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REPORT

QUARTERLY MONITORING REPORT
THIRD QUARTER 2021
RESERVE SILICA RECLAMATION SITE

Ecology Facility Site No. 2041/Cleanup Site No 4728
28131 Ravensdale-Black Diamond Road
Ravensdale, Washington 98051

Submitted to:

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1.0 INTRODUCTION

This report, prepared by Golder Associates USA Inc. (Golder) for Holcim (US) Inc., presents the results of surface water and groundwater monitoring conducted at the Reserve Silica Reclamation Site (Site) during the third quarter of 2021. The Site is located at 28131 Ravensdale-Black Diamond Road in Ravensdale, Washington. Figure 1 shows the Site location.

A Model Toxics Control Act (MTCA) Remedial Investigation/Feasibility Study (RI/FS) is being conducted at the Site under Agreed Order (AO) No. DE 16052. An RI Work Plan (Work Plan), supporting Sampling and Analysis Plan (SAP), and Quality Assurance Project Plan (QAPP) (Golder 2021) describe the RI monitoring requirements and sampling procedures. Quarterly groundwater monitoring at the Site is currently being conducted in accordance with the Work Plan and supporting documents. Historical groundwater and surface water monitoring activities at the Site were conducted under requirements of Post-Closure Care and Maintenance Permits issued by Public Health – Seattle and King County (Public Health).

The third quarter monitoring event is typically conducted in September but was postponed until October 2021 to accommodate inclusion of additional groundwater monitoring wells that were installed in September 2021 as part of Remedial Investigation (RI).

2.0 BACKGROUND

2.1 Site Background

The following is a brief description of the historical mining and reclamation activities that occurred at the Site and includes a discussion of the quarterly monitoring program.

2.1.1 Lower Disposal Area Background

The Lower Disposal Area (LDA) is a former open pit sand mine that was reclaimed by placing CKD and other material into the mine excavation from June 1979 to October 1982. The LDA was filled with approximately 175,000 tons of CKD. Records indicate that a cap consisting of clay and up to 7 feet of overburden material from sand mining operations was placed over the CKD.

Historically, high pH seepage surfaced along the slope west of the LDA. The outbreaks are primarily located along the northern half of the western boundary of the LDA and records as early as 1987 indicate a leachate collection system was implemented for the LDA seepage. The leachate drained through low-lying, marshy areas and commingled with stormwater before flowing to the three infiltration ponds (the Infiltration Ponds as shown in Figure 2) near the Ravensdale-Black Diamond Road (ARCADIS 2004). In 2013 a new seepage collection ditch was installed to intercept and collect the seepage (see Section 2.2.3 of this report), which then flowed inside a pipe to the infiltration ponds. In 2018, a water treatment system was constructed, and the high pH water captured by the collection ditch is currently piped to on-site treatment area for pH neutralization and dissolved metals removal. The treated water discharges from the treatment system to the infiltration ponds.

2.1.2 Dale Strip Pit Background

The Dale Strip Pit (DSP) was created to mine the Dale No. 4 coal seam from the surface starting in 1946. Prior to 1946, the coal seam was worked from an underground mine. The underground mining chutes were driven upward to the surface to provide ventilation and allow the transportation of timbers into the mine. Construction of the mine allowed groundwater to drain by gravity to the mine portal (Portal). The Portal has since collapsed, and now a pipe in the collapsed Portal allows water to continuously drain from the mine under an Ecology Sand and

Gravel General Permit (Ecology 2005) with monitoring as described below. The Portal is located north of the LDA on the east side of the main haul road.

The DSP was approximately 1,800 feet long (north to south), averaged 140 feet wide (east to west), and averaged 40 feet deep. It was filled in the 1970s and 1980s with approximately 250,000 cubic yards of material including CKD, borrow, and other materials pursuant to a permit from Public Health. It is estimated that about one-third of the DSP was filled with CKD (ARCADIS 2004).

2.2 Mitigation Activities

2.2.1 LDA Cover Upgrade

During September and October 2007, the existing soil cover on the LDA was regraded to provide positive drainage at all locations, reduce overly-steep slope areas, and place a minimum 2-foot-thick clean soil cover over the entire area, including locations where CKD was exposed at the surface. The construction activities are described in the Construction Summary Report (Golder 2008a).

2.2.2 LDA Seep Collection System Test Trenches

During September and October 2008, test trenches for collecting high pH seepage were constructed (Golder 2008b). The purpose of this test system was to evaluate the feasibility of using a more extensive trench system to collect high pH seepage that would otherwise discharge at the ground surface adjacent to the LDA. Details of the test trench construction are presented in the Construction Summary Report (Golder 2009a).

Between October 2008 and September 2009, Golder monitored seepage flow rates from each of two test trenches and the pipeline discharge once per month, on average. A summary of activities and results of this monitoring program is presented in the flow monitoring report (Golder 2009b).

2.2.3 LDA Seep Collection Ditch and Seepage Treatment System

In February 2013, a surface water collection ditch and concrete catch basin were constructed on the bench below the main access road on the west side of the LDA. This system was installed to capture leachate seeps emerging from the bank along the east side of the bench (west of the main access road) and direct them into the existing pipeline that carries flow from the test trenches to the infiltration ponds. In April 2015, the 4-inch-diameter pipeline from the catch basin to the infiltration ponds, approximately 1,000 feet in length, was replaced with a 12-inch-diameter pipeline to alleviate plugging issues.

In December 2017, the seepage collection trench was further extended approximately 100 feet to the north to collect additional seepage that was not previously captured. Seepage water was then redirected into a seepage treatment system, which completed construction and started initial operations on September 28, 2018. The treatment system uses carbon dioxide (CO_2) sparging to neutralize pH levels and arsenic and lead adsorption using an iron-based adsorption media.

During the initial year of operation, the system operated intermittingly, with system shut-downs occurring as various upgrades and modifications were completed to increase the long-term operational efficiency of the treatment system. The system began continuous operating in June 2019, with only minor shutdowns occurring to complete routine maintenance.

2.2.4 LDA Interceptor Trench

In September 2013, a gravel-filled interceptor trench that included a perforated drainpipe and vertical downgradient liner was installed south of the LDA to intercept clean groundwater moving in a northerly direction prior to encountering the cement kiln dust in the LDA.

2.2.5 DSP Cover Upgrade

Cover upgrade activities began at the DSP in November 2010 and were completed in July 2011. Cover upgrade activities included stripping surficial vegetation and topsoil, regrading the existing surface to establish positive drainage, placing low permeability soil to provide a minimum 2-foot-thick layer at all locations, filling the existing ditch along the northeast side of the DSP, replacing topsoil, and revegetating the cover surface.

3.0 MONITORING PROGRAM

The purpose of the quarterly monitoring activities is to assess the groundwater and surface water conditions with respect to potential impact from the CKD placed in the LDA and the DSP. Prior to the start of the RI, quarterly monitoring and reporting activities were conducted under requirements of Post-Closure Care and Maintenance Permits issued by Public Health. The current RI groundwater and surface water requirements are detailed within the Work Plan (Golder 2021).

3.1 LDA Sampling Locations

The LDA groundwater and surface water sampling locations are shown in Figure 2. Monitoring well construction details are provided in Table 1. Shallow/alluvial monitoring wells were installed near the LDA in July 2005 and are monitored to assess the shallow/alluvial groundwater conditions with respect to potential impact from the CKD. Four of the wells (MW-1A, MW-2A, MW-5A, and MW-6A) are located around the infiltration ponds. MW-3A is located west of the high pH seepage area. MW-4A, a background well, is located south of, and upgradient with respect to groundwater flow and surface water drainage, the high pH seepage area. P-14 was installed in November 2020 in the center of the LDA and is screened within CKD and other fill material disposed in the LDA. Groundwater samples collected from P-14 provide data on chemical composition of water in an area where saturated CKD is present.

As part of the RI, during September 2021, the following groundwater monitoring wells were also installed to evaluate groundwater quality in and downgradient of the LDA:

- MW-7A and MW-8A were installed west and southwest of the infiltration ponds to evaluate groundwater gradients and groundwater quality.
- MW-9A and MW-10A are located west of the high pH seepage area and the South Pond, near the western property boundary to evaluate groundwater gradients and groundwater quality.
- P-15 was installed in the LDA and, similar to P-14, is also screened within CKD and other fill material disposed in the LDA. Groundwater samples collected from P-15 provide data on chemical composition of water just before the groundwater flows across the Lower Haul Road to daylight as seeps west of the LDA.
- P-16 was installed just west (downgradient) of the high pH seepage area and east (upgradient) of the South Pond.
- P-17 was installed per Ecology's request during their Site visit in September 2021 and is located southwest of the LDA.

The LDA surface water sampling locations evaluate the high pH seepage that occurs west of the LDA:

- The Still Well is a 2-inch-diameter flush-mount well located within the high pH seepage zone west of the LDA.
- The South Pond is a closed depression located west of the high pH seepage area.
- The Weir is located north of the access road to MW-3A immediately below the discharge point from the wetlands. If no flow is observed at the Weir, the constructed wetlands upstream are the alternative sampling location.
- The Infiltration Ponds are located at the north end of the Site near Ravensdale-Black Diamond Road and receive treated water from the on-Site seepage treatment system. The surface sample is collected from the southwest area of the infiltration ponds.

In 2006, bedrock monitoring wells were installed along the west side of the main access road, west of the LDA. The bedrock wells were installed to assess groundwater conditions in the bedrock immediately downgradient of the LDA. MWB-1LDA is located near the northern tip of the LDA, MWB-2LDA is located near the center of the LDA, and MWB-3 LDA is located near the southern end of the LDA. In accordance with the Work Plan, field parameters are monitored in the LDA bedrock monitoring wells semi-annually, and the wells are sampled annually.

3.2 DSP Sampling Locations

The DSP groundwater monitoring locations are shown in Figure 2. The DSP bedrock groundwater monitoring program includes four wells in the DSP area (MWB-1SDSP, MWB-1DDSP, MWB-5DSP, and MWB-6DSP), which evaluate groundwater quality beneath, upgradient, and downgradient of the DSP. Groundwater discharging from the Portal is also monitored. The Portal was originally constructed to drain water from the Dale Strip Coal mine. In accordance with the Work Plan, field parameters are monitored in the LDA bedrock monitoring wells semi-annually, and the wells are sampled annually. There are two additional monitoring wells (MWB-2DSP and MWB-4SDSP) near the DSP area that are monitored for water levels and field parameters only.

3.3 LDA Interceptor Trench

The purpose of the Interceptor Trench is to intercept clean groundwater and direct the water away from the LDA before the water enters the LDA. Monitoring is performed at the Interceptor Trench outfall for flow, pH, turbidity, and total dissolved solids. The purpose of the monitoring is to ensure that the trench is not collecting impacted groundwater.

4.0 SAMPLING ACTIVITIES

The following section summarizes the activities associated with the current monitoring event.

4.1 Procedures

4.1.1 Water Level and Field Parameter Measurements

Depth to water measurements were collected from all monitoring wells at the Site on October 29, 2021. Table 1 presents depth to water measurements and elevations.

Field parameters for groundwater and surface water were measured as part of the sampling activities described in the following sections. These measurements were performed with the following equipment:

- YSI ProDSS multimeter with pH, ORP (oxidation-reduction potential), conductivity, dissolved oxygen, and temperature probes
- Hach 2100P Turbidimeter

4.1.2 Laboratory Analysis

Laboratory analyses were performed on samples collected from the various locations described in the following sections. Although the analytic parameters varied between the types of samples, the following elements are common to all the sampling and analysis activities:

- The collected samples were transported to the laboratory within appropriate sample hold times following chain-of-custody protocols.
- The testing was performed by Analytical Resources, Inc. (ARI) of Tukwila, Washington.
- All samples were tested for the following parameters using the methods indicated:

Antimony	EPA Method 200.8
Arsenic	EPA Method 200.8
Lead	EPA Method 200.8
Potassium	EPA Method 6010D
Vanadium	EPA Method 200.8
Total Dissolved Solids (TDS)	SM 2540 C

- Samples were collected for both total metals and dissolved metals analyses, with dissolved metals samples field filtered with a 0.45 µm in-line filter. Samples historically were analyzed for dissolved metals at the Site until December 2020. Ecology requested in their review of the draft Work Plan that metals analyses be conducted as total metals. Groundwater samples are collected in the field for both dissolved metals and for total metals analyses. The dissolved metals samples are held at the laboratory so that they can be analyzed if the total metals results indicated significant differences from historical dissolved metals results. Both total and dissolved metal results were completed for MW-1A, MW-2A, MW-3A, MW-4A, MW-9A, MW-10A, P-14, P-16, P-17, and the Infiltration Ponds for this sampling event. Total metals results were completed for P-15, but the well was purged dry and did not render sufficient volume for dissolved metals analysis. MW-5A, MW-6A, MW-7A, MW-8A, South Pond, Still Well, and Weir were dry.
- Interceptor Trench samples were tested for the following parameters using the method indicated:

pH	Field Measurement
TDS	SM 2540 C
Turbidity	Field Measurement

- Summaries of historical analytic data for the various sampling locations are presented in Appendix A. The data validation report is provided in Appendix C, and the laboratory analytical data packages are provided in Appendix D.

4.1.3 LDA Groundwater Sampling

On October 12, 13, and 15, 2021, Golder sampled groundwater from the LDA shallow/alluvial groundwater monitoring wells (MW-1A, MW-2A, MW-3A, MW-4A, MW-9A, MW-10, P-16, P-17) and the LDA disposal area (P-

14, P-15). MW-5A, MW-6A, MW-7A, and MW-8A were dry or contained insufficient water to permit sample collection following purging at the time of sampling.

The following methods and procedures were used in collecting the groundwater samples:

- Depth to groundwater was measured in the wells prior to purging and sampling.
- Using a dedicated bladder pump or dedicated tubing connected to a peristaltic pump (if groundwater elevation allowed), water from wells MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, MW-6A, MW-9A, MW-10, P-16, P-17, P-14, and P-15 was purged at a rate between approximately 150 and 450 milliliters (mL) per minute. MW-5A and MW-6A were purged dry and remained dry with little to no recharge when revisited 24 hours following purging. No samples were collected from MW-5A and MW-6A. MW-7A and MW-8A were dry during the October sampling event.
- Field parameters of pH, conductivity, temperature, DO, ORP, and turbidity were measured and recorded during purging at approximately five-minute intervals until parameters were stable.
- Once the field parameters stabilized, the purging phase of the process was concluded. Groundwater samples were then collected directly from the dedicated sample tubing.
- For quality control purposes, a duplicate sample was collected from MW-2A (labeled as MW-45A).
- Laboratory-provided containers were used to collect the samples. For each groundwater sample, two 500-mL bottles preserved with nitric acid and one 1-Liter (L) unpreserved bottle were collected (except for P-15). The samples were then labeled and placed in a cooler with ice.

In addition, field parameters in in LDA monitoring wells MWB-1LDA, MWB-2LDA, and MWB-3LDA were measured on October 13, 2021.

All groundwater and quality control samples were analyzed for the parameters listed in Section 4.1.2. Field parameters and analytical data are presented in Table 2.

4.1.4 LDA Surface Water Sampling

On October 13, 2021, Golder monitored surface water from the Still Well, Weir, South Pond, and the Infiltration Ponds sampling locations. The Still Well, Weir, and South Pond were dry during the October event. The following methods and procedures were used in collecting the surface water samples:

- Field parameters of pH, conductivity, temperature, DO, ORP, and turbidity were measured and recorded. These parameters were measured and recorded at each of the surface water locations at the time of sample collection.
- Grab surface water samples were collected using dedicated sample tubing connected to a peristaltic pump.
- For quality control purposes, a duplicate sample was collected from the Infiltration Ponds (labeled as MW-35A).
- Laboratory-provided containers were used to collect the surface water samples. For each surface water sample, two 500-mL bottles preserved with nitric acid and one unpreserved 1-L bottle were collected. The samples were then labeled and placed in a cooler with ice.

- The pH of some LDA surface water sampling locations is occasionally greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2 upon receipt at the laboratory. To meet this requirement, the pH of the LDA surface water samples collected for metals analysis were checked at the time of sample collection using pH test paper strips. If the pH was higher than 2, additional nitric acid (provided by the laboratory) was added until the pH of the sample was less than 2.

All surface water and quality control samples were analyzed for the parameters listed in Section 4.1.2. Field parameters and analytical data are presented in Table 2.

4.1.5 LDA Interceptor Trench Sampling

On October 15, 2021, Golder sampled groundwater from the Interceptor Trench. The following methods and procedures were used to collect the groundwater sample:

- Field pH, turbidity, and the flow rate at the Interceptor Trench outfall were measured and recorded.
- Grab water samples were collected from the Interceptor Trench by placing the sample bottles under the flow of water.
- Laboratory-provided containers were used to collect the sample for TDS lab analysis. One 1-L unpreserved bottle was collected. The sample was then labeled and placed in a cooler with ice.

The Interceptor Trench sample was analyzed for the parameters listed in Section 4.1.2. Field parameters and analytical data are presented in Table 2.

4.1.6 DSP Groundwater Sampling

On October 18, 2021, Golder measured field parameters in the DSP groundwater monitoring wells (MWB-1SDSP, MWB-1DDSP, MWB-2DSP, MWB-4DSP, MWB-5DSP, and MWB-6DSP) and at the Portal. Field parameter data are presented in Table 2.

4.1.7 Sampling for Cation/Anion Analyses

In addition to the analyses of parameters listed in Section 4.1.2, general chemistry and cation/anion analyses were conducted on samples collected from:

- The LDA bedrock monitoring wells (MWB-1LDA, MWB-2LDA, MWB-3LDA)
- The DSP bedrock monitoring wells (MWB-1SDSP, MWB-1DDSP, MWB-5DSP, MWB-6DSP)
- The DSP Portal

The additional analyses included: total hardness, calcium, magnesium, potassium, sodium, chloride, sulfate, and total alkalinity. These parameters are present in most waters, and the analytical data allow for comparison of the relative abundance of these ions within samples. Plotting of the data from multiple samples on trilinear diagrams and other geochemical evaluations allows for an evaluation of similarities between water types. During the October 2021 sampling event, collection of samples for cation/anion analyses from the shallow LDA groundwater wells and surface water samples was also scheduled, but the lack of water in several of the sampling locations prevented collection of samples from enough of these locations to allow for full comparison of ion abundance between locations. As such, additional sample collection for cation/anion analysis will occur during the spring (wet season) and fall (dry season) 2022 sampling events. The geochemical evaluations of the data will be completed after the cation/anion data are available from all sample locations.

5.0 RESULTS

Analytical results from the October 2021 monitoring round are presented in Table 2. Table 3 presents the current and a historical summary of the Interceptor Trench monitoring data. Table 4 presents the additional geochemical analytical results for samples collected from the LDA and DSP bedrock wells. Historical summary tables of analytical results at each sampling location are provided in Appendix A and concentrations trend graphs for key parameters are provided in Appendix B. All analytical data were subject to a data validation review. Data validation was conducted in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA 2020), the SAP, and the QAPP. Data reporting qualifiers are included with the analytical results in Appendix A. The data validation review found that all the data were considered valid and usable. Copies of the data validation checklist are included in Appendix C. The raw analytical data packages provided by the laboratory are provided in Appendix D. Data collected during this sampling round will be combined with all RI data to complete the evaluations and requirements of the RI/FS.

6.0 OPERATIONS AND MAINTENANCE OF THE LEACHATE TREATMENT SYSTEM

The leachate treatment system first began operating in September 2018. The system operated intermittently from December 2018 to May 2019 as the system upgrades were completed during that time, which included various upgrades and modifications to improve the system's long-term operating efficiency. The system began continuous operations in June 2019, with minor shutdowns occurring to complete routine maintenance and continued minor modifications to improve long-term operating efficiency.

The treatment system includes a 4,200-gallon mixing tank (steel rectangular box shaped tank) that receives the influent water coming from the seepage collection ditch and piping. Water from the tank constantly flows through the carbon dioxide (CO_2) sparge unit, which continuously monitors the water pH and activates CO_2 sparging when the water pH exceeds 8.3. CO_2 sparging continues until the pH reduces to 7.5. The sparged water is pumped back into the mixing tank to maintain the neutralized the water within the tank. The influent flow, pumping from the tank and through the CO_2 sparge unit, and discharge from the sparge unit back into the tank are all specifically located in different areas of the mixing tank to provide a constant circulation effectively providing pH neutralization throughout the tank. The mixing tank contains a float switch activated discharge pump that activates when the water reaches a set height within the tank and turns the pump off when the water is lowered to the desired height. Neutralized water pumped from the tank is discharged through filters and an iron-based adsorption media to remove arsenic, prior to discharge of the water to the Infiltration Ponds.

The continuous pH monitoring system is connected to telemetry that sends pH readings and alerts to Golder engineer's cell phones if readings outside of the set ranges occurs allowing for response and trouble shooting. Routine inspections of the treatment system are conducted approximately once every two weeks. The inspections include routine maintenance activities such as cleaning scale off pump parts, hoses, and probes to sustain continued operations of the treatment system. The treatment system has been effective in reducing the pH of the seepage water to below 8 standard units and reducing metals concentrations before discharge to the infiltration ponds. Typical maintenance down time of less than 1 day occasionally occurs. Optimization of the metals adsorption system continues, as calcium carbonate clogging of the adsorption system frequently arises. Table 5 provides the 2021 third quarter laboratory analytical data before it enters the pH treatment tank, pre-iron-based adsorption media, and post-iron-based adsorption media showing the reduction in lead and arsenic concentrations. The laboratory analytical report is provided in Appendix D.

The treatment system has been effective in reducing the impacts to groundwater in the immediate vicinity of the infiltrations ponds that were historically observed in groundwater monitoring wells MW-5A and MW-6A. Additional modifications and improvements are anticipated to occur to the treatment system during the MTCA cleanup process to improve system performance, efficiency, and achieve Site specific cleanup standards that are protective of human health and the environment.

7.0 LIMITATIONS

Golder prepared this report for the exclusive use of Holcim (US) Inc. and their authorized agents. It may also be submitted to regulatory agencies.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood. This report was prepared, in part, based on previous investigations and data collected by others. Golder Associates USA Inc. is not responsible for any data that were inaccurately reported by others and reproduced here.

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Tables

Table 1: Third Quarter 2021 Water Level Measurements

Sample Area	Sample Location ID	Date Measured	Well Data				Water Levels		
			Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Bentonite Seal (feet bgs)	Casing Diameter (inches)	TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)
LDA - Shallow/Alluvial Groundwater	MW-1A	10/29/2021	44	28-43	2-26	2	613.44	33.84	579.60
	MW-2A	10/29/2021	40	25-40	2-23	2	607.21	27.75	579.46
	MW-3A	10/29/2021	20	4-20	2-4	2	689.11	5.34	683.77
	MW-4A	10/29/2021	20	5-20	2-4	2	705.45	7.69	697.76
	MW-5A	10/29/2021	40	25-40	2-23	2	611.23	31.70	579.53
	MW-6A	10/29/2021	39	24-39	2-22	2	608.95	29.39	579.56
	MW-7A	10/29/2021	20	10-20	2-7	2	592.69	13.61	579.08
	MW-8A	10/29/2021	26	16-26	2-13	2	601.49	23.91	577.58
	MW-9A	10/29/2021	13	8-13	2-5	2	697.29	4.38	692.91
	MW-10A	10/29/2021	29	9-29	2-6	2	698.02	19.04	678.98
	P-16	10/29/2021	10	5-10	1-3	2	702.87	2.41	700.46
	P-17	10/29/2021	13	8-13	2-5	2	720.32	4.89	715.43
Within LDA - Groundwater	P-14	10/29/2021	52	40-50	3-38	2	773.32	33.57	739.75
	P-15	10/29/2021	34	24-34	2-20	2	756.55	30.03	726.52
LDA - Bedrock Groundwater	MWB-1LDA	10/29/2021	135	115-135	2-105	2	704.68	24.41	680.27
	MWB-2LDA	10/29/2021	125	110-125	2-103	2	741.66	37.76	703.90
	MWB-3LDA	10/29/2021	145	125-145	2-115	2	744.19	6.17	738.02
DSP - Bedrock Groundwater	MWB-1SDSP	10/29/2021	160	150-160	138-148	2	936.29	55.97	880.32
	MWB-1DDSP	10/29/2021	265	255-265	243-253	2	935.37	67.32	868.05
	MWB-2DSP	10/29/2021	258	238-258	-	2	934.82	200.24	734.58
	MWB-4SDSP	10/29/2021	43	32-42.8	-	2	932.41	23.22	909.19
	MWB-5DSP	10/29/2021	83	73-83	2-61	2	935.05	29.11	905.94
	MWB-6DSP	10/29/2021	195	120-195	2-108	2	920.65	28.08	892.57

-	Not measured or not available
feet bgs	Feet below ground surface
feet bmp	Feet below measuring point
feet NAVD88	Feet in NAVD88 datum
TOC	Top of casing

Table 2: Third Quarter 2021 Field Parameters and Analytical Data

Sample Area	Sample Location ID	Date Sampled	Field Parameters									Gen. Chem.	Metals (mg/L)									
			TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)*	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony, Total	Antimony, Dissolved	Arsenic, Total	Arsenic, Dissolved	Potassium, Total	Potassium, Dissolved	Lead, Total	Lead, Dissolved	Vanadium, Total	Vanadium, Dissolved
LDA - Shallow/Alluvial Groundwater	MW-1A	10/12/2021	613.44	33.84	579.60	9.3	328.6	9.07	160.8	1.55	**6.34**	236 J-	0.000846	0.00091	0.00113	0.00116	12.5	13.2	0.0001 U	0.0001 U	0.000801	0.000667
	MW-2A	10/12/2021	607.21	27.75	579.46	10.4	595.0	9.33	188.20	0.56	6.53	439 J-	0.00119	0.00125	0.0011	0.00104	21.9	23.4	0.0001 U	0.0001 U	0.00107	0.000887
	MW-2A Duplicate (MW-45A)	10/12/2021	-	-	-	-	-	-	-	-	-	434 J-	0.00117	0.00122	0.00107	0.00105	21.8	23.5	0.0001 U	0.0001 U	0.00101	0.000967
	MW-3A	10/12/2021	689.11	5.34	683.77	12.3	1,611	2.92	133.4	5.25	6.63	1070 J-	**0.0156**	**0.0141**	0.00331	0.00162	93.2	103	0.0004	0.0001 U	0.00214	0.00103
	MW-4A	10/15/2021	705.45	7.69	697.76	12.6	341.3	6.91	133.9	20.5	**6.37**	363 J-	0.00018 J	0.00026	0.00099	0.00038	1.48	1.72	0.000151	0.0001 U	0.00409	0.00142
	MW-5A	10/13/2021	611.23	31.7	579.53	9.5	1,934	5.97	194	9.56	7.22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	MW-6A	10/13/2021	608.95	29.39	579.56	11.2	2,509	4.77	188.6	13.1	7.64	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	MW-7A	10/13/2021	592.69	13.61	579.08	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	MW-8A	10/13/2021	601.49	23.91	577.58	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	MW-9A	10/15/2021	697.29	4.38	692.91	12.2	956	1.45	-93.2	2.7	7.11	981 J-	0.000659	0.0006	0.00479	0.0047	16	14.9	0.000139	0.0001 U	0.0012	0.000954
	MW-10A	10/15/2021	698.02	19.04	678.98	10.7	390	4.24	-115	27.8	7.93	383 J-	0.000705	0.000765	0.00404	0.00395	9.7	10.1	0.000383	0.0001 U	0.00287	0.00158
	P-16	10/15/2021	702.87	2.41	700.46	12.3	2,622	0.71	-261.2	56.2	**12.11**	2640 J-	**0.00916**	**0.00779**	**0.232**	**0.196**	826	841	**0.0411**	**0.0258**	**0.445**	**0.358**
	P-17	10/15/2021	720.32	4.89	715.43	14.0	463.7	0.98	-97.5	38.1	6.49	444 J-	0.001 U	0.000382 J	**0.0164**	**0.006**	9.7	8.1	0.0131	0.0002 U	**0.105**	0.00227
Within LDA - Groundwater	P-14	10/13/2021	773.32	33.57	739.75	12.7	23,225	0.77	-139.7	0.75	**13.18**	7240 J-	**0.131**	**0.134**	**0.292**	**0.285**	2560	2800	0.00247	0.00157	0.0242	0.0211
	P-15	10/15/2021	756.55	30.03		13.0	15,815	1.72	-147.5	5.08	**13.17**	7180 J-	0.002 U	Note 1	**0.00657**	Note 1	2390	Note 1	**0.094**	Note 1	0.00365	Note 1
LDA - Bedrock Groundwater[3]	MWB-1LDA	10/13/2021	704.68	24.41	680.27	10.9	327.2	0.91	-76.1	0.33	7.48	231 J-	-	-	-	-	-	-	-	-	-	-
	MWB-2LDA	10/13/2021	741.66	37.76	703.90	11.7	308.1	3.66	-44.7	0.32	7.43	220 J-	-	-	-	-	-	-	-	-	-	-
	MWB-3LDA	10/13/2021	744.19	6.17	738.02	12.9	215.1	4.1	148.3	0.96	7.05	162 J-	-	-	-	-	-	-	-	-	-	-
LDA- Surface Water	South Pond	10/13/2021	-	-	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Still Well	10/13/2021	-	-	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Weir	10/13/2021	-	-	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Infiltration Ponds	10/13/2021	-	-	-	9.3	2563	4.73	34.2	39.3	**8.84**	2610 J-	**0.0161**	**0.0165**	**0.0197**	**0.0192**	831	1050	0.00612	0.00364	0.00311	0.00188
	Infiltration Ponds Duplicate (MW-35A)	10/13/2021	-	-	-	-	-	-	-	-	-	2310 J-	**0.0164**	**0.0167**	**0.02**	**0.0197**	854	991	0.00736	0.00349	0.00329	0.00177

Table 2: Third Quarter 2021 Field Parameters and Analytical Data

Sample Area	Sample Location ID	Date Sampled	Field Parameters									Gen. Chem.	Metals (mg/L)									
			TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)*	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony, Total	Antimony, Dissolved	Arsenic, Total	Arsenic, Dissolved	Potassium, Total	Potassium, Dissolved	Lead, Total	Lead, Dissolved	Vanadium, Total	Vanadium, Dissolved
DSP - Bedrock Groundwater[3]	MWB-1SDSP	10/18/2021	936.29	55.97	880.32	11.7	858	0.86	-92.3	0.48	6.84	-	-	-	-	-	-	-	-	-	-	-
	MWB-1DDSP	10/18/2021	935.37	67.32	868.05	11.6	561	0.83	-148.8	0.33	7.23	-	-	-	-	-	-	-	-	-	-	-
	MWB-2DSP	10/18/2021	934.82	200.24	734.58	12.6	307.7	6.06	161.4	12.3	7.35	-	-	-	-	-	-	-	-	-	-	-
	MWB-4SDSP	10/18/2021	932.41	23.22	909.19	13.5	368.9	8.47	130.8	1.36	7.63	-	-	-	-	-	-	-	-	-	-	-
	MWB-5DSP	10/18/2021	935.05	29.11	905.94	11.9	440.1	0.87	-86.2	0.35	6.96	-	-	-	-	-	-	-	-	-	-	-
	MWB-6DSP	10/18/2021	920.65	28.08	892.57	11.6	273.8	0.96	-73.8	1.38	7.15	-	-	-	-	-	-	-	-	-	-	-
	MWB-6DSP Duplicate (MW-55A)	10/18/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Portal	10/18/2021	-	-	-	10.9	386.7	5.11	-28.4	86.1	**6.45**	-	-	-	-	-	-	-	-	-	-	-
Preliminary Screening Level[a]			-	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.006	0.005	0.005	-	-	0.015	0.015	0.08	0.08

bold	Bold values indicate parameter results above the Preliminary Screening Level.	TOC	Top of casing inside PVC well
-	Not measured or not collected.	°C	Degrees Celsius
*	Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date.	feet bmp	Feet below measuring point
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.	feet NAVD88	Feet in NAVD88 datum
J	Data validation code; estimated value.	mg/L	Milligrams per liter
J+	Data validation code; estimated value with high bias	mV	Millivolts
J-	Data validation code; estimated value with low bias.	NTU	Nephelometric Turbidity Unit
U	Data validation code; not detected at the Reporting Limit (RL).	µmhos/cm	Micromhos per centimeter
DRY	Location is dry. Unable to collect field parameters or samples.		
Note 1	P-15 did not produce sufficient volume for sampling of dissolved metals.		

Table 3: Interceptor Trench Discharge Monitoring

Date Sampled	Time Sampled	Flow (gpm)	Field pH (standard units)	Turbidity (NTU)	Total Dissolved Solids (mg/L)
19-Oct-13	8:45	0.3	7.47	-	-
19-Nov-13	9:25	0.7	7.52	-	-
23-Dec-13	15:25	1.2	7.27	-	-
20-Jan-14	11:15	0.8	7.58	1.0	277
-	-	-	-	-	-
31-Mar-14	11:12	1.0	7.22	1.6	257
22-Apr-14	16:05	3.6	6.85	474	214
27-May-14	15:30	0.8	7.12	21.9	294
27-Jun-14	11:10	0.3	7.13	13.3	136
31-Jul-14	19:45	0.2	6.95	4.1	305
28-Aug-14	14:00	0.1	7.20	1.8	294
29-Sep-14	13:39	0.1	7.87	1.4	340
29-Oct-14	11:45	0.3	7.03	1.1	319
24-Nov-14	11:50	0.8	7.09	0.7	229
22-Dec-14	8:00	0.4	7.08	0.4	253
30-Jan-15[1]	10:10	1.1	7.09	0.7	270
4-May-15	9:30	0.3	7.54	2.1	290
4-Aug-15	12:20	0.1	7.61	1.5	268
3-Nov-15	13:15	0.8	7.38	36.9	320
8-Feb-16	10:40	1.9	7.23	9.3	279
2-May-16	16:00	0.5	7.77	22.5	431
22-Aug-16	11:00	0.1	7.78	3.3	302
1-Nov-16	11:40	2.4	8.16	96.3	345
2-Feb-17	9:25	4.5	7.61	0.9	514
30-May-17	15:45	4.5	7.33	4.0	324
18-Aug-17	8:50	0.1	7.57	34.0	300
10-Nov-17	11:20	1.1	6.81	12.9	365

Table 3: Interceptor Trench Discharge Monitoring

Date Sampled	Time Sampled	Flow (gpm)	Field pH (standard units)	Turbidity (NTU)	Total Dissolved Solids (mg/L)
28-Feb-18	10:16	2.2	7.02	37.9	381
2-May-18	11:45	1.2	7.46	2.9	339
22-Aug-18	10:00	0.1	7.32	19.3	287
7-Nov-18	14:40	0.3	7.24	3.1	342
13-Mar-19	11:31	1.4	7.61	19.4	313
9-May-19	10:30	0.9	7.77	8.9	394
26-Aug-19	18:15	0.4	7.25	26.4	361
14-Nov-19	13:30	0.4	7.05	34.5	447
13-Feb-20	12:35	1.6	6.95	1.8	306
13-Aug-20	12:00	0.2	7.32	20.8	339
10-Dec-20	12:22	3.8	7.70	228	691
4-Mar-21	12:20	3.5	7.23	116	584
10-Jun-21	13:10	0.2	7.02	6.31	360
15-Oct-21	13:55	0.2	7.08	31	382

-	Not measured or not available
gpm	Gallons per minute
NTU	Nephelometric Turbidity Unit
mg/L	Milligrams per liter
1	Reduction in monitoring frequency to quarterly approved by Public Health – Seattle and King County in an email to Holcim dated January 2, 2015. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

Table 4: LDA Bedrock Wells, DSP Bedrock Wells, and Portal Geochemical Analytical Data

Sample Area	Sample Location ID	Date Sampled	Alkalinity, Total as CaCO3 (mg/L)	Hardness, Total as CaCO3 (mg/L)	Calcium, Total (mg/L)	Chloride, Total (mg/L)	Magnesium, Total (mg/L)	Potassium, Total (mg/L)	Sodium, Total (mg/L)	Sulfate (mg/L)
LDA - Bedrock Groundwater	MWB-1LDA	10/13/2021	198	168	41.7	1.9	15.6	1.4 J	12.1	3.48
	MWB-2LDA	10/13/2021	188	162	35.3	1.87	18	1.54 J	9.41	1.06
	MWB-3LDA	10/13/2021	117	95.6	19.8	1.95	11.2	0.995 J	9.83	3.31
DSP - Bedrock Groundwater	MWB-1SDSP	10/18/2021	623	992	231	11	101	5.89	32.6	336 J-
	MWB-1DDSP	10/18/2021	397	599	140	12	60.3	3.63	23	165
	MWB-2DSP	10/18/2021	-	-	-	-	-	-	-	-
	MWB-4SDSP	10/18/2021	-	-	-	-	-	-	-	-
	MWB-5DSP	10/18/2021	473	474	107	2.55	50.1	2.13 J	13.6	36.2
	MWB-6DSP	10/18/2021	300	278	59.1	1.44	31.8	0.613 J	9.62	7.77
	MWB-6DSP Duplicate (MW-55A)	10/18/2021	-	273	57.9	-	31.3	1.18 J	9.29	-
	Portal	10/18/2021	335	315	65.5	6.61	36.9	29.5	30.2	59.5

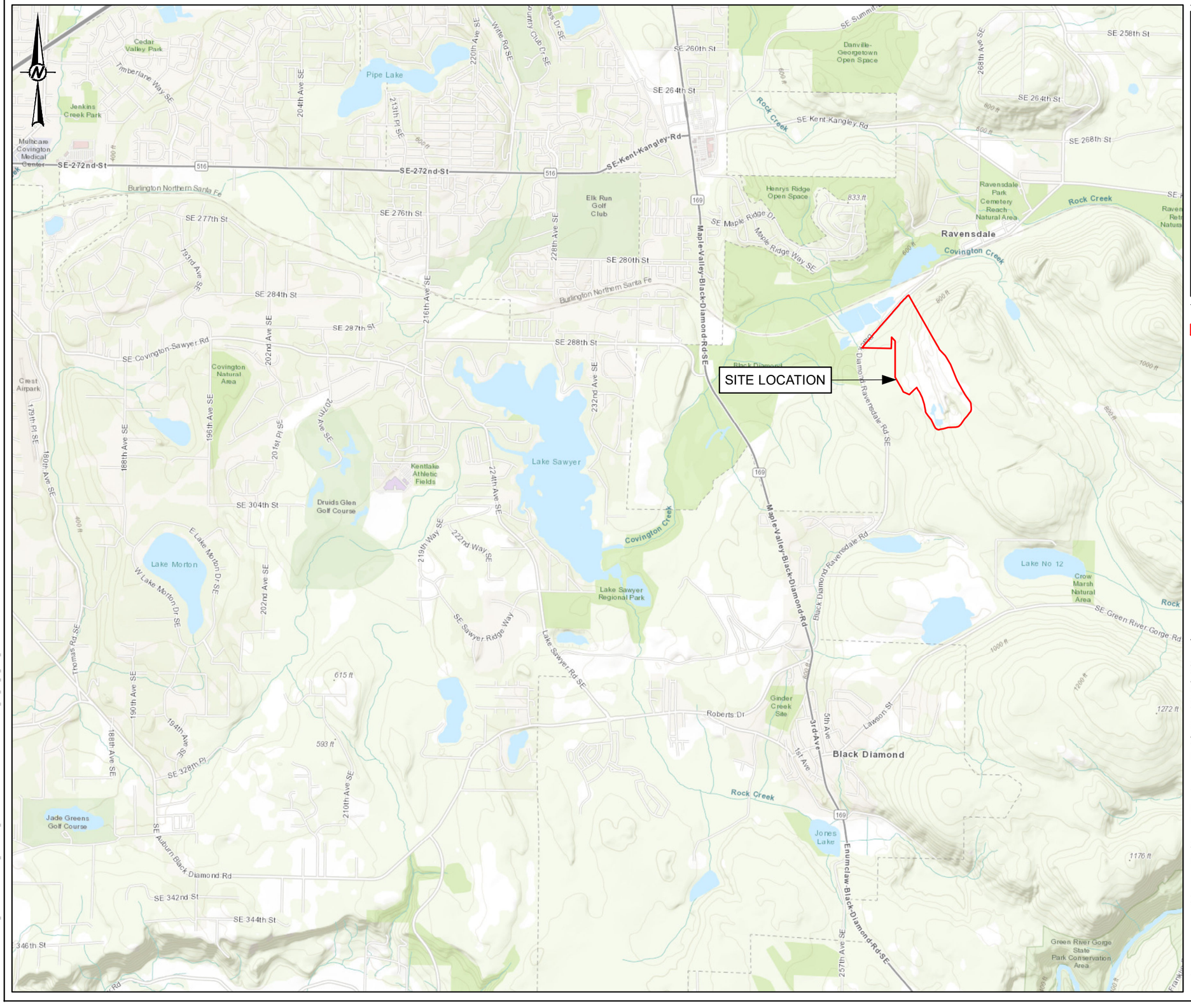
mg/L	Milligrams per liter
-	Not measured or not collected.
J	Data validation code; estimated value.
J+	Data validation code; estimated value with high bias
J-	Data validation code; estimated value with low bias.
U	Data validation code; not detected at the Reporting Limit (RL).

Table 5: Third Quarter 2021 Treatment System Metals Monitoring

Sample Location	Sample ID	Date Sampled	Total Arsenic (mg/L)	Dissolved Arsenic (mg/L)	Total Lead (mg/L)	Dissolved Lead (mg/L)
pH Tank Influent	Tank-Influent	20-Oct-21	0.0740	-	0.0872	-
pH Tank Effluent/Filter Media Influent	Tank-Effluent	20-Oct-21	0.0790	-	0.0389	-
Filter Media Effluent	As2-Effluent	20-Oct-21	0.0011	0.0030	0.0090	0.0015

- Not measured or not available
mg/L Milligrams per liter

Figures



LEGEND

Property Boundary

0 3,000 6,000

1 " = 3,000 FEET FEET

REFERENCE(S)

1. ASPECT CONSULTING (PROPERTY BOUNDARY)
2. ESRI (WASHINGTON STATE COUNTY BOUNDARY)
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE WASHINGTON NORTH FIPS 4601 FEET
4. MAP SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

CLIENT
HOLCIM

PROJECT
RI WORK PLAN 2020
RAVENSDALE, WA

TITLE
SITE LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2021-02-10
DESIGNED	TL
PREPARED	TL
REVIEWED	JX
APPROVED	GZ

PROJECT NO.	PHASE	REV.	FIGURE
152030420	004	A	1

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

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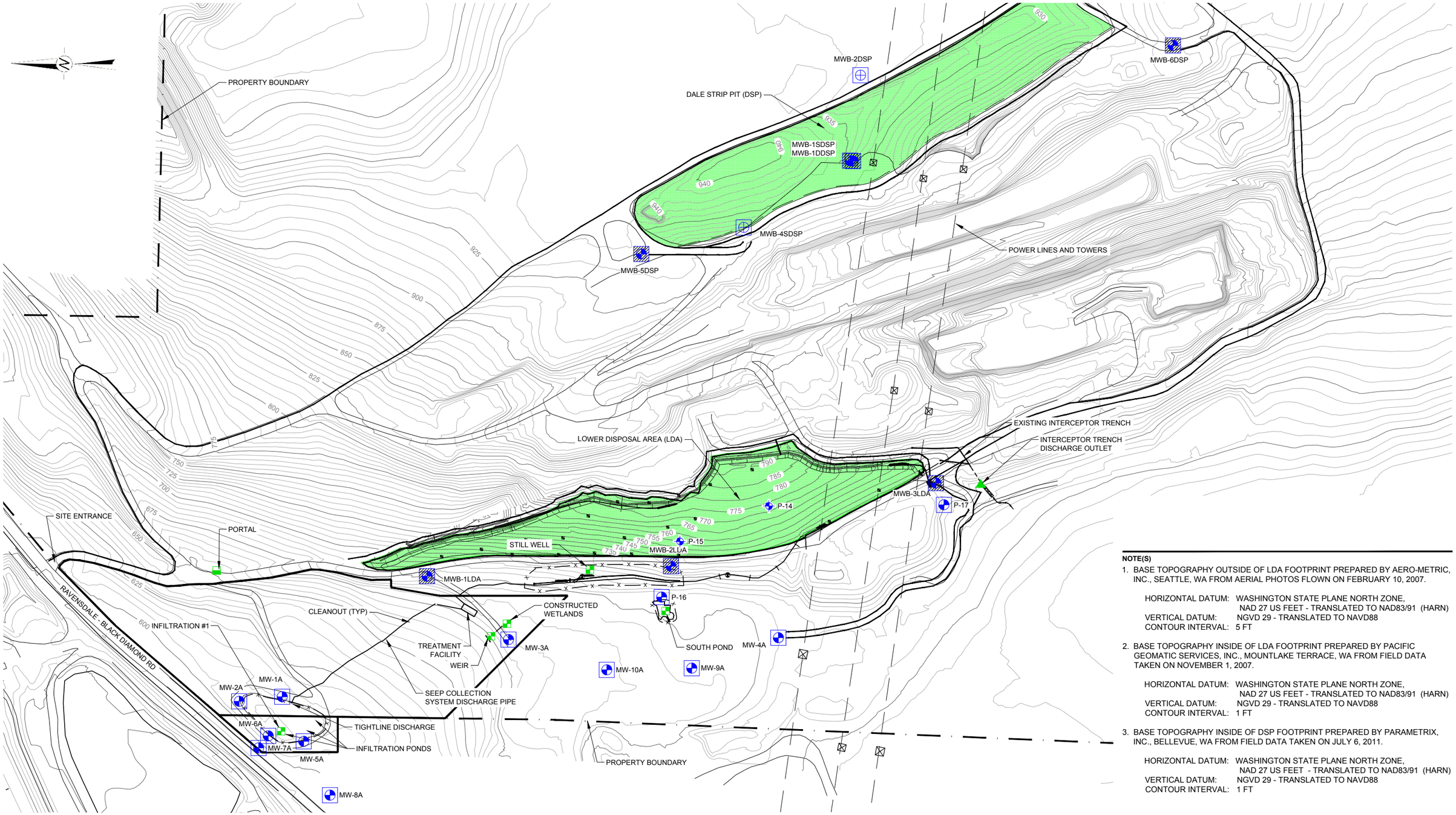

LEGEND

	COVER AREA		LDA SURFACE WATER SAMPLING LOCATION
MW-1A	ALLUVIAL MONITORING WELL		DSP BEDROCK SAMPLING LOCATION (PORTAL)
MWB-1DDSP	BEDROCK MONITORING WELL		INTERCEPTOR TRENCH SAMPLING LOCATION
MWB-2DSP	BEDROCK MONITORING WELL (NOTE 4)	— x — x —	FENCE LINE
	DISPOSAL AREA MONITORING WELL		

0 150 300
1" = 150' FEET

NOTE(S)

1. BASE TOPOGRAPHY OUTSIDE OF LDA FOOTPRINT PREPARED BY AERO-METRIC, INC., SEATTLE, WA FROM AERIAL PHOTOS FLOWN ON FEBRUARY 10, 2007.
   HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 27 US FEET - TRANSLATED TO NAD83/91 (HARN)
   VERTICAL DATUM: NGVD 29 - TRANSLATED TO NAVD88
   CONTOUR INTERVAL: 5 FT
2. BASE TOPOGRAPHY INSIDE OF LDA FOOTPRINT PREPARED BY PACIFIC GEOMATIC SERVICES, INC., MOUNTLAKE TERRACE, WA FROM FIELD DATA TAKEN ON NOVEMBER 1, 2007.
   HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 27 US FEET - TRANSLATED TO NAD83/91 (HARN)
   VERTICAL DATUM: NGVD 29 - TRANSLATED TO NAVD88
   CONTOUR INTERVAL: 1 FT
3. BASE TOPOGRAPHY INSIDE OF DSP FOOTPRINT PREPARED BY PARAMETRIX, INC., BELLEVUE, WA FROM FIELD DATA TAKEN ON JULY 6, 2011.
   HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 27 US FEET - TRANSLATED TO NAD83/91 (HARN)
   VERTICAL DATUM: NGVD 29 - TRANSLATED TO NAVD88
   CONTOUR INTERVAL: 1 FT

CLIENT
HOLCIM

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-20
DESIGNED	JX
PREPARED	REDMOND
REVIEWED	JX
APPROVED	GZ

PROJECT
RI WORK PLAN 2020
RAVENSDALE, WA

TITLE
SITE PLAN

PROJECT NO.	PHASE	REV.	FIGURE
152030420	004	A	2

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

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APPENDIX A

Summary Data Tables for Individual Wells and Monitoring Locations

APPENDIX A-1

Summary of Lower Disposal Area – Surface Water Sampling Results

Table A-1a: Summary of Lower Disposal Area - Surface Water Sampling Results - Still Well
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters						General Chemistry		Metals (mg/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	pH measured in lab (standard units)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
1-Feb-05	8.10	10658	-	-	6.59	12.87	2860	12.58	-	0.04990	<0.100	0.00552	<0.0100	-	-
9-Mar-05	13.23	7393	-	-	7.42	12.51	2860	12.53	-	0.11500	0.228	0.01470	<0.0100	-	-
5-Apr-05	9.50	11310	-	-	10.90	12.44	2900	12.32	-	0.05560	<0.100	0.01160	<0.0200	-	-
10-May-05	13.99	11871	-	-	3.60	12.53	2810	12.57	-	0.05540	<0.100	0.01250	<0.0200	-	-
7-Jun-05	13.83	10888	-	-	22.60	12.54	2490	12.51	-	<0.00500	<0.100	<0.00500	<0.0200	-	-
15-Jul-05[a]	18.21	11331	-	-	14.80	12.50	3800	12.6	-	0.00272	<0.150	0.00607	<0.0100	-	-
15-Jul-05[b]	-	-	-	-	-	-	2540	12.61	-	0.03980	<0.100	0.00757	<0.0200	-	-
9-Aug-05[a]	21.45	12087	-	-	17.90	11.78	3500	12.6	-	0.12000	0.288	0.01090	0.0101	-	-
9-Aug-05[b]	-	-	-	-	-	-	2820	12.46	-	0.09150	<0.100	0.00953	<0.0200	-	-
14-Sept-05[a]	17.38	9507	-	-	14.00	12.36	3600	12.5	-	0.11800	<0.750	0.01120	<0.0500	-	-
14-Sept-05[b]	-	-	-	-	-	-	2830	12.61	-	0.11500	0.363	0.01440	-	-	-
5-Oct-05	13.31	11481	-	-	62.70	12.47	3020	12.6	-	0.08520	<0.100	0.01190	<0.0200	-	-
9-Nov-05	9.58	14417	-	-	11.00	12.34	3400	12.6	-	0.07400	<0.150	<0.01000	<0.0100	-	-
9-Dec-05	6.18	7138	-	-	12.50	12.82	2800	12.6	-	0.01450	<0.150	0.00107	<0.0100	-	-
19-Jan-06	8.66	8265	1.74	-	11.80	13.06	1900 J	12.6 J	-	0.01520 J	<0.150	<0.00100	<0.0100	-	-
16-Feb-06	8.13	9019	2.81	195.6	6.16	12.27	3200 J	12.6	-	0.01340 J	<0.150	0.00189	<0.0100	-	-
15-Mar-06	7.98	9033	0.79	114.8	8.93	12.60	3300 J	12.6	-	0.00236	<0.150	0.00250 J	<0.0100	-	-
7-Apr-06	9.98	10450	0.57	34.8	6.08	12.51	3400	12.6	-	0.01520	<0.150	0.00283	<0.0100	-	-
16-May-06	12.79	11060	0.14	45.4	9.28	12.40	3500	12.6	-	0.00404	<0.150	0.00159	<0.0100	-	-
23-Jun-06	13.29	11680	0.44	-	14.60	12.90	3600	12.6	-	0.05260	<0.150	0.01650	<0.0100	-	-
20-Jul-06	16.20	12240	0.14	-217.8	10.40	12.47	4300	12.7	-	0.01930	<0.150	0.00357	<0.0100	-	-
22-Aug-06	17.14	10920	1.22	-146.0	13.30	12.66	3800	12.7	-	0.14400	<0.150	0.00914 J	<0.0100	-	-
26-Sep-06	15.72	9599	0.42	-263.3	61.40	12.59	3800	12.5	-	0.12300	0.171	0.00463	0.0154	-	-
26-Oct-06	10.99	9955	0.88	-207.5	82.30	12.93	3600	12.6	-	0.16100	<1.500	0.01950	<0.1000	-	-
15-Nov-06	10.58	12040	1.82	149.2	188.00	12.87	3400	12.5	-	0.03060 J	<0.150	0.00450	<0.0100	-	-
20-Dec-06	8.85	10990	0.71	-152.0	32.80	13.02	2600 J	12.8	-	0.05260	<0.150	0.01300	<0.0100	-	-
24-Jan-07	8.29	10440	0.97	-139.8	13.70	13.05	2500 J	12.4	-	0.05860	<0.150	0.01310	<0.0100	-	-
12-Feb-07	8.88	10590	0.86	-125.8	56.40	13.06	3400	12.5	-	0.06130	<0.150	0.01400	<0.0100	-	-
27-Mar-07	9.45	9163	1.25	-42.4	18.40	11.53	2900 J	12.5 J	-	0.04410	<0.150	0.00181	<0.0100	-	-
18-Apr-07	8.90	8155	2.63	2.3	37.20	12.77	3300 J	12.4	-	0.02930	<0.150	0.00198	<0.0100	-	-
31-May-07	20.12	11050	5.30	-153.9	9.31	11.59	2800 J	12.5	-	0.04850	<0.150	0.01510 J	<0.0100	-	-
20-Jun-07	18.28	12000	5.41	-122.5	16.10	12.04	4300 J	12.4 J	-	0.02680	<0.150	0.00233	<0.0100	-	-
31-Jul-07	16.53	12200	1.70	-151.6	24.80	12.48	6000	12.6 J	-	0.08760	<0.150	0.00103	<0.0100	-	-
29-Aug-07	17.00	9570	1.12	-183.1	268.00	12.78	4600 J	12.6 J	-	0.10600	<0.150	0.00946	<0.0100	-	-
27-Sep-07	14.49	8263	52.40	-183.0	211.00	12.42	2800	12.5 J	-	0.12500	<0.150	0.01540	<0.0100	-	-
26-Oct-07	9.49	6144	4.88	-147.2	92.40	12.85	3300 J	12.3 J	-	0.12400	0.260	0.02490	0.0101	-	-
30-Nov-07	5.53	7703	2.13	-122.6	127.00	12.67	2200	12.4 J	-	0.17400	0.184	0.01410	<0.0100	-	-
12-Dec-07	5.24	11609	3.43	-144.8	116.00	12.60	4100	12.4 J	-	0.11000	<0.150	0.01130	<0.0100	-	-
24-Jan-08	3.73	9649	13.81	-138.0	-	10.74	2500	11.8 J	-	0.10100	1.530	0.00974	0.0815	-	-
28-Feb-08	-	-	-	-	51.20	-	2900	12.4 J	-	0.05850	<0.150	0.01260	<0.0100	-	-
25-Mar-08	7.06	8623	5.52	-11.2	17.40	11.26	3400	12.5 J	-	0.07430	<0.150	0.01040	<0.0100	-	-
29-Apr-08	9.74	11332	4.29	-1.3	27.70	12.82	3000 J	12.5 J	-	0.07660	<0.150	0.01330	<0.0100	-	-
20-May-08	14.53	11955	1.74	-35.8	72.70	12.82	3400	12.5 J	-	0.08730	<0.150	0.01510	<0.0100	-	-
18-Jun-08	12.77	10267	3.34	-27.0	34.00	12.86	3200 J	12.4 J	-	0.06320	<0.150	0.01690	<0.0100	-	-
26-Aug-08	15.86	7703	1.06	-72.8	38.30	12.67	2600 J	12.2 J	-	0.43000	1.220	0.03500	0.0497	759	759
20-Nov-08	9.59	8762	0.91	-65.6	74.10	13.32	3500	12.4 J	-	0.07000	<0.150	0.01680	<0.0100	848	848
12-Feb-09	3.25	554	14.29	-	108.00	13.03	550	11.8 J	-	0.04720	<0.150	0.01370	<0.0100	551	551
19-May-09	11.53	276	8.80	26.0	43.40	9.83	2500 J	12.4 J	-	0.03780	<0.150	0.01500	<0.0100	689	689
22-Sep-09	12.47	9760	1.50	159.1	625.00	12.47	3000	-	-	0.16000	0.200	0.03700	0.0100 J	990	990
15-Dec-09	5.20	11650	1.90	237.0	26.30	12.85	3000	-	-	0.08600	0.067 J	0.02100	0.0047 J	900 J	900 J
22-Mar-10	9.70	1035	-	182.0	19.40	12.58	3000	-	-	0.07300	<0.200	0.01700	<0.0200	870	870
17-Jun-10	11.70	9610	0.08	-	6.59	12.48	2700	-	-	0.06600	0.095 J	0.01500	0.0020 J	780	780
21-Sep-10	15.00	6710	1.26	152.6	140.00	12.29	2400	-	-	0.30000	1.100 J+	0.03900	0.0300 J+	570	570
8-Dec-10	8.30	10110	1.00	-	5.44	12.63	2600	-	-	0.06400	<0.200	0.01000	<0.0200	860	860
30-Mar-11	8.60	4810	0.46	136.3	13.70	14.31	2500 J	-	-	0.06500	<0.200	0.00960	<0.0200	720	720
21-Jun-11	16.60	10420	1.63	111.9	3.40	12.36	5200	-	-	0.06000	<0.200	0.00910	0.0017 J	770	770
28-Sep-11	14.80	5270	2.34	70.0	66.70	12.17	2200	-	-	0.22000	0.360	0.01100	0.0072 J	1000	1000
15-Dec-11	6.00	7330	2.47	104.2	18.30	13.09	2800	-	-	0.08300	<0.200	0.00290	<0.0200	880	880
21-Mar-12	5.50	11040	3.15	294.2	12.00	12.39	2600	-	-	0.06700	<0.200	0.00470	<0.0200	760	760
19-Jun-12	5.50	11040	3.15	294.2	12.00	12.39	2600	-	-	0.05800	<0.200	0.00670	<0.0200	690	690
20-Sep-12	16.10	9560	3.27	76.0	10.70	12.35	2900	-	-	0.08400	<0.200	0.00300	<0.0200	830	830
19-Dec-12	4.10	1320	10.11	303.1	5.86	9.69	700	-	-	0.07500	0.690	0.00430	0.0710	250	250
26-Feb-13	7.30	9950	1.77	161.8	25.50	12.66	2000	-	-	0.07000	<0.500	0.00029 J	<0.0200	720	720
23-May-13	11.50	8040	2.23	266.8	22.70	12.47	2500	-	-	0.05700	<0.500	0.00340	<0.0200	690	690
22-Aug-13	17.40	8810	2.42	10.8	38.50	12.79	2590	-	-	0.05780	<0.100	0.00150	0.0020	863	863
19-Nov-13	9.00	7090	2.47	79.0	62.80	12.54	2720	-	-	0.05250	<0.100	0.00420	<0.0020	909	909
1-Apr-14	10.30	6080	0.55	128.2	37.10	6.08	1890	-	-	0.05460	<0.100	0.00110	<0.0013	687	687
22-May-14	13.60	7360	1.22	34.4	-	11.75	2330	-	-	0.06090	<0.100	0.00200	<0.0020	689	689
13-Aug-14	18.26	7844	0.33	1.2	7.30	12.53	2770	-	-	0.07000	<0.100	0.00210	<0.0020	849	849
12-Nov-14	9.00	585	3.17	-47.8	17.50	12.93	2450	-	-	0.08320	<0.100	0.00390	<0.0020	837	837
12-Feb-15	10.70	7540	2.68	-18.6	9.64	12.71	2150	-	-	0.05160	<0.100	0.00030	<0.0020	690	690
4-May-15	12.90	9140	2.73	110.4	26.80	13.02	2520	-	-	0.05460	<0.100	0.00022 J	<0.0020	734	734
5-Aug-15	19.50	8060	2.58	-29.8	61.10	12.62	2980	-	-	0.06390	<0.250	0.00170	0.0047 J	898	898
3-Nov-15	11.10	5150	0.37	38.6	171.00	8.93	1840	-	-	0.10900	0.270	0.02170	0.0130	747	747
9-Feb-16	9.70	7390	0.78	80.8	7.79	13.07	2170	-	-	0.05360	<0.100	0.00120	0.0060	601	601
3-May-16	14.70	7530	1.40	358.1	2.65	12.98	2480	-	-	0.0542	<0.100	0.00170 J-	0.0020	711	711
22-Aug-16	20.50	8	2.10	-	59.00	12.95	2780	-	-	0.09130	<0.250	0.00587	0.0023 J	831	831
1-Nov-16	12.30	2884	2.66	-72.1	19.10	13.17	2620	-	-	0.04620	<0.100	0.00964	<0.0020	841	841
31-Jan-17	7.40	8510	2.37	-167.0	7.35	13.17	2050	-	-	0.05250	0.026 J	0.00119	0.0016 J	582	582
31-May-17	14.60	7500	2.44	-	4.17	12.89	1900	-	-	0.04540	0.011 J	0.00068 J+	0.0007 J	615	615
17-Aug-17	18.30	8460	3.35	-84.0	15.90	12.79	2680	-	-	0.05680	0.003 J	0.00214	0.0013 J	750	750
9-Nov-17	8.20	7215	3.48	90.9	18.20	12.65	2360	-	-	0.0621	<0.1	0.00352	0.0025	822	822
27-Feb-18	6.60	5312	3.75	2.3	2.49	12.11	1970	-	-	0.0502	<0.1	0.00753	0.0025	521	521

Table A-1a: Summary of Lower Disposal Area - Surface Water Sampling Results - Still Well
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters						General Chemistry		Metals (mg/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	pH measured in lab (standard units)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
2-May-18	11.10	8260	1.70	-	13.00	12.92	2360	-	-	0.0434	0.133	0.02170 J+	0.0088	552	552
21-Aug-18	20.22	6260	4.71	-42.1	5.84	12.58	2100	-	-	0.0522	0.10 U	0.000138	<0.002	629	629
7-Nov-18	9.70	995	6.72	126.8	20.60	9.15	1880	-	-	0.644	1.35	0.0802	0.0491	502 J+	502 J+
11-Mar-19	10.60	1354	5.93	-18.7	7.19	10.31	1710	-	-	0.0528	0.0091 J	0.0212	0.0013 J	501	501
9-May-19	13.80	6973	6.40	18.1	16.70	12.36	1980	-	-	0.0416	0.0079 J	0.0134	0.0008 J	521	521
26-Aug-19	17.80	6405	3.91	Note 1	5.15	12.56	2570	-	-	0.0425	<0.1	0.0154	0.001 J	722	722
14-Nov-19	9.70	6065	0.41	-53.3	12.00	12.67	1750	-	-	0.167	0.121 J	0.0239	0.0065	563	563
13-Feb-20	7.60	4936	0.37	-139.0	2.56	12.66	1630	-	-	0.0486	0.0136 J	0.00608	0.0031	490	490
13-Aug-20	15.00	6817	2.55	-42.8	2.02	12.39	2620	-	-	0.0419	0.0063 J	0.00086	0.0009 J	659	659
10-Dec-20	8.80	4534	0.55	-26.2	5.87	12.79	1670	-	-	0.0827	0.241	0.0111	0.0108	510	510
4-Mar-21	7.70	4728	0.05	-42.0	0.85	11.94	1470	-	-	0.0618	0.1 U	0.00149	0.008 U	512	512
9-Jun-21	13.40	5213	0.89	-148.4	4.06	12.56	1600	-	-	0.0917	-	0.00572	-	471	471
13-Oct-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	DRY	-	DRY	DRY
Preliminary Screening Level[c]	-	-	-	-	-	6.5-8.5	-	6.5-8.5	0.006	0.005	-	0.015	-	-	0.08

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not analyzed or not available		
<	Analyte not detected above the reporting limit shown.		
a	North Creek Analytical, Inc.		
b	Severn Trent Laboratories		
c	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
U	Data validation code; not detected at the Reporting Limit (RL)		
J	Data validation code; estimated value		
J+	Data validation code; estimated value with positive bias		
°C	Degrees Celsius		
Note 1	ORP measurements not available due to faulty sensor.		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-1b: Summary of Lower Disposal Area - Surface Water Sampling Results - Infiltration Ponds #1
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters						General Chemistry		Metals (mg/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	pH measured in lab (standard units)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
1-Feb-05	8.17	1315	-	-	8.13	9.95	874	9.75	-	0.08490	0.234	0.00499	0.0249	-	-
9-Mar-05	14.04	1183	-	-	23.00	9.59	960	9.46	-	0.09620	0.470	0.00392	0.0321	-	-
5-Apr-05	11.00	1115	-	-	43.70	9.80	800	9.49	-	0.06230	0.574	0.00321	<0.0200	-	-
10-May-05	14.91	1275	-	-	564.00	9.83	844	9.79	-	0.07650	0.790	<0.00500	0.0462	-	-
7-Jun-05	15.11	1140	-	-	239.00	9.61	804	9.53	-	0.08430	0.722	<0.00500	0.0327	-	-
15-Jul-05[a]	23.56	1276	-	-	94.40	9.30	1100	9.54	-	0.09250	<0.300	0.00414	0.0534	-	-
15-Jul-05[b]	-	-	-	-	-	-	874	9.45	-	0.09990	0.533	0.00382	<0.0200	-	-
9-Aug-05[a]	19.05	1744	-	-	57.20	9.44	1000	9.22	-	0.12300	0.792	0.00510	0.0499	-	-
9-Aug-05[b]	-	-	-	-	-	-	1030	9.05	-	0.14000	0.339	0.00612	0.0308	-	-
14-Sept-05[a]	13.59	1154	-	-	99.80	8.97	790	9.04	-	0.11000	<0.750	0.00354	<0.0500	-	-
14-Sept-05[b]	-	-	-	-	-	-	806	9.03	-	0.11800	0.877	0.00518	-	-	-
5-Oct-05	14.82	970	-	-	82.70	8.98	736	8.73	-	0.08930	0.329	0.00283	0.0263	-	-
9-Nov-05	8.43	1285	-	-	135.00	8.83	970	9.28	-	0.04600	0.194	<0.01000	0.0295	-	-
9-Dec-05	2.12	1361	-	-	14.20	9.71	980	9.54	-	0.06460	0.179	0.00311	0.0399	-	-
19-Jan-06	6.66	728	7.96	-	64.70	10.13	470 J	9.77	-	0.04070	0.181	0.00229	0.0402	-	-
16-Feb-06	2.63	624	9.75	30.3	25.20	8.54	530 J	8.99	-	0.01330	<0.150	<0.00100	0.1190	-	-
15-Mar-06	7.16	639	11.61	236.8	23.10	9.22	530 J	9.19	-	0.02250	0.167	<0.00100	0.0791	-	-
7-Apr-06	11.91	1013	10.81	27.8	18.80	9.98	780	9.72	-	0.06380	0.344	0.00324	0.0483	-	-
16-May-06	15.58	1160	7.58	50.6	16.50	9.57	950	9.65	-	0.07790	0.462	0.00249	0.0505	-	-
23-Jun-06	18.63	1261	7.41	-	126.00	9.85	920	9.35	-	0.07070	0.228	0.00365	0.0366	-	-
20-Jul-06	20.65	932	5.36	-35.1	279.00	8.94	980	8.79	-	0.10800	0.287	0.00348	0.0285	-	-
22-Aug-06	15.65	860	7.64	86.5	218.00	9.22	760	9.15	-	0.11600	0.734	0.00384	0.0237	-	-
26-Sep-06	21.86	903	8.98	-72.8	263.00	8.89	820	8.76	-	0.07580	0.616	0.00306	0.0558	-	-
26-Oct-06	11.04	702	9.97	90.4	221.00	8.56	760	8.59	-	0.06830	<1.500	0.00166	<0.1000	-	-
15-Nov-06	7.73	715	9.21	149.2	33.60	9.07	500	9.25	-	0.02080	0.174	0.00229	0.0367	-	-
20-Dec-06	4.98	1082	9.05	86.3	9.29	9.78	680	9.83	-	0.05130	0.269	0.00267	0.0549	-	-
24-Jan-07	2.12	1058	10.71	130.4	20.50	9.97	640 J	9.97	-	0.06610	<0.150	0.00758	0.0403	-	-
12-Feb-07	10.10	1218	12.40	-61.8	103.00	9.98	860	9.97	-	0.09010	0.642	0.00449	0.0451	-	-
27-Mar-07	7.94	772	9.67	13.3	25.50	8.27	540 J	9.96 J	-	0.04980	<0.150	0.00274	0.0336	-	-
18-Apr-07	7.52	2418	9.23	84.4	58.10	11.73	1400	11.4 J	-	0.07920	0.212	0.01050	0.0296	-	-
31-May-07	15.45	1879	6.47	-92.2	3.15	9.79	1300	10 J	-	0.16500	<0.750	0.00811	0.1340	-	-
20-Jun-07	24.18	1925	10.88	-52.1	251.00	10.24	1300 J	10.1 J	-	0.14400	<0.150	0.00534	<0.0100	-	-
31-Jul-07	19.05	1418	5.97	-36.1	128.00	9.81	1200	9.4 J	-	0.14000	1.070	0.00723	0.0433	-	-
29-Aug-07	18.00	1193	5.60	-35.4	158.00	9.29	1300 J	9.48 J	-	0.16400	0.427 J	0.00701	0.0277 J	-	-
27-Sep-07	14.97	987	5.44	45.9	186.00	8.99	970	9.15 J	-	0.19600	0.438	0.00549	0.0326	-	-
26-Oct-07	2.66	504	6.02	63.1	282.00	8.64	770 J	8.17 J	-	0.04290	0.422	0.00225	0.0602	-	-
30-Nov-07	1.86	955	9.77	190.1	163.00	10.02	570	8.9 J	-	0.04890	0.205	0.00162	0.0271	-	-
12-Dec-07	4.22	790	11.11	126.8	56.00	9.40	520	9.05 J	-	0.03430	0.179	0.00167	0.0175	-	-
24-Jan-08	2.12	875	19.35	142.0	-	8.68	640	9.24 J	-	0.04280	0.162	0.00166	0.0155	-	-
28-Feb-08	-	-	-	-	25.60	-	510	9.18 J	-	0.04130	<0.150	0.00266	0.0159	-	-
25-Mar-08	5.27	937	14.46	91.0	86.80	9.60	630	9.55 J	-	0.05020	0.180	0.00215	0.0213	-	-
29-Apr-08	9.02	1079	10.56	190.8	61.30	9.87	670 J	9.76 J	-	0.06600	0.27 J	0.00287	0.0286	-	-
20-May-08	15.42	1191	7.58	160.0	91.40	9.75	820	9.7 J	-	0.08590	0.334	0.00485	0.0432	-	-
18-Jun-08	12.94	1124	9.62	167.3	76.90	9.65	810 J	9.55 J	-	0.07760	0.486	0.00367	0.0222	-	-
26-Aug-08	15.95	880	3.75	53.5	490.00	8.00	650 J	7.81 J	-	0.07690	0.334	0.00164	0.0713	144	-
20-Nov-08	6.91	897	7.02	183.5	376.00	10.22	960	10.1 J	-	0.08720	0.196	0.00421	0.0584 J	313	-
12-Feb-09	1.29	-	13.72	-	10.20	10.52	800	10.1 J	-	0.11800	0.177	0.00584	0.0561	271	-
19-May-09	11.90	862	6.52	71.9	133.00	9.59	840 J	9.9 J	-	0.09130	0.350	0.00399	0.0366	238	-
18-Nov-09	5.70	852	6.61	185.9	68.00	9.88	490	-	-	0.04000	0.700	0.00440	0.0350	160	-
15-Dec-09	2.30	1162	8.22	460.1	63.30	9.97	640	-	-	0.07100	0.850	0.00720	0.0500	220	-
24-Mar-10	13.00	1299	5.83	408.2	13.00	10.48	1,000	-	-	0.14000	0.720	0.00850	0.0370	340	-
17-Jun-10	12.00	947	4.45	332.1	33.60	10.56	540	-	-	0.06200	0.660	0.00620	0.0630	220	-
22-Sep-10	15.60	1736	3.14	342.5	33.00	9.84	1300	-	-	0.13000	2.900	0.02100	0.1700 J+	360	-
8-Dec-10	5.40	1382	7.73	371.1	12.10	10.75	870	-	-	0.10000	0.490	0.01200	0.0370	300	-
29-Mar-11	9.60	627	5.16	577.6	19.80	11.05	760 J	-	-	0.07800	0.200 J+	0.00310	0.0210	270	-
21-Jun-11	21.00	1778	5.46	239.1	11.60	10.44	1700 J	-	-	0.07800	0.810	0.01100	0.0650	340	-
27-Sep-11	14.80	1382	3.98	239.8	33.40	9.58	1600	-	-	0.12000	1.600	0.01300	0.0820	670	-
14-Dec-11	3.10	1046	5.60	281.7	15.70	9.93	1100	-	-	0.08700	1.100	0.01400	0.0630	330	-
20-Mar-12	6.10	986	11.04	271.1	11.70	10.32	500	-	-	0.07100	0.470	0.00330	0.0590	180	-
19-Jun-12	14.80	862	7.83	352.2	38.80	9.57	500	-	-	0.06400	0.560 J+	0.00370	0.0540	180	-
20-Sep-12	12.40	1961	1.81	419.0	10.30	9.43	4600 J	-	-	0.13000	0.480	0.00210	0.0470	440	-
19-Dec-12	4.10	1320	10.11	303.1	5.86	9.69	700	-	-	0.07500	0.690	0.00430	0.0710	250	-
25-Feb-13	7.10	1963	9.30	234.7	26.60	11.30	1000	-	-	0.09000	0.100 J	0.00600	0.0230	370	-
22-May-13	10.50	4380	7.72	411.7	202.00	12.56	1400	-	-	0.02500	<0.500	0.01100	0.0064 J	530	-
21-Aug-13	20.10	12850	1.24	-2.3	18.20	12.18	3430	-	-	0.10600	0.270	0.04750	0.0210	1180	-
20-Nov-13	5.70	1198	8.03	131.9	22.20	10.23	704	-	-	0.04130	0.210	0.00620	0.0400	260	-
1-Apr-14	9.80	1708	9.77	136.4	8.79	12.26	832	-	-	0.02410	0.049 J	0.00300	0.0050 J+	317	-
23-May-14	12.63	6574	8.63	120.8	-	12.61	2120	-	-	0.00480	<0.100	0.03540	<0.0020	811	-
13-Aug-14	18.99	3273	6.29	77.7	89.00	12.34	1660	-	-	0.07140	<0.100	0.00630 J	0.0070	548	-
11-Nov-14	8.80	578	3.55	179.2	62.50	12.73	2000	-	-	0.05670	<0.100	0.02040	<0.0020	739	-
11-Feb-15	9.70	487	9.97	66.2	42.00	9.40	337	-	-	0.00910	0.120	0.00090	0.0120	87.7	-
4-May-15	14.30	4210	5.60	281.2	7.67	12.53	1670	-	-	0.03530	0.039 J	0.00740	0.0014 J	589	-
5-Aug-15	19.90	4890	5.14	18.8	89.80	11.79	3080	-	-	0.08540	0.390	0.01810	0.0120	1150	-
3-Nov-15	9.20	760	6.39	129.9	34.60	9.78	707	-	-	0.02350	0.270	0.00530	0.0150	235	-
9-Feb-16	10.20	-	10.29	100.3	8.01	12.78	1330	-	-	0.00530	<0.1000	0.02480	0.0030	530	-
2-May-16[d]	-	-	-	-	-	-	2490	-	-	0.02400	0.0754 J	0.0370 J-	0.0041 J	996	-
23-Aug-16	19.30	4250	3.95	386.5	46.30	11.76	2970	-	-	0.10500	0.404	0.01430	0.0113	989	-
1-Nov-16	11.70	229	9.26	185.2	48.90	10.33	508	-	-	0.01260	0.155	0.00079	0.0067	164	-
1-Feb-17	2.40	8890	10.78	26.1	3.17	13.36	2220	-	-	0.01010	<0.250	0.04680	<0.0050	854	-
30-May-17	14.70	6800	56.90	17.7	1.38	12.73	1720	-	-	0.00175	0.030 J	0.03160 J+	0.0009 J	759	-
17-Aug-17	18.10	5410	3.88	-19.5	14.90	11.93	3080	-	-	0.06260	0.122 J	0.03280	0.0111	1150	-

Table A-1b: Summary of Lower Disposal Area - Surface Water Sampling Results - Infiltration Ponds #1
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters						General Chemistry		Metals (mg/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	pH measured in lab (standard units)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
10-Nov-17	7.90	2016	7.72	64.4	30.70	12.00	1520	-	-	0.063	0.156	0.0322	0.0141	578	-
27-Feb-18	5.70	5062	8.76	42.0	3.74	12.28	1620	-	-	0.015	<0.1	0.0546	<0.002	678	-
1-May-18	12.30	6620	5.25	-	1.94	12.73	2070	-	-	0.00242	0.0117 J	0.03010 J+	0.0010 J	745	-
21-Aug-18	23.85	5058	2.95	106.0	5.62	11.64	3090	-	-	0.0773	0.25 U	0.0288	0.0094	1200	-
6-Nov-18	11.70	1078	3.50	-5.4	46.90	8.48	1180	-	-	0.00603	<0.5	0.00544	0.0298	359 J+	-
13-Mar-19	3.90	331	8.08	183.7	29.10	10.72	455	-	-	0.0119	0.131	0.00221	0.0053	185	-
8-May-19	17.20	6113	6.38	6.4	6.17	12.39	2040	-	-	0.0077	0.0246 J	0.0268	0.0018 J	830	-
26-Aug-19	24.22	4177	2.47	Note 1	7.21	9.12	2840	-	-	0.0172 J	0.405 J	0.00527 J	0.0172 J	1020	-
13-Nov-19	8.70	2523	1.61	-201.7	33.00	8.67	1930	-	-	0.0325	0.211	0.00444	0.024	726	-
12-Feb-20	7.80	971	7.99	150.3	16.00	7.92	836	-	-	0.0143	0.0234 J	0.00396	0.0279	243	-
12-Aug-20	18.30	3655	4.33	123.5	5.74	8.98	2570	-	-	0.0208	0.124 J	0.00259	0.0048 J	988	-
9-Dec-20	8.30	740	7.80	202.0	18.40	8.21	632	-	-	0.0149	0.686	0.00511	0.0172	207	-
3-Mar-21	8.30	1446	7.87	217.0	15.50	8.56	1310	-	-	0.0353	0.118	0.00611	0.0079 J	509	-
9-Jun-21	15.10	2963	4.88	174.9	4.37	8.79	2400	-	-	0.0237	-	0.00151	-	923	-
13-Oct-21	9.30	2563	4.73	34.2	39.30	8.84	2610 J-	-	0.01610	0.01970	-	0.00612	-	831	0.00311
Preliminary Screening Level[c]	-	-	-	-	-	6.5-8.5	-	6.5-8.5	0.006	0.005	-	0.015	-	-	0.08

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not analyzed or not available
<	Analyte not detected above the reporting limit shown.
a	North Creek Analytical, Inc.
b	Severn Trent Laboratories
c	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
d	Field parameters for Infiltration Ponds #1 were inadvertently not collected during May 2016 sampling
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.
µmhos/cm	Micromhos per centimeter
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
mg/L	Milligrams per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit

Table A-1c: Summary of Lower Disposal Area - Surface Water Sampling Results - Weir
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters							General Chemistry		Metals (mg/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)	pH (standard units)	Weir Flow Rate (gpm)	Total Dissolved Solids (mg/L)	pH measured in lab (standard units)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
1-Feb-05	8.47	2205	-	-	6.24	10.23	-	1440	10.37	-	0.14900	0.323	0.01070	0.0569	-	-
9-Mar-05	11.38	2054	-	-	7.80	10.15	2.64	1630	10.11	-	0.20000	0.526	0.01190	0.0938	-	-
5-Apr-05	7.7	2169	-	-	7.99	10.42	10.00	1420	10.18	-	0.12900	1.150	0.00861	0.0540	-	-
10-May-05	14.1	1912	-	-	562.00	9.87	25.00	1210	9.85	-	0.10500	1.460	0.00763	0.0818	-	-
7-Jun-05	15.74	2588	-	-	11.60	10.03	6.82	1570	10.18	-	0.13800	1.470	0.01010	0.1170	-	-
15-Jul-05[a]	20.38	3184	-	-	8.91	10.36	0.94	3200	10.3	-	0.19200	0.367	0.00998	0.2060	-	-
15-Jul-05[b]	-	-	-	-	-	-	-	1990	10.44	-	0.18900	1.460	0.01080	0.1640	-	-
9-Aug-05[a]	-	-	-	-	-	-	Dry	-	-	-	-	-	-	-	-	-
9-Aug-05[b]	-	-	-	-	-	-	Dry	-	-	-	-	-	-	-	-	-
14-Sept-05[a]	15.60	3792	-	-	14.50	9.92	0.07	2800	10	-	0.20800	1.250	0.05780	0.1000	-	-
14-Sept-05[b]	-	-	-	-	-	-	-	2730	10.16	-	0.22300	1.070	0.07330	-	-	-
5-Oct-05	12.96	3237	-	-	4.99	9.89	0.32	2150	9.97	-	0.17000	1.430	0.01250	0.2250	-	-
9-Nov-05	8.40	2545	-	-	13.80	9.64	7.50	1900	9.88	-	0.07820	0.167	<0.01000	0.0835	-	-
9-Dec-05	3.34	1377	-	-	8.03	10.43	5.00	1700	10.4	-	0.13000	0.189	0.00612	0.0857	-	-
19-Jan-06	7.37	1424	7.92	-	12.20	10.61	7.50	1000 J	10.4	-	0.08950	0.449	0.00481	0.1040	-	-
16-Feb-06	3.74	1680	12.19	*	14.60	10.78	7.50	1400 J	10.8	-	0.10500	0.343	0.00546	0.0817	-	-
15-Mar-06	7.21	1634	12.61	194.4	7.44	10.63	5.28	1300 J	10.7	-	0.12800	0.204	0.00638	0.0750	-	-
7-Apr-06	14.33	2055	8.54	55.3	9.21	10.84	3.17	1500	10.4	-	0.14300	0.552	0.00663	0.1140	-	-
16-May-06	21.65	2474	6.09	11.6	9.37	10.69	0.83	2000	10.6	-	0.15700	0.921	0.00819	0.2000	-	-
23-Jun-06	24.58	2820	6.66	-	15.40	11.64	0.63	1400	10.6	-	0.15400	0.210	0.01310	0.1090	-	-
20-Jul-06	21.17	3291	8.56	-85.5	68.30	10.75	Dry*	2300	10.8	-	0.13100	0.454	0.00941	0.0406	-	-
22-Aug-06	-	-	-	-	-	-	Dry	-	-	-	-	-	-	-	-	-
26-Sep-06	16.38	2997	3.00	-57.1	31.60	9.92	Dry*	2900	9.94	-	0.10300	1.070	0.01680	0.1010	-	-
26-Oct-06	11.00	2650	5.35	59.6	25.80	9.65	0.63	2300	9.45	-	0.13200	2.220	0.02630	<0.100	-	-
15-Nov-06	8.51	1708	8.16	-35.7	34.70	10.15	17.14	1200	10.1	-	0.06740	0.518	0.00807	0.0794	-	-
20-Dec-06	5.07	1927	8.84	14.8	7.94	10.67	10.91	1200	10.5	-	0.09970	0.384	0.00478	0.0844	-	-
24-Jan-07	2.30	1846	10.72	5.9	11.70	10.37	9.00	1100 J	10.6	-	0.12600	0.359	0.01610	0.0729	-	-
12-Feb-07	9.26	1777	11.75	-91.3	26.70	10.56	6.00	1100	10.3	-	0.13900	0.283	0.00712	0.0808	-	-
27-Mar-07	8.71	1219	9.18	-12.6	13.80	8.70	24.00	840 J	10.2 J	-	0.08850	0.289	0.00486	0.0821	-	-
18-Apr-07	7.39	4563	8.65	41.0	16.80	12.12	9.00	2000	11.9 J	-	0.09750	0.830	0.03250	0.0408	-	-
31-May-07	-	3916	6.33	-149.5	10.70	10.96	1.36	2100	11.5 J	-	0.27500	<0.750	0.02290	0.1560	-	-
20-Jun-07	22.59	3336	8.50	-20.4	42.50	10.46	0.29	2400 J	10.4 J	-	0.25500	<0.150	0.02740	0.0309	-	-
31-Jul-07	18.94	3915	7.85	-69.2	41.30	10.92	0.06	3300	10.8 J	-	0.23600	1.100	0.01260	0.0846	-	-
29-Aug-07	21.52	2406	5.75	-5.3	24.10	9.72	Dry*	2300 J	9.53 J	-	0.12900	0.627	0.00845	0.1940	-	-
27-Sep-07	13.88	2009	5.75	15.5	28.30	9.56	0.06	1600	9.51 J	-	0.20700	1.150	0.00437	0.4170	-	-
26-Oct-07	7.68	1662	9.06	80.5	13.00	9.92	2.04	1800 J	9.74 J	-	0.13200	0.591	0.00753	0.1960	-	-
30-Nov-07	4.34	2446	9.63	26.7	11.70	9.86	2.63	1600	9.74 J	-	0.13500	0.432	0.00827	0.1000	-	-
12-Dec-07	5.88	2056	10.34	39.3	10.30	10.18	2.63	1500	9.85 J	-	0.10500	0.324	0.00573	0.0784	-	-
24-Jan-08	3.05	1601	15.03	42.3	-	9.40	2.63	1000	9.73 J	-	0.08740	0.451	0.00406	0.1500	-	-
28-Feb-08	-	-	-	-	9.22	-	4.13	1200	10.1 J	-	0.11800	0.260	0.00892	0.0714	-	-
25-Mar-08	6.80	1622	12.37	95.1	16.40	9.98	5.25	1100	9.98 J	-	0.11000	0.307	0.00386	0.0683	-	-
29-Apr-08	7.53	1997	9.10	137.4	11.90	10.29	7.50	1100 J	10.4 J	-	0.12400	0.328	0.00705	0.0789	-	-
20-May-08	16.35	2504	9.03	77.4	32.90	10.92	7.50	1700	10.8 J	-	0.14600	0.558	0.01470	0.1580	-	-
18-Jun-08	11.82	2925	8.32	68.3	25.70	11.14	1.69	1800 J	10.9 J	-	0.20800	0.351	0.00848	0.1540	-	-
26-Aug-08	17.69	3376	7.98	62.8	41.10	10.43	0.84	2200 J	10.3 J	-	0.28700	0.391	0.01320	0.4630	647	-
20-Nov-08	8.10	1447	9.65	112.0	43.70	11.00	11.25	1400	10.6 J	-	0.12100	0.386	0.01620	0.0888	485	-
12-Feb-09	2.99	1214	14.46	-	14.60	10.93	4.06	1200	10.6 J	-	0.21900	0.410	0.01180	0.0986	434	-
19-May-09	13.05	1962	7.92	32.6	36.70	10.23	7.50	1800 J	10.8 J	-	0.21000	0.620	0.01370	0.1430	521	-
24-Sep-09	16.30	2792	1.59	263.8	13.70	8.82	Dry*	2400	-	-	0.13000	8.600	0.05300	0.6400	730	-
15-Dec-09	2.80	1702	7.47	343.0	-	10.18	6.67	1200	-	-	0.17000	2.300	0.02200	0.1200	330	-
24-Mar-10	13.80	2629	2.09	270.7	263.00	11.46	6.03	1800	-	-	0.18000	0.660	0.02000	0.0360	600	-
17-Jun-10	12.00	1876	0.01	-	157.00	10.76	14.15	1200	-	-	0.02700	1.600	0.00390	0.1700	410	-
20-Sep-10	11.40	3100	6.34	198.6	12.20	10.63	2.38	2800	-	-	0.25000	4.800	0.04000	0.4600	580	-
7-Dec-10	6.60	2455	4.03	154.0	11.00	11.61	16.69	1600	-	-	0.24000	1.300	0.02600	0.0710	510	-
30-Mar-11	8.10	848	0.22	136.1	31.50	13.08	58.61	940 J	-	-	0.09100	0.720 J+	0.00990	0.0500	330	-
22-Jun-11	14.40	2286	5.68	164.2	13.20	11.28	5.68	2600 J	-	-	0.12000	1.200	0.02500	0.1000	490	-
27-Sep-11	16.20	1911	4.62	253.4	39.10	10.07	13.40	2100	-	-	0.17000	4.900	0.04500	0.4400	880	-
15-Dec-11	4.10	1439	7.40	139.4	10.60	10.33	6.65	1400	-	-	0.18000	2.000	0.02100	0.1100	500	-
20-Mar-12	5.20	1687	8.50	27.5	9.60	11.17	60.00	410	-	-	0.13000	0.970	0.00740	0.1700	290	-
18-Jun-12	14.70	2336	0.11	326.9	15.60	11.25	60.00	410	-	-	0.13000	1.000 J+	0.00980	0.0540	430	-
20-Sep-12	15.30	2972	7.81	106.0	12.10	9.55	0.10	1400 J	-	-	0.13000	0.460	0.00220	0.0480	450	-
18-Dec-12	4.80	1908	9.34	-14.2	7.41	10.28	18.50	870	-	-	0.12000	1.100	0.00810	0.3000	390	-
26-Feb-13	5.80	6470	11.27	161.6	22.00	12.46	9.90	1800	-	-	0.09900	<0.500	0.06200	0.0200	710	-
23-May-13	10.50	1625	9.14	291.8	14.40	9.93	4.84	980	-	-	0.09400	2.100	0.02100	0.1500	310	-
21-Aug-13	15.70	7260	7.69	51.6	9.00	10.71	0.32	2780	-	-	0.34200	0.770	0.01830	0.1610	954	-
19-Nov-13	8.10	2032	10.00	87.4	9.95	11.19	25.40	1270	-	-	0.07080	0.350	0.01690	0.0800	487	-
1-Apr-14	13.70	3420	9.11	129.4	59.00	12.57	20.77	1300	-	-	0.03730	0.120	0.01200	0.0160	572	-
23-May-14	12.83	986	11.63	105.7	-	9.36	-	822	-	-	0.04700	0.550	0.01390	0.1950	274	-
13-Aug-14	18.38	2000	5.52	63.6	8.93	8.02	2.00	1250	-	-	0.01340	0.050	0.00060	0.4140	326	-
11-Nov-14	6.70	259	9.77	164.8	4.27	8.09	1.50	955	-	-	0.01900	0.080	0.00020	0.0780	315	-
12-Feb-15	10.00	669	11.13	142.9	2.75	8.62	40.00	1490	-	-	0.01490	0.310	0.00180	0.2020	155	-
4-May-15	13.70	1293	8.69	181.7	155.00	9.38	0.09	1100	-	-	0.04330	0.660	0.01130	0.1700	292	-
5-Aug-15	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
3-Nov-15	9.70	1296	7.66	165.6	13.70	8.03	1.98	1200	-	-	0.01140	0.120	0.00080	0.1690	355	-
9-Feb-16	9.10	838	8.79	181.4	2.17	7.87	0.69	529	-	-	0.00780	0.110	0.00050 J+	0.0630	145	-
2-May-16	23.40	1126	6.16	128.1	7.59	7.63	Dry*	688	-	-	0.00760	0.023 J	0.00006 J-	0.3240	162	-
23-Aug-16	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
1-Nov-16	11.70	332	7.12	97.5	7.71	7.76	7.24	703	-	-	0.00918	0.097	0.00030	0.0223	207	-
1-Feb-17	2.30	925	11.55	39.1	2.04	7.71	0.30	567	-	-	0.00490	<0.050	0.00009 J	0.0397	135	-
30-May-17	13.30	817	57.50	8.3	22.20	7.40	0.30	516	-	-	0.01310	0.526	0.00008 J+	3.4700	94	-
17-Aug-17	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
9-Nov-17	7.00	851	7.57	88.0	67.30	8.43	-	865	-	-	0.0366	1.33	0.0107	0.284	236	-
27-Feb-18	5.50	498	10.68	106.0	5.39	8.60	-	503	-	-	0.00970	0.174	0.00123	0.0488	127	-
1-May-18	12.80	894	8.87	-	2.39	7.97	-	656	-	-	0.00781	0.0212 J	<0.00010 J	0.0762	195	-
21-Aug-18	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
7-Nov-18	8.50	1079	7.37	166.6	5.48	7.94	-	1030	-	-	0.01570	<0.05	0.000089 J	0.0244	322 J+	-
11-Mar-19	5.00	525	9.79	146.3	1.28	7.76	-	541	-	-	0.00421	0.0035 J	<0.0001	0.0050	133	-
9-May-19	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
26-Aug-19	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-

Table A-1c: Summary of Lower Disposal Area - Surface Water Sampling Results - Weir
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters							General Chemistry		Metals (mg/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)	pH (standard units)	Weir Flow Rate (gpm)	Total Dissolved Solids (mg/L)	pH measured in lab (standard units)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
14-Nov-19	7.40	842	4.10	214.3	19.00	7.74	Dry*	783	-	-	0.01130	0.0146 J	0.000076 J	0.1560	242	-
12-Feb-20	7.20	401	8.41	-38.3	2.47	7.53	3.96	348	-	-	0.00481	0.0201 J	0.0001 U	0.0106	87	-
13-Aug-20	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
10-Dec-20	7.20	581	6.72	185.0	0.96	7.80	8	560	-	-	0.00513	0.029 J	0.0001 U	0.0089	126	-
4-Mar-21	4.90	427	7.11	146.0	2.50	7.86	3	424	-	-	0.00370	0.0386 J	0.00011	0.0156	81	-
10-Jun-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	-	DRY	DRY	DRY	DRY	DRY	-
13-Oct-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	DRY	-	DRY	DRY
Preliminary Screening Level[a]	-	-	-	-	-	6.5-8.5	-	-	6.5-8.5	0.006	0.005	-	0.015	-	-	0.08

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

*	Sample collected from constructed wetland (alternative sampling location) upstream of weir
-	Not analyzed or not available
Dry	Weir dry; unable to collect field parameters or samples
<	Analyte not detected above the reporting limit shown
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
µmhos/cm	Micromhos per centimeter
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
gpm	Gallons per minute
mg/L	Milligrams per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit

Table A-1d: Summary of Lower Disposal Area - Surface Water Sampling Results - South Pond
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters						General Chemistry		Metals (mg/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	pH measured in lab (standard units)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
1-Feb-05	7.13	9580	-	-	4.19	13.02	4080	12.61	-	0.17400	1.140	0.02430	0.0694	-	-
9-Mar-05	14.28	9979	-	-	6.79	12.52	4640	12.57	-	0.24000	0.988	0.04210	0.0853	-	-
5-Apr-05	9.90	10820	-	-	43.50	11.99	3830	12.31	-	0.13300	2.520	0.00985	0.1280	-	-
10-May-05	15.10	6091	-	-	45.60	12.14	3270	12.4	-	0.09290	0.866	0.02550	0.0339	-	-
7-Jun-05	14.49	8257	-	-	24.20	12.19	3780	12.32	-	0.13200	1.540	0.02470	0.0526	-	-
15-Jul-05[a]	18.34	6937	-	-	6.89	11.69	5000	11.6	-	0.28100	1.260	0.03180	0.0922	-	-
15-Jul-05[b]	-	-	-	-	-	-	4260	11.8	-	0.23700	0.286	0.03420	<0.0200	-	-
9-Aug-05[a]	23.53	7654	-	-	17.l	10.26	6600	10.3	-	0.32200	8.360	0.04450	0.1480	-	-
9-Aug-05[b]	-	-	-	-	-	-	5580	10.35	-	0.34000	0.648	0.03710	0.0828	-	-
14-Sept-05[a]	18.55	6730	-	-	10.00	10.51	5100	11.1	-	0.23500	1.860	0.01930	0.1550	-	-
14-Sept-05[b]	-	-	-	-	-	-	4750	11.78	-	0.26800	2.270	0.03420	-	-	-
5-Oct-05	12.14	4323	-	-	17.60	9.80	3090	10.15	-	0.13000	0.947	0.02650	0.0638	-	-
9-Nov-05	6.78	3784	-	-	11.80	11.12	2600	11.5	-	0.12100	0.504	0.02170	0.0802	-	-
9-Dec-05	3.22	8745	-	-	12.90	12.85	3900	12.3	-	0.17500	5.720	0.01410	0.1490	-	-
19-Jan-06	7.73	5215	5.43	-	13.30	12.52	2000 J	12.3 J	-	0.02030	0.556	0.00324	0.0355	-	-
16-Feb-06	3.96	9342	8.97	231.2	9.08	12.30	4100 J	12.6	-	0.04300	1.480	0.02560	0.0548	-	-
15-Mar-06	8.72	12910	9.59	222.1	7.64	12.60	5100 J	12.7	-	0.03860	<0.150	0.04180	<0.0100	-	-
7-Apr-06	14.26	15220	6.90	18.9	3.65	12.92	5700	12.7	-	0.04850	0.382	0.06560	0.0119	-	-
16-May-06	19.75	10880	2.61	33.8	15.40	12.46	5100	12.6	-	0.13000	3.200	0.09210	0.0916	-	-
23-Jun-06	22.76	7586	2.98	-	14.10	12.65	5100	11.9	-	0.13000	0.606	0.05790	0.0618	-	-
20-Jul-06	24.33	7457	0.73	-148.4	16.70	11.33	6400	11.5	-	0.27200	1.180	0.05130	0.0418	-	-
22-Aug-06	15.03	7481	3.75	61.0	14.10	10.40	6100	10.3	-	0.31800	0.824	0.03320	0.0390	-	-
26-Sep-06	17.30	8409	1.31	-312.4	15.10	12.38	5500	12.2	-	0.23000	0.966	0.04570	0.0490	-	-
26-Oct-06	10.95	6075	4.10	-265.6	13.30	12.18	4600	11.7	-	0.24300	3.980	0.04150	<0.2000	-	-
15-Nov-06	8.07	5022	7.71	-152.7	21.50	12.24	2600	11.9	-	0.07620	0.217	0.00368	0.1110	-	-
20-Dec-06	6.32	9148	5.73	-139.6	12.20	12.85	2900 J	12.6	-	0.04610	1.630	0.00128	0.0820	-	-
24-Jan-07	2.15	12690	9.24	-98.4	9.74	13.10	3000 J	12.4	-	0.01920	<0.150	0.02680	<0.0100	-	-
12-Feb-07	9.35	14110	8.43	-86.7	32.50	13.13	4700	12.6	-	0.09620	<0.150	0.08350	0.0233	-	-
27-Mar-07	9.16	10560	8.41	-46.2	7.42	11.31	2900 J	12.5 J	-	0.00598	<0.150	0.01450	<0.0100	-	-
18-Apr-07	8.27	14570	8.32	10.8	10.30	12.79	5200	12.5 J	-	0.01980	<0.300	0.02210	<0.0200	-	-
31-May-07	23.66	13410	6.42	-95.0	31.20	11.77	5100	12.5 J	-	0.07840	<1.500	0.05040	<0.100	-	-
20-Jun-07	26.35	10050	5.53	-195.7	27.90	12.29	5300 J	12.4 J	-	0.11200	0.315	0.03820	0.0207	-	-
31-Jul-07	21.39	6666	4.76	-106.4	72.00	10.86	6300	10.9 J	-	0.20800	2.540	0.06880	0.1160	-	-
29-Aug-07	22.61	6950	1.57	-193.4	61.80	12.05	6300 J	11.7 J	-	0.14900	0.835	0.03060	0.0710	-	-
27-Sep-07	11.45	5059	2.66	-180.4	78.40	11.43	4800	11.3 J	-	0.19000	1.430	0.01740	0.1140	-	-
26-Oct-07	6.98	4147	1.44	-204.7	39.50	12.48	3900 J	11.8 J	-	0.16800	1.510	0.02550	0.0861	-	-
30-Nov-07	2.86	5030	8.50	-74.9	12.40	12.20	2600	11.7 J	-	0.12100	0.885	0.01430	0.1120	-	-
12-Dec-07	4.45	3564	2.03	-141.8	20.70	10.93	2700	11 J	-	0.07930	1.130	0.00987	0.1640	-	-
24-Jan-08	1.13	4859	4.10	-186.8	-	11.19	2200	12.4 J	-	0.08610	<0.150	0.00679	<0.0100	-	-
28-Feb-08	-	-	-	-	18.10	-	2800	11.2 J	-	0.18300	0.499	0.07340	0.0279	-	-
25-Mar-08	7.37	5413	7.88	-58.2	122.00	12.29	2900	11.7 J	-	0.18200	0.548	0.01300	0.0583	-	-
29-Apr-08	8.43	3685	9.04	59.3	19.20	11.63	2400 J	11.2 J	-	0.15200	0.708	0.01600	0.0520	-	-
20-May-08	18.03	3554	6.69	58.0	156.00	11.01	2100	10.8 J	-	0.13700	0.406	0.03830	0.0688	-	-
18-Jun-08	13.01	5680	6.46	57.5	71.80	11.14	4000 J	11 J	-	0.27900	0.381	0.03440	0.0423	-	-
26-Aug-08	18.02	2800	5.72	16.9	49.80	10.08	2500 J	9.9 J	-	0.09170	0.404	0.01860	0.0532	557	-
20-Nov-08	7.46	2011	9.04	38.3	23.60	10.49	2300	10.1 J	-	0.07290	1.980	0.00920	0.1710	566	-
12-Feb-09	1.63	1870	11.74	-	46.10	10.83	2300	10.6 J	-	0.12900	0.982	0.01720	0.1130	738	-
19-May-09	12.73	1895	5.37	-16.4	168.00	9.82	1700 J	9.94 J	-	0.07890	1.320	0.01130	0.0736	515	-
23-Sep-09	21.50	4190	0.09	175.1	14.40	9.70	4100	-	-	0.12000	4.500	0.09900	0.0890	1300	-
14-Dec-09	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-
22-Mar-10	13.10	2480	-	342.0	15.60	10.05	1700	-	-	0.07600	5.700	0.03400	0.1400	520	-
17-Jun-10	13.40	2429	5.14	-	26.10	10.77	2100	-	-	0.12000	7.700	0.08900	0.1100	630	-
21-Sep-10	16.30	2733	1.10	216.8	21.50	9.81	2200	-	-	0.02500	4.400 J	0.02700	0.2400	510	-
8-Dec-10	6.00	1994	2.70	-	18.70	10.05	1400	-	-	0.05300	6.000	0.01800	0.2100	490	-
30-Mar-11	9.10	509	0.37	179.2	13.80	12.04	730 J	-	-	0.03600	3.000	0.01400	0.0760	260	-
21-Jun-11	21.60	2092	1.90	192.2	13.60	10.07	2800 J	-	-	0.06200	4.300	0.02900	0.0890	380	-
27-Sep-11	14.60	1516	9.34	220.4	32.50	9.34	1800	-	-	0.07800	2.800	0.03600	0.0580	780	-
15-Dec-11	3.00	1449	1.90	94.6	13.80	10.75	2100	-	-	0.14000	6.200	0.07400	0.0810	630	-
21-Mar-12	2.60	1088	8.10	285.7	13.10	9.95	780	-	-	0.03000	2.800	0.00720	0.0580	240	-
19-Jun-12	17.10	1747	5.54	345.3	10.80	9.93	780	-	-	0.07000	4.200	0.02900	0.0620	400	-
20-Sep-12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19-Dec-12	4.00	1771	6.37	104.0	6.12	10.71	1300	-	-	0.04700	4.000	0.01800	0.0960	440	-
26-Feb-13	6.90	3720	5.40	196.7	10.60	11.86	1100	-	-	0.14000	4.000	0.03900	0.1000	690	-
23-May-13	11.50	2335	5.21	323.5	44.10	12.48	1800	-	-	0.13000	3.100	0.05000	0.0510	530	-
22-Aug-13	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
19-Nov-13	8.20	1256	4.12	79.3	18.20	9.89	1260	-	-	0.03980	0.650	0.02040	0.0590	487	-
1-Apr-14	15.30	2053	4.42	130.9	772.00	11.27	1800	-	-	0.11300	1.270	0.04220	0.0520	649	-
23-May-14	14.15	2187	5.50	77.3	-	10.19	1860	-	-	0.11200	1.180	0.02360	0.0840	623	-
13-Aug-14	20.29	1298	5.35	40.1	24.80	9.63	949	-	-	0.04490	0.560	0.02280	0.0480	306	-
12-Nov-14	1.30	315	4.55	-0.5	22.10	10.45	2440	-	-	0.12200	1.160	0.03420	0.0480	804	-
12-Feb-15	11.10	1267	4.01	-8.2	23.90	10.20	905	-	-	0.02720	2.500	0.00960	0.0440	320	-
4-May-15	15.60	3200	4.35	240.5	9.21	10.42	2280	-	-	0.15400	1.320	0.03080	0.0580	774	-
5-Aug-15	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
3-Nov-15	8.30	1143	2.01	88.1	35.40	9.22	1050	-	-	0.02800	0.660	0.02820	0.0430	364	-
9-Feb-16	7.30	1672	3.45	95.9	7.79	10.45	1170	-	-	0.05100 J+	0.880	0.03400	0.0540	410	-
3-May-16	14.20	3150	3.61	335.2	63.80	10.35	2260	-	-	0.14800	1.430	0.09790 J-	0.0600	777	-
24-Aug-16	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
1-Nov-16	12.10	401	5.56	-65.9	15.00	9.43	742	-	-	0.02190	0.423	0.01410	0.0213	356	-
1-Feb-17	2.10	2064	4.82	5.0	17.80	10.27	1330	-	-	0.05760	0.963	0.13900	0.0693	455	-
31-May-17	14.50	2594	5.36	-	22.70	9.93	1920	-	-	0.10500	0.888	0.05150 J+	0.0472	664	-
17-Aug-17	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
9-Nov-17	6.50	1049	6.38	92.3	14.40	10.13	1260	-	-	0.0588	1.46	0.0534 J+	0.0661	441	-
27-Feb-18	6.50	1379	4.05	-71.0	6.11	10.94	865	-	-	0.06170	0.752	0.0477 J-	0.0267	429	-

Table A-1d: Summary of Lower Disposal Area - Surface Water Sampling Results - South Pond
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters						General Chemistry		Metals (mg/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	pH measured in lab (standard units)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
2-May-18	11.60	2547	-	-	25.30	10.36	1860	-	-	0.08590	0.886	0.02670 J+	0.0436	611	-
22-Aug-18	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
7-Nov-18	9.70	995	6.72	126.8	20.60	9.15	1040	-	-	0.07600	0.950	0.06550	0.0450	333 J+	-
11-Mar-19	10.60	1354	5.93	-18.7	7.19	10.31	1270	-	-	0.04930	0.708	0.04170	0.0833	458	-
9-May-19	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
26-Aug-19	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
14-Nov-19	8.70	1180	5.98	30.9	7.38	9.03	1120	-	-	0.0672	0.787	0.0764	0.0599	418	-
13-Feb-20	4.30	1032	2.51	-126.9	6.10	10.46	927	-	-	0.0281	0.466	0.0130	0.0680	348	-
13-Aug-20	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	-	Dry	Dry	Dry	Dry	Dry	-
10-Dec-20	5.60	1000	2.52	66.8	6.02	9.66	952	-	-	0.0120	0.993	0.0066	0.0382	318	-
4-Mar-21	8.10	1271	1.98	38.0	8.02	10.35	4820	-	-	0.0506	4.370	0.0357	0.0864	435	-
10-Jun-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	-	DRY	DRY	DRY	DRY	DRY	-
13-Oct-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	DRY	-	DRY	DRY
Preliminary Screening Level[c]	-	-	-	-	-	6.5-8.5	-	6.5-8.5	0.006	0.005	-	0.015	-	-	0.08

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not analyzed or not available		
<	Analyte not detected above the reporting limit shown		
+	South Pond frozen; unable to collect field parameters or samples		
Dry	South Pond dry; unable to collect field parameters or samples		
a	North Creek Analytical, Inc.		
b	Severn Trent Laboratories		
c	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
U	Data validation code; not detected at the Reporting Limit (RL)		
J	Data validation code; estimated value		
J+	Data validation code; estimated value with positive bias		
°C	Degrees Celsius		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

APPENDIX A-2

Summary of Lower Disposal Area – Shallow/Alluvial Groundwater Sampling Results

Table A-2a: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-1A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Jul-05	35.43	578.01	15.17	883	-	-	358.00	7.03	664	-	0.00847	<0.100	<0.00200	0.6020	-	-
9-Nov-05	31.83	581.61	10.77	1037	-	-	22.20	6.89	680	-	0.00345	<0.150	<0.00100	0.0286	-	-
15-Feb-06	23.91	589.53	9.14	623	1.53	497.4	6.76	7.26	470 J	-	0.00325	<0.150	<0.00100	<0.0100	-	-
17-May-06	31.91	581.53	11.32	1029	1.33	121.6	10.30	7.18	600	-	0.00518	<0.150	<0.00100	0.3160	-	-
23-Aug-06	35.35	578.09	19.21	481	5.97	60.4	6.30	6.67	340	-	0.00170	<0.150	<0.00100	0.0234	-	-
14-Nov-06	20.00	593.44	10.35	635	4.55	95.1	22.20	7.23	550	-	0.00307	<0.150	<0.00100	0.0131	-	-
14-Feb-07	29.29	584.15	11.13	435	3.88	85.6	32.10	6.76	260	-	0.00200	<0.150	<0.00100	0.0116	-	-
30-May-07	32.90	580.54	10.30	545	6.63	145.7	6.93	6.81	320	-	0.00248	<0.150	<0.00100	<0.0100	-	-
27-Aug-07	35.68	577.76	10.49	428	7.13	76.7	8.65	6.95	260 J	-	0.00187	<0.150	<0.00100	0.0189	-	-
29-Nov-07	32.75	580.69	10.10	625	7.14	144.3	12.20	6.96	340 J	-	0.00232	<0.150	<0.00100	<0.0100	-	-
27-Feb-08	27.83	585.61	-	-	-	-	19.60	-	320	-	0.00258	<0.150	<0.00100	<0.0100	-	-
20-May-08	31.86	581.58	10.22	471	6.38	177.0	109.00	6.48	290 J	-	0.00224	<0.150	<0.00100	0.0253	-	-
27-Aug-08	36.04	577.40	9.84	427	7.40	118.4	63.60	7.08	260	-	0.00205	<0.150	<0.00100	0.0173	23.0	-
26-Sep-08	*Test Trench Drain Line Installed*															
16-Oct-08	35.65	577.79	9.51	443	9.78	113.9	38.00	7.38	260 J	-	0.00179	<0.150	<0.00100	0.0136	22.9	-
20-Nov-08	25.62	587.82	9.49	563	6.11	231.0	5.48	7.18	430	-	0.00368	<0.150	<0.00100	<0.0100	106.0	-
30-Dec-08	23.14	590.30	9.84	402	8.40	106.9	8.92	7.25	280 J	-	0.00247	<0.150	<0.00100	0.0130	43.9	-
15-Jan-09	20.66	592.78	8.40	336	9.65	229.6	1.07	6.88	290	-	0.00225	<0.150	<0.00100	<0.0100	35.7	-
12-Feb-09	30.00	583.44	9.05	372	8.46	-	16.70	7.34	320	-	0.00193	<0.150	<0.00100	0.0165	27.0	-
12-Mar-09	31.30	582.14	9.13	409	8.60	174.9	15.80	7.03	340	-	0.00166	<0.150	<0.00100	<0.0100	20.6	-
16-Apr-09	23.88	589.56	8.17	343	10.24	131.8	13.50	6.78	310	-	0.00177	<0.150	<0.00100	<0.0100	24.6	-
19-May-09	30.50	582.94	8.99	392	8.69	82.6	23.70	7.75	340 J	-	0.00156	<0.150	<0.00100	<0.0100	19.6	-
23-Jun-09	34.00	579.44	9.21	480	9.56	79.0	22.90	7.89	430	-	<0.00200	<0.200	<0.00200	<0.0200	20.0	-
25-Aug-09	36.95	576.49	13.10	373	6.47	311.9	4.98	6.76	270 J+	-	0.00064 J	<0.200	<0.00200	0.0042 J	17.0	-
23-Sep-09	37.12	576.32	11.30	336	6.90	368.3	21.30	6.73	240	-	<0.00200	0.054 J	0.00018 J	0.0120 J	14.0	-
15-Dec-09	28.30	585.14	9.20	643	5.30	567.0	18.00	6.72	330	-	<0.00200	0.033 J	<0.00200	0.0065 J	26.0	-
24-Mar-10	30.03	583.41	9.80	562	5.72	545.9	5.04	6.74	370	-	0.00190 J	<0.200	<0.00200	<0.0200 U	19.0	-
16-Jun-10	23.55	589.89	9.20	506	5.93	405.4	16.10	6.53	<40	-	0.00360	0.110 J	<0.00200	0.0110 J	20.0	-
21-Sep-10	35.89	577.55	10.40	593	4.82	288.5	117.00	6.96	370	-	0.00260	<0.200	0.00023 J	0.0350 J+	19.0	-
7-Dec-10	27.39	586.05	10.00	504	1.45	198.4	139.00	7.15	330	-	0.00230	0.650	<0.00200	0.1700	14.0	-
29-Mar-11	29.76	583.68	8.10	247	2.47	169.0	6.81	7.14	300	-	0.00240	0.290 J+	<0.00200	0.0540	15.0	-
21-Jun-11	30.45	582.99	9.30	606	4.58	332.9	3.56	7.17	400 J	-	<0.00500	<0.200	<0.00200	0.0100 J	16.0	-
27-Sep-11	36.65	576.79	9.90	366	7.27	356.2	2.18	6.85	310	-	<0.00500	<0.200	<0.00200	0.0060 J	17.0	-
14-Dec-11	31.53	581.91	9.20	407	1.97	234.7	20.40	7.09	370	-	<0.00500	0.330	<0.00200	0.0860	16.0	-
20-Mar-12	21.60	591.84	7.70	561	7.06	385.4	4.80	7.18	280	-	0.00230	<0.200	<0.00040	0.0029 J	16.0	-
19-Jun-12	21.60	591.84	10.00	575	7.04	378.2	5.60	7.31	330	-	0.00250	<0.200	<0.00040	0.0068 J	16.0	-
19-Sep-12	36.42	577.02	11.30	561	8.76	286.0	2.49	7.02	310	-	0.00240	<0.200	<0.00040	<0.0200	17.0	-
19-Dec-12	23.43	590.01	9.30	671	6.67	348.2	0.74	7.26	<20	-	0.00170	<0.200	<0.00040	<0.0200	17.0	-
25-Feb-13	29.32	584.12	8.00	572	9.51	337.0	26.00	7.28	300	-	0.00250	<0.500	<0.00040	<0.0200	16.0	-
22-May-13	31.23	582.21	9.00	518	8.59	397.7	4.68	7.40	310	-	0.00180	<0.500	<0.00040	<0.0200	15.0	-
21-Aug-13	37.02	576.42	10.20	534	9.27	152.7	1.46	7.11	227	-	0.00120	<0.050	<0.00010	0.0030	14.1	-
20-Nov-13	29.69	583.75	9.50	852	7.62	243.5	39.50	6.75	419	-	0.00160	<0.050	<0.00010	0.0020	19.9	-
1-Apr-14	23.29	590.15	8.90	347	7.60	248.1	2.54	7.30	247	-	0.00200	<0.050	<0.00010	<0.0007	16.5	-
21-May-14	28.31	585.13	9.50	349	4.02	178.6	-	7.12	280	-	0.00180	<0.050	<0.00010	0.0150	15.1	-
13-Aug-14	36.52	576.92	12.10	441	9.22	51.9	6.20	7.10	283	-	0.00140	<0.050	<0.00010	0.0030	15.2	-
13-Nov-14	31.63	581.81	11.50	438	8.80	173.0	14.70	7.10	352	-	0.00160	<0.050	<0.00010	0.0020	17.1	-
11-Feb-15	23.02	590.42	9.40	498	3.89	98.1	10.50	7.72	319	-	0.00910	0.180	0.00030	0.0040	42.9	-
4-May-15	31.93	581.51	9.80	578	7.35	416.9	1.05	7.26	413	-	0.00170	0.008 J	<0.00010	0.0100	16.0	-
6-Aug-15	37.65	575.79	10.70	447	0.17	71.6	49.00	7.21	343	-	0.00390	0.110	<0.00010	0.2140	10.3	-
4-Nov-15	32.89	580.55	9.50	657	8.56	240.5	5.70	6.92	554	-	0.00230	0.013 J	<0.00010	<0.0010	49.3	-
10-Feb-16	25.39	588.05	9.80	322	7.36	204.8	3.21	7.31	202	-	0.00200	0.0076 J	<0.00010	0.0070	22.2	-
2-May-16	32.32	581.12	10.80	579	5.95	250.2	4.70	7.02	350	-	0.00180	<0.050	0.00004 J-	0.0040	17.8	-
23-Aug-16	37.66	575.78	11.00	488	1.34	459.9	259.00	7.08	413	-	0.00388	0.130	0.00007 J	0.6220	14.6	-
2-Nov-16	31.30	582.14	9.70	280	3.94	225.0	6.13	7.18	531	-	0.00213	<0.050	0.00012	0.0020	37.7	-
1-Feb-17	29.01	584.43	8.60	510	5.26	187.7	0.97	7.04	270	-	0.00147	<0.050	<0.00010	0.0035	19.0	-
30-May-17	28.47	584.97	9.50	483	6.89	4.7	4.85	6.96	290	-	0.00209	0.005 J	<0.00010	0.0034	15.7	-
17-Aug-17	36.30	577.14	10.50	536	3.79	82.5	6.44	6.96	283	-	0.00155	0.061	<0.00010	0.0524	15.5	-
9-Nov-17	32.20	581.24	9.20	460	5.89	75.1	2.70	7.01	380	-	0.00163	<0.05	<0.0001	0.0019	16.3	-
27-Feb-18	25.18	588.26	8.90	215	7.35	121.6	6.04	6.31	186	-	0.00172	<0.05	<0.0001	0.0084	15.5	-
1-May-18	26.98	586.46	9.50	391	7.82	-	3.06	6.94	214	-	0.00165	0.0042 J	<0.00010 J	<0.0003	14.1	-
21-Aug-18	37.29	576.15	10.02	266	7.37	75.6	129.00	6.84	215	-	0.00151	0.148	<0.0001	0.0150	13.3	-
6-Nov-18	34.18	579.26	9.60	340	9.13	215.4	1.00	6.93	327	-	0.00167	<0.05	<0.0001	<0.001	16.6	-
11-Mar-19	27.75	585.69	8.90	323	5.65	185.3	4.29	6.94	269	-	0.00136	<0.05	<0.0001	0.0111	14.4	-
8-May-19	30.05	583.39	9.80	448	7.77	97.6	1.11	6.87	320	-	0.00125	0.0068 J	<0.0001	0.0005 J	15.1	-
26-Aug-19	37.02	576.42	9.83	329	1.16	Note 1	7.97	7.11	258	-	0.00090	0.0039 J	<0.0001	0.0317	10.7	-
13-Nov-19	35.13	578.31	9.20	376	5.50	144.0	8.26	6.87	320	-	0.00123	0.0133 J	<0.0001	0.0055	15.8	-
12-Feb-20	20.38	593.06	9.00	381	2.58	191.6	1.33	7.15	268	-	0.00125	0.0083 J	0.0001 U	0.0228	26.6	-
12-Aug-20	36.61	576.83	9.50	285	5.01	198.7	0.80	6.96	214	-	0.00114	0.0034 J	0.0001 U	0.0009 J	14.1	-
9-Dec-20	32.05	581.39	9.10	425	7.17	211.0	1.57	6.86	347	-	0.00111	0.0185 J	0.0001 U	0.004 U	17.1	-
3-Mar-21	27.01	586.43	8.60	383	5.71	248.0	0.60	6.83	299	-	0.00116	0.05 U	0.0001 U	0.004 U	17.4	-
9-Jun-21	35.32	578.12	9.20	422	8.47	151.0	2.22	6.68	310	-	0.00139	-	0.0001 U	-	16.3	-
12-Oct-21	33.84	579.60	9.30	329	9.07	160.8	1.55	6.34	236 J-	0.00085	0.00113	-	0.0001 U	-	12.5	0.000801
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:
Top of casing elevation (feet NAVD88): 613.44

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
<	Analyte not detected above the reporting limit shown
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.
µmhos/cm	Micromhos per centimeter
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
mg/L	Milligrams per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit

Table A-2b: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-2A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Jul-05	29.18	578.03	13.78	853	-	-	28.30	7.70	606	-	<0.00200	<0.100	<0.00200	0.2090	-	-
9-Nov-05	25.64	581.57	10.95	860	-	-	3.82	7.43	550	-	0.00131	<0.150	<0.00100	0.4490	-	-
15-Feb-06	17.64	589.57	7.81	709	0.82	467.7	3.96	7.86	520 J	-	0.00106	<0.150	<0.00100	0.1340	-	-
17-May-06	25.76	581.45	9.67	810	2.17	246.1	3.01	7.06	490	-	0.00113	<0.150	<0.00100	0.0596	-	-
23-Aug-06	29.13	578.08	12.86	759	2.60	12.0	9.82	7.40	570	-	0.00154	<0.150	<0.00100	0.2300	-	-
14-Nov-06	13.74	593.47	10.44	649	3.72	63.6	9.78	7.72	460	-	0.00136	<0.150	<0.00100	0.0553	-	-
14-Feb-07	22.09	585.12	10.77	648	1.69	11.5	52.40	7.51	380	-	0.00107	<0.150	<0.00100	0.1650	-	-
30-May-07	26.72	580.49	11.46	732	2.05	72.2	12.80	7.44	480	-	0.00117	<0.150	<0.00100	0.1870	-	-
27-Aug-07	29.45	577.76	10.80	829	7.41	62.8	117.00	7.58	590 J	-	0.00109	<0.150	<0.00100	0.1160	-	-
29-Nov-07	26.57	580.64	10.74	899	2.00	81.1	392.00	6.05	490	-	0.00103	<0.150	<0.00100	0.1260	-	-
27-Feb-08	21.45	585.76	-	-	-	-	446.00	-	400	-	0.00109	<0.150	<0.00100	0.1230	-	-
20-May-08	25.73	581.48	9.48	706	3.07	110.2	419.00	7.26	420 J	-	0.00121	<0.150	<0.00100	0.0835	-	-
27-Aug-08	29.84	577.37	9.87	824	4.74	91.5	571.00	7.43	550 J	-	0.00130	<0.150	<0.00100	0.0929	65.1	-
26-Sep-08	*Test Trench Drain Line Installed*															
16-Oct-08	29.13	578.08	9.76	820	4.56	53.6	227.00	7.33	520 J	-	0.00130	<0.150	<0.00100	0.0496	76.3	-
20-Nov-08	19.48	587.73	9.31	462	5.24	240.1	6.16	7.35	360	-	0.00176	<0.150	<0.00100	0.0149	67.0	-
30-Dec-08	16.93	590.28	9.85	480	6.18	66.8	56.10	7.35	390 J	-	0.00155	<0.150	<0.00100	0.0157	61.5	-
15-Jan-09	14.46	592.75	7.71	402	7.47	177.8	1.61	7.61	360	-	0.00157	<0.150	<0.00100	<0.0100	58.5	-
12-Feb-09	23.84	583.37	9.63	-	8.72	-	74.90	7.54	390	-	0.00130	<0.150	<0.00100	0.0371 J	48.1	-
12-Mar-09	25.15	582.06	9.11	454	7.22	163.7	573.00	7.19	400	-	0.00117	<0.150	<0.00100	0.0135	43.1	-
16-Apr-09	17.72	589.49	8.40	417	8.27	126.4	128.00	7.26	400	-	0.00140	<0.150	<0.00100	0.0107	48.8	-
19-May-09	24.38	582.83	8.80	448	6.88	72.0	178.00	7.95	410 J	-	0.00110	<0.150	<0.00100	<0.0100	44.0	-
23-Jun-09	27.85	579.36	8.95	507	7.76	61.9	256.00	8.07	490	-	<0.00200	<0.200	<0.00200	<0.0200	39.0	-
25-Aug-09	30.68	576.53	10.50	707	6.94*	307.4	4.38	7.17	530 J+	-	<0.00200	0.091 J	0.00018 J	0.0300	49.0	-
23-Sep-09	30.84	576.37	11.20	661	5.41	374.7	15.00	7.28	500	-	<0.00200	<0.200	<0.00200	0.0041 J	51.0	-
15-Dec-09	22.10	585.11	9.50	720	5.10	579.0	39.00	6.92	380	-	<0.00200	<0.200	<0.00200	<0.0200	42.0	-
24-Mar-10	23.82	583.39	10.00	602	4.10	535.3	43.30	6.93	370	-	0.00170 J	0.062 J	<0.00200	<0.0200 U	39.0	-
17-Jun-10	17.45	589.76	9.30	547	4.06	-	157.00	6.57	350	-	0.00390	0.063 J	<0.00200	0.0030 J	39.0	-
22-Sep-10	29.66	577.55	10.20	722	5.77	360.2	7.20	7.22	450	-	0.00330	<0.200	<0.00200	<0.0200	55.0	-
8-Dec-10	22.10	585.11	9.90	566	6.69	-	64.60	7.09	350	-	<0.00200	<0.200	<0.00200	0.0018 J	35.0	-
29-Mar-11	19.94	587.27	8.40	251	6.95	620.0	28.00	7.13	250 J	-	0.00140 J	<0.200	<0.00200	0.0030 J	30.0	-
21-Jun-11	24.25	582.96	9.90	628	5.23	344.3	37.00	7.29	410 J	-	<0.00500	<0.200	<0.00200	0.0056 J	28.0	-
28-Sep-11	30.41	576.80	9.50	58	6.54	481.7	13.80	7.24	500	-	<0.00500	<0.200	<0.00200	<0.0200	54.0	-
14-Dec-11	25.35	581.86	9.30	441	3.86	346.5	386.00	7.26	440	-	<0.00500	<0.200	<0.00200	0.0037 J	29.0	-
20-Mar-12	15.45	591.76	7.70	580	1.53	382.0	32.30	7.40	280	-	0.00220	0.200	<0.00040	<0.0200	26.0	-
19-Jun-12	23.88	583.33	9.00	590	1.85	388.1	55.70	7.74	320	-	0.00250	<0.200	<0.00040	<0.0200	23.0	-
19-Sep-12	30.18	577.03	11.10	695	7.03	297.0	9.31	7.41	420	-	0.00270	<0.200	<0.00040	<0.0200	42.0	-
19-Dec-12	17.24	589.97	9.40	704	6.33	317.0	55.20	7.40	310	-	0.00170	<0.200	<0.00040	<0.0200	25.0	-
25-Feb-13	23.12	584.09	9.10	585	6.04	339.0	110.00	7.46	370	-	0.00250	<0.500	<0.00040	<0.0200	24.0	-
22-May-13	25.05	582.16	8.60	537	8.41	391.5	12.30	7.51	310	-	0.00190	<0.500	<0.00040	<0.0200	22.0	-
21-Aug-13	30.75	576.46	10.60	684	8.42	150.2	5.85	7.74	419	-	0.00150	<0.050	0.00020	0.0020	27.7	-
20-Nov-13	23.51	583.70	9.60	513	6.19	230.4	32.10	6.81	364	-	0.00130	<0.050	<0.00010	0.0010	27.5	-
1-Apr-14	17.11	590.10	8.50	386	7.32	243.1	14.60	7.46	294	-	0.00140	0.009 J	<0.00010	<0.0005	31.7	-
21-May-14	22.07	585.14	9.10	365	6.02	212.7	-	6.93	273	-	0.00130	<0.050	<0.00010	<0.0010	24.7	-
12-Aug-14	31.32	575.89	13.16	552	6.56	76.7	6.80	7.36	394	-	0.00150	<0.050	<0.00010	<0.0010	25.3	-
13-Nov-14	25.48	581.73	12.30	460	7.22	189.8	7.20	7.19	367	-	0.00140	<0.050	<0.00010	0.0010	25.5	-
11-Feb-15	16.83	590.38	9.30	447	6.76	134.4	36.60	7.52	286	-	0.00170	0.026 J	<0.00010	0.0007 J	30.4	-
4-May-15	25.78	581.43	10.20	619	6.27	407.1	7.70	7.36	382	-	0.00140	<0.050	<0.00010	0.0004 J	25.2	-
6-Aug-15	31.87	575.34	11.30	500	9.18	207.1	28.10	7.23	394	-	0.00150	<0.050	<0.00010	0.0030	22.0	-
4-Nov-15	26.74	580.47	9.90	481	8.76	222.6	16.80	6.88	381	-	0.00110	<0.050	<0.00010	0.0190	21.8	-
10-Feb-16	19.19	588.02	9.00	376	7.35	206.0	40.20	7.68	261	-	0.00360	0.0140 J	<0.00010	0.0040	37.1	-
2-May-16	26.14	581.07	11.30	552	3.19	194.5	87.80	7.35	344	-	0.00210	0.0045 J	0.00001 J-	0.0020	31.2	-
23-Aug-16	31.64	575.57	10.50	545	7.62	486.5	10.80	7.18	412	-	0.00154	<0.050	<0.00010	0.0011	32.6	-
2-Nov-16	25.12	582.09	10.20	220	4.01	238.9	245.00	7.19	431	-	0.00140	<0.050	<0.00010	0.0015	30.6	-
1-Feb-17	22.84	584.37	9.10	580	5.06	186.3	13.60	7.35	317	-	0.00317	0.010 J	<0.00010	<0.0010	51.1	-
30-May-17	22.31	584.90	9.40	520	7.01	5.0	40.20	7.18	322	-	0.00178	0.010 J	<0.00010	<0.0010	34.1	-
17-Aug-17	30.08	577.13	10.60	626	5.63	134.2	32.30	7.21	370	-	0.00128	0.014 J	<0.00010	0.0009 J	28.9	-
9-Nov-17	26.04	581.17	9.80	480	5.79	74.4	68.80	7.00	391	-	0.00139	<0.05	<0.0001	0.0005 J	25.4	-
27-Feb-18	19.03	588.18	8.80	293	7.43	185.2	15.10	6.90	254	-	0.00398	<0.05	<0.0001	<0.001	41.9	-
1-May-18	20.84	586.37	9.10	531	7.46	-	25.00	7.35	316	-	0.00300	0.0216 J	<0.00010 J	0.0018	40.6	-
21-Aug-18	31.09	576.12	10.39	437	7.33	115.2	19.10	7.04	358	-	0.00148	0.05 U	<0.0001	0.0011	26.9	-
6-Nov-18	28.00	579.21	9.70	420	8.17	210.3	6.74	6.97	418	-	0.00130	<0.05	<0.0001	<0.001	23.4	-
11-Mar-19	21.61	585.60	9.00	351	9.20	187.1	20.60	7.11	312	-	0.00157	0.0057 J	<0.0001	0.0012	32.7	-
8-May-19	23.88	583.33	9.80	443	8.05	109.6	7.79	7.06	316	-	0.00166	0.005 J	<0.0001	0.0005 J	32.9	-
26-Aug-19	30.90	576.31	10.91	495	8.65	Note 1	12.70	6.91	394	-	0.00128	<0.05	<0.0001	0.0004 J	21.1	-
13-Nov-19	28.91	578.30	9.80	506	7.81	180.4	14.40	6.87	429	-	0.00134	0.0031 J	<0.0001	<0.001	22.9	-

Table A-2b: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-2A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
12-Feb-20	14.21	593.00	8.10	319	9.95	189.3	14.60	7.27	277	-	0.00195	0.0093 J	0.0001 U	0.001 U	56.3	-
12-Aug-20	30.41	576.80	9.50	463	6.60	185.5	72.90	7.03	359	-	0.00120	0.0151 J	0.0001 U	0.0013	22.4	-
9-Dec-20	25.91	581.30	9.40	533	6.44	213.0	9.96	6.97	400	-	0.00138	0.255 J	0.00049 J	0.0149	26.8	-
3-Mar-21	20.83	586.38	8.90	330	5.24	216.5	12.40	7.18	268	-	0.00180	0.340	0.00022	0.0126	61.1	-
9-Jun-21	29.14	578.07	9.10	460	8.65	193.6	1.34	6.88	360 J	-	0.00125	-	0.000058 J	-	21.8	-
12-Oct-21	27.75	579.46	10.40	595	9.33	188.2	0.56	6.53	439 J-	0.00119	0.00110	-	0.0001 U	-	21.9	0.00107
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:
Top of casing elevation (feet NAVD88): 607.21

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available		
<	Analyte not detected above the reporting limit shown		
*	Dissolved Oxygen meter working incorrectly at the time of sample collection		
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
U	Data validation code; not detected at the Reporting Limit (RL)		
J	Data validation code; estimated value		
J+	Data validation code; estimated value with positive bias		
°C	Degrees Celsius		
Note 1	ORP measurements not available due to faulty sensor.		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-2c: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-3A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Jul-05	6.09	683.02	13.80	1124	-	-	30.30	6.96	922	-	0.00241	<0.100	<0.00200	0.6280	-	-
10-Nov-05	5.50	683.61	10.80	1518	-	-	2.32	6.88	960	-	0.01050	4.800	<0.00100	3.6000	-	-
15-Feb-06	5.31	683.80	9.52	1357	0.46	217.4	58.20	6.33	930 J	-	0.00666	4.290	<0.00100	2.8500	-	-
16-May-06	6.25	682.86	10.40	1296	0.96	91.0	11.40	6.91	910	-	0.01010	6.560	<0.00100	3.3800	-	-
22-Aug-06	8.85	680.26	12.84	1362	1.28	-64.8	56.00	6.97	900	-	0.01210	7.060	<0.00100	2.8500	-	-
13-Nov-06	5.03	684.08	11.24	1392	2.12	-74.4	234.00	6.89	910	-	0.00573	4.750	<0.00100	2.6900	-	-
16-Feb-07	5.55	683.56	8.99	1155	0.75	-71.3	12.30	6.96	770	-	0.00374	3.770 J	<0.00100	2.6100 J	-	-
30-May-07	6.72	682.39	11.86	1297	0.75	-25.2	12.50	7.04	790	-	0.00520	5.840	<0.00100	2.2200	-	-
27-Aug-07	8.38	680.73	12.65	1483	0.71	-96.3	15.30	6.73	1100 J	-	0.00874	9.160	<0.00100	2.3200	-	-
28-Nov-07	5.66	683.45	10.47	1363	1.05	-72.9	26.90	7.31	730	-	0.00424	5.460	<0.00100	2.2700	-	-
27-Feb-08	5.57	683.54	-	-	-	-	121.00	-	860	-	0.00976	5.990	<0.00100	2.4900	-	-
19-May-08	5.94	683.17	9.39	1346	0.66	-52.6	20.00	6.93	820 J	-	0.00664	8.740	<0.00100	2.3300	-	-
26-Aug-08	6.44	682.67	12.15	1495	0.85	-53.6	5.85	6.88	820	-	0.00342	2.610	<0.00100	1.5300	30.3	-
18-Nov-08	5.50	683.61	10.50	975	1.87	-67.4	225.00	6.93	880 J	-	0.00748	10.100	<0.00100	2.2900	62.5	-
11-Feb-09	5.62	683.49	7.67	877	0.98	-	68.00	7.28	810	-	0.00520	5.710	<0.00100	2.2700	50.6	-
19-May-09	5.60	683.51	8.52	847	0.91	-63.4	52.00	8.21	750 J	-	0.00251	<0.150	<0.00100	2.2000	49.5	-
22-Sep-09	8.36	680.75	15.70	1149	0.10	132.1	75.10	7.05	910	-	0.00660	5.200	<0.00200	1.8000	53.0	-
17-Dec-09	4.59	684.52	8.90	1300	0.40	194.0	401.00	7.08	710	-	<0.00200	0.740	<0.00200	2.2000	62.0	-
24-Mar-10	5.40	683.71	11.20	1010	0.12	-	226.00	6.76	800	-	0.00380	4.400	<0.00200	2.1000	46.0	-
16-Jun-10	5.27	683.84	10.10	1123	0.20	188.0	6.19	8.43	570	-	0.01300	6.400	<0.00200	1.9000	49.0	-
21-Sep-10	6.01	683.10	12.70	1314	0.19	177.7	2.97	6.91	1,000	-	0.00620	2.800	0.00019 J	1.3000	160.0	-
7-Dec-10	5.23	683.88	9.70	1183	0.23	182.7	25.30	6.86	840	-	0.00320	4.100	<0.00200	1.9000	82.0	-
30-Mar-11	5.04	684.07	8.30	498	0.28	174.0	4.93	7.89	700	-	0.00360	3.700	<0.00200	1.4000	36.0	-
22-Jun-11	6.77	682.34	9.70	895	0.43	172.2	9.18	7.01	700 J	-	<0.00500	5.100	<0.00200	1.5000	34.0	-
28-Sep-11	7.83	681.28	12.60	99	0.18	141.8	6.07	6.83	840	-	0.00880	7.700	<0.00200	2.7000	83.0	-
15-Dec-11	5.40	683.71	9.00	785	0.60	179.8	24.40	6.98	760	-	0.00450 J	2.400	<0.0020	1.9000	73.0	-
20-Mar-12	4.96	684.15	7.10	1092	0.16	22.6	12.10	7.11	470	-	0.00520	2.300	<0.0020	1.6000	73.0	-
19-Jun-12	6.76	682.35	10.30	1077	0.11	198.6	11.30	7.07	660	-	0.01200	8.500	<0.0004	1.8000	78.0	-
20-Sep-12	8.67	680.44	12.30	1235	0.15	111.0	1.96	6.99	710	-	0.01100	7.500	0.00005 J	2.1000	100.0	-
18-Dec-12	4.98	684.13	8.70	1450	0.30	-40.6	18.70	7.25	740	-	0.00480	1.800	<0.00040	1.6000	150.0	-
26-Feb-13	5.25	683.86	7.80	1211	0.15	186.6	27.80	7.21	740	-	0.00470	3.100	<0.00040	2.0000	98.0	-
23-May-13	6.56	682.55	9.90	1000	0.18	242.3	16.90	7.21	460	-	0.01400	5.100	0.00280	0.9100	150.0	-
21-Aug-13	9.01	680.10	12.10	917	0.12	-14.2	1.24	7.27	772	-	0.00760	5.210	0.00005 J	1.8100	94.0	-
19-Nov-13	6.09	683.02	9.90	697	0.07	61.8	2.93	6.77	852	-	0.01230	9.660	0.00020	1.5300	169.0	-
1-Apr-14	5.75	683.36	9.00	722	0.10	131.3	4.47	7.07	624	-	0.01050	11.100	0.00006 J	1.7600	104.0	-
22-May-14	5.80	683.31	9.80	580	1.08	185.3	-	6.85	494	-	0.00520	4.170	0.00010	1.4300	66.5	-
13-Aug-14	8.54	680.57	11.48	915	2.85	-67.6	8.16	7.09	740	-	0.00690	5.140	<0.00010	1.5100	116.0	-
12-Nov-14	5.97	683.14	11.10	314	2.79	-85.1	15.30	6.87	744	-	0.00690	3.400	<0.00010	2.0000	89.1	-
12-Feb-15	5.50	683.61	9.80	980	0.52	-54.5	1.28	7.04	696	-	0.00420	3.570	<0.00010	2.1900	73.2	-
4-May-15	5.80	683.31	10.80	994	0.17	143.4	15.40	7.12	701	-	0.00930	7.970	<0.00010	1.8800	100.0	-
5-Aug-15	10.12	678.99	12.60	881	0.13	-90.4	0.89	7.07	724	-	0.00730	5.000	<0.00010	2.0000	70.3	-
3-Nov-15	5.30	683.81	12.00	865	1.23	105.5	5.06	6.97	1020	-	0.00170	0.180	0.00020	0.6750	195.0	-
9-Feb-16	5.14	683.97	9.10	954	0.55	154.6	4.82	7.03	625	-	0.00340	3.000	<0.00010	1.8700	92.7	-
2-May-16	4.74	684.37	11.30	844	0.19	96.8	2.21	7.16	621	-	0.01050	7.310	0.00004 J-	1.7200	105.0	-
23-Aug-16	9.04	680.07	13.20	946	0.03	156.2	3.48	6.97	924	-	0.00819	6.780	0.00009 J	1.7000	148.0	-
1-Nov-16	6.18	682.93	11.90	349	0.15	18.5	2.43	7.11	744	-	0.00263	0.730	<0.00010	0.8630	180.0	-
1-Feb-17	5.91	683.20	7.50	1114	0.17	-67.4	6.05	7.08	694	-	0.00640	4.810	<0.00010	1.9200	100.0	-
30-May-17	7.40	681.71	10.40	753	2.20	8.6	3.28	7.12	465	-	0.00952	5.240	<0.00010	1.3800	89.3	-
17-Aug-17	9.71	679.40	12.40	1101	0.25	-60.2	3.39	7.01	737	-	0.00847	5.730	<0.00010	2.1700	72.0	-
9-Nov-17	6.06	683.05	9.60	833	0.64	75.3	2.01	7.08	748	-	0.00184	<0.05	<0.0001	0.5540	191.0	-
27-Feb-18	5.16	683.95	7.60	791	0.21	-75.4	9.52	6.64	506	-	0.00297	1.410	<0.0001	1.3800	92.0	-
1-May-18	5.41	683.70	10.00	847	0.93	-	5.82	7.36	547	-	0.00381	0.961	<0.00010 J	0.8960	120.0	-
21-Aug-18	10.81	678.30	14.54	909	2.96	-17.2	1.67	6.92	722	-	0.00648	2.610	<0.0001	2.0700	101.0	-
7-Nov-18	5.85	683.26	11.20	931	0.66	179.0	0.87	6.97	828	-	0.00203	<0.05	0.000073 J	0.2780	202 J+	-
11-Mar-19	5.26	683.85	6.10	478	1.25	53.7	2.39	7.34	486	-	0.00144	0.051	<0.0001	0.3490	125.0	-
9-May-19	5.44	683.67	10.20	678	3.72	-9.4	1.85	7.04	574	-	0.00302	0.274	0.000083 J	0.5940	143.0	-
26-Aug-19	9.30	679.81	13.96	1041	0.60	Note 1	0.02	6.83	843	-	0.00615	2.160	<0.0001	2.3600	142.0	-
13-Nov-19	5.58	683.53	9.40	803	0.31	12.8	0.02	6.97	724	-	0.00220	0.132	0.000077 J	0.4760	174.0	-
12-Feb-20	5.10	684.01	7.80	349	0.37	-62.4	1.40	7.25	287	-	0.00186	0.257	0.0001 U	0.4760	74.2	-
13-Aug-20	9.33	679.78	11.80	884	0.64	-81.6	4.28	6.76	683	-	0.01090	3.290	0.0001 U	2.1600	119.0	-
10-Dec-20	5.08	684.03	8.50	688	3.06	210.0	0.90	7.29	566	-	0.00236	0.070	0.00016	0.2920	128.0	-
4-Mar-21	5.26	683.85	7.00	364	0.59	47.0	1.54	7.42	319	-	0.00152	0.121	0.00013	0.3710	74.2	-
9-Jun-21	6.24	682.87	11.40	706	0.96	-50.2	4.12	7.03	540	-	0.00648	-	0.00020	-	124.0	-
12-Oct-21	5.34	683.77	12.30	1611	2.92	133.4	5.25	6.63	1070 J-	0.0156	0.00331	-	0.00040	-	93.2	0.00214
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:
Top of casing elevation (feet NAVD88): 689.11

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
<	Analyte not detected above the reporting limit shown
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.
µmhos/cm	Micromhos per centimeter
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
mg/L	Milligrams per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit

Table A-2d: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-4A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Jul-05	4.60	700.85	12.43	629	-	-	6.07	6.45	490	-	<0.00200	<0.100	<0.00200	0.4260	-	-
10-Nov-05	3.70	701.75	11.98	441	-	-	7.40	6.22	290	-	<0.00100	<0.150	<0.00100	0.0991	-	-
19-Jan-06	3.56	701.89	8.29	319	0.42	-	1.46	6.53	290 J	-	<0.00100	<0.150	<0.00100	0.0908	-	-
15-Feb-06	3.82	701.63	8.32	326	0.62	99.7	3.50	7.39	220 J	-	<0.00100	<0.150	<0.00100	0.0341	-	-
15-Mar-06	3.79	701.66	7.58	254	0.87	201.9	0.82	6.65	210 J	-	<0.00100	<0.150	<0.00100	0.0650	-	-
7-Apr-06	3.87	701.58	9.36	295	0.55	157.4	0.24	6.34	220	-	<0.00100	<0.150	<0.00100	0.0724	-	-
16-May-06	4.92	700.53	10.80	321	0.45	142.1	0.99	6.36	220	-	<0.00100	<0.150	<0.00100	0.0376	-	-
23-Jun-06	4.41	701.04	12.62	316	0.57	-	2.05	6.25	200	-	<0.00100	<0.150	0.00264	0.0638	-	-
20-Jul-06	6.90	698.55	13.43	347	0.23	-20.9	0.32	6.11	120	-	<0.00100	<0.150	<0.00100	0.1040	-	-
22-Aug-06	8.46	696.99	13.68	406	0.90	153.5	2.20	6.13	280	-	<0.00100	<0.150	<0.00100	0.1510	-	-
26-Sep-06	6.50	698.95	14.59	417	2.47	-35.2	2.42	6.33	290	-	<0.00100	<0.150	<0.00100	0.0835	-	-
26-Oct-06	5.98	699.47	12.82	434	3.30	124.1	0.82	6.12	320	-	<0.00100	<0.150	<0.00100	0.2160	-	-
13-Nov-06	3.02	702.43	11.70	386	5.06	187.8	2.47	6.13	280	-	<0.00100	<0.150	<0.00100	0.0442	-	-
20-Dec-06	3.60	701.85	9.64	379	4.30	150.5	1.03	6.07	250	-	<0.00100	<0.150	<0.00100	0.0568	-	-
23-Jan-07	3.68	701.77	8.37	239	3.96	58.9	0.66	6.28	220	-	<0.00100	<0.150	<0.00100	0.1800	-	-
14-Feb-07	3.74	701.71	8.18	325	2.85	110.8	0.53	6.25	210	-	<0.00100	<0.150	<0.00100	0.0398	-	-
27-Mar-07	3.32	702.13	8.27	289	2.07	61.5	0.88	6.83	210 J	-	<0.00100	<0.150	<0.00100	0.2290	-	-
17-Apr-07	3.89	701.56	9.59	306	1.80	102.3	2.31	6.34	190	-	<0.00100	<0.150	<0.00100	0.2220	-	-
30-May-07	4.70	700.75	11.27	285	1.78	101.7	1.37	6.37	180	-	<0.00100	<0.150	<0.00100	0.0246	-	-
20-Jun-07	4.69	700.76	12.37	350	1.67	9.3	1.25	6.90	240 J	-	<0.00100	<0.150	<0.00100	0.0321	-	-
31-Jul-07	6.38	699.07	14.57	402	1.15	5.5	0.60	6.37	250	-	0.00129	<0.150	<0.00100	0.0307	-	-
29-Aug-07	7.44	698.01	13.78	353	1.11	128.3	1.87	6.18	280 J	-	<0.00100	<0.150	<0.00100	0.0490	-	-
27-Sep-07	8.25	697.20	13.60	375	0.96	142.6	0.70	6.70	300	-	<0.00100	<0.150	<0.00100	0.1170	-	-
26-Oct-07	4.09	701.36	12.16	343	2.27	75.9	3.93	6.10	310 J	-	<0.00100	<0.150	<0.00100	0.0117	-	-
29-Nov-07	3.93	701.52	10.13	428	3.17	197.3	1.63	6.32	270	-	<0.00100	<0.150	<0.00100	0.0164	-	-
12-Dec-07	5.82	699.63	9.51	384	3.37	185.0	0.80	6.06	260	-	<0.00100	<0.150	<0.00100	0.0392	-	-
24-Jan-08	3.86	701.59	7.74	354	3.09	109.0	-	6.35	250	-	<0.00100	<0.150	<0.00100	0.0376	-	-
28-Feb-08	4.04	701.41	-	-	-	-	1.06	-	220	-	<0.00100	<0.150	<0.00100	0.0275	-	-
19-May-08	4.35	701.10	9.79	329	1.38	209.2	1.20	6.08	200 J	-	<0.00100	<0.150	<0.00100	0.0191	-	-
26-Aug-08	7.83	697.62	12.66	431	1.38	210.5	0.28	6.19	270	-	<0.00100	<0.150	<0.00100	0.0493	<3.0	-
18-Nov-08	3.64	701.81	10.43	235	3.95	217.5	0.66	6.03	210	-	<0.00100	<0.150	<0.00100	0.0208	<3.0	-
11-Feb-09	4.09	701.36	7.24	188	2.13	-	0.12	6.54	180	-	<0.00100	<0.150	<0.00100	0.0180	<3.0	-
19-May-09	3.79	701.66	8.19	173	1.28	111.9	1.78	7.18	170 J	-	<0.00100	<0.150	<0.00100	0.0163	<3.0	-
22-Sep-09	9.70	695.75	16.50	440	0.82	383.3	12.50	6.31	370 J	-	<0.00200	<0.200	<0.00200	0.0700	1.2 J	-
17-Dec-09	3.47	701.98	9.20	311	4.37	470.0	16.00	6.25	110	-	<0.00200	<0.200	<0.00200	0.0200 J	0.7 J	-
24-Mar-10	3.87	701.58	9.40	410	0.34	204.8	30.70	6.65	240	-	0.00081 J	<0.200	<0.00200	0.1700	1.3 J	-
16-Jun-10	3.77	701.68	10.30	298	0.99	397.8	1.11	7.40	180	-	0.00360	0.049 J	<0.00200	0.0320	0.9 J	-
21-Sep-10	5.82	699.63	13.70	350	1.01	302.5	1.04	6.25	200	-	0.00140 J	<0.200	0.0002 J	<0.0200	1.2 J	-
7-Dec-10	3.83	701.62	9.60	283	0.72	405.6	0.42	6.16	190	-	<0.00200	<0.200	<0.00200	0.0090 J	0.8 J	-
30-Mar-11	3.91	701.54	8.20	133	0.51	248.2	0.29	9.87	140 J	-	0.00035 J	<0.200	<0.00200	0.0091 J	5.0	-
22-Jun-11	3.99	701.46	11.00	219	0.16	222.5	0.22	6.13	160	-	<0.00500	0.180 J	<0.00200	0.1900	0.7 J	-
28-Sep-11	8.54	696.91	14.30	35	0.26	333.9	2.45	6.30	270	-	<0.00500	0.110 J	<0.00200	0.1300	2.1 J	-
15-Dec-11	4.12	701.33	9.40	217	1.15	414.3	2.74	6.28	200	-	<0.00500	<0.200	<0.00200	0.0170 J	1.2 J	-
21-Mar-12	3.35	702.10	8.40	346	0.42	438.4	0.48	6.14	220	-	0.00480	<0.200	<0.00040	0.0280	1.3 J	-
19-Jun-12	3.78	701.67	11.30	290	0.09	314.0	0.46	6.28	170 J+	-	0.00130	<0.200	<0.00040	0.0710	<3.3	-
20-Sep-12	8.53	696.92	14.40	419	0.26	309.0	1.07	6.39	240	-	0.00160	0.085 J	<0.00040	0.1300	2.9 J	-
18-Dec-12	3.49	701.96	9.10	491	2.56	264.4	1.38	6.63	170	-	<0.00100	<0.200	<0.00040	0.0480	1.2 J	-
26-Feb-13	3.91	701.54	8.40	324	2.59	404.2	1.01	7.03	140	-	0.00110	<0.500	<0.00040	0.0079 J	3.4	-
23-May-13	3.76	701.69	10.60	338	1.15	465.9	0.57	6.31	190	-	<0.00100	<0.500	<0.00040	0.0060 J	<3.3	-
22-Aug-13	8.28	697.17	13.10	284	0.33	32.2	0.89	6.34	220	-	0.00040	<0.050	<0.00010	0.0320	1.3	-
19-Nov-13	3.33	702.12	10.30	323	1.70	109.2	0.64	6.27	200	-	0.00020	<0.050	<0.00010	0.0070	0.8	-
1-Apr-14	3.69	701.76	8.20	244	0.45	180.7	0.28	6.33	173	-	0.00018 J	<0.050	<0.00010	0.0050 J+	0.7	-
22-May-14	4.52	700.93	10.80	195	0.65	75.0	-	7.20	152	-	0.00030	<0.050	0.00010	0.0240	0.6	-
13-Aug-14	7.56	697.89	12.62	269	0.44	37.7	1.12	5.89	181	-	0.00080	0.200	<0.00010	0.0930	0.9	-
12-Nov-14	3.73	701.72	11.70	231	1.29	108.2	1.32	6.17	191	-	0.00030	<0.050	<0.00010	0.0450	1.0	-
11-Feb-15	3.50	701.95	9.20	270	0.53	-34.2	0.73	6.30	170	-	0.00020	0.021 J	<0.00010	0.0160	0.7	-
4-May-15	4.69	700.76	10.90	250	0.28	378.1	0.57	6.29	341	-	0.00020	0.012 J	<0.00010	0.0790	0.6	-
5-Aug-15	9.44	696.01	13.90	316	0.72	-38.1	1.16	6.45	262	-	0.00030	<0.050	<0.00010	0.0150	1.2	-
3-Nov-15	4.21	701.24	11.80	192	8.59	205.6	5.39	6.34	166	-	0.00020 J	<0.050	<0.00010	0.0008 J	0.8	-
9-Feb-16	3.82	701.63	9.20	292	4.61	230.7	0.49	6.45	164	-	0.00017 J	<0.050	<0.00010	0.0050	0.8	-
3-May-16	4.61	700.84	10.90	310	2.39	253.0	1.01	6.34	178	-	0.00030	<0.050	0.00001 J-	0.0020	0.9	-
24-Aug-16	8.76	696.69	13.20	287	1.24	490.4	1.01	6.35	177	-	0.00020 J	<0.050	<0.00010	0.0093	0.8	-
1-Nov-16	3.34	702.11	12.20	100	3.69	177.2	0.40	6.38	205	-	0.00019 J	<0.050	<0.00010	0.0062	1.0	-
2-Feb-17	3.94	701.51	7.80	363	3.11	190.0	0.10	6.39	223	-	0.00017 J	<0.050	<0.00010	0.0080	0.8	-
31-May-17	4.68	700.77	10.30	300	4.50	-	2.48	6.30	182	-	0.00020	<0.050	<0.00010	0.0145	0.8	-
18-Aug-17	8.61	696.84	12.70	393	0.51	120.2	0.87	6.44	228	-	0.00031	0.096	<0.00010	0.0516	1.3	-
10-Nov-17	3.58	701.87	11.00	264	3.88	56.5	0.76	6.01	217	-	0.000186 J	<0.05	<0.0001	0.0054	0.7	-
27-Feb-18	3.76	701.69	8.30	302	3.19	221.1	0.55	6.29	238	-	0.000176 J	<0.05	<0.0001	0.0045	0.9	-
2-May-18	4.02	701.43	10.00	343	3.02	-	0.59	6.36	215	-	0.00015 J	0.0026 J	<0.00010 J	0.0045	1.0	-
22-Aug-18	9.35	696.10	12.17	330	1.99	142.0	2.31	6.27	265	-	0.00032	0.05 U	<0.0001	0.0310	1.2	-
7-Nov-18	5.25	700.20	11.70	317	5.45	124.4	0.76	6.23	250	-	0.000199 J	<0.05	<0.0001	0.0007 J	0.8	-
11-Mar-19	3.96	701.49	7.60	226	3.96	220.8	0.70	6.38	233	-	0.000146 J	<0.05	<0.0001	0.0034	0.9	-
9-May-19	4.70	700.75	12.50	283	3.60	82.3	1.56	6.14	230	-	0.000154 J	0.007 J	<0.0001	0.0041	0.8	-
26-Aug-19	8.20	697.25	13.13	374	0.86	Note 1	0.02	6.30	264	-	0.00030	0.0324 J	<0.0001	0.0547	0.9	-
14-Nov-19	4.35	701.10	10.80	309	3.19	109.5	0.02	6.15	240	-	0.00025	0.082	<0.0001	0.0723	0.9	-

Table A-2d: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-4A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
13-Feb-20	3.70	701.75	7.90	284	2.98	102.2	0.91	6.18	283	-	0.000176 J	0.067	0.0001 U	0.0723	0.9	-
13-Aug-20	7.73	697.72	13.50	334	0.62	58.3	0.51	6.19	238	-	0.00071	0.248	0.0001 U	0.1710	0.9	-
10-Dec-20	3.45	702.00	9.80	364	6.11	169.0	1.56	6.51	297	-	0.00030	0.159	0.0001 U	0.0511	1.3	-
4-Mar-21	3.72	701.73	8.30	304	2.83	137.0	0.49	6.47	255	-	0.000192 J	0.055	0.0001 U	0.0274	0.9	-
10-Jun-21	5.32	700.13	11.90	339	1.23	108.5	0.73	6.09	220	-	0.00023	-	0.0001 U	-	0.8	-
15-Oct-21	7.69	697.76	12.60	341	6.91	133.9	20.50	6.37	363 J-	0.00018 J	0.00099	-	0.00015	-	1.5	0.00409
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:
Top of casing elevation (feet NAVD88): 705.45

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available		
<	Analyte not detected above the reporting limit shown		
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
U	Data validation code; not detected at the Reporting Limit (RL)		
J	Data validation code; estimated value		
J+	Data validation code; estimated value with positive bias		
°C	Degrees Celsius		
Note 1	ORP measurements not available due to faulty sensor.		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-2e: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-5A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Jul-05	33.33	577.90	12.02	956	-	-	496.00	7.34	600	-	0.00201	<0.100	<0.00200	1.1300	-	-
10-Nov-05	29.62	581.61	11.24	1,212	-	-	27.60	7.32	800	-	0.00840	<0.150	<0.00100	0.0183	-	-
15-Feb-06	21.70	589.53	6.45	665	2.59	280.3	11.10	7.86	520 J	-	0.02230	0.256	<0.00100	0.0169	-	-
17-May-06	29.80	581.43	7.74	831	0.88	101.9	8.67	7.79	580	-	0.01100	<0.150	<0.00100	0.0207	-	-
23-Aug-06	33.25	577.98	15.19	737	1.76	33.5	19.60	7.32	660	-	0.00253	<0.150	<0.00100	0.5820	-	-
14-Nov-06	17.79	593.44	10.86	699	4.50	76.3	38.70	7.55	490	-	0.00315	<0.150	<0.00100	0.0134	-	-
16-Feb-07	27.08	584.15	8.08	630	6.07	2.3	57.60	8.26	500	-	0.01440	<0.150 UJ	<0.00100	0.016 J	-	-
30-May-07	30.75	580.48	9.60	894	2.59	13.3	13.40	7.76	540	-	0.00843	<0.150	<0.00100	<0.0100	-	-
29-Aug-07	33.60	577.63	9.56	684	7.64	67.0	-	7.10	670 J	-	0.00197	<0.150	<0.00100	0.4540	-	-
29-Nov-07	30.60	580.63	11.00	1075	3.53	151.5	23.50	8.37	560	-	0.00517	<0.150	<0.00100	<0.0100	-	-
27-Feb-08	25.68	585.55	-	-	-	-	29.90	-	400	-	0.01070	<0.150	<0.00100	<0.0100	-	-
20-May-08	29.73	581.50	7.93	768	4.27	180.7	77.80	7.39	480 J	-	0.00567	<0.150	<0.00100	0.0124	-	-
27-Aug-08	33.97	577.26	10.17	862	4.07	81.2	-	7.43	540 J	-	0.00117	<0.150	<0.00100	0.0644	87.5	-
26-Sep-08	*Test Trench Drain Line Installed*															-
16-Oct-08	33.55	577.68	8.89	845	5.39	86.3	852.00	7.53	440 J	-	0.00103	<0.150	<0.00100	0.0578	90.7	-
20-Nov-08	23.48	587.75	9.34	577	5.27	234.3	9.48	7.50	470	-	0.00624	<0.150	<0.00200	0.0121	138	-
30-Dec-08	20.88	590.35	8.39	510	8.89	99.0	44.80	8.02	430 J	-	0.01420	0.202	0.00111	0.0251	138	-
15-Jan-09	18.50	592.73	4.97	347	8.90	154.8	17.20	8.47	380	-	0.02440	0.172	<0.00100	0.0238 J	104	-
12-Feb-09	27.90	583.33	8.47	-	10.21	-	22.00	7.60	420 J	-	0.00611	<0.150	<0.00100	<0.0100	99	-
12-Mar-09	29.19	582.04	7.47	521	6.15	171.7	26.80	7.39	480	-	0.00897	<0.150	<0.00100	<0.0100	124	-
16-Apr-09	21.70	589.53	6.99	456	7.60	151.6	72.70	8.66	470	-	0.02820	0.162	0.00101	0.0135	126	-
19-May-09	28.37	582.86	8.08	509	6.38	64.4	31.30	8.07	450 J	-	0.00919	<0.150	<0.00100	<0.0100	105	-
23-Jun-09	31.95	579.28	8.84	551	5.97	69.1	74.30	8.28	500	-	0.00430	<0.200	<0.00200	<0.0200	71	-
25-Aug-09	35.08	576.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Sep-09	35.29	575.94	11.70	714	2.28	371.9	258.00	7.26	550 J	-	0.00076 J	0.180 J	0.00017 J	0.1200	88	-
15-Dec-09	26.11	585.12	8.60	928	2.89	544.0	89.00	7.14	450	-	0.00110 J	<0.200	<0.00200	0.0024 J	110	-
24-Mar-10	27.86	583.37	8.30	697	3.52	505.1	18.10	7.47	450	-	0.02300	0.160 J	0.00046 J	0.0280	110	-
16-Jun-10	21.35	589.88	10.70	783	2.07	379.0	41.40	7.73	340	-	0.05300	0.760	0.00210	0.0300	150	-
22-Sep-10	33.88	577.35	10.40	938	4.30	467.1	7.93	7.10	620	-	0.00500	<0.200	<0.00200	0.0770 J+	100	-
7-Dec-10	25.22	586.01	10.20	781	3.86	353.7	11.10	7.39	500	-	0.01200	0.094 J	0.00053 J	0.011 J	130	-
29-Mar-11	23.59	587.64	7.00	354	3.47	708.0	22.22	9.52	440 J	-	0.06300	0.650 J+	0.00140 J	0.0250	140	-
21-Jun-11	28.33	582.90	11.60	1000	2.22	285.3	10.60	9.06	1100 J	-	0.04300	0.420	0.00120 J	0.0230	180	-
27-Sep-11	34.70	576.53	12.70	641	1.46	307.2	12.80	7.30	680	-	<0.00500	0.063 J	0.00023 J	0.2800	100	-
14-Dec-11	29.46	581.77	9.50	691	1.95	757.1	9.69	7.35	690	-	0.00690	<0.200	0.00018 J	0.0019 J	180	-
20-Mar-12	19.50	591.73	6.20	841	3.98	320.2	8.52	8.25	350	-	0.02600	0.470	0.00100 J	0.0300	140	-
19-Jun-12	27.91	583.32	10.20	800	3.22	365.9	2.76	7.66	510	-	0.00870	<0.200	<0.00040	0.0290	120	-
20-Sep-12	34.53	576.70	11.00	859	0.73	387.0	46.80	7.64	530	-	0.00260	<0.200	<0.00040	0.6300	100	-
19-Dec-12	21.26	589.97	8.90	983	1.73	279.0	778.00	7.71	530	-	0.01100	0.110 J	0.00062	0.0670	180	-
25-Feb-13	27.19	584.04	7.50	682	7.61	330.5	4.36	7.85	380	-	0.01300	<0.500	0.00015 J	0.0110 J	74	-
22-May-13	29.09	582.14	8.80	828	3.88	411.4	8.11	8.29	350	-	0.02500	0.085 J	0.00053	0.0220	100	-
21-Aug-13	35.15	576.08	17.10	1248	3.41	114.2	144.00	7.78	1060	-	0.00150	0.060	0.00005 J	0.4870	95	-
20-Nov-13	27.45	583.78	10.00	1032	4.13	196.5	31.70	7.18	699	-	0.01450	0.100	0.00140	0.0080	202	-
1-Apr-14	21.08	590.15	8.40	567	3.04	168.2	15.70	10.24	413	-	0.06270	0.210	0.00150	0.0140	150	-
21-May-14	26.11	585.12	10.30	670	0.49	198.4	-	7.45	565	-	0.09500	0.200	0.00160	0.0480	166	-
12-Aug-14	34.56	576.67	14.07	812	3.64	87.7	1519.00	7.51	560	-	0.00300	0.070	<0.00010	0.1370	107	-
13-Nov-14	29.48	581.75	12.90	1135	3.50	241.7	10.46	7.69	956	-	0.02080	<0.050	0.00010	0.0020	295	-
11-Feb-15	20.81	590.42	7.70	619	6.17	81.4	18.00	9.63	430	-	0.03920	0.380	0.00130	0.0110	126	-
4-May-15	29.80	581.43	10.50	924	2.54	361.3	8.70	9.74	623	-	0.04230	0.110	0.00050	0.0130	192	-
6-Aug-15	36.08	575.15	12.80	781	2.40	129.6	261.00	7.24	Dry	-	Dry	Dry	Dry	Dry	Dry	-
4-Nov-15	30.80	580.43	10.70	1234	4.98	205.6	11.80	7.13	1130	-	0.00660	0.048 J	0.00030	0.0020	318	-
10-Feb-16	23.56	587.67	6.40	602	1.62	197.7	11.90	10.19	451	-	0.13200	0.190	0.00140	0.0190	148	-
2-May-16	30.19	581.04	11.50	1008	0.80	110.6	9.76	10.14	751	-	0.17100	0.250	0.00270 J-	0.0480	232	-
23-Aug-16	35.79	575.44	13.10	729	2.00	436.2	51.40	7.20	1010	-	0.00401	<0.050	<0.00010	0.1820	137	-
2-Nov-16	29.06	582.17	10.90	570	4.98	103.1	32.10	7.55	1180	-	0.01120	0.185	0.00056	0.0050	372	-
1-Feb-17	26.86	584.37	8.10	992	2.21	99.7	7.19	9.73	632	-	0.10900	0.089	0.00097	0.0179	194	-
30-May-17	26.86	584.37	10.50	814	6.12	5.8	5.74	9.73	487	-	0.04250	0.084	0.00036 J+	0.0044	168	-
17-Aug-17	34.23	577.00	11.70	1054	5.43	125.1	5.68	7.65	731	-	0.00652	0.029 J	<0.00010	0.0604	156	-
10-Nov-17	29.96	581.27	10.00	1077	4.65	85.2	10.50	7.18	953	-	0.00582	0.069	0.00034	0.0042	308	-
27-Feb-18	23.02	588.21	7.70	584	1.91	120.4	12.60	9.96	530	-	0.08630	0.143	0.00064	0.0068	174	-
1-May-18	24.85	586.38	9.10	1082	2.16	-	11.80	10.34	682	-	0.11300	0.214	.000775 J+	0.0222	196	-
21-Aug-18	35.17	576.06	14.83	1095	4.02	131.0	123.00	7.40	936	-	0.00365	0.05 U	<0.0001	0.8700	214	-
6-Nov-18	32.00	579.23	10.30	1192	5.93	198.1	2.35	7.49	1200	-	0.00487	<0.05	0.000077 J	<0.001	363 J+	-
13-Mar-19	25.12	586.11	7.40	695	2.19	189.7	15.80	9.48	632	-	0.04410	0.091	0.00063	0.0076	200	-
8-May-19	27.89	583.34	10.70	844	4.95	60.5	5.19	9.30	697	-	0.04190	0.0953 J	0.00068	0.0140	182	-
26-Aug-19	35.02	576.21	11.89	1111	1.52	Note 1	22.90	7.26	995	-	0.00246	0.0152 J	<0.0001	0.9700	177	-
13-Nov-19	33.00	578.23	9.80	932	5.27	66.1	0.02	7.18	776	-	0.00389	0.0049 J	<0.0001	0.0006 J	211	-

Table A-2e: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-5A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
12-Feb-20	18.23	593.00	7.00	533	7.58	140.4	10.60	8.32	463	-	0.00631	0.0436 J	0.00015	0.0015	183	-
12-Aug-20	34.50	576.73	11.20	1381	4.00	125.0	2.75	7.52	1250	-	0.00537	0.012 J	0.0001 U	0.0839	333	-
9-Dec-20	29.90	581.33	9.80	1105	4.51	222.0	8.32	7.29	897	-	0.00312	0.196	0.00030	0.0064	263	-
3-Mar-21	24.81	586.42	9.20	899	3.04	225.0	3.09	7.60	792	-	0.00374	0.100	0.00013	0.0052	247	-
9-Jun-21	33.20	578.03	9.30	875	5.23	184.0	1.26	7.27	700	-	0.00262	-	0.000063 J	-	205	-
13-Oct-21	31.70	579.53	9.50	1934	5.97	194.0	9.56	7.22	DRY	DRY	DRY	-	DRY	-	DRY	DRY
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:
Top of casing elevation (feet NAVD88): 611.23

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available		
<	Analyte not detected above the reporting limit shown		
Dry	Well went dry during sampling. Unable to collect sample.		
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
U	Data validation code; not detected at the Reporting Limit (RL)		
J	Data validation code; estimated value		
J+	Data validation code; estimated value with positive bias		
°C	Degrees Celsius		
Note 1	ORP measurements not available due to faulty sensor.		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-2f: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-6A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Jul-05	30.89	578.06	15.26	735	-	-	303.00	7.60	612	-	<0.00200	<0.100	<0.00200	0.3490	-	-
10-Nov-05	27.25	581.70	11.79	700	-	-	13.70	7.51	460	-	0.00216	<0.150	<0.00100	0.4510	-	-
15-Feb-06	19.42	589.53	6.17	759	2.00	162.9	9.42	8.27	550 J	-	0.00754	<0.150	<0.00100	0.6160	-	-
17-May-06	27.55	581.40	11.99	835	1.31	248.3	4.16	7.46	550	-	0.01100	<0.150	<0.00100	0.1060	-	-
23-Aug-06	30.99	577.96	15.92	862	1.60	-26.4	15.50	7.40	810	-	0.00134	<0.150	<0.00100	0.6820	-	-
14-Nov-06	15.30	593.65	10.56	712	4.59	84.1	14.50	7.32	500	-	0.00171	<0.150	<0.00100	0.0163	-	-
16-Feb-07	24.22	584.73	8.49	581	3.64	38.6	139.00	7.21	420	-	0.00160	<0.150 UJ	<0.00100	0.1710 J	-	-
30-May-07	28.50	580.45	13.93	1092	2.72	180.7	210.00	7.40	740	-	0.01620	<0.150	<0.00100	0.1570	-	-
29-Aug-07	31.34	577.61	10.15	701	4.48	84.8	662.00	7.80	620 J	-	0.00141	<0.150	<0.00100	0.3520	-	-
29-Nov-07	28.32	580.63	11.30	731	6.23	154.0	-	6.26	420	-	0.00178	<0.150	<0.00100	0.1760	-	-
27-Feb-08	23.42	585.53	-	-	-	-	-	-	410	-	0.00147	<0.150	<0.00100	0.0220	-	-
20-May-08	27.49	581.46	8.14	791	3.93	176.5	-	7.64	540 J	-	0.00818	0.170	<0.00100	0.0410	-	-
27-Aug-08	31.72	577.23	9.33	776	4.83	142.0	-	7.32	660 J	-	0.00186	<0.150	<0.00100	0.2660	109	-
26-Sep-08	*Test Trench Drain Line Installed*															-
16-Oct-08	31.29	577.66	9.17	923	4.60	115.4	-	7.13	590 J	-	0.00185	<0.150	<0.00100	0.0910	106	-
20-Nov-08	21.18	587.77	9.70	578	5.22	249.4	11.70	7.40	460	-	0.00442	<0.150	<0.00200	0.0202	110	-
30-Dec-08	18.64	590.31	8.45	448	9.27	137.9	75.80	7.89	370 J	-	0.01190	0.209	0.00114	0.0267	106	-
15-Jan-09	16.23	592.72	6.84	344	9.25	181.9	2.77	7.47	320	-	0.00488	<0.150	<0.00100	<0.0100	73	-
12-Feb-09	25.64	583.31	7.89	-	10.82	-	71.70	7.70	420	-	0.01100	0.177	<0.00100	<0.0100	103	-
12-Mar-09	26.92	582.03	7.27	524	8.31	166.7	116.00	7.76	500	-	0.02350	0.244	<0.00100	0.0167	125	-
16-Apr-09	19.46	589.49	7.33	406	7.57	182.8	91.80	8.33	430	-	0.02410	0.154	0.00109	0.0244	101	-
19-May-09	26.10	582.85	9.07	554	6.39	65.6	161.00	8.32	550 J	-	0.01340	<0.150	<0.00100	<0.0100	115	-
23-Jun-09	29.67	579.28	9.51	522	6.05	71.4	-	8.17	540	-	0.00310	<0.200	<0.00200	0.0630	74	-
25-Aug-09	32.72	576.23	14.80	795	3.25	282.7	22.00	7.28	630 J	-	0.00075 J	<0.200	<0.00200	0.0330	100	-
24-Sep-09	32.93	576.02	10.60	745	4.02	361.3	29.80	7.27	560 J	-	0.00028 J	<0.200	<0.00200	0.0068 J	100	-
15-Dec-09	23.87	585.08	9.50	815	4.20	556.0	20.00	7.15	450	-	<0.00200	<0.200	<0.00200	0.0030 J	120	-
24-Mar-10	25.61	583.34	8.50	704	4.93	205.6	20.50	8.53	490	-	0.04700	0.370	0.00090 J	<0.0200 U	140	-
16-Jun-10	19.11	589.84	10.40	553	4.79	399.8	13.40	7.22	310	-	0.01600	0.100 J	<0.00200	0.0036 J	90	-
22-Sep-10	31.61	577.34	11.30	1019	3.89	413.8	20.30	7.10	770	-	0.00620	<0.200	0.00024 J	<0.0200	130	-
8-Dec-10	23.10	585.85	87.90	751	6.24	437.1	9.55	8.77	520	-	0.04300	0.220	0.00130 J	0.0100 J	130	-
29-Mar-11	21.32	587.63	7.10	303	4.76	809.4	13.40	9.35	350 J	-	0.04300	0.400 J+	0.00055 J	0.0110 J	110	-
21-Jun-11	26.04	582.91	11.20	840	3.24	300.2	8.50	8.40	790	-	0.01800	0.160 J	0.00058 J	0.0092 J	110	-
28-Sep-11	32.43	576.52	10.90	67	3.92	415.6	8.32	7.30	590	-	<0.00500	0.040 J	0.00019 J	0.0025 J	110	-
14-Dec-11	27.19	581.76	9.00	605	1.56	329.9	21.90	7.89	570	-	0.01100	0.280	0.00079 J	0.0085 J	150	-
20-Mar-12	17.23	591.72	6.70	639	5.03	362.5	59.90	7.79	200	-	0.01700	0.091 J	<0.00200	<0.0200	79	-
19-Jun-12	25.63	583.32	9.60	681	5.24	373.2	5.94	7.43	430	-	0.00740	<0.200	<0.00040	<0.0200	76	-
19-Sep-12	32.12	576.83	11.70	786	3.49	290.0	7.36	7.38	460	-	0.00570	<0.200	<0.00040	<0.0200	81	-
19-Dec-12	19.00	589.95	8.90	977	4.55	308.0	26.90	7.98	440	-	0.02000	0.490	0.00130	0.0120 J	150	-
25-Feb-13	24.93	584.02	7.10	766	7.59	306.9	6.18	8.20	450	-	0.03400	0.190 J	0.00073	0.0120 J	120	-
22-May-13	26.84	582.11	9.10	705	3.94	412.9	5.97	9.33	430	-	0.04300	0.150 J	0.00052	0.0054 J	140	-
21-Aug-13	32.84	576.11	11.20	879	4.54	110.2	8.28	8.28	548	-	0.00950	<0.050	<0.00010	0.0040	106	-
20-Nov-13	25.21	583.74	11.10	1264	4.69	201.4	30.80	7.55	640	-	0.02490	0.140	0.00190	0.0130	163	-
1-Apr-14	18.81	590.14	8.40	448	3.50	194.9	14.70	8.87	342	-	0.01480	0.060	0.00030	0.0040 J+	78	-
21-May-14	23.84	585.11	10.60	122	1.32	199.3	-	8.46	352	-	0.01800	<0.050	0.00020	0.0330	80	-
13-Aug-14	32.25	576.70	12.46	796	5.77	54.0	8.01	8.68	628	-	0.01610	<0.050	<0.00010	0.0040	165	-
13-Nov-14	27.21	581.74	13.30	837	4.02	234.3	11.40	8.63	711	-	0.04410	0.090	0.00040	0.0030	203	-
11-Feb-15	18.54	590.41	8.40	609	1.75	16.0	87.40	9.71	435	-	0.03620	0.420	0.00100	0.0120	117	-
4-May-15	27.52	581.43	9.90	974	3.27	356.5	12.30	10.14	654	-	0.04160	0.100	0.00050	0.0070	199	-
6-Aug-15	33.98	574.97	11.70	822	1.77	113.7	4.02	8.83	670	-	0.01910	<0.050	<0.00010	0.0020	210	-
4-Nov-15	28.51	580.44	11.70	1207	4.85	206.3	21.20	7.48	1090	-	0.00770	0.100	0.00100	0.0060	370	-
10-Feb-16	20.96	587.99	6.90	712	2.30	145.8	20.10	10.82	575	-	0.12100	0.190	0.00110	0.0290	173	-
2-May-16	28.91	580.04	10.60	1856	0.19	111.2	15.60	11.53	1010	-	0.19900	0.220	0.00250 J-	0.0250	347	-
23-Aug-16	33.58	575.37	11.40	1241	0.43	462.0	8.89	9.51	1150	-	0.03890	0.084	0.00034	0.0049	349	-
2-Nov-16	26.92	582.03	11.60	409	5.05	14.4	40.60	9.15	911	-	0.02560	0.448	0.00149	0.0133	297	-
1-Feb-17	24.61	584.34	6.20	1757	2.34	72.1	11.70	11.97	880	-	0.14100	0.037 J	0.00034	0.0026	283	-
30-May-17	24.56	584.39	10.80	1026	2.45	5.7	16.90	10.50	629	-	0.07280	0.081	0.00052 J+	0.0064	210	-
17-Aug-17	32.04	576.91	13.10	1019	3.94	87.3	42.70	9.36	726	-	0.02030	0.048 J	0.00015	0.0083	219	-
10-Nov-17	27.72	581.23	11.60	1090	4.17	109.6	38.20	9.12	931	-	0.02430	0.251	0.00277	0.0161	356	-
27-Feb-18	20.78	588.17	7.00	823	3.99	59.3	12.00	11.29	635	-	0.09930	0.077	0.00056	0.0045	203	-
1-May-18	22.58	586.37	8.90	1442	3.52	-	17.70	11.49	817	-	0.11900	0.182	0.000831 J+	0.0085	250	-
21-Aug-18	33.09	575.86	13.18	1153	1.01	139.8	9.68	10.06	989	-	0.05360	0.10 U	0.00035	0.0102	334	-
6-Nov-18	29.74	579.21	11.10	1719	3.85	218.4	6.49	8.13	1860	-	0.00304	<0.1	0.00037	0.0007 J	701 J+	-
13-Mar-19	22.90	586.05	5.80	748	5.04	145.7	32.00	10.55	737	-	0.03910	0.0479 J	0.00046	0.0045	246	-
8-May-19	25.63	583.32	9.10	936	5.95	75.9	7.60	10.38	747	-	0.05470	0.142	0.00127	0.0071	246	-
26-Aug-19	32.90	576.05	11.18	1622	0.88	Note 1	6.57	8.97	1510	-	0.01880	0.0895 J	0.00051	0.0169	478	-
13-Nov-19	30.92	578.03	10.20	1320	1.45	172.7	5.10	8.33	1140	-	0.00631	0.0099 J	<0.0001	0.0027	422	-

Table A-2f: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-6A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
12-Feb-20	15.95	593.00	7.70	438	1.40	150.6	19.70	8.13	379	-	0.00212	0.0144 J	0.0001 U	0.0023	122	-
12-Aug-20	32.30	576.65	11.00	2360	2.25	162.9	13.40	8.16	2060	-	0.00628	0.0089 J	0.000088 J	0.0061	709	-
9-Dec-20	27.60	581.35	10.80	1750	1.95	209.0	22.00	8.22	1500	-	0.00314	0.592	0.00098	0.0216	539	-
3-Mar-21	22.58	586.37	7.10	760	1.74	208.0	5.60	8.04	722	-	0.00309	0.182	0.00031	0.0174	243	-
9-Jun-21	31.07	577.88	9.80	2077	4.83	197.3	1.81	8.08	1900	-	0.00503	-	0.000094 J	-	707	-
13-Oct-21	29.39	579.56	11.20	2509	4.77	188.6	13.10	7.64	DRY	DRY	DRY	-	DRY	-	DRY	DRY
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:

Top of casing elevation (feet NAVD88): 608.95

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available		
<	Analyte not detected above the reporting limit shown		
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
U	Data validation code; not detected at the Reporting Limit (RL)		
J	Data validation code; estimated value		
J+	Data validation code; estimated value with positive bias		
°C	Degrees Celsius		
Note 1	ORP measurements not available due to faulty sensor.		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-2g: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-7A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
13-Oct-21	13.61	579.08	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	-	DRY	DRY
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:
Top of casing elevation (feet NAVD88): 592.69

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available		
<	Analyte not detected above the reporting limit shown		
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
U	Data validation code; not detected at the Reporting Limit (RL)		
J	Data validation code; estimated value		
J+	Data validation code; estimated value with positive bias		
°C	Degrees Celsius		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-2h: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-8A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
13-Oct-21	23.91	577.58	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	-	DRY	DRY
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:
Top of casing elevation (feet NAVD88): 601.49

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available		
<	Analyte not detected above the reporting limit shown		
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
U	Data validation code; not detected at the Reporting Limit (RL)		
J	Data validation code; estimated value		
J+	Data validation code; estimated value with positive bias		
°C	Degrees Celsius		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-2i: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-9A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Oct-21	4.38	692.91	12.20	956	1.45	-93.2	2.70	7.11	981 J-	0.000659	0.00479	-	0.000139	-	16	0.00120
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:
Top of casing elevation (feet NAVD88): 697.29

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available		
<	Analyte not detected above the reporting limit shown		
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
U	Data validation code; not detected at the Reporting Limit (RL)		
J	Data validation code; estimated value		
J+	Data validation code; estimated value with positive bias		
°C	Degrees Celsius		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-2j: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-10A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Oct-21	19.04	678.98	10.70	390	4.24	-115.0	27.80	7.93	383 J-	0.000705	0.00404	-	0.000383	-	9.7	0.00287
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:

Top of casing elevation (feet NAVD88): 698.02

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available
< Analyte not detected above the reporting limit shown
a Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U Data validation code; not detected at the Reporting Limit (RL)
J Data validation code; estimated value
J+ Data validation code; estimated value with positive bias
°C Degrees Celsius
µmhos/cm Micromhos per centimeter
feet bmp Feet below measuring point
feet NAVD88 Feet NAVD88 Datum
mg/L Milligrams per liter
mV Millivolts
NTU Nephelometric Turbidity Unit

Table A-2k: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well P-16
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Oct-21	2.41	700.46	12.30	2622	0.71	-261.2	56.2	12.11	2640 J-	0.00916	0.232	-	0.0411	-	826	0.445
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:

Top of casing elevation (feet NAVD88): 702.87

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available
< Analyte not detected above the reporting limit shown
a Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U Data validation code; not detected at the Reporting Limit (RL)
J Data validation code; estimated value
J+ Data validation code; estimated value with positive bias
°C Degrees Celsius
µmhos/cm Micromhos per centimeter
feet bmp Feet below measuring point
feet NAVD88 Feet NAVD88 Datum
mg/L Milligrams per liter
mV Millivolts
NTU Nephelometric Turbidity Unit

Table A-2l: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well P-17
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Oct-21	4.89	715.43	14.00	464	0.98	-97.5	38.1	6.49	444 J-	0.001 U	0.0164	-	0.0131	-	9.7	0.105
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:

Top of casing elevation (feet NAVD88): 720.32

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available
< Analyte not detected above the reporting limit shown
a Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U Data validation code; not detected at the Reporting Limit (RL)
J Data validation code; estimated value
J+ Data validation code; estimated value with positive bias
°C Degrees Celsius
µmhos/cm Micromhos per centimeter
feet bmp Feet below measuring point
feet NAVD88 Feet NAVD88 Datum
mg/L Milligrams per liter
mV Millivolts
NTU Nephelometric Turbidity Unit

APPENDIX A-3

Summary of Lower Disposal Area – Bedrock Groundwater Sampling Results

Table A-3a: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results - Well MWB-1LDA
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Iron	Lead	Manganese	Potassium
19-Dec-06	26.51	678.17	10.96	546	0.43	-115.4	1.05	7.70	310	0.15100	<0.150	<0.00100	0.0377	-
14-Feb-07	26.08	678.60	10.62	397	1.02	-90.8	3.07	7.53	240	0.16000	0.208	<0.00100	0.0463	-
31-May-07	25.96	678.72	10.83	386	0.36	-172.8	4.20	8.20	220	0.12200	0.183	<0.00100	0.0442	-
27-Aug-07	25.66	679.02	10.97	372	0.76	-128.2	1.08	7.51	240	0.08990	0.166	<0.00100	0.0466	-
28-Nov-07	26.81	677.87	10.56	371	0.42	-121.2	1.29	8.03	220	0.08830	<0.150	<0.00100	0.0547	-
27-Feb-08	25.80	678.88	10.62	371	2.01	-	1.07	-	230	0.08090	0.159	<0.00100	0.0553	<3.0
20-May-08	25.62	679.06	10.61	391	0.36	-53.0	1.11	7.28	230	0.06430	0.162	<0.00100	0.0521	-
27-Aug-08	26.14	678.54	10.58	394	0.50	-63.9	1.02	7.35	230 J	0.06400	0.170	<0.00100	0.0482	<3.0
19-Nov-08	25.16	679.52	10.33	269	0.45	-88.6	0.48	7.51	230	0.05960	0.166	<0.00100	0.0536	<3.0
11-Feb-09	25.08	679.60	10.04	268	0.48	-	0.97	7.89	230	0.05600	0.182	<0.00100	0.0519	<3.0
18-May-09	24.83	679.85	10.10	271	0.42	-50.5	1.81	8.05	230 J	0.04660	<0.150	<0.00100	0.0500	<3.0
24-Sep-09	26.32	678.36	11.80	323	0.24	202.0	3.59	7.57	260	0.02700	0.080 J	<0.00200	0.0650	1.1 J
17-Dec-09	25.06	679.62	10.10	370	0.94	179.0	4.16	7.77	<40	0.03400	0.052 J	<0.00200	0.0700	1.2 J
23-Mar-10	24.83	679.85	10.90	344	0.21	397.4	3.17	7.57	240	0.02500	0.058 J	<0.00200	0.0660	1.3 J
15-Jun-10	24.38	680.30	10.50	355	0.08	195.5	0.42	7.66	150	0.02700	0.083 J	<0.00200	0.0590	1.1 J
20-Sep-10	25.74	678.94	10.50	354	0.06	192.9	0.20	7.65	200	0.02200	<0.200	<0.00200	0.0660 J+	1.1 J
6-Dec-10	24.59	680.09	10.00	347	0.09	99.3	0.17	7.86	230	0.02200	<0.200	<0.00200	0.0510	1.0 J
28-Mar-11	24.01	680.67	10.00	173	0.16	90.6	0.88	7.58	200	0.02200	<0.200	<0.00200	0.0500	1.0 J
20-Jun-11	24.11	680.57	10.30	330	0.07	121.5	0.17	7.65	250	0.02200	0.110 J	<0.00200	0.0510	0.9 J
26-Sep-11	25.39	679.29	10.40	2906	0.06	123.6	0.43	7.65	280	0.01500	0.130 J	<0.00200	0.0560	1.1 J
14-Dec-11	24.61	680.07	9.90	245	0.10	193.8	1.76	7.57	230	0.02100	0.110 J	<0.00200	0.0540	1.2 J
21-Mar-12	23.70	680.98	10.10	392	0.07	392.0	0.22	7.47	240	0.02300	0.110 J	<0.00200	0.0480	1.1 J
18-Jun-12	23.90	680.78	10.50	383	0.02	342.8	0.30	7.67	230	0.02000	<0.200	<0.00040	0.0510	<3.3
19-Sep-12	25.38	679.30	10.30	402	0.01	151.0	0.44	7.63	220	0.01900	0.110 J	<0.00040	0.0550	1.0 J
18-Dec-12	23.59	681.09	10.10	492	0.00	-45.7	0.16	7.70	92	0.01700	0.120 J	<0.00040	0.0490	1.2 J
25-Feb-13	23.73	680.95	9.90	377	0.00	177.1	0.37	7.53	270 J	0.01900	0.140 J	<0.00040	0.0450	1.0 J
22-May-13	23.85	680.83	9.90	398	0.00	430.4	0.44	7.73	290	0.01700	0.130 J	<0.00040	0.0460	<3.3
21-Aug-13	25.34	679.34	10.40	467	0.01	-31.7	0.55	7.68	238	0.01680	0.140	0.00008 J	0.0480	1.1
19-Nov-13	24.25	680.43	10.10	361	0.00	70.3	0.32	7.30	232	0.01570	0.160	<0.00010	0.0500	1.0
31-Mar-14	22.36	682.32	10.70	286	0.01	107.4	0.21	7.79	211	0.01380	0.160	<0.00010	0.0490	1.0
21-May-14	23.29	681.39	8.54	271	1.35	54.3	-	7.14	198	0.01310	0.160	<0.00010	0.0460	1.0
12-Aug-14	24.87	679.81	14.79	335	0.41	-16.0	2.02	7.05	216	0.01190	0.140	<0.00010	0.0450	1.0
11-Nov-14	24.96	679.72	10.10	262	0.79	11.1	1.51	7.49	221	0.01360	0.160	<0.00010	0.0450	1.1
10-Feb-15	23.23	681.45	10.40	319	0.25	-114.0	0.36	7.70	240	0.01330	0.160	<0.00010	0.0450	1.0
4-May-15	23.62	681.06	10.20	370	0.05	175.1	0.16	7.70	224	0.01170	0.180	<0.00010	0.0480	1.0
4-Aug-15	25.30	679.38	11.00	279	0.06	-30.5	0.72	7.72	234	0.01440	0.180	<0.00010	0.0460	1.0
4-Nov-15	25.35	679.33	10.60	263	0.00	51.2	0.46	7.46	233	0.01100	0.170	<0.00010	0.0450	1.2
8-Feb-16	23.03	681.65	10.20	319	0.03	206.5	0.20	7.77	210	0.01210	0.190	<0.00010	0.0480	1.1
2-May-16	23.49	681.19	Monitored Semi-Annually[1]						Monitored Annually[1]					
22-Aug-16	25.00	679.68	11.10	323	0.02	-55.2	1.10	7.64	Monitored Annually[1]					
1-Nov-16	24.29	680.39	Monitored Semi-Annually[1]						Monitored Annually[1]					
31-Jan-17	23.06	681.62	10.20	391	0.05	169.3	0.13	7.66	223	0.01190	0.177	<0.00010	0.0418	1.0
30-May-17	22.45	682.23	Monitored Semi-Annually[1]						Monitored Annually[1]					
16-Aug-17	24.27	680.41	10.70	385	0.15	123.4	0.40	7.64	Monitored Annually[1]					
9-Nov-17	24.41	680.27	Monitored Semi-Annually[1]						Monitored Annually[1]					
28-Feb-18	22.04	682.64	10.10	276	0.20	-96.4	0.25	7.44	221	0.01080	0.192	<0.00010	0.0412	1.0
1-May-18	22.11	682.57	Monitored Semi-Annually[1]						Monitored Annually[1]					
22-Aug-18	24.42	680.26	11.37	277	5.25	-59.6	0.18	7.61	Monitored Annually[1]					
6-Nov-18	24.57	680.11	Monitored Semi-Annually[1]						Monitored Annually[1]					
11-Mar-19	22.61	682.07	10.10	248	0.60	-70.8	0.68	7.60	224	0.00874	0.224	<0.0001	0.0475	1.07
8-May-19	22.68	682.00	Monitored Semi-Annually[1]						Monitored Annually[1]					
27-Aug-19	24.54	680.14	11.45	282	0.58	Note 1	0.04	7.30	Monitored Annually[1]					
13-Nov-19	24.15	680.53	Monitored Semi-Annually[1]						Monitored Annually[1]					

Table A-3a: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results - Well MWB-1LDA
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Iron	Lead	Manganese	Potassium
13-Feb-20	22.04	682.64	10.10	280	0.34	-133.4	0.57	7.51	207	0.00882	0.231	0.0001 U	0.0428	1.05
13-Aug-20	23.92	680.76	11.00	284	0.60	-113.5	0.44	7.55	Monitored Annually[1]					
9-Dec-20	23.35	681.33	Monitored Semi-Annually[1]						Monitored Annually[1]					
5-Mar-21	22.01	682.67	10.20	266	0.04	-50.0	0.42	7.64	214	0.0105	0.21	0.0001 U	0.0407	1.12
10-Jun-21	23.17	681.51	Monitored Semi-Annually[1]						Monitored Annually[1]					
13-Oct-21	24.41	680.27	10.90	327	0.91	-76.1	0.33	7.48	Monitored Annually[1]					
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	-	0.015	-	-

Note:

Top of casing elevation (feet NAVD88): 704.68

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
-	Not available
<	Analyte not detected above the reporting limit shown
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.
µmhos/cm	Micromhos per centimeter
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
mg/L	Milligrams per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit

Table A-3b: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results - Well MWB-2LDA
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Iron	Lead	Manganese	Potassium
19-Dec-06	36.82	704.84	12.15	394	0.57	114.6	1.84	7.58	230	0.00849	<0.150	<0.00100	0.0242	-
14-Feb-07	36.30	705.36	11.69	339	1.40	-85.7	2.72	7.39	200	0.00609	0.232	<0.00100	0.0266	-
31-May-07	36.93	704.73	12.13	346	0.20	-223.7	3.04	8.28	210	0.00695	0.255	<0.00100	0.0297	-
27-Aug-07	37.99	703.67	12.18	336	0.49	-169.7	0.84	7.54	210	0.00749	0.262	<0.00100	0.0313	-
28-Nov-07	37.89	703.77	11.82	338	0.28	-146.6	1.32	7.93	250	0.00691	0.259	<0.00100	0.0320	-
27-Feb-08	37.24	704.42	11.87	340	0.23	-	0.87	7.41	210	0.00746	0.254	<0.00100	0.0309	<3.0
20-May-08	37.31	704.35	11.91	359	0.23	-86.6	0.67	7.27	200	0.00631	0.315	<0.00100	0.0267	-
27-Aug-08	38.37	703.29	11.84	362	0.35	-77.6	0.70	7.21	210 J	0.00636	0.279	<0.00100	0.0231	<3.0
19-Nov-08	37.50	704.16	11.53	254	0.44	-105.9	2.08	7.45	200	0.00586	0.279	<0.00100	0.0231	<3.0
11-Feb-09	37.10	704.56	11.25	254	0.48	-	0.63	7.91	220	0.00561	0.290	<0.00100	0.0238	<3.0
18-May-09	37.00	704.66	11.42	258	0.42	-71.9	1.11	8.00	210 J	0.00517	<0.150	<0.00100	0.0208	<3.0
25-Sep-09	38.88	702.78	13.10	297	0.14	140.7	3.09	7.54	230	0.00650	0.250	<0.00200	0.0290	1.2 J
17-Dec-09	37.19	704.47	10.80	341	0.51	129.0	4.85	7.71	74	0.00430	0.250	<0.00200	0.0290	1.1 J
23-Mar-10	36.60	705.06	12.60	323	0.27	355.0	5.28	7.54	110	0.00760	0.220	<0.00200	0.0290	1.2 J
15-Jun-10	36.25	705.41	11.40	326	0.08	171.1	-	7.62	98	0.00880	0.310	<0.00200	0.0230	1.1 J
20-Sep-10	37.85	703.81	11.60	324	0.08	144.0	0.16	7.61	160	0.00650	0.310 J+	<0.00200	0.0280 J+	1.2 J
6-Dec-10	36.60	705.06	11.00	319	0.21	78.3	0.20	7.81	210	0.00290	0.180 J	<0.00200	0.0200	0.9 J
29-Mar-11	35.98	705.68	11.20	156	0.15	215.0	0.75	7.48	200	0.00560	0.320 J+	<0.00200	0.0200	1.5 J
21-Jun-11	36.34	705.32	11.80	352	0.06	101.5	0.24	7.59	220	<0.00500	0.270	<0.00200	0.0280	1.0 J
27-Sep-11	38.14	703.52	11.50	2484	0.06	114.4	0.45	7.60	220	<0.00500	0.290	<0.00200	0.0220	1.0 J
14-Dec-11	36.91	704.75	11.00	228	0.05	127.2	4.04	7.54	190	0.00670	0.280	<0.00200	0.0210	1.2 J
21-Mar-12	35.68	705.98	11.00	359	0.05	93.9	0.30	7.43	210	0.00690	0.270	<0.00200	0.0170 J	1.1 J
18-Jun-12	36.06	705.60	11.70	350	0.02	211.9	0.23	7.62	220	0.00620	0.350 J+	<0.00040	0.0170 J	<3.3
19-Sep-12	38.07	703.59	11.60	367	0.00	102.0	0.34	7.59	200	0.00650	0.290	<0.00040	0.0220	1.0 J
18-Dec-12	34.88	706.78	10.90	463	0.00	-97.8	0.17	7.81	68	0.00600	0.280	<0.00040	0.0170 J	1.2 J
25-Feb-13	35.70	705.96	10.90	347	0.09	112.6	0.27	7.56	190	0.00660	0.270 J	<0.00040	0.0180 J	1.1 J
22-May-13	36.24	705.42	11.00	412	0.00	412.5	0.43	7.71	190	0.00600	0.280 J	<0.00040	0.0170 J	<3.3
20-Aug-13	38.13	703.53	12.20	406	0.02	-41.5	0.64	7.48	211	0.00550	0.290	<0.00010	0.0220	1.0
19-Nov-13	36.56	705.10	11.10	344	0.01	43.6	0.32	7.35	206	0.00520	0.310	<0.00010	0.0190	1.1
31-Mar-14	35.36	706.30	11.50	285	0.00	93.1	0.31	7.71	207	0.00510	0.320	<0.00010	0.0200	1.1
22-May-14	35.80	705.86	10.05	260	0.24	17.5	-	7.22	186	0.00500	0.310	<0.00010	0.0190	1.0
13-Aug-14	37.50	704.16	13.10	294	0.57	-37.5	3.28	7.19	190	0.00540	0.400	0.00210 J	0.0280	1.1
11-Nov-14	37.06	704.60	10.10	241	0.68	-39.7	2.10	7.48	206	0.00540	0.320	<0.00010	0.0180	1.1
10-Feb-15	35.70	705.96	11.40	295	0.11	-123.2	2.11	7.69	206	0.00510	0.310	<0.00010	0.0190	1.0
4-May-15	36.34	705.32	11.70	336	0.05	340.2	0.72	7.73	204	0.00480	0.310	<0.00010	0.0200	1.0
4-Aug-15	38.42	703.24	12.70	263	0.04	-81.8	0.77	7.72	204	0.00580	0.330	<0.00010	0.0200	1.0
4-Nov-15	37.81	703.85	11.60	244	0.04	26.9	2.13	7.45	201	0.00470	0.320	<0.00010	0.0180	1.1
8-Feb-16	35.68	705.98	11.60	307	0.00	208.4	0.74	7.68	186	0.00550	0.330	<0.00010	0.0220	1.1
2-May-16	36.03	705.63	Monitored Semi-Annually[1]						Monitored Annually[1]					
22-Aug-16	37.92	703.74	12.20	306	0.02	-137.6	1.58	7.67	Monitored Annually[1]					
1-Nov-16	37.07	704.59	Monitored Semi-Annually[1]						Monitored Annually[1]					
31-Jan-17	36.00	705.66	10.90	348	0.10	120.5	0.86	7.67	195	0.00566	0.306	<0.00010	0.0168	1.1
30-May-17	35.44	706.22	Monitored Semi-Annually[1]						Monitored Annually[1]					
16-Aug-17	37.69	703.97	12.30	356	0.14	-77.2	3.27	7.67	Monitored Annually[1]					
9-Nov-17	37.11	704.55	Monitored Semi-Annually[1]						Monitored Annually[1]					
28-Feb-18	34.95	706.71	10.90	261	0.21	-115.5	0.80	7.48	205	0.00569	0.310	<0.00010	0.0173	1.0
1-May-18	35.11	706.55	Monitored Semi-Annually[1]						Monitored Annually[1]					
22-Aug-18	37.90	703.76	12.31	262	1.64	-80.3	0.92	7.56	Monitored Annually[1]					
6-Nov-18	37.66	704.00	Monitored Semi-Annually[1]						Monitored Annually[1]					
12-Mar-19	35.68	705.98	10.70	239	0.58	-75.1	0.59	7.48	188	0.0055	0.352	<0.0001	0.0182	1.08
8-May-19	35.86	705.80	Monitored Semi-Annually[1]						Monitored Annually[1]					
27-Aug-19	37.85	703.81	12.30	265	0.43	Note 1	0.02	7.46	Monitored Annually[1]					
13-Nov-19	37.22	704.44	Monitored Semi-Annually[1]						Monitored Annually[1]					

Table A-3b: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results - Well MWB-2LDA
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Iron	Lead	Manganese	Potassium
13-Feb-20	35.10	706.56	10.80	261	0.39	-135.9	0.96	7.50	185	0.00545	0.349	0.0001 U	0.018	1.15
13-Aug-20	37.21	704.45	11.60	266	0.54	-118.2	1.35	7.50	Monitored Annually[1]					
9-Dec-20	36.55	705.11	Monitored Semi-Annually[1]						Monitored Annually[1]					
5-Mar-21	35.02	706.64	11.10	255	0.04	-80.0	2.29	7.65	176	0.00552	0.321	0.0001 U	0.0166	1.09
10-Jun-21	36.29	705.37	Monitored Semi-Annually[1]						Monitored Annually[1]					
13-Oct-21	37.76	703.90	11.70	308	3.66	-44.7	0.32	7.43	Monitored Annually[1]					
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	-	0.015	-	-

Note:

Top of casing elevation (feet NAVD88): 741.66

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
-	Not available
<	Analyte not detected above the reporting limit shown
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.

µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-3c: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results - Well MWB-3LDA
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Iron	Lead	Manganese	Potassium
19-Dec-06	7.08	737.11	11.37	670	0.42	-171.2	1.20	9.23	500	0.02570	0.173	<0.00100	0.0476	-
23-Jan-07	5.62	738.57	13.07	383	0.51	-275.0	1.53	8.63	270	0.01840	0.450	<0.00100	0.0787	-
14-Feb-07	5.81	738.38	12.57	328	1.09	-158.2	115.00	7.86	310	0.01510	<0.150	<0.00100	0.0718	-
29-Mar-07	4.78	739.41	12.44	458	0.57	-140.8	4.25	7.78	260 J	0.03790	0.261	<0.00100	0.0601	-
17-Apr-07	4.86	739.33	12.79	389	0.27	-102.4	1.22	7.46	240	0.02300	0.451	<0.00100	0.0900	-
31-May-07	6.39	737.80	12.98	394	0.29	-223.8	3.32	8.14	240	0.02120	0.443	<0.00100	0.0998	-
20-Jun-07	6.86	737.33	13.41	412	6.10	-128.5	1.35	8.02	230 J	0.02380	0.274	<0.00100	0.0898	-
31-Jul-07	7.96	736.23	13.47	417	0.77	-174.1	0.92	7.64	250	0.01890	0.609	<0.00100	0.1190	-
27-Aug-07	8.50	735.69	12.84	395	0.46	-132.4	1.97	7.43	250	0.01760	0.315	<0.00100	0.1040	-
27-Sep-07	9.58	734.61	12.68	294	0.51	-133.8	0.53	7.87	250	0.01930	0.451	<0.00100	0.1170	-
26-Oct-07	9.65	734.54	12.49	288	0.84	-111.9	9.83	7.60	240 J	0.01100	0.949	<0.00100	0.1970	-
28-Nov-07	10.23	733.96	11.95	362	0.64	-86.1	1.58	7.87	200	0.01780	0.315	<0.00100	0.0819	-
12-Dec-07	9.66	734.53	11.83	334	0.26	-93.2	0.63	7.63	280 J	0.01740	0.458	<0.00100	0.0953	-
24-Jan-08	8.20	735.99	11.09	335	0.44	-108.3	-	7.46	220	0.01920	0.456	<0.00100	0.0861	-
26-Feb-08	7.61	736.58	12.26	337	0.48	-	2.40	7.45	210	0.02200	0.448	<0.00100	0.0916	<3.0
25-Mar-08	7.22	736.97	11.94	337	1.01	-48.6	2.80	7.51	210	0.01780	0.296	<0.00100	0.0789	-
29-Apr-08	6.75	737.44	12.53	332	0.77	-50.3	1.95	7.41	200 J	0.01820	0.449	<0.00100	0.0826	-
19-May-08	7.17	737.02	12.37	336	0.57	-57.2	2.19	7.34	200 J	0.01870	0.373	<0.00100	0.0758	-
18-Jun-08	7.26	736.93	12.11	323	0.48	-64.1	0.83	7.13	190 J	0.01950	0.461	<0.00100	0.0896	-
26-Aug-08	8.78	735.41	12.31	329	1.16	-36.5	2.89	7.30	200 J	0.01770	0.298	<0.00100	0.0532	<3.0
19-Nov-08	9.03	735.16	11.91	243	0.52	-93.1	1.69	7.40	190	0.01820	0.394	<0.00100	0.0690	<3.0
11-Feb-09	7.07	737.12	11.74	227	0.65	-	1.03	7.76	180	0.01770	0.582	<0.00100	0.1020	<3.0
18-May-09	6.50	737.69	12.11	225	0.67	-63.9	1.51	7.83	190 J	0.01290	<0.150	<0.00100	0.0886	<3.0
25-Sep-09	10.47	733.72	13.50	260.1	0.36	215.3	4.14	7.61	220	0.01700	0.260	0.00094 J	0.0440	12.0
17-Dec-09	8.39	735.80	11.50	301.0	0.44	110.0	3.10	7.71	270	0.02300	0.610	<0.00200	0.0970	1.3 J
23-Mar-10	6.46	737.73	12.20	294.8	0.43	332.5	3.52	7.57	150 J	0.02700	0.380	<0.00200	0.0760	1.3 J
16-Jun-10	5.34	738.85	11.10	281.7	0.05	117.0	-	7.71	160	0.02700	0.490	<0.00200	0.0760	1.3 J
21-Sep-10	7.72	736.47	11.80	276.3	0.06	169.5	0.36	7.54	140	0.02300	0.600 J+	<0.00200	0.0910 J+	1.3 J
7-Dec-10	6.48	737.71	11.00	263.0	0.15	77.2	0.38	7.58	180	0.02000	0.360	<0.00200	0.0680	1.2 J
28-Mar-11	4.42	739.77	10.80	134.0	0.44	75.6	1.06	7.46	160 J	0.02100	0.610 J+	<0.00200	0.0720	1.7 J
20-Jun-11	4.76	739.43	12.10	252.7	0.07	68.4	0.13	7.48	200 J	0.01600	0.650	<0.00200	0.08900	1.0 J
27-Sep-11	7.86	736.33	11.90	2064.0	0.04	102.6	0.37	7.48	170	0.01800	0.620	<0.00200	0.08300	1.1 J
14-Dec-11	7.17	737.02	11.00	188.2	0.03	140.8	1.87	7.50	770	0.02200	0.310	<0.00200	0.05600	1.3 J
21-Mar-12	4.68	739.51	10.70	297.8	0.07	130.6	0.41	7.39	170	0.02100	0.360	<0.00200	0.04600	1.1 J
18-Jun-12	4.75	739.44	11.60	289.0	0.16	271.3	0.55	7.54	150 J+	0.01900	0.440 J+	<0.00040	0.05300	<3.3
19-Sep-12	7.65	736.54	12.60	299.9	0.10	121.0	0.42	7.50	160	0.01800	0.370	<0.00040	0.05500	1.1 J
18-Dec-12	5.58	738.61	10.90	384.0	0.03	15.6	1.39	7.50	200	0.01900	0.150 J	<0.00040	0.04100	1.3 J
25-Feb-13	4.80	739.39	10.60	284.2	0.03	140.4	0.30	7.53	150	0.02200	0.390 J	<0.00040	0.05400	1.2 J
22-May-13	4.81	739.38	11.00	294.9	0.14	387.7	0.52	7.61	160	0.01800	0.420 J	<0.00040	0.05800	<3.3
20-Aug-13	7.63	736.56	12.60	383.0	0.81	-8.4	0.80	7.26	164	0.01670	0.350	<0.00010	0.05200	1.1
19-Nov-13	7.11	737.08	11.30	218.1	0.14	54.3	0.73	7.20	169	0.01660	0.290	<0.00010	0.05200	1.1
1-Apr-14	4.08	740.11	10.70	222.6	0.15	158.5	1.12	7.50	168	0.01330	0.480	<0.00010	0.07300	1.1
22-May-14	4.21	739.98	9.98	206.0	1.59	27.1	-	7.17	158	0.01120	0.150	<0.00010	0.06500	1.0
13-Aug-14	6.95	737.24	13.50	237.0	1.14	9.8	4.70	6.92	154	0.01050	0.160	<0.00010	0.07900	1.0
12-Nov-14	6.04	738.15	8.40	185.1	0.28	-10.1	3.42	7.36	162	0.01610	0.440	<0.00010	0.09300	1.1
11-Feb-15	4.62	739.57	11.50	205.1	1.20	68.1	1.32	7.41	169	0.00900	<0.050	<0.00010	0.07900	1.1
4-May-15	4.93	739.26	12.20	262.0	1.64	190.2	0.84	7.43	168	0.01090	0.640	<0.00010	0.12400	1.0
4-Aug-15	7.44	736.75	13.20	211.3	1.62	81.9	2.02	7.39	173	0.00680	0.043 J	<0.00010	0.05100	1.0
5-Nov-15	8.14	736.05	12.50	186.0	1.49	166.9	1.87	7.10	162	0.00350	0.017 J	<0.00010	0.08600	1.0
8-Feb-16	3.20	740.99	11.70	240.5	2.13	196.9	0.88	7.23	150	0.01120	1.060	<0.00010	0.13300	1.0
2-May-16	3.77	740.42	Monitored Semi-Annually[1]						Monitored Annually[1]					
22-Aug-16	6.81	737.38	13.10	238.0	2.40	168.5	2.39	7.41	Monitored Annually[1]					
1-Nov-16	6.59	737.60	Monitored Semi-Annually[1]						Monitored Annually[1]					
31-Jan-17	4.02	740.17	11.30	265.8	2.79	218.2	1.39	7.34	154	0.00323	0.008 J	<0.00010	0.02720	1.0
30-May-17	2.32	741.87	Monitored Semi-Annually[1]						Monitored Annually[1]					
16-Aug-17	5.48	738.71	13.20	258.4	3.54	92.2	2.50	7.41	Monitored Annually[1]					
9-Nov-17	6.00	738.19	Monitored Semi-Annually[1]						Monitored Annually[1]					
28-Feb-18	1.13	743.06	10.80	186.9	4.11	142.0	1.83	7.18	159	0.00253	0.02 J	<0.00010	0.01230	0.8
1-May-18	1.60	742.59	Monitored Semi-Annually[1]						Monitored Annually[1]					
22-Aug-18	5.93	738.26	13.55	194	7.63	16.9	0.77	7.11	Monitored Annually[1]					
6-Nov-18	6.78	737.41	Monitored Semi-Annually[1]						Monitored Annually[1]					
12-Mar-19	2.32	741.87	10.50	166	4.32	167.7	1.34	7.14	149	0.00187	0.0023 J	<0.0001	<0.001	0.953
8-May-19	2.57	741.62	Monitored Semi-Annually[1]						Monitored Annually[1]					
27-Aug-19	5.76	738.43	13.62	192	3.94	Note 1	0.02	7.09	Monitored Annually[1]					
13-Nov-19	6.00	738.19	Monitored Semi-Annually[1]						Monitored Annually[1]					

Table A-3c: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results - Well MWB-3LDA
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Iron	Lead	Manganese	Potassium
13-Feb-20	1.69	742.50	10.70	180	3.20	88.5	1.21	7.11	140	0.00169	0.05 U	0.0001 U	0.0062	0.915
13-Aug-20	4.59	739.60	13.60	188.7	4.26	50.3	1.60	7.19	Monitored Annually[1]					
9-Dec-20	4.22	739.97	Monitored Semi-Annually[1]						Monitored Annually[1]					
5-Mar-21	1.06	743.13	10.90	172.0	3.43	132	0.69	7.26	136	0.00184	0.107	0.0001 U	0.00750	0.9
10-Jun-21	3.46	740.73	Monitored Semi-Annually[1]						Monitored Annually[1]					
13-Oct-21	6.17	738.02	12.90	215.1	4.10	148.3	0.96	7.05	Monitored Annually[1]					
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	-	0.015	-	-

Note:
Top of casing elevation (feet NAVD88): 744.19
Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.
Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates

1	Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
-	Not available
<	Analyte not detected above the reporting limit shown
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.
µmhos/cm	Micromhos per centimeter
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
mg/L	Milligrams per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit

APPENDIX A-4

Summary of Dale Strip Pit – Bedrock Groundwater Sampling Results

Table A-4a: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-1SDSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
2-Dec-02	69.87	866.42	9.5	1690	-	-	-	7.29	910	0.04660	0.00268	-
3-Mar-03	36.83	899.46	11.5	1260	-	-	24.10	7.15	860	0.00973	-	-
3-May-03	34.88	901.41	12.8	1520	-	-	38.00	7.09	950	-	-	-
3-Aug-03	52.02	884.27	19.19	1460	-	-	11.40	7.01	990	-	-	-
1-Nov-03	53.61	882.68	11.60	915	-	-	8.97	7.19	1010	0.00858	0.00070	-
1-Feb-04	32.75	903.54	11.52	1033	-	-	7.36	6.78	1060	-	-	-
1-May-04	42.50	893.79	14.87	1126	-	-	7.53	7.23	1020	-	-	-
1-Aug-04	49.26	887.03	13.72	1234	-	-	8.07	6.98	981	-	-	-
1-Nov-04	42.81	893.48	11.88	1429	-	-	9.06	6.92	1060	0.01000	<0.00100	-
1-Feb-05	33.62	902.67	13.06	1615	-	-	7.11	7.01	1020	-	-	-
1-May-05	34.88	901.41	12.91	1459	-	-	6.54	6.85	1000	-	-	-
1-Aug-05	43.80	892.49	10.40	1472	-	-	10.40	6.80	1090	-	-	-
1-Nov-05	52.80	883.49	10.40	1458	-	-	6.02	6.64	1100	0.01030	<0.00100	-
1-Feb-06	42.70	893.59	10.40	1343	1.10	48.3	11.10	7.08	1100 J	-	-	-
1-May-06	37.81	898.48	11.52	1686	1.64	49.2	10.50	6.83	1100	-	-	-
1-Aug-06	46.11	890.18	14.10	1357	2.33	43.0	10.70	7.11	1100	-	-	-
1-Nov-06	46.47	889.82	-	-	-	-	-	-	-	-	-	-
28-Dec-06	33.20	903.09	-	-	-	-	-	-	-	-	-	-
7-Feb-07	34.50	901.79	-	-	-	-	-	-	-	-	-	-
7-May-07	36.48	899.81	15.19	1484	0.52	-83.4	6.78	7.60	1100	-	-	-
7-Aug-07	47.57	888.72	11.21	1488	8.80	107.4	9.53	6.51	1200	-	-	-
27-Nov-07	51.25	885.04	13.60	1483	1.82	-129.5	434.00	7.11	1000 J	0.00572	<0.00100	-
8-Feb-08	35.12	901.17	14.71	1489	3.11	-	10.20	6.97	1100	-	-	-
8-May-08	37.60	898.69	14.50	1594	3.99	112.5	4.71	6.90	1200 J	-	-	-
8-Aug-08	46.98	889.31	13.27	1617	2.49	105.3	5.32	6.96	1200 J	0.00782	<0.00100	5.6
1-Nov-08	43.35	892.94	11.17	1096	7.29	127.1	47.30	7.70	1100	0.00980	<0.00100	5.6
11-Feb-09	37.00	899.29	10.28	1112	4.15	-	7.68	7.25	1100	0.00752	<0.00100	5.6
9-May-09	36.53	899.76	13.87	1209	2.93	89.0	5.45	7.41	990 J	0.00757	<0.00100	5.6
24-Sep-09	53.61	882.68	12.10	1328	1.98	331.0	3.26	6.92	1200	0.00790	<0.00200	5.7
14-Dec-09	33.72	902.57	10.20	1519	0.55	393.0	2.82	6.99	1100	0.00340	<0.00200	5.7
22-Mar-10	35.11	901.18	10.90	1463	-	508.0	3.95	6.94	1200	0.01000	<0.00200	5.6
15-Jun-10	33.26	903.03	11.00	1485	0.20	210.3	1.50	7.02	1100	0.01100	<0.00200	5.9
20-Sep-10	45.81	890.48	11.30	1484	0.06	159.7	0.91	6.98	1100	0.00910	0.00048 J	6.0
6-Dec-10	36.20	900.09	10.70	1494	0.08	35.4	0.24	7.21	1200	0.00680	0.00034 J	5.2
28-Mar-11	35.07	901.22	10.70	749	0.08	136.8	0.16	6.88	1100	0.00680	<0.00200	5.5
20-Jun-11	38.53	897.76	11.40	1439	0.08	-19.2	0.21	6.99	1400	0.00460 J	<0.00200	5.5
26-Sep-11	50.43	885.86	11.20	1249	0.07	38.5	0.41	7.01	1200	0.00450 J	<0.00200	5.7
13-Dec-11	51.30	884.99	10.40	1308	0.06	50.3	2.03	7.07	530	0.00760	<0.00200	6.1
22-Mar-12	43.75	892.54	10.60	1695	0.08	125.1	0.28	6.99	1200	0.01200	<0.00200	5.7
18-Jun-12	44.86	891.43	Monitored Semiannually[1]									
18-Sep-12	55.74	880.55	12.90	1506	0.05	99.5	0.36	7.08	1300	0.01000	<0.00040	5.8
18-Dec-12	41.94	894.35	Monitored Semiannually[1]									
21-Feb-13	37.86	898.43	10.40	1730	0.02	131.5	0.41	7.27	1200	0.01300	<0.00040	6.3
22-May-13	39.34	896.95	Monitored Semiannually[1]									
20-Aug-13	49.40	886.89	11.90	1707	0.05	-37.6	0.69	7.00	1240	0.01020	<0.00010	6.0
19-Nov-13	44.94	891.35	Monitored Semiannually[1]									
31-Mar-14	33.31	902.98	11.20	1256	0.01	103.5	0.27	7.00	1200	0.01310	<0.00010	6.6
21-May-14	33.37	902.92	Monitored Semiannually[1]									
15-Aug-14	45.31	890.98	13.43	1467	0.71	-1.1	2.32	6.79	1150	0.01340	<0.00010	6.1
14-Nov-14	44.83	891.46	Monitored Semiannually[1]									
10-Feb-15	35.97	900.32	11.00	1423	0.04	-109.4	2.16	7.00	1200	0.01300	<0.00010	6.3
4-May-15	38.67	897.62	Monitored Semiannually[1]									
4-Aug-15	49.21	887.08	12.50	1253	0.04	-100.7	0.26	7.07	1230	0.01390	<0.00010	6.1
5-Nov-15	56.85	879.44	11.20	1159	0.02	57.4	0.91	6.75	1190	0.01490	<0.00010	7.0
8-Feb-16	33.02	903.27	11.60	1429	0.00	167.6	0.10	7.05	1190	0.01940	<0.00010	6.7
2-May-16	37.48	898.81	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-16	49.78	886.51	12.10	1232	0.06	-143.8	0.77	7.00	Monitored Annually[2]			
1-Nov-16	47.49	888.80	Monitored Semiannually[2]						Monitored Annually[2]			
31-Jan-17	35.57	900.72	11.10	1620	0.05	-241.6	0.24	6.99	1260	0.02180	<0.00010	6.7
30-May-17	34.70	901.59	Monitored Semiannually[2]						Monitored Annually[2]			
16-Aug-17	44.32	891.97	11.90	1621	0.12	-144.5	0.47	6.97	Monitored Annually[2]			
9-Nov-17	44.71	891.58	Monitored Semiannually[2]						Monitored Annually[2]			
28-Feb-18	32.04	904.25	10.70	1278	0.16	-58.5	0.11	6.82	1244	0.02240	<0.00010	6.5
1-May-18	33.99	902.30	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-18	47.95	888.34	11.97	1246	1.17	4.10	0.17	6.88	Monitored Annually[2]			
6-Nov-18	52.94	883.35	Monitored Semiannually[2]						Monitored Annually[2]			

Table A-4a: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-1SDSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
12-Mar-19	33.09	903.20	10.40	1157	0.55	-23.0	0.62	6.81	1200	0.02	<0.0001	0.95
8-May-19	34.37	901.92	Monitored Semiannually[2]						Monitored Annually[2]			
27-Aug-19	47.88	888.41	12.51	1314	0.15	Note 1	0.39	6.80	Monitored Annually[2]			
13-Nov-19	47.03	889.26	Monitored Semiannually[2]						Monitored Annually[2]			
14-Feb-20	31.08	905.21	10.60	1249	0.38	-82.2	0.10	6.61	1230	0.0183	0.0001 U	6.36
13-Aug-20	43.99	892.30	11.70	1176	0.56	-67.7	0.18	6.78	Monitored Annually[2]			
9-Dec-20	39.67	896.62	Monitored Semiannually[2]						Monitored Annually[2]			
5-Mar-21	34.96	901.33	11.00	1257	0.26	-38	0.24	6.95	1200	0.0195	0.0001 U	6.2
10-Jun-21	42.65	893.64	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	55.97	880.32	11.70	858	0.86	-92.3	0.48	6.84	Monitored Annually[2]			
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	0.015	-

Notes:
Top of casing elevation (feet NAVD88): 936.29

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
<	Analyte not detected above the reporting limit shown
1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012
2	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.
µmhos/cm	Micromhos per centimeter
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
mg/L	Milligrams per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit

Table A-4b: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-1DDSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
2-Dec-02	87.28	848.09	11.1	557	-	-	-	7.72	540	0.03270	<0.00050	-
3-Mar-03	48.63	886.74	12.0	623	-	-	24.00	7.48	370	0.00708	-	-
3-May-03	47.12	888.25	12.1	548	-	-	264.00	7.54	440	-	-	-
3-Aug-03	64.60	870.77	23.23	675	-	-	195.00	7.36	450	-	-	-
1-Nov-03	66.14	869.23	11.0	400	-	-	15.50	8.10	437	0.00603	<0.00050	-
1-Feb-04	46.55	888.82	10.68	455	-	-	8.70	7.15	440	-	-	-
1-May-04	55.82	879.55	13.61	508	-	-	12.40	7.58	429	-	-	-
1-Aug-04	61.89	873.48	13.15	585	-	-	15.70	7.47	399	-	-	-
1-Nov-04	56.83	878.54	10.94	655	-	-	9.40	7.22	477	0.00308	<0.00100	-
1-Feb-05	47.31	888.06	12.80	778	-	-	8.39	7.35	451	-	-	-
1-May-05	48.60	886.77	12.86	743	-	-	4.22	7.25	432	-	-	-
1-Aug-05	56.80	878.57	14.17	746	-	-	3.10	6.99	518	-	-	-
1-Nov-05	66.85	868.52	10.20	702	-	-	5.36	7.11	470	0.00360	<0.00100	-
1-Feb-06	47.88	887.49	10.11	648	0.71	109.4	2.72	7.53	450 J	-	-	-
1-May-06	52.23	883.14	12.22	686	1.82	43.7	3.68	7.43	450	-	-	-
1-Aug-06	59.41	875.96	12.28	665	1.06	-74.0	14.20	7.36	480	-	-	-
1-Nov-06	61.84	873.53	-	-	-	-	-	-	-	-	-	-
28-Dec-06	48.26	887.11	-	-	-	-	-	-				
7-Feb-07	49.64	885.73	-	-	-	-	-	-	-	-	-	-
7-May-07	53.24	882.13	12.44	722	0.74	-150.8	6.06	7.94	470	-	-	-
7-Aug-07	60.45	874.92	13.76	712	0.79	-50.0	4.53	7.28	500	-	-	-
27-Nov-07	63.40	871.97	14.41	711	0.45	-194.4	7.07	7.34	470 J	0.00289	<0.00100	-
8-Feb-08	49.23	886.14	14.07	737	0.62	-	6.28	7.46	500	-	-	-
8-May-08	51.31	884.06	13.52	793	0.55	27.9	4.42	7.40	520 J	-	-	-
8-Aug-08	59.69	875.68	13.73	812	0.67	-24.7	9.33	7.37	560 J	0.00226	<0.00100	<3.0
1-Nov-08	57.38	877.99	14.75	619	0.89	-42.5	4.40	7.45	480	0.00222	<0.00100	<3.0
10-Feb-09	50.92	884.45	6.50	618	10.51	-	655.00	7.69 J	530	0.00219	<0.00100	3.0
9-May-09	51.25	884.12	13.95	637	2.21	39.3	5.87	7.74	540 J	0.00242	<0.00100	<3.0
25-Sep-09	65.46	869.91	13.20	678	2.25	331.8	2.29	7.15	570	0.00180 J	<0.00200	3.3
17-Dec-09	49.40	885.97	10.60	794	0.99	224.0	3.97	7.58	440	0.00070 J	<0.00200	3.2 J
22-Mar-10	49.18	886.19	10.40	762	-	245.0	0.74	7.39	580	0.00450	<0.00200	3.2 J
15-Jun-10	46.88	888.49	12.10	762	0.05	142.1	0.47	7.50	420	0.00550	<0.00200	3.3
20-Sep-10	58.97	876.40	11.40	765	0.07	89.6	0.47	7.47	520	0.00470	0.00027 J	3.4
6-Dec-10	50.66	884.71	10.20	763	0.19	58.9	0.32	7.72	550	0.00130 J	<0.00200	3.2 J
28-Mar-11	48.89	886.48	10.50	376	0.55	165.0	0.73	7.53	470	0.00370	<0.00200	3.0 J
20-Jun-11	52.13	883.24	13.40	718	0.45	-65.1	0.75	7.53	600 J	<0.00500	<0.00200	3.5
26-Sep-11	63.02	872.35	11.80	633	1.73	-6.0	1.72	7.61	560	<0.00500	<0.00200	3.5
13-Dec-11	63.88	871.49	8.60	678	0.69	-24.7	1.95	7.56	530	0.00570	<0.00200	4.1
22-Mar-12	56.96	878.41	5.60	877	1.89	-26.6	0.84	7.69	540	0.00340	<0.00040	3.0 J
18-Jun-12	58.01	877.36	Monitored Semiannually[1]									
18-Sep-12	67.78	867.59	26.30	838	3.62	12.4	1.27	7.70	540	0.00310	<0.00040	3.1 J
18-Dec-12	56.10	879.27	Monitored Semiannually[1]									
21-Feb-13	51.62	883.75	4.30	895	7.54	31.3	0.83	8.04	510	0.00360	<0.00040	3.6
22-May-13	53.14	882.23	Monitored Semiannually[1]									
20-Aug-13	62.35	873.02	12.30	526	0.08	-60.4	2.91	7.47	585	0.00320	<0.00010	3.2
19-Nov-13	58.70	876.67	Monitored Semiannually[1]									
31-Mar-14	46.60	888.77	11.10	622	0.04	48.4	0.45	7.52	561	0.00180	<0.00010	3.3
21-May-14	46.96	888.41	Monitored Semiannually[1]									
15-Aug-14	58.62	876.75	12.48	732	0.90	-62.4	2.04	7.16	564	0.00200	0.00020	3.1
14-Nov-14	59.59	875.78	Monitored Semiannually[1]									
10-Feb-15	49.61	885.76	10.90	717	0.03	-114.4	1.82	7.48	551	0.00290	<0.00010	3.3
4-May-15	52.25	883.12	Monitored Semiannually[1]									
4-Aug-15	61.71	873.66	12.00	618	0.04	-115.0	0.35	7.56	552	0.00300	<0.00010	3.4
5-Nov-15	68.72	866.65	11.10	625	0.05	27.5	1.26	7.21	603	0.00160	<0.00010	3.6
8-Feb-16	46.93	888.44	11.40	794	0.00	155.1	0.17	7.57	599	0.00210	<0.00010	3.8
2-May-16	50.77	884.60	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-16	62.11	873.26	11.60	770	0.04	-251.0	0.86	7.50	Monitored Annually[2]			
1-Nov-16	61.71	873.66	Monitored Semiannually[2]						Monitored Annually[2]			
31-Jan-17	49.02	886.35	10.60	916	0.13	-310.4	0.35	7.47	676	0.00187	<0.00010	3.4
30-May-17	48.11	887.26	Monitored Semiannually[2]						Monitored Annually[2]			
16-Aug-17	57.17	878.20	11.80	898	0.12	-210.9	0.22	7.42	Monitored Annually[2]			
9-Nov-17	58.71	876.66	Monitored Semiannually[2]						Monitored Annually[2]			
28-Feb-18	45.21	890.16	10.20	758	0.19	-166.6	0.20	7.26	694	0.00287	<0.00010	3.34
1-May-18	47.40	887.97	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-18	60.25	875.12	11.58	705	2.22	-153.0	0.14	7.37	Monitored Annually[2]			
6-Nov-18	65.30	870.07	Monitored Semiannually[2]						Monitored Annually[2]			

Table A-4b: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-1DDSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
12-Mar-19	46.35	889.02	9.80	707	0.58	-119.9	0.16	7.24	668	0.00496	<0.0001	4.21
8-May-19	47.20	888.17	Monitored Semiannually[2]						Monitored Annually[2]			
27-Aug-19	59.87	875.50	11.95	762	0.39	Note 1	0.02	7.20	Monitored Annually[2]			
13-Nov-19	60.20	875.17	Monitored Semiannually[2]						Monitored Annually[2]			
14-Feb-20	44.28	891.09	10.30	760	0.30	-169.3	1.09	7.11	717	0.0046	0.0001 U	4.07
13-Aug-20	57.57	877.80	11.10	739	0.91	-145.8	0.31	7.17	Monitored Annually[2]			
9-Dec-20	54.25	881.12	Monitored Semiannually[2]						Monitored Annually[2]			
5-Mar-21	48.74	886.63	10.70	724	0.27	-222	0.61	7.36	592	0.00406	0.0001 U	3.9
10-Jun-21	59.90	875.47	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	67.32	868.05	11.60	561	0.83	-148.8	0.33	7.23	Monitored Annually[2]			
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	0.015	-

Notes:
Top of casing elevation (feet NAVD88): 935.37

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available
< Analyte not detected above the reporting limit shown
1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012
2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
a Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U Data validation code; not detected at the Reporting Limit (RL)
J Data validation code; estimated value
J+ Data validation code; estimated value with positive bias
°C Degrees Celsius
Note 1 ORP measurements not available due to faulty sensor.
µmhos/cm Micromhos per centimeter
feet bmp Feet below measuring point
feet NAVD88 Feet NAVD88 Datum
mg/L Milligrams per liter
mV Millivolts
NTU Nephelometric Turbidity Unit

18-Oct-21	67.32	868.05	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	67.32	868.05	11.60	561	0.83	-148.8	0.33	7.23	Monitored Annually[2]			
18-Oct-21	67.32	868.05	11.60	561	0.83	-148.8	0.33	7.23	-	-	-	-

Table A-4c: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-5DSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
18-Dec-06	20.56	914.49	11.30	1054	0.59	-10.5	6.76	7.01	630	0.00446	<0.00100	-
7-Jan-07	18.48	916.57	12.53	700	0.61	-70.6	33.50	7.11	540	0.00519	<0.00100	-
7-Feb-07	21.53	913.52	11.59	557	0.57	-59.1	33.50	6.88	530	0.00519	<0.00100	-
7-Mar-07	15.34	919.71	11.71	817	0.45	-2.4	91.20	6.52	550 J	0.00491	<0.00100	-
7-Apr-07	17.97	917.08	11.96	909	0.25	0.2	121.00	6.91	560	0.00475	<0.00100	-
1-May-07	26.92	908.13	12.55	880	4.20	-14.3	63.70	7.13	540	0.00490	<0.00100	-
7-Jun-07	29.94	905.11	13.12	1016	3.20	-5.6	3.58	7.52	600 J	0.00437	<0.00100	-
7-Jul-07	35.27	899.78	13.00	910	1.74	-27.4	9.97	7.24	550	0.00491	<0.00100	-
7-Aug-07	39.55	895.50	12.40	1065	0.92	-14.6	4.62	6.99	590	0.00446	<0.00100	-
7-Sep-07	44.69	890.36	12.36	696	0.68	-33.3	3.22	7.29	590	0.00492	<0.00100	-
26-Oct-07	38.90	896.15	11.46	667	0.56	-18.3	22.60	6.98	620 J	0.00443	<0.00100	-
27-Nov-07	38.79	896.26	11.71	914	0.56	-46.7	3.32	6.91	560 J	0.00490	<0.00100	-
12-Dec-07	35.33	899.72	12.61	909	0.53	-27.3	4.28	6.87	820	0.00409	<0.00100	-
24-Jan-08	28.97	906.08	10.72	872	0.78	-49.1	-	7.14	550	0.00472	<0.00100	-
8-Feb-08	26.00	909.05	11.25	888	0.44	-	4.18	6.85	550	0.00450	<0.00100	-
8-Mar-08	26.03	909.02	10.94	915	0.59	-95.6	3.19	6.89	550	0.00521	<0.00100	-
8-Apr-08	25.03	910.02	11.27	931	0.61	-20.1	3.44	6.89	550 J	0.00488	<0.00100	-
8-May-08	27.33	907.72	11.68	949	0.68	-6.7	5.37	6.62	580 J	0.00534	<0.00100	-
8-Jun-08	28.38	906.67	11.40	948	0.75	-50.4	1.59	6.68	580 J	0.00445	<0.00100	-
8-Aug-08	39.80	895.25	11.80	970	0.68	-78.6	1.72	6.84	610 J	0.00464	<0.00100	<3.0
1-Nov-08	33.96	901.09	11.20	682	0.63	-115.4	0.95	6.82	540	0.00480	<0.00100	<3.0
10-Feb-09	25.56	909.49	10.54	671	0.71	-71.7	0.98	7.05	610	0.00473	<0.00100	<3.0
9-May-09	25.79	909.26	11.23	682	0.55	-5.8	0.86	7.68	560 J	0.00340	<0.00100	<3.0
22-Sep-09	46.68	888.37	18.70	737	0.64	214.5	0.99	6.91	580 J	0.00390	<0.00200	2.7 J
14-Dec-09	30.45	904.60	9.80	901	0.18	200.0	0.70	6.96	450	0.00170 J	<0.00200	2.5 J
23-Mar-10	19.92	915.13	11.30	773	0.25	148.0	4.40	6.86	510	0.00560	<0.00200	2.6 J
15-Jun-10	16.74	918.31	11.00	838	0.10	202.3	2.89	7.01	860 J	0.00820	<0.00200	2.8 J
20-Sep-10	33.31	901.74	11.20	852	0.09	174.7	0.60	6.97	540	0.00620	<0.00200	2.7 J
6-Dec-10	19.81	915.24	10.80	838	0.10	30.5	0.47	7.17	530	0.00380	<0.00200	2.3 J
28-Mar-11	17.16	917.89	10.80	403	0.15	48.4	1.13	6.89	500 J	0.00230	<0.00200	2.3 J
20-Jun-11	18.95	916.10	11.10	775	0.05	-29.1	0.37	7.01	610 J	<0.00500	<0.00200	2.4 J
26-Sep-11	33.71	901.34	11.20	690	0.03	-8.7	0.54	7.00	560	0.00410 J	<0.00200	2.8 J
13-Dec-11	24.48	910.57	10.50	730	0.05	93.6	1.92	7.07	520	0.00610	<0.00200	2.8 J
21-Mar-12	15.54	919.51	10.70	883	0.06	106.9	0.34	6.90	500	0.00650	<0.00200	2.4 J
19-Jun-12	17.01	918.04	Monitored Semiannually[1]									
19-Sep-12	29.82	905.23	11.90	877	0.00	122.0	0.47	7.08	490	0.00690	<0.00040	2.6 J
18-Dec-12	17.39	917.66	Monitored Semiannually[1]									
21-Feb-13	18.84	916.21	10.60	875	0.05	103.3	0.40	7.32	510	0.00590	<0.00040	2.6 J
22-May-13	20.25	914.80	Monitored Semiannually[1]									
20-Aug-13	30.15	904.90	12.10	530	0.06	-50.3	0.75	6.98	510	0.00560	<0.00010	2.5
19-Nov-13	22.73	912.32	Monitored Semiannually[1]									
31-Mar-14	15.50	919.55	11.30	574	0.06	95.7	0.53	7.15	447	0.00560	<0.00010	2.7
21-May-14	14.83	920.22	Monitored Semiannually[1]									
15-Aug-14	25.16	909.89	14.49	741	0.48	-24.0	2.92	6.87	477	0.00590	<0.00010	2.6
14-Nov-14	22.25	912.80	Monitored Semiannually[1]									
10-Feb-15	15.98	919.07	11.40	693	0.04	-117.5	0.80	7.13	503	0.00590	<0.00010	2.6
4-May-15	20.05	915.00	Monitored Semiannually[1]									
4-Aug-15	31.90	903.15	11.90	620	0.16	-71.1	0.47	7.13	517	0.00640	<0.00010	2.7
5-Nov-15	32.00	903.05	11.40	605	0.00	37.5	1.16	6.84	511	0.00530	<0.00010	3.1
8-Feb-16	17.13	917.92	11.80	720	0.00	160.4	0.08	7.34	480	0.00600	<0.00010	3.0
2-May-16	23.31	911.74	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-16	34.07	900.98	12.50	571	0.00	-	0.66	7.11	Monitored Annually[2]			
1-Nov-16	26.04	909.01	Monitored Semiannually[2]						Monitored Annually2			
31-Jan-17	19.36	915.69	12.20	808	0.07	-219.2	0.30	7.21	509	0.00676	<0.00010	2.8
30-May-17	17.31	917.74	Monitored Semiannually[2]						Monitored Annually[2]			
16-Aug-17	28.13	906.92	12.40	826	0.12	-71.9	0.66	7.10	Monitored Annually[2]			
9-Nov-17	27.17	907.88	Monitored Semiannually[2]						Monitored Annually[2]			
28-Feb-18	16.55	918.50	10.90	657	0.15	-97.6	0.35	7.02	528	0.00539	<0.00010	2.6
1-May-18	17.69	917.36	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-18	32.63	902.42	12.46	655	0.81	-46.4	0.26	7.01	Monitored Annually[2]			
6-Nov-18	32.44	902.61	Monitored Semiannually[2]						Monitored Annually[2]			
12-Mar-19	18.84	916.21	10.90	597	0.56	-28.1	0.86	6.96	512	0.00451	<0.0001	2.89
8-May-19	19.75	915.30	Monitored Semiannually[2]						Monitored Annually[2]			
27-Aug-19	33.26	901.79	13.08	688	0.26	Note 1	0.02	6.89	Monitored Annually[2]			
13-Nov-19	33.03	902.02	Monitored Semiannually[2]						Monitored Annually[2]			

Table A-4c: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-5DSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
14-Feb-20	16.70	918.35	10.90	626	0.34	-99.8	0.33	6.88	524	0.00431	0.0001 U	2.65
13-Aug-20	27.37	907.68	11.80	619	0.55	-70.6	0.40	6.89	Monitored Annually[2]			
9-Dec-20	24.68	910.37	Monitored Semiannually[2]						Monitored Annually[2]			
5-Mar-21	16.91	918.14	11.30	641	0.19	-77.0	0.45	7.09	473	0.00484	0.0001 U	2.45
10-Jun-21	24.68	910.37	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	29.11	905.94	11.90	440	0.87	-86.2	0.35	6.96	Monitored Annually[2]			
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	0.015	-

Notes:

Top of casing elevation (feet NAVD88): 935.05

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
<	Analyte not detected above the reporting limit shown
1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012
2	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.

µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-4d: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-6DSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
18-Dec-06	8.13	897.82	9.93	525	0.54	-54.5	0.61	7.78	300	0.00537	<0.00100	-
7-Feb-07	9.40	896.55	11.79	479	1.19	-30.0	7.40	7.41	330	0.00601	<0.00100	-
7-May-07	10.73	895.22	12.26	729	2.83	-103.6	16.40	7.63	480	0.01010	<0.00100	-
7-Aug-07	15.14	890.81	11.42	882	0.75	-11.5	1.82	7.10	470	0.00325	<0.00100	-
27-Nov-07	16.16	889.79	10.98	748	0.37	-47.9	0.83	6.99	440 J	0.00282	<0.00100	-
8-Feb-08	9.66	896.29	11.01	645	0.31	-	0.90	7.05	380	0.00268	<0.00100	-
8-May-08	10.34	895.61	11.27	665	0.64	13.4	1.52	6.93	380 J	0.00240	<0.00100	-
8-Aug-08	14.17	891.78	11.23	683	0.72	-8.2	2.49	7.05	390 J	0.00218	<0.00100	<3.0
1-Nov-08	12.98	892.97	10.61	488	0.60	-45.6	1.35	6.80	380	0.00204	<0.00100	<3.0
10-Feb-09	9.64	896.31	10.32	398	0.52	-57.0	1.20	7.31	350	0.00200	<0.00100	<3.0
9-May-09	9.91	896.04	10.50	405	0.73	-4.0	1.26	7.77	320 J	0.00169	<0.00100	<3.0
23-Sep-09	17.16	888.79	12.50	541	0.25	216.2	5.38	7.14	400 J	0.00091 J	<0.00200	1.3 J
14-Dec-09	12.73	893.22	9.10	580	0.47	231.0	2.70	7.23	270	<0.00200	<0.00200	1.3 J
22-Mar-10	9.62	896.33	10.90	504	-	321.7	3.50	7.22	320	0.00200	<0.00200	1.2 J
15-Jun-10	8.30	897.65	11.00	495	0.11	205.1	1.41	7.29	320	0.00420	<0.00200	1.3 J
20-Sep-10	14.90	891.05	10.90	560	0.10	187.2	0.28	7.29	270	0.00300	<0.00200	1.4 J
6-Dec-10	10.47	895.48	10.50	515	0.12	87.8	0.14	7.47	300	<0.00200	<0.00200	1.1 J
28-Mar-11	8.71	897.24	10.30	241	0.19	58.9	1.86	7.19	300	<0.00200	<0.00200	1.1 J
20-Jun-11	9.87	896.08	10.80	477	0.06	141.2	0.20	7.27	340	<0.00500	<0.00200	1.1 J
26-Sep-11	14.82	891.13	10.80	467	0.05	114.8	0.92	7.26	380	<0.00500	<0.00200	1.5 J
13-Dec-11	13.02	892.93	10.20	491	0.06	131.3	1.69	7.29	340	<0.00500	<0.00200	1.6 J
21-Mar-12	8.13	897.82	10.20	550	0.09	160.0	0.07	7.14	310	0.00250	<0.00040	1.2 J
18-Jun-12	-	#VALUE!	Monitored Semiannually[1]									
18-Sep-12	14.76	891.19	12.50	587	0.00	122.0	0.35	7.31	370	0.00280	<0.00040	1.3 J
18-Dec-12	8.16	897.79	Monitored Semiannually[1]									
21-Feb-13	8.45	897.50	10.10	594	0.02	152.7	0.28	7.49	300	0.00190	<0.00040	1.3 J
22-May-13	9.36	896.59	Monitored Semiannually[1]									
20-Aug-13	13.28	892.67	11.70	478	0.01	-43.8	0.54	7.22	349 J	0.00160	<0.00010	1.3
19-Nov-13	9.71	896.24	Monitored Semiannually[1]									
31-Mar-14	8.42	897.53	10.70	455	0.06	166.1	0.27	7.35	315	0.00140	<0.00010	1.3
21-May-14	5.99	899.96	Monitored Semiannually[1]									
14-Aug-14	12.03	893.92	13.45	512	0.56	-21.4	1.99	6.95	317	0.00170	<0.00010	1.3
14-Nov-14	10.68	895.27	Monitored Semiannually[1]									
10-Feb-15	7.39	898.56	10.90	482	0.03	-86.2	0.59	7.32	337	0.00140	<0.00010	1.2
4-May-15	9.17	896.78	Monitored Semiannually[1]									
4-Aug-15	13.64	892.31	12.40	449	0.18	-81.7	0.27	7.33	385	0.00170	<0.00010	1.3
5-Nov-15	13.98	891.97	11.50	435	2.23	85.2	1.09	7.04	354	0.00130	<0.00010	1.5
8-Feb-16	6.74	899.21	11.50	495	0.03	187.2	0.25	7.39	297	0.00140	<0.00010	1.4
2-May-16	8.64	897.31	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-16	13.27	892.68	12.20	559	0.03	-52.7	0.80	7.28	Monitored Annually[2]			
1-Nov-16	11.36	894.59	Monitored Semiannually[2]						Monitored Annually[2]			
31-Jan-17	7.91	898.04	10.90	539	0.08	124.4	0.18	7.31	321	0.00148	<0.00010	1.3
30-May-17	2.65	903.30	Monitored Semiannually[2]						Monitored Annually[2]			
16-Aug-17	12.08	893.87	12.10	573	0.12	-46.9	1.39	7.26	Monitored Annually[2]			
9-Nov-17	11.70	894.25	Monitored Semiannually[2]						Monitored Annually[2]			
28-Feb-18	6.50	899.45	11.00	423	0.19	-61.0	0.18	7.12	138	0.00156	<0.00010	1.2
1-May-18	6.80	899.15	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-18	13.47	892.48	11.61	441	7.44	26.6	0.21	7.11	Monitored Annually[2]			
6-Nov-18	13.96	891.99	Monitored Semiannually[2]						Monitored Annually[2]			
12-Mar-19	7.30	898.65	10.30	363	0.56	-25.1	0.27	7.16	294	0.00147	<0.0001	1.34
8-May-19	7.77	898.18	Monitored Semiannually[2]						Monitored Annually[2]			
27-Aug-19	13.16	892.79	12.19	454	0.45	Note 1	0.02	7.05	Monitored Annually[2]			
13-Nov-19	26.35	894.30	Monitored Semiannually[2]						Monitored Annually[2]			

Table A-4d: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-6DSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
13-Feb-20	20.79	899.86	10.60	387	0.39	-76.5	1.05	7.13	313	0.00140	0.0001 U	1.33
13-Aug-20	25.94	894.71	11.70	403	0.65	-64.3	0.60	7.07	Monitored Annually[2]			
9-Dec-20	24.06	896.59	Monitored Semiannually[2]						Monitored Annually[2]			
4-Mar-21	21.56	899.09	10.80	363	0.16	-9.0	1.29	7.30	280	0.00110	0.0001 U	1.24
10-Jun-21	24.55	896.10	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	28.08	892.57	11.60	274	0.96	-73.8	1.38	7.15	Monitored Annually[2]			
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	0.015	-

Notes:

Top of casing elevation (feet NAVD88) prior to raising casing: 905.95

Top of casing elevation (feet NAVD88) after raising casing (post-Q3 2019): 920.65

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
<	Analyte not detected above the reporting limit shown
1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012
2	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.

µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-4e: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Portal Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
1-Mar-02	-	-	-	653	-	-	-	7.29	586	-	-	-
1-Jun-02	-	-	12	920	-	-	-	7.20	583	-	-	-
1-Sep-02	-	-	11	920	-	-	-	7.10	651	-	-	-
2-Dec-02	-	-	9.1	900	-	-	-	7.03	570	0.00444	<0.00050	-
3-Mar-03	-	-	10.1	873	-	-	-	7.09	530	-	-	-
3-May-03	-	-	11.2	981	-	-	10.00	6.94	590	-	-	-
3-Aug-03	-	-	12.78	1030	-	-	13.00	7.17	630	-	-	-
1-Nov-03	-	-	10.2	569	-	-	4.65	7.53	592	0.00333	<0.00050	-
1-Feb-04	-	-	9.31	568	-	-	5.41	6.85	560	-	-	-
1-May-04	-	-	10.93	952	-	-	5.98	7.12	615	-	-	-
1-Aug-04	-	-	12.10	835	-	-	6.29	7.11	601	-	-	-
1-Nov-04	-	-	10.20	941	-	-	6.58	6.94	656	0.00341	<0.00100	-
1-Feb-05	-	-	10.52	889	-	-	8.72	7.41	541	-	-	-
1-May-05	-	-	13.08	953	-	-	8.15	7.31	548	-	-	-
1-Aug-05	-	-	11.08	988	-	-	7.40	7.23	644	-	-	-
1-Nov-05	-	-	9.53	958	-	-	8.58	7.61	640	0.00315	<0.00100	-
1-Feb-06	-	-	9.23	669	7.88	*	7.93	6.78	450 J	-	-	-
1-May-06	-	-	11.49	947	7.60	38.5	10.40	7.01	570	-	-	-
1-Aug-06	-	-	10.52	835	8.82	-39.8	14.10	7.26	640	-	-	-
1-Nov-06	-	-	9.41	740	9.57	-32.2	12.50	7.23	510	0.00245	<0.00100	-
7-Feb-07	-	-	9.90	815	10.99	-6.2	27.80	7.74	510	-	-	-
7-May-07	-	-	18.39	810	11.05	-6.2	11.80	7.61	510	-	-	-
7-Aug-07	-	-	10.42	870	8.72	-44.9	25.20	7.42	560	-	-	-
30-Nov-07	-	-	9.41	783	9.56	-18.7	48.30	-	520	0.00317	<0.00100	-
8-Feb-08	-	-	10.02	708	10.04	-	50.00	7.20	420	-	-	-
8-May-08	-	-	10.83	815	12.13	0.1	7.28	7.29	480 J	-	-	-
8-Aug-08	-	-	10.63	906	11.05	-5.6	11.00	7.05	560 J	0.00369	<0.00100	41.6
1-Nov-08	-	-	9.79	553	10.70	-21.1	16.90	7.40	460	0.00320	<0.00100	35.5
11-Feb-09	-	-	9.16	488	6.99	-	15.40	7.52	430	0.00297	<0.00100	34.2
9-May-09	-	-	9.64	522	10.56	13.4	9.77	7.39	440 J	0.00201	<0.00100	32.4
23-Sep-09	-	-	10.70	745	8.95	271.7	14.70	6.88	570	<0.00200	<0.00200	40.0
15-Dec-09	-	-	8.60	713	5.20	279.0	12.50	6.67	350	<0.00200	<0.00200	30.0
24-Mar-10	-	-	9.90	681	6.14	370.7	-	6.57	470	0.00420	<0.00200	39.0
17-Jun-10	-	-	10.00	623	9.58	-	26.30	7.50	380	0.00590	<0.00200	28.0
22-Sep-10	-	-	10.00	783	9.02	225.9	17.40	7.00	510	0.00520	<0.00200	42.0
7-Dec-10	-	-	9.90	662	9.15	186.0	13.60	6.95	450	<0.00200	<0.00200	32.0
29-Mar-11	-	-	9.90	292	5.90	370.8	4.44	6.73	360 J	0.00410	<0.00200	25.0
20-Jun-11	-	-	10.50	591	6.42	219.1	4.44	7.01	420	<0.00500	<0.00200	26.0
26-Sep-11	-	-	10.70	623	5.76	240.5	11.90	6.83	520	<0.00500	<0.00200	39.0
15-Dec-11	-	-	8.80	472	4.92	310.4	7.32	6.78	430	0.00470 J	<0.00200	32.0
21-Mar-12			8.90	611	5.24	313.3	9.16	6.49	330	0.00480	<0.00040	20.0
18-Jun-12	Monitored Semiannually[1]											
18-Sep-12	-	-	14.20	652	9.70	148.0	20.80	7.48	450	0.00500	<0.00040	29.0
18-Dec-12	Monitored Semiannually[1]											
25-Feb-13	-	-	9.20	648	10.10	209.6	4.12	7.58	300	0.00500	<0.00040	25.0
25-Feb-13	Monitored Semiannually[1]											
21-Feb-13	-	-	9.20	648	10.10	209.6	4.12	7.58	300	0.00500	<0.00040	25.0
22-May-13	Monitored Semiannually[1]											
20-Aug-13	-	-	10.80	635	9.31	170.1	8.46	7.11	458	0.00390	<0.00010	32.3
19-Nov-13	Monitored Semiannually[1]											
31-Mar-14	-	-	10.60	448	9.29	213.5	87.20	7.30	321	0.00370	0.00018 J	21.1
21-May-14	Monitored Semiannually[1]											
15-Aug-14	-	-	10.01	595	10.01	-35.2	6.43	6.99	427	0.00350	<0.00010	31.5
14-Nov-14	Monitored Semiannually[1]											
10-Feb-15	-	-	10.60	515	9.88	183.5	6.84	7.26	363	0.00280	0.00007 J	27.2
4-May-15	Monitored Semiannually[1]											
4-Aug-15	-	-	10.90	554	9.98	95.8	8.68	7.48	438	0.00260	<0.00010	34.7
5-Nov-15	-	-	10.30	503	10.24	177.6	13.40	7.46	449	0.00280	<0.00010	31.8
8-Feb-16	-	-	9.30	541	11.30	215.0	5.12	7.30	293	0.00320	<0.00010	23.1
-	Monitored Semiannually[2]								Monitored Annually[2]			
24-Aug-16	-	-	13.40	585	9.32	410.0	8.50	7.23	Monitored Annually[2]			
1-Nov-16	-	-	10.90	242	9.13	51.4	7.57	7.41	Monitored Annually[2]			
31-Jan-17	-	-	8.90	663	10.87	-57.4	6.23	7.50	3390	0.00397	<0.00010	29.2
-	Monitored Semiannually[2]								Monitored Annually[2]			
17-Aug-17	-	-	11.40	712	9.67	-12.4	9.87	7.30	Monitored Annually[2]			
9-Nov-17	Monitored Semiannually[2]								Monitored Annually[2]			

Table A-4e: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Portal Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
27-Feb-18	-	-	9.50	427	9.94	-46.4	16.70	7.72	354	0.00411	<0.00010	20.4
1-May-18	Monitored Semiannually[2]								Monitored Annually[2]			
21-Aug-18	-	-	13.13	582	12.46	-23.0	23.10	7.24	Monitored Annually[2]			
6-Nov-18	Monitored Semiannually[2]								Monitored Annually[2]			
12-Mar-19	-	-	8.00	406	11.35	-2.8	10.70	7.97	388	0.00156	<0.0001	24.7
8-May-19	Monitored Semiannually[2]								Monitored Annually[2]			
27-Aug-19	-	-	10.55	576	11.80	Note 1	154.00	6.78	Monitored Annually[2]			
13-Nov-19	Monitored Semiannually[2]								Monitored Annually[2]			
13-Feb-20	-	-	9.20	382	9.19	-1.3	13.40	6.93	259	0.00365	0.0001 U	16.7
13-Aug-20	-	-	10.10	569	10.01	-27.0	12.20	7.12	Monitored Annually[2]			
9-Dec-20	Monitored Semiannually[2]								Monitored Annually[2]			
4-Mar-21	-	-	9.30	416	5.80	33.0	17.1	6.89	364	0.00414	0.0001 U	20.0
10-Jun-21	Monitored Semiannually[2]								Monitored Annually[2]			
18-Oct-21	-	-	10.90	387	5.11	-28.4	86.10	6.45	-	-	-	-
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	0.015	-

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- \- Not measured or not available
- < Analyte not detected above the reporting limit shown
- * Measurement invalid and not shown
- 1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012
- 2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
- a Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
- U Data validation code; not detected at the Reporting Limit (RL)
- J Data validation code; estimated value
- J+ Data validation code; estimated value with positive bias
- °C Degrees Celsius
- Note 1 ORP measurements not available due to faulty sensor.
- µmhos/cm Micromhos per centimeter
- feet bmp Feet below measuring point
- feet NAVD88 Feet NAVD88 Datum
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit

Table A-4f: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-2DSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
1-Mar-02	-	-	-	542	-	-	-	7.22	467	-	-	-
1-Jun-02	197.34	735.48	12.00	750	-	-	-	7.10	459	-	-	-
1-Sep-02	199.29	733.53	14.00	660	-	-	-	6.90	499	-	-	-
2-Dec-02	200.09	732.73	10.80	675	-	-	-	6.89	440	<0.00100	<0.00050	-
3-Mar-03	190.21	742.61	11.90	763	-	-	-	6.98	450	-	-	-
3-May-03	191.78	741.04	12.30	730	-	-	233.00	6.98	550	-	-	-
3-Aug-03	199.82	733.00	16.50	848	-	-	17.00	6.92	520	-	-	-
1-Nov-03	199.97	732.85	11.60	559	-	-	9.20	7.04	522	0.00098	<0.00050	-
1-Feb-04	188.78	744.04	11.96	608	-	-	4.86	6.68	560	-	-	-
1-May-04	198.45	734.37	13.69	614	-	-	6.17	6.80	478	-	-	-
1-Aug-04	199.17	733.65	14.38	731	-	-	5.48	6.71	460	-	-	-
1-Nov-04	197.92	734.90	11.62	785	-	-	12.30	6.75	512	<0.00100	<0.00100	-
1-Feb-05	186.36	746.46	11.64	806	-	-	1.47	6.94	487	-	-	-
1-May-05	-	-	12.87	790	-	-	15.80	6.89	338	-	-	-
1-Aug-05	196.10	736.72	15.01	603	-	-	45.70	6.44	388	-	-	-
1-Nov-05	196.78	736.04	9.91	549	-	-	13.30	6.66	350	<0.00100	<0.00100	-
1-Feb-06	193.93	738.89	8.10	641	2.11	269.2	35.70	6.82	400 J	-	-	-
1-May-06	197.90	734.92	10.88	798	1.67	27.3	5.38	6.50	380	-	-	-
1-Aug-06	198.80	734.02	11.44	534	2.52	205.7	8.74	6.67	360	-	-	-
1-Nov-06	187.36	745.46	10.77	680	2.12	-19.9	18.90	7.06	430	<0.00100	<0.00100	-
28-Dec-06	192.37	740.45	-	-	-	-	-	-	-	-	-	-
7-Feb-07	197.46	735.36	10.24	621	0.64	-16.7	27.80	6.89	420	-	-	-
7-May-07	198.49	734.33	-	-	-	-	-	-	-	-	-	-
1-Aug-07	198.45	734.37	-	-	-	-	-	-	-	-	-	-
27-Nov-07	196.48	736.34	-	-	-	-	-	-	-	-	-	-
8-Feb-08	191.30	741.52	-	-	-	-	-	-	-	-	-	-
8-May-08	193.95	738.87	-	-	-	-	-	-	-	-	-	-
27-Sep-11	197.32	735.50	-	-	-	-	-	-	-	-	-	-
13-Dec-11	192.15	740.67	9.6	421	2.10	313.0	16.10	7.49	-	-	-	-
22-Mar-12	183.35	751.47	8.9	546	12.83	166.3	0.56	7.47	-	-	-	-
18-Jun-12	192.54	742.28	-	-	-	-	-	-	-	-	-	-
18-Sep-12	199.51	735.31	16.2	508	2.21	120.0	1.27	7.58	-	-	-	-
18-Dec-12	184.52	750.30	-	-	-	-	-	-	-	-	-	-
21-Feb-13	190.65	744.17	7.6	678	5.33	342.6	6.61	8.02	-	-	-	-
22-May-13	198.05	736.77	-	-	-	-	-	-	-	-	-	-
20-Aug-13	200.47	734.35	13.0	488	3.26	90.2	8.47	7.42	-	-	-	-
19-Nov-13	196.59	738.23	-	-	-	-	-	-	-	-	-	-
31-Mar-14	186.78	748.04	11.4	421	7.28	195.1	1.70	7.47	-	-	-	-
21-May-14	192.27	742.55	-	-	-	-	-	-	-	-	-	-
15-Aug-14	199.97	734.85	18.9	492	0.97	1.4	52.50	7.01	-	-	-	-
14-Nov-14	196.60	738.22	-	-	-	-	-	-	-	-	-	-
10-Feb-15	183.97	750.85	10.2	450	7.65	121.4	1.02	7.34	-	-	-	-
4-May-15	194.19	740.63	-	-	-	-	-	-	-	-	-	-
4-Aug-15	198.35	736.47	13.6	432	3.07	18.6	0.27	7.47	-	-	-	-
3-Nov-15	198.25	736.57	10.3	405	2.57	106.2	7.07	7.35	-	-	-	-
8-Feb-16	188.43	746.39	12.5	536	2.77	189.8	0.25	7.78	-	-	-	-
2-May-16	195.72	739.10	Monitored Semiannually[1]						-	-	-	-
22-Aug-16	197.89	736.93	14.0	418	1.27	-123.1	4.36	7.32	-	-	-	-
1-Nov-16	195.49	739.33	Monitored Semiannually[1]						-	-	-	-
31-Jan-17	186.94	747.88	9.2	506	5.26	-45.4	0.38	7.45	-	-	-	-
30-May-17	190.62	744.20	Monitored Semiannually[1]						-	-	-	-
16-Aug-17	197.55	737.27	13.3	540	2.31	37.3	3.42	7.37	-	-	-	-
9-Nov-17	197.11	737.71	Monitored Semiannually[1]						-	-	-	-
28-Feb-18	185.96	748.86	10.1	390	5.95	204.7	1.62	7.15	-	-	-	-
1-May-18	184.95	749.87	Monitored Semiannually[1]						-	-	-	-
22-Aug-18	197.40	737.42	13.7	412	3.10	85.5	1.66	7.27	-	-	-	-
6-Nov-18	197.94	736.88	Monitored Semiannually[1]						-	-	-	-
12-Mar-19	182.84	751.98	8.7	332	6.25	148.4	1.93	7.28	-	-	-	-
8-May-19	185.36	749.46	Monitored Semiannually[1]						-	-	-	-
27-Aug-19	196.56	738.26	11.92	411	8.82	Note 1	0.02	7.28	-	-	-	-
13-Nov-19	196.74	738.08	Monitored Semiannually[1]						-	-	-	-

Table A-4f: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-2DSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
13-Feb-20	177.10	757.72	9.3	453	3.03	91.0	2.31	7.56	-	-	-	-
13-Aug-20	200.97	733.85	12.2	422	3.04	35.0	0.96	7.42	-	-	-	-
9-Dec-20	197.86	736.96	Monitored Semiannually[1]						-	-	-	-
5-Mar-21	197.42	737.40	10.0	398	3.79	112.0	1.17	7.37	-	-	-	-
10-Jun-21	199.94	734.88	Monitored Semiannually[1]						-	-	-	-
18-Oct-21	200.24	734.58	12.60	308	6.06	161.4	12.30	7.35	-	-	-	-
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	0.015	-

Notes:

Top of casing elevation (feet NAVD88) prior to raising casing:	932.82
Top of casing elevation (feet NAVD88) after raising casing (December 14, 2011):	934.82

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
-	Not measured or not available
<	Analyte not detected above the reporting limit shown
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.

µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

Table A-4g: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-4SDSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
26-Sep-11	25.77	906.64	11.40	553	0.86	197.2	-	7.21	-	-	-	-
13-Dec-11	24.94	907.47	9.70	625	1.73	658.0	22.70	7.68	-	-	-	-
22-Mar-12	23.80	908.61	9.60	785	3.71	242.6	8.14	7.30	-	-	-	-
19-Jun-12	24.09	908.32	-	-	-	-	-	-	-	-	-	-
18-Sep-12	25.68	906.73	16.50	664	2.37	150.0	19.20	7.34	-	-	-	-
18-Dec-12	23.02	909.39	-	-	-	-	-	-	-	-	-	-
21-Feb-13	23.50	908.91	10.00	840	6.55	352.4	3.42	7.42	-	-	-	-
22-May-13	23.84	908.57	-	-	-	-	-	-	-	-	-	-
20-Aug-13	25.08	907.33	13.50	539	2.91	45.1	1.87	7.22	-	-	-	-
19-Nov-13	22.76	909.65	-	-	-	-	-	-	-	-	-	-
31-Mar-14	21.39	911.02	12.20	511	6.31	197.3	1.38	7.58	-	-	-	-
21-May-14	19.82	912.59	-	-	-	-	-	-	-	-	-	-
15-Aug-14	24.00	908.41	12.81	647	0.82	7.5	5.42	6.62	-	-	-	-
14-Nov-14	22.28	910.13	-	-	-	-	-	-	-	-	-	-
10-Feb-15	21.10	911.31	12.30	636	2.56	-71.9	1.11	7.11	-	-	-	-
4-May-15	22.65	909.76	-	-	-	-	-	-	-	-	-	-
5-Aug-15	24.65	907.76	13.50	563	3.21	116.4	55.20	7.42	-	-	-	-
3-Nov-15	23.87	908.54	12.20	493	4.65	114.4	5.78	7.52	-	-	-	-
8-Feb-16	19.39	913.02	15.80	670	3.92	163.5	5.06	7.59	-	-	-	-
2-May-16	20.99	911.42	Monitored Semiannually[1]						-	-	-	-
22-Aug-16	24.42	907.99	17.60	527	5.01	106.0	1.39	7.44	-	-	-	-
1-Nov-16	21.31	911.10	Monitored Semiannually[1]						-	-	-	-
31-Jan-17	21.11	911.30	12.10	680	2.75	-146.1	1.48	7.35	-	-	-	-
30-May-17	18.49	913.92	Monitored Semiannually[1]						-	-	-	-
17-Aug-17	22.58	909.83	12.60	673	5.22	177.8	1.97	7.15		-	-	-
9-Nov-17	20.72	911.69	Monitored Semiannually[1]						-	-	-	-
28-Feb-18	17.09	915.32	11.10	509	8.34	29.0	0.72	7.37	-	-	-	-
1-May-18	17.76	914.65	Monitored Semiannually[1]						-	-	-	-
22-Aug-18	Could not be safely accessed due to wasp nests.								-	-	-	-
6-Nov-18	21.70	910.71	Monitored Semiannually[1]						-	-	-	-
12-Mar-19	18.30	914.11	10.10	215	9.65	18.9	0.39	7.86	-	-	-	-
8-May-19	19.09	913.32	Monitored Semiannually[1]						-	-	-	-
27-Aug-19	22.85	909.56	14.79	562	8.59	Note 1	3.60	7.80	-	-	-	-
13-Nov-19	21.95	910.46	Monitored Semiannually[1]						-	-	-	-
13-Feb-20	16.60	915.81	10.80	458	8.74	68.0	1.98	7.83	-	-	-	-
13-Aug-20	21.96	910.45	12.60	503	8.74	-39.8	1.89	7.83	-	-	-	-
9-Dec-20	20.58	911.83	Monitored Semiannually[1]						-	-	-	-
5-Mar-21	17.69	914.72	11.30	497	6.84	90.0	1.46	7.91	-	-	-	-
10-Jun-21	21.47	910.94	Monitored Semiannually[1]						-	-	-	-
18-Oct-21	23.22	909.19	13.50	369	8.47	130.8	1.36	7.63	-	-	-	-
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.005	0.015	-

Notes:

Top of casing elevation (feet NAVD88) prior to DSP Cover Upgrade:	939.42
Top of casing elevation (feet NAVD88) after DSP Cover Upgrade (completed July 2011):	932.41

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016, extended October 10, 2019. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

-	Not measured or not available		
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.		
°C	Degrees Celsius		
Note 1	ORP measurements not available due to faulty sensor.		
µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

APPENDIX A-5

Summary of Lower Disposal Area – Disposal Area Groundwater Sampling Results

Table A-5A Well P-14
Table A-5B Well P-15

Table A-5a: Summary of Lower Disposal Area - Disposal Area Groundwater Sampling Results - Well P-14
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
11-Dec-20	32.53	740.79	11.6	18697	0.12	-61.2	17.9	13.30	6560	-	0.263	0.293 J	0.0196	0.04 U	2540	-
3-Mar-21	29.44	743.88	12.0	12836	0.05	-87.0	1.54	13.09	4060	-	0.0841	0.25 U	0.00964	0.0106 J	1490	-
10-Jun-21	33.57	739.75	12.9	18706	0.67	-175.2	1.88	13.06	6400	-	0.242	-	0.00344	-	2460	-
13-Oct-21	33.57	739.75	12.70	23225	0.77	-139.7	0.75	13.18	7240 J-	0.131	0.292	-	0.00247	-	2560	0.0242
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:

Top of casing elevation (feet NAVD88): 773.32

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
<	Analyte not detected above the reporting limit shown
a	Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
µmhos/cm	Micromhos per centimeter
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
mg/L	Milligrams per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit

Table A-5b: Summary of Lower Disposal Area - Disposal Area Groundwater Sampling Results - Well P-15
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (mg/L)						
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
15-Oct-21	30.03	726.52	13.00	15815	1.72	-147.5	5.08	13.17	7180 J-	0.002 U	0.00657	-	0.0940	-	2390	0.00365
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	0.006	0.005	-	0.015	-	-	0.08

Notes:
Top of casing elevation (feet NAVD88): 756.55

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

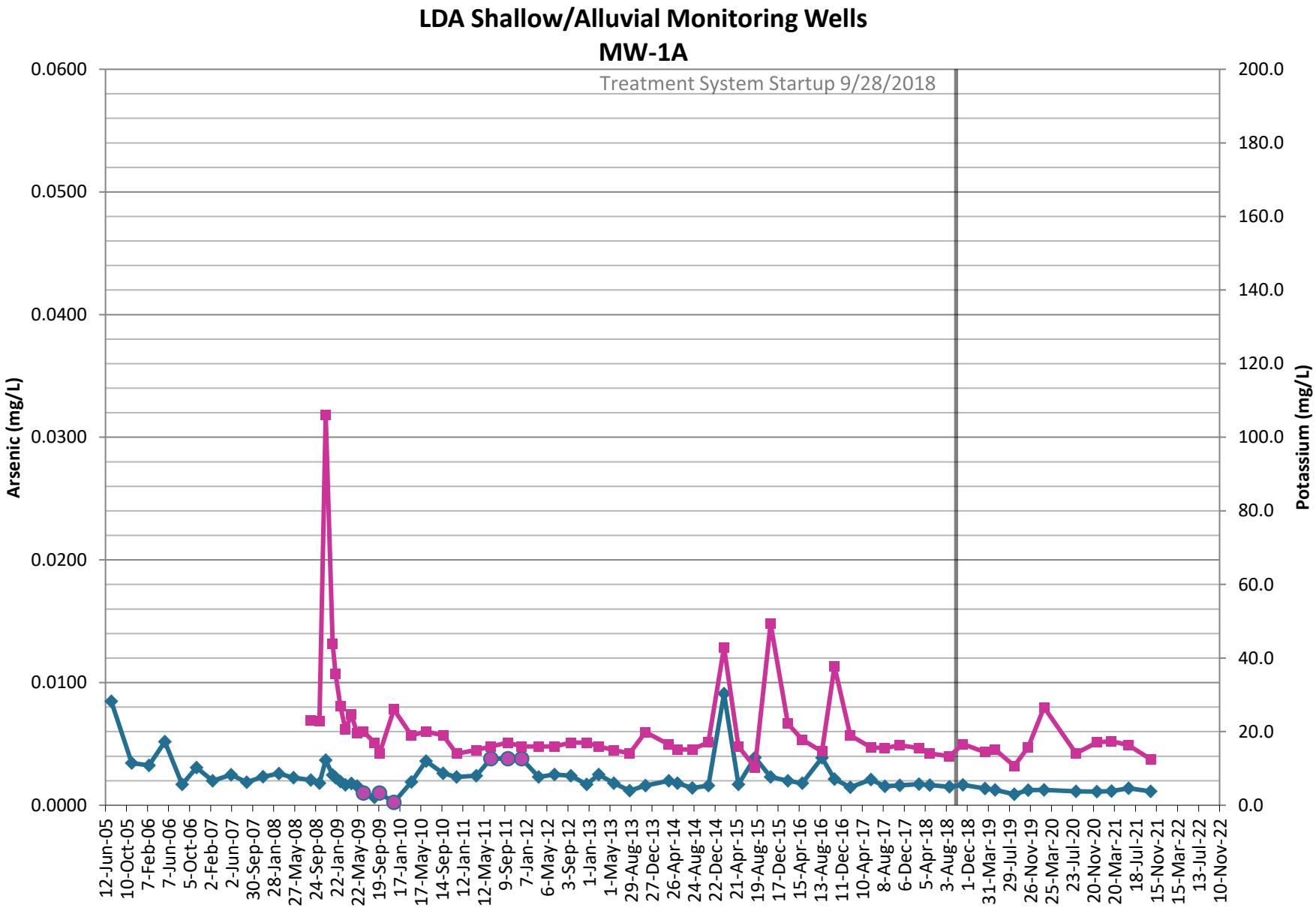
- Not measured or not available
< Analyte not detected above the reporting limit shown
a Preliminary Screening Level (PSL) obtained from Table 5-3 of Golder 2021 RI Work Plan.
U Data validation code; not detected at the Reporting Limit (RL)
J Data validation code; estimated value
J+ Data validation code; estimated value with positive bias
°C Degrees Celsius
µmhos/cm Micromhos per centimeter
feet bmp Feet below measuring point
feet NAVD88 Feet NAVD88 Datum
mg/L Milligrams per liter
mV Millivolts
NTU Nephelometric Turbidity Unit

APPENDIX B

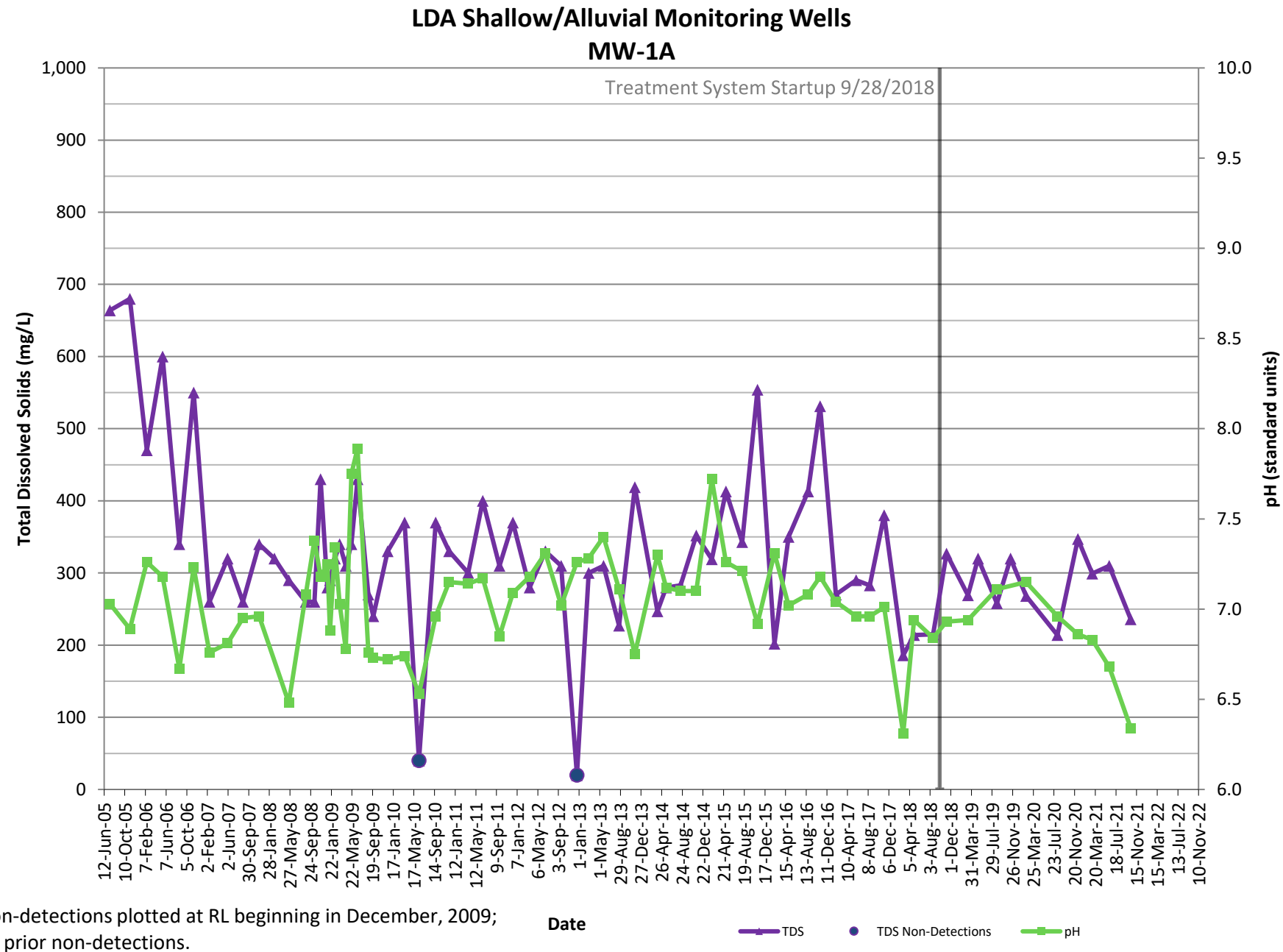
Data Graphs

APPENDIX B-1

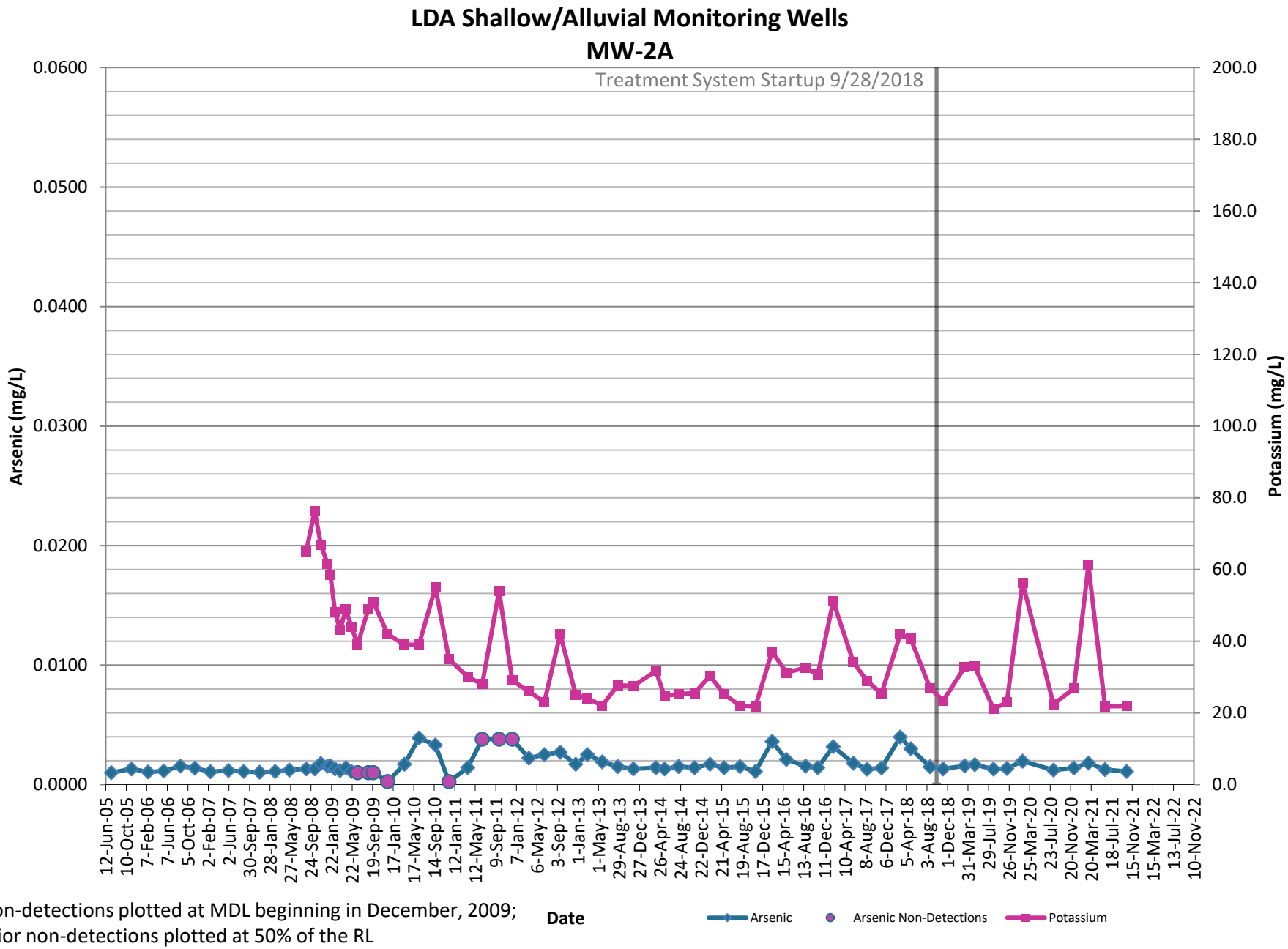
LDA Shallow/Alluvial Monitoring Wells Data Graphs



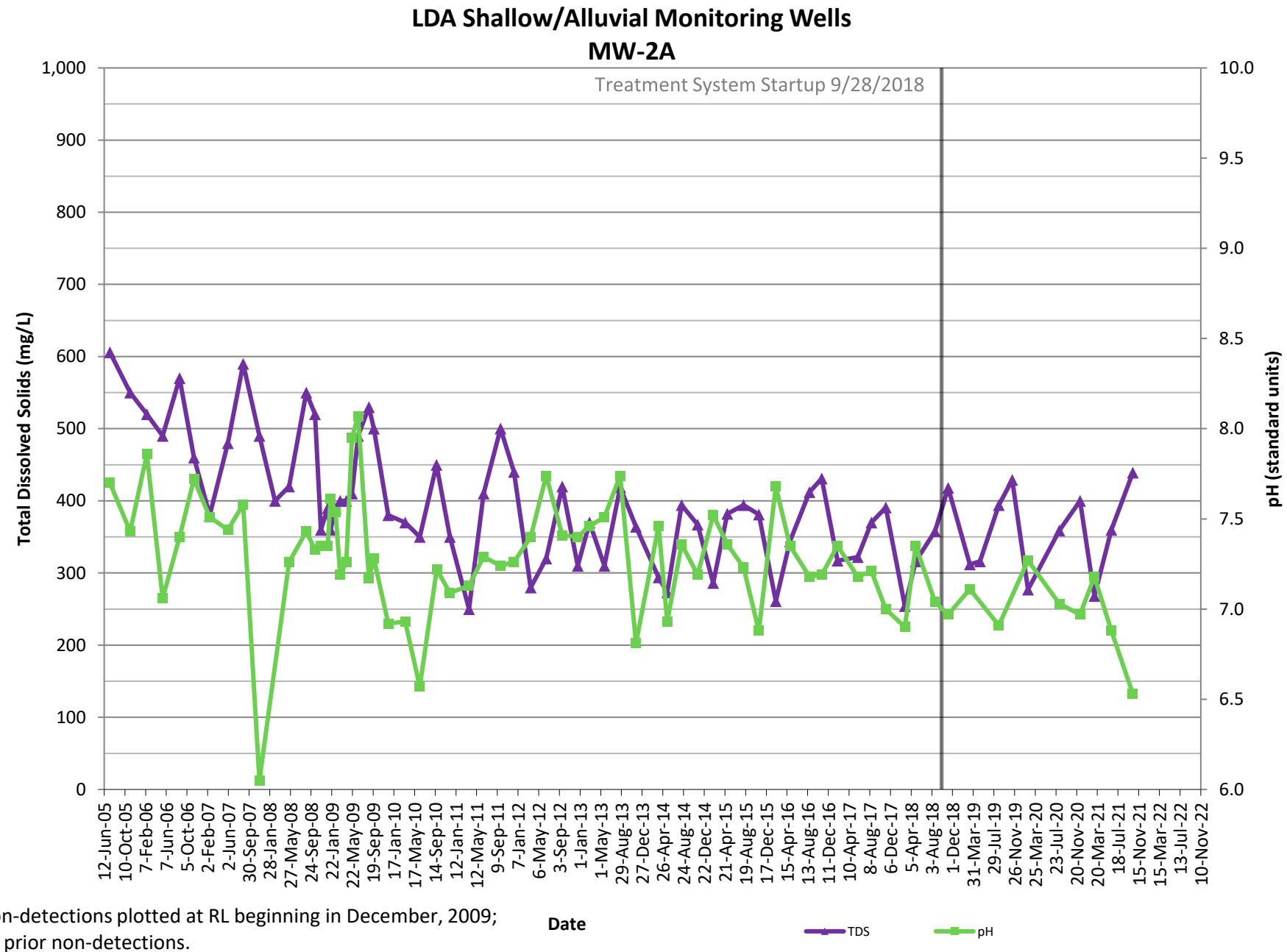
Non-detections plotted at MDL beginning in December, 2009; prior non-detections plotted at 50% of the RL



Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

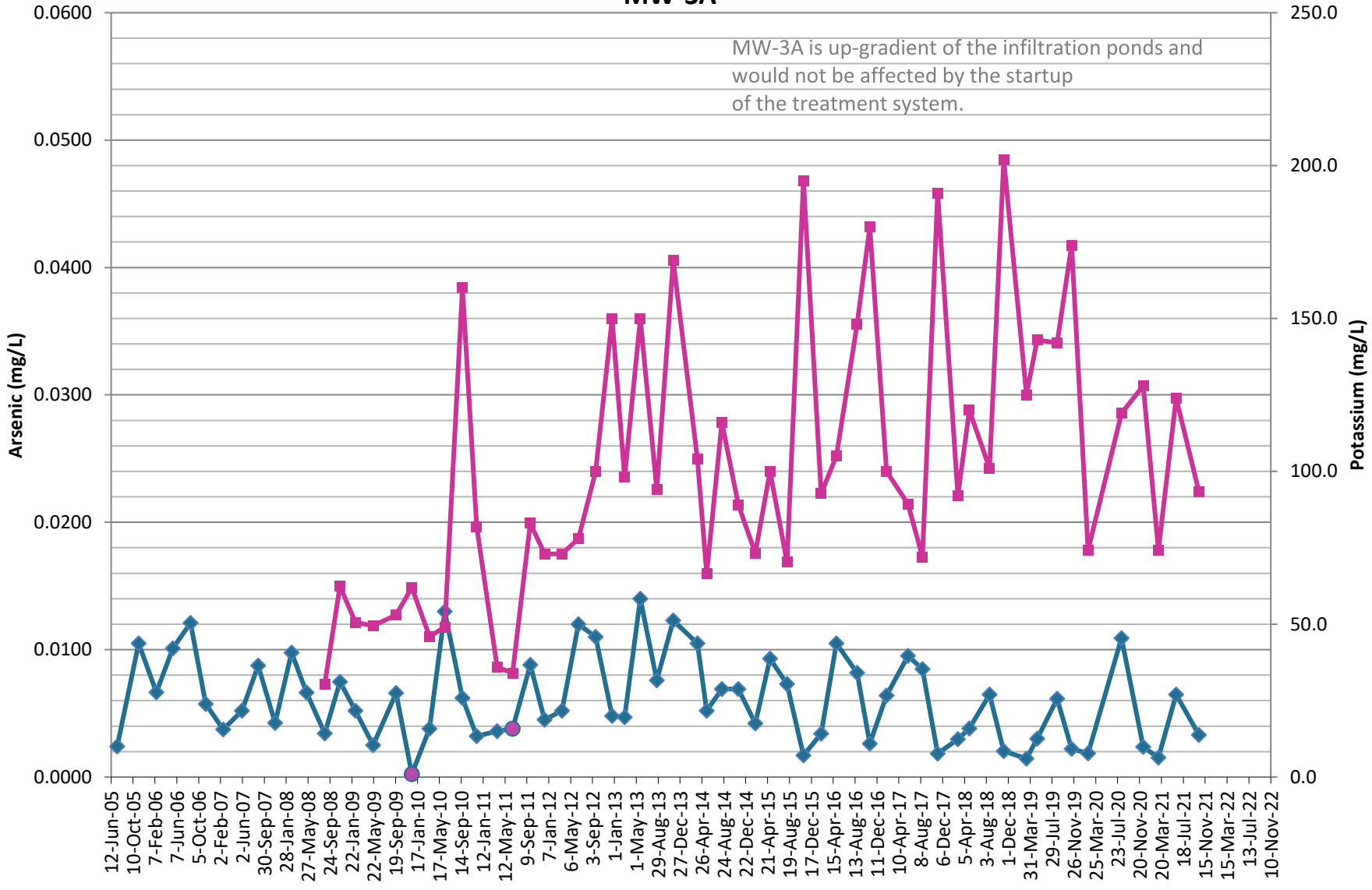


Non-detections plotted at MDL beginning in December, 2009; prior non-detections plotted at 50% of the RL

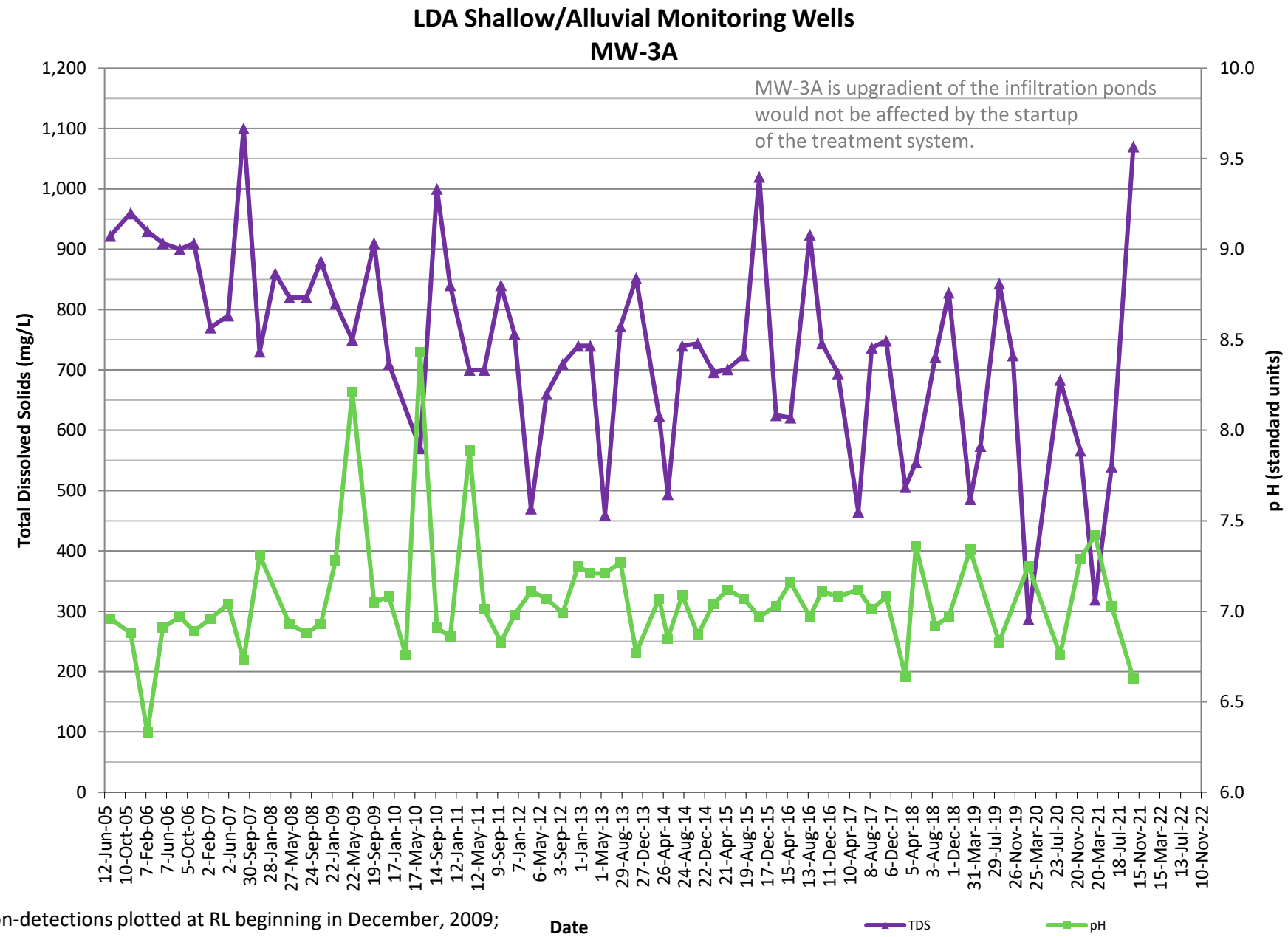


Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

LDA Shallow/Alluvial Monitoring Wells
MW-3A

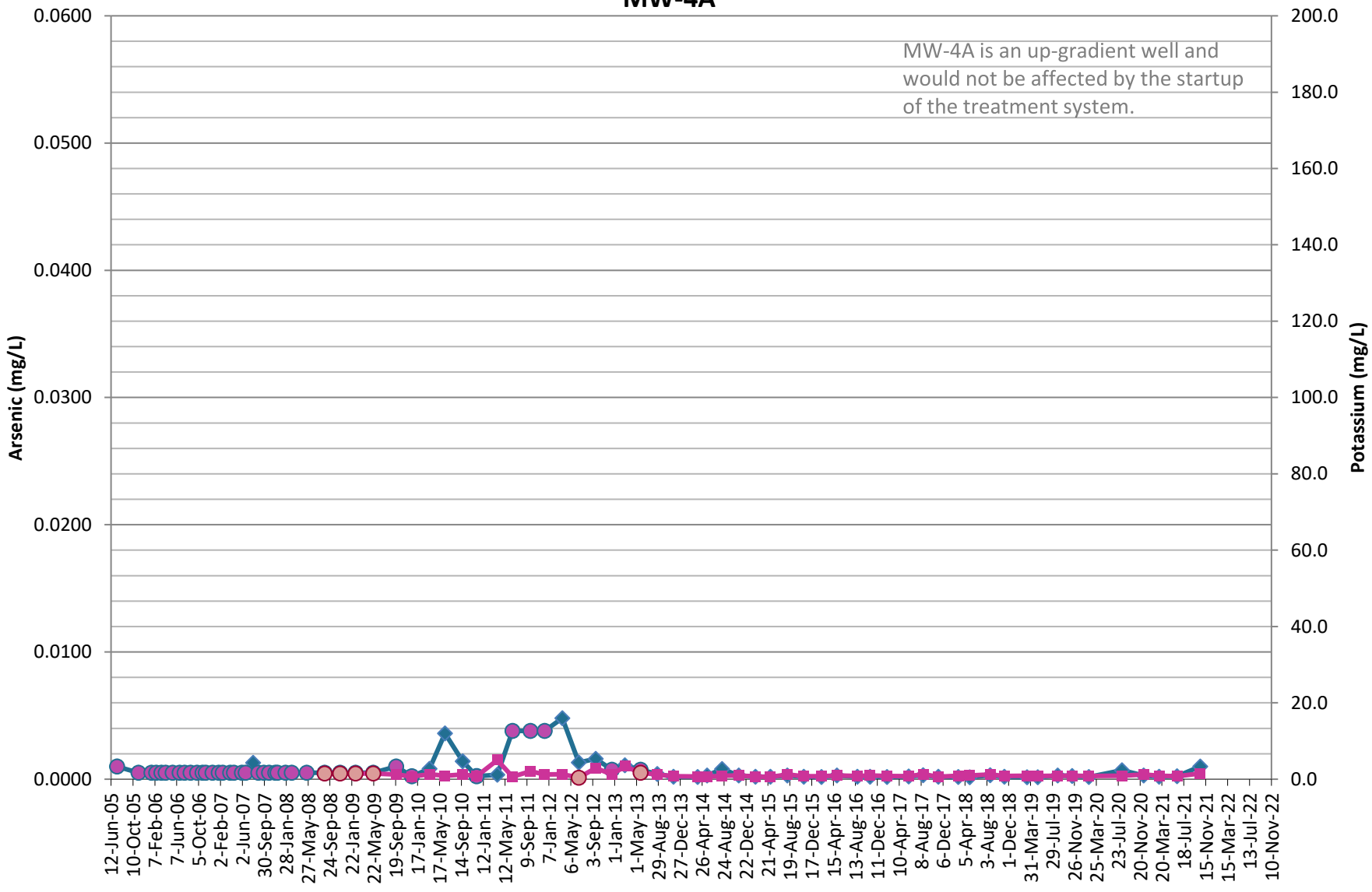


Non-detections plotted at MDL beginning in December, 2009; prior non-detections plotted at 50% of the RL

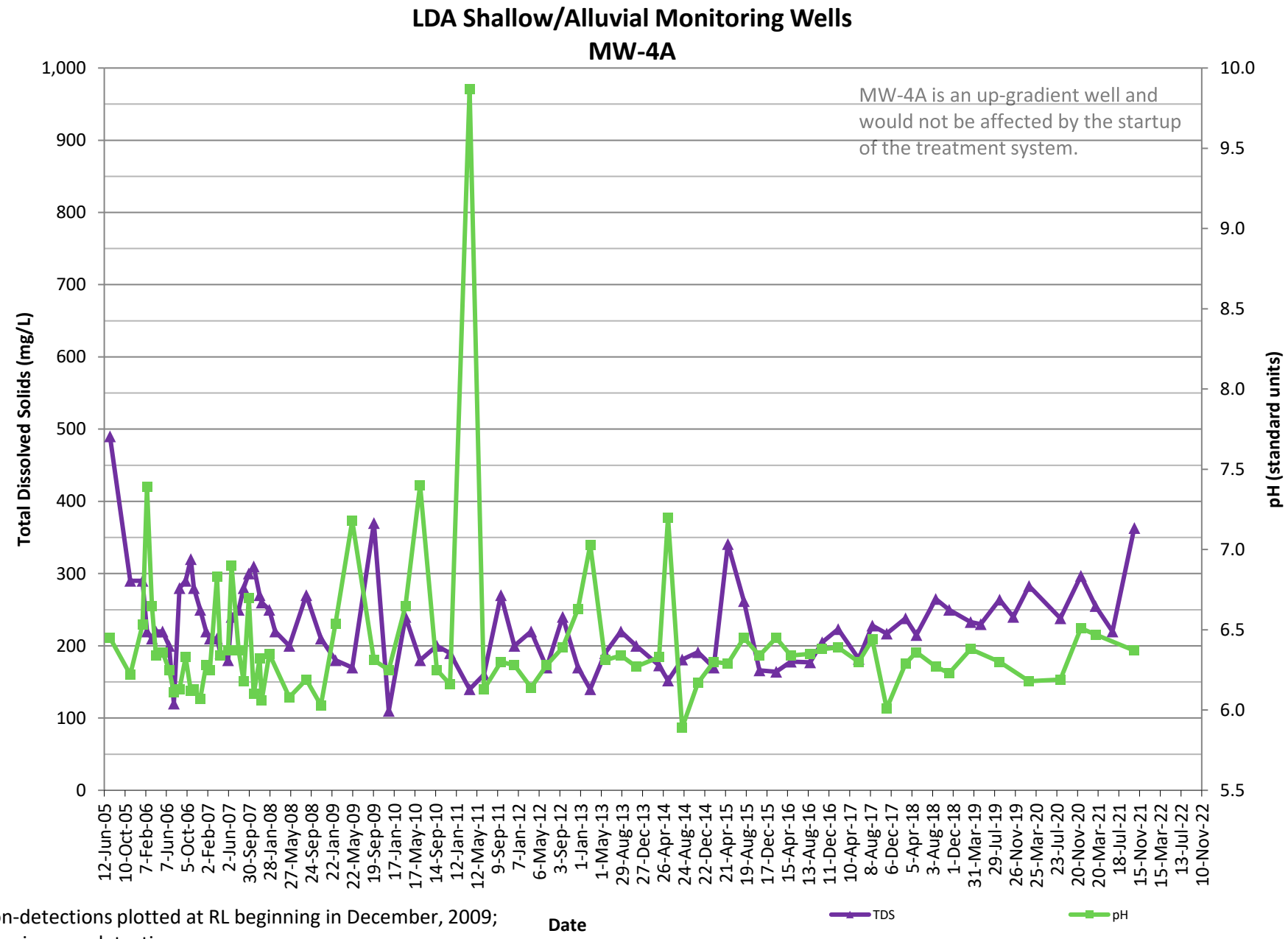


Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

LDA Shallow/Alluvial Monitoring Wells
MW-4A



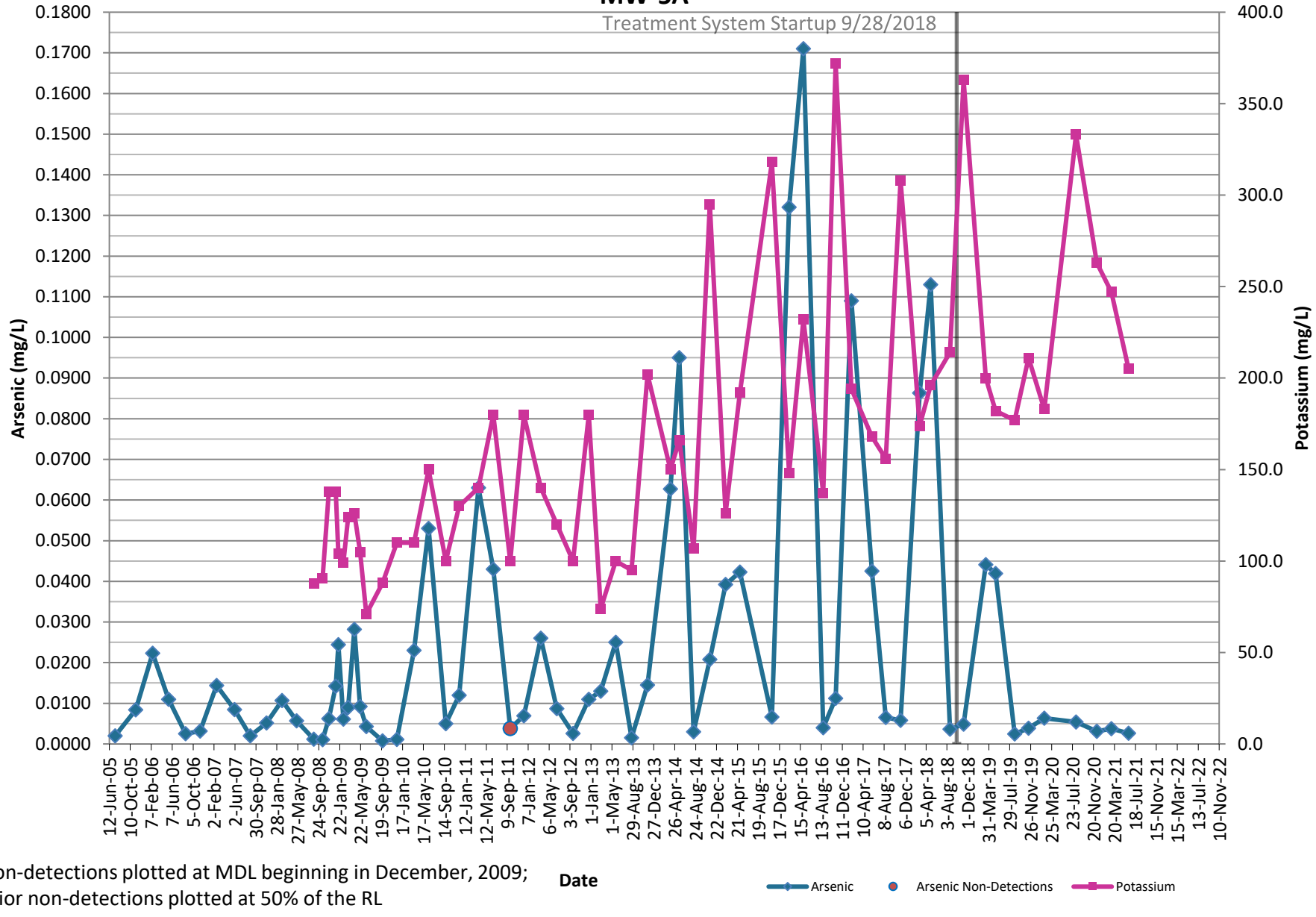
Non-detections plotted at MDL beginning in December, 2009; prior non-detections plotted at 50% of the RL



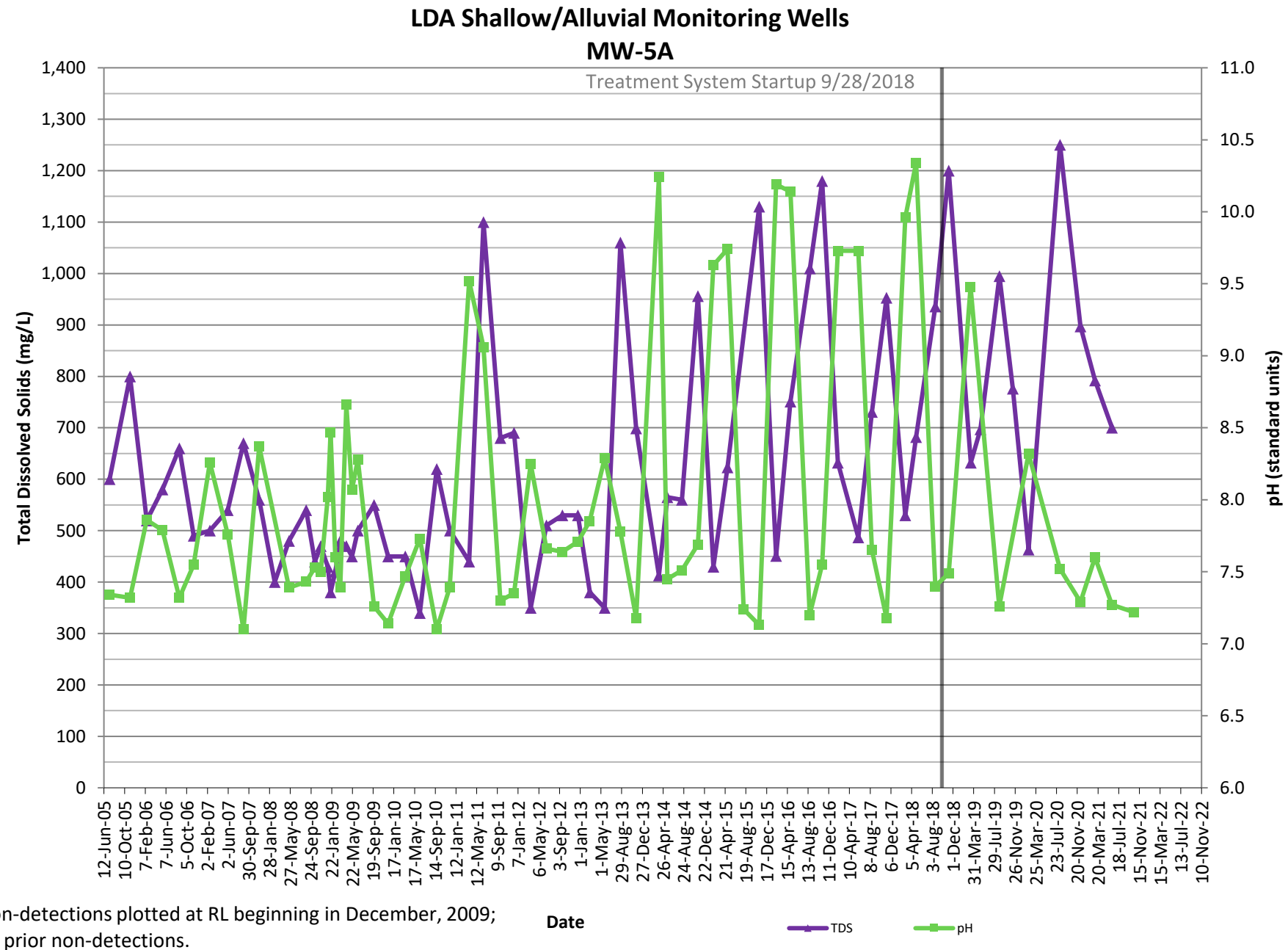
Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

LDA Shallow/Alluvial Monitoring Wells

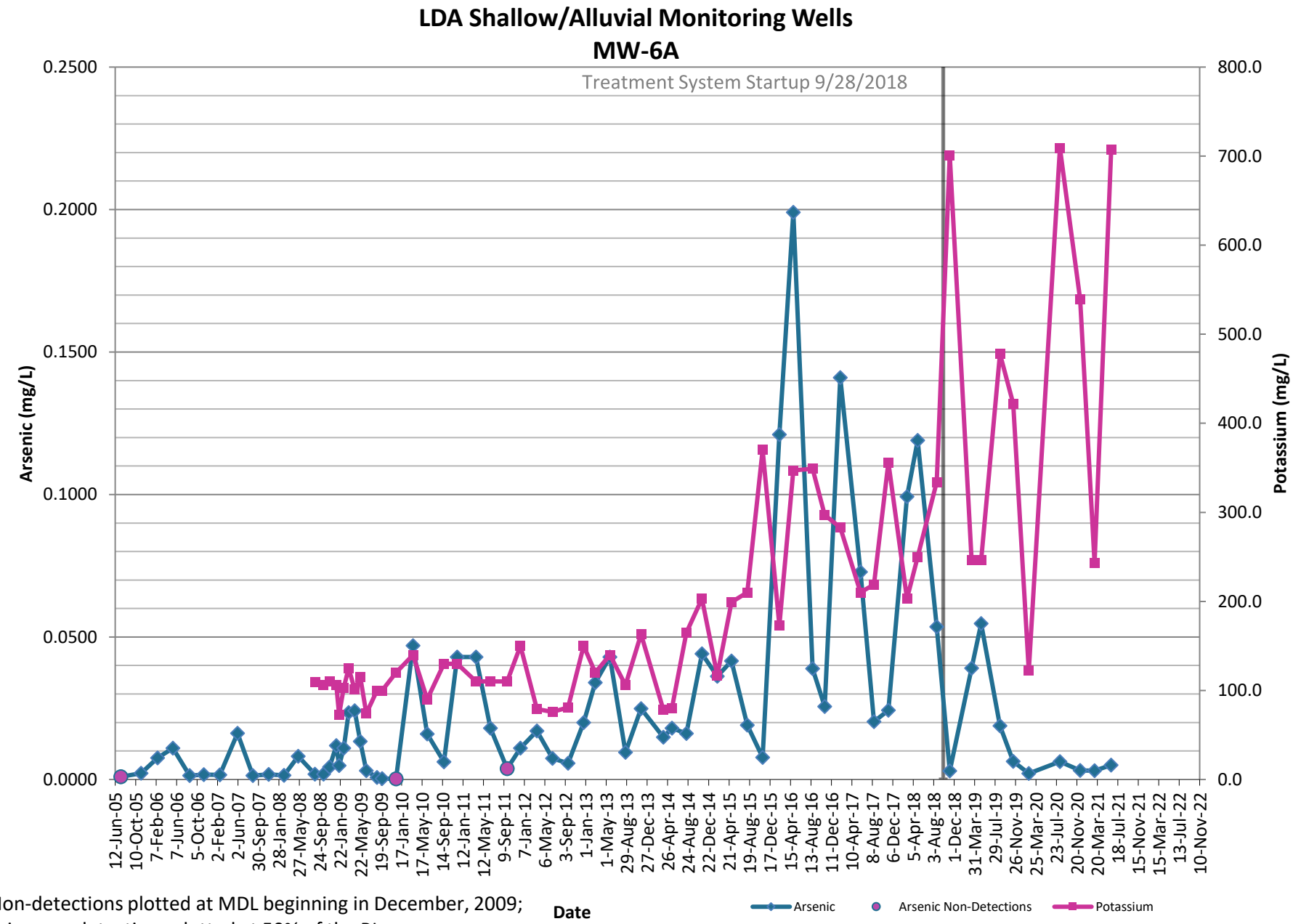
MW-5A



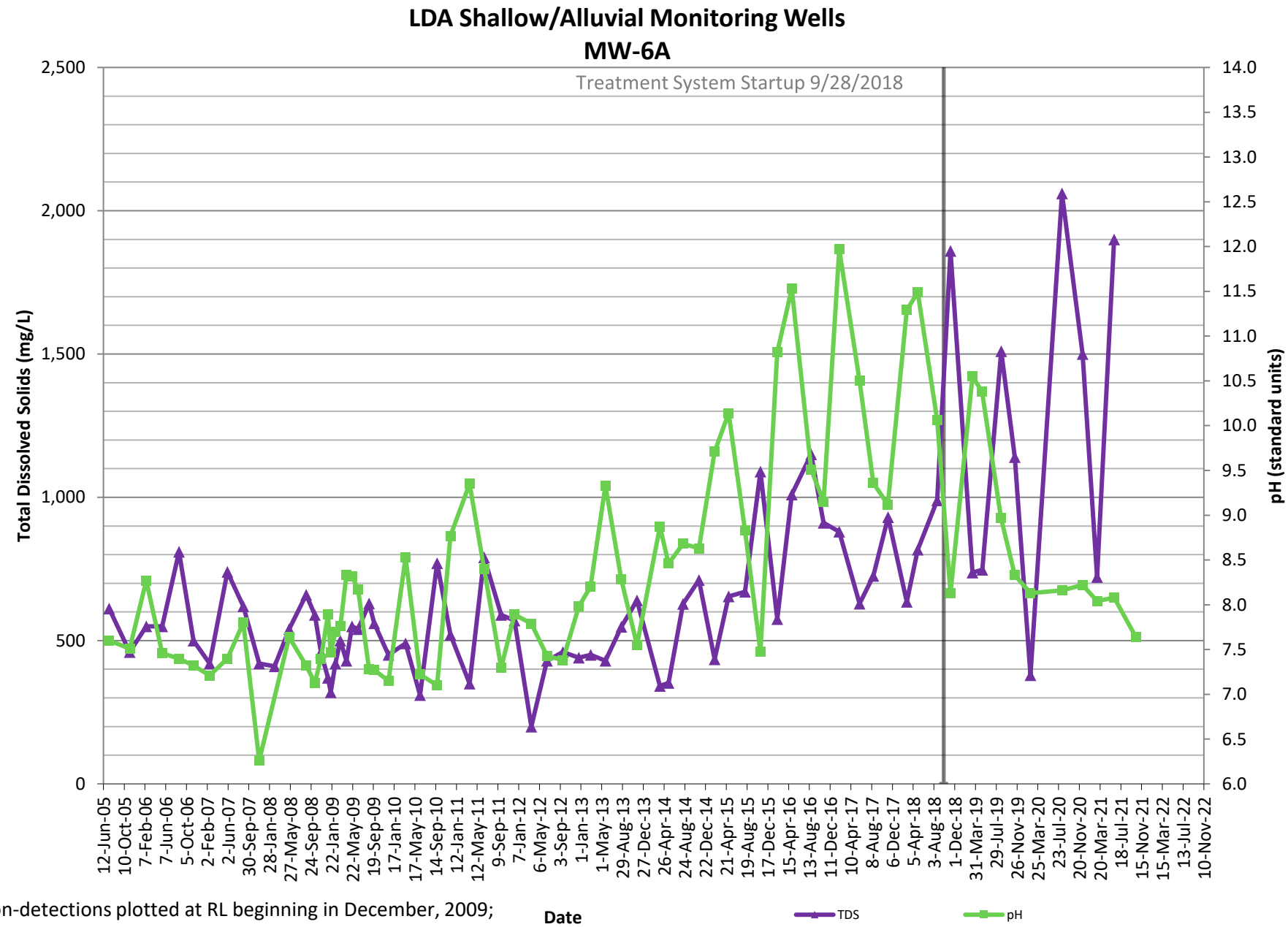
Non-detections plotted at MDL beginning in December, 2009; prior non-detections plotted at 50% of the RL



Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

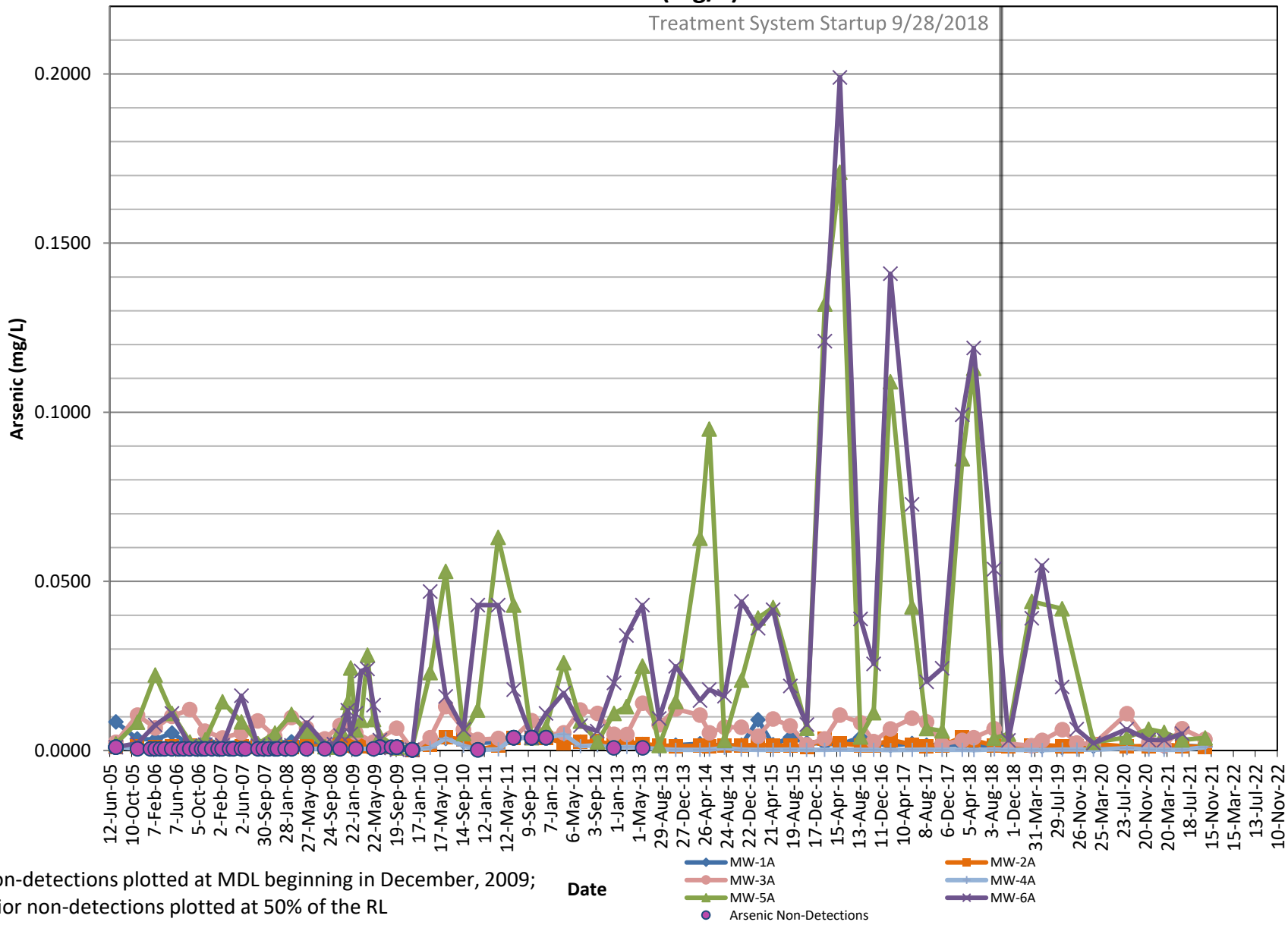


Non-detections plotted at MDL beginning in December, 2009; prior non-detections plotted at 50% of the RL



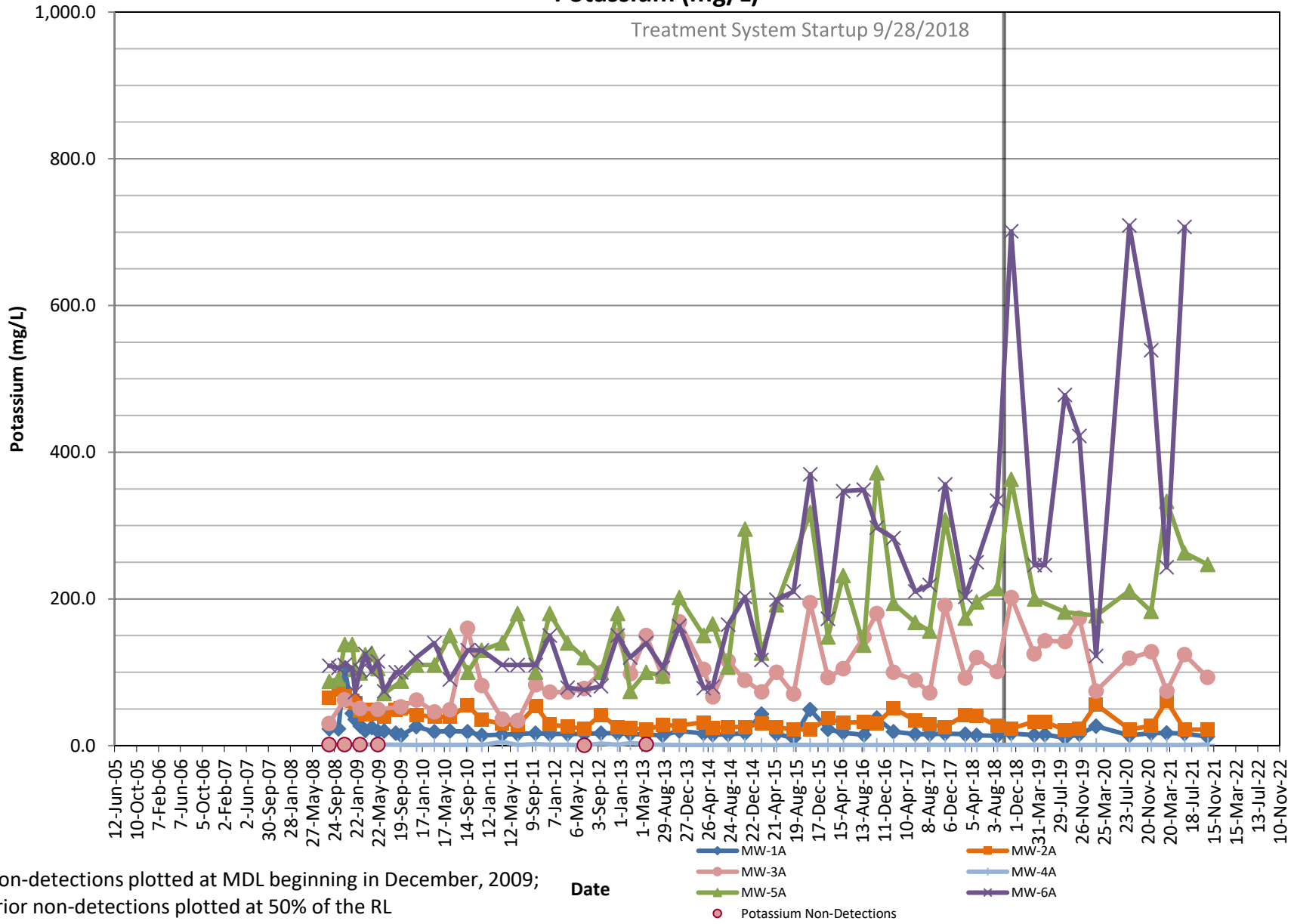
Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

LDA Shallow/Alluvial Monitoring Wells
Arsenic (mg/L)



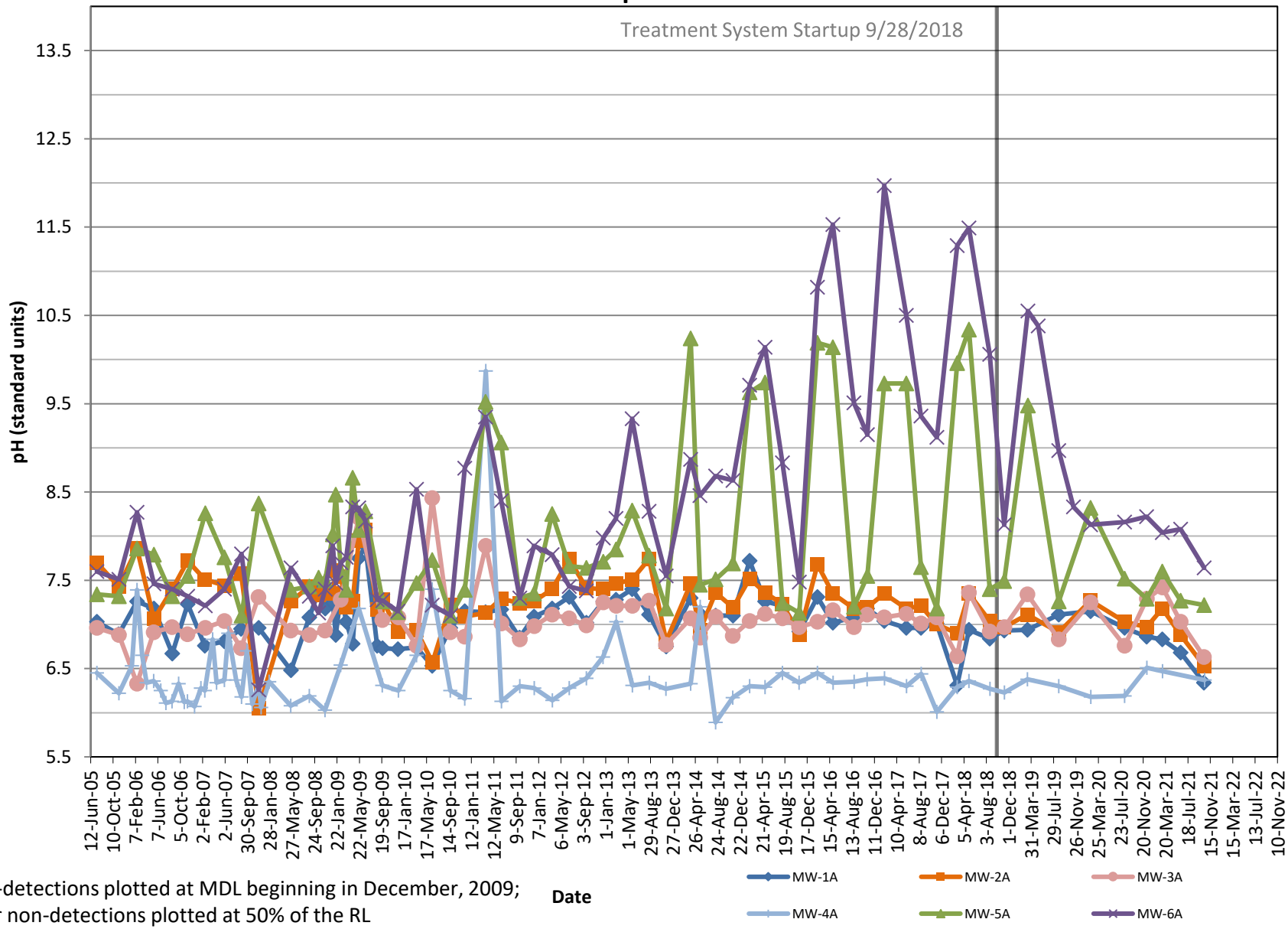
Non-detections plotted at MDL beginning in December, 2009; prior non-detections plotted at 50% of the RL

LDA Shallow/Alluvial Monitoring Wells
Potassium (mg/L)

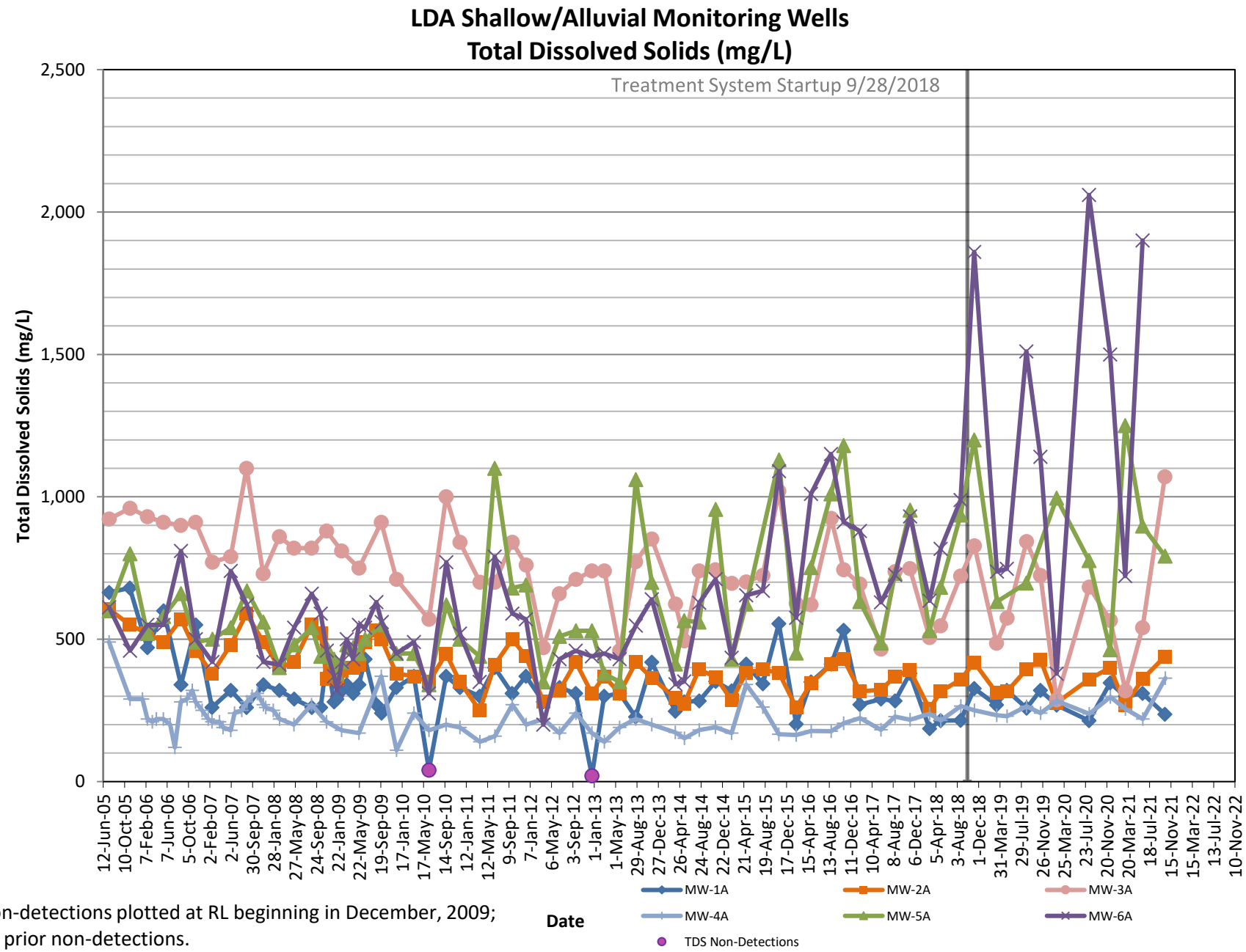


Non-detections plotted at MDL beginning in December, 2009; prior non-detections plotted at 50% of the RL

LDA Shallow/Alluvial Monitoring Wells
pH



Non-detections plotted at MDL beginning in December, 2009; prior non-detections plotted at 50% of the RL



Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

APPENDIX C

Data Validation Report

DATA VALIDATION CHECKLIST

Project Name:	Ravensdale Project
Project Number:	152030402
Sample Identification(s):	Infiltration Ponds-1021, Interceptor Trench-1021, MW-35A-1021, MW-1A-1021, MW-2A-1021, MW-3A-1021, MW-4A-1021, P-14-1021, MW-45A-1021, MWB-1LDA-1021, MWB-2LDA-1021, MWB-3LDA-1021, MW-9A-1021, MW-10A-1021, P-15-1021, P-16-1021, P-17-1021, Portal-1021, MW-99-1-1021, MWB-1SDSP-1021, MWB-1DDSP-1021, MWB-5DSP-1021, MWB-6DSP-1021, MW-55A-1021
Sample Date(s):	10/12/2021, 10/13/2021, 10/15/2021, 10/18/2021
Sample Team:	Turner Doggett, Golder Associates
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources, Inc. – Tukwila, WA
Analyses:	TDS (SM 2540 C), Total Metals (EPA 6010D, 200.8): Ca, Mg, K, Na, Pb, K, Sb, V, Dissolved metals (EPA 6010D, 200.8): Pb, Sb, V, K, Total and dissolved arsenic (200.8 UCT-KED), Anions (EPA 300.0): Sulfate, Chloride, Total Alkalinity (SM 2320 B), Total Hardness (SM 2340 B)
Laboratory Report No.:	21J0211, 21J0254, 21K0390

FIELD DATA PACKAGE DOCUMENTATION

	Reported		**Performance Acceptable**		**Not Required**
Field Sampling Logs:	NO	YES	NO	YES	
1. Sampling dates noted		X		X	
2. Sampling team indicated		X		X	
3. Sampling identification traceable to location collected		X		X	
4. Sample location		X		X	
5. Collection technique (bailer, pump, etc.)		X		X	
6. Sample container type		X		X	
7. Preservation methods		X		X	
8. Chain-of-custody form completed		X		X	
9. Required analytical methods requested		X		X	
10. Field sample logs completed properly and signed		X		X	
11. Number and type of field QC samples collected		X		X	
12. Field equipment calibration		X		X	
13. Field equipment decontamination		X		X	

QC – quality control

COMMENTS:

Performance was acceptable, with no exceptions.

ANALYTICAL DATA PACKAGE DOCUMENTATION

GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Reporting limits of analysis		X		X	
5. Sample collection date		X	X		
6. Laboratory sample received date		X		X	
7. Sample preparation/extraction date		X		X	
8. Sample analysis date		X	X		
9. Copy of chain-of-custody form signed by lab sample custodian		X		X	
10. Narrative summary of QA or sample problems provided		X		X	

QA – quality assurance

COMMENTS:

Performance was acceptable, with the following notes:

- For sample P-15-1021, sample bottle labels have a sample time of 11:55 whereas the chain of custody has a sample time of 11:15. The laboratory was instructed to use the sample time listed on the sample bottle labels.

- The laboratory control sample (LCS) associated with total dissolved solids (TDS) (batch # BJJ0538-BS1) displayed a percent recovery less than the lower control limits. The LCS and associated samples were re-analyzed one day outside the recommended holding time. It is the recommendation that the original sample results be used for data interpretation. All original sample results were qualified as estimated (J-).

  .

INORGANIC ANALYSES

Metals (EPA 6010/200.8)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X		X	
2. Reporting limits		X		X	
3. Blanks					
a. Method blanks		X		X	
b. Equipment rinsate blanks		X	X		
4. Laboratory control sample (LCS) %R		X		X	
5. Matrix spike (MS) %R		X	X		
6. LCS duplicate (LCSD) %R	X				X
7. MS duplicate (MSD) %R		X		X	
8. MS / MSD RPD		X		X	
9. LCS / LCSD RPD	X				X
10. Laboratory Duplicate RPD		X		X	
11.Field duplicate comparison		X		X	

%R – percent recovery RPD – relative percent difference

COMMENTS:

Performance was acceptable, with the following exceptions and/or notes:

- Samples MW-35A-1021, MW-1A-1021, and P-14-1021 submitted for total metals were received at pH values greater than 2. Samples MW-35A-1021, P-14-1021, and Infiltration Ponds-1021 submitted for dissolved metals were received at pH values greater than 2. The laboratory added additional nitric acid to bring the pH of the samples down to below 2. There is no other action but to note.

- The equipment blank (MW-99-1021) displayed a detection for total vanadium at 0.0690 µg/L. Since the result in the blank was less than the reporting limit (RL) and associated sample results were greater than the RL, data were not qualified.

- The MS displayed a recovery greater than the upper control limit (125%) for sample MW-4A-1021 for calcium at 126%. Since the matrix spike duplicate (MSD) and the relative percent difference (RPD) were within control limits, data were not qualified.

GENERAL WET CHEMISTRY

TDS (SM 2540C)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X	X		
2. Reporting limits		X		X	
3. Blanks					
a. Method blanks		X		X	
b. Equipment rinsate blanks		X	X		
4. Laboratory control sample (LCS) %R		X	X		
5. Matrix spike (MS) %R		X	X		
6. LCS duplicate (LCSD) %R	X				X
7. MS duplicate (MSD) %R		X		X	
8. MS/MSD RPD		X		X	
9. LCS/LCSD RPD	X				X
10. Laboratory Duplicate RPD		X		X	
11. Field duplicate comparison		X		X	

%R – percent recovery RPD – relative percent difference

COMMENTS:

Performance was acceptable, with the following exceptions and/or notes:

- The LCS associated with TDS (batch # BJJ0538-BS1) displayed a percent recovery less than the lower control limits. The LCS and associated samples were re-analyzed one day outside the recommended holding time. It is the recommendation that the original sample results be used for data interpretation. All original sample results were qualified as estimated (J-).

- The equipment blank (MW-99-1021) displayed a detection for TDS at 14 mg/L. Since associated sample results were greater than 10x the blank concentration, data were not qualified.

- The MS displayed a recovery less than the lower control limit (75%) for sample MWB-1SDSP-1021 for sulfate of 70%. The detected sulfate result in the parent sample was qualified as estimated (J-).

DATA VALIDATION CHECKLIST

SUMMARY AND DATA QUALIFIER CODES

Project Name:	Ravensdale Project
Project Number:	152030402
Sample Identification(s):	Infiltration Ponds-1021, Interceptor Trench-1021, MW-35A-1021, MW-1A-1021, MW-2A-1021, MW-3A-1021, MW-4A-1021, P-14-1021, MW-45A-1021, MWB-1LDA-1021, MWB-2LDA-1021, MWB-3LDA-1021, MW-9A-1021, MW-10A-1021, P-15-1021, P-16-1021, P-17-1021, Portal-1021, MW-99-1-1021, MWB-1SDSP-1021, MWB-1DDSP-1021, MWB-5DSP-1021, MWB-6DSP-1021, MW-55A-1021
Sample Date(s):	10/12/2021, 10/13/2021, 10/15/2021, 10/18/2021
Sample Team:	Turner Doggett, Golder Associates
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources, Inc. – Tukwila, WA
Analyses:	TDS (SM 2540 C), Total Metals (EPA 6010D, 200.8): Ca, Mg, K, Na, Pb, K, Sb, V, Dissolved metals (EPA 6010D, 200.8): Pb, Sb, V, K, Total and dissolved arsenic (200.8 UCT-KED), Anions (EPA 300.0): Sulfate, Chloride, Total Alkalinity (SM 2320 B), Total Hardness (SM 2340 B)
Laboratory Report No.:	21J0211, 21J0254, 21K0390

Sample ID	Analyte(s)	Old Result	Old Qualifier	New Result	New Qualifier	Reason(s)
All samples	All analytes	-	-	-	-	Remove any lab applied “D” qualifiers
All samples	Total Dissolved Solids	-	-	-	J-	LCS %R less than lower control limit
MWB-1SDP-1021	Sulfate	336	-	336	J-	MS %R less than the lower control limit

VALIDATION PERFORMED BY:	Michael Shadle, Golder Associates
DATE:	December 13, 2021
PEER REVIEW PERFORMED BY:	Carol Lovett, Golder Associates
DATE:	December 15, 2021

		Infiltration Ponds	MW-35A Duplicate					
Client_Sample_ID	Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Infiltration Ponds	Antimony	0.0161	0.0164	2%	mg/L		0.0002	0.000101
Infiltration Ponds	Arsenic	0.0197	0.02	2%	mg/L		0.0002	0.000022
Infiltration Ponds	Lead	0.00612	0.00736	18%	mg/L		0.0001	0.000068
Infiltration Ponds	Potassium	831	854	3%	mg/L		0.5	0.107
Infiltration Ponds	Vanadium	0.00311	0.00329	6%	mg/L		0.0002	0.0000556
Infiltration Ponds	Dissolved Solids	2610	2310	12%	mg/L	J-	10	10

		MW-2A	MW-45A Duplicate					
Client_Sample_ID	Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
MW-2A	Antimony	0.00119	0.00117	2%	mg/L		0.0002	0.000101
MW-2A	Arsenic	0.0011	0.00107	3%	mg/L		0.0002	0.000022
MW-2A	Lead	0.0001	0.0001	0%	mg/L	U	0.0001	0.000068
MW-2A	Potassium	21.9	21.8	0%	mg/L		0.5	0.107
MW-2A	Vanadium	0.00107	0.00101	6%	mg/L		0.0002	0.0000556
MW-2A	Dissolved Solids	439	434	1%	mg/L	J-	10	10

na - not applicable, non-detected value

APPENDIX D

Laboratory Analytical Results

Analytical Resources, LLC
Analytical Chemists and Consultants

16 November 2021

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

RE: Ravensdale

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

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

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

Associated Work Order(s)	Associated SDG ID(s)
21J0211	N/A

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

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

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

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

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 210211	Turn-around Requested: Standard	Page:	of
ARI Client Company:	Phone: 425-883-0777	Date:	Ice Present?
Client Contact: Joseph Xi		No. of Coolers: 2	Cooler Temps: 2.4, 3.3
Client Project Name: Ravensdale 2021 Q3 Sampling			
Client Project #: 152036402.004	Samplers: Turner Doggett		

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

Sample ID	Date	Time	Matrix	No. Containers	Total Metals (2)	Total Metals (3)	TDS	Anions (SO4, Cl)	Total Alkalinity				Notes/Comments
Infiltration Ponds-1021	10/13/2021	1050	GW	3	✓		✓						Analyze in accordance w/ MSA between Golder & ARI Ecology EIM EDD
MW-35A-1021	10/13/2021	1050	GW	3	✓		✓						Hold Dissolved
MW-1A-1021	10/12/2021	1025	GW	3	✓		✓						
MW-2A-1021	10/12/21	1145	GW	3	✓		✓						
MW-45A-1021	10/12/21	1145	GW	3	✓		✓						
MW-3A-1021	10/12/21	1610	GW	3	✓		✓						
P-14-1021	10/13/2021	1615	GW	3	✓		✓						
MWB-1LDA-1021		0920	GW	5		✓	✓	✓	✓				
MWB-2LDA-1021		1230	GW	5		✓	✓	✓	✓				
MWB-3LDA-1021		1510	GW	5		✓	✓	✓	✓				

Comments/Special Instructions
Metals List (2): As, Pb, Se, V, K
Metals List (3): Ca, Mg, K, Na

	Relinquished by:	Received by:	Relinquished by:	Received by:
(Signature)				
Printed Name:	Turner Doggett	Isabelle Beasley		
Company:	Golder	ARI		
Date & Time:	10/14/21 1000	10/14/21 10:05		

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

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Infiltration Ponds-1021	21J0211-01	Water	13-Oct-2021 10:50	14-Oct-2021 10:05
MW-35A-1021	21J0211-03	Water	13-Oct-2021 10:50	14-Oct-2021 10:05
MW-1A-1021	21J0211-05	Water	12-Oct-2021 10:25	14-Oct-2021 10:05
MW-2A-1021	21J0211-07	Water	12-Oct-2021 11:45	14-Oct-2021 10:05
MW-45A-1021	21J0211-09	Water	12-Oct-2021 11:45	14-Oct-2021 10:05
MW-3A-1021	21J0211-11	Water	12-Oct-2021 16:10	14-Oct-2021 10:05
P-14-1021	21J0211-13	Water	13-Oct-2021 16:15	14-Oct-2021 10:05
MWB-1LDA-1021	21J0211-15	Water	13-Oct-2021 09:20	14-Oct-2021 10:05
MWB-2LDA-1021	21J0211-17	Water	13-Oct-2021 12:30	14-Oct-2021 10:05
MWB-3LDA-1021	21J0211-19	Water	13-Oct-2021 15:10	14-Oct-2021 10:05

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Work Order Case Narrative

Total Metals - EPA Method 200.8 and 6010D

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

Initial and continuing calibrations were within method requirements.

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

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

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times for the original analyses. The blank spike failed for the solids analaysis and all of the samples were re-analyzed outside of the holding time. Both sets of data have been reported.

Initial and continuing calibrations were within method requirements.

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

The blank spike (BS/LCS) percent recoveries were within control limits with the exception of the LCS for solids which was out of control low.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 10/14/2021 3:38:15PM

WORK ORDER

21J0211

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

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

Project: Ravensdale | **Project Number:** Ravensdale 15203B402.004

Preservation Confirmation

Container ID	Container Type	pH	
21J0211-01 A	HDPE NM, 1000 mL		
21J0211-01 B	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail
21J0211-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail
21J0211-03 A	HDPE NM, 1000 mL		
21J0211-03 B	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail
21J0211-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail
21J0211-05 A	HDPE NM, 1000 mL		
21J0211-05 B	HDPE NM, 1000 mL		
21J0211-05 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-07 A	HDPE NM, 1000 mL		
21J0211-07 B	HDPE NM, 1000 mL		
21J0211-07 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-09 A	HDPE NM, 1000 mL		
21J0211-09 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-11 A	HDPE NM, 1000 mL		
21J0211-11 B	HDPE NM, 1000 mL		
21J0211-11 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-13 A	HDPE NM, 1000 mL		
21J0211-13 B	HDPE NM, 1000 mL		
21J0211-13 C	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail
21J0211-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail
21J0211-15 A	HDPE NM, 1000 mL		
21J0211-15 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-15 C	HDPE NM, 500 mL		
21J0211-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-17 A	HDPE NM, 1000 mL		
21J0211-17 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-17 C	HDPE NM, 500 mL		
21J0211-18 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-19 A	HDPE NM, 1000 mL		

Reviewed By

Date

WORK ORDER

21J0211

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

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

Project: Ravensdale **Project Number: Ravensdale 15203B402.004**

21J0211-19 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-19 C	HDPE NM, 500 mL		
21J0211-20 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass

RD
Preservation Confirmed By

10/14/21
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder Joseph Xi

Project Name: Ravensdale 2021 GW Sampling

COC No(s): NA

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

Assigned ARI Job No: 21J0211

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 2.9 3.3

Time

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

Temp Gun ID#: DOO 2565

Cooler Accepted by: Date: 10/14/21 Time: 10:05

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA		

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

Samples Logged by: RV Date: 10/14/21 Time: 1439 Labels checked by: JBW

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

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

Additional Notes, Discrepancies, & Resolutions:

See attached email.

By: DL Date: 10/14/21

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 10/14/2021 3:38:15PM

WORK ORDER

21J0211

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

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

Project: Ravensdale **Project Number:** Ravensdale 15203B402.004

Preservation Confirmation

Container ID	Container Type	pH	
21J0211-01 A	HDPE NM, 1000 mL		
21J0211-01 B	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail (1)
21J0211-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail (1)
21J0211-03 A	HDPE NM, 1000 mL		
21J0211-03 B	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail (1)
21J0211-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail (1)
21J0211-05 A	HDPE NM, 1000 mL		
21J0211-05 B	HDPE NM, 1000 mL		
21J0211-05 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-07 A	HDPE NM, 1000 mL		
21J0211-07 B	HDPE NM, 1000 mL		
21J0211-07 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-09 A	HDPE NM, 1000 mL		
21J0211-09 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-11 A	HDPE NM, 1000 mL		
21J0211-11 B	HDPE NM, 1000 mL		
21J0211-11 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-13 A	HDPE NM, 1000 mL		
21J0211-13 B	HDPE NM, 1000 mL		
21J0211-13 C	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail (1)
21J0211-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail (1)
21J0211-15 A	HDPE NM, 1000 mL		
21J0211-15 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-15 C	HDPE NM, 500 mL		
21J0211-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-17 A	HDPE NM, 1000 mL		
21J0211-17 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-17 C	HDPE NM, 500 mL		
21J0211-18 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
21J0211-19 A	HDPE NM, 1000 mL		

Reviewed By

Date

WORK ORDER

21J0211

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

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

Project: Ravensdale | **Project Number: Ravensdale 15203B402.004**

21J0211-19 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
21J0211-19 C	HDPE NM, 500 mL		
21J0211-20 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass

RD
Preservation Confirmed By

10/14/21
Date

O preserved to pH 2 2.0 with 0.75 ml conc. HNO_3 (J10414). ML 10/18/21

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Infiltration Ponds-1021

21J0211-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/13/2021 10:50
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 16:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-01 B 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	16.1	ug/L	D
Lead	7439-92-1	1	0.0513	0.100	6.12	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	3.11	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Infiltration Ponds-1021

21J0211-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 10:50
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 16:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-01 B 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	19.7	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Infiltration Ponds-1021

21J0211-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/13/2021 10:50
Instrument: ICP2 Analyst: MVP — Analyzed: 10/27/2021 17:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-01 B 02
Preparation Batch: BJJ0733 — Sample Size: 25 mL
Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	831	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Infiltration Ponds-1021

21J0211-01 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 10:50

Instrument: BAL2 Analyst: DOE — Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-01

Preparation Batch: BJJ0538 — Sample Size: 25 mL

Prepared: 10/19/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	40	40	2320	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Infiltration Ponds-1021

21J0211-01RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 10:50
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-01RE1
Preparation Batch: BJJ0632 — Sample Size: 25 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	40	40	2610	mg/L	H

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-35A-1021

21J0211-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/13/2021 10:50
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 16:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-03 B 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	16.4	ug/L	D
Lead	7439-92-1	5	0.257	0.500	7.36	ug/L	D
Vanadium	7440-62-2	1	0.0556	0.200	3.29	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-35A-1021

21J0211-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 10:50
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 16:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-03 B 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	20.0	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-35A-1021

21J0211-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/13/2021 10:50
Instrument: ICP2 Analyst: MVP — Analyzed: 10/27/2021 17:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-03 B 02
Preparation Batch: BJJ0733 — Sample Size: 25 mL
Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	854	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-35A-1021

21J0211-03 (Water)

Wet Chemistry

Method: SM 2540 C-97
Instrument: BAL2 Analyst: DOE

Sampled: 10/13/2021 10:50
Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BJJ0538
Prepared: 10/19/2021
Sample Size: 25 mL
Final Volume: 200 mL

Extract ID: 21J0211-03

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	40	40	2400	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-35A-1021

21J0211-03RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 10:50
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-03RE1
Preparation Batch: BJJ0632 — Sample Size: 25 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	40	40	2310	mg/L	H

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-1A-1021

21J0211-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/12/2021 10:25
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 01:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-05 C 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.846	ug/L	
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Vanadium	7440-62-2	1	0.0556	0.200	0.801	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-1A-1021

21J0211-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/12/2021 10:25
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 01:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-05 C 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.13	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-1A-1021

21J0211-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/12/2021 10:25
Instrument: ICP2 Analyst: MVP — Analyzed: 10/27/2021 17:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-05 C 02
Preparation Batch: BJJ0733 — Sample Size: 25 mL
Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	12.5	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-1A-1021

21J0211-05 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/12/2021 10:25
Instrument: BAL2 Analyst: DOE — Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-05
Preparation Batch: BJJ0538 — Sample Size: 200 mL
Prepared: 10/19/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	216	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-1A-1021

21J0211-05RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/12/2021 10:25
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-05RE1
Preparation Batch: BJJ0632 — Sample Size: 200 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	236	mg/L	H

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-2A-1021

21J0211-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/12/2021 11:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 02:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-07 C 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	1.19	ug/L	
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Vanadium	7440-62-2	1	0.0556	0.200	1.07	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-2A-1021

21J0211-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/12/2021 11:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 02:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-07 C 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.10	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-2A-1021

21J0211-07 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/12/2021 11:45
Instrument: ICP2 Analyst: MVP — Analyzed: 10/27/2021 17:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-07 C 02
Preparation Batch: BJJ0733 — Sample Size: 25 mL
Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	21.9	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-2A-1021

21J0211-07 (Water)

Wet Chemistry

Method: SM 2540 C-97
Instrument: BAL2 Analyst: DOE

Sampled: 10/12/2021 11:45
Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BJJ0538
Prepared: 10/19/2021
Sample Size: 100 mL
Final Volume: 200 mL

Extract ID: 21J0211-07

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	402	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-2A-1021

21J0211-07RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/12/2021 11:45

Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-07RE1

Preparation Batch: BJJ0632 — Sample Size: 100 mL

Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	439	mg/L	H

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-45A-1021

21J0211-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/12/2021 11:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 02:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-09 B 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	1.17	ug/L	
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Vanadium	7440-62-2	1	0.0556	0.200	1.01	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-45A-1021

21J0211-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/12/2021 11:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 02:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-09 B 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.07	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-45A-1021

21J0211-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/12/2021 11:45
Instrument: ICP2 Analyst: MVP — Analyzed: 10/27/2021 17:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-09 B 02
Preparation Batch: BJJ0733 — Sample Size: 25 mL
Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	21.8	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-45A-1021

21J0211-09 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/12/2021 11:45

Instrument: BAL2 Analyst: DOE — Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-09

Preparation Batch: BJJ0538 — Sample Size: 100 mL

Prepared: 10/19/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	392	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-45A-1021

21J0211-09RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/12/2021 11:45

Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-09RE1

Preparation Batch: BJJ0632 — Sample Size: 100 mL

Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	434	mg/L	H

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-3A-1021

21J0211-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/12/2021 16:10
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 02:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-11 C 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	15.6	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.400	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	2.14	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-3A-1021

21J0211-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/12/2021 16:10
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 02:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-11 C 01
Preparation Batch: BJJ0743 — Sample Size: 25 mL
Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	3.31	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-3A-1021

21J0211-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/12/2021 16:10
Instrument: ICP2 Analyst: MVP — Analyzed: 10/27/2021 17:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-11 C 02
Preparation Batch: BJJ0733 — Sample Size: 25 mL
Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	93.2	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-3A-1021

21J0211-11 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/12/2021 16:10
Instrument: BAL2 Analyst: DOE — Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-11
Preparation Batch: BJJ0538 — Sample Size: 75 mL
Prepared: 10/19/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	1030	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MW-3A-1021

21J0211-11RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/12/2021 16:10
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-11RE1
Preparation Batch: BJJ0632 — Sample Size: 75 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	1070	mg/L	H

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

P-14-1021

21J0211-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/13/2021 16:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 16:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-13 C 01

Preparation Batch: BJJ0743 — Sample Size: 25 mL

Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	10	1.01	2.00	131	ug/L	D
Lead	7439-92-1	10	0.513	1.00	2.47	ug/L	D
Vanadium	7440-62-2	10	0.556	2.00	24.2	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

P-14-1021

21J0211-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 16:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/29/2021 16:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0211-13 C 01

Preparation Batch: BJJ0743 — Sample Size: 25 mL

Prepared: 10/27/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	292	ug/L	D

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Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

P-14-1021

21J0211-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/13/2021 16:15

Instrument: ICP2 Analyst: MVP — Analyzed: 10/28/2021 16:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-13 C

Preparation Batch: BJJ0733 — Sample Size: 25 mL

Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	10	1.07	5.00	2560	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

P-14-1021

21J0211-13 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 16:15

Instrument: BAL2 Analyst: DOE — Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-13

Preparation Batch: BJJ0538 — Sample Size: 5 mL

Prepared: 10/19/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	200	200	6620	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

P-14-1021

21J0211-13RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 16:15

Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-13RE1

Preparation Batch: BJJ0632 — Sample Size: 5 mL

Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	200	200	7240	mg/L	H

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-1LDA-1021

21J0211-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/13/2021 09:20
Instrument: ICP2 Analyst: MVP — Analyzed: 10/27/2021 18:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-15 B 01
Preparation Batch: BJJ0733 — Sample Size: 25 mL
Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	5	0.110	0.250	41.7	mg/L	D
Magnesium	7439-95-4	5	0.105	0.250	15.6	mg/L	D
Potassium	7440-09-7	5	0.534	2.50	1.40	mg/L	J, D
Sodium	7440-23-5	5	0.526	2.50	12.1	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-1LDA-1021

21J0211-15 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/13/2021 09:20

Instrument: [CALC] Analyst: MVP — Analyzed: 10/27/2021 18:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0211-15

Preparation Batch: [CALC]

Prepared: 10/26/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		5		168	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-1LDA-1021

21J0211-15 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/13/2021 09:20

Instrument: IC930 Analyst: CDE — Analyzed: 10/29/2021 13:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-15 C

Preparation Batch: BJJ0843 — Sample Size: 10 mL

Prepared: 10/29/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	0.100	0.100	1.90	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	3.48	mg/L	

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Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-1LDA-1021

21J0211-15 (Water)

Wet Chemistry

Method: SM 2320 B-97 — Sampled: 10/13/2021 09:20

Instrument: Accumet AB150 Analyst: UW — Analyzed: 10/26/2021 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-15 C

Preparation Batch: BJJ0724 — Sample Size: 100 mL

Prepared: 10/26/2021 — Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	198	mg/L CaCO3	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-1LDA-1021

21J0211-15 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 09:20

Instrument: BAL2 Analyst: DOE — Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-15

Preparation Batch: BJJ0538 — Sample Size: 200 mL

Prepared: 10/19/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	231	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-1LDA-1021

21J0211-15RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 09:20
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-15RE1
Preparation Batch: BJJ0632 — Sample Size: 200 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	237	mg/L	H

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-2LDA-1021

21J0211-17 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/13/2021 12:30
Instrument: ICP2 Analyst: MVP — Analyzed: 10/27/2021 18:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-17 B 01
Preparation Batch: BJJ0733 — Sample Size: 25 mL
Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	5	0.110	0.250	35.3	mg/L	D
Magnesium	7439-95-4	5	0.105	0.250	18.0	mg/L	D
Potassium	7440-09-7	5	0.534	2.50	1.54	mg/L	J, D
Sodium	7440-23-5	5	0.526	2.50	9.41	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-2LDA-1021

21J0211-17 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/13/2021 12:30
Instrument: [CALC] Analyst: MVP — Analyzed: 10/27/2021 18:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0211-17
Preparation Batch: [CALC]
Prepared: 10/26/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		5		162	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-2LDA-1021

21J0211-17 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/13/2021 12:30

Instrument: IC930 Analyst: CDE — Analyzed: 10/29/2021 14:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-17 C

Preparation Batch: BJJ0843 — Sample Size: 10 mL

Prepared: 10/29/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	0.100	0.100	1.87	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	1.06	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-2LDA-1021

21J0211-17 (Water)

Wet Chemistry

Method: SM 2320 B-97 — Sampled: 10/13/2021 12:30

Instrument: Accumet AB150 Analyst: UW — Analyzed: 10/26/2021 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-17 C

Preparation Batch: BJJ0724 — Sample Size: 100 mL

Prepared: 10/26/2021 — Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	188	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-2LDA-1021

21J0211-17 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 12:30

Instrument: BAL2 Analyst: DOE — Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-17

Preparation Batch: BJJ0538 — Sample Size: 200 mL

Prepared: 10/19/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	208	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-2LDA-1021

21J0211-17RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 12:30
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-17RE1
Preparation Batch: BJJ0632 — Sample Size: 200 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	220	mg/L	H

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-3LDA-1021

21J0211-19 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/13/2021 15:10

Instrument: ICP2 Analyst: MVP — Analyzed: 10/27/2021 18:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0211-19 B 01

Preparation Batch: BJJ0733 — Sample Size: 25 mL

Prepared: 10/26/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	5	0.110	0.250	19.8	mg/L	D
Magnesium	7439-95-4	5	0.105	0.250	11.2	mg/L	D
Potassium	7440-09-7	5	0.534	2.50	0.995	mg/L	J, D
Sodium	7440-23-5	5	0.526	2.50	9.83	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-3LDA-1021

21J0211-19 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/13/2021 15:10
Instrument: [CALC] Analyst: MVP — Analyzed: 10/27/2021 18:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0211-19
Preparation Batch: [CALC]
Prepared: 10/26/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		5		95.6	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-3LDA-1021

21J0211-19 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/13/2021 15:10

Instrument: IC930 Analyst: CDE — Analyzed: 10/29/2021 14:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-19 C

Preparation Batch: BJJ0843 — Sample Size: 10 mL

Prepared: 10/29/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	0.100	0.100	1.95	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	3.31	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-3LDA-1021

21J0211-19 (Water)

Wet Chemistry

Method: SM 2320 B-97 — Sampled: 10/13/2021 15:10

Instrument: Accumet AB150 Analyst: UW — Analyzed: 10/26/2021 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-19 C

Preparation Batch: BJJ0724 — Sample Size: 100 mL

Prepared: 10/26/2021 — Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	117	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-3LDA-1021

21J0211-19 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 15:10

Instrument: BAL2 Analyst: DOE — Analyzed: 10/19/2021 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-19

Preparation Batch: BJJ0538 — Sample Size: 200 mL

Prepared: 10/19/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	157	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

MWB-3LDA-1021

21J0211-19RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/13/2021 15:10
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0211-19RE1
Preparation Batch: BJJ0632 — Sample Size: 200 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	162	mg/L	H

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJJ0733 - TWC EPA 3010A

Instrument: ICP2 Analyst: MVP

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0733-BLK1)				Prepared: 26-Oct-2021 Analyzed: 27-Oct-2021 16:27							
Calcium	ND	0.0220	0.0500	mg/L							U
Magnesium	ND	0.0209	0.0500	mg/L							U
Potassium	ND	0.107	0.500	mg/L							U
Sodium	ND	0.105	0.500	mg/L							U
LCS (BJJ0733-BS1)				Prepared: 26-Oct-2021 Analyzed: 27-Oct-2021 16:38							
Calcium	9.40	0.0220	0.0500	mg/L	10.0		94.0	80-120			
Magnesium	10.5	0.0209	0.0500	mg/L	10.0		105	80-120			
Potassium	9.91	0.107	0.500	mg/L	10.0		99.1	80-120			
Sodium	9.82	0.105	0.500	mg/L	10.0		98.2	80-120			
Duplicate (BJJ0733-DUP1)		**Source: 21J0211-19**		Prepared: 26-Oct-2021 Analyzed: 27-Oct-2021 18:08							
Calcium	19.7	0.110	0.250	mg/L		19.8			0.65	20	D
Magnesium	11.2	0.105	0.250	mg/L		11.2			0.08	20	D
Sodium	9.79	0.526	2.50	mg/L		9.83			0.45	20	D
Matrix Spike (BJJ0733-MS1)		**Source: 21J0211-19**		Prepared: 26-Oct-2021 Analyzed: 27-Oct-2021 18:13							
Calcium	30.0	0.110	0.250	mg/L	10.0	19.8	102	75-125			D
Magnesium	21.8	0.105	0.250	mg/L	10.0	11.2	106	75-125			D
Sodium	19.8	0.526	2.50	mg/L	10.0	9.83	99.5	75-125			D

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJJ0743 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0743-BLK1)					Prepared: 27-Oct-2021 Analyzed: 27-Oct-2021 15:57							
Lead	208	ND	0.0513	0.100	ug/L							U
Blank (BJJ0743-BLK2)					Prepared: 27-Oct-2021 Analyzed: 28-Oct-2021 18:54							
Antimony	121	ND	0.101	0.200	ug/L							U
Antimony	123	ND	0.102	0.200	ug/L							U
Vanadium	51a	ND	0.0556	0.200	ug/L							U
Vanadium	51b	ND	0.0521	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
LCS (BJJ0743-BS1)					Prepared: 27-Oct-2021 Analyzed: 27-Oct-2021 16:01							
Lead	208	24.6	0.0513	0.100	ug/L	25.0		98.4	80-120			
LCS (BJJ0743-BS2)					Prepared: 27-Oct-2021 Analyzed: 28-Oct-2021 18:58							
Antimony	121	23.4	0.101	0.200	ug/L	25.0		93.6	80-120			
Antimony	123	23.2	0.102	0.200	ug/L	25.0		92.9	80-120			
Vanadium	51a	25.3	0.0556	0.200	ug/L	25.0		101	80-120			
Vanadium	51b	25.1	0.0521	0.200	ug/L	25.0		100	80-120			
Arsenic	75a	24.3	0.0373	0.200	ug/L	25.0		97.2	80-120			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0538 - No Prep Wet Chem

Instrument: BAL2 Analyst: DOE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0538-BLK1)				Prepared: 19-Oct-2021 Analyzed: 19-Oct-2021 14:19							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BJJ0538-BS1)				Prepared: 19-Oct-2021 Analyzed: 19-Oct-2021 14:19							
Dissolved Solids	403	10	10	mg/L	500		80.5	90-110			*

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0632 - No Prep Wet Chem

Instrument: BAL2 Analyst: DOE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0632-BLK1)				Prepared: 22-Oct-2021 Analyzed: 22-Oct-2021 10:41							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BJJ0632-BS1)				Prepared: 22-Oct-2021 Analyzed: 22-Oct-2021 10:41							
Dissolved Solids	519	10	10	mg/L	500		104	90-110			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0724 - No Prep Wet Chem

Instrument: Accumet AB150 Analyst: UW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0724-BLK1)				Prepared: 26-Oct-2021 Analyzed: 26-Oct-2021 14:43							
Alkalinity, Total	ND	1.00	1.00	mg/L CaCO3							U
Reference (BJJ0724-SRM1)				Prepared: 26-Oct-2021 Analyzed: 26-Oct-2021 14:43							
Alkalinity, Total	128	1.00	1.00	mg/L CaCO3	127		101	85.04-114.96			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0843 - No Prep Wet Chem

Instrument: IC930 Analyst: CDE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0843-BLK1)				Prepared: 29-Oct-2021 Analyzed: 29-Oct-2021 13:16							
Chloride	ND	0.100	0.100	mg/L							U
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BJJ0843-BS1)				Prepared: 29-Oct-2021 Analyzed: 29-Oct-2021 13:36							
Chloride	4.90	0.100	0.100	mg/L	5.00		98.0	90-110			
LCS (BJJ0843-BS3)				Prepared: 29-Oct-2021 Analyzed: 07-Nov-2021 01:36							
Sulfate	4.75	0.100	0.100	mg/L	5.00		95.1	90-110			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Vanadium-51b	NELAP,DoD-ELAP,WADOE
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 300.0 in Water	
Chloride	DoD-ELAP,WADOE,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 6010D in Water	
Calcium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Magnesium	WADOE,NELAP,DoD-ELAP
Sodium	DoD-ELAP,WADOE,NELAP
Sodium-1	DoD-ELAP
SM 2320 B-97 in Water	
Alkalinity, Total	DoD-ELAP,WADOE,WA-DW,NELAP
SM 2540 C-97 in Water	
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale 15203B402.004	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	16-Nov-2021 12:45

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
H	Hold time violation - Hold time was exceeded.
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, LLC
Analytical Chemists and Consultants

22 November 2021

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

RE: Ravensdale

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

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

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

Associated Work Order(s)	Associated SDG ID(s)
21J0254	N/A

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

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

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

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

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 21J0254	Turn-around Requested: Standard	Page: 1 of 2	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 10/18/21	Ice Present? Yes
Client Contact: Joseph Xi		No. of Coolers: 2	Cooler Temps: 0.2/0.9
Client Project Name: Ravensdale 2021 Q3 Sampling			
Client Project #: 1520304D2.004.0003	Samplers: Turner Doggett		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Total metals As, Pb, Sb, V, K	Analysis Requested: TDS	Notes/Comments
Interceptor Trench-1021	10/15/2021	1355	GW	1		X	
MW-4A-1021	10/15/2021	~~1515~~ 1515	GW	~~3~~ 7	X	X	Hold Dissolved Metals Extra vol for MS/MSD.
MW-9A-1021	10/15/2021	1615	GW	3	X	X	Hold Dissolved Metals
MW-10A-1021	10/15/2021	0935	GW	3	X	X	Hold Dissolved Metals
P-15-1021	10/15/2021	1115	GW	2	X	X	Short vol. for TDS. No Dissolved Metals.
P-16-1021	10/15/2021	1025	GW	3	X	X	Hold Dissolved Metals
P-17-1021	10/15/2021	1325	GW	3	X	X	Hold Dissolved Metals

Comments/Special Instructions
Analyze in accordance w/ MSA between Golder & ARI
Ecology EIM EDD

	Relinquished by:	Received by:	Relinquished by:	Received by:
(Signature)				
Printed Name:	Turner Doggett	Isabella		
Company:	Golder	ARZ		
Date & Time:	10/18/2021 1652	10/18/2021 1652		

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

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 2102054	Turn-around Requested: Standard	Page: 2 of 2	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 10/18/21	Ice Present? Yes
Client Contact: Joseph Xi		No. of Coolers: 2	Cooler Temps: 0.2 / 0.9
Client Project Name: Ravensdale Q021 Q3 Sampling			
Client Project #: 152030420.	Samplers: Turner Doggett		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Total Metals Ca, Mg, K, Na	Anions (Cl, SO4)	Total Alkalinity	TDS	Total Metals As, Pb, Sb, V, K Ca, Mg, Na				Notes/Comments
Portal-1021	10/18/2021	0940	GW	4	X	X	X						Hold Dissolved Metals
MW-99-1-1021	10/18/2021	1000	DI	2				X	X				No Dissolved Metals
MWB-1SDSP-1021	10/18/2021	1355	GW	4	X	X	X						Hold Dissolved Metals
MWB-1DDSP-1021		1315	GW	4	X	X	X						Hold Dissolved Metals
MWB-5DSP-1021		1445	GW	4	X	X	X						Hold Dissolved Metals
MWB-6DSP-1021		1140	GW	4	X	X	X						Hold Dissolved Metals
MW~~B~~-55A-1021		1140	GW	2	X								Hold Dissolved Metals

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
Analyze in accordance w/ MSA between Golder & ARI Ecology EIM EDD	(Signature)	(Signature)	(Signature)	(Signature)
	Printed Name: Turner Doggett	Printed Name: Jacob Hall	Printed Name:	Printed Name:
	Company: Golder	Company: ARI	Company:	Company:
	Date & Time: 10/18/2021 1652	Date & Time: 10/18/2021 1652	Date & Time:	Date & Time:

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Interceptor Trench-1021	21J0254-01	Water	15-Oct-2021 13:55	18-Oct-2021 16:52
MW-4A-1021	21J0254-02	Water	15-Oct-2021 15:15	18-Oct-2021 16:52
MW-9A-1021	21J0254-04	Water	15-Oct-2021 16:15	18-Oct-2021 16:52
MW-10A-1021	21J0254-06	Water	15-Oct-2021 09:35	18-Oct-2021 16:52
P-15-1021	21J0254-08	Water	15-Oct-2021 11:55	18-Oct-2021 16:52
P-16-1021	21J0254-09	Water	15-Oct-2021 10:25	18-Oct-2021 16:52
P-17-1021	21J0254-11	Water	15-Oct-2021 13:25	18-Oct-2021 16:52
Portal-1021	21J0254-13	Water	18-Oct-2021 09:40	18-Oct-2021 16:52
MW-99-1-1021	21J0254-15	Water	18-Oct-2021 10:00	18-Oct-2021 16:52
MWB-1SDSP-1021	21J0254-16	Water	18-Oct-2021 13:55	18-Oct-2021 16:52
MWB-1DDSP-1021	21J0254-18	Water	18-Oct-2021 13:15	18-Oct-2021 16:52
MWB-5DSP-1021	21J0254-20	Water	18-Oct-2021 14:45	18-Oct-2021 16:52
MWB-6DSP-1021	21J0254-22	Water	18-Oct-2021 11:40	18-Oct-2021 16:52
MW-55A-1021	21J0254-24	Water	18-Oct-2021 11:40	18-Oct-2021 16:52

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Work Order Case Narrative

Total Metals - EPA Method 200.8 and 6010D

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

Initial and continuing calibrations were within method requirements.

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

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

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

Wet Chemistry

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

Initial and continuing calibrations were within method requirements.

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

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

The reference material (SRM) percent recoveries were within control limits.

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

WORK ORDER

21J0254

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

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

Project: Ravensdale | **Project Number:** Ravensdale

Preservation Confirmation

Container ID	Container Type	pH	
21J0254-01 A	HDPE NM, 1000 mL		
21J0254-02 A	HDPE NM, 1000 mL		
21J0254-02 B	HDPE NM, 1000 mL		
21J0254-02 C	HDPE NM, 1000 mL		
21J0254-02 D	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (P)
21J0254-02 E	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-02 F	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-03 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-04 A	HDPE NM, 1000 mL		
21J0254-04 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-05 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-06 A	HDPE NM, 1000 mL		
21J0254-06 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-07 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-08 A	HDPE NM, 1000 mL		
21J0254-08 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-09 A	HDPE NM, 1000 mL		
21J0254-09 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-11 A	HDPE NM, 1000 mL		
21J0254-11 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-13 A	HDPE NM, 1000 mL		
21J0254-13 B	HDPE NM, 500 mL		
21J0254-13 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-15 A	HDPE NM, 1000 mL		
21J0254-15 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-16 A	HDPE NM, 1000 mL		
21J0254-16 B	HDPE NM, 500 mL		
21J0254-16 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-17 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-18 A	HDPE NM, 1000 mL		
21J0254-18 B	HDPE NM, 500 mL		

Reviewed By _____ Date _____

WORK ORDER

21J0254

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

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

Project: Ravensdale **Project Number: Ravensdale**

21J0254-18 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (P)
21J0254-19 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-20 A	HDPE NM, 1000 mL		
21J0254-20 B	HDPE NM, 500 mL		
21J0254-20 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-21 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-22 A	HDPE NM, 1000 mL		
21J0254-22 B	HDPE NM, 500 mL		
21J0254-22 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-23 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21J0254-24 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21J0254-25 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P

RD
Preservation Confirmed By

10/19/21
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder

Project Name: Ravensdale

COC No(s): ~~NA~~

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

Assigned ARI Job No: 21J0254

Tracking No: ~~NA~~

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

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

Time 1652 0.2 0.9 ____ ____ ____ ____

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

Temp Gun ID#: D00256S

Cooler Accepted by: [signature] Date: 10/18/2021 Time: 1652

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?			YES NO
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA		

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

Samples Logged by: RM Date: 10/19/21 Time: 0947 Labels checked by: ____

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

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

Additional Notes, Discrepancies, & Resolutions:

for sample P-15-1021 the bottles have 1155 as the sample time but the COC lists 1115. Logged with 1155.

Sample P-15-1021 has only about 500mL for TDS

By: RM Date: 10/19/21

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Interceptor Trench-1021

21J0254-01RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/15/2021 13:55

Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-01RE1

Preparation Batch: BJJ0632 — Sample Size: 100 mL

Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	382	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-4A-1021

21J0254-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/15/2021 15:15
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/02/2021 23:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-02 F 02
Preparation Batch: BJK0012 — Sample Size: 25 mL
Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.180	ug/L	J
Lead	7439-92-1	1	0.0513	0.100	0.151	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	4.09	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-4A-1021

21J0254-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 15:15
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/02/2021 23:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-02 F 02
Preparation Batch: BJK0012 — Sample Size: 25 mL
Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	0.990	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-4A-1021

21J0254-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/15/2021 15:15
Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 15:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-02 F
Preparation Batch: BJJ0785 — Sample Size: 25 mL
Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	1.48	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-4A-1021

21J0254-02RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/15/2021 15:15
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-02RE1
Preparation Batch: BJJ0632 — Sample Size: 100 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	363	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-9A-1021

21J0254-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/15/2021 16:15
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/03/2021 00:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-04 B 02
Preparation Batch: BJK0012 — Sample Size: 25 mL
Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.659	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.139	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	1.20	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-9A-1021

21J0254-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 16:15
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/03/2021 00:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-04 B 02
Preparation Batch: BJK0012 — Sample Size: 25 mL
Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	4.79	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-9A-1021

21J0254-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/15/2021 16:15
Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 15:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-04 B
Preparation Batch: BJJ0785 — Sample Size: 25 mL
Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	16.0	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-9A-1021

21J0254-04RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/15/2021 16:15
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-04RE1
Preparation Batch: BJJ0632 — Sample Size: 75 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	981	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-10A-1021

21J0254-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/15/2021 09:35
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/03/2021 00:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-06 B 02
Preparation Batch: BJK0012 — Sample Size: 25 mL
Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.705	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.383	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	2.87	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-10A-1021

21J0254-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 09:35
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/03/2021 00:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-06 B 02
Preparation Batch: BJK0012 — Sample Size: 25 mL
Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	4.04	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-10A-1021

21J0254-06 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/15/2021 09:35

Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 15:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-06 B

Preparation Batch: BJJ0785 — Sample Size: 25 mL

Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	9.70	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-10A-1021

21J0254-06RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/15/2021 09:35
Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-06RE1
Preparation Batch: BJJ0632 — Sample Size: 100 mL
Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	383	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-15-1021

21J0254-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/15/2021 11:55

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/04/2021 19:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-08 B 02

Preparation Batch: BJK0012 — Sample Size: 25 mL

Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	10	1.01	2.00	ND	ug/L	U
Lead	7439-92-1	10	0.513	1.00	94.0	ug/L	D
Vanadium	7440-62-2	10	0.556	2.00	3.65	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-15-1021

21J0254-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 11:55

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/04/2021 19:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-08 B 02

Preparation Batch: BJK0012 — Sample Size: 25 mL

Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	6.57	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-15-1021

21J0254-08 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/15/2021 11:55

Instrument: ICP2 Analyst: MVP — Analyzed: 11/03/2021 15:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-08 B 01

Preparation Batch: BJJ0785 — Sample Size: 25 mL

Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	10	1.07	5.00	2390	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-15-1021

21J0254-08RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/15/2021 11:55

Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-08RE1

Preparation Batch: BJJ0632 — Sample Size: 5 mL

Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	200	200	7180	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-16-1021

21J0254-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/15/2021 10:25

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/02/2021 22:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-09 B 02

Preparation Batch: BJK0012 — Sample Size: 25 mL

Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	2.02	4.00	9.16	ug/L	D
Lead	7439-92-1	20	1.03	2.00	41.1	ug/L	D
Vanadium	7440-62-2	20	1.11	4.00	445	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-16-1021

21J0254-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 10:25

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/02/2021 22:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-09 B 02

Preparation Batch: BJK0012 — Sample Size: 25 mL

Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.746	4.00	232	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-16-1021

21J0254-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/15/2021 10:25

Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 15:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-09 B

Preparation Batch: BJJ0785 — Sample Size: 25 mL

Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	826	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-16-1021

21J0254-09RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/15/2021 10:25

Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-09RE1

Preparation Batch: BJJ0632 — Sample Size: 20 mL

Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	50	50	2640	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-17-1021

21J0254-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/15/2021 13:25

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/02/2021 22:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-11 B 02

Preparation Batch: BJK0012 — Sample Size: 25 mL

Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	ND	ug/L	U
Lead	7439-92-1	5	0.257	0.500	13.1	ug/L	D
Vanadium	7440-62-2	10	0.556	2.00	105	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-17-1021

21J0254-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 13:25

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/02/2021 22:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-11 B 02

Preparation Batch: BJK0012 — Sample Size: 25 mL

Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	16.4	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-17-1021

21J0254-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/15/2021 13:25

Instrument: ICP2 Analyst: MVP — Analyzed: 11/03/2021 15:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-11 B 01

Preparation Batch: BJJ0785 — Sample Size: 25 mL

Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	9.70	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

P-17-1021

21J0254-11RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/15/2021 13:25

Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-11RE1

Preparation Batch: BJJ0632 — Sample Size: 100 mL

Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	444	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Portal-1021

21J0254-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/18/2021 09:40
Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 18:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-13 C 01
Preparation Batch: BJJ0785 — Sample Size: 25 mL
Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	2	0.0440	0.100	65.5	mg/L	D
Magnesium	7439-95-4	2	0.0418	0.100	36.9	mg/L	D
Potassium	7440-09-7	5	0.534	2.50	29.5	mg/L	D
Sodium	7440-23-5	5	0.526	2.50	30.2	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Portal-1021

21J0254-13 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/18/2021 09:40
Instrument: [CALC] Analyst: MVP — Analyzed: 11/01/2021 18:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0254-13
Preparation Batch: [CALC]
Prepared: 10/28/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		2		315	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Portal-1021

21J0254-13 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/18/2021 09:40

Instrument: IC930 Analyst: CDE — Analyzed: 10/29/2021 14:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-13 A

Preparation Batch: BJJ0843 — Sample Size: 10 mL

Prepared: 10/29/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	0.100	0.100	6.61	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Portal-1021

21J0254-13 (Water)

Wet Chemistry

Method: SM 2320 B-97 — Sampled: 10/18/2021 09:40
Instrument: Accumet AB150 Analyst: UW — Analyzed: 10/26/2021 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-13 A
Preparation Batch: BJJ0724 — Sample Size: 50 mL
Prepared: 10/26/2021 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	335	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Portal-1021

21J0254-13RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/18/2021 09:40
Instrument: IC930 Analyst: CDE — Analyzed: 11/07/2021 02:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-13RE2 A
Preparation Batch: BJJ0843 — Sample Size: 10 mL
Prepared: 10/29/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	20	2.00	2.00	59.5	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-99-1-1021

21J0254-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/18/2021 10:00
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/03/2021 00:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-15 B 02
Preparation Batch: BJK0012 — Sample Size: 25 mL
Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Vanadium	7440-62-2	1	0.0556	0.200	0.0690	ug/L	J

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-99-1-1021

21J0254-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/18/2021 10:00

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/03/2021 00:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21J0254-15 B 02

Preparation Batch: BJK0012 — Sample Size: 25 mL

Prepared: 11/01/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-99-1-1021

21J0254-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/18/2021 10:00

Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 19:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-15 B 01

Preparation Batch: BJJ0785 — Sample Size: 25 mL

Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0220	0.0500	ND	mg/L	U
Magnesium	7439-95-4	1	0.0209	0.0500	ND	mg/L	U
Potassium	7440-09-7	5	0.534	2.50	ND	mg/L	U
Sodium	7440-23-5	5	0.526	2.50	ND	mg/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-99-1-1021

21J0254-15 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/18/2021 10:00

Instrument: [CALC] Analyst: MVP — Analyzed: 11/01/2021 19:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0254-15

Preparation Batch: [CALC]

Prepared: 10/28/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		1		0.00	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-99-1-1021

21J0254-15RE1 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 10/18/2021 10:00

Instrument: BAL2 Analyst: DOE — Analyzed: 10/22/2021 10:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-15RE1

Preparation Batch: BJJ0632 — Sample Size: 200 mL

Prepared: 10/22/2021 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	14	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1SDSP-1021

21J0254-16 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/18/2021 13:55
Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 18:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-16 C 01
Preparation Batch: BJJ0785 — Sample Size: 25 mL
Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	2	0.0440	0.100	231	mg/L	D
Magnesium	7439-95-4	2	0.0418	0.100	101	mg/L	D
Potassium	7440-09-7	5	0.534	2.50	5.89	mg/L	D
Sodium	7440-23-5	5	0.526	2.50	32.6	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1SDSP-1021

21J0254-16 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/18/2021 13:55

Instrument: [CALC] Analyst: MVP — Analyzed: 11/01/2021 18:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0254-16

Preparation Batch: [CALC]

Prepared: 10/28/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		2		992	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1SDSP-1021

21J0254-16 (Water)

Wet Chemistry

Method: SM 2320 B-97 — Sampled: 10/18/2021 13:55

Instrument: Accumet AB150 Analyst: UW — Analyzed: 10/26/2021 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-16 A

Preparation Batch: BJJ0724 — Sample Size: 50 mL

Prepared: 10/26/2021 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	623	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1SDSP-1021

21J0254-16RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/18/2021 13:55

Instrument: IC930 Analyst: CDE — Analyzed: 10/23/2021 20:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-16RE1 B

Preparation Batch: BJJ0614 — Sample Size: 10 mL

Prepared: 10/21/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	100	10.0	10.0	336	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1SDSP-1021

21J0254-16RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/18/2021 13:55

Instrument: IC930 Analyst: CDE — Analyzed: 10/23/2021 22:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-16RE2 B

Preparation Batch: BJJ0614 — Sample Size: 10 mL

Prepared: 10/21/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	10	1.00	1.00	11.0	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1DDSP-1021

21J0254-18 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/18/2021 13:15

Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 18:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-18 C 01

Preparation Batch: BJJ0785 — Sample Size: 25 mL

Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	2	0.0440	0.100	140	mg/L	D
Magnesium	7439-95-4	2	0.0418	0.100	60.3	mg/L	D
Potassium	7440-09-7	5	0.534	2.50	3.63	mg/L	D
Sodium	7440-23-5	5	0.526	2.50	23.0	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1DDSP-1021

21J0254-18 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/18/2021 13:15

Instrument: [CALC] Analyst: MVP — Analyzed: 11/01/2021 18:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0254-18

Preparation Batch: [CALC]

Prepared: 10/28/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		2		599	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1DDSP-1021

21J0254-18 (Water)

Wet Chemistry

Method: SM 2320 B-97 — Sampled: 10/18/2021 13:15

Instrument: Accumet AB150 Analyst: UW — Analyzed: 10/26/2021 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-18 A

Preparation Batch: BJJ0724 — Sample Size: 50 mL

Prepared: 10/26/2021 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	397	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1DDSP-1021

21J0254-18RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/18/2021 13:15

Instrument: IC930 Analyst: CDE — Analyzed: 10/23/2021 22:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-18RE1 B

Preparation Batch: BJJ0614 — Sample Size: 10 mL

Prepared: 10/21/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	100	10.0	10.0	165	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-1DDSP-1021

21J0254-18RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/18/2021 13:15

Instrument: IC930 Analyst: CDE — Analyzed: 10/24/2021 00:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-18RE2 B

Preparation Batch: BJJ0614 — Sample Size: 10 mL

Prepared: 10/21/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	2	0.200	0.200	12.0	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-5DSP-1021

21J0254-20 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/18/2021 14:45

Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-20 C 01

Preparation Batch: BJJ0785 — Sample Size: 25 mL

Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	2	0.0440	0.100	107	mg/L	D
Magnesium	7439-95-4	2	0.0418	0.100	50.1	mg/L	D
Potassium	7440-09-7	5	0.534	2.50	2.13	mg/L	J, D
Sodium	7440-23-5	5	0.526	2.50	13.6	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-5DSP-1021

21J0254-20 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/18/2021 14:45

Instrument: [CALC] Analyst: MVP — Analyzed: 11/01/2021 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0254-20

Preparation Batch: [CALC]

Prepared: 10/28/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		2		474	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-5DSP-1021

21J0254-20 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/18/2021 14:45

Instrument: IC930 Analyst: CDE — Analyzed: 10/22/2021 08:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-20 B

Preparation Batch: BJJ0614 — Sample Size: 10 mL

Prepared: 10/21/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	0.100	0.100	2.55	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-5DSP-1021

21J0254-20 (Water)

Wet Chemistry

Method: SM 2320 B-97 — Sampled: 10/18/2021 14:45

Instrument: Accumet AB150 Analyst: UW — Analyzed: 10/26/2021 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-20 A

Preparation Batch: BJJ0724 — Sample Size: 50 mL

Prepared: 10/26/2021 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	473	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-5DSP-1021

21J0254-20RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/18/2021 14:45

Instrument: IC930 Analyst: CDE — Analyzed: 10/23/2021 22:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-20RE1 B

Preparation Batch: BJJ0614 — Sample Size: 10 mL

Prepared: 10/21/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	36.2	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-6DSP-1021

21J0254-22 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/18/2021 11:40

Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 18:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-22 C 01

Preparation Batch: BJJ0785 — Sample Size: 25 mL

Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	2	0.0440	0.100	59.1	mg/L	D
Magnesium	7439-95-4	2	0.0418	0.100	31.8	mg/L	D
Potassium	7440-09-7	5	0.534	2.50	0.613	mg/L	J, D
Sodium	7440-23-5	5	0.526	2.50	9.62	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-6DSP-1021

21J0254-22 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/18/2021 11:40

Instrument: [CALC] Analyst: MVP — Analyzed: 11/01/2021 18:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0254-22

Preparation Batch: [CALC]

Prepared: 10/28/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		2		278	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-6DSP-1021

21J0254-22 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/18/2021 11:40

Instrument: IC930 Analyst: CDE — Analyzed: 10/22/2021 09:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-22 B

Preparation Batch: BJJ0614 — Sample Size: 10 mL

Prepared: 10/21/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	0.100	0.100	1.44	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	7.77	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MWB-6DSP-1021

21J0254-22 (Water)

Wet Chemistry

Method: SM 2320 B-97 — Sampled: 10/18/2021 11:40

Instrument: Accumet AB150 Analyst: UW — Analyzed: 10/26/2021 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21J0254-22 A

Preparation Batch: BJJ0724 — Sample Size: 50 mL

Prepared: 10/26/2021 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	300	mg/L CaCO3	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-55A-1021

21J0254-24 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 10/18/2021 11:40
Instrument: ICP2 Analyst: MVP — Analyzed: 11/01/2021 18:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 21J0254-24 A 01
Preparation Batch: BJJ0785 — Sample Size: 25 mL
Prepared: 10/28/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	2	0.0440	0.100	57.9	mg/L	D
Magnesium	7439-95-4	2	0.0418	0.100	31.3	mg/L	D
Potassium	7440-09-7	5	0.534	2.50	1.18	mg/L	J, D
Sodium	7440-23-5	5	0.526	2.50	9.29	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

MW-55A-1021

21J0254-24 (Water)

Metals and Metallic Compounds

Method: SM 2340 B-97 — Sampled: 10/18/2021 11:40

Instrument: [CALC] Analyst: MVP — Analyzed: 11/01/2021 18:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: [CALC] — Extract ID: 21J0254-24

Preparation Batch: [CALC]

Prepared: 10/28/2021 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hardness		2		273	mg/L CaCO3	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJJ0785 - TWC EPA 3010A

Instrument: ICP2 Analyst: MVP

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0785-BLK1)					Prepared: 28-Oct-2021 Analyzed: 01-Nov-2021 15:20						
Calcium	ND	0.0220	0.0500	mg/L							U
Magnesium	ND	0.0209	0.0500	mg/L							U
Potassium	ND	0.107	0.500	mg/L							U
Sodium	ND	0.105	0.500	mg/L							U
LCS (BJJ0785-BS1)					Prepared: 28-Oct-2021 Analyzed: 01-Nov-2021 15:23						
Calcium	9.96	0.0220	0.0500	mg/L	10.0		99.6	80-120			
Magnesium	11.3	0.0209	0.0500	mg/L	10.0		113	80-120			
Potassium	10.7	0.107	0.500	mg/L	10.0		107	80-120			
Sodium	11.2	0.105	0.500	mg/L	10.0		112	80-120			
Duplicate (BJJ0785-DUP1)		**Source: 21J0254-02**			Prepared: 28-Oct-2021 Analyzed: 01-Nov-2021 15:28						
Calcium	67.2	0.0440	0.100	mg/L		66.5			1.01	20	D
Magnesium	25.4	0.0418	0.100	mg/L		24.9			1.89	20	D
Potassium	1.49	0.214	1.00	mg/L		1.48			0.59	20	D
Sodium	13.6	0.210	1.00	mg/L		13.5			0.60	20	D
Matrix Spike (BJJ0785-MS1)		**Source: 21J0254-02**			Prepared: 28-Oct-2021 Analyzed: 01-Nov-2021 15:33						
Calcium	79.1	0.0440	0.100	mg/L	10.0	66.5	126	75-125			HC, D
Magnesium	36.7	0.0418	0.100	mg/L	10.0	24.9	118	75-125			D
Potassium	12.5	0.214	1.00	mg/L	10.0	1.48	110	75-125			D
Sodium	25.7	0.210	1.00	mg/L	10.0	13.5	122	75-125			D

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

Matrix Spike Dup (BJJ0785-MSD1)		**Source: 21J0254-02**			Prepared: 28-Oct-2021 Analyzed: 01-Nov-2021 15:38						
Calcium	78.5	0.0440	0.100	mg/L	10.0	66.5	120	75-125	0.73	20	HC, D
Magnesium	36.3	0.0418	0.100	mg/L	10.0	24.9	114	75-125	1.11	20	D
Potassium	12.3	0.214	1.00	mg/L	10.0	1.48	108	75-125	1.50	20	D
Sodium	25.6	0.210	1.00	mg/L	10.0	13.5	120	75-125	0.62	20	D

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJK0012 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0012-BLK1)						Prepared: 01-Nov-2021 Analyzed: 02-Nov-2021 17:35						
Antimony	121	ND	0.101	0.200	ug/L							U
Antimony	123	ND	0.102	0.200	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Vanadium	51a	ND	0.0556	0.200	ug/L							U
Vanadium	51b	ND	0.0521	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
LCS (BJK0012-BS1)						Prepared: 01-Nov-2021 Analyzed: 02-Nov-2021 17:40						
Antimony	121	25.1	0.101	0.200	ug/L	25.0		100	80-120			
Antimony	123	25.4	0.102	0.200	ug/L	25.0		102	80-120			
Lead	208	25.4	0.0513	0.100	ug/L	25.0		101	80-120			
Vanadium	51a	25.3	0.0556	0.200	ug/L	25.0		101	80-120			
Vanadium	51b	25.1	0.0521	0.200	ug/L	25.0		101	80-120			
Arsenic	75a	24.0	0.0373	0.200	ug/L	25.0		96.0	80-120			
Duplicate (BJK0012-DUP1)			**Source: 21J0254-02**			Prepared: 01-Nov-2021 Analyzed: 02-Nov-2021 23:31						
Antimony	121	0.178	0.101	0.200	ug/L		0.180			1.12	20	J
Lead	208	0.153	0.0513	0.100	ug/L		0.151			1.32	20	
Vanadium	51a	4.05	0.0556	0.200	ug/L		4.09			1.08	20	
Arsenic	75a	1.05	0.0373	0.200	ug/L		0.990			6.17	20	
Matrix Spike (BJK0012-MS1)			**Source: 21J0254-02**			Prepared: 01-Nov-2021 Analyzed: 02-Nov-2021 23:37						
Antimony	121	24.3	0.101	0.200	ug/L	25.0	0.180	96.4	75-125			
Lead	208	24.3	0.0513	0.100	ug/L	25.0	0.151	96.6	75-125			
Vanadium	51a	26.6	0.0556	0.200	ug/L	25.0	4.09	90.1	75-125			
Arsenic	75a	25.9	0.0373	0.200	ug/L	25.0	0.990	99.7	75-125			

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

Matrix Spike Dup (BJK0012-MSD1)			**Source: 21J0254-02**			Prepared: 01-Nov-2021 Analyzed: 02-Nov-2021 23:42						
Antimony	121	24.3	0.101	0.200	ug/L	25.0	0.180	96.5	75-125	0.11	20	
Lead	208	24.3	0.0513	0.100	ug/L	25.0	0.151	96.6	75-125	0.06	20	
Vanadium	51a	26.3	0.0556	0.200	ug/L	25.0	4.09	88.9	75-125	1.14	20	
Arsenic	75a	25.5	0.0373	0.200	ug/L	25.0	0.990	98.1	75-125	1.52	20	

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0538 - No Prep Wet Chem

Instrument: BAL2 Analyst: DOE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0538-BLK1)				Prepared: 19-Oct-2021 Analyzed: 19-Oct-2021 14:19							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BJJ0538-BS1)				Prepared: 19-Oct-2021 Analyzed: 19-Oct-2021 14:19							
Dissolved Solids	403	10	10	mg/L	500		80.5	90-110			*

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0614 - No Prep Wet Chem

Instrument: IC930 Analyst: CDE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0614-BLK1)				Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 23:05							
Chloride	ND	0.100	0.100	mg/L							U
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BJJ0614-BS1)				Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 23:25							
Chloride	4.86	0.100	0.100	mg/L	5.00		97.2	90-110			
Sulfate	4.67	0.100	0.100	mg/L	5.00		93.4	90-110			
Duplicate (BJJ0614-DUP3)		**Source: 21J0254-16RE1**		Prepared: 21-Oct-2021 Analyzed: 23-Oct-2021 20:27							
Sulfate	339	10.0	10.0	mg/L		336			0.78	20	D
Duplicate (BJJ0614-DUP4)		**Source: 21J0254-16RE2**		Prepared: 21-Oct-2021 Analyzed: 23-Oct-2021 23:06							
Chloride	11.1	1.00	1.00	mg/L		11.0			0.72	20	D
Matrix Spike (BJJ0614-MS3)		**Source: 21J0254-16RE1**		Prepared: 21-Oct-2021 Analyzed: 23-Oct-2021 21:27							
Sulfate	756	20.0	20.0	mg/L	600	336	70.0	75-125			*, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BJJ0614-MS4)		**Source: 21J0254-16RE2**		Prepared: 21-Oct-2021 Analyzed: 23-Oct-2021 23:26							
Chloride	26.4	2.00	2.00	mg/L	20.0	11.0	76.8	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BJJ0614-MSD3)		**Source: 21J0254-16RE1**		Prepared: 21-Oct-2021 Analyzed: 23-Oct-2021 21:47							
Sulfate	803	20.0	20.0	mg/L	600	336	77.8	75-125	6.01	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BJJ0614-MSD4)		**Source: 21J0254-16RE2**		Prepared: 21-Oct-2021 Analyzed: 23-Oct-2021 23:45							
Chloride	26.5	2.00	2.00	mg/L	20.0	11.0	77.3	75-125	0.37	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0632 - No Prep Wet Chem

Instrument: BAL2 Analyst: DOE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0632-BLK1)				Prepared: 22-Oct-2021 Analyzed: 22-Oct-2021 10:41							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BJJ0632-BS1)				Prepared: 22-Oct-2021 Analyzed: 22-Oct-2021 10:41							
Dissolved Solids	519	10	10	mg/L	500		104	90-110			
Duplicate (BJJ0632-DUP1)		**Source: 21J0254-02RE1**		Prepared: 22-Oct-2021 Analyzed: 22-Oct-2021 10:41							
Dissolved Solids	355	10	10	mg/L		363			2.23	20	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0724 - No Prep Wet Chem

Instrument: Accumet AB150 Analyst: UW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0724-BLK1)					Prepared: 26-Oct-2021 Analyzed: 26-Oct-2021 14:43						
Alkalinity, Total	ND	1.00	1.00	mg/L CaCO3							U
Duplicate (BJJ0724-DUP1)		**Source: 21J0254-13**			Prepared: 26-Oct-2021 Analyzed: 26-Oct-2021 14:43						
Alkalinity, Total	325	1.00	1.00	mg/L CaCO3		335			3.23	20	
Reference (BJJ0724-SRM1)					Prepared: 26-Oct-2021 Analyzed: 26-Oct-2021 14:43						
Alkalinity, Total	128	1.00	1.00	mg/L CaCO3	127		101	85.04-114.96			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0843 - No Prep Wet Chem

Instrument: IC930 Analyst: CDE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0843-BLK1)					Prepared: 29-Oct-2021 Analyzed: 29-Oct-2021 13:16						
Chloride	ND	0.100	0.100	mg/L							U
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BJJ0843-BS1)					Prepared: 29-Oct-2021 Analyzed: 29-Oct-2021 13:36						
Chloride	4.90	0.100	0.100	mg/L	5.00		98.0	90-110			
LCS (BJJ0843-BS3)					Prepared: 29-Oct-2021 Analyzed: 07-Nov-2021 01:36						
Sulfate	4.75	0.100	0.100	mg/L	5.00		95.1	90-110			
Duplicate (BJJ0843-DUP1)		**Source: 21J0254-13**			Prepared: 29-Oct-2021 Analyzed: 29-Oct-2021 15:16						
Chloride	6.60	0.100	0.100	mg/L		6.61			0.21	20	
Duplicate (BJJ0843-DUP3)		**Source: 21J0254-13RE2**			Prepared: 29-Oct-2021 Analyzed: 07-Nov-2021 02:36						
Sulfate	59.4	2.00	2.00	mg/L		59.5			0.11	20	D
Matrix Spike (BJJ0843-MS1)		**Source: 21J0254-13**			Prepared: 29-Oct-2021 Analyzed: 29-Oct-2021 15:36						
Chloride	8.75	0.100	0.100	mg/L	2.00	6.61	107	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BJJ0843-MS3)		**Source: 21J0254-13RE2**			Prepared: 29-Oct-2021 Analyzed: 07-Nov-2021 03:36						
Sulfate	152	5.00	5.00	mg/L	100	59.5	92.7	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BJJ0843-MSD1)		**Source: 21J0254-13**			Prepared: 29-Oct-2021 Analyzed: 29-Oct-2021 15:56						
Chloride	8.76	0.100	0.100	mg/L	2.00	6.61	107	75-125	0.15	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BJJ0843-MSD3)		**Source: 21J0254-13RE2**			Prepared: 29-Oct-2021 Analyzed: 07-Nov-2021 03:56						
Sulfate	158	5.00	5.00	mg/L	100	59.5	98.6	75-125	3.81	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	22-Nov-2021 07:03

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Vanadium-51b	NELAP,DoD-ELAP,WADOE
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 300.0 in Water	
Chloride	DoD-ELAP,WADOE,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 6010D in Water	
Calcium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Magnesium	WADOE,NELAP,DoD-ELAP
Sodium	DoD-ELAP,WADOE,NELAP
Sodium-1	DoD-ELAP
SM 2320 B-97 in Water	
Alkalinity, Total	DoD-ELAP,WADOE,WA-DW,NELAP
SM 2540 C-97 in Water	
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022

Golder Associates	Project:	Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number:	Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager:	Gary Zimmerman	22-Nov-2021 07:03

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
HC	The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, LLC
Analytical Chemists and Consultants

14 December 2021

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

RE: Ravensdale

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

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

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

Associated Work Order(s)	Associated SDG ID(s)
21K0390	N/A

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

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

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

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

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 21J0254 / 21K0390	Turn-around Requested: Standard	Page: 1 of 2	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 10/18/21	Ice Present? Yes
Client Contact: Joseph Xi		No. of Coolers: 2	Cooler Temps: 0.2/0.9
Client Project Name: Ravensdale Q021 Q3 Sampling			
Client Project #: 1520304B2.004.0003	Samplers: Turner Doggett		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Total Metals As, Pb, Sb, V, K	Analysis Requested: PS	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Notes/Comments
Interceptor Trench-1021	10/15/2021	1355	GW	1		X							
MW-4A-1021	10/15/2021	~~1515~~ 1515	GW	~~3~~ 7	X	X							Hold Dissolved Metals Extra Vol for MS/MSD
MW-9A-1021	10/15/2021	1615	GW	3	X	X							Hold Dissolved Metals
MW-10A-1021	10/15/2021	0935	GW	3	X	X							Hold Dissolved Metals
P-15-1021	10/15/2021	1115	GW	2	X	X							Short Vol. for TDS. No Dissolved Metals.
P-16-1021	10/15/2021	1025	GW	3	X	X							Hold Dissolved metals
P-17-1021	10/15/2021	1325	GW	3	X	X							Hold Dissolved metals

Comments/Special Instructions: Analyses in accordance with MSA between Golder & ARI. Ecology Fim EDD	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Turner Doggett	Printed Name: Jacobsen Hu	Printed Name:	Printed Name:
	Company: Golder	Company: ARI	Company:	Company:
	Date & Time: 10/18/2021 1652	Date & Time: 10/18/2021 1652	Date & Time:	Date & Time:

Chain of Custody Record & Laboratory Analysis Request

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

ARI Assigned Number: 21J0211 / 21K0390	Turn-around Requested: Standard
ARI Client Company:	Phone: 425-883-0777
Client Contact: Joseph Xi	
Client Project Name: Ravensdale 2021 Q3 Sampling	
Client Project #: 152036402.004	Samplers: Turner Doggett
Page: of	
Date:	Ice Present?
No. of Coolers: 2	Cooler Temps: 2.4, 3.3

Sample ID	Date	Time	Matrix	No. Containers	Total Metals (2)	Total Metals (3)	TDS	Anions (SO4, Cl)	Total Alkalinity				Notes/Comments
Infiltration Ponds-1021	10/13/2021	1050	GW	3	✓		✓						Hold Dissolved
MW-35A-1021	10/13/2021	1050	GW	3	✓		✓						
MW-1A-1021	10/12/2021	1025	GW	3	✓		✓						
MW-2A-1021	10/12/21	1145	GW	3	✓		✓						
MW-45A-1021	10/12/21	1145	GW	3	✓		✓						
MW-3A-1021	10/12/21	1610	GW	3	✓		✓						
P-14-1021	10/13/2021	1615	GW	3	✓		✓						
MWB-1LDA-1021		0920	GW	5		✓	✓	✓	✓				
MWB-2LDA-1021		1230	GW	5		✓	✓	✓	✓				
MWB-3LDA-1021		1510	GW	5		✓	✓	✓	✓				

Comments/Special Instructions
Metals List (2): As, Pb, Se, V, K
Metals List (3): Ca, Mg, K, Na

	Relinquished by:	Received by:	Relinquished by:	Received by:
(Signature)				
Printed Name:	Turner Doggett	Isabelle Beasley		
Company:	Golder	ARI		
Date & Time:	10/14/21 1000	10/14/21 10:05		

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

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 21K0254 / 21K0390	Turn-around Requested: Standard	Page: 2 of 2	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 10/18/21	Ice Present? Yes
Client Contact: Joseph Xi		No. of Coolers: 2	Cooler Temps: 0.2 / 0.9
Client Project Name: Ravensdale Q2021 Q3 Sampling			
Client Project #: 1520304.20.	Samplers: Turner Doggett		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Total Metals (Sb, Mg, K, Na)	Anions (Cl, SO4)	Total Alkalinity	TDS	Total Metals (Fe, Mn, K, Ca, Mg, Na)				Notes/Comments
Portal - 1021	10/18/2021	0940	GW	4	X	X	X						Hold Dissolved Metals
MW-99-1-1021	10/18/2021	1000	DI	2				X	X				No Dissolved Metals
MWB-1SDSP-1021	10/18/2021	1355	GW	4	X	X	X						Hold Dissolved Metals
MWB-1DDSP-1021		1315	GW	4	X	X	X						Hold Dissolved Metals
MWB-5DSP-1021		1445	GW	4	X	X	X						Hold Dissolved Metals
MWB-6DSP-1021		1140	GW	4	X	X	X						Hold Dissolved Metals
MW-55A-1021	↓	1140	GW	2	X								Hold Dissolved Metals

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
Analyze in accordance w/ MSA between Golder & ARI Evelyn EIM EDD	(Signature)	(Signature)	(Signature)	(Signature)
	Printed Name: Turner Doggett	Printed Name: Jacob Leg	Printed Name:	Printed Name:
	Company: Golder	Company: ARI	Company:	Company:
	Date & Time: 10/18/2021 1652	Date & Time: 10/18/2021 1652	Date & Time:	Date & Time:

ARI Job #: 21K0390

Fw: Analyze Dissolved Metals

Kelly Bottem <kelly.bottem@arilabs.com>

Tue 11/23/2021 3:51 PM

To: **Sample Receiving <sample-receiving@arilabs.com>**

2 attachments (5 MB)

21J0211 Final report ; 21J0254 Final report ;

Sorry, I tried to do this so you wouldn't need to. Dissolved metals that were held for 21J0211 and 21J0254 need to be pulled, logged under one new WO for the dissolved metals list below. Tomorrow is fine

DISSOLVED METALS (As, Pb, Sb, V, K) for these wells:
MW-1A
MW-2A
MW-3A
MW-4A
MW-1A
MW-9A
MW-10A
MW-35A
MW-45A
P-14
P-15
P-16
P-17
Infiltration Ponds

Kelly Frances Bottem, Client Services Manager
Pronouns: She/her/hers
Analytical Resources, LLC
4611 S. 134th Place, Suite 100
Tukwila, WA 98168-3212
Website: https://www.arilabs.com
Direct Phone: 206-695-6211
E-Mail: kelly.bottem@arilabs.com
Fax: 206-695-6202
Cell: 206-228-1385

https://www.arilabs.com

ARI Job #: 21K0390

"Never interrupt someone doing something you said couldn't be done" - Amelia Earhart

***Before printing, think about ENVIRONMENTAL responsibility

From: Xi, Jing Song <JingSong_Xi@golder.com>
Sent: Tuesday, November 23, 2021 3:08 PM
To: Kelly Bottem <kelly.bottem@arilabs.com>
Subject: Analyze Dissolved Metals

Hi Kelly, for the Ravensdale samples, can you analyze DISSOLVED METALS (As, Pb, Sb, V, K) for these wells:
MW-1A
MW-2A
MW-3A
MW-4A
MW-1A
MW-9A
MW-10A
MW-35A
MW-45A
P-14
P-15
P-16
P-17
Infiltration Ponds

Thanks!

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1A-1021	21K0390-01	Water	13-Oct-2021 10:25	23-Nov-2021 16:26
MW-2A-1021	21K0390-02	Water	13-Oct-2021 11:45	23-Nov-2021 16:26
MW-3A-1021	21K0390-03	Water	13-Oct-2021 16:10	23-Nov-2021 16:26
MW-4A-1021	21K0390-04	Water	15-Oct-2021 15:15	23-Nov-2021 16:26
MW-9A-1021	21K0390-05	Water	15-Oct-2021 16:15	23-Nov-2021 16:26
MW-10A-1021	21K0390-06	Water	15-Oct-2021 09:35	23-Nov-2021 16:26
MW-35A-1021	21K0390-07	Water	13-Oct-2021 10:50	23-Nov-2021 16:26
MW-45A-1021	21K0390-08	Water	13-Oct-2021 11:45	23-Nov-2021 16:26
P-14-1021	21K0390-09	Water	13-Oct-2021 16:15	23-Nov-2021 16:26
P-16-1021	21K0390-10	Water	15-Oct-2021 10:25	23-Nov-2021 16:26
P-17-1021	21K0390-11	Water	15-Oct-2021 13:25	23-Nov-2021 16:26
Infiltration Ponds-1021	21K0390-12	Water	13-Oct-2021 10:50	23-Nov-2021 16:26

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

Work Order Case Narrative

Dissolved Metals - EPA Method 200.8 and 6010D

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

Initial and continuing calibrations were within method requirements.

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

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

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

WORK ORDER

21K0390

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

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

Project: Ravensdale **Project Number: Ravensdale**

Analysis	Due	TAT	Expires	Comments
Met Diss 6010D - K	12/09/2021	10	4/13/2022	
21K0390-12 Infiltration Ponds-1021 [Water] Sampled 13-Oct-2021 10:50				
Filter 0.45 micron	12/09/2021	10	11/24/2021	
Met Diss 200.8 - As UCT	12/09/2021	10	4/11/2022	
Met Diss 200.8 - Pb	12/09/2021	10	4/11/2022	
Met Diss 200.8 - Sb	12/09/2021	10	4/11/2022	
Met Diss 200.8 - V	12/09/2021	10	4/11/2022	
Met Diss 6010D - K	12/09/2021	10	4/11/2022	

Preservation Confirmation

Container ID	Container Type	pH	
21K0390-01 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass (P)
21K0390-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21K0390-03 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21K0390-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21K0390-05 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21K0390-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21K0390-07 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail
21K0390-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21K0390-09 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail
21K0390-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21K0390-11 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21K0390-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail

RD
Preservation Confirmed By

11/23/21
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

Golder

ARI Client: Joseph Xi

Project Name: Ravensdale 2021 GPS

COC No(s): NA

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

Assigned ARI Job No: 21J0211 / 21K0390

Tracking No: NA

Sampling

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 2.4 3.3

Time

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

Temp Gun ID#: D00 7565

Cooler Accepted by: Date: 10/14/21 Time: 10:05

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA		

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

Samples Logged by: RV Date: 10/14/21 Time: 1439 Labels checked by: JBW

RV ** *Notify Project Manager of discrepancies or concerns* ** 11/23/21 1626

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

Additional Notes, Discrepancies, & Resolutions:

See attached email.

By: DL Date: 10/14/21

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder

Project Name: Ravenstake

COC No(s): (NA)

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

Assigned ARI Job No: 21J0254 / 21K0390

Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

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

Time 1652 0.2 0.9 ___ ___ ___ ___

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

Temp Gun ID#: D00-2565

Cooler Accepted by: [signature] Date: 10/18/2021 Time: 1652

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		YES	(NO)
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	(NO)
Date VOC Trip Blank was made at ARI	(NA)		

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

Samples Logged by: RD Date: 10/19/21 Time: 0947 Labels checked by: RD 11/23/21 1626

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

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

Additional Notes, Discrepancies, & Resolutions:

For sample P-15-1021 the bottles have 1155 as the sample time but the COC lists 1115. Logged with 1155.

Sample P-15-1021 has only about 500mL for TDS

By: RD Date: 10/19/21

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-1A-1021

21K0390-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/13/2021 10:25
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-01 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.910	ug/L	
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	0.667	ug/L	

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 00:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-01 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-1A-1021

21K0390-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 10:25
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-01 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	1.16	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-1A-1021

21K0390-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/13/2021 10:25
Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 16:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-01 A 02
Preparation Batch: BJL0142 — Sample Size: 25 mL
Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	1	0.107	0.500	13.2	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-2A-1021

21K0390-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/13/2021 11:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-02 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	1.25	ug/L	
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	0.887	ug/L	

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 00:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-02 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-2A-1021

21K0390-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 11:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-02 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	1.04	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-2A-1021

21K0390-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/13/2021 11:45
Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 17:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-02 A 02
Preparation Batch: BJL0142 — Sample Size: 25 mL
Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	1	0.107	0.500	23.4	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-3A-1021

21K0390-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/13/2021 16:10
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-03 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	14.1	ug/L	
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	1.03	ug/L	

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 00:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-03 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-3A-1021

21K0390-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 16:10
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-03 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	1.62	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-3A-1021

21K0390-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/13/2021 16:10

Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 18:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-03 A 02

Preparation Batch: BJL0142 — Sample Size: 25 mL

Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	1	0.107	0.500	103	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-4A-1021

21K0390-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/15/2021 15:15
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-04 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.255	ug/L	
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	1.42	ug/L	

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 00:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-04 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-4A-1021

21K0390-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 15:15
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-04 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	0.380	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-4A-1021

21K0390-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/15/2021 15:15
Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 18:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-04 A 02
Preparation Batch: BJL0142 — Sample Size: 25 mL
Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	1	0.107	0.500	1.72	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-9A-1021

21K0390-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/15/2021 16:15
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-05 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.600	ug/L	
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	0.954	ug/L	

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 00:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-05 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-9A-1021

21K0390-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 16:15
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-05 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	4.70	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-9A-1021

21K0390-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/15/2021 16:15

Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 18:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-05 A 02

Preparation Batch: BJL0142 — Sample Size: 25 mL

Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	1	0.107	0.500	14.9	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-10A-1021

21K0390-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/15/2021 09:35

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-06 A 01

Preparation Batch: BJK0728 — Sample Size: 25 mL

Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.765	ug/L	
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	1.58	ug/L	

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 00:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-06 A 01

Preparation Batch: BJK0728 — Sample Size: 25 mL

Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-10A-1021

21K0390-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 09:35
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-06 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	3.95	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-10A-1021

21K0390-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/15/2021 09:35

Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 18:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-06 A 02

Preparation Batch: BJL0142 — Sample Size: 25 mL

Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	1	0.107	0.500	10.1	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-35A-1021

21K0390-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/13/2021 10:50

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-07 A 01

Preparation Batch: BJK0728 — Sample Size: 25 mL

Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	16.7	ug/L	
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	1.77	ug/L	

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 00:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-07 A 01

Preparation Batch: BJK0728 — Sample Size: 25 mL

Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0680	0.100	3.49	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-35A-1021

21K0390-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 10:50
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-07 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	19.7	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-35A-1021

21K0390-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/13/2021 10:50
Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 18:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-07 A 02
Preparation Batch: BJL0142 — Sample Size: 25 mL
Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	0.534	2.50	991	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-45A-1021

21K0390-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/13/2021 11:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-08 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	1.22	ug/L	
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	0.967	ug/L	

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 01:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-08 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-45A-1021

21K0390-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 11:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 06:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-08 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	1.05	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

MW-45A-1021

21K0390-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/13/2021 11:45

Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 18:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-08 A 02

Preparation Batch: BJL0142 — Sample Size: 25 mL

Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	1	0.107	0.500	23.5	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

P-14-1021

21K0390-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/13/2021 16:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 07:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-09 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	21.1	ug/L	D

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/10/2021 20:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-09 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	10	1.01	2.00	134	ug/L	D
Lead, Dissolved	7439-92-1	10	0.680	1.00	1.57	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

P-14-1021

21K0390-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 16:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 07:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-09 A 01

Preparation Batch: BJK0728 — Sample Size: 25 mL

Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	285	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

P-14-1021

21K0390-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/13/2021 16:15

Instrument: ICP2 Analyst: MVP — Analyzed: 12/08/2021 17:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-09 A 02

Preparation Batch: BJL0142 — Sample Size: 25 mL

Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	20	2.14	10.0	2800	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

P-16-1021

21K0390-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/15/2021 10:25

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 07:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-10 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	10	1.01	2.00	7.79	ug/L	D
Vanadium, Dissolved	7440-62-2	10	0.556	2.00	358	ug/L	D

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 01:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-10 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	10	0.680	1.00	25.8	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

P-16-1021

21K0390-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 10:25

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 07:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-10 A 01

Preparation Batch: BJK0728 — Sample Size: 25 mL

Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	0.220	2.00	196	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

P-16-1021

21K0390-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/15/2021 10:25

Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 18:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-10 A 02

Preparation Batch: BJL0142 — Sample Size: 25 mL

Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	0.534	2.50	841	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

P-17-1021

21K0390-11 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/15/2021 13:25

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 07:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-11 A 01

Preparation Batch: BJK0728 — Sample Size: 25 mL

Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	2	0.202	0.400	0.382	ug/L	J, D
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	2.27	ug/L	D

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 01:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-11 A 01

Preparation Batch: BJK0728 — Sample Size: 25 mL

Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	2	0.136	0.200	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

P-17-1021

21K0390-11 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/15/2021 13:25

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 07:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-11 A 01

Preparation Batch: BJK0728 — Sample Size: 25 mL

Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	6.00	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

P-17-1021

21K0390-11 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/15/2021 13:25

Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 18:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-11 A 02

Preparation Batch: BJL0142 — Sample Size: 25 mL

Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	1	0.107	0.500	8.10	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

Infiltration Ponds-1021

21K0390-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/13/2021 10:50
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 07:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-12 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	16.5	ug/L	
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	1.88	ug/L	

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/08/2021 01:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-12 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0680	0.100	3.64	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

Infiltration Ponds-1021

21K0390-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/13/2021 10:50
Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/01/2021 07:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21K0390-12 A 01
Preparation Batch: BJK0728 — Sample Size: 25 mL
Prepared: 11/30/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	19.2	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

Infiltration Ponds-1021

21K0390-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 10/13/2021 10:50
Instrument: ICP2 Analyst: SKD — Analyzed: 12/06/2021 18:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 21K0390-12 A 02
Preparation Batch: BJL0142 — Sample Size: 25 mL
Prepared: 12/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	0.534	2.50	1050	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BJK0728 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0728-BLK1)						Prepared: 30-Nov-2021 Analyzed: 30-Nov-2021 16:38						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Antimony, Dissolved	123	ND	0.102	0.200	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Vanadium, Dissolved	51a	ND	0.0556	0.200	ug/L							U
Vanadium, Dissolved	51b	ND	0.0521	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
LCS (BJK0728-BS1)						Prepared: 30-Nov-2021 Analyzed: 30-Nov-2021 16:43						
Antimony, Dissolved	121	25.4	0.101	0.200	ug/L	25.0		102	80-120			
Antimony, Dissolved	123	25.8	0.102	0.200	ug/L	25.0		103	80-120			
Lead, Dissolved	208	25.5	0.0513	0.100	ug/L	25.0		102	80-120			
Vanadium, Dissolved	51a	24.6	0.0556	0.200	ug/L	25.0		98.4	80-120			
Vanadium, Dissolved	51b	24.6	0.0521	0.200	ug/L	25.0		98.3	80-120			
Arsenic, Dissolved	75a	24.8	0.0373	0.200	ug/L	25.0		99.2	80-120			
Duplicate (BJK0728-DUP1)			**Source: 21K0390-01**			Prepared: 30-Nov-2021 Analyzed: 01-Dec-2021 06:15						
Antimony, Dissolved	121	0.906	0.101	0.200	ug/L		0.910			0.44	20	
Vanadium, Dissolved	51a	0.667	0.0556	0.200	ug/L		0.667			0.00		
Arsenic, Dissolved	75a	1.16	0.0373	0.200	ug/L		1.16			0.00		
Matrix Spike (BJK0728-MS1)			**Source: 21K0390-01**			Prepared: 30-Nov-2021 Analyzed: 01-Dec-2021 06:21						
Antimony, Dissolved	121	26.1	0.101	0.200	ug/L	25.0	0.910	101	75-125			
Vanadium, Dissolved	51a	21.6	0.0556	0.200	ug/L	25.0	0.667	83.8	75-125			
Arsenic, Dissolved	75a	26.7	0.0373	0.200	ug/L	25.0	1.16	102	75-125			

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

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BJK0728-DUP3)			**Source: 21K0390-01**			Prepared: 30-Nov-2021 Analyzed: 08-Dec-2021 00:40						
Lead, Dissolved	208	ND	0.0513	0.100	ug/L		ND					U
Matrix Spike (BJK0728-MS3)			**Source: 21K0390-01**			Prepared: 30-Nov-2021 Analyzed: 08-Dec-2021 00:47						
Lead, Dissolved	208	23.2	0.0513	0.100	ug/L	25.0	ND	92.9	75-125			

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BJK0728 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BJL0142 - WMN (No Prep)

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJL0142-BLK1)				Prepared: 06-Dec-2021 Analyzed: 06-Dec-2021 16:31							
Potassium, Dissolved	ND	0.107	0.500	mg/L							U
LCS (BJL0142-BS1)				Prepared: 06-Dec-2021 Analyzed: 06-Dec-2021 16:34							
Potassium, Dissolved	10.2	0.108	0.505	mg/L	10.0		102	80-120			
Duplicate (BJL0142-DUP1)		**Source: 21K0390-01**		Prepared: 06-Dec-2021 Analyzed: 06-Dec-2021 16:50							
Potassium, Dissolved	13.3	0.107	0.500	mg/L		13.2			0.83	20	
Matrix Spike (BJL0142-MS1)		**Source: 21K0390-01**		Prepared: 06-Dec-2021 Analyzed: 06-Dec-2021 16:56							
Potassium, Dissolved	23.8	0.108	0.505	mg/L	10.0	13.2	106	75-125			

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	14-Dec-2021 07:58

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-123	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	DoD-ELAP,NELAP,WADOE
Vanadium-51b	DoD-ELAP,NELAP,WADOE
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 6010D in Water	
Potassium	WADOE,NELAP,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022

Golder Associates	Project:	Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number:	Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager:	Gary Zimmerman	14-Dec-2021 07:58

Notes and Definitions

B	This analyte was detected in the method blank.
D	The reported value is from a dilution
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

20 October 2021

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

RE: Ravensdale

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

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

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

Associated Work Order(s)	Associated SDG ID(s)
21I0345	N/A

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

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

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

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

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 21E0345	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: Golder	Phone:	Date: 9/23/21	Ice Present?
Client Contact: Joseph Li		No. of Coolers:	Cooler Temps: 3.1
Client Project Name: Ravensdale			
Client Project #: 1520304.420	Samplers: Joseph Li		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Total As, Pb	Analysis Requested: Dissolved As, Pb	Notes/Comments
Tank-Influent	9/23/21	0945	W	1	X		Analyte in accordance w/ MSA between Golder + ARI
Tank-Effluent	↓	0950	↓	1	X		
AS2-Effluent	↓	0955	↓	2	X	X	Diss. bottle unpreserved field filter

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Please filter dissolved metals. Bottle is unpreserved.	Printed Name: Joseph Li	Printed Name: Dimitri Lamarche	Printed Name:	Printed Name:
	Company: Golder	Company: ARI	Company:	Company:
	Date & Time: 9/23/21 1100	Date & Time: 09/23/21 1100	Date & Time:	Date & Time:

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

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Tank-Influent	21I0345-01	Water	23-Sep-2021 09:45	23-Sep-2021 11:00
Tank-Effluent	21I0345-02	Water	23-Sep-2021 09:50	23-Sep-2021 11:00
AS2-Effluent	21I0345-03	Water	23-Sep-2021 09:55	23-Sep-2021 11:00
AS2-Effluent	21I0345-04	Water	23-Sep-2021 09:55	23-Sep-2021 11:00

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

Work Order Case Narrative

Total and Dissolved Metals - EPA Method 200.8

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

Initial and continuing calibrations were within method requirements.

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

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

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 9/24/2021 09:12:37AM

WORK ORDER

21I0345

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

Client: Golder Associates
Project Manager: Kelly Bottem

Project: Ravensdale
Project Number: Ravensdale

Preservation Confirmation

Container ID	Container Type	pH
21I0345-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2 Pass
21I0345-02 A	HDPE NM, 500 mL, 1:1 HNO3	>2 Fail
21I0345-03 A	HDPE NM, 500 mL, 1:1 HNO3	>2 Fail
21I0345-04 A	HDPE NM, 500 mL	

DL
Preservation Confirmed By

09/24/21
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder Project Name: Ravensdale

COC No(s): ~~NA~~ Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 210345 Tracking No: _____ ~~NA~~

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	~~NO~~
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 3.1

Time 1100

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: D00255O3

Cooler Accepted by: DC Date: 09/23/21 Time: 1100

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	~~NO~~
What kind of packing material was used? ...	Bubble Wrap ~~Wet Ice~~ Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	~~YES~~	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA		

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

Samples Logged by: DC Date: 09/23/21 Time: 0908 Labels checked by: _____

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

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

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 9/24/2021 09:12:37AM

WORK ORDER

21I0345

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

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

Preservation Confirmation

Container ID	Container Type	pH
21I0345-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2 Pass
21I0345-02 A	HDPE NM, 500 mL, 1:1 HNO3	>2 Fail
21I0345-03 A	HDPE NM, 500 mL, 1:1 HNO3	>2 Fail
21I0345-04 A	HDPE NM, 500 mL	①

DL
Preservation Confirmed By

09/24/21
Date

① Filtered at 0.45u and preserved to pH <2.0 w/ 1.00 mL conc. HNO_3 (S6747).
ML 09/24/21

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

Tank-Influent

21I0345-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/23/2021 09:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/12/2021 21:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21I0345-01 A 01
Preparation Batch: BJJ0158 — Sample Size: 25 mL
Prepared: 10/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	20	1.03	2.00	87.2	ug/L	D

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

Tank-Influent

21I0345-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/23/2021 09:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/12/2021 02:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21I0345-01 A 01
Preparation Batch: BJJ0158 — Sample Size: 25 mL
Prepared: 10/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	74.0	ug/L	D

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

Tank-Effluent

21I0345-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/23/2021 09:50
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/12/2021 21:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21I0345-02 A 01
Preparation Batch: BJJ0158 — Sample Size: 25 mL
Prepared: 10/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	10	0.513	1.00	14.1	ug/L	D

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

Tank-Effluent

21I0345-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/23/2021 09:50
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/12/2021 02:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21I0345-02 A 01
Preparation Batch: BJJ0158 — Sample Size: 25 mL
Prepared: 10/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	72.7	ug/L	D

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

AS2-Effluent

21I0345-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/23/2021 09:55
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/12/2021 21:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21I0345-03 A 01
Preparation Batch: BJJ0158 — Sample Size: 25 mL
Prepared: 10/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	10	0.513	1.00	8.04	ug/L	D

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

AS2-Effluent

21I0345-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/23/2021 09:55
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/12/2021 02:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21I0345-03 A 01
Preparation Batch: BJJ0158 — Sample Size: 25 mL
Prepared: 10/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	9.55	ug/L	D

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

AS2-Effluent

21I0345-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 09/23/2021 09:55
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/13/2021 19:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21I0345-04 A 02
Preparation Batch: BJJ0282 — Sample Size: 25 mL — Filtration Batch: BJI0702
Prepared: 10/11/2021 — Final Volume: 25 mL — Filtration Date: 09/24/2021 09:37

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	10	0.680	1.00	1.30	ug/L	D

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

AS2-Effluent

21I0345-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/23/2021 09:55
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/13/2021 19:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 21I0345-04 A 02
Preparation Batch: BJJ0282 — Sample Size: 25 mL — Filtration Batch: BJI0702
Prepared: 10/11/2021 — Final Volume: 25 mL — Filtration Date: 09/24/2021 09:37

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	0.220	2.00	14.6	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJJ0158 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0158-BLK1)					Prepared: 06-Oct-2021 Analyzed: 07-Oct-2021 22:15							
Lead	208	ND	0.0513	0.100	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
LCS (BJJ0158-BS1)					Prepared: 06-Oct-2021 Analyzed: 07-Oct-2021 22:19							
Lead	208	26.3	0.0513	0.100	ug/L	25.0		105	80-120			
Arsenic	75a	24.5	0.0373	0.200	ug/L	25.0		98.1	80-120			

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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BJJ0282 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0282-BLK1)					Prepared: 11-Oct-2021 Analyzed: 13-Oct-2021 19:19							
Lead, Dissolved	208	0.0550	0.0513	0.100	ug/L							J
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
LCS (BJJ0282-BS1)					Prepared: 11-Oct-2021 Analyzed: 13-Oct-2021 19:23							
Lead, Dissolved	208	25.4	0.0513	0.100	ug/L	25.0		101	80-120			
Arsenic, Dissolved	75a	23.8	0.0373	0.200	ug/L	25.0		95.0	80-120			

Golder Associates	Project: Ravensdale	
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Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022

Analytical Report

Golder Associates	Project: Ravensdale	
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Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Oct-2021 16:28

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
Y1	Raised reporting limit due to interference
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

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