>22</u>	<u>X</u>		<u>X</u>	<u>X</u>			
<u>Trip Blank</u>	<u>-</u>	<u>-</u>	<u>↓</u>	<u>3</u>	<u>X</u>						
Comments/Special Instructions <u>HOLD TPH FOLLOW-UPS. CLIENT SPECIFIC RLs/Analyte List</u>				Relinquished by: <u>[Signature]</u>		Received by: <u>[Signature]</u>		Relinquished by: <u>[Signature]</u>			
				(Signature)		(Signature)		(Signature)		(Signature)	
				Printed Name: <u>Autumn Pearson</u>		Printed Name: <u>Sofia Cervantes</u>		Printed Name: <u> </u>		Printed Name: <u> </u>	
				Company: <u>WSP</u>		Company: <u>ARI</u>		Company: <u> </u>		Company: <u> </u>	
				Date & Time: <u>9/12/24 1252</u>		Date & Time: <u>09/12/24 12:52</u>		Date & Time: <u> </u>			

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

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



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

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
LMW-12-0924	24I0252-01	Water	09-Sep-2024 13:10	12-Sep-2024 12:52
LMW-13R-0924	24I0252-02	Water	09-Sep-2024 11:30	12-Sep-2024 12:52
LMW-10-0924	24I0252-03	Water	09-Sep-2024 14:50	12-Sep-2024 12:52
LMW-11-0924	24I0252-04	Water	10-Sep-2024 09:45	12-Sep-2024 12:52
LMW-15-0924	24I0252-05	Water	10-Sep-2024 11:20	12-Sep-2024 12:52
LMW-14-0924	24I0252-06	Water	10-Sep-2024 12:30	12-Sep-2024 12:52
LMW-9-0924	24I0252-07	Water	10-Sep-2024 14:10	12-Sep-2024 12:52
LMW-6-0924	24I0252-08	Water	11-Sep-2024 09:35	12-Sep-2024 12:52
LMW-3-0924	24I0252-09	Water	11-Sep-2024 10:55	12-Sep-2024 12:52
LMW-5-0924	24I0252-10	Water	11-Sep-2024 11:40	12-Sep-2024 12:52
LMW-FB-0924	24I0252-11	Water	11-Sep-2024 12:30	12-Sep-2024 12:52
LMW-8-0924	24I0252-12	Water	11-Sep-2024 12:45	12-Sep-2024 12:52
LMW-7-0924	24I0252-13	Water	11-Sep-2024 14:15	12-Sep-2024 12:52
LMW-2-0924	24I0252-14	Water	12-Sep-2024 09:55	12-Sep-2024 12:52
LMW-2-0924-D	24I0252-15	Water	12-Sep-2024 10:00	12-Sep-2024 12:52
LMW-4-0924	24I0252-16	Water	12-Sep-2024 10:00	12-Sep-2024 12:52
Trip Blank	24I0252-17	Water	09-Sep-2024 11:30	12-Sep-2024 12:52



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

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Work Order Case Narrative

Volatiles - EPA Method SW8260D

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

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits with the exception of analytes flagged on the associated forms.

Total and Dissolved Metals - EPA Method 200.8, 7470A and 6010D

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

Initial and continuing calibrations including interference checks were within method requirements for reported elements.

The method blank(s) contained sodium. Samples that contain sodium have been flagged with a "B" qualifier.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

Colbalt is out of control high in the interference check standard, but Colbalt is ND for all of the associated samples.

Hydrocarbon Identification (HCID) - 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.



Golder Associates

18300 NE Union Hill Road Suite 200

Redmond WA, 98052-3333

Project: Landsburg

Project Number: Landsburg

Project Manager: Gary Zimmerman

Reported:

23-Oct-2024 10:50

The surrogate percent recoveries were within control limits.

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



WORK ORDER

24I0252

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Golder Associates

Project Manager: Kelly Bottem

Project: Landsburg

Project Number: Landsburg

Preservation Confirmation

Container ID	Container Type	pH
24I0252-01 A	Glass NM, Amber, 500 mL	
24I0252-01 B	Glass NM, Amber, 500 mL	
24I0252-01 C	Glass NM, Amber, 500 mL	
24I0252-01 D	Glass NM, Amber, 500 mL	
24I0252-01 E	HDPE NM, 500 mL, 1:1 HNO3	42 P
24I0252-01 F	VOA Vial, Clear, 40 mL, HCL	
24I0252-01 G	VOA Vial, Clear, 40 mL, HCL	
24I0252-01 H	VOA Vial, Clear, 40 mL, HCL	
24I0252-01 I	VOA Vial, Clear, 40 mL, HCL	
24I0252-01 J	VOA Vial, Clear, 40 mL, HCL	
24I0252-02 A	Glass NM, Amber, 500 mL	
24I0252-02 B	Glass NM, Amber, 500 mL	
24I0252-02 C	Glass NM, Amber, 500 mL	
24I0252-02 D	Glass NM, Amber, 500 mL	
24I0252-02 E	HDPE NM, 500 mL, 1:1 HNO3	42 P
24I0252-02 F	VOA Vial, Clear, 40 mL, HCL	
24I0252-02 G	VOA Vial, Clear, 40 mL, HCL	
24I0252-02 H	VOA Vial, Clear, 40 mL, HCL	
24I0252-02 I	VOA Vial, Clear, 40 mL, HCL	
24I0252-02 J	VOA Vial, Clear, 40 mL, HCL	
24I0252-03 A	Glass NM, Amber, 500 mL	
24I0252-03 B	Glass NM, Amber, 500 mL	
24I0252-03 C	Glass NM, Amber, 500 mL	
24I0252-03 D	Glass NM, Amber, 500 mL	
24I0252-03 E	HDPE NM, 500 mL, 1:1 HNO3	42 P
24I0252-03 F	VOA Vial, Clear, 40 mL, HCL	
24I0252-03 G	VOA Vial, Clear, 40 mL, HCL	
24I0252-03 H	VOA Vial, Clear, 40 mL, HCL	
24I0252-03 I	VOA Vial, Clear, 40 mL, HCL	
24I0252-03 J	VOA Vial, Clear, 40 mL, HCL	
24I0252-04 A	Glass NM, Amber, 500 mL	
24I0252-04 B	Glass NM, Amber, 500 mL	
24I0252-04 C	Glass NM, Amber, 500 mL	
24I0252-04 D	Glass NM, Amber, 500 mL	



WORK ORDER

24I0252

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Project: Landsburg

Project Number: Landsburg

24I0252-04 E HDPE NM, 500 mL, 1:1 HNO₃

42 P

24I0252-04 F VOA Vial, Clear, 40 mL, HCL

24I0252-04 G VOA Vial, Clear, 40 mL, HCL

24I0252-04 H VOA Vial, Clear, 40 mL, HCL

24I0252-04 I VOA Vial, Clear, 40 mL, HCL

24I0252-04 J VOA Vial, Clear, 40 mL, HCL

24I0252-05 A Glass NM, Amber, 500 mL

24I0252-05 B Glass NM, Amber, 500 mL

24I0252-05 C Glass NM, Amber, 500 mL

24I0252-05 D Glass NM, Amber, 500 mL

24I0252-05 E HDPE NM, 500 mL, 1:1 HNO₃

42 P

24I0252-05 F VOA Vial, Clear, 40 mL, HCL

24I0252-05 G VOA Vial, Clear, 40 mL, HCL

24I0252-05 H VOA Vial, Clear, 40 mL, HCL

24I0252-05 I VOA Vial, Clear, 40 mL, HCL

24I0252-05 J VOA Vial, Clear, 40 mL, HCL

24I0252-06 A Glass NM, Amber, 500 mL

24I0252-06 B Glass NM, Amber, 500 mL

24I0252-06 C Glass NM, Amber, 500 mL

24I0252-06 D Glass NM, Amber, 500 mL

24I0252-06 E HDPE NM, 500 mL, 1:1 HNO₃

42 P

24I0252-06 F VOA Vial, Clear, 40 mL, HCL

24I0252-06 G VOA Vial, Clear, 40 mL, HCL

24I0252-06 H VOA Vial, Clear, 40 mL, HCL

24I0252-06 I VOA Vial, Clear, 40 mL, HCL

24I0252-06 J VOA Vial, Clear, 40 mL, HCL

24I0252-07 A Glass NM, Amber, 500 mL

24I0252-07 B Glass NM, Amber, 500 mL

24I0252-07 C Glass NM, Amber, 500 mL

24I0252-07 D Glass NM, Amber, 500 mL

24I0252-07 E HDPE NM, 500 mL, 1:1 HNO₃

42 P

24I0252-07 F VOA Vial, Clear, 40 mL, HCL

24I0252-07 G VOA Vial, Clear, 40 mL, HCL

24I0252-07 H VOA Vial, Clear, 40 mL, HCL

24I0252-07 I VOA Vial, Clear, 40 mL, HCL

24I0252-07 J VOA Vial, Clear, 40 mL, HCL



WORK ORDER

24I0252

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Golder Associates

Project Manager: Kelly Bottem

Project: Landsburg

Project Number: Landsburg

24I0252-08 A	Glass NM, Amber, 500 mL		
24I0252-08 B	Glass NM, Amber, 500 mL		
24I0252-08 C	Glass NM, Amber, 500 mL		
24I0252-08 D	Glass NM, Amber, 500 mL		
24I0252-08 E	HDPE NM, 500 mL, 1:1 HNO ₃	<2	P
24I0252-08 F	VOA Vial, Clear, 40 mL, HCL		
24I0252-08 G	VOA Vial, Clear, 40 mL, HCL		
24I0252-08 H	VOA Vial, Clear, 40 mL, HCL		
24I0252-08 I	VOA Vial, Clear, 40 mL, HCL		
24I0252-08 J	VOA Vial, Clear, 40 mL, HCL		
24I0252-09 A	Glass NM, Amber, 500 mL		
24I0252-09 B	Glass NM, Amber, 500 mL		
24I0252-09 C	Glass NM, Amber, 500 mL		
24I0252-09 D	Glass NM, Amber, 500 mL		
24I0252-09 E	HDPE NM, 500 mL, 1:1 HNO ₃	<2	P
24I0252-09 F	VOA Vial, Clear, 40 mL, HCL		
24I0252-09 G	VOA Vial, Clear, 40 mL, HCL		
24I0252-09 H	VOA Vial, Clear, 40 mL, HCL		
24I0252-09 I	VOA Vial, Clear, 40 mL, HCL		
24I0252-09 J	VOA Vial, Clear, 40 mL, HCL		
24I0252-10 A	Glass NM, Amber, 500 mL		
24I0252-10 B	Glass NM, Amber, 500 mL		
24I0252-10 C	Glass NM, Amber, 500 mL		
24I0252-10 D	Glass NM, Amber, 500 mL		
24I0252-10 E	HDPE NM, 500 mL, 1:1 HNO ₃	<2	P
24I0252-10 F	VOA Vial, Clear, 40 mL, HCL		
24I0252-10 G	VOA Vial, Clear, 40 mL, HCL		
24I0252-10 H	VOA Vial, Clear, 40 mL, HCL		
24I0252-10 I	VOA Vial, Clear, 40 mL, HCL		
24I0252-10 J	VOA Vial, Clear, 40 mL, HCL		
24I0252-11 A	Glass NM, Amber, 500 mL		
24I0252-11 B	Glass NM, Amber, 500 mL		
24I0252-11 C	Glass NM, Amber, 500 mL		
24I0252-11 D	Glass NM, Amber, 500 mL		
24I0252-11 E	HDPE NM, 500 mL, 1:1 HNO ₃	<2	P
24I0252-11 F	VOA Vial, Clear, 40 mL, HCL		



WORK ORDER

24I0252

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Client: Golder Associates

Project Manager: Kelly Bottem

Project: Landsburg

Project Number: Landsburg

24I0252-11 G	VOA Vial, Clear, 40 mL, HCL		
24I0252-11 H	VOA Vial, Clear, 40 mL, HCL		
24I0252-11 I	VOA Vial, Clear, 40 mL, HCL		
24I0252-11 J	VOA Vial, Clear, 40 mL, HCL		
24I0252-12 A	Glass NM, Amber, 500 mL		
24I0252-12 B	Glass NM, Amber, 500 mL		
24I0252-12 C	Glass NM, Amber, 500 mL		
24I0252-12 D	Glass NM, Amber, 500 mL		
24I0252-12 E	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24I0252-12 F	VOA Vial, Clear, 40 mL, HCL		
24I0252-12 G	VOA Vial, Clear, 40 mL, HCL		
24I0252-12 H	VOA Vial, Clear, 40 mL, HCL		
24I0252-12 I	VOA Vial, Clear, 40 mL, HCL		
24I0252-12 J	VOA Vial, Clear, 40 mL, HCL		
24I0252-13 A	Glass NM, Amber, 500 mL		
24I0252-13 B	Glass NM, Amber, 500 mL		
24I0252-13 C	Glass NM, Amber, 500 mL		
24I0252-13 D	Glass NM, Amber, 500 mL		
24I0252-13 E	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24I0252-13 F	VOA Vial, Clear, 40 mL, HCL		
24I0252-13 G	VOA Vial, Clear, 40 mL, HCL		
24I0252-13 H	VOA Vial, Clear, 40 mL, HCL		
24I0252-13 I	VOA Vial, Clear, 40 mL, HCL		
24I0252-13 J	VOA Vial, Clear, 40 mL, HCL		
24I0252-14 A	Glass NM, Amber, 500 mL		
24I0252-14 B	Glass NM, Amber, 500 mL		
24I0252-14 C	Glass NM, Amber, 500 mL		
24I0252-14 D	Glass NM, Amber, 500 mL		
24I0252-14 E	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24I0252-14 F	VOA Vial, Clear, 40 mL, HCL		
24I0252-14 G	VOA Vial, Clear, 40 mL, HCL		
24I0252-14 H	VOA Vial, Clear, 40 mL, HCL		
24I0252-14 I	VOA Vial, Clear, 40 mL, HCL		
24I0252-14 J	VOA Vial, Clear, 40 mL, HCL		
24I0252-15 A	Glass NM, Amber, 500 mL		
24I0252-15 B	Glass NM, Amber, 500 mL		



WORK ORDER

24I0252

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Project Manager: Kelly Bottem

Project: Landsburg

Project Number: Landsburg

24I0252-15 C	Glass NM, Amber, 500 mL		
24I0252-15 D	Glass NM, Amber, 500 mL		
24I0252-15 E	HDPE NM, 500 mL, 1:1 HNO3	C2	P
24I0252-15 F	VOA Vial, Clear, 40 mL, HCL		
24I0252-15 G	VOA Vial, Clear, 40 mL, HCL		
24I0252-15 H	VOA Vial, Clear, 40 mL, HCL		
24I0252-15 I	VOA Vial, Clear, 40 mL, HCL		
24I0252-15 J	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 A	Glass NM, Amber, 500 mL		
24I0252-16 B	Glass NM, Amber, 500 mL		
24I0252-16 C	Glass NM, Amber, 500 mL		
24I0252-16 D	Glass NM, Amber, 500 mL		
24I0252-16 E	Glass NM, Amber, 500 mL		
24I0252-16 F	Glass NM, Amber, 500 mL		
24I0252-16 G	Glass NM, Amber, 500 mL		
24I0252-16 H	Glass NM, Amber, 500 mL		
24I0252-16 I	HDPE NM, 500 mL, 1:1 HNO3	C2	P
24I0252-16 J	HDPE NM, 500 mL, 1:1 HNO3	C2	P
24I0252-16 K	HDPE NM, 500 mL, 1:1 HNO3	C2	P
24I0252-16 L	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 M	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 N	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 O	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 P	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 Q	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 R	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 S	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 T	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 U	VOA Vial, Clear, 40 mL, HCL		
24I0252-16 V	VOA Vial, Clear, 40 mL, HCL		
24I0252-17 A	VOA Vial, Clear, 40 mL, HCL		
24I0252-17 B	VOA Vial, Clear, 40 mL, HCL		
24I0252-17 C	VOA Vial, Clear, 40 mL, HCL		

Sony Hall
Preservation Confirmed By

9/12/24
Date



Cooler Receipt Form

ARI Client: WSP

COC No(s): _____ (NA)

Assigned ARI Job No: 24I0252

Project Name: Landsburg 2024-09 Sampling

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

Tracking No: _____ (NA)

Preliminary Examination Phase:

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

Were custody papers included with the cooler? (YES) NO

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

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

Time 13:00

2.4 1.5 1.2 4.5 4.9

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

Temp Gun ID#: 9208

Cooler Accepted by: RL Date: 09/12/24 Time: 13:00

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

How were bottles sealed in plastic bags? Individually Grouped Not 9/12/24

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 9/27/24

Date VOC Trip Blank was made at ARI... NA 9/27/24

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: RL Date: 9/12/24 Time: 1329 Labels checked by: RL

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

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

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



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

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-12-0924
24I0252-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 13:10

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 11:36

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-01 J

Preparation Batch: BMI0476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-12-0924
24I0252-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 13:10

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 11:36

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U



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

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-12-0924
24I0252-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 13:10

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 11:36

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.7</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>98.9</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>96.8</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>99.7</i>	<i>%</i>	



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Reported:
23-Oct-2024 10:50

LMW-12-0924
24I0252-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/09/2024 13:10

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 19:39

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-01 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	89.2	%	
Surrogate: n-Triacontane			50-150 %	93.0	%	



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Reported:
23-Oct-2024 10:50

LMW-12-0924
24I0252-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/09/2024 13:10

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 03:45

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-01 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-12-0924
24I0252-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/09/2024 13:10

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 03:45

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-01 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-12-0924
24I0252-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/09/2024 13:10

Instrument: ICP3 Analyst: SH

Analyzed: 10/02/2024 22:04

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-01 E 02

Preparation Batch: BMI0553

Sample Size: 25 mL

Prepared: 09/23/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	57.6	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	12.0	mg/L	
Magnesium	7439-95-4	1	0.500	33.0	mg/L	
Manganese	7439-96-5	1	0.0100	0.809	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.61	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	6.51	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-12-0924
24I0252-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/09/2024 13:10

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:03

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-01 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-13R-0924
24I0252-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 11:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 11:59

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-02 J

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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Reported:
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LMW-13R-0924
24I0252-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 11:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 11:59

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 100 %



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Reported:
23-Oct-2024 10:50

LMW-13R-0924
24I0252-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 11:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 11:59

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.5	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	97.1	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



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Reported:
23-Oct-2024 10:50

LMW-13R-0924
24I0252-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/09/2024 11:30

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 19:59

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-02 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	86.5	%	
Surrogate: n-Triacontane			50-150 %	91.1	%	



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Reported:
23-Oct-2024 10:50

LMW-13R-0924
24I0252-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/09/2024 11:30

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 03:50

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-02 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-13R-0924
24I0252-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/09/2024 11:30

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 03:50

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-02 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-13R-0924
24I0252-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/09/2024 11:30

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:08

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-02 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	83.0	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	1.50	mg/L	
Magnesium	7439-95-4	1	0.500	38.6	mg/L	
Manganese	7439-96-5	1	0.0100	0.0239	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.94	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	50.0	70.5	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-13R-0924
24I0252-02 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/09/2024 11:30

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:05

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-02 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-10-0924
24I0252-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 14:50

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 12:22

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-03 I

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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Redmond WA, 98052-3333

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-10-0924
24I0252-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 14:50

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 12:22

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 102 %



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Reported:
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LMW-10-0924
24I0252-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 14:50

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 12:22

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	99.3	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	92.9	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	105	%	



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-10-0924
24I0252-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/09/2024 14:50

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 20:19

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-03 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: <i>o</i> -Terphenyl			50-150 %	101	%	
Surrogate: <i>n</i> -Triacontane			50-150 %	106	%	



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-10-0924
24I0252-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/09/2024 14:50

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 03:55

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-03 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-10-0924
24I0252-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/09/2024 14:50

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 03:55

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-03 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-10-0924
24I0252-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/09/2024 14:50

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:11

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-03 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	6.53	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	2.87	mg/L	
Manganese	7439-96-5	1	0.0100	ND	mg/L	U
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	1.19	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	50.0	80.3	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-10-0924
24I0252-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/09/2024 14:50

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:07

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-03 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-11-0924
24I0252-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 09:45

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 12:45

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-04 J

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-11-0924
24I0252-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 09:45

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 12:45

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			80-129 %	103	%	



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-11-0924
24I0252-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 09:45

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 12:45

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.6	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	96.4	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	102	%	



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-11-0924
24I0252-04 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/10/2024 09:45

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 20:39

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-04 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: <i>o</i> -Terphenyl			50-150 %	95.6	%	
Surrogate: <i>n</i> -Triacontane			50-150 %	99.7	%	



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-11-0924
24I0252-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/10/2024 09:45

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:00

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-04 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	0.00857	mg/L	
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-11-0924
24I0252-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/10/2024 09:45

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:00

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-04 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-11-0924
24I0252-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/10/2024 09:45

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:14

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-04 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	55.7	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	0.439	mg/L	
Magnesium	7439-95-4	1	0.500	24.9	mg/L	
Manganese	7439-96-5	1	0.0100	0.159	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	1.92	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	22.2	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-11-0924
24I0252-04 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/10/2024 09:45

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:10

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-04 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-15-0924
24I0252-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 11:20

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 13:09

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-05 J

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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24I0252-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 11:20

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 13:09

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 103 %



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24I0252-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 11:20

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 13:09

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	100	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	95.8	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



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Reported:
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LMW-15-0924
24I0252-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/10/2024 11:20

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 21:00

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-05 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	77.9	%	
Surrogate: n-Triacontane			50-150 %	84.4	%	



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Reported:
23-Oct-2024 10:50

LMW-15-0924
24I0252-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/10/2024 11:20

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:06

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-05 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	0.00356	mg/L	
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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LMW-15-0924
24I0252-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/10/2024 11:20

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:06

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-05 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Reported:
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LMW-15-0924
24I0252-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/10/2024 11:20

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:17

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-05 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	59.8	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	3.92	mg/L	
Magnesium	7439-95-4	1	0.500	25.7	mg/L	
Manganese	7439-96-5	1	0.0100	0.342	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	1.84	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	12.5	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Reported:
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LMW-15-0924
24I0252-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/10/2024 11:20

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:17

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-05 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-14-0924
24I0252-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 12:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 13:32

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-06 J

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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LMW-14-0924
24I0252-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 12:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 13:32

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 104 %



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23-Oct-2024 10:50

LMW-14-0924
24I0252-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 12:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 13:32

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.6	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	95.8	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	105	%	



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Reported:
23-Oct-2024 10:50

LMW-14-0924
24I0252-06 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/10/2024 12:30

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 21:20

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-06 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	51.1	%	
Surrogate: n-Triacontane			50-150 %	54.2	%	



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-14-0924
24I0252-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/10/2024 12:30

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:11

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-06 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-14-0924
24I0252-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/10/2024 12:30

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:11

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-06 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-14-0924
24I0252-06 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/10/2024 12:30

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:20

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-06 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	127	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	9.97	mg/L	
Magnesium	7439-95-4	1	0.500	58.6	mg/L	
Manganese	7439-96-5	1	0.0100	0.581	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.45	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	9.88	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-14-0924
24I0252-06 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/10/2024 12:30

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:19

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-06 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-9-0924
24I0252-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 14:10

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 13:56

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-07 J

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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Reported:
23-Oct-2024 10:50

LMW-9-0924
24I0252-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 14:10

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 13:56

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 103 %



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Reported:
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LMW-9-0924
24I0252-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/10/2024 14:10

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 13:56

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.5	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	96.5	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	99.9	%	



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Reported:
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LMW-9-0924
24I0252-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/10/2024 14:10

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 21:40

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-07 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: <i>o</i> -Terphenyl			50-150 %	93.0	%	
Surrogate: <i>n</i> -Triacontane			50-150 %	96.4	%	



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Reported:
23-Oct-2024 10:50

LMW-9-0924
24I0252-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/10/2024 14:10

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:16

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-07 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-9-0924
24I0252-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/10/2024 14:10

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:16

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-07 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-9-0924
24I0252-07 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/10/2024 14:10

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:23

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-07 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	73.7	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	1.34	mg/L	
Magnesium	7439-95-4	1	0.500	38.8	mg/L	
Manganese	7439-96-5	1	0.0100	0.154	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.18	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	12.9	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Reported:
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LMW-9-0924
24I0252-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/10/2024 14:10

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:21

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-07 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-6-0924
24I0252-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 09:35

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 14:20

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-08 J

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	8.60	ug/L	
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-6-0924
24I0252-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 09:35

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 14:20

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 105 %



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-6-0924
24I0252-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 09:35

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 14:20

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.7	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	95.8	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	102	%	



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-6-0924
24I0252-08 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/11/2024 09:35

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 22:00

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-08 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	91.5	%	
Surrogate: n-Triacontane			50-150 %	97.2	%	



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-6-0924
24I0252-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/11/2024 09:35

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:21

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-08 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-6-0924
24I0252-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/11/2024 09:35

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:21

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-08 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-6-0924
24I0252-08 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/11/2024 09:35

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:39

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-08 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	25.8	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	1.63	mg/L	
Magnesium	7439-95-4	1	0.500	13.2	mg/L	
Manganese	7439-96-5	1	0.0100	0.0176	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	0.602	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	6.50	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-6-0924
24I0252-08 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/11/2024 09:35

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:24

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-08 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-3-0924
24I0252-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 10:55

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 14:43

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-09 I

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	7.28	ug/L	
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-3-0924
24I0252-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 10:55

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 14:43

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 106 %



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Project Number: Landsburg
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Reported:
23-Oct-2024 10:50

LMW-3-0924
24I0252-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 10:55

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 14:43

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.5	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	97.5	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	102	%	



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-3-0924
24I0252-09 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/11/2024 10:55

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 22:21

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-09 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: <i>o</i> -Terphenyl			50-150 %	102	%	
Surrogate: <i>n</i> -Triacontane			50-150 %	106	%	



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-3-0924
24I0252-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/11/2024 10:55

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:26

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-09 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-3-0924
24I0252-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/11/2024 10:55

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:26

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-09 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-3-0924
24I0252-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/11/2024 10:55

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:42

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-09 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	34.8	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	14.7	mg/L	
Manganese	7439-96-5	1	0.0100	ND	mg/L	U
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	1.59	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	9.37	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-3-0924
24I0252-09 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/11/2024 10:55

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:26

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-09 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-5-0924
24I0252-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 11:40

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 15:07

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-10 F

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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Redmond WA, 98052-3333

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-5-0924
24I0252-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 11:40

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 15:07

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 107 %



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LMW-5-0924
24I0252-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 11:40

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 15:07

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.9	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	96.1	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	101	%	



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-5-0924
24I0252-10 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/11/2024 11:40

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 22:41

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-10 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	101	%	
Surrogate: n-Triacontane			50-150 %	107	%	



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-5-0924
24I0252-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/11/2024 11:40

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:50

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-10 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-5-0924
24I0252-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/11/2024 11:40

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:50

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-10 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-5-0924
24I0252-10 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/11/2024 11:40

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:45

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-10 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	77.4	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	0.319	mg/L	
Magnesium	7439-95-4	1	0.500	41.4	mg/L	
Manganese	7439-96-5	1	0.0100	0.189	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.30	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	13.3	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-5-0924
24I0252-10 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/11/2024 11:40

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:28

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-10 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-FB-0924
24I0252-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 12:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 15:31

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-11 F

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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Project: Landsburg
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Reported:
23-Oct-2024 10:50

LMW-FB-0924
24I0252-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 12:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 15:31

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			80-129 %	107	%	



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Reported:
23-Oct-2024 10:50

LMW-FB-0924
24I0252-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 12:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 15:31

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.8	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	97.1	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	102	%	



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Reported:
23-Oct-2024 10:50

LMW-FB-0924
24I0252-11 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/11/2024 12:30

Instrument: FID4 Analyst: JGR

Analyzed: 09/14/2024 23:41

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-11 B 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	100	%	
Surrogate: n-Triacontane			50-150 %	105	%	



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Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-FB-0924
24I0252-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/11/2024 12:30

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/25/2024 17:22

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-11 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-FB-0924
24I0252-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/11/2024 12:30

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/25/2024 17:22

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-11 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-FB-0924
24I0252-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/11/2024 12:30

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:48

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-11 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	ND	mg/L	U
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	ND	mg/L	U
Magnesium	7439-95-4	1	0.500	ND	mg/L	U
Manganese	7439-96-5	1	0.0100	ND	mg/L	U
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	ND	mg/L	U
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	ND	mg/L	U
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-FB-0924
24I0252-11 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/11/2024 12:30

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:31

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-11 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-8-0924
24I0252-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 12:45

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 15:55

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-12 F

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	5.49	ug/L	
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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24I0252-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 12:45

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 15:55

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 104 %



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24I0252-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 12:45

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 15:55

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	99.8	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	95.8	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	102	%	



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Reported:
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LMW-8-0924
24I0252-12 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/11/2024 12:45

Instrument: FID4 Analyst: JGR

Analyzed: 09/15/2024 00:02

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-12 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	70.7	%	
Surrogate: n-Triacontane			50-150 %	76.1	%	



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Reported:
23-Oct-2024 10:50

LMW-8-0924
24I0252-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/11/2024 12:45

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:55

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-12 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	0.00304	mg/L	
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Reported:
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LMW-8-0924
24I0252-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/11/2024 12:45

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 04:55

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-12 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Reported:
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LMW-8-0924
24I0252-12 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/11/2024 12:45

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:51

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-12 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	70.7	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	13.4	mg/L	
Magnesium	7439-95-4	1	0.500	38.6	mg/L	
Manganese	7439-96-5	1	0.0100	0.476	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.09	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	12.8	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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LMW-8-0924
24I0252-12 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/11/2024 12:45

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:33

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-12 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-7-0924
24I0252-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 14:15

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 16:19

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-13 F

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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LMW-7-0924
24I0252-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 14:15

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 16:19

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 104 %



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Reported:
23-Oct-2024 10:50

LMW-7-0924
24I0252-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/11/2024 14:15

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 16:19

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.7	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	96.0	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	102	%	



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LMW-7-0924
24I0252-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/11/2024 14:15

Instrument: FID4 Analyst: JGR

Analyzed: 09/15/2024 00:22

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-13 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	95.3	%	
Surrogate: n-Triacontane			50-150 %	99.0	%	



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Reported:
23-Oct-2024 10:50

LMW-7-0924
24I0252-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/11/2024 14:15

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 05:00

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-13 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-7-0924
24I0252-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/11/2024 14:15

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 05:00

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-13 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-7-0924
24I0252-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/11/2024 14:15

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 19:18

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-13 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	30.8	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	0.429	mg/L	
Magnesium	7439-95-4	1	0.500	14.0	mg/L	
Manganese	7439-96-5	1	0.0100	0.0288	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.16	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	46.5	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-7-0924
24I0252-13 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/11/2024 14:15

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:35

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-13 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
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LMW-2-0924
24I0252-14 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/12/2024 09:55

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 16:42

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-14 F

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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Reported:
23-Oct-2024 10:50

LMW-2-0924
24I0252-14 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/12/2024 09:55

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 16:42

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 106 %



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Reported:
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LMW-2-0924
24I0252-14 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/12/2024 09:55

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 16:42

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.3	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	94.8	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	104	%	



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Reported:
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LMW-2-0924
24I0252-14 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/12/2024 09:55

Instrument: FID4 Analyst: JGR

Analyzed: 09/15/2024 00:42

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-14 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: <i>o</i> -Terphenyl			50-150 %	99.2	%	
Surrogate: <i>n</i> -Triacontane			50-150 %	106	%	



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Reported:
23-Oct-2024 10:50

LMW-2-0924
24I0252-14 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/12/2024 09:55

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 05:06

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-14 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Reported:
23-Oct-2024 10:50

LMW-2-0924
24I0252-14 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/12/2024 09:55

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 05:06

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-14 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Reported:
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LMW-2-0924
24I0252-14 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/12/2024 09:55

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 19:21

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-14 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	108	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	0.238	mg/L	
Magnesium	7439-95-4	1	0.500	65.1	mg/L	
Manganese	7439-96-5	1	0.0100	0.211	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.37	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	18.9	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
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LMW-2-0924
24I0252-14 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/12/2024 09:55

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:38

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-14 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-2-0924-D
24I0252-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/12/2024 10:00

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 17:06

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-15 F

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.10	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	5.95	ug/L	
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.10	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	2.50	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-2-0924-D
24I0252-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/12/2024 10:00

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 17:06

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 %

111

%



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-2-0924-D
24I0252-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/12/2024 10:00

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 17:06

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	97.9	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	93.8	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-2-0924-D
24I0252-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/12/2024 10:00

Instrument: FID4 Analyst: JGR

Analyzed: 09/15/2024 01:02

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-15 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	69.2	%	
Surrogate: n-Triacontane			50-150 %	72.3	%	



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-2-0924-D
24I0252-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/12/2024 10:00

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 05:11

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-15 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-2-0924-D
24I0252-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/12/2024 10:00

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 05:11

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-15 E

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-2-0924-D
24I0252-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/12/2024 10:00

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 19:24

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-15 E 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	111	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	0.253	mg/L	
Magnesium	7439-95-4	1	0.500	67.2	mg/L	
Manganese	7439-96-5	1	0.0100	0.216	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.44	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	19.6	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-2-0924-D
24I0252-15 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/12/2024 10:00

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 13:45

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-15 E

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-4-0924
24I0252-16 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/12/2024 10:00

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 17:30

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-16 L

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-4-0924
24I0252-16 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/12/2024 10:00

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 17:30

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U

Surrogate: 1,2-Dichloroethane-d4

80-129 % 112 %



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Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-4-0924
24I0252-16 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/12/2024 10:00

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 17:30

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	99.5	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	96.7	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	104	%	



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Project: Landsburg
Project Number: Landsburg
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Reported:
23-Oct-2024 10:50

LMW-4-0924
24I0252-16 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/12/2024 10:00

Instrument: FID4 Analyst: JGR

Analyzed: 09/15/2024 01:22

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 24I0252-16 A 01

Preparation Batch: BMI0300

Sample Size: 500 mL

Prepared: 09/13/2024

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-C12)	GRO	1	0.25	ND	mg/L	U
Diesel Range Organics (C12-C24)	DRO	1	0.50	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	1.00	ND	mg/L	U
Surrogate: <i>o</i> -Terphenyl			50-150 %	107	%	
Surrogate: <i>n</i> -Triacontane			50-150 %	111	%	



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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-4-0924
24I0252-16 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 09/12/2024 10:00

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 05:16

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-16 K

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	ND	mg/L	U
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-4-0924
24I0252-16 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/12/2024 10:00

Instrument: ICPMS1 Analyst: HAL

Analyzed: 09/26/2024 05:16

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24I0252-16 K

Preparation Batch: BMI0625

Sample Size: 25 mL

Prepared: 09/25/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.00300	ND	mg/L	U
Lead	7439-92-1	1	0.0100	ND	mg/L	U
Thallium	7440-28-0	1	0.00200	ND	mg/L	U



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Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-4-0924
24I0252-16 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/12/2024 10:00

Instrument: ICP3 Analyst: SH

Analyzed: 09/25/2024 18:54

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24I0252-16 K 01

Preparation Batch: BMI0532

Sample Size: 25 mL

Prepared: 09/21/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Aluminum	7429-90-5	1	1.00	ND	mg/L	U
Barium	7440-39-3	1	0.500	ND	mg/L	U
Beryllium	7440-41-7	1	0.0100	ND	mg/L	U
Cadmium	7440-43-9	1	0.0020	ND	mg/L	U
Calcium	7440-70-2	1	0.500	105	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	ND	mg/L	U
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	1.39	mg/L	
Magnesium	7439-95-4	1	0.500	62.1	mg/L	
Manganese	7439-96-5	1	0.0100	0.121	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.78	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	37.8	mg/L	B
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

LMW-4-0924
24I0252-16 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 09/12/2024 10:00

Instrument: HYDRA Analyst: ML

Analyzed: 09/27/2024 12:53

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 24I0252-16 J

Preparation Batch: BMI0570

Sample Size: 20 mL

Prepared: 09/26/2024

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00100	ND	mg/L	U



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Trip Blank
24I0252-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 11:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 11:13

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 24I0252-17 A

Preparation Batch: BM10476

Sample Size: 10 mL

Prepared: 09/19/2024

Final Volume: 10 mL

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



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

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Trip Blank
24I0252-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 11:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 11:13

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.10	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.10	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.25	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.10	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			80-129 %	95.8	%	



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Trip Blank
24I0252-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/09/2024 11:30

Instrument: NT20 Analyst: LN

Analyzed: 09/19/2024 11:13

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: Toluene-d8		80-120 %	98.0	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	94.0	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	99.6	%	



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Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0476-BLK1)		Prepared: 19-Sep-2024 Analyzed: 19-Sep-2024 10:34								
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.10	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.10	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	2.50	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0476-BLK1)		Prepared: 19-Sep-2024 Analyzed: 19-Sep-2024 10:34							
2-Hexanone	ND	5.00	ug/L						U
1,1,2-Trichloroethane	ND	0.20	ug/L						U
1,3-Dichloropropane	ND	0.10	ug/L						U
Tetrachloroethene	ND	0.20	ug/L						U
Dibromochloromethane	ND	0.20	ug/L						U
1,2-Dibromoethane	ND	0.10	ug/L						U
Chlorobenzene	ND	0.20	ug/L						U
Ethylbenzene	ND	0.20	ug/L						U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L						U
m,p-Xylene	ND	0.40	ug/L						U
o-Xylene	ND	0.20	ug/L						U
Xylenes, total	ND	0.60	ug/L						U
Styrene	ND	0.20	ug/L						U
Bromoform	ND	0.20	ug/L						U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L						U
1,2,3-Trichloropropane	ND	0.25	ug/L						U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L						U
n-Propylbenzene	ND	0.20	ug/L						U
Bromobenzene	ND	0.20	ug/L						U
Isopropyl Benzene	ND	0.20	ug/L						U
2-Chlorotoluene	ND	0.10	ug/L						U
4-Chlorotoluene	ND	0.20	ug/L						U
t-Butylbenzene	ND	0.20	ug/L						U
1,3,5-Trimethylbenzene	ND	0.20	ug/L						U
1,2,4-Trimethylbenzene	ND	0.20	ug/L						U
s-Butylbenzene	ND	0.20	ug/L						U
4-Isopropyl Toluene	ND	0.20	ug/L						U
1,3-Dichlorobenzene	ND	0.20	ug/L						U
1,4-Dichlorobenzene	ND	0.20	ug/L						U
n-Butylbenzene	ND	0.20	ug/L						U
1,2-Dichlorobenzene	ND	0.20	ug/L						U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L						U
1,2,4-Trichlorobenzene	ND	0.50	ug/L						U
Hexachloro-1,3-Butadiene	ND	0.50	ug/L						U
Naphthalene	ND	0.50	ug/L						U



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0476-BLK1)		Prepared: 19-Sep-2024 Analyzed: 19-Sep-2024 10:34								
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.93		ug/L	5.00		98.6	80-129			
Surrogate: Toluene-d8	4.95		ug/L	5.00		99.0	80-120			
Surrogate: 4-Bromofluorobenzene	4.78		ug/L	5.00		95.5	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.08		ug/L	5.00		102	80-120			



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Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
LCS (BMI0476-BS1)		Prepared: 19-Sep-2024 Analyzed: 19-Sep-2024 09:26							
Chloromethane	9.93	0.50	ug/L	10.0		99.3	60-138		
Vinyl Chloride	10.4	0.10	ug/L	10.0		104	66-133		
Bromomethane	10.1	1.00	ug/L	10.0		101	72-131		
Chloroethane	10.6	0.20	ug/L	10.0		106	60-155		
Trichlorofluoromethane	10.5	0.20	ug/L	10.0		105	62-141		
Acrolein	46.9	5.00	ug/L	50.0		93.9	52-190		
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.3	0.20	ug/L	10.0		103	76-129		
Acetone	45.1	5.00	ug/L	50.0		90.1	58-142		
1,1-Dichloroethene	10.2	0.20	ug/L	10.0		102	69-135		
Iodomethane	10.0	1.00	ug/L	10.0		100	56-147		
Methylene Chloride	9.16	1.00	ug/L	10.0		91.6	65-135		
Acrylonitrile	9.53	1.00	ug/L	10.0		95.3	64-134		
Carbon Disulfide	10.1	0.20	ug/L	10.0		101	78-125		
trans-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	78-128		
Vinyl Acetate	9.83	0.20	ug/L	10.0		98.3	55-138		
1,1-Dichloroethane	10.2	0.20	ug/L	10.0		102	76-124		
2-Butanone	46.7	5.00	ug/L	50.0		93.3	61-140		
2,2-Dichloropropane	11.2	0.20	ug/L	10.0		112	66-147		
cis-1,2-Dichloroethene	10.2	0.20	ug/L	10.0		102	80-121		
Chloroform	10.2	0.20	ug/L	10.0		102	80-122		
Bromochloromethane	10.0	0.20	ug/L	10.0		100	80-121		
1,1,1-Trichloroethane	10.7	0.20	ug/L	10.0		107	79-123		
1,1-Dichloropropene	10.2	0.10	ug/L	10.0		102	80-127		
Carbon tetrachloride	9.75	0.20	ug/L	10.0		97.5	53-137		
1,2-Dichloroethane	9.74	0.20	ug/L	10.0		97.4	75-123		
Benzene	10.3	0.20	ug/L	10.0		103	80-120		
Trichloroethene	10.1	0.20	ug/L	10.0		101	80-120		
1,2-Dichloropropane	10.2	0.20	ug/L	10.0		102	80-120		
Bromodichloromethane	9.90	0.20	ug/L	10.0		99.0	80-121		
Dibromomethane	10.0	0.20	ug/L	10.0		100	80-120		
2-Chloroethyl vinyl ether	9.55	1.00	ug/L	10.0		95.5	64-120		
4-Methyl-2-Pentanone	48.3	2.50	ug/L	50.0		96.6	67-133		
cis-1,3-Dichloropropene	10.3	0.20	ug/L	10.0		103	80-124		
Toluene	10.2	0.20	ug/L	10.0		102	80-120		
trans-1,3-Dichloropropene	10.3	0.20	ug/L	10.0		103	71-127		



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Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMI0476-BS1)		Prepared: 19-Sep-2024 Analyzed: 19-Sep-2024 09:26								
2-Hexanone	46.0	5.00	ug/L	50.0		92.0	69-133			
1,1,2-Trichloroethane	9.90	0.20	ug/L	10.0		99.0	80-121			
1,3-Dichloropropane	9.90	0.10	ug/L	10.0		99.0	80-120			
Tetrachloroethene	10.2	0.20	ug/L	10.0		102	80-120			
Dibromochloromethane	9.94	0.20	ug/L	10.0		99.4	65-135			
1,2-Dibromoethane	10.1	0.10	ug/L	10.0		101	80-121			
Chlorobenzene	10.2	0.20	ug/L	10.0		102	80-120			
Ethylbenzene	10.4	0.20	ug/L	10.0		104	80-120			
1,1,1,2-Tetrachloroethane	10.2	0.20	ug/L	10.0		102	80-120			
m,p-Xylene	20.9	0.40	ug/L	20.0		105	80-121			
o-Xylene	10.4	0.20	ug/L	10.0		104	80-121			
Xylenes, total	31.3	0.60	ug/L	30.0		104	76-127			
Styrene	10.6	0.20	ug/L	10.0		106	80-124			
Bromoform	10.0	0.20	ug/L	10.0		100	51-134			
1,1,2,2-Tetrachloroethane	9.51	0.20	ug/L	10.0		95.1	77-123			
1,2,3-Trichloropropane	9.19	0.25	ug/L	10.0		91.9	76-125			
trans-1,4-Dichloro 2-Butene	8.83	1.00	ug/L	10.0		88.3	55-129			
n-Propylbenzene	10.4	0.20	ug/L	10.0		104	78-130			
Bromobenzene	9.63	0.20	ug/L	10.0		96.3	80-120			
Isopropyl Benzene	10.5	0.20	ug/L	10.0		105	80-128			
2-Chlorotoluene	10.0	0.10	ug/L	10.0		100	78-122			
4-Chlorotoluene	10.0	0.20	ug/L	10.0		100	80-121			
t-Butylbenzene	10.3	0.20	ug/L	10.0		103	78-125			
1,3,5-Trimethylbenzene	10.5	0.20	ug/L	10.0		105	80-129			
1,2,4-Trimethylbenzene	10.5	0.20	ug/L	10.0		105	80-127			
s-Butylbenzene	10.6	0.20	ug/L	10.0		106	78-129			
4-Isopropyl Toluene	10.8	0.20	ug/L	10.0		108	79-130			
1,3-Dichlorobenzene	9.87	0.20	ug/L	10.0		98.7	80-120			
1,4-Dichlorobenzene	9.66	0.20	ug/L	10.0		96.6	80-120			
n-Butylbenzene	10.4	0.20	ug/L	10.0		104	74-129			
1,2-Dichlorobenzene	9.54	0.20	ug/L	10.0		95.4	80-120			
1,2-Dibromo-3-chloropropane	8.74	0.50	ug/L	10.0		87.4	62-123			
1,2,4-Trichlorobenzene	9.49	0.50	ug/L	10.0		94.9	64-124			
Hexachloro-1,3-Butadiene	9.73	0.50	ug/L	10.0		97.3	65-145			
Naphthalene	9.42	0.50	ug/L	10.0		94.2	50-134			



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Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
LCS (BMI0476-BS1)									
					Prepared: 19-Sep-2024	Analyzed: 19-Sep-2024 09:26			
1,2,3-Trichlorobenzene	9.61	0.50	ug/L	10.0		96.1	49-133		
Dichlorodifluoromethane	10.7	0.20	ug/L	10.0		107	48-147		
Surrogate: 1,2-Dichloroethane-d4	4.72		ug/L	5.00		94.4	80-129		
Surrogate: Toluene-d8	5.01		ug/L	5.00		100	80-120		
Surrogate: 4-Bromofluorobenzene	5.04		ug/L	5.00		101	80-120		
Surrogate: 1,2-Dichlorobenzene-d4	4.95		ug/L	5.00		99.0	80-120		



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMI0476-BSD1)		Prepared: 19-Sep-2024 Analyzed: 19-Sep-2024 09:49								
Chloromethane	10.1	0.50	ug/L	10.0		101	60-138	1.97	30	
Vinyl Chloride	10.5	0.10	ug/L	10.0		105	66-133	0.96	30	
Bromomethane	10.2	1.00	ug/L	10.0		102	72-131	0.24	30	
Chloroethane	10.7	0.20	ug/L	10.0		107	60-155	0.16	30	
Trichlorofluoromethane	10.4	0.20	ug/L	10.0		104	62-141	0.43	30	
Acrolein	47.4	5.00	ug/L	50.0		94.8	52-190	0.98	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.4	0.20	ug/L	10.0		104	76-129	0.83	30	
Acetone	48.0	5.00	ug/L	50.0		96.0	58-142	6.27	30	
1,1-Dichloroethene	10.3	0.20	ug/L	10.0		103	69-135	0.61	30	
Iodomethane	10.1	1.00	ug/L	10.0		101	56-147	1.05	30	
Methylene Chloride	9.40	1.00	ug/L	10.0		94.0	65-135	2.54	30	
Acrylonitrile	9.26	1.00	ug/L	10.0		92.6	64-134	2.84	30	
Carbon Disulfide	10.1	0.20	ug/L	10.0		101	78-125	0.12	30	
trans-1,2-Dichloroethene	10.3	0.20	ug/L	10.0		103	78-128	0.55	30	
Vinyl Acetate	10.1	0.20	ug/L	10.0		101	55-138	2.50	30	
1,1-Dichloroethane	10.3	0.20	ug/L	10.0		103	76-124	1.57	30	
2-Butanone	49.7	5.00	ug/L	50.0		99.3	61-140	6.22	30	
2,2-Dichloropropane	11.2	0.20	ug/L	10.0		112	66-147	0.15	30	
cis-1,2-Dichloroethene	10.3	0.20	ug/L	10.0		103	80-121	0.38	30	
Chloroform	9.99	0.20	ug/L	10.0		99.9	80-122	2.09	30	
Bromochloromethane	9.92	0.20	ug/L	10.0		99.2	80-121	1.18	30	
1,1,1-Trichloroethane	10.9	0.20	ug/L	10.0		109	79-123	1.77	30	
1,1-Dichloropropene	10.4	0.10	ug/L	10.0		104	80-127	1.48	30	
Carbon tetrachloride	9.68	0.20	ug/L	10.0		96.8	53-137	0.68	30	
1,2-Dichloroethane	9.55	0.20	ug/L	10.0		95.5	75-123	1.92	30	
Benzene	10.3	0.20	ug/L	10.0		103	80-120	0.35	30	
Trichloroethene	10.1	0.20	ug/L	10.0		101	80-120	0.06	30	
1,2-Dichloropropane	10.2	0.20	ug/L	10.0		102	80-120	0.16	30	
Bromodichloromethane	9.92	0.20	ug/L	10.0		99.2	80-121	0.18	30	
Dibromomethane	9.80	0.20	ug/L	10.0		98.0	80-120	2.00	30	
2-Chloroethyl vinyl ether	9.90	1.00	ug/L	10.0		99.0	64-120	3.57	30	
4-Methyl-2-Pentanone	49.2	2.50	ug/L	50.0		98.4	67-133	1.90	30	
cis-1,3-Dichloropropene	10.4	0.20	ug/L	10.0		104	80-124	0.86	30	
Toluene	10.0	0.20	ug/L	10.0		100	80-120	1.20	30	
trans-1,3-Dichloropropene	10.2	0.20	ug/L	10.0		102	71-127	1.64	30	



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

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMI0476-BSD1)		Prepared: 19-Sep-2024 Analyzed: 19-Sep-2024 09:49								
2-Hexanone	48.6	5.00	ug/L	50.0		97.1	69-133	5.42	30	
1,1,2-Trichloroethane	10.0	0.20	ug/L	10.0		100	80-121	1.33	30	
1,3-Dichloropropane	10.2	0.10	ug/L	10.0		102	80-120	3.42	30	
Tetrachloroethene	10.1	0.20	ug/L	10.0		101	80-120	0.47	30	
Dibromochloromethane	10.2	0.20	ug/L	10.0		102	65-135	2.79	30	
1,2-Dibromoethane	10.2	0.10	ug/L	10.0		102	80-121	0.91	30	
Chlorobenzene	10.3	0.20	ug/L	10.0		103	80-120	0.69	30	
Ethylbenzene	10.4	0.20	ug/L	10.0		104	80-120	0.47	30	
1,1,1,2-Tetrachloroethane	10.1	0.20	ug/L	10.0		101	80-120	0.12	30	
m,p-Xylene	20.9	0.40	ug/L	20.0		104	80-121	0.10	30	
o-Xylene	10.6	0.20	ug/L	10.0		106	80-121	1.54	30	
Xylenes, total	31.5	0.60	ug/L	30.0		105	76-127	0.45	30	
Styrene	10.7	0.20	ug/L	10.0		107	80-124	1.13	30	
Bromoform	10.5	0.20	ug/L	10.0		105	51-134	4.74	30	
1,1,2,2-Tetrachloroethane	10.1	0.20	ug/L	10.0		101	77-123	5.77	30	
1,2,3-Trichloropropane	9.53	0.25	ug/L	10.0		95.3	76-125	3.65	30	
trans-1,4-Dichloro 2-Butene	9.45	1.00	ug/L	10.0		94.5	55-129	6.77	30	
n-Propylbenzene	10.6	0.20	ug/L	10.0		106	78-130	2.02	30	
Bromobenzene	10.1	0.20	ug/L	10.0		101	80-120	5.11	30	
Isopropyl Benzene	10.9	0.20	ug/L	10.0		109	80-128	4.15	30	
2-Chlorotoluene	10.4	0.10	ug/L	10.0		104	78-122	4.19	30	
4-Chlorotoluene	10.6	0.20	ug/L	10.0		106	80-121	5.15	30	
t-Butylbenzene	10.6	0.20	ug/L	10.0		106	78-125	3.06	30	
1,3,5-Trimethylbenzene	10.9	0.20	ug/L	10.0		109	80-129	3.65	30	
1,2,4-Trimethylbenzene	10.9	0.20	ug/L	10.0		109	80-127	3.58	30	
s-Butylbenzene	10.8	0.20	ug/L	10.0		108	78-129	2.41	30	
4-Isopropyl Toluene	11.0	0.20	ug/L	10.0		110	79-130	2.57	30	
1,3-Dichlorobenzene	10.3	0.20	ug/L	10.0		103	80-120	4.00	30	
1,4-Dichlorobenzene	10.1	0.20	ug/L	10.0		101	80-120	4.16	30	
n-Butylbenzene	10.7	0.20	ug/L	10.0		107	74-129	2.59	30	
1,2-Dichlorobenzene	9.98	0.20	ug/L	10.0		99.8	80-120	4.48	30	
1,2-Dibromo-3-chloropropane	9.20	0.50	ug/L	10.0		92.0	62-123	5.17	30	
1,2,4-Trichlorobenzene	9.76	0.50	ug/L	10.0		97.6	64-124	2.77	30	
Hexachloro-1,3-Butadiene	10.0	0.50	ug/L	10.0		100	65-145	2.93	30	
Naphthalene	9.90	0.50	ug/L	10.0		99.0	50-134	4.93	30	



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Project: Landsburg
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Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMI0476-BSD1)		Prepared: 19-Sep-2024 Analyzed: 19-Sep-2024 09:49								
1,2,3-Trichlorobenzene	9.96	0.50	ug/L	10.0		99.6	49-133	3.55	30	
Dichlorodifluoromethane	10.6	0.20	ug/L	10.0		106	48-147	1.11	30	
Surrogate: 1,2-Dichloroethane-d4	4.80		ug/L	5.00		95.9	80-129			
Surrogate: Toluene-d8	5.03		ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	5.00		ug/L	5.00		99.9	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.04		ug/L	5.00		101	80-120			



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Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BMI0476-MS1)		Source: 24I0252-16		Prepared: 19-Sep-2024		Analyzed: 19-Sep-2024 18:17				
Chloromethane	9.38	0.50	ug/L	10.0	ND	93.8	60-138			
Vinyl Chloride	9.79	0.10	ug/L	10.0	ND	97.9	66-133			
Bromomethane	10.2	1.00	ug/L	10.0	ND	102	72-131			
Chloroethane	11.8	0.20	ug/L	10.0	ND	118	60-155			
Trichlorofluoromethane	10.3	0.20	ug/L	10.0	ND	103	62-141			
Acrolein	15.2	5.00	ug/L	50.0	ND	30.3	52-190			*
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.66	0.20	ug/L	10.0	ND	96.6	76-129			
Acetone	57.3	5.00	ug/L	50.0	ND	115	58-142			
1,1-Dichloroethene	10.3	0.20	ug/L	10.0	ND	103	69-135			
Iodomethane	9.99	1.00	ug/L	10.0	ND	99.9	56-147			
Methylene Chloride	9.37	1.00	ug/L	10.0	ND	93.7	65-135			
Acrylonitrile	10.1	1.00	ug/L	10.0	ND	101	64-134			
Carbon Disulfide	9.99	0.20	ug/L	10.0	ND	99.9	78-125			
trans-1,2-Dichloroethene	10.4	0.20	ug/L	10.0	ND	104	78-128			
Vinyl Acetate	9.64	0.20	ug/L	10.0	ND	96.4	55-138			
1,1-Dichloroethane	10.3	0.20	ug/L	10.0	ND	103	76-124			
2-Butanone	54.9	5.00	ug/L	50.0	ND	110	61-140			
2,2-Dichloropropane	10.1	0.20	ug/L	10.0	ND	101	66-147			
cis-1,2-Dichloroethene	10.2	0.20	ug/L	10.0	ND	102	80-121			
Chloroform	10.2	0.20	ug/L	10.0	ND	102	80-122			
Bromochloromethane	10.3	0.20	ug/L	10.0	ND	103	80-121			
1,1,1-Trichloroethane	10.4	0.20	ug/L	10.0	ND	104	79-123			
1,1-Dichloropropene	10.0	0.10	ug/L	10.0	ND	100	80-127			
Carbon tetrachloride	10.7	0.20	ug/L	10.0	ND	107	53-137			
1,2-Dichloroethane	10.5	0.20	ug/L	10.0	ND	105	75-123			
Benzene	10.2	0.20	ug/L	10.0	ND	102	80-120			
Trichloroethene	10.0	0.20	ug/L	10.0	ND	100	80-120			
1,2-Dichloropropane	10.2	0.20	ug/L	10.0	ND	102	80-120			
Bromodichloromethane	10.5	0.20	ug/L	10.0	ND	105	80-121			
Dibromomethane	10.7	0.20	ug/L	10.0	ND	107	80-120			
2-Chloroethyl vinyl ether	ND	1.00	ug/L	10.0	ND		64-120			*, U
4-Methyl-2-Pentanone	55.4	2.50	ug/L	50.0	ND	111	67-133			
cis-1,3-Dichloropropene	10.3	0.20	ug/L	10.0	ND	103	80-124			
Toluene	10.2	0.20	ug/L	10.0	ND	101	80-120			
trans-1,3-Dichloropropene	10.8	0.20	ug/L	10.0	ND	108	71-127			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BMI0476-MS1)		Source: 24I0252-16		Prepared: 19-Sep-2024		Analyzed: 19-Sep-2024 18:17				
2-Hexanone	54.3	5.00	ug/L	50.0	ND	109	69-133			
1,1,2-Trichloroethane	10.4	0.20	ug/L	10.0	ND	104	80-121			
1,3-Dichloropropane	10.7	0.10	ug/L	10.0	ND	107	80-120			
Tetrachloroethene	10.2	0.20	ug/L	10.0	ND	102	80-120			
Dibromochloromethane	10.6	0.20	ug/L	10.0	ND	106	65-135			
1,2-Dibromoethane	10.7	0.10	ug/L	10.0	ND	107	80-121			
Chlorobenzene	10.4	0.20	ug/L	10.0	ND	104	80-120			
Ethylbenzene	10.4	0.20	ug/L	10.0	ND	104	80-120			
1,1,1,2-Tetrachloroethane	10.7	0.20	ug/L	10.0	ND	107	80-120			
m,p-Xylene	21.1	0.40	ug/L	20.0	ND	106	80-121			
o-Xylene	10.5	0.20	ug/L	10.0	ND	105	80-121			
Xylenes, total	31.6	0.60	ug/L	30.0	ND	105	76-127			
Styrene	10.9	0.20	ug/L	10.0	ND	109	80-124			
Bromoform	11.4	0.20	ug/L	10.0	ND	114	51-134			
1,1,2,2-Tetrachloroethane	10.4	0.20	ug/L	10.0	ND	104	77-123			
1,2,3-Trichloropropane	10.5	0.25	ug/L	10.0	ND	105	76-125			
trans-1,4-Dichloro 2-Butene	10.6	1.00	ug/L	10.0	ND	106	55-129			
n-Propylbenzene	10.4	0.20	ug/L	10.0	ND	104	78-130			
Bromobenzene	9.84	0.20	ug/L	10.0	ND	98.4	80-120			
Isopropyl Benzene	10.3	0.20	ug/L	10.0	ND	103	80-128			
2-Chlorotoluene	10.1	0.10	ug/L	10.0	ND	101	78-122			
4-Chlorotoluene	10.2	0.20	ug/L	10.0	ND	102	80-121			
t-Butylbenzene	10.4	0.20	ug/L	10.0	ND	104	78-125			
1,3,5-Trimethylbenzene	10.6	0.20	ug/L	10.0	ND	106	80-129			
1,2,4-Trimethylbenzene	10.7	0.20	ug/L	10.0	ND	107	80-127			
s-Butylbenzene	10.5	0.20	ug/L	10.0	ND	105	78-129			
4-Isopropyl Toluene	10.9	0.20	ug/L	10.0	ND	109	79-130			
1,3-Dichlorobenzene	10.2	0.20	ug/L	10.0	ND	102	80-120			
1,4-Dichlorobenzene	10.0	0.20	ug/L	10.0	ND	100	80-120			
n-Butylbenzene	10.4	0.20	ug/L	10.0	ND	104	74-129			
1,2-Dichlorobenzene	10.1	0.20	ug/L	10.0	ND	101	80-120			
1,2-Dibromo-3-chloropropane	10.4	0.50	ug/L	10.0	ND	104	62-123			
1,2,4-Trichlorobenzene	10.4	0.50	ug/L	10.0	ND	104	64-124			
Hexachloro-1,3-Butadiene	9.82	0.50	ug/L	10.0	ND	98.2	65-145			
Naphthalene	11.1	0.50	ug/L	10.0	ND	111	50-134			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BMI0476-MS1)		Source: 24I0252-16		Prepared: 19-Sep-2024		Analyzed: 19-Sep-2024 18:17				
1,2,3-Trichlorobenzene	10.8	0.50	ug/L	10.0	ND	108	49-133			
Dichlorodifluoromethane	9.69	0.20	ug/L	10.0	ND	96.9	48-147			
Surrogate: 1,2-Dichloroethane-d4	5.32		ug/L	5.00	5.58	106	80-129			
Surrogate: Toluene-d8	5.02		ug/L	5.00	4.97	100	80-120			
Surrogate: 4-Bromofluorobenzene	5.12		ug/L	5.00	4.84	102	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.00		ug/L	5.00	5.21	99.9	80-120			

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



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Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BMI0476-MSD1)		Source: 24I0252-16		Prepared: 19-Sep-2024		Analyzed: 19-Sep-2024 18:41				
Chloromethane	9.13	0.50	ug/L	10.0	ND	91.3	60-138	2.69	30	
Vinyl Chloride	9.86	0.10	ug/L	10.0	ND	98.6	66-133	0.70	30	
Bromomethane	10.2	1.00	ug/L	10.0	ND	102	72-131	0.06	30	
Chloroethane	10.9	0.20	ug/L	10.0	ND	109	60-155	7.86	30	
Trichlorofluoromethane	10.1	0.20	ug/L	10.0	ND	101	62-141	2.72	30	
Acrolein	19.0	5.00	ug/L	50.0	ND	37.9	52-190	22.30	30	*
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.72	0.20	ug/L	10.0	ND	97.2	76-129	0.61	30	
Acetone	54.6	5.00	ug/L	50.0	ND	109	58-142	4.92	30	
1,1-Dichloroethene	10.2	0.20	ug/L	10.0	ND	102	69-135	0.52	30	
Iodomethane	9.82	1.00	ug/L	10.0	ND	98.2	56-147	1.72	30	
Methylene Chloride	9.12	1.00	ug/L	10.0	ND	91.2	65-135	2.76	30	
Acrylonitrile	9.48	1.00	ug/L	10.0	ND	94.8	64-134	6.57	30	
Carbon Disulfide	9.91	0.20	ug/L	10.0	ND	99.1	78-125	0.77	30	
trans-1,2-Dichloroethene	10.2	0.20	ug/L	10.0	ND	102	78-128	1.59	30	
Vinyl Acetate	9.05	0.20	ug/L	10.0	ND	90.5	55-138	6.38	30	
1,1-Dichloroethane	9.93	0.20	ug/L	10.0	ND	99.3	76-124	3.49	30	
2-Butanone	51.9	5.00	ug/L	50.0	ND	104	61-140	5.55	30	
2,2-Dichloropropane	10.2	0.20	ug/L	10.0	ND	102	66-147	1.00	30	
cis-1,2-Dichloroethene	9.85	0.20	ug/L	10.0	ND	98.5	80-121	3.51	30	
Chloroform	9.81	0.20	ug/L	10.0	ND	98.1	80-122	4.06	30	
Bromochloromethane	10.0	0.20	ug/L	10.0	ND	100	80-121	2.76	30	
1,1,1-Trichloroethane	9.80	0.20	ug/L	10.0	ND	98.0	79-123	5.87	30	
1,1-Dichloropropene	9.59	0.10	ug/L	10.0	ND	95.9	80-127	4.43	30	
Carbon tetrachloride	9.95	0.20	ug/L	10.0	ND	99.5	53-137	7.08	30	
1,2-Dichloroethane	9.91	0.20	ug/L	10.0	ND	99.1	75-123	5.59	30	
Benzene	9.78	0.20	ug/L	10.0	ND	97.8	80-120	4.37	30	
Trichloroethene	9.52	0.20	ug/L	10.0	ND	95.2	80-120	5.17	30	
1,2-Dichloropropane	9.67	0.20	ug/L	10.0	ND	96.7	80-120	5.51	30	
Bromodichloromethane	9.92	0.20	ug/L	10.0	ND	99.2	80-121	5.81	30	
Dibromomethane	10.2	0.20	ug/L	10.0	ND	102	80-120	5.32	30	
2-Chloroethyl vinyl ether	ND	1.00	ug/L	10.0	ND		64-120		30	*, U
4-Methyl-2-Pentanone	51.7	2.50	ug/L	50.0	ND	103	67-133	6.98	30	
cis-1,3-Dichloropropene	9.99	0.20	ug/L	10.0	ND	99.9	80-124	2.64	30	
Toluene	9.70	0.20	ug/L	10.0	ND	96.3	80-120	4.93	30	
trans-1,3-Dichloropropene	10.4	0.20	ug/L	10.0	ND	104	71-127	3.24	30	



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Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BMI0476-MSD1)		Source: 24I0252-16		Prepared: 19-Sep-2024		Analyzed: 19-Sep-2024 18:41				
2-Hexanone	51.3	5.00	ug/L	50.0	ND	103	69-133	5.76	30	
1,1,2-Trichloroethane	10.1	0.20	ug/L	10.0	ND	101	80-121	2.65	30	
1,3-Dichloropropane	10.1	0.10	ug/L	10.0	ND	101	80-120	5.15	30	
Tetrachloroethene	9.56	0.20	ug/L	10.0	ND	95.6	80-120	6.35	30	
Dibromochloromethane	10.2	0.20	ug/L	10.0	ND	102	65-135	4.01	30	
1,2-Dibromoethane	10.2	0.10	ug/L	10.0	ND	102	80-121	5.25	30	
Chlorobenzene	9.91	0.20	ug/L	10.0	ND	99.1	80-120	4.56	30	
Ethylbenzene	9.84	0.20	ug/L	10.0	ND	98.4	80-120	5.46	30	
1,1,1,2-Tetrachloroethane	10.1	0.20	ug/L	10.0	ND	101	80-120	5.75	30	
m,p-Xylene	20.1	0.40	ug/L	20.0	ND	101	80-121	4.84	30	
o-Xylene	10.1	0.20	ug/L	10.0	ND	101	80-121	4.00	30	
Xylenes, total	30.2	0.60	ug/L	30.0	ND	101	76-127	4.56	30	
Styrene	10.6	0.20	ug/L	10.0	ND	106	80-124	3.10	30	
Bromoform	10.6	0.20	ug/L	10.0	ND	106	51-134	7.16	30	
1,1,2,2-Tetrachloroethane	10.2	0.20	ug/L	10.0	ND	102	77-123	1.85	30	
1,2,3-Trichloropropane	9.71	0.25	ug/L	10.0	ND	97.1	76-125	7.96	30	
trans-1,4-Dichloro 2-Butene	10.3	1.00	ug/L	10.0	ND	103	55-129	3.01	30	
n-Propylbenzene	10.1	0.20	ug/L	10.0	ND	101	78-130	2.68	30	
Bromobenzene	9.66	0.20	ug/L	10.0	ND	96.6	80-120	1.79	30	
Isopropyl Benzene	10.2	0.20	ug/L	10.0	ND	102	80-128	1.62	30	
2-Chlorotoluene	9.93	0.10	ug/L	10.0	ND	99.3	78-122	1.86	30	
4-Chlorotoluene	9.97	0.20	ug/L	10.0	ND	99.7	80-121	2.01	30	
t-Butylbenzene	10.1	0.20	ug/L	10.0	ND	101	78-125	2.52	30	
1,3,5-Trimethylbenzene	10.4	0.20	ug/L	10.0	ND	104	80-129	2.16	30	
1,2,4-Trimethylbenzene	10.4	0.20	ug/L	10.0	ND	104	80-127	3.19	30	
s-Butylbenzene	10.3	0.20	ug/L	10.0	ND	103	78-129	1.82	30	
4-Isopropyl Toluene	10.5	0.20	ug/L	10.0	ND	105	79-130	3.26	30	
1,3-Dichlorobenzene	9.90	0.20	ug/L	10.0	ND	99.0	80-120	3.20	30	
1,4-Dichlorobenzene	9.73	0.20	ug/L	10.0	ND	97.3	80-120	2.82	30	
n-Butylbenzene	10.2	0.20	ug/L	10.0	ND	102	74-129	2.22	30	
1,2-Dichlorobenzene	9.75	0.20	ug/L	10.0	ND	97.5	80-120	3.52	30	
1,2-Dibromo-3-chloropropane	9.81	0.50	ug/L	10.0	ND	98.1	62-123	5.59	30	
1,2,4-Trichlorobenzene	9.98	0.50	ug/L	10.0	ND	99.8	64-124	4.50	30	
Hexachloro-1,3-Butadiene	9.35	0.50	ug/L	10.0	ND	93.5	65-145	4.85	30	
Naphthalene	10.5	0.50	ug/L	10.0	ND	105	50-134	5.36	30	



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

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMI0476 - EPA 8260D

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BMI0476-MSD1)		Source: 24I0252-16		Prepared: 19-Sep-2024		Analyzed: 19-Sep-2024 18:41				
1,2,3-Trichlorobenzene	10.4	0.50	ug/L	10.0	ND	104	49-133	3.45	30	
Dichlorodifluoromethane	9.35	0.20	ug/L	10.0	ND	93.5	48-147	3.54	30	
Surrogate: 1,2-Dichloroethane-d4	5.23		ug/L	5.00	5.58	105	80-129			
Surrogate: Toluene-d8	5.00		ug/L	5.00	4.97	100	80-120			
Surrogate: 4-Bromofluorobenzene	5.07		ug/L	5.00	4.84	101	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.03		ug/L	5.00	5.21	101	80-120			

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



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BMI0300 - NWT PH-HCID

Instrument: FID4 Analyst: JGR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0300-BLK1)		Prepared: 13-Sep-2024 Analyzed: 14-Sep-2024 18:38								
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: <i>o</i> -Terphenyl	0.197		mg/L	0.225		87.6	50-150			
Surrogate: <i>n</i> -Triacontane	0.205		mg/L	0.225		91.3	50-150			



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0532 - EPA 6010D

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0532-BLK1)		Prepared: 21-Sep-2024 Analyzed: 25-Sep-2024 17:31								
Aluminum	ND	1.00	mg/L							U
Barium	ND	0.500	mg/L							U
Beryllium	ND	0.0100	mg/L							U
Cadmium	ND	0.0020	mg/L							U
Calcium	ND	0.500	mg/L							U
Chromium	ND	0.0100	mg/L							U
Cobalt	ND	0.0100	mg/L							U
Copper	ND	0.0030	mg/L							U
Iron	ND	0.200	mg/L							U
Magnesium	ND	0.500	mg/L							U
Manganese	ND	0.0100	mg/L							U
Nickel	ND	0.0100	mg/L							U
Potassium	ND	0.500	mg/L							U
Silver	ND	0.0050	mg/L							U
Sodium	ND	0.500	mg/L							U
Vanadium	ND	0.0030	mg/L							U
Zinc	ND	0.0200	mg/L							U
LCS (BMI0532-BS1)		Prepared: 21-Sep-2024 Analyzed: 25-Sep-2024 17:34								
Aluminum	2.04	1.00	mg/L	2.00		102	80-120			
Barium	1.92	0.500	mg/L	2.00		96.1	80-120			
Beryllium	0.483	0.0100	mg/L	0.500		96.6	80-120			
Cadmium	0.498	0.0020	mg/L	0.500		99.5	80-120			
Calcium	10.1	0.500	mg/L	10.0		101	80-120			
Chromium	0.489	0.0100	mg/L	0.500		97.7	80-120			
Cobalt	0.483	0.0100	mg/L	0.500		96.7	80-120			
Copper	0.480	0.0030	mg/L	0.500		96.1	80-120			
Iron	2.10	0.200	mg/L	2.00		105	80-120			
Magnesium	10.1	0.500	mg/L	10.0		101	80-120			
Manganese	0.481	0.0100	mg/L	0.500		96.2	80-120			
Nickel	0.481	0.0100	mg/L	0.500		96.1	80-120			
Potassium	10.1	0.500	mg/L	10.0		101	80-120			
Silver	0.483	0.0050	mg/L	0.500		96.7	80-120			
Sodium	10.1	0.500	mg/L	10.0		101	80-120			B
Vanadium	0.499	0.0030	mg/L	0.500		99.8	80-120			



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0532 - EPA 6010D

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMI0532-BS1)		Prepared: 21-Sep-2024 Analyzed: 25-Sep-2024 17:34								
Zinc	0.465	0.0200	mg/L	0.500		92.9	80-120			
Duplicate (BMI0532-DUP1)		Source: 24I0252-16 Prepared: 21-Sep-2024 Analyzed: 25-Sep-2024 18:57								
Aluminum	ND	1.00	mg/L		ND			20		U
Barium	ND	0.500	mg/L		ND			20		U
Beryllium	ND	0.0100	mg/L		ND			20		U
Cadmium	ND	0.0020	mg/L		ND			20		U
Calcium	102	0.500	mg/L		105			3.12	20	
Chromium	ND	0.0100	mg/L		ND			20		U
Cobalt	ND	0.0100	mg/L		ND			20		U
Copper	ND	0.0030	mg/L		ND			20		U
Iron	1.34	0.200	mg/L		1.39			3.78	20	
Magnesium	59.8	0.500	mg/L		62.1			3.81	20	
Manganese	0.118	0.0100	mg/L		0.121			2.51	20	
Nickel	ND	0.0100	mg/L		ND			20		U
Potassium	3.69	0.500	mg/L		3.78			2.55	20	
Silver	ND	0.0050	mg/L		ND			20		U
Sodium	36.4	0.500	mg/L		37.8			3.95	20	B
Vanadium	ND	0.0030	mg/L		ND			20		U
Zinc	ND	0.0200	mg/L		ND			20		U
Matrix Spike (BMI0532-MS1)		Source: 24I0252-16 Prepared: 21-Sep-2024 Analyzed: 25-Sep-2024 19:00								
Aluminum	2.09	1.00	mg/L	2.00	ND	104	75-125			
Barium	2.22	0.500	mg/L	2.00	ND	93.8	75-125			
Beryllium	0.480	0.0100	mg/L	0.500	ND	96.0	75-125			
Cadmium	0.483	0.0020	mg/L	0.500	ND	96.6	75-125			
Calcium	111	0.500	mg/L	10.0	105	62.7	75-125			HC
Chromium	0.479	0.0100	mg/L	0.500	ND	95.7	75-125			
Cobalt	0.463	0.0100	mg/L	0.500	ND	92.7	75-125			
Copper	0.482	0.0030	mg/L	0.500	ND	96.5	75-125			
Iron	3.38	0.200	mg/L	2.00	1.39	99.5	75-125			
Magnesium	69.6	0.500	mg/L	10.0	62.1	74.7	75-125			HC
Manganese	0.584	0.0100	mg/L	0.500	0.121	92.5	75-125			
Nickel	0.460	0.0100	mg/L	0.500	ND	92.0	75-125			
Potassium	13.8	0.500	mg/L	10.0	3.78	100	75-125			
Silver	0.485	0.0050	mg/L	0.500	ND	96.9	75-125			



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Project: Landsburg
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Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0532 - EPA 6010D

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BMI0532-MS1)		Source: 24I0252-16		Prepared: 21-Sep-2024		Analyzed: 25-Sep-2024 19:00				
Sodium	45.9	0.500	mg/L	10.0	37.8	80.9	75-125			B
Vanadium	0.497	0.0030	mg/L	0.500	ND	99.3	75-125			
Zinc	0.456	0.0200	mg/L	0.500	ND	91.3	75-125			

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

Matrix Spike Dup (BMI0532-MSD1)		Source: 24I0252-16		Prepared: 21-Sep-2024		Analyzed: 25-Sep-2024 19:03				
Aluminum	2.01	1.00	mg/L	2.00	ND	101	75-125	3.64	20	
Barium	2.22	0.500	mg/L	2.00	ND	93.9	75-125	0.07	20	
Beryllium	0.481	0.0100	mg/L	0.500	ND	96.3	75-125	0.29	20	
Cadmium	0.485	0.0020	mg/L	0.500	ND	97.0	75-125	0.39	20	
Calcium	109	0.500	mg/L	10.0	105	46.0	75-125	1.52	20	HC
Chromium	0.479	0.0100	mg/L	0.500	ND	95.9	75-125	0.17	20	
Cobalt	0.465	0.0100	mg/L	0.500	ND	93.0	75-125	0.37	20	
Copper	0.495	0.0030	mg/L	0.500	ND	98.9	75-125	2.50	20	
Iron	3.37	0.200	mg/L	2.00	1.39	98.8	75-125	0.44	20	
Magnesium	68.7	0.500	mg/L	10.0	62.1	65.6	75-125	1.32	20	HC
Manganese	0.583	0.0100	mg/L	0.500	0.121	92.4	75-125	0.12	20	
Nickel	0.461	0.0100	mg/L	0.500	ND	92.2	75-125	0.15	20	
Potassium	13.8	0.500	mg/L	10.0	3.78	100	75-125	0.19	20	
Silver	0.486	0.0050	mg/L	0.500	ND	97.2	75-125	0.27	20	
Sodium	45.5	0.500	mg/L	10.0	37.8	76.6	75-125	0.94	20	B
Vanadium	0.498	0.0030	mg/L	0.500	ND	99.6	75-125	0.24	20	
Zinc	0.466	0.0200	mg/L	0.500	ND	93.1	75-125	2.02	20	

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



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0553 - EPA 6010D

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0553-BLK1)		Prepared: 23-Sep-2024 Analyzed: 25-Sep-2024 17:25								
Aluminum	ND	1.00	mg/L							U
Barium	ND	0.500	mg/L							U
Beryllium	ND	0.0100	mg/L							U
Cadmium	ND	0.0020	mg/L							U
Calcium	ND	0.500	mg/L							U
Chromium	ND	0.0100	mg/L							U
Cobalt	ND	0.0100	mg/L							U
Copper	ND	0.0030	mg/L							U
Iron	ND	0.200	mg/L							U
Magnesium	ND	0.500	mg/L							U
Manganese	ND	0.0100	mg/L							U
Nickel	ND	0.0100	mg/L							U
Potassium	ND	0.500	mg/L							U
Silver	ND	0.0050	mg/L							U
Sodium	ND	0.500	mg/L							U
Vanadium	ND	0.0030	mg/L							U
Zinc	ND	0.0200	mg/L							U
LCS (BMI0553-BS1)		Prepared: 23-Sep-2024 Analyzed: 25-Sep-2024 17:28								
Aluminum	2.07	1.00	mg/L	2.00		104	80-120			
Barium	1.94	0.500	mg/L	2.00		97.0	80-120			
Beryllium	0.483	0.0100	mg/L	0.500		96.6	80-120			
Cadmium	0.497	0.0020	mg/L	0.500		99.3	80-120			
Calcium	10.4	0.500	mg/L	10.0		104	80-120			
Chromium	0.488	0.0100	mg/L	0.500		97.6	80-120			
Cobalt	0.483	0.0100	mg/L	0.500		96.6	80-120			
Copper	0.489	0.0030	mg/L	0.500		97.7	80-120			
Iron	2.10	0.200	mg/L	2.00		105	80-120			
Magnesium	10.1	0.500	mg/L	10.0		101	80-120			
Manganese	0.487	0.0100	mg/L	0.500		97.4	80-120			
Nickel	0.481	0.0100	mg/L	0.500		96.2	80-120			
Potassium	10.2	0.500	mg/L	10.0		102	80-120			
Silver	0.485	0.0050	mg/L	0.500		96.9	80-120			
Sodium	9.98	0.500	mg/L	10.0		99.8	80-120			
Vanadium	0.499	0.0030	mg/L	0.500		99.8	80-120			



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18300 NE Union Hill Road Suite 200
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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0553 - EPA 6010D

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMI0553-BS1)		Prepared: 23-Sep-2024 Analyzed: 25-Sep-2024 17:28								
Zinc	0.475	0.0200	mg/L	0.500		95.0	80-120			
Duplicate (BMI0553-DUP1)		Source: 24I0252-01		Prepared: 23-Sep-2024 Analyzed: 02-Oct-2024 22:07						
Aluminum	ND	1.00	mg/L		ND			20		U
Barium	ND	0.500	mg/L		ND			20		U
Cadmium	ND	0.0020	mg/L		ND			20		U
Calcium	55.5	0.500	mg/L		57.6			3.81	20	
Cobalt	ND	0.0100	mg/L		ND			20		U
Copper	ND	0.0030	mg/L		ND			20		L, U
Magnesium	32.0	0.500	mg/L		33.0			3.17	20	
Manganese	0.776	0.0100	mg/L		0.809			4.13	20	
Potassium	2.55	0.500	mg/L		2.61			2.51	20	
Silver	ND	0.0050	mg/L		ND			20		U
Sodium	6.30	0.500	mg/L		6.51			3.33	20	
Vanadium	ND	0.0030	mg/L		ND			20		U
Zinc	ND	0.0200	mg/L		ND			20		U
Duplicate (BMI0553-DUP2)		Source: 24I0252-01		Prepared: 23-Sep-2024 Analyzed: 09-Oct-2024 15:55						
Beryllium	ND	0.0100	mg/L		ND			20		U
Chromium	ND	0.0100	mg/L		ND			20		U
Iron	11.9	0.200	mg/L		12.0			1.32	20	
Nickel	ND	0.0100	mg/L		ND			20		U
Matrix Spike (BMI0553-MS1)		Source: 24I0252-01		Prepared: 23-Sep-2024 Analyzed: 02-Oct-2024 22:10						
Aluminum	2.04	1.00	mg/L	2.00	ND	102	75-125			
Barium	2.09	0.500	mg/L	2.00	ND	96.5	75-125			
Cadmium	0.495	0.0020	mg/L	0.500	ND	99.0	75-125			
Calcium	64.2	0.500	mg/L	10.0	57.6	65.4	75-125			HC
Cobalt	0.480	0.0100	mg/L	0.500	ND	95.7	75-125			
Copper	0.494	0.0030	mg/L	0.500	ND	98.1	75-125			
Magnesium	41.3	0.500	mg/L	10.0	33.0	82.2	75-125			
Manganese	1.24	0.0100	mg/L	0.500	0.809	86.8	75-125			
Potassium	12.6	0.500	mg/L	10.0	2.61	100	75-125			
Silver	0.479	0.0050	mg/L	0.500	ND	95.8	75-125			
Sodium	15.9	0.500	mg/L	10.0	6.51	94.0	75-125			
Vanadium	0.503	0.0030	mg/L	0.500	ND	101	75-125			



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0553 - EPA 6010D

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Matrix Spike (BMI0553-MS1) Source: 24I0252-01 Prepared: 23-Sep-2024 Analyzed: 02-Oct-2024 22:10

Zinc	0.484	0.0200	mg/L	0.500	ND	94.8	75-125			
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BMI0553-MS2) Source: 24I0252-01 Prepared: 23-Sep-2024 Analyzed: 09-Oct-2024 15:58

Beryllium	0.487	0.0100	mg/L	0.500	ND	97.4	75-125			
Chromium	0.485	0.0100	mg/L	0.500	ND	97.1	75-125			
Iron	13.5	0.200	mg/L	2.00	12.0	73.6	75-125			HC
Nickel	0.471	0.0100	mg/L	0.500	ND	94.1	75-125			

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

Matrix Spike Dup (BMI0553-MSD1) Source: 24I0252-01 Prepared: 23-Sep-2024 Analyzed: 02-Oct-2024 22:13

Aluminum	2.06	1.00	mg/L	2.00	ND	103	75-125	0.92	20	
Barium	2.08	0.500	mg/L	2.00	ND	96.0	75-125	0.40	20	
Cadmium	0.500	0.0020	mg/L	0.500	ND	100	75-125	1.01	20	
Calcium	64.2	0.500	mg/L	10.0	57.6	65.8	75-125	0.06	20	HC
Cobalt	0.484	0.0100	mg/L	0.500	ND	96.4	75-125	0.75	20	
Copper	0.503	0.0030	mg/L	0.500	ND	100	75-125	1.87	20	
Magnesium	41.3	0.500	mg/L	10.0	33.0	82.3	75-125	0.03	20	
Manganese	1.24	0.0100	mg/L	0.500	0.809	86.7	75-125	0.04	20	
Potassium	12.6	0.500	mg/L	10.0	2.61	100	75-125	0.00	20	
Silver	0.484	0.0050	mg/L	0.500	ND	96.7	75-125	0.94	20	
Sodium	15.8	0.500	mg/L	10.0	6.51	93.3	75-125	0.48	20	
Vanadium	0.507	0.0030	mg/L	0.500	ND	101	75-125	0.83	20	
Zinc	0.507	0.0200	mg/L	0.500	ND	99.4	75-125	4.64	20	

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

Matrix Spike Dup (BMI0553-MSD2) Source: 24I0252-01 Prepared: 23-Sep-2024 Analyzed: 09-Oct-2024 16:01

Beryllium	0.496	0.0100	mg/L	0.500	ND	99.2	75-125	1.79	20	
Chromium	0.495	0.0100	mg/L	0.500	ND	98.9	75-125	1.90	20	
Iron	13.6	0.200	mg/L	2.00	12.0	80.4	75-125	1.01	20	
Nickel	0.480	0.0100	mg/L	0.500	ND	96.1	75-125	2.02	20	

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



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Redmond WA, 98052-3333

Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0570 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0570-BLK1)		Prepared: 26-Sep-2024 Analyzed: 27-Sep-2024 12:49								
Mercury	ND	0.00100	mg/L							U
LCS (BMI0570-BS1)		Prepared: 26-Sep-2024 Analyzed: 27-Sep-2024 12:51								
Mercury	0.00199	0.00100	mg/L	0.00200		99.4	80-120			
Duplicate (BMI0570-DUP1)		Source: 24I0252-16		Prepared: 26-Sep-2024 Analyzed: 27-Sep-2024 12:56						
Mercury	ND	0.00100	mg/L		ND			20		U
Matrix Spike (BMI0570-MS1)		Source: 24I0252-16		Prepared: 26-Sep-2024 Analyzed: 27-Sep-2024 12:58						
Mercury	ND	0.00100	mg/L	0.00100	ND	95.6	75-125			U
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BMI0570-MSD1)		Source: 24I0252-16		Prepared: 26-Sep-2024 Analyzed: 27-Sep-2024 13:00						
Mercury	ND	0.00100	mg/L	0.00100	ND	99.4	75-125	20		U

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



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0625 - EPA 200.8

Instrument: ICPMS1 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0625-BLK1)			Prepared: 25-Sep-2024 Analyzed: 25-Sep-2024 17:11								
Antimony	121	ND	0.00300	mg/L							U
Lead	208	ND	0.0100	mg/L							U
Thallium	205	ND	0.00200	mg/L							U
Arsenic	75a	ND	0.00300	mg/L							U
Selenium	78	ND	0.0250	mg/L							U
LCS (BMI0625-BS1)			Prepared: 25-Sep-2024 Analyzed: 25-Sep-2024 17:17								
Antimony	121	0.0254	0.00300	mg/L	0.0250		102	80-120			
Lead	208	0.0267	0.0100	mg/L	0.0250		107	80-120			
Thallium	205	0.0247	0.00200	mg/L	0.0250		98.9	80-120			
Arsenic	75a	0.0262	0.00300	mg/L	0.0250		105	80-120			
Selenium	78	0.0842	0.0250	mg/L	0.0800		105	80-120			
Duplicate (BMI0625-DUP1)			Source: 24I0252-16		Prepared: 25-Sep-2024 Analyzed: 26-Sep-2024 05:21						
Antimony	121	ND	0.00300	mg/L		ND			20		U
Thallium	205	ND	0.00200	mg/L		ND			20		U
Arsenic	75a	ND	0.00300	mg/L		ND			20		U
Duplicate (BMI0625-DUP2)			Source: 24I0252-16		Prepared: 25-Sep-2024 Analyzed: 28-Sep-2024 05:20						
Lead	208	ND	0.0100	mg/L		ND			20		U
Selenium	78	ND	0.0250	mg/L		ND			20		U
Matrix Spike (BMI0625-MS1)			Source: 24I0252-16		Prepared: 25-Sep-2024 Analyzed: 26-Sep-2024 05:26						
Antimony	121	0.0259	0.00300	mg/L	0.0250	ND	104	75-125			
Thallium	205	0.0269	0.00200	mg/L	0.0250	ND	108	75-125			
Arsenic	75a	0.0272	0.00300	mg/L	0.0250	ND	109	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BMI0625-MS2)			Source: 24I0252-16		Prepared: 25-Sep-2024 Analyzed: 28-Sep-2024 05:25						
Lead	208	0.0247	0.0100	mg/L	0.0250	ND	98.9	75-125			
Selenium	78	0.0830	0.0250	mg/L	0.0800	ND	104	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BMI0625-MSD1)			Source: 24I0252-16		Prepared: 25-Sep-2024 Analyzed: 26-Sep-2024 05:31						
Antimony	121	0.0263	0.00300	mg/L	0.0250	ND	105	75-125	1.59	20	
Thallium	205	0.0279	0.00200	mg/L	0.0250	ND	111	75-125	3.51	20	
Arsenic	75a	0.0269	0.00300	mg/L	0.0250	ND	107	75-125	1.30	20	



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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Oct-2024 10:50

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0625 - EPA 200.8 UCT-KED

Instrument: ICPMS1 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BMI0625-MSD2)		Source: 24I0252-16		Prepared: 25-Sep-2024		Analyzed: 28-Sep-2024 05:29					
Lead	208	0.0253	0.0100	mg/L	0.0250	ND	101	75-125	2.35	20	
Selenium	78	0.0821	0.0250	mg/L	0.0800	ND	103	75-125	1.10	20	

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



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Reported:
23-Oct-2024 10:50

Certified Analyses included in this Report

Analyte	Certifications
<i>EPA 200.8 in Water</i>	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Thallium-205	NELAP,WADOE,WA-DW,DoD-ELAP
<i>EPA 200.8 UCT-KED in Water</i>	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Selenium-78	NELAP,WADOE,WA-DW,DoD-ELAP
<i>EPA 6010D in Water</i>	
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	DoD-ELAP,WADOE,NELAP
Sodium-1	DoD-ELAP
Nickel	WADOE,NELAP,DoD-ELAP,ADEC
Vanadium	WADOE,NELAP,DoD-ELAP,ADEC
Zinc	WADOE,NELAP,DoD-ELAP
<i>EPA 7470A in Water</i>	
Mercury	WADOE,NELAP,DoD-ELAP
<i>EPA 8260D in Water</i>	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE



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Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroeth	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE



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Reported:
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trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE



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Reported:

23-Oct-2024 10:50

Hexachloro-1,3-Butadiene

DoD-ELAP,ADEC,NELAP,WADOE

Naphthalene

DoD-ELAP,ADEC,NELAP,WADOE

1,2,3-Trichlorobenzene

DoD-ELAP,ADEC,NELAP,WADOE

Dichlorodifluoromethane

DoD-ELAP,ADEC,NELAP,WADOE

NWTPH-HCID in Water

Gasoline Range Organics (Tol-C

NELAP,DoD-ELAP,WADOE

Diesel Range Organics (C12-C2

NELAP,DoD-ELAP,WADOE

Motor Oil Range Organics (C24-

NELAP,DoD-ELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2025
WADOE	WA Dept of Ecology	C558	06/30/2025
WA-DW	Ecology - Drinking Water	C558	06/30/2025



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Reported:
23-Oct-2024 10:50

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
HC	The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
J	Estimated concentration value detected below the reporting limit.
L	Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to $\pm$ RL instead of 20% RPD
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
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 C

**Sample Integrity Data Sheets
(SIDS)**

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

Site Location Ravensdale, WA **Sample ID** LMW-2

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated Pump Grundfos

Date September 12, 2024 **Time** 08:55

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.)

Static Water Level: 7.55 ft BTOC

Screened Interval: 27.9' - 38.1' BGS

Sand Pack Interval: 24.8' - 38.1' BGS

Packer Depth: N/A

Sample Description Clear, slight sulfur odor, no sheen.

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
8-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
4-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-2

Date 09/12/2024

Time Begin Purge 09:31

Time Collect Sample 08:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
7.55	09:35	6.77	1,117	10.9	9.05	138.2	0.74
7.55	09:40	6.57	1,103	11	8.52	148.7	0.57
7.55	09:45	6.51	1,091	11	8.12	155.2	0.39
7.55	09:50	6.53	1,024	10.8	8.16	161.1	0.30
7.55	09:53	6.48	1,022	11	7.88	161.5	1.04

Comments:

Flow cell detached and drained at 0949, reattached over drum. Duplicate LMW-2-0924-D collected at 1000.

Grundfos: ~80 Hz

Packer: N/A

Tank: N/A

Throttle: N/A

CPM: N/A

CID: N/A

Sampler 

Date September 12, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

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

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated Pump Grundfos

Date September 11, 2024 **Time** 09:55

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.)

Static Water Level: 13.76 ft BTOC

Screened Interval: 49.8' - 64.8' BGS

Sand Pack Interval: 47.1' - 64.8' BGS

Packer Depth: 39.33' BGS

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-3

Date 09/11/2024

Time Begin Purge 10:32

Time Collect Sample 09:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
16.6	10:35	7.21	313.2	11.1	8.73	190.5	0.44
17.35	10:38	7.29	313.8	11.4	8.44	188.1	0.24
17.9	10:41	7.32	317	11.5	8.08	185.9	0.30
18.16	10:45	7.35	317.5	11.5	7.75	183.6	0.23
18.31	10:48	7.37	317.8	11.5	7.52	181.9	0.33
19.3	10:51	7.4	318	11.4	7.3	180.6	0.37

Comments:

Grundfos: ~135 Hz

Packer: 130 psi

Tank: N/A

Throttle: N/A

CPM: N/A

CID: N/A

Flow Rate: 1200 mL/min

Sampler KP

Date September 11, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

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

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated Pump Grundfos

Date September 12, 2024 **Time** 10:20

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.)

Static Water Level: 10.36 ft BTOC

Screened Interval: 195' - 209.7' BGS

Sand Pack Interval: 189' - 209.7' BGS

Packer Depth: 187.3' BGS

Sample Description Clear, slight sulfur odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

Additional collected for MS/MSD (except for -Gx, -Dx holds)

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-4

Date 09/12/2024

Time Begin Purge 10:45

Time Collect Sample 10:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
10.4	10:50	6.9	1,059	10.7	8.41	180.1	0.56
10.4	10:55	6.81	1,061	10.7	8.12	180.9	0.60
10.4	11:00	6.76	1,062	10.8	7.73	180.3	0.23
10.4	11:05	6.75	1,060	10.8	7.43	178	0.23
10.4	11:10	6.75	1,058	10.8	7.18	174.5	0.87
10.4	11:15	6.76	1,054	10.8	6.96	170	0.50

Comments:

MS/MSD collected, except for -Gx, -Dx

Grundfos: 80 Hz

Packer: 110 psi

Tank: N/A

Throttle: N/A

CPM: N/A

CID: N/A

Flow Rate: 900 mL/min

Sampler 

Date September 12, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

Site Location Ravensdale, WA **Sample ID** LMW-5

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated Pump Grundfos

Date September 11, 2024 **Time** 10:40

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.)

Static Water Level: 15.2 ft BTOC

Screened Interval: 231.8' - 241.8' BGS

Sand Pack Interval: 231.8' - 241.8' BGS

Packer Depth: 222.11' BGS

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-5

Date 09/11/2024

Time Begin Purge 11:20

Time Collect Sample 10:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
15.2	11:25	6.89	639	10.5	7.88	192.0	2.07
15.2	11:28	6.84	640	10.6	7.53	190.4	3.03
15.2	11:31	6.81	641	10.7	7.18	187.7	0.37
15.2	11:34	6.8	641	10.7	6.97	185.9	0.27
15.2	11:37	6.79	641	10.7	6.85	184.8	0.44

Comments:

Grundfos: ~135 Hz

Packer: 110 psi

Tank: N/A

Throttle: N/A

CPM: N/A

CID: N/A

Flow Rate: 3000 mL/min

Sampler KJ

Date September 11, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

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

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated Pump Grundfos

Date September 11, 2024 **Time** 08:35

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.)

Static Water Level: 39.84 ft BTOC

Screened Interval: 90.9' - 105.9' BGS

Sand Pack Interval: 82.5' - 105.9' BGS

Packer Depth: 81.22' BGS

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-6

Date 09/11/2024

Time Begin Purge 09:11

Time Collect Sample 08:35

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
45.6	09:15	7.49	266.6	9.3	9.09	144.0	3.68
46.5	09:18	6.95	267.9	9.6	8.72	155.7	5.01
47.4	09:21	6.72	266.1	9.8	8.4	163.5	3.90
48.2	09:24	6.59	265.4	9.8	8.26	169.5	2.27
49.08	09:27	6.47	264.5	9.9	8.01	176	2.13
49.65	09:30	6.42	263.9	10	7.83	179.3	2.39
50.2	09:33	6.38	263.8	10	7.65	181.8	1.29

Comments:

Reduced grundfos to 165 Hz

Grundfos: 180 Hz

Packer: 110 psi

Tank: N/A

Throttle: N/A

CPM: N/A

CID: N/A

Flow Rate: 2550 mL/min

Sampler KT

Date September 11, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

Site Location Ravensdale, WA **Sample ID** LMW-7

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated Pump Grundfos

Date September 11, 2024 **Time** 13:15

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.)

Static Water Level: 227.8 ft BTOC

Screened Interval: 239.6' - 253.7' BGS

Sand Pack Interval: N/A

Packer Depth: N/A

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-7

Date 09/11/2024

Time Begin Purge 13:52

Time Collect Sample 13:15

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
227.8	13:54	7.54	436.6	10.5	7.89	134.4	13.6
227.8	13:57	7.41	443.3	12.4	7.33	131.4	7.76
227.8	14:00	7.37	447.9	13.4	6.97	128.5	2.51
227.8	14:03	7.36	449	13.6	6.8	127.1	3.66
227.8	14:06	7.36	449.9	13.7	6.61	125.6	2.49
227.8	14:09	7.35	450.2	13.7	6.46	124.7	2.05
227.8	14:12	7.34	448.5	13.8	6.31	123.9	2.83

Comments:

Rental water level not heavy enough to go down diagonal well casing easily, and died @ 1345.
Assumed water level stayed the same as it has historically.

Grundfos: 320 Hz

Packer: N/A

Tank: N/A

Throttle: N/A

CPM: N/A

CID: N/A

Flow Rate: 1500 mL/min

Sampler KT

Date September 11, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

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

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Direct Pour/Peristaltic Pump with New Tubing

Date September 11, 2024 **Time** 11:45

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.)

Static Water Level: 5.08 ft BTOC

Screened Interval: 8' - 13' BGS

Sand Pack Interval: 6' - 13' BGS

Packer Depth: N/A

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-8

Date 09/11/2024

Time Begin Purge 12:03

Time Collect Sample 11:45

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
6.2	12:05	6.9	590	13.6	7.93	191.5	1.98
6.9	12:10	6.72	589	13.3	7.24	176.5	2.38
7.5	12:15	6.7	599	13.2	6.77	147.1	1.52
7.75	12:20	6.7	600	13	6.38	118.0	0.79
7.85	12:25	6.7	600	13	6.16	102.2	0.77
7.95	12:30	6.7	601	13	5.97	89.3	0.52
8	12:35	6.71	601	13.1	5.78	76.1	0.70
8	12:40	6.71	604	13.5	5.61	66.5	0.72
8	12:45	6.72	604	13.6	5.51	63.9	0.80

Comments:

Grundfos: N/A

Packer: N/A

Tank: N/A

Throttle: N/A

CPM: N/A

CID: N/A

Flow Rate: 225 mL/min

Sampler KP

Date September 11, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

Site Location Ravensdale, WA **Sample ID** LMW-9

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated QED Bladder

Date September 10, 2024 **Time** 13:10

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.)

Static Water Level: 100.25 ft BTOC

Screened Interval: 149' - 159' BGS

Sand Pack Interval: 143.5' - 159' BGS

Packer Depth: N/A

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-9

Date 09/10/2024

Time Begin Purge 13:40

Time Collect Sample 13:10

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
100.25	13:45	7.3	670	10.6	8.18	94.4	1.02
100.25	13:50	7.09	669	10.7	7.43	92.3	1.32
100.25	13:55	7.06	668	10.7	6.98	88.5	0.60
100.25	14:00	7.04	668	10.7	6.57	82.6	0.89
100.25	14:05	7.03	667	10.7	6.34	78.5	0.88

Comments:

Grundfos: N/A

Packer: N/A

Tank: 130

Throttle: 95

CPM: 2

CID: 51

Flow Rate: 550 mL/min

Sampler 

Date September 10, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

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

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated QED Bladder

Date September 9, 2024 **Time** 13:50

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.)

Static Water Level: 0.6 ft BTOC

Screened Interval: 267' - 289' BGS

Sand Pack Interval: 258' - 289' BGS

Packer Depth: N/A

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-10

Date 09/09/2024

Time Begin Purge 14:05

Time Collect Sample 13:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
1.45	14:15	8.13	389.1	11.5	6.98	68.2	0.76
2.5	14:20	8.31	389.3	11.4	6.38	56.8	0.95
2.95	14:25	8.33	389.8	11.4	6.15	50.9	0.95
3.5	14:30	8.35	389.3	11.4	5.88	43.4	0.59
4.45	14:35	8.37	389.9	11.4	5.68	36.4	0.98
4.75	14:40	8.38	389.7	11.3	5.46	28.0	0.74
5.25	14:45	8.39	389.8	11.3	5.31	22	0.87

Comments:

Grundfos: N/A

Packer: N/A

Tank: 110

Throttle: 40

CPM: 2

CID: 50

Flow Rate: 350 mL/min

Sampler JK

Date September 9, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

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

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated QED Bladder

Date September 10, 2024 **Time** 08:45

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.)

Static Water Level: 158.1 ft BTOC

Screened Interval: 696' - 707' BGS

Sand Pack Interval: 688' - 707' BGS

Packer Depth: N/A

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-11

Date 09/10/2024

Time Begin Purge 09:18

Time Collect Sample 08:45

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
158.1	09:20	7.83	517	11.6	9.83	110.3	0.44
158.1	09:25	7.19	589	10.6	9.12	119.6	0.39
158.1	09:30	6.87	595	10.4	8.42	130.5	0.58
158.1	09:35	6.81	592	10.5	7.9	133.5	0.76
158.1	09:40	6.79	591	10.4	7.46	134.8	0.64
158.1	09:45	6.79	591	10.4	7.28	134.5	0.38

Comments:

Grundfos: N/A

Packer: N/A

Tank: 130

Throttle: 110

CPM: 1

CID: 15

Flow Rate: 350 mL/min

Sampler 

Date September 10, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

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

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated QED Bladder

Date September 9, 2024 **Time** 12:10

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.)

Static Water Level: 12.25 ft BTOC

Screened Interval: 15' - 25' BGS

Sand Pack Interval: 11' - 25' BGS

Packer Depth: N/A

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-12Date 09/09/2024Time Begin Purge 12:30Time Collect Sample 12:10

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
11.85	12:30	6.55	443.1	11.2	7.72	86.5	8.63
11.85	12:35	6.42	428.7	11.1	7.13	74.7	8.46
11.85	12:40	6.34	422.5	11	6.54	61.6	5.94
11.85	12:45	6.29	422.6	11	6.26	56.4	5.19
11.85	12:50	6.26	423.5	11	6.07	53.1	4.41
11.85	12:55	6.24	426.6	10.8	5.9	50.3	4.22
11.85	13:00	6.22	429.3	10.9	5.69	47.3	3.40
11.85	13:05	6.21	453.2	10.8	5.53	45.1	2.86

Comments:

Grundfos: N/A

Packer: N/A

Tank: 110

Throttle: 20

CPM: 2

CID: 47

Flow Rate: 280 mL/min

Sampler

Date September 9, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

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

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated QED Bladder

Date September 9, 2024 **Time** 10:30

Media Water **Station** LMV-13R

Sample Type: grab time composite space composite

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

Static Water Level: ft BTOC

Screened Interval: 115' - 140' BGS

Sand Pack Interval: 110' - 150' BGS

Packer Depth: N/A

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-13R

Date 09/09/2024

Time Begin Purge 10:38

Time Collect Sample 10:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
12.65	10:45	6.74	995	10.8	8.3	136.6	1.58
12.65	10:50	6.72	992	10.6	7.4	138.6	1.07
12.68	10:55	6.74	990	10.7	7.16	137.7	0.93
12.68	11:00	6.77	988	10.7	6.81	135.4	0.68
12.68	11:05	6.8	985	10.8	6.46	131.4	0.75
12.68	11:10	6.82	984	10.7	6.3	128.0	0.85
12.68	11:15	6.84	983	10.7	6.07	122.2	1.49
12.68	11:20	6.85	982	10.7	5.91	116.8	1.27
12.68	11:25	6.86	981	10.7	5.75	110.5	1.74

Comments:

Grundfos: N/A

Packer: N/A

Tank: 110

Throttle: 35

CPM: 2

CID: 48

Flow Rate: 250 mL/min

Sampler KA

Date September 9, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

Site Location Ravensdale, WA **Sample ID** LMW-14

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated QED Bladder

Date September 10, 2024 **Time** 11:30

Media Water **Station** LMW-14

Sample Type: grab time composite space composite

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

Static Water Level: 166.79 ft BTOC

Screened Interval: 156.5' - 172.3' BGS

Sand Pack Interval: 152.5' - 175.8' BGS

Packer Depth: N/A

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-14

Date 09/10/2024

Time Begin Purge 12:01

Time Collect Sample 11:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
166.79	12:05	6.69	1,411	11.9	7.69	78.0	0.96
166.79	12:10	6.57	1,125	11.4	7.17	77.0	2.85
166.79	12:15	6.54	1,061	11.2	6.67	72.0	1.88
166.79	12:20	6.52	1,045	11.2	6.3	65.4	1.56
166.79	12:25	6.51	1,037	11.2	6.08	61.6	1.23
166.79	12:30	6.51	1,032	11.1	5.92	58.4	1.33

Comments:

Throttle lowered to 100 psi

Grundfos: N/A

Packer: N/A

Tank: 140

Throttle: 115

CPM: 2

CID: 49

Flow Rate: 300 mL/min

Sampler AKR

Date September 10, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

Site Location Ravensdale, WA **Sample ID** LMW-15

Sampling Location Groundwater Monitoring Well - end dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Dedicated QED Bladder

Date September 10, 2024 **Time** 10:20

Media Water **Station** LMW-15

Sample Type: grab time composite space composite

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

Static Water Level: 152.18 ft BTOC

Screened Interval: 235' - 245' BGS

Sand Pack Interval: 231' - 245' BGS

Packer Depth: N/A

Sample Description Clear, no odor, no sheen.

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
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-15

Date 09/10/2024

Time Begin Purge 10:28

Time Collect Sample 10:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
152.18	10:30	7.51	536	12.2	9.36	122.9	9.37
152.18	10:35	7.12	535	10.3	9.03	128.9	5.26
152.18	10:40	7.03	531	10	8.24	124.4	2.30
152.18	10:45	7.02	534	10	7.76	119.1	1.36
152.18	10:50	7.02	536	10	7.35	109.4	1.28
152.18	10:55	7.03	537	10	7.01	96.7	1.67
152.18	11:00	7.04	538	10	6.7	80.6	1.01
152.18	11:05	7.06	539	10	6.52	69.7	0.99
152.18	11:08	7.07	539	10	6.4	61.4	1.50
152.18	11:11	7.08	539	10	6.29	53.4	0.87
152.18	11:14	7.09	539	9.9	6.19	46.8	1.97
152.18	11:17	7.1	539	9.9	6.09	40.2	0.97

Comments:

Grundfos: N/A Packer: N/A

Tank: 130

Throttle: 95

CPM: 2 CID: 53

Flow Rate: 300 mL/min

Sampler 

Date September 10, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2024

Site Location Ravensdale, WA **Sample ID** LMW-FB-0324

Sampling Location Direct pour/end of dedicated sampling tube

Technical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)

Type of Sampler Direct Pour/Peristaltic Pump with New Tubing

Date September 11, 2024 **Time** 12:30

Media Lab-provided DI **Station** N/A

Sample Type: grab time composite space composite

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

Static Water Level: N/A

Screened Interval: N/A

Sand Pack Interval: N/A

Packer Depth: N/A

Sample Description Lab-provided DI water poured directly into sample containers.

Field Measurements on Sample (pH, conductivity, etc.) N/A

Aliquot Amount	Analysis	Container	Preservation / Amount
3-40 mL	VOA	VOA vial	HCl
1-500 mL	Total Metals	HDPE	HNO3
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-FB

Date 09/11/2024

Time Begin Purge N/A

Time Collect Sample 12:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
Parameters not applicable.							

Comments:

Grundfos: N/A
Packer: N/A
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: N/A mL/min

Sampler 

Date September 11, 2024

Supervisor _____

Date _____



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