**REPORT**

# Compliance Monitoring Report
# December 2022 Quarterly Groundwater Sampling

*Landsburg Mine Site*

Submitted to:

**Washington Department of Ecology**
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Submitted by:

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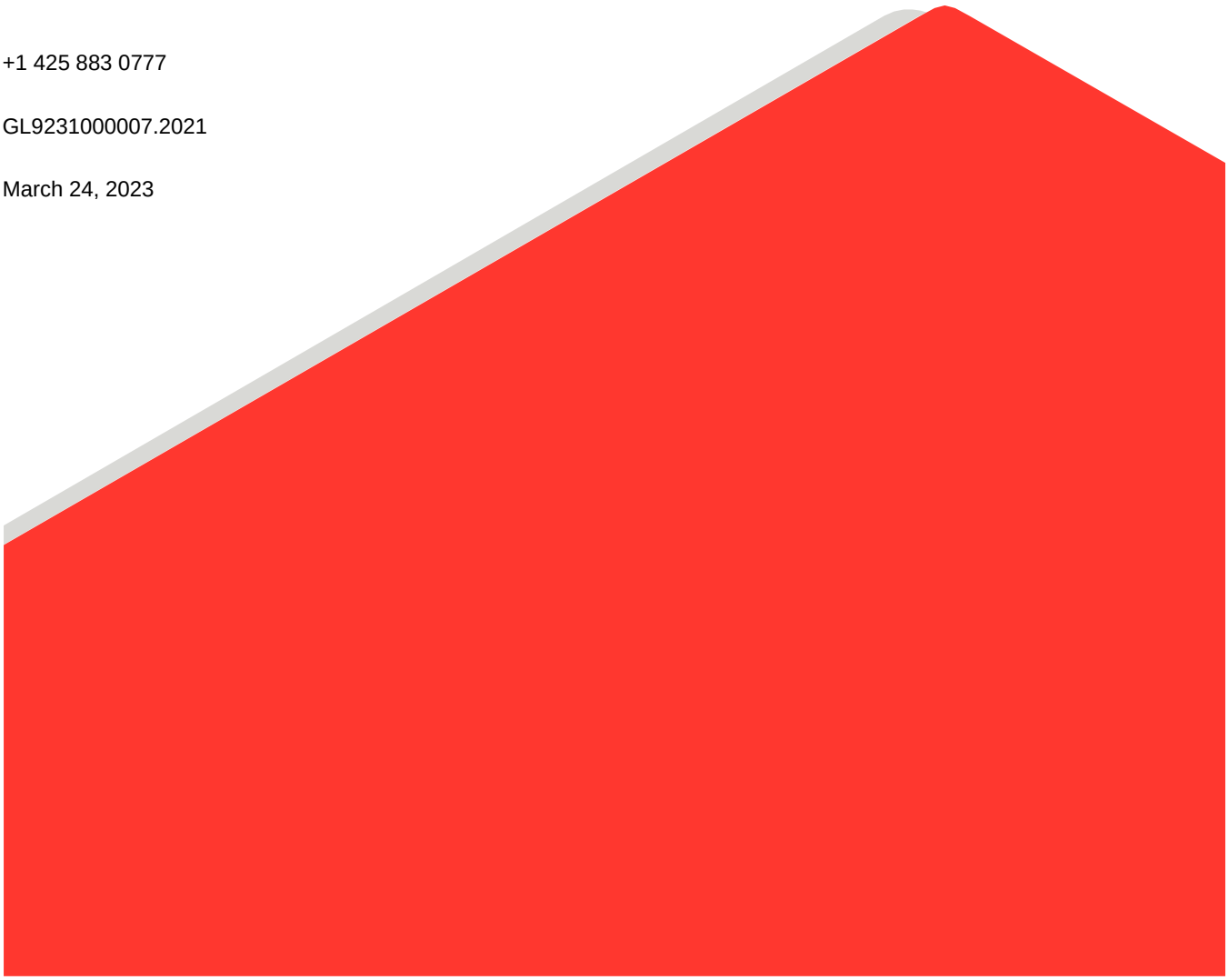

# Distribution List

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Landsburg PLP Group

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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 fourth quarter 2022 confirmational monitoring event, which was completed in December 2022.

The event was conducted on December 19, 21, and 29, 2022, and included collecting groundwater samples from monitoring wells LMW-2, LMW-4, LMW-10, LMW-12, LMW-13R, LMW-20, LMW-21, and LMW-22. Sampling of the Landsburg Estates private well was also completed on December 21, 2022.

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. LMW-20, LMW-21, and LMW-22 monitor groundwater north of the Site, between the Site and the Cedar River.

# 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

Sampling of the Landsburg Estates private well (required annual sampling) was conducted in accordance with the CMP (Ecology 2017), and included the following activities:

- Well purging of a volume sufficient to flush out any standing water in the pipe configuration with the dedicated pumping system installed in the well to ensure sample representativeness.
- Collection of representative samples in appropriate containers provided by the analytical laboratory.
- Analyses of groundwater samples for the following parameters:

- VOCs by USEPA Method 8260D
- 1,4-Dioxane by USEPA SW-846 Method 8270E
- TPHs by NWTPH-HCID

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.

Most of the QA/QC samples (The Field Blank and three Trip Blanks) contained methylene chloride, a common laboratory contaminant, but methylene chloride was not detected at any of the Site wells.

Additionally, a few samples were received partially frozen below the range of acceptability (0º to 6º C). All samples that were partially frozen were qualified (UJ) for non-detects and (J) for detects as detailed in Appendix A. 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. Table 3 presents the laboratory analytical results for the Landsburg Estates private well sample.

## 3.0 RESULTS

The December 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 VOC was detected above the respective laboratory reporting limit:
  - Carbon disulfide was detected in LMW-10 at a concentration of 0.23 micrograms per liter (µg/L). The reported concentration is considerably lower than the MTCA Method A groundwater cleanup level of 800 µg/L. Carbon disulfide is infrequently detected at low levels in Site groundwater samples, and is attributed to the naturally occurring presence of carbon disulfide in the coal bed material.

- 1,4-Dioxane results include the following:
  - 1,4-dioxane was detected in LMW-2 (1.8 µg/L) and LMW-4 (2.0 µg/L). 1,4-dioxane has been detected in prior sampling events only in these wells and LMW-12. 1,4-dioxane was not detected in LMW-12 (<0.4 µg/L) during the December 2022 sampling round. 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 status of the quarterly sampling for 1,4-dioxane is as follows:
    - LMW-2 and LMW-4 have 21 rounds of sampling data.
    - LMW-10 has 20 rounds of 1,4-dioxane sampling data. 1,4-Dioxane has never been detected at LMW-10.
    - LMW-12 has 19 rounds of 1,4-dioxane sampling data.
    - LMW-13R has 19 rounds of 1,4-dioxane sampling data. 1,4-Dioxane has never been detected at LMW-13R.

The results of the Landsburg Estates private well December 2022 monitoring event are summarized below:

- Laboratory analyses did not detect TPH, VOCs, or 1,4-dioxane above the laboratory reporting limits.

## 4.0 NEXT SAMPLING EVENT

The next compliance monitoring event is a confirmational monitoring event scheduled for March 2023, and will include sampling of all Site groundwater monitoring wells: LMW-2 through LMW-13R.

**WSP USA Inc.**

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AP/GLZ/tp

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# 5.0 REFERENCES

Golder Associates Inc. (Golder). 2020. Landsburg Mine Site Quarterly Groundwater Monitoring Report March 2020 Sampling. Landsburg PLP Group, Black Diamond, Washington. June 18.

Washington State Department of Ecology (Ecology). 2017. Exhibit D of the Consent Decree – Compliance Monitoring Plan Landsburg Mine Site MTCA Remediation Project, Ravensdale, Washington. Prepared by WSP. June 7.

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

# Tables

**Table 1: Groundwater Elevation Data, Landsburg Mine Site, December 19, 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 | LMW-20 | LMW-21 | LMW-22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Water Depths** | | | | | | | | | | | | | | | | | | |
| Date of data collection | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 | 12/19/2022 |
| Time of data collection | 11:14 AM | 10:45 AM | 12:32 PM | 10:42 AM | 12:27 PM | 11:03 AM | 12:02 PM | 12:21 PM | 12:40 PM | 10:37 AM | 11:42 AM | 10:31 AM | 10:26 AM | 11:23 AM | 11:35 AM | 1:23 PM | 1:19 PM | 1:27 PM |
| Measured to Top of PVC (ft btc) | 137.80 | 6.83 | 13.42 | 8.95 | 14.89 | 36.65 | 214.36 | 4.13 | 99.99 | 0.45 | 157.82 | 8.51 | 9.05 | 160.71 | 151.90 | 15.32 | 10.26 | 10.55 |
| | | | | | | | | | | | | | | | | | | |
| **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 | 546.8 | 544.09 | 542.86 |
| 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 | 546.92 | 544.36 | 543.13 |
| 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 | 543.24 | 540.58 | 540.00 |
| | | | | | | | | | | | | | | | | | | |
| **Corrected Water Elevation** | | | | | | | | | | | | | | | | | | |
| Using PVC elevation (ft NAVD88) | **627.56** | **610.96** | **643.33** | **610.32** | **643.38** | **595.68** | **557.15** | **642.84** | **644.00** | **618.53** | **644.37** | **616.84** | **616.81** | **644.41** | **644.56** | **531.48** | **533.83** | **532.31** |
| | | | | | | | | | | | | | | | | | | |

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: December 2022 Groundwater Analytical Results Landsburg Mine Site**

| ANALYTE | UNITS | LMW-2 | LMW-2 Duplicate | LMW-4 | LMW-10 | LMW-12 | LMW-13R | LMW-20 | LMW-21 | LMW-22 | Field Blank | Trip Blank 1 | Trip Blank 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12/21/2022 | 12/21/2022 | 12/21/2022 | 12/21/2022 | 12/29/2022 | 12/29/2022 | 12/21/2022 | 12/21/2022 | 12/21/2022 | 12/21/2022 | - | - |
| **Field Parameter** | | | | | | | | | | | | | |
| Temperature | °C | 10.7 | - | 10 | 8.3 | 9.2 | 9.9 | 8.9 | 8.8 | 9.7 | - | - | - |
| pH | stnd | 6.89 | - | 6.89 | 8.7 | 6.46 | 7.24 | 6.63 | 7.61 | 7.23 | - | - | - |
| Specific Conductance | uS/cm | 762 | - | 741 | 259.2 | 166.4 | 681 | 210.3 | 262 | 302.3 | - | - | - |
| Dissolved Oxygen | mg/L | 3.14 | - | 2.68 | 3.71 | 3.17 | 3.03 | 4.97 | 3.5 | 3.85 | - | - | - |
| ORP | mV | -174 | - | -188.2 | -222.3 | -43.6 | -165.2 | 114.2 | 5.9 | -49.6 | - | - | - |
| Turbidity | NTU | 1.31 | - | 7.2 | 1.18 | 3.74 | 0.69 | 3.64 | 5.17 | 9.31 | - | - | - |
| **Volatile Organic Compounds (VOCs)** | | | | | | | | | | | | | |
| Acetone | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | NA | NA | NA | 5 U | 5 U | 5 U |
| Acrolein | ug/L | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | NA | NA | NA | 5 U | 5 U | 5 U |
| Acrylonitrile | ug/L | 1 UJ | 1 UJ | 1 UJ | 1 UJ | 1 UJ | 1 UJ | NA | NA | NA | 1 U | 1 U | 1 U |
| Benzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Bromobenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Bromochloromethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Bromoform | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Bromomethane | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA | NA | NA | 1 U | 1 U | 1 U |
| methyl ethyl ketone | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | NA | NA | NA | 5 U | 5 U | 5 U |
| n-Butylbenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Sec-Butylbenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| tert-butylbenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Carbon Disulfide | ug/L | 0.2 U | 0.2 U | 0.2 U | **0.23** | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Carbon Tetrachloride | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Chlorobenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Chloroethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 2-Chloroethyl vinyl ether | ug/L | 1 UJ | 1 UJ | 1 R | 1 UJ | 1 UJ | 1 UJ | NA | NA | NA | 1 U | 1 U | 1 U |
| Chloroform | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | **4.34** | 0.2 U | 0.2 U |
| Chloromethane | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U |
| 2-Chlorotoluene | ug/L | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U |
| 4-Chlorotoluene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Dichlorodifluoromethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,2-Dibromo-3-Chloropropane | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U |
| Ethylene Dibromide | ug/L | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U |
| Dibromomethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,2-Dichlorobenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,3-Dichlorobenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,4-Dichlorobenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Trans-1,4-Dichloro-2-butene | ug/L | 1 U | 1 U | 1 UJ | 1 U | 1 U | 1 U | NA | NA | NA | 1 U | 1 U | 1 U |
| 1,1-Dichloroethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,2-Dichloroethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,1-Dichloroethene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Cis-1,2-Dichloroethene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Trans-1,2-Dichloroethene | ug/L | 0.2 UJ | 0.2 UJ | 0.2 U | 0.2 UJ | 0.2 UJ | 0.2 UJ | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,2-Dichloropropane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,3-Dichloropropane | ug/L | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U |
| 2,2-Dichloropropane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,1-Dichloropropene | ug/L | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U |
| Cis-1,3-Dichloropropene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |

**Table 2: December 2022 Groundwater Analytical Results Landsburg Mine Site**

| ANALYTE | UNITS | LMW-2 | LMW-2 Duplicate | LMW-4 | LMW-10 | LMW-12 | LMW-13R | LMW-20 | LMW-21 | LMW-22 | Field Blank | Trip Blank 1 | Trip Blank 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trans-1,3-Dichloropropene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Ethylbenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Hexachlorobutadiene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U |
| 2-Hexanone | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | NA | NA | NA | 5 U | 5 U | 5 U |
| Iodomethane | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA | NA | NA | 1 U | 1 U | 1 U |
| Cumene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| p-Isopropyltoluene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Methylene Chloride | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA | NA | NA | **1.54** | **1.09** | **1.13** |
| Methyl isobutyl ketone | ug/L | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | NA | NA | NA | 2.5 U | 2.5 U | 2.5 U |
| Naphthalene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U |
| n-Propylbenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Styrene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,2,3-Trichlorobenzene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U |
| 1,2,4-Trichlorobenzene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U |
| 1,1,1,2-Tetrachloroethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,1,2,2-Tetrachloroethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Tetrachloroethene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Toluene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,1,1-Trichloroethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,1,2-Trichloroethane | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Trichloroethene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| CFC-113 | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,2,3-Trichloropropane | ug/L | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U |
| 1,2,4-Trimethylbenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| 1,3,5-Trimethylbenzene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Vinyl Acetate | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| Vinyl Chloride | ug/L | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U |
| m, p-Xylene | ug/L | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | NA | NA | NA | 0.4 U | 0.4 U | 0.4 U |
| o-Xylene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U |
| **Semi-Volatile Organic Compounds (SVOCs)** | | | | | | | | | | | | | |
| 1,4-Dioxane | ug/L | **1.8** | **1.8 J** | **2 J** | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | NA | NA |
| **Hydrocarbon Identification** | | | | | | | | | | | | | |
| Diesel Range | mg/L | 0.5 UJ | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | NA | NA | NA | 0.5 U | NA | NA |
| Gas Range | mg/L | 0.25 UJ | 0.25 UJ | 0.25 U | 0.25 U | 0.25 U | 0.25 U | NA | NA | NA | 0.25 U | NA | NA |
| Lube Oil Range | mg/L | 1 UJ | 1 UJ | 1 U | 1 U | 1 U | 1 U | NA | NA | NA | 1 U | NA | NA |

Notes:
U - Analyte was not detected above the Reporting Limit (RL).
J - Analyte was detected above the Method Detection Limit (MDL) but below the RL.
R - Analytical result is unusable because certain data quality criteria were not met.
NA - Not Applicable

**Table 3: December 2022 Analytical Results Landsburg Estates Well**

| ANALYTE | UNITS | Landsburg Estates | Trip Blank |
|---|---|---|---|
| | | 12/21/2022 | - |
| **Volatile Organic Compounds (VOCs)** | | | |
| Acetone | ug/L | 5 UJ | 5 U |
| Acrolein | ug/L | 5 UJ | 5 U |
| Acrylonitrile | ug/L | 1 UJ | 1 U |
| Benzene | ug/L | 0.2 UJ | 0.2 U |
| Bromobenzene | ug/L | 0.2 UJ | 0.2 U |
| Bromochloromethane | ug/L | 0.2 UJ | 0.2 U |
| Bromoform | ug/L | 0.2 UJ | 0.2 U |
| Bromomethane | ug/L | 1 UJ | 1 U |
| methyl ethyl ketone | ug/L | 5 UJ | 5 U |
| n-Butylbenzene | ug/L | 0.2 UJ | 0.2 U |
| Sec-Butylbenzene | ug/L | 0.2 UJ | 0.2 U |
| tert-butylbenzene | ug/L | 0.2 UJ | 0.2 U |
| Carbon Disulfide | ug/L | 0.2 UJ | 0.2 U |
| Carbon Tetrachloride | ug/L | 0.2 UJ | 0.2 U |
| Chlorobenzene | ug/L | 0.2 UJ | 0.2 U |
| Chloroethane | ug/L | 0.2 UJ | 0.2 U |
| 2-Chloroethyl vinyl ether | ug/L | 1 UJ | 1 U |
| Chloroform | ug/L | 0.2 UJ | 0.2 U |
| Chloromethane | ug/L | 0.5 UJ | 0.5 U |
| 2-Chlorotoluene | ug/L | 0.1 UJ | 0.1 U |
| 4-Chlorotoluene | ug/L | 0.2 UJ | 0.2 U |
| Dichlorodifluoromethane | ug/L | 0.2 UJ | 0.2 U |
| 1,2-Dibromo-3-Chloropropane | ug/L | 0.5 UJ | 0.5 U |
| Ethylene Dibromide | ug/L | 0.1 UJ | 0.1 U |
| Dibromomethane | ug/L | 0.2 UJ | 0.2 U |
| 1,2-Dichlorobenzene | ug/L | 0.2 UJ | 0.2 U |
| 1,3-Dichlorobenzene | ug/L | 0.2 UJ | 0.2 U |
| 1,4-Dichlorobenzene | ug/L | 0.2 UJ | 0.2 U |
| Trans-1,4-Dichloro-2-butene | ug/L | 1 UJ | 1 U |
| 1,1-Dichloroethane | ug/L | 0.2 UJ | 0.2 U |
| 1,2-Dichloroethane | ug/L | 0.2 UJ | 0.2 U |
| 1,1-Dichloroethene | ug/L | 0.2 UJ | 0.2 U |
| Cis-1,2-Dichloroethene | ug/L | 0.2 UJ | 0.2 U |
| Trans-1,2-Dichloroethene | ug/L | 0.2 UJ | 0.2 U |
| 1,2-Dichloropropane | ug/L | 0.2 UJ | 0.2 U |
| 1,3-Dichloropropane | ug/L | 0.1 UJ | 0.1 U |
| 2,2-Dichloropropane | ug/L | 0.2 UJ | 0.2 U |
| 1,1-Dichloropropene | ug/L | 0.1 UJ | 0.1 U |
| Cis-1,3-Dichloropropene | ug/L | 0.2 UJ | 0.2 U |
| Trans-1,3-Dichloropropene | ug/L | 0.2 UJ | 0.2 U |
| Ethylbenzene | ug/L | 0.2 UJ | 0.2 U |
| Hexachlorobutadiene | ug/L | 0.5 UJ | **0.51 B** |
| 2-Hexanone | ug/L | 5 UJ | 5 U |
| Iodomethane | ug/L | 1 UJ | 1 U |
| Cumene | ug/L | 0.2 UJ | 0.2 U |
| p-Isopropyltoluene | ug/L | 0.2 UJ | 0.2 U |
| Methylene Chloride | ug/L | 1 UJ | **1.18** |
| Methyl isobutyl ketone | ug/L | 2.5 UJ | 2.5 U |
| Naphthalene | ug/L | 0.5 UJ | 0.5 U |
| n-Propylbenzene | ug/L | 0.2 UJ | 0.2 U |
| Styrene | ug/L | 0.2 UJ | 0.2 U |
| 1,2,3-Trichlorobenzene | ug/L | 0.5 UJ | 0.5 U |
| 1,2,4-Trichlorobenzene | ug/L | 0.5 UJ | 0.5 U |
| 1,1,1,2-Tetrachloroethane | ug/L | 0.2 UJ | 0.2 U |
| 1,1,2,2-Tetrachloroethane | ug/L | 0.2 UJ | 0.2 U |

**Table 3: December 2022 Analytical Results Landsburg Estates Well**

| ANALYTE | UNITS | Landsburg Estates | Trip Blank |
|---|---|---|---|
| Tetrachloroethene | ug/L | 0.2 UJ | 0.2 U |
| Toluene | ug/L | 0.2 UJ | 0.2 U |
| 1,1,1-Trichloroethane | ug/L | 0.2 UJ | 0.2 U |
| 1,1,2-Trichloroethane | ug/L | 0.2 UJ | 0.2 U |
| Trichloroethene | ug/L | 0.2 UJ | 0.2 U |
| CFC-113 | ug/L | 0.2 UJ | 0.2 U |
| 1,2,3-Trichloropropane | ug/L | 0.25 UJ | 0.25 U |
| 1,2,4-Trimethylbenzene | ug/L | 0.2 UJ | 0.2 U |
| 1,3,5-Trimethylbenzene | ug/L | 0.2 UJ | 0.2 U |
| Vinyl Acetate | ug/L | 0.2 UJ | 0.2 U |
| Vinyl Chloride | ug/L | 0.1 UJ | 0.1 U |
| m, p-Xylene | ug/L | 0.4 UJ | 0.4 U |
| o-Xylene | ug/L | 0.2 UJ | 0.2 U |
| Total Xylenes | ug/L | 0.6 UJ | 0.6 U |
| **Semi-Volatile Organic Compounds (SVOCs)** | | | |
| 1,4-Dioxane | ug/L | 0.4 U | NA |
| **Hydrocarbon Identification** | | | |
| Diesel Range | mg/L | 0.5 U | NA |
| Gas Range | mg/L | 0.25 U | NA |
| Lube Oil Range | mg/L | 1 U | NA |

Notes:
U - Analyte was not detected above the Reporting Limit (RL).
J - Analyte was detected above the Method Detection Limit (MDL) but below the RL.
B- Analyte was not detected in the method blank.
R - Analytical result is unusable because certain data quality criteria were not met.
NA - Not Applicable

# Figures

Approximate Location of Landsburg Estates Well
CEDAR RIVER
DISCHARGE PIPE
TREATMENT FACILITIES
LMW-22
LMW-20
LMW-21
LMW-10
LMW-4
LMW-2
LMW-13R
LMW-12
PORTAL 2
LMW-6
LMW-1
FENCED AREA
LMW-7
LMW-14
LMW-15
LMW-11
LMW-9
LMW-5
LMW-3
LMW-8
PORTAL 3
POWER LINES
KENT-KANGLEY ROAD

**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

0 300 600
1" = 300' FEET

CLIENT
LANDSBURG MINE SITE PLP GROUP

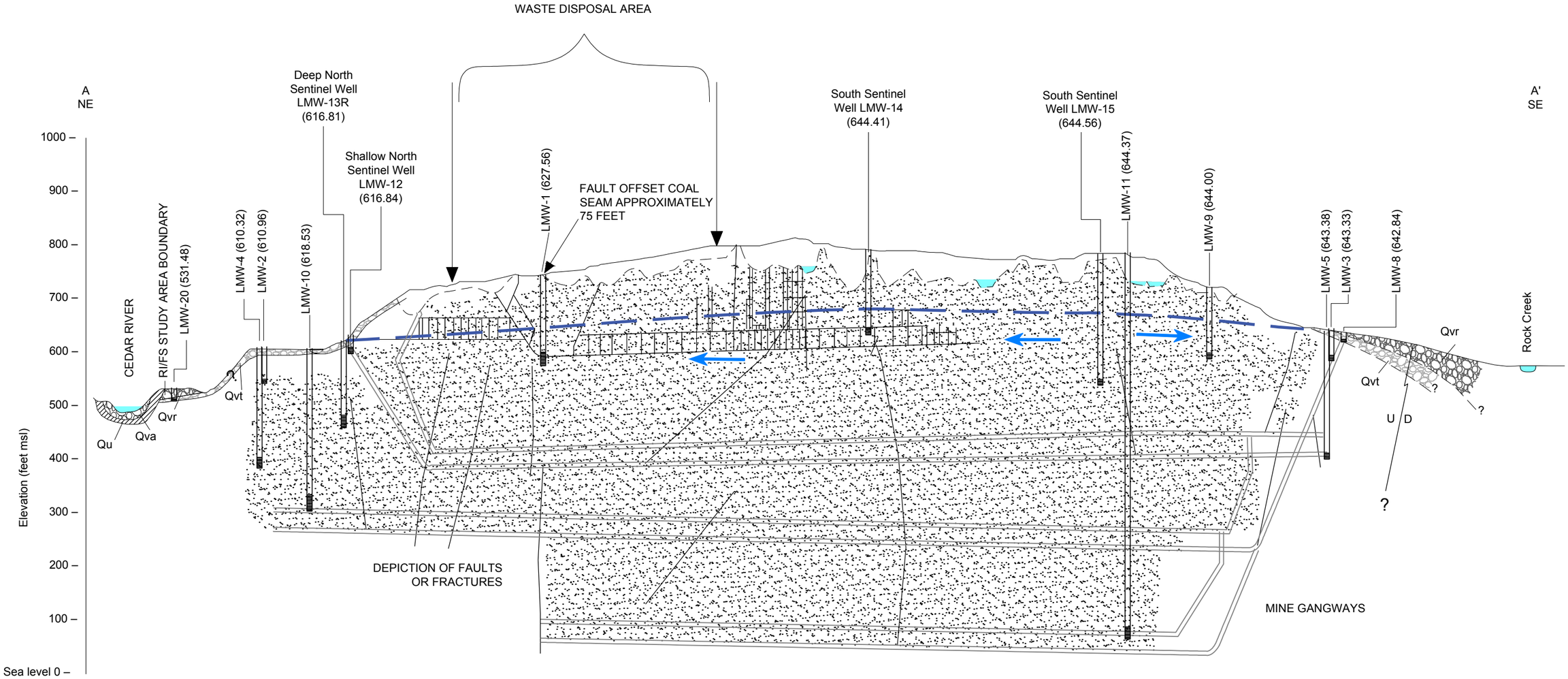
CONSULTANT
wsp

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

PROJECT
LANDSBURG MINE SITE
MTCA REMEDIAL ACTION

TITLE
**GROUNDWATER MONITORING LOCATIONS**

| PROJECT NO. | PHASE | REV. | FIGURE |
|---|---|---|---|
| 9231000005 | 1200 | A | 1 |




**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

0 500
FEET

**REFERENCE(S)**

SOURCES FOR THE GEOLOGY AND MINE INFORMATION:
J.E. LUZIER 1969; SURFICIAL GEOLOGY STATE OF WASHINGTON, WATER WELL REPORTS MINE SUPERINTENDANT'S RECORDS LANDSBURG WELL LOGS

**NOTE(S)**

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

CLIENT
LANDSBURG PLP GROUP

CONSULTANT
wsp

| | |
|---|---|
| YYYY-MM-DD | 2023-02-23 |
| DESIGNED | GZ |
| PREPARED | TR |
| REVIEWED | GZ |
| APPROVED | GZ |

PROJECT
LANDSBURG MINE SITE

TITLE
CROSS-SECTION ALONG STRIKE AT COAL SEAM DECEMBER 19, 2022
CROSS-SECTION A-A'

| PROJECT NO. | PHASE | REV. | FIGURE |
|---|---|---|---|
| GL9231000007 | 2021 | A | 2 |

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

1 in

0

**APPENDIX A**

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

# TECHNICAL MEMORANDUM

**DATE** February 23, 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 DECEMBER 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 December 19, 21, and 29, 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.

Nine water samples (including the Landsburg Estates private well), 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-846[1] 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

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

**WSP/Golder Associates USA Inc.**
18300 NE Union Hill Road, Suite 200, Redmond, Washington, USA 98052 T: +1 425 883 0777 F: +1 425 882-5498

Data validation was conducted in accordance with the criteria outlined in the National Functional Guidelines for Organic Review (USEPA 2020a[2]) and Inorganic Review (USEPA 2020b[3] ), 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.

B The analyte was not detected in the method blank.

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

Most of the QA/QC samples (The Field Blank and three Trip Blanks) contained methylene chloride, a common laboratory contaminant, but methylene chloride was not detected at any of the Site wells.

Additionally, some samples were received partially frozen and outside of the range of acceptability (0º to 6º C). All samples that were partially frozen were qualified (UJ) for non-detects and (J) for detects as detailed in Attachment B.

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 December 2022

Table 1a - Sample Collection and Analysis Summary Landsburg Estates Private Well Water Sampling Investigation December 2022

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

Table 2a - Qualifier Summary Table Landsburg Estates Private Well Water Sampling Investigation December 2022

Attachment B Level 2A Data Validation Checklists

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**ATTACHMENT A**

# Tables

**Table 1: Sample Collection and Analysis Summary**

**Q4 - December 2022**

| | | | | | | *Analyses/Parameters* | | |
|---|---|---|---|---|---|---|---|---|
| **SDG** | **Field Identification** | **Collection Date** | **Lab Identification** | **Matrix** | **QC Samples** | **VOCs (8260D)** | **1,4-Dioxane (8270E-SIM)** | **NWTPH HCID** |
| 22L0531 | LMW-2-1222 | 12/21/2022 13:30 | 22L0531-01 | GW | - | X | X | X |
| 22L0531 | LMW-2-1222-D | 12/21/2022 13:40 | 22L0531-02 | GW | FD (LMW-2-1222) | X | X | X |
| 22L0531 | LMW-4-1222 | 12/21/2022 14:35 | 22L0531-03 | GW | MS/MSD | X | X | X |
| 22L0531 | LMW-10-1222 | 12/21/2022 15:55 | 22L0531-04 | GW | - | X | X | X |
| 22L0531 | LMW-22-1222 | 12/21/2022 11:00 | 22L0531-05 | GW | - | | X | |
| 22L0531 | LMW-20-1222 | 12/21/2022 11:40 | 22L0531-06 | GW | - | | X | |
| 22L0531 | LMW-21-1222 | 12/21/2022 12:20 | 22L0531-07 | GW | - | | X | |
| 22L0531 | Trip Blank | - | 22L0531-08 | WQ | TB | X | X | |
| 22L0531 | LMW-FB-1222 | - | 22L0531-09 | WQ | FB | X | X | |
| 22L0625 | LMW-13R-1222 | 12/29/2022 11:50 | 22L0531-01 | GW | - | X | X | X |
| 22L0625 | LMW-12-1222 | 12/29/2022 12:54 | 22L0531-02 | GW | - | X | X | X |
| 22L0625 | Trip Blank | - | 22L0531-03 | 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
NWTPH: Northwest Total Petroleum Hydrocarbons
HCID: Hydrocarbon Identification
MS/MSD: Matrix Spike/Matrix Spike Duplicate
FB: Field Blank
TB: Trip Blank

**Table 1: Sample Collection and Analysis Summary**

**Annual Groundwater Sampling - December 2022**

| | | | | | | *Analyses/Parameters* | | |
|---|---|---|---|---|---|---|---|---|
| **SDG** | **Field Identification** | **Collection Date** | **Lab Identification** | **Matrix** | **QC Samples** | **VOCs (8260D)** | **1,4-Dioxane (8270E-SIM)** | **NWTPH HCID** |
| 22L0530 | Landsburg Estates-1222 | 12/21/2022 9:27 | 22L0530-01 | GW | - | X | X | X |
| 22L0530 | Trip Blank | - | 22L0530-02 | 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
NWTPH: Northwest Total Petroleum Hydrocarbons
HCID: Hydrocarbon Identification
TB-Trip Blank

**Table 2: Qualifier Summary Table**

**Annual Groundwater Sampling - December 2022**

| SDG | Sample Name | Constituent | New Result | New MDL | New RL | Qualifier | Reason |
|---|---|---|---|---|---|---|---|
| 22L0531 | LMW-2-1222 | Gasoline Range Organics | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222 | Diesel Range Organics | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222 | Motor Oil Range Organics | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222 | 1,4-Dioxane | -- | -- | -- | J | Improper preservation |
| 22L0531 | LMW-2-1222-D | Gasoline Range Organics | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222-D | Diesel Range Organics | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222-D | Motor Oil Range Organics | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222-D | 1,4-Dioxane | -- | -- | -- | J | Improper preservation |
| 22L0531 | LMW-2-1222 | Acrolein | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222 | Acrylonitrile | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222 | 2-Chloroethyl vinyl ether | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222-D | Acrolein | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222-D | Acrylonitrile | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222-D | 2-Chloroethyl vinyl ether | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-4-1222 | Acrolein | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-4-1222 | Acrylonitrile | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-4-1222 | 1,4-Dioxane | -- | -- | -- | J | Improper preservation |
| 22L0531 | LMW-4-1222 | 2-Chloroethyl vinyl ether | -- | -- | -- | R | Improper preservation, No recovery in MS/MSD |
| 22L0531 | LMW-10-1222 | Acrolein | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-10-1222 | Acrylonitrile | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-10-1222 | 2-Chloroethyl vinyl ether | -- | -- | -- | UJ | Improper preservation |
| 22L0531 | LMW-2-1222 | trans-1,2-Dichloroethene | -- | -- | -- | UJ | LCS/LCSD %R recovery below control limit |
| 22L0531 | LMW-2-1222-D | trans-1,2-Dichloroethene | -- | -- | -- | UJ | LCS/LCSD %R recovery below control limit |
| 22L0531 | LMW-10-1222 | trans-1,2-Dichloroethene | -- | -- | -- | UJ | LCS/LCSD %R recovery below control limit |
| 22L0531 | LMW-4-1222 | trans-1,4-Dichloror 2-Butene | -- | -- | -- | UJ | MSD %R below lower control limit; RPD value greater than control limit |
| 22L0625 | LMW-13R-1222 | Acrolein | -- | -- | -- | UJ | Improper preservation |
| 22L0625 | LMW-13R-1222 | Acrylonitrile | -- | -- | -- | UJ | Improper preservation |
| 22L0625 | LMW-13R-1222 | 2-Chloroethyl vinyl ether | -- | -- | -- | UJ | Improper preservation |
| 22L0625 | LMW-12-1222 | Acrolein | -- | -- | -- | UJ | Improper preservation |
| 22L0625 | LMW-12-1222 | Acrylonitrile | -- | -- | -- | UJ | Improper preservation |
| 22L0625 | LMW-12-1222 | 2-Chloroethyl vinyl ether | -- | -- | -- | UJ | Improper preservation |
| 22L0625 | LMW-13R-1222 | trans-1,2-Dichloroethene | -- | -- | -- | UJ | LCS/LCSD %R recovery below control limit |
| 22L0625 | LMW-12-1222 | trans-1,2-Dichloroethene | -- | -- | -- | UJ | LCS/LCSD %R recovery below control limit |
| 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
LCS/LCSD - Lab Control Sample/Duplicate
%R - Percent Recovery

**Qualifier Definitions**

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

**Table 2: Qualifier Summary Table**

Annual Groundwater Sampling - December 2022

| SDG | Sample Name | Constituent | New Result | New MDL | New RL | Qualifier | Reason |
|---|---|---|---|---|---|---|---|
| 22L0530 | Landsburg Estates-1222 | All VOC non-detect results | -- | -- | -- | UJ | Improper preservation |
| 22L0530 | Landsburg Estates-1222 | Acrolein | -- | -- | -- | UJ | Improper preservation |
| 22L0530 | Landsburg Estates-1222 | Acrylonitrile | -- | -- | -- | UJ | Improper preservation |
| 22L0530 | Landsburg Estates-1222 | 2-Chloroethyl vinyl ether | -- | -- | -- | UJ | Improper preservation |
| 22L0530 | Landsburg Estates-1222 | trans-1,2-Dichloroethene | -- | -- | -- | UJ | LCS/LCSD %R recovery below control limit |
| 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
RL - Reporting Limit
SDG - Sample Delivery Group

**Qualifier Definitions**

UJ: Non-Detect Result, RL is estimated

**ATTACHMENT B**

# Level 2A Data Validation Checklists

**Project Name:** Landsburg Groundwater
**Project Number/Phase/Task:** GL9231000007 2021
**Reviewing Company:** WSP
**Project Manager:** Gary Zimmerman
**Data Evaluator:** Ricky Orellana
**Data Evaluation Date:** February 1, 2023
**Checked by: Michael Shadle**
**Review Date: February 1, 2023**
**Laboratory:** Analytical Resources, Inc., Tukwila, WA
**Lab SDG #:** 22L0531, 22L0625

**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? | ☒ | ☐ | | See Note 1 |
| b) COC documents release of custody (signed and dated)? | ☒ | ☐ | | |
| c) Field QC types provided (note types)? | ☒ | ☐ | ☐ | FB, TB, MS/MSD; See Table 1 |
| d) Did the cooler contents match the COC? | ☒ | ☐ | | See Note 1 |
| e) Were samples received in good condition? | ☐ | ☒ | | See Note 2 |
| f) Were cooler temperatures within control limits? | ☐ | ☒ | | |

| **Data Package Information** | **YES** | **NO** | **NA** | **COMMENT** |
|---|---|---|---|---|
| a) Laboratory name and location documented? | ☒ | ☐ | | |
| b) All samples on COC reported in data package? | ☒ | ☐ | | |
| c) Requested analytical methods used? | ☐ | ☒ | | See Note 3 |
| d) Requested sample preparation methods used? | ☒ | ☐ | ☐ | |
| e) Requested analyte list reported? | ☒ | ☐ | | |
| f) Requested units reported? | ☒ | ☐ | ☐ | |
| g) Did the laboratory define the qualifiers used? | ☒ | ☐ | | |
| h) Data package contains all information necessary to complete the data quality review? | ☒ | ☐ | | All Information for a 2A Scope |

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

| **Analytical Assessment** | **YES** | **NO** | **NA** | **COMMENT** |
|---|---|---|---|---|
| f) Did the laboratory satisfy the requested sensitivity requirements? | ☒ | ☐ | | |

| **Laboratory Case Narrative** | **YES** | **NO** | **NA** | **COMMENT** |
|---|---|---|---|---|
| a) Do the laboratory narrative or laboratory qualifiers indicate deficiencies? | ☒ | ☐ | ☐ | |
| b) Were all deficiencies noted in the laboratory qualifiers or narrative? | ☒ | ☐ | ☐ | |

| **Sample Preservation and Holding Time** | **YES** | **NO** | **NA** | **COMMENT** |
|---|---|---|---|---|
| a) Were samples properly preserved? | ☐ | ☒ | | See Note 4 |
| b) Were holding times met for sample preparation? | ☒ | ☐ | ☐ | |
| c) Were holding times met for sample analysis? | ☒ | ☐ | | |

| **Blanks** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Were blanks analyzed at the appropriate frequency? | ☒ | ☐ | | |
| b) Were any analytes detected in the associated preparation/method blank? | ☒ | ☐ | | See Note 5 |
| c) Were any analytes detected in the associated trip blanks? | ☒ | ☐ | ☐ | See Note 6 |
| d) Were any analytes detected in the associated field or equipment/rinsate blanks? | ☒ | ☐ | ☐ | See Note 6 |
| e) Were any analytes detected in the associated storage blanks? | ☐ | ☐ | ☒ | |

| **Surrogates or Deuterated Monitoring Compounds** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Were the correct surrogate compounds added to each sample? | ☒ | ☐ | ☐ | |
| b) Were surrogate recoveries within control limits? | ☒ | ☐ | ☐ | |
| c) If not, were samples analyzed at dilution factors of 20x or greater? | ☐ | ☐ | ☒ | |

| **LCS/LCSD** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Were LCS/LCSD reported at the appropriate frequency? | ☒ | ☐ | | |
| b) Were proper analytes included in the LCS/LCSD? | ☒ | ☐ | | |
| c) Were LCS/LCSD recoveries within control limits? | ☐ | ☒ | | See Note 7 |
| d) Were RPD values within control limits (if LCSD was analyzed)? | ☒ | ☐ | ☐ | |

| **MS/MSDs** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Were project-specific MS (and MSD) reported? | ☒ | ☐ | | LMW-4-1222 |
| b) Were proper analytes reported in the MS/MSD? | ☒ | ☐ | ☐ | |
| c) Were project-specific MS/MSD recoveries within control limits? | ☐ | ☒ | ☐ | See Note 8 |

| **MS/MSDs** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| d) If not, were sample concentrations greater than 4x the spiking concentration? | ☒ | ☐ | ☐ | |
| e) Was the RPD or absolute difference within control limits (if project-specific MSD analyzed)? | ☐ | ☒ | ☐ | See Note 8 |
| f) Were project-specific post-digestion spikes analyzed? | ☐ | ☐ | ☒ | |
| g) Were project-specific post-digestion spike recoveries within control limits? | ☐ | ☐ | ☒ | |

| **Duplicates** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Were project-specific laboratory duplicates reported? | ☒ | ☐ | ☐ | |
| b) Was laboratory duplicate RPD or absolute difference criteria acceptable? | ☒ | ☐ | ☐ | |
| c) Were field duplicates reported? | ☒ | ☐ | ☐ | LMW-2-1222/LMW-2-1222-D |
| d) Was field duplicate RPD or absolute difference criteria acceptable? | ☒ | ☐ | ☐ | |

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

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

**Comments/Notes:**

1. In SDG 22L0531, according to the cooler receipt form, sample LMW-FB-1222 was not listed on the COC but added as a final sample in the lab package. Additionally, sample vial 22L0531-09A was received broken due to being frozen during transportation; however, no other samples were affected. There is no other action but to note.

   In SDG 22L0531, according to the cooler receipt form, air bubbles could potentially be present, however, the preservation form does not indicate any air bubbles. Therefore, it is assumed that the bubbles were less than 6mm and samples were analyzed without any issues. There is no other action but to note.

   In SDG 22L0625, according to the cooler receipt form, sample containers 22L0625-01G and 22L0625--02G both contained bubbles that the lab was going to determine the size of the bubbles. No preservation sheet is present to determine if the laboratory noted the size of the bubbles. It is assumed that the bubbles were less than 6mm and samples were analyzed without any issues. There is no other action but to note.

2. In SDG 22L0531, samples for analysis of gasoline range organics, diesel range organics, motor oil range organics, and 1,4-dioxane arrived at the laboratory partially frozen. The cooler receipt form indicates that the temperatures of two out of the three coolers at receipt time were -10º C and -2.4º C which were outside the range of acceptability (0º - 6º C). All samples that were partially frozen were qualified (UJ) for non-detects and (J) for detects.

3. In SDG 22L0625, the COC indicates that TPH-Dx and TPH-Gx were put on hold. The samples were not taken off hold or analyzed. There is no other action but to note.

4. 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'.

5. Analytes were detected in the method blank as shown in the table below. Following the Organic Guidelines, when the blank concentration was less than the RL and associated sample results were less than the RL, associated detected results were qualified as "U" at the reporting limit. If the blank is only associated with QC samples, no qualifications are required.

| SDG | Blank ID | Method | Analyte | Result | Qualifier | RL | Units |
|---|---|---|---|---|---|---|---|
| 22L0531<br>22L0625 | BKL0736-BLK1 | 8260D | Hexachloro-1,3-Butadiene | 0.84 | - | 0.50 | ug/L |

6. 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.

| SDG | Blank ID | Method | Analyte | Result | RL | Units |
|---|---|---|---|---|---|---|
| 22L0531 | TRIP BLANK | 8260D | Methylene Chloride | 1.09 | 1 | ug/L |
| 22L0531 | LMW-FB-1222 | 8260D | Methylene Chloride | 1.54 | 1 | ug/L |
| 22L0531 | LMW-FB-1222 | 8260D | Chloroform | 4.34 | 0.2 | ug/L |
| 22L0625 | TRIP BLANK | 8260D | Methylene Chloride | 1.13 | 1 | ug/L |

7. 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. Following Guidelines and using professional judgement, when the LCS/LCSD criteria is below the QC criteria, associated non-detect results are qualified (UJ).

| SDG | Sample Name | Parameter | Analyte | LCS/LCSD % Recovery | RPD | % Recovery / RPD Criteria |
|---|---|---|---|---|---|---|
| 22L0531<br>22L0625 | BKL0736-BS1<br>BKL0736-BSD1 | 8260D | trans-1,2-Dichloroethene | **66.9** / **67.7** | 1.28% | 78 – 128 /30 |
| 22L0531<br>22L0625 | BKL0736-BS1<br>BKL0736-BSD1 | 8260D | 2-Chloroethyl vinyl ether | **62.8** / 77.3 | 20.7% | 64 – 120 /30 |

8. 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

   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 non-detect and the calculated percent recovery of the associated MS/MSD did not recover, the associated non-detect results were rejected (R). When the MS/MSD recoveries were less than the lower acceptance limit, the non-detect result in the parent sample was qualified as estimated (UJ).

| SDG | Primary Sample Name | Parameter | Analyte | MS/MSD % Recovery | RPD | % Recovery / RPD Criteria |
|---|---|---|---|---|---|---|
| 22L0531 | LMW-4-1222 | 8260D | 2-Chloroethyl vinyl ether | **0/0** | 0% | 64 – 120 /30 |
| 22L0531 | LMW-4-1222 | 6010D | trans-1,4-Dichloro 2-Butene | 99 / **49.7** | **66.4%** | 55 – 129 /30 |

**Data qualification:** See Table 2.

Definitions:

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

**Project Name:** Landsburg Groundwater
**Project Number/Phase/Task:** GL9231000007 2021
**Reviewing Company:** WSP
**Project Manager:** Gary Zimmerman
**Data Evaluator:** Ricky Orellana
**Data Evaluation Date:** January 25, 2023
**Checked by: Michael Shadle**
**Review Date: February 1, 2023**
**Laboratory:** Analytical Resources, Inc., Tukwila, WA
**Lab SDG #:** 22L0530

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

**Analytical Methods:** See Table 1.

**Sample Information:** See Table 1.

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

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

| **COC and Sample Receipt** | **YES** | **NO** | **NA** | **COMMENT** |
|---|---|---|---|---|
| a) COC complete and correct? | ☒ | ☐ | | |
| b) COC documents release of custody (signed and dated)? | ☒ | ☐ | | |
| c) Field QC types provided (note types)? | ☒ | ☐ | ☐ | TB; See Table 1 |
| d) Did the cooler contents match the COC? | ☒ | ☐ | | |
| e) Were samples received in good condition? | ☐ | ☒ | | See Note 1 |
| f) Were cooler temperatures within control limits? | ☒ | ☐ | | |

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

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

| **Analytical Assessment** | **YES** | **NO** | **NA** | **COMMENT** |
|---|---|---|---|---|
| f) Did the laboratory satisfy the requested sensitivity requirements? | ☒ | ☐ | | |

| **Laboratory Case Narrative** | **YES** | **NO** | **NA** | **COMMENT** |
|---|---|---|---|---|
| a) Do the laboratory narrative or laboratory qualifiers indicate deficiencies? | ☒ | ☐ | ☐ | |
| b) Were all deficiencies noted in the laboratory qualifiers or narrative? | ☒ | ☐ | ☐ | |

| **Sample Preservation and Holding Time** | **YES** | **NO** | **NA** | **COMMENT** |
|---|---|---|---|---|
| a) Were samples properly preserved? | ☐ | ☒ | | See Note 2 |
| b) Were holding times met for sample preparation? | ☒ | ☐ | ☐ | |
| c) Were holding times met for sample analysis? | ☒ | ☐ | | |

| **Blanks** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Were blanks analyzed at the appropriate frequency? | ☒ | ☐ | | |
| b) Were any analytes detected in the associated preparation/method blank? | ☒ | ☐ | | See Note 3 |
| c) Were any analytes detected in the associated trip blanks? | ☒ | ☐ | ☐ | See Note 4 |
| d) Were any analytes detected in the associated field or equipment/rinsate blanks? | ☐ | ☐ | ☒ | |
| e) Were any analytes detected in the associated storage blanks? | ☐ | ☐ | ☒ | |

| **Surrogates or Deuterated Monitoring Compounds** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Were the correct surrogate compounds added to each sample? | ☒ | ☐ | ☐ | |
| b) Were surrogate recoveries within control limits? | ☒ | ☐ | ☐ | |
| c) If not, were samples analyzed at dilution factors of 20x or greater? | ☐ | ☐ | ☒ | |

| **LCS/LCSD** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Were LCS/LCSD reported at the appropriate frequency? | ☒ | ☐ | | |
| b) Were proper analytes included in the LCS/LCSD? | ☒ | ☐ | | |
| c) Were LCS/LCSD recoveries within control limits? | ☐ | ☒ | | See Note 5 |
| d) Were RPD values within control limits (if LCSD was analyzed)? | ☒ | ☐ | ☐ | |

| **MS/MSDs** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Were project-specific MS (and MSD) reported? | ☐ | ☒ | | |
| b) Were proper analytes reported in the MS/MSD? | ☐ | ☐ | ☒ | |
| c) Were project-specific MS/MSD recoveries within control limits? | ☐ | ☐ | ☒ | |

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

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

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

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

**Comments/Notes:**

1. The cooler receipt form indicates that all VOA vials were frozen at collection for samples Landsburg Estates-1222 and Trip Blank. Following Guidelines and using professional judgment non-detects are qualified (UJ) and detects are qualified (J).

2. 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'.

3. Analytes were detected in the method blank as shown in the table below. If the blank is only associated with QC samples, no qualifications are required.

| Blank ID | Method | Analyte | Result | Qualifier | RL | Units |
|---|---|---|---|---|---|---|
| BKL0736-BLK1 | 8260D | Hexachloro-1,3-Butadiene | 0.84 | - | 0.50 | ug/L |

4. Analytes were detected in the trip 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.

| Blank ID | Method | Analyte | Result | RL | Units |
|---|---|---|---|---|---|
| TRIP BLANK | 8260D | Methylene Chloride | 1.18 | 1 | ug/L |
| TRIP BLANK | 8260D | Hexachloro-1,3-Butadiene | 0.51 | 0.50 | ug/L |

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. Following Organic Guidelines and using professional judgement, when the LCS/LCSD criteria is below the QC criteria, associated non-detect results are qualified UJ.

| SDG | Sample Name | Parameter | Analyte | LCS/LCSD % Recovery | RPD | % Recovery / RPD Criteria |
|---|---|---|---|---|---|---|
| 22L0530 | BKL0736-BS1<br>BKL0736-BSD1 | 8260D | trans-1,2-Dichloroethene | **66.9** / **67.7** | 1.28% | 78 – 128 / 30 |
| 22L0530 | BKL0736-BS1<br>BKL0736-BSD1 | 8260D | 2-Chloroethyl vinyl ether | **62.8** / 77.3 | 20.78% | 64 – 120 / 30 |

**Data qualification:** See Table 2.

Definitions:

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

**APPENDIX B**

# Laboratory Analytical Report

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

04 January 2023

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

RE: Landsburg (9231000007.2021)

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

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

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

| Associated Work Order(s) | Associated SDG ID(s) |
|---|---|
| 22L0531 | 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.*

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

## Chain of Custody Record & Laboratory Analysis Request

| | | | |
|---|---|---|---|
| ARI Assigned Number: 22L4531 | Turn-around Requested: Standard | Date: 12/21/22 | |
| ARI Client Company: Golder | Phone: 425-883-0777 | Page: of | |
| Client Contact: Gary Zimmerman/Autumn Pearson | | No. of Coolers: | Cooler Temps: |
| Client Project Name: Landsburg 2022 ~~Q3~~ Q4 Sampling | | | |
| Client Project #: GL 9231000007.2021 | Samplers: AP + AW | | |

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

| Sample ID | Date | Time | Matrix | No. Containers | VOCs | 1,4-Dioxane | Total Priority Metal | TPH-HCID (NWTPH) | TPH-Dx (HOLD) | TPH-Gx (HOLD) | | | Notes/Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analysis Requested | | | | | | | | | | | | |
| LMW-2-1222 | 12/21/22 | 13:30 | W | 12 | X | X | | X | X | X | | | Analyze in accordance with MSA between Golder and ARI Ecology EIM EDD |
| LMW-2-1222-D | 12/21/22 | 13:40 | W | 12 | X | X | | X | X | X | | | |
| LMW-4-1222 | 12/21/22 | 14:35 | W | ~~24~~ 26 | X | X | | X | X | X | | | MS+MSD collected (not for -Dx or -Gx) |
| LMW-10-1222 | 12/21/22 | 15:55 | W | 12 | X | X | | X | X | X | | | |
| LMW-22-1222 | 12/21/22 | 11:00 | W | 2 | | X | | | | | | | |
| LMW-20-1222 | 12/21/22 | 11:40 | W | 2 | | X | | | | | | | |
| LMW-21-1222 | 12/21/22 | 12:20 | W | 2 | | X | | | | | | | |
| Trip Blank | — | — | W | 3 | X | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| Comments/Special Instructions | Relinquished by: (Signature) | Received by: (Signature) | Relinquished by: (Signature) | Received by: (Signature) |
|---|---|---|---|---|
| HOLD TPH FOLLOW-UPS. CLIENT SPECIFIC RLs/Analyte List | Printed Name: Andrew Waser | Printed Name: Amee Smith | Printed Name: | Printed Name: |
| Ecology EIM EDDs | Company: Golder/WSP | Company: ARI LL | Company: | Company: |
| | Date & Time: 12/22/22 1340 | Date & Time: 12/22/22 13:42 | Date & Time: | Date & Time: |

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

**Sample Retention Policy:** 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.

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| LMW-2-1222 | 22L0531-01 | Water | 21-Dec-2022 13:30 | 22-Dec-2022 13:42 |
| LMW-2-1222-D | 22L0531-02 | Water | 21-Dec-2022 13:40 | 22-Dec-2022 13:42 |
| LMW-4-1222 | 22L0531-03 | Water | 21-Dec-2022 14:35 | 22-Dec-2022 13:42 |
| LMW-10-1222 | 22L0531-04 | Water | 21-Dec-2022 15:55 | 22-Dec-2022 13:42 |
| LMW-22-1222 | 22L0531-05 | Water | 21-Dec-2022 11:00 | 22-Dec-2022 13:42 |
| LMW-20-1222 | 22L0531-06 | Water | 21-Dec-2022 11:40 | 22-Dec-2022 13:42 |
| LMW-21-1222 | 22L0531-07 | Water | 21-Dec-2022 12:20 | 22-Dec-2022 13:42 |
| Trip Blank | 22L0531-08 | Water | 21-Dec-2022 13:30 | 22-Dec-2022 13:42 |
| LMW-FB-1222 | 22L0531-09 | Water | 21-Dec-2022 13:40 | 22-Dec-2022 13:42 |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

# 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 with the exception of all associated "Q" flagged analytes which are out of control low in the CCAL and hexachloro-1,3-Butadiene is out of control high. All associated samples that contain analyte have been flagged with a "Q" qualifer.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) contained hexachloro-1,3-Butadiene. Associated samples that contain analyte have been flagged with a "B" qualifer.

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) spike recoveries and 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.

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

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.

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

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 12/22/2022 2:59:57PM

**WORK ORDER**

22L0531

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:** 9231000007.2021

## Preservation Confirmation

| Container ID | Container Type | pH |
|---|---|---|
| 22L0531-01 A | Glass NM, Amber, 500 mL | Partially Frozen (PF) |
| 22L0531-01 B | Glass NM, Amber, 500 mL | PF |
| 22L0531-01 C | Glass NM, Amber, 500 mL | PF |
| 22L0531-01 D | Glass NM, Amber, 500 mL | PF |
| 22L0531-01 E | Glass NM, Amber, 500 mL | PF |
| 22L0531-01 F | Glass NM, Amber, 500 mL | PF |
| 22L0531-01 G | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-01 H | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-01 I | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-01 J | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-01 K | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-01 L | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-02 A | Glass NM, Amber, 500 mL | PF |
| 22L0531-02 B | Glass NM, Amber, 500 mL | PF |
| 22L0531-02 C | Glass NM, Amber, 500 mL | PF |
| 22L0531-02 D | Glass NM, Amber, 500 mL | PF |
| 22L0531-02 E | Glass NM, Amber, 500 mL | PF |
| 22L0531-02 F | Glass NM, Amber, 500 mL | PF |
| 22L0531-02 G | VOA Vial, Clear, 40 mL, HCL | PF |
| 22L0531-02 H | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-02 I | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-02 J | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-02 K | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-02 L | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 A | Glass NM, Amber, 500 mL | |
| 22L0531-03 B | Glass NM, Amber, 500 mL | |
| 22L0531-03 C | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 D | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 E | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 F | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 G | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 H | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 I | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 J | Glass NM, Amber, 500 mL | PF |

Reviewed By

Date

**WORK ORDER**

22L0531

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: 9231000007.2021**

| | | |
|---|---|---|
| 22L0531-03 K | Glass NM, Amber, 500 mL | Partially Frozen (PF) |
| 22L0531-03 L | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 M | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 N | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 O | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 P | Glass NM, Amber, 500 mL | PF |
| 22L0531-03 Q | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 R | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 S | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 T | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 U | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 V | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 W | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 X | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 Y | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-03 Z | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-04 A | Glass NM, Amber, 500 mL | |
| 22L0531-04 B | Glass NM, Amber, 500 mL | |
| 22L0531-04 C | Glass NM, Amber, 500 mL | |
| 22L0531-04 D | Glass NM, Amber, 500 mL | |
| 22L0531-04 E | Glass NM, Amber, 500 mL | |
| 22L0531-04 F | Glass NM, Amber, 500 mL | |
| 22L0531-04 G | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-04 H | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-04 I | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-04 J | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-04 K | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-04 L | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-05 A | Glass NM, Amber, 500 mL | |
| 22L0531-05 B | Glass NM, Amber, 500 mL | |
| 22L0531-06 A | Glass NM, Amber, 500 mL | |
| 22L0531-06 B | Glass NM, Amber, 500 mL | |
| 22L0531-07 A | Glass NM, Amber, 500 mL | |
| 22L0531-07 B | Glass NM, Amber, 500 mL | |
| 22L0531-08 A | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-08 B | VOA Vial, Clear, 40 mL, HCL | |

Reviewed By

Date

**WORK ORDER**

22L0531

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: 9231000007.2021**

| | | |
|---|---|---|
| 22L0531-08 C | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-08 D | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-08 E | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-08 F | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-09 A | Glass NM, Amber, 500 mL | Froze & broke in transit |
| 22L0531-09 B | Glass NM, Amber, 500 mL | |
| 22L0531-09 C | Glass NM, Amber, 500 mL | |
| 22L0531-09 D | Glass NM, Amber, 500 mL | |
| 22L0531-09 E | Glass NM, Amber, 500 mL | |
| 22L0531-09 F | Glass NM, Amber, 500 mL | |
| 22L0531-09 G | VOA Vial, Clear, 40 mL, HCL | Partially Frozen (PF) |
| 22L0531-09 H | VOA Vial, Clear, 40 mL, HCL | PF |
| 22L0531-09 I | VOA Vial, Clear, 40 mL, HCL | PF |
| 22L0531-09 J | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-09 K | VOA Vial, Clear, 40 mL, HCL | |
| 22L0531-09 L | VOA Vial, Clear, 40 mL, HCL | |

JJ

Preservation Confirmed By

12/22/22

Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

# Cooler Receipt Form

ARI Client: Golder

Project Name: Longs Burg 2022 GW Sampling

COC No(s): _____ (NA)

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

Assigned ARI Job No: 22L0531

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) -1.0 .8 -2.4

Time 1342

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

Temp Gun ID#: 90097038

Cooler Accepted by: JMS Date: 12/22/22 Time: 13:42

***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? | JM | (YES) | NO |
| Did all bottle labels and tags agree with custody papers? | JM | (YES) | NO |
| Were all bottles used correct for the requested analyses? | | (YES) | NO |
| Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) | NA | YES | (NO) |
| Were all VOC vials free of air bubbles? | NA | YES | (NO) |
| Was sufficient amount of sample sent in each bottle? | | (YES) | NO |
| Date VOC Trip Blank was made at ARI | NA | 11/22/22 | |

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

Samples Logged by: JM Date: 12/22/22 Time: 1451 Labels checked by: JM

*** 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:***

vials w/ air bubbles, or partially frozen, marked on preservation paperwork, lab to determine sizes.

Sample "LMW-FS-1222" was not listed on CoC, added as final sample in markup. 6 Trip blanks were received instead of the listed 3.

By: JM Date: 12/22/22

~~1 sample aliquot from Sample~~ "LMW-FS-1222" was received broken due to being frozen during transport.

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-2-1222

**22L0531-01 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 13:30

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 19:38

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0531-01 H

Preparation Batch: BKL0736 — Sample Size: 10 mL

Prepared: 12/30/2022 — Final Volume: 10 mL

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

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-2-1222

**22L0531-01 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 13:30

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 19:38

**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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-2-1222

**22L0531-01 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 13:30

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 19:38

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *111* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *97.9* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *97.2* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *102* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-2-1222**

**22L0531-01 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/21/2022 13:30

Instrument: NT6 Analyst: JZ — Analyzed: 01/03/2023 17:06

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0531-01 C 01

Preparation Batch: BKL0643 — Sample Size: 500 mL

Prepared: 12/28/2022 — Final Volume: 1 mL

| Analyte | CAS Number | Dilution | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|
| 1,4-Dioxane | 123-91-1 | 1 | 0.4 | 1.8 | ug/L | |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *52.8* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-2-1222**

**22L0531-01 (Water)**

## Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 12/21/2022 13:30

Instrument: FID4 Analyst: AA — Analyzed: 12/28/2022 15:47

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 22L0531-01 A 01

Preparation Batch: BKL0607 — Sample Size: 500 mL

Prepared: 12/27/2022 — 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 |
| *Surrogate: o-Terphenyl* | | | *50-150 %* | *99.5* | *%* | |
| *Surrogate: n-Triacontane* | | | *50-150 %* | *117* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-2-1222-D

**22L0531-02 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 13:40

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 19:59

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0531-02 H

Preparation Batch: BKL0736 — Sample Size: 10 mL

Prepared: 12/30/2022 — Final Volume: 10 mL

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

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-2-1222-D**

**22L0531-02 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/21/2022 13:40
Analyzed: 12/30/2022 19:59

**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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-2-1222-D

**22L0531-02 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/21/2022 13:40
Analyzed: 12/30/2022 19:59

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *107* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *97.1* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *95.8* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *101* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-2-1222-D**

**22L0531-02 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/21/2022 13:40

Instrument: NT6 Analyst: JZ — Analyzed: 01/03/2023 17:31

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0531-02 C 01

Preparation Batch: BKL0643 — Sample Size: 500 mL

Prepared: 12/28/2022 — Final Volume: 1 mL

| Analyte | CAS Number | Dilution | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|
| 1,4-Dioxane | 123-91-1 | 1 | 0.4 | 1.8 | ug/L | |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *51.3* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-2-1222-D**

**22L0531-02 (Water)**

## Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 12/21/2022 13:40

Instrument: FID4 Analyst: AA — Analyzed: 12/28/2022 16:07

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 22L0531-02 A 01

Preparation Batch: BKL0607 — Sample Size: 500 mL

Prepared: 12/27/2022 — 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 |
| *Surrogate: o-Terphenyl* | | | *50-150 %* | *96.6* | *%* | |
| *Surrogate: n-Triacontane* | | | *50-150 %* | *114* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-4-1222

**22L0531-03 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 14:35

Instrument: NT3 Analyst: PKC — Analyzed: 01/03/2023 18:51

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0531-03 W

Preparation Batch: BLA0037 — Sample Size: 10 mL

Prepared: 01/03/2023 — Final Volume: 10 mL

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

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-4-1222

**22L0531-03 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT3 Analyst: PKC

Sampled: 12/21/2022 14:35
Analyzed: 01/03/2023 18:51

**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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-4-1222

**22L0531-03 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT3 Analyst: PKC

Sampled: 12/21/2022 14:35
Analyzed: 01/03/2023 18:51

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *102* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *98.1* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *97.1* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *100* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-4-1222**

**22L0531-03 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/21/2022 14:35

Instrument: NT6 Analyst: JZ — Analyzed: 01/03/2023 17:57

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0531-03 D 01

Preparation Batch: BKL0643 — Sample Size: 500 mL

Prepared: 12/28/2022 — 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 | |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *53.6* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-4-1222**

**22L0531-03 (Water)**

## Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 12/21/2022 14:35

Instrument: FID4 Analyst: AA — Analyzed: 12/28/2022 16:26

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 22L0531-03 A 01

Preparation Batch: BKL0607 — Sample Size: 500 mL

Prepared: 12/27/2022 — 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 |
| *Surrogate: o-Terphenyl* | | | *50-150 %* | *95.9* | *%* | |
| *Surrogate: n-Triacontane* | | | *50-150 %* | *113* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-10-1222

**22L0531-04 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 15:55
Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 20:41

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0531-04 J
Preparation Batch: BKL0736 — Sample Size: 10 mL
Prepared: 12/30/2022 — Final Volume: 10 mL

| Analyte | CAS Number | Dilution | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | 1 | 0.50 | ND | ug/L | U |
| Vinyl Chloride | 75-01-4 | 1 | 0.10 | ND | ug/L | U |
| Bromomethane | 74-83-9 | 1 | 1.00 | ND | ug/L | U |
| Chloroethane | 75-00-3 | 1 | 0.20 | ND | ug/L | U |
| Trichlorofluoromethane | 75-69-4 | 1 | 0.20 | ND | ug/L | U |
| Acrolein | 107-02-8 | 1 | 5.00 | ND | ug/L | U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76-13-1 | 1 | 0.20 | ND | ug/L | U |
| Acetone | 67-64-1 | 1 | 5.00 | ND | ug/L | U |
| 1,1-Dichloroethene | 75-35-4 | 1 | 0.20 | ND | ug/L | U |
| Iodomethane | 74-88-4 | 1 | 1.00 | ND | ug/L | U |
| Methylene Chloride | 75-09-2 | 1 | 1.00 | ND | ug/L | U |
| Acrylonitrile | 107-13-1 | 1 | 1.00 | ND | ug/L | U |
| Carbon Disulfide | 75-15-0 | 1 | 0.20 | 0.23 | ug/L | |
| 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 | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-10-1222**

**22L0531-04 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/21/2022 15:55
Analyzed: 12/30/2022 20:41

**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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-10-1222

**22L0531-04 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/21/2022 15:55
Analyzed: 12/30/2022 20:41

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *111* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *97.7* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *93.2* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *100* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-10-1222**

**22L0531-04 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/21/2022 15:55

Instrument: NT6 Analyst: JZ — Analyzed: 01/03/2023 19:12

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0531-04 C 01

Preparation Batch: BKL0643 — Sample Size: 500 mL

Prepared: 12/28/2022 — 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 |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *55.9* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-10-1222**

**22L0531-04 (Water)**

## Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 12/21/2022 15:55

Instrument: FID4 Analyst: AA — Analyzed: 12/28/2022 16:46

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 22L0531-04 A 01

Preparation Batch: BKL0607 — Sample Size: 500 mL

Prepared: 12/27/2022 — 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 |
| *Surrogate: o-Terphenyl* | | | *50-150 %* | *92.5* | *%* | |
| *Surrogate: n-Triacontane* | | | *50-150 %* | *109* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-22-1222**

**22L0531-05 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/21/2022 11:00

Instrument: NT6 Analyst: JZ — Analyzed: 01/03/2023 19:37

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0531-05 A 01

Preparation Batch: BKL0643 — Sample Size: 500 mL

Prepared: 12/28/2022 — 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 |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *51.2* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-20-1222**

**22L0531-06 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/21/2022 11:40

Instrument: NT6 Analyst: JZ — Analyzed: 01/03/2023 20:02

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0531-06 A 01

Preparation Batch: BKL0643 — Sample Size: 500 mL

Prepared: 12/28/2022 — 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 |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *54.0* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-21-1222**

**22L0531-07 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/21/2022 12:20

Instrument: NT6 Analyst: JZ — Analyzed: 01/03/2023 20:26

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0531-07 A 01

Preparation Batch: BKL0643 — Sample Size: 500 mL

Prepared: 12/28/2022 — 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 |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *52.6* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## Trip Blank

**22L0531-08 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 13:30

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 18:56

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0531-08 F

Preparation Batch: BKL0736 — Sample Size: 10 mL

Prepared: 12/30/2022 — Final Volume: 10 mL

| Analyte | CAS Number | Dilution | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | 1 | 0.50 | ND | ug/L | U |
| Vinyl Chloride | 75-01-4 | 1 | 0.10 | ND | ug/L | U |
| Bromomethane | 74-83-9 | 1 | 1.00 | ND | ug/L | U |
| Chloroethane | 75-00-3 | 1 | 0.20 | ND | ug/L | U |
| Trichlorofluoromethane | 75-69-4 | 1 | 0.20 | ND | ug/L | U |
| Acrolein | 107-02-8 | 1 | 5.00 | ND | ug/L | U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76-13-1 | 1 | 0.20 | ND | ug/L | U |
| Acetone | 67-64-1 | 1 | 5.00 | ND | ug/L | U |
| 1,1-Dichloroethene | 75-35-4 | 1 | 0.20 | ND | ug/L | U |
| Iodomethane | 74-88-4 | 1 | 1.00 | ND | ug/L | U |
| Methylene Chloride | 75-09-2 | 1 | 1.00 | 1.09 | ug/L | |
| 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 | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## Trip Blank

**22L0531-08 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/21/2022 13:30
Analyzed: 12/30/2022 18:56

**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 | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## Trip Blank

**22L0531-08 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 13:30

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 18:56

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *107* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *97.8* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *96.8* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *99.5* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## LMW-FB-1222

**22L0531-09 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 13:40

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 21:01

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0531-09 J

Preparation Batch: BKL0736 — Sample Size: 10 mL

Prepared: 12/30/2022 — Final Volume: 10 mL

| Analyte | CAS Number | Dilution | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | 1 | 0.50 | ND | ug/L | U |
| Vinyl Chloride | 75-01-4 | 1 | 0.10 | ND | ug/L | U |
| Bromomethane | 74-83-9 | 1 | 1.00 | ND | ug/L | U |
| Chloroethane | 75-00-3 | 1 | 0.20 | ND | ug/L | U |
| Trichlorofluoromethane | 75-69-4 | 1 | 0.20 | ND | ug/L | U |
| Acrolein | 107-02-8 | 1 | 5.00 | ND | ug/L | U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76-13-1 | 1 | 0.20 | ND | ug/L | U |
| Acetone | 67-64-1 | 1 | 5.00 | ND | ug/L | U |
| 1,1-Dichloroethene | 75-35-4 | 1 | 0.20 | ND | ug/L | U |
| Iodomethane | 74-88-4 | 1 | 1.00 | ND | ug/L | U |
| Methylene Chloride | 75-09-2 | 1 | 1.00 | 1.54 | ug/L | |
| 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 | 4.34 | 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 |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-FB-1222**

**22L0531-09 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 13:40

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 21:01

**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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-FB-1222**

**22L0531-09 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 13:40

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 21:01

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *110* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *97.9* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *93.4* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *101* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-FB-1222**

**22L0531-09 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/21/2022 13:40

Instrument: NT6 Analyst: JZ — Analyzed: 01/03/2023 20:51

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0531-09 D 01

Preparation Batch: BKL0643 — Sample Size: 500 mL

Prepared: 12/28/2022 — 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 |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *56.9* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**LMW-FB-1222**

**22L0531-09 (Water)**

## Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 12/21/2022 13:40

Instrument: FID4 Analyst: AA — Analyzed: 12/28/2022 17:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 22L0531-09 B 01

Preparation Batch: BKL0607 — Sample Size: 500 mL

Prepared: 12/27/2022 — 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 |
| *Surrogate: o-Terphenyl* | | | *50-150 %* | *85.7* | *%* | |
| *Surrogate: n-Triacontane* | | | *50-150 %* | *100* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0736-BLK1)** | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 18:15 | | | | | | | |
| 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 | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0736-BLK1)** | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 18:15 | | | | | | | |
| 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 | 0.84 | 0.50 | ug/L | | | | | | | |
| Naphthalene | ND | 0.50 | ug/L | | | | | | | U |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0736-BLK1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 18:15 | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.50 | ug/L | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.20 | ug/L | | | | | | | U |
| *Surrogate: 1,2-Dichloroethane-d4* | 5.13 | | ug/L | *5.00* | | *103* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 4.88 | | ug/L | *5.00* | | *97.7* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.96 | | ug/L | *5.00* | | *99.3* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 5.05 | | ug/L | *5.00* | | *101* | *80-120* | | | |
| **LCS (BKL0736-BS1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:13 | | | | | | |
| Chloromethane | 9.54 | 0.50 | ug/L | 10.0 | | 95.4 | 60-138 | | | |
| Vinyl Chloride | 9.63 | 0.10 | ug/L | 10.0 | | 96.3 | 66-133 | | | |
| Bromomethane | 9.31 | 1.00 | ug/L | 10.0 | | 93.1 | 72-131 | | | |
| Chloroethane | 9.84 | 0.20 | ug/L | 10.0 | | 98.4 | 60-155 | | | |
| Trichlorofluoromethane | 12.0 | 0.20 | ug/L | 10.0 | | 120 | 62-141 | | | |
| Acrolein | 42.4 | 5.00 | ug/L | 50.0 | | 84.7 | 52-190 | | | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 9.93 | 0.20 | ug/L | 10.0 | | 99.3 | 76-129 | | | |
| Acetone | 42.0 | 5.00 | ug/L | 50.0 | | 84.0 | 58-142 | | | |
| 1,1-Dichloroethene | 9.56 | 0.20 | ug/L | 10.0 | | 95.6 | 69-135 | | | |
| Iodomethane | 9.84 | 1.00 | ug/L | 10.0 | | 98.4 | 56-147 | | | |
| Methylene Chloride | 8.98 | 1.00 | ug/L | 10.0 | | 89.8 | 65-135 | | | |
| Acrylonitrile | 7.60 | 1.00 | ug/L | 10.0 | | 76.0 | 64-134 | | | |
| Carbon Disulfide | 9.56 | 0.20 | ug/L | 10.0 | | 95.6 | 78-125 | | | |
| trans-1,2-Dichloroethene | 6.69 | 0.20 | ug/L | 10.0 | | 66.9 | 78-128 | | | *, Q |
| Vinyl Acetate | 9.15 | 0.20 | ug/L | 10.0 | | 91.5 | 55-138 | | | |
| 1,1-Dichloroethane | 8.96 | 0.20 | ug/L | 10.0 | | 89.6 | 76-124 | | | |
| 2-Butanone | 39.4 | 5.00 | ug/L | 50.0 | | 78.8 | 61-140 | | | |
| 2,2-Dichloropropane | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 66-147 | | | |
| cis-1,2-Dichloroethene | 9.24 | 0.20 | ug/L | 10.0 | | 92.4 | 80-121 | | | |
| Chloroform | 9.35 | 0.20 | ug/L | 10.0 | | 93.5 | 80-122 | | | |
| Bromochloromethane | 8.78 | 0.20 | ug/L | 10.0 | | 87.8 | 80-121 | | | |
| 1,1,1-Trichloroethane | 9.80 | 0.20 | ug/L | 10.0 | | 98.0 | 79-123 | | | |
| 1,1-Dichloropropene | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 80-127 | | | |
| Carbon tetrachloride | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 53-137 | | | |
| 1,2-Dichloroethane | 9.49 | 0.20 | ug/L | 10.0 | | 94.9 | 75-123 | | | |
| Benzene | 9.65 | 0.20 | ug/L | 10.0 | | 96.5 | 80-120 | | | |
| Trichloroethene | 9.80 | 0.20 | ug/L | 10.0 | | 98.0 | 80-120 | | | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (BKL0736-BS1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:13 | | | | | | |
| 1,2-Dichloropropane | 9.16 | 0.20 | ug/L | 10.0 | | 91.6 | 80-120 | | | |
| Bromodichloromethane | 9.63 | 0.20 | ug/L | 10.0 | | 96.3 | 80-121 | | | |
| Dibromomethane | 9.16 | 0.20 | ug/L | 10.0 | | 91.6 | 80-120 | | | |
| 2-Chloroethyl vinyl ether | 6.28 | 1.00 | ug/L | 10.0 | | 62.8 | 64-120 | | | *, Q |
| 4-Methyl-2-Pentanone | 44.4 | 2.50 | ug/L | 50.0 | | 88.8 | 67-133 | | | |
| cis-1,3-Dichloropropene | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-124 | | | |
| Toluene | 9.59 | 0.20 | ug/L | 10.0 | | 95.9 | 80-120 | | | |
| trans-1,3-Dichloropropene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 71-127 | | | |
| 2-Hexanone | 43.8 | 5.00 | ug/L | 50.0 | | 87.6 | 69-133 | | | |
| 1,1,2-Trichloroethane | 8.92 | 0.20 | ug/L | 10.0 | | 89.2 | 80-121 | | | |
| 1,3-Dichloropropane | 9.45 | 0.10 | ug/L | 10.0 | | 94.5 | 80-120 | | | |
| Tetrachloroethene | 9.90 | 0.20 | ug/L | 10.0 | | 99.0 | 80-120 | | | |
| Dibromochloromethane | 8.37 | 0.20 | ug/L | 10.0 | | 83.7 | 65-135 | | | |
| 1,2-Dibromoethane | 9.47 | 0.10 | ug/L | 10.0 | | 94.7 | 80-121 | | | |
| Chlorobenzene | 9.63 | 0.20 | ug/L | 10.0 | | 96.3 | 80-120 | | | |
| Ethylbenzene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | | | |
| 1,1,1,2-Tetrachloroethane | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | | | |
| m,p-Xylene | 21.1 | 0.40 | ug/L | 20.0 | | 105 | 80-121 | | | |
| o-Xylene | 9.95 | 0.20 | ug/L | 10.0 | | 99.5 | 80-121 | | | |
| Xylenes, total | 31.0 | 0.60 | ug/L | 30.0 | | 103 | 76-127 | | | |
| Styrene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-124 | | | |
| Bromoform | 7.89 | 0.20 | ug/L | 10.0 | | 78.9 | 51-134 | | | |
| 1,1,2,2-Tetrachloroethane | 8.51 | 0.20 | ug/L | 10.0 | | 85.1 | 77-123 | | | |
| 1,2,3-Trichloropropane | 8.92 | 0.25 | ug/L | 10.0 | | 89.2 | 76-125 | | | |
| trans-1,4-Dichloro 2-Butene | 9.08 | 1.00 | ug/L | 10.0 | | 90.8 | 55-129 | | | |
| n-Propylbenzene | 10.9 | 0.20 | ug/L | 10.0 | | 109 | 78-130 | | | |
| Bromobenzene | 9.75 | 0.20 | ug/L | 10.0 | | 97.5 | 80-120 | | | |
| Isopropyl Benzene | 11.1 | 0.20 | ug/L | 10.0 | | 111 | 80-128 | | | |
| 2-Chlorotoluene | 10.7 | 0.10 | ug/L | 10.0 | | 107 | 78-122 | | | |
| 4-Chlorotoluene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-121 | | | |
| t-Butylbenzene | 11.4 | 0.20 | ug/L | 10.0 | | 114 | 78-125 | | | |
| 1,3,5-Trimethylbenzene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 80-129 | | | |
| 1,2,4-Trimethylbenzene | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-127 | | | |
| s-Butylbenzene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 78-129 | | | |
| 4-Isopropyl Toluene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 79-130 | | | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (BKL0736-BS1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:13 | | | | | | |
| 1,3-Dichlorobenzene | 9.97 | 0.20 | ug/L | 10.0 | | 99.7 | 80-120 | | | |
| 1,4-Dichlorobenzene | 9.59 | 0.20 | ug/L | 10.0 | | 95.9 | 80-120 | | | |
| n-Butylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 74-129 | | | |
| 1,2-Dichlorobenzene | 9.52 | 0.20 | ug/L | 10.0 | | 95.2 | 80-120 | | | |
| 1,2-Dibromo-3-chloropropane | 7.46 | 0.50 | ug/L | 10.0 | | 74.6 | 62-123 | | | |
| 1,2,4-Trichlorobenzene | 10.6 | 0.50 | ug/L | 10.0 | | 106 | 64-124 | | | |
| Hexachloro-1,3-Butadiene | 12.0 | 0.50 | ug/L | 10.0 | | 120 | 58-123 | | | Q, B |
| Naphthalene | 8.53 | 0.50 | ug/L | 10.0 | | 85.3 | 50-134 | | | |
| 1,2,3-Trichlorobenzene | 10.2 | 0.50 | ug/L | 10.0 | | 102 | 49-133 | | | |
| Dichlorodifluoromethane | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 48-147 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | 4.82 | | ug/L | *5.00* | | *96.4* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 5.03 | | ug/L | *5.00* | | *101* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.17 | | ug/L | *5.00* | | *103* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 4.79 | | ug/L | *5.00* | | *95.7* | *80-120* | | | |
| **LCS Dup (BKL0736-BSD1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:34 | | | | | | |
| Chloromethane | 8.07 | 0.50 | ug/L | 10.0 | | 80.7 | 60-138 | 16.60 | 30 | |
| Vinyl Chloride | 8.81 | 0.10 | ug/L | 10.0 | | 88.1 | 66-133 | 8.93 | 30 | |
| Bromomethane | 8.90 | 1.00 | ug/L | 10.0 | | 89.0 | 72-131 | 4.47 | 30 | |
| Chloroethane | 9.69 | 0.20 | ug/L | 10.0 | | 96.9 | 60-155 | 1.48 | 30 | |
| Trichlorofluoromethane | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 62-141 | 10.80 | 30 | |
| Acrolein | 47.0 | 5.00 | ug/L | 50.0 | | 94.1 | 52-190 | 10.40 | 30 | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 9.45 | 0.20 | ug/L | 10.0 | | 94.5 | 76-129 | 4.92 | 30 | |
| Acetone | 45.3 | 5.00 | ug/L | 50.0 | | 90.6 | 58-142 | 7.59 | 30 | |
| 1,1-Dichloroethene | 9.40 | 0.20 | ug/L | 10.0 | | 94.0 | 69-135 | 1.73 | 30 | |
| Iodomethane | 9.53 | 1.00 | ug/L | 10.0 | | 95.3 | 56-147 | 3.15 | 30 | |
| Methylene Chloride | 9.31 | 1.00 | ug/L | 10.0 | | 93.1 | 65-135 | 3.59 | 30 | |
| Acrylonitrile | 8.78 | 1.00 | ug/L | 10.0 | | 87.8 | 64-134 | 14.50 | 30 | |
| Carbon Disulfide | 9.45 | 0.20 | ug/L | 10.0 | | 94.5 | 78-125 | 1.08 | 30 | |
| trans-1,2-Dichloroethene | 6.77 | 0.20 | ug/L | 10.0 | | 67.7 | 78-128 | 1.28 | 30 | *, Q |
| Vinyl Acetate | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 55-138 | 12.80 | 30 | |
| 1,1-Dichloroethane | 9.27 | 0.20 | ug/L | 10.0 | | 92.7 | 76-124 | 3.45 | 30 | |
| 2-Butanone | 47.3 | 5.00 | ug/L | 50.0 | | 94.6 | 61-140 | 18.20 | 30 | |
| 2,2-Dichloropropane | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 66-147 | 2.50 | 30 | |
| cis-1,2-Dichloroethene | 9.78 | 0.20 | ug/L | 10.0 | | 97.8 | 80-121 | 5.66 | 30 | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (BKL0736-BSD1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:34 | | | | | | |
| Chloroform | 9.92 | 0.20 | ug/L | 10.0 | | 99.2 | 80-122 | 5.95 | 30 | |
| Bromochloromethane | 9.55 | 0.20 | ug/L | 10.0 | | 95.5 | 80-121 | 8.39 | 30 | |
| 1,1,1-Trichloroethane | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 79-123 | 4.45 | 30 | |
| 1,1-Dichloropropene | 11.0 | 0.10 | ug/L | 10.0 | | 110 | 80-127 | 4.82 | 30 | |
| Carbon tetrachloride | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 53-137 | 0.68 | 30 | |
| 1,2-Dichloroethane | 9.98 | 0.20 | ug/L | 10.0 | | 99.8 | 75-123 | 5.07 | 30 | |
| Benzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 6.99 | 30 | |
| Trichloroethene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 5.05 | 30 | |
| 1,2-Dichloropropane | 9.91 | 0.20 | ug/L | 10.0 | | 99.1 | 80-120 | 7.92 | 30 | |
| Bromodichloromethane | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-121 | 6.12 | 30 | |
| Dibromomethane | 9.84 | 0.20 | ug/L | 10.0 | | 98.4 | 80-120 | 7.16 | 30 | |
| 2-Chloroethyl vinyl ether | 7.73 | 1.00 | ug/L | 10.0 | | 77.3 | 64-120 | 20.70 | 30 | Q |
| 4-Methyl-2-Pentanone | 52.6 | 2.50 | ug/L | 50.0 | | 105 | 67-133 | 16.90 | 30 | |
| cis-1,3-Dichloropropene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 80-124 | 7.87 | 30 | |
| Toluene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 7.65 | 30 | |
| trans-1,3-Dichloropropene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 71-127 | 9.16 | 30 | |
| 2-Hexanone | 51.8 | 5.00 | ug/L | 50.0 | | 104 | 69-133 | 16.70 | 30 | |
| 1,1,2-Trichloroethane | 9.84 | 0.20 | ug/L | 10.0 | | 98.4 | 80-121 | 9.72 | 30 | |
| 1,3-Dichloropropane | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 80-120 | 10.20 | 30 | |
| Tetrachloroethene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 3.91 | 30 | |
| Dibromochloromethane | 9.01 | 0.20 | ug/L | 10.0 | | 90.1 | 65-135 | 7.37 | 30 | |
| 1,2-Dibromoethane | 10.6 | 0.10 | ug/L | 10.0 | | 106 | 80-121 | 11.50 | 30 | |
| Chlorobenzene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | 4.85 | 30 | |
| Ethylbenzene | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 80-120 | 5.77 | 30 | |
| 1,1,1,2-Tetrachloroethane | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 80-120 | 2.65 | 30 | |
| m,p-Xylene | 22.0 | 0.40 | ug/L | 20.0 | | 110 | 80-121 | 4.40 | 30 | |
| o-Xylene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-121 | 4.96 | 30 | |
| Xylenes, total | 32.5 | 0.60 | ug/L | 30.0 | | 108 | 76-127 | 4.58 | 30 | |
| Styrene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-124 | 1.73 | 30 | |
| Bromoform | 8.68 | 0.20 | ug/L | 10.0 | | 86.8 | 51-134 | 9.55 | 30 | |
| 1,1,2,2-Tetrachloroethane | 9.82 | 0.20 | ug/L | 10.0 | | 98.2 | 77-123 | 14.30 | 30 | |
| 1,2,3-Trichloropropane | 9.80 | 0.25 | ug/L | 10.0 | | 98.0 | 76-125 | 9.39 | 30 | |
| trans-1,4-Dichloro 2-Butene | 10.2 | 1.00 | ug/L | 10.0 | | 102 | 55-129 | 11.70 | 30 | |
| n-Propylbenzene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 78-130 | 1.67 | 30 | |
| Bromobenzene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 5.09 | 30 | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (BKL0736-BSD1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:34 | | | | | | |
| Isopropyl Benzene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 80-128 | 3.58 | 30 | |
| 2-Chlorotoluene | 11.0 | 0.10 | ug/L | 10.0 | | 110 | 78-122 | 2.27 | 30 | |
| 4-Chlorotoluene | 10.9 | 0.20 | ug/L | 10.0 | | 109 | 80-121 | 4.53 | 30 | |
| t-Butylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 78-125 | 2.73 | 30 | |
| 1,3,5-Trimethylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 80-129 | 2.25 | 30 | |
| 1,2,4-Trimethylbenzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-127 | 1.63 | 30 | |
| s-Butylbenzene | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 78-129 | 2.86 | 30 | |
| 4-Isopropyl Toluene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 79-130 | 0.77 | 30 | |
| 1,3-Dichlorobenzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 3.75 | 30 | |
| 1,4-Dichlorobenzene | 9.96 | 0.20 | ug/L | 10.0 | | 99.6 | 80-120 | 3.78 | 30 | |
| n-Butylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 74-129 | 0.13 | 30 | |
| 1,2-Dichlorobenzene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | 6.21 | 30 | |
| 1,2-Dibromo-3-chloropropane | 8.53 | 0.50 | ug/L | 10.0 | | 85.3 | 62-123 | 13.30 | 30 | |
| 1,2,4-Trichlorobenzene | 11.3 | 0.50 | ug/L | 10.0 | | 113 | 64-124 | 5.91 | 30 | |
| Hexachloro-1,3-Butadiene | 11.7 | 0.50 | ug/L | 10.0 | | 117 | 58-123 | 2.23 | 30 | Q, B |
| Naphthalene | 9.65 | 0.50 | ug/L | 10.0 | | 96.5 | 50-134 | 12.30 | 30 | |
| 1,2,3-Trichlorobenzene | 10.9 | 0.50 | ug/L | 10.0 | | 109 | 49-133 | 6.46 | 30 | |
| Dichlorodifluoromethane | 9.79 | 0.20 | ug/L | 10.0 | | 97.9 | 48-147 | 11.50 | 30 | |
| *Surrogate: 1,2-Dichloroethane-d4* | 4.78 | | ug/L | *5.00* | | *95.7* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 5.15 | | ug/L | *5.00* | | *103* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.22 | | ug/L | *5.00* | | *104* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 4.98 | | ug/L | *5.00* | | *99.6* | *80-120* | | | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BLA0037-BLK1)** | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 18:29 | | | | | | | |
| 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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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BLA0037-BLK1)** | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 18:29 | | | | | | | |
| 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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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BLA0037-BLK1)** | | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 18:29 | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.50 | ug/L | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.20 | ug/L | | | | | | | U |
| *Surrogate: 1,2-Dichloroethane-d4* | 5.15 | | ug/L | *5.00* | | *103* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 4.84 | | ug/L | *5.00* | | *96.9* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.84 | | ug/L | *5.00* | | *96.7* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 5.17 | | ug/L | *5.00* | | *103* | *80-120* | | | |
| **LCS (BLA0037-BS1)** | | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 17:22 | | | | | | |
| Chloromethane | 10.9 | 0.50 | ug/L | 10.0 | | 109 | 60-138 | | | |
| Vinyl Chloride | 10.4 | 0.10 | ug/L | 10.0 | | 104 | 66-133 | | | |
| Bromomethane | 10.8 | 1.00 | ug/L | 10.0 | | 108 | 72-131 | | | |
| Chloroethane | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 60-155 | | | |
| Trichlorofluoromethane | 11.6 | 0.20 | ug/L | 10.0 | | 116 | 62-141 | | | |
| Acrolein | 50.7 | 5.00 | ug/L | 50.0 | | 101 | 52-190 | | | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 76-129 | | | |
| Acetone | 49.6 | 5.00 | ug/L | 50.0 | | 99.2 | 58-142 | | | |
| 1,1-Dichloroethene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 69-135 | | | |
| Iodomethane | 10.4 | 1.00 | ug/L | 10.0 | | 104 | 56-147 | | | |
| Methylene Chloride | 9.91 | 1.00 | ug/L | 10.0 | | 99.1 | 65-135 | | | |
| Acrylonitrile | 9.75 | 1.00 | ug/L | 10.0 | | 97.5 | 64-134 | | | |
| Carbon Disulfide | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 78-125 | | | |
| trans-1,2-Dichloroethene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 78-128 | | | |
| Vinyl Acetate | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 55-138 | | | |
| 1,1-Dichloroethane | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 76-124 | | | |
| 2-Butanone | 51.2 | 5.00 | ug/L | 50.0 | | 102 | 61-140 | | | |
| 2,2-Dichloropropane | 11.4 | 0.20 | ug/L | 10.0 | | 114 | 66-147 | | | |
| cis-1,2-Dichloroethene | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 80-121 | | | |
| Chloroform | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-122 | | | |
| Bromochloromethane | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-121 | | | |
| 1,1,1-Trichloroethane | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 79-123 | | | |
| 1,1-Dichloropropene | 10.4 | 0.10 | ug/L | 10.0 | | 104 | 80-127 | | | |
| Carbon tetrachloride | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 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 | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 80-120 | | | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (BLA0037-BS1)** | | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 17:22 | | | | | | |
| 1,2-Dichloropropane | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 80-120 | | | |
| Bromodichloromethane | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 80-121 | | | |
| Dibromomethane | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | | | |
| 2-Chloroethyl vinyl ether | 10.5 | 1.00 | ug/L | 10.0 | | 105 | 64-120 | | | |
| 4-Methyl-2-Pentanone | 54.7 | 2.50 | ug/L | 50.0 | | 109 | 67-133 | | | |
| cis-1,3-Dichloropropene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 80-124 | | | |
| Toluene | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 80-120 | | | |
| trans-1,3-Dichloropropene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 71-127 | | | |
| 2-Hexanone | 53.7 | 5.00 | ug/L | 50.0 | | 107 | 69-133 | | | |
| 1,1,2-Trichloroethane | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-121 | | | |
| 1,3-Dichloropropane | 10.1 | 0.10 | ug/L | 10.0 | | 101 | 80-120 | | | |
| Tetrachloroethene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-120 | | | |
| Dibromochloromethane | 10.9 | 0.20 | ug/L | 10.0 | | 109 | 65-135 | | | |
| 1,2-Dibromoethane | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 80-121 | | | |
| Chlorobenzene | 10.9 | 0.20 | ug/L | 10.0 | | 109 | 80-120 | | | |
| Ethylbenzene | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 80-120 | | | |
| 1,1,1,2-Tetrachloroethane | 11.4 | 0.20 | ug/L | 10.0 | | 114 | 80-120 | | | |
| m,p-Xylene | 22.4 | 0.40 | ug/L | 20.0 | | 112 | 80-121 | | | |
| o-Xylene | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 80-121 | | | |
| Xylenes, total | 33.2 | 0.60 | ug/L | 30.0 | | 111 | 76-127 | | | |
| Styrene | 11.4 | 0.20 | ug/L | 10.0 | | 114 | 80-124 | | | |
| Bromoform | 9.34 | 0.20 | ug/L | 10.0 | | 93.4 | 51-134 | | | |
| 1,1,2,2-Tetrachloroethane | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 77-123 | | | |
| 1,2,3-Trichloropropane | 10.7 | 0.25 | ug/L | 10.0 | | 107 | 76-125 | | | |
| trans-1,4-Dichloro 2-Butene | 11.1 | 1.00 | ug/L | 10.0 | | 111 | 55-129 | | | |
| n-Propylbenzene | 11.6 | 0.20 | ug/L | 10.0 | | 116 | 78-130 | | | |
| Bromobenzene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 80-120 | | | |
| Isopropyl Benzene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 80-128 | | | |
| 2-Chlorotoluene | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 78-122 | | | |
| 4-Chlorotoluene | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 80-121 | | | |
| t-Butylbenzene | 11.4 | 0.20 | ug/L | 10.0 | | 114 | 78-125 | | | |
| 1,3,5-Trimethylbenzene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 80-129 | | | |
| 1,2,4-Trimethylbenzene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 80-127 | | | |
| s-Butylbenzene | 11.6 | 0.20 | ug/L | 10.0 | | 116 | 78-129 | | | |
| 4-Isopropyl Toluene | 11.9 | 0.20 | ug/L | 10.0 | | 119 | 79-130 | | | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (BLA0037-BS1)** | | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 17:22 | | | | | | |
| 1,3-Dichlorobenzene | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 80-120 | | | |
| 1,4-Dichlorobenzene | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 80-120 | | | |
| n-Butylbenzene | 11.6 | 0.20 | ug/L | 10.0 | | 116 | 74-129 | | | |
| 1,2-Dichlorobenzene | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 80-120 | | | |
| 1,2-Dibromo-3-chloropropane | 10.5 | 0.50 | ug/L | 10.0 | | 105 | 62-123 | | | |
| 1,2,4-Trichlorobenzene | 11.5 | 0.50 | ug/L | 10.0 | | 115 | 64-124 | | | |
| Hexachloro-1,3-Butadiene | 11.1 | 0.50 | ug/L | 10.0 | | 111 | 58-123 | | | |
| Naphthalene | 11.4 | 0.50 | ug/L | 10.0 | | 114 | 50-134 | | | |
| 1,2,3-Trichlorobenzene | 11.3 | 0.50 | ug/L | 10.0 | | 113 | 49-133 | | | |
| Dichlorodifluoromethane | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 48-147 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | 4.84 | | ug/L | *5.00* | | *96.8* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 5.01 | | ug/L | *5.00* | | *100* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.12 | | ug/L | *5.00* | | *102* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 5.02 | | ug/L | *5.00* | | *100* | *80-120* | | | |
| **LCS Dup (BLA0037-BSD1)** | | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 17:45 | | | | | | |
| Chloromethane | 10.6 | 0.50 | ug/L | 10.0 | | 106 | 60-138 | 2.59 | 30 | |
| Vinyl Chloride | 10.2 | 0.10 | ug/L | 10.0 | | 102 | 66-133 | 1.94 | 30 | |
| Bromomethane | 10.7 | 1.00 | ug/L | 10.0 | | 107 | 72-131 | 0.98 | 30 | |
| Chloroethane | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 60-155 | 1.49 | 30 | |
| Trichlorofluoromethane | 11.4 | 0.20 | ug/L | 10.0 | | 114 | 62-141 | 1.78 | 30 | |
| Acrolein | 49.7 | 5.00 | ug/L | 50.0 | | 99.5 | 52-190 | 1.91 | 30 | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 76-129 | 0.94 | 30 | |
| Acetone | 48.4 | 5.00 | ug/L | 50.0 | | 96.8 | 58-142 | 2.45 | 30 | |
| 1,1-Dichloroethene | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 69-135 | 2.77 | 30 | |
| Iodomethane | 10.4 | 1.00 | ug/L | 10.0 | | 104 | 56-147 | 0.33 | 30 | |
| Methylene Chloride | 10.0 | 1.00 | ug/L | 10.0 | | 100 | 65-135 | 1.27 | 30 | |
| Acrylonitrile | 9.68 | 1.00 | ug/L | 10.0 | | 96.8 | 64-134 | 0.73 | 30 | |
| Carbon Disulfide | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 78-125 | 1.94 | 30 | |
| trans-1,2-Dichloroethene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 78-128 | 1.97 | 30 | |
| Vinyl Acetate | 11.4 | 0.20 | ug/L | 10.0 | | 114 | 55-138 | 1.07 | 30 | |
| 1,1-Dichloroethane | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 76-124 | 0.49 | 30 | |
| 2-Butanone | 52.4 | 5.00 | ug/L | 50.0 | | 105 | 61-140 | 2.24 | 30 | |
| 2,2-Dichloropropane | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 66-147 | 3.29 | 30 | |
| cis-1,2-Dichloroethene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-121 | 1.82 | 30 | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (BLA0037-BSD1)** | | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 17:45 | | | | | | |
| Chloroform | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-122 | 0.25 | 30 | |
| Bromochloromethane | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-121 | 0.82 | 30 | |
| 1,1,1-Trichloroethane | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 79-123 | 0.85 | 30 | |
| 1,1-Dichloropropene | 10.3 | 0.10 | ug/L | 10.0 | | 103 | 80-127 | 1.79 | 30 | |
| Carbon tetrachloride | 11.3 | 0.20 | ug/L | 10.0 | | 113 | 53-137 | 1.97 | 30 | |
| 1,2-Dichloroethane | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 75-123 | 1.61 | 30 | |
| Benzene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-120 | 2.04 | 30 | |
| Trichloroethene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 2.66 | 30 | |
| 1,2-Dichloropropane | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-120 | 3.54 | 30 | |
| Bromodichloromethane | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-121 | 2.26 | 30 | |
| Dibromomethane | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-120 | 1.41 | 30 | |
| 2-Chloroethyl vinyl ether | 10.3 | 1.00 | ug/L | 10.0 | | 103 | 64-120 | 1.88 | 30 | |
| 4-Methyl-2-Pentanone | 54.1 | 2.50 | ug/L | 50.0 | | 108 | 67-133 | 1.06 | 30 | |
| cis-1,3-Dichloropropene | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 80-124 | 2.61 | 30 | |
| Toluene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 2.60 | 30 | |
| trans-1,3-Dichloropropene | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 71-127 | 2.82 | 30 | |
| 2-Hexanone | 51.7 | 5.00 | ug/L | 50.0 | | 103 | 69-133 | 3.69 | 30 | |
| 1,1,2-Trichloroethane | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-121 | 0.88 | 30 | |
| 1,3-Dichloropropane | 9.85 | 0.10 | ug/L | 10.0 | | 98.5 | 80-120 | 2.82 | 30 | |
| Tetrachloroethene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | 4.31 | 30 | |
| Dibromochloromethane | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 65-135 | 3.02 | 30 | |
| 1,2-Dibromoethane | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 80-121 | 0.18 | 30 | |
| Chlorobenzene | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-120 | 6.50 | 30 | |
| Ethylbenzene | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-120 | 6.31 | 30 | |
| 1,1,1,2-Tetrachloroethane | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 80-120 | 4.78 | 30 | |
| m,p-Xylene | 21.4 | 0.40 | ug/L | 20.0 | | 107 | 80-121 | 4.77 | 30 | |
| o-Xylene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-121 | 3.42 | 30 | |
| Xylenes, total | 31.8 | 0.60 | ug/L | 30.0 | | 106 | 76-127 | 4.33 | 30 | |
| Styrene | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 80-124 | 5.31 | 30 | |
| Bromoform | 9.17 | 0.20 | ug/L | 10.0 | | 91.7 | 51-134 | 1.83 | 30 | |
| 1,1,2,2-Tetrachloroethane | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 77-123 | 2.78 | 30 | |
| 1,2,3-Trichloropropane | 9.85 | 0.25 | ug/L | 10.0 | | 98.5 | 76-125 | 8.25 | 30 | |
| trans-1,4-Dichloro 2-Butene | 11.0 | 1.00 | ug/L | 10.0 | | 110 | 55-129 | 0.60 | 30 | |
| n-Propylbenzene | 11.3 | 0.20 | ug/L | 10.0 | | 113 | 78-130 | 2.80 | 30 | |
| Bromobenzene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-120 | 3.96 | 30 | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (BLA0037-BSD1)** | | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 17:45 | | | | | | |
| Isopropyl Benzene | 11.2 | 0.20 | ug/L | 10.0 | | 112 | 80-128 | 2.59 | 30 | |
| 2-Chlorotoluene | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 78-122 | 0.14 | 30 | |
| 4-Chlorotoluene | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 80-121 | 1.82 | 30 | |
| t-Butylbenzene | 11.1 | 0.20 | ug/L | 10.0 | | 111 | 78-125 | 2.75 | 30 | |
| 1,3,5-Trimethylbenzene | 11.2 | 0.20 | ug/L | 10.0 | | 112 | 80-129 | 2.08 | 30 | |
| 1,2,4-Trimethylbenzene | 11.1 | 0.20 | ug/L | 10.0 | | 111 | 80-127 | 3.24 | 30 | |
| s-Butylbenzene | 11.2 | 0.20 | ug/L | 10.0 | | 112 | 78-129 | 3.26 | 30 | |
| 4-Isopropyl Toluene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 79-130 | 3.14 | 30 | |
| 1,3-Dichlorobenzene | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 80-120 | 2.12 | 30 | |
| 1,4-Dichlorobenzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 2.10 | 30 | |
| n-Butylbenzene | 11.3 | 0.20 | ug/L | 10.0 | | 113 | 74-129 | 2.72 | 30 | |
| 1,2-Dichlorobenzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 3.71 | 30 | |
| 1,2-Dibromo-3-chloropropane | 10.5 | 0.50 | ug/L | 10.0 | | 105 | 62-123 | 0.39 | 30 | |
| 1,2,4-Trichlorobenzene | 11.0 | 0.50 | ug/L | 10.0 | | 110 | 64-124 | 4.22 | 30 | |
| Hexachloro-1,3-Butadiene | 10.9 | 0.50 | ug/L | 10.0 | | 109 | 58-123 | 1.50 | 30 | |
| Naphthalene | 11.1 | 0.50 | ug/L | 10.0 | | 111 | 50-134 | 2.97 | 30 | |
| 1,2,3-Trichlorobenzene | 10.9 | 0.50 | ug/L | 10.0 | | 109 | 49-133 | 3.50 | 30 | |
| Dichlorodifluoromethane | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 48-147 | 1.37 | 30 | |
| *Surrogate: 1,2-Dichloroethane-d4* | 5.24 | | ug/L | *5.00* | | *105* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 5.13 | | ug/L | *5.00* | | *103* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.97 | | ug/L | *5.00* | | *99.3* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 5.02 | | ug/L | *5.00* | | *100* | *80-120* | | | |
| **Matrix Spike (BLA0037-MS1)** | **Source: 22L0531-03** | | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 19:35 | | | | | | |
| Chloromethane | 9.82 | 0.50 | ug/L | 10.0 | ND | 98.2 | 60-138 | | | |
| Vinyl Chloride | 8.84 | 0.10 | ug/L | 10.0 | ND | 88.4 | 66-133 | | | |
| Bromomethane | 9.62 | 1.00 | ug/L | 10.0 | ND | 96.2 | 72-131 | | | |
| Chloroethane | 9.18 | 0.20 | ug/L | 10.0 | ND | 91.8 | 60-155 | | | |
| Trichlorofluoromethane | 9.52 | 0.20 | ug/L | 10.0 | ND | 95.2 | 62-141 | | | |
| Acrolein | 47.0 | 5.00 | ug/L | 50.0 | ND | 94.0 | 52-190 | | | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 8.39 | 0.20 | ug/L | 10.0 | ND | 83.9 | 76-129 | | | |
| Acetone | 46.7 | 5.00 | ug/L | 50.0 | ND | 93.4 | 58-142 | | | |
| 1,1-Dichloroethene | 9.20 | 0.20 | ug/L | 10.0 | ND | 92.0 | 69-135 | | | |
| Iodomethane | 9.46 | 1.00 | ug/L | 10.0 | ND | 94.6 | 56-147 | | | |
| Methylene Chloride | 8.84 | 1.00 | ug/L | 10.0 | ND | 88.4 | 65-135 | | | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike (BLA0037-MS1)** | **Source: 22L0531-03** | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 19:35 | | | | | | | |
| Acrylonitrile | 8.94 | 1.00 | ug/L | 10.0 | ND | 89.4 | 64-134 | | | |
| Carbon Disulfide | 9.06 | 0.20 | ug/L | 10.0 | ND | 90.6 | 78-125 | | | |
| trans-1,2-Dichloroethene | 9.33 | 0.20 | ug/L | 10.0 | ND | 93.3 | 78-128 | | | |
| Vinyl Acetate | 9.55 | 0.20 | ug/L | 10.0 | ND | 95.5 | 55-138 | | | |
| 1,1-Dichloroethane | 9.63 | 0.20 | ug/L | 10.0 | ND | 96.3 | 76-124 | | | |
| 2-Butanone | 48.6 | 5.00 | ug/L | 50.0 | ND | 97.3 | 61-140 | | | |
| 2,2-Dichloropropane | 9.72 | 0.20 | ug/L | 10.0 | ND | 97.2 | 66-147 | | | |
| cis-1,2-Dichloroethene | 9.41 | 0.20 | ug/L | 10.0 | ND | 94.1 | 80-121 | | | |
| Chloroform | 9.54 | 0.20 | ug/L | 10.0 | ND | 95.4 | 80-122 | | | |
| Bromochloromethane | 9.45 | 0.20 | ug/L | 10.0 | ND | 94.5 | 80-121 | | | |
| 1,1,1-Trichloroethane | 9.35 | 0.20 | ug/L | 10.0 | ND | 93.5 | 79-123 | | | |
| 1,1-Dichloropropene | 9.12 | 0.10 | ug/L | 10.0 | ND | 91.2 | 80-127 | | | |
| Carbon tetrachloride | 9.61 | 0.20 | ug/L | 10.0 | ND | 96.1 | 53-137 | | | |
| 1,2-Dichloroethane | 9.87 | 0.20 | ug/L | 10.0 | ND | 98.7 | 75-123 | | | |
| Benzene | 9.68 | 0.20 | ug/L | 10.0 | ND | 96.8 | 80-120 | | | |
| Trichloroethene | 9.44 | 0.20 | ug/L | 10.0 | ND | 94.4 | 80-120 | | | |
| 1,2-Dichloropropane | 9.65 | 0.20 | ug/L | 10.0 | ND | 96.5 | 80-120 | | | |
| Bromodichloromethane | 9.49 | 0.20 | ug/L | 10.0 | ND | 94.9 | 80-121 | | | |
| Dibromomethane | 9.46 | 0.20 | ug/L | 10.0 | ND | 94.6 | 80-120 | | | |
| 2-Chloroethyl vinyl ether | ND | 1.00 | ug/L | 10.0 | ND | | 64-120 | | | *, U |
| 4-Methyl-2-Pentanone | 51.5 | 2.50 | ug/L | 50.0 | ND | 103 | 67-133 | | | |
| cis-1,3-Dichloropropene | 9.80 | 0.20 | ug/L | 10.0 | ND | 98.0 | 80-124 | | | |
| Toluene | 9.60 | 0.20 | ug/L | 10.0 | ND | 96.0 | 80-120 | | | |
| trans-1,3-Dichloropropene | 9.73 | 0.20 | ug/L | 10.0 | ND | 97.3 | 71-127 | | | |
| 2-Hexanone | 49.6 | 5.00 | ug/L | 50.0 | ND | 99.3 | 69-133 | | | |
| 1,1,2-Trichloroethane | 9.64 | 0.20 | ug/L | 10.0 | ND | 96.4 | 80-121 | | | |
| 1,3-Dichloropropane | 9.35 | 0.10 | ug/L | 10.0 | ND | 93.5 | 80-120 | | | |
| Tetrachloroethene | 9.23 | 0.20 | ug/L | 10.0 | ND | 92.3 | 80-120 | | | |
| Dibromochloromethane | 9.73 | 0.20 | ug/L | 10.0 | ND | 97.3 | 65-135 | | | |
| 1,2-Dibromoethane | 9.79 | 0.10 | ug/L | 10.0 | ND | 97.9 | 80-121 | | | |
| Chlorobenzene | 9.63 | 0.20 | ug/L | 10.0 | ND | 96.3 | 80-120 | | | |
| Ethylbenzene | 9.60 | 0.20 | ug/L | 10.0 | ND | 96.0 | 80-120 | | | |
| 1,1,1,2-Tetrachloroethane | 10.0 | 0.20 | ug/L | 10.0 | ND | 100 | 80-120 | | | |
| m,p-Xylene | 19.8 | 0.40 | ug/L | 20.0 | ND | 99.1 | 80-121 | | | |
| o-Xylene | 9.67 | 0.20 | ug/L | 10.0 | ND | 96.7 | 80-121 | | | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike (BLA0037-MS1)** | **Source: 22L0531-03** | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 19:35 | | | | | | | |
| Xylenes, total | 29.5 | 0.60 | ug/L | 30.0 | ND | 98.3 | 76-127 | | | |
| Styrene | 10.1 | 0.20 | ug/L | 10.0 | ND | 101 | 80-124 | | | |
| Bromoform | 8.25 | 0.20 | ug/L | 10.0 | ND | 82.5 | 51-134 | | | |
| 1,1,2,2-Tetrachloroethane | 9.75 | 0.20 | ug/L | 10.0 | ND | 97.5 | 77-123 | | | |
| 1,2,3-Trichloropropane | 9.37 | 0.25 | ug/L | 10.0 | ND | 93.7 | 76-125 | | | |
| trans-1,4-Dichloro 2-Butene | 9.90 | 1.00 | ug/L | 10.0 | ND | 99.0 | 55-129 | | | |
| n-Propylbenzene | 10.0 | 0.20 | ug/L | 10.0 | ND | 100 | 78-130 | | | |
| Bromobenzene | 9.78 | 0.20 | ug/L | 10.0 | ND | 97.8 | 80-120 | | | |
| Isopropyl Benzene | 9.95 | 0.20 | ug/L | 10.0 | ND | 99.5 | 80-128 | | | |
| 2-Chlorotoluene | 9.38 | 0.10 | ug/L | 10.0 | ND | 93.8 | 78-122 | | | |
| 4-Chlorotoluene | 9.53 | 0.20 | ug/L | 10.0 | ND | 95.3 | 80-121 | | | |
| t-Butylbenzene | 9.87 | 0.20 | ug/L | 10.0 | ND | 98.7 | 78-125 | | | |
| 1,3,5-Trimethylbenzene | 10.0 | 0.20 | ug/L | 10.0 | ND | 100 | 80-129 | | | |
| 1,2,4-Trimethylbenzene | 9.92 | 0.20 | ug/L | 10.0 | ND | 99.2 | 80-127 | | | |
| s-Butylbenzene | 9.98 | 0.20 | ug/L | 10.0 | ND | 99.8 | 78-129 | | | |
| 4-Isopropyl Toluene | 10.2 | 0.20 | ug/L | 10.0 | ND | 102 | 79-130 | | | |
| 1,3-Dichlorobenzene | 9.59 | 0.20 | ug/L | 10.0 | ND | 95.9 | 80-120 | | | |
| 1,4-Dichlorobenzene | 9.46 | 0.20 | ug/L | 10.0 | ND | 94.6 | 80-120 | | | |
| n-Butylbenzene | 9.85 | 0.20 | ug/L | 10.0 | ND | 98.5 | 74-129 | | | |
| 1,2-Dichlorobenzene | 9.53 | 0.20 | ug/L | 10.0 | ND | 95.3 | 80-120 | | | |
| 1,2-Dibromo-3-chloropropane | 9.54 | 0.50 | ug/L | 10.0 | ND | 95.4 | 62-123 | | | |
| 1,2,4-Trichlorobenzene | 9.78 | 0.50 | ug/L | 10.0 | ND | 97.8 | 64-124 | | | |
| Hexachloro-1,3-Butadiene | 9.05 | 0.50 | ug/L | 10.0 | ND | 90.5 | 58-123 | | | |
| Naphthalene | 10.3 | 0.50 | ug/L | 10.0 | ND | 103 | 50-134 | | | |
| 1,2,3-Trichlorobenzene | 9.87 | 0.50 | ug/L | 10.0 | ND | 98.7 | 49-133 | | | |
| Dichlorodifluoromethane | 8.09 | 0.20 | ug/L | 10.0 | ND | 80.9 | 48-147 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | 4.95 | | ug/L | *5.00* | *5.11* | *99.1* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 5.05 | | ug/L | *5.00* | *4.91* | *101* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.98 | | ug/L | *5.00* | *4.86* | *99.6* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 5.05 | | ug/L | *5.00* | *5.01* | *101* | *80-120* | | | |

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

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike Dup (BLA0037-MSD1)** | **Source: 22L0531-03** | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 19:57 | | | | | | | |
| Chloromethane | 10.3 | 0.50 | ug/L | 10.0 | ND | 103 | 60-138 | 4.53 | 30 | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike Dup (BLA0037-MSD1)** | **Source: 22L0531-03** | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 19:57 | | | | | | | |
| Vinyl Chloride | 9.10 | 0.10 | ug/L | 10.0 | ND | 91.0 | 66-133 | 2.93 | 30 | |
| Bromomethane | 9.55 | 1.00 | ug/L | 10.0 | ND | 95.5 | 72-131 | 0.82 | 30 | |
| Chloroethane | 8.73 | 0.20 | ug/L | 10.0 | ND | 87.3 | 60-155 | 4.95 | 30 | |
| Trichlorofluoromethane | 9.64 | 0.20 | ug/L | 10.0 | ND | 96.4 | 62-141 | 1.26 | 30 | |
| Acrolein | 42.8 | 5.00 | ug/L | 50.0 | ND | 85.6 | 52-190 | 9.27 | 30 | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 8.45 | 0.20 | ug/L | 10.0 | ND | 84.5 | 76-129 | 0.67 | 30 | |
| Acetone | 45.9 | 5.00 | ug/L | 50.0 | ND | 91.7 | 58-142 | 1.79 | 30 | |
| 1,1-Dichloroethene | 9.41 | 0.20 | ug/L | 10.0 | ND | 94.1 | 69-135 | 2.21 | 30 | |
| Iodomethane | 9.60 | 1.00 | ug/L | 10.0 | ND | 96.0 | 56-147 | 1.55 | 30 | |
| Methylene Chloride | 9.00 | 1.00 | ug/L | 10.0 | ND | 90.0 | 65-135 | 1.78 | 30 | |
| Acrylonitrile | 9.11 | 1.00 | ug/L | 10.0 | ND | 91.1 | 64-134 | 1.91 | 30 | |
| Carbon Disulfide | 9.25 | 0.20 | ug/L | 10.0 | ND | 92.5 | 78-125 | 2.05 | 30 | |
| trans-1,2-Dichloroethene | 9.43 | 0.20 | ug/L | 10.0 | ND | 94.3 | 78-128 | 1.09 | 30 | |
| Vinyl Acetate | 9.65 | 0.20 | ug/L | 10.0 | ND | 96.5 | 55-138 | 1.05 | 30 | |
| 1,1-Dichloroethane | 9.59 | 0.20 | ug/L | 10.0 | ND | 95.9 | 76-124 | 0.42 | 30 | |
| 2-Butanone | 48.1 | 5.00 | ug/L | 50.0 | ND | 96.1 | 61-140 | 1.20 | 30 | |
| 2,2-Dichloropropane | 9.66 | 0.20 | ug/L | 10.0 | ND | 96.6 | 66-147 | 0.55 | 30 | |
| cis-1,2-Dichloroethene | 9.63 | 0.20 | ug/L | 10.0 | ND | 96.3 | 80-121 | 2.28 | 30 | |
| Chloroform | 9.47 | 0.20 | ug/L | 10.0 | ND | 94.7 | 80-122 | 0.79 | 30 | |
| Bromochloromethane | 9.52 | 0.20 | ug/L | 10.0 | ND | 95.2 | 80-121 | 0.77 | 30 | |
| 1,1,1-Trichloroethane | 9.51 | 0.20 | ug/L | 10.0 | ND | 95.1 | 79-123 | 1.78 | 30 | |
| 1,1-Dichloropropene | 9.12 | 0.10 | ug/L | 10.0 | ND | 91.2 | 80-127 | 0.08 | 30 | |
| Carbon tetrachloride | 9.58 | 0.20 | ug/L | 10.0 | ND | 95.8 | 53-137 | 0.36 | 30 | |
| 1,2-Dichloroethane | 9.53 | 0.20 | ug/L | 10.0 | ND | 95.3 | 75-123 | 3.45 | 30 | |
| Benzene | 9.48 | 0.20 | ug/L | 10.0 | ND | 94.8 | 80-120 | 2.11 | 30 | |
| Trichloroethene | 9.31 | 0.20 | ug/L | 10.0 | ND | 93.1 | 80-120 | 1.41 | 30 | |
| 1,2-Dichloropropane | 9.49 | 0.20 | ug/L | 10.0 | ND | 94.9 | 80-120 | 1.60 | 30 | |
| Bromodichloromethane | 9.31 | 0.20 | ug/L | 10.0 | ND | 93.1 | 80-121 | 1.97 | 30 | |
| Dibromomethane | 9.29 | 0.20 | ug/L | 10.0 | ND | 92.9 | 80-120 | 1.82 | 30 | |
| 2-Chloroethyl vinyl ether | ND | 1.00 | ug/L | 10.0 | ND | | 64-120 | | | *, U |
| 4-Methyl-2-Pentanone | 49.6 | 2.50 | ug/L | 50.0 | ND | 99.1 | 67-133 | 3.79 | 30 | |
| cis-1,3-Dichloropropene | 9.51 | 0.20 | ug/L | 10.0 | ND | 95.1 | 80-124 | 3.07 | 30 | |
| Toluene | 9.36 | 0.20 | ug/L | 10.0 | ND | 93.6 | 80-120 | 2.61 | 30 | |
| trans-1,3-Dichloropropene | 9.52 | 0.20 | ug/L | 10.0 | ND | 95.2 | 71-127 | 2.21 | 30 | |
| 2-Hexanone | 48.2 | 5.00 | ug/L | 50.0 | ND | 96.3 | 69-133 | 3.02 | 30 | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike Dup (BLA0037-MSD1)** | **Source: 22L0531-03** | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 19:57 | | | | | | | |
| 1,1,2-Trichloroethane | 9.34 | 0.20 | ug/L | 10.0 | ND | 93.4 | 80-121 | 3.18 | 30 | |
| 1,3-Dichloropropane | 9.15 | 0.10 | ug/L | 10.0 | ND | 91.5 | 80-120 | 2.21 | 30 | |
| Tetrachloroethene | 9.35 | 0.20 | ug/L | 10.0 | ND | 93.5 | 80-120 | 1.30 | 30 | |
| Dibromochloromethane | 9.53 | 0.20 | ug/L | 10.0 | ND | 95.3 | 65-135 | 2.05 | 30 | |
| 1,2-Dibromoethane | 9.74 | 0.10 | ug/L | 10.0 | ND | 97.4 | 80-121 | 0.52 | 30 | |
| Chlorobenzene | 9.50 | 0.20 | ug/L | 10.0 | ND | 95.0 | 80-120 | 1.38 | 30 | |
| Ethylbenzene | 9.50 | 0.20 | ug/L | 10.0 | ND | 95.0 | 80-120 | 1.05 | 30 | |
| 1,1,1,2-Tetrachloroethane | 9.89 | 0.20 | ug/L | 10.0 | ND | 98.9 | 80-120 | 1.25 | 30 | |
| m,p-Xylene | 19.8 | 0.40 | ug/L | 20.0 | ND | 99.0 | 80-121 | 0.13 | 30 | |
| o-Xylene | 9.74 | 0.20 | ug/L | 10.0 | ND | 97.4 | 80-121 | 0.73 | 30 | |
| Xylenes, total | 29.5 | 0.60 | ug/L | 30.0 | ND | 98.5 | 76-127 | 0.16 | 30 | |
| Styrene | 9.96 | 0.20 | ug/L | 10.0 | ND | 99.6 | 80-124 | 1.40 | 30 | |
| Bromoform | 8.17 | 0.20 | ug/L | 10.0 | ND | 81.7 | 51-134 | 0.98 | 30 | |
| 1,1,2,2-Tetrachloroethane | 9.55 | 0.20 | ug/L | 10.0 | ND | 95.5 | 77-123 | 2.11 | 30 | |
| 1,2,3-Trichloropropane | 9.19 | 0.25 | ug/L | 10.0 | ND | 91.9 | 76-125 | 1.94 | 30 | |
| trans-1,4-Dichloro 2-Butene | 4.97 | 1.00 | ug/L | 10.0 | ND | 49.7 | 55-129 | 66.40 | 30 | * |
| n-Propylbenzene | 10.2 | 0.20 | ug/L | 10.0 | ND | 102 | 78-130 | 1.06 | 30 | |
| Bromobenzene | 9.80 | 0.20 | ug/L | 10.0 | ND | 98.0 | 80-120 | 0.21 | 30 | |
| Isopropyl Benzene | 10.1 | 0.20 | ug/L | 10.0 | ND | 101 | 80-128 | 1.51 | 30 | |
| 2-Chlorotoluene | 9.20 | 0.10 | ug/L | 10.0 | ND | 92.0 | 78-122 | 1.96 | 30 | |
| 4-Chlorotoluene | 9.60 | 0.20 | ug/L | 10.0 | ND | 96.0 | 80-121 | 0.70 | 30 | |
| t-Butylbenzene | 10.0 | 0.20 | ug/L | 10.0 | ND | 100 | 78-125 | 1.38 | 30 | |
| 1,3,5-Trimethylbenzene | 10.1 | 0.20 | ug/L | 10.0 | ND | 101 | 80-129 | 1.32 | 30 | |
| 1,2,4-Trimethylbenzene | 10.1 | 0.20 | ug/L | 10.0 | ND | 101 | 80-127 | 1.39 | 30 | |
| s-Butylbenzene | 10.1 | 0.20 | ug/L | 10.0 | ND | 101 | 78-129 | 1.38 | 30 | |
| 4-Isopropyl Toluene | 10.4 | 0.20 | ug/L | 10.0 | ND | 104 | 79-130 | 2.81 | 30 | |
| 1,3-Dichlorobenzene | 9.75 | 0.20 | ug/L | 10.0 | ND | 97.5 | 80-120 | 1.66 | 30 | |
| 1,4-Dichlorobenzene | 9.40 | 0.20 | ug/L | 10.0 | ND | 94.0 | 80-120 | 0.65 | 30 | |
| n-Butylbenzene | 10.0 | 0.20 | ug/L | 10.0 | ND | 100 | 74-129 | 1.90 | 30 | |
| 1,2-Dichlorobenzene | 9.53 | 0.20 | ug/L | 10.0 | ND | 95.3 | 80-120 | 0.09 | 30 | |
| 1,2-Dibromo-3-chloropropane | 9.57 | 0.50 | ug/L | 10.0 | ND | 95.7 | 62-123 | 0.24 | 30 | |
| 1,2,4-Trichlorobenzene | 9.92 | 0.50 | ug/L | 10.0 | ND | 99.2 | 64-124 | 1.44 | 30 | |
| Hexachloro-1,3-Butadiene | 9.59 | 0.50 | ug/L | 10.0 | ND | 95.9 | 58-123 | 5.79 | 30 | |
| Naphthalene | 10.3 | 0.50 | ug/L | 10.0 | ND | 103 | 50-134 | 0.21 | 30 | |
| 1,2,3-Trichlorobenzene | 9.84 | 0.50 | ug/L | 10.0 | ND | 98.4 | 49-133 | 0.29 | 30 | |

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| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BLA0037 - EPA 8260D

Instrument: NT3 Analyst: PKC

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike Dup (BLA0037-MSD1)** | **Source: 22L0531-03** | | Prepared: 03-Jan-2023 Analyzed: 03-Jan-2023 19:57 | | | | | | | |
| Dichlorodifluoromethane | 8.10 | 0.20 | ug/L | 10.0 | ND | 81.0 | 48-147 | 0.10 | 30 | |
| *Surrogate: 1,2-Dichloroethane-d4* | 5.19 | | ug/L | *5.00* | *5.11* | *104* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 4.98 | | ug/L | *5.00* | *4.91* | *99.5* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.10 | | ug/L | *5.00* | *4.86* | *102* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 5.20 | | ug/L | *5.00* | *5.01* | *104* | *80-120* | | | |

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

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Semivolatile Organic Compounds - SIM - Quality Control

### Batch BKL0643 - 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 (BKL0643-BLK1)** | | | | Prepared: 28-Dec-2022 Analyzed: 03-Jan-2023 14:45 | | | | | | |
| 1,4-Dioxane | ND | 0.4 | ug/L | | | | | | | U |
| *Surrogate: 1,4-Dioxane-d8* | 6.04 | | ug/L | *10.0* | | *60.4* | *33.6-120* | | | |
| **LCS (BKL0643-BS1)** | | | | Prepared: 28-Dec-2022 Analyzed: 03-Jan-2023 15:20 | | | | | | |
| 1,4-Dioxane | 6.9 | 0.4 | ug/L | 10.0 | | 68.7 | 39.9-120 | | | |
| *Surrogate: 1,4-Dioxane-d8* | 5.63 | | ug/L | *10.0* | | *56.3* | *33.6-120* | | | |
| **LCS Dup (BKL0643-BSD1)** | | | | Prepared: 28-Dec-2022 Analyzed: 03-Jan-2023 15:44 | | | | | | |
| 1,4-Dioxane | 7.0 | 0.4 | ug/L | 10.0 | | 69.6 | 39.9-120 | 1.28 | 30 | |
| *Surrogate: 1,4-Dioxane-d8* | 5.42 | | ug/L | *10.0* | | *54.2* | *33.6-120* | | | |
| **Matrix Spike (BKL0643-MS1)** | **Source: 22L0531-03** | | | Prepared: 28-Dec-2022 Analyzed: 03-Jan-2023 18:22 | | | | | | |
| 1,4-Dioxane | 8.6 | 0.4 | ug/L | 10.0 | 2.0 | 65.5 | 35.1-120 | | | |
| *Surrogate: 1,4-Dioxane-d8* | 5.44 | | ug/L | *10.0* | *5.36* | *54.4* | *33.6-120* | | | |

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

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike Dup (BKL0643-MSD1)** | **Source: 22L0531-03** | | | Prepared: 28-Dec-2022 Analyzed: 03-Jan-2023 18:47 | | | | | | |
| 1,4-Dioxane | 7.7 | 0.4 | ug/L | 10.0 | 2.0 | 57.3 | 35.1-120 | 10.20 | 30 | |
| *Surrogate: 1,4-Dioxane-d8* | 5.02 | | ug/L | *10.0* | *5.36* | *50.2* | *33.6-120* | | | |

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

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

**Analysis by: Analytical Resources, LLC**

## Petroleum Hydrocarbons - Quality Control

### Batch BKL0607 - NWTPH-HCID

Instrument: FID4 Analyst: AA

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0607-BLK1)** | | | | Prepared: 27-Dec-2022 Analyzed: 28-Dec-2022 14:29 | | | | | | |
| Gasoline Range Organics (Tol-C12) | ND | 0.25 | mg/L | | | | | | | U |
| Diesel Range Organics (C12-C24) | ND | 0.50 | mg/L | | | | | | | U |
| Motor Oil Range Organics (C24-C38) | ND | 1.00 | mg/L | | | | | | | U |
| *Surrogate: o-Terphenyl* | 0.208 | | mg/L | *0.225* | | *92.6* | *50-150* | | | |
| *Surrogate: n-Triacontane* | 0.248 | | mg/L | *0.225* | | *110* | *50-150* | | | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## Certified Analyses included in this Report

| Analyte | Certifications |
|---|---|
| ***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 |
| 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 |

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

Project: Landsburg
Project Number: 9231000007.2021
Project Manager: Gary Zimmerman

**Reported:**
04-Jan-2023 13:26

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

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

***EPA 8270E-SIM in Water***

| | |
|---|---|
| 1,4-Dioxane | WADOE,NELAP,DoD-ELAP |

***NWTPH-HCID in Water***

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

| Code | Description | Number | Expires |
|---|---|---|---|
| ADEC | Alaska Dept of Environmental Conservation | 17-015 | 03/28/2023 |
| DoD-ELAP | DoD-Environmental Laboratory Accreditation Program | 66169 | 02/28/2023 |
| NELAP | ORELAP - Oregon Laboratory Accreditation Program | WA100006-012 | 05/12/2023 |
| WADOE | WA Dept of Ecology | C558 | 06/30/2023 |
| WA-DW | Ecology - Drinking Water | C558 | 06/30/2023 |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: 9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:26 |

## Notes and Definitions

| | |
|---|---|
| * | Flagged value is not within established control limits. |
| B | This analyte was detected in the method blank. |
| E | The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL) |
| Q | Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF) |
| U | This analyte is not detected above the 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**

11 January 2023

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) | Associated SDG ID(s) |
|---|---|
| 22L0625 | 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.*

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

## Chain of Custody Record & Laboratory Analysis Request

| | | | |
|---|---|---|---|
| ARI Assigned Number: 220625 | Turn-around Requested: Standard | Date: 12/29/22 | |
| ARI Client Company: Golder | Phone: 425-883-0777 | Page: 1 of 1 | |
| Client Contact: Gary Zimmerman/Autumn Pearson | | No. of Coolers: 1 | Cooler Temps: 0.6° |
| Client Project Name: Landsburg 2022-03 Sampling (AP) | | | |
| Client Project #: GL9231000007.2021 | Samplers: AP | | |

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

| Sample ID | Date | Time | Matrix | No. Containers | Analysis Requested: VOCs | 1,4-Dioxane | Total Priority Metal | TPH-HCID (NWTPH) | TPH-Dx (HOLD) | TPH-Gx (HOLD) | | | Notes/Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LMW-13R-1222 | 12/29/22 | 11:50 | W | 12 | X | X | | X | X | X | | | Analyze in accordance with MSA between Golder and ARI Ecology EIM EDD |
| LMW-12-1222 | 12/29/22 | 12:54 | W | 12 | X | X | | X | X | X | | | |
| TRIP BLANK | 12/29/22 | — | W | 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: Autumn Pearson | Printed Name: Roman Miller | Printed Name: | Printed Name: |
| Company: WSP Golder | Company: ARI | Company: | Company: |
| Date & Time: 12/29/22 14:18 | Date & Time: 12/29/22 1418 | Date & Time: | Date & Time: |

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

**Sample Retention Policy:** 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.

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| LMW-13R-1222 | 22L0625-01 | Water | 29-Dec-2022 11:50 | 29-Dec-2022 14:18 |
| LMW-12-1222 | 22L0625-02 | Water | 29-Dec-2022 12:54 | 29-Dec-2022 14:18 |
| TRIP BLANK | 22L0625-03 | Water | 29-Dec-2022 00:00 | 29-Dec-2022 14:18 |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

# 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 with the exception of all associated "Q" flagged analytes which are out of control low in the CCAL and hexachloro-1,3-Butadiene is out of control high. All associated samples that contain analyte have been flagged with a "Q" qualifer.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) contained hexachloro-1,3-Butadiene. Associated samples that contain analyte have been flagged with a "B" qualifer.

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 SIM**

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.

**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.

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analytical Resources, LLC**
Analytical Chemists and Consultants

# Cooler Receipt Form

ARI Client: Golder

Project Name: Landsburg 2022 Q4

COC No(s): NA

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

Assigned ARI Job No: 220625

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 1418 — 0.6°

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

Cooler Accepted by: 12~ Date: 12/29/22 Time: 1418

***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 | 11/22/22 | |

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

Samples Logged by: 12~ Date: 12/29/22 Time: 1503 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:***

Containers 220625-016, 026 both contain bubbles. Lab to determine size

By: 12~ Date: 12/29/22

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

## LMW-13R-1222

**22L0625-01 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/29/2022 11:50
Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 21:22

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0625-01 J
Preparation Batch: BKL0736 — Sample Size: 10 mL
Prepared: 12/30/2022 — Final Volume: 10 mL

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

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

## LMW-13R-1222

**22L0625-01 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/29/2022 11:50
Analyzed: 12/30/2022 21:22

**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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**LMW-13R-1222**

**22L0625-01 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/29/2022 11:50

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 21:22

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *110* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *96.5* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *94.1* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *102* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**LMW-13R-1222**

**22L0625-01 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/29/2022 11:50

Instrument: NT6 Analyst: JZ — Analyzed: 01/09/2023 14:45

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0625-01 B 01

Preparation Batch: BKL0733 — Sample Size: 500 mL

Prepared: 01/04/2023 — 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 |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *50.6* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**LMW-13R-1222**

**22L0625-01 (Water)**

## Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 12/29/2022 11:50

Instrument: FID4 Analyst: AA — Analyzed: 01/03/2023 22:11

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 22L0625-01 A 01

Preparation Batch: BKL0705 — Sample Size: 500 mL

Prepared: 12/29/2022 — 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 |
| *Surrogate: o-Terphenyl* | | | *50-150 %* | *95.0* | *%* | |
| *Surrogate: n-Triacontane* | | | *50-150 %* | *109* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**LMW-12-1222**

**22L0625-02 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/29/2022 12:54

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 21:42

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0625-02 J

Preparation Batch: BKL0736 — Sample Size: 10 mL

Prepared: 12/30/2022 — Final Volume: 10 mL

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

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**LMW-12-1222**

**22L0625-02 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/29/2022 12:54

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 21:42

**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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**LMW-12-1222**

**22L0625-02 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/29/2022 12:54

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 21:42

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *113* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *96.7* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *96.3* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *99.3* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**LMW-12-1222**

**22L0625-02 (Water)**

## Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/29/2022 12:54

Instrument: NT6 Analyst: JZ — Analyzed: 01/09/2023 15:09

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0625-02 B 01

Preparation Batch: BKL0733 — Sample Size: 500 mL

Prepared: 01/04/2023 — 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 |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *49.3* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**LMW-12-1222**

**22L0625-02 (Water)**

## Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 12/29/2022 12:54

Instrument: FID4 Analyst: AA — Analyzed: 01/03/2023 22:31

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 22L0625-02 A 01

Preparation Batch: BKL0705 — Sample Size: 500 mL

Prepared: 12/29/2022 — 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 |
| *Surrogate: o-Terphenyl* | | | *50-150 %* | *83.6* | *%* | |
| *Surrogate: n-Triacontane* | | | *50-150 %* | *94.6* | *%* | |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

## TRIP BLANK

**22L0625-03 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/29/2022 00:00
Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 22:03

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0625-03 A
Preparation Batch: BKL0736 — Sample Size: 10 mL
Prepared: 12/30/2022 — Final Volume: 10 mL

| Analyte | CAS Number | Dilution | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | 1 | 0.50 | ND | ug/L | U |
| Vinyl Chloride | 75-01-4 | 1 | 0.10 | ND | ug/L | U |
| Bromomethane | 74-83-9 | 1 | 1.00 | ND | ug/L | U |
| Chloroethane | 75-00-3 | 1 | 0.20 | ND | ug/L | U |
| Trichlorofluoromethane | 75-69-4 | 1 | 0.20 | ND | ug/L | U |
| Acrolein | 107-02-8 | 1 | 5.00 | ND | ug/L | U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76-13-1 | 1 | 0.20 | ND | ug/L | U |
| Acetone | 67-64-1 | 1 | 5.00 | ND | ug/L | U |
| 1,1-Dichloroethene | 75-35-4 | 1 | 0.20 | ND | ug/L | U |
| Iodomethane | 74-88-4 | 1 | 1.00 | ND | ug/L | U |
| Methylene Chloride | 75-09-2 | 1 | 1.00 | 1.13 | ug/L | |
| 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 | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

## TRIP BLANK

**22L0625-03 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/29/2022 00:00
Analyzed: 12/30/2022 22:03

**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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

## TRIP BLANK

**22L0625-03 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/29/2022 00:00

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 22:03

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *118* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *97.2* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *94.4* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *101* | *%* | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0736-BLK1)** | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 18:15 | | | | | | | |
| 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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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0736-BLK1)** | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 18:15 | | | | | | | |
| 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 | 0.84 | 0.50 | ug/L | | | | | | | |
| Naphthalene | ND | 0.50 | ug/L | | | | | | | U |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0736-BLK1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 18:15 | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.50 | ug/L | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.20 | ug/L | | | | | | | U |
| *Surrogate: 1,2-Dichloroethane-d4* | 5.13 | | ug/L | *5.00* | | *103* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 4.88 | | ug/L | *5.00* | | *97.7* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.96 | | ug/L | *5.00* | | *99.3* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 5.05 | | ug/L | *5.00* | | *101* | *80-120* | | | |
| **LCS (BKL0736-BS1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:13 | | | | | | |
| Chloromethane | 9.54 | 0.50 | ug/L | 10.0 | | 95.4 | 60-138 | | | |
| Vinyl Chloride | 9.63 | 0.10 | ug/L | 10.0 | | 96.3 | 66-133 | | | |
| Bromomethane | 9.31 | 1.00 | ug/L | 10.0 | | 93.1 | 72-131 | | | |
| Chloroethane | 9.84 | 0.20 | ug/L | 10.0 | | 98.4 | 60-155 | | | |
| Trichlorofluoromethane | 12.0 | 0.20 | ug/L | 10.0 | | 120 | 62-141 | | | |
| Acrolein | 42.4 | 5.00 | ug/L | 50.0 | | 84.7 | 52-190 | | | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 9.93 | 0.20 | ug/L | 10.0 | | 99.3 | 76-129 | | | |
| Acetone | 42.0 | 5.00 | ug/L | 50.0 | | 84.0 | 58-142 | | | |
| 1,1-Dichloroethene | 9.56 | 0.20 | ug/L | 10.0 | | 95.6 | 69-135 | | | |
| Iodomethane | 9.84 | 1.00 | ug/L | 10.0 | | 98.4 | 56-147 | | | |
| Methylene Chloride | 8.98 | 1.00 | ug/L | 10.0 | | 89.8 | 65-135 | | | |
| Acrylonitrile | 7.60 | 1.00 | ug/L | 10.0 | | 76.0 | 64-134 | | | |
| Carbon Disulfide | 9.56 | 0.20 | ug/L | 10.0 | | 95.6 | 78-125 | | | |
| trans-1,2-Dichloroethene | 6.69 | 0.20 | ug/L | 10.0 | | 66.9 | 78-128 | | | *, Q |
| Vinyl Acetate | 9.15 | 0.20 | ug/L | 10.0 | | 91.5 | 55-138 | | | |
| 1,1-Dichloroethane | 8.96 | 0.20 | ug/L | 10.0 | | 89.6 | 76-124 | | | |
| 2-Butanone | 39.4 | 5.00 | ug/L | 50.0 | | 78.8 | 61-140 | | | |
| 2,2-Dichloropropane | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 66-147 | | | |
| cis-1,2-Dichloroethene | 9.24 | 0.20 | ug/L | 10.0 | | 92.4 | 80-121 | | | |
| Chloroform | 9.35 | 0.20 | ug/L | 10.0 | | 93.5 | 80-122 | | | |
| Bromochloromethane | 8.78 | 0.20 | ug/L | 10.0 | | 87.8 | 80-121 | | | |
| 1,1,1-Trichloroethane | 9.80 | 0.20 | ug/L | 10.0 | | 98.0 | 79-123 | | | |
| 1,1-Dichloropropene | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 80-127 | | | |
| Carbon tetrachloride | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 53-137 | | | |
| 1,2-Dichloroethane | 9.49 | 0.20 | ug/L | 10.0 | | 94.9 | 75-123 | | | |
| Benzene | 9.65 | 0.20 | ug/L | 10.0 | | 96.5 | 80-120 | | | |
| Trichloroethene | 9.80 | 0.20 | ug/L | 10.0 | | 98.0 | 80-120 | | | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (BKL0736-BS1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:13 | | | | | | |
| 1,2-Dichloropropane | 9.16 | 0.20 | ug/L | 10.0 | | 91.6 | 80-120 | | | |
| Bromodichloromethane | 9.63 | 0.20 | ug/L | 10.0 | | 96.3 | 80-121 | | | |
| Dibromomethane | 9.16 | 0.20 | ug/L | 10.0 | | 91.6 | 80-120 | | | |
| 2-Chloroethyl vinyl ether | 6.28 | 1.00 | ug/L | 10.0 | | 62.8 | 64-120 | | | *, Q |
| 4-Methyl-2-Pentanone | 44.4 | 2.50 | ug/L | 50.0 | | 88.8 | 67-133 | | | |
| cis-1,3-Dichloropropene | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-124 | | | |
| Toluene | 9.59 | 0.20 | ug/L | 10.0 | | 95.9 | 80-120 | | | |
| trans-1,3-Dichloropropene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 71-127 | | | |
| 2-Hexanone | 43.8 | 5.00 | ug/L | 50.0 | | 87.6 | 69-133 | | | |
| 1,1,2-Trichloroethane | 8.92 | 0.20 | ug/L | 10.0 | | 89.2 | 80-121 | | | |
| 1,3-Dichloropropane | 9.45 | 0.10 | ug/L | 10.0 | | 94.5 | 80-120 | | | |
| Tetrachloroethene | 9.90 | 0.20 | ug/L | 10.0 | | 99.0 | 80-120 | | | |
| Dibromochloromethane | 8.37 | 0.20 | ug/L | 10.0 | | 83.7 | 65-135 | | | |
| 1,2-Dibromoethane | 9.47 | 0.10 | ug/L | 10.0 | | 94.7 | 80-121 | | | |
| Chlorobenzene | 9.63 | 0.20 | ug/L | 10.0 | | 96.3 | 80-120 | | | |
| Ethylbenzene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | | | |
| 1,1,1,2-Tetrachloroethane | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | | | |
| m,p-Xylene | 21.1 | 0.40 | ug/L | 20.0 | | 105 | 80-121 | | | |
| o-Xylene | 9.95 | 0.20 | ug/L | 10.0 | | 99.5 | 80-121 | | | |
| Xylenes, total | 31.0 | 0.60 | ug/L | 30.0 | | 103 | 76-127 | | | |
| Styrene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-124 | | | |
| Bromoform | 7.89 | 0.20 | ug/L | 10.0 | | 78.9 | 51-134 | | | |
| 1,1,2,2-Tetrachloroethane | 8.51 | 0.20 | ug/L | 10.0 | | 85.1 | 77-123 | | | |
| 1,2,3-Trichloropropane | 8.92 | 0.25 | ug/L | 10.0 | | 89.2 | 76-125 | | | |
| trans-1,4-Dichloro 2-Butene | 9.08 | 1.00 | ug/L | 10.0 | | 90.8 | 55-129 | | | |
| n-Propylbenzene | 10.9 | 0.20 | ug/L | 10.0 | | 109 | 78-130 | | | |
| Bromobenzene | 9.75 | 0.20 | ug/L | 10.0 | | 97.5 | 80-120 | | | |
| Isopropyl Benzene | 11.1 | 0.20 | ug/L | 10.0 | | 111 | 80-128 | | | |
| 2-Chlorotoluene | 10.7 | 0.10 | ug/L | 10.0 | | 107 | 78-122 | | | |
| 4-Chlorotoluene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-121 | | | |
| t-Butylbenzene | 11.4 | 0.20 | ug/L | 10.0 | | 114 | 78-125 | | | |
| 1,3,5-Trimethylbenzene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 80-129 | | | |
| 1,2,4-Trimethylbenzene | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-127 | | | |
| s-Butylbenzene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 78-129 | | | |
| 4-Isopropyl Toluene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 79-130 | | | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (BKL0736-BS1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:13 | | | | | | |
| 1,3-Dichlorobenzene | 9.97 | 0.20 | ug/L | 10.0 | | 99.7 | 80-120 | | | |
| 1,4-Dichlorobenzene | 9.59 | 0.20 | ug/L | 10.0 | | 95.9 | 80-120 | | | |
| n-Butylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 74-129 | | | |
| 1,2-Dichlorobenzene | 9.52 | 0.20 | ug/L | 10.0 | | 95.2 | 80-120 | | | |
| 1,2-Dibromo-3-chloropropane | 7.46 | 0.50 | ug/L | 10.0 | | 74.6 | 62-123 | | | |
| 1,2,4-Trichlorobenzene | 10.6 | 0.50 | ug/L | 10.0 | | 106 | 64-124 | | | |
| Hexachloro-1,3-Butadiene | 12.0 | 0.50 | ug/L | 10.0 | | 120 | 58-123 | | | Q, B |
| Naphthalene | 8.53 | 0.50 | ug/L | 10.0 | | 85.3 | 50-134 | | | |
| 1,2,3-Trichlorobenzene | 10.2 | 0.50 | ug/L | 10.0 | | 102 | 49-133 | | | |
| Dichlorodifluoromethane | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 48-147 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | 4.82 | | ug/L | *5.00* | | *96.4* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 5.03 | | ug/L | *5.00* | | *101* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.17 | | ug/L | *5.00* | | *103* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 4.79 | | ug/L | *5.00* | | *95.7* | *80-120* | | | |
| **LCS Dup (BKL0736-BSD1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:34 | | | | | | |
| Chloromethane | 8.07 | 0.50 | ug/L | 10.0 | | 80.7 | 60-138 | 16.60 | 30 | |
| Vinyl Chloride | 8.81 | 0.10 | ug/L | 10.0 | | 88.1 | 66-133 | 8.93 | 30 | |
| Bromomethane | 8.90 | 1.00 | ug/L | 10.0 | | 89.0 | 72-131 | 4.47 | 30 | |
| Chloroethane | 9.69 | 0.20 | ug/L | 10.0 | | 96.9 | 60-155 | 1.48 | 30 | |
| Trichlorofluoromethane | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 62-141 | 10.80 | 30 | |
| Acrolein | 47.0 | 5.00 | ug/L | 50.0 | | 94.1 | 52-190 | 10.40 | 30 | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 9.45 | 0.20 | ug/L | 10.0 | | 94.5 | 76-129 | 4.92 | 30 | |
| Acetone | 45.3 | 5.00 | ug/L | 50.0 | | 90.6 | 58-142 | 7.59 | 30 | |
| 1,1-Dichloroethene | 9.40 | 0.20 | ug/L | 10.0 | | 94.0 | 69-135 | 1.73 | 30 | |
| Iodomethane | 9.53 | 1.00 | ug/L | 10.0 | | 95.3 | 56-147 | 3.15 | 30 | |
| Methylene Chloride | 9.31 | 1.00 | ug/L | 10.0 | | 93.1 | 65-135 | 3.59 | 30 | |
| Acrylonitrile | 8.78 | 1.00 | ug/L | 10.0 | | 87.8 | 64-134 | 14.50 | 30 | |
| Carbon Disulfide | 9.45 | 0.20 | ug/L | 10.0 | | 94.5 | 78-125 | 1.08 | 30 | |
| trans-1,2-Dichloroethene | 6.77 | 0.20 | ug/L | 10.0 | | 67.7 | 78-128 | 1.28 | 30 | *, Q |
| Vinyl Acetate | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 55-138 | 12.80 | 30 | |
| 1,1-Dichloroethane | 9.27 | 0.20 | ug/L | 10.0 | | 92.7 | 76-124 | 3.45 | 30 | |
| 2-Butanone | 47.3 | 5.00 | ug/L | 50.0 | | 94.6 | 61-140 | 18.20 | 30 | |
| 2,2-Dichloropropane | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 66-147 | 2.50 | 30 | |
| cis-1,2-Dichloroethene | 9.78 | 0.20 | ug/L | 10.0 | | 97.8 | 80-121 | 5.66 | 30 | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (BKL0736-BSD1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:34 | | | | | | |
| Chloroform | 9.92 | 0.20 | ug/L | 10.0 | | 99.2 | 80-122 | 5.95 | 30 | |
| Bromochloromethane | 9.55 | 0.20 | ug/L | 10.0 | | 95.5 | 80-121 | 8.39 | 30 | |
| 1,1,1-Trichloroethane | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 79-123 | 4.45 | 30 | |
| 1,1-Dichloropropene | 11.0 | 0.10 | ug/L | 10.0 | | 110 | 80-127 | 4.82 | 30 | |
| Carbon tetrachloride | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 53-137 | 0.68 | 30 | |
| 1,2-Dichloroethane | 9.98 | 0.20 | ug/L | 10.0 | | 99.8 | 75-123 | 5.07 | 30 | |
| Benzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 6.99 | 30 | |
| Trichloroethene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 5.05 | 30 | |
| 1,2-Dichloropropane | 9.91 | 0.20 | ug/L | 10.0 | | 99.1 | 80-120 | 7.92 | 30 | |
| Bromodichloromethane | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-121 | 6.12 | 30 | |
| Dibromomethane | 9.84 | 0.20 | ug/L | 10.0 | | 98.4 | 80-120 | 7.16 | 30 | |
| 2-Chloroethyl vinyl ether | 7.73 | 1.00 | ug/L | 10.0 | | 77.3 | 64-120 | 20.70 | 30 | Q |
| 4-Methyl-2-Pentanone | 52.6 | 2.50 | ug/L | 50.0 | | 105 | 67-133 | 16.90 | 30 | |
| cis-1,3-Dichloropropene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 80-124 | 7.87 | 30 | |
| Toluene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 7.65 | 30 | |
| trans-1,3-Dichloropropene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 71-127 | 9.16 | 30 | |
| 2-Hexanone | 51.8 | 5.00 | ug/L | 50.0 | | 104 | 69-133 | 16.70 | 30 | |
| 1,1,2-Trichloroethane | 9.84 | 0.20 | ug/L | 10.0 | | 98.4 | 80-121 | 9.72 | 30 | |
| 1,3-Dichloropropane | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 80-120 | 10.20 | 30 | |
| Tetrachloroethene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 3.91 | 30 | |
| Dibromochloromethane | 9.01 | 0.20 | ug/L | 10.0 | | 90.1 | 65-135 | 7.37 | 30 | |
| 1,2-Dibromoethane | 10.6 | 0.10 | ug/L | 10.0 | | 106 | 80-121 | 11.50 | 30 | |
| Chlorobenzene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | 4.85 | 30 | |
| Ethylbenzene | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 80-120 | 5.77 | 30 | |
| 1,1,1,2-Tetrachloroethane | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 80-120 | 2.65 | 30 | |
| m,p-Xylene | 22.0 | 0.40 | ug/L | 20.0 | | 110 | 80-121 | 4.40 | 30 | |
| o-Xylene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-121 | 4.96 | 30 | |
| Xylenes, total | 32.5 | 0.60 | ug/L | 30.0 | | 108 | 76-127 | 4.58 | 30 | |
| Styrene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-124 | 1.73 | 30 | |
| Bromoform | 8.68 | 0.20 | ug/L | 10.0 | | 86.8 | 51-134 | 9.55 | 30 | |
| 1,1,2,2-Tetrachloroethane | 9.82 | 0.20 | ug/L | 10.0 | | 98.2 | 77-123 | 14.30 | 30 | |
| 1,2,3-Trichloropropane | 9.80 | 0.25 | ug/L | 10.0 | | 98.0 | 76-125 | 9.39 | 30 | |
| trans-1,4-Dichloro 2-Butene | 10.2 | 1.00 | ug/L | 10.0 | | 102 | 55-129 | 11.70 | 30 | |
| n-Propylbenzene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 78-130 | 1.67 | 30 | |
| Bromobenzene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 5.09 | 30 | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (BKL0736-BSD1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:34 | | | | | | |
| Isopropyl Benzene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 80-128 | 3.58 | 30 | |
| 2-Chlorotoluene | 11.0 | 0.10 | ug/L | 10.0 | | 110 | 78-122 | 2.27 | 30 | |
| 4-Chlorotoluene | 10.9 | 0.20 | ug/L | 10.0 | | 109 | 80-121 | 4.53 | 30 | |
| t-Butylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 78-125 | 2.73 | 30 | |
| 1,3,5-Trimethylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 80-129 | 2.25 | 30 | |
| 1,2,4-Trimethylbenzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-127 | 1.63 | 30 | |
| s-Butylbenzene | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 78-129 | 2.86 | 30 | |
| 4-Isopropyl Toluene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 79-130 | 0.77 | 30 | |
| 1,3-Dichlorobenzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 3.75 | 30 | |
| 1,4-Dichlorobenzene | 9.96 | 0.20 | ug/L | 10.0 | | 99.6 | 80-120 | 3.78 | 30 | |
| n-Butylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 74-129 | 0.13 | 30 | |
| 1,2-Dichlorobenzene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | 6.21 | 30 | |
| 1,2-Dibromo-3-chloropropane | 8.53 | 0.50 | ug/L | 10.0 | | 85.3 | 62-123 | 13.30 | 30 | |
| 1,2,4-Trichlorobenzene | 11.3 | 0.50 | ug/L | 10.0 | | 113 | 64-124 | 5.91 | 30 | |
| Hexachloro-1,3-Butadiene | 11.7 | 0.50 | ug/L | 10.0 | | 117 | 58-123 | 2.23 | 30 | Q, B |
| Naphthalene | 9.65 | 0.50 | ug/L | 10.0 | | 96.5 | 50-134 | 12.30 | 30 | |
| 1,2,3-Trichlorobenzene | 10.9 | 0.50 | ug/L | 10.0 | | 109 | 49-133 | 6.46 | 30 | |
| Dichlorodifluoromethane | 9.79 | 0.20 | ug/L | 10.0 | | 97.9 | 48-147 | 11.50 | 30 | |
| *Surrogate: 1,2-Dichloroethane-d4* | 4.78 | | ug/L | *5.00* | | *95.7* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 5.15 | | ug/L | *5.00* | | *103* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.22 | | ug/L | *5.00* | | *104* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 4.98 | | ug/L | *5.00* | | *99.6* | *80-120* | | | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analysis by: Analytical Resources, LLC**

## Semivolatile Organic Compounds - SIM - Quality Control

### Batch BKL0733 - 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 (BKL0733-BLK1)** | | | | Prepared: 04-Jan-2023 Analyzed: 09-Jan-2023 13:30 | | | | | | |
| 1,4-Dioxane | ND | 0.4 | ug/L | | | | | | | U |
| *Surrogate: 1,4-Dioxane-d8* | 4.81 | | ug/L | *10.0* | | *48.1* | *33.6-120* | | | |
| **LCS (BKL0733-BS1)** | | | | Prepared: 04-Jan-2023 Analyzed: 09-Jan-2023 13:55 | | | | | | |
| 1,4-Dioxane | 6.3 | 0.4 | ug/L | 10.0 | | 63.2 | 39.9-120 | | | |
| *Surrogate: 1,4-Dioxane-d8* | 4.97 | | ug/L | *10.0* | | *49.7* | *33.6-120* | | | |
| **LCS Dup (BKL0733-BSD1)** | | | | Prepared: 04-Jan-2023 Analyzed: 09-Jan-2023 14:20 | | | | | | |
| 1,4-Dioxane | 6.5 | 0.4 | ug/L | 10.0 | | 64.6 | 39.9-120 | 2.19 | 30 | |
| *Surrogate: 1,4-Dioxane-d8* | 5.02 | | ug/L | *10.0* | | *50.2* | *33.6-120* | | | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

**Analysis by: Analytical Resources, LLC**

## Petroleum Hydrocarbons - Quality Control

### Batch BKL0705 - NWTPH-HCID

Instrument: FID4 Analyst: AA

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0705-BLK1)** | | | | Prepared: 29-Dec-2022 Analyzed: 03-Jan-2023 21:13 | | | | | | |
| Gasoline Range Organics (Tol-C12) | ND | 0.25 | mg/L | | | | | | | U |
| Diesel Range Organics (C12-C24) | ND | 0.50 | mg/L | | | | | | | U |
| Motor Oil Range Organics (C24-C38) | ND | 1.00 | mg/L | | | | | | | U |
| *Surrogate: o-Terphenyl* | 0.204 | | mg/L | *0.225* | | *90.8* | *50-150* | | | |
| *Surrogate: n-Triacontane* | 0.235 | | mg/L | *0.225* | | *105* | *50-150* | | | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

## Certified Analyses included in this Report

| Analyte | Certifications |
|---|---|
| ***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 |
| 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 |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

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

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 11-Jan-2023 14:15 |

***EPA 8270E-SIM in Water***

| | |
|---|---|
| 1,4-Dioxane | WADOE,NELAP,DoD-ELAP |

***NWTPH-HCID in Water***

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

| Code | Description | Number | Expires |
|---|---|---|---|
| ADEC | Alaska Dept of Environmental Conservation | 17-015 | 03/28/2023 |
| DoD-ELAP | DoD-Environmental Laboratory Accreditation Program | 66169 | 02/28/2023 |
| NELAP | ORELAP - Oregon Laboratory Accreditation Program | WA100006-012 | 05/12/2023 |
| WADOE | WA Dept of Ecology | C558 | 06/30/2023 |
| WA-DW | Ecology - Drinking Water | C558 | 06/30/2023 |

| | | | |
|---|---|---|---|
| Golder Associates | Project: | Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: | Landsburg | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: | Gary Zimmerman | 11-Jan-2023 14:15 |

## Notes and Definitions

| | |
|---|---|
| * | Flagged value is not within established control limits. |
| B | This analyte was detected in the method blank. |
| E | The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL) |
| Q | Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF) |
| U | This analyte is not detected above the 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**

04 January 2023

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

RE: Landsburg (GL9231000007.2021)

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

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

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

| Associated Work Order(s) | Associated SDG ID(s) |
|---|---|
| 22L0530 | N/A |

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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.*

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

## Chain of Custody Record & Laboratory Analysis Request

| | | | |
|---|---|---|---|
| ARI Assigned Number: 22L530 | Turn-around Requested: Standard | Date: 12/21/22 | |
| ARI Client Company: Golder | Phone: 425-883-0777 | Page: 1 of 1 | |
| Client Contact: Gary Zimmerman/Autumn Pearson | | No. of Coolers: | Cooler Temps: |
| Client Project Name: Landsburg 2022 Q4 Sampling | | | |
| Client Project #: GL9231000007.2021 | Samplers: AP + AW + GZ | | |

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

| Sample ID | Date | Time | Matrix | No. Containers | VOCs | 1,4-Dioxane | Total Priority Metal | TPH-HCID (NWTPH) | TPH-Dx (HOLD) | TPH-Gx (HOLD) | | | Notes/Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analysis Requested | | | | | | | | | | | | |
| Landsburg Estates-122 | 12/21/22 | 0927 | W | 7 | ✓ | ✓ | | ✓ | | | | | Analyze in accordance with MSA between Golder and ARI Ecology EIM EDD |
| Trip Blank | — | — | W | 3 | ✓ | | | | | | | | |
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| Comments/Special Instructions | Relinquished by: | Received by: | Relinquished by: | Received by: |
|---|---|---|---|---|
| HOLD TPH FOLLOW-UPS. CLIENT SPECIFIC RLs/Analyte List Ecology EIM EDDs | (Signature) | (Signature) | (Signature) | (Signature) |
| | Printed Name: Andrew Wuest | Printed Name: Trinett Smith | Printed Name: | Printed Name: |
| | Company: Golder/WSP | Company: ARI LLC | Company: | Company: |
| | Date & Time: 12/22/22 1340 | Date & Time: 12/22/22 13:45 | Date & Time: | Date & Time: |

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

**Sample Retention Policy:** 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.

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| Landsburg Estates-1222 | 22L0530-01 | Water | 21-Dec-2022 09:27 | 22-Dec-2022 13:42 |
| Trip Blank | 22L0530-02 | Water | 21-Dec-2022 09:27 | 22-Dec-2022 13:42 |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

# 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 with the exception of all associated "Q" flagged analytes which are out of control low in the CCAL and hexachloro-1,3-Butadiene is out of control high. All associated samples that contain analyte have been flagged with a "Q" qualifer.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) contained hexachloro-1,3-Butadiene. Associated samples that contain analyte have been flagged with a "B" qualifer.

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.

**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.

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

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|---|---|---|
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**Analytical Resources, LLC**
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# Cooler Receipt Form

ARI Client: Golder

Project Name: Landsburg 2022 Q4 Sampling

COC No(s): _____ (NA)

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

Assigned ARI Job No: 2216530

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) -1.0 .8 -2.4

Time _____

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

Temp Gun ID#: D209708

Cooler Accepted by: [signature] Date: 12/22/22 Time: 13:42

***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? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: [signature] Date: 12/22/22 Time: 14:43 Labels checked by: JCS

*** 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:***

all VOA Vials Frozen - 1E1 1F/1G - 2A/2B/2C

By: [signature] Date: 12/22/22

| | | |
|---|---|---|
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## Landsburg Estates-1222

**22L0530-01 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 09:27

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 19:17

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0530-01 F

Preparation Batch: BKL0736 — Sample Size: 10 mL

Prepared: 12/30/2022 — Final Volume: 10 mL

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

| | | |
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## Landsburg Estates-1222

**22L0530-01 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/21/2022 09:27
Analyzed: 12/30/2022 19:17

**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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# Analytical Report

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| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

## Landsburg Estates-1222

**22L0530-01 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/21/2022 09:27
Analyzed: 12/30/2022 19:17

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *109* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *97.7* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *94.9* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *103* | *%* | |

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## Landsburg Estates-1222

**22L0530-01 (Water)**

### Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM — Sampled: 12/21/2022 09:27

Instrument: NT6 Analyst: JZ — Analyzed: 01/03/2023 16:42

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) — Extract ID: 22L0530-01 C 01

Preparation Batch: BKL0643 — Sample Size: 500 mL

Prepared: 12/28/2022 — 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 |
| *Surrogate: 1,4-Dioxane-d8* | | | *33.6-120 %* | *58.9* | *%* | |

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## Landsburg Estates-1222

**22L0530-01 (Water)**

### Petroleum Hydrocarbons

Method: NWTPH-HCID — Sampled: 12/21/2022 09:27
Instrument: FID4 Analyst: AA — Analyzed: 12/28/2022 15:28

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 3510C SepF — Extract ID: 22L0530-01 A 01
Preparation Batch: BKL0607 — Sample Size: 500 mL
Prepared: 12/27/2022 — 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 |
| *Surrogate: o-Terphenyl* | | | *50-150 %* | *100* | *%* | |
| *Surrogate: n-Triacontane* | | | *50-150 %* | *118* | *%* | |

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| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

## Trip Blank

**22L0530-02 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/21/2022 09:27

Instrument: NT2 Analyst: PB — Analyzed: 12/30/2022 18:36

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0530-02 C

Preparation Batch: BKL0736 — Sample Size: 10 mL

Prepared: 12/30/2022 — Final Volume: 10 mL

| Analyte | CAS Number | Dilution | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | 1 | 0.50 | ND | ug/L | U |
| Vinyl Chloride | 75-01-4 | 1 | 0.10 | ND | ug/L | U |
| Bromomethane | 74-83-9 | 1 | 1.00 | ND | ug/L | U |
| Chloroethane | 75-00-3 | 1 | 0.20 | ND | ug/L | U |
| Trichlorofluoromethane | 75-69-4 | 1 | 0.20 | ND | ug/L | U |
| Acrolein | 107-02-8 | 1 | 5.00 | ND | ug/L | U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76-13-1 | 1 | 0.20 | ND | ug/L | U |
| Acetone | 67-64-1 | 1 | 5.00 | ND | ug/L | U |
| 1,1-Dichloroethene | 75-35-4 | 1 | 0.20 | ND | ug/L | U |
| Iodomethane | 74-88-4 | 1 | 1.00 | ND | ug/L | U |
| Methylene Chloride | 75-09-2 | 1 | 1.00 | 1.18 | ug/L | |
| 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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

## Trip Blank

**22L0530-02 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/21/2022 09:27
Analyzed: 12/30/2022 18:36

**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 | 0.51 | ug/L | B |
| 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 |

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

# Analytical Report

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

## Trip Blank

**22L0530-02 (Water)**

### Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT2 Analyst: PB

Sampled: 12/21/2022 09:27
Analyzed: 12/30/2022 18:36

**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 |
| *Surrogate: 1,2-Dichloroethane-d4* | | | *80-129 %* | *104* | *%* | |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *98.6* | *%* | |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *99.2* | *%* | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | | | *80-120 %* | *98.1* | *%* | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0736-BLK1)** | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 18:15 | | | | | | | |
| 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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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0736-BLK1)** | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 18:15 | | | | | | | |
| 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 | 0.84 | 0.50 | ug/L | | | | | | | |
| Naphthalene | ND | 0.50 | ug/L | | | | | | | U |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0736-BLK1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 18:15 | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.50 | ug/L | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.20 | ug/L | | | | | | | U |
| *Surrogate: 1,2-Dichloroethane-d4* | 5.13 | | ug/L | *5.00* | | *103* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 4.88 | | ug/L | *5.00* | | *97.7* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.96 | | ug/L | *5.00* | | *99.3* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 5.05 | | ug/L | *5.00* | | *101* | *80-120* | | | |
| **LCS (BKL0736-BS1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:13 | | | | | | |
| Chloromethane | 9.54 | 0.50 | ug/L | 10.0 | | 95.4 | 60-138 | | | |
| Vinyl Chloride | 9.63 | 0.10 | ug/L | 10.0 | | 96.3 | 66-133 | | | |
| Bromomethane | 9.31 | 1.00 | ug/L | 10.0 | | 93.1 | 72-131 | | | |
| Chloroethane | 9.84 | 0.20 | ug/L | 10.0 | | 98.4 | 60-155 | | | |
| Trichlorofluoromethane | 12.0 | 0.20 | ug/L | 10.0 | | 120 | 62-141 | | | |
| Acrolein | 42.4 | 5.00 | ug/L | 50.0 | | 84.7 | 52-190 | | | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 9.93 | 0.20 | ug/L | 10.0 | | 99.3 | 76-129 | | | |
| Acetone | 42.0 | 5.00 | ug/L | 50.0 | | 84.0 | 58-142 | | | |
| 1,1-Dichloroethene | 9.56 | 0.20 | ug/L | 10.0 | | 95.6 | 69-135 | | | |
| Iodomethane | 9.84 | 1.00 | ug/L | 10.0 | | 98.4 | 56-147 | | | |
| Methylene Chloride | 8.98 | 1.00 | ug/L | 10.0 | | 89.8 | 65-135 | | | |
| Acrylonitrile | 7.60 | 1.00 | ug/L | 10.0 | | 76.0 | 64-134 | | | |
| Carbon Disulfide | 9.56 | 0.20 | ug/L | 10.0 | | 95.6 | 78-125 | | | |
| trans-1,2-Dichloroethene | 6.69 | 0.20 | ug/L | 10.0 | | 66.9 | 78-128 | | | *, Q |
| Vinyl Acetate | 9.15 | 0.20 | ug/L | 10.0 | | 91.5 | 55-138 | | | |
| 1,1-Dichloroethane | 8.96 | 0.20 | ug/L | 10.0 | | 89.6 | 76-124 | | | |
| 2-Butanone | 39.4 | 5.00 | ug/L | 50.0 | | 78.8 | 61-140 | | | |
| 2,2-Dichloropropane | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 66-147 | | | |
| cis-1,2-Dichloroethene | 9.24 | 0.20 | ug/L | 10.0 | | 92.4 | 80-121 | | | |
| Chloroform | 9.35 | 0.20 | ug/L | 10.0 | | 93.5 | 80-122 | | | |
| Bromochloromethane | 8.78 | 0.20 | ug/L | 10.0 | | 87.8 | 80-121 | | | |
| 1,1,1-Trichloroethane | 9.80 | 0.20 | ug/L | 10.0 | | 98.0 | 79-123 | | | |
| 1,1-Dichloropropene | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 80-127 | | | |
| Carbon tetrachloride | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 53-137 | | | |
| 1,2-Dichloroethane | 9.49 | 0.20 | ug/L | 10.0 | | 94.9 | 75-123 | | | |
| Benzene | 9.65 | 0.20 | ug/L | 10.0 | | 96.5 | 80-120 | | | |
| Trichloroethene | 9.80 | 0.20 | ug/L | 10.0 | | 98.0 | 80-120 | | | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (BKL0736-BS1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:13 | | | | | | |
| 1,2-Dichloropropane | 9.16 | 0.20 | ug/L | 10.0 | | 91.6 | 80-120 | | | |
| Bromodichloromethane | 9.63 | 0.20 | ug/L | 10.0 | | 96.3 | 80-121 | | | |
| Dibromomethane | 9.16 | 0.20 | ug/L | 10.0 | | 91.6 | 80-120 | | | |
| 2-Chloroethyl vinyl ether | 6.28 | 1.00 | ug/L | 10.0 | | 62.8 | 64-120 | | | *, Q |
| 4-Methyl-2-Pentanone | 44.4 | 2.50 | ug/L | 50.0 | | 88.8 | 67-133 | | | |
| cis-1,3-Dichloropropene | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-124 | | | |
| Toluene | 9.59 | 0.20 | ug/L | 10.0 | | 95.9 | 80-120 | | | |
| trans-1,3-Dichloropropene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 71-127 | | | |
| 2-Hexanone | 43.8 | 5.00 | ug/L | 50.0 | | 87.6 | 69-133 | | | |
| 1,1,2-Trichloroethane | 8.92 | 0.20 | ug/L | 10.0 | | 89.2 | 80-121 | | | |
| 1,3-Dichloropropane | 9.45 | 0.10 | ug/L | 10.0 | | 94.5 | 80-120 | | | |
| Tetrachloroethene | 9.90 | 0.20 | ug/L | 10.0 | | 99.0 | 80-120 | | | |
| Dibromochloromethane | 8.37 | 0.20 | ug/L | 10.0 | | 83.7 | 65-135 | | | |
| 1,2-Dibromoethane | 9.47 | 0.10 | ug/L | 10.0 | | 94.7 | 80-121 | | | |
| Chlorobenzene | 9.63 | 0.20 | ug/L | 10.0 | | 96.3 | 80-120 | | | |
| Ethylbenzene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | | | |
| 1,1,1,2-Tetrachloroethane | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | | | |
| m,p-Xylene | 21.1 | 0.40 | ug/L | 20.0 | | 105 | 80-121 | | | |
| o-Xylene | 9.95 | 0.20 | ug/L | 10.0 | | 99.5 | 80-121 | | | |
| Xylenes, total | 31.0 | 0.60 | ug/L | 30.0 | | 103 | 76-127 | | | |
| Styrene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-124 | | | |
| Bromoform | 7.89 | 0.20 | ug/L | 10.0 | | 78.9 | 51-134 | | | |
| 1,1,2,2-Tetrachloroethane | 8.51 | 0.20 | ug/L | 10.0 | | 85.1 | 77-123 | | | |
| 1,2,3-Trichloropropane | 8.92 | 0.25 | ug/L | 10.0 | | 89.2 | 76-125 | | | |
| trans-1,4-Dichloro 2-Butene | 9.08 | 1.00 | ug/L | 10.0 | | 90.8 | 55-129 | | | |
| n-Propylbenzene | 10.9 | 0.20 | ug/L | 10.0 | | 109 | 78-130 | | | |
| Bromobenzene | 9.75 | 0.20 | ug/L | 10.0 | | 97.5 | 80-120 | | | |
| Isopropyl Benzene | 11.1 | 0.20 | ug/L | 10.0 | | 111 | 80-128 | | | |
| 2-Chlorotoluene | 10.7 | 0.10 | ug/L | 10.0 | | 107 | 78-122 | | | |
| 4-Chlorotoluene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-121 | | | |
| t-Butylbenzene | 11.4 | 0.20 | ug/L | 10.0 | | 114 | 78-125 | | | |
| 1,3,5-Trimethylbenzene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 80-129 | | | |
| 1,2,4-Trimethylbenzene | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-127 | | | |
| s-Butylbenzene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 78-129 | | | |
| 4-Isopropyl Toluene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 79-130 | | | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (BKL0736-BS1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:13 | | | | | | |
| 1,3-Dichlorobenzene | 9.97 | 0.20 | ug/L | 10.0 | | 99.7 | 80-120 | | | |
| 1,4-Dichlorobenzene | 9.59 | 0.20 | ug/L | 10.0 | | 95.9 | 80-120 | | | |
| n-Butylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 74-129 | | | |
| 1,2-Dichlorobenzene | 9.52 | 0.20 | ug/L | 10.0 | | 95.2 | 80-120 | | | |
| 1,2-Dibromo-3-chloropropane | 7.46 | 0.50 | ug/L | 10.0 | | 74.6 | 62-123 | | | |
| 1,2,4-Trichlorobenzene | 10.6 | 0.50 | ug/L | 10.0 | | 106 | 64-124 | | | |
| Hexachloro-1,3-Butadiene | 12.0 | 0.50 | ug/L | 10.0 | | 120 | 58-123 | | | Q, B |
| Naphthalene | 8.53 | 0.50 | ug/L | 10.0 | | 85.3 | 50-134 | | | |
| 1,2,3-Trichlorobenzene | 10.2 | 0.50 | ug/L | 10.0 | | 102 | 49-133 | | | |
| Dichlorodifluoromethane | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 48-147 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | 4.82 | | ug/L | *5.00* | | *96.4* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 5.03 | | ug/L | *5.00* | | *101* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.17 | | ug/L | *5.00* | | *103* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 4.79 | | ug/L | *5.00* | | *95.7* | *80-120* | | | |
| **LCS Dup (BKL0736-BSD1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:34 | | | | | | |
| Chloromethane | 8.07 | 0.50 | ug/L | 10.0 | | 80.7 | 60-138 | 16.60 | 30 | |
| Vinyl Chloride | 8.81 | 0.10 | ug/L | 10.0 | | 88.1 | 66-133 | 8.93 | 30 | |
| Bromomethane | 8.90 | 1.00 | ug/L | 10.0 | | 89.0 | 72-131 | 4.47 | 30 | |
| Chloroethane | 9.69 | 0.20 | ug/L | 10.0 | | 96.9 | 60-155 | 1.48 | 30 | |
| Trichlorofluoromethane | 10.8 | 0.20 | ug/L | 10.0 | | 108 | 62-141 | 10.80 | 30 | |
| Acrolein | 47.0 | 5.00 | ug/L | 50.0 | | 94.1 | 52-190 | 10.40 | 30 | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 9.45 | 0.20 | ug/L | 10.0 | | 94.5 | 76-129 | 4.92 | 30 | |
| Acetone | 45.3 | 5.00 | ug/L | 50.0 | | 90.6 | 58-142 | 7.59 | 30 | |
| 1,1-Dichloroethene | 9.40 | 0.20 | ug/L | 10.0 | | 94.0 | 69-135 | 1.73 | 30 | |
| Iodomethane | 9.53 | 1.00 | ug/L | 10.0 | | 95.3 | 56-147 | 3.15 | 30 | |
| Methylene Chloride | 9.31 | 1.00 | ug/L | 10.0 | | 93.1 | 65-135 | 3.59 | 30 | |
| Acrylonitrile | 8.78 | 1.00 | ug/L | 10.0 | | 87.8 | 64-134 | 14.50 | 30 | |
| Carbon Disulfide | 9.45 | 0.20 | ug/L | 10.0 | | 94.5 | 78-125 | 1.08 | 30 | |
| trans-1,2-Dichloroethene | 6.77 | 0.20 | ug/L | 10.0 | | 67.7 | 78-128 | 1.28 | 30 | *, Q |
| Vinyl Acetate | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 55-138 | 12.80 | 30 | |
| 1,1-Dichloroethane | 9.27 | 0.20 | ug/L | 10.0 | | 92.7 | 76-124 | 3.45 | 30 | |
| 2-Butanone | 47.3 | 5.00 | ug/L | 50.0 | | 94.6 | 61-140 | 18.20 | 30 | |
| 2,2-Dichloropropane | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 66-147 | 2.50 | 30 | |
| cis-1,2-Dichloroethene | 9.78 | 0.20 | ug/L | 10.0 | | 97.8 | 80-121 | 5.66 | 30 | |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (BKL0736-BSD1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:34 | | | | | | |
| Chloroform | 9.92 | 0.20 | ug/L | 10.0 | | 99.2 | 80-122 | 5.95 | 30 | |
| Bromochloromethane | 9.55 | 0.20 | ug/L | 10.0 | | 95.5 | 80-121 | 8.39 | 30 | |
| 1,1,1-Trichloroethane | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 79-123 | 4.45 | 30 | |
| 1,1-Dichloropropene | 11.0 | 0.10 | ug/L | 10.0 | | 110 | 80-127 | 4.82 | 30 | |
| Carbon tetrachloride | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 53-137 | 0.68 | 30 | |
| 1,2-Dichloroethane | 9.98 | 0.20 | ug/L | 10.0 | | 99.8 | 75-123 | 5.07 | 30 | |
| Benzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 6.99 | 30 | |
| Trichloroethene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 5.05 | 30 | |
| 1,2-Dichloropropane | 9.91 | 0.20 | ug/L | 10.0 | | 99.1 | 80-120 | 7.92 | 30 | |
| Bromodichloromethane | 10.2 | 0.20 | ug/L | 10.0 | | 102 | 80-121 | 6.12 | 30 | |
| Dibromomethane | 9.84 | 0.20 | ug/L | 10.0 | | 98.4 | 80-120 | 7.16 | 30 | |
| 2-Chloroethyl vinyl ether | 7.73 | 1.00 | ug/L | 10.0 | | 77.3 | 64-120 | 20.70 | 30 | Q |
| 4-Methyl-2-Pentanone | 52.6 | 2.50 | ug/L | 50.0 | | 105 | 67-133 | 16.90 | 30 | |
| cis-1,3-Dichloropropene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 80-124 | 7.87 | 30 | |
| Toluene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 7.65 | 30 | |
| trans-1,3-Dichloropropene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 71-127 | 9.16 | 30 | |
| 2-Hexanone | 51.8 | 5.00 | ug/L | 50.0 | | 104 | 69-133 | 16.70 | 30 | |
| 1,1,2-Trichloroethane | 9.84 | 0.20 | ug/L | 10.0 | | 98.4 | 80-121 | 9.72 | 30 | |
| 1,3-Dichloropropane | 10.5 | 0.10 | ug/L | 10.0 | | 105 | 80-120 | 10.20 | 30 | |
| Tetrachloroethene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 3.91 | 30 | |
| Dibromochloromethane | 9.01 | 0.20 | ug/L | 10.0 | | 90.1 | 65-135 | 7.37 | 30 | |
| 1,2-Dibromoethane | 10.6 | 0.10 | ug/L | 10.0 | | 106 | 80-121 | 11.50 | 30 | |
| Chlorobenzene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | 4.85 | 30 | |
| Ethylbenzene | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 80-120 | 5.77 | 30 | |
| 1,1,1,2-Tetrachloroethane | 10.7 | 0.20 | ug/L | 10.0 | | 107 | 80-120 | 2.65 | 30 | |
| m,p-Xylene | 22.0 | 0.40 | ug/L | 20.0 | | 110 | 80-121 | 4.40 | 30 | |
| o-Xylene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-121 | 4.96 | 30 | |
| Xylenes, total | 32.5 | 0.60 | ug/L | 30.0 | | 108 | 76-127 | 4.58 | 30 | |
| Styrene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 80-124 | 1.73 | 30 | |
| Bromoform | 8.68 | 0.20 | ug/L | 10.0 | | 86.8 | 51-134 | 9.55 | 30 | |
| 1,1,2,2-Tetrachloroethane | 9.82 | 0.20 | ug/L | 10.0 | | 98.2 | 77-123 | 14.30 | 30 | |
| 1,2,3-Trichloropropane | 9.80 | 0.25 | ug/L | 10.0 | | 98.0 | 76-125 | 9.39 | 30 | |
| trans-1,4-Dichloro 2-Butene | 10.2 | 1.00 | ug/L | 10.0 | | 102 | 55-129 | 11.70 | 30 | |
| n-Propylbenzene | 11.0 | 0.20 | ug/L | 10.0 | | 110 | 78-130 | 1.67 | 30 | |
| Bromobenzene | 10.3 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 5.09 | 30 | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKL0736 - EPA 8260D

Instrument: NT2 Analyst: PB

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (BKL0736-BSD1)** | | | | Prepared: 30-Dec-2022 Analyzed: 30-Dec-2022 17:34 | | | | | | |
| Isopropyl Benzene | 11.5 | 0.20 | ug/L | 10.0 | | 115 | 80-128 | 3.58 | 30 | |
| 2-Chlorotoluene | 11.0 | 0.10 | ug/L | 10.0 | | 110 | 78-122 | 2.27 | 30 | |
| 4-Chlorotoluene | 10.9 | 0.20 | ug/L | 10.0 | | 109 | 80-121 | 4.53 | 30 | |
| t-Butylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 78-125 | 2.73 | 30 | |
| 1,3,5-Trimethylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 80-129 | 2.25 | 30 | |
| 1,2,4-Trimethylbenzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-127 | 1.63 | 30 | |
| s-Butylbenzene | 10.6 | 0.20 | ug/L | 10.0 | | 106 | 78-129 | 2.86 | 30 | |
| 4-Isopropyl Toluene | 10.5 | 0.20 | ug/L | 10.0 | | 105 | 79-130 | 0.77 | 30 | |
| 1,3-Dichlorobenzene | 10.4 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 3.75 | 30 | |
| 1,4-Dichlorobenzene | 9.96 | 0.20 | ug/L | 10.0 | | 99.6 | 80-120 | 3.78 | 30 | |
| n-Butylbenzene | 11.7 | 0.20 | ug/L | 10.0 | | 117 | 74-129 | 0.13 | 30 | |
| 1,2-Dichlorobenzene | 10.1 | 0.20 | ug/L | 10.0 | | 101 | 80-120 | 6.21 | 30 | |
| 1,2-Dibromo-3-chloropropane | 8.53 | 0.50 | ug/L | 10.0 | | 85.3 | 62-123 | 13.30 | 30 | |
| 1,2,4-Trichlorobenzene | 11.3 | 0.50 | ug/L | 10.0 | | 113 | 64-124 | 5.91 | 30 | |
| Hexachloro-1,3-Butadiene | 11.7 | 0.50 | ug/L | 10.0 | | 117 | 58-123 | 2.23 | 30 | Q, B |
| Naphthalene | 9.65 | 0.50 | ug/L | 10.0 | | 96.5 | 50-134 | 12.30 | 30 | |
| 1,2,3-Trichlorobenzene | 10.9 | 0.50 | ug/L | 10.0 | | 109 | 49-133 | 6.46 | 30 | |
| Dichlorodifluoromethane | 9.79 | 0.20 | ug/L | 10.0 | | 97.9 | 48-147 | 11.50 | 30 | |
| *Surrogate: 1,2-Dichloroethane-d4* | 4.78 | | ug/L | *5.00* | | *95.7* | *80-129* | | | |
| *Surrogate: Toluene-d8* | 5.15 | | ug/L | *5.00* | | *103* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.22 | | ug/L | *5.00* | | *104* | *80-120* | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | 4.98 | | ug/L | *5.00* | | *99.6* | *80-120* | | | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

**Analysis by: Analytical Resources, LLC**

## Semivolatile Organic Compounds - SIM - Quality Control

### Batch BKL0643 - 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 (BKL0643-BLK1)** | | | | Prepared: 28-Dec-2022 Analyzed: 03-Jan-2023 14:45 | | | | | | |
| 1,4-Dioxane | ND | 0.4 | ug/L | | | | | | | U |
| *Surrogate: 1,4-Dioxane-d8* | 6.04 | | ug/L | *10.0* | | *60.4* | *33.6-120* | | | |
| **LCS (BKL0643-BS1)** | | | | Prepared: 28-Dec-2022 Analyzed: 03-Jan-2023 15:20 | | | | | | |
| 1,4-Dioxane | 6.9 | 0.4 | ug/L | 10.0 | | 68.7 | 39.9-120 | | | |
| *Surrogate: 1,4-Dioxane-d8* | 5.63 | | ug/L | *10.0* | | *56.3* | *33.6-120* | | | |
| **LCS Dup (BKL0643-BSD1)** | | | | Prepared: 28-Dec-2022 Analyzed: 03-Jan-2023 15:44 | | | | | | |
| 1,4-Dioxane | 7.0 | 0.4 | ug/L | 10.0 | | 69.6 | 39.9-120 | 1.28 | 30 | |
| *Surrogate: 1,4-Dioxane-d8* | 5.42 | | ug/L | *10.0* | | *54.2* | *33.6-120* | | | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

**Analysis by: Analytical Resources, LLC**

## Petroleum Hydrocarbons - Quality Control

### Batch BKL0607 - NWTPH-HCID

Instrument: FID4 Analyst: AA

| QC Sample/Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKL0607-BLK1)** | | | | Prepared: 27-Dec-2022 Analyzed: 28-Dec-2022 14:29 | | | | | | |
| Gasoline Range Organics (Tol-C12) | ND | 0.25 | mg/L | | | | | | | U |
| Diesel Range Organics (C12-C24) | ND | 0.50 | mg/L | | | | | | | U |
| Motor Oil Range Organics (C24-C38) | ND | 1.00 | mg/L | | | | | | | U |
| *Surrogate: o-Terphenyl* | 0.208 | | mg/L | *0.225* | | *92.6* | *50-150* | | | |
| *Surrogate: n-Triacontane* | 0.248 | | mg/L | *0.225* | | *110* | *50-150* | | | |

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|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

## Certified Analyses included in this Report

| Analyte | Certifications |
|---|---|
| ***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 |
| 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 |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

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

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

***EPA 8270E-SIM in Water***

| | |
|---|---|
| 1,4-Dioxane | WADOE,NELAP,DoD-ELAP |

***NWTPH-HCID in Water***

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

| Code | Description | Number | Expires |
|---|---|---|---|
| ADEC | Alaska Dept of Environmental Conservation | 17-015 | 03/28/2023 |
| DoD-ELAP | DoD-Environmental Laboratory Accreditation Program | 66169 | 02/28/2023 |
| NELAP | ORELAP - Oregon Laboratory Accreditation Program | WA100006-012 | 05/12/2023 |
| WADOE | WA Dept of Ecology | C558 | 06/30/2023 |
| WA-DW | Ecology - Drinking Water | C558 | 06/30/2023 |

| | | |
|---|---|---|
| Golder Associates | Project: Landsburg | |
| 18300 NE Union Hill Road Suite 200 | Project Number: GL9231000007.2021 | **Reported:** |
| Redmond WA, 98052-3333 | Project Manager: Gary Zimmerman | 04-Jan-2023 13:11 |

## Notes and Definitions

| | |
|---|---|
| * | Flagged value is not within established control limits. |
| B | This analyte was detected in the method blank. |
| E | The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL) |
| Q | Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF) |
| U | This analyte is not detected above the 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-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** December 21, 2022 **Time** 13:30

**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: 6.45 ft BTOC

Screened Interval: 27.9' - 38.1' BGS

Sand Pack Interval: 24.8' - 38.1' BGS

Packer Depth: N/A

**Sample Description** Clear, slight odor, no sheen.

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

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

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-2
Date 12/21/2022
Time Begin Purge 13:03
Time Collect Sample 13:30

| Water Level (ft bmp) | Time | pH | Cond. (uS/cm) | Temp (°C) | DO (mg/L) | ORP (rel mV) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|
| 6.45 | 13:05 | 6.85 | 761 | 10.5 | 5.88 | -99.3 | 0.35 |
| 6.46 | 13:08 | 6.86 | 764 | 10.6 | 5.13 | -118 | 3.97 |
| 6.46 | 13:11 | 6.87 | 764 | 10.7 | 4.43 | -135.6 | 1.38 |
| 6.46 | 13:16 | 6.88 | 764 | 10.7 | 4.23 | -141.6 | 2.87 |
| 6.46 | 13:19 | 6.88 | 763 | 10.7 | 3.91 | -150.1 | 0.69 |
| 6.46 | 13:22 | 6.89 | 763 | 10.7 | 3.59 | -159.3 | 3.82 |
| 6.46 | 13:25 | 6.89 | 761 | 10.7 | 3.34 | -166.6 | 0.36 |
| 6.46 | 13:28 | 6.89 | 762 | 10.7 | 3.14 | -174.0 | 1.31 |

Comments:

Grundfos: 80 Hz
Packer: N/A
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: 1200 mL/min

**Sampler** _____ **Date** December 21, 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-2-1222-D (duplicate)

**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** December 21, 2022 **Time** 13:40

**Media** Water **Station** LMW-2 (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 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 odor

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

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

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-2 (duplicate)
Date 12/21/2022
Time Begin Purge 13:03
Time Collect Sample 13:40

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

Comments:

Grundfos: 80 Hz
Packer: N/A
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: 1200 mL/min

**Sampler** _____ **Date** December 21, 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-4

**Sampling Location** Groundwater Monitoring Well - end dedicated sampling tube

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

**Type of Sampler** Dedicated Pump Grundfos

**Date** December 21, 2022 **Time** 14:35

**Media** Water **Station** LMW-4

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

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

Static Water Level: 8.39 ft BTOC

Screened Interval: 195' - 209.7' BGS

Sand Pack Interval: 189' - 209.7' BGS

Packer Depth: 187.3' BGS

**Sample Description** Clear, no odor, no sheen.

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

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

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-4
Date 12/21/2022
Time Begin Purge 14:06
Time Collect Sample 14:35

| Water Level (ft bmp) | Time | pH | Cond. (uS/cm) | Temp (°C) | DO (mg/L) | ORP (rel mV) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|
| 8.4 | 14:10 | 7.1 | 734 | 9.9 | 5.01 | -160.8 | 0.20 |
| 8.4 | 14:13 | 7.02 | 735 | 9.9 | 4.6 | -163.2 | 0.42 |
| 8.4 | 14:16 | 6.93 | 738 | 9.9 | 3.89 | -160.9 | 3.68 |
| 8.4 | 14:19 | 6.91 | 740 | 10 | 3.45 | -168.2 | 1.70 |
| 8.4 | 14:22 | 6.9 | 742 | 10 | 3.21 | -170.8 | 4.74 |
| 8.4 | 14:25 | 6.89 | 741 | 10 | 2.94 | -179.9 | 3.50 |
| 8.4 | 14:28 | 6.89 | 740 | 10 | 2.83 | -183.7 | 4.05 |
| 8.4 | 14:31 | 6.89 | 741 | 10 | 2.68 | -188.2 | 7.20 |

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: 1200 mL/min

**Sampler** _____ **Date** December 21, 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** December 21, 2022 **Time** 15:55

**Media** Water **Station** LMW-10

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

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

Static Water Level: 0.6 ft BTOC

Screened Interval: 267' - 289' BGS

Sand Pack Interval: 258' - 289' BGS

Packer Depth: N/A

**Sample Description** Clear, no odor, no sheen.

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

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

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-10
Date 12/21/2022
Time Begin Purge 15:31
Time Collect Sample 15:55

| Water Level (ft bmp) | Time | pH | Cond. (uS/cm) | Temp (°C) | DO (mg/L) | ORP (rel mV) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|
| 1.3 | 15:35 | 8.69 | 254.2 | 7.9 | 7.21 | -133.9 | 0.75 |
| 1.52 | 15:38 | 8.71 | 257.5 | 8.2 | 5.98 | -188.0 | 0.77 |
| 2 | 15:41 | 8.72 | 258.1 | 8.3 | 5.04 | -208.9 | 0.90 |
| 2.27 | 15:44 | 8.71 | 259.2 | 8.3 | 4.66 | -213.7 | 0.72 |
| 2.55 | 15:47 | 8.71 | 259.6 | 8.4 | 4.21 | -218.2 | 0.48 |
| 2.85 | 15:50 | 8.7 | 259.4 | 8.3 | 3.91 | -220.3 | 0.37 |
| 3.15 | 15:53 | 8.7 | 259.2 | 8.3 | 3.71 | -222.3 | 1.18 |

Comments:

Grundfos: N/A
Packer: N/A
Tank: 110
Throttle: 40
CPM: 2
CID: 50
Flow Rate: 300 mL/min

**Sampler** _____ **Date** December 21, 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-12

**Sampling Location** Groundwater Monitoring Well - end dedicated sampling tube

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

**Type of Sampler** Dedicated QED Bladder

**Date** December 29, 2022 **Time** 12:54

**Media** Water **Station** LMW-12

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

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

Static Water Level: 4.3 ft BTOC

Screened Interval: 15' - 25' BGS

Sand Pack Interval: 11' - 25' BGS

Packer Depth: N/A

**Sample Description** clear, no odor, no sheen.

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

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

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-12
Date 12/29/2022
Time Begin Purge 12:20
Time Collect Sample 12:54

| Water Level (ft bmp) | Time | pH | Cond. (uS/cm) | Temp (°C) | DO (mg/L) | ORP (rel mV) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|
| 4.45 | 12:25 | 6.58 | 196.9 | 9.1 | 6.23 | -38.9 | 4.70 |
| 4.47 | 12:30 | 6.48 | 161.1 | 9.1 | 5.01 | -32.8 | 4.36 |
| 4.47 | 12:35 | 6.46 | 158.5 | 9.2 | 4.48 | -31.1 | 4.12 |
| 4.47 | 12:40 | 6.46 | 158.9 | 9.2 | 4.04 | -32.9 | 4.27 |
| 4.47 | 12:45 | 6.46 | 158.6 | 9.2 | 3.7 | -35.2 | 3.59 |
| 4.47 | 12:48 | 6.46 | 158.4 | 9.2 | 3.43 | -38.6 | 3.59 |
| 4.47 | 12:51 | 6.46 | 160.6 | 9.2 | 3.28 | -40.9 | 3.38 |
| 4.48 | 12:54 | 6.46 | 166.4 | 9.2 | 3.17 | -43.6 | 3.74 |

Comments:

Grundfos: N/A
Packer: N/A
Tank: 110
Throttle: 20
CPM: 2
CID: 47
Flow Rate: 225 mL/min

**Sampler** _____ **Date** December 29, 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** December 29, 2022 **Time** 11:50

**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: 4.97 ft BTOC

Screened Interval: 115' - 140' BGS

Sand Pack Interval: 110' - 150' 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 |
|---|---|---|---|
| 3-40 mL | VOA | VOA vial | HCl |
| 2-500 mL | 1,4-dioxane | 500 mL amber bottles | None |
| 4-500 mL | TPH-HCID, -Dx (HOLD) | Glass amber | None |
| 3-40 mL | TPH-Gx (HOLD) | VOA vial | HCl |

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-13R
Date 12/29/2022
Time Begin Purge 11:05
Time Collect Sample 11:50

| Water Level (ft bmp) | Time | pH | Cond. (uS/cm) | Temp (°C) | DO (mg/L) | ORP (rel mV) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|
| 5.2 | 11:10 | 7.13 | 681 | 9.8 | 7.5 | -27.2 | 0.54 |
| 5.21 | 11:15 | 7.2 | 681 | 9.8 | 5.84 | -87.1 | 0.35 |
| 5.21 | 11:20 | 7.21 | 681 | 9.8 | 4.92 | -118.1 | 0.57 |
| 5.23 | 11:25 | 7.23 | 681 | 9.8 | 3.92 | -142.9 | 0.26 |
| 5.24 | 11:30 | 7.24 | 681 | 9.8 | 3.43 | -153.9 | 0.50 |
| 5.24 | 11:40 | 7.24 | 681 | 9.8 | 3.21 | -161.1 | 0.35 |
| 5.23 | 11:43 | 7.24 | 681 | 9.9 | 3.1 | -164.6 | 0.58 |
| 5.23 | 11:46 | 7.24 | 681 | 9.9 | 3.03 | -165.2 | 0.69 |

Comments:

Grundfos: N/A
Packer: N/A
Tank: 110
Throttle: 35
CPM: 2
CID: 48
Flow Rate: 480 mL/min

**Sampler** _____ **Date** December 29, 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-20

**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** December 21, 2022 **Time** 11:40

**Media** Water **Station** LMW-20

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

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

Static Water Level: 15.05 ft BTOC

Screened Interval: 14' - 24' BGS

Sand Pack Interval: 11' - 24.5' 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 |
|---|---|---|---|
| 2-500 mL | 1,4-dioxane | 500 mL amber bottles | None |

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-20
Date 12/21/2022
Time Begin Purge 11:20
Time Collect Sample 11:40

| Water Level (ft bmp) | Time | pH | Cond. (uS/cm) | Temp (°C) | DO (mg/L) | ORP (rel mV) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|
| 15.15 | 11:25 | 6.73 | 207 | 8.9 | 6.43 | 106.9 | 6.50 |
| 15.15 | 11:30 | 6.64 | 207 | 9 | 5.51 | 109.0 | 6.85 |
| 15.15 | 11:35 | 6.62 | 207.9 | 8.9 | 5.07 | 111.3 | 5.82 |
| 15.15 | 11:38 | 6.63 | 210.3 | 8.9 | 4.97 | 114.2 | 3.64 |

Comments:

Grundfos: N/A
Packer: N/A
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: 230 mL/min

**Sampler** _____ **Date** December 21, 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-21

**Sampling Location** Groundwater Monitoring Well - end dedicated sampling tube

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

**Type of Sampler**

**Date** December 21, 2022 **Time** 12:20

**Media** Water **Station** LMW-21

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

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

Static Water Level: 10.1 ft BTOC

Screened Interval: 9.8' - 14.8' BGS

Sand Pack Interval: 6.8' - 15' 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 |
|---|---|---|---|
| 2-500 mL | 1,4-dioxane | 500 mL amber bottles | None |

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-21
Date 12/21/2022
Time Begin Purge 11:55
Time Collect Sample 12:20

| Water Level (ft bmp) | Time | pH | Cond. (uS/cm) | Temp (°C) | DO (mg/L) | ORP (rel mV) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|
| 11.45 | 11:00 | 7.43 | 261.2 | 8.8 | 6.76 | 110.2 | 76 |
| 11.7 | 12:05 | 7.54 | 261.8 | 8.8 | 5.01 | 78.3 | 17.3 |
| 12.04 | 12:10 | 7.57 | 261.7 | 8.7 | 4.31 | 53.4 | 8.87 |
| 12.26 | 12:13 | 7.59 | 262.2 | 8.8 | 3.92 | 33.5 | 5.96 |
| 12.52 | 12:16 | 7.6 | 262.7 | 8.9 | 3.63 | 15.5 | 6.45 |
| 12.75 | 12:19 | 7.61 | 262 | 8.8 | 3.5 | 5.9 | 5.17 |

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** _____ **Date** December 21, 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-22

**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** December 21, 2022 **Time** 11:00

**Media** Water **Station** LMW-22

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

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

Static Water Level: 9.49 ft BTOC

Screened Interval: 17' - 27' BGS

Sand Pack Interval: 14' - 27.3' 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 |
|---|---|---|---|
| 2-500 mL | 1,4-dioxane | 500 mL amber bottles | None |

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-22
Date 12/21/2022
Time Begin Purge 10:30
Time Collect Sample 11:00

| Water Level (ft bmp) | Time | pH | Cond. (uS/cm) | Temp (°C) | DO (mg/L) | ORP (rel mV) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|
| 10.6 | 10:35 | 6.63 | 289.8 | 9.7 | 6.57 | -80.9 | 16.5 |
| 10.6 | 10:40 | 7.19 | 298.5 | 9.6 | 5.53 | -88.1 | 14.7 |
| 10.58 | 10:45 | 7.18 | 296.7 | 9.6 | 4.74 | -62.2 | 22.2 |
| 10.56 | 10:50 | 7.19 | 298.7 | 9.7 | 4.32 | -40.9 | 14.6 |
| 10.56 | 10:55 | 7.21 | 300.3 | 9.7 | 4.06 | -43.1 | 11.1 |
| 10.56 | 10:58 | 7.23 | 302.3 | 9.7 | 3.85 | -49.6 | 9.31 |

Comments:
Grundfos: N/A
Packer: N/A
Tank: N/A
Throttle: N/A
CPM: N/A
CID: N/A
Flow Rate: 300 mL/min

**Sampler** _____ **Date** December 21, 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-1222

**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** December 21, 2022 **Time** 15:59

**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 |
|---|---|---|---|
| 3-40 mL | VOA | VOA vial | HCl |
| 2-500 mL | 1,4-dioxane | 500 mL amber bottles | None |
| 4-500 mL | TPH-HCID, -Dx (HOLD) | Glass amber | None |
| 3-40 mL | TPH-Gx (HOLD) | VOA vial | HCl |

# SAMPLE INTEGRITY DATA SHEET

Well ID LMW-FB
Date 12/21/2022
Time Begin Purge -
Time Collect Sample 15:59

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

Comments:

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

**Sampler** _____ **Date** December 21, 2022

**Supervisor** _____ **Date** _____

# SAMPLE INTEGRITY DATA SHEET

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

**Site Location** Ravensdale, WA **Sample ID** Landsburg Estates-1222

**Sampling Location** Groundwater Monitoring Well - end dedicated sampling tube

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

**Type of Sampler** Private Well Dedicated Tubing

**Date** December 21, 2022 **Time** 09:27 AM

**Media** Water **Station** Landsburg Estates Well

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

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

Static Water Level: N/A

Screened Interval: N/A

Sand Pack Interval: N/A

Packer Depth: N/A

**Sample Description** Clear, no odor, no sheen.

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

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

# SAMPLE INTEGRITY DATA SHEET

Well ID Landsburg Estates-1222
Date 12/21/22
Time Begin Purge -
Time Collect Sample 09:27

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

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

**Sampler** _____ **Date** December 21, 2022

**Supervisor** _____ **Date** _____

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