REPORT

QUARTERLY MONITORING REPORT
THIRD QUARTER 2024
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 WSP USA Inc. (WSP) 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 2024. The Site is located at 26000 Black Diamond Ravensdale 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. Groundwater and surface water 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 the requirements of Post-Closure Care and Maintenance Permits issued by Public Health – Seattle and King County (Public Health). The third quarter monitoring event was conducted in September 2024.

2.0 BACKGROUND

2.1 Site Background

The following briefly describes 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 cement kiln dust (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 Black Diamond Ravensdale 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 the 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 Interim Remedial Actions

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 the 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 intermittently, 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 continuously 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 CDK 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 monitoring wells were installed near the LDA in July 2005 and are monitored to assess the shallow 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 of the high pH seepage area. The Still Well is a 2-inch-diameter flush-mount well located within the high pH seepage zone west of the LDA.

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.

The LDA surface water sampling locations evaluate the high pH seepage that occurs 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. Field parameters of groundwater discharging from the Portal are monitored semi-annually, and the Portal is sampled annually. 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 DSP 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 semi-annually for water levels and field parameters only.

3.3 LDA Interceptor Trench

The purpose of the Interceptor Trench is to intercept clean shallow groundwater from the southern and southeast end of the LDA. The interceptor trench is approximately 220 feet and 20 feet, it is filled with gravel with a perforated drainage pipe in the bottom that discharges from the hillside to the south of 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 during the period of September 16 to 19, 2024. Table 1 presents depth to water measurements and elevations. Groundwater elevation contour maps are provided in Figures 3A-C.

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, oxidation-reduction potential (ORP), conductivity, dissolved oxygen (DO), and temperature probes
- Hach 2100Q 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

- Interceptor Trench samples are 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 and the laboratory analytical data packages are provided in Appendix C. Sampling Integrity Data Sheets (SIDS) are provided in Appendix D.

4.1.3 LDA Groundwater Sampling

During the period of September 16 to 19, 2024, WSP sampled groundwater from shallow groundwater monitoring wells outside of the LDA (MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, MW-6A, MW-7A, MW-9A, MW-10A, and Still Well). Shallow groundwater monitoring well MW-8A was dry and no sample was collected.

The following methods and procedures were used to collect 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-7A,, MW-9A, and MW-10Awas purged at a rate between approximately 100 and 500 milliliters (mL) per minute.
- 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, one 500-mL bottle preserved with nitric acid and one 1-Liter (L) unpreserved bottle were collected. The samples were then labeled and placed in a cooler with ice.
- The pH of the water in some of the wells is occasionally greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2. To meet this requirement, the pH of the LDA groundwater samples collected for metals analysis was checked at the time of sample receipt at the laboratory and additional nitric acid was added until the pH was less than 2 if necessary.

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 September 16 and 17, 2024, WSP visited the South Pond and Weir surface water monitoring locations but was unable to collect sample because both locations were dry. On September 16, 2024, WSP collected samples from the Infiltration Ponds surface water monitoring location. The following methods and procedures were used to collect 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, one 500-mL bottle preserved with nitric acid and one unpreserved 1-L bottle were collected. The samples were labeled and placed in a cooler with ice.
- The pH of the LDA surface water samples is occasionally greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2. To meet this requirement, the pH of the LDA surface water samples collected for metals analysis was checked at the time of sample receipt at the laboratory and additional nitric acid was added until the pH was less than 2 if necessary.

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 DSP Groundwater Sampling

During the period of September 17 to 19, WSP sampled groundwater from the DSP groundwater monitoring wells (MWB-1SDSP, MWB-1DDSP, MWB-2DSP, MWB-5DSP, and MWB-6DSP) and the Portal. Monitoring well MWB-4SDSP could not be safely accessed due to wasp nest. 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 the dedicated discharge tubing connected to the dedicated bladder pump, water from wells MWB-1SDSP, MWB-1DDSP, MWB-2DSP, MWB-5DSP, and MWB-6DSP was purged at a rate between approximately 100 and 500 mL per minute.
- 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.

No groundwater samples were collected for analytical testing during this period.

4.1.6 LDA Interceptor Trench Sampling

On September 16, 2024, WSP sampled groundwater from the Interceptor Trench outfall. The following methods and procedures were used to collect the sample:

- Field pH, turbidity, and 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 3.

5.0 RESULTS

Analytical results from the September 2024 monitoring round are presented in Table 2. Table 3 presents the current and historical summary of the Interceptor Trench monitoring data. 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 (Golder 2021). 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. The data validation and raw analytical data packages provided by the laboratory are provided in Appendix C. 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 began start-up operations 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.

Ecology's Water Quality Program has indicated that discharges from the treatment system to the Infiltration Ponds should be regulated under an individual State Waste Discharge Permit (SWDP). Reserve Silica submitted an application to obtain a SWDP in December 2024. State Waste Discharge Permit No. ST0501373 was issued as a temporary permit effective February 14, 2025. Ecology anticipates finalizing the State Waste Discharge Permit in the summer of 2025.

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 8.5. CO_2 sparging continues until the pH reduces to 8. The sparged water is pumped back into the mixing tank to maintain the neutralized 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 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 WSP engineer's cell phones if readings outside of the set ranges occur allowing for response and troubleshooting. 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 downtime 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 4 provides the 2024 third quarter laboratory analytical data for samples collected: before the pH treatment tank (influent), pre-iron-based adsorption media, and post-iron-based adsorption media. The laboratory analytical report is provided in Appendix C.

The treatment system has been effective in reducing the impacts to groundwater in the immediate vicinity of the Infiltration 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 and efficiency and achieve Site-specific cleanup standards that are protective of human health and the environment.

7.0 LIMITATIONS

WSP 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. WSP USA Inc. is not responsible for any data that were inaccurately reported by others and reproduced here.

8.0 REFERENCES

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TABLES

Table 1: Third Quarter 2024 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 Groundwater	MW-1A	9/16/2024	44	28-43	2-26	2	613.44	36.11	577.33
	MW-2A	9/16/2024	40	25-40	2-23	2	607.21	30.40	576.81
	MW-3A	9/17/2024	20	4-20	2-4	2	689.11	11.40	677.71
	MW-4A	9/17/2024	20	5-20	2-4	2	705.45	8.33	697.12
	MW-5A	9/16/2024	40	25-40	2-23	2	611.23	34.45	576.78
	MW-6A	9/16/2024	39	24-39	2-22	2	608.95	32.34	576.61
	MW-7A	9/17/2024	20	10-20	2-7	2	592.69	16.38	576.31
	MW-8A	9/17/2024	26	16-26	2-13	2	601.49	DRY	DRY
	MW-9A	9/17/2024	13	8-13	2-5	2	697.29	7.55	689.74
	MW-10A	9/17/2024	29	9-29	2-6	2	698.02	15.56	682.46
LDA - Bedrock Groundwater	MWB-1LDA	9/18/2024	135	115-135	2-105	2	704.68	23.85	680.83
	MWB-2LDA	9/18/2024	125	110-125	2-103	2	741.66	36.90	704.76
	MWB-3LDA	9/18/2024	145	125-145	2-115	2	744.19	4.55	739.64
DSP - Bedrock Groundwater	MWB-1SDSP	9/18/2024	160	150-160	138-148	2	936.29	46.01	890.28
	MWB-1DDSP	9/18/2024	265	255-265	243-253	2	935.37	58.65	876.72
	MWB-2DSP	9/19/2024	258	238-258	-	2	934.82	199.64	735.18
	MWB-4SDSP	9/18/2024	43	32-42.8	-	2	932.41	Could not be accessed.	
	MWB-5DSP	9/18/2024	83	73-83	2-61	2	935.05	27.07	898.28
	MWB-6DSP	9/19/2024	195	120-195	2-108	2	918.67	23.55	898.08

-	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 2024 Field Parameters and Analytical Data

Sample Area	Sample Location ID	Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/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	Arsenic, Total	Potassium, Total	Lead, Total	Vanadium, Total
Preliminary Cleanup Level[a]			-	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.5	80
LDA - Shallow Groundwater	MW-1A	9/16/2024	613.44	36.11	577.33	9.5	366.8	9.72	174.4	0.64	6.51	205	0.668	0.996	10700	0.103 U	0.585 J
	MW-2A	9/16/2024	607.21	30.40	576.81	10.0	667.0	9.64	200.7	2.02	6.67	396	0.934	1.28	19700	0.103 U	1.04
	MW-2A Duplicate (MW-45A)	9/16/2024	-	-	-	-	-	-	-	-	-	396	0.886	1.21	21200	0.103 U	1.06
	MW-3A	9/17/2024	689.11	11.40	677.71	11.9	1206.0	6.77	199.9	9.95	6.60	779	1.09	11	90500	0.286	0.785 J
	MW-4A	9/17/2024	705.45	8.33	697.12	12.2	576.0	6.20	132.0	1.90	6.38	304	0.202 U	0.482	931	0.103 U	2.42 J
	MW-5A	9/16/2024	611.23	34.45	576.78	10.8	1940.0	7.65	228.6	4.82	7.54	1340	6.16	4.56	986000	0.244	1.82
	MW-6A	9/16/2024	608.95	32.34	576.61	11.4	2433.0	8.03	235.6	2.04	7.74	1830	6.33	3.87	495000	0.103 U	1.76
	MW-7A	9/17/2024	592.69	16.38	576.31	15.2	762.0	7.57	175.9	2.53	6.97	445	1.29	1.7	28100	0.103 U	1.31
	MW-8A	9/17/2024	601.49	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	MW-9A	9/17/2024	697.29	7.55	689.74	13.2	593.0	7.28	161.8	1.02	6.96	321	0.234 J	0.54	2350	0.103 U	1
	MW-10A	9/17/2024	698.02	15.56	682.46	10.7	287.2	8.25	153.0	0.87	6.70	182	0.202 U	1.2	1770	0.103 U	1.34
	Still Well	9/17/2024	-	-	-	14.6	3389.0	8.00	165.4	18.60	12.49	1640	65.7	35.9	453000	5.94	4.82
LDA - Bedrock Groundwater[b]	MWB-1LDA	9/18/2024	704.68	23.85	680.83	11.0	363.3	7.57	131.2	0.42	7.49	-	-	-	-	-	-
	MWB-2LDA	9/18/2024	741.66	36.90	704.76	-	-	-	-	-	-	-	-	-	-	-	-
	MWB-3LDA	9/18/2024	744.19	4.55	739.64	14.0	227.0	7.50	123.4	1.66	7.09	-	-	-	-	-	-
LDA- Surface Water	South Pond	9/16/2024	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Weir	9/17/2024	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Infiltration Ponds	9/16/2024	741.66	-	-	17.4	2932.0	8.39	228.9	24.30	8.30	2080	14.4	16.3	708000	15.6	2.63
	Infiltration Ponds Duplicate (MW-35A)	9/16/2024	744.19	-	-	-	-	-	-	-	-	2020	14.1	16.1	736000	13.700	2.67
DSP - Bedrock Groundwater[b]	MWB-1SDSP	9/18/2024	936.29	46.01	890.28	11.7	1523.0	8.07	155.4	1.01	6.54	-	-	-	-	-	-
	MWB-1DDSP	9/18/2024	935.37	58.65	876.72	14.8	1033.0	8.91	151.5	2.74	7.16	-	-	-	-	-	-
	MWB-2DSP	9/19/2024	934.82	199.64	735.18	11.9	540.0	9.23	162.1	1.07	6.96	-	-	-	-	-	-
	MWB-4SDSP	9/18/2024	932.41	Could not be accessed.								-	-	-	-	-	-
	MWB-5DSP	9/18/2024	935.05	27.07	898.28	13.0	778.0	7.82	143.3	2.96	7.09	-	-	-	-	-	-
	MWB-6DSP	9/19/2024	918.67	23.55	898.08	11.5	454.9	8.03	136.9	0.71	6.74	-	-	-	-	-	-
	Portal	9/17/2024	-	-	-	10.6	714.0	8.59	187.8	55.50	7.18	-	-	-	-	-	-

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

-	Not measured or not collected.
*	Depth to water (DTW) measurements for all shallow wells collected on the same day; date noted is sampling date.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
b	LDA and DSP bedrock wells are monitored semi-annually
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).
DRY	Location is dry. Unable to collect field parameters or samples.

TOC	Top of casing inside PVC well
°C	Degrees Celsius
feet bmp	Feet below measuring point
feet NAVD88	Feet in NAVD88 datum
ug/L	Micrograms per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit
µmhos/cm	Micromhos per centimeter

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	277
-	-	-	-	-	-
31-Mar-14	11:12	1	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	7.2	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	0.31	7.54	2.05	290
4-Aug-15	12:20	0.06	7.61	1.51	268
3-Nov-15	13:15	0.8	7.38	36.9	320
8-Feb-16	10:40	1.9	7.23	9.29	279
2-May-16	16:00	0.5	7.77	22.5	431
22-Aug-16	11:00	0.08	7.78	3.34	302
1-Nov-16	11:40	2.4	8.16	96.3	345
2-Feb-17	9:25	4.5	7.61	0.85	514
30-May-17	15:45	4.5	7.33	4.04	324
18-Aug-17	8:50	0.1	7.57	34	300
10-Nov-17	11:20	1.1	6.81	12.9	365
28-Feb-18	10:16	2.22	7.02	37.9	381
2-May-18	11:45	1.18	7.46	2.89	339
22-Aug-18	10:00	0.13	7.32	19.3	287
7-Nov-18	14:40	0.33	7.24	3.05	342
13-Mar-19	11:31	1.43	7.61	19.4	313
9-May-19	10:30	0.88	7.77	8.9	394
26-Aug-19	18:15	0.42	7.25	26.4	361
14-Nov-19	13:30	0.42	7.05	34.5	447
13-Feb-20	12:35	1.58	6.95	1.76	306
13-Aug-20	12:00	0.21	7.32	20.8	339
10-Dec-20	12:22	3.8	7.7	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
7-Jan-22	11:58	9.2	7.43	6.23	288
17-Mar-22	15:25	3.5	11.75^	3.24	368
22-Jun-22	14:05	2.2	6.94	6.21	415
23-Sep-22	14:46	0.11	7.54	4.77	330
14-Dec-22	9:20	0.79	7.19	2.27	279
13-Mar-23	9:25	2.25	6.9	1.07	232
27-Jun-23	9:55	0.33	7.05	7.31	381
7-Sep-23	14:38	-	7.68	21.5	295
12-Dec-23	15:28	4.76	6.98	1.51	244
6-Mar-24	14:30	3.17	8.39	2.31	359
17-Jun-24	15:40	1.98	7.04	8.04	448
16-Sep-24	14:15	0.15	8.02	2.53	328

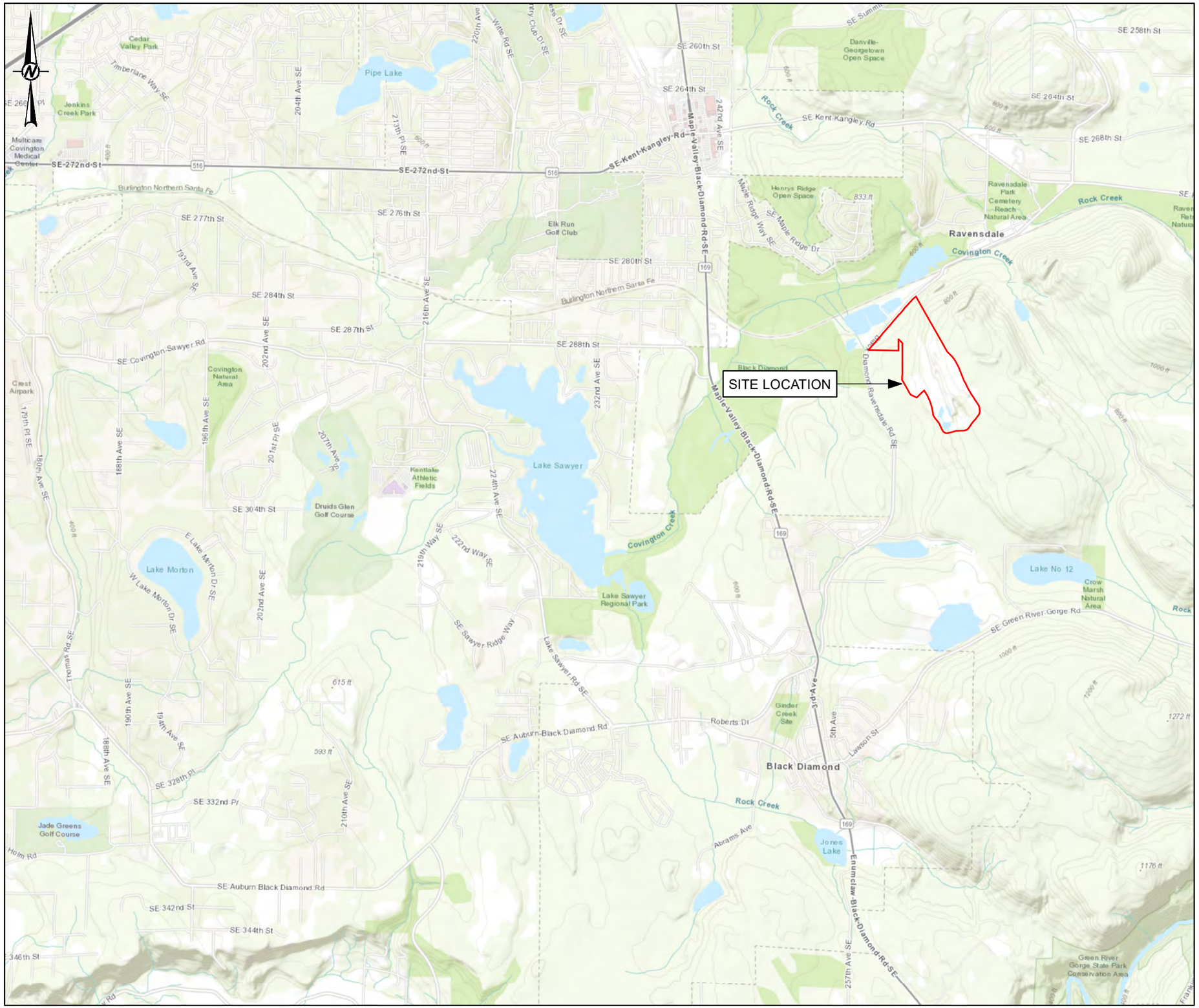
-	Not measured or not available
^	pH values error, due to faulty pH probe.
gpm	Gallons per minute
NTU	Nephelometric Turbidity Unit
mg/L	Milligrams per liter

Table 4: Third Quarter 2024 Treatment System Metals Monitoring

Sample Location	Sample ID	Date Sampled	pH (standard units)	Total Antimony (ug/L)	Dissolved Antimony (ug/L)	Total Arsenic (ug/L)	Dissolved Arsenic (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Vanadium (ug/L)	Dissolved Vanadium (ug/L)
pH Tank Influent	Tank-Influent	19-Sep-24	-	28.4	31.1	16.0	17.0	73.4	67.1	2.26	2.30
pH Tank Effluent/Filter Media Influent	Sand-Effluent	19-Sep-24	-	27.0	27.4	14.8	14.3	23.2	9.71	2.17	1.92
Filter Media Effluent	As-Effluent	19-Sep-24	7.09	27.5	30.6	15.2	10.01	29.9	2.58	2.83	1.03

-	Not measured or not available
ug/L	Micrograms per liter
J	Data validation code; estimated value

FIGURES



KEY MAP

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

YYYY-MM-DD	2025-03-05
DESIGNED	TL
PREPARED	TL/KAS
REVIEWED	JX
APPROVED	GZ

PROJECT NO.	PHASE	REV.	FIGURE
31406578.8318	300	0	1

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

0 1in

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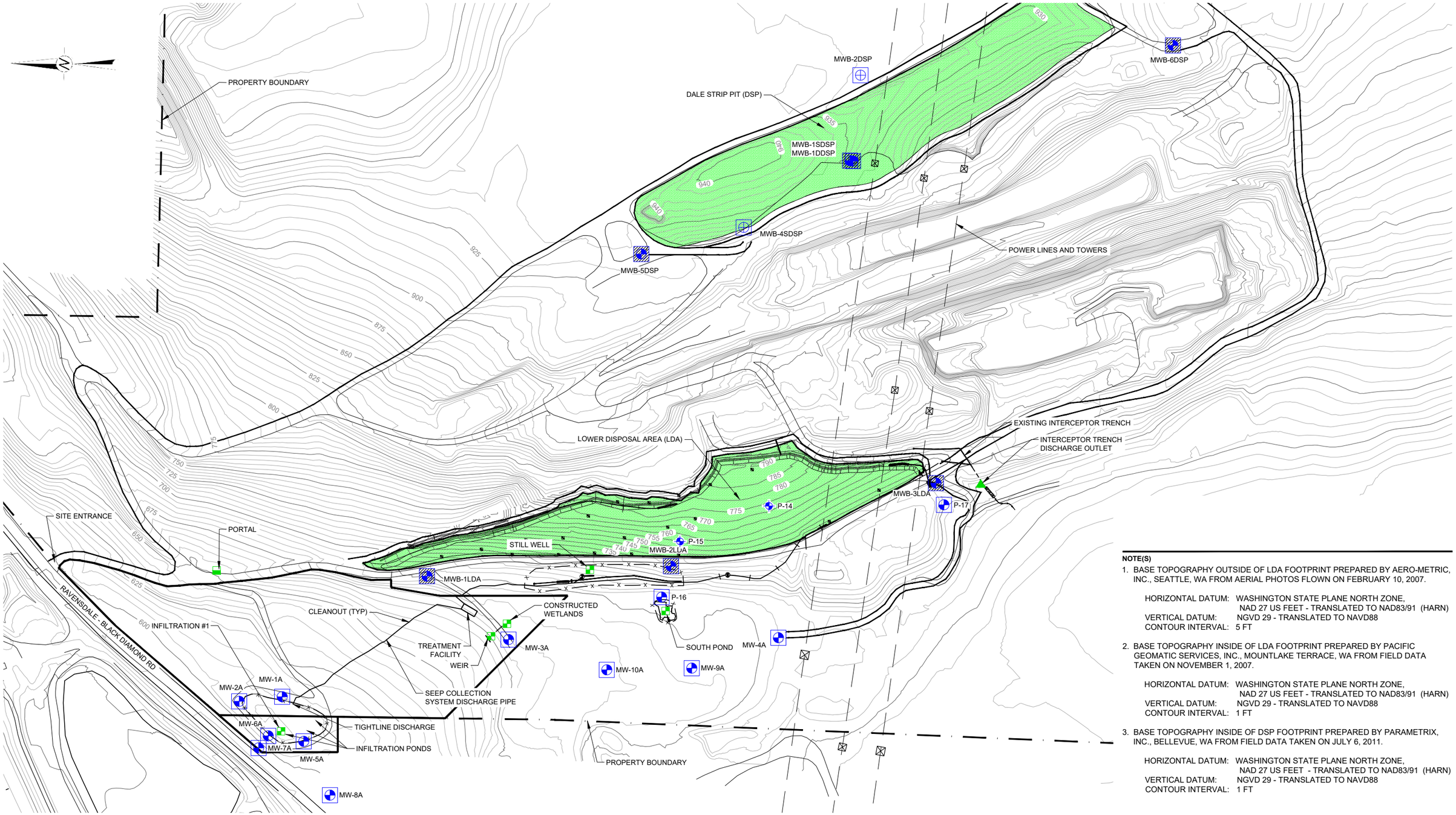

NOTE(S)

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

LEGEND

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

0 150 300
1" = 150' FEET

CLIENT
HOLCIM

CONSULTANT
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.	Task	REV.	FIGURE
31406578.8318	300	0	2

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

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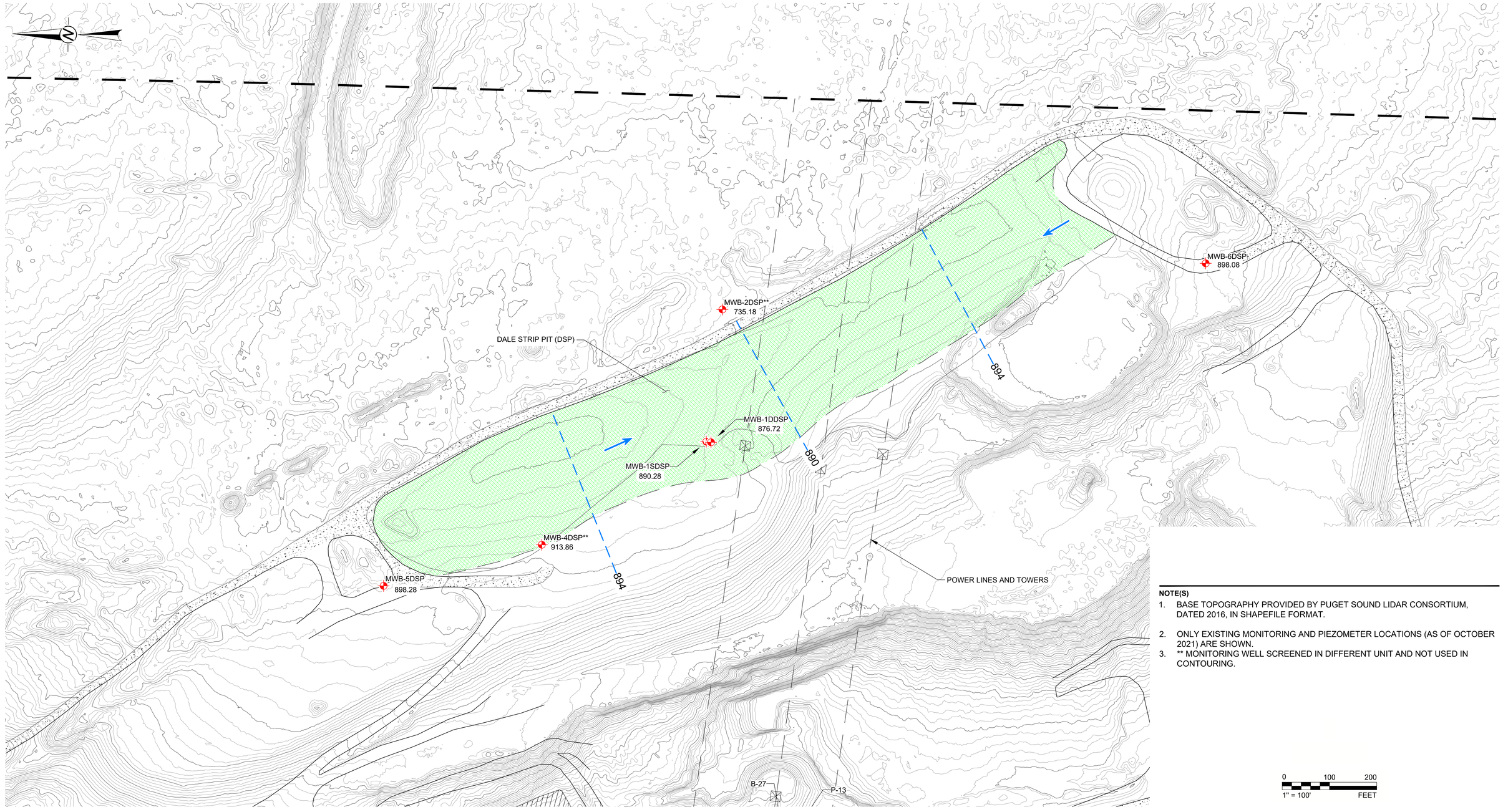

NOTE(S)

1. BASE TOPOGRAPHY PROVIDED BY PUGET SOUND LIDAR CONSORTIUM, DATED 2016, IN SHAPEFILE FORMAT.
2. ONLY EXISTING MONITORING AND PIEZOMETER LOCATIONS (AS OF OCTOBER 2021) ARE SHOWN.
3. ** MONITORING WELL SCREENED IN DIFFERENT UNIT AND NOT USED IN CONTOURING.

0 100 200
1" = 100' FEET

LEGEND

COVER AREA	P-1	GOLDER PIEZOMETER	CONCEPTUAL GROUNDWATER FLOW DIRECTION
MW-1A	ALLUVIAL MONITORING WELL	LDA SURFACE WATER SAMPLING LOCATION	
MWB-1DDSP	BEDROCK MONITORING WELL	DSP BEDROCK SAMPLING LOCATION (PORTAL)	
P-14	LDA MONITORING WELL	INTERCEPTOR TRENCH SAMPLING LOCATION	
AMW-1	PLANT SITE MONITORING WELLS	FENCE LINE	

CLIENT
HOLCIM

CONSULTANT
wsp

YYYY-MM-DD	2025-02-13
DESIGNED	TK
PREPARED	TR
REVIEWED	DE
APPROVED	GZ

PROJECT
SEPTEMBER, 2024 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
DSP BEDROCK GROUNDWATER ELEVATIONS

PROJECT NO.	TASK	REV.	FIGURE
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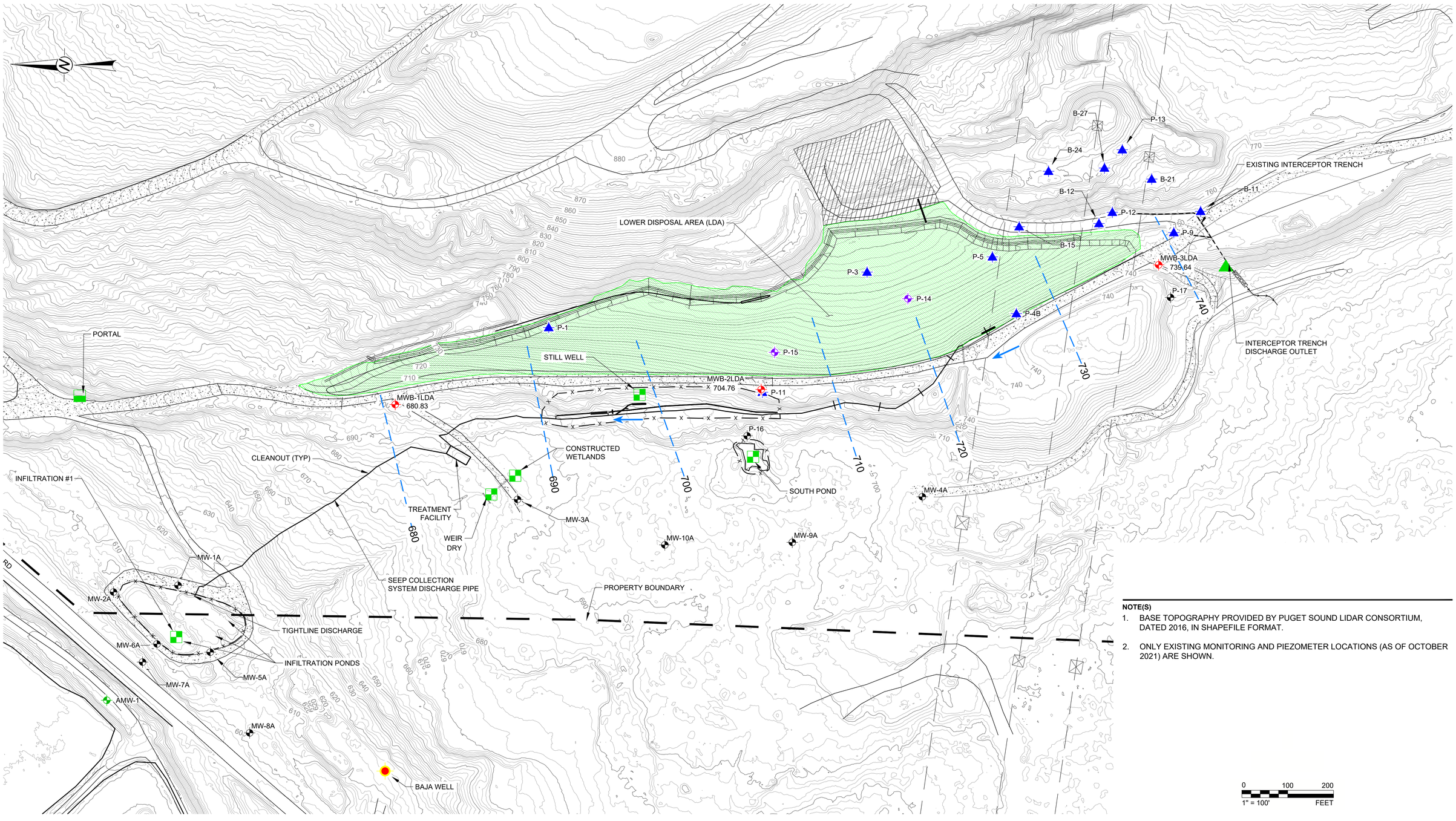

NOTE(S)

1. BASE TOPOGRAPHY PROVIDED BY PUGET SOUND LIDAR CONSORTIUM, DATED 2016, IN SHAPEFILE FORMAT.
2. ONLY EXISTING MONITORING AND PIEZOMETER LOCATIONS (AS OF OCTOBER 2021) ARE SHOWN.

0 100 200
1" = 100' FEET

LEGEND

	COVER AREA	P-1	GOLDER PIEZOMETER		PRIVATE WELL
MW-1A	ALLUVIAL MONITORING WELL		LDA SURFACE WATER SAMPLING LOCATION		CONCEPTUAL GROUNDWATER FLOW DIRECTION
MWB-1DDSP	BEDROCK MONITORING WELL		DSP BEDROCK SAMPLING LOCATION (PORTAL)		
P-14	LDA MONITORING WELL		INTERCEPTOR TRENCH SAMPLING LOCATION		
AMW-1	PLANT SITE MONITORING WELLS	x x	FENCE LINE		

CLIENT
HOLCIM

CONSULTANT
wsp

YYYY-MM-DD	2025-02-13
DESIGNED	TK
PREPARED	TR
REVIEWED	DE
APPROVED	GZ

PROJECT
SEPTEMBER, 2024 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
LDA BEDROCK GROUNDWATER ELEVATIONS

PROJECT NO.	TASK	REV.	FIGURE
31406578.8318	300	0	3B

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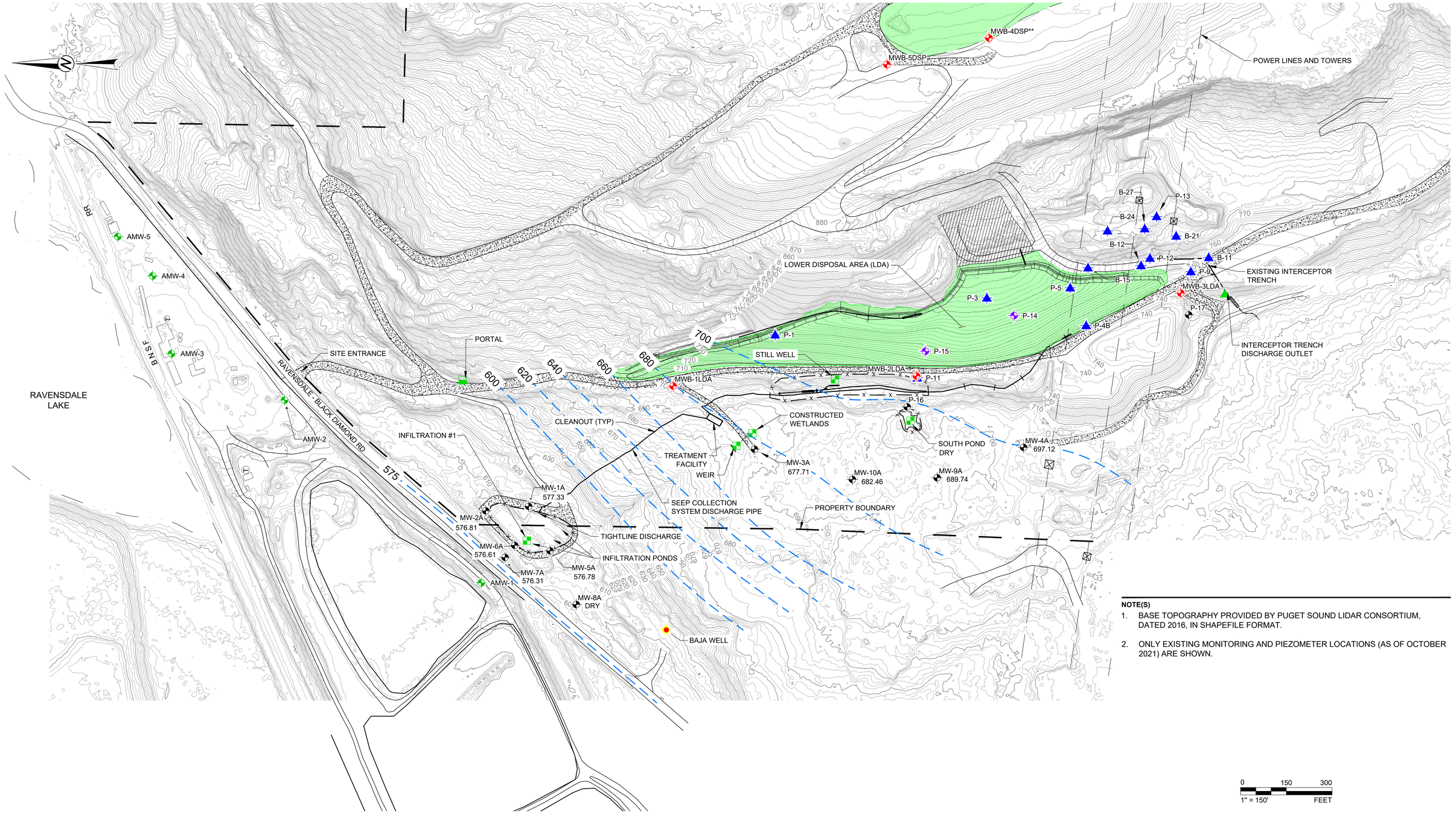

NOTE(S)

1. BASE TOPOGRAPHY PROVIDED BY PUGET SOUND LIDAR CONSORTIUM, DATED 2016, IN SHAPEFILE FORMAT.
2. ONLY EXISTING MONITORING AND PIEZOMETER LOCATIONS (AS OF OCTOBER 2021) ARE SHOWN.

0 150 300
1" = 150' FEET

LEGEND

	COVER AREA	P-1	GOLDER PIEZOMETER		PRIVATE WELL
MW-1A	SHALLOW MONITORING WELL		LDA SURFACE WATER SAMPLING LOCATION		CONCEPTUAL GROUNDWATER FLOW DIRECTION
MWB-1DDSP	BEDROCK MONITORING WELL		DSP BEDROCK SAMPLING LOCATION (PORTAL)		
P-14	LDA MONITORING WELL		INTERCEPTOR TRENCH SAMPLING LOCATION		
AMW-1	PLANT SITE MONITORING WELLS	— x — x —	FENCE LINE		

CLIENT
HOLCIM

CONSULTANT
wsp

YYYY-MM-DD	2025-03-03
DESIGNED	TK
PREPARED	TR
REVIEWED	DE
APPROVED	GZ

PROJECT
SEPTEMBER, 2024 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
SHALLOW GROUNDWATER ELEVATIONS

PROJECT NO.	TASK	REV.	FIGURE
31406578.8318	300	0	3C

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 - Infiltration Ponds #1
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters						Gen-Chem	Metals (ug/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)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
1-Feb-05	8.17	1315	-	-	8.13	9.95	874	-	84.9	4.99	-	-
9-Mar-05	14.04	1183	-	-	23.00	9.59	960	-	96.2	3.92	-	-
5-Apr-05	11.00	1115	-	-	43.70	9.80	800	-	62.3	3.21	-	-
10-May-05	14.91	1275	-	-	564.00	9.83	844	-	76.5	5 U	-	-
7-Jun-05	15.11	1140	-	-	239.00	9.61	804	-	84.3	5 U	-	-
15-Jul-05[a]	23.56	1276	-	-	94.40	9.30	1100	-	92.5	4.14	-	-
15-Jul-05[b]	-	-	-	-	-	-	874	-	99.9	3.82	-	-
9-Aug-05[a]	19.05	1744	-	-	57.20	9.44	1000	-	123	5.1	-	-
9-Aug-05[b]	-	-	-	-	-	-	1030	-	140	6.12	-	-
14-Sept-05[a]	13.59	1154	-	-	99.80	8.97	790	-	110	3.54	-	-
14-Sept-05[b]	-	-	-	-	-	-	806	-	118	5.18	-	-
5-Oct-05	14.82	970	-	-	82.70	8.98	736	-	89.3	2.83	-	-
9-Nov-05	8.43	1285	-	-	135.00	8.83	970	-	46	10 U	-	-
9-Dec-05	2.12	1361	-	-	14.20	9.71	980	-	64.6	3.11	-	-
19-Jan-06	6.66	728	7.96	-	64.70	10.13	470 J	-	40.7	2.29	-	-
16-Feb-06	2.63	624	9.75	30.3	25.20	8.54	530 J	-	13.3	1 U	-	-
15-Mar-06	7.16	639	11.61	236.8	23.10	9.22	530 J	-	22.5	1 U	-	-
7-Apr-06	11.91	1013	10.81	27.8	18.80	9.98	780	-	63.8	3.24	-	-
16-May-06	15.58	1160	7.58	50.6	16.50	9.57	950	-	77.9	2.49	-	-
23-Jun-06	18.63	1261	7.41	-	126.00	9.85	920	-	70.7	3.65	-	-
20-Jul-06	20.65	932	5.36	-35.1	279.00	8.94	980	-	108	3.48	-	-
22-Aug-06	15.65	860	7.64	86.5	218.00	9.22	760	-	116	3.84	-	-
26-Sep-06	21.86	903	8.98	-72.8	263.00	8.89	820	-	75.8	3.06	-	-
26-Oct-06	11.04	702	9.97	90.4	221.00	8.56	760	-	68.3	1.66	-	-
15-Nov-06	7.73	715	9.21	149.2	33.60	9.07	500	-	20.8	2.29	-	-
20-Dec-06	4.98	1082	9.05	86.3	9.29	9.78	680	-	51.3	2.67	-	-
24-Jan-07	2.12	1058	10.71	130.4	20.50	9.97	640 J	-	66.1	7.58	-	-
12-Feb-07	10.10	1218	12.40	-61.8	103.00	9.98	860	-	90.1	4.49	-	-
27-Mar-07	7.94	772	9.67	13.3	25.50	8.27	540 J	-	49.8	2.74	-	-
18-Apr-07	7.52	2418	9.23	84.4	58.10	11.73	1400	-	79.2	10.5	-	-
31-May-07	15.45	1879	6.47	-92.2	3.15	9.79	1300	-	165	8.11	-	-
20-Jun-07	24.18	1925	10.88	-52.1	251.00	10.24	1300 J	-	144	5.34	-	-
31-Jul-07	19.05	1418	5.97	-36.1	128.00	9.81	1200	-	140	7.23	-	-
29-Aug-07	18.00	1193	5.60	-35.4	158.00	9.29	1300 J	-	164	7.01	-	-
27-Sep-07	14.97	987	5.44	45.9	186.00	8.99	970	-	196	5.49	-	-
26-Oct-07	2.66	504	6.02	63.1	282.00	8.64	770 J	-	42.9	2.25	-	-
30-Nov-07	1.86	955	9.77	190.1	163.00	10.02	570	-	48.9	1.62	-	-
12-Dec-07	4.22	790	11.11	126.8	56.00	9.40	520	-	34.3	1.67	-	-
24-Jan-08	2.12	875	19.35	142.0	-	8.68	640	-	42.8	1.66	-	-
28-Feb-08	-	-	-	-	25.60	-	510	-	41.3	2.66	-	-
25-Mar-08	5.27	937	14.46	91.0	86.80	9.60	630	-	50.2	2.15	-	-
29-Apr-08	9.02	1079	10.56	190.8	61.30	9.87	670 J	-	66	2.87	-	-
20-May-08	15.42	1191	7.58	160.0	91.40	9.75	820	-	85.9	4.85	-	-
18-Jun-08	12.94	1124	9.62	167.3	76.90	9.65	810 J	-	77.6	3.67	-	-
26-Aug-08	15.95	880	3.75	53.5	490.00	8.00	650 J	-	76.9	1.64	144000	-
20-Nov-08	6.91	897	7.02	183.5	376.00	10.22	960	-	87.2	4.21	313000	-
12-Feb-09	1.29	-	13.72	-	10.20	10.52	800	-	118	5.84	271000	-
19-May-09	11.90	862	6.52	71.9	133.00	9.59	840 J	-	91.3	3.99	238000	-
18-Nov-09	5.70	852	6.61	185.9	68.00	9.88	490	-	40	4.4	160000	-
15-Dec-09	2.30	1162	8.22	460.1	63.30	9.97	640	-	71	7.2	220000	-
24-Mar-10	13.00	1299	5.83	408.2	13.00	10.48	1000	-	140	8.5	340000	-
17-Jun-10	12.00	947	4.45	332.1	33.60	10.56	540	-	62	6.2	220000	-
22-Sep-10	15.60	1736	3.14	342.5	33.00	9.84	1300	-	130	21	360000	-
8-Dec-10	5.40	1382	7.73	371.1	12.10	10.75	870	-	100	12	300000	-
29-Mar-11	9.60	627	5.16	577.6	19.80	11.05	760 J	-	78	3.1	270000	-
21-Jun-11	21.00	1778	5.46	239.1	11.60	10.44	1700 J	-	78	11	340000	-
27-Sep-11	14.80	1382	3.98	239.8	33.40	9.58	1600	-	120	13	670000	-
14-Dec-11	3.10	1046	5.60	281.7	15.70	9.93	1100	-	87	14	330000	-
20-Mar-12	6.10	986	11.04	271.1	11.70	10.32	500	-	71	3.3	180000	-
19-Jun-12	14.80	862	7.83	352.2	38.80	9.57	500	-	64	3.7	180000	-
20-Sep-12	12.40	1961	1.81	419.0	10.30	9.43	4600 J	-	130	2.1	440000	-
19-Dec-12	4.10	1320	10.11	303.1	5.86	9.69	700	-	75	4.3	250000	-

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

Date Sampled	Field Parameters						Gen-Chem	Metals (ug/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)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
25-Feb-13	7.10	1963	9.30	234.7	26.60	11.30	1000	-	90	6	370000	-
22-May-13	10.50	4380	7.72	411.7	202.00	12.56	1400	-	25	11	530000	-
21-Aug-13	20.10	12850	1.24	-2.3	18.20	12.18	3430	-	106	47.5	1180000	-
20-Nov-13	5.70	1198	8.03	131.9	22.20	10.23	704	-	41.3	6.2	260000	-
1-Apr-14	9.80	1708	9.77	136.4	8.79	12.26	832	-	24.1	3	317000	-
23-May-14	12.63	6574	8.63	120.8	-	12.61	2120	-	4.8	35.4	811000	-
13-Aug-14	18.99	3273	6.29	77.7	89.00	12.34	1660	-	71.4	6.3 J	548000	-
11-Nov-14	8.80	578	3.55	179.2	62.50	12.73	2000	-	56.7	20.4	739000	-
11-Feb-15	9.70	487	9.97	66.2	42.00	9.40	337	-	9.1	0.9	87700	-
4-May-15	14.30	4210	5.60	281.2	7.67	12.53	1670	-	35.3	7.4	589000	-
5-Aug-15	19.90	4890	5.14	18.8	89.80	11.79	3080	-	85.4	18.1	1150000	-
3-Nov-15	9.20	760	6.39	129.9	34.60	9.78	707	-	23.5	5.3	235000	-
9-Feb-16	10.20	-	10.29	100.3	8.01	12.78	1330	-	5.3	24.8	530000	-
2-May-16[d]	-	-	-	-	-	-	2490	-	24	37 J-	996000	-
23-Aug-16	19.30	4250	3.95	386.5	46.30	11.76	2970	-	105	14.3	989000	-
1-Nov-16	11.70	229	9.26	185.2	48.90	10.33	508	-	12.6	0.792	164000	-
1-Feb-17	2.40	8890	10.78	26.1	3.17	13.36	2220	-	10.1	46.8	854000	-
30-May-17	14.70	6800	56.90	17.7	1.38	12.73	1720	-	1.75	31.6 J+	759000	-
17-Aug-17	18.10	5410	3.88	-19.5	14.90	11.93	3080	-	62.6	32.8	1150000	-
10-Nov-17	7.90	2016	7.72	64.4	30.70	12.00	1520	-	63	32.2	578000	-
27-Feb-18	5.70	5062	8.76	42.0	3.74	12.28	1620	-	15	54.6	678000	-
1-May-18	12.30	6620	5.25	-	1.94	12.73	2070	-	2.42	30.1 J+	745000	-
21-Aug-18	23.85	5058	2.95	106.0	5.62	11.64	3090	-	77.3	28.8	1200000	-
6-Nov-18	11.70	1078	3.50	-5.4	46.90	8.48	1180	-	6.03	5.44	359000 J+	-
13-Mar-19	3.90	331	8.08	183.7	29.10	10.72	455	-	11.9	2.21	185000	-
8-May-19	17.20	6113	6.38	6.4	6.17	12.39	2040	-	7.7	26.8	830000	-
26-Aug-19	24.22	4177	2.47	Note 1	7.21	9.12	2840	-	17.2 J	5.27 J	1020000	-
13-Nov-19	8.70	2523	1.61	-201.7	33.00	8.67	1930	-	32.5	4.44	726000	-
12-Feb-20	7.80	971	7.99	150.3	16.00	7.92	836	-	14.3	3.96	243000	-
12-Aug-20	18.30	3655	4.33	123.5	5.74	8.98	2570	-	20.8	2.59	988000	-
9-Dec-20	8.30	740	7.80	202.0	18.40	8.21	632	-	14.9	5.11	207000	-
3-Mar-21	8.30	1446	7.87	217.0	15.50	8.56	1310	-	35.3	6.11	509000	-
9-Jun-21	15.10	2963	4.88	174.9	4.37	8.79	2400	-	23.7	1.51	923000	-
13-Oct-21	9.30	2563	4.73	34.2	39.30	8.84	2610 J-	16.1	19.7	6.12	831000	3.11
5-Jan-22	1.20	510	9.85	236.4	14.00	8.01	679	6.32	12.1	6.31	226000	3.36
16-Mar-22	11.10	786	10.41	172.1	12.8	7.45	733	7.59	10.6	4.77	236000	1.82
23-Jun-22	14.90	1982	2.58	156.8	5.3	8.34	1650	8.5	10.2	3.44	549000	0.97
28-Sep-22	16.20	3251.00	7.06	-49.10	3.18	8.75	2730 J	24	5.88	1.11	1040000	0.516
5-Jan-23	8.80	1047.00	8.40	191.00	8.47	8.16	1560	18.8	26.7	2.49	567000	4.45
13-Mar-23	7.20	1831.00	11.21	177.80	31.80	8.29	1050	8.27	16.3	5.8	401000	4
28-Jun-23	19.90	3514.00	4.58	91.00	4.73	8.64	2270	8.82	8.35	1.37	879000	0.935 J
8-Sep-23	19.50	3882.00	2.26	48.50	14.50	8.96	2550 J-	10.2	11.5	3.91	929000	0.929
15-Dec-23	6.90	2395.00	9.94	163.00	3.19	8.49	1240	22.7	15.3	2.16	447000	3.31
4-Mar-24	6.80	1477.00	7.24	237.40	9.50	8.17	1370 J	13.3	21.8	2.86	471000	3.16
18-Jun-24	15.80	3495.00	10.86	173.00	4.69	8.41	1370 J	9.87	9.58	0.162 J	775000	0.716
16-Sep-24	17.40	2932.00	8.39	228.90	24.30	8.30	2080	14.4	16.3	15.6	708000	2.63

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not analyzed or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the I
a	North Creek Analytical, Inc.
b	Severn Trent Laboratories
c	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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	
mV	
NTU	

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

Date Sampled	Field Parameters							Gen-Chem	Metals (ug/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)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.5	-	80
1-Feb-05	8.47	2205	-	-	6.24	10.23	-	1440	-	149	10.7	-	-
9-Mar-05	11.38	2054	-	-	7.80	10.15	2.64	1630	-	200	11.9	-	-
5-Apr-05	7.7	2169	-	-	7.99	10.42	10.00	1420	-	129	8.61	-	-
10-May-05	14.1	1912	-	-	562.00	9.87	25.00	1210	-	105	7.63	-	-
7-Jun-05	15.74	2588	-	-	11.60	10.03	6.82	1570	-	138	10.1	-	-
15-Jul-05[a]	20.38	3184	-	-	8.91	10.36	0.94	3200	-	192	9.98	-	-
15-Jul-05[b]	-	-	-	-	-	-	-	1990	-	189	10.8	-	-
9-Aug-05[a]	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	-
9-Aug-05[b]	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	-
14-Sept-05[a]	15.60	3792	-	-	14.50	9.92	0.07	2800	-	208	57.8	-	-
14-Sept-05[b]	-	-	-	-	-	-	-	2730	-	223	73.3	-	-
5-Oct-05	12.96	3237	-	-	4.99	9.89	0.32	2150	-	170	12.5	-	-
9-Nov-05	8.40	2545	-	-	13.80	9.64	7.50	1900	-	78.2	10 U	-	-
9-Dec-05	3.34	1377	-	-	8.03	10.43	5.00	1700	-	130	6.12	-	-
19-Jan-06	7.37	1424	7.92	-	12.20	10.61	7.50	1000 J	-	89.5	4.81	-	-
16-Feb-06	3.74	1680	12.19	*	14.60	10.78	7.50	1400 J	-	105	5.46	-	-
15-Mar-06	7.21	1634	12.61	194.4	7.44	10.63	5.28	1300 J	-	128	6.38	-	-
7-Apr-06	14.33	2055	8.54	55.3	9.21	10.84	3.17	1500	-	143	6.63	-	-
16-May-06	21.65	2474	6.09	11.6	9.37	10.69	0.83	2000	-	157	8.19	-	-
23-Jun-06	24.58	2820	6.66	-	15.40	11.64	0.63	1400	-	154	13.1	-	-
20-Jul-06	21.17	3291	8.56	-85.5	68.30	10.75	DRY*	2300	-	131	9.41	-	-
22-Aug-06	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	-
26-Sep-06	16.38	2997	3.00	-57.1	31.60	9.92	DRY*	2900	-	103	16.8	-	-
26-Oct-06	11.00	2650	5.35	59.6	25.80	9.65	0.63	2300	-	132	26.3	-	-
15-Nov-06	8.51	1708	8.16	-35.7	34.70	10.15	17.14	1200	-	67.4	8.07	-	-
20-Dec-06	5.07	1927	8.84	14.8	7.94	10.67	10.91	1200	-	99.7	4.78	-	-
24-Jan-07	2.30	1846	10.72	5.9	11.70	10.37	9.00	1100 J	-	126	16.1	-	-
12-Feb-07	9.26	1777	11.75	-91.3	26.70	10.56	6.00	1100	-	139	7.12	-	-
27-Mar-07	8.71	1219	9.18	-12.6	13.80	8.70	24.00	840 J	-	88.5	4.86	-	-
18-Apr-07	7.39	4563	8.65	41.0	16.80	12.12	9.00	2000	-	97.5	32.5	-	-
31-May-07	-	3916	6.33	-149.5	10.70	10.96	1.36	2100	-	275	22.9	-	-
20-Jun-07	22.59	3336	8.50	-20.4	42.50	10.46	0.29	2400 J	-	255	27.4	-	-
31-Jul-07	18.94	3915	7.85	-69.2	41.30	10.92	0.06	3300	-	236	12.6	-	-
29-Aug-07	21.52	2406	5.75	-5.3	24.10	9.72	DRY*	2300 J	-	129	8.45	-	-
27-Sep-07	13.88	2009	5.75	15.5	28.30	9.56	0.06	1600	-	207	4.37	-	-
26-Oct-07	7.68	1662	9.06	80.5	13.00	9.92	2.04	1800 J	-	132	7.53	-	-
30-Nov-07	4.34	2446	9.63	26.7	11.70	9.86	2.63	1600	-	135	8.27	-	-
12-Dec-07	5.88	2056	10.34	39.3	10.30	10.18	2.63	1500	-	105	5.73	-	-
24-Jan-08	3.05	1601	15.03	42.3	-	9.40	2.63	1000	-	87.4	4.06	-	-
28-Feb-08	-	-	-	-	9.22	-	4.13	1200	-	118	8.92	-	-
25-Mar-08	6.80	1622	12.37	95.1	16.40	9.98	5.25	1100	-	110	3.86	-	-
29-Apr-08	7.53	1997	9.10	137.4	11.90	10.29	7.50	1100 J	-	124	7.05	-	-
20-May-08	16.35	2504	9.03	77.4	32.90	10.92	7.50	1700	-	146	14.7	-	-
18-Jun-08	11.82	2925	8.32	68.3	25.70	11.14	1.69	1800 J	-	208	8.48	-	-
26-Aug-08	17.69	3376	7.98	62.8	41.10	10.43	0.84	2200 J	-	287	13.2	647000	-
20-Nov-08	8.10	1447	9.65	112.0	43.70	11.00	11.25	1400	-	121	16.2	485000	-
12-Feb-09	2.99	1214	14.46	-	14.60	10.93	4.06	1200	-	219	11.8	434000	-
19-May-09	13.05	1962	7.92	32.6	36.70	10.23	7.50	1800 J	-	210	13.7	521000	-
24-Sep-09	16.30	2792	1.59	263.8	13.70	8.82	DRY*	2400	-	130	53	730000	-
15-Dec-09	2.80	1702	7.47	343.0	-	10.18	6.67	1200	-	170	22	330000	-
24-Mar-10	13.80	2629	2.09	270.7	263.00	11.46	6.03	1800	-	180	20	600000	-
17-Jun-10	12.00	1876	0.01	-	157.00	10.76	14.15	1200	-	27	3.9	410000	-
20-Sep-10	11.40	3100	6.34	198.6	12.20	10.63	2.38	2800	-	250	40	580000	-
7-Dec-10	6.60	2455	4.03	154.0	11.00	11.61	16.69	1600	-	240	26	510000	-
30-Mar-11	8.10	848	0.22	136.1	31.50	13.08	58.61	940 J	-	91	9.9	330000	-
22-Jun-11	14.40	2286	5.68	164.2	13.20	11.28	5.68	2600 J	-	120	25	490000	-
27-Sep-11	16.20	1911	4.62	253.4	39.10	10.07	13.40	2100	-	170	45	880000	-
15-Dec-11	4.10	1439	7.40	139.4	10.60	10.33	6.65	1400	-	180	21	500000	-
20-Mar-12	5.20	1687	8.50	27.5	9.60	11.17	60.00	410	-	130	7.4	290000	-
18-Jun-12	14.70	2336	0.11	326.9	15.60	11.25	60.00	410	-	130	9.8	430000	-
20-Sep-12	15.30	2972	7.81	106.0	12.10	9.55	0.10	1400 J	-	130	2.2	450000	-
18-Dec-12	4.80	1908	9.34	-14.2	7.41	10.28	18.50	870	-	120	8.1	390000	-

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

Date Sampled	Field Parameters							Gen-Chem	Metals (ug/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)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.5	-	80
26-Feb-13	5.80	6470	11.27	161.6	22.00	12.46	9.90	1800	-	99	62	710000	-
23-May-13	10.50	1625	9.14	291.8	14.40	9.93	4.84	980	-	94	21	310000	-
21-Aug-13	15.70	7260	7.69	51.6	9.00	10.71	0.32	2780	-	342	18.3	954000	-
19-Nov-13	8.10	2032	10.00	87.4	9.95	11.19	25.40	1270	-	70.8	16.9	487000	-
1-Apr-14	13.70	3420	9.11	129.4	59.00	12.57	20.77	1300	-	37.3	12	572000	-
23-May-14	12.83	986	11.63	105.7	-	9.36	-	822	-	47	13.9	274000	-
13-Aug-14	18.38	2000	5.52	63.6	8.93	8.02	2.00	1250	-	13.4	0.6	326000	-
11-Nov-14	6.70	259	9.77	164.8	4.27	8.09	1.50	955	-	19	0.2	315000	-
12-Feb-15	10.00	669	11.13	142.9	2.75	8.62	40.00	1490	-	14.9	1.8	155000	-
4-May-15	13.70	1293	8.69	181.7	155.00	9.38	0.09	1100	-	43.3	11.3	292000	-
5-Aug-15	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	-	11.4	0.8	355000	-
9-Feb-16	9.10	838	8.79	181.4	2.17	7.87	0.69	529	-	7.8	0.5 J+	145000	-
2-May-16	23.40	1126	6.16	128.1	7.59	7.63	DRY*	688	-	7.6	0.06 J-	162000	-
23-Aug-16	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	-	9.18	0.3	207000	-
1-Feb-17	2.30	925	11.55	39.1	2.04	7.71	0.30	567	-	4.9	0.09 J	135000	-
30-May-17	13.30	817	57.50	8.3	22.20	7.40	0.30	516	-	13.1	0.08 J+	94300	-
17-Aug-17	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	-	36.6	10.7	236000	-
27-Feb-18	5.50	498	10.68	106.0	5.39	8.60	-	503	-	9.7	1.23	127000	-
1-May-18	12.80	894	8.87	-	2.39	7.97	-	656	-	7.81	0.1 UJ	195000	-
21-Aug-18	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	-	15.7	0.089 J	322000 J+	-
11-Mar-19	5.00	525	9.79	146.3	1.28	7.76	-	541	-	4.21	0.1 U	133000	-
9-May-19	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	-
14-Nov-19	7.40	842	4.10	214.3	19.00	7.74	DRY*	783	-	11.3	0.076 J	242000	-
12-Feb-20	7.20	401	8.41	-38.3	2.47	7.53	3.96	348	-	4.81	0.1 U	86900	-
13-Aug-20	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	-	5.13	0.1 U	126000	-
4-Mar-21	4.90	427	7.11	146.0	2.50	7.86	3	424	-	3.7	0.114	80600	-
10-Jun-21	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
6-Jan-22	4.90	269	10.81	211.8	15.90	7.63	300	228	5.52	4.33	0.698	50500	1
17-Mar-22	7.00	410	9.46	157.2	0.91	7.43	8	394	5.37	3.5	0.055 J	86000	1
21-Jun-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
12-Sep-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-22	5.60	712	6.9	12.5	1.29	7.83	-	535	10.5	3.27	0.113 J+	111000	1.01
15-Mar-23	5.10	758.2	6.46	202.5	9.22	7.49	0.1	437	5.92	3.49	0.197	96000	0.825
26-Jun-23	DRY	DRY	DRY	DRY	DRY	DRY		DRY	DRY	DRY	DRY	DRY	DRY
7-Sep-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
5-Mar-24	4.10	673	7.31	117.1	9.45	7.09	1.59	445	5.28	4.74	2.23	76800	1.16
17-Jun-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
16-Sep-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

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 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
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-1c: Summary of Lower Disposal Area - Surface Water Sampling Results - South Pond
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters						Gen-Chem	Metals (ug/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)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
1-Feb-05	7.13	9580	-	-	4.19	13.02	4080	-	174	24.3	-	-
9-Mar-05	14.28	9979	-	-	6.79	12.52	4640	-	240	42.1	-	-
5-Apr-05	9.90	10820	-	-	43.50	11.99	3830	-	133	9.85	-	-
10-May-05	15.10	6091	-	-	45.60	12.14	3270	-	92.9	25.5	-	-
7-Jun-05	14.49	8257	-	-	24.20	12.19	3780	-	132	24.7	-	-
15-Jul-05[a]	18.34	6937	-	-	6.89	11.69	5000	-	281	31.8	-	-
15-Jul-05[b]	-	-	-	-	-	-	4260	-	237	34.2	-	-
9-Aug-05[a]	23.53	7654	-	-	17.l	10.26	6600	-	322	44.5	-	-
9-Aug-05[b]	-	-	-	-	-	-	5580	-	340	37.1	-	-
14-Sept-05[a]	18.55	6730	-	-	10.00	10.51	5100	-	235	19.3	-	-
14-Sept-05[b]	-	-	-	-	-	-	4750	-	268	34.2	-	-
5-Oct-05	12.14	4323	-	-	17.60	9.80	3090	-	130	26.5	-	-
9-Nov-05	6.78	3784	-	-	11.80	11.12	2600	-	121	21.7	-	-
9-Dec-05	3.22	8745	-	-	12.90	12.85	3900	-	175	14.1	-	-
19-Jan-06	7.73	5215	5.43	-	13.30	12.52	2000 J	-	20.3	3.24	-	-
16-Feb-06	3.96	9342	8.97	231.2	9.08	12.30	4100 J	-	43	25.6	-	-
15-Mar-06	8.72	12910	9.59	222.1	7.64	12.60	5100 J	-	38.6	41.8	-	-
7-Apr-06	14.26	15220	6.90	18.9	3.65	12.92	5700	-	48.5	65.6	-	-
16-May-06	19.75	10880	2.61	33.8	15.40	12.46	5100	-	130	92.1	-	-
23-Jun-06	22.76	7586	2.98	-	14.10	12.65	5100	-	130	57.9	-	-
20-Jul-06	24.33	7457	0.73	-148.4	16.70	11.33	6400	-	272	51.3	-	-
22-Aug-06	15.03	7481	3.75	61.0	14.10	10.40	6100	-	318	33.2	-	-
26-Sep-06	17.30	8409	1.31	-312.4	15.10	12.38	5500	-	230	45.7	-	-
26-Oct-06	10.95	6075	4.10	-265.6	13.30	12.18	4600	-	243	41.5	-	-
15-Nov-06	8.07	5022	7.71	-152.7	21.50	12.24	2600	-	76.2	3.68	-	-
20-Dec-06	6.32	9148	5.73	-139.6	12.20	12.85	2900 J	-	46.1	1.28	-	-
24-Jan-07	2.15	12690	9.24	-98.4	9.74	13.10	3000 J	-	19.2	26.8	-	-
12-Feb-07	9.35	14110	8.43	-86.7	32.50	13.13	4700	-	96.2	83.5	-	-
27-Mar-07	9.16	10560	8.41	-46.2	7.42	11.31	2900 J	-	5.98	14.5	-	-
18-Apr-07	8.27	14570	8.32	10.8	10.30	12.79	5200	-	19.8	22.1	-	-
31-May-07	23.66	13410	6.42	-95.0	31.20	11.77	5100	-	78.4	50.4	-	-
20-Jun-07	26.35	10050	5.53	-195.7	27.90	12.29	5300 J	-	112	38.2	-	-
31-Jul-07	21.39	6666	4.76	-106.4	72.00	10.86	6300	-	208	68.8	-	-
29-Aug-07	22.61	6950	1.57	-193.4	61.80	12.05	6300 J	-	149	30.6	-	-
27-Sep-07	11.45	5059	2.66	-180.4	78.40	11.43	4800	-	190	17.4	-	-
26-Oct-07	6.98	4147	1.44	-204.7	39.50	12.48	3900 J	-	168	25.5	-	-
30-Nov-07	2.86	5030	8.50	-74.9	12.40	12.20	2600	-	121	14.3	-	-
12-Dec-07	4.45	3564	2.03	-141.8	20.70	10.93	2700	-	79.3	9.87	-	-
24-Jan-08	1.13	4859	4.10	-186.8	-	11.19	2200	-	86.1	6.79	-	-
28-Feb-08	-	-	-	-	18.10	-	2800	-	183	73.4	-	-
25-Mar-08	7.37	5413	7.88	-58.2	122.00	12.29	2900	-	182	13	-	-
29-Apr-08	8.43	3685	9.04	59.3	19.20	11.63	2400 J	-	152	16	-	-
20-May-08	18.03	3554	6.69	58.0	156.00	11.01	2100	-	137	38.3	-	-
18-Jun-08	13.01	5680	6.46	57.5	71.80	11.14	4000 J	-	279	34.4	-	-
26-Aug-08	18.02	2800	5.72	16.9	49.80	10.08	2500 J	-	91.7	18.6	557000	-
20-Nov-08	7.46	2011	9.04	38.3	23.60	10.49	2300	-	72.9	9.2	566000	-
12-Feb-09	1.63	1870	11.74	-	46.10	10.83	2300	-	129	17.2	738000	-
19-May-09	12.73	1895	5.37	-16.4	168.00	9.82	1700 J	-	78.9	11.3	515000	-
23-Sep-09	21.50	4190	0.09	175.1	14.40	9.70	4100	-	120	99	1300000	-
14-Dec-09	+	+	+	+	+	+	+	-	+	+	+	-
22-Mar-10	13.10	2480	-	342.0	15.60	10.05	1700	-	76	34	520000	-
17-Jun-10	13.40	2429	5.14	-	26.10	10.77	2100	-	120	89	630000	-
21-Sep-10	16.30	2733	1.10	216.8	21.50	9.81	2200	-	25	27	510000	-
8-Dec-10	6.00	1994	2.70	-	18.70	10.05	1400	-	53	18	490000	-
30-Mar-11	9.10	509	0.37	179.2	13.80	12.04	730 J	-	36	14	260000	-
21-Jun-11	21.60	2092	1.90	192.2	13.60	10.07	2800 J	-	62	29	380000	-
27-Sep-11	14.60	1516	9.34	220.4	32.50	9.34	1800	-	78	36	780000	-
15-Dec-11	3.00	1449	1.90	94.6	13.80	10.75	2100	-	140	74	630000	-
21-Mar-12	2.60	1088	8.10	285.7	13.10	9.95	780	-	30	7.2	240000	-
19-Jun-12	17.10	1747	5.54	345.3	10.80	9.93	780	-	70	29	400000	-
20-Sep-12	-	-	-	-	-	-	-	-	-	-	-	-
19-Dec-12	4.00	1771	6.37	104.0	6.12	10.71	1300	-	47	18	440000	-

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

Date Sampled	Field Parameters						Gen-Chem	Metals (ug/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)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
26-Feb-13	6.90	3720	5.40	196.7	10.60	11.86	1100	-	140	39	690000	-
23-May-13	11.50	2335	5.21	323.5	44.10	12.48	1800	-	130	50	530000	-
22-Aug-13	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	-	39.8	20.4	487000	-
1-Apr-14	15.30	2053	4.42	130.9	772.00	11.27	1800	-	113	42.2	649000	-
23-May-14	14.15	2187	5.50	77.3	-	10.19	1860	-	112	23.6	623000	-
13-Aug-14	20.29	1298	5.35	40.1	24.80	9.63	949	-	44.9	22.8	306000	-
12-Nov-14	1.30	315	4.55	-0.5	22.10	10.45	2440	-	122	34.2	804000	-
12-Feb-15	11.10	1267	4.01	-8.2	23.90	10.20	905	-	27.2	9.6	320000	-
4-May-15	15.60	3200	4.35	240.5	9.21	10.42	2280	-	154	30.8	774000	-
5-Aug-15	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	-	28	28.2	364000	-
9-Feb-16	7.30	1672	3.45	95.9	7.79	10.45	1170	-	51 J+	34	410000	-
3-May-16	14.20	3150	3.61	335.2	63.80	10.35	2260	-	148	97.9 J-	777000	-
24-Aug-16	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	-	21.9	14.1	356000	-
1-Feb-17	2.10	2064	4.82	5.0	17.80	10.27	1330	-	57.6	139	455000	-
31-May-17	14.50	2594	5.36	-	22.70	9.93	1920	-	105	51.5 J+	664000	-
17-Aug-17	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	-	58.8	53.4 J+	441000	-
27-Feb-18	6.50	1379	4.05	-71.0	6.11	10.94	865	-	61.7	47.7 J-	429000	-
2-May-18	11.60	2547	-	-	25.30	10.36	1860	-	85.9	26.7 J+	611000	-
22-Aug-18	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	-	76	65.5	333000 J+	-
11-Mar-19	10.60	1354	5.93	-18.7	7.19	10.31	1270	-	49.3	41.7	458000	-
9-May-19	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
26-Aug-19	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	-	67.2	76.4	418000	-
13-Feb-20	4.30	1032	2.51	-126.9	6.10	10.46	927	-	28.1	13	348000	-
13-Aug-20	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	-	12	6.63	318000	-
4-Mar-21	8.10	1271	1.98	38.0	8.02	10.35	4820	-	50.6	35.7	435000	-
10-Jun-21	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
6-Jan-22	4.50	305	10.57	-30.2	4.07	9.42	300	2.29	4.42	2.29	77100	4.27
17-Mar-22	8.80	997	8.53	-66.4	4.54	11.32	912	4.85	22.60	16.70	358000	37.80
21-Jun-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
12-Sep-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-22	4.1	1319	8.1	-51.9	15.8	9.45	1170	17.5	40.5	33.1	384000	79.3
15-Mar-23	8.9	1467	10.36	-7.6	6.57	9.33	913	2.75	8.5	4.84	347000	12.3
26-Jun-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Sep-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-23	5.2	2217	7.86	-41.2	8.63	9	1180	3.98	21.1	15.8	394000	53.4
5-Mar-24	10.5	2327	7.99	-12.1	6.72	9.9	1220	3.99	21.6	15.2	435000	75.1
17-Jun-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
16-Sep-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not analyzed or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
+	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 Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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	
mV	
NTU	

APPENDIX A-2

Summary of Lower Disposal Area – Shallow Groundwater Sampling Results

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	35.43	578.01	15.17	883	-	-	358	7.03	664	-	8.47	2 U	-	-
9-Nov-05	31.83	581.61	10.77	1037	-	-	22.2	6.89	680	-	3.45	1 U	-	-
15-Feb-06	23.91	589.53	9.14	623	1.53	497.4	6.76	7.26	470 J	-	3.25	1 U	-	-
17-May-06	31.91	581.53	11.32	1029	1.33	121.6	10.3	7.18	600	-	5.18	1 U	-	-
23-Aug-06	35.35	578.09	19.21	481	5.97	60.4	6.3	6.67	340	-	1.7	1 U	-	-
14-Nov-06	20.00	593.44	10.35	635	4.55	95.1	22.2	7.23	550	-	3.07	1 U	-	-
14-Feb-07	29.29	584.15	11.13	435	3.88	85.6	32.1	6.76	260	-	2	1 U	-	-
30-May-07	32.90	580.54	10.30	545	6.63	145.7	6.93	6.81	320	-	2.48	1 U	-	-
27-Aug-07	35.68	577.76	10.49	428	7.13	76.7	8.65	6.95	260 J	-	1.87	1 U	-	-
29-Nov-07	32.75	580.69	10.10	625	7.14	144.3	12.2	6.96	340 J	-	2.32	1 U	-	-
27-Feb-08	27.83	585.61	-	-	-	-	19.6	-	320	-	2.58	1 U	-	-
20-May-08	31.86	581.58	10.22	471	6.38	177.0	109	6.48	290 J	-	2.24	1 U	-	-
27-Aug-08	36.04	577.40	9.84	427	7.40	118.4	63.6	7.08	260	-	2.05	1 U	23000	-
26-Sep-08	*Test Trench Drain Line Installed*													
16-Oct-08	35.65	577.79	9.51	443	9.78	113.9	38	7.38	260 J	-	1.79	1 U	22900	-
20-Nov-08	25.62	587.82	9.49	563	6.11	231.0	5.48	7.18	430	-	3.68	1 U	106000	-
30-Dec-08	23.14	590.30	9.84	402	8.40	106.9	8.92	7.25	280 J	-	2.47	1 U	43900	-
15-Jan-09	20.66	592.78	8.40	336	9.65	229.6	1.07	6.88	290	-	2.25	1 U	35700	-
12-Feb-09	30.00	583.44	9.05	372	8.46	-	16.7	7.34	320	-	1.93	1 U	27000	-
12-Mar-09	31.30	582.14	9.13	409	8.60	174.9	15.8	7.03	340	-	1.66	1 U	20600	-
16-Apr-09	23.88	589.56	8.17	343	10.24	131.8	13.5	6.78	310	-	1.77	1 U	24600	-
19-May-09	30.50	582.94	8.99	392	8.69	82.6	23.7	7.75	340 J	-	1.56	1 U	19600	-
23-Jun-09	34.00	579.44	9.21	480	9.56	79.0	22.9	7.89	430	-	2 U	2 U	20000	-
25-Aug-09	36.95	576.49	13.10	373	6.47	311.9	4.98	6.76	270 J+	-	0.64 J	2 U	17000	-
23-Sep-09	37.12	576.32	11.30	336	6.90	368.3	21.3	6.73	240	-	2 U	0.18 J	14000	-
15-Dec-09	28.30	585.14	9.20	643	5.30	567.0	18	6.72	330	-	2 U	2 U	26000	-
24-Mar-10	30.03	583.41	9.80	562	5.72	545.9	5.04	6.74	370	-	1.9 J	2 U	19000	-
16-Jun-10	23.55	589.89	9.20	506	5.93	405.4	16.1	6.53	40 U	-	3.6	2 U	20000	-
21-Sep-10	35.89	577.55	10.40	593	4.82	288.5	117	6.96	370	-	2.6	0.23 J	19000	-
7-Dec-10	27.39	586.05	10.00	504	1.45	198.4	139	7.15	330	-	2.3	2 U	14000	-
29-Mar-11	29.76	583.68	8.10	247	2.47	169.0	6.81	7.14	300	-	2.4	2 U	15000	-
21-Jun-11	30.45	582.99	9.30	606	4.58	332.9	3.56	7.17	400 J	-	5 U	2 U	16000	-
27-Sep-11	36.65	576.79	9.90	366	7.27	356.2	2.18	6.85	310	-	5 U	2 U	17000	-
14-Dec-11	31.53	581.91	9.20	407	1.97	234.7	20.4	7.09	370	-	5 U	2 U	16000	-
20-Mar-12	21.60	591.84	7.70	561	7.06	385.4	4.8	7.18	280	-	2.3	0.4 U	16000	-
19-Jun-12	21.60	591.84	10.00	575	7.04	378.2	5.6	7.31	330	-	2.5	0.4 U	16000	-
19-Sep-12	36.42	577.02	11.30	561	8.76	286.0	2.49	7.02	310	-	2.4	0.4 U	17000	-
19-Dec-12	23.43	590.01	9.30	671	6.67	348.2	0.74	7.26	20 U	-	1.7	0.4 U	17000	-
25-Feb-13	29.32	584.12	8.00	572	9.51	337.0	26	7.28	300	-	2.5	0.4 U	16000	-
22-May-13	31.23	582.21	9.00	518	8.59	397.7	4.68	7.40	310	-	1.8	0.4 U	15000	-
21-Aug-13	37.02	576.42	10.20	534	9.27	152.7	1.46	7.11	227	-	1.2	0.1 U	14100	-
20-Nov-13	29.69	583.75	9.50	852	7.62	243.5	39.5	6.75	419	-	1.6	0.1 U	19900	-
1-Apr-14	23.29	590.15	8.90	347	7.60	248.1	2.54	7.30	247	-	2	0.1 U	16500	-
21-May-14	28.31	585.13	9.50	349	4.02	178.6	-	7.12	280	-	1.8	0.1 U	15100	-
13-Aug-14	36.52	576.92	12.10	441	9.22	51.9	6.2	7.10	283	-	1.4	0.1 U	15200	-
13-Nov-14	31.63	581.81	11.50	438	8.80	173.0	14.7	7.10	352	-	1.6	0.1 U	17100	-
11-Feb-15	23.02	590.42	9.40	498	3.89	98.1	10.5	7.72	319	-	9.1	0.3	42900	-
4-May-15	31.93	581.51	9.80	578	7.35	416.9	1.05	7.26	413	-	1.7	0.1 U	16000	-
6-Aug-15	37.65	575.79	10.70	447	0.17	71.6	49	7.21	343	-	3.9	0.1 U	10300	-
4-Nov-15	32.89	580.55	9.50	657	8.56	240.5	5.7	6.92	554	-	2.3	0.1 U	49300	-
10-Feb-16	25.39	588.05	9.80	322	7.36	204.8	3.21	7.31	202	-	2	0.1 U	22200	-
2-May-16	32.32	581.12	10.80	579	5.95	250.2	4.7	7.02	350	-	1.8	0.04 J-	17800	-
23-Aug-16	37.66	575.78	11.00	488	1.34	459.9	259	7.08	413	-	3.88	0.07 J	14600	-
2-Nov-16	31.30	582.14	9.70	280	3.94	225.0	6.13	7.18	531	-	2.13	0.12	37700	-
1-Feb-17	29.01	584.43	8.60	510	5.26	187.7	0.97	7.04	270	-	1.47	0.1 U	19000	-
30-May-17	28.47	584.97	9.50	483	6.89	4.7	4.85	6.96	290	-	2.09	0.1 U	15700	-
17-Aug-17	36.30	577.14	10.50	536	3.79	82.5	6.44	6.96	283	-	1.55	0.1 U	15500	-
9-Nov-17	32.20	581.24	9.20	460	5.89	75.1	2.7	7.01	380	-	1.63	0.1 U	16300	-
27-Feb-18	25.18	588.26	8.90	215	7.35	121.6	6.04	6.31	186	-	1.72	0.1 U	15500	-
1-May-18	26.98	586.46	9.50	391	7.82	-	3.06	6.94	214	-	1.65	0.1 UJ	14100	-
21-Aug-18	37.29	576.15	10.02	266	7.37	75.6	129	6.84	215	-	1.51	0.1 U	13300	-
6-Nov-18	34.18	579.26	9.60	340	9.13	215.4	1	6.93	327	-	1.67	0.1 U	16600	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
11-Mar-19	27.75	585.69	8.90	323	5.65	185.3	4.29	6.94	269	-	1.36	0.1 U	14400	-
8-May-19	30.05	583.39	9.80	448	7.77	97.6	1.11	6.87	320	-	1.25	0.1 U	15100	-
26-Aug-19	37.02	576.42	9.83	329	1.16	Note 1	7.97	7.11	258	-	0.904	0.1 U	10700	-
13-Nov-19	35.13	578.31	9.20	376	5.50	144.0	8.26	6.87	320	-	1.23	0.1 U	15800	-
12-Feb-20	20.38	593.06	9.00	381	2.58	191.6	1.33	7.15	268	-	1.25	0.1 U	26600	-
12-Aug-20	36.61	576.83	9.50	285	5.01	198.7	0.8	6.96	214	-	1.14	0.1 U	14100	-
9-Dec-20	32.05	581.39	9.10	425	7.17	211.0	1.57	6.86	347	-	1.11	0.1 U	17100	-
3-Mar-21	27.01	586.43	8.60	383	5.71	248.0	0.6	6.83	299	-	1.16	0.1 U	17400	-
9-Jun-21	35.32	578.12	9.20	422	8.47	151.0	2.22	6.68	310	-	1.39	0.1 U	16300	-
12-Oct-21	33.84	579.60	9.30	329	9.07	160.8	1.55	6.34	236 J-	0.846	1.13	0.1 U	12500	0.801
5-Jan-22	25.20	588.24	9.20	344	7.96	170.2	0.67	6.54	255	1.06	1.02	0.1 U	18100	0.782
16-Mar-22	23.67	589.77	9.30	386	7.79	155.0	0.96	5.60	350	1.58	1.33	0.1 U	36800	0.887
23-Jun-22	27.91	585.53	9.80	356	7.21	152.8	2.55	6.93	281	1.08	1.04	0.1 U	16500	0.86
23-Sep-22	37.05	576.39	13.2	312.5	6.93	128.4	2.84	6.91	222	0.83	1.2	0.137	14100	0.786
13-Dec-22	32.35	581.09	9.4	394.6	8.79	99.3	0.31	6.77	234	0.955	1.13	0.1 U	14500	0.791
13-Mar-23	29.36	584.08	8	584.2	9.22	90.2	0.29	6.85	298	0.86	1.27	0.053 J	14000	0.935
28-Jun-23	34.78	578.66	9.4	527	9.69	277.4	0.85	6.68	363	0.87	1.18	0.1 U	16600	0.862
5-Sep-23	37.62	575.82	9.5	586.1	5.14	77.6	3.75	6.97	360 J-	0.41	3.82	0.586	13300	2.23
12-Dec-23	22.16	591.28	9.2	806	7.53	120.7	1.27	6.7	424	1.71	1.39	0.103 U	43400	0.986
4-Mar-24	26.79	586.65	8.4	437.2	8.26	194.8	0.42	6.56	274 J	0.83	1.02	0.103 U	13400	0.614
18-Jun-24	32.56	580.88	8.8	700	12.5	119.2	0.39	6.64	335	0.87	1.14	0.103 U	13900	0.684
16-Sep-24	36.11	577.33	9.5	366.8	9.72	174.4	0.64	6.51	205	0.668	0.996	0.103 U	10700	0.585 J

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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 Groundwater Sampling Results - Well MW-2A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	29.18	578.03	13.78	853	-	-	28.3	7.7	606	-	2 U	2 U	-	-
9-Nov-05	25.64	581.57	10.95	860	-	-	3.82	7.43	550	-	1.31	1 U	-	-
15-Feb-06	17.64	589.57	7.81	709	0.82	467.7	3.96	7.86	520 J	-	1.06	1 U	-	-
17-May-06	25.76	581.45	9.67	810	2.17	246.1	3.01	7.06	490	-	1.13	1 U	-	-
23-Aug-06	29.13	578.08	12.86	759	2.6	12	9.82	7.4	570	-	1.54	1 U	-	-
14-Nov-06	13.74	593.47	10.44	649	3.72	63.6	9.78	7.72	460	-	1.36	1 U	-	-
14-Feb-07	22.09	585.12	10.77	648	1.69	11.5	52.4	7.51	380	-	1.07	1 U	-	-
30-May-07	26.72	580.49	11.46	732	2.05	72.2	12.8	7.44	480	-	1.17	1 U	-	-
27-Aug-07	29.45	577.76	10.8	829	7.41	62.8	117	7.58	590 J	-	1.09	1 U	-	-
29-Nov-07	26.57	580.64	10.74	899	2	81.1	392	6.05	490	-	1.03	1 U	-	-
27-Feb-08	21.45	585.76	-	-	-	-	446	-	400	-	1.09	1 U	-	-
20-May-08	25.73	581.48	9.48	706	3.07	110.2	419	7.26	420 J	-	1.21	1 U	-	-
27-Aug-08	29.84	577.37	9.87	824	4.74	91.5	571	7.43	550 J	-	1.3	1 U	65100	-
26-Sep-08	*Test Trench Drain Line Installed*													
16-Oct-08	29.13	578.08	9.76	820	4.56	53.6	227	7.33	520 J	-	1.3	1 U	76300	-
20-Nov-08	19.48	587.73	9.31	462	5.24	240.1	6.16	7.35	360	-	1.76	1 U	67000	-
30-Dec-08	16.93	590.28	9.85	480	6.18	66.8	56.1	7.35	390 J	-	1.55	1 U	61500	-
15-Jan-09	14.46	592.75	7.71	402	7.47	177.8	1.61	7.61	360	-	1.57	1 U	58500	-
12-Feb-09	23.84	583.37	9.63	-	8.72	-	74.9	7.54	390	-	1.3	1 U	48100	-
12-Mar-09	25.15	582.06	9.11	454	7.22	163.7	573	7.19	400	-	1.17	1 U	43100	-
16-Apr-09	17.72	589.49	8.4	417	8.27	126.4	128	7.26	400	-	1.4	1 U	48800	-
19-May-09	24.38	582.83	8.8	448	6.88	72	178	7.95	410 J	-	1.1	1 U	44000	-
23-Jun-09	27.85	579.36	8.95	507	7.76	61.9	256	8.07	490	-	2 U	2 U	39000	-
25-Aug-09	30.68	576.53	10.5	707	6.94*	307.4	4.38	7.17	530 J+	-	2 U	0.18 J	49000	-
23-Sep-09	30.84	576.37	11.2	661	5.41	374.7	15	7.28	500	-	2 U	2 U	51000	-
15-Dec-09	22.10	585.11	9.5	720	5.1	579	39	6.92	380	-	2 U	2 U	42000	-
24-Mar-10	23.82	583.39	10	602	4.1	535.3	43.3	6.93	370	-	1.7 J	2 U	39000	-
17-Jun-10	17.45	589.76	9.3	547	4.06	-	157	6.57	350	-	3.9	2 U	39000	-
22-Sep-10	29.66	577.55	10.2	722	5.77	360.2	7.2	7.22	450	-	3.3	2 U	55000	-
8-Dec-10	22.10	585.11	9.9	566	6.69	-	64.6	7.09	350	-	2 U	2 U	35000	-
29-Mar-11	19.94	587.27	8.4	251.3	6.95	620	28	7.13	250 J	-	1.4 J	2 U	30000	-
21-Jun-11	24.25	582.96	9.9	628	5.23	344.3	37	7.29	410 J	-	5 U	2 U	28000	-
28-Sep-11	30.41	576.8	9.5	57.5	6.54	481.7	13.8	7.24	500	-	5 U	2 U	54000	-
14-Dec-11	25.35	581.86	9.3	441	3.86	346.5	386	7.26	440	-	5 U	2 U	29000	-
20-Mar-12	15.45	591.76	7.7	580	1.53	382	32.3	7.4	280	-	2.2	0.4 U	26000	-
19-Jun-12	23.88	583.33	9	590	1.85	388.1	55.7	7.74	320	-	2.5	0.4 U	23000	-
19-Sep-12	30.18	577.03	11.1	695	7.03	297	9.31	7.41	420	-	2.7	0.4 U	42000	-
19-Dec-12	17.24	589.97	9.4	704	6.33	317	55.2	7.4	310	-	1.7	0.4 U	25000	-
25-Feb-13	23.12	584.09	9.1	585	6.04	339	110	7.46	370	-	2.5	0.4 U	24000	-
22-May-13	25.05	582.16	8.6	537	8.41	391.5	12.3	7.51	310	-	1.9	0.4 U	22000	-
21-Aug-13	30.75	576.46	10.6	684	8.42	150.2	5.85	7.74	419	-	1.5	0.2	27700	-
20-Nov-13	23.51	583.7	9.6	513	6.19	230.4	32.1	6.81	364	-	1.3	0.1 U	27500	-
1-Apr-14	17.11	590.1	8.5	386	7.32	243.1	14.6	7.46	294	-	1.4	0.1 U	31700	-
21-May-14	22.07	585.14	9.1	365	6.02	212.7	-	6.93	273	-	1.3	0.1 U	24700	-
12-Aug-14	31.32	575.89	13.16	552	6.56	76.7	6.8	7.36	394	-	1.5	0.1 U	25300	-
13-Nov-14	25.48	581.73	12.3	459.5	7.22	189.8	7.2	7.19	367	-	1.4	0.1 U	25500	-
11-Feb-15	16.83	590.38	9.3	447	6.76	134.4	36.6	7.52	286	-	1.7	0.1 U	30400	-
4-May-15	25.78	581.43	10.2	619	6.27	407.1	7.7	7.36	382	-	1.4	0.1 U	25200	-
6-Aug-15	31.87	575.34	11.3	500	9.18	207.1	28.1	7.23	394	-	1.5	0.1 U	22000	-
4-Nov-15	26.74	580.47	9.9	481	8.76	222.6	16.8	6.88	381	-	1.1	0.1 U	21800	-
10-Feb-16	19.19	588.02	9	376	7.35	206	40.2	7.68	261	-	3.6	0.1 U	37100	-
2-May-16	26.14	581.07	11.3	552	3.19	194.5	87.8	7.35	344	-	2.1	0.01 J-	31200	-
23-Aug-16	31.64	575.57	10.5	545	7.62	486.5	10.8	7.18	412	-	1.54	0.1 U	32600	-
2-Nov-16	25.12	582.09	10.2	220	4.01	238.9	245	7.19	431	-	1.4	0.1 U	30600	-
1-Feb-17	22.84	584.37	9.1	580	5.06	186.3	13.6	7.35	317	-	3.17	0.1 U	51100	-
30-May-17	22.31	584.9	9.4	520	7.01	4.99	40.2	7.18	322	-	1.78	0.1 U	34100	-
17-Aug-17	30.08	577.13	10.6	626	5.63	134.2	32.3	7.21	370	-	1.28	0.1 U	28900	-
9-Nov-17	26.04	581.17	9.8	479.5	5.79	74.4	68.8	7	391	-	1.39	0.1 U	25400	-
27-Feb-18	19.03	588.18	8.8	293.1	7.43	185.2	15.1	6.9	254	-	3.98	0.1 U	41900	-
1-May-18	20.84	586.37	9.1	531	7.46	-	25	7.35	316	-	3	0.1 UJ	40600	-
21-Aug-18	31.09	576.12	10.39	437	7.33	115.2	19.1	7.04	358	-	1.48	0.1 U	26900	-
6-Nov-18	28.00	579.21	9.7	420.1	8.17	210.3	6.74	6.97	418	-	1.3	0.1 U	23400	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
11-Mar-19	21.61	585.6	9	351.2	9.2	187.1	20.6	7.11	312	-	1.57	0.1 U	32700	-
8-May-19	23.88	583.33	9.8	443.1	8.05	109.6	7.79	7.06	316	-	1.66	0.1 U	32900	-
26-Aug-19	30.90	576.31	10.91	495	8.65	Note 1	12.7	6.91	394	-	1.28	0.1 U	21100	-
13-Nov-19	28.91	578.3	9.8	506	7.81	180.4	14.4	6.87	429	-	1.34	0.1 U	22900	-
12-Feb-20	14.21	593	8.1	319.3	9.95	189.3	14.6	7.27	277	-	1.95	0.1 U	56300	-
12-Aug-20	30.41	576.8	9.5	463.3	6.6	185.5	72.9	7.03	359	-	1.2	0.1 U	22400	-
9-Dec-20	25.91	581.3	9.4	533	6.44	213	9.96	6.97	400	-	1.38	0.49 J	26800	-
3-Mar-21	20.83	586.38	8.9	330	5.24	216.5	12.4	7.18	268	-	1.8	0.219	61100	-
9-Jun-21	29.14	578.07	9.1	459.8	8.65	193.6	1.34	6.88	360 J	-	1.25	0.058 J	21800	-
12-Oct-21	27.75	579.46	10.4	595	9.33	188.2	0.56	6.53	439 J-	1.19	1.1	0.1 U	21900	1.07
6-Jan-22	19.05	588.16	10.2	466.3	4.66	197.7	2.69	7.14	368	3.24	1.89	0.1 U	80700	1.19
16-Mar-22	17.54	589.67	8.4	304.1	9.88	154.6	6.43	6	291	3.26	1.85	0.218	60900	1.15
23-Jun-22	21.76	585.45	9.5	442.6	6.06	158.8	1.49	7.10	369	1.94	1.5	0.1 U	37500	1.15
23-Sep-22	30.87	576.34	11.2	471.5	8.5	190.3	2.04	6.82	351	0.923	1.17	0.13	23300	1.18
13-Dec-22	26.24	580.97	9.9	557	8.35	117.4	4.38	6.81	319	1.17	1.28 J	0.218 J+	21800	1.59
14-Mar-23	23.24	583.97	8.6	664.2	7.67	174.1	0.97	7.08	368	1.65	1.49	0.1 U	28800	1.03
28-Jun-23	28.64	578.57	10.5	521	9.26	275.7	2.1	6.79	361	1.05	1.12	0.371 J	19600	1.02
5-Sep-23	31.49	575.72	9.6	699	11.67	128.3	3.01	7.06	400 J-	0.74	1.1	0.383 J	19800	1.06
12-Dec-23	16.04	591.17	9.9	894	8.57	137	4.29	7.01	529	3.53	1.94	0.103 U	133000	1.5
4-Mar-24	20.65	586.56	8.9	505	8.82	218.3	1.74	6.87	360 J	2.27	1.39	0.103 U	71900	0.97
18-Jun-24	26.42	580.79	8.9	763	11.61	137.9	0.56	6.8	389	1.13	0.978	0.103 U	20500	0.954
16-Sep-24	30.4	576.81	10	667	9.64	200.7	2.02	6.67	396	0.934	1.28	0.103 U	19700	1.04

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
*	Dissolved Oxygen meter working incorrectly at the time of sample collection
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-2c: Summary of Lower Disposal Area - Shallow Groundwater Sampling Results - Well MW-3A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	6.09	683.02	13.8	1124	-	-	30.3	6.96	922	-	2.41	2 U	-	-
10-Nov-05	5.50	683.61	10.8	1518	-	-	2.32	6.88	960	-	10.5	1 U	-	-
15-Feb-06	5.31	683.80	9.52	1357	0.46	217.4	58.2	6.33	930 J	-	6.66	1 U	-	-
16-May-06	6.25	682.86	10.4	1296	0.96	91	11.4	6.91	910	-	10.1	1 U	-	-
22-Aug-06	8.85	680.26	12.84	1362	1.28	-64.8	56	6.97	900	-	12.1	1 U	-	-
13-Nov-06	5.03	684.08	11.24	1392	2.12	-74.4	234	6.89	910	-	5.73	1 U	-	-
16-Feb-07	5.55	683.56	8.99	1155	0.75	-71.3	12.3	6.96	770	-	3.74	1 U	-	-
30-May-07	6.72	682.39	11.86	1297	0.75	-25.2	12.5	7.04	790	-	5.2	1 U	-	-
27-Aug-07	8.38	680.73	12.65	1483	0.71	-96.3	15.3	6.73	1100 J	-	8.74	1 U	-	-
28-Nov-07	5.66	683.45	10.47	1363	1.05	-72.9	26.9	7.31	730	-	4.24	1 U	-	-
27-Feb-08	5.57	683.54	-	-	-	-	121	-	860	-	9.76	1 U	-	-
19-May-08	5.94	683.17	9.39	1346	0.66	-52.6	20	6.93	820 J	-	6.64	1 U	-	-
26-Aug-08	6.44	682.67	12.15	1495	0.85	-53.6	5.85	6.88	820	-	3.42	1 U	30300	-
18-Nov-08	5.50	683.61	10.5	975	1.87	-67.4	225	6.93	880 J	-	7.48	1 U	62500	-
11-Feb-09	5.62	683.49	7.67	877	0.98	-	68	7.28	810	-	5.2	1 U	50600	-
19-May-09	5.60	683.51	8.52	847	0.91	-63.4	52	8.21	750 J	-	2.51	1 U	49500	-
22-Sep-09	8.36	680.75	15.7	1149	0.1	132.1	75.1	7.05	910	-	6.6	2 U	53000	-
17-Dec-09	4.59	684.52	8.9	1300	0.4	194	401	7.08	710	-	2 U	2 U	62000	-
24-Mar-10	5.40	683.71	11.2	1010	0.12	-	226	6.76	800	-	3.8	2 U	46000	-
16-Jun-10	5.27	683.84	10.1	1123	0.2	188	6.19	8.43	570	-	13	2 U	49000	-
21-Sep-10	6.01	683.10	12.7	1314	0.19	177.7	2.97	6.91	1,000	-	6.2	0.19 J	160000	-
7-Dec-10	5.23	683.88	9.7	1183	0.23	182.7	25.3	6.86	840	-	3.2	2 U	82000	-
30-Mar-11	5.04	684.07	8.3	498	0.28	174	4.93	7.89	700	-	3.6	2 U	36000	-
22-Jun-11	6.77	682.34	9.7	895	0.43	172.2	9.18	7.01	700 J	-	5 U	2 U	34000	-
28-Sep-11	7.83	681.28	12.6	99	0.18	141.8	6.07	6.83	840	-	8.8	2 U	83000	-
15-Dec-11	5.40	683.71	9	785	0.6	179.8	24.4	6.98	760	-	4.5 J	2 U	73000	-
20-Mar-12	4.96	684.15	7.1	1092	0.16	22.6	12.1	7.11	470	-	5.2	2 U	73000	-
19-Jun-12	6.76	682.35	10.3	1077	0.11	198.6	11.3	7.07	660	-	12	0.4 U	78000	-
20-Sep-12	8.67	680.44	12.3	1235	0.15	111	1.96	6.99	710	-	11	0.05 J	100000	-
18-Dec-12	4.98	684.13	8.7	1450	0.3	-40.6	18.7	7.25	740	-	4.8	0.4 U	150000	-
26-Feb-13	5.25	683.86	7.8	1211	0.15	186.6	27.8	7.21	740	-	4.7	0.4 U	98000	-
23-May-13	6.56	682.55	9.9	1000	0.18	242.3	16.9	7.21	460	-	14	2.8	150000	-
21-Aug-13	9.01	680.10	12.1	917	0.12	-14.2	1.24	7.27	772	-	7.6	0.05 J	94000	-
19-Nov-13	6.09	683.02	9.9	697	0.07	61.8	2.93	6.77	852	-	12.3	0.2	169000	-
1-Apr-14	5.75	683.36	9	722	0.1	131.3	4.47	7.07	624	-	10.5	0.06 J	104000	-
22-May-14	5.80	683.31	9.8	580	1.08	185.3	-	6.85	494	-	5.2	0.1	66500	-
13-Aug-14	8.54	680.57	11.48	915	2.85	-67.6	8.16	7.09	740	-	6.9	0.1 U	116000	-
12-Nov-14	5.97	683.14	11.1	313.7	2.79	-85.1	15.3	6.87	744	-	6.9	0.1 U	89100	-
12-Feb-15	5.50	683.61	9.8	980	0.52	-54.5	1.28	7.04	696	-	4.2	0.1 U	73200	-
4-May-15	5.80	683.31	10.8	994	0.17	143.4	15.4	7.12	701	-	9.3	0.1 U	100000	-
5-Aug-15	10.12	678.99	12.6	881	0.13	-90.4	0.89	7.07	724	-	7.3	0.1 U	70300	-
3-Nov-15	5.30	683.81	12	865	1.23	105.5	5.06	6.97	1020	-	1.7	0.2	195000	-
9-Feb-16	5.14	683.97	9.1	954	0.55	154.6	4.82	7.03	625	-	3.4	0.1 U	92700	-
2-May-16	4.74	684.37	11.3	844	0.19	96.8	2.21	7.16	621	-	10.5	0.04 J-	105000	-
23-Aug-16	9.04	680.07	13.2	946	0.03	156.2	3.48	6.97	924	-	8.19	0.09 J	148000	-
1-Nov-16	6.18	682.93	11.9	349	0.15	18.5	2.43	7.11	744	-	2.63	0.1 U	180000	-
1-Feb-17	5.91	683.20	7.5	1114	0.17	-67.4	6.05	7.08	694	-	6.4	0.1 U	100000	-
30-May-17	7.40	681.71	10.4	753	2.2	8.59	3.28	7.12	465	-	9.52	0.1 U	89300	-
17-Aug-17	9.71	679.40	12.4	1101	0.25	-60.2	3.39	7.01	737	-	8.47	0.1 U	72000	-
9-Nov-17	6.06	683.05	9.6	833	0.64	75.3	2.01	7.08	748	-	1.84	0.1 U	191000	-
27-Feb-18	5.16	683.95	7.6	791	0.21	-75.4	9.52	6.64	506	-	2.97	0.1 U	92000	-
1-May-18	5.41	683.70	10	847	0.93	-	5.82	7.36	547	-	3.81	0.1 UJ	120000	-
21-Aug-18	10.81	678.30	14.54	909	2.96	-17.2	1.67	6.92	722	-	6.48	0.1 U	101000	-
7-Nov-18	5.85	683.26	11.2	931	0.66	179	0.87	6.97	828	-	2.03	0.073 J	202000 J+	-
11-Mar-19	5.26	683.85	6.1	477.5	1.25	53.7	2.39	7.34	486	-	1.44	0.1 U	125000	-
9-May-19	5.44	683.67	10.2	678	3.72	-9.4	1.85	7.04	574	-	3.02	0.083 J	143000	-
26-Aug-19	9.30	679.81	13.96	1041	0.6	Note 1	0.02	6.83	843	-	6.15	0.1 U	142000	-
13-Nov-19	5.58	683.53	9.4	803	0.31	12.8	0.02	6.97	724	-	2.2	0.077 J	174000	-
12-Feb-20	5.10	684.01	7.8	349.3	0.37	-62.4	1.4	7.25	287	-	1.86	0.1 U	74200	-
13-Aug-20	9.33	679.78	11.8	884	0.64	-81.6	4.28	6.76	683	-	10.9	0.1 U	119000	-
10-Dec-20	5.08	684.03	8.5	688	3.06	210	0.9	7.29	566	-	2.36	0.159	128000	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
4-Mar-21	5.26	683.85	7	364	0.59	47	1.54	7.42	319	-	1.52	0.134	74200	-
9-Jun-21	6.24	682.87	11.4	706	0.96	-50.2	4.12	7.03	540	-	6.48	0.204	124000	-
12-Oct-21	5.34	683.77	12.3	1611	2.92	133.4	5.25	6.63	1070 J-	15.6	3.31	0.4	93200	2.14
6-Jan-22	5.10	684.01	7.5	269.6	2.33	189.1	1.84	7.38	242	8.89	2.04	0.265	53400	2.61
17-Mar-22	4.97	684.14	7.5	269.6	2.33	189.1	1.84	7.38	252	3.39	1.98	0.169	53200	0.88
21-Jun-22	5.21	683.9	11.2	439.4	0.19	181.3	0.66	7.03	368	0.966	3.66	0.075 J	75400	0.39
13-Sep-22	11.25	677.86	15.3	910	4.92	85.7	9.15	6.49	689	0.973	5.42	0.137	91100	0.507
12-Dec-22	5.32	683.79	7.7	817	4.09	205.2	1.29	7.15	475	9.5	1.72	0.115 J+	99800	1.26
15-Mar-23	5.02	684.09	6.1	669.2	1.38	203.9	0.95	7.34	393	5.15	2.42	0.147	91100	1.19
26-Jun-23	7.35	681.76	11.7	802	0.65	-21.3	4.65	6.78	699	5.91	11.7	0.558	144000	1.07
6-Sep-23	13.95	675.16	13.8	1227	2.17	18	3.14	6.89	747 J-	0.717	4.08	0.126	95900	0.483
13-Dec-23	5.14	683.97	9.4	712	4.35	43.8	2.87	6.73	343	4.61	3.7	0.208	82900	0.816
5-Mar-24	5.05	684.06	7.5	620	5.62	93.3	4.58	6.74	356	1.55	4.65	0.336	66200	0.604
17-Jun-24	5.61	683.5	10.6	983	5.34	-34.5	0.58	7.06	544	1.16	9.66	0.134 J	118000	0.454
17-Sep-24	11.40	677.71	11.9	1206	6.77	199.9	9.95	6.6	779	1.09	11	0.286	90500	0.785 J

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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 Groundwater Sampling Results - Well MW-4A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	4.60	700.85	12.43	629	-	-	6.07	6.45	490	-	2 U	2 U	-	-
10-Nov-05	3.70	701.75	11.98	441	-	-	7.4	6.22	290	-	1 U	1 U	-	-
19-Jan-06	3.56	701.89	8.29	319	0.42	-	1.46	6.53	290 J	-	1 U	1 U	-	-
15-Feb-06	3.82	701.63	8.32	326	0.62	99.7	3.5	7.39	220 J	-	1 U	1 U	-	-
15-Mar-06	3.79	701.66	7.58	254	0.87	201.9	0.82	6.65	210 J	-	1 U	1 U	-	-
7-Apr-06	3.87	701.58	9.36	295	0.55	157.4	0.24	6.34	220	-	1 U	1 U	-	-
16-May-06	4.92	700.53	10.8	321	0.45	142.1	0.99	6.36	220	-	1 U	1 U	-	-
23-Jun-06	4.41	701.04	12.62	316	0.57	-	2.05	6.25	200	-	1 U	2.64	-	-
20-Jul-06	6.90	698.55	13.43	347	0.23	-20.9	0.32	6.11	120	-	1 U	1 U	-	-
22-Aug-06	8.46	696.99	13.68	406	0.9	153.5	2.2	6.13	280	-	1 U	1 U	-	-
26-Sep-06	6.50	698.95	14.59	417	2.47	-35.2	2.42	6.33	290	-	1 U	1 U	-	-
26-Oct-06	5.98	699.47	12.82	434	3.3	124.1	0.82	6.12	320	-	1 U	1 U	-	-
13-Nov-06	3.02	702.43	11.7	386	5.06	187.8	2.47	6.13	280	-	1 U	1 U	-	-
20-Dec-06	3.60	701.85	9.64	379	4.3	150.5	1.03	6.07	250	-	1 U	1 U	-	-
23-Jan-07	3.68	701.77	8.37	239	3.96	58.9	0.66	6.28	220	-	1 U	1 U	-	-
14-Feb-07	3.74	701.71	8.18	325	2.85	110.8	0.53	6.25	210	-	1 U	1 U	-	-
27-Mar-07	3.32	702.13	8.27	289	2.07	61.5	0.88	6.83	210 J	-	1 U	1 U	-	-
17-Apr-07	3.89	701.56	9.59	306	1.8	102.3	2.31	6.34	190	-	1 U	1 U	-	-
30-May-07	4.70	700.75	11.27	285	1.78	101.7	1.37	6.37	180	-	1 U	1 U	-	-
20-Jun-07	4.69	700.76	12.37	350	1.67	9.3	1.25	6.9	240 J	-	1 U	1 U	-	-
31-Jul-07	6.38	699.07	14.57	402	1.15	5.5	0.6	6.37	250	-	1.29	1 U	-	-
29-Aug-07	7.44	698.01	13.78	353	1.11	128.3	1.87	6.18	280 J	-	1 U	1 U	-	-
27-Sep-07	8.25	697.20	13.6	375	0.96	142.6	0.7	6.7	300	-	1 U	1 U	-	-
26-Oct-07	4.09	701.36	12.16	343	2.27	75.9	3.93	6.1	310 J	-	1 U	1 U	-	-
29-Nov-07	3.93	701.52	10.13	428	3.17	197.3	1.63	6.32	270	-	1 U	1 U	-	-
12-Dec-07	5.82	699.63	9.51	384	3.37	185	0.8	6.06	260	-	1 U	1 U	-	-
24-Jan-08	3.86	701.59	7.74	354	3.09	109	-	6.35	250	-	1 U	1 U	-	-
28-Feb-08	4.04	701.41	-	-	-	-	1.06	-	220	-	1 U	1 U	-	-
19-May-08	4.35	701.10	9.79	329	1.38	209.2	1.2	6.08	200 J	-	1 U	1 U	-	-
26-Aug-08	7.83	697.62	12.66	431	1.38	210.5	0.28	6.19	270	-	1 U	1 U	3000 U	-
18-Nov-08	3.64	701.81	10.43	235	3.95	217.5	0.66	6.03	210	-	1 U	1 U	3000 U	-
11-Feb-09	4.09	701.36	7.24	188	2.13	-	0.12	6.54	180	-	1 U	1 U	3000 U	-
19-May-09	3.79	701.66	8.19	173	1.28	111.9	1.78	7.18	170 J	-	1 U	1 U	3000 U	-
22-Sep-09	9.70	695.75	16.5	440	0.82	383.3	12.5	6.31	370 J	-	2 U	2 U	1200 J	-
17-Dec-09	3.47	701.98	9.2	311	4.37	470	16	6.25	110	-	2 U	2 U	700 J	-
24-Mar-10	3.87	701.58	9.4	410	0.34	204.8	30.7	6.65	240	-	0.81 J	2 U	1300 J	-
16-Jun-10	3.77	701.68	10.3	298	0.99	397.8	1.11	7.4	180	-	3.6	2 U	900 J	-
21-Sep-10	5.82	699.63	13.7	350	1.01	302.5	1.04	6.25	200	-	1.4 J	0.2 J	1200 J	-
7-Dec-10	3.83	701.62	9.6	283	0.72	405.6	0.42	6.16	190	-	2 U	2 U	800 J	-
30-Mar-11	3.91	701.54	8.2	133.3	0.51	248.2	0.29	9.87	140 J	-	0.35 J	2 U	5000	-
22-Jun-11	3.99	701.46	11	219.3	0.16	222.5	0.22	6.13	160	-	5 U	2 U	700 J	-
28-Sep-11	8.54	696.91	14.3	34.5	0.26	333.9	2.45	6.3	270	-	5 U	2 U	2100 J	-
15-Dec-11	4.12	701.33	9.4	217	1.15	414.3	2.74	6.28	200	-	5 U	2 U	1200 J	-
21-Mar-12	3.35	702.10	8.4	346	0.42	438.4	0.48	6.14	220	-	4.8	0.4 U	1300 J	-
19-Jun-12	3.78	701.67	11.3	290.1	0.09	314	0.46	6.28	170 J+	-	1.3	0.4 U	3300 U	-
20-Sep-12	8.53	696.92	14.4	419	0.26	309	1.07	6.39	240	-	1.6	0.4 U	2900 J	-
18-Dec-12	3.49	701.96	9.1	491	2.56	264.4	1.38	6.63	170	-	1 U	0.4 U	1200 J	-
26-Feb-13	3.91	701.54	8.4	324	2.59	404.2	1.01	7.03	140	-	1.1	0.4 U	3400	-
23-May-13	3.76	701.69	10.6	338	1.15	465.9	0.57	6.31	190	-	1 U	0.4 U	3300 U	-
22-Aug-13	8.28	697.17	13.1	284.2	0.33	32.2	0.89	6.34	220	-	0.4	0.1 U	1260	-
19-Nov-13	3.33	702.12	10.3	323	1.7	109.2	0.64	6.27	200	-	0.2	0.1 U	750	-
1-Apr-14	3.69	701.76	8.2	243.6	0.45	180.7	0.28	6.33	173	-	0.18 J	0.1 U	710	-
22-May-14	4.52	700.93	10.8	195	0.65	75	-	7.2	152	-	0.3	0.1	600	-
13-Aug-14	7.56	697.89	12.62	269	0.44	37.7	1.12	5.89	181	-	0.8	0.1 U	890	-
12-Nov-14	3.73	701.72	11.7	230.9	1.29	108.2	1.32	6.17	191	-	0.3	0.1 U	950	-
11-Feb-15	3.50	701.95	9.2	270.4	0.53	-34.2	0.73	6.3	170	-	0.2	0.1 U	680	-
4-May-15	4.69	700.76	10.9	249.5	0.28	378.1	0.57	6.29	341	-	0.2	0.1 U	610	-
5-Aug-15	9.44	696.01	13.9	316	0.72	-38.1	1.16	6.45	262	-	0.3	0.1 U	1230	-
3-Nov-15	4.21	701.24	11.8	192.2	8.59	205.6	5.39	6.34	166	-	0.2 J	0.1 U	790	-
9-Feb-16	3.82	701.63	9.2	291.8	4.61	230.7	0.49	6.45	164	-	0.17 J	0.1 U	790	-
3-May-16	4.61	700.84	10.9	310	2.39	253	1.01	6.34	178	-	0.3	0.01 J-	940	-
24-Aug-16	8.76	696.69	13.2	286.7	1.24	490.4	1.01	6.35	177	-	0.2 J	0.1 U	840	-
1-Nov-16	3.34	702.11	12.2	100	3.69	177.2	0.4	6.38	205	-	0.19 J	0.1 U	971	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
2-Feb-17	3.94	701.51	7.8	363	3.11	190	0.1	6.39	223	-	0.17 J	0.1 U	819	-
31-May-17	4.68	700.77	10.3	300	4.5	-	2.48	6.3	182	-	0.203	0.1 U	795	-
18-Aug-17	8.61	696.84	12.7	393	0.51	120.2	0.87	6.44	228	-	0.308	0.1 U	1300	-
10-Nov-17	3.58	701.87	11	264.4	3.88	56.5	0.76	6.01	217	-	0.186 J	0.1 U	669	-
27-Feb-18	3.76	701.69	8.3	302.1	3.19	221.1	0.55	6.29	238	-	0.176 J	0.1 U	875	-
2-May-18	4.02	701.43	10	343	3.02	-	0.59	6.36	215	-	0.15 J	0.1 UJ	980	-
22-Aug-18	9.35	696.10	12.17	330	1.99	142	2.31	6.27	265	-	0.315	0.1 U	1230	-
7-Nov-18	5.25	700.20	11.7	316.7	5.45	124.4	0.76	6.23	250	-	0.199 J	0.1 U	843	-
11-Mar-19	3.96	701.49	7.6	226.3	3.96	220.8	0.7	6.38	233	-	0.146 J	0.1 U	918	-
9-May-19	4.70	700.75	12.5	282.5	3.6	82.3	1.56	6.14	230	-	0.154 J	0.1 U	816	-
26-Aug-19	8.20	697.25	13.13	374	0.86	Note 1	0.02	6.3	264	-	0.3	0.1 U	928	-
14-Nov-19	4.35	701.10	10.8	309.4	3.19	109.5	0.02	6.15	240	-	0.251	0.1 U	894	-
13-Feb-20	3.70	701.75	7.9	283.7	2.98	102.2	0.91	6.18	283	-	0.176 J	0.1 U	859	-
13-Aug-20	7.73	697.72	13.5	334.3	0.62	58.3	0.51	6.19	238	-	0.711	0.1 U	921	-
10-Dec-20	3.45	702.00	9.8	364	6.11	169	1.56	6.51	297	-	0.296	0.1 U	1260	-
4-Mar-21	3.72	701.73	8.3	304	2.83	137	0.49	6.47	255	-	0.192 J	0.1 U	876	-
10-Jun-21	5.32	700.13	11.9	338.7	1.23	108.5	0.73	6.09	220	-	0.228	0.1 U	787	-
15-Oct-21	7.69	697.76	12.6	341.3	6.91	133.9	20.5	6.37	363 J-	0.18 J	0.99	0.151	1480	4.09
7-Jan-22	3.40	702.05	8.7	248.4	4.37	211.1	3.08	6.29	270	0.2 U	0.383	0.1 U	774 J	1.73
18-Mar-22	3.52	701.93	9.1	340.6	3.26	123.8	1.85	6.63	320	0.2 U	0.279	0.1 U	1140	1.53
22-Jun-22	3.83	701.62	10.1	327.8	1.36	114.5	0.46	6.36	263	0.2 U	0.201	0.1 U	666	1.16
14-Sep-22	8.9	696.55	13.4	389.4	2.46	87.6	2.53	6.02	330	0.2 U	0.385	0.1 U	1080	1.19
14-Dec-22	3.88	701.57	9.1	278	7.03	135.4	0.44	6.35	224	0.2 U	0.188 J	0.1 U	583	1.42
16-Mar-23	3.39	702.06	7.9	468.9	4.44	111.7	2.92	6.3	264	0.2 U	0.159 J	0.1 U	616	1.13
27-Jun-23	6.27	699.18	11.4	308.1	3.02	74.9	1.06	6.2	246	0.2 U	0.19 J	0.5 U	745	1.24
8-Sep-23	9.88	695.57	12.8	560.7	1.14	57.3	9.67	6.45	329 J-	0.101 U	0.317	0.0513 U	1170	1.14
14-Dec-23	3.78	701.67	9.7	497	6.6	227.1	1.2	6.37	255	0.202 U	0.218 J	0.257 U	527	1.25
7-Mar-24	3.72	701.73	8.7	576	4.82	171.9	0.66	6.37	320	0.202 U	0.4 U	0.103 U	708	1.18
17-Jun-24	4.00	701.45	10.8	451.3	6.22	77.4	0.62	6.26	226	0.202 U	0.18 J	0.103 U	452 J	0.85
17-Sep-24	8.33	697.12	12.2	576	6.2	132	1.9	6.38	304	0.202 U	0.482	0.103 U	931	2.42 J

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-2e: Summary of Lower Disposal Area - Shallow Groundwater Sampling Results - Well MW-5A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	33.33	577.90	12.02	956	-	-	496	7.34	600	-	2.01	2 U	-	-
10-Nov-05	29.62	581.61	11.24	1212	-	-	27.6	7.32	800	-	8.4	1 U	-	-
15-Feb-06	21.70	589.53	6.45	665	2.59	280.3	11.1	7.86	520 J	-	22.3	1 U	-	-
17-May-06	29.80	581.43	7.74	831	0.88	101.9	8.67	7.79	580	-	11	1 U	-	-
23-Aug-06	33.25	577.98	15.19	737	1.76	33.5	19.6	7.32	660	-	2.53	1 U	-	-
14-Nov-06	17.79	593.44	10.86	699	4.5	76.3	38.7	7.55	490	-	3.15	1 U	-	-
16-Feb-07	27.08	584.15	8.08	630	6.07	2.3	57.6	8.26	500	-	14.4	1 U	-	-
30-May-07	30.75	580.48	9.6	894	2.59	13.3	13.4	7.76	540	-	8.43	1 U	-	-
29-Aug-07	33.60	577.63	9.56	684	7.64	67	-	7.1	670 J	-	1.97	1 U	-	-
29-Nov-07	30.60	580.63	11	1075	3.53	151.5	23.5	8.37	560	-	5.17	1 U	-	-
27-Feb-08	25.68	585.55	-	-	-	-	29.9	-	400	-	10.7	1 U	-	-
20-May-08	29.73	581.50	7.93	768	4.27	180.7	77.8	7.39	480 J	-	5.67	1 U	-	-
27-Aug-08	33.97	577.26	10.17	862	4.07	81.2	-	7.43	540 J	-	1.17	1 U	87500	-
26-Sep-08	*Test Trench Drain Line Installed*													
16-Oct-08	33.55	577.68	8.89	845	5.39	86.3	852	7.53	440 J	-	1.03	1 U	90700	-
20-Nov-08	23.48	587.75	9.34	577	5.27	234.3	9.48	7.5	470	-	6.24	2 U	138000	-
30-Dec-08	20.88	590.35	8.39	510	8.89	99	44.8	8.02	430 J	-	14.2	1.11	138000	-
15-Jan-09	18.50	592.73	4.97	347	8.9	154.8	17.2	8.47	380	-	24.4	1 U	104000	-
12-Feb-09	27.90	583.33	8.47	-	10.21	-	22	7.6	420 J	-	6.11	1 U	99000	-
12-Mar-09	29.19	582.04	7.47	521	6.15	171.7	26.8	7.39	480	-	8.97	1 U	124000	-
16-Apr-09	21.70	589.53	6.99	456	7.6	151.6	72.7	8.66	470	-	28.2	1.01	126000	-
19-May-09	28.37	582.86	8.08	509	6.38	64.4	31.3	8.07	450 J	-	9.19	1 U	105000	-
23-Jun-09	31.95	579.28	8.84	551	5.97	69.1	74.3	8.28	500	-	4.3	2 U	71000	-
25-Aug-09	35.08	576.15	-	-	-	-	-	-	-	-	-	-	-	-
24-Sep-09	35.29	575.94	11.7	714	2.28	371.9	258	7.26	550 J	-	0.76 J	0.17 J	88000	-
15-Dec-09	26.11	585.12	8.6	928	2.89	544	89	7.14	450	-	1.1 J	2 U	110000	-
24-Mar-10	27.86	583.37	8.3	697	3.52	505.1	18.1	7.47	450	-	23	0.46 J	110000	-
16-Jun-10	21.35	589.88	10.7	783	2.07	379	41.4	7.73	340	-	53	0.0021	150000	-
22-Sep-10	33.88	577.35	10.4	938	4.3	467.1	7.93	7.1	620	-	5	2 U	100000	-
7-Dec-10	25.22	586.01	10.2	781	3.86	353.7	11.1	7.39	500	-	12	0.53 J	130000	-
29-Mar-11	23.59	587.64	7	354	3.47	708	22.22	9.52	440 J	-	63	1.4 J	140000	-
21-Jun-11	28.33	582.90	11.6	1000	2.22	285.3	10.6	9.06	1100 J	-	43	1.2 J	180000	-
27-Sep-11	34.70	576.53	12.7	641	1.46	307.2	12.8	7.3	680	-	5 U	0.23 J	100000	-
14-Dec-11	29.46	581.77	9.5	691	1.95	757.1	9.69	7.35	690	-	6.9	0.18 J	180000	-
20-Mar-12	19.50	591.73	6.2	841	3.98	320.2	8.52	8.25	350	-	26	1 J	140000	-
19-Jun-12	27.91	583.32	10.2	800	3.22	365.9	2.76	7.66	510	-	8.7	0.4 U	120000	-
20-Sep-12	34.53	576.70	11	859	0.73	387	46.8	7.64	530	-	2.6	0.4 U	100000	-
19-Dec-12	21.26	589.97	8.9	983	1.73	279	778	7.71	530	-	11	0.62	180000	-
25-Feb-13	27.19	584.04	7.5	682	7.61	330.5	4.36	7.85	380	-	13	0.15 J	74000	-
22-May-13	29.09	582.14	8.8	828	3.88	411.4	8.11	8.29	350	-	25	0.53	100000	-
21-Aug-13	35.15	576.08	17.1	1248	3.41	114.2	144	7.78	1060	-	1.5	0.05 J	95000	-
20-Nov-13	27.45	583.78	10	1032	4.13	196.5	31.7	7.18	699	-	14.5	1.4	202000	-
1-Apr-14	21.08	590.15	8.4	567	3.04	168.2	15.7	10.24	413	-	62.7	1.5	150000	-
21-May-14	26.11	585.12	10.3	670	0.49	198.4	-	7.45	565	-	95	1.6	166000	-
12-Aug-14	34.56	576.67	14.07	812	3.64	87.7	1519	7.51	560	-	3	0.1 U	107000	-
13-Nov-14	29.48	581.75	12.9	1135	3.5	241.7	10.46	7.69	956	-	20.8	0.1	295000	-
11-Feb-15	20.81	590.42	7.7	619	6.17	81.4	18	9.63	430	-	39.2	1.3	126000	-
4-May-15	29.80	581.43	10.5	924	2.54	361.3	8.7	9.74	623	-	42.3	0.5	192000	-
6-Aug-15	36.08	575.15	12.8	781	2.4	129.6	261	7.24	DRY	-	DRY	DRY	DRY	-
4-Nov-15	30.80	580.43	10.7	1234	4.98	205.6	11.8	7.13	1130	-	6.6	0.3	318000	-
10-Feb-16	23.56	587.67	6.4	602	1.62	197.7	11.9	10.19	451	-	132	1.4	148000	-
2-May-16	30.19	581.04	11.5	1008	0.8	110.6	9.76	10.14	751	-	171	2.7 J-	232000	-
23-Aug-16	35.79	575.44	13.1	729	2	436.2	51.4	7.2	1010	-	4.01	0.1 U	137000	-
2-Nov-16	29.06	582.17	10.9	570	4.98	103.1	32.1	7.55	1180	-	11.2	0.56	372000	-
1-Feb-17	26.86	584.37	8.1	992	2.21	99.7	7.19	9.73	632	-	109	0.971	194000	-
30-May-17	26.86	584.37	10.5	814	6.12	5.83	5.74	9.73	487	-	42.5	0.36 J+	168000	-
17-Aug-17	34.23	577.00	11.7	1054	5.43	125.1	5.68	7.65	731	-	6.52	0.1 U	156000	-
10-Nov-17	29.96	581.27	10	1077	4.65	85.2	10.5	7.18	953	-	5.82	0.338	308000	-
27-Feb-18	23.02	588.21	7.7	584	1.91	120.4	12.6	9.96	530	-	86.3	0.642	174000	-
1-May-18	24.85	586.38	9.1	1082	2.16	-	11.8	10.34	682	-	113	0.775 J+	196000	-
21-Aug-18	35.17	576.06	14.83	1095	4.02	131	123	7.4	936	-	3.65	0.1 U	214000	-
6-Nov-18	32.00	579.23	10.3	1192	5.93	198.1	2.35	7.49	1200	-	4.87	0.077 J	363000 J+	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
13-Mar-19	25.12	586.11	7.4	695	2.19	189.7	15.8	9.48	632	-	44.1	0.633	200000	-
8-May-19	27.89	583.34	10.7	844	4.95	60.5	5.19	9.3	697	-	41.9	0.677	182000	-
26-Aug-19	35.02	576.21	11.89	1111	1.52	Note 1	22.9	7.26	995	-	2.46	0.1 U	177000	-
13-Nov-19	33.00	578.23	9.8	932	5.27	66.1	0.02	7.18	776	-	3.89	0.1 U	211000	-
12-Feb-20	18.23	593.00	7	533	7.58	140.4	10.6	8.32	463	-	6.31	0.145	183000	-
12-Aug-20	34.50	576.73	11.2	1381	4	125	2.75	7.52	1250	-	5.37	0.1 U	333000	-
9-Dec-20	29.90	581.33	9.8	1105	4.51	222	8.32	7.29	897	-	3.12	0.295	263000	-
3-Mar-21	24.81	586.42	9.2	899	3.04	225	3.09	7.6	792	-	3.74	0.132	247000	-
9-Jun-21	33.20	578.03	9.3	875	5.23	184	1.26	7.27	700	-	2.62	0.063 J	205000	-
13-Oct-21	31.70	579.53	9.5	1934	5.97	194	9.56	7.22	DRY	DRY	DRY	DRY	DRY	DRY
5-Jan-22	23.00	588.23	9.2	972	4.7	271.1	1.4	7.18	829	6.42	3.38	0.085 J	252000	1.8
16-Mar-22	21.48	589.75	7.8	724	7.0	187	2.65	6.6	711	6.01	4.02	0.11	223000	1.52
23-Jun-22	25.74	585.49	9.6	969	3.5	173.1	1.13	7.38	881	5.49	3.29	0.093 J	251000	1.82
23-Sep-22	35	576.23	11.5	1640	3.45	223.6	1.35	7.42	1720	4.57	3.21	0.156 J	455000	1.58
13-Dec-22	30.22	581.01	10.4	928	7.08	109.2	2.27	7.04	634	3.54	1.89	0.105 J+	173000	1.25
13-Mar-23	27.15	584.08	8.1	1685	5.49	172.5	1.43	7.47	1090	5.83	3.39	0.068 J	318000	1.64
26-Jun-23	32.57	578.66	11.1	1559	4.28	74.7	1.29	7.49	1510	6.99	4.55	0.2 U	475000	2.17
5-Sep-23	35.67	575.56	Insufficient depth of water to sample											
12-Dec-23	19.96	591.27	9.7	1260	6.44	152.6	2.92	7.07	847	4.62	2.69	0.103 U	225000	1.71
4-Mar-24	24.62	586.61	8.4	1191	6.08	237	0.63	7.35	984 J	6.37	4.28	0.103 U	294000	1.62
18-Jun-24	30.41	580.82	9.9	2586	8.65	176.1	0.88	7.51	1430	7.1	3.91	0.103 U	456000	1.81
16-Sep-24	34.45	576.78	10.8	1940	7.65	228.6	4.82	7.54	1340	6.16	4.56	0.244	986000	1.82

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
Dry	Well went dry during sampling. Unable to collect sample.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-2f: Summary of Lower Disposal Area - Shallow Groundwater Sampling Results - Well MW-6A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	30.89	578.06	15.26	735	-	-	303	7.6	612	-	2 U	2 U	-	-
10-Nov-05	27.25	581.70	11.79	700	-	-	13.7	7.51	460	-	2.16	1 U	-	-
15-Feb-06	19.42	589.53	6.17	759	2	162.9	9.42	8.27	550 J	-	7.54	1 U	-	-
17-May-06	27.55	581.40	11.99	835	1.31	248.3	4.16	7.46	550	-	11	1 U	-	-
23-Aug-06	30.99	577.96	15.92	862	1.6	-26.4	15.5	7.4	810	-	1.34	1 U	-	-
14-Nov-06	15.30	593.65	10.56	712	4.59	84.1	14.5	7.32	500	-	1.71	1 U	-	-
16-Feb-07	24.22	584.73	8.49	581	3.64	38.6	139	7.21	420	-	1.6	1 U	-	-
30-May-07	28.50	580.45	13.93	1092	2.72	180.7	210	7.4	740	-	16.2	1 U	-	-
29-Aug-07	31.34	577.61	10.15	701	4.48	84.8	662	7.8	620 J	-	1.41	1 U	-	-
29-Nov-07	28.32	580.63	11.3	731	6.23	154	-	6.26	420	-	1.78	1 U	-	-
27-Feb-08	23.42	585.53	-	-	-	-	-	-	410	-	1.47	1 U	-	-
20-May-08	27.49	581.46	8.14	791	3.93	176.5	-	7.64	540 J	-	8.18	1 U	-	-
27-Aug-08	31.72	577.23	9.33	776	4.83	142	-	7.32	660 J	-	1.86	1 U	109000	-
26-Sep-08	*Test Trench Drain Line Installed*													-
16-Oct-08	31.29	577.66	9.17	923	4.6	115.4	-	7.13	590 J	-	1.85	1 U	106000	-
20-Nov-08	21.18	587.77	9.7	578	5.22	249.4	11.7	7.4	460	-	4.42	2 U	110000	-
30-Dec-08	18.64	590.31	8.45	448	9.27	137.9	75.8	7.89	370 J	-	11.9	1.14	106000	-
15-Jan-09	16.23	592.72	6.84	344	9.25	181.9	2.77	7.47	320	-	4.88	1 U	72900	-
12-Feb-09	25.64	583.31	7.89	-	10.82	-	71.7	7.7	420	-	11	1 U	103000	-
12-Mar-09	26.92	582.03	7.27	524	8.31	166.7	116	7.76	500	-	23.5	1 U	125000	-
16-Apr-09	19.46	589.49	7.33	406	7.57	182.8	91.8	8.33	430	-	24.1	1.09	101000	-
19-May-09	26.10	582.85	9.07	554	6.39	65.6	161	8.32	550 J	-	13.4	1 U	115000	-
23-Jun-09	29.67	579.28	9.51	522	6.05	71.4	-	8.17	540	-	3.1	2 U	74000	-
25-Aug-09	32.72	576.23	14.8	795	3.25	282.7	22	7.28	630 J	-	0.75 J	2 U	100000	-
24-Sep-09	32.93	576.02	10.6	745	4.02	361.3	29.8	7.27	560 J	-	0.28 J	2 U	100000	-
15-Dec-09	23.87	585.08	9.5	815	4.2	556	20	7.15	450	-	2 U	2 U	120000	-
24-Mar-10	25.61	583.34	8.5	704	4.93	205.6	20.5	8.53	490	-	47	0.9 J	140000	-
16-Jun-10	19.11	589.84	10.4	553	4.79	399.8	13.4	7.22	310	-	16	2 U	90000	-
22-Sep-10	31.61	577.34	11.3	1019	3.89	413.8	20.3	7.1	770	-	6.2	0.24 J	130000	-
8-Dec-10	23.10	585.85	87.9	751	6.24	437.1	9.55	8.77	520	-	43	1.3 J	130000	-
29-Mar-11	21.32	587.63	7.1	303	4.76	809.4	13.4	9.35	350 J	-	43	0.55 J	110000	-
21-Jun-11	26.04	582.91	11.2	840	3.24	300.2	8.5	8.4	790	-	18	0.58 J	110000	-
28-Sep-11	32.43	576.52	10.9	66.6	3.92	415.6	8.32	7.3	590	-	5 U	0.19 J	110000	-
14-Dec-11	27.19	581.76	9	605	1.56	329.9	21.9	7.89	570	-	11	0.79 J	150000	-
20-Mar-12	17.23	591.72	6.7	639	5.03	362.5	59.9	7.79	200	-	17	2 U	79000	-
19-Jun-12	25.63	583.32	9.6	681	5.24	373.2	5.94	7.43	430	-	7.4	0.4 U	76000	-
19-Sep-12	32.12	576.83	11.7	786	3.49	290	7.36	7.38	460	-	5.7	0.4 U	81000	-
19-Dec-12	19.00	589.95	8.9	977	4.55	308	26.9	7.98	440	-	20	1.3	150000	-
25-Feb-13	24.93	584.02	7.1	766	7.59	306.9	6.18	8.2	450	-	34	0.73	120000	-
22-May-13	26.84	582.11	9.1	705	3.94	412.9	5.97	9.33	430	-	43	0.52	140000	-
21-Aug-13	32.84	576.11	11.2	879	4.54	110.2	8.28	8.28	548	-	9.5	0.1 U	106000	-
20-Nov-13	25.21	583.74	11.1	1264	4.69	201.4	30.8	7.55	640	-	24.9	1.9	163000	-
1-Apr-14	18.81	590.14	8.4	448	3.5	194.9	14.7	8.87	342	-	14.8	0.3	78400	-
21-May-14	23.84	585.11	10.6	122	1.32	199.3	-	8.46	352	-	18	0.2	80400	-
13-Aug-14	32.25	576.70	12.46	796	5.77	54	8.01	8.68	628	-	16.1	0.1 U	165000	-
13-Nov-14	27.21	581.74	13.3	837	4.02	234.3	11.4	8.63	711	-	44.1	0.4	203000	-
11-Feb-15	18.54	590.41	8.4	609	1.75	16	87.4	9.71	435	-	36.2	1	117000	-
4-May-15	27.52	581.43	9.9	974	3.27	356.5	12.3	10.14	654	-	41.6	0.5	199000	-
6-Aug-15	33.98	574.97	11.7	822	1.77	113.7	4.02	8.83	670	-	19.1	0.1 U	210000	-
4-Nov-15	28.51	580.44	11.7	1207	4.85	206.3	21.2	7.48	1090	-	7.7	1	370000	-
10-Feb-16	20.96	587.99	6.9	712	2.3	145.8	20.1	10.82	575	-	121	1.1	173000	-
2-May-16	28.91	580.04	10.6	1856	0.19	111.2	15.6	11.53	1010	-	199	2.5 J-	347000	-
23-Aug-16	33.58	575.37	11.4	1241	0.43	462	8.89	9.51	1150	-	38.9	0.341	349000	-
2-Nov-16	26.92	582.03	11.6	409	5.05	14.4	40.6	9.15	911	-	25.6	1.49	297000	-
1-Feb-17	24.61	584.34	6.2	1757	2.34	72.1	11.7	11.97	880	-	141	0.336	283000	-
30-May-17	24.56	584.39	10.8	1026	2.45	5.69	16.9	10.5	629	-	72.8	0.52 J+	210000	-
17-Aug-17	32.04	576.91	13.1	1019	3.94	87.3	42.7	9.36	726	-	20.3	0.15	219000	-
10-Nov-17	27.72	581.23	11.6	1090	4.17	109.6	38.2	9.12	931	-	24.3	2.77	356000	-
27-Feb-18	20.78	588.17	7	823	3.99	59.3	12	11.29	635	-	99.3	0.561	203000	-
1-May-18	22.58	586.37	8.9	1442	3.52	-	17.7	11.49	817	-	119	0.831 J+	250000	-
21-Aug-18	33.09	575.86	13.18	1153	1.01	139.8	9.68	10.06	989	-	53.6	0.345	334000	-
6-Nov-18	29.74	579.21	11.1	1719	3.85	218.4	6.49	8.13	1860	-	3.04	0.367	701000 J+	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
13-Mar-19	22.90	586.05	5.8	748	5.04	145.7	32	10.55	737	-	39.1	0.455	246000	-
8-May-19	25.63	583.32	9.1	936	5.95	75.9	7.6	10.38	747	-	54.7	1.27	246000	-
26-Aug-19	32.90	576.05	11.18	1622	0.88	Note 1	6.57	8.97	1510	-	18.8	0.507	478000	-
13-Nov-19	30.92	578.03	10.2	1320	1.45	172.7	5.1	8.33	1140	-	6.31	0.1 U	422000	-
12-Feb-20	15.95	593.00	7.7	437.7	1.4	150.6	19.7	8.13	379	-	2.12	0.1 U	122000	-
12-Aug-20	32.30	576.65	11	2360	2.25	162.9	13.4	8.16	2060	-	6.28	0.088 J	709000	-
9-Dec-20	27.60	581.35	10.8	1750	1.95	209	22	8.22	1500	-	3.14	0.984	539000	-
3-Mar-21	22.58	586.37	7.1	760	1.74	208	5.6	8.04	722	-	3.09	0.307	243000	-
9-Jun-21	31.07	577.88	9.8	2077	4.83	197.3	1.81	8.08	1900	-	5.03	0.094 J	707000	-
13-Oct-21	29.39	579.56	11.2	2509	4.77	188.6	13.1	7.64	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	20.72	588.23	7.3	1136	8.21	229.4	2.04	7.98	1040	7.89	2.41	0.115	333000	0.912
16-Mar-22	19.23	589.72	7.3	828	7.3	176.4	3.63	7.57	808	7.90	2.85	0.155	255000	0.935
23-Jun-22	23.49	585.46	11.2	916	3.74	163.1	0.76	7.66	836	7.00	2.09	0.073 J	265000	0.977
23-Sep-22	32.92	576.03	14.8	2281	3.73	199.3	2.05	8.05	2150	7.64	4.97	0.2 U	646000	2.52
13-Dec-22	27.98	580.97	12.4	1915	6.1	80.4	3.77	7.98	1350	12.4	5.64	0.865 J+	495000	1.26
14-Mar-23	24.91	584.04	6.8	2029	8.44	212.6	0.76	7.71	1190	6.7	1.87	0.1 U	387000	0.801
28-Jun-23	30.50	578.45	11	1640	2.57	222.4	1.22	7.78	1310	7.07	3.92	0.052 J	446000	1.73
5-Sep-23	Below Pump	-	11.6	2869	4.79	184.9	4.83	7.9	1930 J-	7.37	4.56	0.1	566000	2.33
12-Dec-23	17.75	591.2	9.4	1170	7.75	137.3	4.99	7.33	766	6.48	2.09	0.254	266000	1
4-Mar-24	22.36	586.59	7.3	1215	7.46	232.5	0.84	7.59	1070 J	7.92	2.83	0.103 U	359000	0.928
18-Jun-24	28.14	580.81	7.72	1515	11.01	176	0.49	7.72	784	5.06	1.49	0.103 U	270000	0.458
16-Sep-24	32.34	576.61	11.4	2433	8.03	235.6	2.04	7.74	1830	6.33	3.87	0.103 U	495000	1.76

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-2g: Summary of Lower Disposal Area - Shallow Groundwater Sampling Results - Well MW-7A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
13-Oct-21	13.61	579.08	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
10-Jan-22	4.73	587.96	7.00	467	5.45	197.0	2.99	7.34	419	3.89	2.07	0.1 U	98000	1.04
21-Mar-22	3.21	589.48	7.3	691	6.38	66.2	1.52	7.46	632	6.23	2.88	0.071 J	179000	1.34
22-Jun-22	7.45	585.24	12	541	1.88	107.5	0.47	7.21	387	2.91	1.78	0.1 U	65500	1.19
14-Sep-22	16.9	575.79	13.6	548	4.46	141	0.5	6.31	444	1.63	1.49	0.1 U	54000	1.16
14-Dec-22	12	580.69	8	514	5.35	170.1	0.41	7.07	335	1.64	1.18	0.1 U	42700	0.798
17-Mar-23	8.90	583.79	5.3	755	2.7	205.3	0.85	7.16	412	1.51	1.45	0.1 U	55300	0.774
28-Jun-23	14.57	578.12	13	561	0.46	119.6	0.42	6.83	364	0.785	1.24	0.407	26200	1.02
7-Sep-23	17.51	575.18	12	868	4.05	44	0.47	6.87	493 J-	1.3	1.43	0.0513 U	35100	1.07
15-Dec-23	2.53	590.16	9.2	1163	6.27	354.3	4.79	7.22	577	4.03	1.95	0.103 U	113000	1.25
6-Mar-24	6.52	586.17	6.4	850	7.35	254.1	0.66	7.24	588	3.01	2.14	0.103 U	111000	0.97
17-Jun-24	12.25	580.44	11.8	810	6.53	154.4	0.35	6.83	405	0.924	1.44	0.103 U	29800	0.996
17-Sep-24	16.38	576.31	15.2	762	7.57	175.9	2.53	6.97	445	1.29	1.7	0.103 U	28100	1.31

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-2h: Summary of Lower Disposal Area - Shallow Groundwater Sampling Results - Well MW-8A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
13-Oct-21	23.91	577.58	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	13.55	587.94	9.5	670	3.99	239.1	4.50	7.05	595	5.21	6.64	0.1 U	169000	3.87
21-Mar-22	12.11	589.38	8.0	587	7.13	45	3.32	7.71	536	4.76	7.48	0.1 U	163000	3.84
22-Jun-22	16.4	585.09	9.4	773	2.99	96	0.94	7.22	699	5.17	8.13	0.1 U	197000	4.73
12-Sep-22	26	575.49	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-22	21.16	580.33	10.4	1011	6.13	122.1	1.22	7.07	721	4.53	5.37	0.1 U	205000	3.61
17-Mar-23	17.86	583.63	9.2	1216	4.6	214.5	0.8	7.19	714	4.71	7.2	0.1 U	218000	4.22
28-Jun-23	24.08	577.41	10.2	845	1.85	176.3	0.58	7.19	656	4.03	5.91	0.1 U	189000	3.62
7-Sep-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
15-Dec-23	11.34	590.15	9.8	1434	5.3	348.7	6.22	6.89	760	4.1	5.52	0.148 J	220000	3.64
6-Mar-24	15.41	586.08	8.3	926	8.1	304.5	0.74	7.06	622	4.93	6.67	0.103 U	159000	3.44
17-Jun-24	21.53	579.96	10.1	1378	8.54	167.8	0.83	7.14	719	4.28	5.97	0.103 U	195000	3.38
17-Sep-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-2i: Summary of Lower Disposal Area - Shallow Groundwater Sampling Results - Well MW-9A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Oct-21	4.38	692.91	12.20	956	1.45	-93.2	2.70	7.11	981 J-	0.659	4.79	0.139	16000	1.2
7-Jan-22	2.45	694.84	8.50	381	4.86	189.9	1.43	6.95	404	0.181 J	1.02	0.056 J	2910	1.03
18-Mar-22	2.38	694.91	8.50	423	5.19	138.3	1.17	7.16	403	0.154 J	0.788	0.1 U	2470	0.776
22-Jun-22	2.38	694.91	10.5	485.8	4.42	72.8	0.85	6.89	399	0.244	0.656	0.052 J	2130	0.916
14-Sep-22	8.7	688.59	13.5	509	3.84	130.2	1.09	6.44	441	0.154 J	1.05	0.1 U	2780	1.13
14-Dec-22	2.5	694.79	8	413.5	7.42	135.6	0.53	6.91	328	0.132 J	0.599	0.1 U	1630	0.867
16-Mar-23	2.39	694.9	6.6	556.2	5.25	120.9	1.6	6.85	337	0.119 J	0.508	0.1 U	1660	0.812
27-Jun-23	5.19	692.1	11.1	468.4	2.6	44.3	7.31	6.72	379	0.123 J	0.832	0.5 U	2120	1.3
8-Sep-23	11.47	685.82	Insufficient depth of water to sample											
13-Dec-23	2.48	694.81	9.1	623	6.85	127.8	3.2	6.4	297	0.202 U	0.47	0.103 U	1420	0.846
7-Mar-24	2.58	694.71	7.6	610	6.61	186.2	1.46	6.89	360	0.202 U	0.436	0.103 U	1790	0.64 J
17-Sep-24	7.55	689.74	13.2	593	7.28	161.8	1.02	6.96	321	0.234 J	0.54	0.103 U	2350	1

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available		
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.		
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022		
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 Groundwater Sampling Results - Well MW-10A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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	Lead	Potassium	Vanadium
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Oct-21	19.04	678.98	10.7	390	4.24	-115.0	27.80	7.93	383 J-	0.705	4.04	0.383	9700	2.87
6-Jan-22	5.55	692.47	9.3	168	7.06	94.6	6.90	7.50	141	0.151 J	1.13	0.109	2660	1.03
17-Mar-22	5.39	692.63	9.4	151	7.12	95.1	6.21	6.50	139	0.2 U	0.91	0.061 J	1880	0.807
21-Jun-22	5.89	692.13	11.5	114.9	7.92	191.1	4.48	6.80	116	0.2 U	0.764	0.081 J	1150	1.02
13-Sep-22	14.24	683.78	12	221.3	6.64	189.1	3.74	6.78	195	0.201	1.54	0.082 J	2350	1.56
13-Dec-22	14.93	683.09	9.8	395.9	4.71	179.4	5.19	7.34	200	0.173 J	1.3	0.1 U	2060	1.1
15-Mar-23	5.64	692.38	8.4	179.4	8.78	145.7	2.07	6.85	108	0.2 U	0.541	0.1 U	892	0.727
26-Jun-23	9.63	688.39	11.1	102.6	9.22	143.6	4.69	6.19	108	0.2 U	0.579	0.168 J	823	1
6-Sep-23	17.39	680.63	10.6	335	2.5	-26.6	4.58	7.51	205 J-	0.224	1.45	0.12	2310	1.4
13-Dec-23	6.01	692.01	10.3	247.7	9.01	154.4	4.23	6.3	111	0.202 U	0.596	0.103 U	977	0.746
5-Mar-24	5.33	692.69	8.9	180.6	9.04	162.6	5.3	6.31	106	0.202 U	0.44	0.103 U	777	0.556 U
17-Jun-24	7.15	690.87	9.8	197.4	12.65	198.6	3.18	6.4	115	0.202 U	0.548	0.104 J	883	0.806
17-Sep-24	15.56	682.46	10.7	287.2	8.25	153	0.87	6.7	182	0.202 U	1.2	0.103 U	1770	1.34

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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 Groundwater Sampling Results - Still Well
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters						Gen-Chem	Metals (ug/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)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
Preliminary Cleanup Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.5	-	-	80
1-Feb-05	8.1	10658	-	-	6.59	12.87	2860	-	49.9	100 U	5.52	10 U	-	-
9-Mar-05	13.23	7393	-	-	7.42	12.51	2860	-	115	228	14.7	10 U	-	-
5-Apr-05	9.5	11310	-	-	10.9	12.44	2900	-	55.6	100 U	11.6	20 U	-	-
10-May-05	13.99	11871	-	-	3.6	12.53	2810	-	55.4	100 U	12.5	20 U	-	-
7-Jun-05	13.83	10888	-	-	22.6	12.54	2490	-	5 U	100 U	5 U	20 U	-	-
15-Jul-05[a]	18.21	11331	-	-	14.8	12.5	3800	-	2.72	150 U	6.07	10 U	-	-
15-Jul-05[b]	-	-	-	-	-	-	2540	-	39.8	100 U	7.57	20 U	-	-
9-Aug-05[a]	21.45	12087	-	-	17.9	11.78	3500	-	120	288	10.9	10.1	-	-
9-Aug-05[b]	-	-	-	-	-	-	2820	-	91.5	100 U	9.53	20 U	-	-
14-Sept-05[a]	17.38	9507	-	-	14	12.36	3600	-	118	750 U	11.2	50 U	-	-
14-Sept-05[b]	-	-	-	-	-	-	2830	-	115	363	14.4	-	-	-
5-Oct-05	13.31	11481	-	-	62.7	12.47	3020	-	85.2	100 U	11.9	20 U	-	-
9-Nov-05	9.58	14417	-	-	11	12.34	3400	-	74	150 U	10 U	10 U	-	-
9-Dec-05	6.18	7138	-	-	12.5	12.82	2800	-	14.5	150 U	1.07	10 U	-	-
19-Jan-06	8.66	8265	1.74	-	11.8	13.06	1900 J	-	15.2 J	150 U	1 U	10 U	-	-
16-Feb-06	8.13	9019	2.81	195.6	6.16	12.27	3200 J	-	13.4 J	150 U	1.89	10 U	-	-
15-Mar-06	7.98	9033	0.79	114.8	8.93	12.6	3300 J	-	2.36	150 U	2.5 J	10 U	-	-
7-Apr-06	9.98	10450	0.57	34.8	6.08	12.51	3400	-	15.2	150 U	2.83	10 U	-	-
16-May-06	12.79	11060	0.14	45.4	9.28	12.4	3500	-	4.04	150 U	1.59	10 U	-	-
23-Jun-06	13.29	11680	0.44	-	14.6	12.9	3600	-	52.6	150 U	16.5	10 U	-	-
20-Jul-06	16.2	12240	0.14	-217.8	10.4	12.47	4300	-	19.3	150 U	3.57	10 U	-	-
22-Aug-06	17.14	10920	1.22	-146	13.3	12.66	3800	-	144	150 U	9.14 J	10 U	-	-
26-Sep-06	15.72	9599	0.42	-263.3	61.4	12.59	3800	-	123	171	4.63	15.4	-	-
26-Oct-06	10.99	9955	0.88	-207.5	82.3	12.93	3600	-	161	1500 U	19.5	10 U	-	-
15-Nov-06	10.58	12040	1.82	149.2	188	12.87	3400	-	30.6 J	150 U	4.5	10 U	-	-
20-Dec-06	8.85	10990	0.71	-152	32.8	13.02	2600 J	-	52.6	150 U	13	10 U	-	-
24-Jan-07	8.29	10440	0.97	-139.8	13.7	13.05	2500 J	-	58.6	150 U	13.1	10 U	-	-
12-Feb-07	8.88	10590	0.86	-125.8	56.4	13.06	3400	-	61.3	150 U	14	10 U	-	-
27-Mar-07	9.45	9163	1.25	-42.4	18.4	11.53	2900 J	-	44.1	150 U	1.81	10 U	-	-
18-Apr-07	8.9	8155	2.63	2.3	37.2	12.77	3300 J	-	29.3	150 U	1.98	10 U	-	-
31-May-07	20.12	11050	5.3	-153.9	9.31	11.59	2800 J	-	48.5	150 U	15.1 J	10 U	-	-
20-Jun-07	18.28	12000	5.41	-122.5	16.1	12.04	4300 J	-	26.8	150 U	2.33	10 U	-	-
31-Jul-07	16.53	12200	1.7	-151.6	24.8	12.48	6000	-	87.6	150 U	1.03	10 U	-	-
29-Aug-07	17	9570	1.12	-183.1	268	12.78	4600 J	-	106	150 U	9.46	10 U	-	-
27-Sep-07	14.49	8263	52.4	-183	211	12.42	2800	-	125	150 U	15.4	10 U	-	-
26-Oct-07	9.49	6144	4.88	-147.2	92.4	12.85	3300 J	-	124	260	24.9	10.1	-	-
30-Nov-07	5.53	7703	2.13	-122.6	127	12.67	2200	-	174	184	14.1	10 U	-	-
12-Dec-07	5.24	11609	3.43	-144.8	116	12.6	4100	-	110	150 U	11.3	10 U	-	-
24-Jan-08	3.73	9649	13.81	-138	-	10.74	2500	-	101	1530	9.74	81.5	-	-
28-Feb-08	-	-	-	-	51.2	-	2900	-	58.5	150 U	12.6	10 U	-	-
25-Mar-08	7.06	8623	5.52	-11.2	17.4	11.26	3400	-	74.3	150 U	10.4	10 U	-	-
29-Apr-08	9.74	11332	4.29	-1.3	27.7	12.82	3000 J	-	76.6	150 U	13.3	10 U	-	-
20-May-08	14.53	11955	1.74	-35.8	72.7	12.82	3400	-	87.3	150 U	15.1	10 U	-	-
18-Jun-08	12.77	10267	3.34	-27	34	12.86	3200 J	-	63.2	150 U	16.9	10 U	-	-
26-Aug-08	15.86	7703	1.06	-72.8	38.3	12.67	2600 J	-	430	1220	35	49.7	759000	-
20-Nov-08	9.59	8762	0.91	-65.6	74.1	13.32	3500	-	70	150 U	16.8	10 U	848000	-
12-Feb-09	3.25	554	14.29	-	108	13.03	550	-	47.2	150 U	13.7	10 U	551000	-
19-May-09	11.53	276	8.8	26	43.4	9.83	2500 J	-	37.8	150 U	15	10 U	689000	-
22-Sep-09	12.47	9760	1.5	159.1	625	12.47	3000	-	160	200	37	10 J	990000	-
15-Dec-09	5.2	11650	1.9	237	26.3	12.85	3000	-	86	67 J	21	4.7 J	900000 J	-
22-Mar-10	9.7	1035	-	182	19.4	12.58	3000	-	73	200 U	17	20 U	870000	-
17-Jun-10	11.7	9610	0.08	-	6.59	12.48	2700	-	66	95 J	15	2 J	780000	-
21-Sep-10	15	6710	1.26	152.6	140	12.29	2400	-	300	1100 J+	39	30 J+	570000	-
8-Dec-10	8.3	10110	1	-	5.44	12.63	2600	-	64	200 U	10	20 U	860000	-
30-Mar-11	8.6	4810	0.46	136.3	13.7	14.31	2500 J	-	65	200 U	9.6	20 U	720000	-
21-Jun-11	16.6	10420	1.63	111.9	3.4	12.36	5200	-	60	200 U	9.1	1.7 J	770000	-
28-Sep-11	14.8	5270	2.34	70	66.7	12.17	2200	-	220	360	11	7.2 J	1000000	-
15-Dec-11	6	7330	2.47	104.2	18.3	13.09	2800	-	83	200 U	2.9	20 U	880000	-
21-Mar-12	5.5	11040	3.15	294.2	12	12.39	2600	-	67	200 U	4.7	20 U	760000	-
19-Jun-12	5.5	11040	3.15	294.2	12	12.39	2600	-	58	200 U	6.7	20 U	690000	-
20-Sep-12	16.1	9560	3.27	76	10.7	12.35	2900	-	84	200 U	3	20 U	830000	-
19-Dec-12	4.1	1320	10.11	303.1	5.86	9.69	700	-	75	690	4.3	71	250000	-

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

Date Sampled	Field Parameters						Gen-Chem	Metals (ug/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)	Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
Preliminary Cleanup Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.5	-	-	80
26-Feb-13	7.3	9950	1.77	161.8	25.5	12.66	2000	-	70	500 U	0.29 J	20 U	720000	-
23-May-13	11.5	8040	2.23	266.8	22.7	12.47	2500	-	57	500 U	3.4	20 U	690000	-
22-Aug-13	17.4	8810	2.42	10.8	38.5	12.79	2590	-	57.8	100 U	1.5	2	863000	-
19-Nov-13	9	7090	2.47	79	62.8	12.54	2720	-	52.5	100 U	4.2	2 U	909000	-
1-Apr-14	10.3	6080	0.55	128.2	37.1	6.08	1890	-	54.6	100 U	1.1	1.3 U	687000	-
22-May-14	13.6	7360	1.22	34.4	-	11.75	2330	-	60.9	100 U	2	2 U	689000	-
13-Aug-14	18.26	7844	0.33	1.2	7.3	12.53	2770	-	70	100 U	2.1	2 U	849000	-
12-Nov-14	9	585	3.17	-47.8	17.5	12.93	2450	-	83.2	100 U	3.9	2 U	837000	-
12-Feb-15	10.7	7540	2.68	-18.6	9.64	12.71	2150	-	51.6	100 U	0.3	2 U	690000	-
4-May-15	12.9	9140	2.73	110.4	26.8	13.02	2520	-	54.6	100 U	0.22 J	2 U	734000	-
5-Aug-15	19.5	8060	2.58	-29.8	61.1	12.62	2980	-	63.9	250 U	1.7	4.7 J	898000	-
3-Nov-15	11.1	5150	0.37	38.6	171	8.93	1840	-	109	270	21.7	13	747000	-
9-Feb-16	9.7	7390	0.78	80.8	7.79	13.07	2170	-	53.6	100 U	1.2	6	601000	-
3-May-16	14.7	7530	1.4	358.1	2.65	12.98	2480	-	54.2	100 U	1.7 J-	2	711000	-
22-Aug-16	20.5	7.91	2.1	-	59	12.95	2780	-	91.3	250 U	5.87	2.3 J	831000	-
1-Nov-16	12.3	2884	2.66	-72.1	19.1	13.17	2620	-	46.2	100 U	9.64	2 U	841000	-
31-Jan-17	7.4	8510	2.37	-167	7.35	13.17	2050	-	52.5	26 J	1.19	1.6 J	582000	-
31-May-17	14.6	7500	2.44	-	4.17	12.89	1900	-	45.4	11 J	0.68 J+	0.7 J	615000	-
17-Aug-17	18.3	8460	3.35	-84	15.9	12.79	2680	-	56.8	3 J	2.14	1.3 J	750000	-
9-Nov-17	8.2	7215	3.48	90.9	18.2	12.65	2360	-	62.1	100 U	3.52	2.5	822000	-
27-Feb-18	6.6	5312	3.75	2.3	2.49	12.11	1970	-	50.2	100 U	7.53	2.5	521000	-
2-May-18	11.1	8260	1.7	-	13	12.92	2360	-	43.4	133	21.7 J+	8.8	552000	-
21-Aug-18	20.22	6260	4.71	-42.1	5.84	12.58	2100	-	52.2	100 U	0.138	2 U	629000	-
7-Nov-18	9.7	995	6.72	126.8	20.6	9.15	1880	-	644	1350	80.2	49.1	502000 J+	-
11-Mar-19	10.6	1354	5.93	-18.7	7.19	10.31	1710	-	52.8	9.1 J	21.2	1.3 J	501000	-
9-May-19	13.8	6973	6.4	18.1	16.7	12.36	1980	-	41.6	7.9 J	13.4	0.8 J	521000	-
26-Aug-19	17.8	6405	3.91	Note 1	5.15	12.56	2570	-	42.5	100 U	15.4	1 J	722000	-
14-Nov-19	9.7	6065	0.41	-53.3	12	12.67	1750	-	167	121 J	23.9	6.5	563000	-
13-Feb-20	7.6	4936	0.37	-139	2.56	12.66	1630	-	48.6	13.6 J	6.08	3.1	490000	-
13-Aug-20	15	6817	2.55	-42.8	2.02	12.39	2620	-	41.9	6.3 J	0.86	0.9 J	659000	-
10-Dec-20	8.8	4534	0.55	-26.2	5.87	12.79	1670	-	82.7	241	11.1	10.8	510000	-
4-Mar-21	7.7	4728	0.05	-42	0.85	11.94	1470	-	61.8	100 U	1.49	8 U	512000	-
9-Jun-21	13.4	5213	0.89	-148.4	4.06	12.56	1600	-	91.7	-	5.72	-	471000	-
13-Oct-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	-	DRY	DRY
7-Jan-22	8.8	4103	2.53	55.4	3.04	12.88	1900	8.39	50.3	-	4.26	-	486000	3.34
17-Mar-22	9	4955	7.42	153.1	1.88	13.71	2070	8.23	51.7	-	5.88	-	517000	3.02
21-Jun-22	15.4	5090	2.53	156.3	3.4	11.96	2180	9.34	51.6	-	3.08	-	465000	3.7
14-Sep-22	16.6	6728	6	68	44.5	12.33	2480	7.82	52.3	-	6.96	-	669000	3.47
13-Dec-22	7.7	1419	7.42	-92.9	9.97	11.6	967	71	125	-	9.95	-	309000	11.1
15-Mar-23	7.5	7393	3.03	77	42	12.72	2070	10.1	39.1	-	6.26	-	478000	3.06
28-Jun-23	15.6	6301	2.79	-109.2	3.74	12.33	2240	27.6	42.1	-	0.977	-	450000	4.49
6-Sep-23	17.2	5942	2.55	-53.7	10.5	12.46	1740 J-	271	78.5	-	4.35	-	541000	18.1
15-Dec-23	10.3	4630	9.48	81.6	6.81	12.38	1120	25.5	35.8	-	4.91	-	367000	2.87
5-Mar-24	8.3	7467	8.51	-23	9.33	12.39	1700	7.25	50.1	-	4.7	-	434000	2.9
18-Jun-24	13.4	5636	10.88	95	3.5	12.21	1700	16.8	48.5	-	5.82	-	408000	2.88
17-Sep-24	14.6	3389	8	165.4	18.6	12.49	1640	65.7	35.9	-	5.94	-	453000	4.82

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not analyzed or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	North Creek Analytical, Inc.
b	Severn Trent Laboratories
c	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
19-Dec-06	26.51	678.17	10.96	546	0.43	-115.4	1.05	7.70	310	151	1 U	-
14-Feb-07	26.08	678.60	10.62	397	1.02	-90.8	3.07	7.53	240	160	1 U	-
31-May-07	25.96	678.72	10.83	386	0.36	-172.8	4.20	8.20	220	122	1 U	-
27-Aug-07	25.66	679.02	10.97	372	0.76	-128.2	1.08	7.51	240	89.9	1 U	-
28-Nov-07	26.81	677.87	10.56	371	0.42	-121.2	1.29	8.03	220	88.3	1 U	-
27-Feb-08	25.80	678.88	10.62	371	2.01	-	1.07	-	230	80.9	1 U	3000 U
20-May-08	25.62	679.06	10.61	391	0.36	-53.0	1.11	7.28	230	64.3	1 U	-
27-Aug-08	26.14	678.54	10.58	394	0.50	-63.9	1.02	7.35	230 J	64	1 U	3000 U
19-Nov-08	25.16	679.52	10.33	269	0.45	-88.6	0.48	7.51	230	59.6	1 U	3000 U
11-Feb-09	25.08	679.60	10.04	268	0.48	-	0.97	7.89	230	56	1 U	3000 U
18-May-09	24.83	679.85	10.10	271	0.42	-50.5	1.81	8.05	230 J	46.6	1 U	3000 U
24-Sep-09	26.32	678.36	11.80	323	0.24	202.0	3.59	7.57	260	27	2 U	1100 J
17-Dec-09	25.06	679.62	10.10	370	0.94	179.0	4.16	7.77	<40	34	2 U	1200 J
23-Mar-10	24.83	679.85	10.90	344	0.21	397.4	3.17	7.57	240	25	2 U	1300 J
15-Jun-10	24.38	680.30	10.50	355	0.08	195.5	0.42	7.66	150	27	2 U	1100 J
20-Sep-10	25.74	678.94	10.50	354	0.06	192.9	0.20	7.65	200	22	2 U	1100 J
6-Dec-10	24.59	680.09	10.00	347	0.09	99.3	0.17	7.86	230	22	2 U	1000 J
28-Mar-11	24.01	680.67	10.00	173	0.16	90.6	0.88	7.58	200	22	2 U	1000 J
20-Jun-11	24.11	680.57	10.30	330	0.07	121.5	0.17	7.65	250	22	2 U	900 J
26-Sep-11	25.39	679.29	10.40	2906	0.06	123.6	0.43	7.65	280	15	2 U	1100 J
14-Dec-11	24.61	680.07	9.90	245	0.10	193.8	1.76	7.57	230	21	2 U	1200 J
21-Mar-12	23.70	680.98	10.10	392	0.07	392.0	0.22	7.47	240	23	2 U	1100 J
18-Jun-12	23.90	680.78	10.50	383	0.02	342.8	0.30	7.67	230	20	0.4 U	3300 U
19-Sep-12	25.38	679.30	10.30	402	0.01	151.0	0.44	7.63	220	19	0.4 U	1000 J
18-Dec-12	23.59	681.09	10.10	492	0.00	-45.7	0.16	7.70	92	17	0.4 U	1200 J
25-Feb-13	23.73	680.95	9.90	377	0.00	177.1	0.37	7.53	270 J	19	0.4 U	1000 J
22-May-13	23.85	680.83	9.90	398	0.00	430.4	0.44	7.73	290	17	0.4 U	3300 U
21-Aug-13	25.34	679.34	10.40	467	0.01	-31.7	0.55	7.68	238	16.8	0.08 J	1060
19-Nov-13	24.25	680.43	10.10	361	0.00	70.3	0.32	7.30	232	15.7	0.1 U	1040
31-Mar-14	22.36	682.32	10.70	286	0.01	107.4	0.21	7.79	211	13.8	0.1 U	1020
21-May-14	23.29	681.39	8.54	271	1.35	54.3	-	7.14	198	13.1	0.1 U	1000
12-Aug-14	24.87	679.81	14.79	335	0.41	-16.0	2.02	7.05	216	11.9	0.1 U	1010
11-Nov-14	24.96	679.72	10.10	262	0.79	11.1	1.51	7.49	221	13.6	0.1 U	1090
10-Feb-15	23.23	681.45	10.40	319	0.25	-114.0	0.36	7.70	240	13.3	0.1 U	960
4-May-15	23.62	681.06	10.20	370	0.05	175.1	0.16	7.70	224	11.7	0.1 U	960
4-Aug-15	25.30	679.38	11.00	279	0.06	-30.5	0.72	7.72	234	14.4	0.1 U	990
4-Nov-15	25.35	679.33	10.60	263	0.00	51.2	0.46	7.46	233	11	0.1 U	1150
8-Feb-16	23.03	681.65	10.20	319	0.03	206.5	0.20	7.77	210	12.1	0.1 U	1050
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	11.9	0.1 U	1030
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	36.90	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	10.8	0.1 U	951
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]			

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
11-Mar-19	22.61	682.07	10.10	248	0.60	-70.8	0.68	7.60	224	8.74	0.1 U	1070
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]			
13-Feb-20	22.04	682.64	10.10	280	0.34	-133.4	0.57	7.51	207	8.82	0.1 U	1050
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	10.5	0.1 U	1120
10-Jun-21	23.17	681.51	Monitored Semi-Annually[1]						Monitored Annually[1]			
13-Oct-21	24.41	680.27	10.90	327.2	0.91	-76.1	0.33	7.48	Monitored Annually[1]			
5-Jan-22	22.00	682.68	Monitored Semi-Annually[1]						Monitored Annually[1]			
17-Mar-22	21.89	682.79	10.7	259.6	1.24	-60.4	0.22	6.52	220	8.2	0.1 U	925
21-Jun-22	21.58	683.1	Monitored Semi-Annually[1]						Monitored Annually[1]			
12-Sep-22	23.51	681.17	11.3	263.3	2.86	-7.4	0.37	6.76	Monitored Annually[1]			
12-Dec-22	23.51	681.17	Monitored Semi-Annually[1]						Monitored Annually[1]			
15-Mar-23	22.00	682.68	10.3	372.2	0.17	-86.5	0.13	7.66	221	8.35	0.1 U	864
27-Jun-23	22.85	681.83	Monitored Semi-Annually[1]						Monitored Annually[1]			
6-Sep-23	24.14	680.54	11.6	385.5	2.01	-50.9	1.44	7.73	Monitored Annually[1]			
15-Dec-23	22.74	681.94	Monitored Semi-Annually1						Monitored Annually1			
4-Mar-24	21.68	683	10.2	320.6	3.65	-29.8	0.3	7.38	243 J	9.13	0.103 U	857
18-Jun-24	22.16	682.52	Monitored Semi-Annually[1]						Monitored Annually[1]			
18-Sep-24	23.85	680.83	11	363.3	7.57	131.2	0.42	7.49	Monitored Annually[1]			

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 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
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
19-Dec-06	36.82	704.84	12.15	394	0.57	114.6	1.84	7.58	230	8.49	1 U	-
14-Feb-07	36.30	705.36	11.69	339	1.40	-85.7	2.72	7.39	200	6.09	1 U	-
31-May-07	36.93	704.73	12.13	346	0.20	-223.7	3.04	8.28	210	6.95	1 U	-
27-Aug-07	37.99	703.67	12.18	336	0.49	-169.7	0.84	7.54	210	7.49	1 U	-
28-Nov-07	37.89	703.77	11.82	338	0.28	-146.6	1.32	7.93	250	6.91	1 U	-
27-Feb-08	37.24	704.42	11.87	340	0.23	-	0.87	7.41	210	7.46	1 U	3000 U
20-May-08	37.31	704.35	11.91	359	0.23	-86.6	0.67	7.27	200	6.31	1 U	-
27-Aug-08	38.37	703.29	11.84	362	0.35	-77.6	0.70	7.21	210 J	6.36	1 U	3000 U
19-Nov-08	37.50	704.16	11.53	254	0.44	-105.9	2.08	7.45	200	5.86	1 U	3000 U
11-Feb-09	37.10	704.56	11.25	254	0.48	-	0.63	7.91	220	5.61	1 U	3000 U
18-May-09	37.00	704.66	11.42	258	0.42	-71.9	1.11	8.00	210 J	5.17	1 U	3000 U
25-Sep-09	38.88	702.78	13.10	297	0.14	140.7	3.09	7.54	230	6.5	2 U	1200 J
17-Dec-09	37.19	704.47	10.80	341	0.51	129.0	4.85	7.71	74	4.3	2 U	1100 J
23-Mar-10	36.60	705.06	12.60	323	0.27	355.0	5.28	7.54	110	7.6	2 U	1200 J
15-Jun-10	36.25	705.41	11.40	326	0.08	171.1	-	7.62	98	8.8	2 U	1100 J
20-Sep-10	37.85	703.81	11.60	324	0.08	144.0	0.16	7.61	160	6.5	2 U	1200 J
6-Dec-10	36.60	705.06	11.00	319	0.21	78.3	0.20	7.81	210	2.9	2 U	900 J
29-Mar-11	35.98	705.68	11.20	156	0.15	215.0	0.75	7.48	200	5.6	2 U	1500 J
21-Jun-11	36.34	705.32	11.80	352	0.06	101.5	0.24	7.59	220	5 U	2 U	1000 J
27-Sep-11	38.14	703.52	11.50	2484	0.06	114.4	0.45	7.60	220	5 U	2 U	1000 J
14-Dec-11	36.91	704.75	11.00	228	0.05	127.2	4.04	7.54	190	6.7	2 U	1200 J
21-Mar-12	35.68	705.98	11.00	359	0.05	93.9	0.30	7.43	210	6.9	2 U	1100 J
18-Jun-12	36.06	705.60	11.70	350	0.02	211.9	0.23	7.62	220	6.2	0.4 U	3300 U
19-Sep-12	38.07	703.59	11.60	367	0.00	102.0	0.34	7.59	200	6.5	0.4 U	1000 J
18-Dec-12	34.88	706.78	10.90	463	0.00	-97.8	0.17	7.81	68	6	0.4 U	1200 J
25-Feb-13	35.70	705.96	10.90	347	0.09	112.6	0.27	7.56	190	6.6	0.4 U	1100 J
22-May-13	36.24	705.42	11.00	412	0.00	412.5	0.43	7.71	190	6	0.4 U	3300 U
20-Aug-13	38.13	703.53	12.20	406	0.02	-41.5	0.64	7.48	211	5.5	0.1 U	1030
19-Nov-13	36.56	705.10	11.10	344	0.01	43.6	0.32	7.35	206	5.2	0.1 U	1090
31-Mar-14	35.36	706.30	11.50	285	0.00	93.1	0.31	7.71	207	5.1	0.1 U	1100
22-May-14	35.80	705.86	10.05	260	0.24	17.5	-	7.22	186	5	0.1 U	1000
13-Aug-14	37.50	704.16	13.10	294	0.57	-37.5	3.28	7.19	190	5.4	0.1 U	1110
11-Nov-14	37.06	704.60	10.10	241	0.68	-39.7	2.10	7.48	206	5.4	0.1 U	1090
10-Feb-15	35.70	705.96	11.40	295	0.11	-123.2	2.11	7.69	206	5.1	0.1 U	1020
4-May-15	36.34	705.32	11.70	336	0.05	340.2	0.72	7.73	204	4.8	0.1 U	1040
4-Aug-15	38.42	703.24	12.70	263	0.04	-81.8	0.77	7.72	204	5.8	0.1 U	1040
4-Nov-15	37.81	703.85	11.60	244	0.04	26.9	2.13	7.45	201	4.7	0.1 U	1070
8-Feb-16	35.68	705.98	11.60	307	0.00	208.4	0.74	7.68	186	5.5	0.1 U	1110
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	5.66	0.1 U	1110
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]			

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
28-Feb-18	34.95	706.71	10.90	261	0.21	-115.5	0.80	7.48	205	5.69	0.1 U	992
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	5.5	0.1 U	1080
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]			
13-Feb-20	35.10	706.56	10.80	261	0.39	-135.9	0.96	7.50	185	5.45	0.1 U	1150
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	5.52	0.1 U	1090
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]			
5-Jan-22	35.31	706.35	Monitored Semi-Annually[1]						Monitored Annually[1]			
17-Mar-22	34.52	707.14	11.6	244.3	2.84	-60.6	3.21	6.56	201	5.53	0.071 J	1060
21-Jun-22	34.7	706.96	Monitored Semi-Annually[1]						Monitored Annually[1]			
23-Sep-22	37	704.66	12.1	243.1	3.88	-17.8	0.54	7.47	Monitored Annually[1]			
12-Dec-22	36.41	705.25	Monitored Semi-Annually[1]						Monitored Annually[1]			
14-Mar-23	35.09	706.57	10.8	350.4	3.17	50.5	0.2	7.37	199	5.25	0.1 U	894
27-Jun-23	36.04	705.62	Monitored Semi-Annually[1]						Monitored Annually[1]			
6-Sep-23	37.74	703.92	12.9	354.5	1.99	-35.7	0.51	7.67	Monitored Annually[1]			
14-Dec-23	35.46	706.2	Monitored Semi-Annually[1]						Monitored Annually[1]			
6-Mar-24	34.60	707.06	10.8	320.7	5.8	84.9	0.52	7.39	218	5.24	0.103 U	952
18-Jun-24	35.20	706.46	Monitored Semi-Annually[1]						Monitored Annually[1]			
18-Sep-24	36.90	704.76	Monitored Semi-Annually[1]						Monitored Annually[1]			

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 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
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-3c: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results - Well MWB-3LDA Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
19-Dec-06	7.08	737.11	11.37	670	0.42	-171.2	1.20	9.23	500	25.7	1 U	-
23-Jan-07	5.62	738.57	13.07	383	0.51	-275.0	1.53	8.63	270	18.4	1 U	-
14-Feb-07	5.81	738.38	12.57	328	1.09	-158.2	115.00	7.86	310	15.1	1 U	-
29-Mar-07	4.78	739.41	12.44	458	0.57	-140.8	4.25	7.78	260 J	37.9	1 U	-
17-Apr-07	4.86	739.33	12.79	389	0.27	-102.4	1.22	7.46	240	23	1 U	-
31-May-07	6.39	737.80	12.98	394	0.29	-223.8	3.32	8.14	240	21.2	1 U	-
20-Jun-07	6.86	737.33	13.41	412	6.10	-128.5	1.35	8.02	230 J	23.8	1 U	-
31-Jul-07	7.96	736.23	13.47	417	0.77	-174.1	0.92	7.64	250	18.9	1 U	-
27-Aug-07	8.50	735.69	12.84	395	0.46	-132.4	1.97	7.43	250	17.6	1 U	-
27-Sep-07	9.58	734.61	12.68	294	0.51	-133.8	0.53	7.87	250	19.3	1 U	-
26-Oct-07	9.65	734.54	12.49	288	0.84	-111.9	9.83	7.60	240 J	11	1 U	-
28-Nov-07	10.23	733.96	11.95	362	0.64	-86.1	1.58	7.87	200	17.8	1 U	-
12-Dec-07	9.66	734.53	11.83	334	0.26	-93.2	0.63	7.63	280 J	17.4	1 U	-
24-Jan-08	8.20	735.99	11.09	335	0.44	-108.3	-	7.46	220	19.2	1 U	-
26-Feb-08	7.61	736.58	12.26	337	0.48	-	2.40	7.45	210	22	1 U	3000 U
25-Mar-08	7.22	736.97	11.94	337	1.01	-48.6	2.80	7.51	210	17.8	1 U	-
29-Apr-08	6.75	737.44	12.53	332	0.77	-50.3	1.95	7.41	200 J	18.2	1 U	-
19-May-08	7.17	737.02	12.37	336	0.57	-57.2	2.19	7.34	200 J	18.7	1 U	-
18-Jun-08	7.26	736.93	12.11	323	0.48	-64.1	0.83	7.13	190 J	19.5	1 U	-
26-Aug-08	8.78	735.41	12.31	329	1.16	-36.5	2.89	7.30	200 J	17.7	1 U	3000 U
19-Nov-08	9.03	735.16	11.91	243	0.52	-93.1	1.69	7.40	190	18.2	1 U	3000 U
11-Feb-09	7.07	737.12	11.74	227	0.65	-	1.03	7.76	180	17.7	1 U	3000 U
18-May-09	6.50	737.69	12.11	225	0.67	-63.9	1.51	7.83	190 J	12.9	1 U	3000 U
25-Sep-09	10.47	733.72	13.50	260.1	0.36	215.3	4.14	7.61	220	17	0.94 J	12000
17-Dec-09	8.39	735.80	11.50	301.0	0.44	110.0	3.10	7.71	270	23	2 U	1300 J
23-Mar-10	6.46	737.73	12.20	294.8	0.43	332.5	3.52	7.57	150 J	27	2 U	1300 J
16-Jun-10	5.34	738.85	11.10	281.7	0.05	117.0	-	7.71	160	27	2 U	1300 J
21-Sep-10	7.72	736.47	11.80	276.3	0.06	169.5	0.36	7.54	140	23	2 U	1300 J
7-Dec-10	6.48	737.71	11.00	263.0	0.15	77.2	0.38	7.58	180	20	2 U	1200 J
28-Mar-11	4.42	739.77	10.80	134.0	0.44	75.6	1.06	7.46	160 J	21	2 U	1700 J
20-Jun-11	4.76	739.43	12.10	252.7	0.07	68.4	0.13	7.48	200 J	16	2 U	1000 J
27-Sep-11	7.86	736.33	11.90	2064.0	0.04	102.6	0.37	7.48	170	18	2 U	1100 J
14-Dec-11	7.17	737.02	11.00	188.2	0.03	140.8	1.87	7.50	770	22	2 U	1300 J
21-Mar-12	4.68	739.51	10.70	297.8	0.07	130.6	0.41	7.39	170	21	2 U	1100 J
18-Jun-12	4.75	739.44	11.60	289.0	0.16	271.3	0.55	7.54	150 J+	19	0.4 U	3300 U
19-Sep-12	7.65	736.54	12.60	299.9	0.10	121.0	0.42	7.50	160	18	0.4 U	1100 J
18-Dec-12	5.58	738.61	10.90	384.0	0.03	15.6	1.39	7.50	200	19	0.4 U	1300 J
25-Feb-13	4.80	739.39	10.60	284.2	0.03	140.4	0.30	7.53	150	22	0.4 U	1200 J
22-May-13	4.81	739.38	11.00	294.9	0.14	387.7	0.52	7.61	160	18	0.4 U	3300 U
20-Aug-13	7.63	736.56	12.60	383.0	0.81	-8.4	0.80	7.26	164	16.7	0.1 U	1060
19-Nov-13	7.11	737.08	11.30	218.1	0.14	54.3	0.73	7.20	169	16.6	0.1 U	1130
1-Apr-14	4.08	740.11	10.70	222.6	0.15	158.5	1.12	7.50	168	13.3	0.1 U	1070
22-May-14	4.21	739.98	9.98	206.0	1.59	27.1	-	7.17	158	11.2	0.1 U	1000
13-Aug-14	6.95	737.24	13.50	237.0	1.14	9.8	4.70	6.92	154	10.5	0.1 U	990
12-Nov-14	6.04	738.15	8.40	185.1	0.28	-10.1	3.42	7.36	162	16.1	0.1 U	1050
11-Feb-15	4.62	739.57	11.50	205.1	1.20	68.1	1.32	7.41	169	9	0.1 U	1100
4-May-15	4.93	739.26	12.20	262.0	1.64	190.2	0.84	7.43	168	10.9	0.1 U	1010
4-Aug-15	7.44	736.75	13.20	211.3	1.62	81.9	2.02	7.39	173	6.8	0.1 U	1020
5-Nov-15	8.14	736.05	12.50	186.0	1.49	166.9	1.87	7.10	162	3.5	0.1 U	1040

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
8-Feb-16	3.20	740.99	11.70	240.5	2.13	196.9	0.88	7.23	150	11.2	0.1 U	980
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	3.23	0.1 U	953
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	2.53	0.1 U	848
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	1.87	0.1 U	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]			
13-Feb-20	1.69	742.50	10.70	180	3.20	88.5	1.21	7.11	140	1.69	0.1 U	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	1.84	0.1 U	877
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]			
5-Jan-22	0.80	743.39	Monitored Semi-Annually[1]						Monitored Annually[1]			
17-Mar-22	0.2	743.99	11.4	166.1	5.44	58.3	0.79	7.54	151	1.58	0.1 U	1200
21-Jun-22	0.54	743.65	Monitored Semi-Annually[1]						Monitored Annually[1]			
23-Sep-22	4	740.19	13.8	178.6	5.66	172	5.55	6.63	Monitored Annually[1]			
12-Dec-22	4.48	739.71	Monitored Semi-Annually[1]						Monitored Annually[1]			
14-Mar-23	1.11	743.08	11	254.9	0.8	-29.8	0.29	7.51	146	7.37	0.1 U	786
27-Jun-23	2.73	741.46	Monitored Semi-Annually[1]						Monitored Annually[1]			
6-Sep-23	5.21	738.98	15.1	240.1	2.85	0.7	1.57	7.22	Monitored Annually[1]			
15-Dec-23	2.74	741.45	Monitored Semi-Annually[1]						Monitored Annually[1]			
7-Mar-24	0.19	744	10.8	272.7	3.09	-27.9	1.15	6.93	138	6.36	0.174 J	796
18-Jun-24	1.35	742.84	Monitored Semi-Annually[1]						Monitored Annually[1]			
18-Sep-24	4.55	739.64	14	227	7.5	123.4	1.66	7.09	Monitored Annually[1]			

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

Notes:
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 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
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
2-Dec-02	69.87	866.42	9.5	1690	-	-	-	7.29	910	46.6	2.68	-
3-Mar-03	36.83	899.46	11.5	1260	-	-	24.10	7.15	860	9.73	-	-
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	8.58	0.695	-
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	10	1 U	-
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	10.3	1 U	-
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	5.72	1 U	-
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	7.82	1 U	5570
1-Nov-08	43.35	892.94	11.17	1096	7.29	127.1	47.30	7.70	1100	9.8	1 U	5610
11-Feb-09	37.00	899.29	10.28	1112	4.15	-	7.68	7.25	1100	7.52	1 U	5560
9-May-09	36.53	899.76	13.87	1209	2.93	89.0	5.45	7.41	990 J	7.57	1 U	5580
24-Sep-09	53.61	882.68	12.10	1328	1.98	331.0	3.26	6.92	1200	7.9	2 U	5700
14-Dec-09	33.72	902.57	10.20	1519	0.55	393.0	2.82	6.99	1100	3.4	2 U	5700
22-Mar-10	35.11	901.18	10.90	1463	-	508.0	3.95	6.94	1200	10	2 U	5600
15-Jun-10	33.26	903.03	11.00	1485	0.20	210.3	1.50	7.02	1100	11	2 U	5900
20-Sep-10	45.81	890.48	11.30	1484	0.06	159.7	0.91	6.98	1100	9.1	0.48 J	6000
6-Dec-10	36.20	900.09	10.70	1494	0.08	35.4	0.24	7.21	1200	6.8	0.48 J	5200
28-Mar-11	35.07	901.22	10.70	749	0.08	136.8	0.16	6.88	1100	6.8	2 U	5500
20-Jun-11	38.53	897.76	11.40	1439	0.08	-19.2	0.21	6.99	1400	4.6 J	2 U	5500
26-Sep-11	50.43	885.86	11.20	1249	0.07	38.5	0.41	7.01	1200	4.5 J	2 U	5700
13-Dec-11	51.30	884.99	10.40	1308	0.06	50.3	2.03	7.07	530	7.6	2 U	6100
22-Mar-12	43.75	892.54	10.60	1695	0.08	125.1	0.28	6.99	1200	12	2 U	5700
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	10	0.4 U	5800
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	13	0.4 U	6300
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	10.2	0.1 U	6000
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	13.1	0.1 U	6580
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	13.4	0.1 U	6100
14-Nov-14	44.83	891.46	Monitored Semiannually[1]									

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
10-Feb-15	35.97	900.32	11.00	1423	0.04	-109.4	2.16	7.00	1200	13	0.1 U	6260
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	13.9	0.1 U	6070
5-Nov-15	56.85	879.44	11.20	1159	0.02	57.4	0.91	6.75	1190	14.9	0.1 U	6990
8-Feb-16	33.02	903.27	11.60	1429	0.00	167.6	0.10	7.05	1190	19.4	0.1 U	6730
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	21.8	0.1 U	6690
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	22.4	0.1 U	6530
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]			
12-Mar-19	33.09	903.20	10.40	1157	0.55	-23.0	0.62	6.81	1200	20.7	0.1 U	951
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	18.3	0.1 U	6360
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	19.5	0.1 U	6150
10-Jun-21	42.65	893.64	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	55.97	880.32	11.7	858	0.86	-92.3	0.48	6.84	Monitored Annually[2]			
5-Jan-22	33.64	902.65	Monitored Semiannually[2]						Monitored Annually[2]			
18-Mar-22	38.2	898.09	11.5	1096	1.17	-40.8	0.31	7.18	1260	16.6	0.1 U	6400
21-Jun-22	35.46	900.83	Monitored Semiannually[2]						Monitored Annually[2]			
13-Sep-22	44.37	891.92	11.8	1122	2.97	6.4	4.73	6.42	Monitored Annually[2]			
12-Dec-22	42.96	893.33	Monitored Semiannually[2]						Monitored Annually[2]			
16-Mar-23	34.48	901.81	11.5	1633	0.21	-28.9	0.42	6.88	1200	16.5	0.1 U	5580
26-Jun-23	39.87	896.42	Monitored Semiannually[2]						Monitored Annually[2]			
5-Sep-23	47.77	888.52	11.9	1673	3.02	-1.4	3.03	6.99	Monitored Annually[2]			
12-Dec-23	37.23	899.06	Monitored Semiannually[2]						Monitored Annually[2]			
8-Mar-24	33.71	902.58	11	1032	4.94	4.9	2.34	6.81	1270	16.5	0.103 U	5590
19-Jun-24	36.7	899.59	Monitored Semiannually[2]						Monitored Annually[2]			
18-Sep-24	46.01	890.28	11.7	1523	8.07	155.4	1.01	6.54	Monitored Annually[2]			

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

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
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 Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-4b: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-1DDSP Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
2-Dec-02	87.28	848.09	11.1	557	-	-	-	7.72	540	32.7	0.5 U	-
3-Mar-03	48.63	886.74	12.0	623	-	-	24.00	7.48	370	7.08	-	-
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	6.03	0.5 U	-
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	3.08	1 U	-
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	3.6	1 U	-
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	2.89	1 U	-
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	2.26	1 U	3000 U
1-Nov-08	57.38	877.99	14.75	619	0.89	-42.5	4.40	7.45	480	2.22	1 U	3000 U
10-Feb-09	50.92	884.45	6.50	618	10.51	-	655.00	7.69 J	530	2.19	1 U	3010
9-May-09	51.25	884.12	13.95	637	2.21	39.3	5.87	7.74	540 J	2.42	1 U	3000 U
25-Sep-09	65.46	869.91	13.20	678	2.25	331.8	2.29	7.15	570	1.8 J	2 U	3300
17-Dec-09	49.40	885.97	10.60	794	0.99	224.0	3.97	7.58	440	0.7 J	2 U	3200 J
22-Mar-10	49.18	886.19	10.40	762	-	245.0	0.74	7.39	580	4.5	2 U	3200 J
15-Jun-10	46.88	888.49	12.10	762	0.05	142.1	0.47	7.50	420	5.5	2 U	3300
20-Sep-10	58.97	876.40	11.40	765	0.07	89.6	0.47	7.47	520	4.7	0.27 J	3400
6-Dec-10	50.66	884.71	10.20	763	0.19	58.9	0.32	7.72	550	1.3 J	2 U	3200 J
28-Mar-11	48.89	886.48	10.50	376	0.55	165.0	0.73	7.53	470	3.7	2 U	3000 J
20-Jun-11	52.13	883.24	13.40	718	0.45	-65.1	0.75	7.53	600 J	5 U	2 U	3500
26-Sep-11	63.02	872.35	11.80	633	1.73	-6.0	1.72	7.61	560	5 U	2 U	3500
13-Dec-11	63.88	871.49	8.60	678	0.69	-24.7	1.95	7.56	530	5.7	2 U	4100
22-Mar-12	56.96	878.41	5.60	877	1.89	-26.6	0.84	7.69	540	3.4	0.4 U	3000 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	3.1	0.4 U	3100 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	3.6	0.4 U	3600
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	3.2	0.1 U	3200
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	1.8	0.1 U	3340
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	2	0.2	3140
14-Nov-14	59.59	875.78	Monitored Semiannually[1]									

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
10-Feb-15	49.61	885.76	10.90	717	0.03	-114.4	1.82	7.48	551	2.9	0.1 U	3270
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	3	0.1 U	3360
5-Nov-15	68.72	866.65	11.10	625	0.05	27.5	1.26	7.21	603	1.6	0.1 U	3590
8-Feb-16	46.93	888.44	11.40	794	0.00	155.1	0.17	7.57	599	2.1	0.1 U	3800
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	1.87	0.1 U	3410
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	2.87	0.1 U	3340
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]			
12-Mar-19	46.35	889.02	9.80	707	0.58	-119.9	0.16	7.24	668	4.96	0.1 U	4210
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	4.56	0.1 U	4070
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	4.06	0.1 U	3880
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	-149	0.33	7.23	Monitored Annually[2]			
5-Jan-22	47.77	887.60	Monitored Semiannually[2]						Monitored Annually[2]			
18-Mar-22	48.37	887	11.3	741	1.2	-93.4	0.39	7.52	781	4.64	0.1 U	4240
21-Jun-22	49.68	885.69	Monitored Semiannually[2]						Monitored Annually[2]			
13-Sep-22	57.47	877.9	11.9	778	2.5	-91	0.45	6.84	Monitored Annually[2]			
12-Dec-22	57.68	877.69	Monitored Semiannually[2]						Monitored Annually[2]			
16-Mar-23	48.34	887.03	11.7	1110	0.29	-89.5	0.38	7.19	783	5.45	0.1 U	3870
26-Jun-23	53.28	882.09	Monitored Semiannually[2]						Monitored Annually[2]			
5-Sep-23	60.34	875.03	11.7	1136	2.65	-49.8	1.99	7.38	Monitored Annually[2]			
12-Dec-23	52.09	883.28	Monitored Semiannually[2]						Monitored Annually[2]			
8-Mar-24	47.77	887.6	11	746	4.16	-99.6	1.62	7.19	767	4.74	0.132 J	3990
19-Jun-24	50.3	885.07	Monitored Semiannually[2]						Monitored Annually[2]			
18-Sep-24	58.65	876.72	14.8	1033	8.91	151.5	2.74	7.16	Monitored Annually[2]			

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

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
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 Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-4c: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-5DSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
18-Dec-06	20.56	914.49	11.30	1054	0.59	-10.5	6.76	7.01	630	4.46	1 U	-
7-Jan-07	18.48	916.57	12.53	700	0.61	-70.6	33.50	7.11	540	5.19	1 U	-
7-Feb-07	21.53	913.52	11.59	557	0.57	-59.1	33.50	6.88	530	5.19	1 U	-
7-Mar-07	15.34	919.71	11.71	817	0.45	-2.4	91.20	6.52	550 J	4.91	1 U	-
7-Apr-07	17.97	917.08	11.96	909	0.25	0.2	121.00	6.91	560	4.75	1 U	-
1-May-07	26.92	908.13	12.55	880	4.20	-14.3	63.70	7.13	540	4.9	1 U	-
7-Jun-07	29.94	905.11	13.12	1016	3.20	-5.6	3.58	7.52	600 J	4.37	1 U	-
7-Jul-07	35.27	899.78	13.00	910	1.74	-27.4	9.97	7.24	550	4.91	1 U	-
7-Aug-07	39.55	895.50	12.40	1065	0.92	-14.6	4.62	6.99	590	4.46	1 U	-
7-Sep-07	44.69	890.36	12.36	696	0.68	-33.3	3.22	7.29	590	4.92	1 U	-
26-Oct-07	38.90	896.15	11.46	667	0.56	-18.3	22.60	6.98	620 J	4.43	1 U	-
27-Nov-07	38.79	896.26	11.71	914	0.56	-46.7	3.32	6.91	560 J	4.9	1 U	-
12-Dec-07	35.33	899.72	12.61	909	0.53	-27.3	4.28	6.87	820	4.09	1 U	-
24-Jan-08	28.97	906.08	10.72	872	0.78	-49.1	-	7.14	550	4.72	1 U	-
8-Feb-08	26.00	909.05	11.25	888	0.44	-	4.18	6.85	550	4.5	1 U	-
8-Mar-08	26.03	909.02	10.94	915	0.59	-95.6	3.19	6.89	550	5.21	1 U	-
8-Apr-08	25.03	910.02	11.27	931	0.61	-20.1	3.44	6.89	550 J	4.88	1 U	-
8-May-08	27.33	907.72	11.68	949	0.68	-6.7	5.37	6.62	580 J	5.34	1 U	-
8-Jun-08	28.38	906.67	11.40	948	0.75	-50.4	1.59	6.68	580 J	4.45	1 U	-
8-Aug-08	39.80	895.25	11.80	970	0.68	-78.6	1.72	6.84	610 J	4.64	1 U	3000 U
1-Nov-08	33.96	901.09	11.20	682	0.63	-115.4	0.95	6.82	540	4.8	1 U	3000 U
10-Feb-09	25.56	909.49	10.54	671	0.71	-71.7	0.98	7.05	610	4.73	1 U	3000 U
9-May-09	25.79	909.26	11.23	682	0.55	-5.8	0.86	7.68	560 J	3.4	1 U	3000 U
22-Sep-09	46.68	888.37	18.70	737	0.64	214.5	0.99	6.91	580 J	3.9	2 U	2700 J
14-Dec-09	30.45	904.60	9.80	901	0.18	200.0	0.70	6.96	450	1.7 J	2 U	2500 J
23-Mar-10	19.92	915.13	11.30	773	0.25	148.0	4.40	6.86	510	5.6	2 U	2600 J
15-Jun-10	16.74	918.31	11.00	838	0.10	202.3	2.89	7.01	860 J	8.2	2 U	2800 J
20-Sep-10	33.31	901.74	11.20	852	0.09	174.7	0.60	6.97	540	6.2	2 U	2700 J
6-Dec-10	19.81	915.24	10.80	838	0.10	30.5	0.47	7.17	530	3.8	2 U	2300 J
28-Mar-11	17.16	917.89	10.80	403	0.15	48.4	1.13	6.89	500 J	2.3	2 U	2300 J
20-Jun-11	18.95	916.10	11.10	775	0.05	-29.1	0.37	7.01	610 J	5 U	2 U	2400 J
26-Sep-11	33.71	901.34	11.20	690	0.03	-8.7	0.54	7	560	4.1 J	2 U	2800 J
13-Dec-11	24.48	910.57	10.50	730	0.05	93.6	1.92	7.07	520	6.1	2 U	2800 J
21-Mar-12	15.54	919.51	10.70	883	0.06	106.9	0.34	6.9	500	6.5	2 U	2400 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	6.9	0.4 U	2600 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	5.9	0.4 U	2600 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	5.6	0.1 U	2500
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	5.6	0.1 U	2720
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	5.9	0.1 U	2550
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	5.9	0.1 U	2560
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	6.4	0.1 U	2670
5-Nov-15	32.00	903.05	11.40	605	0.00	37.5	1.16	6.84	511	5.3	0.1 U	3060

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
8-Feb-16	17.13	917.92	11.80	720	0.00	160.4	0.08	7.34	480	6	0.1 U	3020
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 Annually[2]			
31-Jan-17	19.36	915.69	12.20	808	0.07	-219.2	0.30	7.21	509	6.76	0.1 U	2840
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	5.39	0.1 U	2550
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	4.51	0.1 U	2890
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]			
14-Feb-20	16.70	918.35	10.90	626	0.34	-99.8	0.33	6.88	524	4.31	0.1 U	2650
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	4.84	0.1 U	2450
10-Jun-21	24.68	910.37	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	29.11	905.94	11.9	440.1	0.87	-86.2	0.35	6.96	Monitored Annually[2]			
5-Jan-22	16.88	918.17	Monitored Semiannually[2]						Monitored Annually[2]			
21-Mar-22	17.14	917.91	11.3	601	1.28	-42.9	0.82	6.26	513	4.79	0.1 U	2560
21-Jun-22	17.25	917.8	Monitored Semiannually[2]						Monitored Annually[2]			
13-Sep-22	27.19	907.86	12.3	606	2.54	-3.7	1.49	6.74	Monitored Annually[2]			
12-Dec-22	24.31	910.74	Monitored Semiannually[2]						Monitored Annually[2]			
16-Mar-23	18.62	916.43	11.7	846	0.21	-19.7	0.41	7.03	497	4.56	0.1 U	2570
26-Jun-23	22.23	912.82	Monitored Semiannually[2]						Monitored Annually[2]			
7-Sep-23	28.89	906.16	13.7	904	1.36	-54.9	0.76	7.03	Monitored Annually[2]			
12-Dec-23	20.99	914.06	Monitored Semiannually[2]						Monitored Annually[2]			
8-Mar-24	17.79	917.26	11.1	711	4.7	10.8	0.35	6.97	500	4.95	0.103 U	2400
19-Jun-24	18.95	916.1	Monitored Semiannually[2]						Monitored Annually[2]			
18-Sep-24	27.07	907.98	13	778	7.82	143.3	2.96	7.09	Monitored Annually[2]			

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

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
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 Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
18-Dec-06	8.13	897.82	9.93	525	0.54	-54.5	0.61	7.78	300	5.37	1 U	-
7-Feb-07	9.40	896.55	11.79	479	1.19	-30.0	7.40	7.41	330	6.01	1 U	-
7-May-07	10.73	895.22	12.26	729	2.83	-103.6	16.40	7.63	480	10.1	1 U	-
7-Aug-07	15.14	890.81	11.42	882	0.75	-11.5	1.82	7.10	470	3.25	1 U	-
27-Nov-07	16.16	889.79	10.98	748	0.37	-47.9	0.83	6.99	440 J	2.82	1 U	-
8-Feb-08	9.66	896.29	11.01	645	0.31	-	0.90	7.05	380	2.68	1 U	-
8-May-08	10.34	895.61	11.27	665	0.64	13.4	1.52	6.93	380 J	2.40	1 U	-
8-Aug-08	14.17	891.78	11.23	683	0.72	-8.2	2.49	7.05	390 J	2.18	1 U	3000 U
1-Nov-08	12.98	892.97	10.61	488	0.60	-45.6	1.35	6.80	380	2.04	1 U	3000 U
10-Feb-09	9.64	896.31	10.32	398	0.52	-57.0	1.20	7.31	350	2.00	1 U	3000 U
9-May-09	9.91	896.04	10.50	405	0.73	-4.0	1.26	7.77	320 J	1.69	1 U	3000 U
23-Sep-09	17.16	888.79	12.50	541	0.25	216.2	5.38	7.14	400 J	0.91 J	2 U	1300 J
14-Dec-09	12.73	893.22	9.10	580	0.47	231.0	2.70	7.23	270	2 U	2 U	1300 J
22-Mar-10	9.62	896.33	10.90	504	-	321.7	3.50	7.22	320	2.00	2 U	1200 J
15-Jun-10	8.30	897.65	11.00	495	0.11	205.1	1.41	7.29	320	4.20	2 U	1300 J
20-Sep-10	14.90	891.05	10.90	560	0.10	187.2	0.28	7.29	270	3.00	2 U	1400 J
6-Dec-10	10.47	895.48	10.50	515	0.12	87.8	0.14	7.47	300	2 U	2 U	1100 J
28-Mar-11	8.71	897.24	10.30	241	0.19	58.9	1.86	7.19	300	2 U	2 U	1100 J
20-Jun-11	9.87	896.08	10.80	477	0.06	141.2	0.20	7.27	340	5 U	2 U	1100 J
26-Sep-11	14.82	891.13	10.80	467	0.05	114.8	0.92	7.26	380	5 U	2 U	1500 J
13-Dec-11	13.02	892.93	10.20	491	0.06	131.3	1.69	7.29	340	5 U	2 U	1600 J
21-Mar-12	8.13	897.82	10.20	550	0.09	160.0	0.07	7.14	310	2.50	0.4 U	1200 J
18-Jun-12	-	-	Monitored Semiannually[1]									
18-Sep-12	14.76	891.19	12.50	587	0.00	122.0	0.35	7.31	370	2.80	0.4 U	1300 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	1.90	0.4 U	1300 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	1.60	0.1 U	1300
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	1.40	0.1 U	1290
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	1.70	0.1 U	1270
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	1.40	0.1 U	1230
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	1.70	0.1 U	1280
5-Nov-15	13.98	891.97	11.50	435	2.23	85.2	1.09	7.04	354	1.30	0.1 U	1470
8-Feb-16	6.74	899.21	11.50	495	0.03	187.2	0.25	7.39	297	1.40	0.1 U	1350
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	1.48	0.1 U	1300
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]			

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
28-Feb-18	6.50	899.45	11.00	423	0.19	-61.0	0.18	7.12	138	1.56	0.1 U	1200
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	1.47	0.1 U	1340
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]			
13-Feb-20	20.79	899.86	10.60	387	0.39	-76.5	1.05	7.13	313	1.40	0.1 U	1330
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	1.10	0.1 U	1240
10-Jun-21	24.55	896.10	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	28.08	892.57	11.6	273.8	0.96	-73.8	1.38	7.15	Monitored Annually[2]			
5-Jan-22	21.36	899.29	Monitored Semiannually[2]						Monitored Annually[2]			
21-Mar-22	20.7	899.95	10.9	348.2	1.41	102.1	1.4	6.42	297	1.06	0.1 U	1090
21-Jun-22	21.51	899.14	Monitored Semiannually[2]						Monitored Annually[2]			
13-Sep-22	Well Damaged - Unable to Sample[3]											
12-Dec-22	Well Damaged - Unable to Sample[3]											
15-Mar-23	15.98	905.92	10.9	444.1	1.06	16.4	1.17	7.11	251	1.05	0.1 U	1110
26-Jun-23	21.56	900.24	Monitored Semiannually[2]						Monitored Annually[2]			
5-Sep-23	24.52	897.097	11.6	479	2.98	25.8	0.7	7.37	Monitored Annually[2]			
12-Dec-23	19.65	902.467	Monitored Semiannually[2]						Monitored Annually[2]			
8-Mar-24	18.03	902.467	11	370.3	4.37	40	0.34	7.24	264	0.966	0.103 U	1070
18-Jun-24	18.60	903.24	Monitored Semiannually[2]						Monitored Annually[2]			
19-Sep-24	23.55	898.08	11.5	454.9	8.03	136.9	0.71	6.74	Monitored Annually[2]			

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

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
Top of casing elevation (feet NAVD88) repair (post-Q1 2023):	918.67

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
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.
3	MWB-6DSP was found damaged in July 2022. The well was repaired by late December 2022.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
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	4.44	0.5 U	-
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	3.33	0.5 U	-
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	3.41	1 U	-
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	3.15	1 U	-
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	2.45	1 U	-
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	3.17	1 U	-
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	3.69	1 U	41600
1-Nov-08	-	-	9.79	553	10.70	-21.1	16.90	7.40	460	3.2	1 U	35500
11-Feb-09	-	-	9.16	488	6.99	-	15.40	7.52	430	2.97	1 U	34200
9-May-09	-	-	9.64	522	10.56	13.4	9.77	7.39	440 J	2.01	1 U	32400
23-Sep-09	-	-	10.70	745	8.95	271.7	14.70	6.88	570	2 U	2 U	40000
15-Dec-09	-	-	8.60	713	5.20	279.0	12.50	6.67	350	2 U	2 U	30000
24-Mar-10	-	-	9.90	681	6.14	370.7	-	6.57	470	4.2	2 U	39000
17-Jun-10	-	-	10.00	623	9.58	-	26.30	7.50	380	5.9	2 U	28000
22-Sep-10	-	-	10.00	783	9.02	225.9	17.40	7.00	510	5.2	2 U	42000
7-Dec-10	-	-	9.90	662	9.15	186.0	13.60	6.95	450	2 U	2 U	32000
29-Mar-11	-	-	9.90	292	5.90	370.8	4.44	6.73	360 J	4.1	2 U	25000
20-Jun-11	-	-	10.50	591	6.42	219.1	4.44	7.01	420	5 U	2 U	26000
26-Sep-11	-	-	10.70	623	5.76	240.5	11.90	6.83	520	5 U	2 U	39000
15-Dec-11	-	-	8.80	472	4.92	310.4	7.32	6.78	430	4.7 J	2 U	32000
21-Mar-12			8.90	611	5.24	313.3	9.16	6.49	330	4.8	0.4 U	20000
18-Jun-12	Monitored Semiannually[1]											
18-Sep-12	-	-	14.20	652	9.70	148.0	20.80	7.48	450	5	0.4 U	29000
18-Dec-12	Monitored Semiannually[1]											
25-Feb-13	-	-	9.20	648	10.10	209.6	4.12	7.58	300	5	0.4 U	25000
25-Feb-13	Monitored Semiannually[1]											
21-Feb-13	-	-	9.20	648	10.10	209.6	4.12	7.58	300	5	0.4 U	25000
22-May-13	Monitored Semiannually[1]											
20-Aug-13	-	-	10.80	635	9.31	170.1	8.46	7.11	458	3.9	0.1 U	32300
19-Nov-13	Monitored Semiannually[1]											

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
31-Mar-14	-	-	10.60	448	9.29	213.5	87.20	7.30	321	3.7	0.18 J	21100
21-May-14	Monitored Semiannually[1]											
15-Aug-14	-	-	10.01	595	10.01	-35.2	6.43	6.99	427	3.5	0.1 U	31500
14-Nov-14	Monitored Semiannually[1]											
10-Feb-15	-	-	10.60	515	9.88	183.5	6.84	7.26	363	2.8	0.07 J	27200
4-May-15	Monitored Semiannually[1]											
4-Aug-15	-	-	10.90	554	9.98	95.8	8.68	7.48	438	2.6	0.1 U	34700
5-Nov-15	-	-	10.30	503	10.24	177.6	13.40	7.46	449	2.8	0.1 U	31800
8-Feb-16	-	-	9.30	541	11.30	215.0	5.12	7.30	293	3.2	0.1 U	23100
-	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	3.97	0.1 U	29200
-	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]			
27-Feb-18	-	-	9.50	427	9.94	-46.4	16.70	7.72	354	4.11	0.1 U	20400
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	1.56	0.1 U	24700
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	3.65	0.1 U	16700
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	4.14	0.1 U	20000
10-Jun-21	Monitored Semiannually[2]								Monitored Annually[2]			
18-Oct-21	-	-	10.9	386.7	5.11	-28.4	86.1	6.45	Monitored Annually[2]			
5-Jan-22	Monitored Semiannually[2]								Monitored Annually[2]			
16-Mar-22	-	-	12	402.9	6.78	70.7	19.8	5.81	348	5.32	0.1 U	18800
21-Jun-22	Monitored Semiannually[2]								Monitored Annually[2]			
14-Sep-22	-	-	12	521	7.29	39.1	93.8	6.7	Monitored Annually[2]			
14-Dec-22	Monitored Semiannually[2]								Monitored Annually[2]			
16-Mar-23	-	-	10.8	667.5	6.16	76.1	8.99	6.86	383	5.08	0.1 U	27100
26-Jun-23	Monitored Semiannually[2]								Monitored Annually[2]			
7-Sep-23	-	-	10.5	769	7.66	-33.9	6.94	6.79	Monitored Annually[2]			
15-Dec-23	Monitored Semiannually[2]								Monitored Annually[2]			
8-Mar-24	-	-	10.5	470.6	8.59	84	7.64	6.83	359	5.51	0.103 U	22800
19-Jun-24	-	-	Monitored Semiannually[2]						Monitored Annually[2]			
17-Sep-24	-	-	10.6	714	8.59	187.8	55.5	7.18	Monitored Annually[2]			

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

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 groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
*	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 Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-4f: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-2DSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
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	1 U	0.5 U	-
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	0.98	0.5 U	-
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	1 U	1 U	-
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	1 U	1 U	-
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	1 U	1 U	-
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]						-	-	-	-

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
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]						-	-	-	-
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	12.6	307.7	6.06	161.4	12.3	7.35	-	-	-	-
5-Jan-22	192.66	742.16	Monitored Semiannually[1]						-	-	-	-
21-Mar-22	193.68	741.14	9.6	369	7.04	125.6	5.95	6.63	-	-	-	-
21-Jun-22	191.33	743.49	Monitored Semiannually[1]						-	-	-	-
13-Sep-22	200.03	734.79	12.6	404.7	8.66	252.7	10.5	6.91	-	-	-	-
12-Dec-22	197.99	736.83	Monitored Semiannually[1]						-	-	-	-
15-Mar-23	192.63	742.19	11.4	591.7	2.44	41.8	5.56	7.53	-	-	-	-
26-Jun-23	198.92	735.9	Monitored Semiannually[1]						-	-	-	-
5-Sep-23	200.21	734.61	12.1	571.3	3.59	8.3	10.5	7.36	-	-	-	-
13-Dec-23	183.09	751.73	Monitored Semiannually[1]						-	-	-	-
6-Mar-24	192.55	742.27	9.1	577	8.66	35.4	4.3	7.75	-	-	-	-
19-Jun-24	194.6	740.22	Monitored Semiannually[1]						-	-	-	-
19-Sep-24	199.64	735.18	11.9	540	9.23	162.1	1.07	6.96	-	-	-	-

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 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
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
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-4g: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-4SDSP
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
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	13.5	368.9	8.47	130.8	1.36	7.63	-	-	-	-
5-Jan-22	17.66	914.75	Monitored Semiannually[1]						-	-	-	-
21-Mar-22	16.7	915.71	10.7	456.3	9.94	115.5	2.79	7.05	-	-	-	-
21-Jun-22	17.95	914.46	Monitored Semiannually[1]						-	-	-	-
13-Sep-22	21.6	910.81	15.3	531	7.87	90.3	1.45	7.53	-	-	-	-
12-Dec-22	19.02	913.39	Monitored Semiannually[1]						-	-	-	-
15-Mar-23	17.46	914.95	12.3	668	8.07	57.4	2.67	7.85	-	-	-	-
26-Jun-23	19.98	912.43	Monitored Semiannually[1]						-	-	-	-
5-Sep-23	Could not be safely accessed due to wasp nests.								-	-	-	-
13-Dec-23	16.91	915.5	Monitored Semiannually[1]						-	-	-	-

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 (ug/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
Preliminary Cleanup Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
8-Mar-24	15.77	916.64	10.9	558	8.79	90.8	0.74	7.82	-	-	-	-
19-Jun-24	18.55	913.86	Monitored Semiannually[1]						-	-	-	-
16-Sep-24	Could not be safely accessed due to wasp nests.								-	-	-	-

Notes:

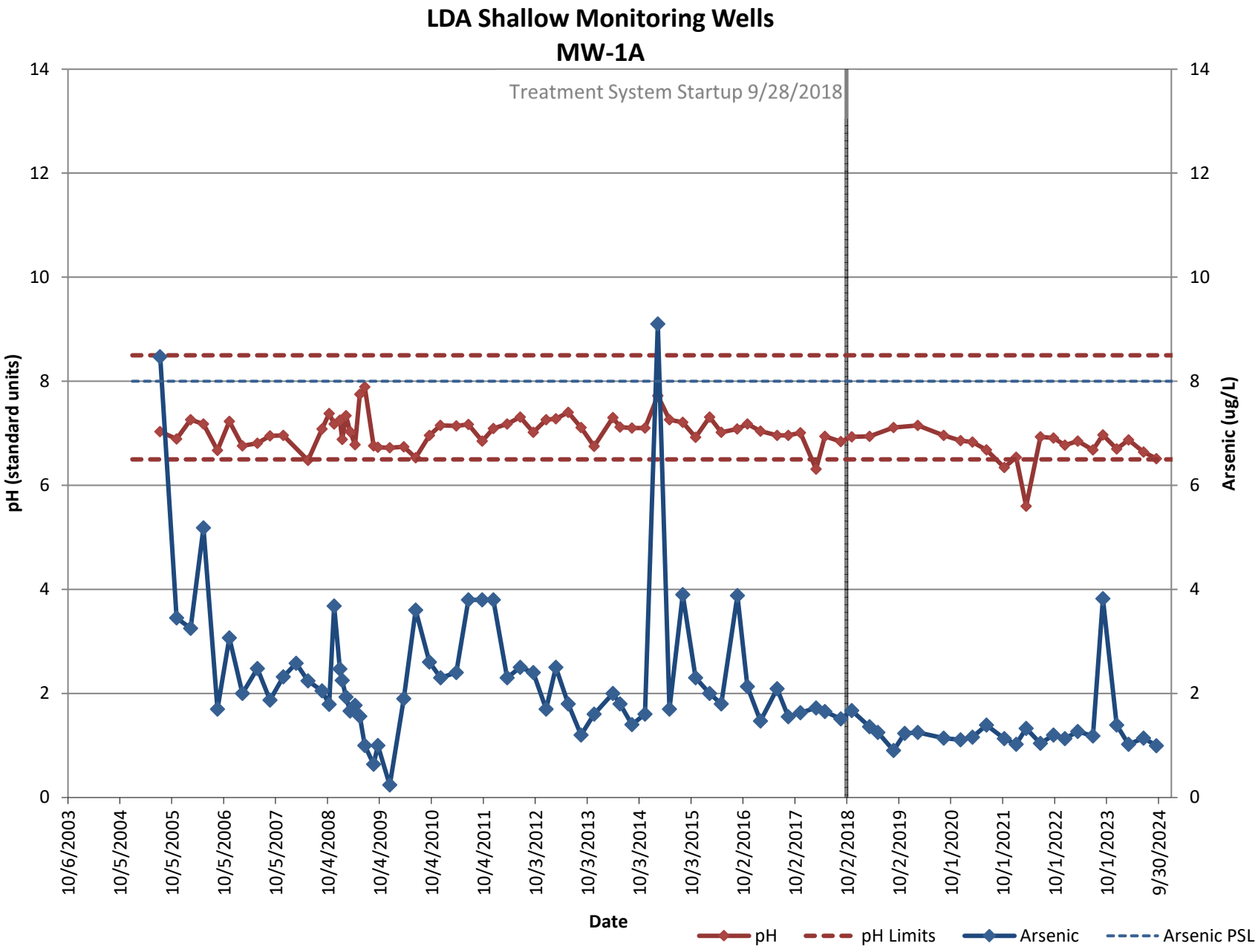
Top of casing elevation (feet NAVD88) prior to DSP Cover Upgrade: 939.42
Top of casing elevation (feet NAVD88) after DSP Cover Upgrade (completed July 2011): 932.41

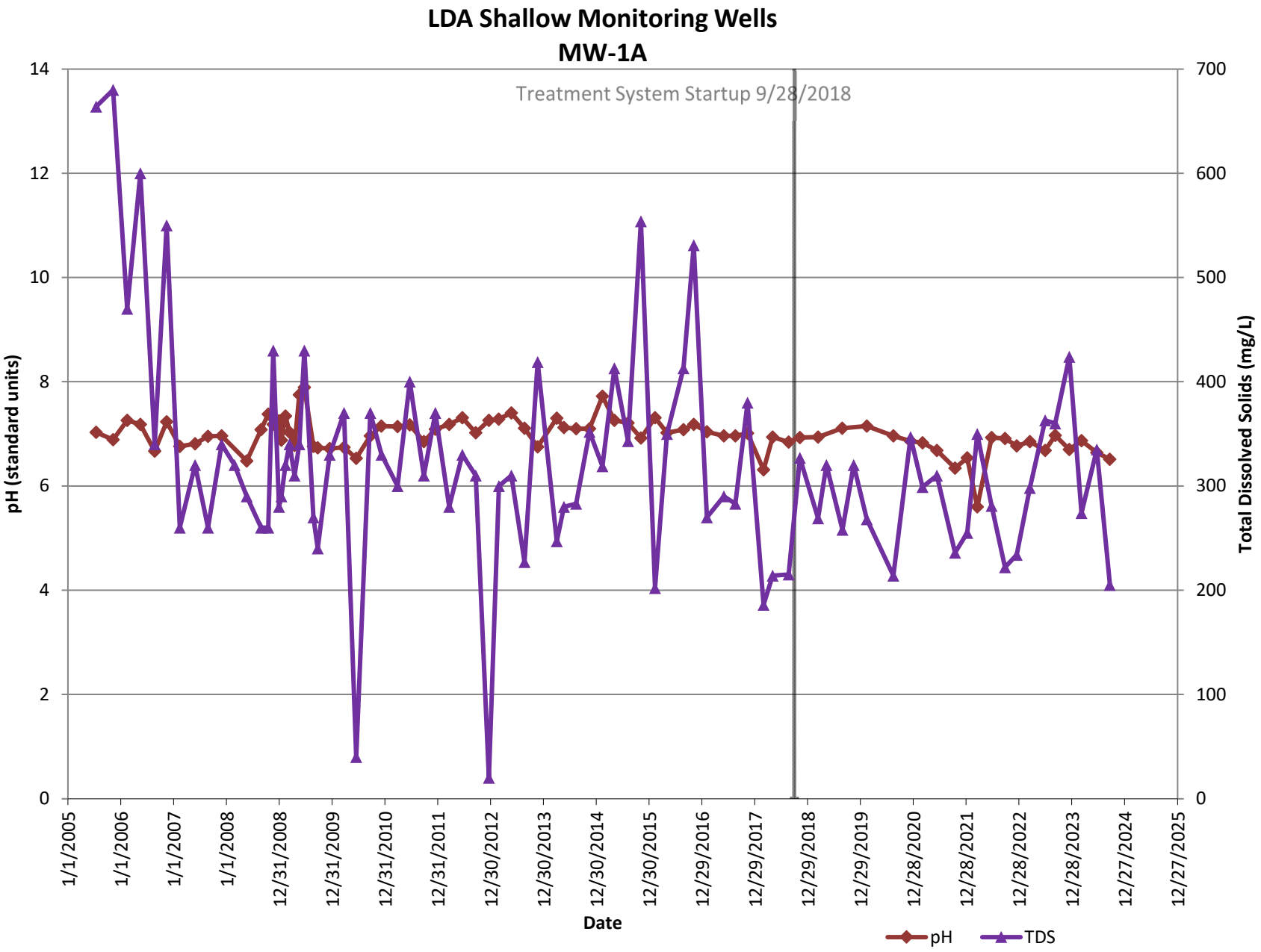
Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included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

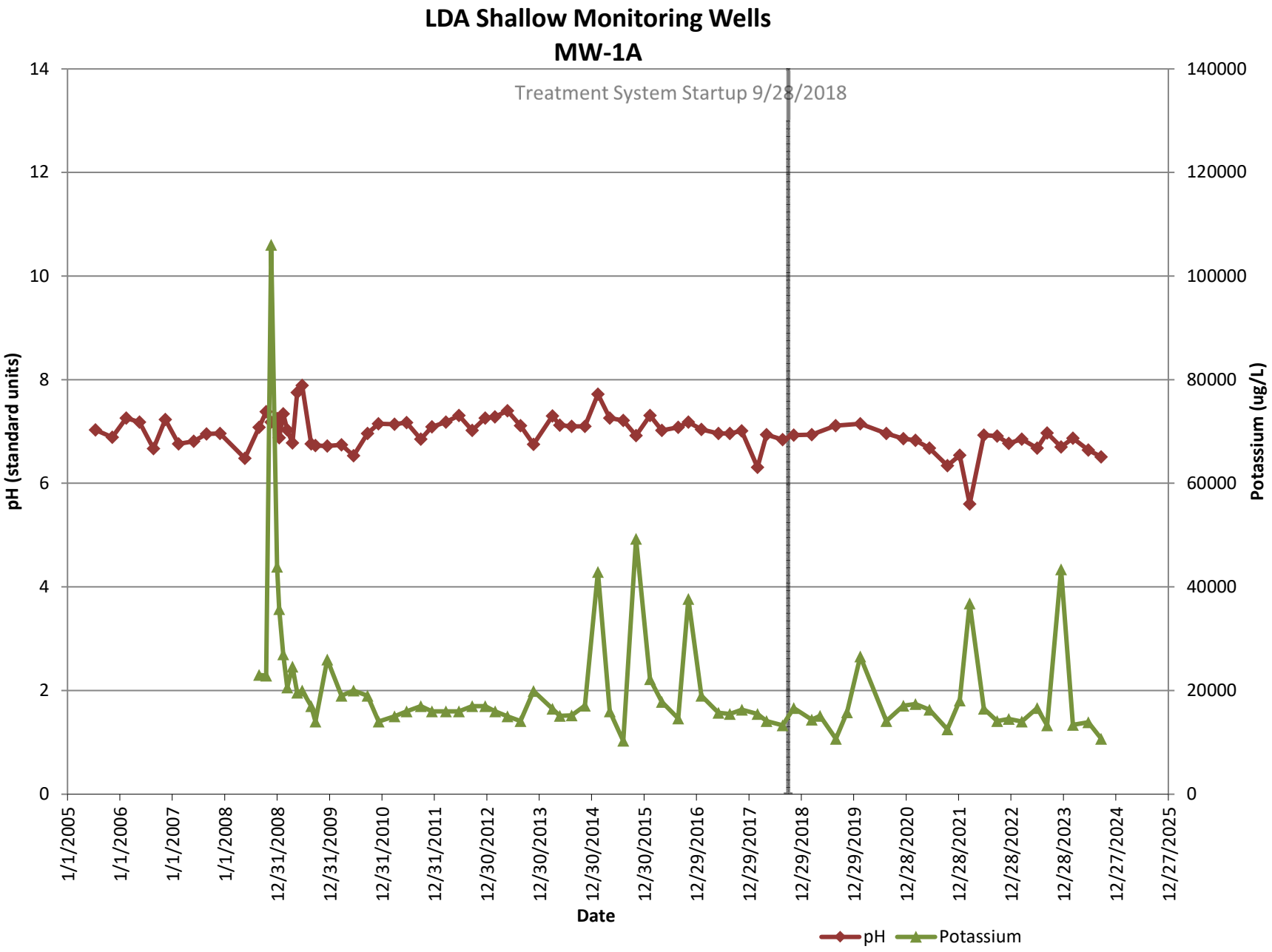
1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016, extended October 10, 2019. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
°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

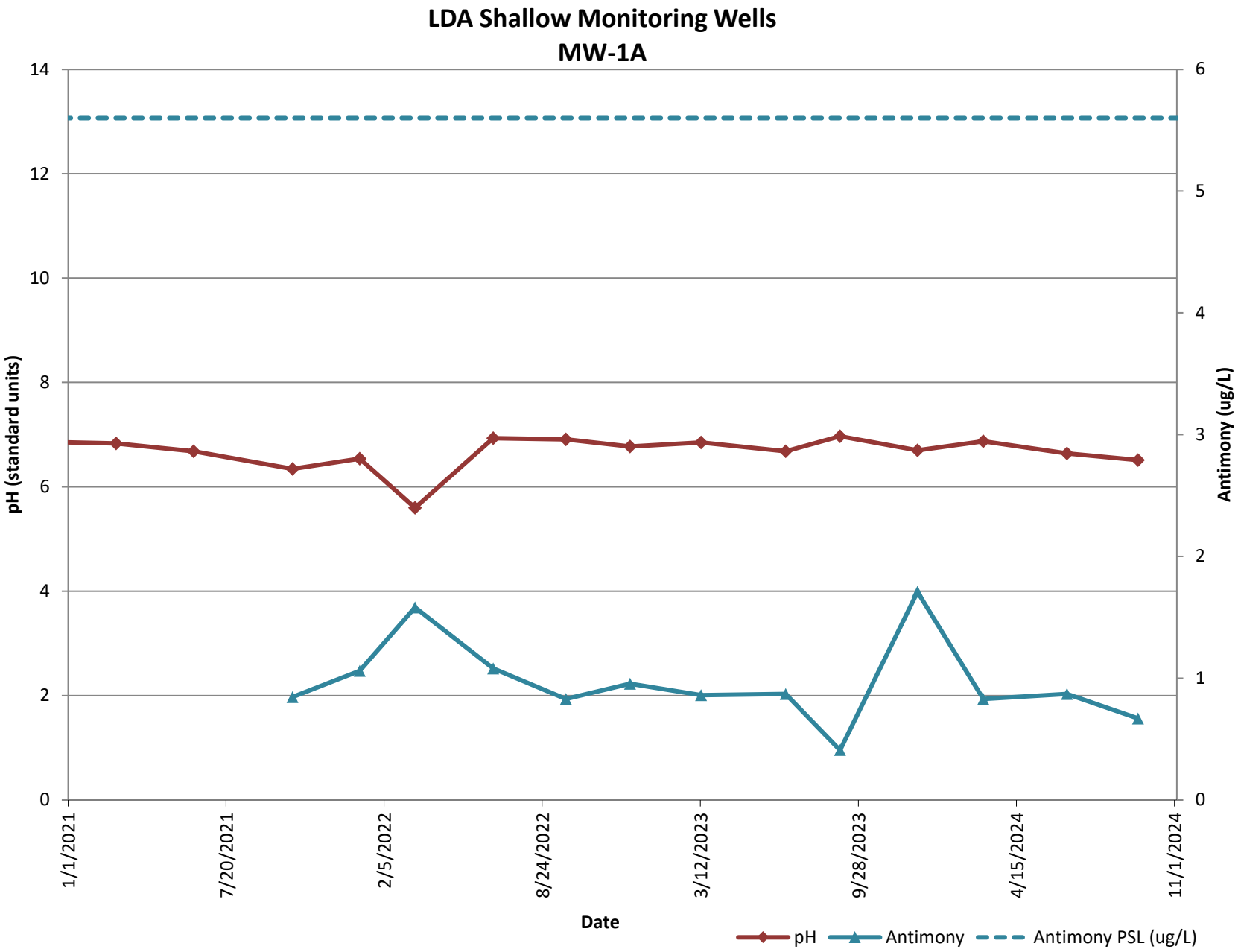
APPENDIX B

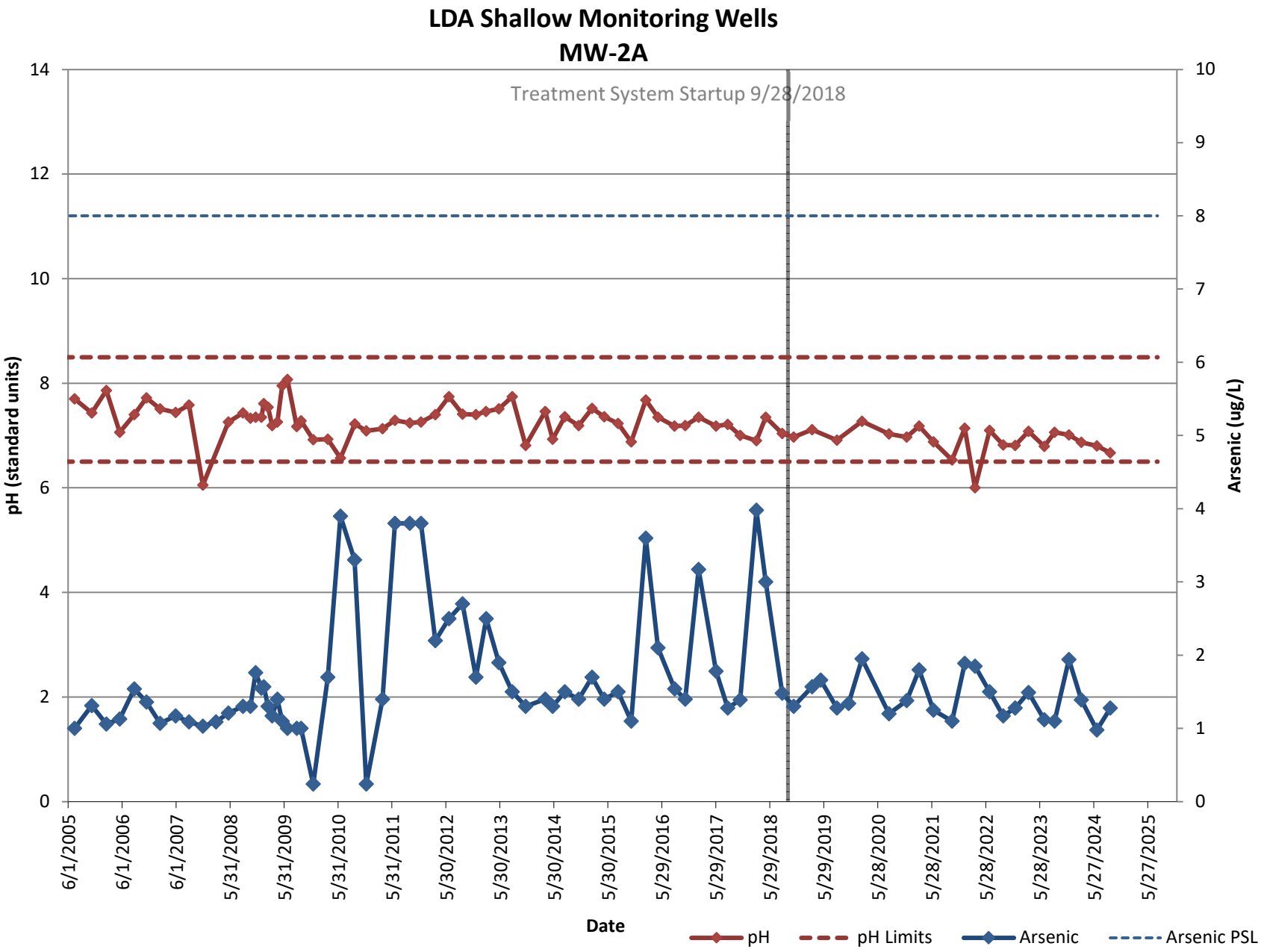
LDA Shallow Monitoring Wells Data Graphs

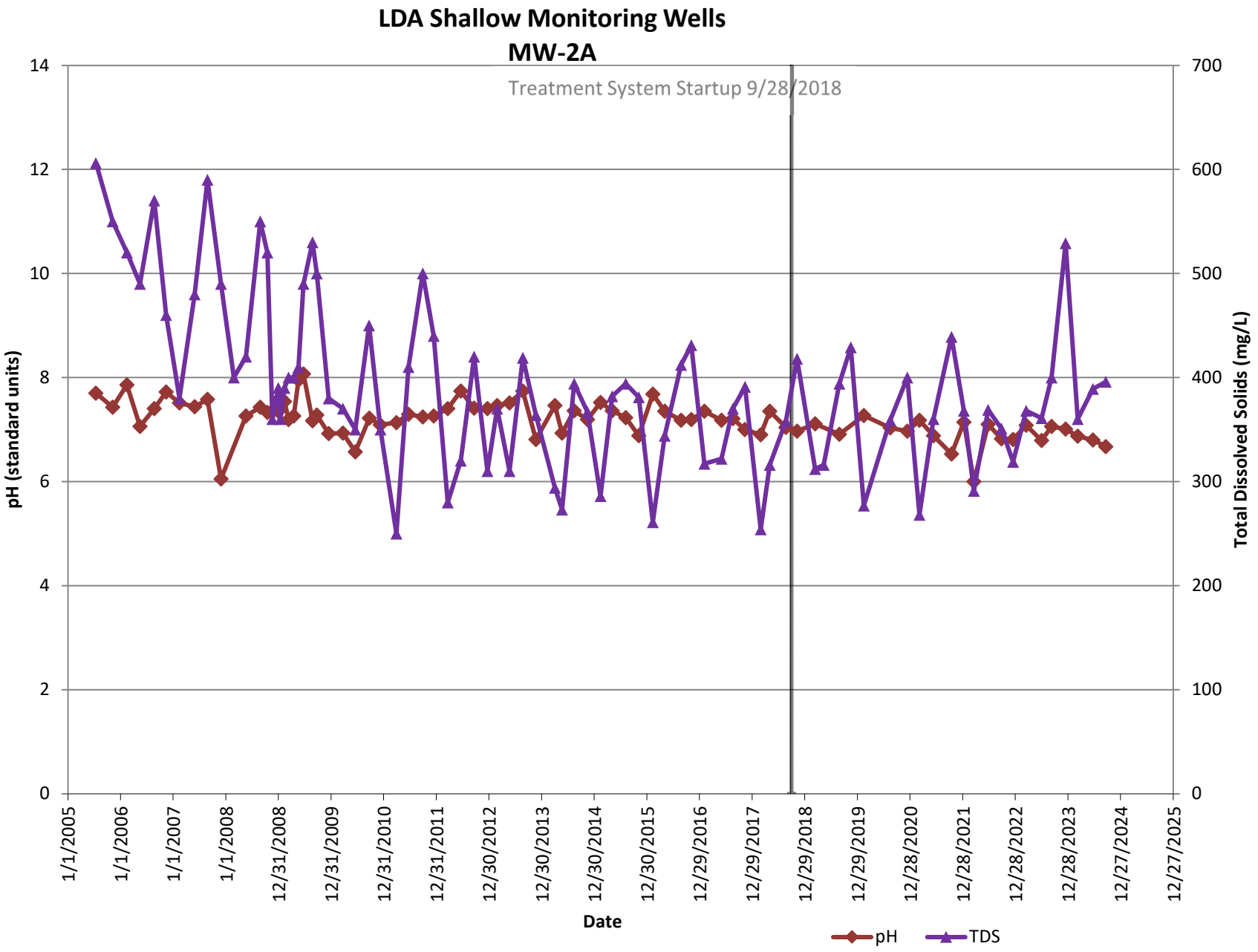

LDA Shallow Monitoring Wells
MW-1A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
Date
0
2
4
6
8
10
12
14
10/6/2003
10/5/2004
10/5/2005
10/5/2006
10/5/2007
10/4/2008
10/4/2009
10/4/2010
10/4/2011
10/3/2012
10/3/2013
10/3/2014
10/3/2015
10/2/2016
10/2/2017
10/2/2018
10/2/2019
10/1/2020
10/1/2021
10/1/2022
10/1/2023
9/30/2024
pH
pH Limits
Arsenic
Arsenic PSL


LDA Shallow Monitoring Wells
MW-1A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
100
200
300
400
500
600
700
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025


LDA Shallow Monitoring Wells
MW-1A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
0
20000
40000
60000
80000
100000
120000
140000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025


LDA Shallow Monitoring Wells
MW-1A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
1/1/2021
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
4/15/2024
11/1/2024
Date
pH
Antimony
Antimony PSL (ug/L)


LDA Shallow Monitoring Wells
MW-2A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
Date
pH
pH Limits
Arsenic
Arsenic PSL


LDA Shallow Monitoring Wells
MW-2A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
100
200
300
400
500
600
700
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
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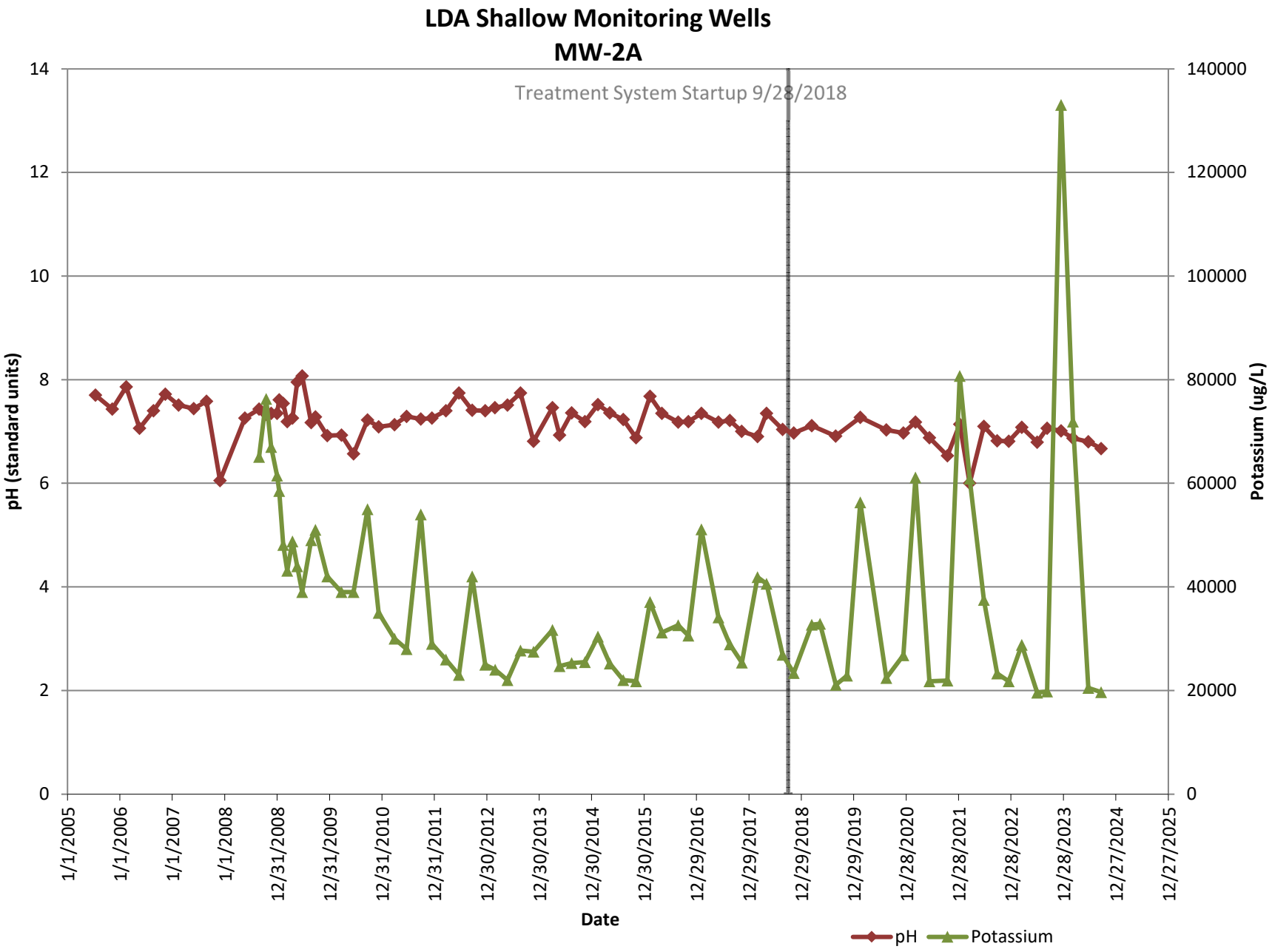
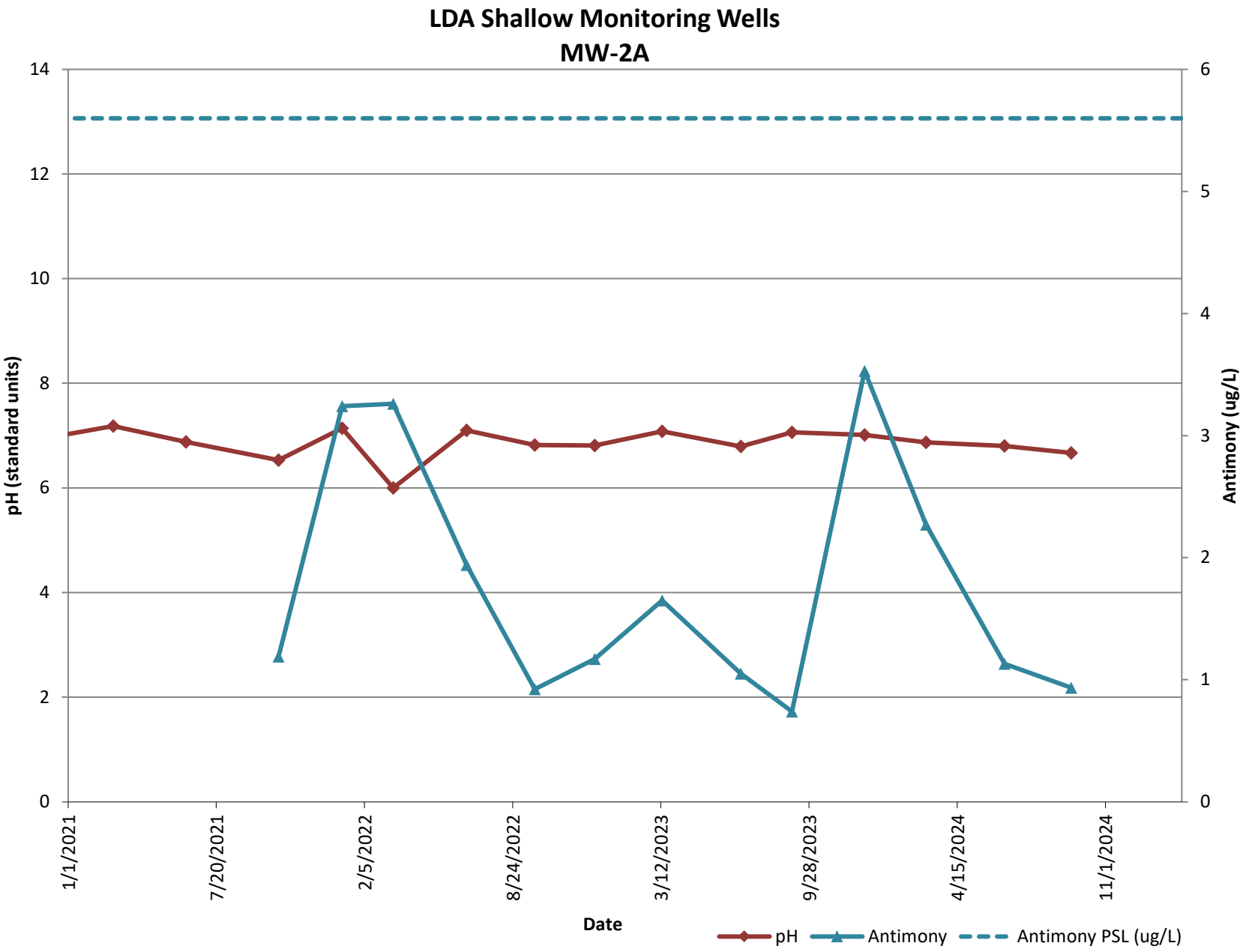
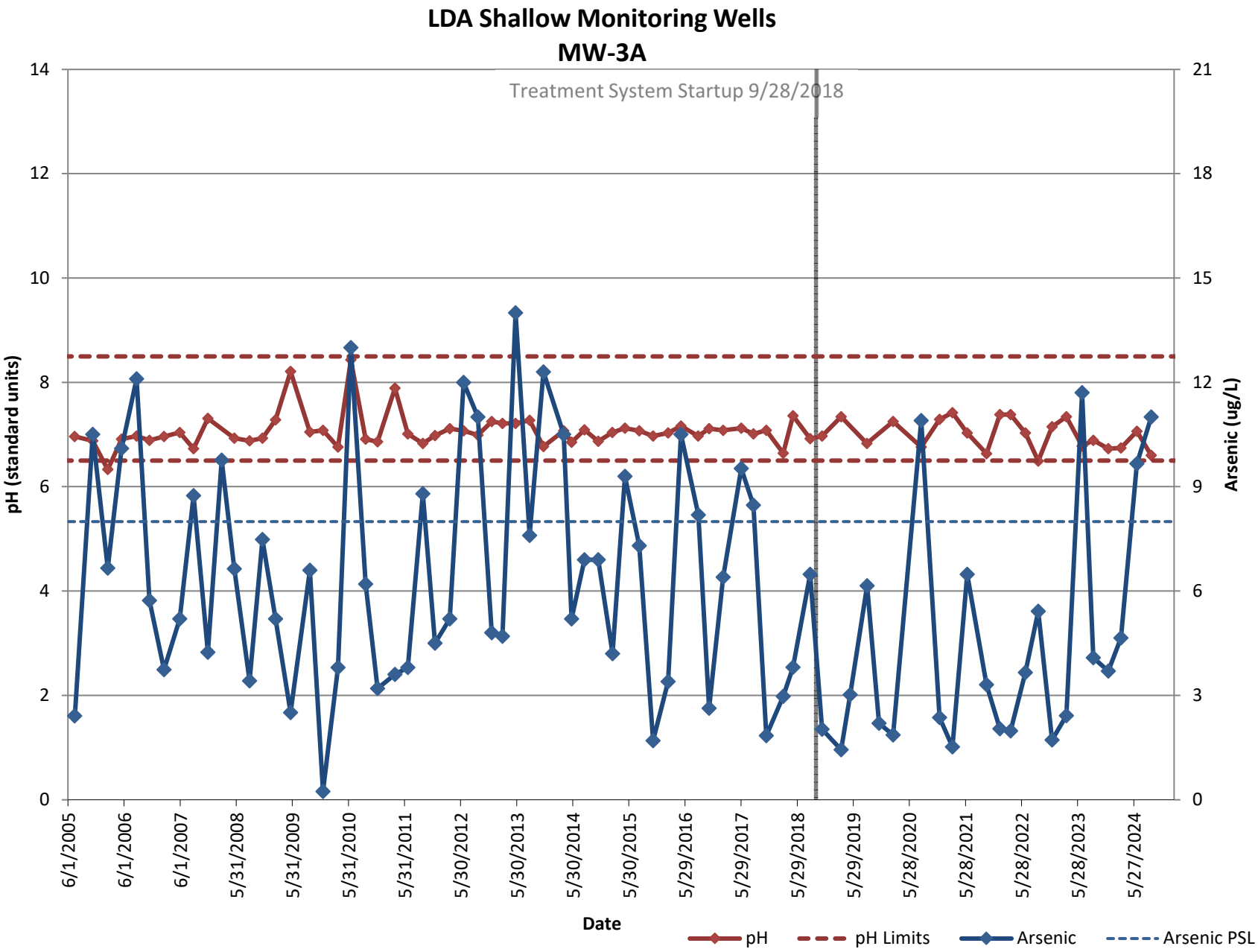
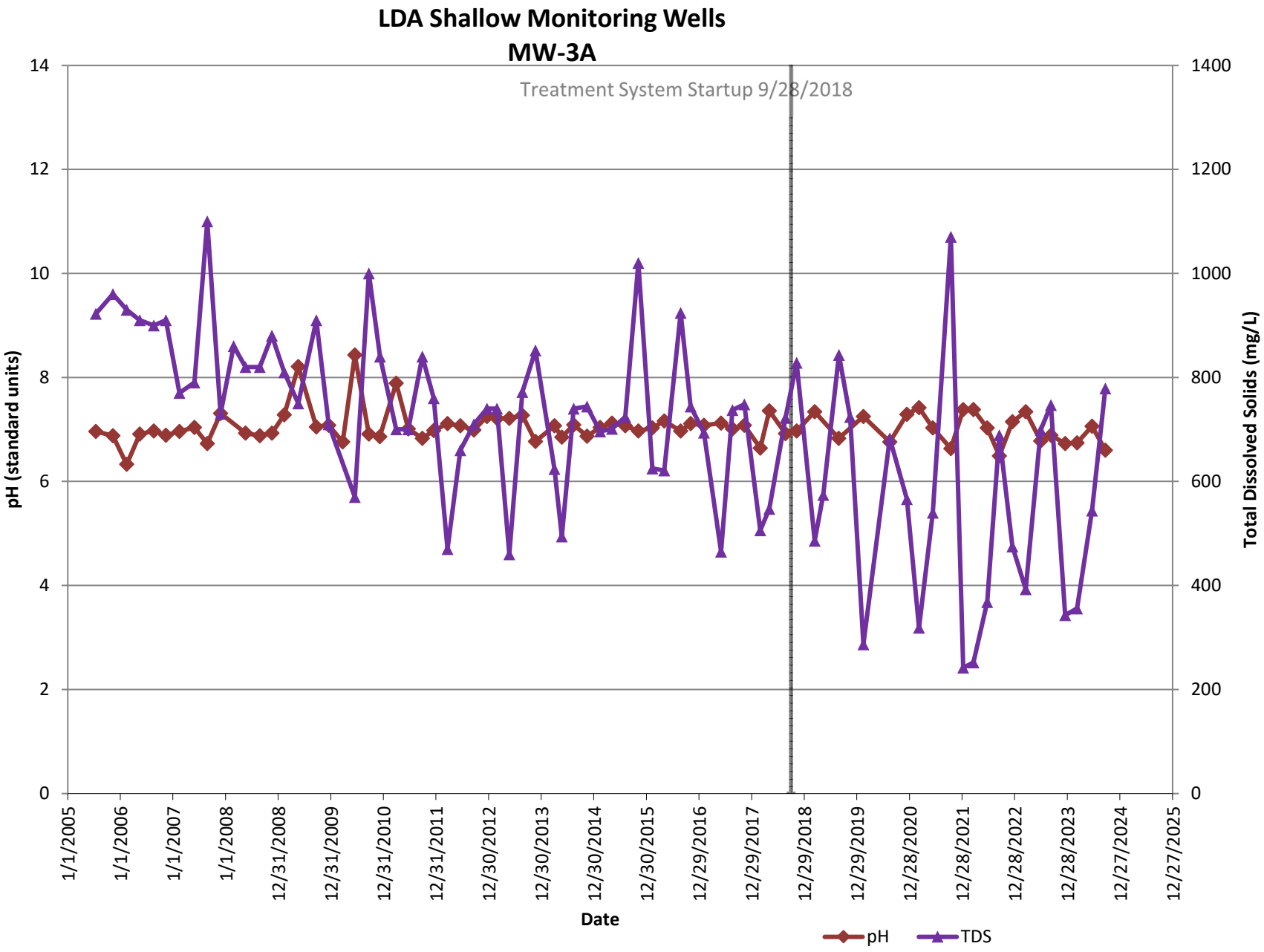
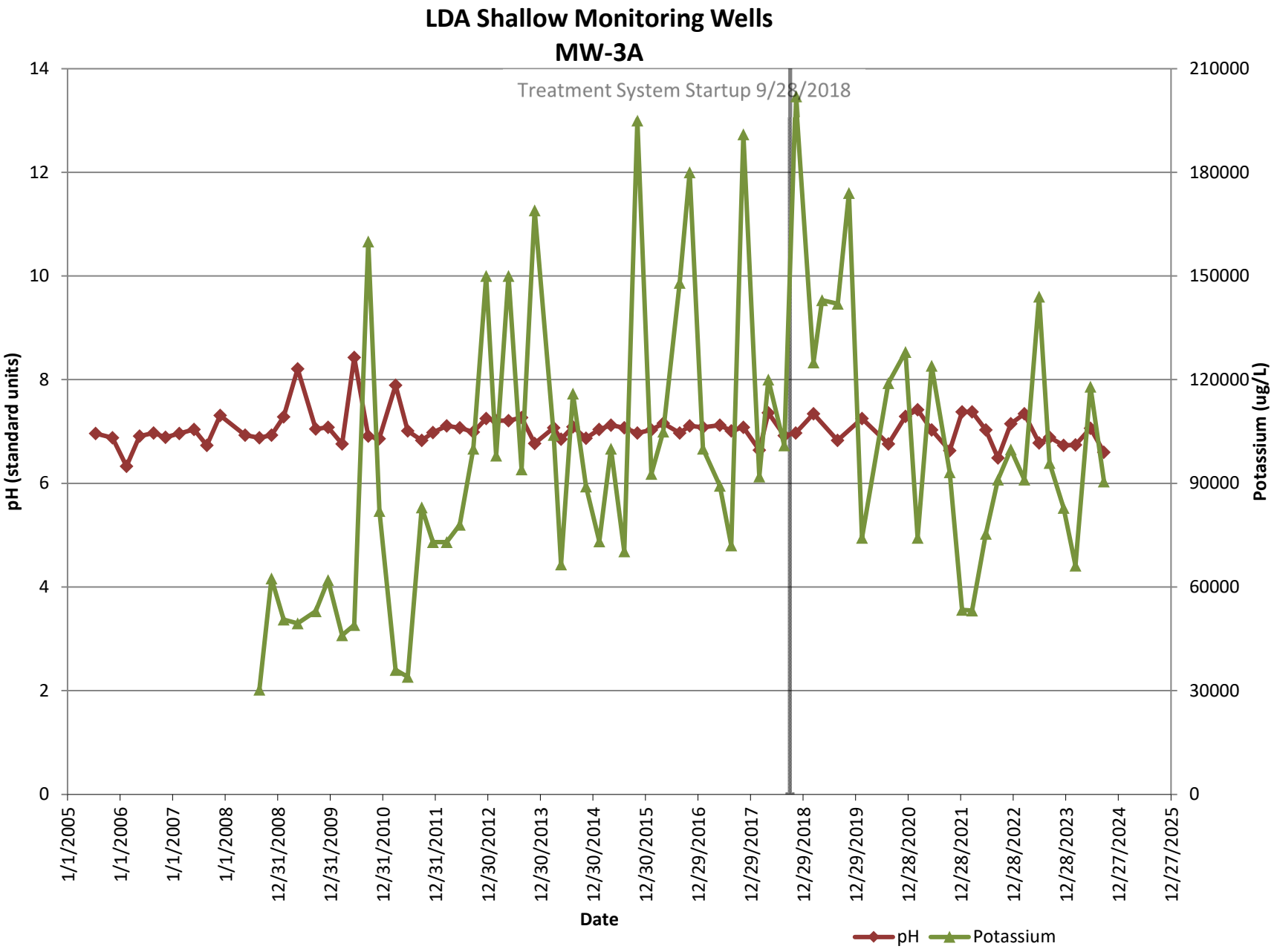
12/28/2022
12/28/2023
12/27/2024
12/27/2025

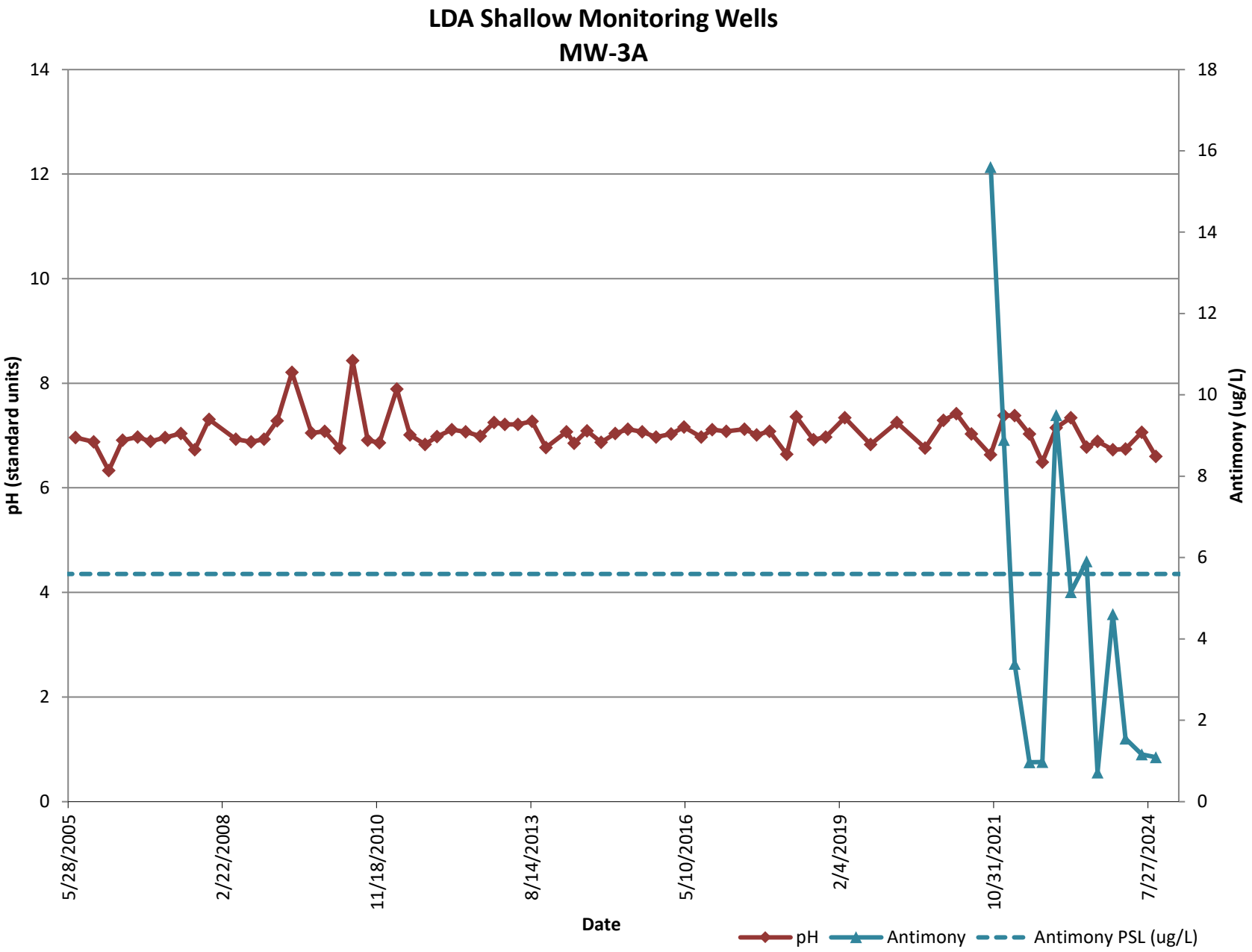

LDA Shallow Monitoring Wells
MW-2A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
0
20000
40000
60000
80000
100000
120000
140000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025

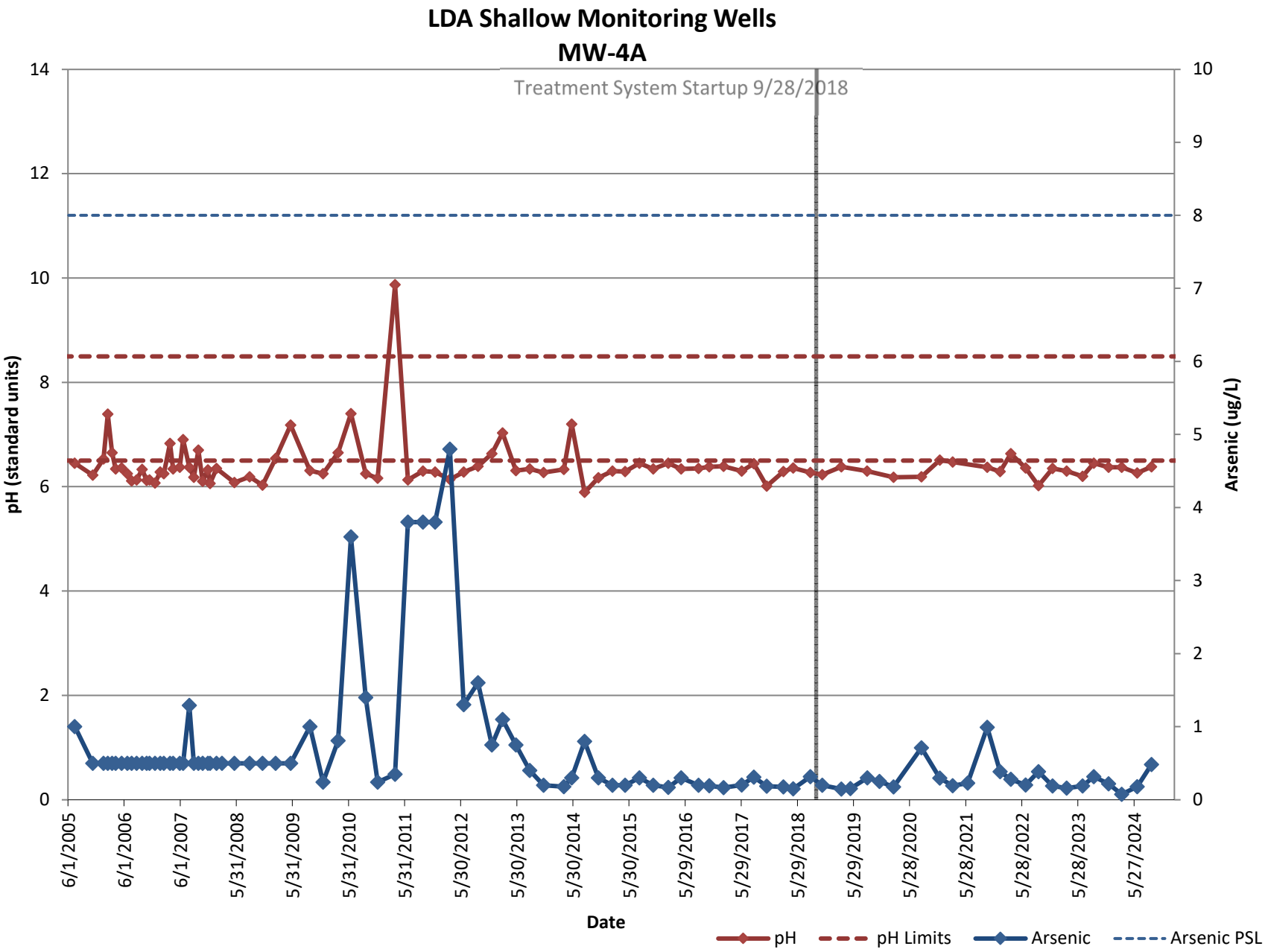

LDA Shallow Monitoring Wells
MW-2A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
1/1/2021
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
4/15/2024
11/1/2024
Date
pH
Antimony
Antimony PSL (ug/L)

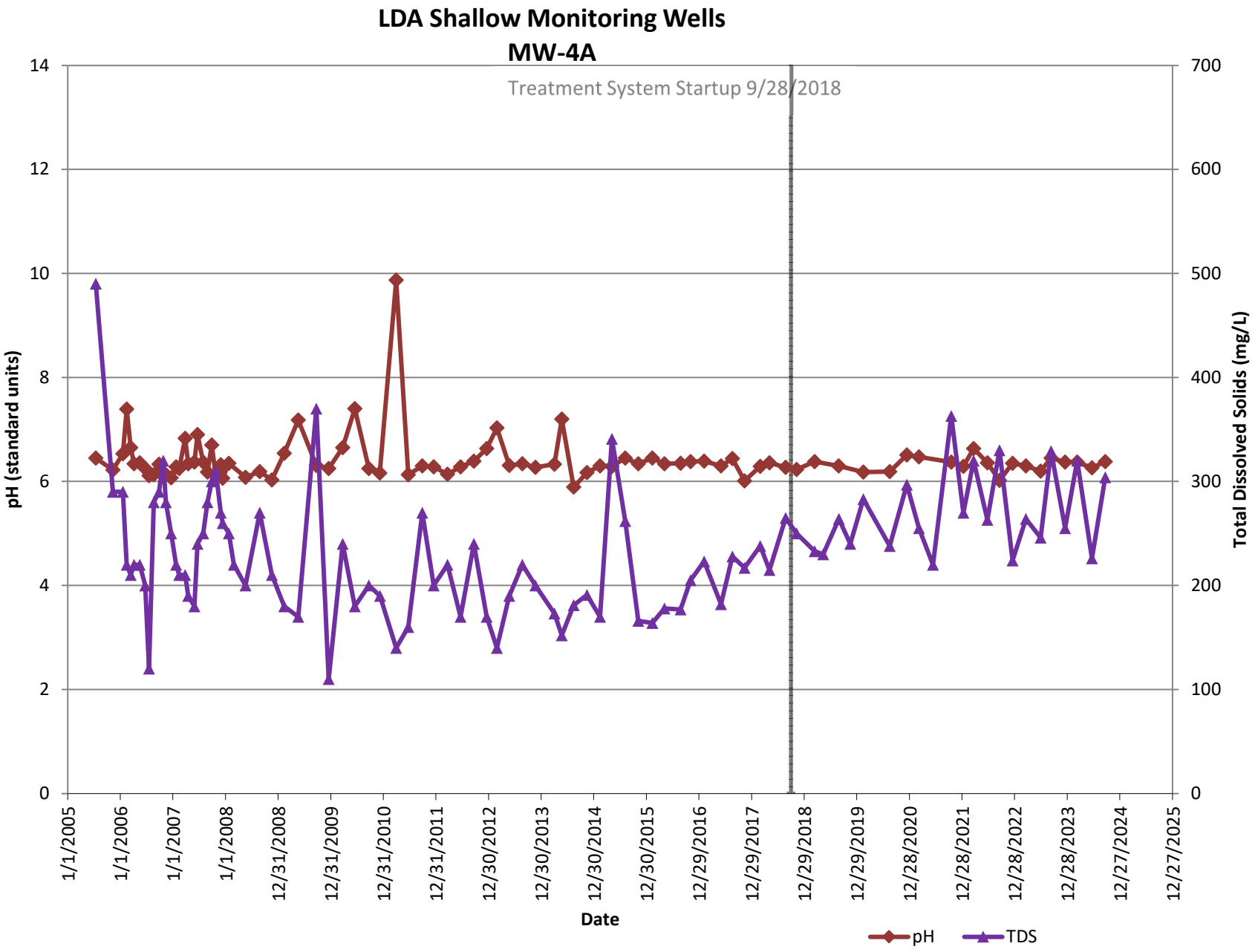

LDA Shallow Monitoring Wells
MW-3A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
21
18
15
12
9
6
3
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
5/27/2024
Date
pH
pH Limits
Arsenic
Arsenic PSL

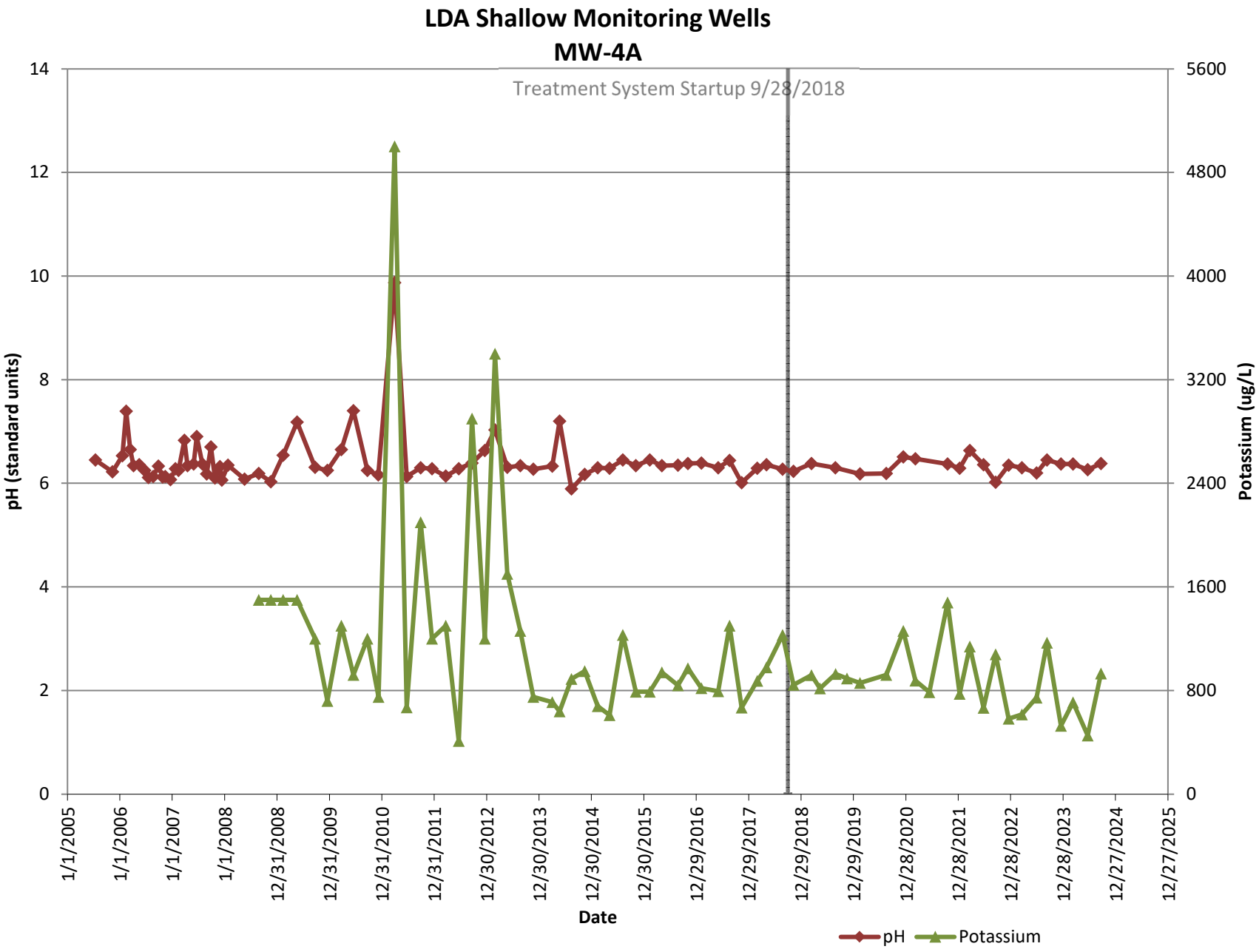

LDA Shallow Monitoring Wells
MW-3A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
200
400
600
800
1000
1200
1400
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025

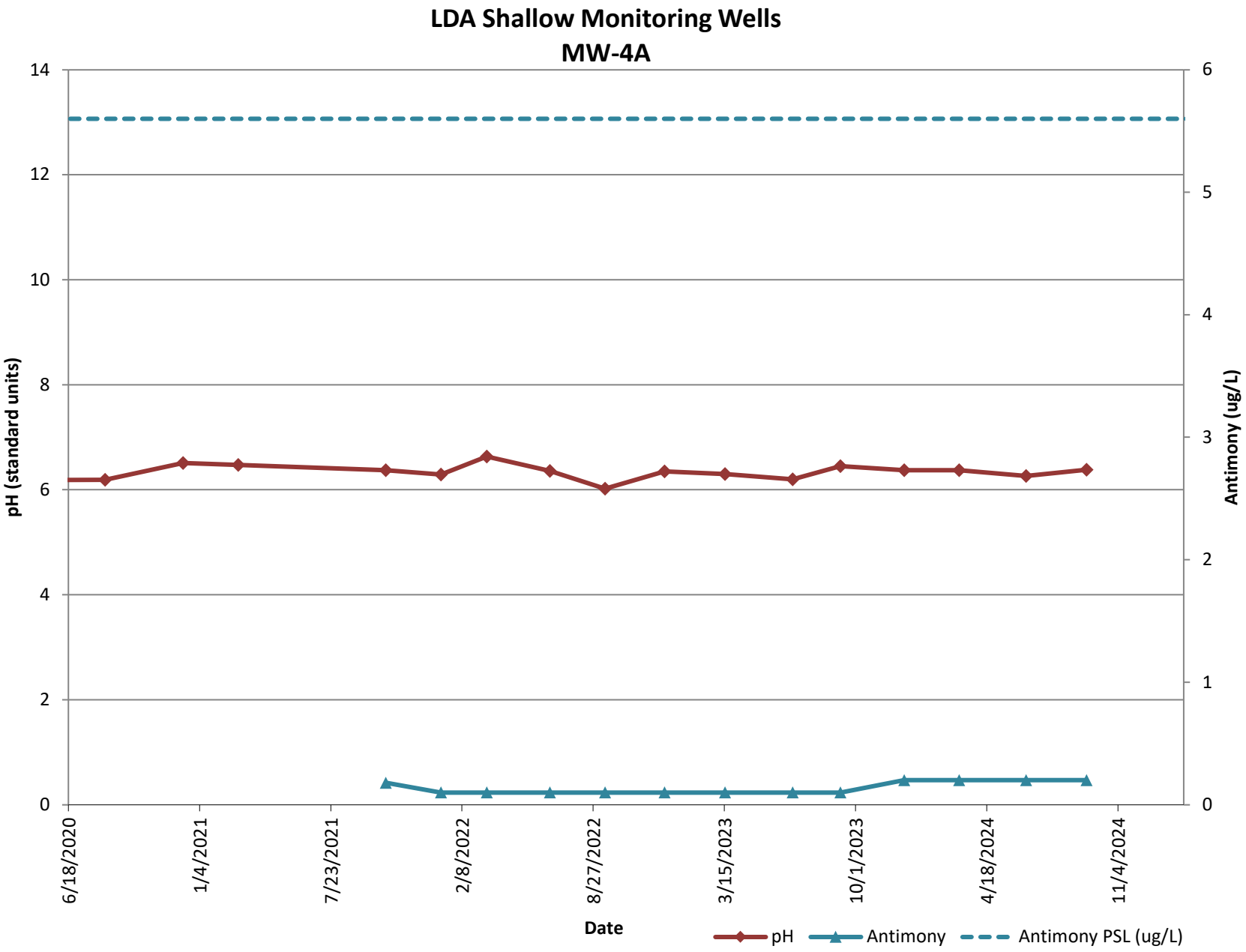

LDA Shallow Monitoring Wells
MW-3A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
14
12
10
8
6
4
2
0
210000
180000
150000
120000
90000
60000
30000
0
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025

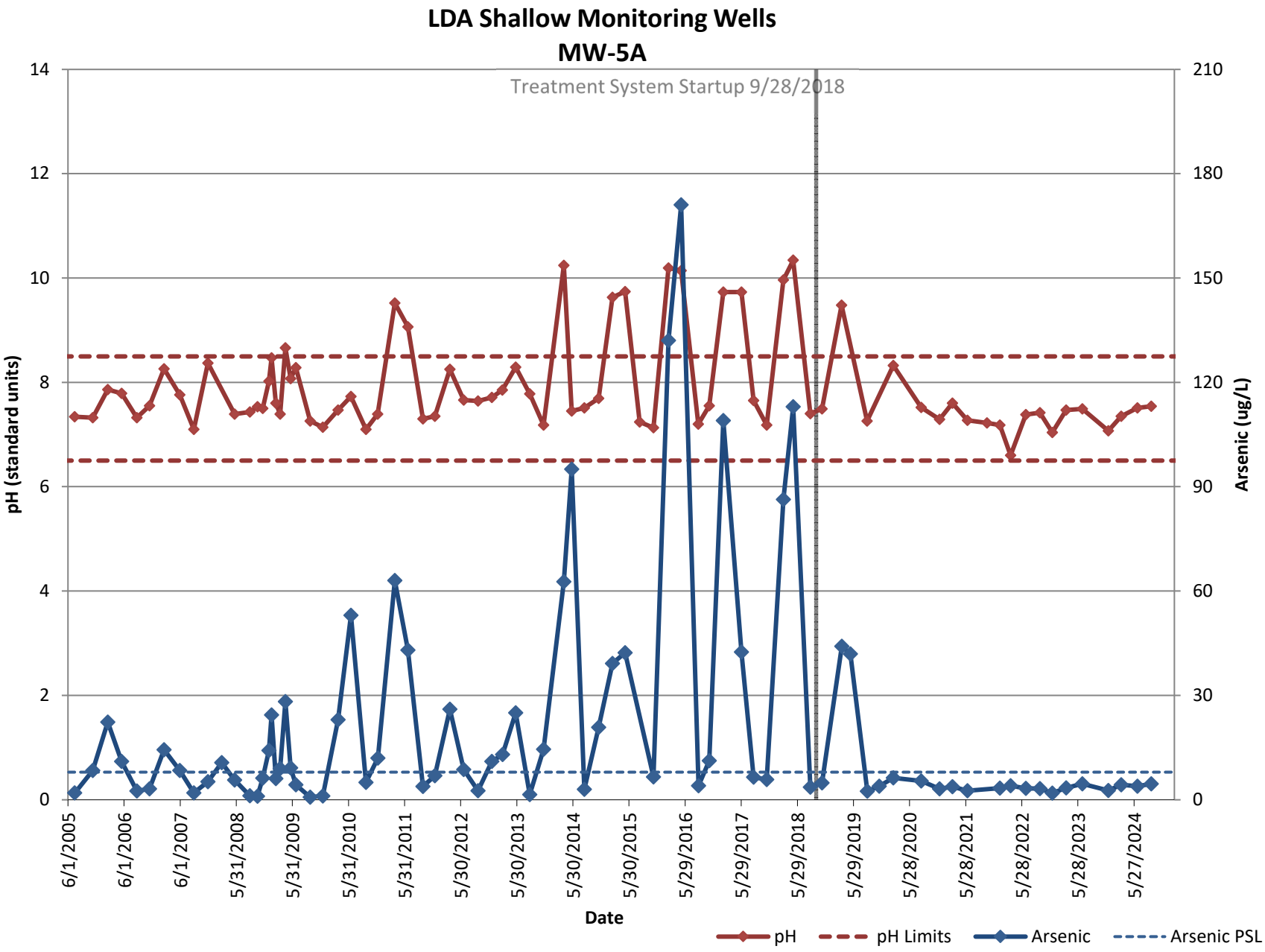

LDA Shallow Monitoring Wells
MW-3A
pH (standard units)
Antimony (ug/L)
Date
5/28/2005
2/22/2008
11/18/2010
8/14/2013
5/10/2016
2/4/2019
10/31/2021
7/27/2024
pH
Antimony
Antimony PSL (ug/L)

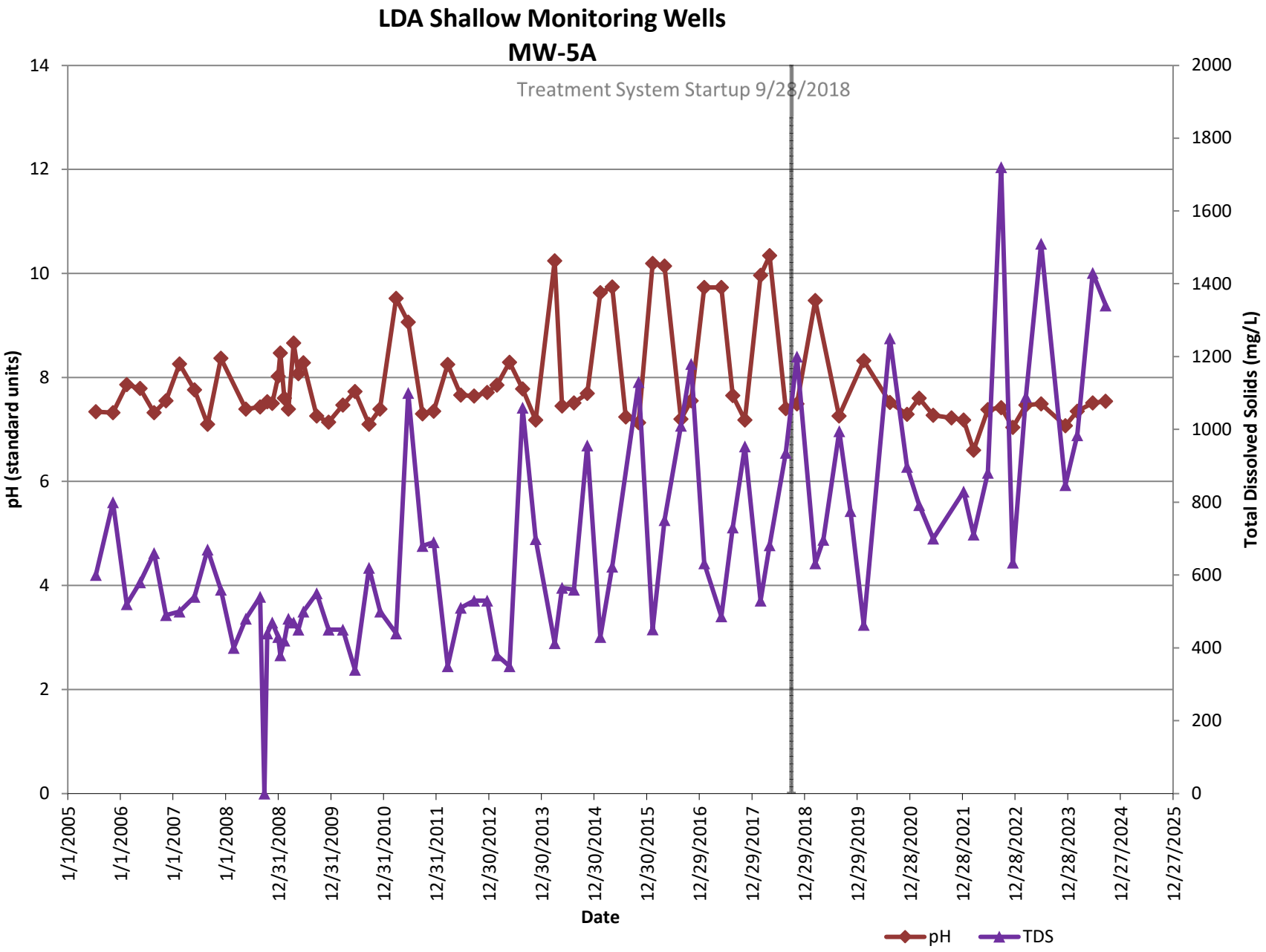

LDA Shallow Monitoring Wells
MW-4A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
Date
14
12
10
8
6
4
2
0
10
9
8
7
6
5
4
3
2
1
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
5/27/2024
pH
pH Limits
Arsenic
Arsenic PSL

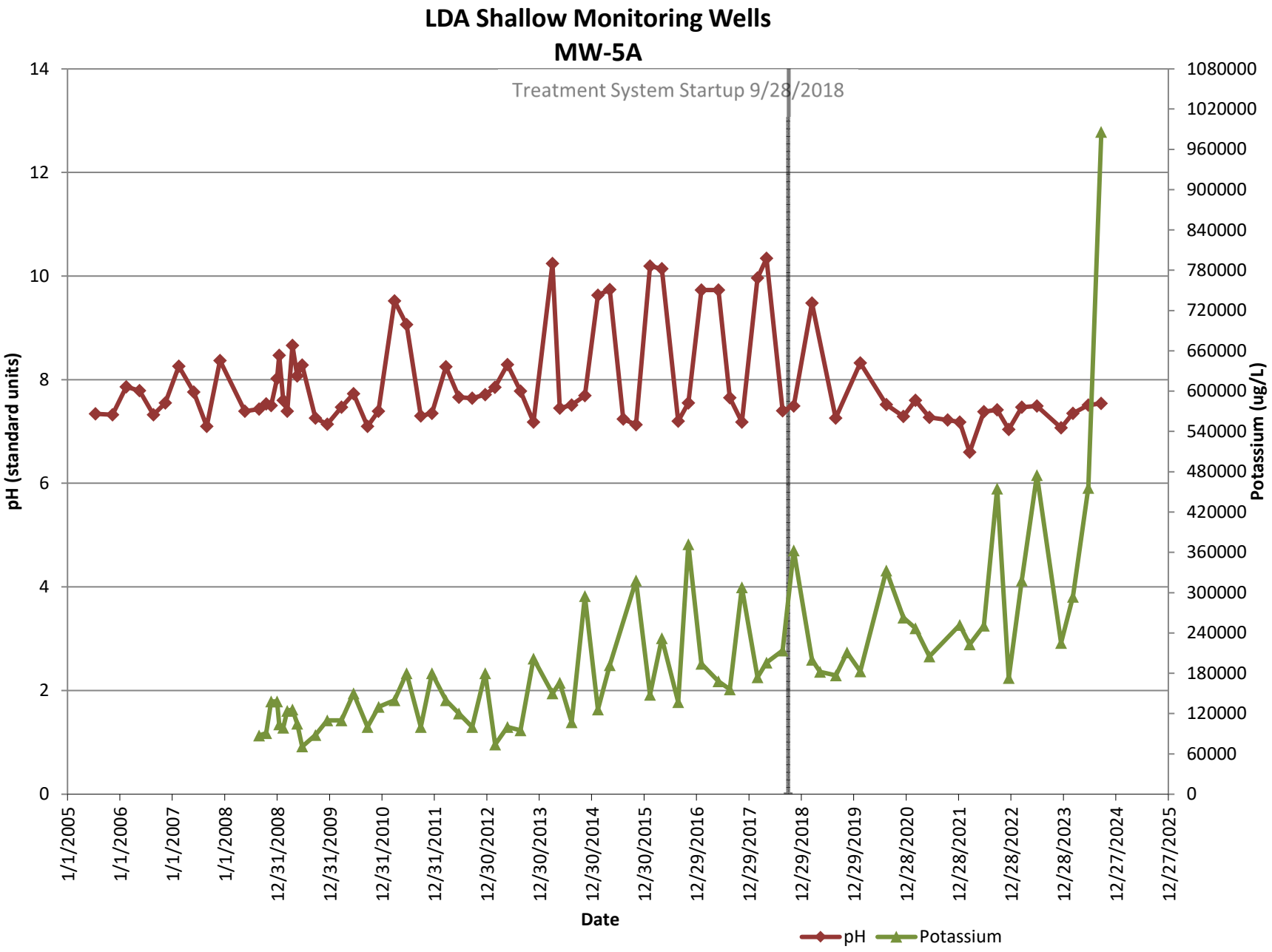

LDA Shallow Monitoring Wells
MW-4A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
0
2
4
6
8
10
12
14
0
100
200
300
400
500
600
700
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025
pH
TDS

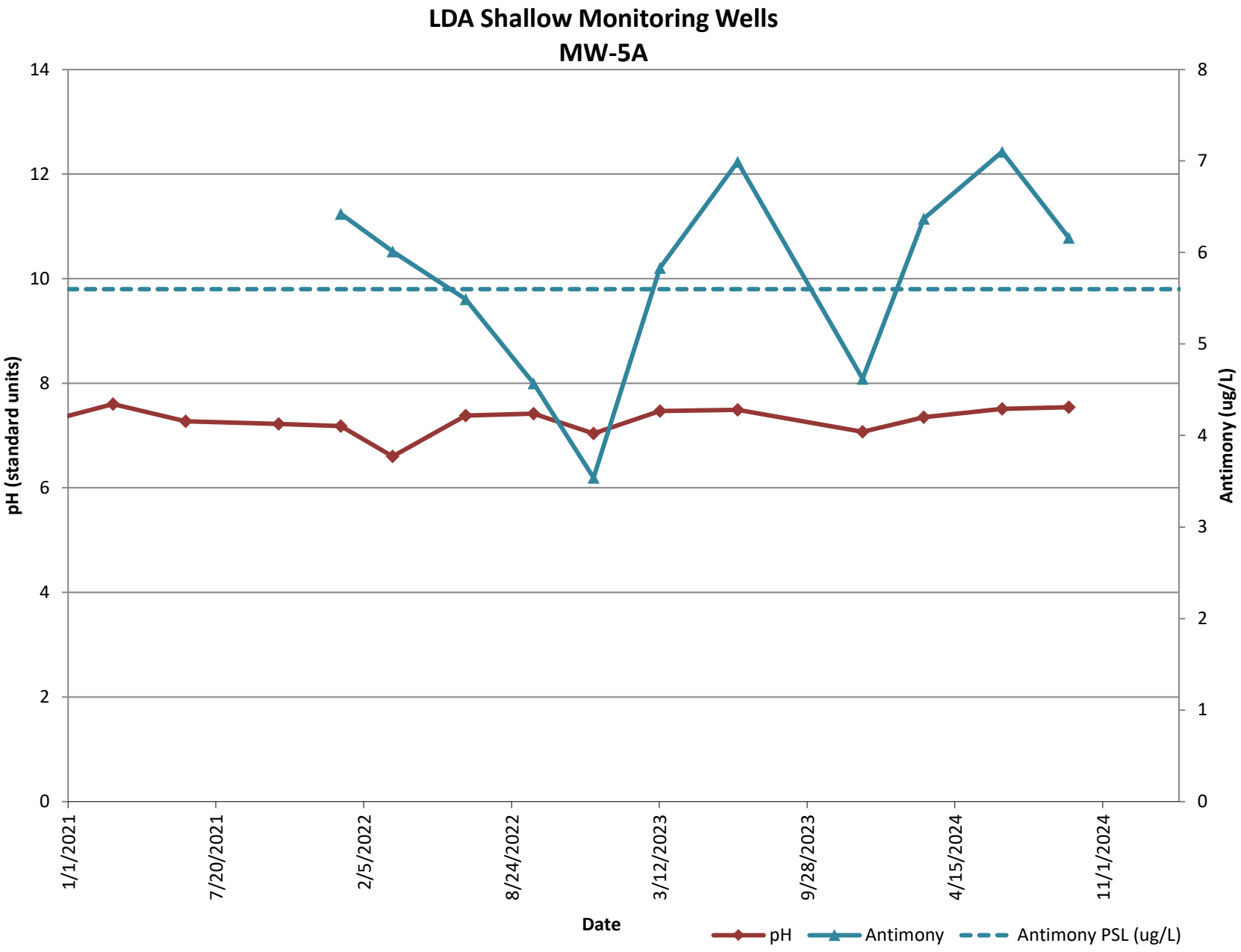

LDA Shallow Monitoring Wells
MW-4A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
14
12
10
8
6
4
2
0
5600
4800
4000
3200
2400
1600
800
0
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025

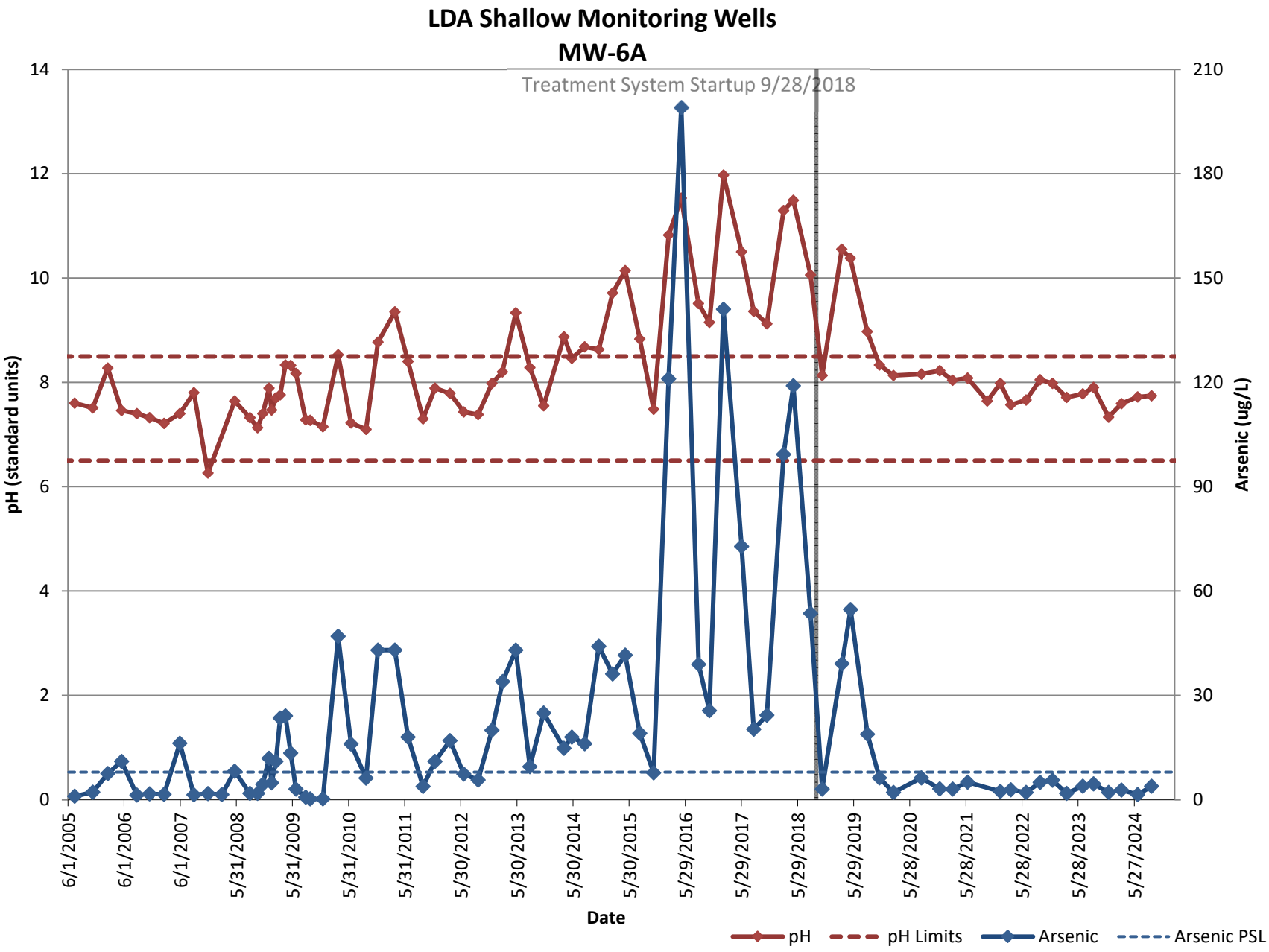

LDA Shallow Monitoring Wells
MW-4A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
6/18/2020
1/4/2021
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
11/4/2024
Date
pH
Antimony
Antimony PSL (ug/L)

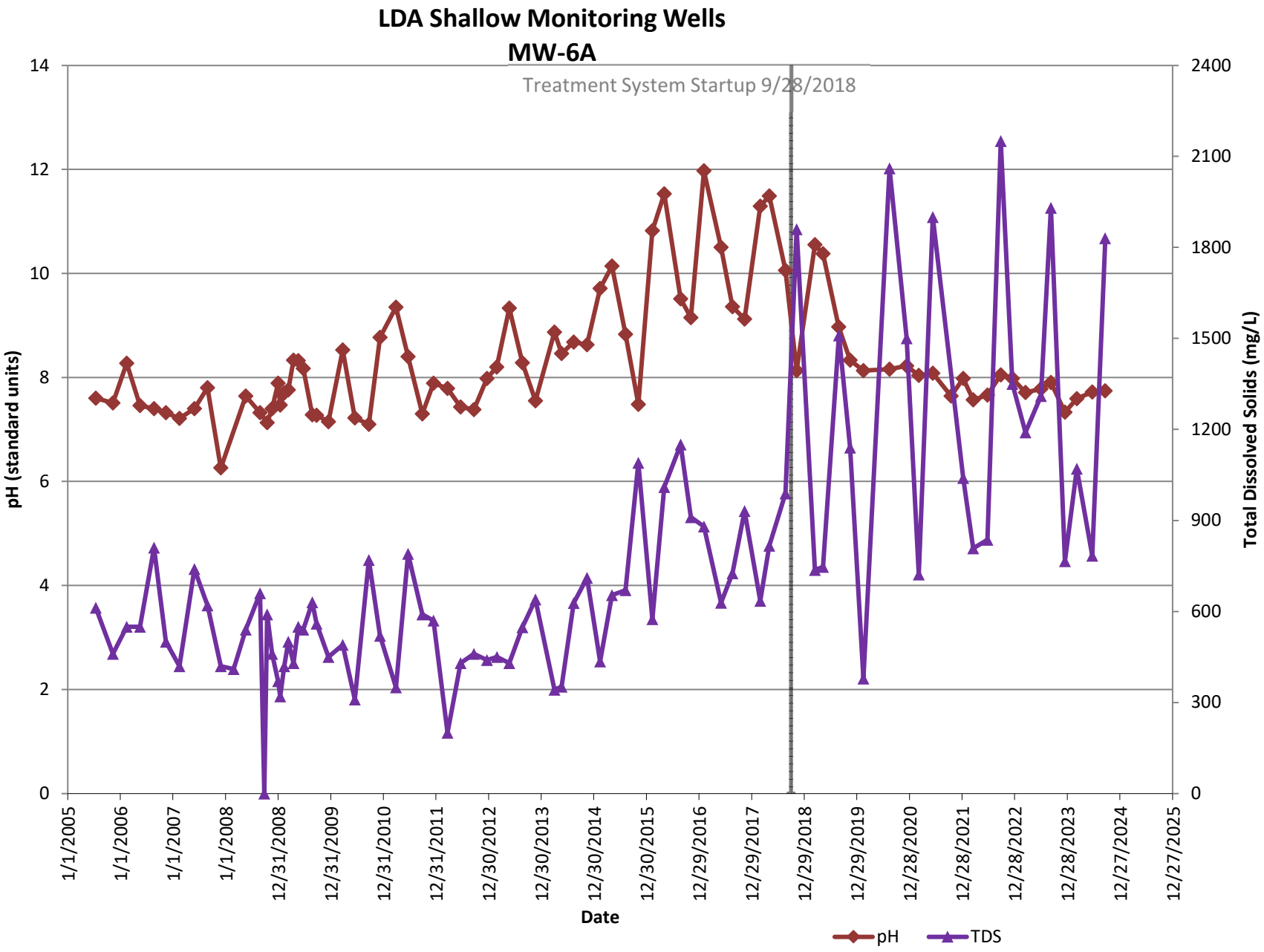

LDA Shallow Monitoring Wells
MW-5A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
210
180
150
120
90
60
30
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
5/27/2024
Date
pH
pH Limits
Arsenic
Arsenic PSL

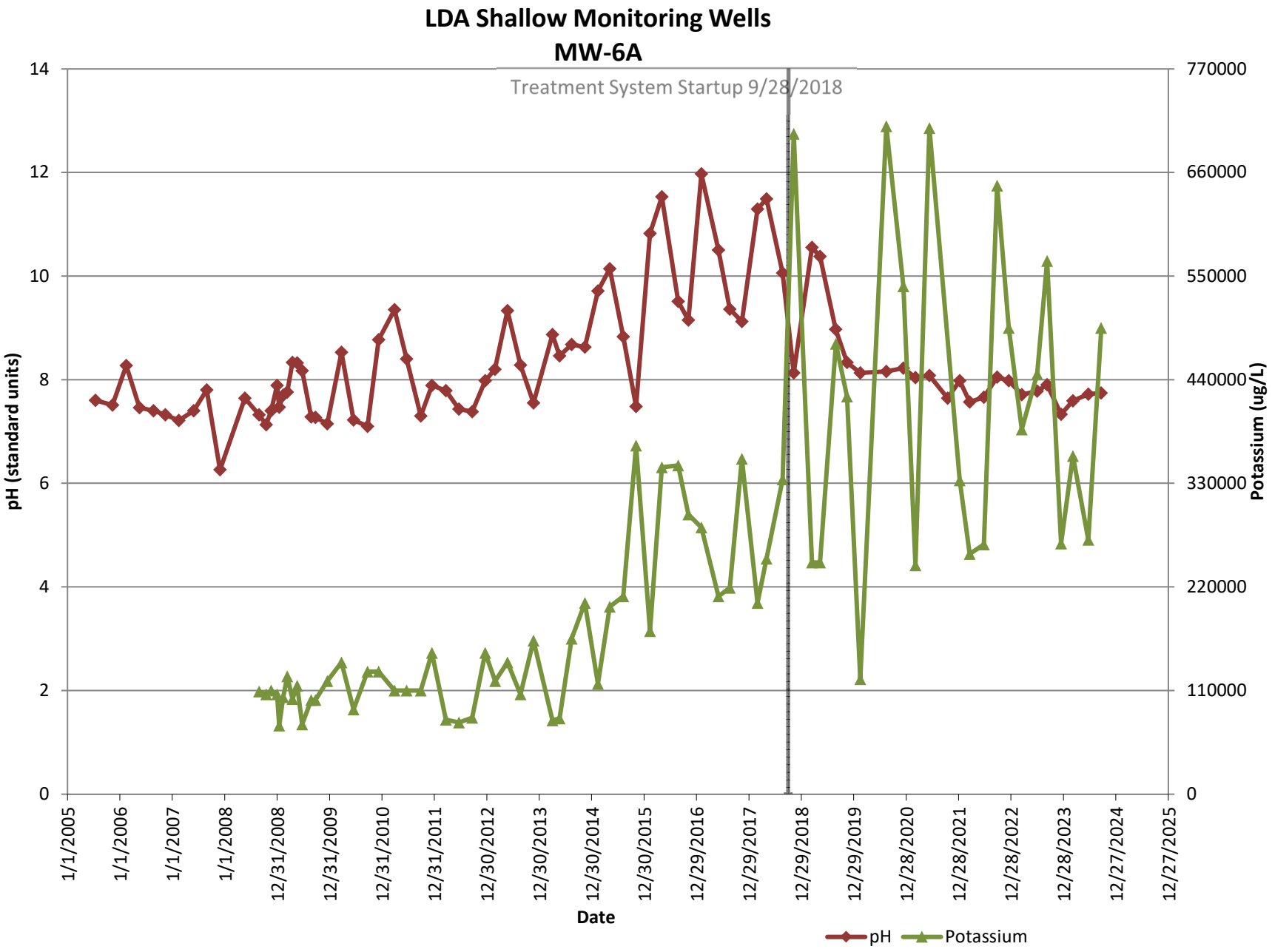

LDA Shallow Monitoring Wells
MW-5A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
200
400
600
800
1000
1200
1400
1600
1800
2000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025

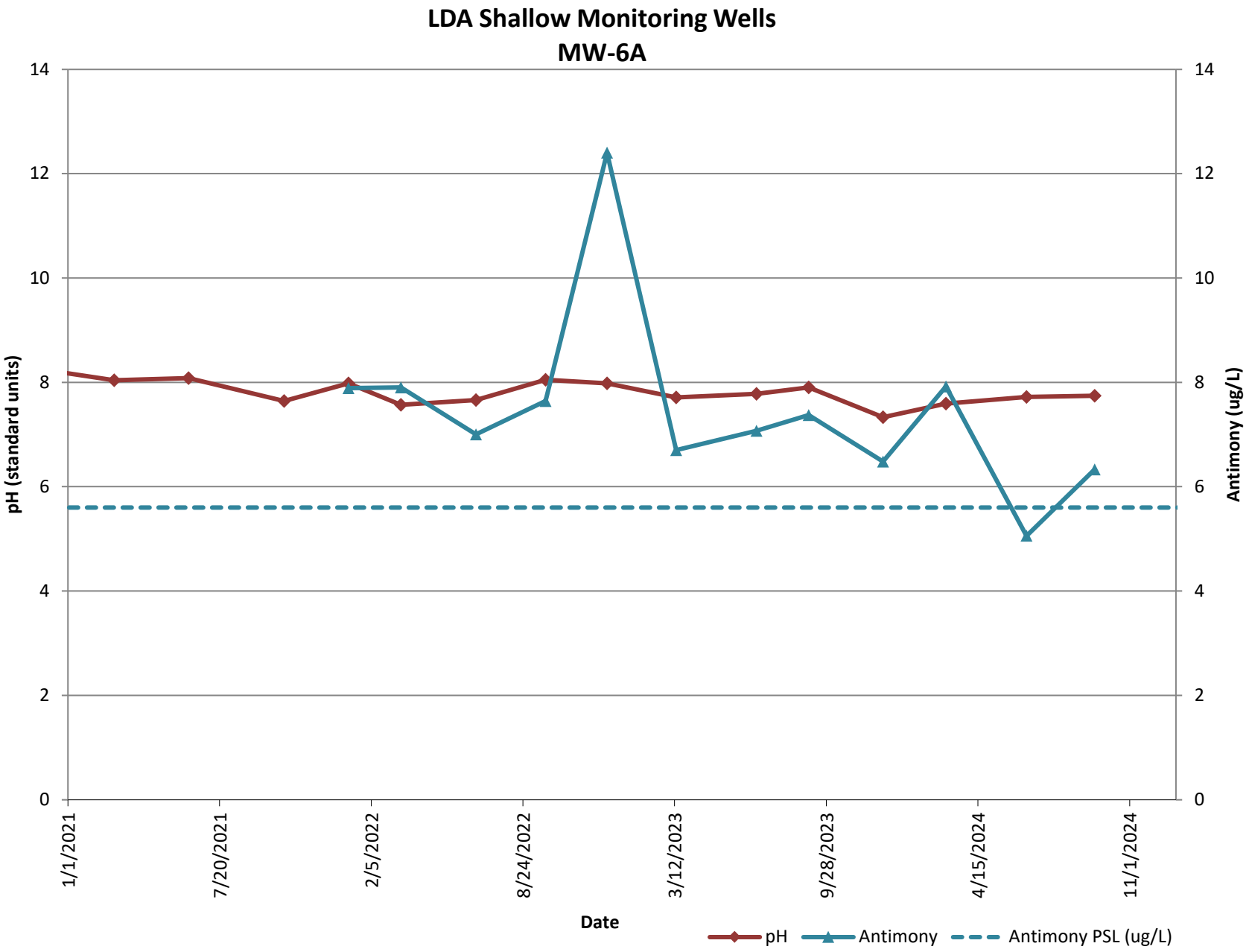

LDA Shallow Monitoring Wells
MW-5A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
0
60000
120000
180000
240000
300000
360000
420000
480000
540000
600000
660000
720000
780000
840000
900000
960000
1020000
1080000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025

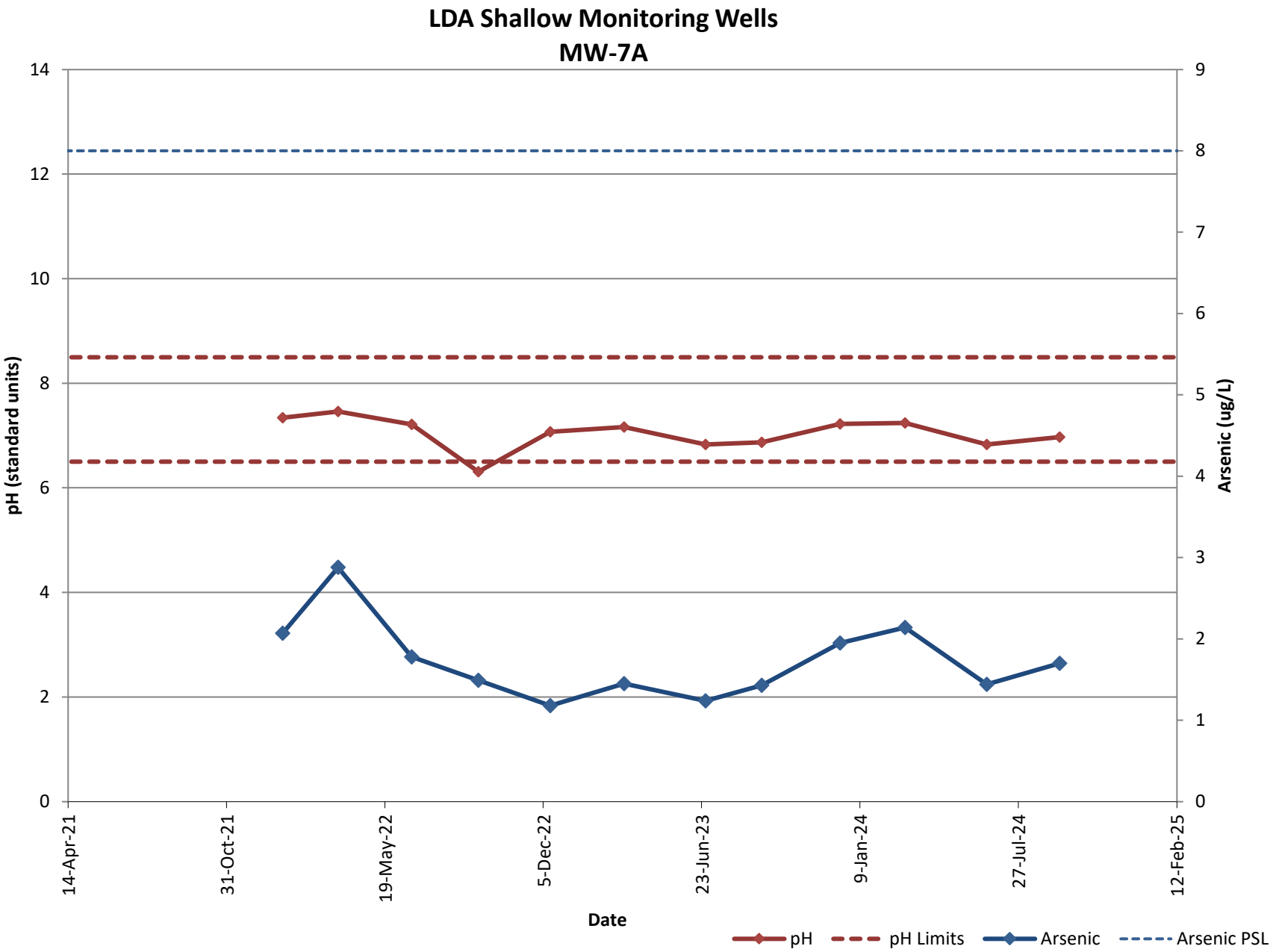

LDA Shallow Monitoring Wells
MW-5A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
8
7
6
5
4
3
2
1
0
1/1/2021
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
4/15/2024
11/1/2024
Date
pH
Antimony
Antimony PSL (ug/L)

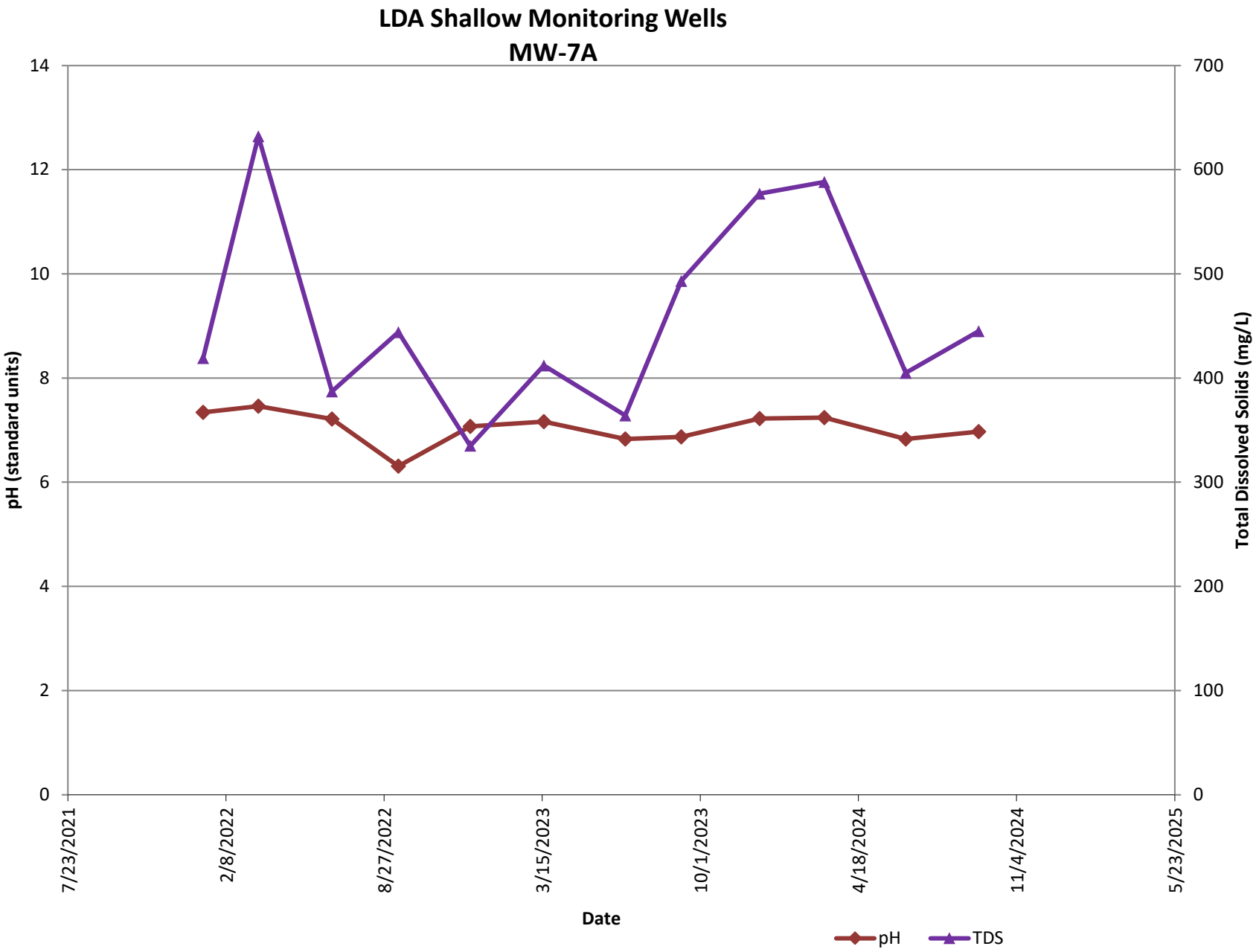

LDA Shallow Monitoring Wells
MW-6A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
Date
14
12
10
8
6
4
2
0
210
180
150
120
90
60
30
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
5/27/2024
pH
pH Limits
Arsenic
Arsenic PSL

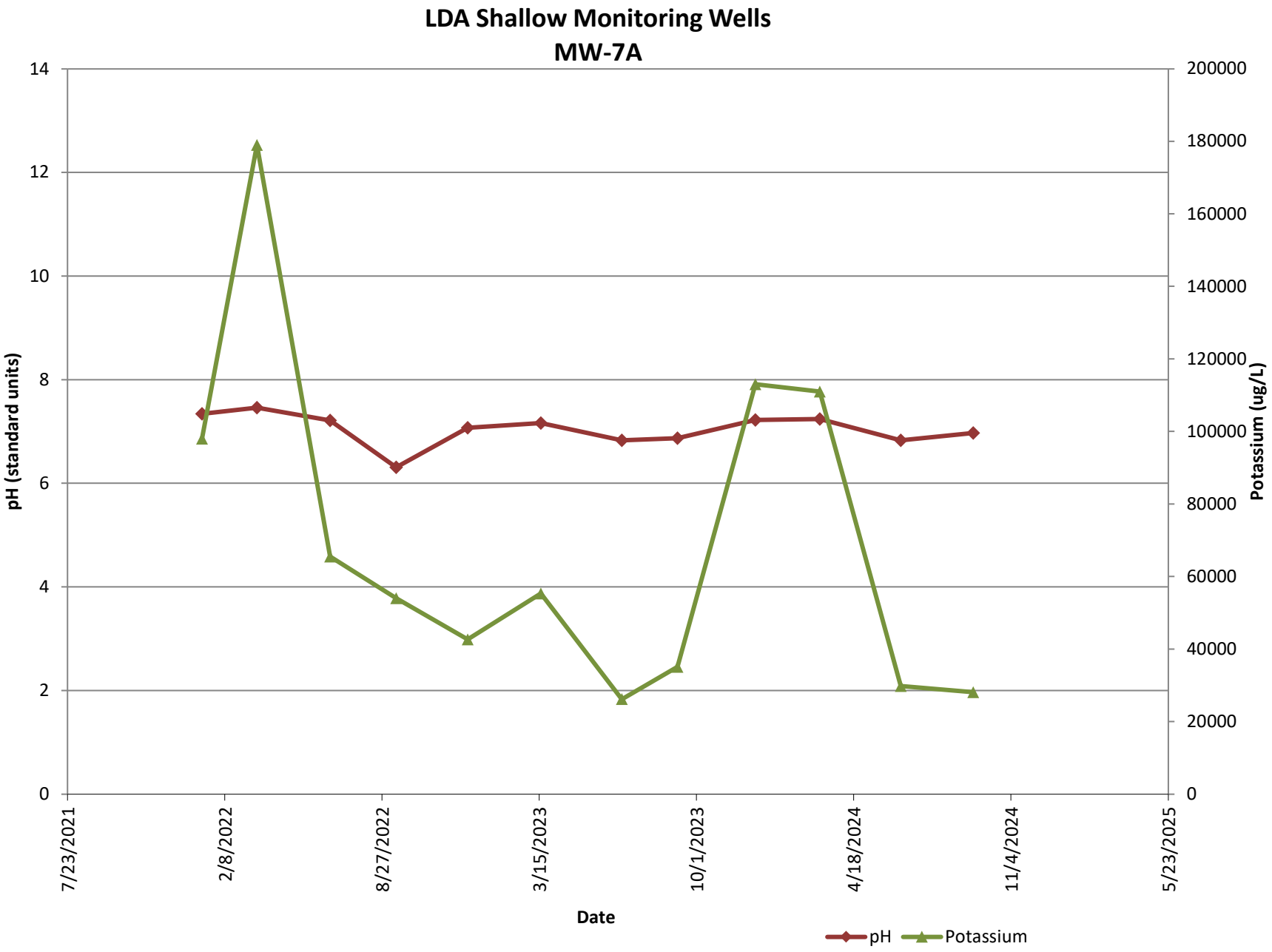

LDA Shallow Monitoring Wells
MW-6A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
300
600
900
1200
1500
1800
2100
2400
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025

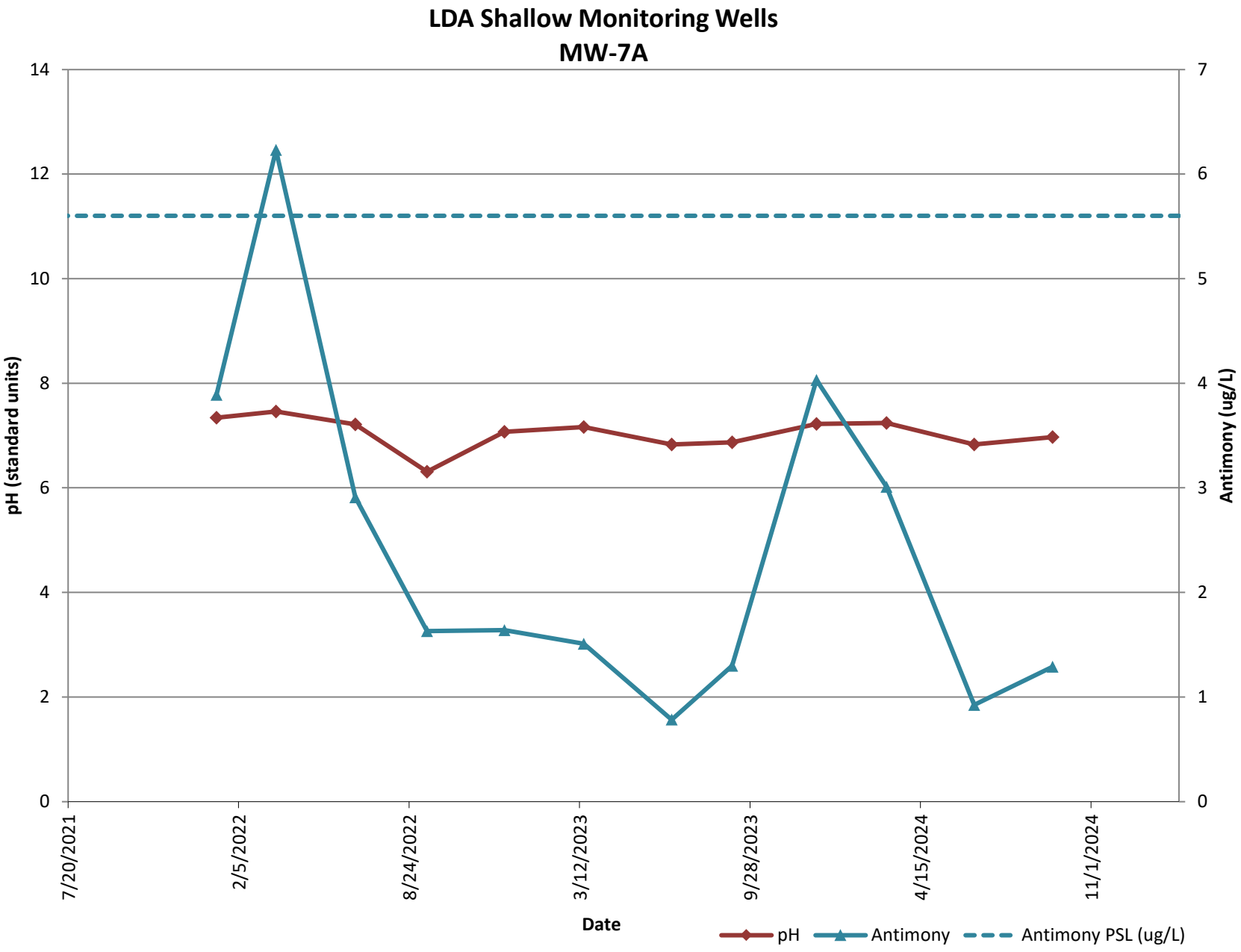

LDA Shallow Monitoring Wells
MW-6A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
0
110000
220000
330000
440000
550000
660000
770000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
12/27/2025

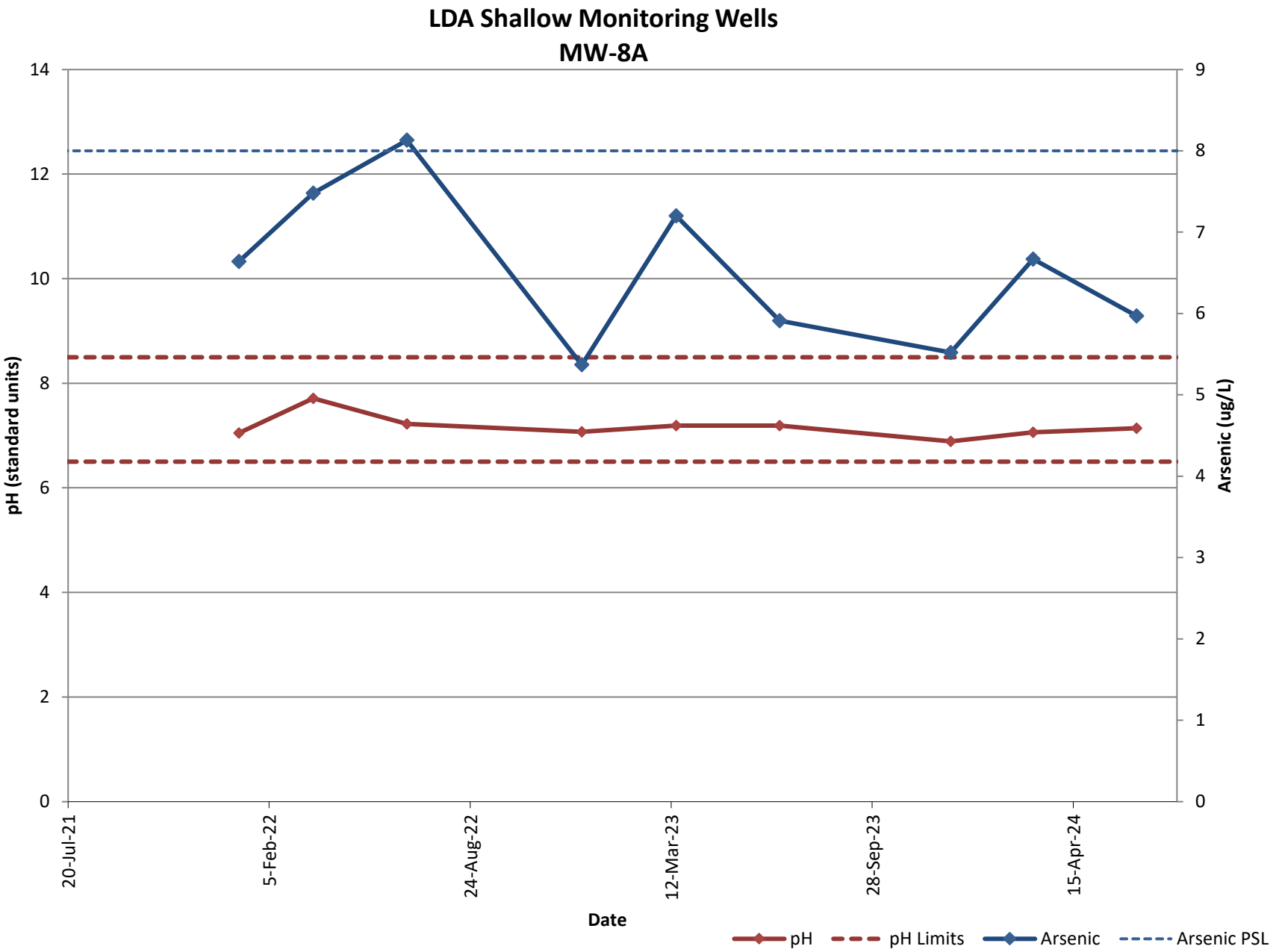

LDA Shallow Monitoring Wells
MW-6A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
1/1/2021
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
4/15/2024
11/1/2024
Date
pH
Antimony
Antimony PSL (ug/L)

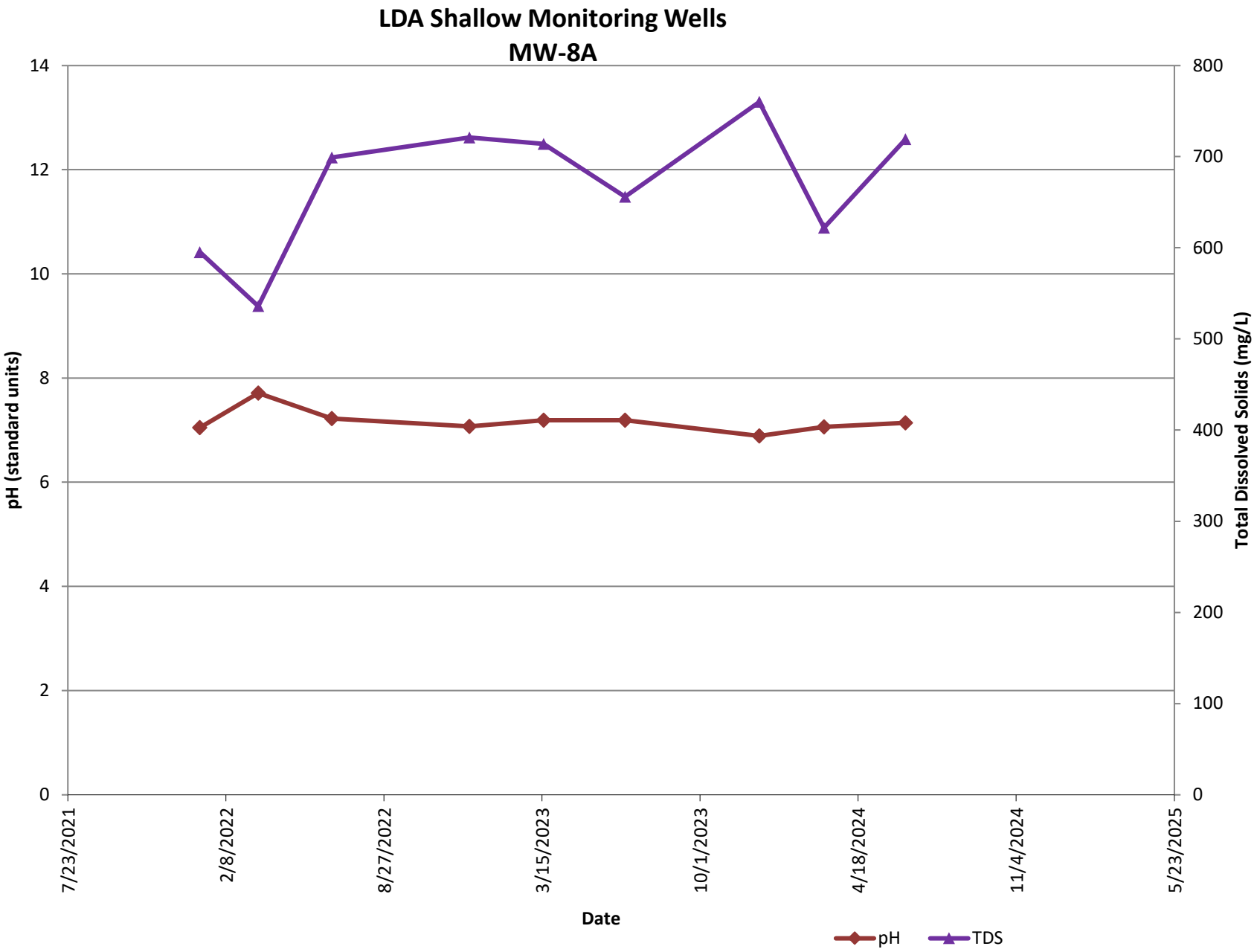

LDA Shallow Monitoring Wells
MW-7A
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
9
8
7
6
5
4
3
2
1
0
14-Apr-21
31-Oct-21
19-May-22
5-Dec-22
23-Jun-23
9-Jan-24
27-Jul-24
12-Feb-25
Date
pH
pH Limits
Arsenic
Arsenic PSL

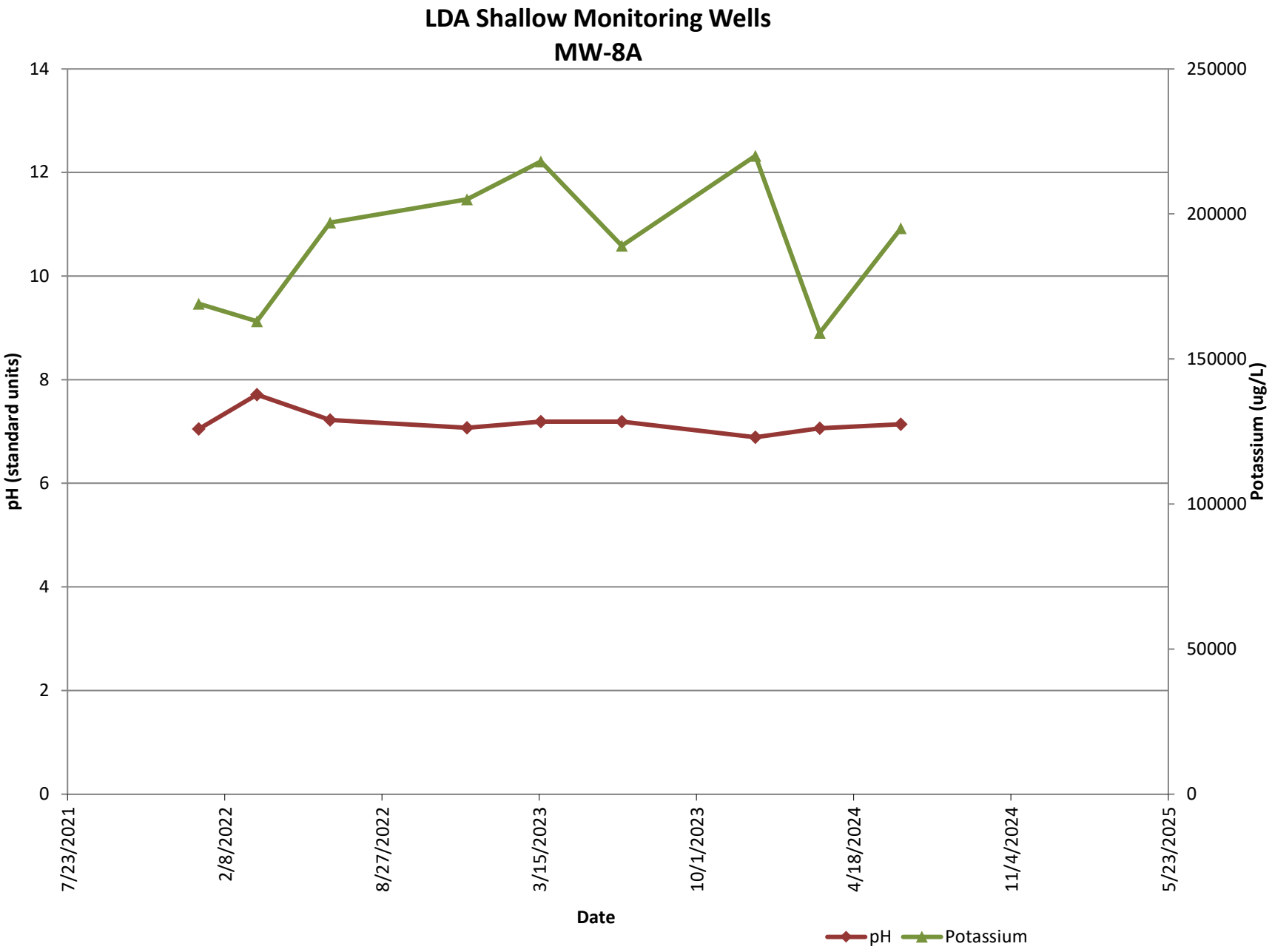

LDA Shallow Monitoring Wells
MW-7A
pH (standard units)
Total Dissolved Solids (mg/L)
14
12
10
8
6
4
2
0
700
600
500
400
300
200
100
0
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
11/4/2024
5/23/2025
Date
pH
TDS

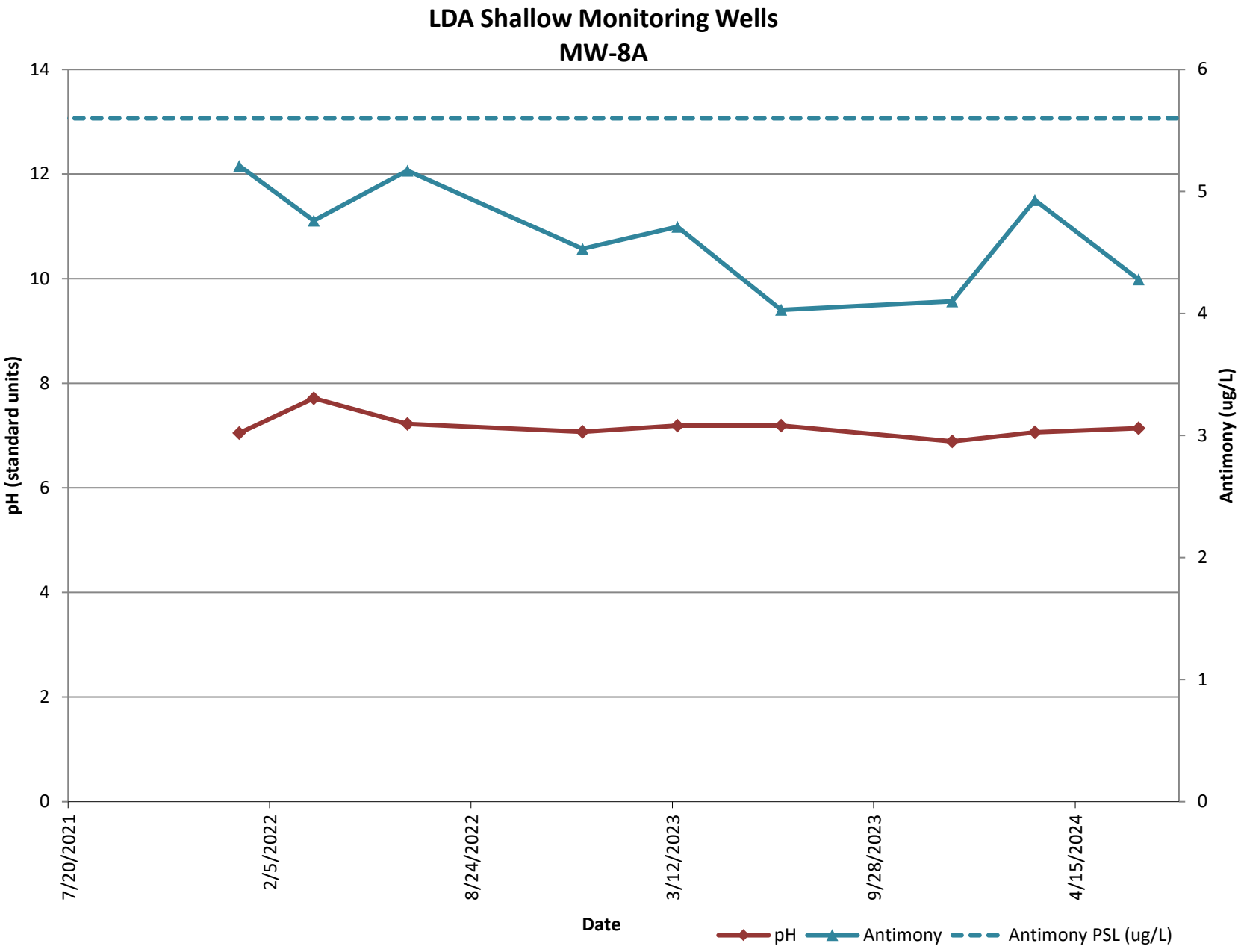

LDA Shallow Monitoring Wells
MW-7A
pH (standard units)
Potassium (ug/L)
Date
0
2
4
6
8
10
12
14
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
11/4/2024
5/23/2025
pH
Potassium

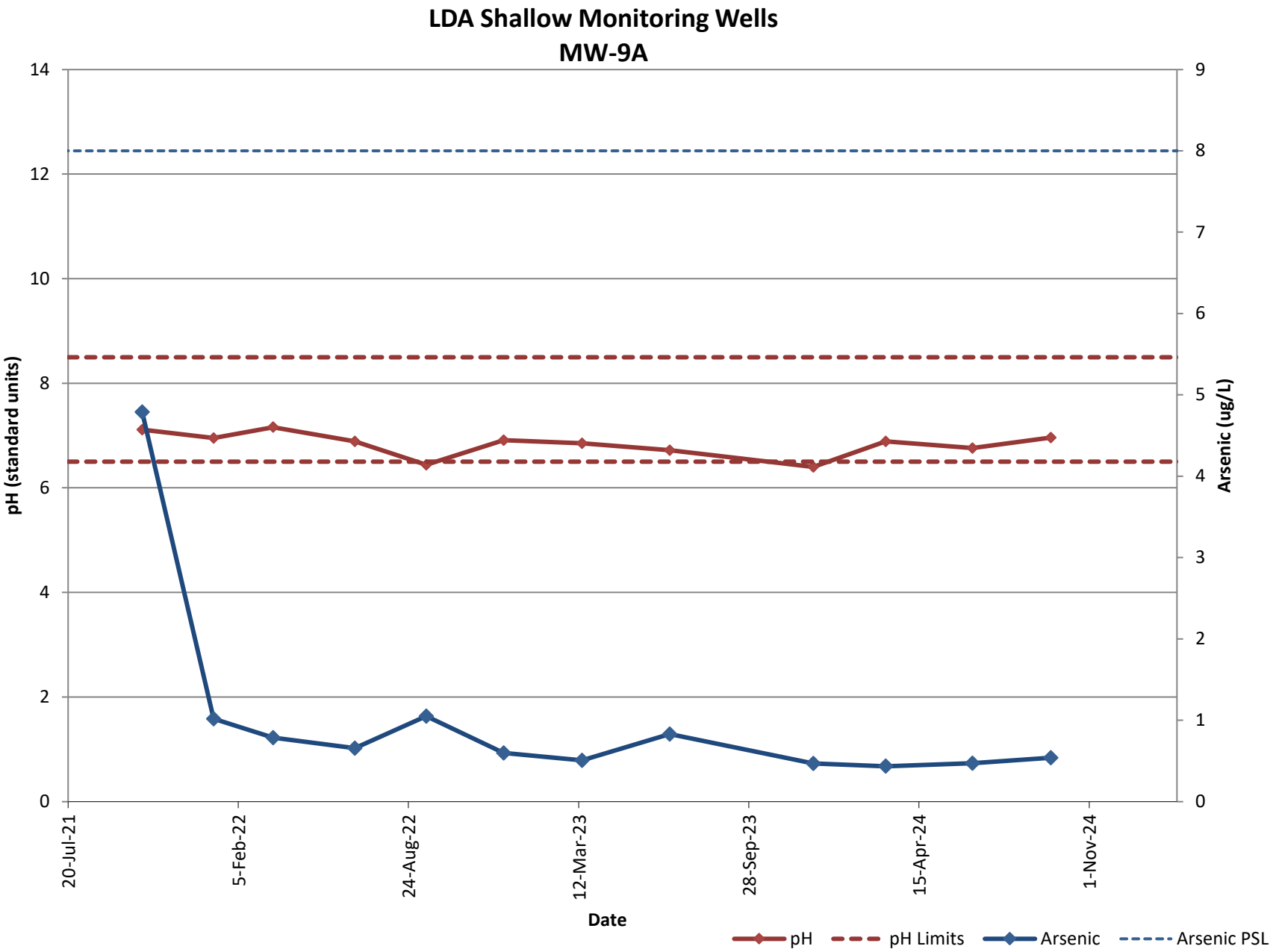

LDA Shallow Monitoring Wells
MW-7A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
7
6
5
4
3
2
1
0
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
4/15/2024
11/1/2024
Date
pH
Antimony
Antimony PSL (ug/L)

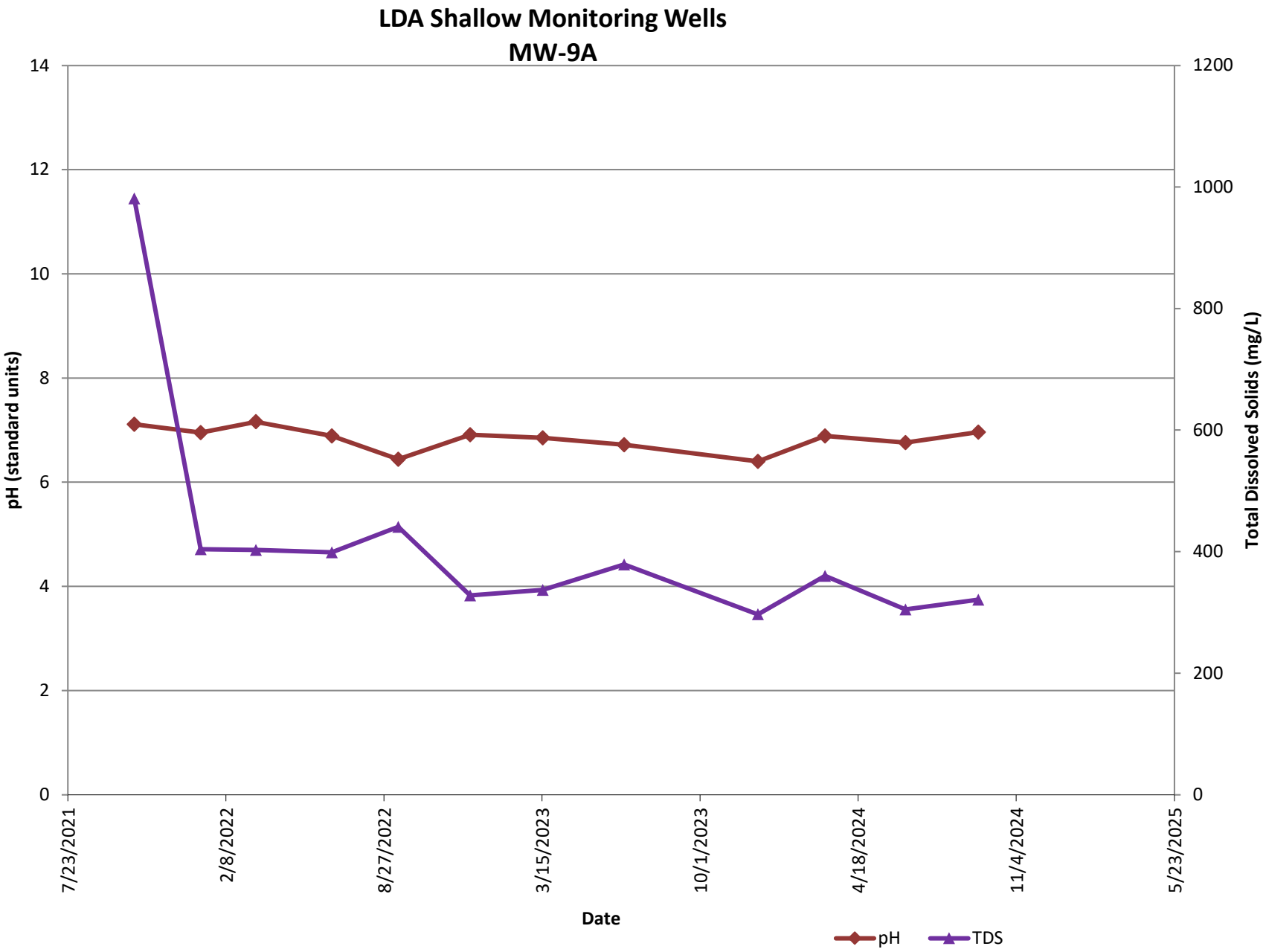

LDA Shallow Monitoring Wells
MW-8A
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
9
8
7
6
5
4
3
2
1
0
20-Jul-21
5-Feb-22
24-Aug-22
12-Mar-23
28-Sep-23
15-Apr-24
Date
pH
pH Limits
Arsenic
Arsenic PSL

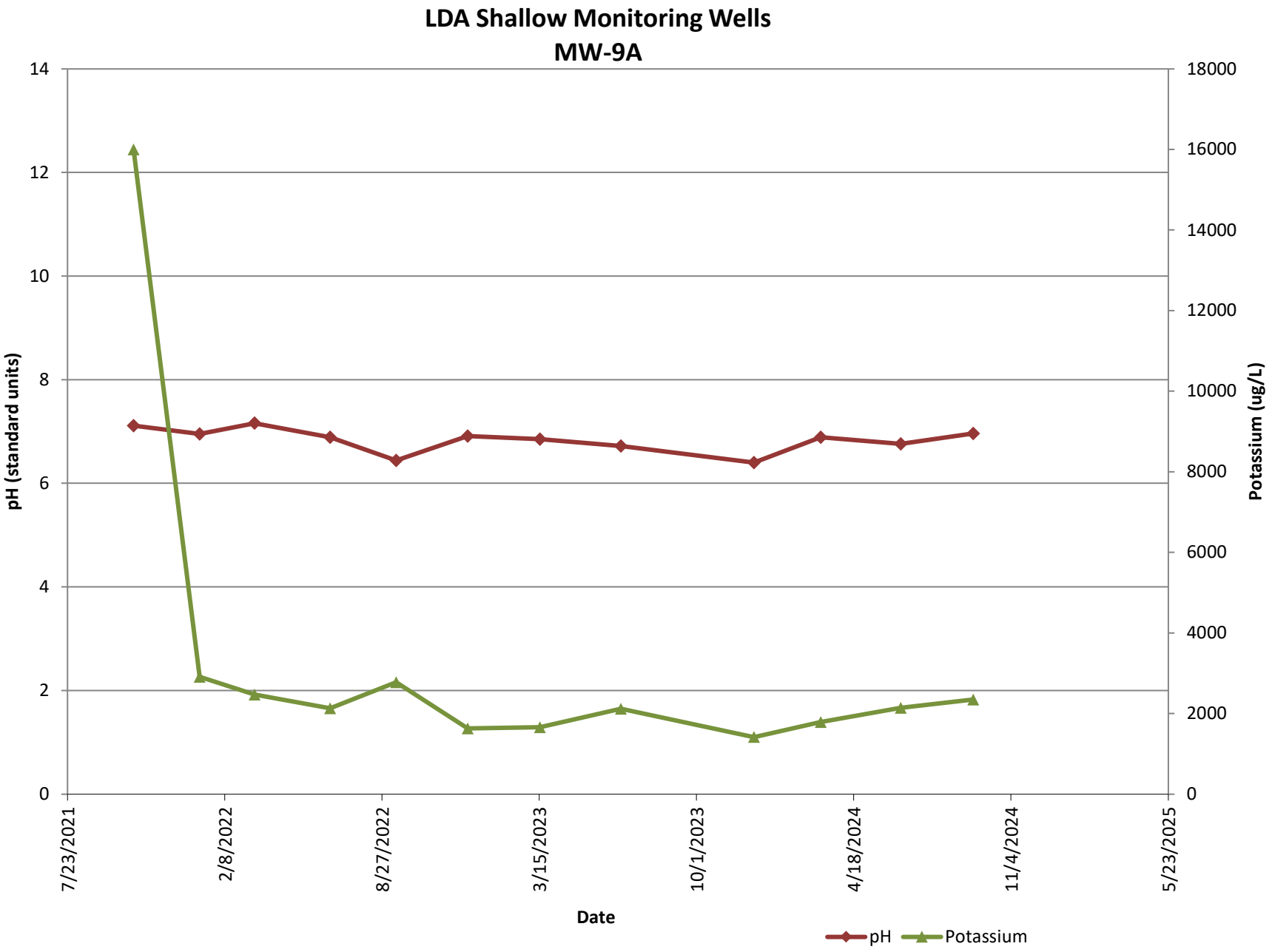

LDA Shallow Monitoring Wells
MW-8A
pH (standard units)
Total Dissolved Solids (mg/L)
14
12
10
8
6
4
2
0
800
700
600
500
400
300
200
100
0
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
11/4/2024
5/23/2025
Date
pH
TDS

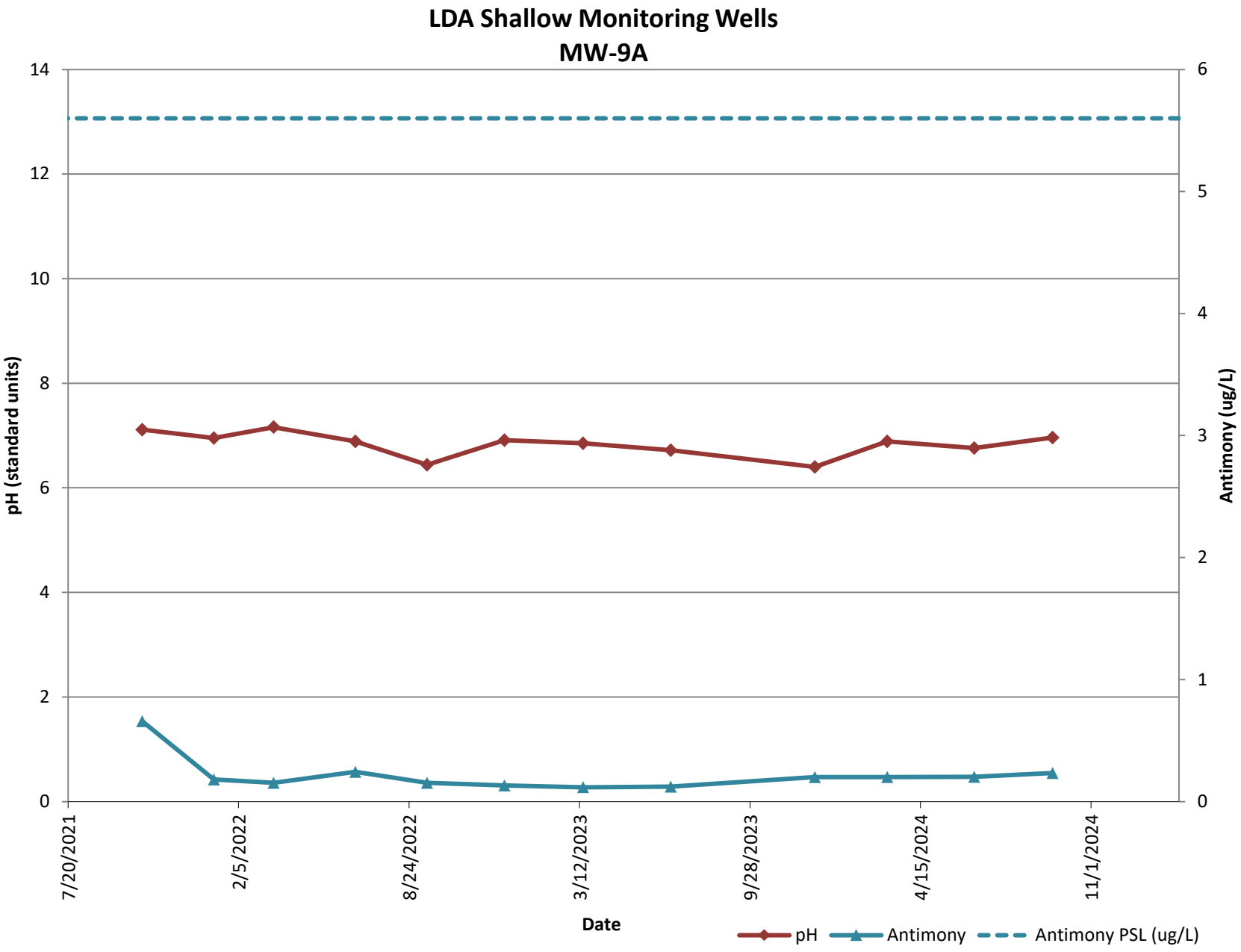

LDA Shallow Monitoring Wells
MW-8A
pH (standard units)
Potassium (ug/L)
14
12
10
8
6
4
2
0
250000
200000
150000
100000
50000
0
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
11/4/2024
5/23/2025
Date
pH
Potassium

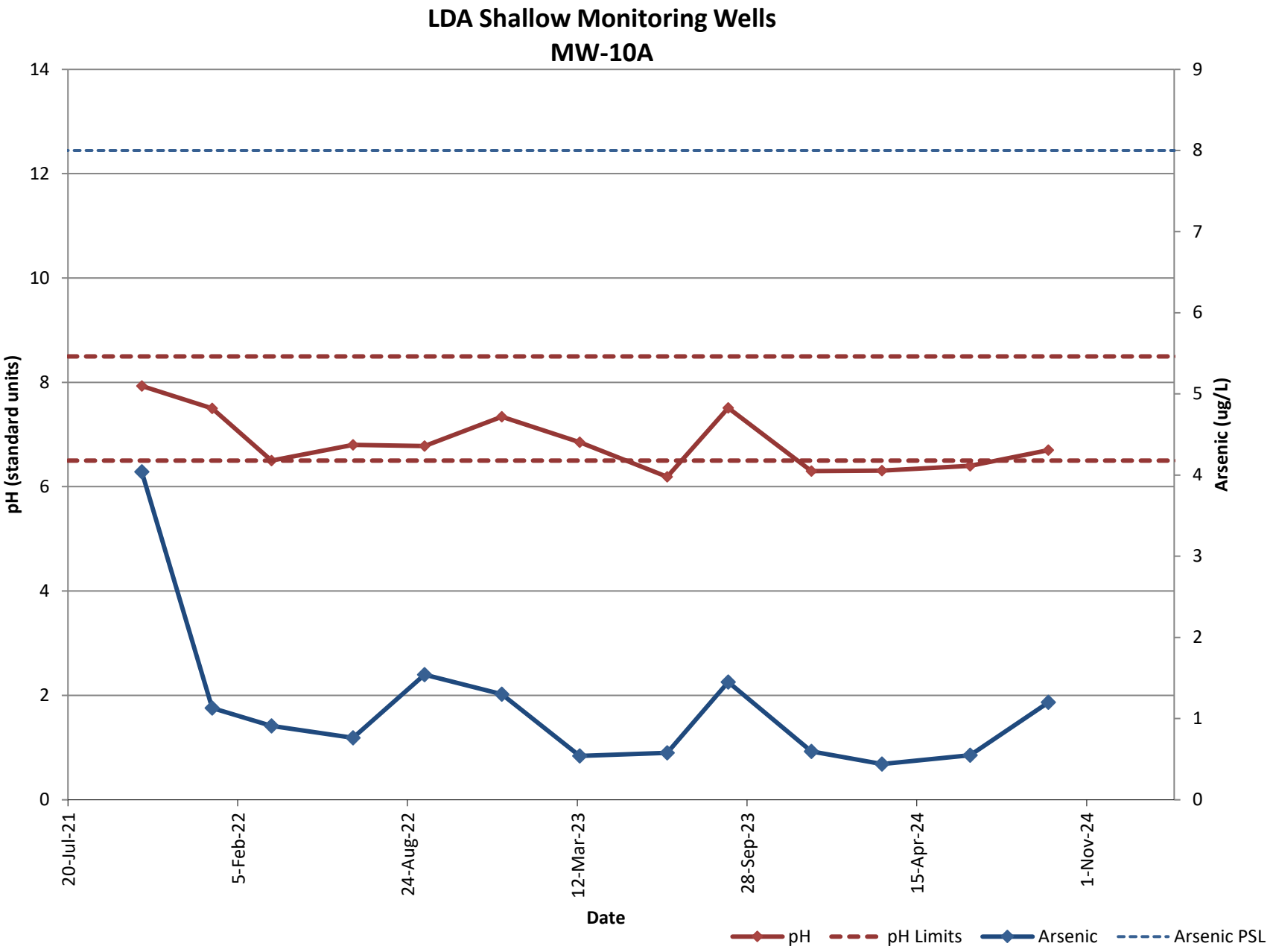

LDA Shallow Monitoring Wells
MW-8A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
4/15/2024
Date
pH
Antimony
Antimony PSL (ug/L)

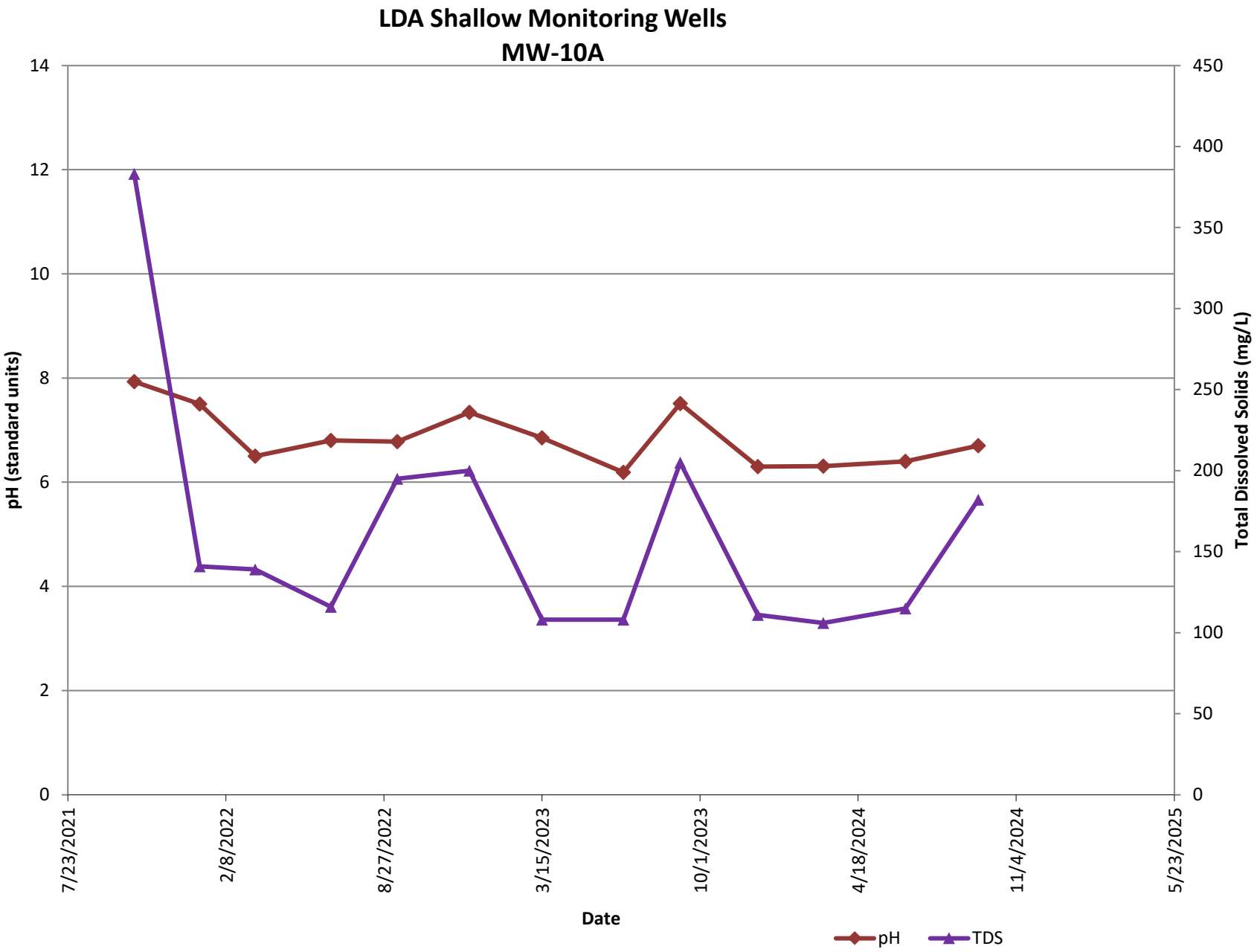

LDA Shallow Monitoring Wells
MW-9A
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
9
8
7
6
5
4
3
2
1
0
20-Jul-21
5-Feb-22
24-Aug-22
12-Mar-23
28-Sep-23
15-Apr-24
1-Nov-24
Date
pH
pH Limits
Arsenic
Arsenic PSL

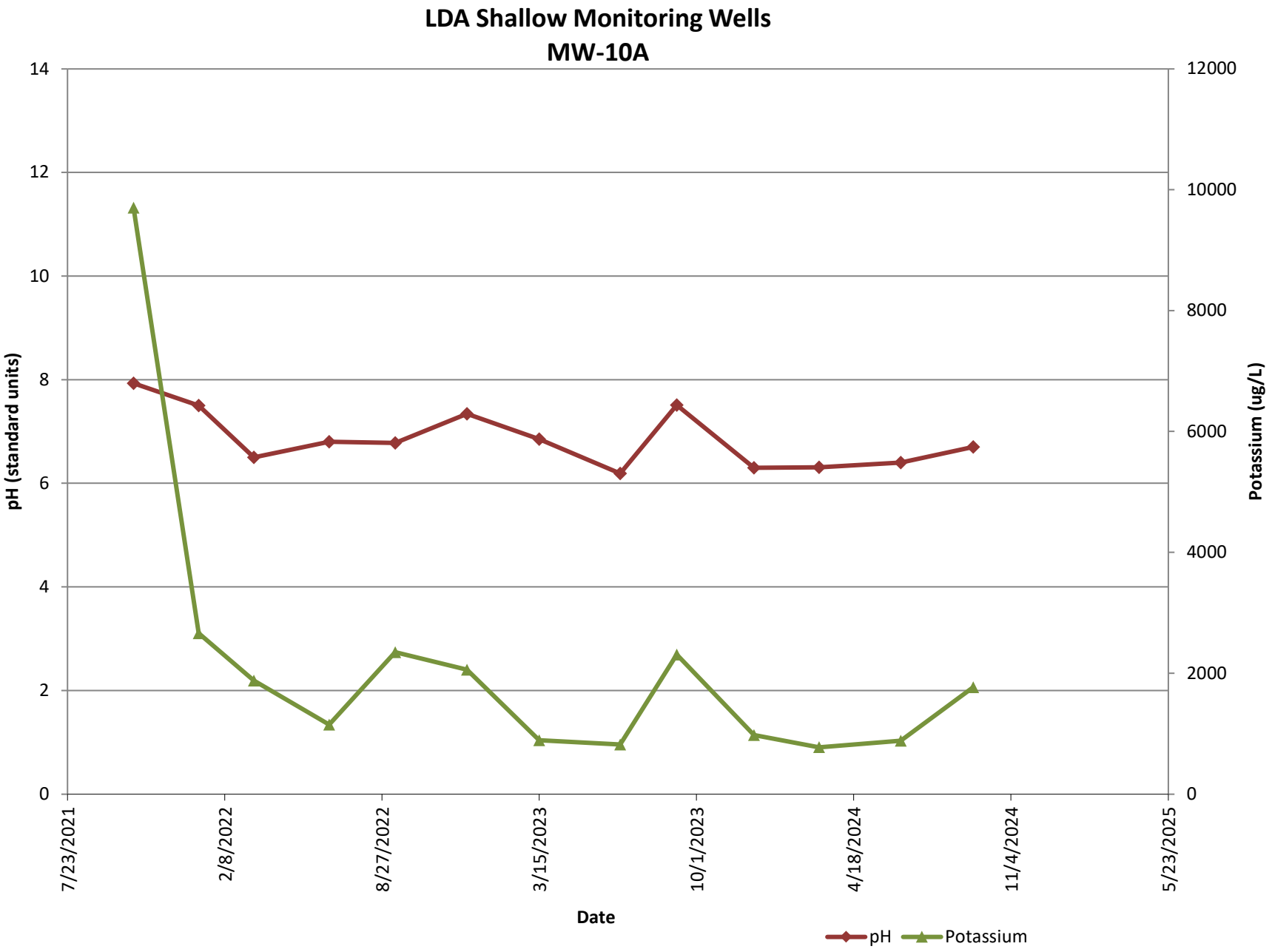

LDA Shallow Monitoring Wells
MW-9A
pH (standard units)
Total Dissolved Solids (mg/L)
14
12
10
8
6
4
2
0
1200
1000
800
600
400
200
0
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
11/4/2024
5/23/2025
Date
pH
TDS

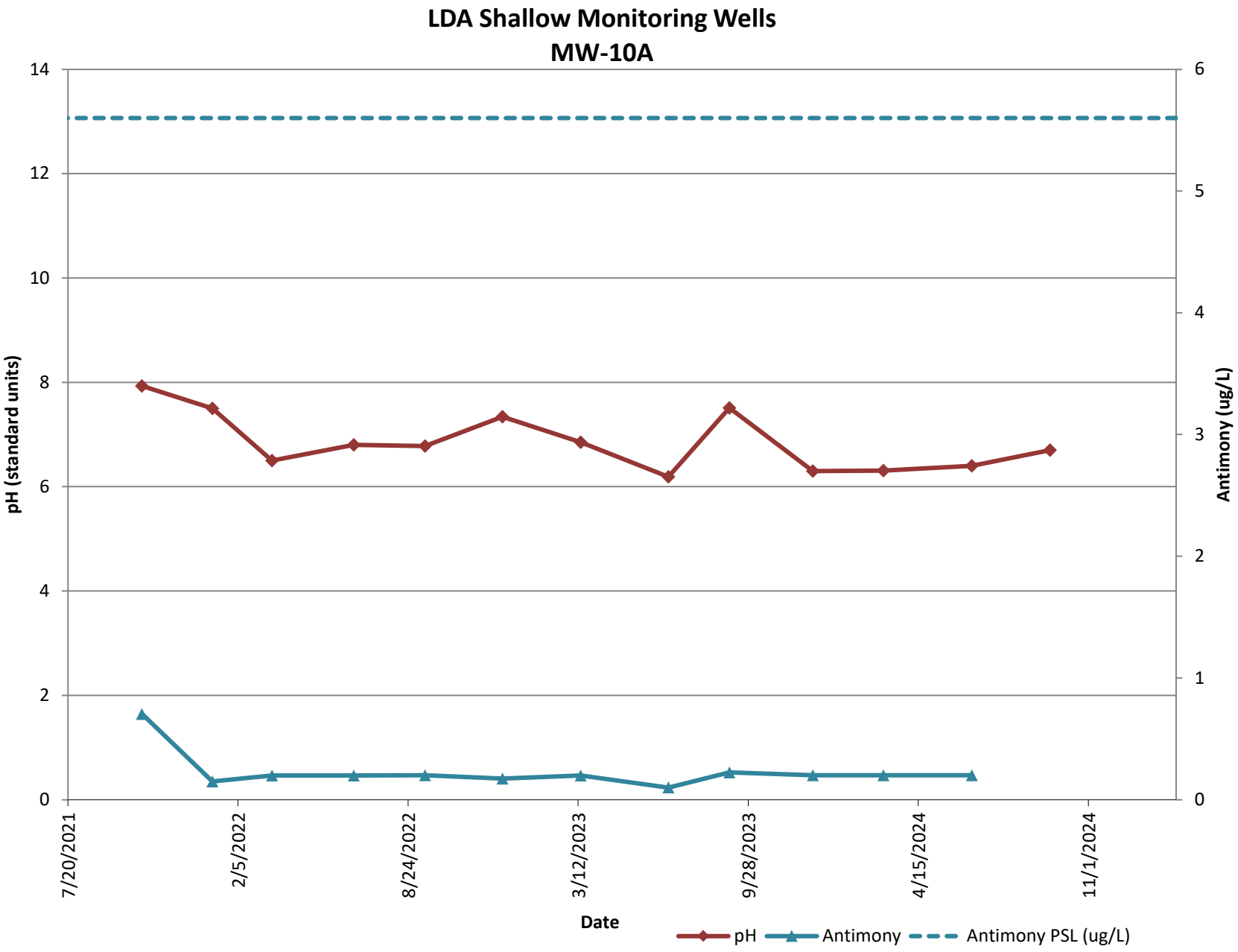

LDA Shallow Monitoring Wells
MW-9A
pH (standard units)
Potassium (ug/L)
14
12
10
8
6
4
2
0
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
11/4/2024
5/23/2025
Date
pH
Potassium


LDA Shallow Monitoring Wells
MW-9A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
4/15/2024
11/1/2024
Date
pH
Antimony
Antimony PSL (ug/L)

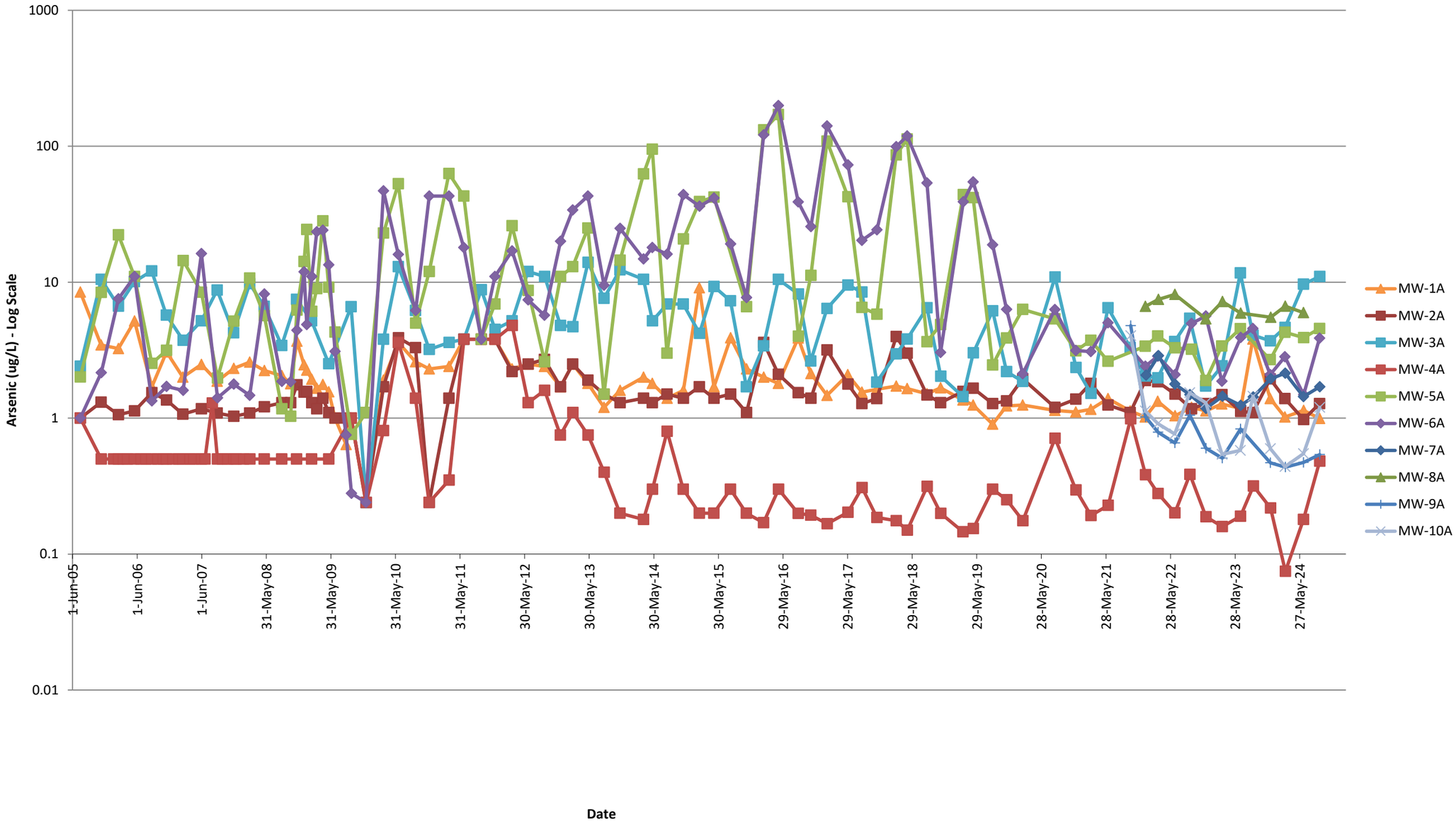

LDA Shallow Monitoring Wells
MW-10A
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
9
8
7
6
5
4
3
2
1
0
20-Jul-21
5-Feb-22
24-Aug-22
12-Mar-23
28-Sep-23
15-Apr-24
1-Nov-24
Date
pH
pH Limits
Arsenic
Arsenic PSL


LDA Shallow Monitoring Wells
MW-10A
pH (standard units)
Total Dissolved Solids (mg/L)
14
12
10
8
6
4
2
0
450
400
350
300
250
200
150
100
50
0
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
11/4/2024
5/23/2025
Date
pH
TDS

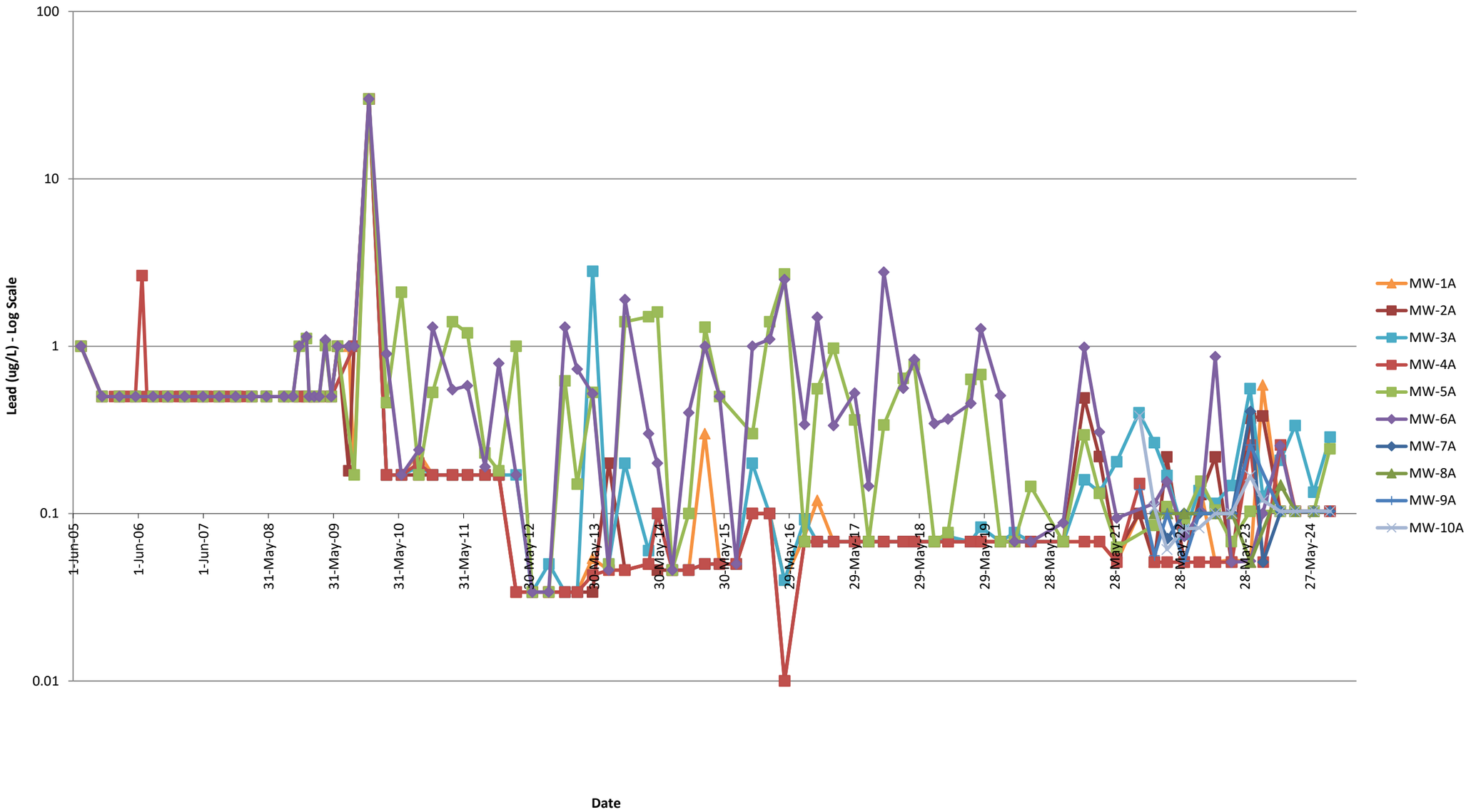

LDA Shallow Monitoring Wells
MW-10A
pH (standard units)
Potassium (ug/L)
14
12
10
8
6
4
2
0
12000
10000
8000
6000
4000
2000
0
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
11/4/2024
5/23/2025
Date
pH
Potassium


LDA Shallow Monitoring Wells
MW-10A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
4/15/2024
11/1/2024
Date
pH
Antimony
Antimony PSL (ug/L)

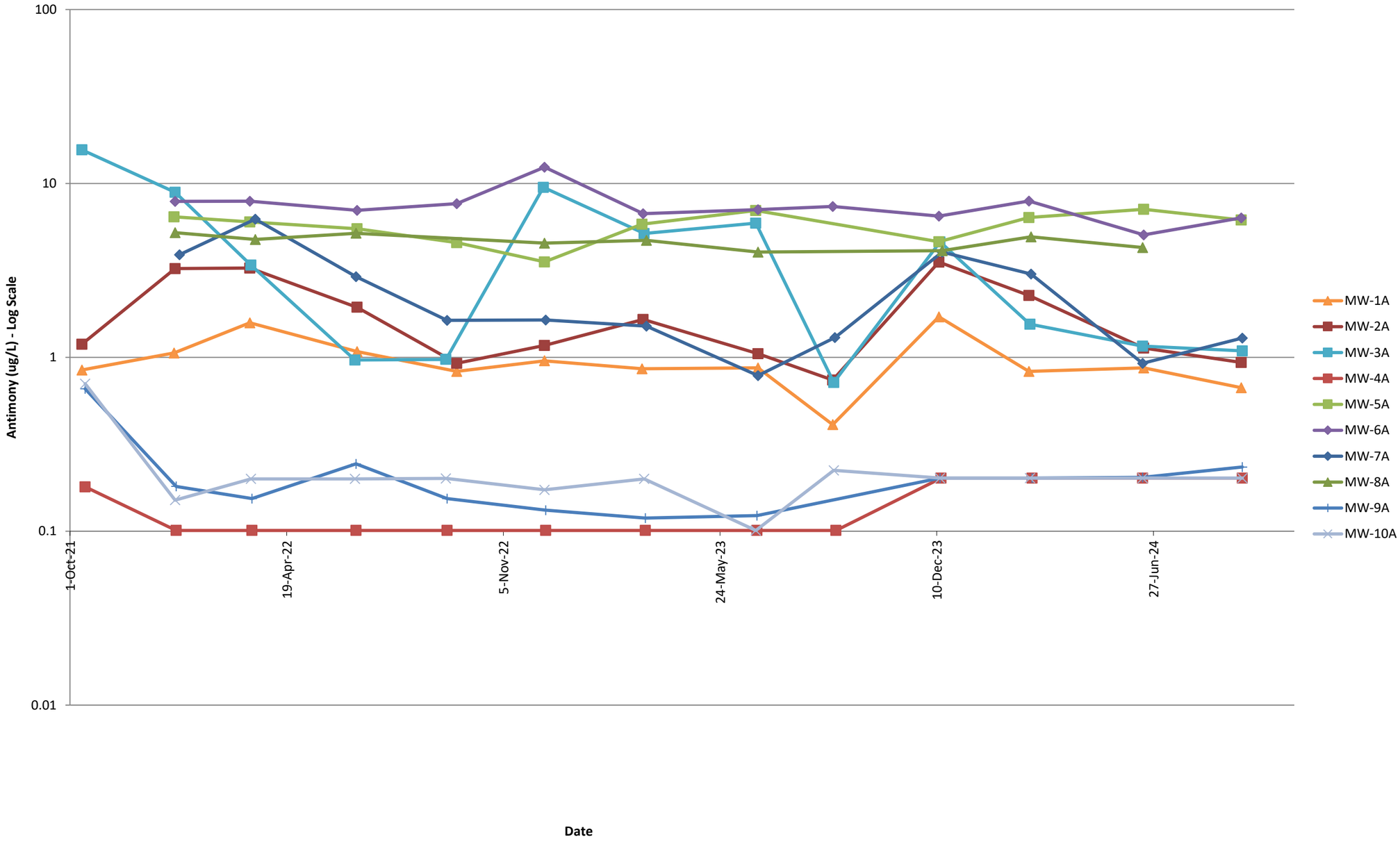
LDA Shallow Monitoring Wells

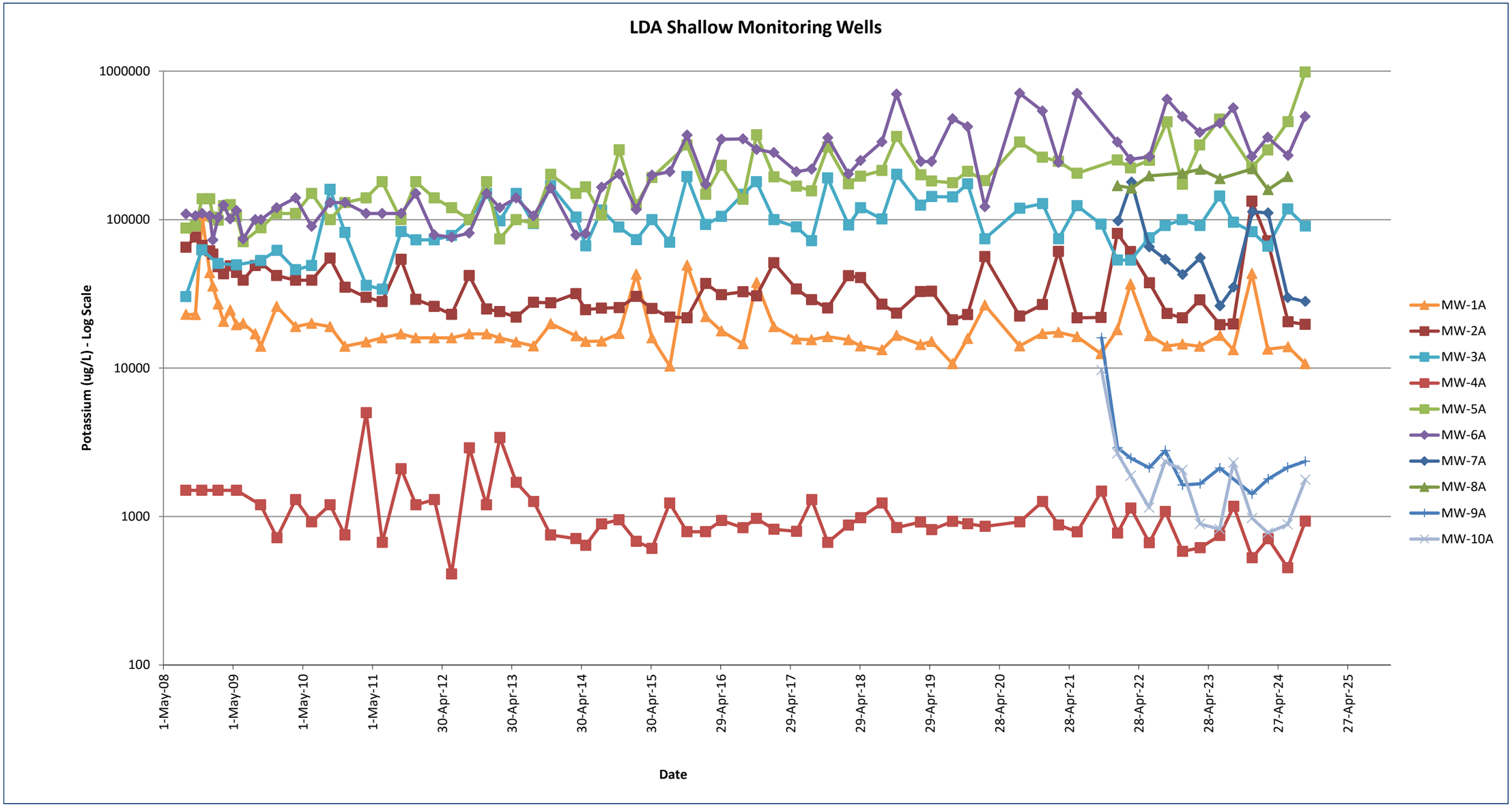


LDA Shallow Monitoring Wells

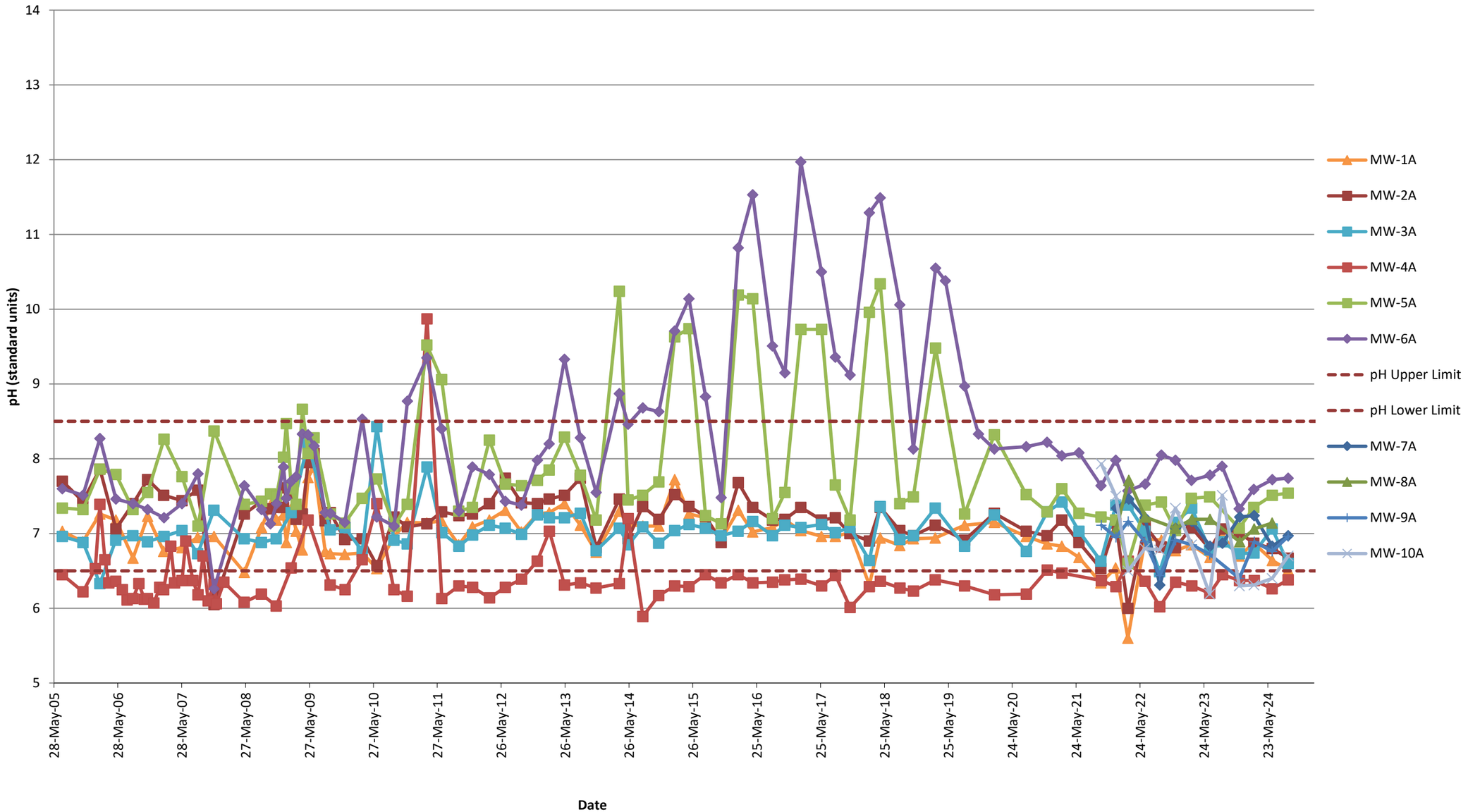


LDA Shallow Monitoring Wells




LDA Shallow Monitoring Wells
Potassium (ug/L) - Log Scale
1000000
100000
10000
1000
100
1-May-08
1-May-09
1-May-10
1-May-11
30-Apr-12
30-Apr-13
30-Apr-14
30-Apr-15
29-Apr-16
29-Apr-17
29-Apr-18
29-Apr-19
28-Apr-20
28-Apr-21
28-Apr-22
28-Apr-23
27-Apr-24
27-Apr-25
Date
MW-1A
MW-2A
MW-3A
MW-4A
MW-5A
MW-6A
MW-7A
MW-8A
MW-9A
MW-10A

LDA ShallowMonitoring Wells



APPENDIX C

Data Validation Report and Laboratory Analytical Results

Data Validation Checklist

Project Name:	Ravensdale Project
Project Number:	**GL152030402.001/03.LBR**
Sample Identification(s):	MW-1A-0924, MW-2A-0924, MW-3A-0924, MW-4A-0924 (MS/MSD), MW-5A-0924, MW-6A-0924, MW-7A-0924, MW-8A-0924, MW-9A-0924, MW-10A-0924, MW-45A-0924 (Field duplicate), Infiltration Ponds – 0924, Still Well – 0924, Interceptor Trench – 0924, MW-35A-0924 (Field duplicate), and MW-99-1-0924 (Field blank)
Sample Date(s):	9/16/2024, 9/17/2024, and 9/19/2024
Sample Team:	Andrew Waser, WSP
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources, Inc. – Tukwila, WA
Analyses:	TDS (SM2540C); Total Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED), Dissolved Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED)
Laboratory Report No.:	2410429

Field Data Package Documentation

Field Sampling Logs:	Reported		Performance Acceptable		Not Required
	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 the following exceptions and/or notes:

A container for metals analysis for sample 2410429-14 B had a pH above 2 upon arrival to the lab. Lab personnel added 0.75 mL of concentrated HNO3 to bring pH down below 2. No further action is required other than to note.

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.

Inorganic Analyses

Metals (EPA 6010/200.8) (E200.8 UCT-KED)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X		X	
2. Reporting limits		X		X	
3. Blanks		X		X	
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:

- Lab duplicate BMJ0079-DUP2 from sample MW-4A-0924 had an RPD of 45.70% for vanadium, the RPD limit is 20%. The associated results were qualified as estimated, J.
- Field duplicates are as follows: MW-35A-0924 is a duplicate for Infiltration Ponds-0924, and MW-45A-0924 is a field duplicate for MW-2A-0924. All were within QC limits; no qualifications were required.
- Certain samples were analyzed at dilutions to bring sample concentrations within the instrument calibration range. Reporting limits were elevated proportional to the dilution when undiluted results were not provided by the laboratory. The National Functional Guidelines do not require qualification based on dilution, but the end user is alerted that the sensitivity of non-detect results should be considered as part of determining data usability.

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		X		X	
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:

Field duplicates are as follows: MW-35A-0924 is a duplicate for Infiltration Ponds-0924, and MW-45A-0924 is a field duplicate for MW-2A-0924. All were within QC limits; no qualifications were required.

Data Validation Checklist
Summary and Data Qualifier Codes

Project Name:	Ravensdale Project
Project Number:	**GL152030402.001/03.LBR**
Sample Identification(s):	MW-1A-0924, MW-2A-0924, MW-3A-0924, MW-4A-0924 (MS/MSD), MW-5A-0924, MW-6A-0924, MW-7A-0924, MW-8A-0924, MW-9A-0924, MW-10A-0924, MW-45A-0924 (Field duplicate), Infiltration Ponds – 0924, Still Well – 0924, Interceptor Trench – 0924, MW-35A-0924 (Field duplicate), and MW-99-1-0924 (Field blank)
Sample Date(s):	9/16/2024, 9/17/2024, and 9/19/2024
Sample Team:	Andrew Waser, WSP
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources, Inc. – Tukwila, WA
Analyses:	TDS (SM2540C); Total Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED), Dissolved Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED)
Laboratory Report No.:	2410429

Sample ID	Analyte(s)	Old Result	Old Qualifier	New Result	New Qualifier	Reason(s)
MW-4A-0924	Vanadium	--	--	--	J	Lab duplicate RPD exceedance

Validation Performed By:	Julia Campbell, WSP
Date:	10/10/24
Peer Review Performed By:	Michael Shadle
Date:	10/15/2024

	Infiltration Ponds	MW-35A Duplicate					
Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Antimony	14.4	14.1	2%	ug/L		1	0.505
Arsenic	16.3	16.1	1%	ug/L		1	0.187
Potassium	708	736	4%	mg/L		2.5	0.534
Lead	15.6	13.7	13%	ug/L		0.5	0.257
Vanadium	2.63	2.67	2%	ug/L		1	0.278
Total Dissolved Solids	2080	2020	3%	mg/L		20	20
Antimony, dissolved	13.6	13.7	1%	ug/L		0.4	0.202
Arsenic, dissolved	15.3	15.1	1%	ug/L		0.4	0.044
Potassium, dissolved	702	669	5%	mg/L		1	0.214
Lead, dissolved	8.25	8.71	5%	ug/L		0.2	0.136
Vanadium, dissolved	1.74	1.77	2%	ug/L		0.4	0.111

	MW-2A	MW-45A Duplicate					
Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Antimony	0.934	0.886	5%	ug/L		0.4	0.202
Arsenic	1.28	1.21	6%	ug/L		0.4	0.0746
Potassium	19.7	21.2	7%	ug/L		0.5	0.107
Vanadium	1.04	1.06	2%	ug/L		1	0.278
Total Dissolved Solids	396	396	0%	mg/L		10	10

Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

07 October 2024

Accounts Payable
WSP USA, Inc.
840 HOWE STREET, #1000
VANCOUVER, BRITISH COLUMBIA V6Z 2M1

RE: Ravensdale (31406578.000)

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)
24I0423	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: 2410423	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: WSP	Phone: (425) 883-0777	Date: 9/19/24	Ice Present? Y
Client Contact: Gary Zimmerman		No. of Coolers: 2	Cooler Temps: 0.8 5.4
Client Project Name: Ravensdale Treatment Facility			
Client Project #: 31406578.000	Samplers: Andrew Weser, Tushar Khaire		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Total metals As, Pb, Sb, U, K	Analysis Requested: Dissolved metals As, Pb, Sb, U, K	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Notes/Comments
Tank - Influent	9/19/24	1230	W	2	X	X							
Sand - Effluent	9/19/24	1235	W	2	X	X							
As - Effluent	9/19/24	1250	W	2	X	X							

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
	(Signature)	(Signature)	(Signature)	(Signature)
	Printed Name: Andrew Weser	Printed Name:	Printed Name:	Printed Name:
	Company: WSP	Company:	Company:	Company:
	Date & Time: 9/19/24 ~~9/23/24~~ 1533	Date & Time: 09/19/24 1533	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, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Tank - Influent	24I0423-01	Water	19-Sep-2024 12:30	19-Sep-2024 15:33
Tank - Influent	24I0423-02	Water	19-Sep-2024 12:30	19-Sep-2024 15:33
Sand - Effluent	24I0423-03	Water	19-Sep-2024 12:35	19-Sep-2024 15:33
Sand - Effluent	24I0423-04	Water	19-Sep-2024 12:35	19-Sep-2024 15:33
As - Effluent	24I0423-05	Water	19-Sep-2024 12:50	19-Sep-2024 15:33
As - Effluent	24I0423-06	Water	19-Sep-2024 12:50	19-Sep-2024 15:33

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Work Order Case Narrative

Total and Dissolved Metals - EPA Method 200.8 and 6010D

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

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

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

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

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 9/19/2024 4:09:11PM

WORK ORDER

24I0423

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

Client: WSP USA, Inc. | **Project Manager: Kelly Bottem**

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

Report To:
WSP USA, Inc.
Accounts Payable
840 HOWE STREET, #1000
VANCOUVER, BRITISH COLUMBIA V6Z 2M1
Phone: (360) 823-6107
Fax: (206) 431-2250

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

Date Due:	04-Oct-2024 18:00 (10 day TAT)		
Received By:	Matthew Daniel	Date Received:	19-Sep-2024 15:33
Logged In By:	Emma Stewart	Date Logged In:	19-Sep-2024 15:58

Samples Received at: **5.4°C**

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

Preservation Confirmation

Container ID	Container Type	pH	
24I0423-01 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
24I0423-02 A	HDPE NM, 1000 mL	> 2	Fail
24I0423-03 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
24I0423-04 A	HDPE NM, 1000 mL	> 2	Fail
24I0423-05 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
24I0423-06 A	HDPE NM, 1000 mL	> 2	Fail

EJ
Preservation Confirmed By

09/19/24
Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: WSP

Project Name: Ravensdale

COC No(s): NA

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

Assigned ARI Job No: 241042 3

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) 0.8 5.4

Time 1535

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

Temp Gun ID#: 509708

Cooler Accepted by: [illegible] Date: 09/19/24 Time: 1535

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: ES Date: 09/19/24 Time: 1558 Labels checked by: ES

*** 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, LLC
Analytical Chemists and Consultants

Printed: 9/19/2024 4:09:11PM

WORK ORDER

24I0423

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

Client: WSP USA, Inc. | **Project Manager: Kelly Bottem**

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

Report To:
WSP USA, Inc.
Accounts Payable
840 HOWE STREET, #1000
VANCOUVER, BRITISH COLUMBIA V6Z 2M1
Phone: (360) 823-6107
Fax: (206) 431-2250

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

Date Due: 04-Oct-2024 18:00 (10 day TAT)

Received By: Matthew Daniel | Date Received: 19-Sep-2024 15:33

Logged In By: Emma Stewart | Date Logged In: 19-Sep-2024 15:58

Samples Received at: **5.4°C**

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

Preservation Confirmation

Container ID	Container Type	pH	
24I0423-01 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
24I0423-02 A	HDPE NM, 1000 mL	> 2	Fail (1)
24I0423-03 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
24I0423-04 A	HDPE NM, 1000 mL	> 2	Fail (1)
24I0423-05 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
24I0423-06 A	HDPE NM, 1000 mL	> 2	Fail (1)

EJ
Preservation Confirmed By

09/19/24
Date

(1) filtered at 0.45um and preserved to pH<2 with 0.5ml concentrated HNO_3. (MG229)
9/20/24 KS

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Tank - Influent

24I0423-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/19/2024 12:30
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 18:38

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-01 A 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	16.0	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Tank - Influent

24I0423-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/19/2024 12:30
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 18:38

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-01 A 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	28.4	ug/L	D
Lead	7439-92-1	5	0.257	0.500	73.4	ug/L	D
Vanadium	7440-62-2	5	0.278	1.00	2.26	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Tank - Influent

24I0423-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/19/2024 12:30
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:03

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0423-01 A 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	801	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Tank - Influent

24I0423-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/19/2024 12:30
Instrument: ICPMS1 Analyst: HAL — Analyzed: 09/26/2024 07:01

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-02 A 01
Preparation Batch: BMI0628 — Sample Size: 25 mL — Filtration Batch: BMI0511
Prepared: 09/25/2024 — Final Volume: 25 mL — Filtration Date: 09/20/2024 10:52

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	0.110	1.00	17.0	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Tank - Influent

24I0423-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 09/19/2024 12:30
Instrument: ICPMS1 Analyst: HAL — Analyzed: 09/26/2024 07:01

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-02 A 01
Preparation Batch: BMI0628 — Sample Size: 25 mL — Filtration Batch: BMI0511
Prepared: 09/25/2024 — Final Volume: 25 mL — Filtration Date: 09/20/2024 10:52

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	5	0.505	1.00	31.1	ug/L	D
Lead, Dissolved	7439-92-1	5	0.340	0.500	67.1	ug/L	D
Vanadium, Dissolved	7440-62-2	5	0.278	1.00	2.30	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Tank - Influent

24I0423-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 09/19/2024 12:30
Instrument: ICP3 Analyst: DOE — Analyzed: 09/27/2024 11:45

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 24I0423-02 A 02
Preparation Batch: BMI0548 — Sample Size: 25 mL — Filtration Batch: BMI0511
Prepared: 09/22/2024 — Final Volume: 25 mL — Filtration Date: 09/20/2024 10:52

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	0.534	2.50	844	mg/L	D

Analytical Resources, LLC
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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Sand - Effluent

24I0423-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/19/2024 12:35
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 18:43

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-03 A 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	14.8	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Sand - Effluent

24I0423-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/19/2024 12:35
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 18:43

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-03 A 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	27.0	ug/L	D
Lead	7439-92-1	5	0.257	0.500	23.2	ug/L	D
Vanadium	7440-62-2	5	0.278	1.00	2.17	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Sand - Effluent

24I0423-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/19/2024 12:35
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:06

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0423-03 A 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	828	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Sand - Effluent

24I0423-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/19/2024 12:35
Instrument: ICPMS1 Analyst: HAL — Analyzed: 09/26/2024 07:06

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-04 A 01
Preparation Batch: BMI0628 — Sample Size: 25 mL — Filtration Batch: BMI0511
Prepared: 09/25/2024 — Final Volume: 25 mL — Filtration Date: 09/20/2024 10:52

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	0.110	1.00	14.3	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Sand - Effluent

24I0423-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 09/19/2024 12:35
Instrument: ICPMS1 Analyst: HAL — Analyzed: 09/26/2024 07:06

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-04 A 01
Preparation Batch: BMI0628 — Sample Size: 25 mL — Filtration Batch: BMI0511
Prepared: 09/25/2024 — Final Volume: 25 mL — Filtration Date: 09/20/2024 10:52

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	5	0.505	1.00	27.4	ug/L	D
Lead, Dissolved	7439-92-1	5	0.340	0.500	9.71	ug/L	D
Vanadium, Dissolved	7440-62-2	5	0.278	1.00	1.92	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Sand - Effluent

24I0423-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 09/19/2024 12:35
Instrument: ICP3 Analyst: DOE — Analyzed: 09/27/2024 11:48

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 24I0423-04 A 02
Preparation Batch: BMI0548 — Sample Size: 25 mL — Filtration Batch: BMI0511
Prepared: 09/22/2024 — Final Volume: 25 mL — Filtration Date: 09/20/2024 10:52

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	0.534	2.50	837	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

As - Effluent

24I0423-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/19/2024 12:50
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 18:48

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-05 A 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	15.2	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

As - Effluent

24I0423-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/19/2024 12:50
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 18:48

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-05 A 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	27.5	ug/L	D
Lead	7439-92-1	5	0.257	0.500	29.9	ug/L	D
Vanadium	7440-62-2	5	0.278	1.00	2.83	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

As - Effluent

24I0423-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/19/2024 12:50
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:08

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0423-05 A 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	816	mg/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

As - Effluent

24I0423-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/19/2024 12:50
Instrument: ICPMS1 Analyst: HAL — Analyzed: 09/26/2024 07:11

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-06 A 01
Preparation Batch: BMI0628 — Sample Size: 25 mL — Filtration Batch: BMI0511
Prepared: 09/25/2024 — Final Volume: 25 mL — Filtration Date: 09/20/2024 10:52

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	0.110	1.00	10.1	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

As - Effluent

24I0423-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 09/19/2024 12:50
Instrument: ICPMS1 Analyst: HAL — Analyzed: 09/26/2024 07:11

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0423-06 A 01
Preparation Batch: BMI0628 — Sample Size: 25 mL — Filtration Batch: BMI0511
Prepared: 09/25/2024 — Final Volume: 25 mL — Filtration Date: 09/20/2024 10:52

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	5	0.505	1.00	30.6	ug/L	D
Lead, Dissolved	7439-92-1	5	0.340	0.500	2.58	ug/L	D
Vanadium, Dissolved	7440-62-2	5	0.278	1.00	1.03	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

As - Effluent

24I0423-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 09/19/2024 12:50
Instrument: ICP3 Analyst: DOE — Analyzed: 09/27/2024 11:51

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 24I0423-06 A 02
Preparation Batch: BMI0548 — Sample Size: 25 mL — Filtration Batch: BMI0511
Prepared: 09/22/2024 — Final Volume: 25 mL — Filtration Date: 09/20/2024 10:52

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	0.534	2.50	838	mg/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0533 - EPA 6010D

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0533-BLK1)				Prepared: 21-Sep-2024 Analyzed: 30-Sep-2024 21:04							
Potassium	ND	0.107	0.500	mg/L							U
LCS (BMI0533-BS1)				Prepared: 21-Sep-2024 Analyzed: 30-Sep-2024 21:07							
Potassium	9.87	0.107	0.500	mg/L	10.0		98.7	80-120			

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMJ0079 - EPA 200.8

Instrument: ICPMS1 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMJ0079-BLK1)					Prepared: 02-Oct-2024 Analyzed: 03-Oct-2024 18:09							
Antimony	121	ND	0.101	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
Arsenic	75a	ND	0.0373	0.200	ug/L							U
LCS (BMJ0079-BS1)					Prepared: 02-Oct-2024 Analyzed: 03-Oct-2024 18:14							
Antimony	121	25.1	0.101	0.200	ug/L	25.0		101	80-120			
Lead	208	25.8	0.0513	0.100	ug/L	25.0		103	80-120			
Vanadium	51a	24.7	0.0556	0.200	ug/L	25.0		98.8	80-120			
Arsenic	75a	25.8	0.0373	0.200	ug/L	25.0		103	80-120			

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BMI0548 - EPA 6010D

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0548-BLK1)					Prepared: 22-Sep-2024 Analyzed: 27-Sep-2024 11:25						
Potassium, Dissolved	ND	0.107	0.500	mg/L							U
LCS (BMI0548-BS1)					Prepared: 22-Sep-2024 Analyzed: 27-Sep-2024 11:28						
Potassium, Dissolved	9.90	0.108	0.505	mg/L	10.0		99.0	80-120			

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BMI0628 - EPA 200.8

Instrument: ICPMS1 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0628-BLK1)					Prepared: 25-Sep-2024 Analyzed: 25-Sep-2024 21:51							
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Vanadium, Dissolved	51a	ND	0.0556	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
Blank (BMI0628-BLK2)					Prepared: 25-Sep-2024 Analyzed: 26-Sep-2024 19:43							
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
LCS (BMI0628-BS1)					Prepared: 25-Sep-2024 Analyzed: 25-Sep-2024 21:56							
Antimony, Dissolved	121	25.7	0.101	0.200	ug/L	25.0		103	80-120			
Vanadium, Dissolved	51a	25.0	0.0556	0.200	ug/L	25.0		100	80-120			
Arsenic, Dissolved	75a	25.5	0.0373	0.200	ug/L	25.0		102	80-120			
LCS (BMI0628-BS2)					Prepared: 25-Sep-2024 Analyzed: 26-Sep-2024 19:46							
Lead, Dissolved	208	24.4	0.0513	0.100	ug/L	25.0		97.6	80-120			

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 314O6578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

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	DoD-ELAP,NELAP,WADOE
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	DoD-ELAP,NELAP,WADOE
Vanadium-51a	NELAP,DoD-ELAP,WADOE
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 6010D in Water	
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP

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

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: 31406578.000	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	07-Oct-2024 12:52

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
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
Tukwila, WA

09 October 2024

Accounts Payable
WSP USA, Inc.
840 HOWE STREET, #1000
VANCOUVER, BRITISH COLUMBIA V6Z 2M1

RE: Ravensdale (GL152030402.001)

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)
24I0429	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: 24I0429	Turn-around Requested: Standard	Page: 1 of 2	
ARI Client Company: WSP	Phone: (425) 883-0777	Date: 9/19/24	Ice Present? Y
Client Contact: Gary Zimmerman		No. of Coolers: 2	Cooler Temps: 0.8 5.4
Client Project Name: Riverside 2024 Q3 Sampling			
Client Project #: GLIS2030402.001	Samplers: Andrew Waser, Tushar Khaire		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Total Metals As, Pb, Sb, V, K	Analysis Requested: TDS	Analysis Requested: Dissolved Metals As, Pb, Sb, V, K	Notes/Comments
MW-1A-0924	9/16/24	1110	W	2	X	X		
MW-2A-0924	9/16/24	1155	W	2	X	X		
MW-3A-0924	9/17/24	1055	W	2	X	X		
MW-4A-0924	9/17/24	1250	W	6	X	X		MS/MSD
MW-5A-0924	9/16/24	1410	W	2	X	X		
MW-6A-0924	9/16/24	1300	W	2	X	X		
MW-7A-0924	9/17/24	1500	W	2	X	X		
MW-9A-0924	9/17/24	1345	W	2	X	X		
MW-10A-0924	9/17/24	0950	W	2	X	X		
MW-45A-0924	9/16/24	1200	W	2	X	X		

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Andrew Waser	Printed Name: Matthew Dana	Printed Name:	Printed Name:
	Company: WSP	Company: ARI	Company:	Company:
	Date & Time: 9/19/24 1533	Date & Time: 09/19/24 1533	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.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 24I0429	Turn-around Requested: Standard	Page: 2 of 2	
ARI Client Company: WSP	Phone: (425)883-0777	Date: 9/19/24	Ice Present? Y
Client Contact: Gary Zimmerman		No. of Coolers: 2	Cooler Temps: 0.8 5.4
Client Project Name: Riverside Ravensdale 2024 Q3 Sampling			
Client Project #: GL152030102.001	Samplers: Andrew Waser, Tushar Khaire		

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Total Metals As, Pb, Sb, V, Ir	Analysis Requested: TDS	Analysis Requested: Dissolved metals As, Pb, Sb, V, Ir	Notes/Comments
Infiltration Ponds-0924	9/16/24	1445	W	3	X	X	X	
Still Well-0924	9/17/24	1120	W	2	X	X		
Interceptor Trench-0924	9/16/24	1515	W	2	X	X		
MW-35A-0924	9/16/24	1450	W	3	X	X	X	
MW-99-1-0924	9/19/24	1300	W	2	X	X		

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Andrew Waser	Printed Name: Matthew Davis	Printed Name:	Printed Name:
	Company: WSP	Company: ARI	Company:	Company:
	Date & Time: 9/19/24 1533	Date & Time: 09/19/24 1533	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, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1A-0924	24I0429-01	Water	16-Sep-2024 11:10	19-Sep-2024 15:33
MW-2A-0924	24I0429-02	Water	16-Sep-2024 11:55	19-Sep-2024 15:33
MW-3A-0924	24I0429-03	Water	17-Sep-2024 10:55	19-Sep-2024 15:33
MW-4A-0924	24I0429-04	Water	17-Sep-2024 12:50	19-Sep-2024 15:33
MW-5A-0924	24I0429-05	Water	16-Sep-2024 14:10	19-Sep-2024 15:33
MW-6A-0924	24I0429-06	Water	16-Sep-2024 13:00	19-Sep-2024 15:33
MW-7A-0924	24I0429-07	Water	17-Sep-2024 15:00	19-Sep-2024 15:33
MW-9A-0924	24I0429-08	Water	17-Sep-2024 13:45	19-Sep-2024 15:33
MW-10A-0924	24I0429-09	Water	17-Sep-2024 09:50	19-Sep-2024 15:33
MW-45A-0924	24I0429-10	Water	16-Sep-2024 12:00	19-Sep-2024 15:33
Infiltration Ponds-0924	24I0429-11	Water	16-Sep-2024 14:45	19-Sep-2024 15:33
Infiltration Ponds-0924	24I0429-12	Water	16-Sep-2024 14:45	19-Sep-2024 15:33
Still Well-0924	24I0429-13	Water	17-Sep-2024 11:20	19-Sep-2024 15:33
Interceptor Trench-0924	24I0429-14	Water	16-Sep-2024 15:15	19-Sep-2024 15:33
MW-35A-0924	24I0429-15	Water	16-Sep-2024 14:50	19-Sep-2024 15:33
MW-35A-0924	24I0429-16	Water	16-Sep-2024 14:50	19-Sep-2024 15:33
MW-99-1-0924	24I0429-17	Water	19-Sep-2024 13:00	19-Sep-2024 15:33

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Work Order Case Narrative

Total and Dissolved Metals - EPA Method 6010D and 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.

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

WORK ORDER

24I0429

Client: WSP USA, Inc. **Project Manager:** Kelly Bottem

Project: Ravensdale **Project Number:** GL152030402.001

Preservation Confirmation

Container ID	Container Type	pH
24I0429-01 A	HDPE NM, 1000 mL	
24I0429-01 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-02 A	HDPE NM, 1000 mL	
24I0429-02 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-03 A	HDPE NM, 1000 mL	
24I0429-03 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-04 A	HDPE NM, 1000 mL	
24I0429-04 B	HDPE NM, 1000 mL	
24I0429-04 C	HDPE NM, 1000 mL	
24I0429-04 D	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-04 E	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-04 F	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-05 A	HDPE NM, 1000 mL	
24I0429-05 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-06 A	HDPE NM, 1000 mL	
24I0429-06 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-07 A	HDPE NM, 1000 mL	
24I0429-07 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-08 A	HDPE NM, 1000 mL	
24I0429-08 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-09 A	HDPE NM, 1000 mL	
24I0429-09 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-10 A	HDPE NM, 1000 mL	
24I0429-10 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-11 A	HDPE NM, 1000 mL	
24I0429-11 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
24I0429-13 A	HDPE NM, 1000 mL	
24I0429-13 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24I0429-14 A	HDPE NM, 1000 mL	
24I0429-14 B	HDPE NM, 500 mL	>2 fail
24I0429-15 A	HDPE NM, 1000 mL	

Reviewed By

Date

WORK ORDER

24I0429

Client: WSP USA, Inc.	**Project Manager: Kelly Bottem**
Project: Ravensdale	**Project Number: GL152030402.001**

24I0429-15 B	HDPE NM, 500 mL	
24I0429-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LC pass
24I0429-17 A	HDPE NM, 1000 mL	
24I0429-17 B	HDPE NM, 500 mL, 1:1 HNO3 (FF) MD 09/19/24	LC pass

MD
Preservation Confirmed By

09/19/24
Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: WSP Project Name: Ravensdale

COC No(s): NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: 24IO429 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) 0.8 5.4

Time 1535

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 509708

Cooler Accepted by: MD Date: 09/19/24 Time: 1535

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? MD 09/19/24 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: 09/19/24 1706 Equipment: agitate tpour Split by: MD

Samples Logged by: MD MD 09/19/24 Date: 09/19/24 Time: 1632 Labels checked by: MD

*** 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:

Sample MW-99-1-0924 logged as a field blank. "FB" written on container. Only one container received for sample Interceptor Trench-0924

By: MD Date: 09/19/24

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 9/19/2024 4:59:18PM

WORK ORDER

24I0429

Client: WSP USA, Inc. | Project Manager: Kelly Bottem

Project: Ravensdale | Project Number: GL152030402.001

Preservation Confirmation

Container ID	Container Type	pH
24I0429-01 A	HDPE NM, 1000 mL	
24I0429-01 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-02 A	HDPE NM, 1000 mL	
24I0429-02 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-03 A	HDPE NM, 1000 mL	
24I0429-03 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-04 A	HDPE NM, 1000 mL	
24I0429-04 B	HDPE NM, 1000 mL	
24I0429-04 C	HDPE NM, 1000 mL	
24I0429-04 D	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-04 E	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-04 F	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-05 A	HDPE NM, 1000 mL	
24I0429-05 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-06 A	HDPE NM, 1000 mL	
24I0429-06 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-07 A	HDPE NM, 1000 mL	
24I0429-07 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-08 A	HDPE NM, 1000 mL	
24I0429-08 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-09 A	HDPE NM, 1000 mL	
24I0429-09 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-10 A	HDPE NM, 1000 mL	
24I0429-10 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-11 A	HDPE NM, 1000 mL	
24I0429-11 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	≤2 pass
24I0429-13 A	HDPE NM, 1000 mL	
24I0429-13 B	HDPE NM, 500 mL, 1:1 HNO3	≤2 pass
24I0429-14 A	HDPE NM, 1000 mL	
24I0429-14 B	HDPE NM, 500 mL	>2 fail (1)
24I0429-15 A	HDPE NM, 1000 mL	

Reviewed By

Date

WORK ORDER

24I0429

Client: WSP USA, Inc.	**Project Manager: Kelly Bottem**
Project: Ravensdale	**Project Number: GL152030402.001**

24I0429-15 B	HDPE NM, 500 mL	
24I0429-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
24I0429-17 A	HDPE NM, 1000 mL	
24I0429-17 B	HDPE NM, 500 mL, 1:1 HNO_3 (FF) MD 09/14/24	L2 pass

MD
Preservation Confirmed By

09/14/24
Date

(1) Preserved to pH<2 with 0.15ml concentrated HNO_3. (M9229) 9/21/24 AS

Reviewed By

Date

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-1A-0924

24I0429-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 11:10
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:29

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-01 B 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.996	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-1A-0924

24I0429-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/16/2024 11:10
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:29

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-01 B 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	0.668	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	0.585	ug/L	J, D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-1A-0924

24I0429-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/16/2024 11:10
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:42

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-01 B 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	10.7	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-1A-0924

24I0429-01 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/16/2024 11:10
Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-01
Preparation Batch: BMI0508 — Sample Size: 200 mL
Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	205	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-2A-0924

24I0429-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 11:55

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:33

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-02 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.28	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-2A-0924

24I0429-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/16/2024 11:55

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:33

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-02 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	0.934	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	1.04	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-2A-0924

24I0429-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/16/2024 11:55
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:16

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-02 B 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	19.7	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-2A-0924

24I0429-02 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/16/2024 11:55

Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-02

Preparation Batch: BMI0508 — Sample Size: 100 mL

Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	396	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-3A-0924

24I0429-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/17/2024 10:55

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:38

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-03 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	11.0	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-3A-0924

24I0429-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/17/2024 10:55
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:38

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-03 B 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.09	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.286	ug/L	D
Vanadium	7440-62-2	5	0.278	1.00	0.785	ug/L	J, D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-3A-0924

24I0429-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/17/2024 10:55

Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:44

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-03 B 01

Preparation Batch: BMI0533 — Sample Size: 25 mL

Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	90.5	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-3A-0924

24I0429-03 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/17/2024 10:55
Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BMI0508; Prepared: 09/20/2024; Sample Size: 75 mL; Final Volume: 200 mL; Extract ID: 24I0429-03

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	779	mg/L	

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-4A-0924

24I0429-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/17/2024 12:50
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 18:19

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-04 E 01
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.482	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-4A-0924

24I0429-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/17/2024 12:50
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 18:19

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-04 E 01
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	10	0.556	2.00	2.42	ug/L	D

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-4A-0924

24I0429-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/17/2024 12:50
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:19

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-04 F 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.931	mg/L	

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-4A-0924

24I0429-04 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/17/2024 12:50
Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-04
Preparation Batch: BMI0508 — Sample Size: 100 mL
Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	304	mg/L	

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-5A-0924

24I0429-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 14:10

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:43

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-05 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	4.56	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-5A-0924

24I0429-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/16/2024 14:10
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:43

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-05 B 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	6.16	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.244	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	1.82	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-5A-0924

24I0429-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/16/2024 14:10
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 23:30

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-05 B 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	986	mg/L	D

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-5A-0924

24I0429-05 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/16/2024 14:10
Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-05
Preparation Batch: BMI0508 — Sample Size: 75 mL
Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	1340	mg/L	

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-6A-0924

24I0429-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 13:00

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:48

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-06 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	3.87	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-6A-0924

24I0429-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/16/2024 13:00

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:48

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-06 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	6.33	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	1.76	ug/L	D

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-6A-0924

24I0429-06 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/16/2024 13:00

Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 23:33

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-06 B 01

Preparation Batch: BMI0533 — Sample Size: 25 mL

Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	495	mg/L	D

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-6A-0924

24I0429-06 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/16/2024 13:00
Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-06
Preparation Batch: BMI0508 — Sample Size: 50 mL
Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1830	mg/L	

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-7A-0924

24I0429-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/17/2024 15:00

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:53

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-07 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.70	ug/L	D

Analytical Resources, LLC
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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-7A-0924

24I0429-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/17/2024 15:00

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:53

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-07 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.29	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	1.31	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-7A-0924

24I0429-07 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/17/2024 15:00
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:53

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-07 B 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	28.1	mg/L	

Analytical Resources, LLC
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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-7A-0924

24I0429-07 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/17/2024 15:00

Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-07

Preparation Batch: BMI0508 — Sample Size: 100 mL

Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	445	mg/L	

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-9A-0924

24I0429-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/17/2024 13:45
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:58

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-08 B 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.540	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-9A-0924

24I0429-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/17/2024 13:45
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 19:58

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-08 B 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	0.234	ug/L	J, D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	1.00	ug/L	D

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Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-9A-0924

24I0429-08 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/17/2024 13:45
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:56

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-08 B 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	2.35	mg/L	

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-9A-0924

24I0429-08 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/17/2024 13:45

Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-08

Preparation Batch: BMI0508 — Sample Size: 100 mL

Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	321	mg/L	

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-10A-0924

24I0429-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/17/2024 09:50

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 20:03

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-09 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.20	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-10A-0924

24I0429-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/17/2024 09:50

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 20:03

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-09 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	1.34	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-10A-0924

24I0429-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/17/2024 09:50

Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 22:59

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-09 B 01

Preparation Batch: BMI0533 — Sample Size: 25 mL

Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	1.77	mg/L	

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-10A-0924

24I0429-09 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/17/2024 09:50

Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-09

Preparation Batch: BMI0508 — Sample Size: 200 mL

Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	182	mg/L	

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Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-45A-0924

24I0429-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 12:00

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 20:07

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-10 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.21	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-45A-0924

24I0429-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/16/2024 12:00

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 20:07

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-10 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	0.886	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	1.06	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-45A-0924

24I0429-10 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/16/2024 12:00

Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 23:02

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-10 B 01

Preparation Batch: BMI0533 — Sample Size: 25 mL

Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	21.2	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-45A-0924

24I0429-10 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/16/2024 12:00

Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-10

Preparation Batch: BMI0508 — Sample Size: 100 mL

Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	396	mg/L	

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Infiltration Ponds-0924

24I0429-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 14:45
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:00

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-11 B 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	16.3	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Infiltration Ponds-0924

24I0429-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/16/2024 14:45
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:00

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-11 B 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	14.4	ug/L	D
Lead	7439-92-1	5	0.257	0.500	15.6	ug/L	D
Vanadium	7440-62-2	5	0.278	1.00	2.63	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Infiltration Ponds-0924

24I0429-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/16/2024 14:45
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 23:36

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-11 B 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	708	mg/L	D

Analytical Resources, LLC
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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Infiltration Ponds-0924

24I0429-11 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/16/2024 14:45
Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-11
Preparation Batch: BMI0508 — Sample Size: 50 mL
Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	2080	mg/L	

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Infiltration Ponds-0924

24I0429-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 14:45
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 20:45

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-12 A 02
Preparation Batch: BMJ0130 — Sample Size: 25 mL
Prepared: 10/03/2024 — 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	15.3	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Infiltration Ponds-0924

24I0429-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 09/16/2024 14:45
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 20:45

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-12 A 02
Preparation Batch: BMJ0130 — Sample Size: 25 mL
Prepared: 10/03/2024 — 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	13.6	ug/L	D
Lead, Dissolved	7439-92-1	2	0.136	0.200	8.25	ug/L	D
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	1.74	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Infiltration Ponds-0924

24I0429-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 09/16/2024 14:45
Instrument: ICP3 Analyst: SH — Analyzed: 09/24/2024 11:08

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 24I0429-12 A
Preparation Batch: BMI0550 — Sample Size: 25 mL
Prepared: 09/22/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	2	0.214	1.00	702	mg/L	D

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Still Well-0924

24I0429-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/17/2024 11:20

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:05

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-13 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	35.9	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Still Well-0924

24I0429-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/17/2024 11:20

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:05

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-13 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	65.7	ug/L	D
Lead	7439-92-1	2	0.103	0.200	5.94	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	4.82	ug/L	D

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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Still Well-0924

24I0429-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/17/2024 11:20

Instrument: ICP3 Analyst: SH — Analyzed: 10/02/2024 22:48

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-13 B 01

Preparation Batch: BMI0533 — Sample Size: 25 mL

Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	453	mg/L	D

Analytical Resources, LLC
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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Still Well-0924

24I0429-13 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/17/2024 11:20

Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-13

Preparation Batch: BMI0508 — Sample Size: 20 mL

Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	50	50	1640	mg/L	

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Interceptor Trench-0924

24I0429-14 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 15:15
Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:10

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-14 B 02
Preparation Batch: BMJ0079 — Sample Size: 25 mL
Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	3.21	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Interceptor Trench-0924

24I0429-14 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/16/2024 15:15

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:10

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-14 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.03	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	ND	ug/L	U

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Interceptor Trench-0924

24I0429-14 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/16/2024 15:15
Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 23:21

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-14 B 01
Preparation Batch: BMI0533 — Sample Size: 25 mL
Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	27.4	mg/L	

Analytical Resources, LLC
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Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Interceptor Trench-0924

24I0429-14 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/16/2024 15:15
Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-14
Preparation Batch: BMI0508 — Sample Size: 100 mL
Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	328	mg/L	

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-35A-0924

24I0429-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 14:50

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:33

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-15 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	16.1	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-35A-0924

24I0429-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/16/2024 14:50

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:33

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-15 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	14.1	ug/L	D
Lead	7439-92-1	5	0.257	0.500	13.7	ug/L	D
Vanadium	7440-62-2	5	0.278	1.00	2.67	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-35A-0924

24I0429-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/16/2024 14:50

Instrument: ICP3 Analyst: SH — Analyzed: 10/02/2024 22:51

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-15 B 01

Preparation Batch: BMI0533 — Sample Size: 25 mL

Prepared: 09/21/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	736	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-35A-0924

24I0429-15 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/16/2024 14:50

Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-15

Preparation Batch: BMI0508 — Sample Size: 50 mL

Prepared: 09/20/2024 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	2020	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-35A-0924

24I0429-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/16/2024 14:50

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 20:40

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-16 A 02

Preparation Batch: BMJ0130 — Sample Size: 25 mL

Prepared: 10/03/2024 — 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	15.1	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-35A-0924

24I0429-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 09/16/2024 14:50

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 20:40

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-16 A 02

Preparation Batch: BMJ0130 — Sample Size: 25 mL

Prepared: 10/03/2024 — 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	13.7	ug/L	D
Lead, Dissolved	7439-92-1	2	0.136	0.200	8.71	ug/L	D
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	1.77	ug/L	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-35A-0924

24I0429-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 09/16/2024 14:50

Instrument: ICP3 Analyst: SH — Analyzed: 09/24/2024 11:11

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 24I0429-16 A

Preparation Batch: BMI0550 — Sample Size: 25 mL

Prepared: 09/22/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	2	0.214	1.00	669	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-99-1-0924

24I0429-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/19/2024 13:00

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:38

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-17 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	ND	ug/L	U

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-99-1-0924

24I0429-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/19/2024 13:00

Instrument: ICPMS1 Analyst: DOE — Analyzed: 10/03/2024 21:38

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 24I0429-17 B 02

Preparation Batch: BMJ0079 — Sample Size: 25 mL

Prepared: 10/02/2024 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	ND	ug/L	U

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-99-1-0924

24I0429-17 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/19/2024 13:00

Instrument: ICP3 Analyst: SH — Analyzed: 09/30/2024 23:27

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 24I0429-17 B 01

Preparation Batch: BMI0533 — Sample Size: 25 mL

Prepared: 09/21/2024 — Final Volume: 25 mL

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

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

MW-99-1-0924

24I0429-17 (Water)

Wet Chemistry

Method: SM 2540 C-11 — Sampled: 09/19/2024 13:00

Instrument: BAL2 Analyst: VD — Analyzed: 09/20/2024 13:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 24I0429-17

Preparation Batch: BMI0508 — Sample Size: 200 mL

Prepared: 09/20/2024 — Final Volume: 200 mL

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

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMI0533 - EPA 6010D

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0533-BLK1)				Prepared: 21-Sep-2024 Analyzed: 30-Sep-2024 21:04							
Potassium	ND	0.107	0.500	mg/L							U
LCS (BMI0533-BS1)				Prepared: 21-Sep-2024 Analyzed: 30-Sep-2024 21:07							
Potassium	9.87	0.107	0.500	mg/L	10.0		98.7	80-120			
Duplicate (BMI0533-DUP1)	**Source: 24I0429-04**			Prepared: 21-Sep-2024 Analyzed: 30-Sep-2024 22:22							
Potassium	0.933	0.107	0.500	mg/L		0.931			0.23	20	
Matrix Spike (BMI0533-MS1)	**Source: 24I0429-04**			Prepared: 21-Sep-2024 Analyzed: 30-Sep-2024 22:25							
Potassium	10.6	0.107	0.500	mg/L	10.0	0.931	96.7	75-125			

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

Matrix Spike Dup (BMI0533-MSD1)	**Source: 24I0429-04**			Prepared: 21-Sep-2024 Analyzed: 30-Sep-2024 22:28							
Potassium	10.6	0.107	0.500	mg/L	10.0	0.931	96.3	75-125	0.35	20	

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

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMJ0079 - EPA 200.8

Instrument: ICPMS1 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMJ0079-BLK1)					Prepared: 02-Oct-2024 Analyzed: 03-Oct-2024 18:09							
Antimony	121	ND	0.101	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
Arsenic	75a	ND	0.0373	0.200	ug/L							U
LCS (BMJ0079-BS1)					Prepared: 02-Oct-2024 Analyzed: 03-Oct-2024 18:14							
Antimony	121	25.1	0.101	0.200	ug/L	25.0		101	80-120			
Lead	208	25.8	0.0513	0.100	ug/L	25.0		103	80-120			
Vanadium	51a	24.7	0.0556	0.200	ug/L	25.0		98.8	80-120			
Arsenic	75a	25.8	0.0373	0.200	ug/L	25.0		103	80-120			
Duplicate (BMJ0079-DUP1)			**Source: 24I0429-04**		Prepared: 02-Oct-2024 Analyzed: 03-Oct-2024 18:23							
Antimony	121	ND	0.202	0.400	ug/L		ND				20	U
Lead	208	ND	0.103	0.200	ug/L		ND				20	U
Arsenic	75a	0.454	0.0746	0.400	ug/L		0.482			5.98	20	D
Duplicate (BMJ0079-DUP2)			**Source: 24I0429-04**		Prepared: 02-Oct-2024 Analyzed: 07-Oct-2024 17:59							
Vanadium	51a	1.52	0.556	2.00	ug/L		2.42			45.70	20	L, J, D
Matrix Spike (BMJ0079-MS1)			**Source: 24I0429-04**		Prepared: 02-Oct-2024 Analyzed: 03-Oct-2024 18:28							
Antimony	121	24.7	0.202	0.400	ug/L	25.0	ND	98.8	75-125			D
Lead	208	24.4	0.103	0.200	ug/L	25.0	ND	97.7	75-125			D
Arsenic	75a	26.5	0.0746	0.400	ug/L	25.0	0.482	104	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike (BMJ0079-MS2)			**Source: 24I0429-04**		Prepared: 02-Oct-2024 Analyzed: 07-Oct-2024 18:04							
Vanadium	51a	24.2	0.556	2.00	ug/L	25.0	2.42	87.1	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BMJ0079-MSD1)			**Source: 24I0429-04**		Prepared: 02-Oct-2024 Analyzed: 03-Oct-2024 18:33							
Antimony	121	25.0	0.202	0.400	ug/L	25.0	ND	100	75-125	1.14	20	D
Lead	208	25.2	0.103	0.200	ug/L	25.0	ND	101	75-125	3.01	20	D
Arsenic	75a	27.2	0.0746	0.400	ug/L	25.0	0.482	107	75-125	2.38	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BMJ0079-MSD2)			**Source: 24I0429-04**		Prepared: 02-Oct-2024 Analyzed: 07-Oct-2024 18:09							
Vanadium	51a	23.9	0.556	2.00	ug/L	25.0	2.42	85.9	75-125	1.21	20	D

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Instrument: ICPMS1 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

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

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BMI0550 - EPA 6010D

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0550-BLK1)					Prepared: 22-Sep-2024 Analyzed: 24-Sep-2024 09:33						
Potassium, Dissolved	ND	0.107	0.500	mg/L							U
LCS (BMI0550-BS1)					Prepared: 22-Sep-2024 Analyzed: 24-Sep-2024 09:36						
Potassium, Dissolved	10.2	0.108	0.505	mg/L	10.0		102	80-120			

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BMJ0130 - EPA 200.8

Instrument: ICPMS1 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMJ0130-BLK1)					Prepared: 03-Oct-2024 Analyzed: 03-Oct-2024 20:31							
Antimony, Dissolved	121	ND	0.101	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
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
LCS (BMJ0130-BS1)					Prepared: 03-Oct-2024 Analyzed: 03-Oct-2024 20:36							
Antimony, Dissolved	121	25.3	0.101	0.200	ug/L	25.0		101	80-120			
Lead, Dissolved	208	25.8	0.0513	0.100	ug/L	25.0		103	80-120			
Vanadium, Dissolved	51a	24.4	0.0556	0.200	ug/L	25.0		97.4	80-120			
Arsenic, Dissolved	75a	25.9	0.0373	0.200	ug/L	25.0		104	80-120			
Duplicate (BMJ0130-DUP1)			**Source: 24I0429-12**		Prepared: 03-Oct-2024 Analyzed: 03-Oct-2024 20:50							
Antimony, Dissolved	121	13.9	0.202	0.400	ug/L		13.6			2.49	20	D
Lead, Dissolved	208	8.51	0.103	0.200	ug/L		8.25			3.08	20	D
Vanadium, Dissolved	51a	1.79	0.111	0.400	ug/L		1.74			2.72	20	D
Arsenic, Dissolved	75a	15.8	0.0746	0.400	ug/L		15.3			3.09	20	D
Matrix Spike (BMJ0130-MS1)			**Source: 24I0429-12**		Prepared: 03-Oct-2024 Analyzed: 03-Oct-2024 20:55							
Antimony, Dissolved	121	38.6	0.202	0.400	ug/L	25.0	13.6	100	75-125			D
Lead, Dissolved	208	33.0	0.103	0.200	ug/L	25.0	8.25	99.0	75-125			D
Vanadium, Dissolved	51a	24.8	0.111	0.400	ug/L	25.0	1.74	92.2	75-125			D
Arsenic, Dissolved	75a	42.6	0.0746	0.400	ug/L	25.0	15.3	109	75-125			D

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

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BMI0508 - SM 2540 C-11

Instrument: BAL2 Analyst: VD

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMI0508-BLK1)				Prepared: 20-Sep-2024 Analyzed: 20-Sep-2024 13:00							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BMI0508-BS1)				Prepared: 20-Sep-2024 Analyzed: 20-Sep-2024 13:00							
Dissolved Solids	472	10	10	mg/L	500		94.4	90-110			
Duplicate (BMI0508-DUP1)		**Source: 24I0429-04**		Prepared: 20-Sep-2024 Analyzed: 20-Sep-2024 13:00							
Dissolved Solids	303	10	10	mg/L		304			0.33	20	

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

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	DoD-ELAP,NELAP,WADOE
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	DoD-ELAP,NELAP,WADOE
Vanadium-51a	NELAP,DoD-ELAP,WADOE
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 6010D in Water	
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
SM 2540 C-11 in Water	
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP

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

WSP USA, Inc.	Project: Ravensdale	
840 HOWE STREET, #1000	Project Number: GL152030402.001	**Reported:**
VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project Manager: Accounts Payable	09-Oct-2024 10:24

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.
L	Analyte concentration is <=5 times the reporting limit and the replicate control limit defaults to +/- RL instead of 20% RPD
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

APPENDIX D

Sample Integrity Data Sheets

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MWB-2DSP - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Disposable Bailer

Date September 19, 2024 **Time**

Media Groundwater **Station** MWB-2DSP

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

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

SWL: Depth to water at 199.64 ft BTOC (September 19, 2024 10:27 AM); Well total depth at 258' BGS

Screen Interval: 236'- 256' BGS

Pump Intake: N/A

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-2DSP
Date _____
Time Begin Purge 11:36
Time Collect Sample _____

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
199.64	11:37	6.96	540	11.9	9.23	162.1	1.07

Comments:

Flow Rate: _____ mL/min

Sampler _____

Date September 19, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MWB-6DSP / MW-55A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated)

Date September 19, 2024 **Time** 09:45

Media Groundwater **Station** MWB-6DSP / MW-55A

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

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

SWL: Depth to water at 23.55 ft BTOC (September 19, 2024 9:43 AM); Well total depth at 195' BGS

Screen Interval: 120'- 195' BGS

Pump Intake: ~ 170' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-6DSP / MW-55A
Date 09/19/2024
Time Begin Purge 10:45
Time Collect Sample 09:45

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
26.95	10:50	6.98	465	11.8	9.17	119.7	1.83
28.05	10:55	6.81	460.9	11.6	8.7	126.3	1.16
29.5	11:00	6.76	457.1	11.5	8.32	132.9	0.96
30.64	11:05	6.74	454.9	11.5	8.03	136.9	0.71

Comments:

Flow Rate: 500 mL/min

Sampler _____

Date September 19, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MWB-3LDA - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated)

Date September 18, 2024 **Time**

Media Groundwater **Station** MWB-3LDA

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

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

SWL: Depth to water at 4.55 ft BTOC (September 18, 2024 2:05 PM); Well total depth at 145' BGS

Screen Interval: 125'- 145' BGS

Pump Intake: ~ 135' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-3LDA
Date
Time Begin Purge 15:08
Time Collect Sample

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
8.2	15:15	7.35	228.4	14.4	8.06	123.9	7.11
9.67	15:20	7.17	228.2	14.4	7.79	125.4	3.99
10.41	15:25	7.12	227.7	14.2	7.64	123.9	2.35
11.59	15:30	7.09	227	14	7.5	123.4	1.66

Comments:

Flow Rate: 300 mL/min

Sampler

Date September 18, 2024

Supervisor **Date**

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MWB-1LDA - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated)

Date September 18, 2024 **Time**

Media Groundwater **Station** MWB-1LDA

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

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

SWL: Depth to water at 23.85 ft BTOC (September 18, 2024 12:43 PM); Well total depth at 135' BGS

Screen Interval: 115'- 135' BGS

Pump Intake: ~ 125' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-1LDA
Date
Time Begin Purge 13:42
Time Collect Sample

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
24.53	13:50	7.85	362	11.6	8.81	127.0	0.90
24.5	13:55	7.65	364.3	11.1	8.26	130.1	0.32
25.3	14:00	7.53	363.4	11	7.79	131.0	0.40
25.4	14:05	7.49	363.3	11	7.57	131.2	0.42

Comments:

Flow Rate: 350 mL/min

Sampler _____ **Date** September 18, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MWB-5DSP - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated)

Date September 18, 2024 **Time**

Media Groundwater **Station** MWB-5DSP

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

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

SWL: Depth to water at 27.01 ft BTOC (September 17, 2024 11:59 PM); Well total depth at 83' BGS

Screen Interval: 73'- 83' BGS

Pump Intake: ~ 80' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-5DSP
Date _____
Time Begin Purge 00:59
Time Collect Sample _____

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
27.9	13:05	8.15	774	14.1	9.27	139.2	1.32
28.56	13:10	7.33	779	13.1	8.67	144.9	6.20
29.15	13:15	7.14	781	13	8.18	144.5	4.52
29.85	13:20	7.09	778	13	7.82	143.3	2.96

Comments:

Flow Rate: 200 mL/min

Sampler _____

Date September 18, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MWB-1DDSP - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated)

Date September 18, 2024 **Time**

Media Groundwater **Station** MWB-1DDSP

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

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

SWL: Depth to water at 58.56 ft BTOC (September 18, 2024 9:22 AM); Well total depth at 265' BGS

Screen Interval: 255'- 265' BGS

Pump Intake: ~ 260' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-1DDSP
Date _____
Time Begin Purge 10:23
Time Collect Sample _____

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	10:45	7.42	929	15.5	9	146.5	
59.65	10:45	7.43	950	15.2	9.07	147.3	0.63
59.65	10:50	7.31	1,006	15	9.06	150.1	1.34
60.1		7.16	1,033	14.8	8.91	151.5	2.74

Comments:

Flow Rate: 100 mL/min

Sampler _____

Date September 18, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MWB-1SDSP - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated)

Date September 18, 2024 **Time**

Media Groundwater **Station** MWB-1SDSP

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

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

SWL: Depth to water at 46.01 ft BTOC (September 18, 2024 8:43 AM); Well total depth at 160' BGS

Screen Interval: 73'- 83' BGS

Pump Intake: ~ 80' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-1SDSP
Date
Time Begin Purge 09:49
Time Collect Sample

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
49.7	09:55	6.58	1,587	12	9.44	143.9	9.95
51.91	10:00	6.54	1,563	11.8	8.88	148.4	2.23
53.8	10:05	6.53	1,539	11.8	8.43	152.9	1.45
56.25	10:10	6.54	1,523	11.7	8.07	155.4	1.01

Comments:

Flow Rate: 300 mL/min

Sampler

Date September 18, 2024

Supervisor **Date**

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID Portal - 0924

Sampling Location Surface Water Monitoring Point

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Grab

Date September 17, 2024 **Time** 14:20

Media Surface Water **Station** Portal

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

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

SWL: Depth to water at ft BTOC (September 17, 2024 2:20 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID Portal
Date 09/17/2024
Time Begin Purge 15:20
Time Collect Sample 14:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	15:20	7.18	714	10.6	8.59	187.8	55.5

Comments:

Flow Rate: _____ mL/min

Sampler _____

Date September 17, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-7A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date September 17, 2024 **Time** 14:00

Media Groundwater **Station** MW-7A

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

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

SWL: Depth to water at 16.38 ft BTOC (September 17, 2024 1:29 PM); Well total depth at 20' BGS

Screen Interval: 10' - 20' BGS

Pump Intake: ~ 17' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-7A
Date 09/17/2024
Time Begin Purge 14:32
Time Collect Sample 14:00

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
16.4	14:40	7.03	776	15.2	8.13	174.4	4.5
16.4	14:45	6.97	767	15.2	7.86	174.9	4.61
16.4	14:50	6.97	764	15.2	7.71	175.3	3.63
16.4	14:55	6.97	762	15.2	7.57	175.9	2.53

Comments:

Flow Rate: 200 mL/min

Sampler _____

Date September 17, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-9A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler

Date September 17, 2024 **Time** 12:45

Media Groundwater **Station** MW-9A

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

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

SWL: Depth to water at ft BTOC (September 17, 2024 12:21 PM); Well total depth at 13' BGS

Screen Interval: 8' - 13' BGS

Pump Intake: ~ 10' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-9A
Date 09/17/2024
Time Begin Purge 13:23
Time Collect Sample 12:45

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
8.6	13:25	7.22	598	12.7	7.95	162.8	3.86
9.36	13:30	7.04	596	12.8	7.64	164.0	2 08
9.93	13:35	6.95	595	13	7.42	163.6	1.15
10.55	13:40	6.96	593	13.2	7.28	161.8	1.02

Comments:

Flow Rate: 100 mL/min

Sampler _____

Date September 17, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-4A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date September 17, 2024 **Time** 23:50

Media Groundwater **Station** MW-4A

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

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

SWL: Depth to water at 8.33 ft BTOC (September 17, 2024 10:54 AM); Well total depth at 20' BGS

Screen Interval: 5' - 20' BGS

Pump Intake: ~ 12' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
3-1000 mL	Total Dissolved Solids	HDPE	N/A
3-500 mL	Dissolved Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-4A
Date 09/16/2024
Time Begin Purge 11:57
Time Collect Sample 23:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
8.41	12:00	10.81	656	12.1	8.46	67.2	24.0
8.45	12:05	8.58	690	12	7.89	73.5	18.7
8.46	12:10	7.45	682	12.1	7.51	87.4	11.6
8.5	12:15	6.94	685	12.1	7.19	101.5	3.89
8.52	12:20	6.74	631	12.1	6.96	110	2.13
8.54	12:25	6.63	610	12.1	6.76	116.2	1.66
8.56	12:30	6.54	598	12.1	6.6	121.4	
8.56	12:35	6.46	585	12	6.45	126.0	1.63
8.58	12:40	6.41	576	12.2	6.31	129.3	1.05
8.6	12:45	6.38	576	12.2	6.2	132.0	1.90

Comments:

Flow Rate: 200 mL/min

SAMPLE INTEGRITY DATA SHEET

Sampler _____

Date September 17, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID Still Well - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date September 17, 2024 **Time** 10:20

Media Groundwater **Station** Still Well

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

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

SWL: Depth to water at 0.6 ft BTOC (September 17, 2024 10:20 AM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

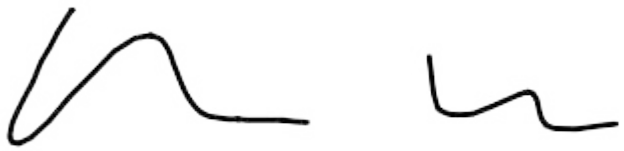
SAMPLE INTEGRITY DATA SHEET

Well ID Still Well
Date 09/17/2024
Time Begin Purge 11:20
Time Collect Sample 10:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
0.6	11:20	12.49	3,389	14.6	8	165.4	18.6

Comments:

Flow Rate: _____ mL/min



Sampler _____

Date September 17, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-3A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date September 17, 2024 **Time** 09:55

Media Groundwater **Station** MW-3A

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

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

SWL: Depth to water at 11.4 ft BTOC (September 17, 2024 9:10 AM); Well total depth at 20' BGS

Screen Interval: 4' - 20' BGS

Pump Intake: ~ 12' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-3A
Date 09/17/2024
Time Begin Purge 10:14
Time Collect Sample 09:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
11.95	10:20	6.39	1,201	11.4	8.4	209.5	23.1
12.05	10:25	6.5	1,206	11.7	7.91	205.5	16.4
12.3	10:30	6.54	1,208	11.9	7.51	203.6	12.4
12.51	10:35	6.55	1,211	11.8	7.34	202.9	19.3
12.67	10:40	6.57	1,205	12	7.1	201.7	17.1
12.94	10:45	6.58	1,207	11.9	6.94	200.9	13.7
13.07	10:50	6.6	1,206	11.9	6.77	199.9	9.95

Comments:

Flow Rate: 100 mL/min

SAMPLE INTEGRITY DATA SHEET

Sampler _____

Date September 17, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-10A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date September 17, 2024 **Time** 08:50

Media Groundwater **Station** MW-10A

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

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

SWL: Depth to water at 15.56 ft BTOC (September 17, 2024 8:02 AM); Well total depth at 29' BGS

Screen Interval: 9' - 29' BGS

Pump Intake: ~ 25' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-10A
Date 09/17/2024
Time Begin Purge 09:07
Time Collect Sample 08:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
15.82	09:10	8.71	279	11.5	9.82	107.4	2.99
16.15	09:15	7.72	290.5	10.7	9.3	111.8	1.99
16.35	09:20	7.24	289.8	10.5	9.02	121.7	1.33
16.52	09:25	7.01	289.5	10.5	8.81	131.2	1.11
16.86	09:30	6.86	289.5	10.7	8.63	139.1	1.60
17.12	09:35	6.78	288.7	10.5	8.49	144.9	1.32
17.41	09:40	6.73	287.2	10.6	8.37	149.6	
17.7	09:45		287.2	10.7	8.25	153.0	0.87

Comments:

Flow Rate: 100 mL/min

SAMPLE INTEGRITY DATA SHEET

Sampler _____

Date September 17, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID Infiltration Ponds / MW-35A - 0924

Sampling Location Surface Water Monitoring Point

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date September 16, 2024 **Time** 15:53

Media Surface Water **Station** Infiltration Ponds / MW-35A

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

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

SWL: Depth to water at ft BTOC (September 16, 2024 1:30 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description MW-35A-0924 (Duplicate sampled at 1450)

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

Aliquot Amount	Analysis	Container	Preservation
2-1000 mL	Total Dissolved Solids	HDPE	N/A
2-500 mL	Total Metals	HDPE	HNO3
2-500 mL	Dissolved Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

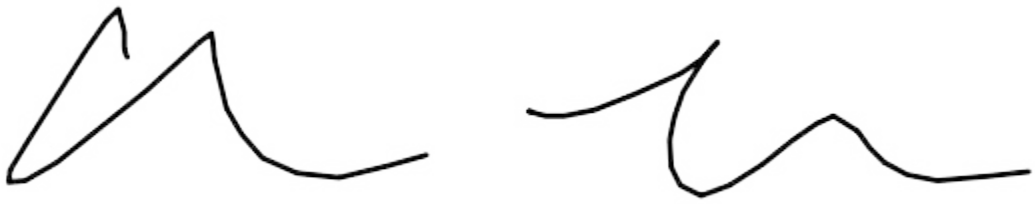
Well ID Infiltration Ponds / MW-35A
Date 09/16/2024
Time Begin Purge 14:30
Time Collect Sample 15:53

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	14:30	8.3	2,932	17.4	8.39	228.9	24.3

Comments:

Flow Rate: _____ mL/min

Sampler



Date September 16, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID Interceptor Trench - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Grab

Date September 16, 2024 **Time** 14:15

Media Surface Water **Station** Interceptor Trench

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

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

SWL: Depth to water at ft BTOC (September 16, 2024 2:15 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID Interceptor Trench
Date 09/16/2024
Time Begin Purge 15:16
Time Collect Sample 14:15

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	15:15	8.02	590	16.3	9	131.9	2.53

Comments:

Flow Rate: 600 mL/min

Sampler

Date September 16, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-5A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated), Grab

Date September 16, 2024 **Time** 13:10

Media Groundwater **Station** MW-5A

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

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

SWL: Depth to water at 34.45 ft BTOC (September 16, 2024 12:24 PM); Well total depth at 40' BGS

Screen Interval: 25'- 40' BGS

Pump Intake: ~ 38' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-5A
Date 09/16/2024
Time Begin Purge 13:25
Time Collect Sample 13:10

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
35.4	13:30	7.79	2,239	10.6	8.83	230.7	.74
35.72		7.6	2,238	10.4	8.32	231.3	1.03
35.55	14:00	7.56	2,132	10.8	7.97	230.6	3.22
35.55	14:00	7.57	2,060	10.9	7.85	229.8	8.38
35.46	14:00	7.57	2,014	10.8	7.77	229.3	9.66
35.55	14:05	7.56	1,977	10.8	7.75	229.0	9.09
35.55	14:05	7.55	1,950	10.7	7.72	228.8	6.24
35.55	14:05	7.54	1,940	10.8	7.65	228.6	4.82

Comments:

Flow Rate: 200 mL/min

SAMPLE INTEGRITY DATA SHEET

Sampler

Date September 16, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-6A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated), Grab

Date September 16, 2024 **Time** 12:00

Media Groundwater **Station** MW-6A

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

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

SWL: Depth to water at 32.34 ft BTOC (September 16, 2024 10:17 AM); Well total depth at 39' BGS

Screen Interval: 24'- 39' BGS

Pump Intake: ~ 36' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-6A
Date 09/16/2024
Time Begin Purge 11:20
Time Collect Sample 12:00

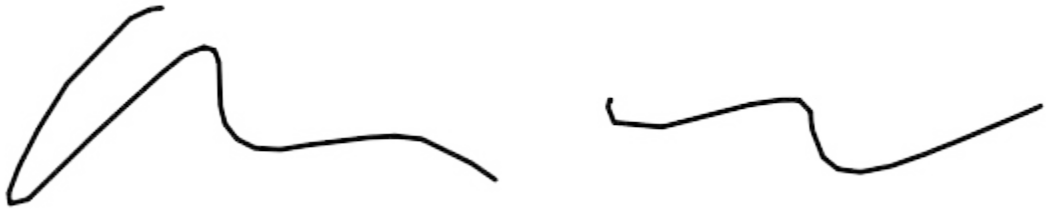
Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
32.34	11:25	7.3	1,729	10.7	9.5	240.7	6.01
33.45	11:35	7.44	1,927	11.2	9.21	241	4.29
34.35	23:50	7.59	2,256	11.4	8.88	241.2	12.2
33.49	23:50	7.69	2,369	11.3	8.62	239.2	6.52
33.51	23:50	7.72	2,395	11.2	8.4	237.8	4.08
33.51	23:50	7.73	2,416	11.4	8.18	236.5	3.15
33.46	11:55	7.74	2,433	11.4	8.03	235.6	2.04

Comments:

Flow Rate: 100 mL/min

SAMPLE INTEGRITY DATA SHEET

Sampler



Date September 16, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-2A / MW-45A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated)

Date September 16, 2024 **Time** 21:55

Media Groundwater **Station** MW-2A

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

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

SWL: Depth to water at 30.4 ft BTOC (September 16, 2024 10:27 AM); Well total depth at 40' BGS

Screen Interval: 24'- 40' BGS

Pump Intake: ~ 30' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-2A / MW-45A
Date 09/16/2024
Time Begin Purge 11:30
Time Collect Sample 21:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
30.4	11:35	6.52	655	10.6	9.9	203.9	3.76
30.5	11:35	6.57	666	10.2	9.73	202.5	5.58
30.4	11:50	6.61	669	10.2	9.7	201.1	3.83
30.4	11:50	6.65	667	9.9	9.67	200.9	2.66
30.4	22:50	6.67	667	10	9.64	200.7	2.02

Comments:

Flow Rate: 300 mL/min

MW-45A-0924 (duplicate taken at 1200

Sampler _____ **Date** September 16, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-1A - 0924

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated)

Date September 16, 2024 **Time** 09:30

Media Groundwater **Station** MW-1A

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

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

SWL: Depth to water at 37.11 ft BTOC (September 16, 2024 9:30 AM); Well total depth at 44' BGS

Screen Interval: 28' - 43' BGS

Pump Intake: ~ 39' BGS

Sample Description

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

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-1A
Date 09/16/2024
Time Begin Purge 10:30
Time Collect Sample 09:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
36.6	10:35	7.17	610	9.4	9.78	145.7	31.6
36.6	10:55	6.77	384.2	9.5	9.76	148.3	8.55
36.6	11:05	6.56	373.1	9.4	9.76	156.7	2.23
36.6	11:05	6.51	369.7	9.4	9.76	163.0	1.13
36.6	11:05	6.5	368.5	9.4	9.75	167.7	1.08
36.6	11:05	6.5	368.3	9.6	9.72	171.3	0.73
36.6	11:05	6.51	366.8	9.5	9.72	174.4	0.64

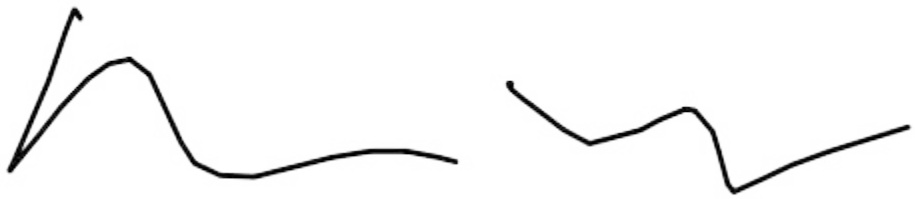
Comments:

Flow Rate: 300 mL/min

Began purge at 1030. Measurements every 5

SAMPLE INTEGRITY DATA SHEET

Sampler



Date September 16, 2024

Supervisor _____ **Date** _____

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