



REPORT

Compliance Monitoring Report
September 2022 Quarterly Groundwater Sampling
Landsburg Mine Site

Submitted to:

Washington Department of Ecology

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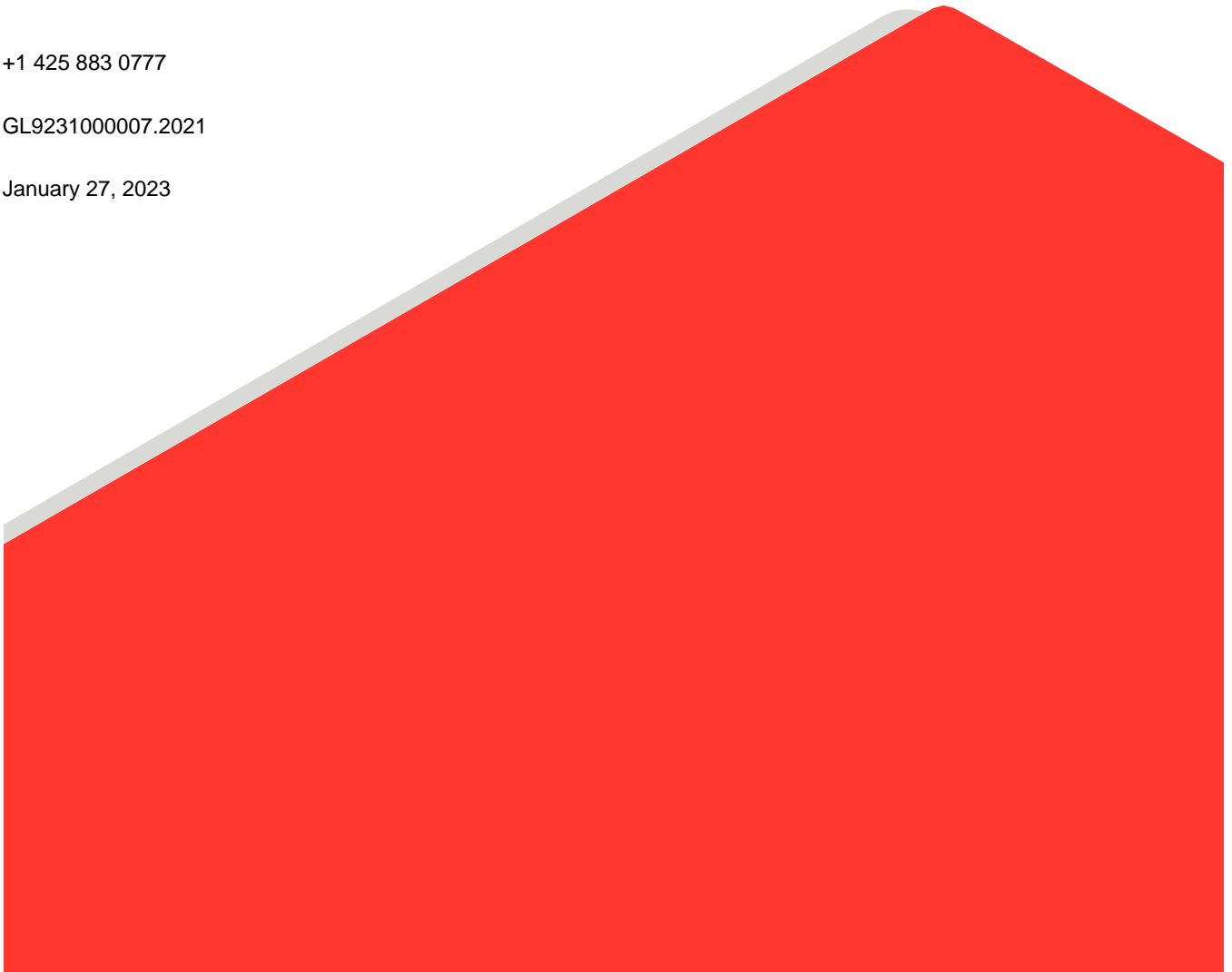
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1.0 INTRODUCTION

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 third quarter 2022 confirmational monitoring event, which was completed in September 2022.

The event was conducted from September 26 to 28, 2022, 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. In accordance with the CAP, all other Site wells are currently sampled semi-annually.

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 the Amendment to the CAP (Ecology 2021), 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
 - 1,4-Dioxane by USEPA SW-846 Method 8270E
 - 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-4-0922 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-4-0922 was rejected. 2-chloroethyl vinyl ether has never been detected at the Site.

Additionally, acetone, a common laboratory contaminant, was detected in the field blank. Following EPA data validation guidelines, the acetone concentrations reported by the laboratory in LMW-2, LMW-2 duplicate, LMW-3, LMW-8, LMW-10, and LMW-14 were qualified as non-detect results ("U" qualifier). Data qualifiers are defined, and all data qualifiers assigned under the data validation process are presented in the 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 2022 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 VOCs were detected above their respective laboratory reporting limits:
 - 1,1-Dichloroethane (1,1-DCA) was detected in LMW-12 at a concentration of 0.41 microgram per liter ($\mu\text{g/L}$). 1,1-DCA has been detected at similar low levels in this well in previous sampling events. The reported concentration is less than the MTCA Method B groundwater cleanup level of 7.68 $\mu\text{g/L}$.
 - Chloroethane was detected in LMW-12 at 1.34 $\mu\text{g/L}$, which is consistent with concentrations of chloroethane reported in this well in previous sampling rounds. The reported concentrations are less than the MTCA Method B groundwater cleanup level of 80 $\mu\text{g/L}$.
- 1,4-Dioxane results include the following:
 - 1,4-dioxane was detected in LMW-2 (2.2 $\mu\text{g/L}$), LMW-4 (2.1 $\mu\text{g/L}$), and LMW-12 (0.5 $\mu\text{g/L}$). 1,4-dioxane has not been detected in any other Site monitoring wells. The September 2022 results are consistent with 1,4-dioxane concentrations reported during previous sampling of these wells. Under the approved Amendment to the CAP (Ecology 2021), 5 years of quarterly groundwater samples (20 rounds of sampling) will be collected in order to conduct a statistical analysis on 1,4-dioxane trends (CAP Amendment Section 4.2). The progression of the quarterly sampling for 1,4-dioxane is as follows:
 - LMW-2 and LMW-4 have 20 rounds of sampling data.

- LMW-10 has 19 rounds of 1,4-dioxane sampling data. 1,4-Dioxane has never been detected at LMW-10.
 - LMW-12 has 18 rounds of 1,4-dioxane sampling data.
 - LMW-13R has 18 rounds of 1,4-dioxane sampling data. 1,4-Dioxane has never been detected at LMW-13R.
- Metals detected in groundwater samples at reported concentrations above MTCA cleanup levels during the current sampling round include the following:
- The groundwater samples from LMW-8 and LMW-12 contained iron concentrations above the MTCA Method B cleanup level of 11 milligrams per liter (mg/L). Iron has been detected in mine groundwater above MTCA cleanup levels in every monitoring event at the Site. It 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 2022 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 0.00688 mg/L. Arsenic in LMW-11 is slightly greater than the MTCA Method A groundwater cleanup level of 0.005 mg/L, but less than the Washington State primary drinking water MCL of 0.01 mg/L. The MTCA arsenic groundwater cleanup level is based on typical groundwater background levels in the State of Washington. Arsenic has been detected in groundwater from LMW-11 near or 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.
 - Groundwater samples from LMW-14 contained cobalt at concentrations of 0.0104 mg/L, which is above the MTCA Method B cleanup level of 0.0048 mg/L. Cobalt has been detected in LMW-14 in every monitoring event since it was installed. The September 2022 detection of 0.0104 mg/L is less than half of the historical high of 0.0515 mg/L, detected in March 2020. The Cobalt detection in LMW-14 is naturally occurring in association with the coal mine water (Golder 2020).

4.0 NEXT SAMPLING EVENT

The next compliance monitoring event is a quarterly confirmational monitoring event that was completed in December 2022. It included sampling of Site groundwater monitoring wells at the northern end of the Site: LMW-2, LMW-4, LMW-10, LMW-12, and LMW-13R, the Cedar River Pipeline Road wells LMW-20, LMW-21, and LMW-22, and the annual sampling of the private well located northwest of the Site.

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5.0 REFERENCES

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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.

_____. 2021. Amendment to Cleanup Action Plan Landsburg Mine Site MTCA Remediation Project, Ravensdale, Washington. March 26.

Tables

Table 1: Groundwater Elevation Data, Landsburg Mine Site, September 26, 2022

	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
Water Depths															
Date of data collection	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022	9/26/2022
Time of data collection	2:00 PM	9:03 AM	3:26 PM	10:52 AM	3:33 PM	1:45 PM	2:59 PM	3:16 PM	3:39 PM	10:36 AM	2:24 PM	10:47 AM	10:41 AM	2:11 PM	2:31 PM
Measured to Top of PVC (ft btc)	145.07	8.07	13.72	10.23	15.17	40.84	213.42	5.14	100.30	0.22	158.19	12.69	13.22	161.11	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)	620.29	609.72	643.03	609.04	643.10	591.49	558.09	641.83	643.69	618.76	644.00	612.66	612.64	644.01	644.28

Notes:

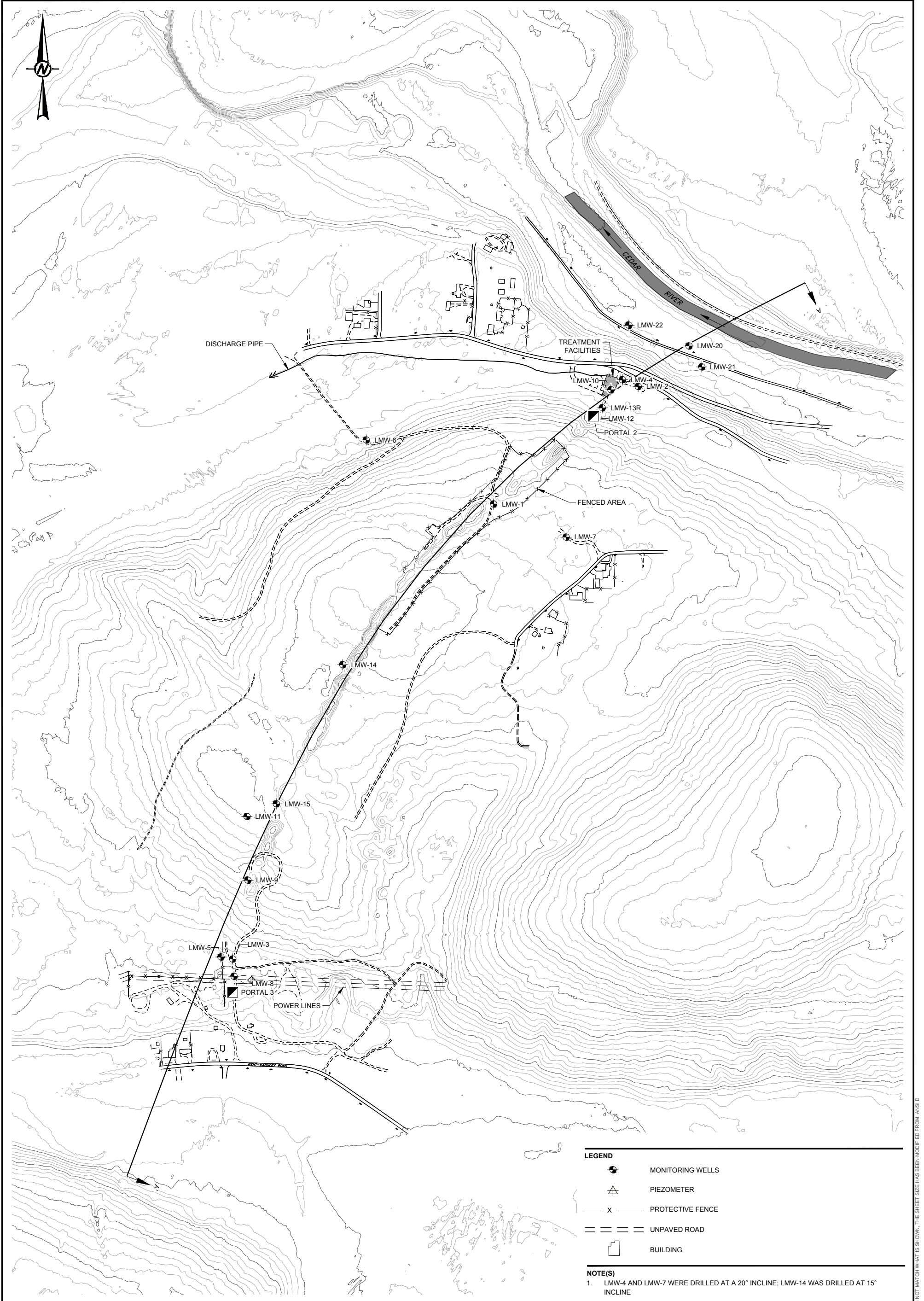
- ¹ Data corrected to accommodate well inclination from vertical
- NA = Not applicable
- NC = Data not collected
- ft btc = feet below top of casing
- ft NAVD88 = elevation in feet NAVD88

Table 2: September 2022 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 1	Trip Blank 2	Trip Blank 3
1,2-Dichloropropane	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,3-Dichloropropane	ug/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2,2-Dichloropropane	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1-Dichloropropene	ug/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Cis-1,3-Dichloropropene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trans-1,3-Dichloropropene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Ethylbenzene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Hexachlorobutadiene	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	ug/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Iodomethane	ug/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Cumene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Methylene Chloride	ug/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Methyl isobutyl ketone	ug/L	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U
Naphthalene	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Propylbenzene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Styrene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,2,3-Trichlorobenzene	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1,2-Tetrachloroethane	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1,2,2-Tetrachloroethane	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Tetrachloroethene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Toluene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1,1-Trichloroethane	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1,2-Trichloroethane	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
CFC-113	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 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	0.25 U	0.25 U
1,2,4-Trimethylbenzene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,3,5-Trimethylbenzene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl Acetate	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl Chloride	ug/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
m, p-Xylene	ug/L	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
o-Xylene	ug/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Total Xylenes	ug/L	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U
Semi-Volatile Organic Compounds (SVOCs)																				
1,4-Dioxane	ug/L	2.2	2	-	2.10	-	-	-	-	-	0.4 U	-	0.50	0.4 U	-	-	0.4 U	-	-	-
Hydrocarbon Identification																				
Diesel Range	mg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	-	-	-
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	-	-	-
Lube Oil Range	mg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	-	-	-

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.
 J+ - Surrogate recovery exceeded QC criteria
Bold values indicate detections above the RL.
 UJ - Non-Detect Result., RL is estimated

Figures



LEGEND	
	MONITORING WELLS
	PIEZOMETER
	PROTECTIVE FENCE
	UNPAVED ROAD
	BUILDING

NOTE(S)
 1. LMW-4 AND LMW-7 WERE DRILLED AT A 20° INCLINE; LMW-14 WAS DRILLED AT 15° INCLINE

CLIENT
 LANDSBURG MINE SITE PLP GROUP

PROJECT
 LANDSBURG MINE SITE
 MTCA REMEDIAL ACTION

CONSULTANT



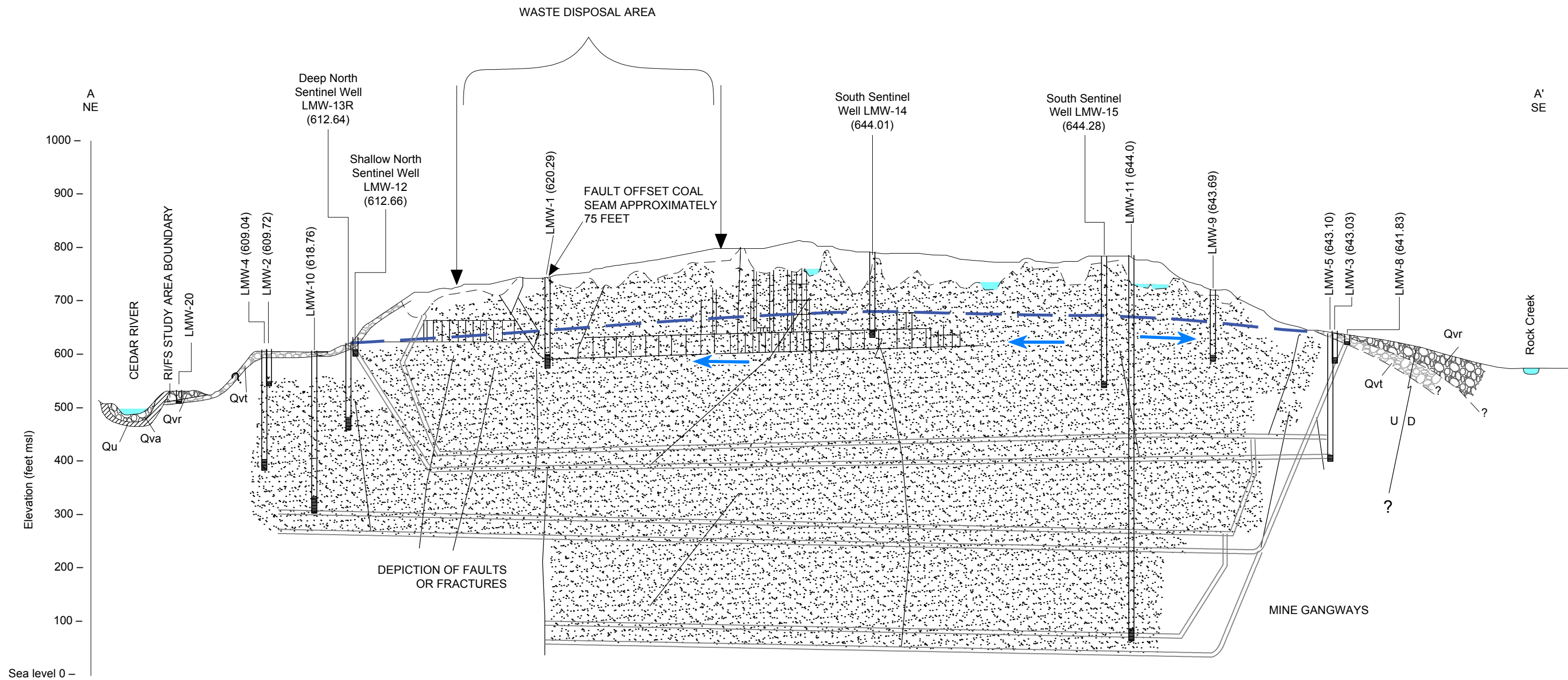
YYYY-MM-DD	2019-05-06
DESIGNED	REDMOND
PREPARED	JX
REVIEWED	JX
APPROVED	GZ

TITLE
GROUNDWATER MONITORING LOCATIONS

PROJECT NO.	PHASE	REV.	FIGURE
9231000005	1200	A	1



Path: \\gdr\gdr\gdr\complex\data\office\Reviews\geomatics\Bureau\Coal\Coal\Landburg\2021_LandsburgMemo02_Eng\Rev01.dwg | File Name: 02100007_2021_003.dwg | Last Edited By: Inbar | Date: 2023-01-18 | Time: 12:57:41 PM | Printed By: Trystar | Date: 2023-01-18 | Time: 1:02:48 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 RECESSIONAL 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

PROJECT
 LANDSBURG MINE SITE

CONSULTANT	YYYY-MM-DD	2023-01-11
	DESIGNED	GZ
	PREPARED	TR
	REVIEWED	GZ
	APPROVED	GZ

TITLE		CROSS-SECTION ALONG STRIKE AT COAL SEAM SEPTEMBER 26, 2022	
TITLE		CROSS-SECTION A-A'	
PROJECT NO.	PHASE	REV.	FIGURE
GL9231000007	2021	A	2

1" 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 January 5, 2023

Project No. GL923-1000-007.2021

TO Bill Kombol
Palmer Coking Coal Company

FROM Gary Zimmerman (WSP)

EMAIL gary.zimmerman@wsp.com

LANDSBURG MINE SITE SEPTEMBER 2022 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 26 through 28, 2022 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 was reviewed in this DUSR to identify quality issues which could affect the use of the sample data for decision making purposes.

Fourteen water samples, one field duplicate sample, one field blank, and three trip blanks 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)
- 1,4-Dioxane following USEPA SW-846 Method 8270E, Semivolatile Organic Compounds by 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.

¹ USEPA. 2015. 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>

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 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 which 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.

The validation level for the data is Tier 2A, and included 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

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.

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 2022 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 analytes 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 2022 sampling round and have never been detected at the Site.

Additionally, acetone, a common laboratory contaminant, was detected in the field blank. Following EPA data validation guidelines, the acetone concentrations reported by the laboratory in LMW-2, LMW-2 duplicate, LMW-3, LMW-8, LMW-10, and LMW-14 were qualified of non-detect results (“U” qualifier).

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 2022

Table 2 – Qualifier Summary Table Landsburg Mine Water Sampling Investigation September 2022

Attachment B Level 2A Data Validation Checklist

ATTACHMENT A

Tables

Table 1: Sample Collection and Analysis Summary

Q3 - September 2022

SDG	Field Identification	Collection Date	Lab Identification	Matrix	QC Samples	Analyses/Parameters			
						VOCs (8260D)	1,4-Dioxane (8270E-SIM)	Total Metals (200.8, 6010D, 7470A)	NWTPH HCID
2210454	LMW-2-0922	9/26/2022	2210454-01	GW	-	X	X	X	X
2210454	LMW-2-0922-D	9/26/2022	2210454-02	GW	FD (LMW-2-0922)	X	X	X	X
2210454	LMW-4-0922	9/26/2022	2210454-03	GW	MS/MSD	X	X	X	X
2210454	LMW-13R-0922	9/26/2022	2210454-04	GW	-	X	X	X	X
2210454	LMW-12-0922	9/26/2022	2210454-05	GW	-	X	X	X	X
2210454	TRIP BLANK	9/26/2022	2210454-06	WQ	TB	X	-	-	-
2210457	LMW-10-0922	9/27/2022	2210457-01	GW	-	X	X	X	X
2210457	LMW-6-0922	9/27/2022	2210457-02	GW	-	X	-	-	X
2210457	LMW-15-0922	9/27/2022	2210457-03	GW	-	X	-	X	X
2210457	LMW-11-0922	9/27/2022	2210457-04	GW	-	X	-	X	X
2210457	LMW-FB-0922	9/27/2022	2210457-05	WQ	FB	X	X	X	X
2210457	Trip Blanks	9/27/2022	2210457-06	WQ	TB	X	-	-	-
2210462	LMW-14-0922	9/28/2022	2210462-01	GW	-	X	-	X	X
2210462	LMW-7-0922	9/28/2022	2210462-02	GW	-	X	-	X	X
2210462	LMW-8-0922	9/28/2022	2210462-03	GW	-	X	-	X	X
2210462	LMW-3-0922	9/28/2022	2210462-04	GW	-	X	-	X	X
2210462	LMW-9-0922	9/28/2022	2210462-05	GW	-	X	-	X	X
2210462	LMW-5-0922	9/28/2022	2210462-06	GW	-	X	-	X	X
2210462	Trip Blank	9/28/2022	2210462-07	WQ	TB	X	-	-	-

Notes:

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

Abbreviations:

- GW: Groundwater
- WQ: Water quality
- VOCs: Volatile Organic Compounds
- SIM: Selective Ion Monitoring
- EPA: Environmental Protection Agency
- NWTPH: Northwest Total Petroleum Hydrocarbons
- HCID: Hydrocarbon Identification
- MS/MSD- Matrix Spike/Matrix Spike Duplicate
- FB-Field Blank
- TB-Trip Blank



Table 2: Qualifier Summary Table

Q3 - September 2022

SDG	Sample Name	Constituent	New Result	New MDL	New RL	Qualifier	Reason
22I0454	LMW-4-0922	2-chloroethyl vinyl ether	--	--	--	R	No recovery in MS/MSD, improper preservation
22I0454	LMW-4-0922	acrolein	--	--	--	UJ	Improper preservation
22I0454	LMW-4-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0454	LMW-2-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0454	LMW-2-0922	acrolein	--	--	--	UJ	Improper preservation
22I0454	LMW-2-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0454	LMW-2-0922-D	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0454	LMW-2-0922-D	acrolein	--	--	--	UJ	Improper preservation
22I0454	LMW-2-0922-D	acrylonitrile	--	--	--	UJ	Improper preservation
22I0454	LMW-13R-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0454	LMW-13R-0922	acrolein	--	--	--	UJ	Improper preservation
22I0454	LMW-13R-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0454	LMW-12-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0454	LMW-12-0922	acrolein	--	--	--	UJ	Improper preservation
22I0454	LMW-12-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0454	LMW-04-0922	silver	--	--	--	UJ	MS/MSD below QC criteria
22I0457	LMW-10-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0457	LMW-10-0922	acrolein	--	--	--	UJ	Improper preservation
22I0457	LMW-10-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0457	LMW-6-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0457	LMW-6-0922	acrolein	--	--	--	UJ	Improper preservation
22I0457	LMW-6-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0457	LMW-15-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0457	LMW-15-0922	acrolein	--	--	--	UJ	Improper preservation
22I0457	LMW-15-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0457	LMW-11-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0457	LMW-11-0922	acrolein	--	--	--	UJ	Improper preservation
22I0457	LMW-11-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0457	LMW-10-0922	acetone	--	5.23	5.23	U	Field blank contamination, common laboratory contaminant
22I0454	LMW-2-0922	acetone	--	5.55	5.55	U	Field blank contamination, common laboratory contaminant
22I0454	LMW-2-0922-D	acetone	--	5.53	5.53	U	Field blank contamination, common laboratory contaminant
22I0462	LMW-14-0922	acetone	--	8.6	8.6	U	Field blank contamination, common laboratory contaminant
22I0462	LMW-3-0922	acetone	--	8.27	8.27	U	Field blank contamination, common laboratory contaminant
22I0462	LMW-8-0922	acetone	--	6.87	6.87	U	Field blank contamination, common laboratory contaminant
22I0462	LMW-14-0922	acrolein	--	--	--	UJ	Improper preservation
22I0462	LMW-14-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0462	LMW-14-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0462	LMW-7-0922	acrolein	--	--	--	UJ	Improper preservation
22I0462	LMW-7-0922	acrylonitrile	--	--	--	UJ	Improper preservation



Table 2: Qualifier Summary Table

Q3 - September 2022

SDG	Sample Name	Constituent	New Result	New MDL	New RL	Qualifier	Reason
22I0462	LMW-7-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0462	LMW-8-0922	acrolein	--	--	--	UJ	Improper preservation
22I0462	LMW-8-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0462	LMW-8-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0462	LMW-3-0922	acrolein	--	--	--	UJ	Improper preservation
22I0462	LMW-3-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0462	LMW-3-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0462	LMW-9-0922	acrolein	--	--	--	UJ	Improper preservation
22I0462	LMW-9-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0462	LMW-9-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0462	LMW-5-0922	acrolein	--	--	--	UJ	Improper preservation
22I0462	LMW-5-0922	acrylonitrile	--	--	--	UJ	Improper preservation
22I0462	LMW-5-0922	2-chloroethyl vinyl ether	--	--	--	UJ	Improper preservation
22I0462	LMW-14-0922	Nickel	--	--	--	UJ	Laboratory duplicate RPD QC criteria exceeded
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
 QC - Quality Control
 RL - Reporting Limit
 SDG - Sample Delivery Group

Qualifier Definitions

UJ: Non-Detect Result, RL is estimated
 U: Non-Detect Result
 J: Estimated Result
 R: Rejected Result



ATTACHMENT B

Level 2A Data Validation Checklist

QA LEVEL 2A - DATA VERIFICATION/DATA VALIDATION CHECKLIST

Project Name: Landsburg Groundwater

Project Number/Phase/Task: GL9231000007 2021

Reviewing Company: WSP

Project Manager: Gary Zimmerman

Data Evaluator: Julia Campbell

Data Evaluation Date: November 3, 2022

Checked by: Michael Shadle

Review Date: November 14, 2022

Laboratory: Analytical Resources, Inc., Tukwila, WA

Lab SDG #: 22I0454, 22I0457, 22I0462

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		See Note 1
b) COC documents release of custody (signed and dated)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
c) Field QC types provided (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FB, TB, MS/MSD; See Table 1
d) Did the cooler contents match the COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		See Note 1
e) Were samples received in good condition?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
f) Were cooler temperatures within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

Data Package Information	YES	NO	NA	COMMENT
a) Laboratory name and location documented?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
b) All samples on COC reported in data package?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
c) Requested analytical methods used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
d) Requested sample preparation methods used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e) Requested analyte list reported?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
f) Requested units reported?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Did the laboratory define the qualifiers used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
h) Data package contains all information necessary to complete the data quality review?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		All Information for a 2A Scope

Analytical Assessment	YES	NO	NA	COMMENT
a) Solid samples reported on a dry-weight basis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Were solid samples percent moisture criteria acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were sample dilutions noted?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
d) Were detected concentrations less than the QL qualified by the laboratory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		No Results Less than RL
e) Were detected concentrations above the calibration range reported by the laboratory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		

Analytical Assessment	YES	NO	NA	COMMENT
f) Did the laboratory satisfy the requested sensitivity requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Results were only reported to the RL.
Laboratory Case Narrative	YES	NO	NA	COMMENT
a) Do the laboratory narrative or laboratory qualifiers indicate deficiencies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Were all deficiencies noted in the laboratory qualifiers or narrative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sample Preservation and Holding Time	YES	NO	NA	COMMENT
a) Were samples properly preserved?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		See Note 2
b) Were holding times met for sample preparation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were holding times met for sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Blanks	YES	NO	NA	COMMENTS
a) Were blanks analyzed at the appropriate frequency?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
b) Were any analytes detected in the associated preparation/method blank?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
c) Were any analytes detected in the associated trip blanks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Note 3
d) Were any analytes detected in the associated field or equipment/rinsate blanks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Note 3
e) Were any analytes detected in the associated storage blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Surrogates or Deuterated Monitoring Compounds	YES	NO	NA	COMMENTS
a) Were the correct surrogate compounds added to each sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Were surrogate recoveries within control limits?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Note 4
c) If not, were samples analyzed at dilution factors of 20x or greater?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
LCS/LCSD	YES	NO	NA	COMMENTS
a) Were LCS/LCSD reported at the appropriate frequency?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
b) Were proper analytes included in the LCS/LCSD?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
c) Were LCS/LCSD recoveries within control limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		See Note 5
d) Were RPD values within control limits (if LCSD was analyzed)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
MS/MSDs	YES	NO	NA	COMMENTS
a) Were project-specific MS (and MSD) reported?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		LMW-04-0922 LMW-10-0922
b) Were proper analytes reported in the MS/MSD?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were project-specific MS/MSD recoveries within control limits?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Note 6

MS/MSDs	YES	NO	NA	COMMENTS
d) If not, were sample concentrations greater than 4x the spiking concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Note 6
e) Was the RPD or absolute difference within control limits (if project-specific MSD analyzed)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f) Were project-specific post-digestion spikes analyzed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
g) Were project-specific post-digestion spike recoveries within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Duplicates	YES	NO	NA	COMMENTS
a) Were project-specific laboratory duplicates reported?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LMW-4-0922, LMW-10-0922, LMW-14-0922
b) Was laboratory duplicate RPD or absolute difference criteria acceptable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Note 7
c) Were field duplicates reported?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LMW-2-0922/LMW-2-0922-D
d) Was field duplicate RPD or absolute difference criteria acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

ICP Serial Dilution (SD)	YES	NO	NA	COMMENTS
a) Was project-specific ICP SD data provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Were project-specific ICP SD within acceptable criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Overall Evaluation	YES	NO	NA	COMMENTS
a) Were there any other technical problems not previously addressed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Were data acceptable and usable, except where noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments/Notes:

- In SDG 2210454, a sample is listed as LMW-4-0922 on the COC but reported as LMW-4-0922-D in the lab package. The sample should be reported as LMW-4-0922. A request to the lab is being sent out to revise the report the correct the sample name.
- Samples for analysis of 2-chloroethyl vinyl, acrolein, and acrylonitrile were collected in preserved VOA vials and the recoveries were potentially lost due to the acid-labile nature of said compounds. Specifically, acrolein and acrylonitrile need to be preserved in sodium thiosulfate at a pH rage between 4 to 5. Following Guidelines and using professional judgment non-detects are qualified 'UJ' and detects are qualified 'J'. See Note 6 for clarification on 2-chloroethyl vinyl ether.
- Analytes were detected in the trip blank and field blank, as shown in the table below. Following Organic Guidelines, when the associated blank concentration was greater than the RL and associated sample results were non-detect, data were not qualified. If the blank is only associated with QC samples, no qualifications are required.

Following the Organic Guidelines and using professional judgement for common laboratory contaminants, when the blank concentration was less than the RL, associated sample results detected at concentrations greater than 2x the RL were not qualified. When associated sample results were detected at concentrations less than 2x the RL, they were qualified as non-detect (U) at the RL.

SDG	Blank ID	Method	Analyte	Result	RL	Units
22I0454	TRIP BLANK	SW8260D	Toluene	0.25	0.20	µg/L
22I0457	LMW-FB-0922	SW8260D	Acetone	5.16	5.0	µg/L
22I0457	LMW-FB-0922	SW8260D	Chloroform	0.91	0.20	µg/L

4. Surrogate recovery was exceeded for certain samples as listed in the table below. Following VOC guidelines, when on surrogate exceeds QC limits, associated detects are qualified as estimated, high bias (J+). Associated non-detects did not require qualification.

SDG	Sample ID	Dilution Factor	Method	Surrogate	Recovery (%)	QC Limits
22I0462	LMW-3-0922	1	8260D	1,2-Dichloroethane-d4	130	80 - 129
22I0462	LMW-9-0922	1	8260D	1,2-Dichloroethane-d4	130	80 - 129
22I0462	LMW-5-0922	1	8260D	1,2-Dichloroethane-d4	131	80 - 129

5. LCS/LCSD recoveries were outside of acceptance criteria for select analytes, as summarized in the table below for project specific samples. Using professional judgment, when only one QC indicator (LCS/LCSD/RPD) did not meet QC criteria, qualification was not required.

SDG	Sample Name	Parameter	Analyte	LCS/LCSD % Recovery	RPD	% Recovery / RPD Criteria
22I0454 22I0457 22I0462	BKI0680-BS1 BKI0680-BSD1	SW8260D	n-Butylbenzene	117/132	11.9%	74-129/30
22I0454 22I0457 22I0462	BKI0680-BS1 BKI0680-BSD1	SW8260D	Hexachloro-1,3-Butadiene	100/125	21.8%	58-123/30

6. MS/MSD recoveries were outside of acceptance criteria for select analytes, as summarized in the table below for project specific samples. 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. When recoveries were greater than the lower control limit and associated sample results were non-detect, data were qualified as estimated (UJ). Associated detects were qualified as estimated, low bias (J-).

The MS/MSD results for 2-chloroethyl vinyl ether were non-detect and the lab did not calculate both the recoveries and 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 ND and the calculated percent recovery of the associated MS/MSD did not recover (NR), the associated non-detect results were rejected (R).

SDG	Primary Sample Name	Parameter	Analyte	MS/MSD % Recovery	RPD	% Recovery / RPD Criteria
22I0454	LMW-04-0922	SW8260D	2-Chloroethyl vinyl ether	0/0	0%	64-120/30
22I0454	LMW-04-0922	6010D	Magnesium*	69.6/34.1	4.53%	75-125/20
22I0454	LMW-04-0922	6010D	Silver	64.1/63.4	1.06%	75-125/20
22I0454	LMW-04-0922	6010D	Calcium*	77.1/18.4	4.83%	75-125/20
22I0457	LMW-10-0922	6010D	Sodium*	1.67/31	3.05%	75-125/20

SDG	Primary Sample Name	Parameter	Analyte	MS/MSD % Recovery	RPD	% Recovery / RPD Criteria
2210462	LMW-14-0922	6010D	Iron*	12/50.2	6.63%	75-125/20
2210462	LMW-14-0922	6010D	Magnesium*	24/64.9	6.10%	75-125/20
2210462	LMW-14-0922	6010D	Calcium*	132/83	5.33%	75-125/20

*Parent sample concentration 4x greater than the spiking concentration

7. Lab duplicate RPD criteria was exceeded as shown in the table below. Using professional judgement, when absolute difference is above QC criteria, associated sample detects are qualified as estimated (J).

Sample Name	Method	Analyte	Primary/Duplicate Results	Criteria/ Value	QC Criteria	Units
LMW-14-0922	6010D	Nickel	0.0132 / ND	RPD/ 39.7	20	%

Data qualification: See Table 2.

Definitions:

- | | |
|--|--------------------------------------|
| %R: Percent Recovery | MSD: Matrix Spike Duplicate |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| CRQL: Contract Required Quantitation Limit | QC: Quality Control |
| DMC: Deuterated Monitoring Compound | RL: Reporting Limit |
| FB: Field Blank | RPD: Relative Percent Deviation |
| HT: Holding Time | SD: Serial Dilution |
| IS: Internal Standard | SDG: Sample Delivery Group |
| LCS: Laboratory Control Sample | TAT: Turn Around Time |
| LCSD: Laboratory Control Sample Duplicate | TB: Trip Blank |
| MB: Method Blank | TPH: Total Petroleum Hydrocarbons |
| MDL: Method Detection Limit | VOC: Volatile Organic Compound |
| MS: Matrix Spike | |

APPENDIX B

Laboratory Analytical Report



Analytical Resources, LLC
Analytical Chemists and Consultants

23 November 2022

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)
22I0454

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



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

ARI Assigned Number: <u>22I0454</u>		Turn-around Requested: <u>Standard</u>			Date: <u>9/26/22</u>						
ARI Client Company: <u>Golder</u>		Phone: <u>425-883-0777</u>			Page: <u>1</u> of <u>1</u>						
Client Contact: <u>Gary Zimmerman/Autumnn Pearson</u>		No. of Coolers: <u>4.5°</u>			Cooler Temps: <u>1.3/1.8°</u>						
Client Project Name: <u>Landsburg 2022 Q3 Sampling</u>				Analysis Requested							
Client Project #: <u>9231000007.2021</u>		Samplers: <u>AP+ SJ</u>		VOCS	1,4-Dioxane	Total Priority Metal	TPH-HCID (NWTPH)	TPH-DX (HOLD)	TPH-GX (HOLD)	Notes/Comments	
Sample ID	Date	Time	Matrix								No. Containers
<u>LMW-2-0922</u>	<u>9/26/22</u>	<u>1100</u>	<u>W</u>	<u>12</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>LMW-2-0922-D</u>	<u> </u>	<u>1105</u>	<u> </u>	<u>12</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>LMW-4-0922</u>	<u> </u>	<u>1230</u>	<u> </u>	<u>36</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M.S + MSD collected</u>	
<u>LMW-13R-0922</u>	<u> </u>	<u>1435</u>	<u> </u>	<u>12</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>LMW-12-0922</u>	<u>∨</u>	<u>1540</u>	<u>∨</u>	<u>12</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>TRIP BLANK</u>	<u>—</u>	<u>—</u>	<u>∨</u>	<u>3</u>	<input checked="" type="checkbox"/>						
Comments/Special Instructions HOLD TPH FOLLOW-UPS. CLIENT SPECIFIC RLs/Analyte List				Relinquished by: (Signature) <u>[Signature]</u>		Received by: (Signature) <u>[Signature]</u>		Relinquished by: (Signature)		Received by: (Signature)	
				Printed Name: <u>SEAN JOHNSON</u>		Printed Name: <u>Roman milk</u>		Printed Name:		Printed Name:	
				Company: <u>GOLDER</u>		Company: <u>ARI</u>		Company:		Company:	
				Date & Time: <u>9/26/22 16:52</u>		Date & Time: <u>9/26/22 1652</u>		Date & Time:		Date & Time:	

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, 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-Nov-2022 18:04
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
LMW-2-0922	22I0454-01	Water	26-Sep-2022 11:00	26-Sep-2022 16:52
LMW-2-0922-D	22I0454-02	Water	26-Sep-2022 11:05	26-Sep-2022 16:52
LMW-4-0922	22I0454-03	Water	26-Sep-2022 12:30	26-Sep-2022 16:52
LMW-13R-0922	22I0454-04	Water	26-Sep-2022 14:35	26-Sep-2022 16:52
LMW-12-0922	22I0454-05	Water	26-Sep-2022 15:40	26-Sep-2022 16:52
TRIP BLANK	22I0454-06	Water	26-Sep-2022 00:00	26-Sep-2022 16:52



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

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

Reported:
23-Nov-2022 18:04

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 with the exception of analytes flagged on the associated forms.

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.

1,4-Dioxane- EPA Method SW8270E

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

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

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

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

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

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

Initial and continuing calibrations were within method requirements.

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



Golder Associates

18300 NE Union Hill Road Suite 200

Redmond WA, 98052-3333

Project: Landsburg

Project Number: Landsburg

Project Manager: Gary Zimmerman

Reported:

23-Nov-2022 18:04

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 with the exception of analytes flagged on the associated forms.

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.

The surrogate percent recoveries were within control limits.

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



WORK ORDER

22I0454

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
22I0454-01 A	Glass NM, Amber, 500 mL	
22I0454-01 B	Glass NM, Amber, 500 mL	
22I0454-01 C	Glass NM, Amber, 500 mL	
22I0454-01 D	Glass NM, Amber, 500 mL	
22I0454-01 E	Glass NM, Amber, 500 mL	
22I0454-01 F	Glass NM, Amber, 500 mL	
22I0454-01 G	HDPE NM, 500 mL, 1:1 HNO3	6.2 Pass
22I0454-01 H	VOA Vial, Clear, 40 mL, HCL	
22I0454-01 I	VOA Vial, Clear, 40 mL, HCL	
22I0454-01 J	VOA Vial, Clear, 40 mL, HCL	
22I0454-01 K	VOA Vial, Clear, 40 mL, HCL	
22I0454-01 L	VOA Vial, Clear, 40 mL, HCL	
22I0454-02 A	Glass NM, Amber, 500 mL	
22I0454-02 B	Glass NM, Amber, 500 mL	
22I0454-02 C	Glass NM, Amber, 500 mL	
22I0454-02 D	Glass NM, Amber, 500 mL	
22I0454-02 E	Glass NM, Amber, 500 mL	
22I0454-02 F	Glass NM, Amber, 500 mL	
22I0454-02 G	HDPE NM, 500 mL, 1:1 HNO3	6.2 Pass
22I0454-02 H	VOA Vial, Clear, 40 mL, HCL	
22I0454-02 I	VOA Vial, Clear, 40 mL, HCL	
22I0454-02 J	VOA Vial, Clear, 40 mL, HCL	
22I0454-02 K	VOA Vial, Clear, 40 mL, HCL	
22I0454-02 L	VOA Vial, Clear, 40 mL, HCL	
22I0454-03 A	Glass NM, Amber, 500 mL	
22I0454-03 AA	VOA Vial, Clear, 40 mL, HCL	
22I0454-03 AB	VOA Vial, Clear, 40 mL, HCL	
22I0454-03 AC	VOA Vial, Clear, 40 mL, HCL	
22I0454-03 AD	VOA Vial, Clear, 40 mL, HCL	
22I0454-03 AE	VOA Vial, Clear, 40 mL, HCL	
22I0454-03 AF	VOA Vial, Clear, 40 mL, HCL	
22I0454-03 AG	VOA Vial, Clear, 40 mL, HCL	
22I0454-03 AH	VOA Vial, Clear, 40 mL, HCL	
22I0454-03 AI	VOA Vial, Clear, 40 mL, HCL	



WORK ORDER

22I0454

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

22I0454-03 AJ	VOA Vial, Clear, 40 mL, HCL		
22I0454-03 B	Glass NM, Amber, 500 mL		
22I0454-03 C	Glass NM, Amber, 500 mL		
22I0454-03 D	Glass NM, Amber, 500 mL		
22I0454-03 E	Glass NM, Amber, 500 mL		
22I0454-03 F	Glass NM, Amber, 500 mL		
22I0454-03 G	Glass NM, Amber, 500 mL		
22I0454-03 H	Glass NM, Amber, 500 mL		
22I0454-03 I	Glass NM, Amber, 500 mL		
22I0454-03 J	Glass NM, Amber, 500 mL		
22I0454-03 K	Glass NM, Amber, 500 mL		
22I0454-03 L	Glass NM, Amber, 500 mL		
22I0454-03 M	Glass NM, Amber, 500 mL		
22I0454-03 N	Glass NM, Amber, 500 mL		
22I0454-03 O	Glass NM, Amber, 500 mL		
22I0454-03 P	Glass NM, Amber, 500 mL		
22I0454-03 Q	Glass NM, Amber, 500 mL		
22I0454-03 R	Glass NM, Amber, 500 mL		
22I0454-03 S	HDPE NM, 500 mL, 1:1 HNO3	CE	Pass
22I0454-03 T	HDPE NM, 500 mL, 1:1 HNO3	CE	↓
22I0454-03 U	HDPE NM, 500 mL, 1:1 HNO3	CE	↓
22I0454-03 V	VOA Vial, Clear, 40 mL, HCL		
22I0454-03 W	VOA Vial, Clear, 40 mL, HCL		
22I0454-03 X	VOA Vial, Clear, 40 mL, HCL		
22I0454-03 Y	VOA Vial, Clear, 40 mL, HCL		
22I0454-03 Z	VOA Vial, Clear, 40 mL, HCL		
22I0454-04 A	Glass NM, Amber, 500 mL		
22I0454-04 B	Glass NM, Amber, 500 mL		
22I0454-04 C	Glass NM, Amber, 500 mL		
22I0454-04 D	Glass NM, Amber, 500 mL		
22I0454-04 E	Glass NM, Amber, 500 mL		
22I0454-04 F	Glass NM, Amber, 500 mL		
22I0454-04 G	HDPE NM, 500 mL, 1:1 HNO3	CE	Pass
22I0454-04 H	VOA Vial, Clear, 40 mL, HCL		
22I0454-04 I	VOA Vial, Clear, 40 mL, HCL		
22I0454-04 J	VOA Vial, Clear, 40 mL, HCL		



WORK ORDER

22I0454

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	
22I0454-04 K	VOA Vial, Clear, 40 mL, HCL	
22I0454-04 L	VOA Vial, Clear, 40 mL, HCL	
22I0454-05 A	Glass NM, Amber, 500 mL	
22I0454-05 B	Glass NM, Amber, 500 mL	
22I0454-05 C	Glass NM, Amber, 500 mL	
22I0454-05 D	Glass NM, Amber, 500 mL	
22I0454-05 E	Glass NM, Amber, 500 mL	
22I0454-05 F	Glass NM, Amber, 500 mL	
22I0454-05 G	HDPE NM, 500 mL, 1:1 HNO3	C2 Pass
22I0454-05 H	VOA Vial, Clear, 40 mL, HCL	
22I0454-05 I	VOA Vial, Clear, 40 mL, HCL	
22I0454-05 J	VOA Vial, Clear, 40 mL, HCL	
22I0454-05 K	VOA Vial, Clear, 40 mL, HCL	
22I0454-05 L	VOA Vial, Clear, 40 mL, HCL	
22I0454-06 A	VOA Vial, Clear, 40 mL, HCL	
22I0454-06 B	VOA Vial, Clear, 40 mL, HCL	
22I0454-06 C	VOA Vial, Clear, 40 mL, HCL	

Ru

9/28/22

Preservation Confirmed By

Date



Cooler Receipt Form

ARI Client: Bolder

Project Name: Laudsbars

COC No(s): _____ (NA)

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

Assigned ARI Job No: 22I0954

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) 4.8° 1.5° 1.8°

Time 1652

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9708

Cooler Accepted by: [Signature] Date: 9/26/22 Time: 1652

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

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

Were all bottle labels complete and legible? YES NO

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

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

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

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

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

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

Date VOC Trip Blank was made at ARI NA

Were the sample(s) split by ARI? YES NO Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: [Signature] Date: 9/28/22 Time: 1556 Labels checked by: _____

**** 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-Nov-2022 18:04

LMW-2-0922
22I0454-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 11:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 15:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0454-01 L

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	5.55	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



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

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

Reported:
23-Nov-2022 18:04

LMW-2-0922
22I0454-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 11:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 15:32

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-2-0922
22I0454-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/26/2022 11:00
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 15:32

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	110	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	95.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	87.1	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



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

Reported:
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LMW-2-0922
22I0454-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 09/26/2022 11:00

Instrument: NT6 Analyst: JZ

Analyzed: 10/07/2022 13:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BKJ0008
Prepared: 10/03/2022

Sample Size: 500 mL
Final Volume: 1 mL

Extract ID: 22I0454-01 B 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.4	2.2	ug/L	
<i>Surrogate: 1,4-Dioxane-d8</i>			<i>33.6-120 %</i>	<i>60.7</i>	<i>%</i>	



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

Reported:
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LMW-2-0922
22I0454-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/26/2022 11:00

Instrument: FID3 Analyst: AA

Analyzed: 10/03/2022 19:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKI0666
Prepared: 10/01/2022

Sample Size: 500 mL
Final Volume: 1 mL

Extract ID: 22I0454-01 A 01

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
<i>Surrogate: o-Terphenyl</i>			50-150 %	87.1	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	121	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 23-Nov-2022 18:04
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LMW-2-0922
22I0454-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/26/2022 11:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 04:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0454-01 G 01
Preparation Batch: BKJ0239 Sample Size: 25 mL
Prepared: 10/10/2022 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



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 23-Nov-2022 18:04
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LMW-2-0922
22I0454-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/26/2022 11:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 04:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0454-01 G 01
Preparation Batch: BKJ0239 Sample Size: 25 mL
Prepared: 10/10/2022 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



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 23-Nov-2022 18:04
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LMW-2-0922
22I0454-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/26/2022 11:00
Instrument: ICP2 Analyst: SKD Analyzed: 10/11/2022 19:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0454-01 G 02
Preparation Batch: BKJ0158 Sample Size: 25 mL
Prepared: 10/07/2022 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	110	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	69.4	mg/L	
Manganese	7439-96-5	1	0.0100	0.224	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.39	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	19.2	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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LMW-2-0922
22I0454-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/26/2022 11:00
Instrument: HYDRA Analyst: ML Analyzed: 10/04/2022 13:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0454-01 G
Preparation Batch: BKJ0020 Sample Size: 20 mL
Prepared: 10/03/2022 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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Redmond WA, 98052-3333

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

Reported:
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LMW-2-0922-D
22I0454-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 11:05

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 15:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0454-02 J

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	5.53	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



Golder Associates
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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
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LMW-2-0922-D
22I0454-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 11:05

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 15:53

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-2-0922-D
22I0454-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/26/2022 11:05
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 15:53

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	116	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	95.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	91.5	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



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LMW-2-0922-D
22I0454-02 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/26/2022 11:05
Instrument: NT6 Analyst: JZ Analyzed: 10/07/2022 13:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 22I0454-02 B 01
Preparation Batch: BKJ0008 Sample Size: 500 mL
Prepared: 10/03/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.4	2.0	ug/L	
<i>Surrogate: 1,4-Dioxane-d8</i>			<i>33.6-120 %</i>	<i>56.4</i>	<i>%</i>	



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LMW-2-0922-D
22I0454-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/26/2022 11:05
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 19:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0454-02 A 01
Preparation Batch: BKI0666 Sample Size: 500 mL
Prepared: 10/01/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	87.0	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	118	%	



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LMW-2-0922-D
22I0454-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/26/2022 11:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 04:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0454-02 G 01
Preparation Batch: BKJ0239 Sample Size: 25 mL
Prepared: 10/10/2022 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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LMW-2-0922-D
22I0454-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/26/2022 11:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 04:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0454-02 G 01
Preparation Batch: BKJ0239 Sample Size: 25 mL
Prepared: 10/10/2022 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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LMW-2-0922-D
22I0454-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/26/2022 11:05

Instrument: ICP2 Analyst: SKD

Analyzed: 10/11/2022 19:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BKJ0158
Prepared: 10/07/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22I0454-02 G 02

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	113	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	71.6	mg/L	
Manganese	7439-96-5	1	0.0100	0.231	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.51	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	19.7	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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LMW-2-0922-D
22I0454-02 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/26/2022 11:05
Instrument: HYDRA Analyst: ML Analyzed: 10/04/2022 13:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0454-02 G
Preparation Batch: BKJ0020 Sample Size: 20 mL
Prepared: 10/03/2022 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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LMW-4-0922
22I0454-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 12:30

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 16:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0454-03 V

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



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LMW-4-0922
22I0454-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 12:30

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 16:15

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-4-0922
22I0454-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/26/2022 12:30
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 16:15

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	114	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	93.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	88.5	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	101	%	



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LMW-4-0922
22I0454-03 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/26/2022 12:30
Instrument: NT6 Analyst: JZ Analyzed: 10/07/2022 14:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 22I0454-03 D 01
Preparation Batch: BKJ0008 Sample Size: 500 mL
Prepared: 10/03/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.4	2.1	ug/L	
<i>Surrogate: 1,4-Dioxane-d8</i>			<i>33.6-120 %</i>	<i>54.2</i>	<i>%</i>	



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LMW-4-0922
22I0454-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/26/2022 12:30
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 20:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0454-03 A 01
Preparation Batch: BK10666 Sample Size: 500 mL
Prepared: 10/01/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	88.8	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	120	%	



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LMW-4-0922
22I0454-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/26/2022 12:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 05:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0454-03 S 01
Preparation Batch: BKJ0239 Sample Size: 25 mL
Prepared: 10/10/2022 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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LMW-4-0922
22I0454-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/26/2022 12:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 05:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0454-03 S 01
Preparation Batch: BKJ0239 Sample Size: 25 mL
Prepared: 10/10/2022 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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LMW-4-0922
22I0454-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/26/2022 12:30
Instrument: ICP2 Analyst: SKD Analyzed: 10/12/2022 15:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0454-03 U 01
Preparation Batch: BKJ0158 Sample Size: 25 mL
Prepared: 10/07/2022 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	117	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	73.1	mg/L	
Manganese	7439-96-5	1	0.0100	0.224	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.88	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	21.3	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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LMW-4-0922
22I0454-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/26/2022 12:30
Instrument: HYDRA Analyst: ML Analyzed: 10/04/2022 13:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0454-03 T
Preparation Batch: BKJ0020 Sample Size: 20 mL
Prepared: 10/03/2022 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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LMW-13R-0922
22I0454-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 14:35

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 16:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0454-04 H

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



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LMW-13R-0922
22I0454-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 14:35

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 16:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-13R-0922
22I0454-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/26/2022 14:35
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 16:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	111	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	96.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	86.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



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LMW-13R-0922
22I0454-04 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 09/26/2022 14:35

Instrument: NT6 Analyst: JZ

Analyzed: 10/07/2022 18:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq)
Preparation Batch: BKJ0008
Prepared: 10/03/2022

Sample Size: 500 mL
Final Volume: 1 mL

Extract ID: 22I0454-04 B 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.4	ND	ug/L	U
<i>Surrogate: 1,4-Dioxane-d8</i>			<i>33.6-120 %</i>	<i>53.1</i>	<i>%</i>	



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LMW-13R-0922
22I0454-04 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/26/2022 14:35

Instrument: FID3 Analyst: AA

Analyzed: 10/03/2022 21:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BK10666
Prepared: 10/01/2022

Sample Size: 500 mL
Final Volume: 1 mL

Extract ID: 22I0454-04 A 01

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
<i>Surrogate: o-Terphenyl</i>			50-150 %	91.0	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	122	%	



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LMW-13R-0922
22I0454-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/26/2022 14:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 04:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0454-04 G 01
Preparation Batch: BKJ0239 Sample Size: 25 mL
Prepared: 10/10/2022 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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LMW-13R-0922
22I0454-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/26/2022 14:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 04:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0454-04 G 01
Preparation Batch: BKJ0239 Sample Size: 25 mL
Prepared: 10/10/2022 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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LMW-13R-0922
22I0454-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/26/2022 14:35

Instrument: ICP2 Analyst: SKD

Analyzed: 10/11/2022 19:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BKJ0158
Prepared: 10/07/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22I0454-04 G 02

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	86.2	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	0.949	mg/L	
Magnesium	7439-95-4	1	0.500	41.2	mg/L	
Manganese	7439-96-5	1	0.0100	0.0303	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.14	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	50.0	88.4	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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LMW-13R-0922
22I0454-04 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/26/2022 14:35
Instrument: HYDRA Analyst: ML Analyzed: 10/04/2022 13:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0454-04 G
Preparation Batch: BKJ0020 Sample Size: 20 mL
Prepared: 10/03/2022 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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LMW-12-0922
22I0454-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 15:40

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 16:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0454-05 H

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	1.34	ug/L	
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	0.41	ug/L	
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



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LMW-12-0922
22I0454-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 15:40

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 16:57

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-12-0922
22I0454-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 15:40

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 16:57

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	120	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	93.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	86.1	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	106	%	



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LMW-12-0922
22I0454-05 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/26/2022 15:40
Instrument: NT6 Analyst: JZ Analyzed: 10/07/2022 19:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 22I0454-05 B 01
Preparation Batch: BKJ0008 Sample Size: 500 mL
Prepared: 10/03/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.4	0.5	ug/L	
<i>Surrogate: 1,4-Dioxane-d8</i>			33.6-120 %	57.0	%	



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LMW-12-0922
22I0454-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/26/2022 15:40
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 22:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0454-05 A 01
Preparation Batch: BK10666 Sample Size: 500 mL
Prepared: 10/01/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	92.4	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	121	%	



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LMW-12-0922
22I0454-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/26/2022 15:40

Instrument: ICPMS1 Analyst: MCB

Analyzed: 10/12/2022 05:04

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22I0454-05 G 01

Preparation Batch: BKJ0239

Sample Size: 25 mL

Prepared: 10/10/2022

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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LMW-12-0922
22I0454-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/26/2022 15:40
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 05:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0454-05 G 01
Preparation Batch: BKJ0239 Sample Size: 25 mL
Prepared: 10/10/2022 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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LMW-12-0922
22I0454-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/26/2022 15:40
Instrument: ICP2 Analyst: SKD Analyzed: 10/11/2022 19:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0454-05 G 02
Preparation Batch: BKJ0158 Sample Size: 25 mL
Prepared: 10/07/2022 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	77.9	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	51.0	mg/L	
Manganese	7439-96-5	1	0.0100	0.705	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.21	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	8.51	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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LMW-12-0922
22I0454-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/26/2022 15:40
Instrument: HYDRA Analyst: ML Analyzed: 10/04/2022 14:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0454-05 G
Preparation Batch: BKJ0020 Sample Size: 20 mL
Prepared: 10/03/2022 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:
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22I0454-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 00:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 14:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0454-06 A

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	0.25	ug/L	



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

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

Reported:
23-Nov-2022 18:04

TRIP BLANK
22I0454-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 00:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 14:29

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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TRIP BLANK
22I0454-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/26/2022 00:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 14:29

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	106	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	96.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.5	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	105	%	



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Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0680-BLK1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 14:08								
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 BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0680-BLK1)										
						Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 14:08				
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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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0680-BLK1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 14:08								
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.25		ug/L	5.00		105	80-129			
<i>Surrogate: Toluene-d8</i>	4.80		ug/L	5.00		95.9	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.78		ug/L	5.00		95.5	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.02		ug/L	5.00		100	80-120			
LCS (BKI0680-BS1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 12:44								
Chloromethane	9.51	0.50	ug/L	10.0		95.1	60-138			
Vinyl Chloride	9.92	0.10	ug/L	10.0		99.2	66-133			
Bromomethane	10.2	1.00	ug/L	10.0		102	72-131			
Chloroethane	9.88	0.20	ug/L	10.0		98.8	60-155			
Trichlorofluoromethane	10.5	0.20	ug/L	10.0		105	62-141			
Acrolein	51.3	5.00	ug/L	50.0		103	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.4	0.20	ug/L	10.0		104	76-129			
Acetone	52.4	5.00	ug/L	50.0		105	58-142			
1,1-Dichloroethene	10.3	0.20	ug/L	10.0		103	69-135			
Iodomethane	10.3	1.00	ug/L	10.0		103	56-147			
Methylene Chloride	9.65	1.00	ug/L	10.0		96.5	65-135			
Acrylonitrile	8.96	1.00	ug/L	10.0		89.6	64-134			
Carbon Disulfide	10.5	0.20	ug/L	10.0		105	78-125			
trans-1,2-Dichloroethene	9.68	0.20	ug/L	10.0		96.8	78-128			
Vinyl Acetate	9.75	0.20	ug/L	10.0		97.5	55-138			
1,1-Dichloroethane	9.99	0.20	ug/L	10.0		99.9	76-124			
2-Butanone	51.6	5.00	ug/L	50.0		103	61-140			
2,2-Dichloropropane	9.60	0.20	ug/L	10.0		96.0	66-147			
cis-1,2-Dichloroethene	10.5	0.20	ug/L	10.0		105	80-121			
Chloroform	9.94	0.20	ug/L	10.0		99.4	80-122			
Bromochloromethane	9.90	0.20	ug/L	10.0		99.0	80-121			
1,1,1-Trichloroethane	10.3	0.20	ug/L	10.0		103	79-123			
1,1-Dichloropropene	11.1	0.10	ug/L	10.0		111	80-127			
Carbon tetrachloride	10.1	0.20	ug/L	10.0		101	53-137			
1,2-Dichloroethane	10.4	0.20	ug/L	10.0		104	75-123			
Benzene	10.7	0.20	ug/L	10.0		107	80-120			
Trichloroethene	10.5	0.20	ug/L	10.0		105	80-120			



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

Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKI0680-BS1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 12:44								
1,2-Dichloropropane	10.2	0.20	ug/L	10.0		102	80-120			
Bromodichloromethane	10.3	0.20	ug/L	10.0		103	80-121			
Dibromomethane	10.3	0.20	ug/L	10.0		103	80-120			
2-Chloroethyl vinyl ether	8.72	1.00	ug/L	10.0		87.2	64-120			
4-Methyl-2-Pentanone	59.8	2.50	ug/L	50.0		120	67-133			
cis-1,3-Dichloropropene	11.3	0.20	ug/L	10.0		113	80-124			
Toluene	10.5	0.20	ug/L	10.0		105	80-120			
trans-1,3-Dichloropropene	11.3	0.20	ug/L	10.0		113	71-127			
2-Hexanone	58.2	5.00	ug/L	50.0		116	69-133			
1,1,2-Trichloroethane	10.5	0.20	ug/L	10.0		105	80-121			
1,3-Dichloropropane	10.8	0.10	ug/L	10.0		108	80-120			
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120			
Dibromochloromethane	10.8	0.20	ug/L	10.0		108	65-135			
1,2-Dibromoethane	11.0	0.10	ug/L	10.0		110	80-121			
Chlorobenzene	10.5	0.20	ug/L	10.0		105	80-120			
Ethylbenzene	10.7	0.20	ug/L	10.0		107	80-120			
1,1,1,2-Tetrachloroethane	10.4	0.20	ug/L	10.0		104	80-120			
m,p-Xylene	22.9	0.40	ug/L	20.0		114	80-121			
o-Xylene	10.9	0.20	ug/L	10.0		109	80-121			
Xylenes, total	33.8	0.60	ug/L	30.0		113	76-127			
Styrene	10.2	0.20	ug/L	10.0		102	80-124			
Bromoform	9.83	0.20	ug/L	10.0		98.3	51-134			
1,1,2,2-Tetrachloroethane	10.6	0.20	ug/L	10.0		106	77-123			
1,2,3-Trichloropropane	10.6	0.25	ug/L	10.0		106	76-125			
trans-1,4-Dichloro 2-Butene	10.9	1.00	ug/L	10.0		109	55-129			
n-Propylbenzene	11.8	0.20	ug/L	10.0		118	78-130			
Bromobenzene	10.6	0.20	ug/L	10.0		106	80-120			
Isopropyl Benzene	11.4	0.20	ug/L	10.0		114	80-128			
2-Chlorotoluene	11.3	0.10	ug/L	10.0		113	78-122			
4-Chlorotoluene	11.4	0.20	ug/L	10.0		114	80-121			
t-Butylbenzene	12.0	0.20	ug/L	10.0		120	78-125			
1,3,5-Trimethylbenzene	12.3	0.20	ug/L	10.0		123	80-129			
1,2,4-Trimethylbenzene	11.0	0.20	ug/L	10.0		110	80-127			
s-Butylbenzene	12.0	0.20	ug/L	10.0		120	78-129			
4-Isopropyl Toluene	10.6	0.20	ug/L	10.0		106	79-130			



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

Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BK10680-BS1)										
					Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 12:44					
1,3-Dichlorobenzene	10.7	0.20	ug/L	10.0		107	80-120			
1,4-Dichlorobenzene	10.1	0.20	ug/L	10.0		101	80-120			
n-Butylbenzene	11.7	0.20	ug/L	10.0		117	74-129			
1,2-Dichlorobenzene	10.3	0.20	ug/L	10.0		103	80-120			
1,2-Dibromo-3-chloropropane	10.7	0.50	ug/L	10.0		107	62-123			
1,2,4-Trichlorobenzene	10.9	0.50	ug/L	10.0		109	64-124			
Hexachloro-1,3-Butadiene	10.0	0.50	ug/L	10.0		100	58-123			
Naphthalene	10.8	0.50	ug/L	10.0		108	50-134			
1,2,3-Trichlorobenzene	10.8	0.50	ug/L	10.0		108	49-133			
Dichlorodifluoromethane	11.6	0.20	ug/L	10.0		116	48-147			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.88		ug/L	5.00		97.5	80-129			
<i>Surrogate: Toluene-d8</i>	5.07		ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.19		ug/L	5.00		104	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.95		ug/L	5.00		99.0	80-120			
LCS Dup (BK10680-BSD1)										
					Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 13:26					
Chloromethane	9.29	0.50	ug/L	10.0		92.9	60-138	2.35	30	
Vinyl Chloride	10.1	0.10	ug/L	10.0		101	66-133	2.01	30	
Bromomethane	10.2	1.00	ug/L	10.0		102	72-131	0.11	30	
Chloroethane	9.83	0.20	ug/L	10.0		98.3	60-155	0.53	30	
Trichlorofluoromethane	9.82	0.20	ug/L	10.0		98.2	62-141	6.52	30	
Acrolein	51.9	5.00	ug/L	50.0		104	52-190	1.25	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.7	0.20	ug/L	10.0		107	76-129	2.51	30	
Acetone	53.0	5.00	ug/L	50.0		106	58-142	1.09	30	
1,1-Dichloroethene	10.5	0.20	ug/L	10.0		105	69-135	1.74	30	
Iodomethane	9.91	1.00	ug/L	10.0		99.1	56-147	3.70	30	
Methylene Chloride	9.64	1.00	ug/L	10.0		96.4	65-135	0.12	30	
Acrylonitrile	8.29	1.00	ug/L	10.0		82.9	64-134	7.72	30	
Carbon Disulfide	10.4	0.20	ug/L	10.0		104	78-125	1.16	30	
trans-1,2-Dichloroethene	9.61	0.20	ug/L	10.0		96.1	78-128	0.76	30	
Vinyl Acetate	9.99	0.20	ug/L	10.0		99.9	55-138	2.49	30	
1,1-Dichloroethane	9.96	0.20	ug/L	10.0		99.6	76-124	0.24	30	
2-Butanone	54.7	5.00	ug/L	50.0		109	61-140	5.83	30	
2,2-Dichloropropane	11.0	0.20	ug/L	10.0		110	66-147	13.60	30	
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	80-121	1.47	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-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKI0680-BSD1)										
Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 13:26										
Chloroform	9.92	0.20	ug/L	10.0		99.2	80-122	0.15	30	
Bromochloromethane	9.84	0.20	ug/L	10.0		98.4	80-121	0.64	30	
1,1,1-Trichloroethane	10.3	0.20	ug/L	10.0		103	79-123	0.29	30	
1,1-Dichloropropene	11.4	0.10	ug/L	10.0		114	80-127	2.49	30	
Carbon tetrachloride	10.3	0.20	ug/L	10.0		103	53-137	2.20	30	
1,2-Dichloroethane	10.4	0.20	ug/L	10.0		104	75-123	0.33	30	
Benzene	10.6	0.20	ug/L	10.0		106	80-120	0.21	30	
Trichloroethene	10.3	0.20	ug/L	10.0		103	80-120	1.14	30	
1,2-Dichloropropane	10.1	0.20	ug/L	10.0		101	80-120	1.10	30	
Bromodichloromethane	10.3	0.20	ug/L	10.0		103	80-121	0.45	30	
Dibromomethane	10.4	0.20	ug/L	10.0		104	80-120	0.41	30	
2-Chloroethyl vinyl ether	9.17	1.00	ug/L	10.0		91.7	64-120	4.95	30	
4-Methyl-2-Pentanone	60.9	2.50	ug/L	50.0		122	67-133	1.81	30	
cis-1,3-Dichloropropene	11.5	0.20	ug/L	10.0		115	80-124	1.29	30	
Toluene	10.5	0.20	ug/L	10.0		105	80-120	0.70	30	
trans-1,3-Dichloropropene	11.6	0.20	ug/L	10.0		116	71-127	2.75	30	
2-Hexanone	59.9	5.00	ug/L	50.0		120	69-133	2.96	30	
1,1,2-Trichloroethane	10.5	0.20	ug/L	10.0		105	80-121	0.33	30	
1,3-Dichloropropane	10.6	0.10	ug/L	10.0		106	80-120	1.97	30	
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120	0.36	30	
Dibromochloromethane	10.5	0.20	ug/L	10.0		105	65-135	2.13	30	
1,2-Dibromoethane	11.0	0.10	ug/L	10.0		110	80-121	0.36	30	
Chlorobenzene	10.2	0.20	ug/L	10.0		102	80-120	2.81	30	
Ethylbenzene	10.6	0.20	ug/L	10.0		106	80-120	1.11	30	
1,1,1,2-Tetrachloroethane	10.2	0.20	ug/L	10.0		102	80-120	2.80	30	
m,p-Xylene	22.8	0.40	ug/L	20.0		114	80-121	0.43	30	
o-Xylene	10.8	0.20	ug/L	10.0		108	80-121	0.96	30	
Xylenes, total	33.6	0.60	ug/L	30.0		112	76-127	0.60	30	
Styrene	10.1	0.20	ug/L	10.0		101	80-124	0.31	30	
Bromoform	9.59	0.20	ug/L	10.0		95.9	51-134	2.47	30	
1,1,1,2,2-Tetrachloroethane	10.4	0.20	ug/L	10.0		104	77-123	1.76	30	
1,2,3-Trichloropropane	10.6	0.25	ug/L	10.0		106	76-125	0.06	30	
trans-1,4-Dichloro 2-Butene	10.6	1.00	ug/L	10.0		106	55-129	2.95	30	
n-Propylbenzene	12.2	0.20	ug/L	10.0		122	78-130	3.55	30	
Bromobenzene	10.7	0.20	ug/L	10.0		107	80-120	1.29	30	



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

Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKI0680-BSD1)										
					Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 13:26					
Isopropyl Benzene	11.8	0.20	ug/L	10.0		118	80-128	3.19	30	
2-Chlorotoluene	11.5	0.10	ug/L	10.0		115	78-122	1.79	30	
4-Chlorotoluene	11.7	0.20	ug/L	10.0		117	80-121	3.07	30	
t-Butylbenzene	12.4	0.20	ug/L	10.0		124	78-125	2.82	30	
1,3,5-Trimethylbenzene	12.7	0.20	ug/L	10.0		127	80-129	3.51	30	
1,2,4-Trimethylbenzene	11.4	0.20	ug/L	10.0		114	80-127	3.09	30	
s-Butylbenzene	12.7	0.20	ug/L	10.0		127	78-129	5.84	30	
4-Isopropyl Toluene	11.4	0.20	ug/L	10.0		114	79-130	6.93	30	
1,3-Dichlorobenzene	11.0	0.20	ug/L	10.0		110	80-120	3.01	30	
1,4-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120	2.93	30	
n-Butylbenzene	13.2	0.20	ug/L	10.0		132	74-129	11.90	30	*
1,2-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	2.28	30	
1,2-Dibromo-3-chloropropane	10.7	0.50	ug/L	10.0		107	62-123	0.06	30	
1,2,4-Trichlorobenzene	11.9	0.50	ug/L	10.0		119	64-124	9.32	30	
Hexachloro-1,3-Butadiene	12.5	0.50	ug/L	10.0		125	58-123	21.80	30	*
Naphthalene	11.1	0.50	ug/L	10.0		111	50-134	3.47	30	
1,2,3-Trichlorobenzene	11.7	0.50	ug/L	10.0		117	49-133	8.09	30	
Dichlorodifluoromethane	11.7	0.20	ug/L	10.0		117	48-147	0.48	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.02		ug/L	5.00		100	80-129			
<i>Surrogate: Toluene-d8</i>	5.06		ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.14		ug/L	5.00		103	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.02		ug/L	5.00		100	80-120			
Matrix Spike (BKI0680-MS1)										
		Source: 2210454-03		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 21:05						
Chloromethane	11.0	0.50	ug/L	10.0	ND	110	60-138			
Vinyl Chloride	10.4	0.10	ug/L	10.0	ND	104	66-133			
Bromomethane	11.2	1.00	ug/L	10.0	ND	112	72-131			
Chloroethane	11.3	0.20	ug/L	10.0	ND	113	60-155			
Trichlorofluoromethane	11.8	0.20	ug/L	10.0	ND	118	62-141			
Acrolein	49.8	5.00	ug/L	50.0	ND	99.7	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.3	0.20	ug/L	10.0	ND	113	76-129			
Acetone	62.6	5.00	ug/L	50.0	ND	116	58-142			
1,1-Dichloroethene	11.7	0.20	ug/L	10.0	ND	117	69-135			
Iodomethane	11.0	1.00	ug/L	10.0	ND	110	56-147			
Methylene Chloride	10.9	1.00	ug/L	10.0	ND	109	65-135			



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Project: Landsburg
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Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKI0680-MS1)										
		Source: 2210454-03			Prepared: 29-Sep-2022		Analyzed: 29-Sep-2022 21:05			
Acrylonitrile	7.82	1.00	ug/L	10.0	ND	78.2	64-134			
Carbon Disulfide	11.8	0.20	ug/L	10.0	ND	118	78-125			
trans-1,2-Dichloroethene	10.5	0.20	ug/L	10.0	ND	105	78-128			
Vinyl Acetate	6.72	0.20	ug/L	10.0	ND	67.2	55-138			
1,1-Dichloroethane	10.6	0.20	ug/L	10.0	ND	106	76-124			
2-Butanone	54.8	5.00	ug/L	50.0	ND	110	61-140			
2,2-Dichloropropane	8.76	0.20	ug/L	10.0	ND	87.6	66-147			
cis-1,2-Dichloroethene	10.6	0.20	ug/L	10.0	ND	106	80-121			
Chloroform	10.8	0.20	ug/L	10.0	ND	108	80-122			
Bromochloromethane	10.5	0.20	ug/L	10.0	ND	105	80-121			
1,1,1-Trichloroethane	10.7	0.20	ug/L	10.0	ND	107	79-123			
1,1-Dichloropropene	10.7	0.10	ug/L	10.0	ND	107	80-127			
Carbon tetrachloride	10.4	0.20	ug/L	10.0	ND	104	53-137			
1,2-Dichloroethane	11.0	0.20	ug/L	10.0	ND	110	75-123			
Benzene	11.1	0.20	ug/L	10.0	ND	111	80-120			
Trichloroethene	9.94	0.20	ug/L	10.0	ND	99.4	80-120			
1,2-Dichloropropane	10.3	0.20	ug/L	10.0	ND	103	80-120			
Bromodichloromethane	10.5	0.20	ug/L	10.0	ND	105	80-121			
Dibromomethane	10.4	0.20	ug/L	10.0	ND	104	80-120			
2-Chloroethyl vinyl ether	ND	1.00	ug/L	10.0	ND		64-120			* , U
4-Methyl-2-Pentanone	59.5	2.50	ug/L	50.0	ND	119	67-133			
cis-1,3-Dichloropropene	10.5	0.20	ug/L	10.0	ND	105	80-124			
Toluene	10.7	0.20	ug/L	10.0	ND	107	80-120			
trans-1,3-Dichloropropene	11.1	0.20	ug/L	10.0	ND	111	71-127			
2-Hexanone	57.2	5.00	ug/L	50.0	ND	114	69-133			
1,1,2-Trichloroethane	10.7	0.20	ug/L	10.0	ND	107	80-121			
1,3-Dichloropropane	10.8	0.10	ug/L	10.0	ND	108	80-120			
Tetrachloroethene	10.5	0.20	ug/L	10.0	ND	105	80-120			
Dibromochloromethane	10.5	0.20	ug/L	10.0	ND	105	65-135			
1,2-Dibromoethane	10.9	0.10	ug/L	10.0	ND	109	80-121			
Chlorobenzene	10.5	0.20	ug/L	10.0	ND	105	80-120			
Ethylbenzene	10.9	0.20	ug/L	10.0	ND	109	80-120			
1,1,1,2-Tetrachloroethane	10.6	0.20	ug/L	10.0	ND	106	80-120			
m,p-Xylene	23.5	0.40	ug/L	20.0	ND	117	80-121			
o-Xylene	10.6	0.20	ug/L	10.0	ND	106	80-121			



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Project: Landsburg
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Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKI0680-MS1)										
Source: 2210454-03 Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 21:05										
Xylenes, total	34.1	0.60	ug/L	30.0	ND	114	76-127			
Styrene	10.3	0.20	ug/L	10.0	ND	103	80-124			
Bromoform	9.27	0.20	ug/L	10.0	ND	92.7	51-134			
1,1,2,2-Tetrachloroethane	10.9	0.20	ug/L	10.0	ND	109	77-123			
1,2,3-Trichloropropane	10.5	0.25	ug/L	10.0	ND	105	76-125			
trans-1,4-Dichloro 2-Butene	9.11	1.00	ug/L	10.0	ND	91.1	55-129			
n-Propylbenzene	11.9	0.20	ug/L	10.0	ND	119	78-130			
Bromobenzene	10.5	0.20	ug/L	10.0	ND	105	80-120			
Isopropyl Benzene	10.8	0.20	ug/L	10.0	ND	108	80-128			
2-Chlorotoluene	11.0	0.10	ug/L	10.0	ND	110	78-122			
4-Chlorotoluene	11.3	0.20	ug/L	10.0	ND	113	80-121			
t-Butylbenzene	11.5	0.20	ug/L	10.0	ND	115	78-125			
1,3,5-Trimethylbenzene	12.4	0.20	ug/L	10.0	ND	124	80-129			
1,2,4-Trimethylbenzene	11.1	0.20	ug/L	10.0	ND	111	80-127			
s-Butylbenzene	12.0	0.20	ug/L	10.0	ND	120	78-129			
4-Isopropyl Toluene	10.7	0.20	ug/L	10.0	ND	107	79-130			
1,3-Dichlorobenzene	11.1	0.20	ug/L	10.0	ND	111	80-120			
1,4-Dichlorobenzene	10.5	0.20	ug/L	10.0	ND	105	80-120			
n-Butylbenzene	12.4	0.20	ug/L	10.0	ND	124	74-129			
1,2-Dichlorobenzene	10.7	0.20	ug/L	10.0	ND	107	80-120			
1,2-Dibromo-3-chloropropane	10.6	0.50	ug/L	10.0	ND	106	62-123			
1,2,4-Trichlorobenzene	10.7	0.50	ug/L	10.0	ND	107	64-124			
Hexachloro-1,3-Butadiene	10.6	0.50	ug/L	10.0	ND	106	58-123			
Naphthalene	10.0	0.50	ug/L	10.0	ND	100	50-134			
1,2,3-Trichlorobenzene	11.2	0.50	ug/L	10.0	ND	112	49-133			
Dichlorodifluoromethane	12.4	0.20	ug/L	10.0	ND	124	48-147			
Surrogate: 1,2-Dichloroethane-d4	5.34		ug/L	5.00	5.68	107	80-129			
Surrogate: Toluene-d8	4.96		ug/L	5.00	4.69	99.2	80-120			
Surrogate: 4-Bromofluorobenzene	5.03		ug/L	5.00	4.43	101	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.93		ug/L	5.00	5.05	98.7	80-120			

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

Matrix Spike Dup (BKI0680-MSD1)										
Source: 2210454-03 Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 21:25										
Chloromethane	10.8	0.50	ug/L	10.0	ND	108	60-138	1.73	30	



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKI0680-MSD1)										
		Source: 2210454-03			Prepared: 29-Sep-2022		Analyzed: 29-Sep-2022 21:25			
Vinyl Chloride	9.96	0.10	ug/L	10.0	ND	99.6	66-133	3.86	30	
Bromomethane	10.6	1.00	ug/L	10.0	ND	106	72-131	5.73	30	
Chloroethane	10.7	0.20	ug/L	10.0	ND	107	60-155	5.22	30	
Trichlorofluoromethane	11.5	0.20	ug/L	10.0	ND	115	62-141	2.83	30	
Acrolein	48.3	5.00	ug/L	50.0	ND	96.5	52-190	3.20	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.6	0.20	ug/L	10.0	ND	106	76-129	6.88	30	
Acetone	56.8	5.00	ug/L	50.0	ND	104	58-142	9.66	30	
1,1-Dichloroethene	11.1	0.20	ug/L	10.0	ND	111	69-135	5.82	30	
Iodomethane	10.4	1.00	ug/L	10.0	ND	104	56-147	5.27	30	
Methylene Chloride	10.4	1.00	ug/L	10.0	ND	104	65-135	4.26	30	
Acrylonitrile	8.45	1.00	ug/L	10.0	ND	84.5	64-134	7.78	30	
Carbon Disulfide	11.0	0.20	ug/L	10.0	ND	110	78-125	6.51	30	
trans-1,2-Dichloroethene	10.0	0.20	ug/L	10.0	ND	100	78-128	4.82	30	
Vinyl Acetate	6.56	0.20	ug/L	10.0	ND	65.6	55-138	2.46	30	
1,1-Dichloroethane	10.3	0.20	ug/L	10.0	ND	103	76-124	3.48	30	
2-Butanone	51.3	5.00	ug/L	50.0	ND	103	61-140	6.51	30	
2,2-Dichloropropane	8.36	0.20	ug/L	10.0	ND	83.6	66-147	4.66	30	
cis-1,2-Dichloroethene	10.3	0.20	ug/L	10.0	ND	103	80-121	2.80	30	
Chloroform	10.4	0.20	ug/L	10.0	ND	104	80-122	4.00	30	
Bromochloromethane	10.3	0.20	ug/L	10.0	ND	103	80-121	2.37	30	
1,1,1-Trichloroethane	10.3	0.20	ug/L	10.0	ND	103	79-123	3.62	30	
1,1-Dichloropropene	10.3	0.10	ug/L	10.0	ND	103	80-127	3.67	30	
Carbon tetrachloride	9.97	0.20	ug/L	10.0	ND	99.7	53-137	3.89	30	
1,2-Dichloroethane	10.6	0.20	ug/L	10.0	ND	106	75-123	3.92	30	
Benzene	10.6	0.20	ug/L	10.0	ND	106	80-120	4.15	30	
Trichloroethene	9.79	0.20	ug/L	10.0	ND	97.9	80-120	1.46	30	
1,2-Dichloropropane	10.1	0.20	ug/L	10.0	ND	101	80-120	2.45	30	
Bromodichloromethane	10.3	0.20	ug/L	10.0	ND	103	80-121	2.24	30	
Dibromomethane	10.1	0.20	ug/L	10.0	ND	101	80-120	3.12	30	
2-Chloroethyl vinyl ether	ND	1.00	ug/L	10.0	ND		64-120			*, U
4-Methyl-2-Pentanone	57.1	2.50	ug/L	50.0	ND	114	67-133	4.25	30	
cis-1,3-Dichloropropene	10.1	0.20	ug/L	10.0	ND	101	80-124	4.27	30	
Toluene	10.3	0.20	ug/L	10.0	ND	103	80-120	3.86	30	
trans-1,3-Dichloropropene	10.7	0.20	ug/L	10.0	ND	107	71-127	3.56	30	
2-Hexanone	56.8	5.00	ug/L	50.0	ND	114	69-133	0.80	30	



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKI0680-MSD1)										
		Source: 2210454-03			Prepared: 29-Sep-2022		Analyzed: 29-Sep-2022 21:25			
1,1,2-Trichloroethane	10.4	0.20	ug/L	10.0	ND	104	80-121	2.91	30	
1,3-Dichloropropane	10.4	0.10	ug/L	10.0	ND	104	80-120	3.44	30	
Tetrachloroethene	10.2	0.20	ug/L	10.0	ND	102	80-120	2.99	30	
Dibromochloromethane	10.2	0.20	ug/L	10.0	ND	102	65-135	2.15	30	
1,2-Dibromoethane	10.3	0.10	ug/L	10.0	ND	103	80-121	5.52	30	
Chlorobenzene	10.3	0.20	ug/L	10.0	ND	103	80-120	2.45	30	
Ethylbenzene	10.6	0.20	ug/L	10.0	ND	106	80-120	2.58	30	
1,1,1,2-Tetrachloroethane	10.3	0.20	ug/L	10.0	ND	103	80-120	3.04	30	
m,p-Xylene	22.5	0.40	ug/L	20.0	ND	112	80-121	4.23	30	
o-Xylene	10.3	0.20	ug/L	10.0	ND	103	80-121	3.19	30	
Xylenes, total	32.7	0.60	ug/L	30.0	ND	109	76-127	3.91	30	
Styrene	9.87	0.20	ug/L	10.0	ND	98.7	80-124	4.54	30	
Bromoform	8.84	0.20	ug/L	10.0	ND	88.4	51-134	4.68	30	
1,1,2,2-Tetrachloroethane	10.2	0.20	ug/L	10.0	ND	102	77-123	6.15	30	
1,2,3-Trichloropropane	10.0	0.25	ug/L	10.0	ND	100	76-125	5.04	30	
trans-1,4-Dichloro 2-Butene	8.63	1.00	ug/L	10.0	ND	86.3	55-129	5.37	30	
n-Propylbenzene	11.5	0.20	ug/L	10.0	ND	115	78-130	3.56	30	
Bromobenzene	10.1	0.20	ug/L	10.0	ND	101	80-120	3.32	30	
Isopropyl Benzene	10.8	0.20	ug/L	10.0	ND	108	80-128	0.68	30	
2-Chlorotoluene	10.8	0.10	ug/L	10.0	ND	108	78-122	1.82	30	
4-Chlorotoluene	11.1	0.20	ug/L	10.0	ND	111	80-121	2.02	30	
t-Butylbenzene	11.5	0.20	ug/L	10.0	ND	115	78-125	0.36	30	
1,3,5-Trimethylbenzene	12.0	0.20	ug/L	10.0	ND	120	80-129	2.86	30	
1,2,4-Trimethylbenzene	10.8	0.20	ug/L	10.0	ND	108	80-127	3.24	30	
s-Butylbenzene	11.8	0.20	ug/L	10.0	ND	118	78-129	1.81	30	
4-Isopropyl Toluene	10.5	0.20	ug/L	10.0	ND	105	79-130	2.41	30	
1,3-Dichlorobenzene	10.7	0.20	ug/L	10.0	ND	107	80-120	3.29	30	
1,4-Dichlorobenzene	10.2	0.20	ug/L	10.0	ND	102	80-120	2.96	30	
n-Butylbenzene	12.3	0.20	ug/L	10.0	ND	123	74-129	0.44	30	
1,2-Dichlorobenzene	10.2	0.20	ug/L	10.0	ND	102	80-120	4.23	30	
1,2-Dibromo-3-chloropropane	10.2	0.50	ug/L	10.0	ND	102	62-123	3.98	30	
1,2,4-Trichlorobenzene	10.7	0.50	ug/L	10.0	ND	107	64-124	0.67	30	
Hexachloro-1,3-Butadiene	11.2	0.50	ug/L	10.0	ND	112	58-123	5.96	30	
Naphthalene	9.96	0.50	ug/L	10.0	ND	99.6	50-134	0.74	30	
1,2,3-Trichlorobenzene	11.1	0.50	ug/L	10.0	ND	111	49-133	1.11	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-Nov-2022 18:04
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKI0680-MSD1)		Source: 22I0454-03		Prepared: 29-Sep-2022		Analyzed: 29-Sep-2022 21:25				
Dichlorodifluoromethane	12.0	0.20	ug/L	10.0	ND	120	48-147	3.64	30	
Surrogate: 1,2-Dichloroethane-d4	5.20		ug/L	5.00	5.68	104	80-129			
Surrogate: Toluene-d8	4.99		ug/L	5.00	4.69	99.7	80-120			
Surrogate: 4-Bromofluorobenzene	4.94		ug/L	5.00	4.43	98.7	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.01		ug/L	5.00	5.05	100	80-120			

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



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

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

Reported:
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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKJ0008 - EPA 8270E-SIM

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0008-BLK1)				Prepared: 03-Oct-2022 Analyzed: 07-Oct-2022 12:08						
1,4-Dioxane	ND	0.4	ug/L							U
<i>Surrogate: 1,4-Dioxane-d8</i>	5.84		ug/L	10.0	58.4		33.6-120			
LCS (BKJ0008-BS1)				Prepared: 03-Oct-2022 Analyzed: 07-Oct-2022 12:33						
1,4-Dioxane	7.5	0.4	ug/L	10.0	74.5		39.9-120			
<i>Surrogate: 1,4-Dioxane-d8</i>	5.89		ug/L	10.0	58.9		33.6-120			
LCS Dup (BKJ0008-BS1)				Prepared: 03-Oct-2022 Analyzed: 07-Oct-2022 12:59						
1,4-Dioxane	7.9	0.4	ug/L	10.0	79.0		39.9-120	5.80	30	
<i>Surrogate: 1,4-Dioxane-d8</i>	6.00		ug/L	10.0	60.0		33.6-120			
Matrix Spike (BKJ0008-MS1)				Source: 2210454-03		Prepared: 03-Oct-2022 Analyzed: 07-Oct-2022 14:41				
1,4-Dioxane	9.3	0.4	ug/L	10.0	2.1	71.5	35.1-120			
<i>Surrogate: 1,4-Dioxane-d8</i>	6.80		ug/L	10.0	5.42	68.0	33.6-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKJ0008-MSD1)				Source: 2210454-03		Prepared: 03-Oct-2022 Analyzed: 07-Oct-2022 15:06				
1,4-Dioxane	9.1	0.4	ug/L	10.0	2.1	69.8	35.1-120	1.90	30	
<i>Surrogate: 1,4-Dioxane-d8</i>	5.55		ug/L	10.0	5.42	55.5	33.6-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKI0666 - NWTPH-HCID

Instrument: FID3 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0666-BLK1)		Prepared: 01-Oct-2022 Analyzed: 03-Oct-2022 18:25								
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	87.5		50-150			
Surrogate: <i>n</i> -Triacontane	0.267		mg/L	0.225	119		50-150			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0020 - 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 (BKJ0020-BLK1)										
					Prepared: 03-Oct-2022 Analyzed: 04-Oct-2022 13:24					
Mercury	ND	0.00100	mg/L							U
LCS (BKJ0020-BS1)										
					Prepared: 03-Oct-2022 Analyzed: 04-Oct-2022 13:27					
Mercury	0.00192	0.00100	mg/L	0.00200		96.1	80-120			
Duplicate (BKJ0020-DUP1)										
		Source: 22I0454-03		Prepared: 03-Oct-2022 Analyzed: 04-Oct-2022 13:31						
Mercury	ND	0.00100	mg/L		ND					U
Matrix Spike (BKJ0020-MS1)										
		Source: 22I0454-03		Prepared: 03-Oct-2022 Analyzed: 04-Oct-2022 13:34						
Mercury	ND	0.00100	mg/L	0.00100	ND	94.1	75-125			U
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKJ0020-MSD1)										
		Source: 22I0454-03		Prepared: 03-Oct-2022 Analyzed: 04-Oct-2022 13:41						
Mercury	ND	0.00100	mg/L	0.00100	ND	90.4	75-125			U
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 23-Nov-2022 18:04
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0158 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0158-BLK1)										
Prepared: 07-Oct-2022 Analyzed: 12-Oct-2022 15:16										
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
Sodium	ND	50.0	mg/L							U
Vanadium	ND	0.0030	mg/L							U
Zinc	ND	0.0200	mg/L							U

LCS (BKJ0158-BS1)										
Prepared: 07-Oct-2022 Analyzed: 12-Oct-2022 15:19										
Aluminum	2.15	1.00	mg/L	2.00		108	80-120			
Barium	2.05	0.500	mg/L	2.00		102	80-120			
Beryllium	0.501	0.0100	mg/L	0.500		100	80-120			
Cadmium	0.561	0.0020	mg/L	0.500		112	80-120			
Calcium	9.90	0.500	mg/L	10.0		99.0	80-120			
Chromium	0.507	0.0100	mg/L	0.500		101	80-120			
Cobalt	0.544	0.0100	mg/L	0.500		109	80-120			
Copper	0.483	0.0030	mg/L	0.500		96.7	80-120			
Iron	1.95	0.200	mg/L	2.00		97.7	80-120			
Magnesium	11.1	0.500	mg/L	10.0		111	80-120			
Manganese	0.522	0.0100	mg/L	0.500		104	80-120			
Nickel	0.518	0.0100	mg/L	0.500		104	80-120			
Potassium	10.5	0.500	mg/L	10.0		105	80-120			
Silver	0.523	0.0050	mg/L	0.500		105	80-120			
Sodium	10.3	0.500	mg/L	10.0		103	80-120			



Golder Associates
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Redmond WA, 98052-3333

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

Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0158 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKJ0158-BS1)		Prepared: 07-Oct-2022 Analyzed: 12-Oct-2022 15:19								
Sodium	ND	50.0	mg/L	10.0		111	80-120			U
Vanadium	0.499	0.0030	mg/L	0.500		99.8	80-120			
Zinc	0.506	0.0200	mg/L	0.500		101	80-120			
Duplicate (BKJ0158-DUP1)		Source: 22I0454-03 Prepared: 07-Oct-2022 Analyzed: 12-Oct-2022 15:38								
Aluminum	ND	1.00	mg/L		ND					U
Barium	ND	0.500	mg/L		ND					U
Beryllium	ND	0.0100	mg/L		ND					U
Cadmium	ND	0.0020	mg/L		ND					U
Calcium	109	0.500	mg/L		117			6.43	20	
Chromium	ND	0.0100	mg/L		ND					U
Cobalt	ND	0.0100	mg/L		ND					U
Copper	ND	0.0030	mg/L		ND					U
Iron	ND	0.200	mg/L		ND					U
Magnesium	68.6	0.500	mg/L		73.1			6.33	20	
Manganese	0.207	0.0100	mg/L		0.224			7.75	20	
Nickel	ND	0.0100	mg/L		ND					U
Potassium	3.62	0.500	mg/L		3.88			7.11	20	
Silver	ND	0.0050	mg/L		ND					U
Sodium	19.8	0.500	mg/L		21.3			7.07	20	
Vanadium	ND	0.0030	mg/L		ND					U
Zinc	ND	0.0200	mg/L		ND					U
Matrix Spike (BKJ0158-MS1)		Source: 22I0454-03 Prepared: 07-Oct-2022 Analyzed: 12-Oct-2022 15:41								
Aluminum	2.14	1.00	mg/L	2.00	ND	107	75-125			
Barium	2.41	0.500	mg/L	2.00	ND	101	75-125			
Beryllium	0.505	0.0100	mg/L	0.500	ND	101	75-125			
Cadmium	0.568	0.0020	mg/L	0.500	ND	114	75-125			
Calcium	124	0.500	mg/L	10.0	117	77.1	75-125			
Chromium	0.510	0.0100	mg/L	0.500	ND	102	75-125			
Cobalt	0.526	0.0100	mg/L	0.500	ND	105	75-125			
Copper	0.478	0.0030	mg/L	0.500	ND	95.5	75-125			
Iron	2.08	0.200	mg/L	2.00	ND	98.7	75-125			
Magnesium	80.0	0.500	mg/L	10.0	73.1	69.6	75-125			HC
Manganese	0.734	0.0100	mg/L	0.500	0.224	102	75-125			



Golder Associates
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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0158 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKJ0158-MS1)										
		Source: 2210454-03			Prepared: 07-Oct-2022		Analyzed: 12-Oct-2022 15:41			
Nickel	0.508	0.0100	mg/L	0.500	ND	102	75-125			
Potassium	14.3	0.500	mg/L	10.0	3.88	104	75-125			
Silver	0.320	0.0050	mg/L	0.500	ND	64.1	75-125			*
Sodium	31.7	0.500	mg/L	10.0	21.3	105	75-125			
Vanadium	0.502	0.0030	mg/L	0.500	ND	100	75-125			
Zinc	0.509	0.0200	mg/L	0.500	ND	102	75-125			

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

Matrix Spike Dup (BKJ0158-MSD1)										
		Source: 2210454-03			Prepared: 07-Oct-2022		Analyzed: 12-Oct-2022 15:45			
Aluminum	2.08	1.00	mg/L	2.00	ND	104	75-125	2.71	20	
Barium	2.34	0.500	mg/L	2.00	ND	96.7	75-125	3.23	20	
Beryllium	0.491	0.0100	mg/L	0.500	ND	98.2	75-125	2.84	20	
Cadmium	0.547	0.0020	mg/L	0.500	ND	109	75-125	3.73	20	
Calcium	119	0.500	mg/L	10.0	117	18.4	75-125	4.83	20	HC
Chromium	0.500	0.0100	mg/L	0.500	ND	100	75-125	1.96	20	
Cobalt	0.506	0.0100	mg/L	0.500	ND	101	75-125	3.94	20	
Copper	0.463	0.0030	mg/L	0.500	ND	92.5	75-125	3.20	20	
Iron	2.01	0.200	mg/L	2.00	ND	94.9	75-125	3.74	20	
Magnesium	76.5	0.500	mg/L	10.0	73.1	34.1	75-125	4.53	20	HC
Manganese	0.705	0.0100	mg/L	0.500	0.224	96.2	75-125	4.03	20	
Nickel	0.496	0.0100	mg/L	0.500	ND	99.3	75-125	2.33	20	
Potassium	13.8	0.500	mg/L	10.0	3.88	99.4	75-125	3.42	20	
Silver	0.317	0.0050	mg/L	0.500	ND	63.4	75-125	1.06	20	*
Sodium	30.3	0.500	mg/L	10.0	21.3	90.7	75-125	4.55	20	
Vanadium	0.486	0.0030	mg/L	0.500	ND	97.2	75-125	3.26	20	
Zinc	0.488	0.0200	mg/L	0.500	ND	97.5	75-125	4.21	20	

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



Golder Associates
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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
23-Nov-2022 18:04

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0239 - EPA 200.8

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0239-BLK1)						Prepared: 10-Oct-2022 Analyzed: 11-Oct-2022 19:00					
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 (BKJ0239-BS1)						Prepared: 10-Oct-2022 Analyzed: 11-Oct-2022 19:05					
Antimony	121	0.0258	0.00300	mg/L	0.0250		103	80-120			
Lead	208	0.0242	0.0100	mg/L	0.0250		96.9	80-120			
Arsenic	75a	0.0246	0.00300	mg/L	0.0250		98.4	80-120			
Selenium	78	0.0788	0.0250	mg/L	0.0800		98.4	80-120			

Duplicate (BKJ0239-DUP2)						Source: 2210454-03 Prepared: 10-Oct-2022 Analyzed: 12-Oct-2022 05:12					
Antimony	121	ND	0.00300	mg/L		ND					U
Lead	208	ND	0.0100	mg/L		ND					U
Arsenic	75a	ND	0.00300	mg/L		ND					U
Selenium	78	ND	0.0250	mg/L		ND					L, U

Duplicate (BKJ0239-DUP4)						Source: 2210454-03 Prepared: 10-Oct-2022 Analyzed: 12-Oct-2022 22:42					
Thallium	205	ND	0.00200	mg/L		ND					U

Matrix Spike (BKJ0239-MS2)						Source: 2210454-03 Prepared: 10-Oct-2022 Analyzed: 12-Oct-2022 05:17					
Antimony	121	0.0259	0.00300	mg/L	0.0250	ND	103	75-125			
Lead	208	0.0202	0.0100	mg/L	0.0250	ND	80.9	75-125			
Arsenic	75a	0.0245	0.00300	mg/L	0.0250	ND	98.1	75-125			
Selenium	78	0.0752	0.0250	mg/L	0.0800	ND	93.7	75-125			

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

Matrix Spike Dup (BKJ0239-MSD2)						Source: 2210454-03 Prepared: 10-Oct-2022 Analyzed: 12-Oct-2022 05:23					
Antimony	121	0.0252	0.00300	mg/L	0.0250	ND	101	75-125	2.54	20	
Lead	208	0.0203	0.0100	mg/L	0.0250	ND	81.0	75-125	0.10	20	
Arsenic	75a	0.0255	0.00300	mg/L	0.0250	ND	102	75-125	4.03	20	
Selenium	78	0.0779	0.0250	mg/L	0.0800	ND	97.2	75-125	3.64	20	

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

Matrix Spike Dup (BKJ0239-MSD4)						Source: 2210454-03 Prepared: 10-Oct-2022 Analyzed: 12-Oct-2022 22:53					
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0239 - EPA 200.8

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKJ0239-MSD4)			Source: 22I0454-03		Prepared: 10-Oct-2022		Analyzed: 12-Oct-2022 22:53				
Thallium	205	0.0230	0.00200	mg/L	0.0250	ND	92.0	75-125			

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



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

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

Reported:
23-Nov-2022 18:04

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Thallium-205	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Selenium-78	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 6010D in Water	
Silver	WADOE,NELAP,DoD-ELAP
Aluminum	WADOE,NELAP,DoD-ELAP
Barium	WADOE,NELAP,DoD-ELAP,ADEC
Beryllium	WADOE,NELAP,DoD-ELAP
Calcium	WADOE,NELAP,DoD-ELAP
Cadmium	WADOE,NELAP,DoD-ELAP,ADEC
Cobalt	WADOE,NELAP,DoD-ELAP
Chromium	WADOE,NELAP,DoD-ELAP,ADEC
Copper	WADOE,NELAP,DoD-ELAP
Iron	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Magnesium	WADOE,NELAP,DoD-ELAP
Manganese	WADOE,NELAP,DoD-ELAP
Sodium	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
EPA 7470A in Water	
Mercury	WADOE,NELAP,DoD-ELAP
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
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



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1,1,2-Trichloro-1,2,2-Trifluoroethane	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
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



Golder Associates
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Redmond WA, 98052-3333

Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
23-Nov-2022 18:04

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
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
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8270E-SIM in Water

1,4-Dioxane	WADOE,NELAP,DoD-ELAP
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NWTPH-HCID in Water

Gasoline Range Organics (Tol-C12)	NELAP,DoD-ELAP,WADOE
Diesel Range Organics (C12-C24)	NELAP,DoD-ELAP,WADOE
Motor Oil Range Organics (C24-C38)	NELAP,DoD-ELAP,WADOE



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 23-Nov-2022 18:04
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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023



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

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

Reported:
23-Nov-2022 18:04

Notes and Definitions

- * Flagged value is not within established control limits.
- 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.



Analytical Resources, LLC
Analytical Chemists and Consultants

21 October 2022

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)
2210457

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 enclosed 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: 2210457		Turn-around Requested: Standard			Date: 9/27/22				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: Golder		Phone: 425-883-0777			Page: 1 of 1								
Client Contact: Gary Zimmerman/Autumn Pearson					No. of Coolers: 3								Cooler Temps: 0.4° 4.5° 6.9°
Client Project Name: Landsburg 2022 Q3 Sampling					Analysis Requested						Notes/Comments		
Client Project #: 923100007.2021		Samplers: AP+ SJ			VOCs	1,4-Dioxane	Total Priority Metal	TPH-HCID (NWTPH)	TPH-DX (HOLD)	TPH-Gx (HOLD)			
Sample ID	Date	Time	Matrix	No. Containers									
LMW-10-0922	9/27/22	0935	W	12	X	X	X	X	X	X			
LMW-6-0922	↓	1055	↓	10	X		X	X	X	X			
LMW-15-0922	↓	1225	↓	10	X		X	X	X	X			
LMW-11-0922	↓	1340	↓	10	X		X	X	X	X			
LMW-FB-0922	↓	1400	↓	12	X	X	X	X	X	X			
TRIP BLANKS	—	—	↓	3	X								
Comments/Special Instructions HOLD TPH FOLLOW-UPS. CLIENT SPECIFIC RLs/Analyte List					Relinquished by: (Signature) 		Received by: (Signature) 		Relinquished by: (Signature)		Received by: (Signature)		
					Printed Name: SEAN JOHNSON		Printed Name: Roman Miller		Printed Name:		Printed Name:		
					Company: GOLDER		Company: ARI		Company:		Company:		
					Date & Time: 9/27/22 15:32		Date & Time: 9/27/22 1532		Date & Time:		Date & Time:		

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, 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:
21-Oct-2022 14:41

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
LMW-10-0922	2210457-01	Water	27-Sep-2022 09:35	27-Sep-2022 15:32
LMW-6-0922	2210457-02	Water	27-Sep-2022 10:55	27-Sep-2022 15:32
LMW-15-0922	2210457-03	Water	27-Sep-2022 12:25	27-Sep-2022 15:32
LMW-11-0922	2210457-04	Water	27-Sep-2022 13:40	27-Sep-2022 15:32
LMW-FB-0922	2210457-05	Water	27-Sep-2022 09:35	27-Sep-2022 15:32
Trip Blanks	2210457-06	Water	27-Sep-2022 00:00	27-Sep-2022 15:32



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

Reported:
21-Oct-2022 14:41

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 with the exception of analytes flagged on the associated forms.

1,4-Dioxane- EPA Method SW8270E

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

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

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

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

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

Initial and continuing calibrations were within method requirements.

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

The 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.



Golder Associates

18300 NE Union Hill Road Suite 200

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Project: Landsburg

Project Number: Landsburg

Project Manager: Gary Zimmerman

Reported:

21-Oct-2022 14:41

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.

The surrogate percent recoveries were within control limits.

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



WORK ORDER

22I0457

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

Report To:

Golder Associates
Gary Zimmerman
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333
Phone: 425-883-0777
Fax: -

Invoice To:

Golder Associates
Gary Zimmerman
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333
Phone :425-883-0777
Fax: -

Date Due: 13-Oct-2022 18:00 (10 day TAT)

Received By: Rowan Miller

Date Received: 27-Sep-2022 15:32

Logged In By: Phillip Bates

Date Logged In: 28-Sep-2022 16:11

Samples Received at: **0.4°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s).....	No	Custody papers included with the cooler.....	Yes
Custody papers properly filled out(in, signed, analyses requested, etc).....	Yes	Was a temperature blank included in the cooler.....	No
Was sufficient ice used (if appropriate).....	Yes	All bottles sealed in individual plastic bags.....	No
All bottles arrived in good condition(unbroken).....	Yes	All bottle labels complete and legible.....	Yes
Number of containers listed on COC match number received.....	No	Bottle labels and tags agree with COC.....	Yes
Correct bottles used for the requested analyses.....	Yes	All VOC vials free of air bubbles.....	Yes
Analyses/bottles require preservation(attach preservation sheet excluding VOC).....	Yes	Sufficient amount of sample sent in each bottle.....	Yes
Sample split at ARI.....	No		



WORK ORDER

22I0457

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

Analysis	Due	TAT	Expires	Comments
22I0457-01 LMW-10-0922 [Water] Sampled 27-Sep-2022 09:35				For follow ups only
8260D Gas (NWTPH)	10/13/2022	10	10/11/2022	
8260D VOA	10/13/2022	10	10/11/2022	
8270E-SIM 1,4-Dioxane (Low Level Water)	10/13/2022	10	10/4/2022	
Met 200.8 - As UCT	10/13/2022	10	3/26/2023	
Met 200.8 - Pb	10/13/2022	10	3/26/2023	
Met 200.8 - Sb	10/13/2022	10	3/26/2023	
Met 200.8 - Se UCT	10/13/2022	10	3/26/2023	
Met 200.8 - Tl	10/13/2022	10	3/26/2023	
Met 6010D - Ag	10/13/2022	10	3/26/2023	
Met 6010D - Al	10/13/2022	10	3/26/2023	
Met 6010D - Ba	10/13/2022	10	3/26/2023	
Met 6010D - Be	10/13/2022	10	3/26/2023	
Met 6010D - Ca	10/13/2022	10	3/26/2023	
Met 6010D - Cd	10/13/2022	10	3/26/2023	
Met 6010D - Co	10/13/2022	10	3/26/2023	
Met 6010D - Cr	10/13/2022	10	3/26/2023	
Met 6010D - Cu	10/13/2022	10	3/26/2023	
Met 6010D - Fe	10/13/2022	10	3/26/2023	
Met 6010D - K	10/13/2022	10	3/26/2023	
Met 6010D - Mg	10/13/2022	10	3/26/2023	
Met 6010D - Mn	10/13/2022	10	3/26/2023	
Met 6010D - Na	10/13/2022	10	3/26/2023	
Met 6010D - Ni	10/13/2022	10	3/26/2023	
Met 6010D - V	10/13/2022	10	3/26/2023	
Met 6010D - Zn	10/13/2022	10	3/26/2023	
Met 7470A Hg	10/13/2022	10	10/25/2022	
TPH NW (Extractables) low level	10/13/2022	10	10/4/2022	
TPH_NW HClD	10/13/2022	10	10/4/2022	
22I0457-02 LMW-6-0922 [Water] Sampled 27-Sep-2022 10:55				For follow ups only
8260D Gas (NWTPH)	10/13/2022	10	10/11/2022	
8260D VOA	10/13/2022	10	10/11/2022	
Met 200.8 - As UCT	10/13/2022	10	3/26/2023	
Met 200.8 - Pb	10/13/2022	10	3/26/2023	
Met 200.8 - Sb	10/13/2022	10	3/26/2023	
Met 200.8 - Se UCT	10/13/2022	10	3/26/2023	
Met 200.8 - Tl	10/13/2022	10	3/26/2023	
Met 6010D - Ag	10/13/2022	10	3/26/2023	



WORK ORDER

22I0457

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

Analysis	Due	TAT	Expires	Comments
Met 6010D - Al	10/13/2022	10	3/26/2023	
Met 6010D - Ba	10/13/2022	10	3/26/2023	
Met 6010D - Be	10/13/2022	10	3/26/2023	
Met 6010D - Ca	10/13/2022	10	3/26/2023	
Met 6010D - Cd	10/13/2022	10	3/26/2023	
Met 6010D - Co	10/13/2022	10	3/26/2023	
Met 6010D - Cr	10/13/2022	10	3/26/2023	
Met 6010D - Cu	10/13/2022	10	3/26/2023	
Met 6010D - Fe	10/13/2022	10	3/26/2023	
Met 6010D - K	10/13/2022	10	3/26/2023	
Met 6010D - Mg	10/13/2022	10	3/26/2023	
Met 6010D - Mn	10/13/2022	10	3/26/2023	
Met 6010D - Na	10/13/2022	10	3/26/2023	
Met 6010D - Ni	10/13/2022	10	3/26/2023	
Met 6010D - V	10/13/2022	10	3/26/2023	
Met 6010D - Zn	10/13/2022	10	3/26/2023	
Met 7470A Hg	10/13/2022	10	10/25/2022	
TPH NW (Extractables) low level	10/13/2022	10	10/4/2022	
TPH_NW HClD	10/13/2022	10	10/4/2022	

22I0457-03 LMW-15-0922 [Water] Sampled 27-Sep-2022 12:25 For follow ups only

8260D Gas (NWTPH)	10/13/2022	10	10/11/2022	
8260D VOA	10/13/2022	10	10/11/2022	
Met 200.8 - As UCT	10/13/2022	10	3/26/2023	
Met 200.8 - Pb	10/13/2022	10	3/26/2023	
Met 200.8 - Sb	10/13/2022	10	3/26/2023	
Met 200.8 - Se UCT	10/13/2022	10	3/26/2023	
Met 200.8 - Tl	10/13/2022	10	3/26/2023	
Met 6010D - Ag	10/13/2022	10	3/26/2023	
Met 6010D - Al	10/13/2022	10	3/26/2023	
Met 6010D - Ba	10/13/2022	10	3/26/2023	
Met 6010D - Be	10/13/2022	10	3/26/2023	
Met 6010D - Ca	10/13/2022	10	3/26/2023	
Met 6010D - Cd	10/13/2022	10	3/26/2023	
Met 6010D - Co	10/13/2022	10	3/26/2023	
Met 6010D - Cr	10/13/2022	10	3/26/2023	
Met 6010D - Cu	10/13/2022	10	3/26/2023	
Met 6010D - Fe	10/13/2022	10	3/26/2023	
Met 6010D - K	10/13/2022	10	3/26/2023	

Reviewed By _____

Date _____



WORK ORDER

22I0457

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

Analysis	Due	TAT	Expires	Comments
8260D Gas (NWTPH)	10/13/2022	10	10/11/2022	
8260D VOA	10/13/2022	10	10/11/2022	
8270E-SIM 1,4-Dioxane (Low Level Water)	10/13/2022	10	10/4/2022	
Met 200.8 - As UCT	10/13/2022	10	3/26/2023	
Met 200.8 - Pb	10/13/2022	10	3/26/2023	
Met 200.8 - Sb	10/13/2022	10	3/26/2023	
Met 200.8 - Se UCT	10/13/2022	10	3/26/2023	
Met 200.8 - Tl	10/13/2022	10	3/26/2023	
Met 6010D - Ag	10/13/2022	10	3/26/2023	
Met 6010D - Al	10/13/2022	10	3/26/2023	
Met 6010D - Ba	10/13/2022	10	3/26/2023	
Met 6010D - Be	10/13/2022	10	3/26/2023	
Met 6010D - Ca	10/13/2022	10	3/26/2023	
Met 6010D - Cd	10/13/2022	10	3/26/2023	
Met 6010D - Co	10/13/2022	10	3/26/2023	
Met 6010D - Cr	10/13/2022	10	3/26/2023	
Met 6010D - Cu	10/13/2022	10	3/26/2023	
Met 6010D - Fe	10/13/2022	10	3/26/2023	
Met 6010D - K	10/13/2022	10	3/26/2023	
Met 6010D - Mg	10/13/2022	10	3/26/2023	
Met 6010D - Mn	10/13/2022	10	3/26/2023	
Met 6010D - Na	10/13/2022	10	3/26/2023	
Met 6010D - Ni	10/13/2022	10	3/26/2023	
Met 6010D - V	10/13/2022	10	3/26/2023	
Met 6010D - Zn	10/13/2022	10	3/26/2023	
Met 7470A Hg	10/13/2022	10	10/25/2022	
TPH NW (Extractables) low level	10/13/2022	10	10/4/2022	
TPH_NW HClD	10/13/2022	10	10/4/2022	

22I0457-06 Trip Blanks [Water] Sampled 27-Sep-2022 00:00

Version

8260D VOA	10/13/2022	10	10/11/2022
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WORK ORDER

22I0457

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
22I0457-01 A	Glass NM, Amber, 500 mL	
22I0457-01 B	Glass NM, Amber, 500 mL	
22I0457-01 C	Glass NM, Amber, 500 mL	
22I0457-01 D	Glass NM, Amber, 500 mL	
22I0457-01 E	HDPE NM, 500 mL, 1:1 HNO3	C2 PDZZ Pass
22I0457-01 F	VOA Vial, Clear, 40 mL, HCL	
22I0457-01 G	VOA Vial, Clear, 40 mL, HCL	
22I0457-01 H	VOA Vial, Clear, 40 mL, HCL	
22I0457-01 I	VOA Vial, Clear, 40 mL, HCL	
22I0457-01 J	VOA Vial, Clear, 40 mL, HCL	
22I0457-02 A	Glass NM, Amber, 500 mL	
22I0457-02 B	Glass NM, Amber, 500 mL	
22I0457-02 C	Glass NM, Amber, 500 mL	
22I0457-02 D	Glass NM, Amber, 500 mL	
22I0457-02 E	HDPE NM, 500 mL, 1:1 HNO3	C2 Pass
22I0457-02 F	VOA Vial, Clear, 40 mL, HCL	
22I0457-02 G	VOA Vial, Clear, 40 mL, HCL	
22I0457-02 H	VOA Vial, Clear, 40 mL, HCL	
22I0457-02 I	VOA Vial, Clear, 40 mL, HCL	
22I0457-02 J	VOA Vial, Clear, 40 mL, HCL	
22I0457-03 A	Glass NM, Amber, 500 mL	
22I0457-03 B	Glass NM, Amber, 500 mL	
22I0457-03 C	Glass NM, Amber, 500 mL	
22I0457-03 D	Glass NM, Amber, 500 mL	
22I0457-03 E	HDPE NM, 500 mL, 1:1 HNO3	C2 Pass
22I0457-03 F	VOA Vial, Clear, 40 mL, HCL	
22I0457-03 G	VOA Vial, Clear, 40 mL, HCL	
22I0457-03 H	VOA Vial, Clear, 40 mL, HCL	
22I0457-03 I	VOA Vial, Clear, 40 mL, HCL	
22I0457-03 J	VOA Vial, Clear, 40 mL, HCL	
22I0457-04 A	Glass NM, Amber, 500 mL	
22I0457-04 B	Glass NM, Amber, 500 mL	
22I0457-04 C	Glass NM, Amber, 500 mL	
22I0457-04 D	Glass NM, Amber, 500 mL	



WORK ORDER

22I0457

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

22I0457-04 E	HDPE NM, 500 mL, 1:1 HNO3	LR pass
22I0457-04 F	VOA Vial, Clear, 40 mL, HCL	
22I0457-04 G	VOA Vial, Clear, 40 mL, HCL	
22I0457-04 H	VOA Vial, Clear, 40 mL, HCL	
22I0457-04 I	VOA Vial, Clear, 40 mL, HCL	
22I0457-04 J	VOA Vial, Clear, 40 mL, HCL	
22I0457-05 A	Glass NM, Amber, 500 mL	
22I0457-05 B	Glass NM, Amber, 500 mL	
22I0457-05 C	Glass NM, Amber, 500 mL	
22I0457-05 D	Glass NM, Amber, 500 mL	
22I0457-05 E	HDPE NM, 500 mL, 1:1 HNO3	LR pass
22I0457-05 F	VOA Vial, Clear, 40 mL, HCL	
22I0457-05 G	VOA Vial, Clear, 40 mL, HCL	
22I0457-05 H	VOA Vial, Clear, 40 mL, HCL	
22I0457-05 I	VOA Vial, Clear, 40 mL, HCL	
22I0457-05 J	VOA Vial, Clear, 40 mL, HCL	
22I0457-05 K	Glass NM, Amber, 500 mL	
22I0457-05 L	Glass NM, Amber, 500 mL	
22I0457-06 A	VOA Vial, Clear, 40 mL, HCL	
22I0457-06 B	VOA Vial, Clear, 40 mL, HCL	
22I0457-06 C	VOA Vial, Clear, 40 mL, HCL	

PB

4/28/22

Preservation Confirmed By _____

Date _____



Cooler Receipt Form

ARI Client: Goldner
 COC No(s): _____ NA
 Assigned ARI Job No: 2210457

Project Name: Landburg 2022 Q3
 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 1532 0.4° 4.5° 1.9°
 If cooler temperature is out of compliance fill out form 00070F
 Cooler Accepted by: [Signature] Date: 4/27 Time: 1532 Temp Gun ID#: 4708

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
 Did all bottles arrive in good condition (unbroken)? YES NO
 Were all bottle labels complete and legible? YES NO
 Did the number of containers listed on COC match with the number of containers received? YES NO
 Did all bottle labels and tags agree with custody papers? YES NO
 Were all bottles used correct for the requested analyses? YES NO
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
 Were all VOC vials free of air bubbles? NA YES NO
 Was sufficient amount of sample sent in each bottle? YES NO
 Date VOC Trip Blank was made at ARI..... NA 9/10/22
 Were the sample(s) split by ARI? NA YES Date/Time: 16:11 Equipment: _____ Split by: _____
 Samples Logged by: PB Date: 4/28/22 Time: 16:11 Labels checked by: _____

**** 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:
21-Oct-2022 14:41

LMW-10-0922
22I0457-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 09:35

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 17:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0457-01 F

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	5.23	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



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

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

Reported:
21-Oct-2022 14:41

LMW-10-0922
22I0457-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 09:35

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 17:18

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	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: 21-Oct-2022 14:41
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LMW-10-0922
22I0457-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/27/2022 09:35
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 17:18

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	115	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	93.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	87.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	103	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 21-Oct-2022 14:41
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LMW-10-0922
22I0457-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/27/2022 09:35
Instrument: NT6 Analyst: JZ Analyzed: 10/07/2022 18:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 22I0457-01 B 01
Preparation Batch: BKJ0008 Sample Size: 500 mL
Prepared: 10/03/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.4	ND	ug/L	U
<i>Surrogate: 1,4-Dioxane-d8</i>			<i>33.6-120 %</i>	<i>60.4</i>	<i>%</i>	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 21-Oct-2022 14:41
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LMW-10-0922
22I0457-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/27/2022 09:35
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 22:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0457-01 A 01
Preparation Batch: BK10666 Sample Size: 500 mL
Prepared: 10/01/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	91.4	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	118	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 21-Oct-2022 14:41
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LMW-10-0922
22I0457-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/27/2022 09:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 06:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0457-01 E 01
Preparation Batch: BKJ0256 Sample Size: 25 mL
Prepared: 10/11/2022 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



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 21-Oct-2022 14:41
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LMW-10-0922
22I0457-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/27/2022 09:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 06:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0457-01 E 01
Preparation Batch: BKJ0256 Sample Size: 25 mL
Prepared: 10/11/2022 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



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 21-Oct-2022 14:41
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LMW-10-0922
22I0457-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/27/2022 09:35
Instrument: ICP2 Analyst: SKD Analyzed: 10/17/2022 18:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0457-01 E 02
Preparation Batch: BKJ0296 Sample Size: 25 mL
Prepared: 10/11/2022 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	6.81	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	3.28	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	1.25	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	50.0	94.6	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	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: 21-Oct-2022 14:41
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LMW-10-0922
22I0457-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/27/2022 09:35
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 13:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0457-01 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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:
21-Oct-2022 14:41

LMW-6-0922
22I0457-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 10:55

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 17:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0457-02 F

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



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

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

Reported:
21-Oct-2022 14:41

LMW-6-0922
22I0457-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 10:55

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 17:39

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-6-0922
22I0457-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/27/2022 10:55
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 17:39

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	120	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	94.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	84.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 21-Oct-2022 14:41
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LMW-6-0922
22I0457-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/27/2022 10:55
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 23:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0457-02 A 01
Preparation Batch: BK10666 Sample Size: 500 mL
Prepared: 10/01/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	91.0	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	118	%	



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

Reported:
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LMW-6-0922
22I0457-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 09/27/2022 10:55

Instrument: ICPMS1 Analyst: MCB

Analyzed: 10/12/2022 05:47

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22I0457-02 E 01

Preparation Batch: BKJ0256

Sample Size: 25 mL

Prepared: 10/11/2022

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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LMW-6-0922
22I0457-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/27/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 05:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0457-02 E 01
Preparation Batch: BKJ0256 Sample Size: 25 mL
Prepared: 10/11/2022 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:
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LMW-6-0922
22I0457-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/27/2022 10:55

Instrument: ICP2 Analyst: SKD

Analyzed: 10/17/2022 18:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BKJ0296
Prepared: 10/11/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22I0457-02 E 02

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	26.4	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	1.77	mg/L	
Magnesium	7439-95-4	1	0.500	13.3	mg/L	
Manganese	7439-96-5	1	0.0100	0.0246	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	0.666	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	6.90	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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LMW-6-0922
22I0457-02 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/27/2022 10:55
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 13:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0457-02 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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:
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LMW-15-0922
22I0457-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 12:25

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 18:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0457-03 F

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



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Project: Landsburg
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Reported:
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LMW-15-0922
22I0457-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 12:25

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 18:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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

Reported:
21-Oct-2022 14:41

LMW-15-0922
22I0457-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 12:25

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 18:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	120	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	94.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	86.6	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



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LMW-15-0922
22I0457-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/27/2022 12:25
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 23:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0457-03 A 01
Preparation Batch: BK10666 Sample Size: 500 mL
Prepared: 10/01/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	91.7	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	119	%	



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LMW-15-0922
22I0457-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/27/2022 12:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 05:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0457-03 E 01
Preparation Batch: BKJ0256 Sample Size: 25 mL
Prepared: 10/11/2022 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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LMW-15-0922
22I0457-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/27/2022 12:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 05:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0457-03 E 01
Preparation Batch: BKJ0256 Sample Size: 25 mL
Prepared: 10/11/2022 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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LMW-15-0922
22I0457-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/27/2022 12:25
Instrument: ICP2 Analyst: SKD Analyzed: 10/17/2022 18:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0457-03 E 02
Preparation Batch: BKJ0296 Sample Size: 25 mL
Prepared: 10/11/2022 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	61.5	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	4.10	mg/L	
Magnesium	7439-95-4	1	0.500	25.6	mg/L	
Manganese	7439-96-5	1	0.0100	0.376	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	1.96	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	12.6	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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LMW-15-0922
22I0457-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/27/2022 12:25
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 14:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0457-03 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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

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LMW-11-0922
22I0457-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 13:40

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 18:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0457-04 F

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



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Project Manager: Gary Zimmerman

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LMW-11-0922
2210457-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 13:40

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 18:21

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-11-0922
22I0457-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/27/2022 13:40
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 18:21

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	124	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	94.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	87.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



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LMW-11-0922
22I0457-04 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/27/2022 13:40
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 23:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0457-04 A 01
Preparation Batch: BK10666 Sample Size: 500 mL
Prepared: 10/01/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	91.7	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	121	%	



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LMW-11-0922
22I0457-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/27/2022 13:40
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 05:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0457-04 E 01
Preparation Batch: BKJ0256 Sample Size: 25 mL
Prepared: 10/11/2022 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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LMW-11-0922
22I0457-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/27/2022 13:40
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 05:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0457-04 E 01
Preparation Batch: BKJ0256 Sample Size: 25 mL
Prepared: 10/11/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.00300	0.00688	mg/L	
Selenium	7782-49-2	1	0.0250	ND	mg/L	U



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LMW-11-0922
22I0457-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/27/2022 13:40
Instrument: ICP2 Analyst: SKD Analyzed: 10/17/2022 18:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0457-04 E 02
Preparation Batch: BKJ0296 Sample Size: 25 mL
Prepared: 10/11/2022 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	58.1	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	0.401	mg/L	
Magnesium	7439-95-4	1	0.500	27.2	mg/L	
Manganese	7439-96-5	1	0.0100	0.169	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.10	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	26.4	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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LMW-11-0922
22I0457-04 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/27/2022 13:40
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 14:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0457-04 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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
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LMW-FB-0922
22I0457-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 09:35

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 18:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0457-05 J

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	5.16	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	0.91	ug/L	
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



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LMW-FB-0922
22I0457-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 09:35

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 18:41

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-FB-0922
22I0457-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 09:35

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 18:41

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	120	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	93.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	84.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	107	%	



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LMW-FB-0922
22I0457-05 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/27/2022 09:35
Instrument: NT6 Analyst: JZ Analyzed: 10/07/2022 18:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 22I0457-05 B 01
Preparation Batch: BKJ0008 Sample Size: 500 mL
Prepared: 10/03/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,4-Dioxane	123-91-1	1	0.4	ND	ug/L	U
<i>Surrogate: 1,4-Dioxane-d8</i>			<i>33.6-120 %</i>	<i>55.8</i>	<i>%</i>	



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LMW-FB-0922
22I0457-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/27/2022 09:35
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 00:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0457-05 A 01
Preparation Batch: BK10666 Sample Size: 500 mL
Prepared: 10/01/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	86.2	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	117	%	



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LMW-FB-0922
22I0457-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/27/2022 09:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 06:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0457-05 E 01
Preparation Batch: BKJ0256 Sample Size: 25 mL
Prepared: 10/11/2022 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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LMW-FB-0922
22I0457-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/27/2022 09:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/12/2022 06:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0457-05 E 01
Preparation Batch: BKJ0256 Sample Size: 25 mL
Prepared: 10/11/2022 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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LMW-FB-0922
22I0457-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/27/2022 09:35

Instrument: ICP2 Analyst: SKD

Analyzed: 10/17/2022 18:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BKJ0296
Prepared: 10/11/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22I0457-05 E 02

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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LMW-FB-0922
22I0457-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/27/2022 09:35
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 14:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0457-05 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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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Trip Blanks
22I0457-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 00:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 14:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0457-06 B

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



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Trip Blanks
22I0457-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/27/2022 00:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 14:50

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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Trip Blanks
22I0457-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/27/2022 00:00
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 14:50

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	108	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	95.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	91.4	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	103	%	



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Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0680-BLK1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 14:08								
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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Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0680-BLK1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 14:08								
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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Project Manager: Gary Zimmerman

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0680-BLK1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 14:08								
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.25		ug/L	5.00		105	80-129			
<i>Surrogate: Toluene-d8</i>	4.80		ug/L	5.00		95.9	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.78		ug/L	5.00		95.5	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.02		ug/L	5.00		100	80-120			
LCS (BKI0680-BS1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 12:44								
Chloromethane	9.51	0.50	ug/L	10.0		95.1	60-138			
Vinyl Chloride	9.92	0.10	ug/L	10.0		99.2	66-133			
Bromomethane	10.2	1.00	ug/L	10.0		102	72-131			
Chloroethane	9.88	0.20	ug/L	10.0		98.8	60-155			
Trichlorofluoromethane	10.5	0.20	ug/L	10.0		105	62-141			
Acrolein	51.3	5.00	ug/L	50.0		103	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.4	0.20	ug/L	10.0		104	76-129			
Acetone	52.4	5.00	ug/L	50.0		105	58-142			
1,1-Dichloroethene	10.3	0.20	ug/L	10.0		103	69-135			
Iodomethane	10.3	1.00	ug/L	10.0		103	56-147			
Methylene Chloride	9.65	1.00	ug/L	10.0		96.5	65-135			
Acrylonitrile	8.96	1.00	ug/L	10.0		89.6	64-134			
Carbon Disulfide	10.5	0.20	ug/L	10.0		105	78-125			
trans-1,2-Dichloroethene	9.68	0.20	ug/L	10.0		96.8	78-128			
Vinyl Acetate	9.75	0.20	ug/L	10.0		97.5	55-138			
1,1-Dichloroethane	9.99	0.20	ug/L	10.0		99.9	76-124			
2-Butanone	51.6	5.00	ug/L	50.0		103	61-140			
2,2-Dichloropropane	9.60	0.20	ug/L	10.0		96.0	66-147			
cis-1,2-Dichloroethene	10.5	0.20	ug/L	10.0		105	80-121			
Chloroform	9.94	0.20	ug/L	10.0		99.4	80-122			
Bromochloromethane	9.90	0.20	ug/L	10.0		99.0	80-121			
1,1,1-Trichloroethane	10.3	0.20	ug/L	10.0		103	79-123			
1,1-Dichloropropene	11.1	0.10	ug/L	10.0		111	80-127			
Carbon tetrachloride	10.1	0.20	ug/L	10.0		101	53-137			
1,2-Dichloroethane	10.4	0.20	ug/L	10.0		104	75-123			
Benzene	10.7	0.20	ug/L	10.0		107	80-120			
Trichloroethene	10.5	0.20	ug/L	10.0		105	80-120			



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

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

Reported:
21-Oct-2022 14:41

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKI0680-BS1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 12:44								
1,2-Dichloropropane	10.2	0.20	ug/L	10.0		102	80-120			
Bromodichloromethane	10.3	0.20	ug/L	10.0		103	80-121			
Dibromomethane	10.3	0.20	ug/L	10.0		103	80-120			
2-Chloroethyl vinyl ether	8.72	1.00	ug/L	10.0		87.2	64-120			
4-Methyl-2-Pentanone	59.8	2.50	ug/L	50.0		120	67-133			
cis-1,3-Dichloropropene	11.3	0.20	ug/L	10.0		113	80-124			
Toluene	10.5	0.20	ug/L	10.0		105	80-120			
trans-1,3-Dichloropropene	11.3	0.20	ug/L	10.0		113	71-127			
2-Hexanone	58.2	5.00	ug/L	50.0		116	69-133			
1,1,2-Trichloroethane	10.5	0.20	ug/L	10.0		105	80-121			
1,3-Dichloropropane	10.8	0.10	ug/L	10.0		108	80-120			
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120			
Dibromochloromethane	10.8	0.20	ug/L	10.0		108	65-135			
1,2-Dibromoethane	11.0	0.10	ug/L	10.0		110	80-121			
Chlorobenzene	10.5	0.20	ug/L	10.0		105	80-120			
Ethylbenzene	10.7	0.20	ug/L	10.0		107	80-120			
1,1,1,2-Tetrachloroethane	10.4	0.20	ug/L	10.0		104	80-120			
m,p-Xylene	22.9	0.40	ug/L	20.0		114	80-121			
o-Xylene	10.9	0.20	ug/L	10.0		109	80-121			
Xylenes, total	33.8	0.60	ug/L	30.0		113	76-127			
Styrene	10.2	0.20	ug/L	10.0		102	80-124			
Bromoform	9.83	0.20	ug/L	10.0		98.3	51-134			
1,1,2,2-Tetrachloroethane	10.6	0.20	ug/L	10.0		106	77-123			
1,2,3-Trichloropropane	10.6	0.25	ug/L	10.0		106	76-125			
trans-1,4-Dichloro 2-Butene	10.9	1.00	ug/L	10.0		109	55-129			
n-Propylbenzene	11.8	0.20	ug/L	10.0		118	78-130			
Bromobenzene	10.6	0.20	ug/L	10.0		106	80-120			
Isopropyl Benzene	11.4	0.20	ug/L	10.0		114	80-128			
2-Chlorotoluene	11.3	0.10	ug/L	10.0		113	78-122			
4-Chlorotoluene	11.4	0.20	ug/L	10.0		114	80-121			
t-Butylbenzene	12.0	0.20	ug/L	10.0		120	78-125			
1,3,5-Trimethylbenzene	12.3	0.20	ug/L	10.0		123	80-129			
1,2,4-Trimethylbenzene	11.0	0.20	ug/L	10.0		110	80-127			
s-Butylbenzene	12.0	0.20	ug/L	10.0		120	78-129			
4-Isopropyl Toluene	10.6	0.20	ug/L	10.0		106	79-130			



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Reported:
21-Oct-2022 14:41

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BK10680-BS1)										
					Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 12:44					
1,3-Dichlorobenzene	10.7	0.20	ug/L	10.0		107	80-120			
1,4-Dichlorobenzene	10.1	0.20	ug/L	10.0		101	80-120			
n-Butylbenzene	11.7	0.20	ug/L	10.0		117	74-129			
1,2-Dichlorobenzene	10.3	0.20	ug/L	10.0		103	80-120			
1,2-Dibromo-3-chloropropane	10.7	0.50	ug/L	10.0		107	62-123			
1,2,4-Trichlorobenzene	10.9	0.50	ug/L	10.0		109	64-124			
Hexachloro-1,3-Butadiene	10.0	0.50	ug/L	10.0		100	58-123			
Naphthalene	10.8	0.50	ug/L	10.0		108	50-134			
1,2,3-Trichlorobenzene	10.8	0.50	ug/L	10.0		108	49-133			
Dichlorodifluoromethane	11.6	0.20	ug/L	10.0		116	48-147			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.88		ug/L	5.00		97.5	80-129			
<i>Surrogate: Toluene-d8</i>	5.07		ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.19		ug/L	5.00		104	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.95		ug/L	5.00		99.0	80-120			

LCS Dup (BK10680-BSD1)										
					Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 13:26					
Chloromethane	9.29	0.50	ug/L	10.0		92.9	60-138	2.35	30	
Vinyl Chloride	10.1	0.10	ug/L	10.0		101	66-133	2.01	30	
Bromomethane	10.2	1.00	ug/L	10.0		102	72-131	0.11	30	
Chloroethane	9.83	0.20	ug/L	10.0		98.3	60-155	0.53	30	
Trichlorofluoromethane	9.82	0.20	ug/L	10.0		98.2	62-141	6.52	30	
Acrolein	51.9	5.00	ug/L	50.0		104	52-190	1.25	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.7	0.20	ug/L	10.0		107	76-129	2.51	30	
Acetone	53.0	5.00	ug/L	50.0		106	58-142	1.09	30	
1,1-Dichloroethene	10.5	0.20	ug/L	10.0		105	69-135	1.74	30	
Iodomethane	9.91	1.00	ug/L	10.0		99.1	56-147	3.70	30	
Methylene Chloride	9.64	1.00	ug/L	10.0		96.4	65-135	0.12	30	
Acrylonitrile	8.29	1.00	ug/L	10.0		82.9	64-134	7.72	30	
Carbon Disulfide	10.4	0.20	ug/L	10.0		104	78-125	1.16	30	
trans-1,2-Dichloroethene	9.61	0.20	ug/L	10.0		96.1	78-128	0.76	30	
Vinyl Acetate	9.99	0.20	ug/L	10.0		99.9	55-138	2.49	30	
1,1-Dichloroethane	9.96	0.20	ug/L	10.0		99.6	76-124	0.24	30	
2-Butanone	54.7	5.00	ug/L	50.0		109	61-140	5.83	30	
2,2-Dichloropropane	11.0	0.20	ug/L	10.0		110	66-147	13.60	30	
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	80-121	1.47	30	



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

Reported:
21-Oct-2022 14:41

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKI0680-BSD1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 13:26								
Chloroform	9.92	0.20	ug/L	10.0		99.2	80-122	0.15	30	
Bromochloromethane	9.84	0.20	ug/L	10.0		98.4	80-121	0.64	30	
1,1,1-Trichloroethane	10.3	0.20	ug/L	10.0		103	79-123	0.29	30	
1,1-Dichloropropene	11.4	0.10	ug/L	10.0		114	80-127	2.49	30	
Carbon tetrachloride	10.3	0.20	ug/L	10.0		103	53-137	2.20	30	
1,2-Dichloroethane	10.4	0.20	ug/L	10.0		104	75-123	0.33	30	
Benzene	10.6	0.20	ug/L	10.0		106	80-120	0.21	30	
Trichloroethene	10.3	0.20	ug/L	10.0		103	80-120	1.14	30	
1,2-Dichloropropane	10.1	0.20	ug/L	10.0		101	80-120	1.10	30	
Bromodichloromethane	10.3	0.20	ug/L	10.0		103	80-121	0.45	30	
Dibromomethane	10.4	0.20	ug/L	10.0		104	80-120	0.41	30	
2-Chloroethyl vinyl ether	9.17	1.00	ug/L	10.0		91.7	64-120	4.95	30	
4-Methyl-2-Pentanone	60.9	2.50	ug/L	50.0		122	67-133	1.81	30	
cis-1,3-Dichloropropene	11.5	0.20	ug/L	10.0		115	80-124	1.29	30	
Toluene	10.5	0.20	ug/L	10.0		105	80-120	0.70	30	
trans-1,3-Dichloropropene	11.6	0.20	ug/L	10.0		116	71-127	2.75	30	
2-Hexanone	59.9	5.00	ug/L	50.0		120	69-133	2.96	30	
1,1,2-Trichloroethane	10.5	0.20	ug/L	10.0		105	80-121	0.33	30	
1,3-Dichloropropane	10.6	0.10	ug/L	10.0		106	80-120	1.97	30	
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120	0.36	30	
Dibromochloromethane	10.5	0.20	ug/L	10.0		105	65-135	2.13	30	
1,2-Dibromoethane	11.0	0.10	ug/L	10.0		110	80-121	0.36	30	
Chlorobenzene	10.2	0.20	ug/L	10.0		102	80-120	2.81	30	
Ethylbenzene	10.6	0.20	ug/L	10.0		106	80-120	1.11	30	
1,1,1,2-Tetrachloroethane	10.2	0.20	ug/L	10.0		102	80-120	2.80	30	
m,p-Xylene	22.8	0.40	ug/L	20.0		114	80-121	0.43	30	
o-Xylene	10.8	0.20	ug/L	10.0		108	80-121	0.96	30	
Xylenes, total	33.6	0.60	ug/L	30.0		112	76-127	0.60	30	
Styrene	10.1	0.20	ug/L	10.0		101	80-124	0.31	30	
Bromoform	9.59	0.20	ug/L	10.0		95.9	51-134	2.47	30	
1,1,1,2,2-Tetrachloroethane	10.4	0.20	ug/L	10.0		104	77-123	1.76	30	
1,2,3-Trichloropropane	10.6	0.25	ug/L	10.0		106	76-125	0.06	30	
trans-1,4-Dichloro 2-Butene	10.6	1.00	ug/L	10.0		106	55-129	2.95	30	
n-Propylbenzene	12.2	0.20	ug/L	10.0		122	78-130	3.55	30	
Bromobenzene	10.7	0.20	ug/L	10.0		107	80-120	1.29	30	



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

Reported:
21-Oct-2022 14:41

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKI0680-BSD1)				Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 13:26						
Isopropyl Benzene	11.8	0.20	ug/L	10.0		118	80-128	3.19	30	
2-Chlorotoluene	11.5	0.10	ug/L	10.0		115	78-122	1.79	30	
4-Chlorotoluene	11.7	0.20	ug/L	10.0		117	80-121	3.07	30	
t-Butylbenzene	12.4	0.20	ug/L	10.0		124	78-125	2.82	30	
1,3,5-Trimethylbenzene	12.7	0.20	ug/L	10.0		127	80-129	3.51	30	
1,2,4-Trimethylbenzene	11.4	0.20	ug/L	10.0		114	80-127	3.09	30	
s-Butylbenzene	12.7	0.20	ug/L	10.0		127	78-129	5.84	30	
4-Isopropyl Toluene	11.4	0.20	ug/L	10.0		114	79-130	6.93	30	
1,3-Dichlorobenzene	11.0	0.20	ug/L	10.0		110	80-120	3.01	30	
1,4-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120	2.93	30	
n-Butylbenzene	13.2	0.20	ug/L	10.0		132	74-129	11.90	30	*
1,2-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	2.28	30	
1,2-Dibromo-3-chloropropane	10.7	0.50	ug/L	10.0		107	62-123	0.06	30	
1,2,4-Trichlorobenzene	11.9	0.50	ug/L	10.0		119	64-124	9.32	30	
Hexachloro-1,3-Butadiene	12.5	0.50	ug/L	10.0		125	58-123	21.80	30	*
Naphthalene	11.1	0.50	ug/L	10.0		111	50-134	3.47	30	
1,2,3-Trichlorobenzene	11.7	0.50	ug/L	10.0		117	49-133	8.09	30	
Dichlorodifluoromethane	11.7	0.20	ug/L	10.0		117	48-147	0.48	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.02		ug/L	5.00		100	80-129			
<i>Surrogate: Toluene-d8</i>	5.06		ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.14		ug/L	5.00		103	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.02		ug/L	5.00		100	80-120			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKJ0008 - EPA 8270E-SIM

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0008-BLK1)				Prepared: 03-Oct-2022 Analyzed: 07-Oct-2022 12:08						
1,4-Dioxane	ND	0.4	ug/L							U
<i>Surrogate: 1,4-Dioxane-d8</i>	5.84		ug/L	10.0	58.4		33.6-120			
LCS (BKJ0008-BS1)				Prepared: 03-Oct-2022 Analyzed: 07-Oct-2022 12:33						
1,4-Dioxane	7.5	0.4	ug/L	10.0	74.5		39.9-120			
<i>Surrogate: 1,4-Dioxane-d8</i>	5.89		ug/L	10.0	58.9		33.6-120			
LCS Dup (BKJ0008-BS1)				Prepared: 03-Oct-2022 Analyzed: 07-Oct-2022 12:59						
1,4-Dioxane	7.9	0.4	ug/L	10.0	79.0		39.9-120	5.80	30	
<i>Surrogate: 1,4-Dioxane-d8</i>	6.00		ug/L	10.0	60.0		33.6-120			



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
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Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKI0666 - NWTPH-HCID

Instrument: FID3 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0666-BLK1)		Prepared: 01-Oct-2022 Analyzed: 03-Oct-2022 18:25								
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
<i>Surrogate: o-Terphenyl</i>	0.197		mg/L	0.225		87.5	50-150			
<i>Surrogate: n-Triacontane</i>	0.267		mg/L	0.225		119	50-150			



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 21-Oct-2022 14:41
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0256 - EPA 200.8

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0256-BLK1)			Prepared: 11-Oct-2022 Analyzed: 11-Oct-2022 17:53								
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 (BKJ0256-BS1)			Prepared: 11-Oct-2022 Analyzed: 11-Oct-2022 17:58								
Antimony	121	0.0242	0.00300	mg/L	0.0250		96.9	80-120			
Lead	208	0.0248	0.0100	mg/L	0.0250		99.3	80-120			
Thallium	205	0.0223	0.00200	mg/L	0.0250		89.2	80-120			
Arsenic	75a	0.0238	0.00300	mg/L	0.0250		95.0	80-120			
Selenium	78	0.0774	0.0250	mg/L	0.0800		96.7	80-120			
Duplicate (BKJ0256-DUP1)			Source: 2210457-01		Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 06:09						
Antimony	121	ND	0.00300	mg/L		ND					U
Lead	208	ND	0.0100	mg/L		ND					U
Arsenic	75a	ND	0.00300	mg/L		ND					U
Selenium	78	ND	0.0250	mg/L		ND					U
Duplicate (BKJ0256-DUP2)			Source: 2210457-01		Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 23:41						
Thallium	205	ND	0.00200	mg/L		ND					U
Matrix Spike (BKJ0256-MS1)			Source: 2210457-01		Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 06:13						
Antimony	121	0.0257	0.00300	mg/L	0.0250	ND	103	75-125			
Lead	208	0.0226	0.0100	mg/L	0.0250	ND	90.5	75-125			
Arsenic	75a	0.0252	0.00300	mg/L	0.0250	ND	100	75-125			
Selenium	78	0.0762	0.0250	mg/L	0.0800	ND	94.9	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BKJ0256-MS2)			Source: 2210457-01		Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 23:46						
Thallium	205	0.0242	0.00200	mg/L	0.0250	ND	96.7	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKJ0256-MSD1)			Source: 2210457-01		Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 06:19						
Antimony	121	0.0261	0.00300	mg/L	0.0250	ND	104	75-125	1.42	20	
Lead	208	0.0225	0.0100	mg/L	0.0250	ND	90.1	75-125	0.43	20	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 21-Oct-2022 14:41
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0256 - EPA 200.8 UCT-KED

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKJ0256-MSD1)			Source: 22I0457-01			Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 06:19					
Arsenic	75a	0.0252	0.00300	mg/L	0.0250	ND	100	75-125	0.20	20	
Selenium	78	0.0758	0.0250	mg/L	0.0800	ND	94.4	75-125	0.60	20	

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

Matrix Spike Dup (BKJ0256-MSD2)			Source: 22I0457-01			Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 23:52					
Thallium	205	0.0239	0.00200	mg/L	0.0250	ND	95.5	75-125	1.24	20	

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



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 21-Oct-2022 14:41
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0276 - 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 (BKJ0276-BLK1)					Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 13:39					
Mercury	ND	0.00100	mg/L							U
LCS (BKJ0276-BS1)					Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 13:41					
Mercury	0.00188	0.00100	mg/L	0.00200		94.0	80-120			
Duplicate (BKJ0276-DUP1)					Source: 22I0457-01 Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 13:46					
Mercury	ND	0.00100	mg/L		ND					U
Matrix Spike (BKJ0276-MS1)					Source: 22I0457-01 Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 13:48					
Mercury	ND	0.00100	mg/L	0.00100	ND	94.4	75-125			U
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKJ0276-MSD1)					Source: 22I0457-01 Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 13:55					
Mercury	0.00106	0.00100	mg/L	0.00100	ND	106	75-125	11.90	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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

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

Reported:
21-Oct-2022 14:41

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0296 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0296-BLK1)										
Prepared: 11-Oct-2022 Analyzed: 13-Oct-2022 17:02										
Barium	ND	0.500	mg/L							U
Beryllium	ND	0.0100	mg/L							U
Cadmium	ND	0.0020	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
Sodium	ND	50.0	mg/L							U
Vanadium	ND	0.0030	mg/L							U
Zinc	ND	0.0200	mg/L							U
Blank (BKJ0296-BLK2)										
Prepared: 11-Oct-2022 Analyzed: 17-Oct-2022 17:40										
Aluminum	ND	1.00	mg/L							U
Blank (BKJ0296-BLK3)										
Prepared: 11-Oct-2022 Analyzed: 18-Oct-2022 17:19										
Calcium	ND	0.500	mg/L							U
LCS (BKJ0296-BS1)										
Prepared: 11-Oct-2022 Analyzed: 13-Oct-2022 17:05										
Barium	2.05	0.500	mg/L	2.00		102	80-120			
Beryllium	0.509	0.0100	mg/L	0.500		102	80-120			
Cadmium	0.549	0.0020	mg/L	0.500		110	80-120			
Calcium	9.87	0.500	mg/L	10.0		98.7	80-120			
Chromium	0.508	0.0100	mg/L	0.500		102	80-120			
Cobalt	0.542	0.0100	mg/L	0.500		108	80-120			
Copper	0.478	0.0030	mg/L	0.500		95.6	80-120			
Iron	1.99	0.200	mg/L	2.00		99.6	80-120			
Magnesium	11.3	0.500	mg/L	10.0		113	80-120			
Manganese	0.523	0.0100	mg/L	0.500		105	80-120			
Nickel	0.522	0.0100	mg/L	0.500		104	80-120			



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Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0296 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKJ0296-BS1)		Prepared: 11-Oct-2022 Analyzed: 13-Oct-2022 17:05								
Potassium	9.99	0.500	mg/L	10.0		99.9	80-120			
Silver	0.511	0.0050	mg/L	0.500		102	80-120			
Sodium	9.97	0.500	mg/L	10.0		99.7	80-120			
Sodium	ND	50.0	mg/L	10.0		116	80-120			U
Vanadium	0.491	0.0030	mg/L	0.500		98.3	80-120			
Zinc	0.512	0.0200	mg/L	0.500		102	80-120			
LCS (BKJ0296-BS2)		Prepared: 11-Oct-2022 Analyzed: 17-Oct-2022 17:43								
Aluminum	2.10	1.00	mg/L	2.00		105	80-120			
Duplicate (BKJ0296-DUP1)		Source: 2210457-01		Prepared: 11-Oct-2022 Analyzed: 13-Oct-2022 18:00						
Barium	ND	0.500	mg/L		ND					U
Beryllium	ND	0.0100	mg/L		ND					U
Calcium	6.89	0.500	mg/L		6.81			1.17	20	
Chromium	ND	0.0100	mg/L		ND					U
Cobalt	ND	0.0100	mg/L		ND					U
Copper	ND	0.0030	mg/L		ND					U
Iron	ND	0.200	mg/L		ND					U
Magnesium	3.28	0.500	mg/L		3.28			0.14	20	
Manganese	ND	0.0100	mg/L		ND					U
Nickel	ND	0.0100	mg/L		ND					U
Potassium	1.26	0.500	mg/L		1.25			0.65	20	
Silver	ND	0.0050	mg/L		ND					U
Sodium	95.4	50.0	mg/L		94.6			0.87	20	
Vanadium	ND	0.0030	mg/L		ND					U
Zinc	ND	0.0200	mg/L		ND					U
Duplicate (BKJ0296-DUP2)		Source: 2210457-01		Prepared: 11-Oct-2022 Analyzed: 17-Oct-2022 18:35						
Aluminum	ND	1.00	mg/L		ND					U
Duplicate (BKJ0296-DUP3)		Source: 2210457-01		Prepared: 11-Oct-2022 Analyzed: 18-Oct-2022 17:36						
Cadmium	ND	0.0020	mg/L		ND					U
Matrix Spike (BKJ0296-MS1)		Source: 2210457-01		Prepared: 11-Oct-2022 Analyzed: 13-Oct-2022 18:03						
Barium	2.00	0.500	mg/L	2.00	ND	98.2	75-125			
Beryllium	0.505	0.0100	mg/L	0.500	ND	101	75-125			



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Reported:
21-Oct-2022 14:41

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0296 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKJ0296-MS1)		Source: 2210457-01		Prepared: 11-Oct-2022		Analyzed: 13-Oct-2022 18:03				
Calcium	16.3	0.500	mg/L	10.0	6.81	95.4	75-125			
Chromium	0.497	0.0100	mg/L	0.500	ND	99.4	75-125			
Cobalt	0.529	0.0100	mg/L	0.500	ND	106	75-125			
Copper	0.482	0.0030	mg/L	0.500	ND	96.4	75-125			
Iron	1.98	0.200	mg/L	2.00	ND	96.4	75-125			
Magnesium	13.7	0.500	mg/L	10.0	3.28	104	75-125			
Manganese	0.508	0.0100	mg/L	0.500	ND	99.9	75-125			
Nickel	0.509	0.0100	mg/L	0.500	ND	102	75-125			
Potassium	11.3	0.500	mg/L	10.0	1.25	100	75-125			
Silver	0.510	0.0050	mg/L	0.500	ND	102	75-125			
Sodium	94.8	50.0	mg/L	10.0	94.6	1.67	75-125			HC
Vanadium	0.490	0.0030	mg/L	0.500	ND	98.0	75-125			
Zinc	0.506	0.0200	mg/L	0.500	ND	101	75-125			

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

Matrix Spike (BKJ0296-MS2)		Source: 2210457-01		Prepared: 11-Oct-2022		Analyzed: 17-Oct-2022 18:38				
Aluminum	2.07	1.00	mg/L	2.00	ND	103	75-125			

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

Matrix Spike (BKJ0296-MS3)		Source: 2210457-01		Prepared: 11-Oct-2022		Analyzed: 18-Oct-2022 17:39				
Cadmium	0.515	0.0020	mg/L	0.500	ND	103	75-125			

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

Matrix Spike Dup (BKJ0296-MSD1)		Source: 2210457-01		Prepared: 11-Oct-2022		Analyzed: 13-Oct-2022 18:08				
Barium	2.03	0.500	mg/L	2.00	ND	99.9	75-125	1.70	20	
Beryllium	0.513	0.0100	mg/L	0.500	ND	103	75-125	1.55	20	
Calcium	16.6	0.500	mg/L	10.0	6.81	98.4	75-125	1.85	20	
Chromium	0.508	0.0100	mg/L	0.500	ND	102	75-125	2.14	20	
Cobalt	0.534	0.0100	mg/L	0.500	ND	107	75-125	0.94	20	
Copper	0.482	0.0030	mg/L	0.500	ND	96.5	75-125	0.07	20	
Iron	2.04	0.200	mg/L	2.00	ND	99.5	75-125	3.12	20	
Magnesium	14.0	0.500	mg/L	10.0	3.28	107	75-125	1.89	20	
Manganese	0.516	0.0100	mg/L	0.500	ND	102	75-125	1.74	20	
Nickel	0.518	0.0100	mg/L	0.500	ND	104	75-125	1.85	20	
Potassium	11.4	0.500	mg/L	10.0	1.25	102	75-125	1.32	20	



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Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0296 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKJ0296-MSD1)										
		Source: 22I0457-01		Prepared: 11-Oct-2022		Analyzed: 13-Oct-2022 18:08				
Silver	0.512	0.0050	mg/L	0.500	ND	102	75-125	0.31	20	
Sodium	97.7	50.0	mg/L	10.0	94.6	31.0	75-125	3.05	20	HC
Vanadium	0.490	0.0030	mg/L	0.500	ND	98.1	75-125	0.08	20	
Zinc	0.515	0.0200	mg/L	0.500	ND	103	75-125	1.66	20	

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

Matrix Spike Dup (BKJ0296-MSD2)										
		Source: 22I0457-01		Prepared: 11-Oct-2022		Analyzed: 17-Oct-2022 18:41				
Aluminum	2.11	1.00	mg/L	2.00	ND	106	75-125	2.23	20	

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

Matrix Spike Dup (BKJ0296-MSD3)										
		Source: 22I0457-01		Prepared: 11-Oct-2022		Analyzed: 18-Oct-2022 17:43				
Cadmium	0.526	0.0020	mg/L	0.500	ND	105	75-125	2.07	20	

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



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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
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



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1,1,2-Trichloro-1,2,2-Trifluoroethane	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
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



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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
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
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8270E-SIM in Water

1,4-Dioxane	WADOE,NELAP,DoD-ELAP
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NWTPH-HCID in Water

Gasoline Range Organics (Tol-C12)	NELAP,DoD-ELAP,WADOE
Diesel Range Organics (C12-C24)	NELAP,DoD-ELAP,WADOE
Motor Oil Range Organics (C24-C38)	NELAP,DoD-ELAP,WADOE



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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023



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Notes and Definitions

- * Flagged value is not within established control limits.
- 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.



Analytical Resources, LLC
Analytical Chemists and Consultants

15 October 2022

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)
22I0462

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: 2210702		Turn-around Requested: Standard			Date: 9/28/22				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: Golder		Phone: 425-883-0777			Page: 1 of 1								
Client Contact: Gary Zimmerman/Autumnn Pearson					No. of Coolers: 3								Cooler Temps: 1.7 1.2 2.6
Client Project Name: Landsburg 2022 Q3 Sampling					Analysis Requested						Notes/Comments		
Client Project #: 9231000007.2021		Samplers: AP+ SJ			VOCs	1,4-Dioxane	Total Priority Metal	TPH-HCID (NWTPH)	TPH-DX (HOLD)	TPH-GX (HOLD)	Analyze in accordance with MSA between Golder and ARI Ecology EIM EDD		
Sample ID	Date	Time	Matrix	No. Containers									
LMW-14-0922	9/28/22	0900	W	10	X		X	X	X	X			
LMW-7-0922		1053		10	X		X	X	X	X			
LMW-8-0922		1220		10	X		X	X	X	X			
LMW-3-0922		1325		10	X		X	X	X	X			
LMW-9-0922		1440		10	X		X	X	X	X			
LMW-5-0922	↓	1555		10	X		X	X	X	X			
TRIP BLANK	—		↓	3	X								
Comments/Special Instructions HOLD TPH FOLLOW-UPS. CLIENT SPECIFIC RLs/Analyte List													
Relinquished by: (Signature) <i>Sean Johnson</i>		Received by: (Signature) <i>Jacob Walter</i>		Relinquished by: (Signature)		Received by: (Signature)							
Printed Name: SEAN JOHNSON		Printed Name: <i>Jacob Walter</i>		Printed Name:		Printed Name:							
Company: GOLDER		Company: ARI		Company:		Company:							
Date & Time: 9/29/22 8:47		Date & Time: 9/29/22 8:47		Date & Time:		Date & Time:							

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, 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:
15-Oct-2022 16:07

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
LMW-14-0922	2210462-01	Water	28-Sep-2022 09:00	29-Sep-2022 08:47
LMW-7-0922	2210462-02	Water	28-Sep-2022 10:53	29-Sep-2022 08:47
LMW-8-0922	2210462-03	Water	28-Sep-2022 12:20	29-Sep-2022 08:47
LMW-3-0922	2210462-04	Water	28-Sep-2022 13:25	29-Sep-2022 08:47
LMW-9-0922	2210462-05	Water	28-Sep-2022 14:40	29-Sep-2022 08:47
LMW-5-0922	2210462-06	Water	28-Sep-2022 15:55	29-Sep-2022 08:47
Trip Blank	2210462-07	Water	28-Sep-2022 00:00	29-Sep-2022 08:47



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

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

Reported:
15-Oct-2022 16:07

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 with the exception of surrogates flagged on the associated forms.

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 with the exception of analytes flagged on the associated forms.

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

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

Initial and continuing calibrations were within method requirements.

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

The 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.

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.

The surrogate percent recoveries were within control limits.

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



WORK ORDER

22I0462

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

Client: Golder Associates

Project Manager: Kelly Botten

Project: Landsburg

Project Number: Landsburg

Report To:

Golder Associates
Gary Zimmerman
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333
Phone: 425-883-0777
Fax: -

Invoice To:

Golder Associates
Gary Zimmerman
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333
Phone :425-883-0777
Fax: -

Date Due: 14-Oct-2022 18:00 (10 day TAT)

Received By: Jacob Walter

Date Received: 29-Sep-2022 08:47

Logged In By: Phillip Bates

Date Logged In: 29-Sep-2022 11:26

Samples Received at: 1.7°C

Intact, properly signed and dated custody seals attached to outside of cooler(s).....	No	Custody papers included with the cooler.....	Yes
Custody papers properly filled out (in, signed, analyses requested, etc).....	Yes	Was a temperature blank included in the cooler.....	No
Was sufficient ice used (if appropriate).....	Yes	All bottles sealed in individual plastic bags.....	Yes
All bottles arrived in good condition (unbroken).....	Yes	All bottle labels complete and legible.....	Yes
Number of containers listed on COC match number received.....	Yes	Bottle labels and tags agree with COC.....	Yes
Correct bottles used for the requested analyses.....	Yes	All VOC vials free of air bubbles.....	Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC).....	Yes	Sufficient amount of sample sent in each bottle.....	Yes
Sample split at ARI.....	No		



WORK ORDER

22I0462

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

Analysis	Due	TAT	Expires	Comments
22I0462-01 LMW-14-0922 [Water] Sampled 28-Sep-2022 09:00				For follow ups only
8260D Gas (NWTPH)	10/14/2022	10	10/12/2022	
8260D VOA	10/14/2022	10	10/12/2022	
Met 200.8 - As UCT	10/14/2022	10	3/27/2023	
Met 200.8 - Pb	10/14/2022	10	3/27/2023	
Met 200.8 - Sb	10/14/2022	10	3/27/2023	
Met 200.8 - Se UCT	10/14/2022	10	3/27/2023	
Met 200.8 - TI	10/14/2022	10	3/27/2023	
Met 6010D - Ag	10/14/2022	10	3/27/2023	
Met 6010D - Al	10/14/2022	10	3/27/2023	
Met 6010D - Ba	10/14/2022	10	3/27/2023	
Met 6010D - Be	10/14/2022	10	3/27/2023	
Met 6010D - Ca	10/14/2022	10	3/27/2023	
Met 6010D - Cd	10/14/2022	10	3/27/2023	
Met 6010D - Co	10/14/2022	10	3/27/2023	
Met 6010D - Cr	10/14/2022	10	3/27/2023	
Met 6010D - Cu	10/14/2022	10	3/27/2023	
Met 6010D - Fe	10/14/2022	10	3/27/2023	
Met 6010D - K	10/14/2022	10	3/27/2023	
Met 6010D - Mg	10/14/2022	10	3/27/2023	
Met 6010D - Mn	10/14/2022	10	3/27/2023	
Met 6010D - Na	10/14/2022	10	3/27/2023	
Met 6010D - Ni	10/14/2022	10	3/27/2023	
Met 6010D - V	10/14/2022	10	3/27/2023	
Met 6010D - Zn	10/14/2022	10	3/27/2023	
Met 7470A Hg	10/14/2022	10	10/26/2022	
TPH NW (Extractables) low level	10/14/2022	10	10/5/2022	
TPH_NW HClD	10/14/2022	10	10/5/2022	
22I0462-02 LMW-7-0922 [Water] Sampled 28-Sep-2022 10:53				For follow ups only
8260D Gas (NWTPH)	10/14/2022	10	10/12/2022	
8260D VOA	10/14/2022	10	10/12/2022	
Met 200.8 - As UCT	10/14/2022	10	3/27/2023	
Met 200.8 - Pb	10/14/2022	10	3/27/2023	
Met 200.8 - Sb	10/14/2022	10	3/27/2023	
Met 200.8 - Se UCT	10/14/2022	10	3/27/2023	
Met 200.8 - TI	10/14/2022	10	3/27/2023	
Met 6010D - Ag	10/14/2022	10	3/27/2023	
Met 6010D - Al	10/14/2022	10	3/27/2023	



WORK ORDER

22I0462

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

Analysis	Due	TAT	Expires	Comments
Met 6010D - Ba	10/14/2022	10	3/27/2023	
Met 6010D - Be	10/14/2022	10	3/27/2023	
Met 6010D - Ca	10/14/2022	10	3/27/2023	
Met 6010D - Cd	10/14/2022	10	3/27/2023	
Met 6010D - Co	10/14/2022	10	3/27/2023	
Met 6010D - Cr	10/14/2022	10	3/27/2023	
Met 6010D - Cu	10/14/2022	10	3/27/2023	
Met 6010D - Fe	10/14/2022	10	3/27/2023	
Met 6010D - K	10/14/2022	10	3/27/2023	
Met 6010D - Mg	10/14/2022	10	3/27/2023	
Met 6010D - Mn	10/14/2022	10	3/27/2023	
Met 6010D - Na	10/14/2022	10	3/27/2023	
Met 6010D - Ni	10/14/2022	10	3/27/2023	
Met 6010D - V	10/14/2022	10	3/27/2023	
Met 6010D - Zn	10/14/2022	10	3/27/2023	
Met 7470A Hg	10/14/2022	10	10/26/2022	
TPH NW (Extractables) low level	10/14/2022	10	10/5/2022	
TPH_NW HClD	10/14/2022	10	10/5/2022	

22I0462-03 LMW-8-0922 [Water] Sampled 28-Sep-2022 12:20 For follow ups only

8260D Gas (NWTTPH)	10/14/2022	10	10/12/2022	
8260D VOA	10/14/2022	10	10/12/2022	
Met 200.8 - As UCT	10/14/2022	10	3/27/2023	
Met 200.8 - Pb	10/14/2022	10	3/27/2023	
Met 200.8 - Sb	10/14/2022	10	3/27/2023	
Met 200.8 - Se UCT	10/14/2022	10	3/27/2023	
Met 200.8 - TI	10/14/2022	10	3/27/2023	
Met 6010D - Ag	10/14/2022	10	3/27/2023	
Met 6010D - Al	10/14/2022	10	3/27/2023	
Met 6010D - Ba	10/14/2022	10	3/27/2023	
Met 6010D - Be	10/14/2022	10	3/27/2023	
Met 6010D - Ca	10/14/2022	10	3/27/2023	
Met 6010D - Cd	10/14/2022	10	3/27/2023	
Met 6010D - Co	10/14/2022	10	3/27/2023	
Met 6010D - Cr	10/14/2022	10	3/27/2023	
Met 6010D - Cu	10/14/2022	10	3/27/2023	
Met 6010D - Fe	10/14/2022	10	3/27/2023	
Met 6010D - K	10/14/2022	10	3/27/2023	
Met 6010D - Mg	10/14/2022	10	3/27/2023	



WORK ORDER

22I0462

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

Analysis	Due	TAT	Expires	Comments
Met 6010D - Mn	10/14/2022	10	3/27/2023	
Met 6010D - Na	10/14/2022	10	3/27/2023	
Met 6010D - Ni	10/14/2022	10	3/27/2023	
Met 6010D - V	10/14/2022	10	3/27/2023	
Met 6010D - Zn	10/14/2022	10	3/27/2023	
Met 7470A Hg	10/14/2022	10	10/26/2022	
TPH NW (Extractables) low level	10/14/2022	10	10/5/2022	
TPH_NW HCID	10/14/2022	10	10/5/2022	

22I0462-04 LMW-3-0922 [Water] Sampled 28-Sep-2022 13:25 For follow ups only

8260D Gas (NWTPH)	10/14/2022	10	10/12/2022	
8260D VOA	10/14/2022	10	10/12/2022	
Met 200.8 - As UCT	10/14/2022	10	3/27/2023	
Met 200.8 - Pb	10/14/2022	10	3/27/2023	
Met 200.8 - Sb	10/14/2022	10	3/27/2023	
Met 200.8 - Se UCT	10/14/2022	10	3/27/2023	
Met 200.8 - Tl	10/14/2022	10	3/27/2023	
Met 6010D - Ag	10/14/2022	10	3/27/2023	
Met 6010D - Al	10/14/2022	10	3/27/2023	
Met 6010D - Ba	10/14/2022	10	3/27/2023	
Met 6010D - Be	10/14/2022	10	3/27/2023	
Met 6010D - Ca	10/14/2022	10	3/27/2023	
Met 6010D - Cd	10/14/2022	10	3/27/2023	
Met 6010D - Co	10/14/2022	10	3/27/2023	
Met 6010D - Cr	10/14/2022	10	3/27/2023	
Met 6010D - Cu	10/14/2022	10	3/27/2023	
Met 6010D - Fe	10/14/2022	10	3/27/2023	
Met 6010D - K	10/14/2022	10	3/27/2023	
Met 6010D - Mg	10/14/2022	10	3/27/2023	
Met 6010D - Mn	10/14/2022	10	3/27/2023	
Met 6010D - Na	10/14/2022	10	3/27/2023	
Met 6010D - Ni	10/14/2022	10	3/27/2023	
Met 6010D - V	10/14/2022	10	3/27/2023	
Met 6010D - Zn	10/14/2022	10	3/27/2023	
Met 7470A Hg	10/14/2022	10	10/26/2022	
TPH NW (Extractables) low level	10/14/2022	10	10/5/2022	
TPH_NW HCID	10/14/2022	10	10/5/2022	

22I0462-05 LMW-9-0922 [Water] Sampled 28-Sep-2022 14:40 For follow ups only

8260D Gas (NWTPH)	10/14/2022	10	10/12/2022	
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WORK ORDER

22I0462

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

Analysis	Due	TAT	Expires	Comments
8260D VOA	10/14/2022	10	10/12/2022	
Met 200.8 - As UCT	10/14/2022	10	3/27/2023	
Met 200.8 - Pb	10/14/2022	10	3/27/2023	
Met 200.8 - Sb	10/14/2022	10	3/27/2023	
Met 200.8 - Se UCT	10/14/2022	10	3/27/2023	
Met 200.8 - Tl	10/14/2022	10	3/27/2023	
Met 6010D - Ag	10/14/2022	10	3/27/2023	
Met 6010D - Al	10/14/2022	10	3/27/2023	
Met 6010D - Ba	10/14/2022	10	3/27/2023	
Met 6010D - Be	10/14/2022	10	3/27/2023	
Met 6010D - Ca	10/14/2022	10	3/27/2023	
Met 6010D - Cd	10/14/2022	10	3/27/2023	
Met 6010D - Co	10/14/2022	10	3/27/2023	
Met 6010D - Cr	10/14/2022	10	3/27/2023	
Met 6010D - Cu	10/14/2022	10	3/27/2023	
Met 6010D - Fe	10/14/2022	10	3/27/2023	
Met 6010D - K	10/14/2022	10	3/27/2023	
Met 6010D - Mg	10/14/2022	10	3/27/2023	
Met 6010D - Mn	10/14/2022	10	3/27/2023	
Met 6010D - Na	10/14/2022	10	3/27/2023	
Met 6010D - Ni	10/14/2022	10	3/27/2023	
Met 6010D - V	10/14/2022	10	3/27/2023	
Met 6010D - Zn	10/14/2022	10	3/27/2023	
Met 7470A Hg	10/14/2022	10	10/26/2022	
TPH NW (Extractables) low level	10/14/2022	10	10/5/2022	
TPH_NW HCID	10/14/2022	10	10/5/2022	

22I0462-06 LMW-5-0922 [Water] Sampled 28-Sep-2022 15:55

For follow ups only

8260D Gas (NWTPH)	10/14/2022	10	10/12/2022	
8260D VOA	10/14/2022	10	10/12/2022	
Met 200.8 - As UCT	10/14/2022	10	3/27/2023	
Met 200.8 - Pb	10/14/2022	10	3/27/2023	
Met 200.8 - Sb	10/14/2022	10	3/27/2023	
Met 200.8 - Se UCT	10/14/2022	10	3/27/2023	
Met 200.8 - Tl	10/14/2022	10	3/27/2023	
Met 6010D - Ag	10/14/2022	10	3/27/2023	
Met 6010D - Al	10/14/2022	10	3/27/2023	
Met 6010D - Ba	10/14/2022	10	3/27/2023	
Met 6010D - Be	10/14/2022	10	3/27/2023	



WORK ORDER

22I0462

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

Analysis	Due	TAT	Expires	Comments
Met 6010D - Ca	10/14/2022	10	3/27/2023	
Met 6010D - Cd	10/14/2022	10	3/27/2023	
Met 6010D - Co	10/14/2022	10	3/27/2023	
Met 6010D - Cr	10/14/2022	10	3/27/2023	
Met 6010D - Cu	10/14/2022	10	3/27/2023	
Met 6010D - Fe	10/14/2022	10	3/27/2023	
Met 6010D - K	10/14/2022	10	3/27/2023	
Met 6010D - Mg	10/14/2022	10	3/27/2023	
Met 6010D - Mn	10/14/2022	10	3/27/2023	
Met 6010D - Na	10/14/2022	10	3/27/2023	
Met 6010D - Ni	10/14/2022	10	3/27/2023	
Met 6010D - V	10/14/2022	10	3/27/2023	
Met 6010D - Zn	10/14/2022	10	3/27/2023	
Met 7470A Hg	10/14/2022	10	10/26/2022	
TPH NW (Extractables) low level	10/14/2022	10	10/5/2022	
TPH_NW HClD	10/14/2022	10	10/5/2022	
22I0462-07 Trip Blank [Water] Sampled 28-Sep-2022 00:00			Version	
8260D VOA	10/14/2022	10	10/12/2022	



WORK ORDER

22I0462

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
22I0462-01 A	Glass NM, Amber, 500 mL	
22I0462-01 B	Glass NM, Amber, 500 mL	
22I0462-01 C	Glass NM, Amber, 500 mL	
22I0462-01 D	Glass NM, Amber, 500 mL	
22I0462-01 E	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
22I0462-01 F	VOA Vial, Clear, 40 mL, HCL	
22I0462-01 G	VOA Vial, Clear, 40 mL, HCL	
22I0462-01 H	VOA Vial, Clear, 40 mL, HCL	
22I0462-01 I	VOA Vial, Clear, 40 mL, HCL	
22I0462-01 J	VOA Vial, Clear, 40 mL, HCL	
22I0462-02 A	Glass NM, Amber, 500 mL	
22I0462-02 B	Glass NM, Amber, 500 mL	
22I0462-02 C	Glass NM, Amber, 500 mL	
22I0462-02 D	Glass NM, Amber, 500 mL	
22I0462-02 E	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
22I0462-02 F	VOA Vial, Clear, 40 mL, HCL	
22I0462-02 G	VOA Vial, Clear, 40 mL, HCL	
22I0462-02 H	VOA Vial, Clear, 40 mL, HCL	
22I0462-02 I	VOA Vial, Clear, 40 mL, HCL	
22I0462-02 J	VOA Vial, Clear, 40 mL, HCL	
22I0462-03 A	Glass NM, Amber, 500 mL	
22I0462-03 B	Glass NM, Amber, 500 mL	
22I0462-03 C	Glass NM, Amber, 500 mL	
22I0462-03 D	Glass NM, Amber, 500 mL	
22I0462-03 E	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
22I0462-03 F	VOA Vial, Clear, 40 mL, HCL	
22I0462-03 G	VOA Vial, Clear, 40 mL, HCL	
22I0462-03 H	VOA Vial, Clear, 40 mL, HCL	
22I0462-03 I	VOA Vial, Clear, 40 mL, HCL	
22I0462-03 J	VOA Vial, Clear, 40 mL, HCL	
22I0462-04 A	Glass NM, Amber, 500 mL	
22I0462-04 B	Glass NM, Amber, 500 mL	
22I0462-04 C	Glass NM, Amber, 500 mL	
22I0462-04 D	Glass NM, Amber, 500 mL	



WORK ORDER

22I0462

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

22I0462-04 E	HDPE NM, 500 mL, 1:1 HNO3	C2 pass
22I0462-04 F	VOA Vial, Clear, 40 mL, HCL	
22I0462-04 G	VOA Vial, Clear, 40 mL, HCL	
22I0462-04 H	VOA Vial, Clear, 40 mL, HCL	
22I0462-04 I	VOA Vial, Clear, 40 mL, HCL	
22I0462-04 J	VOA Vial, Clear, 40 mL, HCL	
22I0462-05 A	Glass NM, Amber, 500 mL	
22I0462-05 B	Glass NM, Amber, 500 mL	
22I0462-05 C	Glass NM, Amber, 500 mL	
22I0462-05 D	Glass NM, Amber, 500 mL	
22I0462-05 E	HDPE NM, 500 mL, 1:1 HNO3	C2 pass
22I0462-05 F	VOA Vial, Clear, 40 mL, HCL	
22I0462-05 G	VOA Vial, Clear, 40 mL, HCL	
22I0462-05 H	VOA Vial, Clear, 40 mL, HCL	
22I0462-05 I	VOA Vial, Clear, 40 mL, HCL	
22I0462-05 J	VOA Vial, Clear, 40 mL, HCL	
22I0462-06 A	Glass NM, Amber, 500 mL	
22I0462-06 B	Glass NM, Amber, 500 mL	
22I0462-06 C	Glass NM, Amber, 500 mL	
22I0462-06 D	Glass NM, Amber, 500 mL	
22I0462-06 E	HDPE NM, 500 mL, 1:1 HNO3	C2 pass
22I0462-06 F	VOA Vial, Clear, 40 mL, HCL	
22I0462-06 G	VOA Vial, Clear, 40 mL, HCL	
22I0462-06 H	VOA Vial, Clear, 40 mL, HCL	
22I0462-06 I	VOA Vial, Clear, 40 mL, HCL	
22I0462-06 J	VOA Vial, Clear, 40 mL, HCL	
22I0462-07 A	VOA Vial, Clear, 40 mL, HCL	
22I0462-07 B	VOA Vial, Clear, 40 mL, HCL	
22I0462-07 C	VOA Vial, Clear, 40 mL, HCL	

PB

9/29/22

Preservation Confirmed By _____

Date



Cooler Receipt Form

ARI Client: Goldner

Project Name: Landsburg 2022

COC No(s): _____ NA

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

Assigned ARI Job No: 2210462

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 0847 1.7 1.2 2.6

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 7a09708

Cooler Accepted by: JL Date: 09/29/22 Time: 0847

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

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? PB NA YES NO

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

Date VOC Trip Blank was made at ARI NA 9127

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

Samples Logged by: PB Date: 9/29/22 Time: 11:26 Labels checked by: _____

**** 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:
15-Oct-2022 16:07

LMW-14-0922
22I0462-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 09:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 19:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0462-01 F

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



Golder Associates
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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
15-Oct-2022 16:07

LMW-14-0922
22I0462-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 09:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 19:02

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	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: 15-Oct-2022 16:07
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LMW-14-0922
22I0462-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/28/2022 09:00
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 19:02

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	124	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	97.7	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	84.4	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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LMW-14-0922
22I0462-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/28/2022 09:00
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 16:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0462-01 A 01
Preparation Batch: BK10701 Sample Size: 500 mL
Prepared: 09/30/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	102	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	138	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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LMW-14-0922
22I0462-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/28/2022 09:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-01 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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LMW-14-0922
22I0462-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/28/2022 09:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-01 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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



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

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

Reported:
15-Oct-2022 16:07

LMW-14-0922
22I0462-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/28/2022 09:00

Instrument: ICP2 Analyst: SKD

Analyzed: 10/11/2022 18:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BKJ0087
Prepared: 10/05/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22I0462-01 E 02

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	132	mg/L	
Chromium	7440-47-3	1	0.0100	ND	mg/L	U
Cobalt	7440-48-4	1	0.0100	0.0104	mg/L	
Copper	7440-50-8	1	0.0030	ND	mg/L	U
Iron	7439-89-6	1	0.200	10.9	mg/L	
Magnesium	7439-95-4	1	0.500	62.5	mg/L	
Manganese	7439-96-5	1	0.0100	0.587	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	3.47	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	11.4	mg/L	
Vanadium	7440-62-2	1	0.0030	ND	mg/L	U
Zinc	7440-66-6	1	0.0200	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: 15-Oct-2022 16:07
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LMW-14-0922
22I0462-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/28/2022 09:00
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 14:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0462-01 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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:
15-Oct-2022 16:07

LMW-7-0922
22I0462-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 10:53

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 19:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0462-02 H

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



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Project: Landsburg
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Project Manager: Gary Zimmerman

Reported:
15-Oct-2022 16:07

LMW-7-0922
22I0462-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 10:53

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 19:23

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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

Reported:
15-Oct-2022 16:07

LMW-7-0922
22I0462-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 10:53

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 19:23

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	119	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	93.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	84.4	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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LMW-7-0922
22I0462-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/28/2022 10:53
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 16:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0462-02 A 01
Preparation Batch: BK10701 Sample Size: 500 mL
Prepared: 09/30/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	101	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	134	%	



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LMW-7-0922
22I0462-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/28/2022 10:53
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 02:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-02 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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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LMW-7-0922
22I0462-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/28/2022 10:53
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 02:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-02 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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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LMW-7-0922
22I0462-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 09/28/2022 10:53

Instrument: ICP2 Analyst: SKD

Analyzed: 10/11/2022 17:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BKJ0087
Prepared: 10/05/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22I0462-02 E 02

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	39.9	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	0.458	mg/L	
Magnesium	7439-95-4	1	0.500	18.5	mg/L	
Manganese	7439-96-5	1	0.0100	0.0601	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.45	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	50.0	58.6	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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LMW-7-0922
22I0462-02 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/28/2022 10:53
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 14:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0462-02 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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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LMW-8-0922
22I0462-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 12:20

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 19:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0462-03 H

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	6.87	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



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LMW-8-0922
22I0462-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 12:20

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 19:43

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-8-0922
22I0462-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/28/2022 12:20
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 19:43

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	126	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	93.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	82.2	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	106	%	



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LMW-8-0922
22I0462-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID

Sampled: 09/28/2022 12:20

Instrument: FID3 Analyst: AA

Analyzed: 10/03/2022 17:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BK10701
Prepared: 09/30/2022

Sample Size: 500 mL
Final Volume: 1 mL

Extract ID: 22I0462-03 A 01

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
<i>Surrogate: o-Terphenyl</i>			50-150 %	102	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	136	%	



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LMW-8-0922
22I0462-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/28/2022 12:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-03 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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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LMW-8-0922
22I0462-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/28/2022 12:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-03 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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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LMW-8-0922
22I0462-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/28/2022 12:20
Instrument: ICP2 Analyst: SKD Analyzed: 10/11/2022 18:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0462-03 E 02
Preparation Batch: BKJ0087 Sample Size: 25 mL
Prepared: 10/05/2022 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	67.5	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	12.6	mg/L	
Magnesium	7439-95-4	1	0.500	35.6	mg/L	
Manganese	7439-96-5	1	0.0100	0.461	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.04	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	11.9	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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LMW-8-0922
22I0462-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/28/2022 12:20
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 14:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0462-03 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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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LMW-3-0922
22I0462-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 13:25

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 20:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0462-04 H

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	8.27	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



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Project Manager: Gary Zimmerman

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LMW-3-0922
22I0462-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 13:25

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 20:03

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-3-0922
22I0462-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/28/2022 13:25
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 20:03

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	130	%	*
<i>Surrogate: Toluene-d8</i>			80-120 %	93.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	82.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



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LMW-3-0922
22I0462-04 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/28/2022 13:25
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 17:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0462-04 A 01
Preparation Batch: BK10701 Sample Size: 500 mL
Prepared: 09/30/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	101	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	133	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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LMW-3-0922
22I0462-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/28/2022 13:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-04 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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LMW-3-0922
22I0462-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/28/2022 13:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-04 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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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LMW-3-0922
22I0462-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/28/2022 13:25
Instrument: ICP2 Analyst: SKD Analyzed: 10/11/2022 18:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0462-04 E 02
Preparation Batch: BKJ0087 Sample Size: 25 mL
Prepared: 10/05/2022 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	35.2	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	0.0228	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	1.51	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	9.64	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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LMW-3-0922
22I0462-04 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/28/2022 13:25
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 14:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0462-04 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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

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LMW-9-0922
22I0462-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 14:40

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 20:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0462-05 F

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



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Project Manager: Gary Zimmerman

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LMW-9-0922
22I0462-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 14:40

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 20:24

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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LMW-9-0922
22I0462-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/28/2022 14:40
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 20:24

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	130	%	*
<i>Surrogate: Toluene-d8</i>			80-120 %	92.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	83.8	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	106	%	



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LMW-9-0922
22I0462-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/28/2022 14:40
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 17:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0462-05 A 01
Preparation Batch: BK10701 Sample Size: 500 mL
Prepared: 09/30/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	97.4	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	129	%	



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LMW-9-0922
22I0462-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/28/2022 14:40
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-05 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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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LMW-9-0922
22I0462-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/28/2022 14:40
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-05 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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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LMW-9-0922
22I0462-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/28/2022 14:40
Instrument: ICP2 Analyst: SKD Analyzed: 10/12/2022 15:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0462-05 E 02
Preparation Batch: BKJ0087 Sample Size: 25 mL
Prepared: 10/05/2022 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	73.6	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	1.28	mg/L	
Magnesium	7439-95-4	1	0.500	39.6	mg/L	
Manganese	7439-96-5	1	0.0100	0.166	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.36	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	12.9	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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LMW-9-0922
22I0462-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/28/2022 14:40
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 14:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0462-05 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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:
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LMW-5-0922
22I0462-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 15:55

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 20:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0462-06 F

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



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

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

Reported:
15-Oct-2022 16:07

LMW-5-0922
22I0462-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 15:55

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 20:44

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	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: 15-Oct-2022 16:07
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LMW-5-0922
22I0462-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/28/2022 15:55
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 20:44

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	131	%	*
<i>Surrogate: Toluene-d8</i>			80-120 %	92.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	82.9	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	106	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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LMW-5-0922
22I0462-06 (Water)

Petroleum Hydrocarbons

Method: NWTPH-HCID Sampled: 09/28/2022 15:55
Instrument: FID3 Analyst: AA Analyzed: 10/03/2022 18:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22I0462-06 A 01
Preparation Batch: BK10701 Sample Size: 500 mL
Prepared: 09/30/2022 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
<i>Surrogate: o-Terphenyl</i>			50-150 %	98.6	%	
<i>Surrogate: n-Triacontane</i>			50-150 %	134	%	



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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LMW-5-0922
22I0462-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 Sampled: 09/28/2022 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-06 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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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LMW-5-0922
22I0462-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED Sampled: 09/28/2022 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 10/07/2022 03:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22I0462-06 E 01
Preparation Batch: BKJ0086 Sample Size: 25 mL
Prepared: 10/05/2022 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



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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LMW-5-0922
22I0462-06 (Water)

Metals and Metallic Compounds

Method: EPA 6010D Sampled: 09/28/2022 15:55
Instrument: ICP2 Analyst: SKD Analyzed: 10/12/2022 15:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 22I0462-06 E 02
Preparation Batch: BKJ0087 Sample Size: 25 mL
Prepared: 10/05/2022 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	77.8	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	43.1	mg/L	
Manganese	7439-96-5	1	0.0100	0.208	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	U
Potassium	7440-09-7	1	0.500	2.44	mg/L	
Silver	7440-22-4	1	0.0050	ND	mg/L	U
Sodium	7440-23-5	1	0.500	13.3	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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LMW-5-0922
22I0462-06 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 09/28/2022 15:55
Instrument: HYDRA Analyst: ML Analyzed: 10/12/2022 14:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22I0462-06 E
Preparation Batch: BKJ0276 Sample Size: 20 mL
Prepared: 10/11/2022 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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Redmond WA, 98052-3333

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

Reported:
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Trip Blank
22I0462-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 00:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 15:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BK10680
Prepared: 09/29/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22I0462-07 C

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



Golder Associates
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Redmond WA, 98052-3333

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

Reported:
15-Oct-2022 16:07

Trip Blank
22I0462-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/28/2022 00:00

Instrument: NT2 Analyst: LH

Analyzed: 09/29/2022 15:11

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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Trip Blank
22I0462-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 09/28/2022 00:00
Instrument: NT2 Analyst: LH Analyzed: 09/29/2022 15:11

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	107	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	96.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	91.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	103	%	



Golder Associates
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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
15-Oct-2022 16:07

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
Blank (BKI0680-BLK1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 14:08								
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



Golder Associates
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Project: Landsburg
Project Number: Landsburg
Project Manager: Gary Zimmerman

Reported:
15-Oct-2022 16:07

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0680-BLK1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 14:08								
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



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

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

Reported:
15-Oct-2022 16:07

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0680-BLK1)										
					Prepared: 29-Sep-2022		Analyzed: 29-Sep-2022 14:08			
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.25		ug/L	5.00		105	80-129			
<i>Surrogate: Toluene-d8</i>	4.80		ug/L	5.00		95.9	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.78		ug/L	5.00		95.5	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.02		ug/L	5.00		100	80-120			
LCS (BKI0680-BS1)										
					Prepared: 29-Sep-2022		Analyzed: 29-Sep-2022 12:44			
Chloromethane	9.51	0.50	ug/L	10.0		95.1	60-138			
Vinyl Chloride	9.92	0.10	ug/L	10.0		99.2	66-133			
Bromomethane	10.2	1.00	ug/L	10.0		102	72-131			
Chloroethane	9.88	0.20	ug/L	10.0		98.8	60-155			
Trichlorofluoromethane	10.5	0.20	ug/L	10.0		105	62-141			
Acrolein	51.3	5.00	ug/L	50.0		103	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.4	0.20	ug/L	10.0		104	76-129			
Acetone	52.4	5.00	ug/L	50.0		105	58-142			
1,1-Dichloroethene	10.3	0.20	ug/L	10.0		103	69-135			
Iodomethane	10.3	1.00	ug/L	10.0		103	56-147			
Methylene Chloride	9.65	1.00	ug/L	10.0		96.5	65-135			
Acrylonitrile	8.96	1.00	ug/L	10.0		89.6	64-134			
Carbon Disulfide	10.5	0.20	ug/L	10.0		105	78-125			
trans-1,2-Dichloroethene	9.68	0.20	ug/L	10.0		96.8	78-128			
Vinyl Acetate	9.75	0.20	ug/L	10.0		97.5	55-138			
1,1-Dichloroethane	9.99	0.20	ug/L	10.0		99.9	76-124			
2-Butanone	51.6	5.00	ug/L	50.0		103	61-140			
2,2-Dichloropropane	9.60	0.20	ug/L	10.0		96.0	66-147			
cis-1,2-Dichloroethene	10.5	0.20	ug/L	10.0		105	80-121			
Chloroform	9.94	0.20	ug/L	10.0		99.4	80-122			
Bromochloromethane	9.90	0.20	ug/L	10.0		99.0	80-121			
1,1,1-Trichloroethane	10.3	0.20	ug/L	10.0		103	79-123			
1,1-Dichloropropene	11.1	0.10	ug/L	10.0		111	80-127			
Carbon tetrachloride	10.1	0.20	ug/L	10.0		101	53-137			
1,2-Dichloroethane	10.4	0.20	ug/L	10.0		104	75-123			
Benzene	10.7	0.20	ug/L	10.0		107	80-120			
Trichloroethene	10.5	0.20	ug/L	10.0		105	80-120			



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

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

Reported:
15-Oct-2022 16:07

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKI0680-BS1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 12:44								
1,2-Dichloropropane	10.2	0.20	ug/L	10.0		102	80-120			
Bromodichloromethane	10.3	0.20	ug/L	10.0		103	80-121			
Dibromomethane	10.3	0.20	ug/L	10.0		103	80-120			
2-Chloroethyl vinyl ether	8.72	1.00	ug/L	10.0		87.2	64-120			
4-Methyl-2-Pentanone	59.8	2.50	ug/L	50.0		120	67-133			
cis-1,3-Dichloropropene	11.3	0.20	ug/L	10.0		113	80-124			
Toluene	10.5	0.20	ug/L	10.0		105	80-120			
trans-1,3-Dichloropropene	11.3	0.20	ug/L	10.0		113	71-127			
2-Hexanone	58.2	5.00	ug/L	50.0		116	69-133			
1,1,2-Trichloroethane	10.5	0.20	ug/L	10.0		105	80-121			
1,3-Dichloropropane	10.8	0.10	ug/L	10.0		108	80-120			
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120			
Dibromochloromethane	10.8	0.20	ug/L	10.0		108	65-135			
1,2-Dibromoethane	11.0	0.10	ug/L	10.0		110	80-121			
Chlorobenzene	10.5	0.20	ug/L	10.0		105	80-120			
Ethylbenzene	10.7	0.20	ug/L	10.0		107	80-120			
1,1,1,2-Tetrachloroethane	10.4	0.20	ug/L	10.0		104	80-120			
m,p-Xylene	22.9	0.40	ug/L	20.0		114	80-121			
o-Xylene	10.9	0.20	ug/L	10.0		109	80-121			
Xylenes, total	33.8	0.60	ug/L	30.0		113	76-127			
Styrene	10.2	0.20	ug/L	10.0		102	80-124			
Bromoform	9.83	0.20	ug/L	10.0		98.3	51-134			
1,1,2,2-Tetrachloroethane	10.6	0.20	ug/L	10.0		106	77-123			
1,2,3-Trichloropropane	10.6	0.25	ug/L	10.0		106	76-125			
trans-1,4-Dichloro 2-Butene	10.9	1.00	ug/L	10.0		109	55-129			
n-Propylbenzene	11.8	0.20	ug/L	10.0		118	78-130			
Bromobenzene	10.6	0.20	ug/L	10.0		106	80-120			
Isopropyl Benzene	11.4	0.20	ug/L	10.0		114	80-128			
2-Chlorotoluene	11.3	0.10	ug/L	10.0		113	78-122			
4-Chlorotoluene	11.4	0.20	ug/L	10.0		114	80-121			
t-Butylbenzene	12.0	0.20	ug/L	10.0		120	78-125			
1,3,5-Trimethylbenzene	12.3	0.20	ug/L	10.0		123	80-129			
1,2,4-Trimethylbenzene	11.0	0.20	ug/L	10.0		110	80-127			
s-Butylbenzene	12.0	0.20	ug/L	10.0		120	78-129			
4-Isopropyl Toluene	10.6	0.20	ug/L	10.0		106	79-130			



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

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

Reported:
15-Oct-2022 16:07

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BK10680-BS1)										
					Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 12:44					
1,3-Dichlorobenzene	10.7	0.20	ug/L	10.0		107	80-120			
1,4-Dichlorobenzene	10.1	0.20	ug/L	10.0		101	80-120			
n-Butylbenzene	11.7	0.20	ug/L	10.0		117	74-129			
1,2-Dichlorobenzene	10.3	0.20	ug/L	10.0		103	80-120			
1,2-Dibromo-3-chloropropane	10.7	0.50	ug/L	10.0		107	62-123			
1,2,4-Trichlorobenzene	10.9	0.50	ug/L	10.0		109	64-124			
Hexachloro-1,3-Butadiene	10.0	0.50	ug/L	10.0		100	58-123			
Naphthalene	10.8	0.50	ug/L	10.0		108	50-134			
1,2,3-Trichlorobenzene	10.8	0.50	ug/L	10.0		108	49-133			
Dichlorodifluoromethane	11.6	0.20	ug/L	10.0		116	48-147			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.88		ug/L	5.00		97.5	80-129			
<i>Surrogate: Toluene-d8</i>	5.07		ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.19		ug/L	5.00		104	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.95		ug/L	5.00		99.0	80-120			
LCS Dup (BK10680-BSD1)										
					Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 13:26					
Chloromethane	9.29	0.50	ug/L	10.0		92.9	60-138	2.35	30	
Vinyl Chloride	10.1	0.10	ug/L	10.0		101	66-133	2.01	30	
Bromomethane	10.2	1.00	ug/L	10.0		102	72-131	0.11	30	
Chloroethane	9.83	0.20	ug/L	10.0		98.3	60-155	0.53	30	
Trichlorofluoromethane	9.82	0.20	ug/L	10.0		98.2	62-141	6.52	30	
Acrolein	51.9	5.00	ug/L	50.0		104	52-190	1.25	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.7	0.20	ug/L	10.0		107	76-129	2.51	30	
Acetone	53.0	5.00	ug/L	50.0		106	58-142	1.09	30	
1,1-Dichloroethene	10.5	0.20	ug/L	10.0		105	69-135	1.74	30	
Iodomethane	9.91	1.00	ug/L	10.0		99.1	56-147	3.70	30	
Methylene Chloride	9.64	1.00	ug/L	10.0		96.4	65-135	0.12	30	
Acrylonitrile	8.29	1.00	ug/L	10.0		82.9	64-134	7.72	30	
Carbon Disulfide	10.4	0.20	ug/L	10.0		104	78-125	1.16	30	
trans-1,2-Dichloroethene	9.61	0.20	ug/L	10.0		96.1	78-128	0.76	30	
Vinyl Acetate	9.99	0.20	ug/L	10.0		99.9	55-138	2.49	30	
1,1-Dichloroethane	9.96	0.20	ug/L	10.0		99.6	76-124	0.24	30	
2-Butanone	54.7	5.00	ug/L	50.0		109	61-140	5.83	30	
2,2-Dichloropropane	11.0	0.20	ug/L	10.0		110	66-147	13.60	30	
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	80-121	1.47	30	



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

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

Reported:
15-Oct-2022 16:07

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKI0680-BSD1)		Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 13:26								
Chloroform	9.92	0.20	ug/L	10.0		99.2	80-122	0.15	30	
Bromochloromethane	9.84	0.20	ug/L	10.0		98.4	80-121	0.64	30	
1,1,1-Trichloroethane	10.3	0.20	ug/L	10.0		103	79-123	0.29	30	
1,1-Dichloropropene	11.4	0.10	ug/L	10.0		114	80-127	2.49	30	
Carbon tetrachloride	10.3	0.20	ug/L	10.0		103	53-137	2.20	30	
1,2-Dichloroethane	10.4	0.20	ug/L	10.0		104	75-123	0.33	30	
Benzene	10.6	0.20	ug/L	10.0		106	80-120	0.21	30	
Trichloroethene	10.3	0.20	ug/L	10.0		103	80-120	1.14	30	
1,2-Dichloropropane	10.1	0.20	ug/L	10.0		101	80-120	1.10	30	
Bromodichloromethane	10.3	0.20	ug/L	10.0		103	80-121	0.45	30	
Dibromomethane	10.4	0.20	ug/L	10.0		104	80-120	0.41	30	
2-Chloroethyl vinyl ether	9.17	1.00	ug/L	10.0		91.7	64-120	4.95	30	
4-Methyl-2-Pentanone	60.9	2.50	ug/L	50.0		122	67-133	1.81	30	
cis-1,3-Dichloropropene	11.5	0.20	ug/L	10.0		115	80-124	1.29	30	
Toluene	10.5	0.20	ug/L	10.0		105	80-120	0.70	30	
trans-1,3-Dichloropropene	11.6	0.20	ug/L	10.0		116	71-127	2.75	30	
2-Hexanone	59.9	5.00	ug/L	50.0		120	69-133	2.96	30	
1,1,2-Trichloroethane	10.5	0.20	ug/L	10.0		105	80-121	0.33	30	
1,3-Dichloropropane	10.6	0.10	ug/L	10.0		106	80-120	1.97	30	
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120	0.36	30	
Dibromochloromethane	10.5	0.20	ug/L	10.0		105	65-135	2.13	30	
1,2-Dibromoethane	11.0	0.10	ug/L	10.0		110	80-121	0.36	30	
Chlorobenzene	10.2	0.20	ug/L	10.0		102	80-120	2.81	30	
Ethylbenzene	10.6	0.20	ug/L	10.0		106	80-120	1.11	30	
1,1,1,2-Tetrachloroethane	10.2	0.20	ug/L	10.0		102	80-120	2.80	30	
m,p-Xylene	22.8	0.40	ug/L	20.0		114	80-121	0.43	30	
o-Xylene	10.8	0.20	ug/L	10.0		108	80-121	0.96	30	
Xylenes, total	33.6	0.60	ug/L	30.0		112	76-127	0.60	30	
Styrene	10.1	0.20	ug/L	10.0		101	80-124	0.31	30	
Bromoform	9.59	0.20	ug/L	10.0		95.9	51-134	2.47	30	
1,1,2,2-Tetrachloroethane	10.4	0.20	ug/L	10.0		104	77-123	1.76	30	
1,2,3-Trichloropropane	10.6	0.25	ug/L	10.0		106	76-125	0.06	30	
trans-1,4-Dichloro 2-Butene	10.6	1.00	ug/L	10.0		106	55-129	2.95	30	
n-Propylbenzene	12.2	0.20	ug/L	10.0		122	78-130	3.55	30	
Bromobenzene	10.7	0.20	ug/L	10.0		107	80-120	1.29	30	



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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:
15-Oct-2022 16:07

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKI0680 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKI0680-BSD1)				Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 13:26						
Isopropyl Benzene	11.8	0.20	ug/L	10.0		118	80-128	3.19	30	
2-Chlorotoluene	11.5	0.10	ug/L	10.0		115	78-122	1.79	30	
4-Chlorotoluene	11.7	0.20	ug/L	10.0		117	80-121	3.07	30	
t-Butylbenzene	12.4	0.20	ug/L	10.0		124	78-125	2.82	30	
1,3,5-Trimethylbenzene	12.7	0.20	ug/L	10.0		127	80-129	3.51	30	
1,2,4-Trimethylbenzene	11.4	0.20	ug/L	10.0		114	80-127	3.09	30	
s-Butylbenzene	12.7	0.20	ug/L	10.0		127	78-129	5.84	30	
4-Isopropyl Toluene	11.4	0.20	ug/L	10.0		114	79-130	6.93	30	
1,3-Dichlorobenzene	11.0	0.20	ug/L	10.0		110	80-120	3.01	30	
1,4-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120	2.93	30	
n-Butylbenzene	13.2	0.20	ug/L	10.0		132	74-129	11.90	30	*
1,2-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	2.28	30	
1,2-Dibromo-3-chloropropane	10.7	0.50	ug/L	10.0		107	62-123	0.06	30	
1,2,4-Trichlorobenzene	11.9	0.50	ug/L	10.0		119	64-124	9.32	30	
Hexachloro-1,3-Butadiene	12.5	0.50	ug/L	10.0		125	58-123	21.80	30	*
Naphthalene	11.1	0.50	ug/L	10.0		111	50-134	3.47	30	
1,2,3-Trichlorobenzene	11.7	0.50	ug/L	10.0		117	49-133	8.09	30	
Dichlorodifluoromethane	11.7	0.20	ug/L	10.0		117	48-147	0.48	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.02		ug/L	5.00		100	80-129			
<i>Surrogate: Toluene-d8</i>	5.06		ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.14		ug/L	5.00		103	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.02		ug/L	5.00		100	80-120			



Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333	Project: Landsburg Project Number: Landsburg Project Manager: Gary Zimmerman	Reported: 15-Oct-2022 16:07
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Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKI0701 - NWTPH-HCID

Instrument: FID3 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0701-BLK1)		Prepared: 30-Sep-2022 Analyzed: 03-Oct-2022 15:14								
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	0.219		mg/L	0.225	97.2		50-150			
Surrogate: <i>n</i> -Triacontane	0.295		mg/L	0.225	131		50-150			



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Project: Landsburg
Project Number: Landsburg
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Reported:
15-Oct-2022 16:07

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0086 - EPA 200.8

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0086-BLK1)											
						Prepared: 05-Oct-2022 Analyzed: 05-Oct-2022 22:07					
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 (BKJ0086-BS1)											
						Prepared: 05-Oct-2022 Analyzed: 05-Oct-2022 22:12					
Antimony	121	0.0235	0.00300	mg/L	0.0250		94.1	80-120			
Lead	208	0.0241	0.0100	mg/L	0.0250		96.2	80-120			
Thallium	205	0.0239	0.00200	mg/L	0.0250		95.6	80-120			
Arsenic	75a	0.0241	0.00300	mg/L	0.0250		96.2	80-120			
Selenium	78	0.0801	0.0250	mg/L	0.0800		100	80-120			

Duplicate (BKJ0086-DUP1)											
			Source: 2210462-01			Prepared: 05-Oct-2022 Analyzed: 07-Oct-2022 03:26					
Antimony	121	ND	0.00300	mg/L		ND					U
Lead	208	ND	0.0100	mg/L		ND					U
Thallium	205	ND	0.00200	mg/L		ND					U
Arsenic	75a	ND	0.00300	mg/L		ND					U
Selenium	78	ND	0.0250	mg/L		ND					U

Matrix Spike (BKJ0086-MS1)											
			Source: 2210462-01			Prepared: 05-Oct-2022 Analyzed: 07-Oct-2022 03:30					
Antimony	121	0.0214	0.00300	mg/L	0.0250	ND	85.4	75-125			
Lead	208	0.0219	0.0100	mg/L	0.0250	ND	87.4	75-125			
Thallium	205	0.0227	0.00200	mg/L	0.0250	ND	90.8	75-125			
Arsenic	75a	0.0263	0.00300	mg/L	0.0250	ND	100	75-125			
Selenium	78	0.0726	0.0250	mg/L	0.0800	ND	90.8	75-125			

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

Matrix Spike Dup (BKJ0086-MSD1)											
			Source: 2210462-01			Prepared: 05-Oct-2022 Analyzed: 07-Oct-2022 03:35					
Antimony	121	0.0250	0.00300	mg/L	0.0250	ND	100	75-125	15.70	20	
Lead	208	0.0197	0.0100	mg/L	0.0250	ND	78.8	75-125	10.40	20	
Thallium	205	0.0204	0.00200	mg/L	0.0250	ND	81.8	75-125	10.40	20	
Arsenic	75a	0.0248	0.00300	mg/L	0.0250	ND	94.1	75-125	5.78	20	
Selenium	78	0.0690	0.0250	mg/L	0.0800	ND	86.2	75-125	5.15	20	

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



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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:
15-Oct-2022 16:07

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0087 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0087-BLK1)										
Prepared: 05-Oct-2022 Analyzed: 11-Oct-2022 17:13										
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
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
Sodium	ND	50.0	mg/L							U
Vanadium	ND	0.0030	mg/L							U
Zinc	ND	0.0200	mg/L							U

Blank (BKJ0087-BLK2)										
Prepared: 05-Oct-2022 Analyzed: 12-Oct-2022 18:00										
Calcium	ND	0.500	mg/L							U

LCS (BKJ0087-BS1)										
Prepared: 05-Oct-2022 Analyzed: 11-Oct-2022 17:16										
Aluminum	2.13	1.00	mg/L	2.00		107	80-120			
Barium	2.05	0.500	mg/L	2.00		102	80-120			
Beryllium	0.507	0.0100	mg/L	0.500		101	80-120			
Cadmium	0.544	0.0020	mg/L	0.500		109	80-120			
Chromium	0.496	0.0100	mg/L	0.500		99.1	80-120			
Cobalt	0.532	0.0100	mg/L	0.500		106	80-120			
Copper	0.484	0.0030	mg/L	0.500		96.8	80-120			
Iron	1.96	0.200	mg/L	2.00		97.9	80-120			
Magnesium	10.9	0.500	mg/L	10.0		109	80-120			
Manganese	0.524	0.0100	mg/L	0.500		105	80-120			
Nickel	0.515	0.0100	mg/L	0.500		103	80-120			
Potassium	10.1	0.500	mg/L	10.0		101	80-120			
Silver	0.514	0.0050	mg/L	0.500		103	80-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0087 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKJ0087-BS1)		Prepared: 05-Oct-2022 Analyzed: 11-Oct-2022 17:16								
Sodium	10.2	0.500	mg/L	10.0		102	80-120			
Sodium	ND	50.0	mg/L	10.0		118	80-120			U
Vanadium	0.494	0.0030	mg/L	0.500		98.8	80-120			
Zinc	0.495	0.0200	mg/L	0.500		99.0	80-120			
LCS (BKJ0087-BS2)		Prepared: 05-Oct-2022 Analyzed: 12-Oct-2022 18:03								
Calcium	9.57	0.500	mg/L	10.0		95.7	80-120			
Duplicate (BKJ0087-DUP1)		Source: 22I0462-01		Prepared: 05-Oct-2022 Analyzed: 11-Oct-2022 18:13						
Aluminum	ND	1.00	mg/L		ND					U
Barium	ND	0.500	mg/L		ND					U
Beryllium	ND	0.0100	mg/L		ND					U
Cadmium	ND	0.0020	mg/L		ND					U
Chromium	ND	0.0100	mg/L		ND					U
Cobalt	0.0106	0.0100	mg/L		0.0104			1.49	20	
Copper	ND	0.0030	mg/L		ND					U
Iron	10.8	0.200	mg/L		10.9			0.72	20	
Magnesium	61.1	0.500	mg/L		62.5			2.13	20	
Manganese	0.578	0.0100	mg/L		0.587			1.48	20	
Nickel	0.0132	0.0100	mg/L		ND			39.70	20	L
Potassium	3.40	0.500	mg/L		3.47			2.20	20	
Silver	ND	0.0050	mg/L		ND					U
Sodium	11.1	0.500	mg/L		11.4			2.20	20	
Vanadium	ND	0.0030	mg/L		ND					U
Zinc	ND	0.0200	mg/L		ND					U
Duplicate (BKJ0087-DUP2)		Source: 22I0462-01		Prepared: 05-Oct-2022 Analyzed: 12-Oct-2022 18:21						
Calcium	129	0.500	mg/L		132			1.96	20	
Matrix Spike (BKJ0087-MS1)		Source: 22I0462-01		Prepared: 05-Oct-2022 Analyzed: 11-Oct-2022 18:16						
Aluminum	1.98	1.00	mg/L	2.00	ND	98.9	75-125			
Barium	1.91	0.500	mg/L	2.00	ND	94.1	75-125			
Beryllium	0.486	0.0100	mg/L	0.500	ND	97.3	75-125			
Cadmium	0.527	0.0020	mg/L	0.500	ND	105	75-125			
Chromium	0.470	0.0100	mg/L	0.500	ND	94.1	75-125			
Cobalt	0.503	0.0100	mg/L	0.500	0.0104	98.5	75-125			



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Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0087 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKJ0087-MS1) Source: 2210462-01 Prepared: 05-Oct-2022 Analyzed: 11-Oct-2022 18:16										
Copper	0.463	0.0030	mg/L	0.500	ND	92.5	75-125			
Iron	11.1	0.200	mg/L	2.00	10.9	12.0	75-125			HC
Magnesium	64.9	0.500	mg/L	10.0	62.5	24.0	75-125			HC
Manganese	1.07	0.0100	mg/L	0.500	0.587	95.8	75-125			
Nickel	0.480	0.0100	mg/L	0.500	ND	94.3	75-125			
Potassium	13.1	0.500	mg/L	10.0	3.47	96.1	75-125			
Silver	0.498	0.0050	mg/L	0.500	ND	99.6	75-125			
Sodium	20.4	0.500	mg/L	10.0	11.4	90.5	75-125			
Vanadium	0.477	0.0030	mg/L	0.500	ND	95.4	75-125			
Zinc	0.465	0.0200	mg/L	0.500	ND	93.0	75-125			

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

Matrix Spike (BKJ0087-MS2) Source: 2210462-01 Prepared: 05-Oct-2022 Analyzed: 12-Oct-2022 18:24										
Calcium	133	0.500	mg/L	10.0	132	10.4	75-125			HC

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

Matrix Spike Dup (BKJ0087-MSD1) Source: 2210462-01 Prepared: 05-Oct-2022 Analyzed: 11-Oct-2022 18:19										
Aluminum	2.09	1.00	mg/L	2.00	ND	104	75-125	5.38	20	
Barium	1.99	0.500	mg/L	2.00	ND	98.2	75-125	4.21	20	
Beryllium	0.501	0.0100	mg/L	0.500	ND	100	75-125	3.03	20	
Cadmium	0.544	0.0020	mg/L	0.500	ND	109	75-125	3.14	20	
Chromium	0.489	0.0100	mg/L	0.500	ND	97.8	75-125	3.86	20	
Cobalt	0.518	0.0100	mg/L	0.500	0.0104	101	75-125	2.88	20	
Copper	0.477	0.0030	mg/L	0.500	ND	95.3	75-125	3.00	20	
Iron	11.9	0.200	mg/L	2.00	10.9	50.2	75-125	6.63	20	HC
Magnesium	69.0	0.500	mg/L	10.0	62.5	64.9	75-125	6.10	20	HC
Manganese	1.13	0.0100	mg/L	0.500	0.587	108	75-125	5.74	20	
Nickel	0.499	0.0100	mg/L	0.500	ND	98.0	75-125	3.77	20	
Potassium	13.8	0.500	mg/L	10.0	3.47	103	75-125	5.15	20	
Silver	0.513	0.0050	mg/L	0.500	ND	103	75-125	2.97	20	
Sodium	21.5	0.500	mg/L	10.0	11.4	102	75-125	5.28	20	
Vanadium	0.491	0.0030	mg/L	0.500	ND	98.2	75-125	2.96	20	
Zinc	0.481	0.0200	mg/L	0.500	ND	96.2	75-125	3.40	20	

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



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0087 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKJ0087-MSD2)										
		Source: 2210462-01		Prepared: 05-Oct-2022		Analyzed: 12-Oct-2022 18:28				
Calcium	140	0.500	mg/L	10.0	132	83.0	75-125	5.33	20	

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



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0276 - 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 (BKJ0276-BLK1)					Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 13:39					
Mercury	ND	0.00100	mg/L							U
LCS (BKJ0276-BS1)					Prepared: 11-Oct-2022 Analyzed: 12-Oct-2022 13:41					
Mercury	0.00188	0.00100	mg/L	0.00200		94.0	80-120			



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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
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



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1,1,2-Trichloro-1,2,2-Trifluoroethane	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
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



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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
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
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

NWTPH-HCID in Water

Gasoline Range Organics (Tol-C12)	NELAP,DoD-ELAP,WADOE
Diesel Range Organics (C12-C24)	NELAP,DoD-ELAP,WADOE
Motor Oil Range Organics (C24-C38)	NELAP,DoD-ELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023



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Notes and Definitions

- * Flagged value is not within established control limits.
- 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.** 923-1000-007.2021

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 28, 2022 **Time** 15:55

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: 15.24 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
1-500 mL	Total Metals	HDPE	HNO3
3-40 mL	VOA	VOA vial	HCl
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

DRAFT

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-5

Date 09/28/2022

Time Begin Purge 15:15

Time Collect Sample 15:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
15.24	15:20	6.97	472.2	10.9	5.44	-56.0	1.37
15.24	15:25	6.97	472.9	10.9	4.31	-61.0	2.87
15.24	15:30	6.96	472.7	11	3.61	-64.5	0.60
15.25	15:35	6.96	473.2	11	3.19	-68.2	0.94
15.25	15:40	6.96	472.7	11	2.96	-69.2	0.33
15.25	15:45	6.96	472.5	11	2.72	-70.7	1.81
15.25	15:48	6.96	472.3	11	2.57	-71.6	0.87
15.25	15:51	6.96	472.1	11	2.5	-72.0	0.54

Comments:

Grundfos: 100 Hz
Packer: 110 psi
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: 2700 mL/min

Sampler SAT

Date September 28, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-007.2021Site Location Ravensdale, WA Sample ID LMW-9Sampling Location Groundwater Monitoring Well - end dedicated sampling tubeTechnical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)Type of Sampler Dedicated QED BladderDate September 28, 2022 Time 14:40Media Water Station LMW-9Sample Type: **grab** time composite space composite

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

Static Water Level: 100.31 ft BTOCScreened Interval: 149' - 159' BGSSand Pack Interval: 143.5' - 159' BGSPacker Depth: N/ASample Description clear, no odor, no sheenField Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

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

DRAFT

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-9

Date 09/28/2022

Time Begin Purge 14:05

Time Collect Sample 14:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
100.33	14:10	7.04	461	10.9	5.89	-42.6	0.97
100.37	14:15	7.04	460.3	10.9	4.57	-51.4	1.59
100.34	14:20	7.04	459.9	10.9	3.79	-54.6	0.44
100.36	14:25	7.04	459.9	10.9	3.38	-56.1	0.37
100.38	14:30	7.04	459.3	10.9	3.03	-57.3	0.30
100.32	14:33	7.04	459.1	10.9	2.92	-57.7	0.61
100.36	14:36	7.04	458.5	10.9	2.82	-57.7	0.40

Comments:

Grundfos: N/A
 Packer: N/A
 Tank: 130
 Throttle: 95
 CPM: 2
 CID: 51
 Flow Rate: 500 mL/min

Sampler SJM

Date September 28, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-007.2021Site Location Ravensdale, WA Sample ID LMW-3Sampling Location Groundwater Monitoring Well - end dedicated sampling tubeTechnical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)Type of Sampler Dedicated Pump GrundfosDate September 28, 2022 Time 13:25Media Water Station LMW-3Sample Type: **grab** time composite space composite

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

Static Water Level: 13.78 ft BTOCScreened Interval: 49.8' - 64.8' BGSSand Pack Interval: 47.1' - 64.8' BGSPacker Depth: 39.33' BGSSample Description clear, no odor, no sheenField Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
1-500 mL	Total Metals	HDPE	HNO3
3-40 mL	VOA	VOA vial	HCl
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-3Date 09/28/2022Time Begin Purge 12:45Time Collect Sample 13:25

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
20.24	12:50	7.87	225.6	11.3	6.17	81.3	0.29
20.45	12:55	7.81	227.1	11.4	4.69	73.2	0.21
20.52	13:00	7.81	228.5	11.4	3.83	37.1	0.10
20.55	13:05	7.81	228.5	11.4	3.29	4.4	0.11
20.56	13:10	7.8	227.5	11.3	2.92	-18.6	0.14
20.58	13:15	7.79	227.3	11.3	2.71	-27	0.10
20.59	13:20	7.78	227.4	11.3	2.57	-31.7	0.13
20.59	13:23	7.78	228	11.3	2.48	-33.5	0.11

Comments:

Grundfos: ~135 Hz

Packer: 130 psi

Tank: N/A

Throttle: N/A

CPM: N/A

CID: N/A

Flow Rate: 3000 mL/min

Sampler *dtl*Date September 28, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2021

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 New Tubing and Peristaltic Pump

Date September 28, 2022 **Time** 12:20

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: 5.22 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
1-500 mL	Total Metals	HDPE	HNO3
3-40 mL	VOA	VOA vial	HCl
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

DRAFT
SAMPLE INTEGRITY DATA SHEET

Well ID LMW-8

Date 09/28/2022

Time Begin Purge 11:40

Time Collect Sample 12:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
6.72	11:45	6.89	395.5	13.5	4.68	-91.0	1.70
7.04	11:50	6.83	442.2	13.6	3.94	-91.5	0.43
7.1	11:55	6.83	466.7	13.5	3.34	-91.2	0.62
7.13	12:00	6.83	471.5	13.5	2.89	-91.6	0.27
7.22	12:05	6.84	465.7	13.5	2.59	-92.2	0.27
7.36	12:10	6.84	469.2	13.4	2.41	-92.7	0.25
7.38	12:15	6.84	474.9	13.6	2.27	-92.9	0.18

Comments:

Grundfos: N/A
 Packer: N/A
 Tank: N/A
 Throttle: N/A
 CPM: N/A
 CID: N/A
 Flow Rate: 200 mL/min

Sampler *LR*

Date September 28, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2021

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 28, 2022 **Time** 10:53

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: 227.27 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
1-500 mL	Total Metals	HDPE	HNO3
3-40 mL	VOA	VOA vial	HCl
4-500 mL	TPH-HCID, -Dx (HOLD)	Glass amber	None
2-40 mL	TPH-Gx (HOLD)	VOA vial	HCl

DRAFT

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-7

Date 09/28/2022

Time Begin Purge 10:00

Time Collect Sample 10:53

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
227.31	10:05	7.39	374.2	13.5	4.36	57.8	2.39
227.31	10:10	7.36	380.3	14.1	3.75	58.8	3.41
227.31	10:15	7.35	384.2	14.5	3.23	51.0	8.77
227.31	10:20	7.35	386.2	14.6	3	28.0	6.50
227.31	10:25	7.35	387.2	14.7	2.81	1.7	3.89
227.31	10:30	7.35	387.9	14.8	2.57	-3.5	3.27
227.31	10:35	7.34	390.1	14.8	2.44	-5.7	2.24
227.31	10:40	7.32	395	14.8	2.32	-26.3	1.97
227.31	10:45	7.31	399.8	14.9	2.25	-36.0	1.21
227.31	10:50	7.29	403.3	14.9	2.15	-43.9	1.35
227.31	10:53	7.27	407.9	14.9	2.07	-49.5	0.86

Comments:
 Grundfos: 332 Hz
 Packer: N/A
 Tank: N/A
 Throttle: N/A
 CPM: N/A
 CID: N/A
 Flow Rate: 1350 mL/min

Sampler 

Date September 28, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2021

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 28, 2022 **Time** 09:00

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: 166.83 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
1-500 mL	Total Metals	HDPE	HNO3
3-40 mL	VOA	VOA vial	HCl
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 09/28/2022

Time Begin Purge 08:20

Time Collect Sample 09:00

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
167.09	08:25	6.53	1,381	11.9	6.16	158.2	3.78
167.03	08:30	6.58	882	11.5	4.89	14.7	6.03
166.97	08:35	6.59	778	11.4	3.91	-14.6	6.55
166.97	08:40	6.58	758	11.4	3.36	-20.8	5.32
166.96	08:45	6.58	751	11.4	3.03	-22.1	4.38
166.93	08:50	6.58	748	11.5	2.86	-21.8	3.68
166.96	08:55	6.57	744	11.5	2.68	-21.3	3.77
166.95	08:58	6.57	742	11.5	2.63	-21.1	3.51

Comments:

Grundfos: N/A
 Packer: N/A
 Tank: 140
 Throttle: 115
 CPM: 2
 CID: 49
 Flow Rate: 250 mL/min

Sampler 

Date September 28, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2021

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 26, 2022 **Time** 14:35

Media Water **Station** LMW-13R

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

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

Static Water Level: 13.25 ft BTOC

Screened Interval: 115' - 140' BGS

Sand Pack Interval: 110' - 150' BGS

Packer Depth: N/A

Sample Description Clear, no sheen, slight sulfur odor

Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

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

DRAFT
SAMPLE INTEGRITY DATA SHEET

Well ID LMW-13R

Date 09/26/2022

Time Begin Purge 13:55

Time Collect Sample 14:35

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
13.41	14:00	7.28	641	11	5.2	-85.1	1.42
13.41	14:05	7.1	654	11.8	3.92	-79.1	0.70
13.42	14:10	7.1	654	11.8	3.35	-86.8	1.23
13.43	14:15	7.1	653	11.7	2.9	-100.9	0.34
13.42	14:20	7.09	652	11.6	2.42	-112.3	0.13
13.43	14:25	7.08	652	11.6	2.28	-113.9	0.41
13.43	14:30	7.08	652	11.6	2.19	-116.3	0.83

Comments:

Grundfos: N/A
Packer: N/A
Tank: 110
Throttle: 35
CPM: 2
CID: 48
Flow Rate: 360 mL/min

Sampler *AK2*

Date September 26, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-007.2021Site Location Ravensdale, WA Sample ID LMW-12Sampling Location Groundwater Monitoring Well - end dedicated sampling tubeTechnical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)Type of Sampler Dedicated QED BladderDate September 26, 2022 Time 15:40Media Water Station LMW-12Sample Type: **grab** time composite space composite

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

Static Water Level: 12.73 ft BTOCScreened Interval: 15' - 25' BGSSand Pack Interval: 11' - 25' BGSPacker Depth: N/ASample Description Clear, no sheen, slight sulfur odorField Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

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

DRAFT
SAMPLE INTEGRITY DATA SHEET

Well ID LMW-12

Date 09/26/2022

Time Begin Purge 15:10

Time Collect Sample 15:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
12.78	15:15	6.16	469	11.2	3.86	-63.5	3.90
12.73	15:20	6.36	474.7	11.4	3.2	-66.5	3.31
12.73	15:25	6.4	497.9	11.2	2.68	-68.5	2.70
12.73	15:30	6.4	505	11.2	2.37	-68.5	3.06
12.72	15:35	6.4	506	11.2	2.2	-69.4	4.45
12.74	15:40	6.4	506	11.1	2.09	-70.2	4.63

Comments:

Grundfos: N/A
Packer: N/A
Tank: 110
Throttle: 20
CPM: 2
CID: 47
Flow Rate: 400 mL/min

Sampler CHL

Date September 26, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-007.2021Site Location Ravensdale, WA Sample ID LMW-4Sampling Location Groundwater Monitoring Well - end dedicated sampling tubeTechnical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)Type of Sampler Dedicated Pump GrundfosDate September 26, 2022 Time 12:30Media Water Station LMW-4Sample Type: **grab** time composite space composite

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

Static Water Level: 10.91 ft BTOCScreened Interval: 195' - 209.7' BGSSand Pack Interval: 189' - 209.7' BGSPacker Depth: 187.3' BGSSample Description Clear, no sheen, slight sulfur odorField Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

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

DRAFT
SAMPLE INTEGRITY DATA SHEET

Well ID LMW-4

Date 09/26/2022

Time Begin Purge 11:50

Time Collect Sample 12:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
10.91	11:55	7.5	699	11.2	5.54	50.2	0.31
10.91	12:00	6.66	704	11.2	3.54	-96.5	0.21
10.91	12:05	6.6	705	11.3	3.01	-101.9	0.18
10.91	12:10	6.57	704	11.3	2.56	-105.4	0.12
10.91	12:15	6.56	704	11.3	2.29	-106.9	0.14
10.91	12:20	6.55	703	11.3	2.12	-109.5	0.15
10.91	12:25	6.55	702	11.3	2.02	-113.6	0.11
10.92	12:30	6.54	702	11.3	1.95	-115.4	0.56

Comments:
MS and MSD collected

Grundfos: 80 Hz
Packer: 110 psi
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: 800 mL/min

Sampler 

Date September 26, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2021

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 26, 2022 **Time** 11:00

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: 8.07 ft BTOC

Screened Interval: 27.9' - 38.1' BGS

Sand Pack Interval: 24.8' - 38.1' BGS

Packer Depth: N/A

Sample Description Clear, no sheen, slight sulfur odor

Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

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

DRAFT
SAMPLE INTEGRITY DATA SHEET

Well ID LMW-2

Date 09/26/2022

Time Begin Purge 09:35

Time Collect Sample 11:00

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
8.07	10:30	6.49	726	11.6	4.9	-74.5	0.2
8.07	10:35	6.47	726	11.7	3.71	-98.0	0.47
8.07	10:40	6.47	727	11.7	3.21	-101.9	0.10
8.07	10:45	6.48	726	11.8	2.88	-101.5	0.09
8.07	10:50	6.49	725	11.7	2.61	-107.2	0.11
8.07	10:55	6.5	725	11.8	2.43	-109.9	0.12

Comments:

Grundfos: 80
Packer: N/A
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: 860 mL/min

Sampler *Suz*

Date September 26, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-007.2021Site Location Ravensdale, WA Sample ID LMW-2 (duplicate)Sampling Location Groundwater Monitoring Well - end dedicated sampling tubeTechnical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)Type of Sampler Dedicated Pump GrundfosDate September 26, 2022 Time 11:00Media Water Station LMW-2-0922-D (duplicate)Sample Type: **grab** time composite space composite

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

Static Water Level: 8.07 ft BTOCScreened Interval: 27.9' - 38.1' BGSSand Pack Interval: 24.8' - 38.1' BGSPacker Depth: N/ASample Description Clear, no sheen, slight sulfur odorField Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

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

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-2 (duplicate)

Date 09/26/2022

Time Begin Purge 09:35

Time Collect Sample 11:05

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
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Comments:

Grundfos: 80 Hz
Packer: N/A
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: 860 mL/min

Sampler *SMZ*

Date September 26, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2021

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

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 27, 2022 **Time** 14:00

Media Water **Station** LMW-FB

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 ft BTOC

Screened Interval: N/A

Sand Pack Interval: N/A

Packer Depth: N/A

Sample Description _____

Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

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

SAMPLE INTEGRITY DATA SHEET

Well ID LMW-FB

Date 09/27/2022

Time Begin Purge 14:00

Time Collect Sample 14:00

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
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Comments:
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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 *dl*

Date September 27, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2021

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 27, 2022 **Time** 13:40

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: 158.17 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
1-500 mL	Total Metals	HDPE	HNO3
3-40 mL	VOA	VOA vial	HCl
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 09/27/2022

Time Begin Purge 13:00

Time Collect Sample 13:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
158.17	13:05	7.43	461.4	11	6.53	-41.6	1.14
158.17	13:10	7.41	463.4	10.5	4.78	-54.9	0.78
158.18	13:15	7.4	469.2	10.6	3.77	-59.9	0.51
158.19	13:20	7.4	473.3	10.6	3.23	-64.0	0.43
158.19	13:25	7.39	474.4	10.7	2.97	-65.7	0.35
158.19	13:30	7.39	475.8	10.7	2.76	-67.5	0.34
158.19	13:35	7.39	475.4	10.7	2.56	-69.5	0.24

Comments:

Grundfos: N/A
 Packer: N/A
 Tank: 130
 Throttle: 110
 CPM: 1
 CID: 15
 Flow Rate: 375 mL/min

Sampler *AK*

Date September 27, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-007.2021Site Location Ravensdale, WA Sample ID LMW-15Sampling Location Groundwater Monitoring Well - end dedicated sampling tubeTechnical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)Type of Sampler Dedicated QED BladderDate September 27, 2022 Time 12:25Media Water Station LMW-15Sample Type: **grab** time composite space composite

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

Static Water Level: 152.19 ft BTOCScreened Interval: 235' - 245' BGSSand Pack Interval: 231' - 245' BGSPacker Depth: N/ASample Description clear, no odor, no sheenField Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation / Amount
1-500 mL	Total Metals	HDPE	HNO3
3-40 mL	VOA	VOA vial	HCl
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 09/27/2022

Time Begin Purge 11:50

Time Collect Sample 12:25

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
152.34	11:55	7.38	434.3	10.9	7.27	-63.4	2.20
152.33	12:00	7.53	419.4	10.7	4.78	-117.1	2.08
152.39	12:05	7.54	424.2	10.6	4.01	-121.8	1.48
152.21	12:10	7.54	426.5	10.6	3.39	-125.0	1.15
152.39	12:15	7.54	427.7	10.7	3.18	-126.2	0.80
152.36	12:20	7.55	426.6	10.5	2.93	-127.0	1.33
152.31	12:23	7.55	427.7	10.6	2.8	-127.6	1.88

Comments:

Grundfos: N/A
Packer: N/A
Tank: 130
Throttle: 95
CPM: 2
CID: 53
Flow Rate: 400 mL/min

Sampler *AKL*

Date September 27, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site Project No. 923-1000-007.2021Site Location Ravensdale, WA Sample ID LMW-6Sampling Location Groundwater Monitoring Well - end dedicated sampling tubeTechnical Procedure Reference(s) Landsburg Mine Site Compliance Monitoring Plan (2017)Type of Sampler Dedicated Pump GrundfosDate September 27, 2022 Time 10:55Media Water Station LMW-6Sample Type: **grab** time composite space composite

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

Static Water Level: 40.89 ft BTOCScreened Interval: 90.9' - 105.9' BGSSand Pack Interval: 82.5' - 105.9' BGSPacker Depth: 81.22' BGSSample Description clear, no odor, no sheenField Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

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

DRAFT
SAMPLE INTEGRITY DATA SHEET

Well ID LMW-6

Date 09/27/2022

Time Begin Purge 10:20

Time Collect Sample 10:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
47.75	10:25	7.11	218.1	9.7	5.99	28.1	4.01
48.39	10:30	7.07	220.2	10.1	4.96	19.8	3.32
49.27	10:35	7.04	221.3	10.2	4.14	5.7	1.42
50.34	10:40	7.03	222.2	10.3	3.41	-3.1	0.88
50.87	10:45	7.03	222.6	10.4	3.19	-5.7	0.90
51.2	10:50	7.02	223.3	10.4	2.95	-10.1	0.91
51.5	10:55	7.02	224	10.5	2.81	-12.2	0.35

Comments:

Grundfos: 180 Hz
Packer: 110 psi
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: 1650 mL/min

Sampler 

Date September 27, 2022

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Landsburg Mine Site **Project No.** 923-1000-007.2021

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 27, 2022 **Time** 09:35

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: 0.61 ft BTOC

Screened Interval: 267' - 289' BGS

Sand Pack Interval: 258' - 289' BGS

Packer Depth: N/A

Sample Description clear, slight odor, no sheen

Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

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

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SAMPLE INTEGRITY DATA SHEET

Well ID LMW-10

Date 09/27/2022

Time Begin Purge 08:45

Time Collect Sample 09:35

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
1.91	08:50	8.73	322.3	11.1	5.48	-8.1	2.28
2.41	08:55	8.76	320	11.1	3.9	-108.6	0.74
2.79	09:00	8.76	319.2	11	3.43	-149.4	0.82
3.48	09:05	8.77	318.5	11	2.96	-179.5	0.23
3.89	09:10	8.77	318.5	11	2.75	-191.1	0.83
4.33	09:15	8.78	318.7	11	2.57	-198.1	0.18
4.77	09:20	8.78	319	11	2.42	-203.8	0.68
5.49	09:25	8.79	318.7	11	2.23	-213.4	0.32
5.96	09:30	8.8	318.1	11	2.11	-218.9	0.18

Comments:

Grundfos: N/A
Packer: N/A
Tank: 110
Throttle: 40
CPM: 2
CID: 50
Flow Rate: 350 mL/min

Sampler ASL

Date September 27, 2022

Supervisor _____

Date _____



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