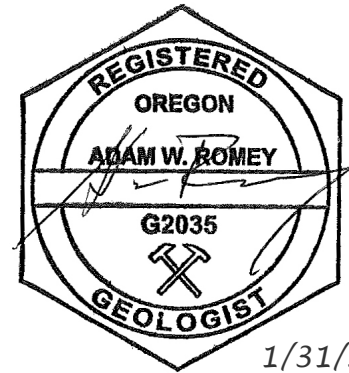


# **Appendix J**

## Geology/Hydrogeology Assessment

DATE: April 7, 2026  
TO: Deschutes County – Department of Solid Waste  
FROM: Adam Romey, RG; Shira DeGroot, RG  
SUBJECT: Geology and Hydrogeology Analysis  
PROJECT NUMBER: 297-2509-015  
PROJECT NAME: Horse Ridge Site Evaluation



1/31/2027

Parametrix has prepared this technical memorandum in support of environmental due diligence activities for the Horse Ridge site (the Site) near Millican in Deschutes County, Oregon (Figure 1). This Site is being evaluated as a potential landfill facility as part of the Deschutes County Landfill Siting Project. This technical memorandum summarizes the geology and hydrogeology of the Site.

## Regional Geology

The Horse Ridge Site lies within the High Lava Plains province of central Oregon; the province is bound to the north by the Blue Mountains province, to the south by the Basin and Range province, to the east by the Owyhee Uplands province, and to the west by the Cascade province (Orr and Orr 1999). Regional geology is dominated by Neogene-aged volcanics, with significant influences from the Newberry Volcano located southwest of the Site. Lava flows primarily consist of basalt, rhyolite, and tuff (Tucker 1975). Although volcanic deposits dominate the region, discontinuous layers of volcanoclastic and lacustrine deposits associated with the paleolakes of the Great Basin have been mapped. Low-lying areas across the province are filled with sand, ash, and pumice. Volcanic landforms including cinder cones, lava buttes, lava tubes, and shield volcanoes are also widespread throughout the region.

These volcanic features are aligned along the Brothers Fault Zone (BFZ). This fault system consists of multiple *en echelon*, high-angle west-northwest trending normal faults (Personius et al. 2003). The BFZ offsets the Miocene-aged lava flows of Horse Ridge located directly south of the Site (Lite and Gannett 2002). However, these faults do not offset the younger Pleistocene-aged flows within the Oregon Badlands just north of the Site, giving further evidence of the age of faulting. According to the U.S. Geological Survey (USGS) Quaternary Faults database, there are no Holocene-aged faults within 20 miles of the Site (USGS 2025).

## Site Geology

The Site is located along the northern flank of Horse Ridge at elevations ranging from approximately 3,700 to 4,000 feet above mean sea level (msl). Topography along the slopes of Horse Ridge (the southern portion of the Site) is steep and slopes downward to the north. The slope grades into a generally flat topography to the north of the ridge (central and northern portions of the Site). Horse Ridge (the southern portion of the Site) is mapped as Pliocene olivine basalt and basaltic andesite lava flows derived from vents associated with the Newberry Volcano within the northern Basin and Range Province (MacLeod et al. 1995). Eleven pre-Holocene, northwest-trending normal faults of the BFZ are mapped to the south and southeast of Horse Ridge.



Three regional geologic surface units are present on the Site (Figure 2):

- Quaternary basalts (Qba) are present north of Horse Ridge Frontage Road. These basalts originated from the nearby Newberry Caldera. Contacts with surface soils are irregular. Surface outcrops of basalts are found predominantly north of Old Horse Ridge Road with depths up to approximately 30 feet below ground surface (bgs) in the central and southern sections of the Site. Geophysical approximation places depth to rock at the Site from 150 to 200 feet bgs on average.
- Quaternary sediments (Qs) consisting of unconsolidated alluvial-fan deposits composed primarily of sand and gravel are present in the central portion of the Site sitting at the foot of the basalts that form Horse Ridge. These deposits have historically been mined for aggregate (Deschutes County Department of Solid Waste 1996). Identified deposits consist of the following:
  - Sand with silt (topsoil) – Lightweight pumiceous sandy soil, thickness up to 20 feet.
  - Sand with fine gravel – The predominant soil type within the Site. Horizontal bedding, thickness greater than 60 feet.
- Tertiary basalts (Tb) form Horse Ridge in the southern portion of the Site. The basalts rise approximately 300 feet above the alluvial deposits within the Site.

Surface soil observations at the Site are mapped as a complex of Gosney, rock outcrops, and Deskamp, and as Clovkamp loamy sand, Gardone sand, and a complex of Stookmoor and Westbutte (USDA NRCS 2025).

Lava tubes are common in this region (Greeley 1971). The collapsed Arnolds lava tube system is located approximately 1.5 miles west of the Site along the western flank of Horse Ridge. Lava tubes present to the west in associated Newberry Basalts have not been mapped or described on the Site.

## Hydrogeology

No year-round surface water is present in the vicinity of the Site. Intermittent drainage may occur from Horse Ridge on a northeast slope toward the Dry River floodplain (Deschutes County Department of Solid Waste 1996). Multiple intermittent streams are mapped on the USGS Horse Ridge quadrangle map flowing downstream from Horse Ridge and onto the Site along the southern site boundary. Surface water is limited and diffuse. Low precipitation conditions in the region result in negligible surface water contribution to the deep groundwater aquifer.

Groundwater was not encountered during any of the three subsurface investigations completed at the Site (up to 58 feet bgs), indicating that perched groundwater is not present at the Site. Geotechnical investigation, including both drilling and geophysical methods, has also confirmed that shallow groundwater is not present at the Site (Delve Underground 2026).

Groundwater in the regional Upper Deschutes Basin aquifer system (Figure 3) flows regionally toward the north-northeast (Lite and Gannett 2002). Groundwater recharge for this aquifer primarily occurs in the highly permeable Quaternary deposits of the Cascade Range and Newberry Volcano, which are located to the west and south, respectively (Gannett et al. 2001; Lite and Gannett 2002). Groundwater flow does not appear to be affected by the adjacent BFZ. Groundwater elevation at the site is approximately 2,800 feet above msl (Figure 3). Two domestic water wells are located on the Site: DESC 5751 (the Oregon Department of Transportation [ODOT] well) and DESC 56052 (the Robinson well). The wells are described in Table 1, and the locations are provided on Figure 3. Based on approximate ground elevation at the Site and measured depth to water of 975.9 feet bgs on November 24, 2025, the static groundwater elevation in the Robinson well is approximately

2,719.6 feet above msl. Depth to water beneath and around the Site has been generally consistent over the last 37 years, ranging from 970 to 975 feet bgs (approximately 2,725.5 to 2,720.5 feet above msl) in the Robinson well. Estimated flow rates during installation were approximately 100 gallons per minute in the ODOT and Robinson wells.

**Table 1. On-Site Wells**

Well Name	Well ID	Construction Date	Approx. Ground Surface Elevation (feet amsl)	Well Depth (feet bgs)	First Encountered Water Depth (feet bgs)	Static Water Level (feet bgs)	Approx. Static Water Level (feet amsl)
ODOT	DESC 5751	02/01/1988	3,725	1,045	1,020	950	2,775
Robinson	DESC 56052	03/20/2004	3,695	1,155	1,070	970	2,725

The ODOT well is buried and not accessible for sampling at time of report publication.

amsl = elevation above mean sea level; approx. = approximate; bgs = below ground surface; ODOT = Oregon Department of Transportation

The 70- to 100-foot rise in water level from first encounter to static indicates a confined or semi-confined aquifer beneath the Site. The current geotechnical investigation and review of past investigations also indicates that bedrock consisting of interbedded lava flows and ash-flow tuffs of low permeability restrict vertical groundwater gradients (Delve Underground 2026).

Other wells located in the vicinity of the Site are described in Table 2 and Figure 3. Two domestic water supply wells and two production wells for the Moon Pit facility are located cross-gradient to the Site. The closest downgradient water supply wells are located approximately 4.5 miles north of the Site (OWRD 2026).

**Table 2. Off-Site Wells**

Well ID	Approximate Distance from the Site (miles)	Construction Date	Approx. Ground Surface Elevation (feet amsl)	Well Depth (feet bgs)	First Encountered Water Depth (feet bgs)	Static Water Level (feet bgs)	Approx. Static Water Level (feet amsl)
DESC 63009	0.65 NW	10/25/2021	3,840	1,300	1,117	1,275	2,565
DESC 61999	0.40 NW	05/01/2020	3,790	1,167	1,064	1,064	2,726
DESC 5750	2.50 ENE	12/20/1986	3,600	915	n/a	850	2,750
DESC 9126	2.50 ENE	02/14/1994	3,600	1,135	890	852	2,750

amsl = above mean sea level; approx. = approximate; bgs = below ground surface; n/a = data not available

Hydrogeologic conditions at the Horse Ridge site are favorable for landfill construction and operation, as characterized by a stable geologic setting, limited surface infiltration, low-permeability geologic conditions, very deep groundwater table, distant downgradient supply wells, and an absence of sensitive hydrogeologic environments (as defined by Oregon Administrative Rule [OAR] 340-94-030).

## Groundwater Quality

Groundwater quality at the Robinson well was assessed on November 24, 2025, by an Apex environmental scientist. The ODOT well is buried and not accessible for sampling. Field activities at

the Robinson well included measuring depth to groundwater and sampling following a three-well-volume purge method. The groundwater sampling field form—which includes field parameter data, purge volumes, and drawdown measurements—is included as Attachment A.

The depth to water in the Robinson well was measured at 975.9 feet bgs, and the calculated volume of three well volumes was 2,190 gallons. The well was purged at a maximum flow rate of 8.6 gallons per minute. After removal of 2,198 gallons of water, field parameters (temperature, pH, specific conductivity, and turbidity) were measured and then samples were collected from the spigot at the well head. The pump was turned off after removal of 2,585 gallons from the well. Minimal drawdown was noted during purging of the well.

The groundwater sample (RW112425) was collected into laboratory-supplied containers with preservatives as indicated by the laboratory method. For the analysis of dissolved concentrations of anions, cations, and metals, groundwater was field-filtered using a 0.45-micron filter and a peristaltic pump to control flow. A new, dedicated filter and disposable pump tubing were used for the filtering process. Immediately after sample collection, each sample container was labeled and placed into a cooler with ice. The samples were then submitted to Pace Analytical National Center for Testing and Innovation (Pace) of Mt. Juliet, Tennessee, for analysis. Due to short holding times, the nitrate-nitrite sample was submitted to Edge Analytical (a Eurofins laboratory) of Bend, Oregon, for analysis.

A summary of the analytical testing results for sample RW112425 is presented in Table 3. Attachment B includes the analytical laboratory reports and chain-of-custody documentation.

**Table 3. Summary of Groundwater Monitoring Data**

	Units	EPA MCLs (2003) <sup>a</sup>	OAR 340-40 <sup>b</sup>	RW112425
<b>Field Indicators (Group 1A)</b>				
Field pH	pH Units	6.5–8.5	6.5–8.5	<b>8.54</b>
Field Specific Conductivity	µS/cm	-	-	235
Field Temperature	degrees C	-	-	20.2
Field Turbidity	NTU	-	-	1.40
<b>Lab Indicators (Group 1B)</b>				
Chemical Oxygen Demand	mg/L	-	-	<14.1
Total Alkalinity (Dissolved)	mg/L	-	-	111 (107)
Hardness	mg/L	-	-	64.4
Specific Conductivity	µS/cm	-	-	238
Total Dissolved Solids	mg/L	500	500	164
Total Organic Carbon	mg/L	-	-	<0.495
Total Suspended Solids	mg/L	-	-	0.3 J
<b>Cations / Anions (Group 2A)</b>				
Dissolved Ammonia-N	mg/L	-	-	<0.0539
Calcium (Dissolved)	mg/L	-	-	10.6 (10.8)
Dissolved Chloride	mg/L	250	250	5.06
Dissolved Bicarbonate Alkalinity	mg/L	-	-	107
Dissolved Carbonate Alkalinity <sup>c</sup>	mg/L	-	-	<4.75
Dissolved Fluoride	mg/L	4	4	0.148 J

	Units	EPA MCLs (2003) <sup>a</sup>	OAR 340-40 <sup>b</sup>	RW112425
Dissolved Iron	mg/L	0.3	0.3	0.0331 J
Magnesium (Dissolved)	mg/L	-	-	9.24 (9.42)
Dissolved Manganese	mg/L	0.05	0.05	0.00217 J
N-Nitrate	mg/L	10	10	0.53
N-Nitrite	mg/L	-	-	0.53
Dissolved Potassium	mg/L	-	-	4.53
Dissolved Silica <sup>c</sup>	mg/L	-	-	49.0
Dissolved Silicon	mg/L	-	-	22.9
Dissolved Sodium	mg/L	-	-	23.0
Dissolved Sulfate	mg/L	250	250	3.76 J
<b>Total Metals (Group 2B)</b>				
Antimony	µg/L	6	-	< 0.310
Arsenic	µg/L	10	50	1.44 J
Barium	µg/L	2,000	1,000	6.18
Beryllium	µg/L	4	-	<0.2
Cadmium	µg/L	5	10	<0.12
Chromium	µg/L	100	50	2.77
Cobalt	µg/L	-	-	<0.1
Copper	µg/L	1,300	1,000	1.67 J
Lead	µg/L	10	50	<0.5
Nickel	µg/L	-	-	<0.5
Selenium	µg/L	50	10	0.262 J
Silver	µg/L	-	50	<0.110
Thallium	µg/L	2	-	<0.13
Vanadium	µg/L	-	-	22.9
Zinc	µg/L	-	5,000	129
<b>Volatile Organic Compounds (Group 3)</b>				
All Compounds	µg/L	-	-	ND

Sample collected on November 24, 2025.

**Bold** values indicate exceedance of MCL or OAR values.

<= not detected at or above the method detection limit; µg/L = micrograms per liter; µS/cm = microsiemens per centimeter; C = Celsius; EPA = U.S. Environmental Protection Agency; J = estimated values between the reported detection limit and the method detection limit; MCL = maximum contaminant level; mg/L = milligrams per liter; OAR = Oregon Administrative Rule; ND = not detected; NTU = nephelometric turbidity units

a EPA MCLs for drinking water in a public water system. For the EPA MCLs, the National Primary Drinking Water Regulations were used.

b OAR 340-40, Tables 1 and 3 (Numerical Groundwater Quality Reference and Guidance Levels).

c Calculated value.

An Apex scientist reviewed the data in accordance with the procedures specified in the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines for Organic Data Review and Inorganic Data Review, as applicable. All data were

considered usable for project objectives. A data quality review of the sampling data verified the following:

- Target compounds were not detected in the method blanks, except for thallium at a concentration of 1.83 micrograms per liter. The method blank detection was between the reporting detection limit (RDL) and the method detection limit (MDL) and flagged as an estimate with the qualifier “J.” The method blank and sample detection were below the RDL and above the MDL or less than 5 times the practical quantitation limit for thallium; therefore, any potential effect of results is negligible, and the data are considered valid.

Groundwater analytical results were compared to regional baseline ranges reported for wells in the Upper Deschutes Basin (Caldwell and Truini 1997). All parameters were within reported regional ranges, with the exception of field pH, which slightly exceeded the reported upper bound by 0.04 pH units. This minor difference is within expected natural and analytical variability and is consistent with background conditions in deep volcanic aquifer systems. Analytical results show low total dissolved solids and low nitrate concentrations, and no exceedances of applicable EPA Maximum Contaminant Levels (MCLs) or Oregon groundwater quality standards. These results are consistent with a deep, confined groundwater system with limited influence from near-surface sources.

For general assessment purposes, groundwater data were compared to EPA MCLs for drinking water in a public water system and OAR 340-40, Tables 1 and 3 (Numerical Groundwater Quality Guidance Levels). Results are summarized below:

- Field pH was measured at 8.54, which slightly exceeds the EPA MCL of 8.5. In comparison, reported pH in wells in the Upper Deschutes Basin ranged from 6.9 to 8.5 (Caldwell and Truini 1997). The reported pH is slightly greater than expected baseline standards, but within the range of field error.
- No laboratory-measured analytical results exceeded EPA MCLs or Oregon Department of Environmental Quality Numerical Groundwater Quality Guidance Levels.

Table 4 provides the cation-anion balance summary for sample RW112425. The calculations are used as a quality check on the design of the sampling program or the laboratory performance. The calculations consist of the relative percentage difference (RPD) between the concentrations of cations and anions in milliequivalents per liter. For analytes that were not detected, the MRL for the analyte was used in the calculation. Carbonate was not detected above the MRL, and ammonium was not analyzed. The RPD value for the sample results was 11.6%. Total cation concentrations were greater than total anion concentrations. The cation-anion RPD was less than 15%; this indicates that the cation and anion concentrations were in agreement (DEQ 2011).

**Table 4. Cation-Anion Balance**

	Analyte	Symbol	mg/L	meq/L
<b>Cations</b>	Calcium	Ca <sup>2+</sup>	10.8	0.540
	Ferrous ion	Fe <sup>2+</sup>	0.0331	0.001
	Magnesium	Mg <sup>2+</sup>	9.42	0.772
	Manganese	Mn <sup>2+</sup>	0.00217	0.000
	Potassium	K <sup>+</sup>	4.53	0.116
	Sodium	Na <sup>+</sup>	22.9	0.998
	<b>Total</b>			

	Analyte	Symbol	mg/L	meq/L
<b>Anions</b>	Bicarbonate	HCO <sub>3</sub> <sup>-</sup>	107	1.755
	Carbonate	CO <sub>3</sub> <sup>2-</sup>	4.75	0.159
	Chloride	Cl <sup>-</sup>	5.06	0.143
	Fluoride	F <sup>-</sup>	0.148	0.008
	Nitrate	NO <sub>3</sub> <sup>-</sup>	0.53	0.009
	Nitrite	NO <sub>2</sub> <sup>-</sup>	0.53	0.012
	Sulfate	SO <sub>4</sub> <sup>2-</sup>	3.76	0.078
	<b>Total</b>			<b>2.162</b>
<b>RPD</b>				<b>11.6%</b>

Compounds that were not detected included at the method detection limit.  
 meq/L = milliequivalents per liter; mg/L = milligrams per liter; RPD = relative percentage difference

## Conclusion

Based on the review of existing data, the site reconnaissance, subsurface investigations, and groundwater quality sampling, the Horse Ridge site exhibits hydrogeologic conditions that are favorable for development of a municipal solid waste landfill, provide a substantial degree of natural groundwater protection, and meet requirements defined by OAR 340-94-030. These characteristics indicate that no hydrogeologic constraints have been identified that would preclude landfill development under applicable state and federal siting criteria.

The Site is underlain by thick sequences of interbedded basalt flows, ash-flow tuffs, and volcanoclastic deposits that limit vertical groundwater movement and provide substantial hydraulic separation between the ground surface and the regional aquifer system. No Quaternary-aged faults are present in the region.

Groundwater beneath the Site occurs at considerable depth (approximately 950 feet bgs) within a confined volcanic aquifer. No perched or shallow groundwater has been encountered during subsurface investigations. Recharge to the Upper Deschutes Basin aquifer system occurs primarily in the Cascade Range and at the Newberry Volcano, which are located upgradient of the site; regional groundwater flow beneath the Site is toward the north-northeast. Domestic supply wells in the vicinity of the Site are a minimum of 0.4 miles away and cross-gradient. The closest downgradient water supply wells are located approximately 4.5 miles north of the Site.

Baseline groundwater quality data collected from the Robinson well indicate good water quality which is representative of regional background conditions in the Upper Deschutes Basin. Analytical results show low total dissolved solids and low nitrate concentrations, and no exceedances of applicable EPA MCLs or Oregon groundwater quality standards. These results are consistent with a deep, confined groundwater system with limited influence from near-surface sources.

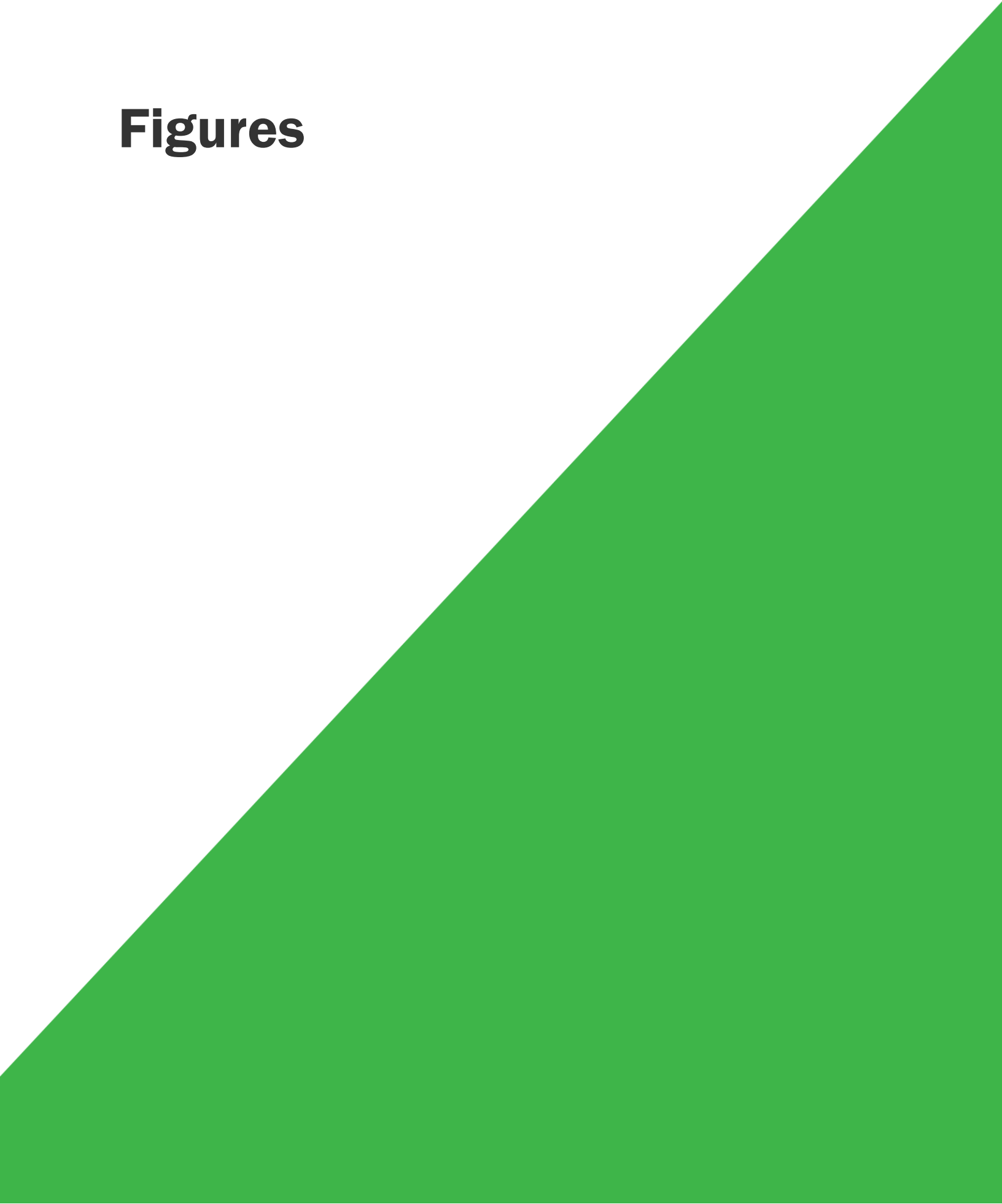
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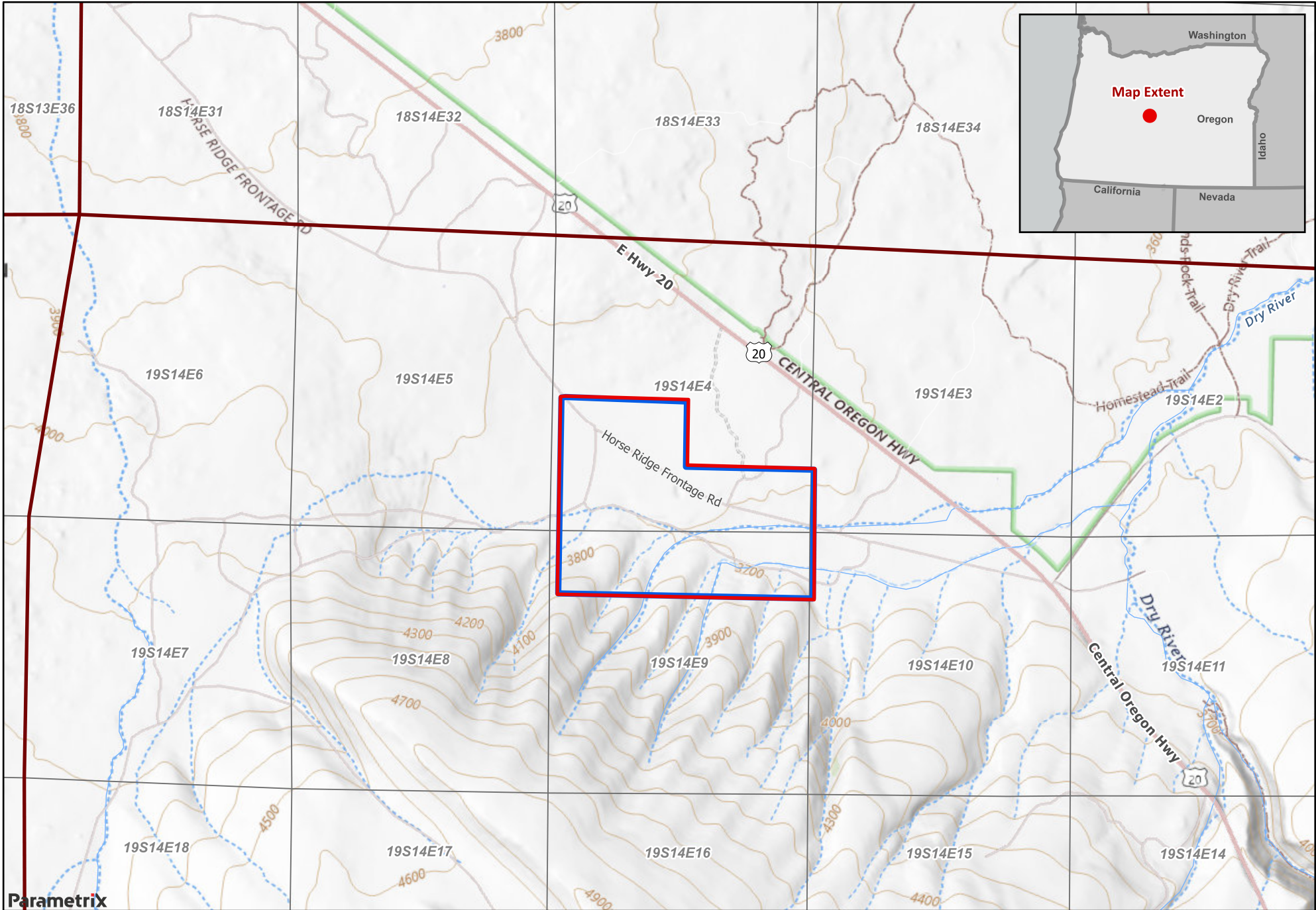
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**ATTACHMENTS**

- A Groundwater Sampling Field Form
- B Analytical Laboratory Reports and Chain-of-Custody Documentation

# Figures



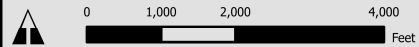


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**Parametrix**

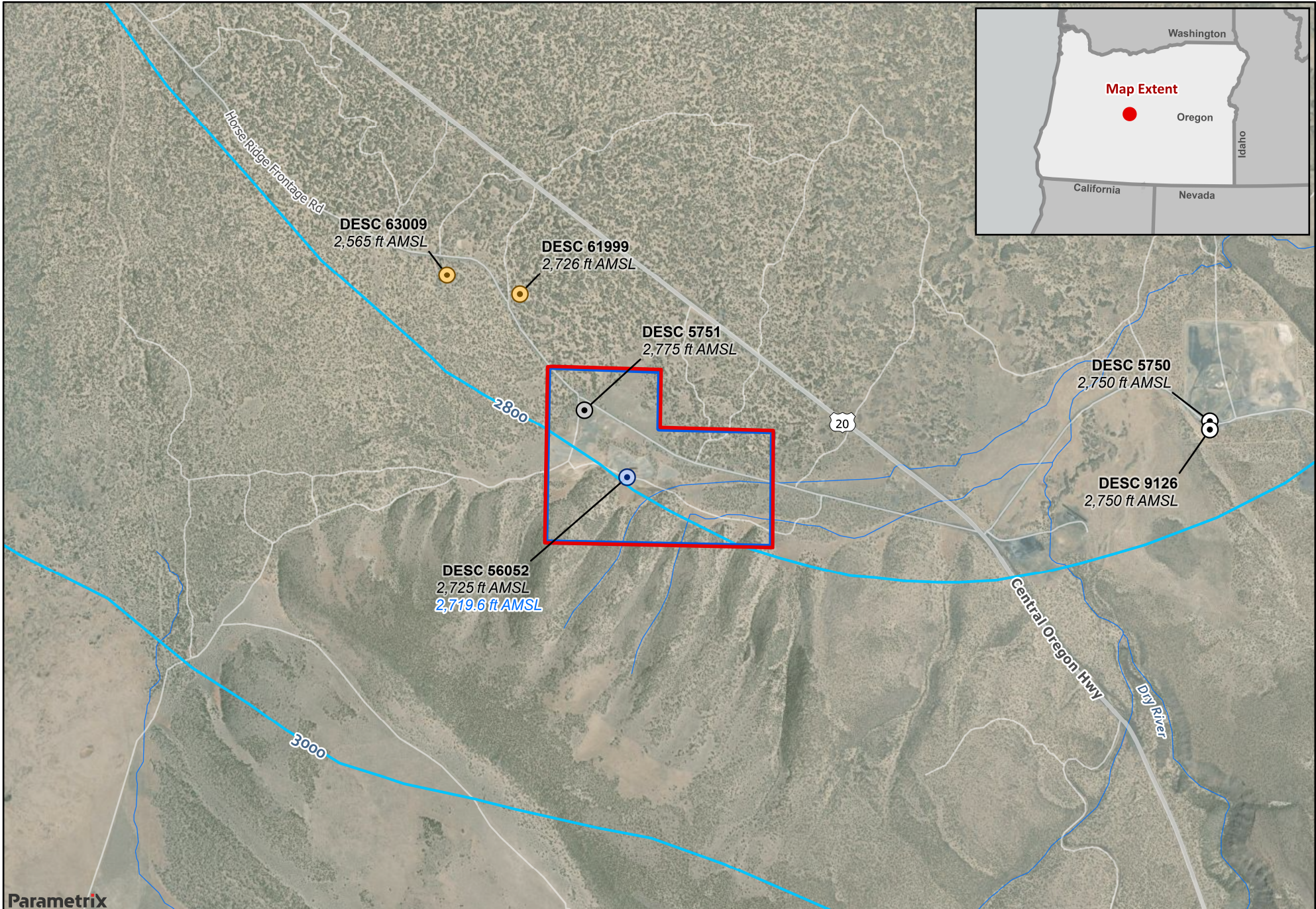
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- Site Boundary
- Proposed Development Area
- Township
- Section

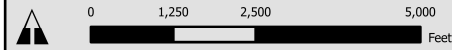


**Figure 1 - Vicinity Map  
Horse Ridge Site Evaluations**





Date: 2/6/2026  
 Sources: USGS, Lite, K.E., Jr., and Gannett, M.W., (2002) Geologic framework of the regional ground-water flow system in the upper Deschutes Basin, Oregon: U.S. Geological Survey Water-Resources Investigations Report 02-4015, p.44.  
 PCS: NAD 1983 StatePlane Washington North FIPS 4601 Feet  
 Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.



- ▭ Site Boundary
- ▭ Proposed Development Area
- Regional Aquifer Hydraulic Head Elevation Contour (200-ft Interval)
- Intermittent Stream

- Active Robinson Well 2,719.6
- Inactive ODOT Well
- Moon Pit Production Wells 2,750
- Off Site Domestic Wells


Approximate groundwater elevation on November 24, 2025, in feet above mean sea level (AMSL)

Approximate static groundwater elevation at time of drilling, in feet above mean sea level (AMSL)

**Figure 3 - Hydraulic Contour Lines Horse Ridge Site Evaluations**

# **Attachment A**

## Groundwater Sampling Field Form


	Apex Companies, LLC	Project No: 81087.000, T 8, P1
	GROUNDWATER SAMPLING FORM (YSI 556)	Project Name/Location: Robinson Well Test/Sampling
Initial DTW (feet bgs)	975.9	Date: 11-24-25
Screen Interval (feet bgs)	—	Monitoring Well ID: Robinson Well (L8435)
Well depth (feet bgs)	1155	Sample ID (if not well ID): RW112425
Depth of pump/tubing inlet (feet bgs)	—	Sample Time* (*Record time at start of sampling): 1345
Sampling method (describe pump or sampler)	Spigot	QC Sample type: <input checked="" type="checkbox"/> Not collected
Purge Rate (L/min)	8.6 gal/min	ID: — Time: —
		Field Personnel: HB
		Weather Conditions: 30s/40s clear

WELL PURGING INFORMATION									
Time <input type="checkbox"/> elapsed <input checked="" type="checkbox"/> actual	DTW (feet)	Temp. (°C)	Dissolved oxygen (mg/L)	Specific conductivity <input type="checkbox"/> mS/cm <input type="checkbox"/> µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged <input type="checkbox"/> ltr <input checked="" type="checkbox"/> gal
EPA stabilization goals:	<0.3 drawdown	±3%	+/- 10% or +/- 0.3 mg/L	±3% mS/cm	±0.1	±10% or ±3 mV	±10%		
924	975.9							temp on WLI	34.4
936	974.7							set to 36°F	137.6
939	974.9								163.4
941	974.5								180.6
945	974.4								215
950	974.4								258
1005	974.2								387
1020	974.0								516
1035	973.9								645
1050	974.1								774
1105	973.7								903
1120	974.8								1032
1135	974.6								1161
1150	974.6								1290
1205	974.6								1419
1220	974.8								1548
Total Volume Purged									→

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Used Hanna turbidity meter for measurements. Used sonic WLI.  
 Started pumping @ 920. Couldn't get accurate WL prior to pumping, WLI being finicky/inconsistent.  
 Took readings when able.  
 Purge rate - 5 gal in 35 sec (checked periodically, and at end). 179.1' of water x 4.08 = 730 x 3 = 2190 is 3 well volumes

Signature of Field Personnel: *HB*

	Apex Companies, LLC	Project No: 81087.000, T 8, P1
	GROUNDWATER SAMPLING FORM (YSI 556)	Project Name/Location: Robinson Well Test/Sampling
Initial DTW (feet bgs)	975.9	Date: 11-24-25
Screen Interval (feet bgs)	—	Monitoring Well ID: Robinson Well (L8435)
Well depth (feet bgs)	1155	Sample ID (if not well ID): RW112425
Depth of pump/tubing inlet (feet bgs)	—	Sample Time* (*Record time at start of sampling): 1345
Sampling method (describe pump or sampler): spigot		QC Sample type: <input checked="" type="checkbox"/> Not collected
Purge Rate (L/min): 8.6 gal/min		ID: — Time: —
		Field Personnel: HB
		Weather Conditions: 30s/40s, clear

WELL PURGING INFORMATION

Time <input type="checkbox"/> elapsed <input checked="" type="checkbox"/> actual	DTW (feet)	Temp. (°C)	Dissolved oxygen (mg/L)	Specific conductivity <input type="checkbox"/> mS/cm <input checked="" type="checkbox"/> µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged <input type="checkbox"/> ltr <input checked="" type="checkbox"/> gal
EPA stabilization goals:	<0.3 drawdown	±3%	+/- 10% or +/- 0.3 mg/L	±3% mS/cm	±0.1	±10% or ±3 mV	±10%		
1235	974.5	—	—	—	—	—	—	—	1677
1250	974.5	—	—	—	—	—	—	—	1806
1305	974.4	—	—	—	—	—	—	—	1935
1320	974.5	—	—	—	—	—	—	—	2064
1335	974.5	19.5	—	245	8.86	—	3.89	—	2198
1338	974.4	19.7	—	244	8.66	—	2.18	—	2223.8
1341	974.6	20.2	—	235	8.54	—	1.40	—	2249.6
1356	974.4	—	—	—	—	—	—	—	2378.6
1411	974.4	—	—	—	—	—	—	—	2507.6
1420	974.3	—	—	—	—	—	—	—	2585
Pump turned off @ 1421									
1423	974.4	—	—	—	—	—	—	—	—
1425	974.6	—	—	—	—	—	—	—	—
1427	974.7	—	—	—	—	—	—	—	—
1429	974.7	—	—	—	—	—	—	—	—
1434	974.7	—	—	—	—	—	—	—	—

Total Volume Purged →

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Took WL measurements from top of a cone on top of well (to remove opening for sonic wave)  
 Cone height - 1.5'  
 Top of casing to ground - 1.3'  
 Cone top to ground - 2.8'

Signature of Field Personnel: *HB*



# **Attachment B**

Analytical Laboratory Reports  
and Chain-of-Custody  
Documentation

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Alex Fischer  
Apex Companies LLC  
141 NW Greenwood Ave.  
Ste 102  
Bend, Oregon 97703

Generated 11/26/2025 4:11:52 PM

## JOB DESCRIPTION

81087.000, T8, P1

## JOB NUMBER

175-1657-1

# Eurofins Bend

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

## Authorization



Generated  
11/26/2025 4:11:52 PM

Authorized for release by  
Michelle England, Project Manager  
[michelle.England@et.eurofinsus.com](mailto:michelle.England@et.eurofinsus.com)  
(541)639-8425



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
QC Sample Results . . . . .	8
QC Association Summary . . . . .	9
Lab Chronicle . . . . .	10
Certification Summary . . . . .	11
Method Summary . . . . .	12
Sample Summary . . . . .	13
Chain of Custody . . . . .	14
Receipt Checklists . . . . .	15

# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: 81087.000, T8, P1

Job ID: 175-1657-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Apex Companies LLC  
Project: 81087.000, T8, P1

Job ID: 175-1657-1

**Job ID: 175-1657-1**

**Eurofins Bend**

## Job Narrative 175-1657-1

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

### Receipt

The sample was received on 11/24/2025 3:56 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 9.3°C.

### General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
Project/Site: 81087.000, T8, P1

Job ID: 175-1657-1

**Client Sample ID: RW112425 Horse Ridge**

**Lab Sample ID: 175-1657-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	0.53		0.0050	0.0050	mg/L	1		Nitrate by calc	Total/NA
Nitrate Nitrite as N	0.53		0.010	0.0039	mg/L	1		SM 4500 NO3 F	Total/NA

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

Client: Apex Companies LLC  
Project/Site: 81087.000, T8, P1

Job ID: 175-1657-1

**Client Sample ID: RW112425 Horse Ridge**

**Lab Sample ID: 175-1657-1**

**Date Collected: 11/24/25 13:45**

**Matrix: Water**

**Date Received: 11/24/25 15:56**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N (SM Nitrate by calc)	0.53		0.0050	0.0050	mg/L			11/26/25 09:41	1
Nitrite as N (SM 4500 NO3 F)	ND		0.0050	0.0029	mg/L			11/25/25 15:46	1
Nitrate Nitrite as N (SM 4500 NO3 F)	0.53		0.010	0.0039	mg/L			11/25/25 15:46	1

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: 81087.000, T8, P1

Job ID: 175-1657-1

## Method: SM 4500 NO3 F - Nitrogen, Nitrate

**Lab Sample ID: MB 175-798/3**  
**Matrix: Water**  
**Analysis Batch: 798**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	ND		0.0050	0.0029	mg/L			11/25/25 15:34	1
Nitrate Nitrite as N	ND		0.010	0.0039	mg/L			11/25/25 15:34	1

**Lab Sample ID: LCS 175-798/4**  
**Matrix: Water**  
**Analysis Batch: 798**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrite as N	0.500	0.510		mg/L		102	90 - 110
Nitrate Nitrite as N	0.500	0.510		mg/L		102	90 - 110

**Lab Sample ID: LCS 175-798/5**  
**Matrix: Water**  
**Analysis Batch: 798**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate Nitrite as N	0.999	0.910		mg/L		91	90 - 110

**Lab Sample ID: MRL 175-798/2**  
**Matrix: Water**  
**Analysis Batch: 798**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Nitrite as N	0.00500	ND		mg/L		94	50 - 150
Nitrate Nitrite as N	0.0100	0.0113		mg/L		113	-

**Lab Sample ID: 175-1642-B-1 MS**  
**Matrix: Water**  
**Analysis Batch: 798**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrite as N	ND		0.500	0.500		mg/L		100	70 - 130
Nitrate Nitrite as N	0.22		1.00	1.19		mg/L		97	70 - 130

**Lab Sample ID: 175-1642-B-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 798**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nitrite as N	ND		0.500	0.500		mg/L		100	70 - 130	0	20
Nitrate Nitrite as N	0.22		1.00	1.18		mg/L		96	70 - 130	1	20

**Lab Sample ID: 175-1642-B-1 DU**  
**Matrix: Water**  
**Analysis Batch: 798**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrite as N	ND		ND		mg/L		NC	20
Nitrate Nitrite as N	0.22		0.220		mg/L		0	20

Eurofins Bend

# QC Association Summary

Client: Apex Companies LLC  
Project/Site: 81087.000, T8, P1

Job ID: 175-1657-1

## General Chemistry

### Analysis Batch: 798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
175-1657-1	RW112425 Horse Ridge	Total/NA	Water	SM 4500 NO3 F	
MB 175-798/3	Method Blank	Total/NA	Water	SM 4500 NO3 F	
LCS 175-798/4	Lab Control Sample	Total/NA	Water	SM 4500 NO3 F	
LCS 175-798/5	Lab Control Sample	Total/NA	Water	SM 4500 NO3 F	
MRL 175-798/2	Lab Control Sample	Total/NA	Water	SM 4500 NO3 F	
175-1642-B-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NO3 F	
175-1642-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NO3 F	
175-1642-B-1 DU	Duplicate	Total/NA	Water	SM 4500 NO3 F	

### Analysis Batch: 804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
175-1657-1	RW112425 Horse Ridge	Total/NA	Water	Nitrate by calc	

# Lab Chronicle

Client: Apex Companies LLC  
Project/Site: 81087.000, T8, P1

Job ID: 175-1657-1

**Client Sample ID: RW112425 Horse Ridge**

**Lab Sample ID: 175-1657-1**

**Date Collected: 11/24/25 13:45**

**Matrix: Water**

**Date Received: 11/24/25 15:56**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Nitrate by calc		1	804	KRH	EET BEN	11/26/25 09:41
Total/NA	Analysis	SM 4500 NO3 F		1	798	KCW	EET BEN	11/25/25 15:46

**Laboratory References:**

EET BEN = Eurofins Bend, 20332 Empire Ave, Suite F4, Bend, OR 97701, TEL (541)639-8425

- 1
- 2
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# Accreditation/Certification Summary

Client: Apex Companies LLC  
Project/Site: 81087.000, T8, P1

Job ID: 175-1657-1

## Laboratory: Eurofins Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4075	11-01-26

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Nitrate by calc		Water	Nitrate as N
SM 4500 NO3 F		Water	Nitrate Nitrite as N
SM 4500 NO3 F		Water	Nitrite as N

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Method Summary

Client: Apex Companies LLC  
Project/Site: 81087.000, T8, P1

Job ID: 175-1657-1

Method	Method Description	Protocol	Laboratory
Nitrate by calc	Nitrogen, Nitrate-Nitrite	SM	EET BEN
SM 4500 NO3 F	Nitrogen, Nitrate	SM	EET BEN

**Protocol References:**

SM = "Standard Methods For The Examination Of Water And Wastewater"

**Laboratory References:**

EET BEN = Eurofins Bend, 20332 Empire Ave, Suite F4, Bend, OR 97701, TEL (541)639-8425

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Sample Summary

Client: Apex Companies LLC  
Project/Site: 81087.000, T8, P1

Job ID: 175-1657-1

---


Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
175-1657-1	RW112425 Horse Ridge	Water	11/24/25 13:45	11/24/25 15:56	Oregon

---

- 1
- 2
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- 12
- 13
- 14

# Chain of Custody / Analysis Request (Please complete all applicable shaded sections)



Report to: <u>Alex Fischer</u>	Bill to: <u>Apex Companies LLC</u>	Ref #
Ship Address: <u>141 NW Greenwood Ave, Ste 102</u>	Address: <u>PO Box 69142</u>	 175-1657 COC Act
City: <u>Bend</u> St: <u>OR</u> Zip: <u>97703</u>	City: <u>Baltimore</u> St: <u>MD</u> Zip: <u>21264</u>	
Attn:	Phone: FAX:	<input type="checkbox"/> Se <input type="checkbox"/> Clean Water Act <input type="checkbox"/> RCRA / CERCLA <input type="checkbox"/> Other
Phone: <u>541-323-5881</u> FAX:	P.O.#: <u>81087.000, T8, P1</u> Attn:	
Email: <u>alex.fischer@apexcos.com</u>	<u>apexvendorinvoices@apexcos.com</u>	
Project <u>81087.000, T8, P1</u>		

**ANALYTICAL**  
**Main Lab (800-755-9295)**  
 1620 South Walnut St. Burlington, WA 98233  
**Microbiology (360-715-1212)**  
 805 W. Orchard Dr. Suite 4 Bellingham, WA 98225  
**Wilsonville Lab (503-682-7802)**  
 9725SW Commerce Cir. Ste A2 Wilsonville, OR 97070  
**Corvallis Lab (541-753-4946)**  
 1100 NE Circle Blvd, Ste 130, Corvallis, OR 97330  
**Bend Lab (541-639-8425)**  
 20332 Empire Ave Ste F4, Bend, OR 97703

1. Use one line per sample Location.
2. Be specific in analysis requests.
3. List each metal individually
4. Check off analyses to be performed for each sample Location.
5. Enter number of containers.
6. (NEW) Report to \_\_ MDL or \_\_ PQL (NEW)

## Analyses Requested

**Turn Around Time Required**

Standard

Half-time (50% surcharge)

Quickest (100% surcharge) Phone Call Req.

Emergency (Phone Call Req.)

Field ID	Location	Grab/Comp.	Sample Matrix*	Date	Time	NO <sub>2</sub> , NO <sub>3</sub>										Number of Containers	Special Instructions Conditions on Receipt
1	<u>BW112425</u>	<u>G</u>	<u>GW</u>	<u>11-24-25</u>	<u>1345</u>	<u>X</u>											
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	

\*\*Are there known hazardous or dangerous wastes in these samples? YES  NO  If YES, indicate type on reverse of this form; samples may be returned to you.

Total Containers: 1

Sampled by: Holly Burnett Phone: 541-419-2104 FAX: --- Email: holly.burnette@apexcos.com

Sample Receipt Request (Must include FAX or Email)

\* W - water SW - surface water WW - waste water SL - salt water  
 DW - drinking water ST - storm water S - soil OL - oil Other: \_\_\_\_\_

**Relinquished by	Date	Time	Received by	Date	Time	Custody seals intact	Yes	No	N/A
<u>H. Burnett</u>	<u>11-24-25</u>	<u>1550</u>	<u>[Signature]</u>	<u>11/24/25</u>	<u>1550</u>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						Sample temp <u>4.3</u> C° satisfactory	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						Samples received intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						Chain of custody & labels agree	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 175-1657-1

**Login Number: 1657**

**List Source: Eurofins Bend**

**List Number: 1**

**Creator: Angland, Michelle R**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Received same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

**Apex Companies, LLC - Portland, OR**

Sample Delivery Group: L1922916  
Samples Received: 11/26/2025  
Project Number: 81087.000Task008P001  
Description: Horse Ridge

Report To: Holly Burnett  
141 NW Greenwood Ave  
Ste 102  
Bend, OR 97703

Entire Report Reviewed By: 

Dane Wacasey  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 mydata.pacelabs.com

# TABLE OF CONTENTS

<b>Cp: Cover Page</b>	<b>1</b>
<b>Tc: Table of Contents</b>	<b>2</b>
<b>Ss: Sample Summary</b>	<b>3</b>
<b>Cn: Case Narrative</b>	<b>4</b>
<b>Sr: Sample Results</b>	<b>5</b>
<b>RW112425 L1922916-01</b>	<b>5</b>
<b>TRIP BLANK L1922916-02</b>	<b>8</b>
<b>Qc: Quality Control Summary</b>	<b>10</b>
<b>Gravimetric Analysis by Method 2540 C-2011</b>	<b>10</b>
<b>Gravimetric Analysis by Method 2540 D-2020</b>	<b>11</b>
<b>Wet Chemistry by Method 2320 B-2011</b>	<b>12</b>
<b>Wet Chemistry by Method 410.4</b>	<b>13</b>
<b>Wet Chemistry by Method 9050A</b>	<b>14</b>
<b>Wet Chemistry by Method 9060A</b>	<b>15</b>
<b>Metals (ICP) by Method 6010D</b>	<b>16</b>
<b>Metals (ICPMS) by Method 6020B</b>	<b>17</b>
<b>Volatile Organic Compounds (GC/MS) by Method 8260D</b>	<b>19</b>
<b>Gl: Glossary of Terms</b>	<b>23</b>
<b>Al: Accreditations &amp; Locations</b>	<b>24</b>
<b>Sc: Sample Chain of Custody</b>	<b>25</b>



# SAMPLE SUMMARY

RW112425 L1922916-01

Collected by: Holly Burnett  
 Collected date/time: 11/24/25 13:45  
 Received date/time: 11/26/25 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2648785	1	12/02/25 18:18	12/02/25 18:18	NMM	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG2649654	1	12/01/25 07:28	12/01/25 11:30	AMG	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 D-2020	WG2648815	1	12/01/25 06:46	12/01/25 07:29	AMG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2652843	1	12/07/25 09:26	12/07/25 09:26	ARD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2649941	1	12/01/25 13:43	12/01/25 19:43	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG2651659	1	12/04/25 03:50	12/04/25 03:50	AVB	Mt. Juliet, TN
Wet Chemistry by Method 9060A	WG2651402	1	12/04/25 04:46	12/04/25 04:46	TMH	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG2648785	1	12/02/25 08:59	12/02/25 18:18	NMM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2648986	1	11/29/25 10:28	12/11/25 22:43	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2649229	1	11/29/25 16:13	11/29/25 16:13	JBE	Mt. Juliet, TN

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

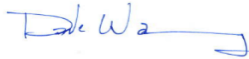
TRIP BLANK L1922916-02

Collected by: Holly Burnett  
 Collected date/time: 11/24/25 00:00  
 Received date/time: 11/26/25 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2649229	1	11/29/25 15:35	11/29/25 15:35	JBE	Mt. Juliet, TN

# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Dane Wacasey  
Project Manager

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	64400		383	2500	1	12/02/2025 18:18	<a href="#">WG2648785</a>

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	164000		10000		1	12/01/2025 11:30	<a href="#">WG2649654</a>

Gravimetric Analysis by Method 2540 D-2020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	300	J	283	2500	1	12/01/2025 07:29	<a href="#">WG2648815</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Alkalinity	111000		4750	20000	1	12/07/2025 09:26	<a href="#">WG2652843</a>

Sample Narrative:

L1922916-01 WG2652843: Endpoint pH 4.5, Headspace

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
COD	U		14100	20000	1	12/01/2025 19:43	<a href="#">WG2649941</a>

Wet Chemistry by Method 9050A

Analyte	Result	Units	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	238	umhos/cm		10.0	1	12/04/2025 03:50	<a href="#">WG2651659</a>

Sample Narrative:

L1922916-01 WG2651659: at 25C

Wet Chemistry by Method 9060A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TOC (Total Organic Carbon)	U		495	1000	1	12/04/2025 04:46	<a href="#">WG2651402</a>

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Calcium	10600		153	1000	1	12/02/2025 18:18	<a href="#">WG2648785</a>
Magnesium	9240		101	1000	1	12/02/2025 18:18	<a href="#">WG2648785</a>

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Antimony	U		0.310	4.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Arsenic	1.44	J	0.120	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Barium	6.18		0.500	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Beryllium	U		0.200	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>

Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Cadmium	U		0.120	1.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Chromium	2.77		0.900	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Copper	1.67	J	0.700	5.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Cobalt	U		0.100	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Lead	U		0.500	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Nickel	U		0.500	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Selenium	0.262	J	0.250	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Silver	U		0.110	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Thallium	U		0.130	2.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Vanadium	22.9		0.520	5.00	1	12/11/2025 22:43	<a href="#">WG2648986</a>
Zinc	129		4.00	25.0	1	12/11/2025 22:43	<a href="#">WG2648986</a>

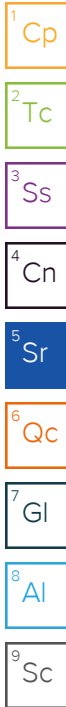
1 Cp  
2 Tc  
3 Ss  
4 Cn  
5 Sr  
6 Qc  
7 Gl  
8 Al  
9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		46.9	50.0	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Acrolein	U	J4	25.0	50.0	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Acrylonitrile	U		8.09	10.0	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Benzene	U		0.320	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Bromobenzene	U		0.277	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Bromodichloromethane	U		0.371	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Bromoform	U		0.548	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Bromomethane	U		4.85	5.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
n-Butylbenzene	U		0.516	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
sec-Butylbenzene	U		0.355	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
tert-Butylbenzene	U		0.314	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Carbon tetrachloride	U		0.360	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Chlorobenzene	U		0.266	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Chlorodibromomethane	U		0.398	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Chloroethane	U		2.79	5.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Chloroform	U		1.28	5.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Chloromethane	U		1.70	5.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
2-Chlorotoluene	U		0.273	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
4-Chlorotoluene	U		0.256	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2-Dibromo-3-Chloropropane	U		1.25	5.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2-Dibromoethane	U		0.341	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Dibromomethane	U		0.422	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2-Dichlorobenzene	U		0.304	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,3-Dichlorobenzene	U		0.282	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,4-Dichlorobenzene	U		0.277	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Dichlorodifluoromethane	U		2.41	5.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,1-Dichloroethane	U		0.389	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2-Dichloroethane	U		0.395	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,1-Dichloroethene	U		0.422	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
cis-1,2-Dichloroethene	U		0.323	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
trans-1,2-Dichloroethene	U		0.348	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2-Dichloropropane	U		0.427	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,1-Dichloropropene	U		0.359	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,3-Dichloropropane	U		0.283	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
cis-1,3-Dichloropropene	U		0.348	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
trans-1,3-Dichloropropene	U		0.313	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
2,2-Dichloropropane	U		0.463	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Di-isopropyl ether	U		0.105	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Ethylbenzene	U		0.234	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Hexachloro-1,3-butadiene	U	C3	0.650	2.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Isopropylbenzene	U		0.105	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>

## Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
p-Isopropyltoluene	U		0.345	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
2-Butanone (MEK)	U		9.00	20.0	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Methylene Chloride	U		1.48	5.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
4-Methyl-2-pentanone (MIBK)	U		7.52	20.0	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Methyl tert-butyl ether	U		0.357	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Naphthalene	U	<u>C3</u>	2.64	5.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
n-Propylbenzene	U		0.239	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Styrene	U		0.342	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,1,1,2-Tetrachloroethane	U		0.381	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,1,2,2-Tetrachloroethane	U		0.354	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,1,2-Trichlorotrifluoroethane	U		0.643	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Tetrachloroethene	U	<u>C3</u>	0.358	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Toluene	U		0.274	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2,3-Trichlorobenzene	U	<u>C3</u>	0.935	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2,4-Trichlorobenzene	U	<u>C3</u>	0.691	2.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,1,1-Trichloroethane	U		0.336	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,1,2-Trichloroethane	U		0.375	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Trichloroethene	U		0.383	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Trichlorofluoromethane	U		3.04	5.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2,3-Trichloropropane	U		0.602	2.50	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2,4-Trimethylbenzene	U		0.274	2.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,2,3-Trimethylbenzene	U		0.339	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
1,3,5-Trimethylbenzene	U		0.266	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Vinyl chloride	U		0.458	1.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
Xylenes, Total	U		0.319	3.00	1	11/29/2025 16:13	<a href="#">WG2649229</a>
(S) Toluene-d8	92.3			80.0-120		11/29/2025 16:13	<a href="#">WG2649229</a>
(S) 4-Bromofluorobenzene	83.9			77.0-126		11/29/2025 16:13	<a href="#">WG2649229</a>
(S) 1,2-Dichloroethane-d4	113			70.0-130		11/29/2025 16:13	<a href="#">WG2649229</a>



## Volatile Organic Compounds (GC/MS) by Method 8260D - TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch	CAS #	RT
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Number of TICs found: 0

Tentatively Identified compounds (TIC) refers to substances not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search routine of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist. Quantitation is accomplished by relative peak area of the TIC compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is 10% or more of that of the nearest internal standard.

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		46.9	50.0	1	11/29/2025 15:35	WG2649229
Acrolein	U	J4	25.0	50.0	1	11/29/2025 15:35	WG2649229
Acrylonitrile	U		8.09	10.0	1	11/29/2025 15:35	WG2649229
Benzene	U		0.320	1.00	1	11/29/2025 15:35	WG2649229
Bromobenzene	U		0.277	1.00	1	11/29/2025 15:35	WG2649229
Bromodichloromethane	U		0.371	1.00	1	11/29/2025 15:35	WG2649229
Bromoform	U		0.548	1.00	1	11/29/2025 15:35	WG2649229
Bromomethane	U		4.85	5.00	1	11/29/2025 15:35	WG2649229
n-Butylbenzene	U		0.516	1.00	1	11/29/2025 15:35	WG2649229
sec-Butylbenzene	U		0.355	1.00	1	11/29/2025 15:35	WG2649229
tert-Butylbenzene	U		0.314	1.00	1	11/29/2025 15:35	WG2649229
Carbon tetrachloride	U		0.360	1.00	1	11/29/2025 15:35	WG2649229
Chlorobenzene	U		0.266	1.00	1	11/29/2025 15:35	WG2649229
Chlorodibromomethane	U		0.398	1.00	1	11/29/2025 15:35	WG2649229
Chloroethane	U		2.79	5.00	1	11/29/2025 15:35	WG2649229
Chloroform	U		1.28	5.00	1	11/29/2025 15:35	WG2649229
Chloromethane	U		1.70	5.00	1	11/29/2025 15:35	WG2649229
2-Chlorotoluene	U		0.273	1.00	1	11/29/2025 15:35	WG2649229
4-Chlorotoluene	U		0.256	1.00	1	11/29/2025 15:35	WG2649229
1,2-Dibromo-3-Chloropropane	U		1.25	5.00	1	11/29/2025 15:35	WG2649229
1,2-Dibromoethane	U		0.341	1.00	1	11/29/2025 15:35	WG2649229
Dibromomethane	U		0.422	1.00	1	11/29/2025 15:35	WG2649229
1,2-Dichlorobenzene	U		0.304	1.00	1	11/29/2025 15:35	WG2649229
1,3-Dichlorobenzene	U		0.282	1.00	1	11/29/2025 15:35	WG2649229
1,4-Dichlorobenzene	U		0.277	1.00	1	11/29/2025 15:35	WG2649229
Dichlorodifluoromethane	U		2.41	5.00	1	11/29/2025 15:35	WG2649229
1,1-Dichloroethane	U		0.389	1.00	1	11/29/2025 15:35	WG2649229
1,2-Dichloroethane	U		0.395	1.00	1	11/29/2025 15:35	WG2649229
1,1-Dichloroethene	U		0.422	1.00	1	11/29/2025 15:35	WG2649229
cis-1,2-Dichloroethene	U		0.323	1.00	1	11/29/2025 15:35	WG2649229
trans-1,2-Dichloroethene	U		0.348	1.00	1	11/29/2025 15:35	WG2649229
1,2-Dichloropropane	U		0.427	1.00	1	11/29/2025 15:35	WG2649229
1,1-Dichloropropene	U		0.359	1.00	1	11/29/2025 15:35	WG2649229
1,3-Dichloropropane	U		0.283	1.00	1	11/29/2025 15:35	WG2649229
cis-1,3-Dichloropropene	U		0.348	1.00	1	11/29/2025 15:35	WG2649229
trans-1,3-Dichloropropene	U		0.313	1.00	1	11/29/2025 15:35	WG2649229
2,2-Dichloropropane	U		0.463	1.00	1	11/29/2025 15:35	WG2649229
Di-isopropyl ether	U		0.105	1.00	1	11/29/2025 15:35	WG2649229
Ethylbenzene	U		0.234	1.00	1	11/29/2025 15:35	WG2649229
Hexachloro-1,3-butadiene	U	C3	0.650	2.00	1	11/29/2025 15:35	WG2649229
Isopropylbenzene	U		0.105	1.00	1	11/29/2025 15:35	WG2649229
p-Isopropyltoluene	U		0.345	1.00	1	11/29/2025 15:35	WG2649229
2-Butanone (MEK)	U		9.00	20.0	1	11/29/2025 15:35	WG2649229
Methylene Chloride	U		1.48	5.00	1	11/29/2025 15:35	WG2649229
4-Methyl-2-pentanone (MIBK)	U		7.52	20.0	1	11/29/2025 15:35	WG2649229
Methyl tert-butyl ether	U		0.357	1.00	1	11/29/2025 15:35	WG2649229
Naphthalene	U	C3	2.64	5.00	1	11/29/2025 15:35	WG2649229
n-Propylbenzene	U		0.239	1.00	1	11/29/2025 15:35	WG2649229
Styrene	U		0.342	1.00	1	11/29/2025 15:35	WG2649229
1,1,1,2-Tetrachloroethane	U		0.381	1.00	1	11/29/2025 15:35	WG2649229
1,1,2,2-Tetrachloroethane	U		0.354	1.00	1	11/29/2025 15:35	WG2649229
1,1,2-Trichlorotrifluoroethane	U		0.643	1.00	1	11/29/2025 15:35	WG2649229
Tetrachloroethene	U	C3	0.358	1.00	1	11/29/2025 15:35	WG2649229
Toluene	U		0.274	1.00	1	11/29/2025 15:35	WG2649229
1,2,3-Trichlorobenzene	U	C3	0.935	1.00	1	11/29/2025 15:35	WG2649229
1,2,4-Trichlorobenzene	U	C3	0.691	2.00	1	11/29/2025 15:35	WG2649229

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,1,1-Trichloroethane	U		0.336	1.00	1	11/29/2025 15:35	<a href="#">WG2649229</a>
1,1,2-Trichloroethane	U		0.375	1.00	1	11/29/2025 15:35	<a href="#">WG2649229</a>
Trichloroethene	U		0.383	1.00	1	11/29/2025 15:35	<a href="#">WG2649229</a>
Trichlorofluoromethane	U		3.04	5.00	1	11/29/2025 15:35	<a href="#">WG2649229</a>
1,2,3-Trichloropropane	U		0.602	2.50	1	11/29/2025 15:35	<a href="#">WG2649229</a>
1,2,4-Trimethylbenzene	U		0.274	2.00	1	11/29/2025 15:35	<a href="#">WG2649229</a>
1,2,3-Trimethylbenzene	U		0.339	1.00	1	11/29/2025 15:35	<a href="#">WG2649229</a>
1,3,5-Trimethylbenzene	U		0.266	1.00	1	11/29/2025 15:35	<a href="#">WG2649229</a>
Vinyl chloride	U		0.458	1.00	1	11/29/2025 15:35	<a href="#">WG2649229</a>
Xylenes, Total	U		0.319	3.00	1	11/29/2025 15:35	<a href="#">WG2649229</a>
(S) Toluene-d8	91.4			80.0-120		11/29/2025 15:35	<a href="#">WG2649229</a>
(S) 4-Bromofluorobenzene	86.8			77.0-126		11/29/2025 15:35	<a href="#">WG2649229</a>
(S) 1,2-Dichloroethane-d4	115			70.0-130		11/29/2025 15:35	<a href="#">WG2649229</a>

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260D - TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch	CAS #	RT
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Number of TICs found: 0

Tentatively Identified compounds (TIC) refers to substances not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search routine of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist. Quantitation is accomplished by relative peak area of the TIC compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is 10% or more of that of the nearest internal standard.

Method Blank (MB)

(MB) R4308771-1 12/01/25 11:30

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U		10000	10000

1 Cp

2 Tc

3 Ss

L1922975-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1922975-02 12/01/25 11:30 • (DUP) R4308771-4 12/01/25 11:30

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Dissolved Solids	1270000	1280000	1	0.393		10

4 Cn

5 Sr

Laboratory Control Sample (LCS)

(LCS) R4308771-2 12/01/25 11:30

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8560000	97.3	90.0-110	

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R4308131-1 12/01/25 07:29

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Suspended Solids	U		283	2500

1 Cp

2 Tc

3 Ss

L1922826-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1922826-02 12/01/25 07:29 • (DUP) R4308131-3 12/01/25 07:29

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Suspended Solids	74800	75600	1	1.06		10

4 Cn

5 Sr

6 Qc

L1922885-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1922885-01 12/01/25 07:29 • (DUP) R4308131-4 12/01/25 07:29

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Suspended Solids	53200	52000	1	2.28		10

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R4308131-2 12/01/25 07:29

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Suspended Solids	773000	750000	97.0	85.0-115	

Method Blank (MB)

(MB) R4310986-2 12/07/25 09:17

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		4750	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1922916-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1922916-01 12/07/25 09:26 • (DUP) R4310986-4 12/07/25 09:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	111000	112000	1	0.485		20

Sample Narrative:

OS: Endpoint pH 4.5, Headspace  
DUP: Endpoint pH 4.5

L1923663-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1923663-03 12/07/25 10:44 • (DUP) R4310986-6 12/07/25 10:48

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	426000	434000	1	1.83		20

Sample Narrative:

OS: Endpoint pH 4.5, Headspace  
DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R4310986-1 12/07/25 09:09

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100000	101000	101	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R4308324-2 12/01/25 19:38

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
COD	U		14100	20000

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R4308324-1 12/01/25 19:38

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500000	501000	100	90.0-110	

4 Cn

5 Sr

L1922872-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922872-01 12/01/25 19:38 • (MS) R4308324-3 12/01/25 19:38 • (MSD) R4308324-4 12/01/25 19:39

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500000	103000	650000	650000	109	109	1	90.0-110			0.105	20

6 Qc

7 Gl

8 Al

L1922902-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922902-01 12/01/25 19:41 • (MS) R4308324-5 12/01/25 19:42 • (MSD) R4308324-6 12/01/25 19:42

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500000	15800	566000	561000	110	109	1	90.0-110			0.738	20

9 Sc

Method Blank (MB)

(MB) R4309608-1 12/04/25 03:50

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1920999-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1920999-02 12/04/25 03:50 • (DUP) R4309608-3 12/04/25 03:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	349	345	1	1.15		10

Sample Narrative:

OS: at 25C

DUP: at 25C

L1923529-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1923529-02 12/04/25 03:50 • (DUP) R4309608-4 12/04/25 03:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	1910	1880	1	1.53		10

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R4309608-2 12/04/25 03:50

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	581	586	101	90.0-110	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R4309644-2 12/03/25 18:24

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
TOC (Total Organic Carbon)	U		495	1000

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1922860-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1922860-02 12/04/25 02:40 • (DUP) R4309644-6 12/04/25 03:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
TOC (Total Organic Carbon)	2580	2570	1	0.233		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4309644-1 12/03/25 18:06 • (LCSD) R4309644-3 12/03/25 21:15

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
TOC (Total Organic Carbon)	25000	23800	24400	95.2	97.5	80.0-120			2.32	20

L1922860-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922860-01 12/04/25 01:32 • (MS) R4309644-4 12/04/25 01:56 • (MSD) R4309644-5 12/04/25 02:19

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
TOC (Total Organic Carbon)	25000	1680	25500	25600	95.2	95.6	1	75.0-125			0.353	20

Method Blank (MB)

(MB) R4308973-1 12/02/25 17:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Calcium	U		153	1000
Magnesium	U		101	1000

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R4308973-2 12/02/25 17:04

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Calcium	10000	10200	102	80.0-120	
Magnesium	10000	9810	98.1	80.0-120	

L1922858-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922858-05 12/02/25 17:07 • (MS) R4308973-4 12/02/25 17:12 • (MSD) R4308973-5 12/02/25 17:14

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Calcium	10000	166000	176000	180000	92.7	132	1	75.0-125	V		2.22	20
Magnesium	10000	32900	42500	43000	96.0	102	1	75.0-125			1.33	20

L1922900-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922900-03 12/02/25 17:17 • (MS) R4308973-6 12/02/25 17:20 • (MSD) R4308973-7 12/02/25 17:22

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Calcium	10000	129000	140000	137000	116	87.2	1	75.0-125			2.04	20
Magnesium	10000	41700	52300	51700	106	100	1	75.0-125			1.23	20

Method Blank (MB)

(MB) R4313125-7 12/11/25 21:39

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		0.310	4.00
Arsenic	U		0.120	2.00
Barium	U		0.500	2.00
Beryllium	U		0.200	2.00
Cadmium	U		0.120	1.00
Chromium	U		0.900	2.00
Copper	U		0.700	5.00
Cobalt	U		0.100	2.00
Lead	U		0.500	2.00
Nickel	U		0.500	2.00
Selenium	U		0.250	2.00
Silver	U		0.110	2.00
Thallium	1.83	U	0.130	2.00
Vanadium	U		0.520	5.00
Zinc	U		4.00	25.0

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R4313125-1 12/11/25 20:41

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Antimony	50.0	49.3	98.5	80.0-120	
Arsenic	50.0	49.2	98.4	80.0-120	
Barium	50.0	47.7	95.4	80.0-120	
Beryllium	50.0	49.3	98.6	80.0-120	
Cadmium	50.0	50.9	102	80.0-120	
Chromium	50.0	51.3	103	80.0-120	
Copper	50.0	51.5	103	80.0-120	
Cobalt	50.0	52.1	104	80.0-120	
Lead	50.0	50.1	100	80.0-120	
Nickel	50.0	52.6	105	80.0-120	
Selenium	50.0	49.9	99.9	80.0-120	
Silver	50.0	47.1	94.1	80.0-120	
Thallium	50.0	49.6	99.1	80.0-120	
Vanadium	50.0	50.8	102	80.0-120	
Zinc	50.0	51.4	103	80.0-120	

L1922849-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922849-05 12/11/25 20:45 • (MS) R4313125-3 12/11/25 20:51 • (MSD) R4313125-4 12/11/25 20:55

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	U	51.9	51.7	104	103	1	75.0-125			0.433	20
Arsenic	50.0	8.27	59.4	58.5	102	100	1	75.0-125			1.46	20
Barium	50.0	254	306	304	105	99.8	1	75.0-125			0.847	20
Beryllium	50.0	U	49.2	49.4	98.4	98.7	1	75.0-125			0.330	20
Cadmium	50.0	U	51.5	52.5	103	105	1	75.0-125			2.03	20
Chromium	50.0	U	52.2	51.4	104	103	1	75.0-125			1.51	20
Copper	50.0	0.728	50.9	50.9	100	100	1	75.0-125			0.0101	20
Cobalt	50.0	1.08	51.6	51.6	101	101	1	75.0-125			0.0984	20
Lead	50.0	U	50.2	50.3	100	101	1	75.0-125			0.266	20
Nickel	50.0	1.54	52.7	51.8	102	101	1	75.0-125			1.64	20
Selenium	50.0	U	50.5	50.0	101	100	1	75.0-125			0.950	20
Silver	50.0	U	47.9	47.9	95.8	95.8	1	75.0-125			0.0440	20
Thallium	50.0	U	50.3	50.6	101	101	1	75.0-125			0.513	20
Vanadium	50.0	U	51.7	51.2	103	102	1	75.0-125			0.996	20
Zinc	50.0	5.11	58.9	57.9	108	106	1	75.0-125			1.68	20

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

L1922900-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922900-03 12/11/25 20:58 • (MS) R4313125-5 12/11/25 21:01 • (MSD) R4313125-6 12/11/25 21:05

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	U	50.5	50.3	101	101	1	75.0-125			0.343	20
Arsenic	50.0	21.4	70.7	71.8	98.5	101	1	75.0-125			1.58	20
Barium	50.0	276	318	330	83.3	107	1	75.0-125			3.67	20
Beryllium	50.0	U	48.5	48.6	96.9	97.1	1	75.0-125			0.191	20
Cadmium	50.0	U	51.1	51.1	102	102	1	75.0-125			0.0673	20
Chromium	50.0	U	51.0	51.4	102	103	1	75.0-125			0.832	20
Copper	50.0	1.66	52.5	51.2	102	99.0	1	75.0-125			2.48	20
Cobalt	50.0	2.60	51.8	52.3	98.4	99.4	1	75.0-125			0.946	20
Lead	50.0	1.31	50.6	52.0	98.6	101	1	75.0-125			2.62	20
Nickel	50.0	4.16	52.8	54.6	97.2	101	1	75.0-125			3.43	20
Selenium	50.0	0.308	48.6	47.6	96.7	94.7	1	75.0-125			2.08	20
Silver	50.0	U	46.7	47.9	93.4	95.8	1	75.0-125			2.46	20
Thallium	50.0	U	48.7	50.4	97.4	101	1	75.0-125			3.40	20
Vanadium	50.0	1.04	51.2	53.2	100	104	1	75.0-125			3.79	20
Zinc	50.0	6.80	58.6	57.8	104	102	1	75.0-125			1.37	20

Method Blank (MB)

(MB) R4308115-2 11/29/25 11:36

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		46.9	50.0
Acrolein	U		25.0	50.0
Acrylonitrile	U		8.09	10.0
Benzene	U		0.320	1.00
Bromobenzene	U		0.277	1.00
Bromodichloromethane	U		0.371	1.00
Bromoform	U		0.548	1.00
Bromomethane	U		4.85	5.00
n-Butylbenzene	U		0.516	1.00
sec-Butylbenzene	U		0.355	1.00
tert-Butylbenzene	U		0.314	1.00
Carbon tetrachloride	U		0.360	1.00
Chlorobenzene	U		0.266	1.00
Chlorodibromomethane	U		0.398	1.00
Chloroethane	U		2.79	5.00
Chloroform	U		1.28	5.00
Chloromethane	U		1.70	5.00
2-Chlorotoluene	U		0.273	1.00
4-Chlorotoluene	U		0.256	1.00
1,2-Dibromo-3-Chloropropane	U		1.25	5.00
1,2-Dibromoethane	U		0.341	1.00
Dibromomethane	U		0.422	1.00
1,2-Dichlorobenzene	U		0.304	1.00
1,3-Dichlorobenzene	U		0.282	1.00
1,4-Dichlorobenzene	U		0.277	1.00
Dichlorodifluoromethane	U		2.41	5.00
1,1-Dichloroethane	U		0.389	1.00
1,2-Dichloroethane	U		0.395	1.00
1,1-Dichloroethene	U		0.422	1.00
cis-1,2-Dichloroethene	U		0.323	1.00
trans-1,2-Dichloroethene	U		0.348	1.00
1,2-Dichloropropane	U		0.427	1.00
1,1-Dichloropropene	U		0.359	1.00
1,3-Dichloropropane	U		0.283	1.00
cis-1,3-Dichloropropene	U		0.348	1.00
trans-1,3-Dichloropropene	U		0.313	1.00
2,2-Dichloropropane	U		0.463	1.00
Di-isopropyl ether	U		0.105	1.00
Ethylbenzene	U		0.234	1.00
Hexachloro-1,3-butadiene	U		0.650	2.00

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R4308115-2 11/29/25 11:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Isopropylbenzene	U		0.105	1.00
p-Isopropyltoluene	U		0.345	1.00
2-Butanone (MEK)	U		9.00	20.0
Methylene Chloride	U		1.48	5.00
4-Methyl-2-pentanone (MIBK)	U		7.52	20.0
Methyl tert-butyl ether	U		0.357	1.00
Naphthalene	U		2.64	5.00
n-Propylbenzene	U		0.239	1.00
Styrene	U		0.342	1.00
1,1,1,2-Tetrachloroethane	U		0.381	1.00
1,1,2,2-Tetrachloroethane	U		0.354	1.00
1,1,2-Trichlorotrifluoroethane	U		0.643	1.00
Tetrachloroethene	U		0.358	1.00
Toluene	U		0.274	1.00
1,2,3-Trichlorobenzene	U		0.935	1.00
1,2,4-Trichlorobenzene	U		0.691	2.00
1,1,1-Trichloroethane	U		0.336	1.00
1,1,2-Trichloroethane	U		0.375	1.00
Trichloroethene	U		0.383	1.00
Trichlorofluoromethane	U		3.04	5.00
1,2,3-Trichloropropane	U		0.602	2.50
1,2,4-Trimethylbenzene	U		0.274	2.00
1,2,3-Trimethylbenzene	U		0.339	1.00
1,3,5-Trimethylbenzene	U		0.266	1.00
Vinyl chloride	U		0.458	1.00
Xylenes, Total	U		0.319	3.00
(S) Toluene-d8	94.1			80.0-120
(S) 4-Bromofluorobenzene	84.1			77.0-126
(S) 1,2-Dichloroethane-d4	114			70.0-130

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB) - TENTATIVELY IDENTIFIED COMPOUNDS

(MB) R4308115-2 11/29/25 11:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL	CAS #
	ug/l		ug/l	ug/l	

Number of TICs found: 0

Tentatively Identified compounds (TIC) refers to substances not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search routine of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist. Quantitation is accomplished by relative peak area of the TIC compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is 10% or more of that of the nearest internal standard.

Laboratory Control Sample (LCS)

(LCS) R4308115-1 11/29/25 10:57

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Acetone	50.0	55.8	112	19.0-160	
Acrolein	50.0	80.8	162	10.0-160	J4
Acrylonitrile	50.0	51.2	102	55.0-149	
Benzene	10.0	10.8	108	70.0-123	
Bromobenzene	10.0	9.17	91.7	73.0-121	
Bromodichloromethane	10.0	11.3	113	75.0-120	
Bromoform	10.0	8.16	81.6	68.0-132	
Bromomethane	10.0	11.5	115	10.0-160	
n-Butylbenzene	10.0	8.74	87.4	73.0-125	
sec-Butylbenzene	10.0	9.23	92.3	75.0-125	
tert-Butylbenzene	10.0	9.03	90.3	76.0-124	
Carbon tetrachloride	10.0	10.2	102	68.0-126	
Chlorobenzene	10.0	8.59	85.9	80.0-121	
Chlorodibromomethane	10.0	8.59	85.9	77.0-125	
Chloroethane	10.0	11.5	115	47.0-150	
Chloroform	10.0	10.6	106	73.0-120	
Chloromethane	10.0	10.6	106	41.0-142	
2-Chlorotoluene	10.0	9.39	93.9	76.0-123	
4-Chlorotoluene	10.0	9.77	97.7	75.0-122	
1,2-Dibromo-3-Chloropropane	10.0	8.74	87.4	58.0-134	
1,2-Dibromoethane	10.0	8.80	88.0	80.0-122	
Dibromomethane	10.0	11.3	113	80.0-120	
1,2-Dichlorobenzene	10.0	8.46	84.6	79.0-121	
1,3-Dichlorobenzene	10.0	8.88	88.8	79.0-120	
1,4-Dichlorobenzene	10.0	9.01	90.1	79.0-120	
Dichlorodifluoromethane	10.0	9.10	91.0	51.0-149	
1,1-Dichloroethane	10.0	10.5	105	70.0-126	
1,2-Dichloroethane	10.0	12.1	121	70.0-128	
1,1-Dichloroethene	10.0	10.0	100	71.0-124	
cis-1,2-Dichloroethene	10.0	9.95	99.5	73.0-120	
trans-1,2-Dichloroethene	10.0	9.61	96.1	73.0-120	
1,2-Dichloropropane	10.0	10.5	105	77.0-125	
1,1-Dichloropropene	10.0	10.6	106	74.0-126	
1,3-Dichloropropane	10.0	9.16	91.6	80.0-120	
cis-1,3-Dichloropropene	10.0	11.4	114	80.0-123	
trans-1,3-Dichloropropene	10.0	9.88	98.8	78.0-124	
2,2-Dichloropropane	10.0	11.3	113	58.0-130	
Di-isopropyl ether	10.0	10.5	105	58.0-138	
Ethylbenzene	10.0	8.27	82.7	79.0-123	
Hexachloro-1,3-butadiene	10.0	7.16	71.6	54.0-138	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R4308115-1 11/29/25 10:57

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Isopropylbenzene	10.0	8.17	81.7	76.0-127	
p-Isopropyltoluene	10.0	8.67	86.7	76.0-125	
2-Butanone (MEK)	50.0	55.6	111	44.0-160	
Methylene Chloride	10.0	9.55	95.5	67.0-120	
4-Methyl-2-pentanone (MIBK)	50.0	49.5	99.0	68.0-142	
Methyl tert-butyl ether	10.0	10.8	108	68.0-125	
Naphthalene	10.0	7.52	75.2	54.0-135	
n-Propylbenzene	10.0	10.1	101	77.0-124	
Styrene	10.0	8.51	85.1	73.0-130	
1,1,1,2-Tetrachloroethane	10.0	8.24	82.4	75.0-125	
1,1,2,2-Tetrachloroethane	10.0	11.5	115	65.0-130	
1,1,2-Trichlorotrifluoroethane	10.0	9.91	99.1	69.0-132	
Tetrachloroethene	10.0	7.54	75.4	72.0-132	
Toluene	10.0	8.86	88.6	79.0-120	
1,2,3-Trichlorobenzene	10.0	7.39	73.9	50.0-138	
1,2,4-Trichlorobenzene	10.0	6.55	65.5	57.0-137	
1,1,1-Trichloroethane	10.0	10.5	105	73.0-124	
1,1,2-Trichloroethane	10.0	8.77	87.7	80.0-120	
Trichloroethene	10.0	9.62	96.2	78.0-124	
Trichlorofluoromethane	10.0	14.6	146	59.0-147	
1,2,3-Trichloropropane	10.0	10.8	108	73.0-130	
1,2,4-Trimethylbenzene	10.0	9.59	95.9	76.0-121	
1,2,3-Trimethylbenzene	10.0	9.20	92.0	77.0-120	
1,3,5-Trimethylbenzene	10.0	9.59	95.9	76.0-122	
Vinyl chloride	10.0	10.7	107	67.0-131	
Xylenes, Total	30.0	25.4	84.7	79.0-123	
<i>(S) Toluene-d8</i>			89.1	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			89.6	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			115	70.0-130	

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RT	Retention Time.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
U (Radiochemistry)	Result + Error < MDA.
J (Radiochemistry)	Result < MDA; Result + Error > MDA.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
V	The sample concentration is too high to evaluate accurate spike recoveries.



# ACCREDITATIONS & LOCATIONS

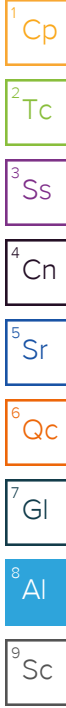
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



**141 NW Greenwood Ave Ste 102 Bend, OR 97703**

**Email To: Holly.Burnett@apexcos.com alex.fischere@apexcos.com**

**Report to: Holly Burnett 541-323-5881**

**City/State Collected: Bend, OR**

**Project Description: Horse Ridge**

**Please Circle: PT MT CT ET**

**Regulatory Program(DOD,RCRA,DW,etc):**

**Client Project # 81087.000Task008P001**

**Lab Project # PBSENGPOR-HORSERIDGE**

**Collected by (print): Holly Burnett**

**Site/Facility ID #**

**P.O. #**

**Collected by (signature): HBurnett**

**Rush? (Lab MUST Be Notified)**

**Quote #**

**Immediately Packed on Ice N \_\_\_ Y**

**Same Day \_\_\_ Five Day \_\_\_ Next Day \_\_\_ 5 Day (Rad Only) \_\_\_ Two Day \_\_\_ 10 Day (Rad Only) \_\_\_ Three Day  STD TAT**

**Date Results Needed**

**No. of Cntrs**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	COD 250mlHDPE-H2SO4	FF-Alk(tot,bi,ca) 125mlHDPE-NoPres	FF-Ammonia 250mlHDPE-H2SO4	FF-Cl,F,S04 125mlHDPE-NoPres	FF-Diss-Metals* 250mlHDPE-HNO3	Spec Con,Tot Alk 250mlHDPE-NoPres	TDS,TSS 1L-HDPE NoPres	TOC 250mlAmb-HCl	Total Metals* 250mlHDPE-HNO3	VOCs+TICs 8260TIC 40mlAmb-HCl	Remarks	Sample # (lab only)
RW112425	G	GW		11-24-25	1345	12	X					X	X	X	X	X		701
Trip Blank		GW				1										X		-02

\* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other

**Remarks: \*Total Metals=Ag,As,Ba,Be,Cd,Co,Cr,Cu,Ni,Pb,Sb,Se,Tl,V,Zn 6020;Ca,Mg 6010;Hard. \*\*FF Diss Metals=Ca,Fe,K,Mg,Mn,Na,Si,SILICA 6010. Field-filtered on separate COC than non-field filtered.**

pH \_\_\_ Temp \_\_\_ Flow \_\_\_ Other \_\_\_

Sample Receipt Checklist	
COC Seal Present/Intact:	NP <input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
COC Signed/Accurate:	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
Bottles arrive intact:	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
Correct bottles used:	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
Sufficient volume sent:	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
If Applicable	
VOA Zero Headspace:	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
Preservation Correct/Checked:	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
RAD Screen <0.5 mR/hr:	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N

Samples returned via:  UPS  FedEx  Courier Tracking # **4744 0273 1773**

Relinquished by: (Signature) **HBurnett**

Date: **11-25-25** Time: **1415**

Received by: (Signature)

Trip Blank Received: Yes/No  HCL/MeOH TBR

Relinquished by: (Signature)

Date: Time:

Received by: (Signature)

Temp: °C Bottles Received: **13** preservation required by Login: Date/Time **EDA9 0.310TD.3**

Relinquished by: (Signature)

Date: Time:

Received for lab by: (Signature) **annwoods**

Date: Time: **11/26/25 930**

Hold: Condition: NCF /  OK

## Apex Companies, LLC - Portland, OR

Sample Delivery Group: L1922917  
Samples Received: 11/26/2025  
Project Number: 81087.000Task008P001  
Description: Horse Ridge

Report To: Holly Burnett  
141 NW Greenwood Ave  
Ste 102  
Bend, OR 97703

Entire Report Reviewed By:



Olivia Currie  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 mydata.pacelabs.com

# TABLE OF CONTENTS

<b>Cp: Cover Page</b>	<b>1</b>	<b>1</b> Cp
<b>Tc: Table of Contents</b>	<b>2</b>	
<b>Ss: Sample Summary</b>	<b>3</b>	<b>2</b> Tc
<b>Cn: Case Narrative</b>	<b>4</b>	
<b>Sr: Sample Results</b>	<b>5</b>	<b>3</b> Ss
RW112425 FF L1922917-01	<b>5</b>	
RW112425 FF L1922917-02	<b>6</b>	<b>4</b> Cn
<b>Qc: Quality Control Summary</b>	<b>7</b>	<b>5</b> Sr
Wet Chemistry by Method 2320 B-2011	<b>7</b>	
Wet Chemistry by Method 350.1	<b>9</b>	<b>6</b> Qc
Wet Chemistry by Method 9056A	<b>10</b>	
Metals (ICP) by Method 6010D	<b>12</b>	<b>7</b> Gl
<b>Gl: Glossary of Terms</b>	<b>13</b>	<b>8</b> Al
<b>Al: Accreditations &amp; Locations</b>	<b>14</b>	
<b>Sc: Sample Chain of Custody</b>	<b>15</b>	<b>9</b> Sc

# SAMPLE SUMMARY

RW112425 FF L1922917-01

Collected by: Holly Burnett  
 Collected date/time: 11/24/25 13:45  
 Received date/time: 11/26/25 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2648981	1	12/02/25 21:12	12/02/25 21:12	NMM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2652716	1	12/05/25 13:32	12/05/25 13:32	RJP	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2649575	1	11/30/25 19:02	11/30/25 19:02	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2648726	1	11/30/25 23:20	11/30/25 23:20	AJC	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG2648981	1	12/02/25 11:09	12/02/25 21:12	NMM	Mt. Juliet, TN

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

RW112425 FF L1922917-02

Collected by: Holly Burnett  
 Collected date/time: 11/24/25 13:45  
 Received date/time: 11/26/25 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG2648726	1	11/30/25 23:20	11/30/25 23:20	AJC	Mt. Juliet, TN

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Olivia Currie  
Project Manager

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Silica,Dissolved	49000		165	428	1	12/02/2025 21:12	<a href="#">WG2648981</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	107000		4750	20000	1	12/05/2025 13:32	<a href="#">WG2652716</a>
Alkalinity,Bicarbonate	107000		4750	20000	1	12/05/2025 13:32	<a href="#">WG2652716</a>
Alkalinity,Carbonate	U		4750	20000	1	12/05/2025 13:32	<a href="#">WG2652716</a>

Sample Narrative:

L1922917-01 WG2652716: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Ammonia Nitrogen	U		53.9	100	1	11/30/2025 19:02	<a href="#">WG2649575</a>

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	5060		547	1000	1	11/30/2025 23:20	<a href="#">WG2648726</a>
Fluoride	148	J	76.1	150	1	11/30/2025 23:20	<a href="#">WG2648726</a>

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium,Dissolved	10800		153	1000	1	12/02/2025 21:12	<a href="#">WG2648981</a>
Iron,Dissolved	33.1	J	20.5	100	1	12/02/2025 21:12	<a href="#">WG2648981</a>
Magnesium,Dissolved	9420		101	1000	1	12/02/2025 21:12	<a href="#">WG2648981</a>
Manganese,Dissolved	2.17	J	1.01	10.0	1	12/02/2025 21:12	<a href="#">WG2648981</a>
Potassium,Dissolved	4530		624	2000	1	12/02/2025 21:12	<a href="#">WG2648981</a>
Silicon,Dissolved	22900		77.1	200	1	12/02/2025 21:12	<a href="#">WG2648981</a>
Sodium,Dissolved	23000		444	3000	1	12/02/2025 21:12	<a href="#">WG2648981</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sulfate	3760	J	637	5000	1	11/30/2025 23:20	<a href="#">WG2648726</a>

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Method Blank (MB)

(MB) R4310468-2 12/05/25 12:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Alkalinity	U		4750	20000
Alkalinity,Bicarbonate	U		4750	20000
Alkalinity,Carbonate	U		4750	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1922623-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1922623-02 12/05/25 12:32 • (DUP) R4310468-3 12/05/25 12:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Alkalinity	283000	287000	1	1.47		20
Alkalinity,Bicarbonate	283000	287000	1	1.47		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L1922623-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1922623-08 12/05/25 14:59 • (DUP) R4310468-4 12/05/25 15:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Alkalinity	335000	331000	1	1.34		20
Alkalinity,Bicarbonate	335000	331000	1	1.34		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5



Laboratory Control Sample (LCS)

(LCS) R4310468-1 12/05/25 11:57

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100000	100000	100	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R4307898-1 11/30/25 18:29

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Ammonia Nitrogen	U		53.9	100

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1922851-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1922851-01 11/30/25 18:34 • (DUP) R4307898-3 11/30/25 18:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	149	144	1	3.41		10

L1922877-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1922877-02 11/30/25 18:43 • (DUP) R4307898-5 11/30/25 18:49

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	956	951	1	0.524		10

Laboratory Control Sample (LCS)

(LCS) R4307898-2 11/30/25 18:31

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ammonia Nitrogen	7500	7520	100	90.0-110	

L1922851-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1922851-01 11/30/25 18:34 • (MS) R4307898-4 11/30/25 18:37

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Ammonia Nitrogen	5000	149	5310	103	1	90.0-110	

L1922877-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922877-02 11/30/25 18:43 • (MS) R4307898-6 11/30/25 18:50 • (MSD) R4307898-7 11/30/25 18:52

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Ammonia Nitrogen	5000	956	5970	6270	100	106	1	90.0-110			4.95	10

Method Blank (MB)

(MB) R4308048-1 11/30/25 15:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Chloride	U		547	1000
Fluoride	U		76.1	150
Sulfate	U		637	5000

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1922877-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1922877-02 11/30/25 16:39 • (DUP) R4308048-3 11/30/25 16:52

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	128000	129000	10	0.675		15

Sample Narrative:

OS: Dilution due to matrix impact on instrumentation at lower dilution

L1922877-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1922877-02 11/30/25 17:30 • (DUP) R4308048-6 11/30/25 17:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Sulfate	1830000	1840000	100	0.971		15

L1922900-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1922900-03 11/30/25 21:18 • (DUP) R4308048-7 11/30/25 21:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	7740	7770	1	0.443		15
Fluoride	242	243	1	0.0825		15
Sulfate	59700	60100	1	0.669		15

Laboratory Control Sample (LCS)

(LCS) R4308048-2 11/30/25 15:49

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Chloride	40000	39200	98.1	90.0-110	
Fluoride	8000	8200	102	90.0-110	
Sulfate	40000	39700	99.4	90.0-110	

L1922877-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922877-02 11/30/25 16:39 • (MS) R4308048-4 11/30/25 17:05 • (MSD) R4308048-5 11/30/25 17:17

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Chloride	40000	128000	145000	146000	41.6	44.5	10	90.0-110	<u>J6</u>	<u>J6</u>	0.796	15
Sulfate	40000	1970000	1650000	1660000	0.000	0.000	10	90.0-110	<u>E V</u>	<u>E V</u>	0.647	15

Sample Narrative:

OS: Dilution due to matrix impact on instrumentation at lower dilution

L1922900-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922900-03 11/30/25 21:18 • (MS) R4308048-8 11/30/25 21:43 • (MSD) R4308048-9 11/30/25 21:56

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Chloride	40000	7740	47200	47100	98.7	98.4	1	90.0-110			0.284	15
Fluoride	8000	242	8440	8410	102	102	1	90.0-110			0.326	15
Sulfate	40000	59700	89800	89600	75.1	74.8	1	90.0-110	<u>J6</u>	<u>J6</u>	0.177	15

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R4308976-1 12/02/25 20:23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Calcium,Dissolved	U		153	1000
Iron,Dissolved	U		20.5	100
Magnesium,Dissolved	U		101	1000
Manganese,Dissolved	U		1.01	10.0
Potassium,Dissolved	U		624	2000
Silicon,Dissolved	U		77.1	200
Sodium,Dissolved	U		444	3000

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R4308976-2 12/02/25 20:26

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Calcium,Dissolved	10000	10600	106	80.0-120	
Iron,Dissolved	10000	10700	107	80.0-120	
Magnesium,Dissolved	10000	10200	102	80.0-120	
Manganese,Dissolved	1000	1060	106	80.0-120	
Potassium,Dissolved	10000	10200	102	80.0-120	
Silicon,Dissolved	1000	945	94.5	80.0-120	
Sodium,Dissolved	10000	10700	107	80.0-120	

L1922877-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1922877-02 12/02/25 20:28 • (MS) R4308976-4 12/02/25 20:33 • (MSD) R4308976-5 12/02/25 20:36

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l		ug/l	ug/l	%	%		%			%	%
Calcium,Dissolved	10000		562000	561000	19.0	9.40	1	75.0-125	V	V	0.171	20
Iron,Dissolved	10000		44500	44700	90.2	92.0	1	75.0-125			0.424	20
Magnesium,Dissolved	10000		206000	208000	69.7	82.4	1	75.0-125	V		0.614	20
Manganese,Dissolved	1000		10200	10200	85.3	85.2	1	75.0-125			0.00969	20
Potassium,Dissolved	10000		16600	16400	107	106	1	75.0-125			0.886	20
Silicon,Dissolved	1000		10600	10600	86.6	85.7	1	75.0-125			0.0903	20
Sodium,Dissolved	10000		59800	60500	83.7	90.7	1	75.0-125			1.17	20

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
U (Radiochemistry)	Result + Error < MDA.
J (Radiochemistry)	Result < MDA; Result + Error > MDA.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

# ACCREDITATIONS & LOCATIONS

## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

14 NW Greenwood Ave  
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Email To: Holly.Burnett@apexcos.com  
 alex.fischer@apexcos.com

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 Holly Burnett 541-323-5881

City/State Collected: Bend, OR  
 Please Circle: (PT) MT CT ET

Project Description:  
 Horse Ridge

Client Project #  
 81087.000Task008P001

Pres Chk

Regulatory Program(DOD,RCRA,DW,etc):

Lab Project #  
 PBSENGPOR-HORSERIDGE

P.O. #

600 250mlHDPE-H2SO4  
 FF Alk(tot,bj,ca) 125mlHDPE-NoPres  
 FF Ammonia 250mlHDPE-H2SO4  
 FF Cl,F,SO4 125mlHDPE-NoPres  
 FF Diss Metals\*\* 250mlHDPE HNO3  
 Spec Con,Tot Alk 250mlHDPE-NoPres  
 TDS,TSS 1L-HDPE NoPres  
 TOC 250mlAmb-HCl  
 Total Metals\* 250mlHDPE HNO3  
 VOCs+PbCs 6260TIC 40mlAmb-HCl

Collected by (print):  
 Holly Burnett

Site/Facility ID #

Quote #

SDG # 1922917  
 H107

Collected by (signature):  
 HBurnett

Rush? (Lab MUST Be Notified)  
 \_\_\_ Same Day \_\_\_ Five Day  
 \_\_\_ Next Day \_\_\_ 5 Day (Rad Only)  
 \_\_\_ Two Day \_\_\_ 10 Day (Rad Only)  
 \_\_\_ Three Day  STD TAT

Date Results Needed

Acctnum: PBSENGPOR  
 Template:T284193  
 Prelogin: P1190020  
 PM: 110 - Brian Ford  
 PB:

Immediately Packed on Ice N \_\_\_ Y

No. of Cntrs

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	600 250mlHDPE-H2SO4	FF Alk(tot,bj,ca) 125mlHDPE-NoPres	FF Ammonia 250mlHDPE-H2SO4	FF Cl,F,SO4 125mlHDPE-NoPres	FF Diss Metals** 250mlHDPE HNO3	Spec Con,Tot Alk 250mlHDPE-NoPres	TDS,TSS 1L-HDPE NoPres	TOC 250mlAmb-HCl	Total Metals* 250mlHDPE HNO3	VOCs+PbCs 6260TIC 40mlAmb-HCl	Remarks	Sample # (lab only)
RW112425 FF	G	GW		11-24-25	1345	2	X	X	X	X								
		GW																

\* Matrix:  
 SS - Soil AIR - Air F - Filter  
 GW - Groundwater B - Bioassay  
 WW - WasteWater  
 DW - Drinking Water  
 OT - Other

Remarks: \*Total Metals=Ag,As,Ba,Be,Cd,Co,Cr,Cu,Ni,Pb,Sb,Se,Tl,V,Zn 6020;Ca,Mg 6010;Hard.  
 \*\*FF Diss Metals=Ca,Fe,K,Mg,Mn,Na,Si,SILICA 6010.  
 Field Filtered on separate COC than non-field filtered.  
 Samples returned via: \_\_\_ UPS \_\_\_ FedEx \_\_\_ Courier  
 Tracking # 47416 8273 1773

Sample Receipt Checklist  
 COC Seal Present/Intact: NP  Y \_\_\_ N  
 COC Signed/Accurate:  Y \_\_\_ N  
 Bottles arrive intact:  Y \_\_\_ N  
 Correct bottles used:  Y \_\_\_ N  
 Sufficient volume sent:  Y \_\_\_ N  
 If Applicable  
 VOA Zero Headspace:  Y \_\_\_ N  
 Preservation Correct/Checked:  Y \_\_\_ N  
 RAD Screen <0.5 mR/hr:  Y \_\_\_ N

Relinquished by: (Signature)  
 HBurnett

Date: 11-25-25  
 Time: 1415

Received by: (Signature)

Trip Blank Received: Yes/No  
 HCL/Mech  
 TBR

Temp: °C Bottles Received: 4  
 If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: 11/20/25  
 Time: 930

Received for lab by: (Signature)  
 amwwoods

Date: 11/20/25  
 Time: 930

Hold: Condition: NCF / OK

Relinquished by: (Signature)

Date: 11/20/25  
 Time: 930

Received for lab by: (Signature)

Date: 11/20/25  
 Time: 930

Hold: Condition: NCF / OK

# **Subtask 8 – Geology/Hydrogeology Assessment**

Roth East Site  
Deschutes County, Oregon

Prepared for:  
Parametrix, Inc.  
150 NW Pacific Park Lane, Suite 110  
Bend, Oregon 97701

February 2024  
PBS Project 81087.000, Phase 0004, Task 002



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## Table of Contents

<b>1 INTRODUCTION .....</b>	<b>1</b>
<b>2 REGIONAL GEOLOGY .....</b>	<b>1</b>
<b>3 SITE GEOLOGY .....</b>	<b>1</b>
<b>4 HYDROGEOLOGY.....</b>	<b>2</b>
<b>5 SITE GROUNDWATER QUALITY .....</b>	<b>3</b>

## Supporting Data

### FIGURES

- Figure 1: Vicinity Map
- Figure 2: Surface Geologic Map
- Figure 3: Regional Aquifer Elevation Map

### TABLES

- Table 1: Summary of Groundwater Monitoring Data
- Table 2: Cation/Anion Balance

### APPENDICES

- Appendix A. Photo Pages
- Appendix B. Groundwater Sampling Field Form
- Appendix C. Laboratory Analytical Reports

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## 1 INTRODUCTION

PBS Engineering and Environmental Inc. (PBS) was retained by Parametrix Inc. to provide geologic consulting services for the Deschutes County Landfill Siting Project. Parametrix is contracted with the Deschutes County Solid Waste Department to assist with the selection of a new Deschutes County Landfill site.

This report and attachments provide a summary of the regional geology, site geology, site hydrogeology, and site groundwater quality for the Roth East Site (Site; see Figures 1 and 2).

## 2 REGIONAL GEOLOGY

The Site is located within the High Lava Plains Physiographic Province of Central Oregon. This region is characterized by a combination of Neogene period (23 to 2.6 million years ago) basaltic lava flows, rhyolitic tuff and tuffaceous sediments, and rhyolitic dome complexes, such as Pine Mountain to the southeast of the Site. The High Lava Plains (HLP) is situated at the northern edge of the Basin and Range geologic province where a shift from northwest extension through northeast-trending faults to a system of west-northwest trending *en echelon* normal faults occurs. This system of west-northwest trending faults, known as the Brothers Fault Zone (BFZ), is believed to represent the surface expression of deep-seated right-lateral shear accommodating the termination of Basin and Range extension.<sup>1</sup> The BFZ is believed to have been active in the Pliocene epoch (approximately 5.3 to 2.6 million years ago) of the Neogene period within the HLP.<sup>2</sup> According to the USGS Quaternary Faults database<sup>3</sup>, there are no recently active faults (i.e. Holocene; within the last 12,000 years) within 16.5 miles of the Site; however, numerous older faults associated with the BFZ have surficially impacted the HLP volcanics near the site.

The BFZ provided pathways for the mid-Miocene-age volcanism within the HLP. HLP volcanics within and to the south, southeast, east, and northeast of the Site, which are known as the Bear Creek Buttes and dated to approximately 7.5 million years, within the Miocene epoch of the Neogene period, are linked to vents in the HLP.<sup>4</sup> The Oregon Badlands, situated to the northwest of the Site, is a lava flow dating back approximately 80,000 years and believed to be sourced from Newberry Volcano and transported through lava tubes to an area roughly 2.75 miles northwest of the site. The Oregon Badlands basalt does not appear to be offset by the BFZ, which provides further evidence of the age of BFZ faulting.

## 3 SITE GEOLOGY

The proposed development area of the Site is located at elevations ranging from approximately 4,450 to 4,600 feet above mean sea level and lies atop alluvial deposits along the northern flank of Pine Mountain and directly downslope from small buttes mapped as Pliocene lava flows that have been uplifted by faults<sup>5</sup> (see Figure 2). These buttes reach a maximum elevation of 5,550 feet, but the buttes directly upslope of the proposed development area reach 5,112 feet elevation. The alluvial deposits at the Site may originate from Pine Mountain, the uplifted Pliocene flows, Newberry Volcano, which produced lava flows reaching the southern edge of Pine Mountain and Millican Valley as recently as 7,700 years ago.<sup>6</sup> Alluvial deposits at the Site may include talus, slope wash, conglomerate, and windblown deposits.

<sup>1</sup> [https://pubs.usgs.gov/of/2003/ofr-03-095/OFR\\_03\\_095\\_text.pdf](https://pubs.usgs.gov/of/2003/ofr-03-095/OFR_03_095_text.pdf)

<sup>2</sup> [https://www.deschutesmeridian.com/IAOS/pdf/tucker\\_1976.pdf](https://www.deschutesmeridian.com/IAOS/pdf/tucker_1976.pdf)

<sup>3</sup> <https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf>

<sup>4</sup> <https://pubs.usgs.gov/wri/2002/4015/wri02-4015.pdf>

<sup>5</sup> [https://ngmdb.usgs.gov/Prodesc/proddesc\\_1708.htm](https://ngmdb.usgs.gov/Prodesc/proddesc_1708.htm)

<sup>6</sup> <https://pubs.usgs.gov/fs/2011/3145/fs2011-3145.pdf>

Published geological interpretations align with surface observations made onsite in October 2023 and the unconsolidated stratigraphy revealed during a geotechnical investigation conducted at the site in September 2023 (Delve Underground, 2023). A geophysical study carried out by Siemens and Associates in 2023 estimated at least 300 feet of unconsolidated alluvial deposits overlying bedrock beneath the proposed development area. Moreover, sediment thickness within areas of the Millican Valley is reported to exceed 445 feet.<sup>7</sup> During the geotechnical investigation, which was conducted to verify observations made during the geophysical survey, three boreholes (B-1, B-2, and B-3) were advanced to depths of 100 to 150 feet in the northern and central portions of the proposed development area (Figure 2). The subsurface strata encountered generally consisted of subrounded basalt and tuff gravel mixed with varying proportions of silt and sand in 6- to 12-inch layers typical of alluvial deposits. Groundwater or saturated strata was not encountered in the three investigated borings. Bedrock was not encountered during the investigation, but according to nearby well logs is likely to be basalt associated with the HLP. The Site's surface soil includes a notable quantity of pebbles and cobbles, which gradually diminishes in size and quantity downslope towards the lacustrine Millican Valley floor to the northwest.

#### 4 HYDROGEOLOGY

The Site is located near the far eastern edge of the Upper Deschutes Basin. The regional groundwater flow direction from the Millican Valley is to the north-northwest, roughly following topography and the path of Dry River, which once catastrophically drained Lake Millican to the northwest, eventually reaching the Crooked River east of Redmond. A simplified model of the Upper Deschutes Basin<sup>8</sup> estimates the regional groundwater elevation at the proposed development area to be approximately 3,800 feet above mean level (see Figure 3). This model uses the recorded static water levels from the installation of select nearby water wells to create an approximate groundwater surface.

A well located near the southwestern corner of the Site (DESC 194; a.k.a., the Powell Well or Deep Well) and situated approximately 1.1 miles from the proposed development area at an elevation of roughly 4,800 feet (600 feet above the Millican Valley floor), reports a depth to water of 970 feet (measured during installation in 1990), indicating a groundwater elevation of approximately 3,830 feet. The geophysical investigation conducted by Siemens and Associates indicates that first bedrock is located at a depth of greater than 300 feet below the surface of the proposed development area, corresponding to an approximate elevation range of 4,150 to 4,300 feet.

Water wells within the presumed footprint of prehistoric Lake Millican (below an elevation of approximately 4,300 feet) have reportedly encountered a saturated zone near the bottom of the approximately 450-foot-thick sedimentary sequence, with yields of less than 20 gal/min.<sup>9</sup> This was confirmed by review of the DESC 1603 and DESC 1371 well logs (summarized in the table below), which are located approximately 2.7 miles and 1.9 miles northwest of the proposed development area, respectively. This suggests that the bedrock underlying alluvial sediment within the Lake Millican footprint may separate a shallow water bearing zone from the deeper regional aquifer. Well logs of water wells to the east and northeast of the proposed development area report screened intervals generally consistent with the expected regional aquifer elevation, based on the simplified model, rather than being evident of a shallow water bearing zone. This observation was confirmed by reviewing eight water well logs from wells advanced between elevations of approximately 4,300 and 4500 feet. The approximate location of reviewed wells is based on the Oregon Water Resources Department's (OWRD) water well report location descriptions and have not been field verified (See Figure 3).

<sup>7</sup> <https://pubs.usgs.gov/wri/2002/4015/wri02-4015.pdf>

<sup>8</sup> <https://pubs.usgs.gov/wri/2002/4015/wri02-4015.pdf>

<sup>9</sup> <https://pubs.usgs.gov/wri/2002/4015/wri02-4015.pdf>

The field verified on site Powell Well (DESC 194), appears to be correlated with the regional aquifer and has a reported estimated yield of 50 gal/min based on a well test conducted at time of well completion. See table below for a summary of reviewed well logs.

Well ID	Owner Name	Completion Date	First Water	Static Water	Screened Interval	Reported Yield (gpm)	Potential Confining Layers Above Groundwater?	Interpreted Bedrock Depth
DESC 194	Lloyd Powell	8/6/1990	970	970	Open hole to 995	50	Yes	Near surface
DESC 1371	Panelope A Behre	6/10/1992	398	398	Open hole to 425	10	Yes	Not encountered
DESC 1603	Earl Conyers	12/16/1992	371	352	330-347	12	Yes	397
DESC 6477	Jack Vogt	9/1/1972	NR	485	Open hole to 498	3	Unknown	Unknown
DESC 6478/50803	Hershel Haley	11/15/1969	NR	NR	No water	No water	No water	235
DESC 6479/50804	Hershel Haley	11/19/1969	NR	450	Open hole to 655	12	Yes	275
DESC 52142	Larry Waugman	1/16/1999	465	435	425-505	20	Yes	505
DESC 54733	Pieratt Bros, Inc	2/28/2002	495	495	505-545	15	Unknown	Not encountered
DESC 58094	Doug McGee	6/27/2007	499	480	524-544	15	Yes	Not encountered
DESC 58210	Bill Grafton	9/7/2007	476	423	505-525 545-565	35	Yes	Not encountered
DESC 62152	Mark&Ann Mallot	7/9/2020	460	480	570-590	10	Yes	Not encountered

**Notes:**

All information based on information provided in OWRD water well logs

Measurements in feet below ground surface

gpm - gallons per minute

NR: Not Reported

## 5 SITE GROUNDWATER QUALITY

The Powell Well (DESC 194) was purged a minimum of approximately three well volumes of the last recorded water column height of the well (20 feet). Groundwater was purged at a hose connection for approximately 15 minutes, at a flow rate of approximately 19 liters (5 gallons) per minute. Groundwater purged from this well was discharged onto the ground surface, and over 80 gallons of water was purged from this well prior to sampling.

Field parameters, including temperature, pH, specific conductivity, and turbidity were measured every three minutes as the well was purged. The field parameter data are presented on the groundwater sampling field form, included as an attachment.

Groundwater samples were collected from the Powell Well (DESC 194) following purging and the stabilization of the field indicator parameters, i.e., three consecutive readings within  $\pm 3$  percent (specific conductivity),  $\pm 1$  pH units (pH),  $\pm 10$  percent (turbidity), and  $1^\circ$  Celsius (temperature) of one another. The well was sampled using clean dedicated tubing connected to the spigot near the wellhead.

The samples were collected into laboratory-supplied containers with preservatives as indicated by the laboratory method. For the analysis of dissolved concentrations of anions, cations, and metals, groundwater was field filtered for each analysis using a 0.45-micron filter and a peristaltic pump to control flow. A new, dedicated filter and disposable pump tubing were used for the filtering process. Immediately after sample collection, each sample was placed into a cooler with ice. The samples were then submitted to Pace Analytical National Center for Testing and Innovation (Pace) of Mt. Juliet, Tennessee for analysis. Due to short holding times, the samples collected for nitrate-nitrite were submitted to Edge Analytical (Edge) of Bend, Oregon for

laboratory analysis. A summary of the analytical testing results for the sampling events is presented in Table 1. Copies of the analytical laboratory reports and chain-of-custody documentation are included as attachments.

A PBS chemist reviewed the data in accordance with the procedures specified in the U. S. Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Organic Data Review<sup>10</sup> and Inorganic Data Review<sup>11</sup> as applicable. A data quality review of the sampling data verified the following:


- No constituents were reported above the EPA Maximum Contaminant Level (MCL) or the OAR 340-40 numerical groundwater quality reference levels (Table 1).
- The concentrations of dissolved iron, sulfate, and arsenic are flagged with the qualifier "J," meaning these are estimated values between the reporting detection limit (RDL) and method detection limit (MDL).

All data was considered usable for project objectives.


Table 2 provides the cation-anion balance summary for the well sampling event. The calculations are used as a quality check on the design of the sampling program or the laboratory performance. The calculations consist of the percent difference (PD) between the milliequivalents per liter (meq/l) concentrations of cations and anions. For analytes that were not detected, the MRL for the analyte was used in the calculation. Carbonate and ammonia were not detected above the MRL. The PD value for the sample results was +16.15 percent. Total cation concentrations (positive PD values) were greater than total anion concentrations (negative PD values). The typical acceptable range for the PD is +/- 10 percent for wells constructed for groundwater monitoring (i.e. monitoring wells). Given the samples were collected from a water supply well rather than a well designed for groundwater monitoring the slightly higher PD is to be expected.

Please feel free to contact either of us at 541.388.9290 or via email at [kyle.johnson@pbsusa.com](mailto:kyle.johnson@pbsusa.com) or [toby.scott@pbsusa.com](mailto:toby.scott@pbsusa.com) with any questions or comments.

Sincerely,

  
\_\_\_\_\_  
Kyle Johnson, RG  
Project Geologist

2/6/2024  
Date

  
\_\_\_\_\_  
Toby Scott, RG  
Senior Project Manager

2/6/2024  
Date



<sup>10</sup> Environmental Protection Agency (EPA). (October 1999). Contract Laboratory Program National Functional Guidelines for Organic Data Review.

<sup>11</sup> EPA. (October 2004). Inorganic Data Review.

# Figures

Figure 1: Vicinity Map

Figure 2: Surface Geologic Map



Figure 3: Regional Aquifer Elevation Map

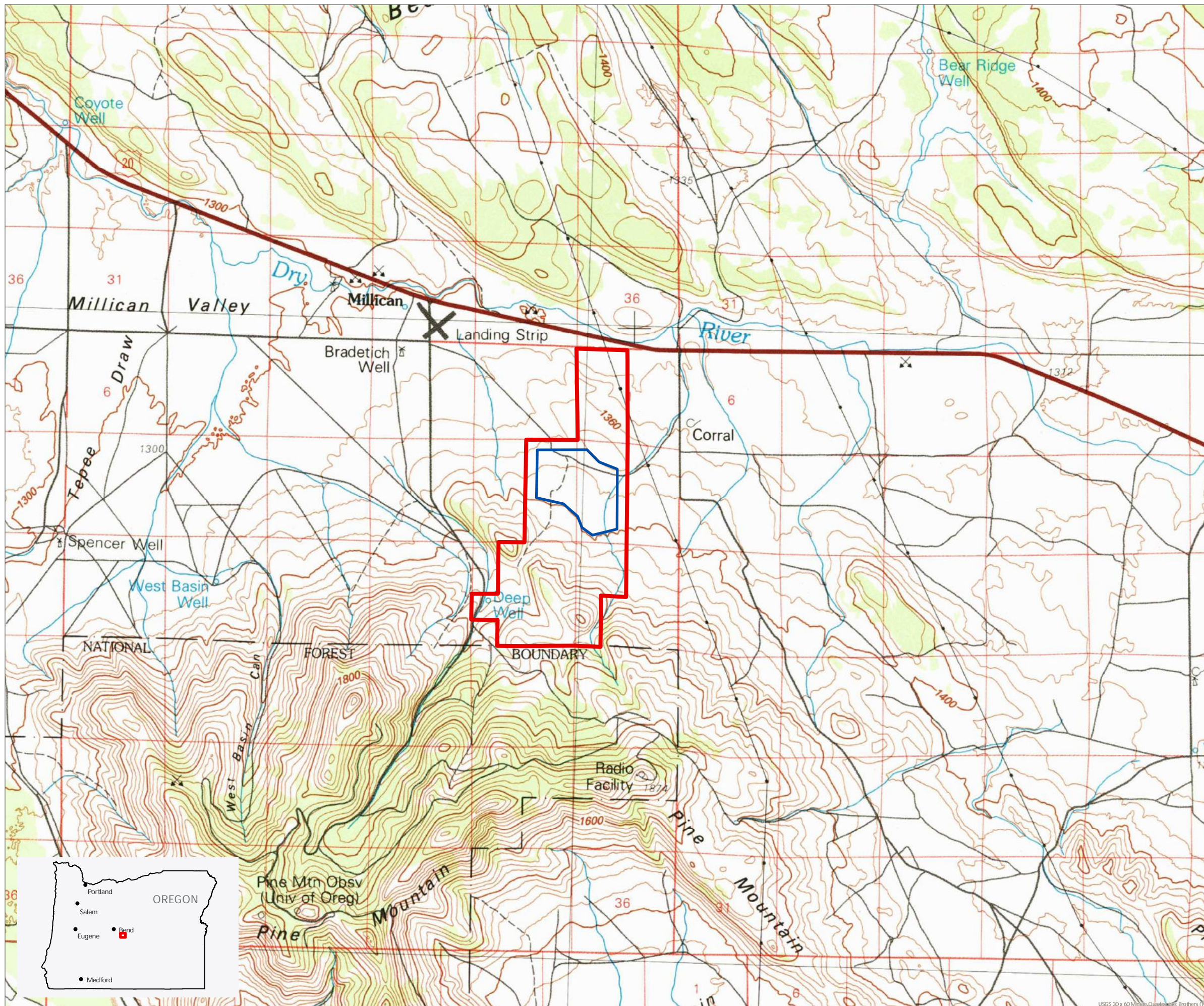
# Vicinity Map

Roth East Site

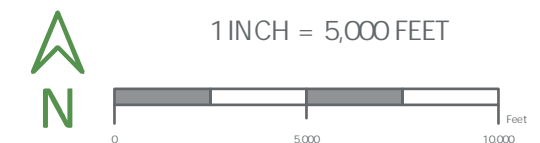
Date: February 2024 | Project: 81087.000

Figure: 1

-  Site/Taxlot Boundary
-  Proposed Development Area



20 Meter (approx. 65') Elevation Contour Interval



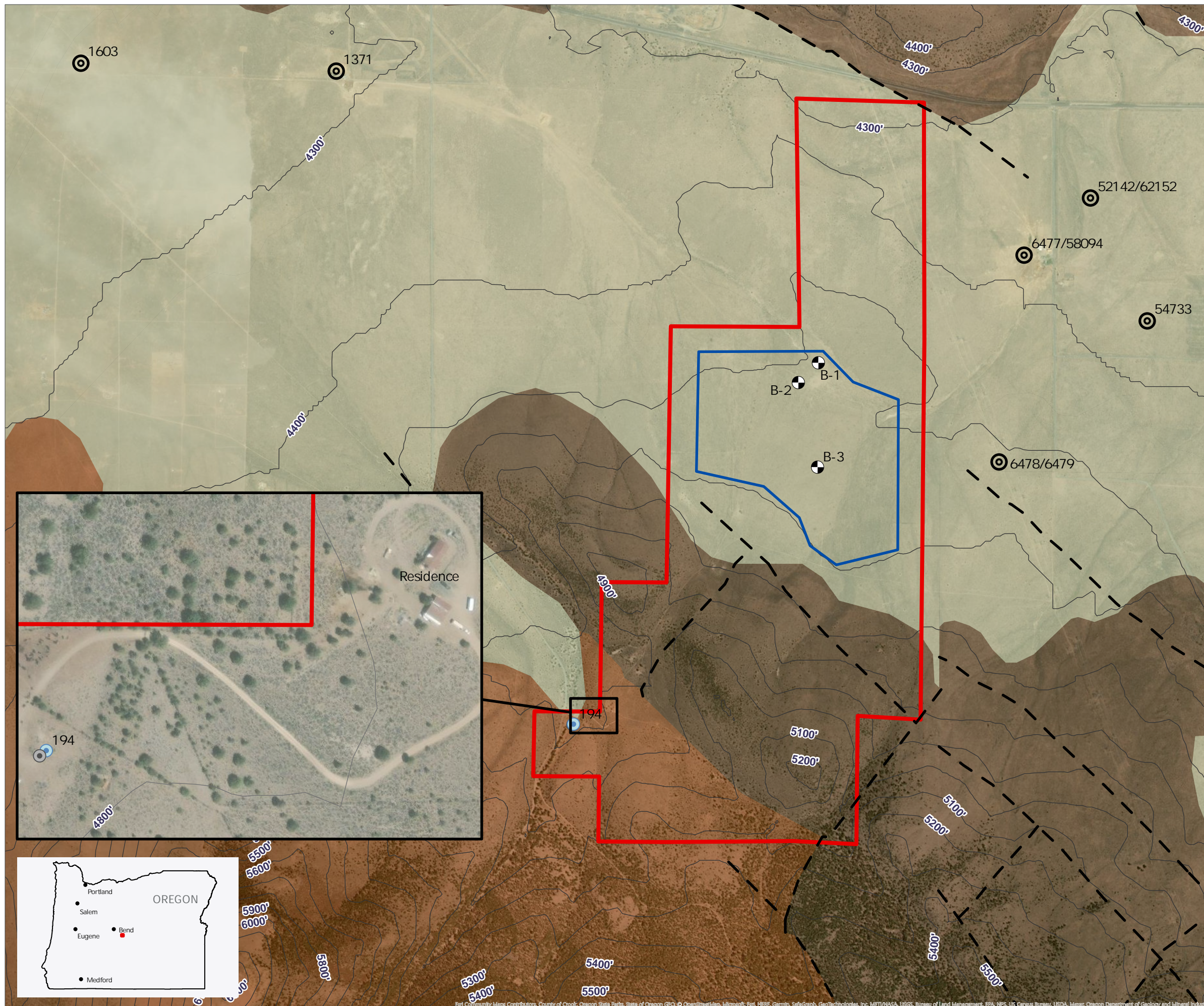
This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

# Surface Geologic Map

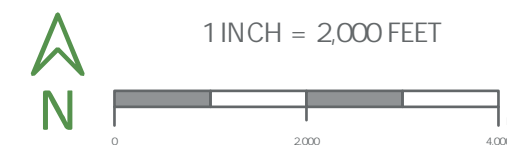
## Roth East Site

Date: February 2024 | Project: 81087.000

Figure: 2



- Onsite Active Water Well
- Onsite Inactive Water Well
- ⊙ Approximate Locations of Reviewed Well Log
- Elevation Contour (100 ft interval)
- - - Pre-Holocene Faults (DOGAMI, 2020)
- Quaternary Surficial Deposits
- Neogene Silicic Vent Deposits
- Neogene High Lava Plains Basalt
- ▭ Proposed Development Area
- ▭ Site/Taxlot Boundary



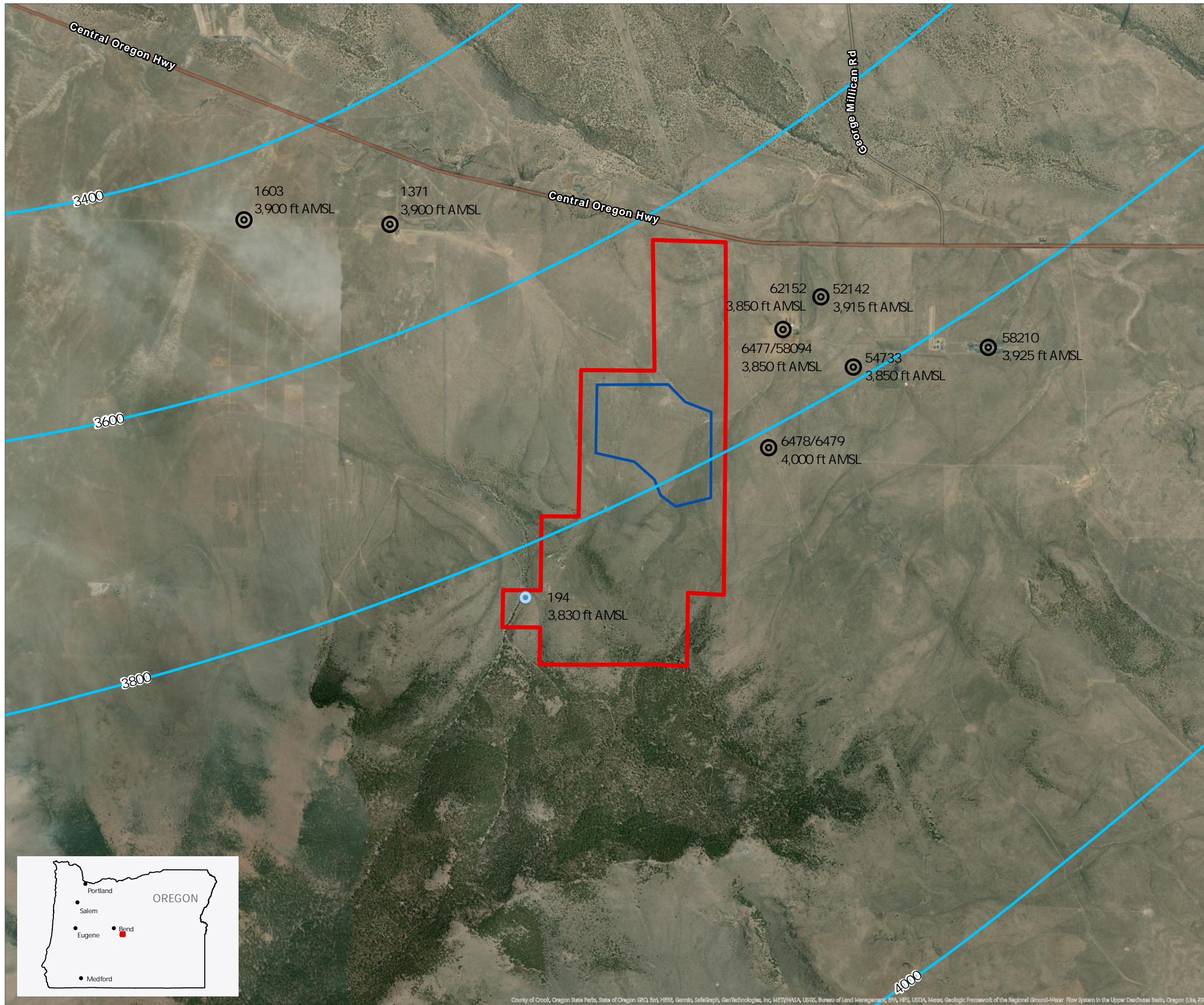
This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

# Regional Aquifer Elevation Map

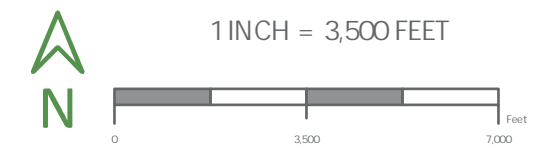
Roth East Site

Date: February 2024 | Project: 81087.000

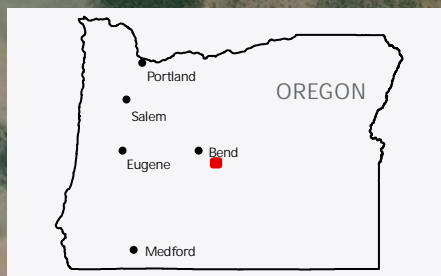
Figure: 3



- Onsite Active Water Well
- Onsite Inactive Water Well
- Approximate Locations of Reviewed Well Log (With Approximate Groundwater Static Elevation Above Mean Sea Level)
- Regional Aquifer Hydraulic Head Elevation Contour (200 ft Interval) (USGS, 2002)
- ▭ Proposed Development Area
- ▭ Site/Taxlot Boundary



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



# Tables

Table 1: Summary of Groundwater Monitoring Data

Table 2: Cation/Anion Balance

<b>Table 1</b>		<b>PBS Project No. 81087.000</b>		
<b>Summary of Groundwater Monitoring Data</b>		<b>Report Date: February 2024</b>		
<b>Roth East Site, Deschutes County, Oregon</b>				
	<b>Units</b>	<b>EPA MCLs (2003)<sup>1</sup></b>	<b>OAR 340-40<sup>2</sup></b>	<b>RE-Powell-01 (Powell / Deep Well)</b>
<b>Field Indicators (Group 1A)</b>				
Field pH	pH Units	6.5-8.5	6.5-8.5	8.35
Field Specific Conductivity	uS/cm			255
Field Temperature	°C			18.1
Field Turbidity	NTU			128
<b>Lab Indicators (Group 1B)</b>				
Chemical Oxygen Demand	mg/l			< 20
Total Alkalinity (Dissolved)	mg/l			126
Hardness <sup>3</sup>	mg/l			62.5
Specific Conductivity	uS/cm			265
Total Dissolved Solids	mg/l	500	500	178
Total Organic Carbon	mg/l			< 1
Total Suspended Solids	mg/l			< 2.5
Total Total Alkalinity	mg/l			126
<b>Cations / Anions (Group 2A)</b>				
Ammonia-N (Dissolved)	mg/l			< 0.25
Calcium	mg/l			13.8 (13.7)
Chloride	mg/l	250	250	5.4
Bicarbonate Alkalinity	mg/l			124
Carbonate Alkalinity <sup>3</sup>	mg/l			< 20
Fluoride	mg/l	4	4	0.158
Iron (Dissolved)	mg/l	0.3	0.3	0.0216 J
Magnesium	mg/l			6.91 (6.77)
Manganese (Dissolved)	mg/l	0.05	0.05	< 0.01
N-Nitrate	mg/l	10	10	0.39
N-Nitrite	mg/l			< 0.010
Potassium (Dissolved)	mg/l			4.99
Silica (Dissolved) <sup>3</sup>	mg/l			47.9
Silicon (Dissolved)	mg/l			22.4
Sodium (Dissolved)	mg/l			29.9
Sulfate	mg/l	250	250	3.77 J
<b>Total Metals (Group 2B)</b>				
Antimony	ug/l	6		< 4
Arsenic	ug/l	10	50	1.93 J
Barium	ug/l	2000	1000	3.66
Beryllium	ug/l	4		< 2
Cadmium	ug/l	5	10	< 1
Chromium	ug/l	100	50	2.22
Cobalt	ug/l			< 2
Copper	ug/l	1000	1000	12.3
Lead	ug/l	15	50	4.17
Nickel	ug/l			< 2
Selenium	ug/l	50	10	< 2
Silver	ug/l	100	50	< 2
Thallium	ug/l	2		< 2
Vanadium	ug/l			33.5
Zinc	ug/l	5000	5000	86.9
<b>Volatile Organic Compounds (Group 3)</b>				
All Compounds	ug/l			ND
<b>Notes:</b>				
Sample collected October 5, 2023				
<b>Bold</b> values indicate exceedance of MCL or OAR values and are further discussed in the report.				
Dissolved concentrations shown in (parentheses).				
mg/l=milligrams per liter				
ug/l=micrograms per liter				
uS/cm=microSiemens per centimeter				
°C=Degrees Celsius				
NTU=nephelometric turbidity units				
ND=Not Detected at or above the reported detection limit (RDL)				
J = Values with a 'J' are estimated values between the Reported Detection Limit and the Method Detection Limit.				
(1) U.S. Environmental Protection Agency Maximum Contaminant Levels (MCLs) drinking water for public water systems				
(2) Oregon Administrative Rule 340-40, Tables 1 and 3 (Numerical Groundwater Quality Reference and Guidance Levels)				
(3) Calculated value				

**Table 2**  
**Cation/Anion Balance**  
**Roth East Site, Deschutes County, Oregon**

**PBS Project No. 81087.000**  
**Report Date: February 2024**

Well and Sample Date	Ca <sup>+</sup>		Mg <sup>2+</sup>		Na <sup>+</sup>		Fe <sup>2+</sup>		K <sup>+</sup>		Total Cations	CO <sub>3</sub>		HCO <sub>3</sub> <sup>-</sup>		NH <sub>3</sub>		SO <sub>4</sub> <sup>2-</sup>		Cl <sup>-</sup>		Total Anions	Percent Difference (%)
	mg/l	meq/l	mg/l	meq/l	mg/l	meq/l	mg/l	meq/l	mg/l	meq/l	meq/l	mg/l	meq/l	mg/l	meq/l	mg/l	meq/l	mg/l	meq/l	mg/l	meq/l	meq/l	
RE-Powell/ Deep Well (DESC194)																							
10/5/2023	<b>13.8</b>	0.690	<b>6.77</b>	0.564	<b>29.9</b>	1.300	<b>21.6</b>	0.771	<b>4.99</b>	0.128	3.454	20 U	0.667	<b>124</b>	2.033	0.25 U	0.005	<b>3.77</b>	0.079	<b>5.40</b>	0.154	2.937	16.15

**Notes:**  
**Bold** values indicate laboratory detected concentrations above the method reporting limit.  
 U = not detected at the method reporting limit as shown  
 mg/l = milligrams per liter  
 meq/l = milliequivalents per liter  
 The method reporting limit is used for non-detect values to calculate the meq/l values.  
 Although non-rounded values were used in the calculations, the values displayed are rounded to three significant figures.

# **Appendix A**

**Photo Pages**



Photo 1. The active water well location (Powell or Deep well) as seen from the south. Vault is shown by arrow.



Photo 2. The interior of the water well vault, as seen from the north. The well is shown by arrow.



Photo 3. The proposed development area of the Site, as seen from near the northwest corner, looking southeast.



Photo 4. Millican Valley as seen from the proposed development area access road, looking northwest.

# **Appendix B**

## **Groundwater Sampling Field Form**



# **Appendix C**

## **Laboratory Analytical Reports**

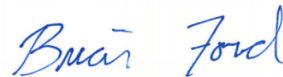
- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

## PBS Engineering & Env.- POR

Sample Delivery Group: L1663868  
Samples Received: 10/06/2023  
Project Number: 81087.000  
Description: Roth East

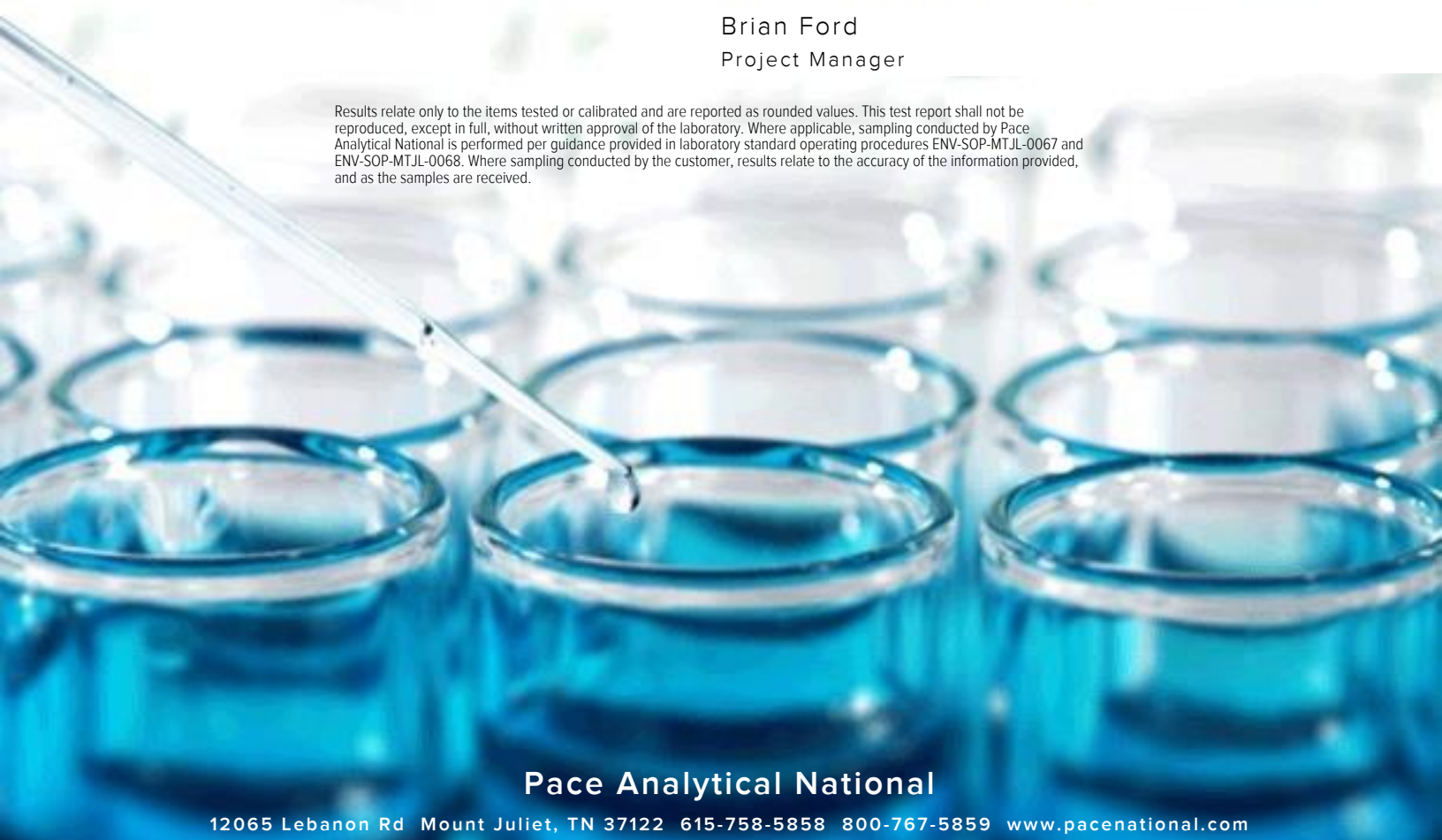
Report To: Holly Burnett  
390 NE Emerson Ave  
Suite 201  
Bend, OR 97701

Entire Report Reviewed By:



Brian Ford  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

# TABLE OF CONTENTS

<b>Cp: Cover Page</b>	<b>1</b>
<b>Tc: Table of Contents</b>	<b>2</b>
<b>Ss: Sample Summary</b>	<b>3</b>
<b>Cn: Case Narrative</b>	<b>4</b>
<b>Sr: Sample Results</b>	<b>5</b>
<b>RE-POWELL-01 L1663868-01</b>	<b>5</b>
<b>RE-POWELL-01 FF L1663868-02</b>	<b>8</b>
<b>RE-POWELL-01 FF L1663868-03</b>	<b>9</b>
<b>Qc: Quality Control Summary</b>	<b>10</b>
<b>Gravimetric Analysis by Method 2540 C-2011</b>	<b>10</b>
<b>Gravimetric Analysis by Method 2540 D-2011</b>	<b>11</b>
<b>Wet Chemistry by Method 2320 B-2011</b>	<b>12</b>
<b>Wet Chemistry by Method 300.0</b>	<b>15</b>
<b>Wet Chemistry by Method 350.1</b>	<b>16</b>
<b>Wet Chemistry by Method 410.4</b>	<b>18</b>
<b>Wet Chemistry by Method 9050A</b>	<b>19</b>
<b>Wet Chemistry by Method 9056A</b>	<b>20</b>
<b>Wet Chemistry by Method 9060A</b>	<b>22</b>
<b>Metals (ICP) by Method 6010D</b>	<b>23</b>
<b>Metals (ICPMS) by Method 6020B</b>	<b>26</b>
<b>Volatile Organic Compounds (GC/MS) by Method 8260D</b>	<b>28</b>
<b>Gl: Glossary of Terms</b>	<b>32</b>
<b>Al: Accreditations &amp; Locations</b>	<b>33</b>
<b>Sc: Sample Chain of Custody</b>	<b>34</b>



# SAMPLE SUMMARY

## RE-POWELL-01 L1663868-01 GW

Collected by: Holly Burnett  
 Collected date/time: 10/05/23 08:38  
 Received date/time: 10/06/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2146837	1	10/17/23 12:56	10/17/23 12:56	DJS	Mt. Juliet, TN
Calculated Results	WG2146862	1	10/12/23 20:57	10/12/23 20:57	ZSA	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG2149548	1	10/11/23 18:54	10/12/23 12:22	MMF	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 D-2011	WG2149502	1	10/11/23 16:39	10/12/23 19:37	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2147880	1	10/11/23 11:59	10/11/23 11:59	BJM	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2148178	1	10/10/23 07:59	10/10/23 12:58	JGM	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG2144468	1	10/12/23 10:59	10/12/23 10:59	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9060A	WG2149942	1	10/12/23 16:33	10/12/23 16:33	ASH	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG2146837	1	10/11/23 10:39	10/14/23 11:08	DJS	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG2146837	1	10/11/23 10:39	10/16/23 21:48	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG2146837	1	10/11/23 10:39	10/17/23 12:56	DJS	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG2146862	1	10/11/23 08:31	10/14/23 12:50	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2146872	1	10/09/23 03:48	10/12/23 00:26	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2147771	1	10/09/23 15:40	10/09/23 15:40	JCP	Mt. Juliet, TN

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

## RE-POWELL-01 FF L1663868-02 GW

Collected by: Holly Burnett  
 Collected date/time: 10/05/23 08:38  
 Received date/time: 10/06/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG2149208	1	10/12/23 10:28	10/12/23 10:28	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2148273	1	10/10/23 16:51	10/10/23 16:51	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2148972	1	10/12/23 19:29	10/12/23 19:29	HMM	Mt. Juliet, TN

## RE-POWELL-01 FF L1663868-03 WW

Collected by: Holly Burnett  
 Collected date/time: 10/05/23 08:38  
 Received date/time: 10/06/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG2153460	1	10/19/23 08:31	10/19/23 08:31	ASM	Mt. Juliet, TN

# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Brian Ford  
Project Manager

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Silica,Dissolved	47900		59.7	428	1	10/17/2023 12:56	<a href="#">WG2146837</a>

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	62500		198	2500	1	10/12/2023 20:57	<a href="#">WG2146862</a>

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	178000			10000	1	10/12/2023 12:22	<a href="#">WG2149548</a>

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	ND			2500	1	10/12/2023 19:37	<a href="#">WG2149502</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Alkalinity	126000		8450	20000	1	10/11/2023 11:59	<a href="#">WG2147880</a>

Sample Narrative:

L1663868-01 WG2147880: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
COD	U		11700	20000	1	10/10/2023 12:58	<a href="#">WG2148178</a>

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	265			10.0	1	10/12/2023 10:59	<a href="#">WG2144468</a>

Sample Narrative:

L1663868-01 WG2144468: at 25C

Wet Chemistry by Method 9060A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TOC (Total Organic Carbon)	U		102	1000	1	10/12/2023 16:33	<a href="#">WG2149942</a>

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Calcium	13800		79.3	1000	1	10/14/2023 12:50	<a href="#">WG2146862</a>
Calcium,Dissolved	13700		79.3	1000	1	10/14/2023 11:08	<a href="#">WG2146837</a>
Iron,Dissolved	21.6	J	18.0	100	1	10/14/2023 11:08	<a href="#">WG2146837</a>
Magnesium	6910		85.3	1000	1	10/14/2023 12:50	<a href="#">WG2146862</a>
Magnesium,Dissolved	6770		85.3	1000	1	10/16/2023 21:48	<a href="#">WG2146837</a>

## RE-POWELL-01

## SAMPLE RESULTS - 01

Collected date/time: 10/05/23 08:38

L1663868

## Metals (ICP) by Method 6010D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Manganese,Dissolved	U		0.934	10.0	1	10/14/2023 11:08	<a href="#">WG2146837</a>
Potassium,Dissolved	4990		261	2000	1	10/14/2023 11:08	<a href="#">WG2146837</a>
Silicon,Dissolved	22400		27.9	200	1	10/17/2023 12:56	<a href="#">WG2146837</a>
Sodium,Dissolved	29900		504	3000	1	10/14/2023 11:08	<a href="#">WG2146837</a>

## Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		1.03	4.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Arsenic	1.93	J	0.180	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Barium	3.66		0.381	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Beryllium	U		0.190	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Cadmium	U		0.150	1.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Chromium	2.22		1.24	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Copper	12.3		1.51	5.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Cobalt	U		0.0596	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Lead	4.17		0.849	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Nickel	U		0.816	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Selenium	U		0.300	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Silver	U		0.0700	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Thallium	U		0.121	2.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Vanadium	33.5		0.664	5.00	1	10/12/2023 00:26	<a href="#">WG2146872</a>
Zinc	86.9		3.02	25.0	1	10/12/2023 00:26	<a href="#">WG2146872</a>

## Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Acrolein	U		2.54	50.0	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Acrylonitrile	U		0.671	10.0	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Benzene	U		0.0941	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Bromobenzene	U		0.118	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Bromodichloromethane	U		0.136	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Bromoform	U		0.129	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Bromomethane	U		0.605	5.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
n-Butylbenzene	U		0.157	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
sec-Butylbenzene	U		0.125	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
tert-Butylbenzene	U		0.127	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Carbon tetrachloride	U		0.128	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Chlorobenzene	U		0.116	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Chlorodibromomethane	U		0.140	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Chloroethane	U		0.192	5.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Chloroform	U		0.111	5.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Chloromethane	U		0.960	2.50	1	10/09/2023 15:40	<a href="#">WG2147771</a>
2-Chlorotoluene	U		0.106	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
4-Chlorotoluene	U		0.114	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
1,2-Dibromoethane	U		0.126	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Dibromomethane	U		0.122	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
1,2-Dichlorobenzene	U		0.107	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
1,3-Dichlorobenzene	U		0.110	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
1,4-Dichlorobenzene	U		0.120	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
Dichlorodifluoromethane	U		0.374	5.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
1,1-Dichloroethane	U		0.100	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>
1,2-Dichloroethane	U		0.0819	1.00	1	10/09/2023 15:40	<a href="#">WG2147771</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

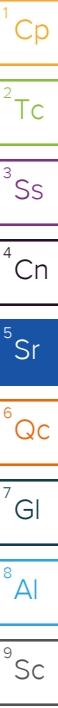
7 Gl

8 Al

9 Sc

## Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,1-Dichloroethene	U		0.188	1.00	1	10/09/2023 15:40	WG2147771
cis-1,2-Dichloroethene	U		0.126	1.00	1	10/09/2023 15:40	WG2147771
trans-1,2-Dichloroethene	U		0.149	1.00	1	10/09/2023 15:40	WG2147771
1,2-Dichloropropane	U		0.149	1.00	1	10/09/2023 15:40	WG2147771
1,1-Dichloropropene	U		0.142	1.00	1	10/09/2023 15:40	WG2147771
1,3-Dichloropropane	U		0.110	1.00	1	10/09/2023 15:40	WG2147771
cis-1,3-Dichloropropene	U		0.111	1.00	1	10/09/2023 15:40	WG2147771
trans-1,3-Dichloropropene	U		0.118	1.00	1	10/09/2023 15:40	WG2147771
2,2-Dichloropropane	U		0.161	1.00	1	10/09/2023 15:40	WG2147771
Di-isopropyl ether	U		0.105	1.00	1	10/09/2023 15:40	WG2147771
Ethylbenzene	U		0.137	1.00	1	10/09/2023 15:40	WG2147771
Hexachloro-1,3-butadiene	U		0.337	1.00	1	10/09/2023 15:40	WG2147771
Isopropylbenzene	U		0.105	1.00	1	10/09/2023 15:40	WG2147771
p-Isopropyltoluene	U		0.120	1.00	1	10/09/2023 15:40	WG2147771
2-Butanone (MEK)	U		1.19	10.0	1	10/09/2023 15:40	WG2147771
Methylene Chloride	U		0.430	5.00	1	10/09/2023 15:40	WG2147771
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	10/09/2023 15:40	WG2147771
Methyl tert-butyl ether	U		0.101	1.00	1	10/09/2023 15:40	WG2147771
Naphthalene	U	C3	1.00	5.00	1	10/09/2023 15:40	WG2147771
n-Propylbenzene	U		0.0993	1.00	1	10/09/2023 15:40	WG2147771
Styrene	U		0.118	1.00	1	10/09/2023 15:40	WG2147771
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	10/09/2023 15:40	WG2147771
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	10/09/2023 15:40	WG2147771
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	10/09/2023 15:40	WG2147771
Tetrachloroethene	U		0.300	1.00	1	10/09/2023 15:40	WG2147771
Toluene	U		0.278	1.00	1	10/09/2023 15:40	WG2147771
1,2,3-Trichlorobenzene	U		0.230	1.00	1	10/09/2023 15:40	WG2147771
1,2,4-Trichlorobenzene	U		0.481	1.00	1	10/09/2023 15:40	WG2147771
1,1,1-Trichloroethane	U		0.149	1.00	1	10/09/2023 15:40	WG2147771
1,1,2-Trichloroethane	U		0.158	1.00	1	10/09/2023 15:40	WG2147771
Trichloroethene	U		0.190	1.00	1	10/09/2023 15:40	WG2147771
Trichlorofluoromethane	U		0.160	5.00	1	10/09/2023 15:40	WG2147771
1,2,3-Trichloropropane	U		0.237	2.50	1	10/09/2023 15:40	WG2147771
1,2,4-Trimethylbenzene	U		0.322	1.00	1	10/09/2023 15:40	WG2147771
1,2,3-Trimethylbenzene	U		0.104	1.00	1	10/09/2023 15:40	WG2147771
1,3,5-Trimethylbenzene	U		0.104	1.00	1	10/09/2023 15:40	WG2147771
Vinyl chloride	U		0.234	1.00	1	10/09/2023 15:40	WG2147771
Xylenes, Total	U		0.174	3.00	1	10/09/2023 15:40	WG2147771
(S) Toluene-d8	110			80.0-120		10/09/2023 15:40	WG2147771
(S) 4-Bromofluorobenzene	99.9			77.0-126		10/09/2023 15:40	WG2147771
(S) 1,2-Dichloroethane-d4	115			70.0-130		10/09/2023 15:40	WG2147771



## Volatile Organic Compounds (GC/MS) by Method 8260D - TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch	CAS #	RT
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Number of TICs found: 0

Tentatively Identified compounds (TIC) refers to substances not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search routine of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist. Quantitation is accomplished by relative peak area of the TIC compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is 10% or more of that of the nearest internal standard.

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	126000		8450	20000	1	10/12/2023 10:28	<a href="#">WG2149208</a>
Alkalinity,Bicarbonate	124000		8450	20000	1	10/12/2023 10:28	<a href="#">WG2149208</a>
Alkalinity,Carbonate	U		8450	20000	1	10/12/2023 10:28	<a href="#">WG2149208</a>

Sample Narrative:

L1663868-02 WG2149208: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Ammonia Nitrogen	U		117	250	1	10/10/2023 16:51	<a href="#">WG2148273</a>

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	5400		379	1000	1	10/12/2023 19:29	<a href="#">WG2148972</a>
Fluoride	158		64.0	150	1	10/12/2023 19:29	<a href="#">WG2148972</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sulfate	3770	J	594	5000	1	10/19/2023 08:31	<a href="#">WG2153460</a>

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Method Blank (MB)

(MB) R3986737-1 10/12/23 12:22

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Dissolved Solids	U		10000	10000

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

L1663610-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1663610-04 10/12/23 12:22 • (DUP) R3986737-3 10/12/23 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	331000	346000	1	4.43		5

<sup>4</sup>Cn

<sup>5</sup>Sr

L1663622-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1663622-01 10/12/23 12:22 • (DUP) R3986737-4 10/12/23 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	507000	508000	1	0.197		5

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

Laboratory Control Sample (LCS)

(LCS) R3986737-2 10/12/23 12:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Dissolved Solids	8800000	8090000	91.9	77.3-123	

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3985873-1 10/12/23 19:37

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Suspended Solids	U		2500	2500

1 Cp

2 Tc

3 Ss

L1664102-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1664102-02 10/12/23 19:37 • (DUP) R3985873-3 10/12/23 19:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Suspended Solids	580000	608000	1	4.71		5

4 Cn

5 Sr

6 Qc

L1664162-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1664162-01 10/12/23 19:37 • (DUP) R3985873-4 10/12/23 19:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Suspended Solids	70800	70800	1	0.000		5

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3985873-2 10/12/23 19:37

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Suspended Solids	773000	756000	97.8	85.7-114	

Method Blank (MB)

(MB) R3984786-2 10/11/23 09:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1662902-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1662902-01 10/11/23 10:20 • (DUP) R3984786-3 10/11/23 10:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	82100	83300	1	1.44		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1663868-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1663868-01 10/11/23 11:59 • (DUP) R3984786-4 10/11/23 12:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	126000	125000	1	0.867		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3984786-1 10/11/23 09:45

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100000	103000	103	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3985483-2 10/12/23 09:57

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity	U		8450	20000
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1664538-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1664538-01 10/12/23 10:08 • (DUP) R3985483-4 10/12/23 10:14

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	499000	496000	1	0.560		20
Alkalinity,Bicarbonate	499000	496000	1	0.560		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1664538-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1664538-04 10/12/23 12:20 • (DUP) R3985483-6 10/12/23 12:27

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	215000	215000	1	0.110		20
Alkalinity,Bicarbonate	212000	211000	1	0.167		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5



Laboratory Control Sample (LCS)

(LCS) R3985483-1 10/12/23 09:49

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100000	101000	101	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3988356-1 10/18/23 20:02

Analyte	MB Result ug/l	<u>MB Qualifier</u>	MB MDL ug/l	MB RDL ug/l
Sulfate	U		594	5000

Laboratory Control Sample (LCS)

(LCS) R3988356-2 10/18/23 20:19

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40000	41100	103	90.0-110	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3984456-1 10/10/23 16:37

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Ammonia Nitrogen	U		117	250

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1663566-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1663566-01 10/10/23 16:45 • (DUP) R3984456-5 10/10/23 16:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	U	U	1	0.000		10

L1664103-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1664103-04 10/10/23 17:03 • (DUP) R3984456-8 10/10/23 17:04

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	3470	3400	1	2.04		10

Laboratory Control Sample (LCS)

(LCS) R3984456-2 10/10/23 16:39

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ammonia Nitrogen	7500	7360	98.1	90.0-110	

L1663510-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663510-01 10/10/23 16:40 • (MS) R3984456-3 10/10/23 16:42 • (MSD) R3984456-4 10/10/23 16:43

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Ammonia Nitrogen	5000	U	4990	4950	99.8	99.1	1	90.0-110			0.784	10

L1664103-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1664103-03 10/10/23 17:00 • (MS) R3984456-7 10/10/23 17:01

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Ammonia Nitrogen	5000	3900	8310	88.1	1	90.0-110	<u>J6</u>

L1664103-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1664103-03 10/10/23 17:00 • (MS) R3984456-7 10/10/23 17:01

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
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Sample Narrative:

MS: Spike failed due to matrix

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3984221-1 10/10/23 12:50

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
COD	U		11700	20000

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1663353-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1663353-01 10/10/23 12:52 • (DUP) R3984221-3 10/10/23 12:53

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	62400	58400	1	6.48		20

L1663868-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1663868-01 10/10/23 12:58 • (DUP) R3984221-6 10/10/23 12:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	U	U	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3984221-2 10/10/23 12:50

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
COD	500000	521000	104	90.0-110	

L1663610-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663610-06 10/10/23 12:56 • (MS) R3984221-4 10/10/23 12:56 • (MSD) R3984221-5 10/10/23 12:56

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
COD	500000	29600	520000	538000	98.0	102	1	90.0-110			3.52	20

Method Blank (MB)

(MB) R3985322-1 10/12/23 10:59

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1663302-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1663302-01 10/12/23 10:59 • (DUP) R3985322-3 10/12/23 10:59

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	43300	43300	1	0.000		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1664194-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1664194-01 10/12/23 10:59 • (DUP) R3985322-4 10/12/23 10:59

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	200	204	1	1.83		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3985322-2 10/12/23 10:59

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	732	754	103	85.0-115	

Sample Narrative:

LCS: at 25C

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3986631-1 10/12/23 09:29

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Chloride	U		379	1000
Fluoride	U		64.0	150

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1662489-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1662489-01 10/12/23 13:33 • (DUP) R3986631-3 10/12/23 13:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	41300	40600	1	1.69		15
Fluoride	U	U	1	0.000		15

L1663868-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1663868-02 10/12/23 19:29 • (DUP) R3986631-6 10/12/23 19:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	5400	5260	1	2.65		15
Fluoride	158	158	1	0.000		15

Laboratory Control Sample (LCS)

(LCS) R3986631-2 10/12/23 09:43

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Chloride	40000	39600	99.1	80.0-120	
Fluoride	8000	7740	96.8	80.0-120	

L1662489-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1662489-01 10/12/23 13:33 • (MS) R3986631-4 10/12/23 14:00 • (MSD) R3986631-5 10/12/23 14:14

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Chloride	40000	41300	54500	55300	33.0	35.2	1	80.0-120	J6	J6	1.59	15
Fluoride	8000	U	8890	9050	111	113	1	80.0-120			1.80	15

L1663868-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1663868-02 10/12/23 19:29 • (MS) R3986631-7 10/12/23 20:24

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Chloride	40000	5400	44100	96.7	1	80.0-120	
Fluoride	8000	158	8030	98.4	1	80.0-120	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3985998-2 10/12/23 12:27

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
TOC (Total Organic Carbon)	U		102	1000

L1664045-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1664045-05 10/12/23 18:55 • (DUP) R3985998-5 10/12/23 19:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
TOC (Total Organic Carbon)	1090	1180	1	7.67		20

L1664045-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1664045-08 10/12/23 20:34 • (DUP) R3985998-6 10/12/23 20:54

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
TOC (Total Organic Carbon)	720	652	1	9.90	↓	20

Laboratory Control Sample (LCS)

(LCS) R3985998-1 10/12/23 12:07

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
TOC (Total Organic Carbon)	25000	24600	98.4	85.0-115	

L1663868-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663868-01 10/12/23 16:33 • (MS) R3985998-3 10/12/23 16:57 • (MSD) R3985998-4 10/12/23 17:19

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
TOC (Total Organic Carbon)	25000	U	25000	24900	100	99.7	1	80.0-120			0.320	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3986340-1 10/14/23 11:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Calcium,Dissolved	U		79.3	1000
Iron,Dissolved	U		18.0	100
Manganese,Dissolved	U		0.934	10.0
Potassium,Dissolved	288	U	261	2000
Silicon,Dissolved	U		27.9	200
Sodium,Dissolved	U		504	3000

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

Method Blank (MB)

(MB) R3986916-1 10/16/23 21:42

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Magnesium,Dissolved	U		85.3	1000

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

Method Blank (MB)

(MB) R3987220-1 10/17/23 12:51

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Silicon,Dissolved	U		27.9	200

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3986340-2 10/14/23 11:06

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Calcium,Dissolved	10000	10000	100	80.0-120	
Iron,Dissolved	10000	9830	98.3	80.0-120	
Manganese,Dissolved	1000	1010	101	80.0-120	
Potassium,Dissolved	10000	10100	101	80.0-120	
Silicon,Dissolved	1000	1010	101	80.0-120	
Sodium,Dissolved	10000	10200	102	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3986916-2 10/16/23 21:45

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Magnesium,Dissolved	10000	9640	96.4	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3987220-2 10/17/23 12:53

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Silicon,Dissolved	1000	941	94.1	80.0-120	

L1663868-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663868-01 10/14/23 11:08 • (MS) R3986340-4 10/14/23 11:37 • (MSD) R3986340-5 10/14/23 11:40

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Calcium,Dissolved	10000	13700	24600	24500	109	108	1	75.0-125			0.413	20
Iron,Dissolved	10000	21.6	10000	9920	99.8	99.0	1	75.0-125			0.800	20
Manganese,Dissolved	1000	U	1010	1000	101	100	1	75.0-125			0.773	20
Potassium,Dissolved	10000	4990	14800	14800	98.3	97.8	1	75.0-125			0.305	20
Sodium,Dissolved	10000	29900	39100	39200	92.1	93.1	1	75.0-125			0.268	20

L1663868-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663868-01 10/16/23 21:48 • (MS) R3986916-4 10/16/23 21:53 • (MSD) R3986916-5 10/16/23 21:56

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Magnesium,Dissolved	10000	6770	16200	16100	94.0	93.2	1	75.0-125			0.503	20

L1663868-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663868-01 10/17/23 12:56 • (MS) R3987220-4 10/17/23 13:02 • (MSD) R3987220-5 10/17/23 13:05

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Silicon,Dissolved	1000	22400	23400	23300	97.4	84.9	1	75.0-125	<u>E</u>	<u>E</u>	0.537	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3985686-1 10/12/23 20:10

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Calcium	U		79.3	1000
Magnesium	U		85.3	1000

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3985686-2 10/12/23 20:12

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Calcium	10000	10200	102	80.0-120	
Magnesium	10000	9760	97.6	80.0-120	

4 Cn

5 Sr

6 Qc

L1663800-15 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663800-15 10/12/23 20:15 • (MS) R3985686-4 10/12/23 20:20 • (MSD) R3985686-5 10/12/23 20:23

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Calcium	10000	27700	36600	36500	88.4	87.8	1	75.0-125			0.165	20
Magnesium	10000	13800	22500	22600	86.5	87.4	1	75.0-125			0.416	20

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3985095-1 10/11/23 22:42

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		1.03	4.00
Arsenic	U		0.180	2.00
Barium	U		0.381	2.00
Beryllium	U		0.190	2.00
Cadmium	U		0.150	1.00
Chromium	U		1.24	2.00
Copper	U		1.51	5.00
Cobalt	U		0.0596	2.00
Lead	U		0.849	2.00
Nickel	U		0.816	2.00
Selenium	U		0.300	2.00
Silver	U		0.0700	2.00
Thallium	U		0.121	2.00
Vanadium	U		0.664	5.00
Zinc	U		3.02	25.0

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3985095-2 10/11/23 22:45

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Antimony	50.0	54.9	110	80.0-120	
Arsenic	50.0	54.5	109	80.0-120	
Barium	50.0	54.3	109	80.0-120	
Beryllium	50.0	55.2	110	80.0-120	
Cadmium	50.0	54.5	109	80.0-120	
Chromium	50.0	56.1	112	80.0-120	
Copper	50.0	50.9	102	80.0-120	
Cobalt	50.0	55.1	110	80.0-120	
Lead	50.0	54.8	110	80.0-120	
Nickel	50.0	54.4	109	80.0-120	
Selenium	50.0	57.9	116	80.0-120	
Silver	50.0	58.5	117	80.0-120	
Thallium	50.0	53.8	108	80.0-120	
Vanadium	50.0	55.3	111	80.0-120	
Zinc	50.0	53.4	107	80.0-120	

L1663702-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663702-01 10/11/23 22:48 • (MS) R3985095-4 10/11/23 22:55 • (MSD) R3985095-5 10/11/23 22:58

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	U	53.3	53.2	107	106	1	75.0-125			0.107	20
Arsenic	50.0	U	51.3	53.0	103	106	1	75.0-125			3.28	20
Barium	50.0		71.9	73.5	106	110	1	75.0-125			2.29	20
Beryllium	50.0	U	54.0	53.7	108	107	1	75.0-125			0.646	20
Cadmium	50.0	0.168	55.0	54.3	110	108	1	75.0-125			1.28	20
Chromium	50.0	2.16	54.3	746	104	1490	1	75.0-125		J3 J5	173	20
Copper	50.0	U	50.0	67.6	100	135	1	75.0-125		J3 J5	30.0	20
Cobalt	50.0	0.0862	51.5	57.2	103	114	1	75.0-125			10.4	20
Lead	50.0		53.3	53.8	107	108	1	75.0-125			0.955	20
Nickel	50.0	0.939	53.2	373	104	743	1	75.0-125		J3 J5	150	20
Selenium	50.0		58.9	56.6	118	113	1	75.0-125			4.12	20
Silver	50.0		57.4	56.9	115	114	1	75.0-125			0.730	20
Thallium	50.0	0.165	51.7	52.3	103	104	1	75.0-125			1.25	20
Vanadium	50.0	U	51.9	57.0	104	114	1	75.0-125			9.23	20
Zinc	50.0	3.31	53.2	53.4	99.8	100	1	75.0-125			0.396	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3985563-3 10/09/23 10:35

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		11.3	50.0
Acrolein	U		2.54	50.0
Acrylonitrile	U		0.671	10.0
Benzene	U		0.0941	1.00
Bromobenzene	U		0.118	1.00
Bromodichloromethane	U		0.136	1.00
Bromoform	U		0.129	1.00
Bromomethane	U		0.605	5.00
n-Butylbenzene	U		0.157	1.00
sec-Butylbenzene	U		0.125	1.00
tert-Butylbenzene	U		0.127	1.00
Carbon tetrachloride	U		0.128	1.00
Chlorobenzene	U		0.116	1.00
Chlorodibromomethane	U		0.140	1.00
Chloroethane	U		0.192	5.00
Chloroform	U		0.111	5.00
Chloromethane	U		0.960	2.50
2-Chlorotoluene	U		0.106	1.00
4-Chlorotoluene	U		0.114	1.00
1,2-Dibromo-3-Chloropropane	U		0.276	5.00
1,2-Dibromoethane	U		0.126	1.00
Dibromomethane	U		0.122	1.00
1,2-Dichlorobenzene	U		0.107	1.00
1,3-Dichlorobenzene	U		0.110	1.00
1,4-Dichlorobenzene	U		0.120	1.00
Dichlorodifluoromethane	U		0.374	5.00
1,1-Dichloroethane	U		0.100	1.00
1,2-Dichloroethane	U		0.0819	1.00
1,1-Dichloroethene	U		0.188	1.00
cis-1,2-Dichloroethene	U		0.126	1.00
trans-1,2-Dichloroethene	U		0.149	1.00
1,2-Dichloropropane	U		0.149	1.00
1,1-Dichloropropene	U		0.142	1.00
1,3-Dichloropropane	U		0.110	1.00
cis-1,3-Dichloropropene	U		0.111	1.00
trans-1,3-Dichloropropene	U		0.118	1.00
2,2-Dichloropropane	U		0.161	1.00
Di-isopropyl ether	U		0.105	1.00
Ethylbenzene	U		0.137	1.00
Hexachloro-1,3-butadiene	U		0.337	1.00

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3985563-3 10/09/23 10:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Isopropylbenzene	U		0.105	1.00
p-Isopropyltoluene	U		0.120	1.00
2-Butanone (MEK)	U		1.19	10.0
Methylene Chloride	U		0.430	5.00
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.0993	1.00
Styrene	U		0.118	1.00
1,1,1,2-Tetrachloroethane	U		0.147	1.00
1,1,2,2-Tetrachloroethane	U		0.133	1.00
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00
Tetrachloroethene	U		0.300	1.00
Toluene	U		0.278	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.481	1.00
1,1,1-Trichloroethane	U		0.149	1.00
1,1,2-Trichloroethane	U		0.158	1.00
Trichloroethene	U		0.190	1.00
Trichlorofluoromethane	U		0.160	5.00
1,2,3-Trichloropropane	U		0.237	2.50
1,2,4-Trimethylbenzene	U		0.322	1.00
1,2,3-Trimethylbenzene	U		0.104	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
Vinyl chloride	U		0.234	1.00
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	110			80.0-120
(S) 4-Bromofluorobenzene	99.6			77.0-126
(S) 1,2-Dichloroethane-d4	112			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB) - TENTATIVELY IDENTIFIED COMPOUNDS

(MB) R3985563-3 10/09/23 10:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL	CAS #
	ug/l		ug/l	ug/l	

Number of TICs found: 0

Tentatively Identified compounds (TIC) refers to substances not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search routine of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist. Quantitation is accomplished by relative peak area of the TIC compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is 10% or more of that of the nearest internal standard.

Laboratory Control Sample (LCS)

(LCS) R3985563-1 10/09/23 09:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Acetone	25.0	29.2	117	19.0-160	
Acrolein	25.0	26.5	106	10.0-160	
Acrylonitrile	25.0	29.1	116	55.0-149	
Benzene	5.00	5.66	113	70.0-123	
Bromobenzene	5.00	5.38	108	73.0-121	
Bromodichloromethane	5.00	5.39	108	75.0-120	
Bromoform	5.00	4.94	98.8	68.0-132	
Bromomethane	5.00	5.47	109	10.0-160	
n-Butylbenzene	5.00	5.15	103	73.0-125	
sec-Butylbenzene	5.00	5.63	113	75.0-125	
tert-Butylbenzene	5.00	5.62	112	76.0-124	
Carbon tetrachloride	5.00	5.82	116	68.0-126	
Chlorobenzene	5.00	5.48	110	80.0-121	
Chlorodibromomethane	5.00	5.15	103	77.0-125	
Chloroethane	5.00	5.81	116	47.0-150	
Chloroform	5.00	5.45	109	73.0-120	
Chloromethane	5.00	6.41	128	41.0-142	
2-Chlorotoluene	5.00	5.56	111	76.0-123	
4-Chlorotoluene	5.00	5.42	108	75.0-122	
1,2-Dibromo-3-Chloropropane	5.00	4.57	91.4	58.0-134	
1,2-Dibromoethane	5.00	5.56	111	80.0-122	
Dibromomethane	5.00	5.49	110	80.0-120	
1,2-Dichlorobenzene	5.00	5.34	107	79.0-121	
1,3-Dichlorobenzene	5.00	5.55	111	79.0-120	
1,4-Dichlorobenzene	5.00	5.25	105	79.0-120	
Dichlorodifluoromethane	5.00	5.98	120	51.0-149	
1,1-Dichloroethane	5.00	5.74	115	70.0-126	
1,2-Dichloroethane	5.00	5.53	111	70.0-128	
1,1-Dichloroethene	5.00	5.66	113	71.0-124	
cis-1,2-Dichloroethene	5.00	5.88	118	73.0-120	
trans-1,2-Dichloroethene	5.00	5.73	115	73.0-120	
1,2-Dichloropropane	5.00	5.62	112	77.0-125	
1,1-Dichloropropene	5.00	5.59	112	74.0-126	
1,3-Dichloropropane	5.00	5.61	112	80.0-120	
cis-1,3-Dichloropropene	5.00	5.35	107	80.0-123	
trans-1,3-Dichloropropene	5.00	5.18	104	78.0-124	
2,2-Dichloropropane	5.00	5.97	119	58.0-130	
Di-isopropyl ether	5.00	5.52	110	58.0-138	
Ethylbenzene	5.00	5.19	104	79.0-123	
Hexachloro-1,3-butadiene	5.00	5.71	114	54.0-138	

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Laboratory Control Sample (LCS)

(LCS) R3985563-1 10/09/23 09:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Isopropylbenzene	5.00	5.45	109	76.0-127	
p-Isopropyltoluene	5.00	5.75	115	76.0-125	
2-Butanone (MEK)	25.0	25.7	103	44.0-160	
Methylene Chloride	5.00	5.64	113	67.0-120	
4-Methyl-2-pentanone (MIBK)	25.0	27.7	111	68.0-142	
Methyl tert-butyl ether	5.00	5.38	108	68.0-125	
Naphthalene	5.00	3.11	62.2	54.0-135	
n-Propylbenzene	5.00	5.41	108	77.0-124	
Styrene	5.00	5.04	101	73.0-130	
1,1,1,2-Tetrachloroethane	5.00	5.35	107	75.0-125	
1,1,2,2-Tetrachloroethane	5.00	5.17	103	65.0-130	
1,1,2-Trichlorotrifluoroethane	5.00	5.45	109	69.0-132	
Tetrachloroethene	5.00	5.73	115	72.0-132	
Toluene	5.00	5.56	111	79.0-120	
1,2,3-Trichlorobenzene	5.00	4.65	93.0	50.0-138	
1,2,4-Trichlorobenzene	5.00	4.61	92.2	57.0-137	
1,1,1-Trichloroethane	5.00	5.57	111	73.0-124	
1,1,2-Trichloroethane	5.00	5.28	106	80.0-120	
Trichloroethene	5.00	5.77	115	78.0-124	
Trichlorofluoromethane	5.00	6.48	130	59.0-147	
1,2,3-Trichloropropane	5.00	5.91	118	73.0-130	
1,2,4-Trimethylbenzene	5.00	5.51	110	76.0-121	
1,2,3-Trimethylbenzene	5.00	5.52	110	77.0-120	
1,3,5-Trimethylbenzene	5.00	5.39	108	76.0-122	
Vinyl chloride	5.00	6.03	121	67.0-131	
Xylenes, Total	15.0	16.3	109	79.0-123	
<i>(S) Toluene-d8</i>			108	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			102	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			111	70.0-130	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

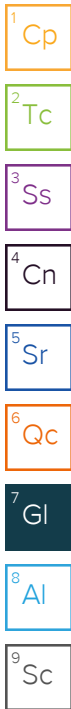
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RT	Retention Time.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.



# ACCREDITATIONS & LOCATIONS

## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc





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1620 S Walnut St - Burlington, WA 98233 - 800.755.9295 • 360.757.1400

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Portland, OR Microbiology/Chemistry (c)  
9725 SW Commerce Cr Ste A2 - Wilsonville, OR 97070 - 503.682.7802

Corvallis, OR Microbiology/Chemistry (d)  
1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946

Bend, OR Microbiology (e)  
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

# Data Report

Client Name: PBS Engineering and Environmental  
390 NE Emerson Ave  
STE 201  
Bend, OR 97701

Reference Number: **23-30755**  
Project: Roth East

Report Date: 10/12/23

Date Received: 10/5/23

Approved by: pap

Authorized by:

Michelle R Angland  
Lab Manager, Bend

Sample Description: RE-Powell-01 Roth East						Matrix W		Sample Date: 10/5/23 8:38 am				
Lab Number: 61153		Sample Comment:				Collected By: HB						
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment

14797-65-0	NITRITE-N	ND	0.010	0.006	mg/L	1.0	SM4500-NO3 F	c	10/6/23	PDK	eno3_231006	
14797-55-8	NITRATE-N	0.39	0.005	0.0035	mg/L	1.0	SM4500-NO3 F	c	10/6/23	PDK	eno3_231006	

Notes: \_\_\_\_\_

ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.  
PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.  
D.F. - Dilution Factor

If you have any questions concerning this report contact us at the above phone number.