REPORT

QUARTERLY MONITORING REPORT FOURTH QUARTER 2023 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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GL152030402.001

April 17, 2024

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Table of Contents

TABLES

FIGURES

APPENDICES

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 fourth quarter of 2023. The Site is located at 28131 Ravensdale-Black Diamond Road in Ravensdale, Washington. Figure 1 shows the Site location.

A Model Toxics Control Act (MTCA) Remedial Investigation/Feasibility Study (RI/FS) is being conducted at the Site under Agreed Order (AO) No. DE 16052. An RI Work Plan (Work Plan), supporting Sampling and Analysis Plan (SAP), and Quality Assurance Project Plan (QAPP) (Golder 2021) describe the RI monitoring requirements and sampling procedures. Quarterly groundwater monitoring at the Site is currently being conducted in accordance with the Work Plan and supporting documents. Historical groundwater and surface water monitoring activities at the Site were conducted under the requirements of Post-Closure Care and Maintenance Permits issued by Public Health – Seattle and King County (Public Health). The fourth quarter monitoring event was conducted in December 2023.

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 Ravensdale-Black Diamond Road (ARCADIS 2004). In 2013, a new seepage collection ditch was installed to intercept and collect the seepage (see Section 2.2.3 of this report), which then flowed inside a pipe to the Infiltration Ponds. In 2018, a water treatment system was constructed, and the high pH water captured by the collection ditch is currently piped to 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 Mitigation Activities

2.2.1 LDA Cover Upgrade

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

2.2.2 LDA Seep Collection System Test Trenches

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

Between October 2008 and September 2009, Golder monitored seepage flow rates from each of 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/alluvial monitoring wells were installed near the LDA in July 2005 and are monitored to assess the shallow/alluvial groundwater conditions with respect to potential impact from the CKD. Four of the wells (MW-1A, MW-2A, MW-5A, and MW-6A) are located around the Infiltration Ponds. MW-3A is located west of the high pH seepage area. MW-4A, a background well, is located south of, and upgradient with respect to groundwater flow and surface water drainage of the high pH seepage area. P-14 was installed in November 2020 in the center of the LDA and is screened within CKD and other fill material disposed in the LDA. Groundwater samples collected from P-14 provide data on chemical composition of water in an area where saturated CKD is present. The monitoring well naming convention of assigning either the prefix MW (for monitoring well) or P (for piezometer) differentiates wells that are historically associated with or will likely be associated with the closed landfill permit required monitoring (prefix MW- or MWB- for bedrock wells), from groundwater wells that were installed for site investigation purposes (P- wells). MW and P groundwater wells are constructed similarly, and groundwater sampling of these wells follows the procedures approved in the Work Plan, thus, data collected from MW or P wells are equivalent in representativeness.

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

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

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

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

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

3.2 DSP Sampling Locations

The DSP groundwater monitoring locations are shown in Figure 2. The DSP bedrock groundwater monitoring program includes four wells in the DSP area (MWB-1SDSP, MWB-1DDSP, MWB-5DSP, and MWB-6DSP), which evaluate groundwater quality beneath, upgradient, and downgradient of the DSP. 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 and direct the water away from the LDA before the water enters the LDA. Monitoring is performed at the Interceptor Trench outfall for flow, pH, turbidity, and total dissolved solids. The purpose of the monitoring is to ensure that the trench is not collecting impacted groundwater.

4.0 SAMPLING ACTIVITIES

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

4.1 Procedures

4.1.1 Water Level and Field Parameter Measurements

Depth to water measurements were collected from all monitoring wells at the Site during the period of December 12 and 15, 2023. 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 December 12 to 15, 2023, WSP sampled groundwater from shallow/alluvial groundwater monitoring wells outside of the LDA (MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, MW-6A, MW-7A, MW-8A, MW-9A, MW-10, P-16, P-17), and from two well installed within the LDA (P-14 and P-15).

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-8A, MW-9A,

MW-10, P-14, P-15, P-16, and P-17 was 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 within the LDA (P-14 and P-15) is occasionally greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2 upon receipt at the laboratory. To meet this requirement, the pH of the LDA surface water samples collected for metals analysis was checked at the time of sample collection using pH test paper strips. If the pH was higher than 2, additional nitric acid (provided by the laboratory) was added until the pH of the sample was less than 2.

All 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 December 13, 2023, WSP visited the Wier surface water monitoring location but was unable to collect samples because the location was dry. However, WSP collected samples from the Still Well and Infiltration Ponds surface water monitoring locations on December 15, 2023, and the South Pond location on December 13, 2023. 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 Still Well is often greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2 upon receipt at the laboratory. To meet this requirement, the pH of the sample collected for metals analysis was checked at the time of sample collection using pH test paper strips. If the pH was higher than 2, additional nitric acid (provided by the laboratory) was added until the pH of the sample was less than 2.

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

4.1.5 LDA Interceptor Trench Sampling

On December 12, 2023, 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 2.

5.0 RESULTS

Analytical results from the December 2023 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 operating in September 2018. The system operated intermittently from December 2018 to May 2019 as the system upgrades were completed during that time, which included various upgrades and modifications to improve the system’s long-term operating efficiency. The system began continuous operations in June 2019, with minor shutdowns occurring to complete routine maintenance and continued minor modifications to improve long-term operating efficiency.

The treatment system includes a 4,200-gallon mixing tank (steel rectangular box-shaped tank) that receives the influent water coming from the seepage collection ditch and piping. Water from the tank constantly flows through the 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 2023 fourth 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: Fourth Quarter 2023 Water Level Measurements

Sample Area	Sample Location ID	Date Measured	Well Data				Water Levels		
			Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Bentonite Seal (feet bgs)	Casing Diameter (inches)	TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)
LDA - Shallow/Alluvial Groundwater	MW-1A	12/12/2023	44	28-43	2-26	2	613.44	22.16	591.28
	MW-2A	12/12/2023	40	25-40	2-23	2	607.21	16.04	591.17
	MW-3A	12/13/2023	20	4-20	2-4	2	689.11	5.14	683.97
	MW-4A	12/13/2023	20	5-20	2-4	2	705.45	3.78	701.67
	MW-5A	12/12/2023	40	25-40	2-23	2	611.23	19.96	591.27
	MW-6A	12/12/2023	39	24-39	2-22	2	608.95	17.75	591.20
	MW-7A	12/15/2023	20	10-20	2-7	2	592.69	2.53	590.16
	MW-8A	12/15/2023	26	16-26	2-13	2	601.49	11.34	590.15
	MW-9A	12/13/2023	13	8-13	2-5	2	697.29	2.48	694.81
	MW-10A	12/13/2023	29	9-29	2-6	2	698.02	6.01	692.01
	P-16	12/12/2023	10	5-10	1-3	2	702.87	2.68	700.19
	P-17	12/13/2023	13	8-13	2-5	2	720.32	4.28	716.04
Within LDA - Groundwater	P-14	12/14/2023	52	40-50	3-38	2	773.32	28.05	745.27
	P-15	12/14/2023	34	24-34	2-20	2	756.55	15.43	741.12
LDA - Bedrock Groundwater	MWB-1LDA	12/15/2023	135	115-135	2-105	2	704.68	22.74	681.94
	MWB-2LDA	12/14/2023	125	110-125	2-103	2	741.66	35.46	706.20
	MWB-3LDA	12/15/2023	145	125-145	2-115	2	744.19	2.74	741.45
DSP - Bedrock Groundwater	MWB-1SDSP	12/12/2023	160	150-160	138-148	2	936.29	37.23	899.06
	MWB-1DDSP	12/12/2023	265	255-265	243-253	2	935.37	52.09	883.28
	MWB-2DSP	12/13/2023	258	238-258	-	2	934.82	183.09	751.73
	MWB-4SDSP	12/13/2023	43	32-42.8	-	2	932.41	16.91	915.50
	MWB-5DSP	12/12/2023	83	73-83	2-61	2	935.05	20.99	902.77
	MWB-6DSP	12/12/2023	195	120-195	2-108	2	918.67	19.65	902.47

-	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: Fourth Quarter 2023 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	140
LDA - Shallow/Alluvial Groundwater	MW-1A	12/12/2023	613.44	22.16	591.28	9.2	806	7.53	120.7	1.27	6.70	424	1.71	1.39	43400	0.103 U	0.986
	MW-2A	12/12/2023	607.21	16.04	591.17	9.9	894.0	8.57	137	4.29	7.01	529	3.53	1.94	133000	0.103 U	1.5
	MW-2A Duplicate (MW-45A)	12/12/2023	-	-	-	-	-	-	-	-	-	552	3.52	1.98	131000	0.103 U	1.48
	MW-3A	12/13/2023	689.11	5.14	683.97	9.4	712	4.35	43.8	2.87	6.73	343	4.61	3.7	82900	0.208	0.816
	MW-4A	12/14/2023	705.45	3.78	701.67	9.7	497	6.6	227.1	1.2	6.37	255	0.202 U	0.218 J	527	0.257 U	1.25
	MW-5A	12/12/2023	611.23	19.96	591.27	9.7	1260	6.44	152.6	2.92	7.07	847	4.62	2.69	225000	0.103 U	1.71
	MW-6A	12/12/2023	608.95	17.75	591.20	9.4	1,170	7.75	137.3	4.99	7.33	766	6.48	2.09	266000	0.254	1
	MW-7A	12/15/2023	592.69	2.53	590.16	9.2	1163	6.27	354.3	4.79	7.22	577	4.03	1.95	113000	0.103 U	1.25
	MW-8A	12/15/2023	601.49	11.34	590.15	9.8	1434	5.3	348.7	6.22	6.89	760	4.1	5.52	220000	0.148 J	3.64
	MW-9A	12/13/2023	697.29	2.48	694.81	9.1	623	6.85	127.8	3.2	6.4	297	0.202 U	0.47	1420	0.103 U	0.846
	MW-10A	12/13/2023	698.02	6.01	692.01	10.3	248	9.01	154.4	4.23	6.30	111	0.202 U	0.596	977	0.103 U	0.746
	P-16	12/13/2023	702.87	2.68	700.19	9.5	6,284	4.08	-804.2	36.4	11.68	3600	0.322 J	81.7	937000	0.675	223
	P-17	12/13/2023	720.32	4.28	716.04	9.7	711	3.78	-60.2	9.25	6.13	337	1.17	3.02	11700	0.103 U	1.32
Within LDA - Groundwater	P-14	12/14/2023	773.32	28.05	745.27	12	27,153	3.49	-407.7	0.64	13.1	6190	116	216	2220000	6.93	17.2
	P-15	12/14/2023	756.55	15.43	741.12	11.5	15,982	3.43	-370.7	1.92	12.99	3600	3.68	6.7	1010000	111	0.48 J
LDA - Bedrock Groundwater[b]	MWB-1LDA	12/15/2023	704.68	22.74	681.94	-	-	-	-	-	-	-	-	-	-	-	-
	MWB-2LDA	12/14/2023	741.66	35.46	706.20	-	-	-	-	-	-	-	-	-	-	-	-
	MWB-3LDA	12/15/2023	744.19	2.74	741.45	-	-	-	-	-	-	-	-	-	-	-	-

Table 2: Fourth Quarter 2023 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	140
LDA- Surface Water	South Pond	12/13/2023	-	-	-	5.2	2217	7.86	-41.2	8.63	9	1180	3.98	21.1	394000	15.8	53.4
	Still Well	12/15/2023	-	-	-	10.3	4630	9.48	81.6	6.81	12.38	1120	25.5	35.8	367000	4.91	2.87
	Weir	12/13/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Infiltration Ponds	12/15/2023	-	-	-	6.90	2395.00	9.94	163.00	3.19	8.49	1240	22.7	14	429000	0.978	3.31
	Infiltration Ponds Duplicate (MW-35A)	12/15/2023	-	-	-	-	-	-	-	-	-	1320	21.6	14.6	440000	2.09	3.09
DSP - Bedrock Groundwater[b]	MWB-1SDSP	12/12/2023	936.29	37.23	899.06	-	-	-	-	-	-	-	-	-	-	-	-
	MWB-1DDSP	12/12/2023	935.37	52.09	883.28	-	-	-	-	-	-	-	-	-	-	-	-
	MWB-2DSP	12/13/2023	934.82	183.09	751.73	-	-	-	-	-	-	-	-	-	-	-	-
	MWB-4SDSP	12/13/2023	932.41	16.91	915.50	-	-	-	-	-	-	-	-	-	-	-	-
	MWB-5DSP	12/12/2023	935.05	20.99	902.77	-	-	-	-	-	-	-	-	-	-	-	-
	MWB-6DSP	12/12/2023	918.67	19.65	902.47	-	-	-	-	-	-	-	-	-	-	-	-
	MWB-6DSP Duplicate (MW-55A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Portal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(orange shading)	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/alluvial 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

Table 3: Interceptor Trench Discharge Monitoring

Date Sampled	Time Sampled	Flow (gpm)	Field pH (standard units)	Turbidity (NTU)	Total Dissolved Solids (mg/L)
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

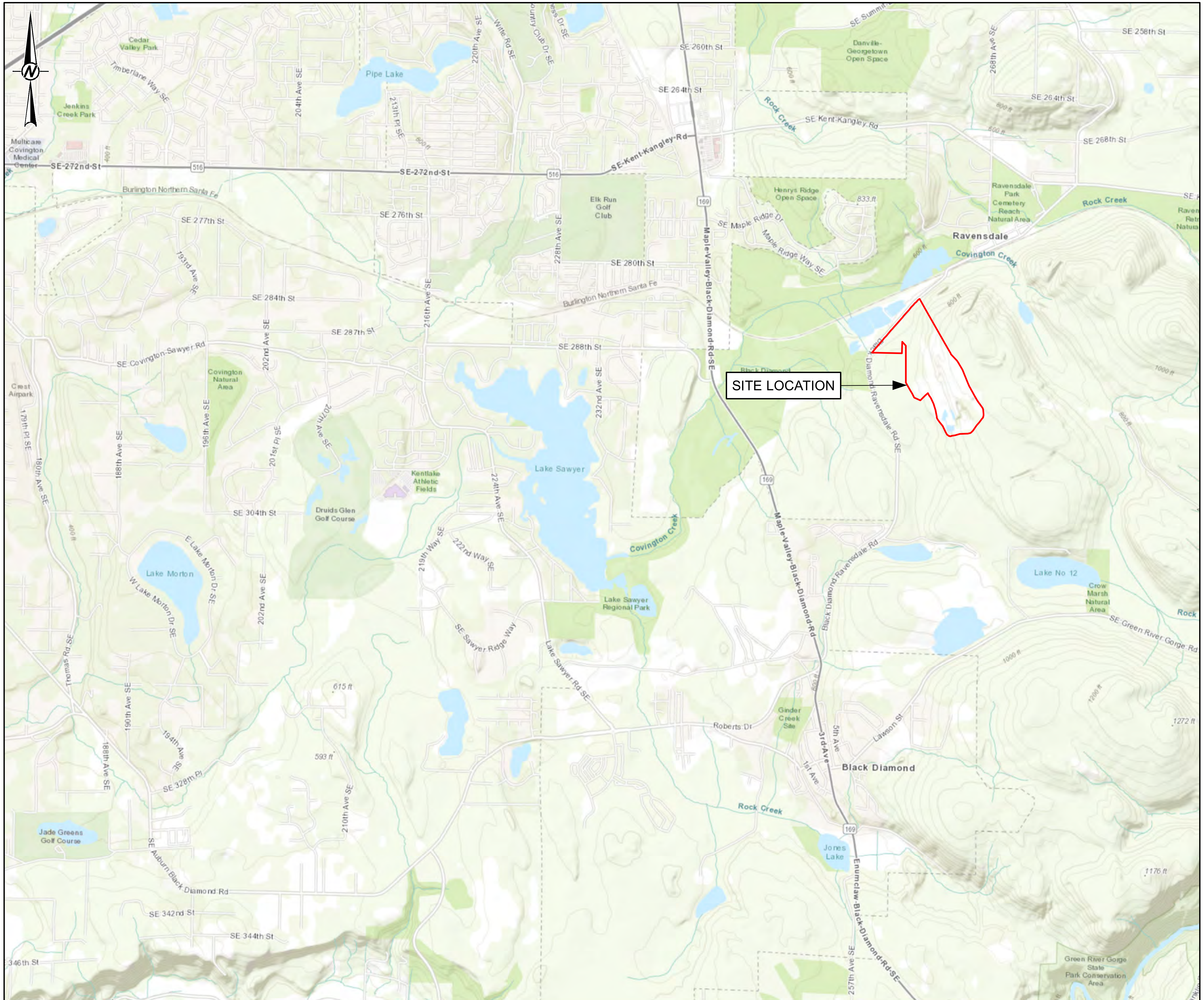
-	Not measured or not available
^	pH values error, due to faulty pH probe.
gpm	Gallons per minute
NTU	Nephelometric Turbidity Unit
mg/L	Milligrams per liter

Table 4: Fourth Quarter 2023 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	20-Dec-23	12.20	16.9	17.7	22.9	14.4	83.3	73.4	3.89	3.63
pH Tank Effluent/Filter Media Influent	Sand-Effluent	20-Dec-23	8.08	16.9	17.8	22.1	22.5	13.9	0.56	3.83	3.88
Filter Media Effluent	As-Effluent	20-Dec-23	7.56	17.1	17.4	15.2	14.4	11.8	0.968	3	2.7

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

Figures



LEGEND

Property Boundary

0 3,000 6,000

1 " = 3,000 FEET FEET

REFERENCE(S)

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

CLIENT
HOLCIM

PROJECT
RI WORK PLAN 2020
RAVENSDALE, WA

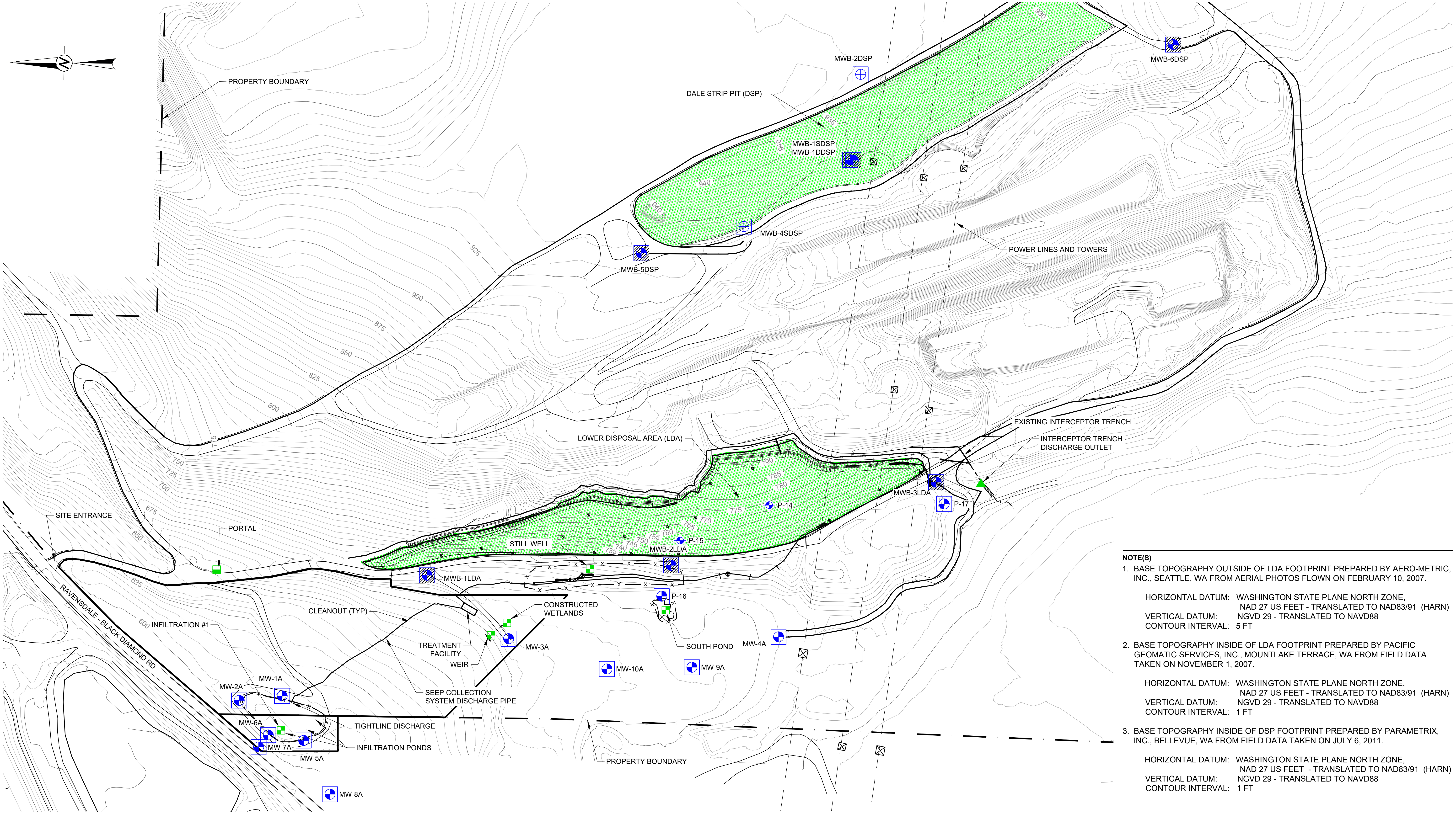
TITLE
SITE LOCATION MAP

CONSULTANT

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

PROJECT NO.	PHASE	REV.	FIGURE
152030420	004	A	1

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



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

0 150 300
1" = 150' FEET

CLIENT
HOLCIM

CONSULTANT

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

PROJECT
RI WORK PLAN 2020
RAVENSDALE, WA

TITLE
SITE PLAN

PROJECT NO.	PHASE	REV.	FIGURE
152030420	004	A	2

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

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.

LEGEND

	COVER AREA	P-1	GOLDER PIEZOMETER
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	— x —— x ——	FENCE LINE

CLIENT
HOLCIM

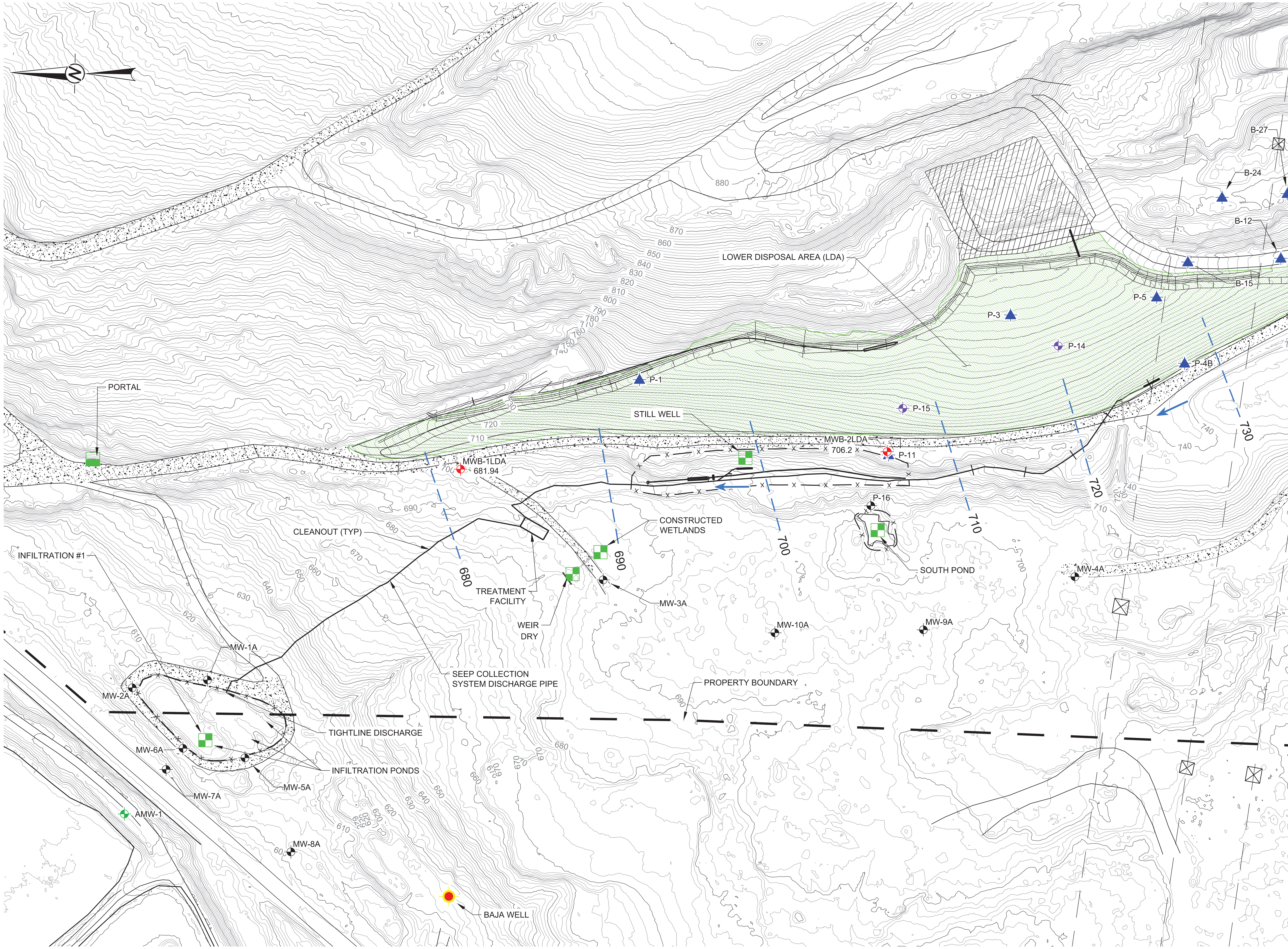
CONSULTANT

YYYY-MM-DD	2024-04-10
DESIGNED	AW
PREPARED	TR
REVIEWED	AP
APPROVED	GZ

PROJECT
DECEMBER 12-15, 2023 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
DSP BEDROCK GROUNDWATER ELEVATIONS

PROJECT NO.	TASK	REV.	FIGURE
GL152030402.001	03	A	3A



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
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	— x —— x —	FENCE LINE
	PRIVATE WELL		

CLIENT
HOLCIM

CONSULTANT

wsp

YYYY-MM-DD	2024-04-10
DESIGNED	AW
PREPARED	TR
REVIEWED	AP
APPROVED	GZ

PROJECT
DECEMBER 12-15, 2023 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
LDA BEDROCK GROUNDWATER ELEVATIONS

PROJECT NO.	TASK	REV.	FIGURE
GL152030402.001	03	A	3B

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.

LEGEND

	COVER AREA	P-1	GOLDER PIEZOMETER
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	— x —— x ——	FENCE LINE
	PRIVATE WELL		

CLIENT
HOLCIM

CONSULTANT
wsp

YYYY-MM-DD	2024-04-10
DESIGNED	AW
PREPARED	TR
REVIEWED	AP
APPROVED	GZ

PROJECT
DECEMBER 12-15, 2023 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
ALLUVIAL - SHALLOW GROUNDWATER ELEVATIONS

PROJECT NO.	TASK	REV.	FIGURE
GL152030402.001	03	A	3C

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 Still Well
Table A-1B Infiltration Ponds
Table A-1C Weir
Table A-1D South Pond

Table A-1a: Summary of Lower Disposal Area - Surface Water 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	-	-	140
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	-
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	-

Table A-1a: Summary of Lower Disposal Area - Surface Water 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	-	-	140
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

Notes:

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

-	Not analyzed or not available		
	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	mg/L	
feet bmp	Feet below measuring point	mV	
feet NAVD88	Feet NAVD88 Datum	NTU	

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

Date Sampled	Field Parameters: Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Gen-Chem: Total Dissolved Solids (mg/L)	Metals (ug/L): Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
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	-
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	-

Table A-1b: 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	-	140
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	8.92	8.35	0.807	831000	0.935 J
8-Sep-23	19.50	3882.00	2.26	48.50	14.50	8.96	2550 J-	10.4	11.5	3.23	929000	0.929
15-Dec-23	6.90	2395.00	9.94	163.00	3.19	8.49	1240	22.7	14	0.978	429000	3.31

Notes:

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

-	Not analyzed or not available		
	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		
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	mg/L	
feet bmp	Feet below measuring point	mV	
feet NAVD88	Feet NAVD88 Datum	NTU	

Table A-1c: 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	-	140
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	-
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	-

Table A-1c: 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	-	140
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

Notes:

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

*	Sample collected from constructed wetland (alternative sampling location) upstream of weir
-	Not analyzed or not available
Dry	Weir dry; unable to collect field parameters or samples
(orange shading)	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-1d: 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	-	140
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.I	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	-
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	-

Table A-1d: 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	-	140
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

Notes:

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

-	Not analyzed or not available	
	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	mg/L
feet bmp	Feet below measuring point	mV
feet NAVD88	Feet NAVD88 Datum	NTU

APPENDIX A-2

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
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	-
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	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
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

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

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

- Not measured or not available
(orange shading) 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/Alluvial 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	-	140
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	-
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	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
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

Notes:

Top of casing elevation (feet NAVD88): 607.21

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

-	Not measured or not available
	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/Alluvial 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	-	140
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/Alluvial 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	-	140
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

Notes:

Top of casing elevation (feet NAVD88): 689.11

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

-	Not measured or not available
(orange shading)	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/Alluvial 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	-	140
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	-
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	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
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

Notes:

Top of casing elevation (feet NAVD88): 705.45

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

-	Not measured or not available
(orange shading)	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/Alluvial 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	-	140
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+	-
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	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
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

Notes:

Top of casing elevation (feet NAVD88): 611.23

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

-	Not measured or not available
(orange shading)	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/Alluvial 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	-	140
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+	-
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	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
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

Notes:

Top of casing elevation (feet NAVD88): 608.95

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

-	Not measured or not available
(orange shading)	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/Alluvial 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	-	140
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

Notes:

Top of casing elevation (feet NAVD88): 592.69

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

-	Not measured or not available
(orange)	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/Alluvial 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	-	140
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

Notes:

Top of casing elevation (feet NAVD88): 601.49

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

-	Not measured or not available
	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/Alluvial 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	-	140
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

Notes:

Top of casing elevation (feet NAVD88): 697.29

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

- Not measured or not available
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-2j: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-10A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
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

Notes:
Top of casing elevation (feet NAVD88): 698.02
Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
	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/Alluvial Groundwater Sampling Results - Well P-16
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	-	140
15-Oct-21	2.41	700.46	12.30	2622	0.71	-261.2	56.2	12.11	2640 J-	9.16	232	41.1	826000	445
6-Jan-22	2.35	700.52	8.10	2804	1.06	-409.7	1.1	12.75	2420	9.63	109	14.6	809000	292
17-Mar-22	2.73	700.14	8.4	2600	1.16	-421.2	23.5	13.71	2570	8.14	124	10.5	771000	255
22-Jun-22	2.71	700.16	11.6	2757	0.04	-105.8	27.4	12.19	2200	9.62	124	17.1	713000	285
13-Sep-22	4.33	698.54	14.9	2609	1.26	-427.3	31.8	11.63	2160	5.92	103	42.7	756000	431
13-Dec-22	2.86	700.01	8.2	4004	3.49	-393.6	21	11.01	2390	6.52	55.2	12	820000	213
15-Mar-23	2.49	700.38	7.1	4819	0.04	-332.2	52.2	12	2520	9.34	166	11.1	829000	317
26-Jun-23	3.72	699.15	12.5	2388	-0.03	-514.9	49.8	11.68	2130	6.04	80.4	8.79	726000	211
6-Sep-23	4.07	698.8	14	3763	1.38	258.9	30.7	12.14	2250 J-	7.04	119	12.3	697000	258
13-Dec-23	2.68	700.19	9.5	6284	4.08	-804.2	36.4	11.68	3600	0.322 J	81.7	0.675	937000	223

Notes:

Top of casing elevation (feet NAVD88): 702.87

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

-	Not measured or not available
	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-2l: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well P-17
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
15-Oct-21	4.89	715.43	14.00	464	0.98	-97.5	38.1	6.49	444 J-	1 U	16.4	13.1	9700	105
7-Jan-22	3.65	716.67	6.90	389	1.13	-60.4	4.1	6.46	388	1.26	2.81	0.1 U	8030	1.8
18-Mar-22	4.12	716.2	8.4	404.4	1.46	23.7	5.41	7.33	362	1.38	1.34	0.1 U	13300	1.08
22-Jun-22	6.87	713.45	11.7	586	0.26	-57.6	2.87	6.44	398	0.68	6.73	0.2 U	3560	2.99
14-Sep-22	13.31	707.01	14.3	706	1.91	-63.2	2.12	6.1	489	1 U	7.67	0.5 U	3570	2.99
14-Dec-22	5.47	714.85	9.7	469.3	3.17	-85.9	3.75	6.51	377	1	2.69	0.1 U	7820	1.6
16-Mar-23	5.05	715.27	7.6	630	0.22	-42.4	7.01	6.5	293	0.816	3.46	0.1 U	7590	1.54
27-Jun-23	10.06	710.26	11.4	578	0.32	-59.6	8.02	6.35	377	0.658	4.51	0.5 U	6140	2.29
7-Sep-23	13.26	707.06	Insufficient depth of water to sample											
13-Dec-23	4.28	716.04	9.7	711	3.78	-60.2	9.25	6.13	337	1.17	3.02	0.103 U	11700	1.32

Notes:

Top of casing elevation (feet NAVD88): 720.32

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

-	Not measured or not available
(orange shading)	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

APPENDIX A-3

Summary of Lower Disposal Area – Bedrock Groundwater Sampling Results

Table A-3A Well MWB-1LDA
Table A-3B Well MWB-2LDA
Table A-3C Well MWB-3LDA

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	35.46	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]			
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

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	-
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			

Note:

Top of casing elevation (feet NAVD88): 704.68

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

1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
-	Not available
	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]			
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

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	-
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]			

Note:

Top of casing elevation (feet NAVD88): 741.66

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

1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
-	Not available
	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
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]			

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	-
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]			

Note:

Top of casing elevation (feet NAVD88): 744.19

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

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

APPENDIX A-4

Summary of Dale Strip Pit – Bedrock Groundwater Sampling Results

Table A-4A Well MWB-1SDSP
Table A-4B Well MWB-1DDSP
Table A-4C Well MWB-5DSP
Table A-4D Well MWB-6DSP
Table A-4E Portal
Table A-4F Well MWB-2DSP
Table A-4G Well MWB-4SDSP

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]									
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]			

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	-
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]			

Notes:

Top of casing elevation (feet NAVD88): 936.29

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

-	Not measured or not available
(orange shading)	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]									
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]			

**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	-
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]			

Notes:

Top of casing elevation (feet NAVD88): 935.37

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

-	Not measured or not available
	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
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]			

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	-
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]			

Notes:

Top of casing elevation (feet NAVD88): 935.05

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

-	Not measured or not available
(orange shading)	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-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]			
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

**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	-
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]			

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/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

-	Not measured or not available
(orange shading)	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
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
mg/L	Milligrams per liter
mV	Millivolts
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]											
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

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	-
-	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]			

Notes:

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

-	Not measured or not available
(orange shading)	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
feet bmp	Feet below measuring point
feet NAVD88	Feet NAVD88 Datum
mg/L	Milligrams per liter
mV	Millivolts
NTU	Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (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]						-	-	-	-
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]						-	-	-	-

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	-
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]						-	-	-	-

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

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

1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
-	Not measured or not available
	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]						-	-	-	-

Notes:

Top of casing elevation (feet NAVD88) prior to DSP Cover Upgrade: 939.42

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

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

1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016, extended October 10, 2019. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
-	Not measured or not available
	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 A-5

Summary of Lower Disposal Area – Disposal Area Groundwater Sampling Results

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
11-Dec-20	32.53	740.79	11.6	18697	0.12	-61.2	17.9	13.30	6560	-	263	19.6	2540000	-
3-Mar-21	29.44	743.88	12.0	12836	0.05	-87.0	1.54	13.09	4060	-	84.1	9.64	1490000	-
10-Jun-21	33.57	739.75	12.9	18706	0.67	-175.2	1.88	13.06	6400	-	242	3.44	2460000	-
13-Oct-21	33.57	739.75	12.7	23225	0.77	-139.7	0.75	13.18	7240 J-	131	292	2.47	2560000	24.2
7-Jan-22	27.73	745.59	11.9	9778	0.96	-112.9	1.86	13.30	4850	51.8	76.3	9.19	1480000	6.77
21-Mar-22	27.5	745.82	12.5	11725	1.27	-25.3	2.18	14.52	4110	46.1	74.8	41.3	1430000	6.68
23-Jun-22	28.65	744.67	13.5	18219	0.05	-88.6	2.04	12.93	6160	130	238	6.56	2250000	21.9
14-Sep-22	34.22	739.1	13.2	17395	1.72	-127.9	1.7	13.21	6510	130	235	6.3	2570000	20.5
14-Dec-22	32.59	740.73	12.1	19267	3.3	-448.9	0.88	13.06	6730	130	255	11.1	2710000	23
14-Mar-23	30.30	743.02	12.4	24035	0.08	-187.5	0.31	13.12	6280	134	232	2.22	2390000	20.5
27-Jun-23	33.06	740.26	13.5	18550	0.05	-591.7	1.19	13.07	6300	139	242	2.9	2200000	21.4
7-Sep-23	35.51	737.81	12.6	23287	0.73	-177.6	1.37	13.14	6020 J-	127	229	6.81	2360000	18.7
14-Dec-23	28.05	745.27	12	27153	3.49	-407.7	0.64	13.1	6190	116	216	6.93	2220000	17.2

Notes:

Top of casing elevation (feet NAVD88): 773.32

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

-	Not measured or not available
(orange shading)	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-5b: Summary of Lower Disposal Area - Disposal Area Groundwater Sampling Results - Well P-15
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (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	-	140
15-Oct-21	30.03	726.52	13.00	15815	1.72	-147.5	5.08	13.17	7180 J-	2 U	6.57	94	2390000	3.65
7-Jan-22	15.32	741.23	10.20	7227	1.03	-116.3	1.84	13.28	3420	5.17	6.34	101	884000	0.515 J
17-Mar-22	14.44	742.11	11.8	9351	1.11	-70	1.88	14.60	3060	3.08	5.63	109	970000	0.406
22-Jun-22	18.39	738.16	13	10563	0.14	-71	2.19	12.95	3300	2.22	5.37	100	924000	1.14
14-Sep-22	28.82	727.73	13.8	14297	6.41	-17.7	4.71	12.99	5340	4 U	3.68 J	269	1790000	0.624
14-Dec-22	21.29	735.26	11	10770	2.85	-322.9	2.33	13.05	3460	1.72	5.07	173	1070000	1.19
14-Mar-23	21.53	735.02	11.5	14124	0.15	70.5	0.41	12.98	3360	2.47	5.82	93.8	945000	0.288 J
27-Jun-23	24.90	731.65	14.4	13549	0.56	-360.4	0.89	12.87	4290	1.15	5.77	119	1450000	0.635 J
7-Sep-23	29.41	727.14	12.6	19870	7.79	-94.6	6.49	13.13	4970 J-	2.37	5.35	274	1720000	0.72 J
14-Dec-23	15.43	741.12	11.5	15982	3.43	-370.7	1.92	12.99	3600	3.68	6.7	111	1010000	0.48 J

Notes:

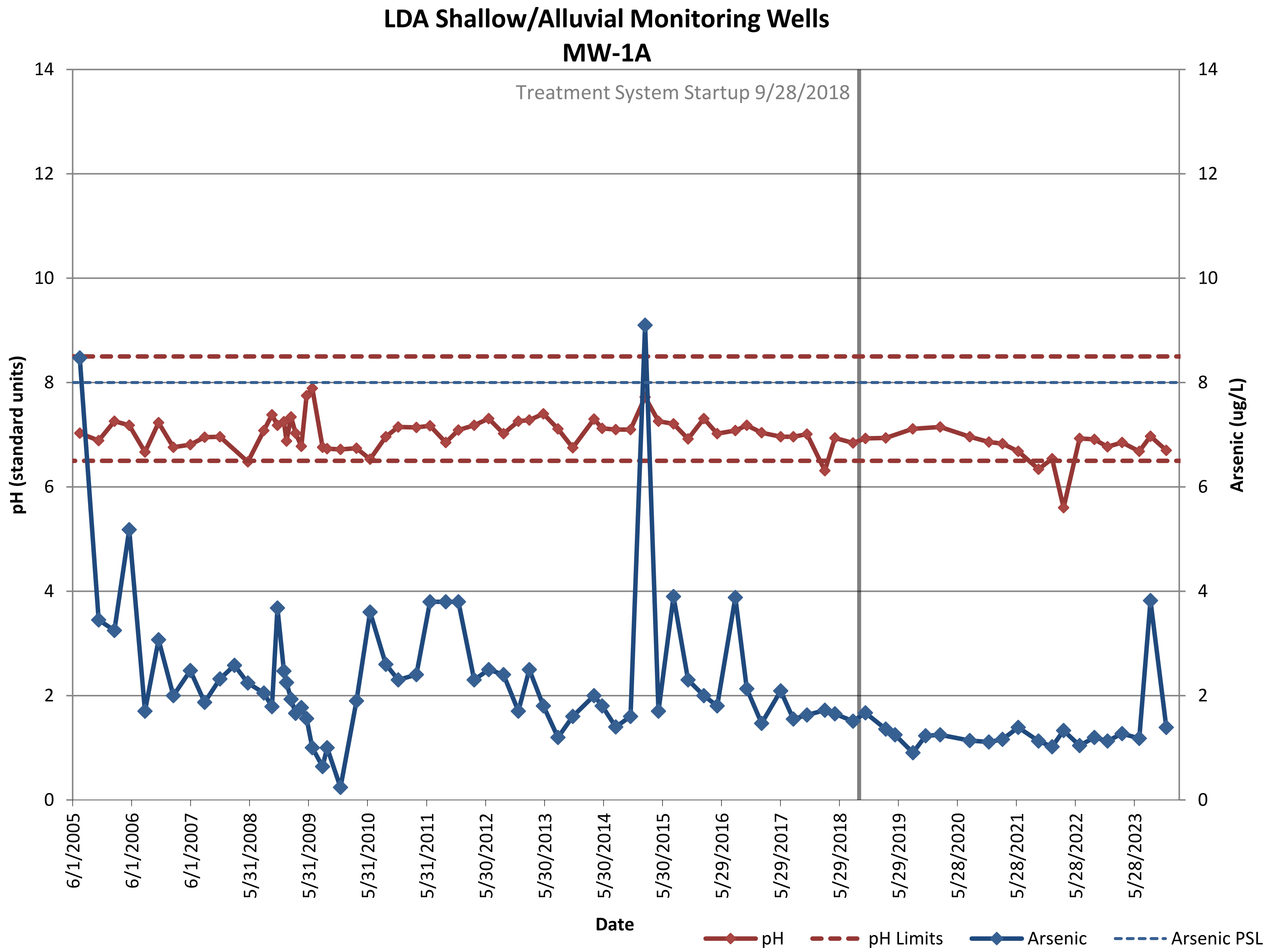
Top of casing elevation (feet NAVD88): 756.55

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

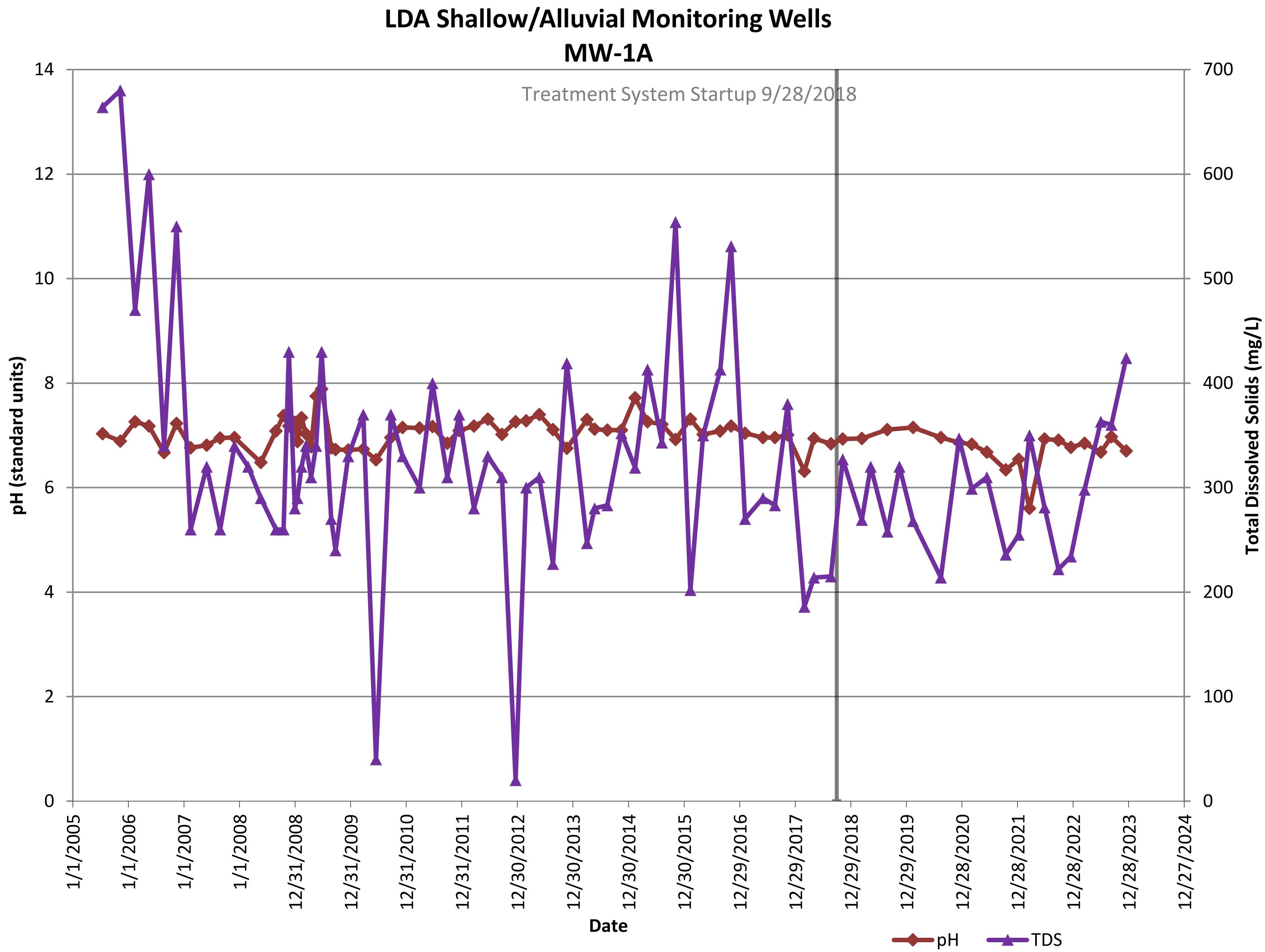
-	Not measured or not available
(orange shading)	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
U	Data validation code; not detected 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

APPENDIX B

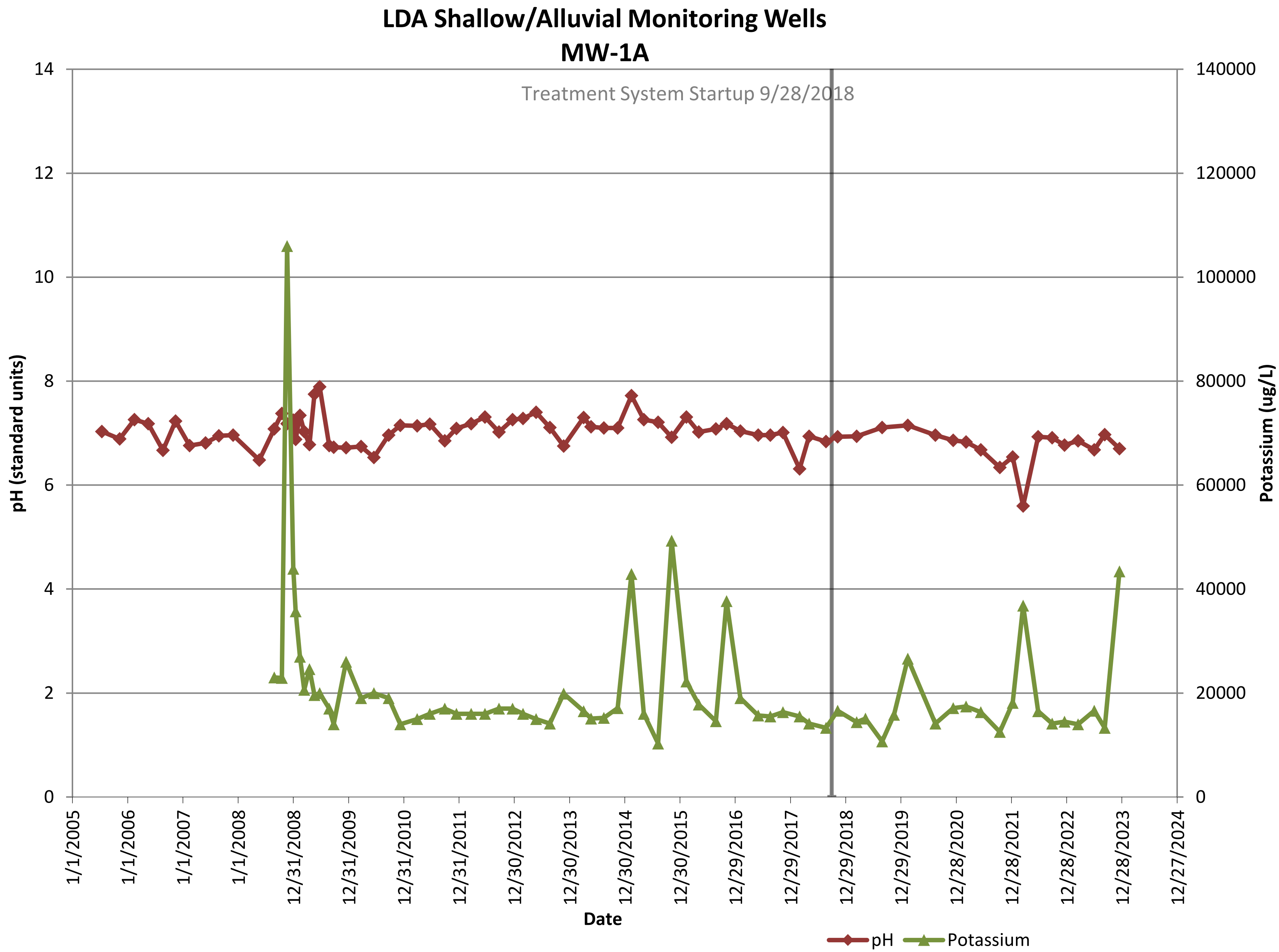
LDA Shallow/Alluvial Monitoring Wells Data Graphs



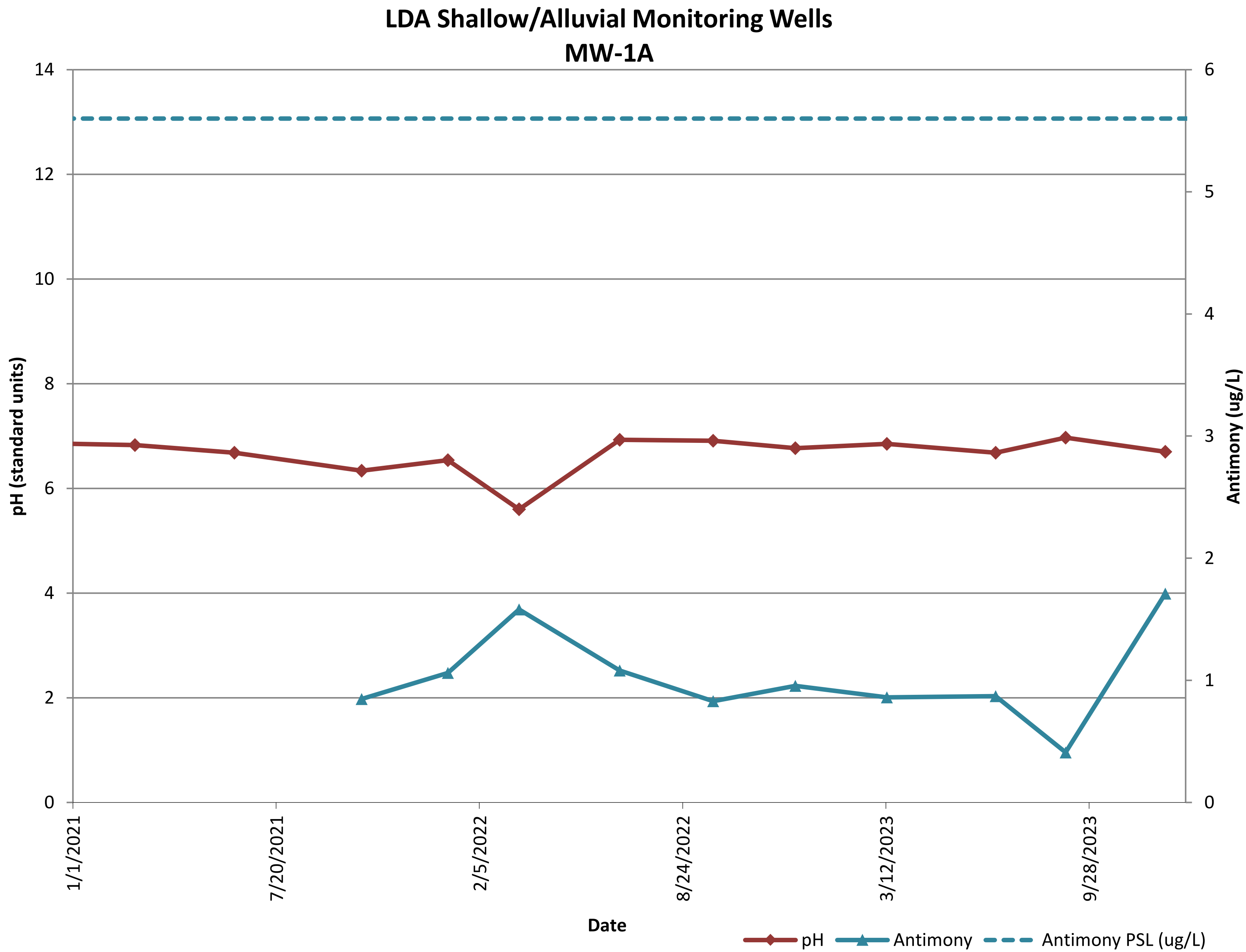
LDA Shallow/Alluvial Monitoring Wells
MW-1A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
0
2
4
6
8
10
12
14
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022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

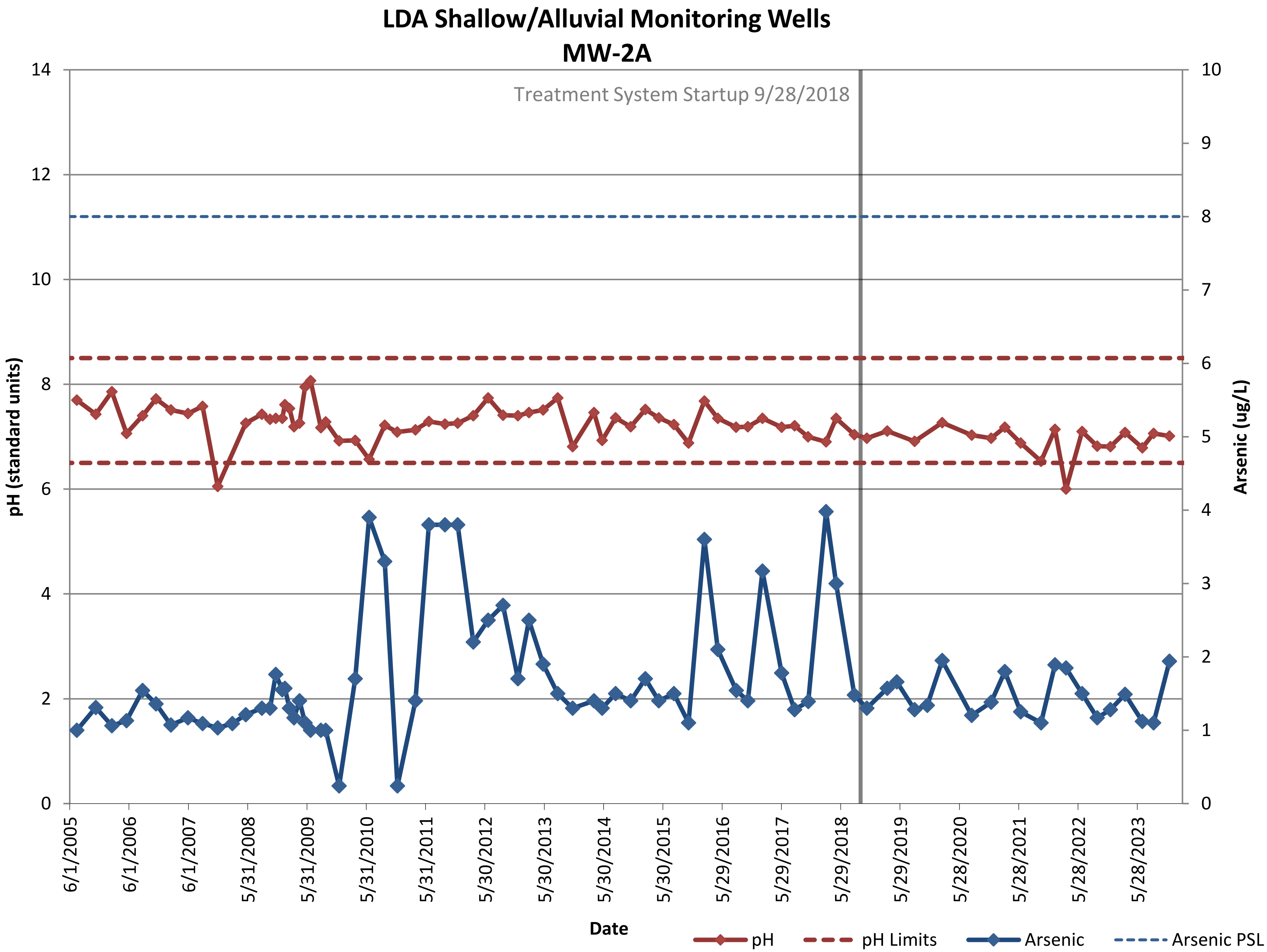


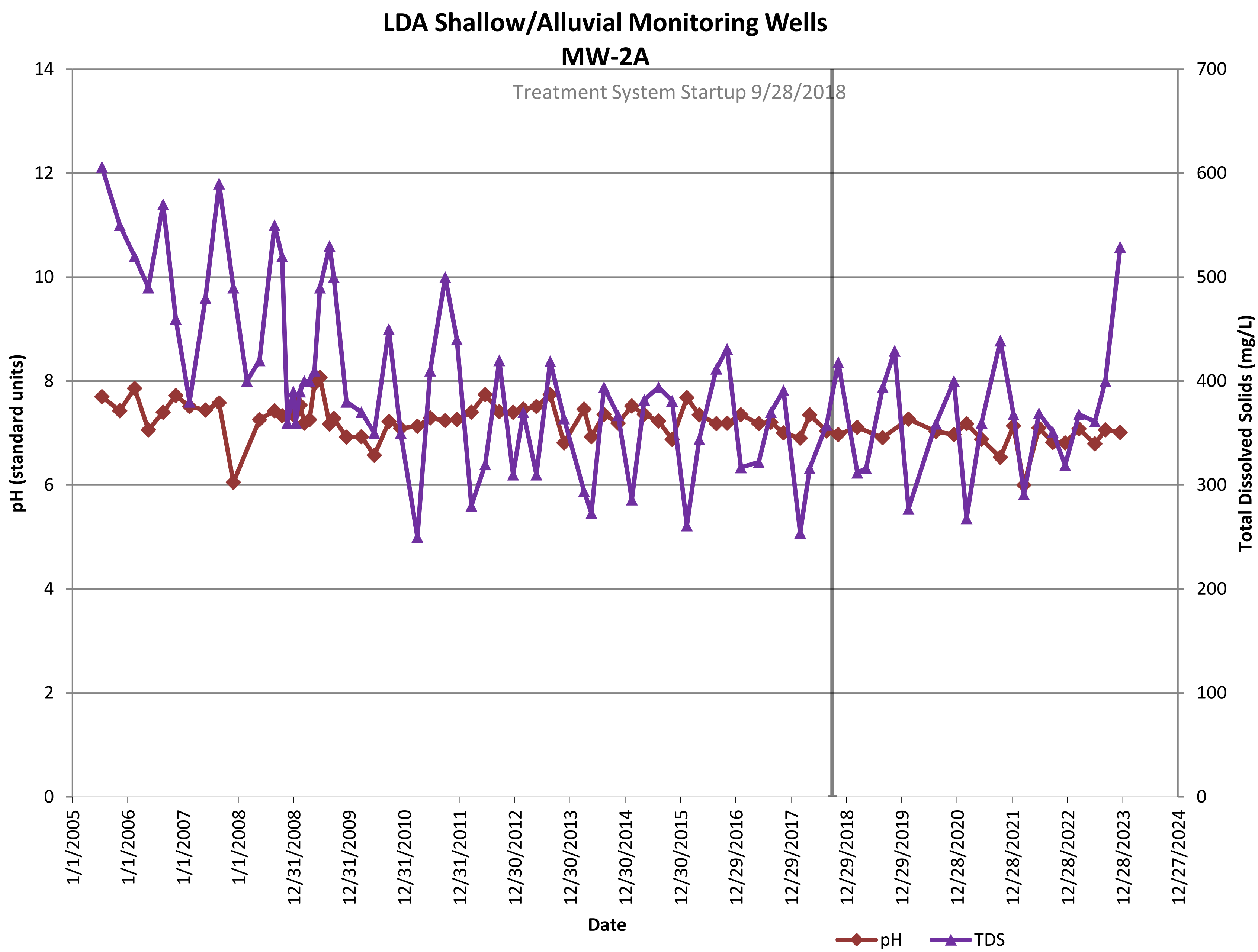
LDA Shallow/Alluvial Monitoring Wells
MW-1A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
0
2
4
6
8
10
12
14
0
100
200
300
400
500
600
700
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015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



LDA Shallow/Alluvial Monitoring Wells
MW-1A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
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
Date
pH
Potassium


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


LDA Shallow/Alluvial Monitoring Wells
MW-2A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
0
2
4
6
8
10
12
14
0
1
2
3
4
5
6
7
8
9
10
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
Date
pH
pH Limits
Arsenic
Arsenic PSL



LDA Shallow/Alluvial Monitoring Wells
MW-2A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
14
12
10
8
6
4
2
0
700
600
500
400
300
200
100
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
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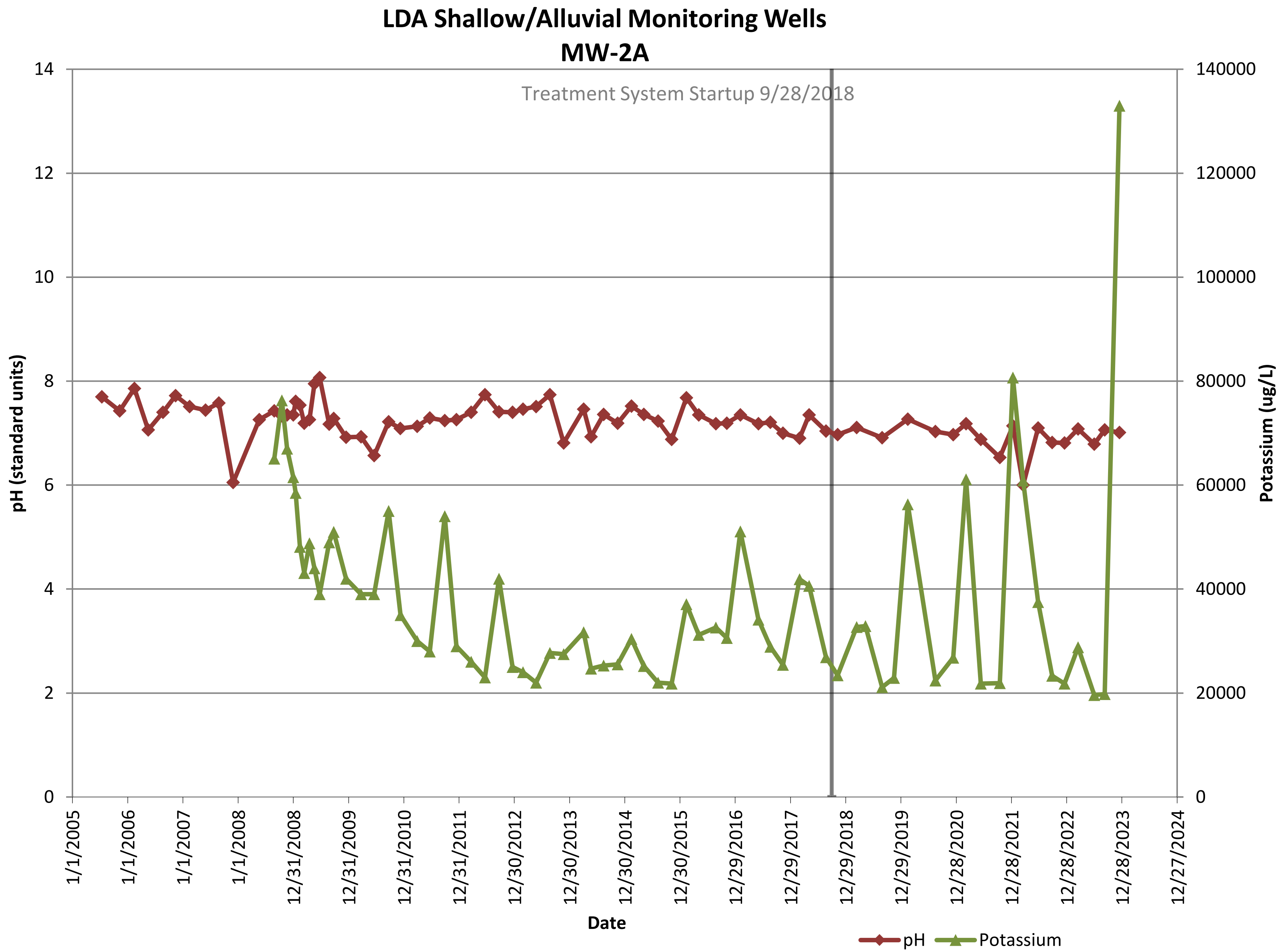
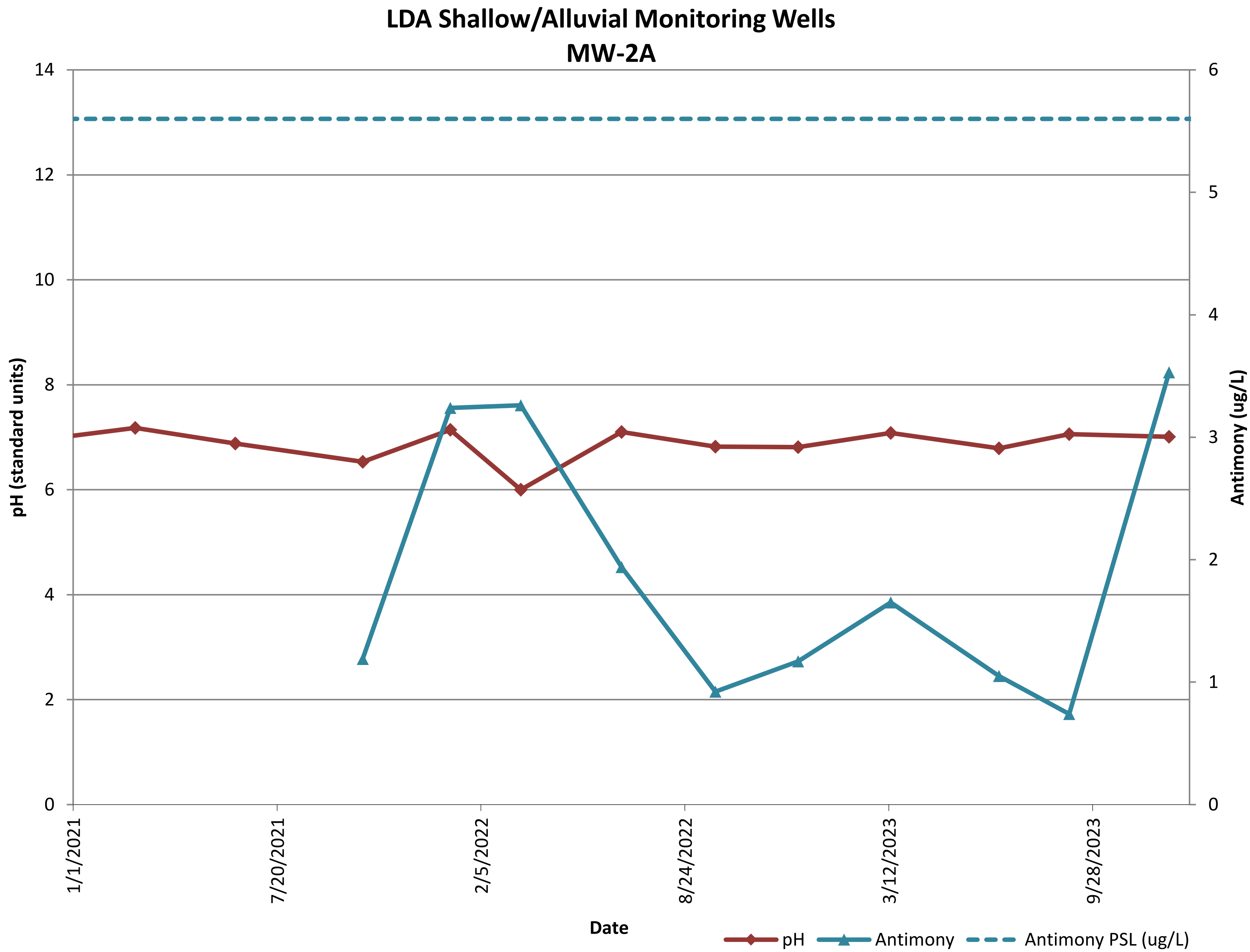
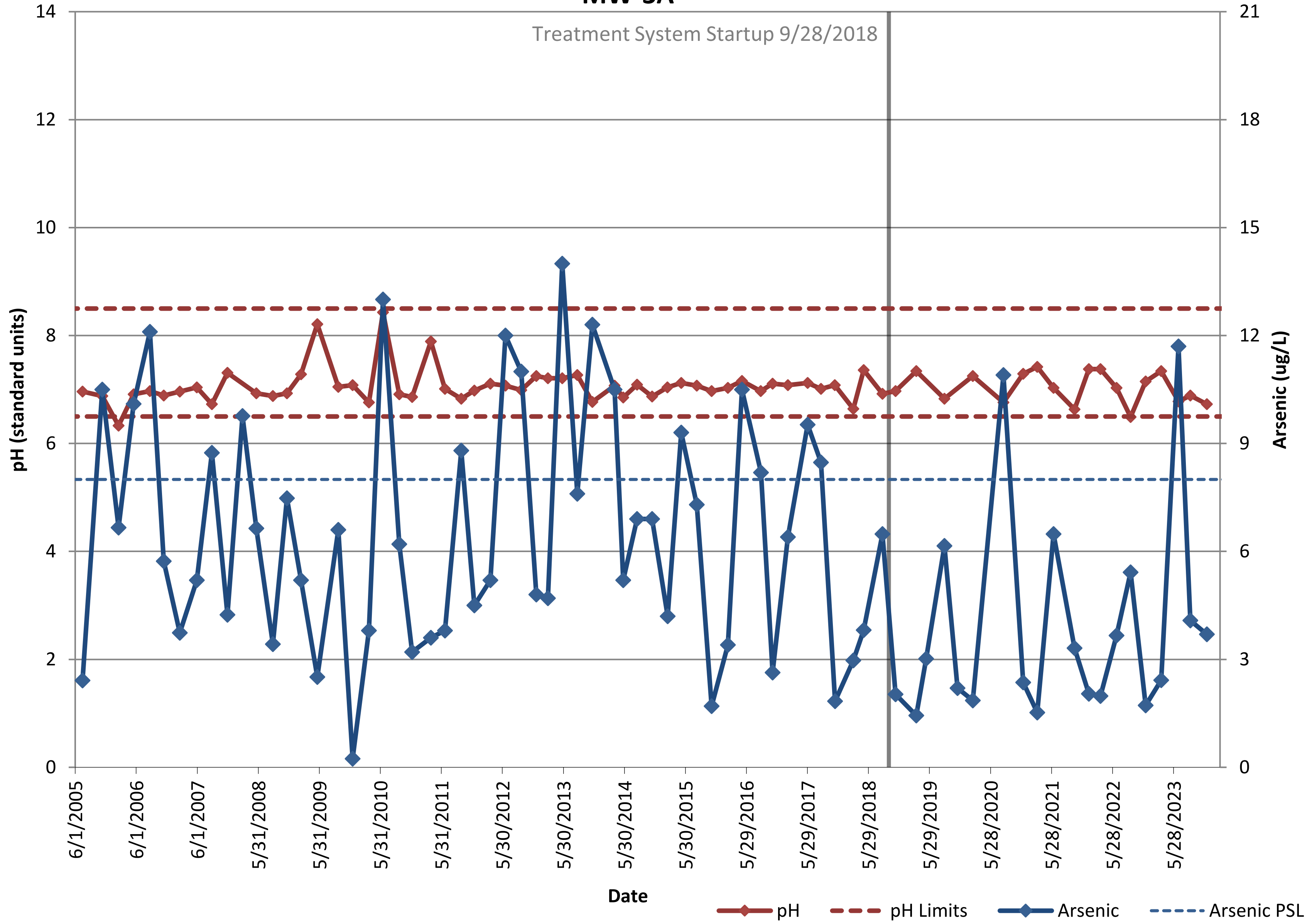
12/28/2022
12/28/2023
12/27/2024
Date
pH
TDS



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

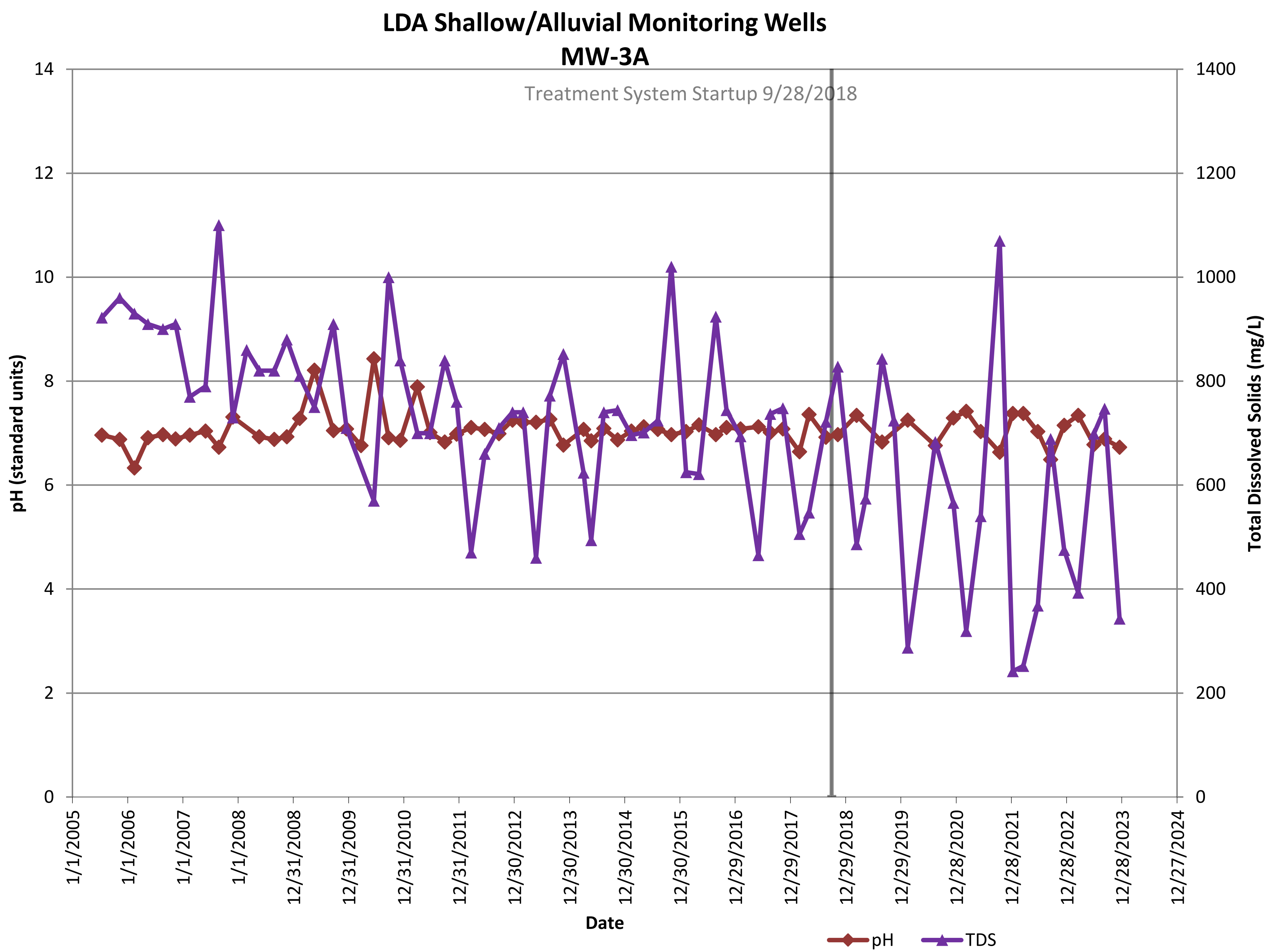

LDA Shallow/Alluvial Monitoring Wells
MW-2A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
1/1/2021
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
Date
pH
Antimony
Antimony PSL (ug/L)

LDA Shallow/Alluvial Monitoring Wells
MW-3A



1520304_LDA Infiltration GW Graphs - 2023 Q4_022924.xlsm

152030420



LDA Shallow/Alluvial Monitoring Wells
MW-3A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
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
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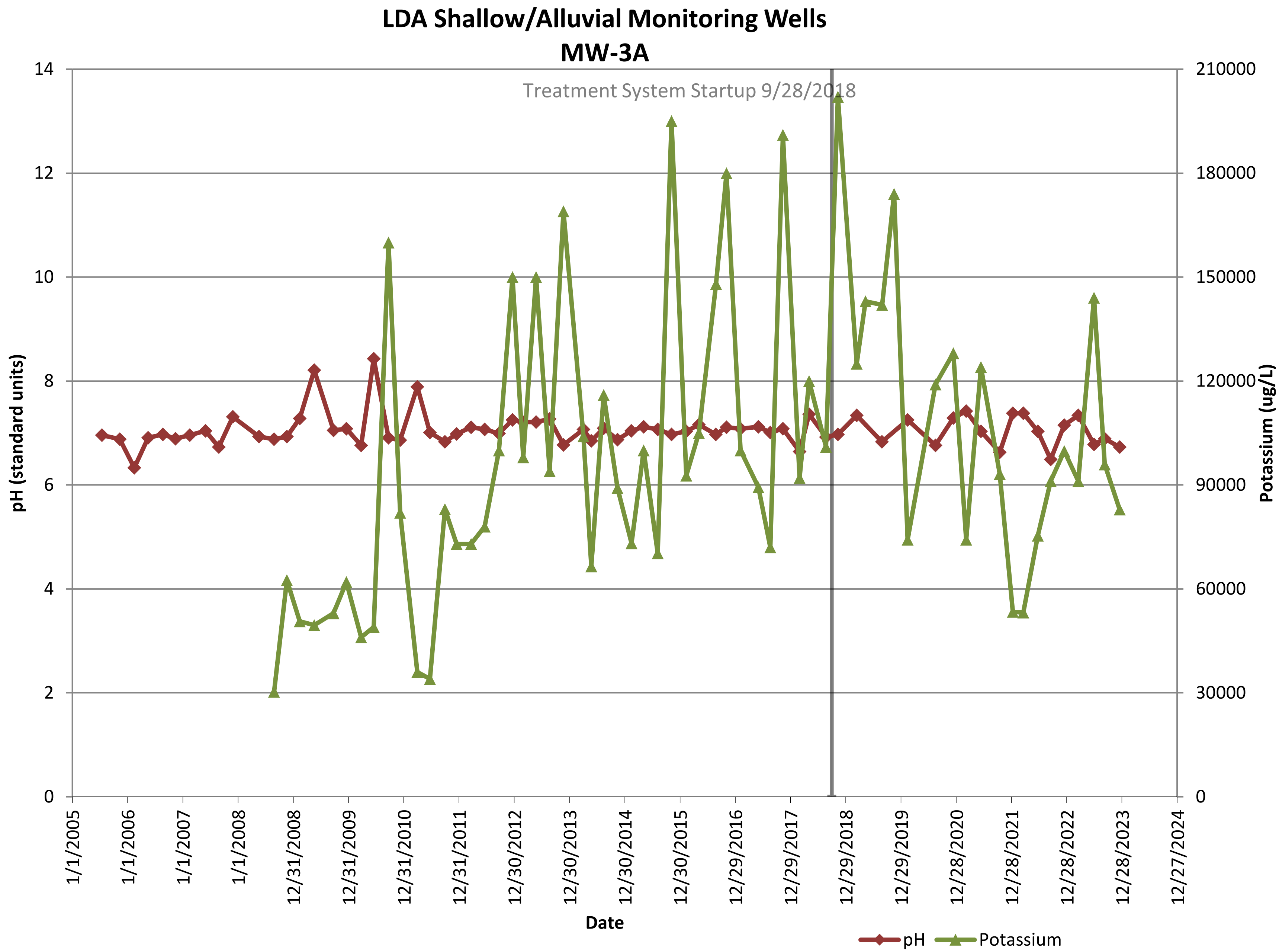
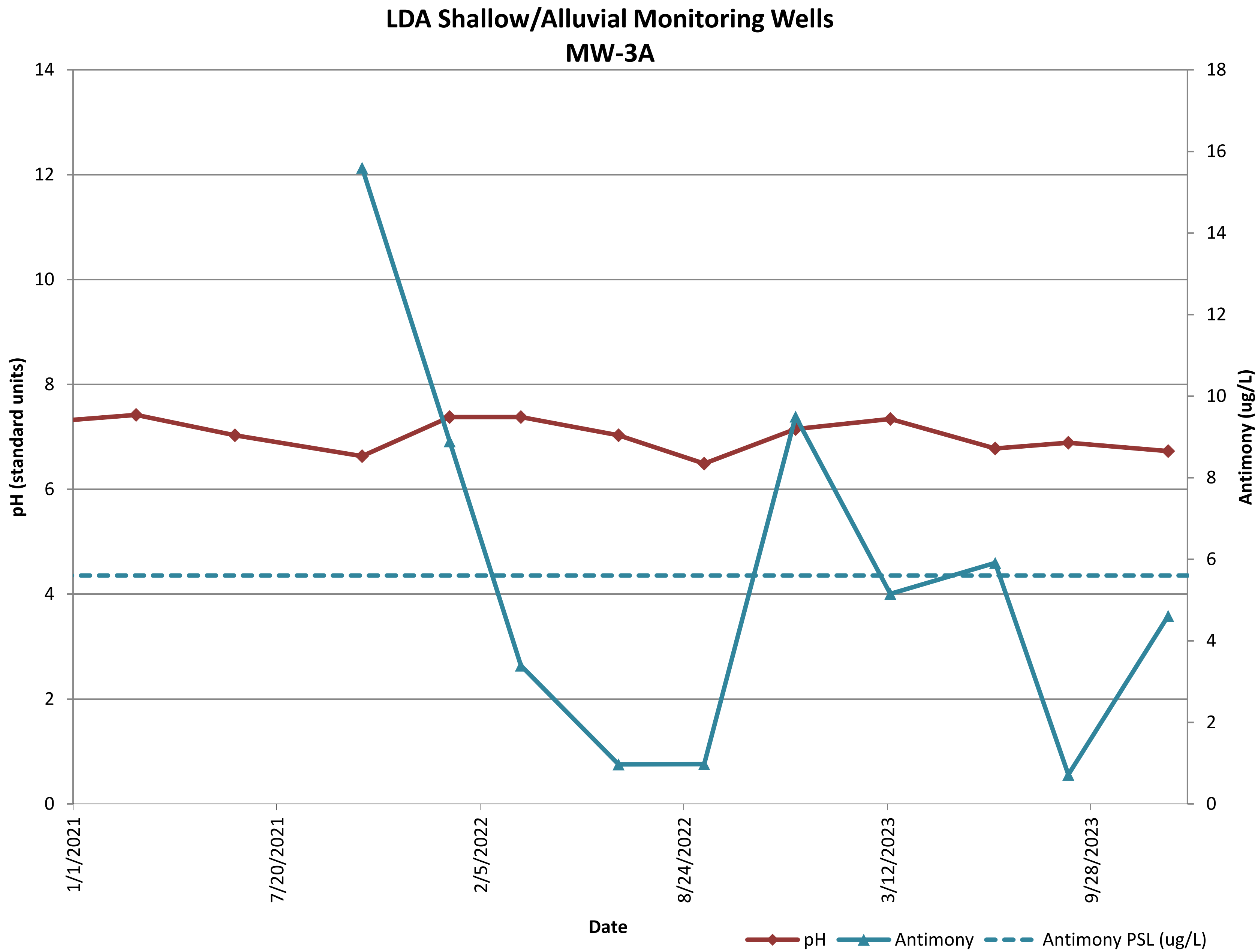
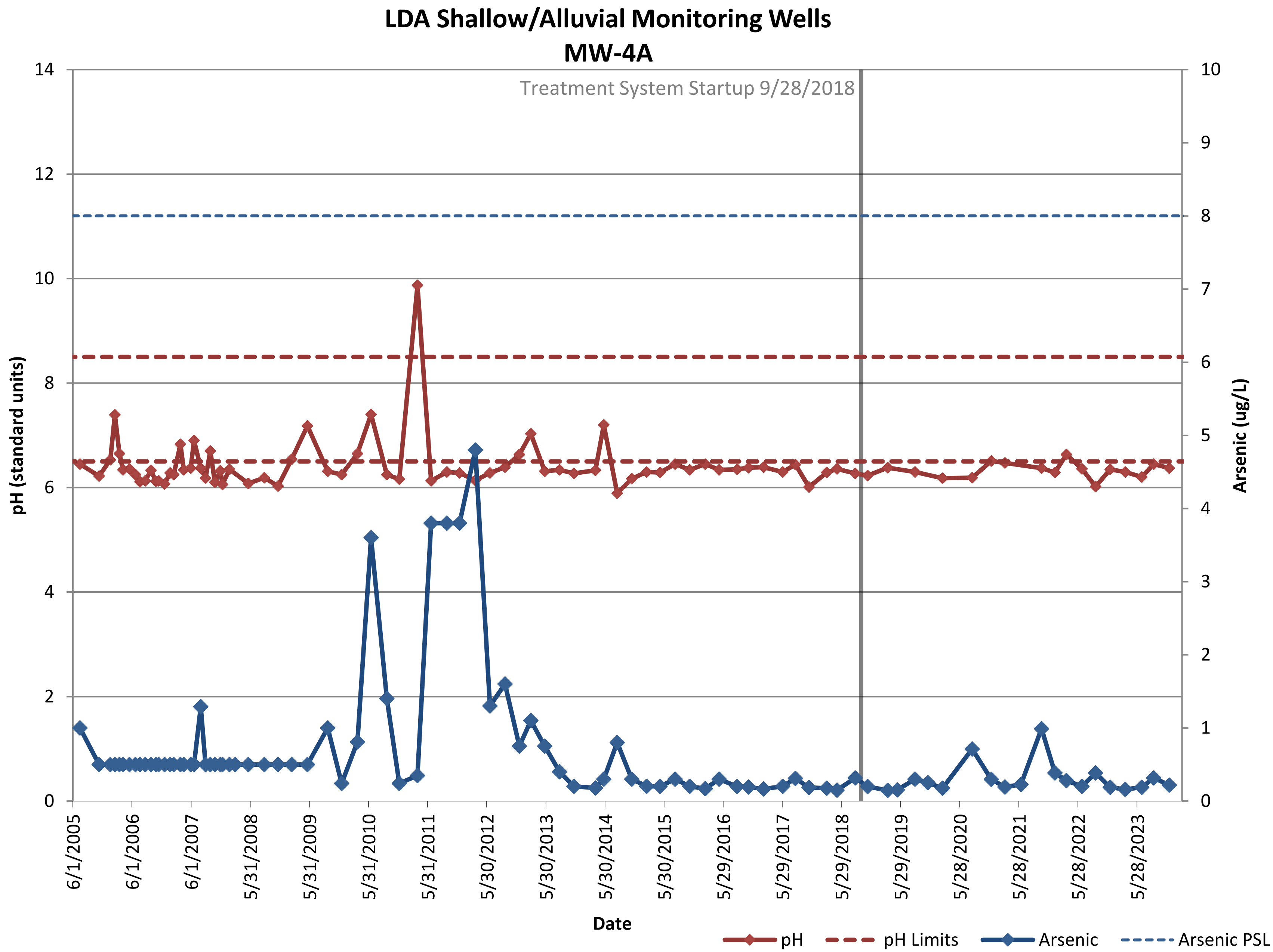
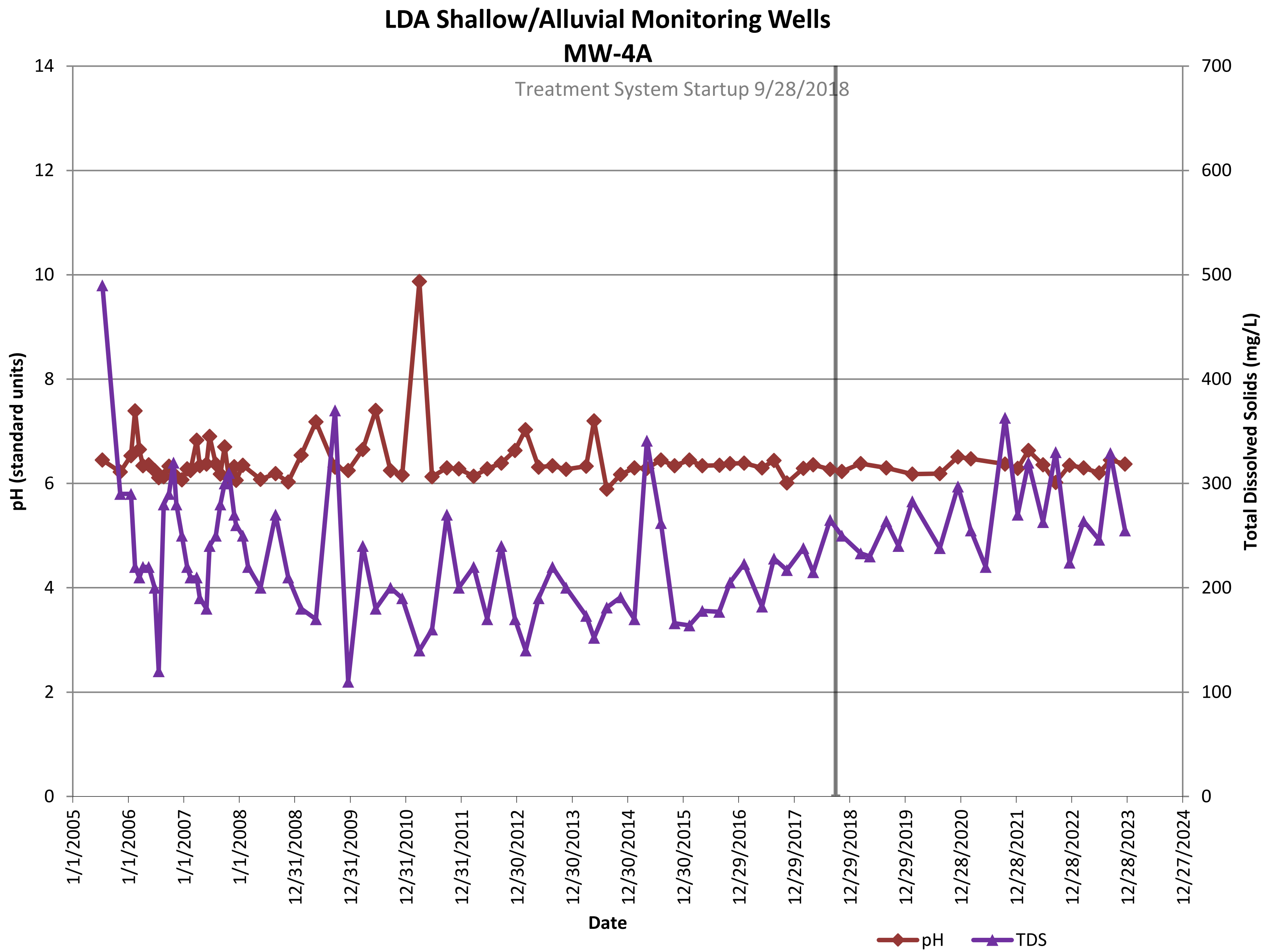
12/28/2020
12/28/2021
12/28/2022
12/28/2023
12/27/2024
pH
TDS

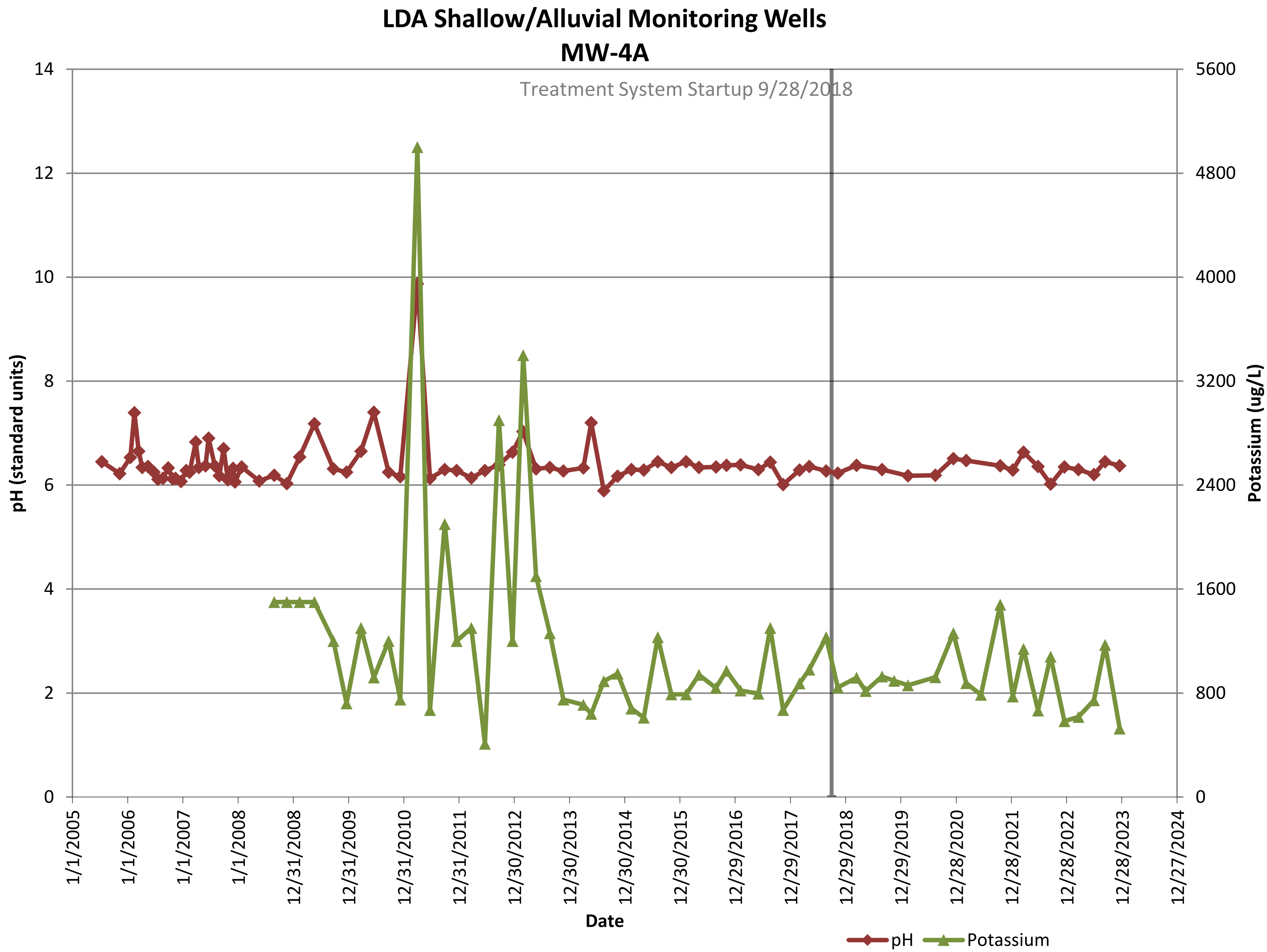

LDA Shallow/Alluvial Monitoring Wells
MW-3A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
14
12
10
8
6
4
2
0
210000
180000
150000
120000
90000
60000
30000
0
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015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

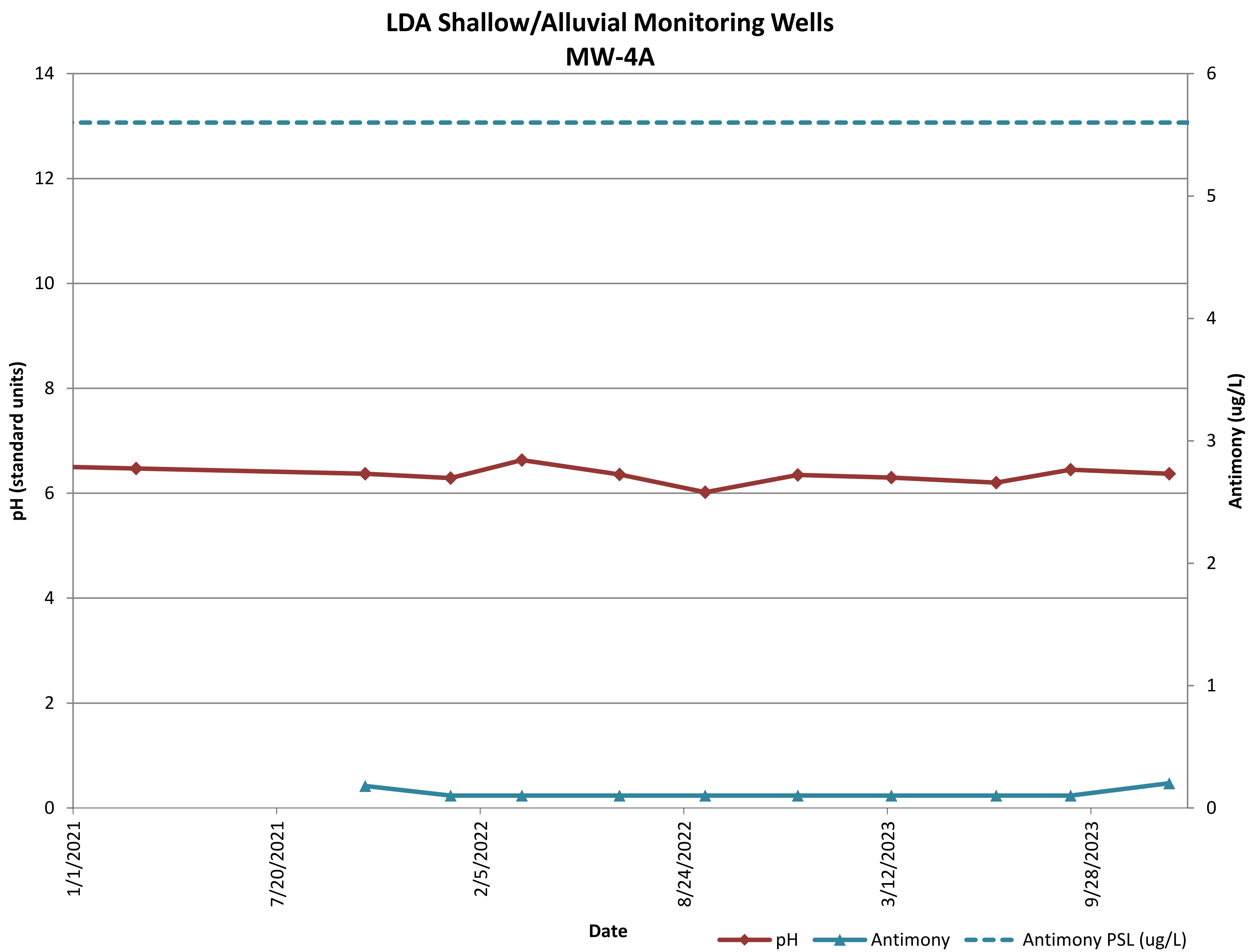

LDA Shallow/Alluvial Monitoring Wells
MW-3A
pH (standard units)
Antimony (ug/L)
0
2
4
6
8
10
12
14
16
18
1/1/2021
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
Date
pH
Antimony
Antimony PSL (ug/L)


LDA Shallow/Alluvial Monitoring Wells
MW-4A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
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
Date
pH
pH Limits
Arsenic
Arsenic PSL

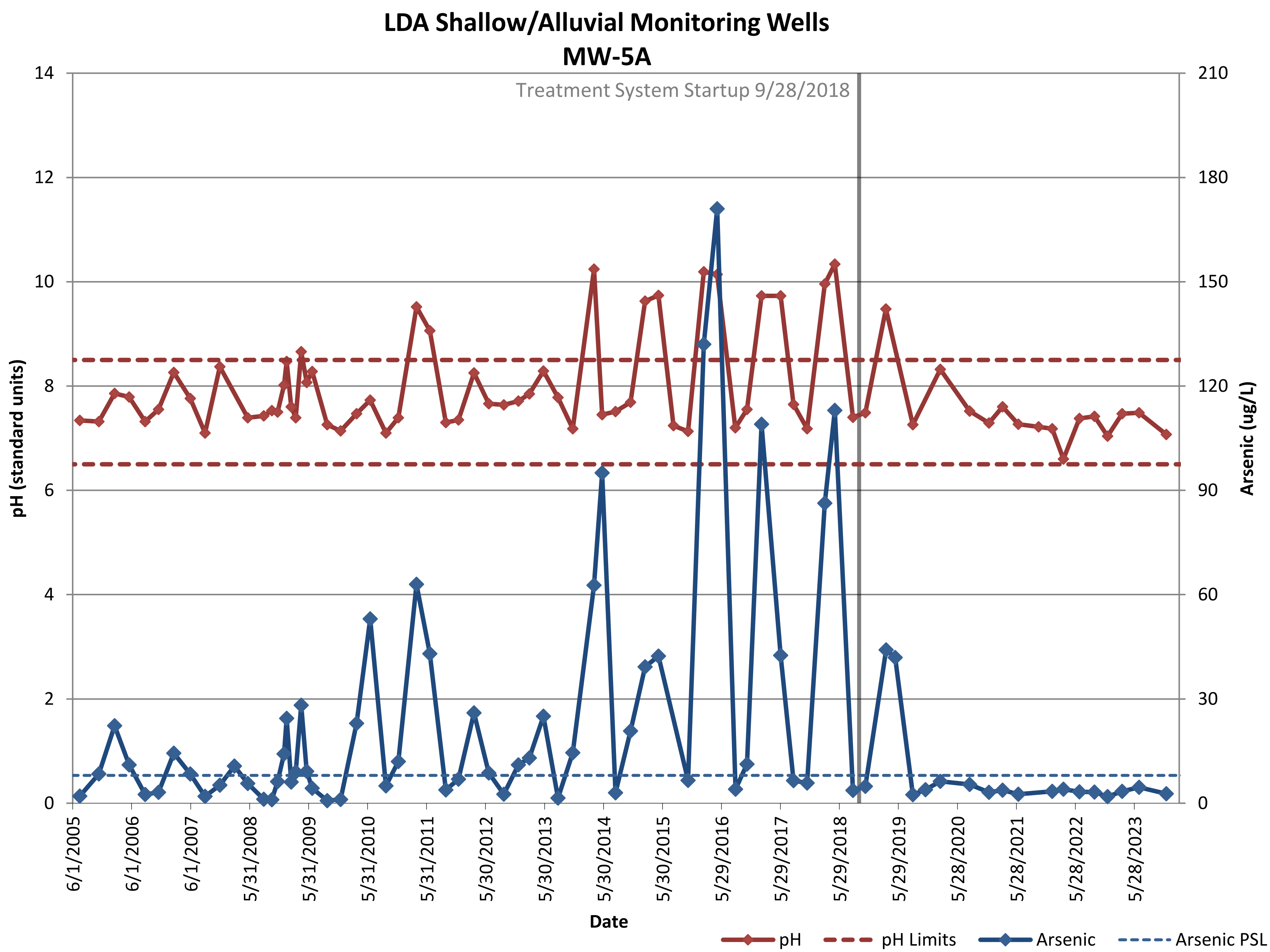


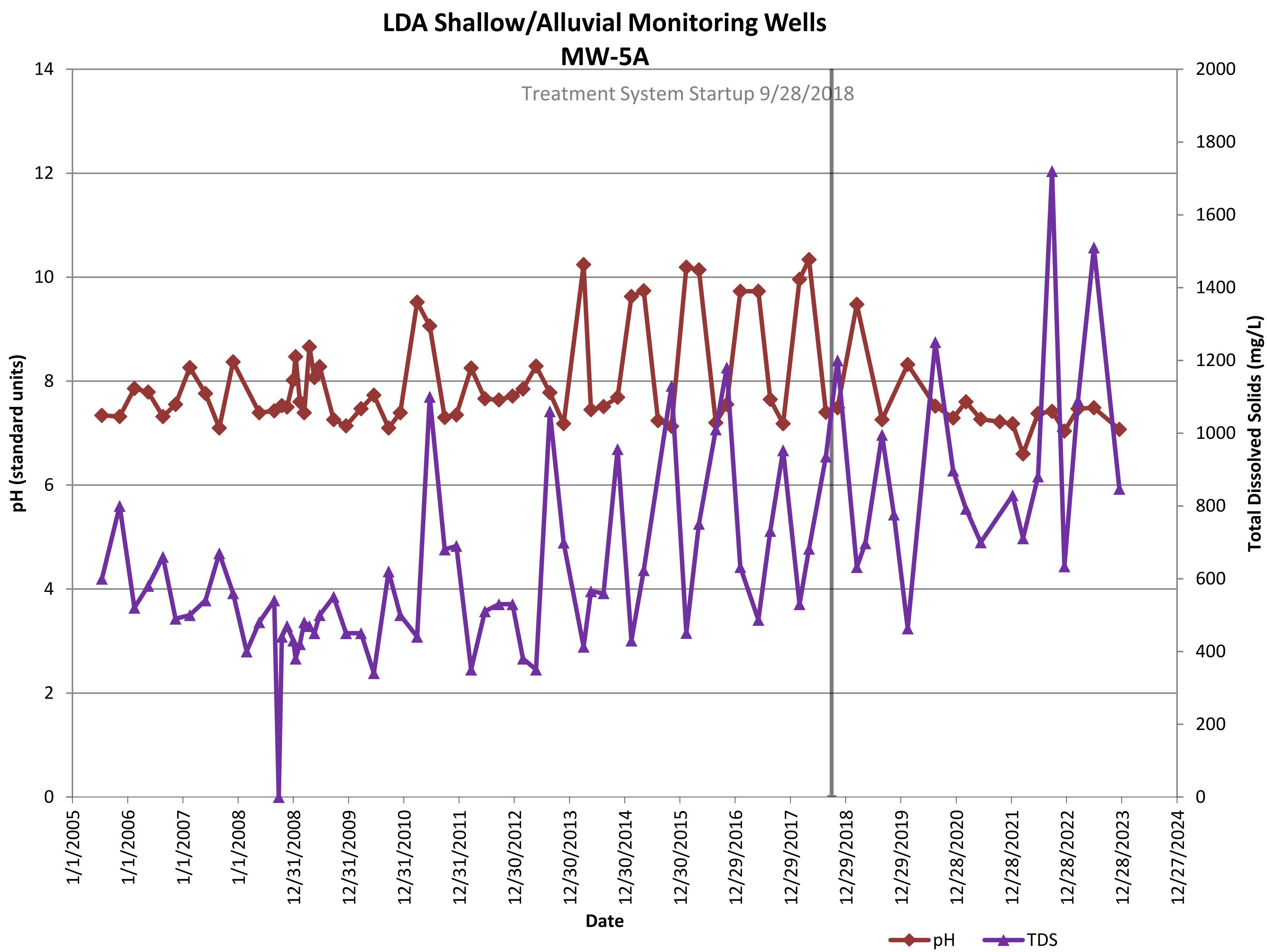
LDA Shallow/Alluvial Monitoring Wells
MW-4A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
14
12
10
8
6
4
2
0
700
600
500
400
300
200
100
0
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015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


LDA Shallow/Alluvial Monitoring Wells
MW-4A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
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
Date
pH
Potassium

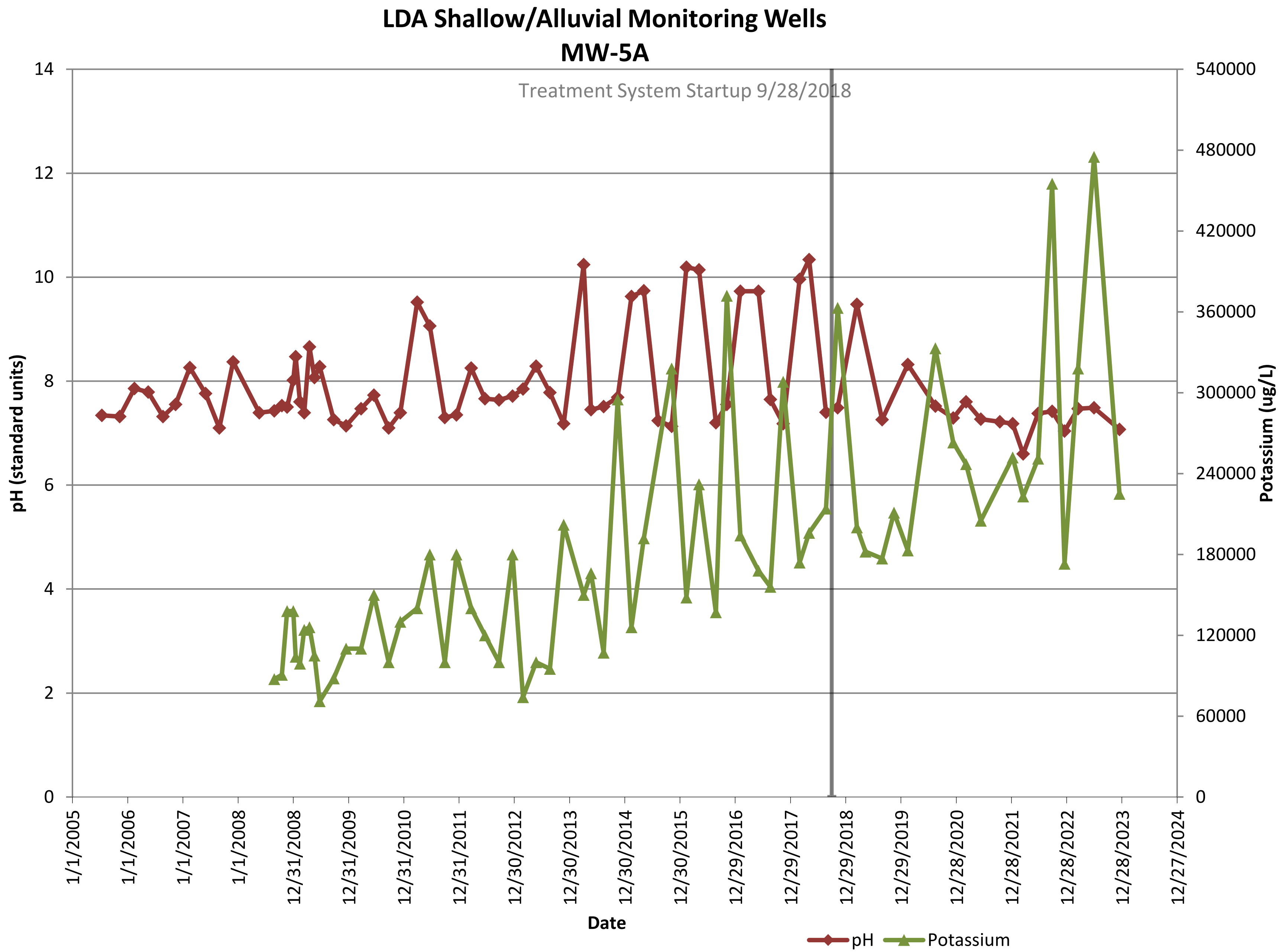


LDA Shallow/Alluvial Monitoring Wells
MW-4A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
1/1/2021
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
Date
pH
Antimony
Antimony PSL (ug/L)

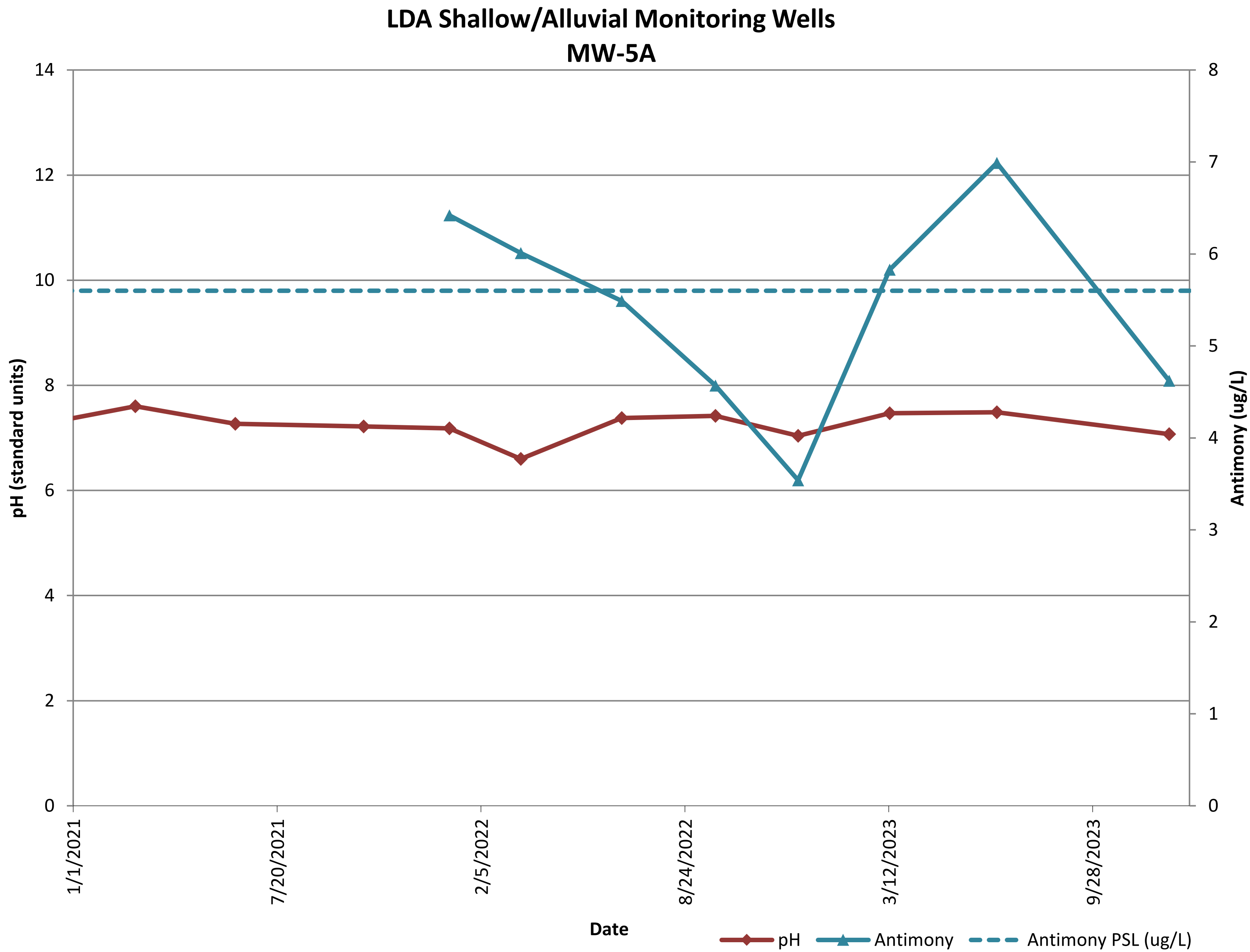

LDA Shallow/Alluvial Monitoring Wells
MW-5A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
210
180
150
120
90
60
30
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019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

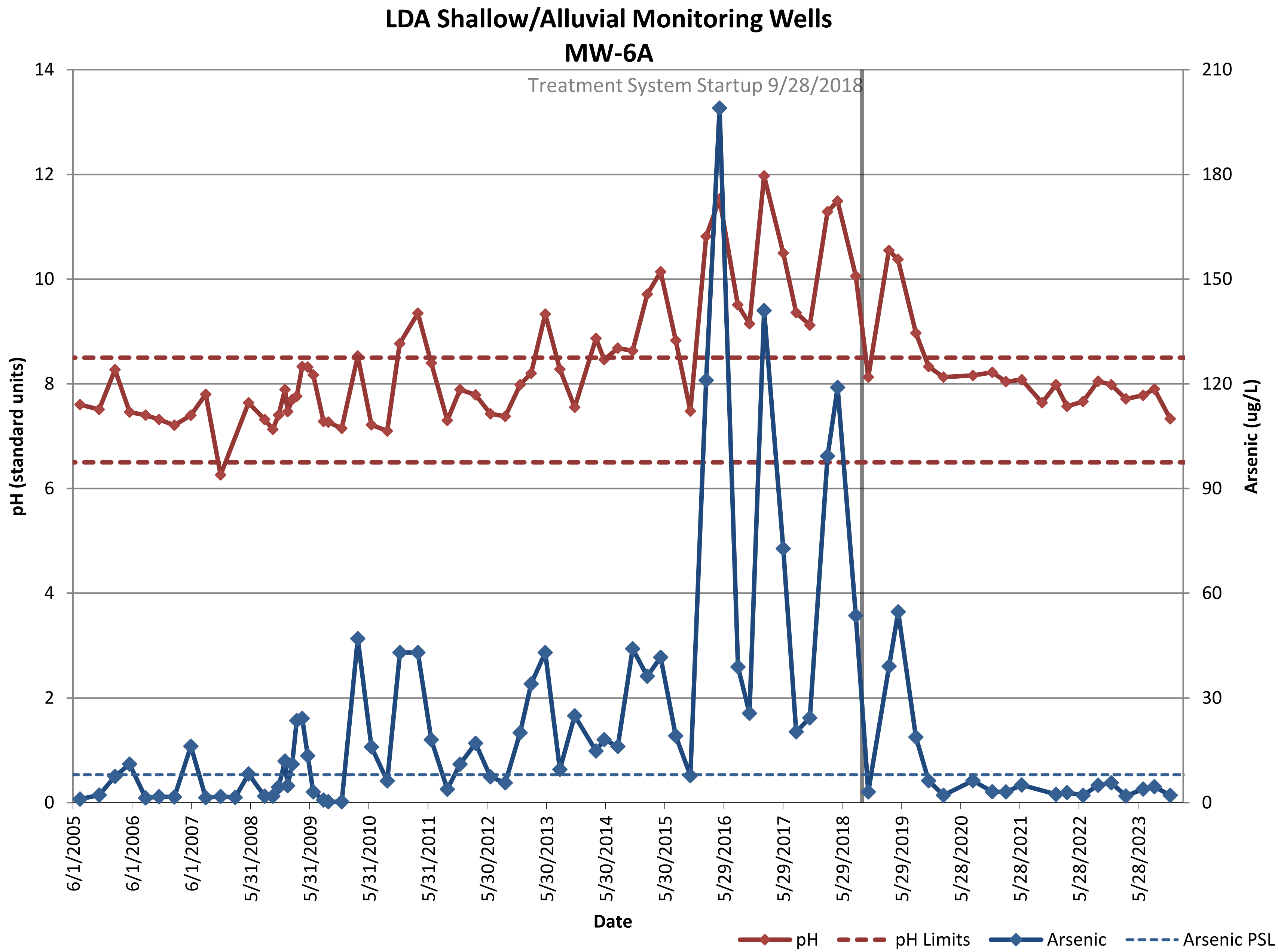


LDA Shallow/Alluvial Monitoring Wells
MW-5A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
14
12
10
8
6
4
2
0
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014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

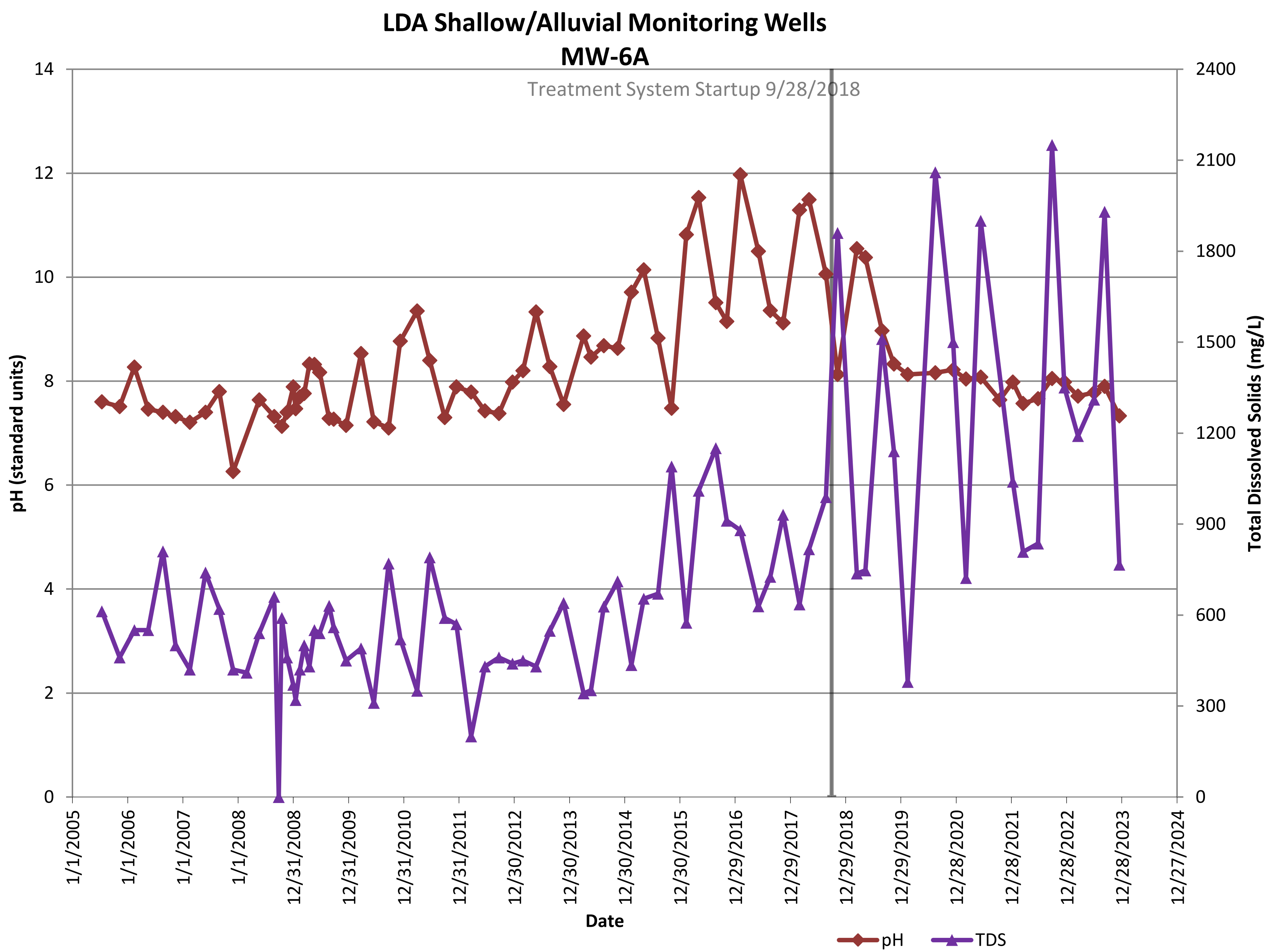


LDA Shallow/Alluvial Monitoring Wells
MW-5A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
14
12
10
8
6
4
2
0
540000
480000
420000
360000
300000
240000
180000
120000
60000
0
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
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
pH
Potassium

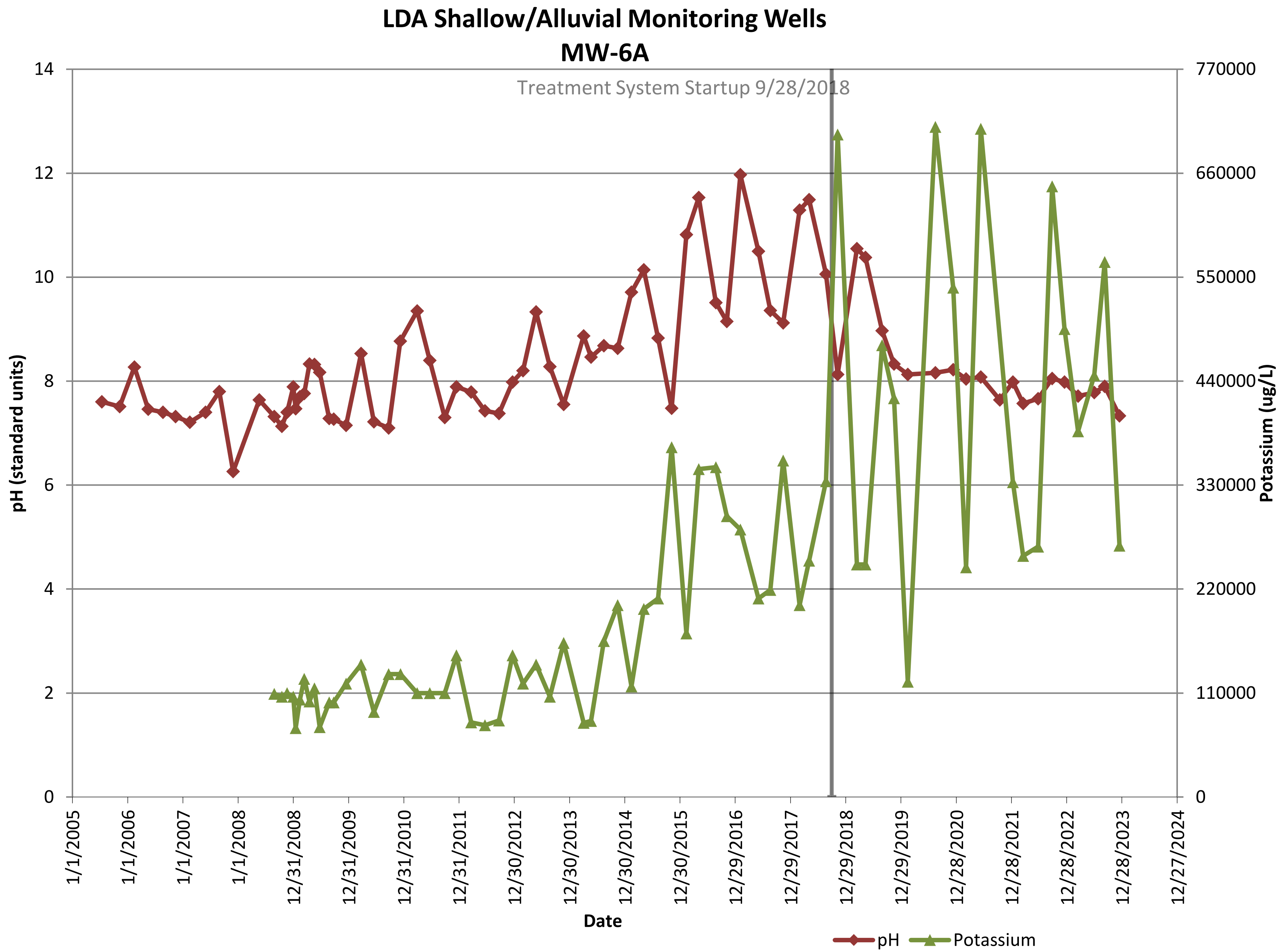

LDA Shallow/Alluvial Monitoring Wells
MW-5A
pH (standard units)
Antimony (ug/L)
Date
14
12
10
8
6
4
2
0
7
5
3
1
1/1/2021
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
pH
Antimony
Antimony PSL (ug/L)



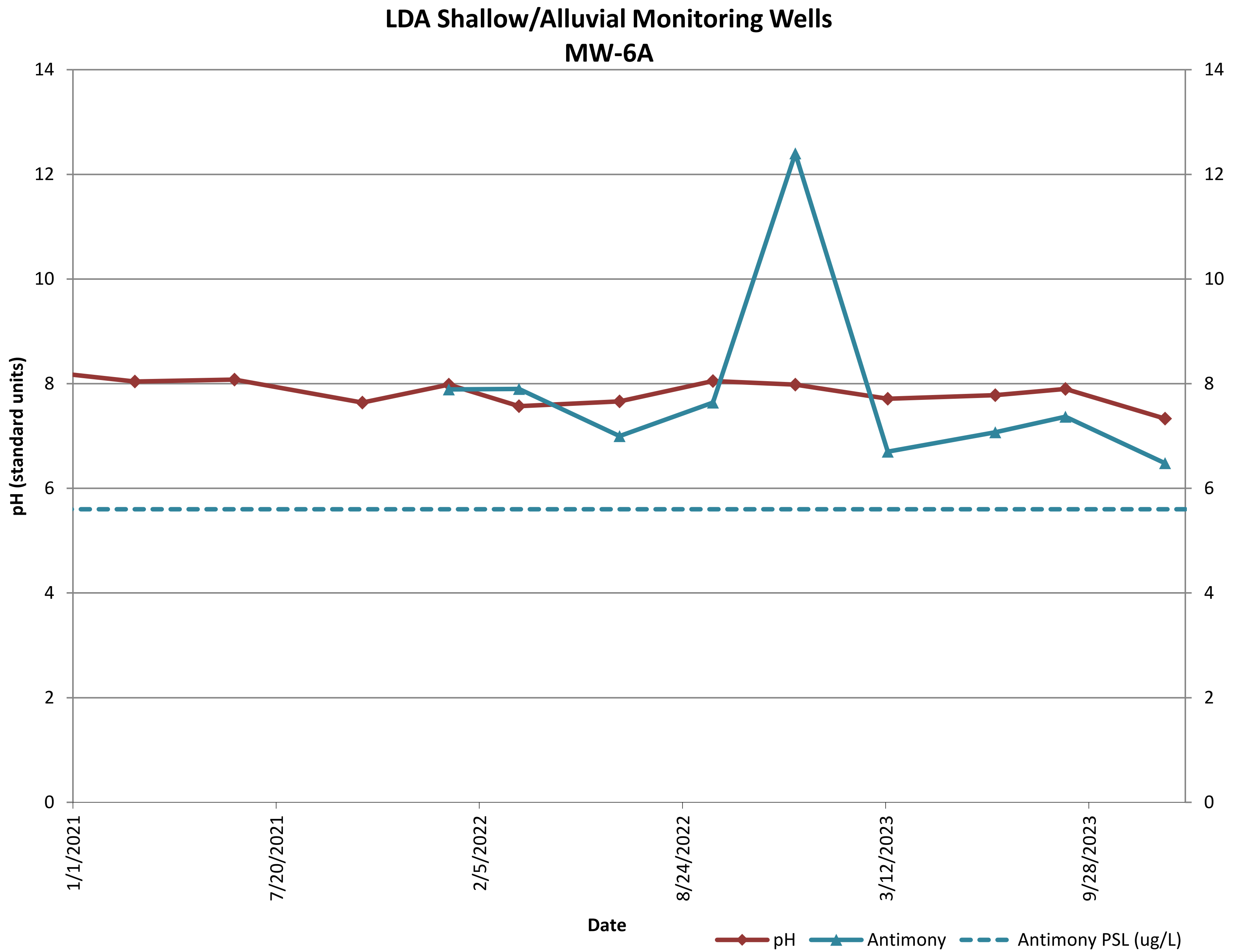
LDA Shallow/Alluvial Monitoring Wells
MW-6A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
210
180
150
120
90
60
30
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019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

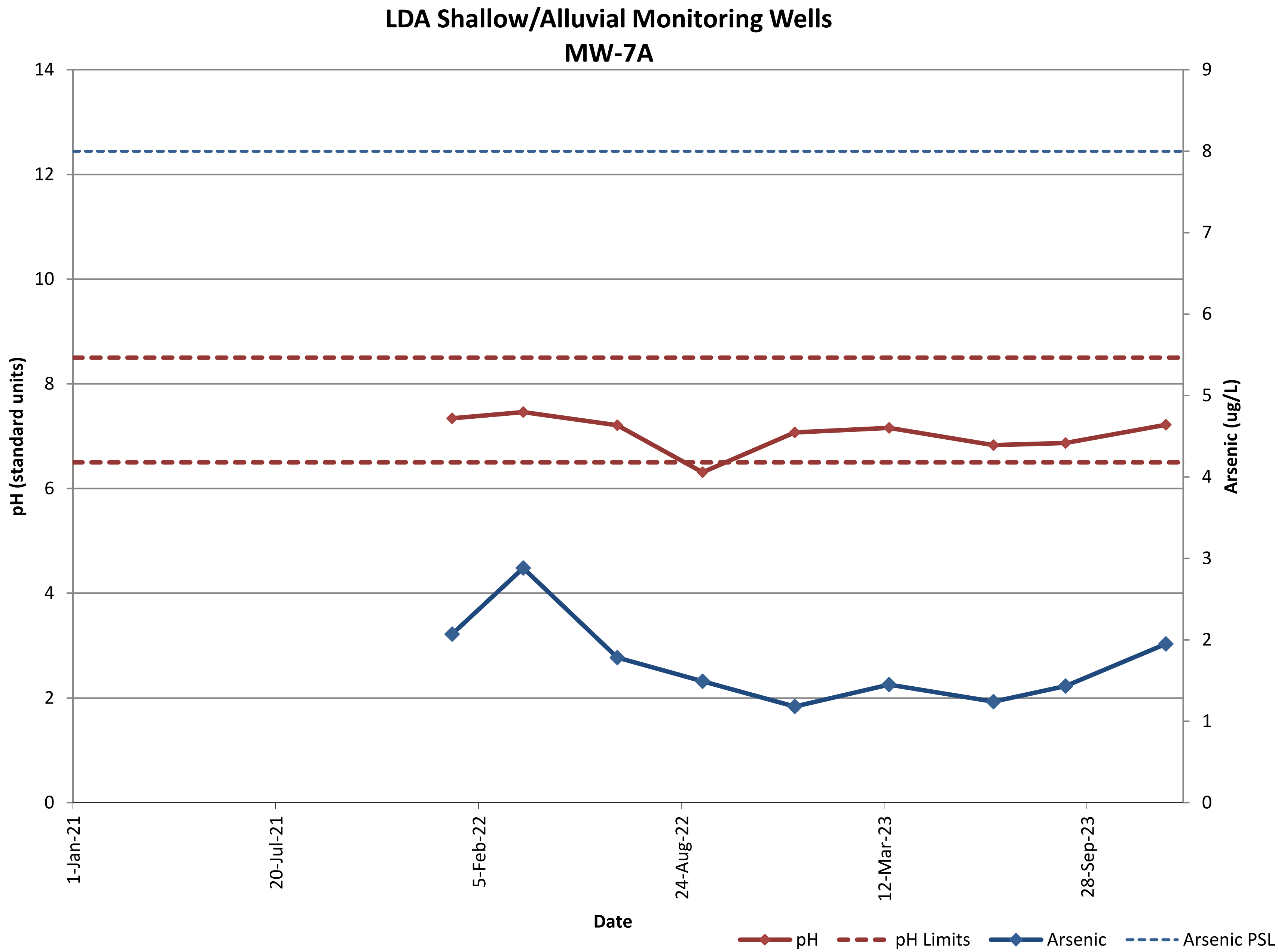


LDA Shallow/Alluvial Monitoring Wells
MW-6A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
0
2
4
6
8
10
12
14
0
300
600
900
1200
1500
1800
2100
2400
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015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

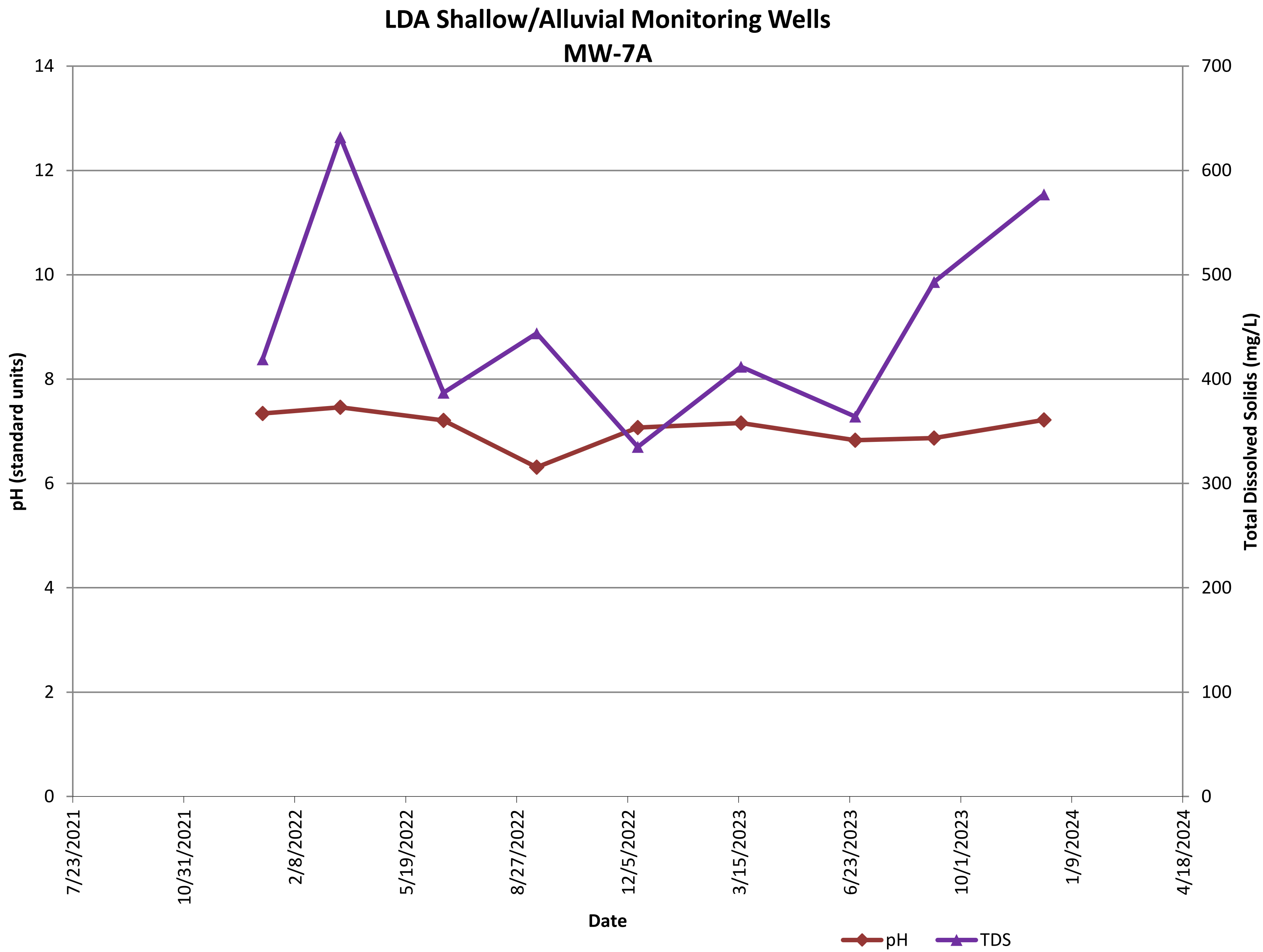


LDA Shallow/Alluvial Monitoring Wells
MW-6A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
14
12
10
8
6
4
2
0
770000
660000
550000
440000
330000
220000
110000
0
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
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
pH
Potassium

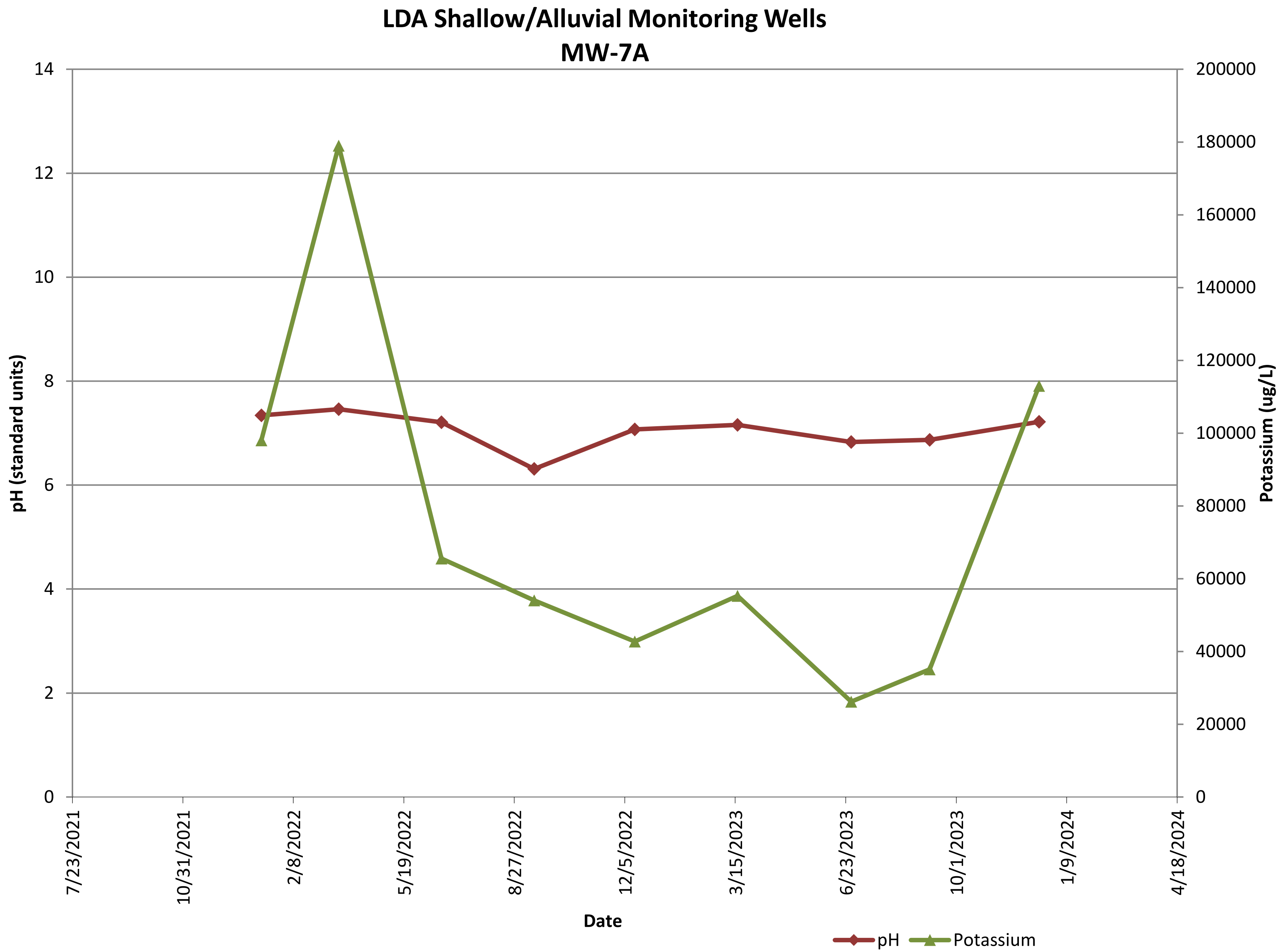

LDA Shallow/Alluvial Monitoring Wells
MW-6A
pH (standard units)
Antimony (ug/L)
0
2
4
6
8
10
12
14
1/1/2021
7/20/2021
2/5/2022
8/24/2022
3/12/2023
9/28/2023
Date
pH
Antimony
Antimony PSL (ug/L)



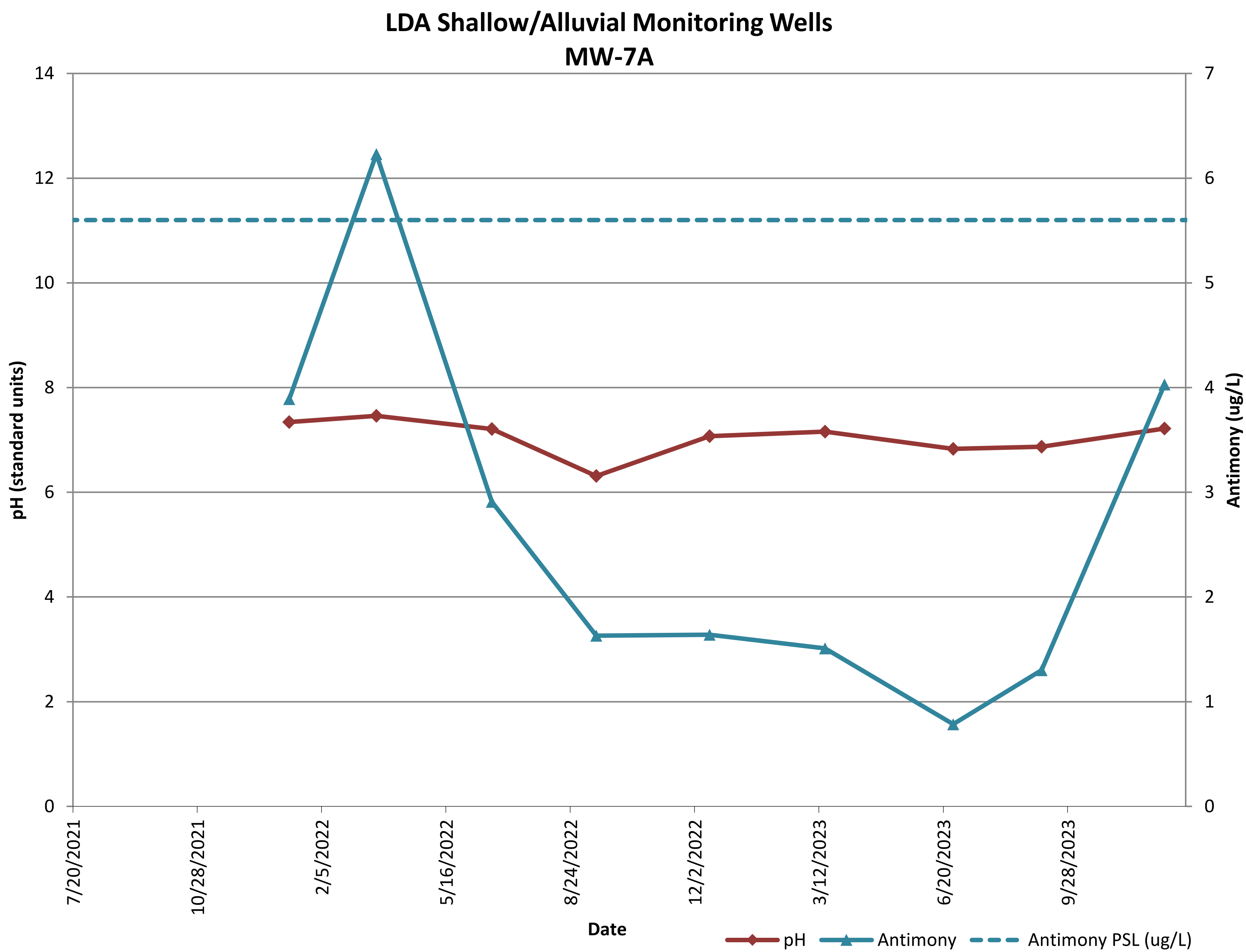
LDA Shallow/Alluvial Monitoring Wells
MW-7A
pH (standard units)
Arsenic (ug/L)
0
2
4
6
8
10
12
14
0
1
2
3
4
5
6
7
8
9
1-Jan-21
20-Jul-21
5-Feb-22
24-Aug-22
12-Mar-23
28-Sep-23
Date
pH
pH Limits
Arsenic
Arsenic PSL



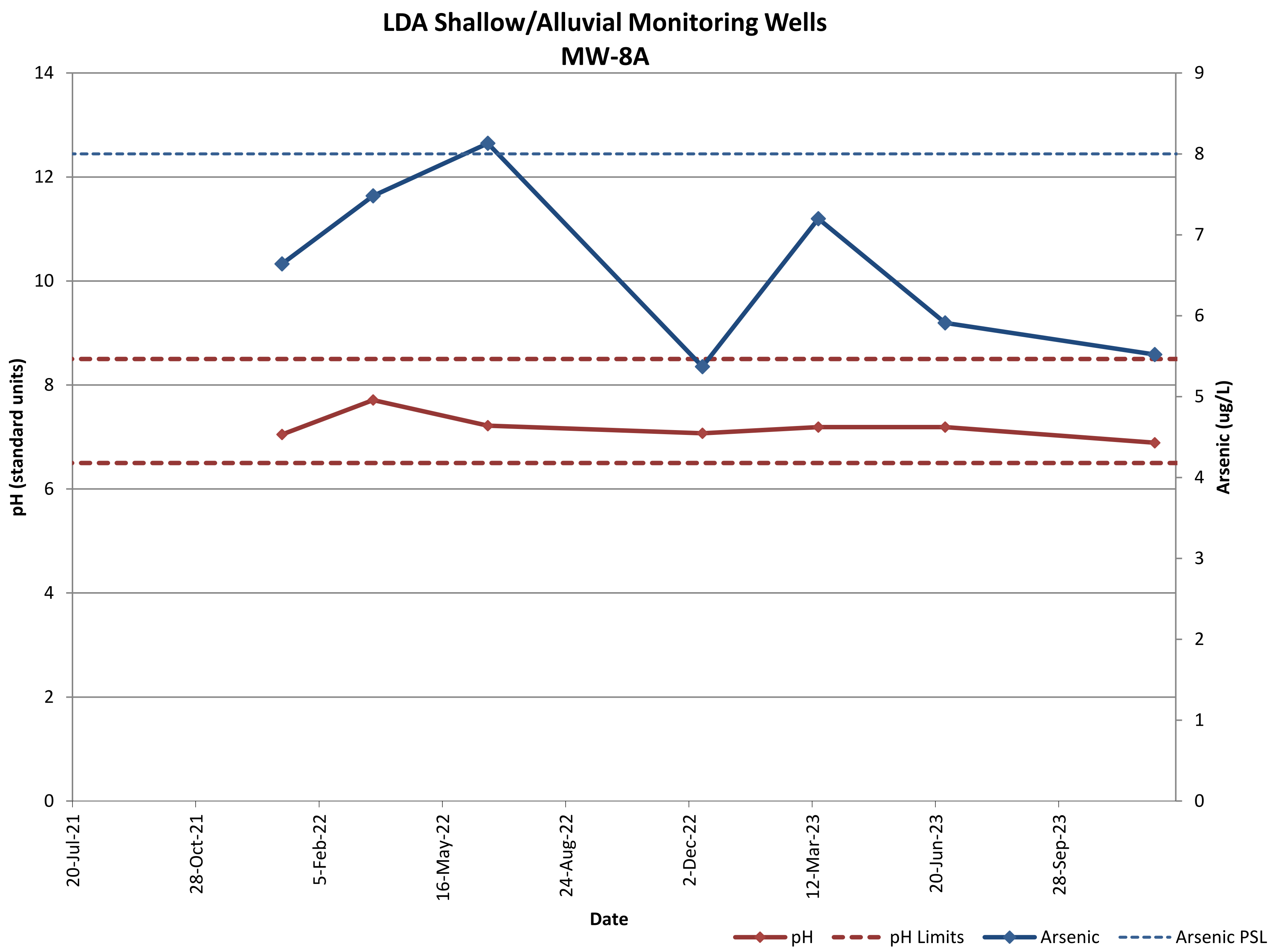
LDA Shallow/Alluvial Monitoring Wells
MW-7A
pH (standard units)
Total Dissolved Solids (mg/L)
0
2
4
6
8
10
12
14
0
100
200
300
400
500
600
700
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
Date
pH
TDS

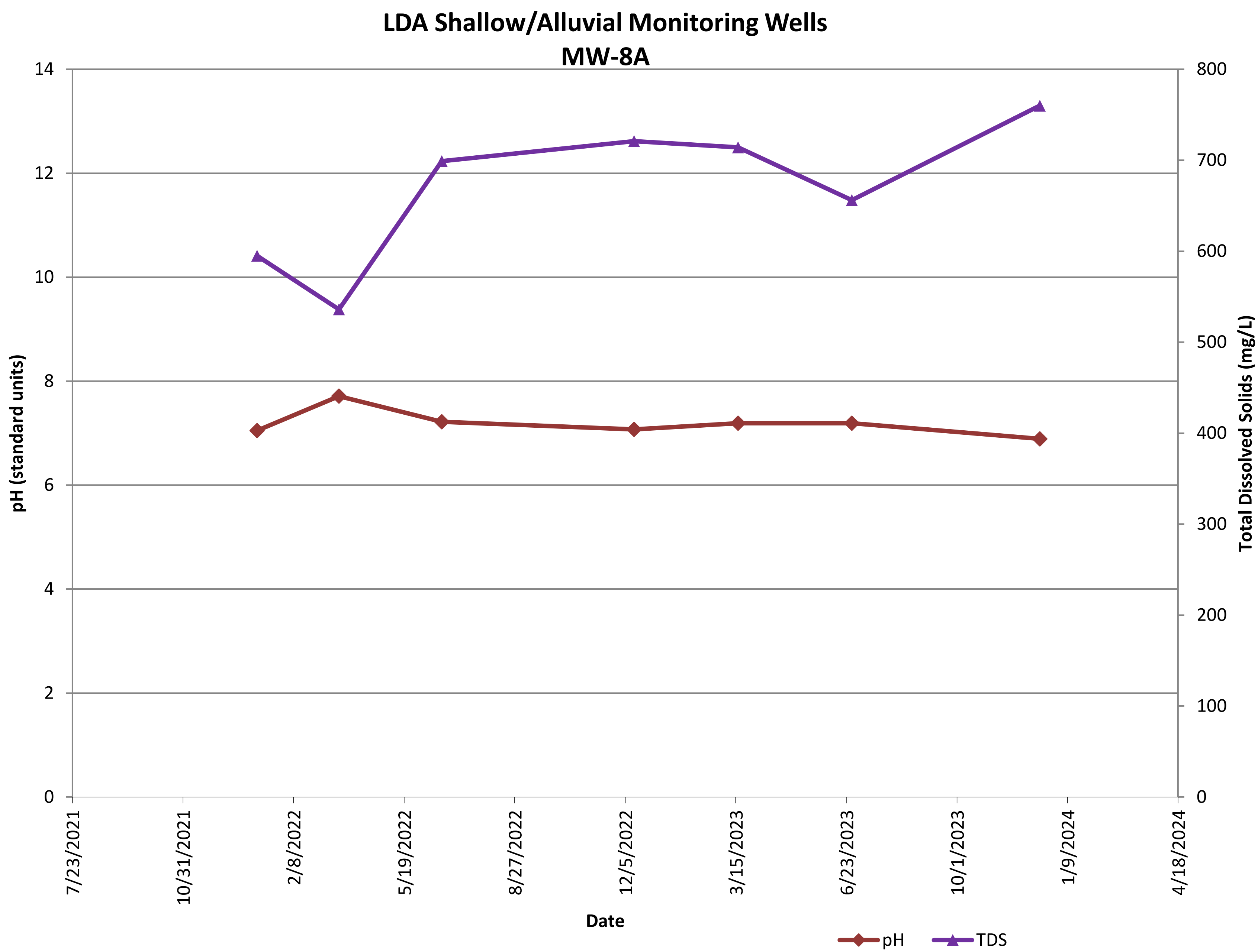


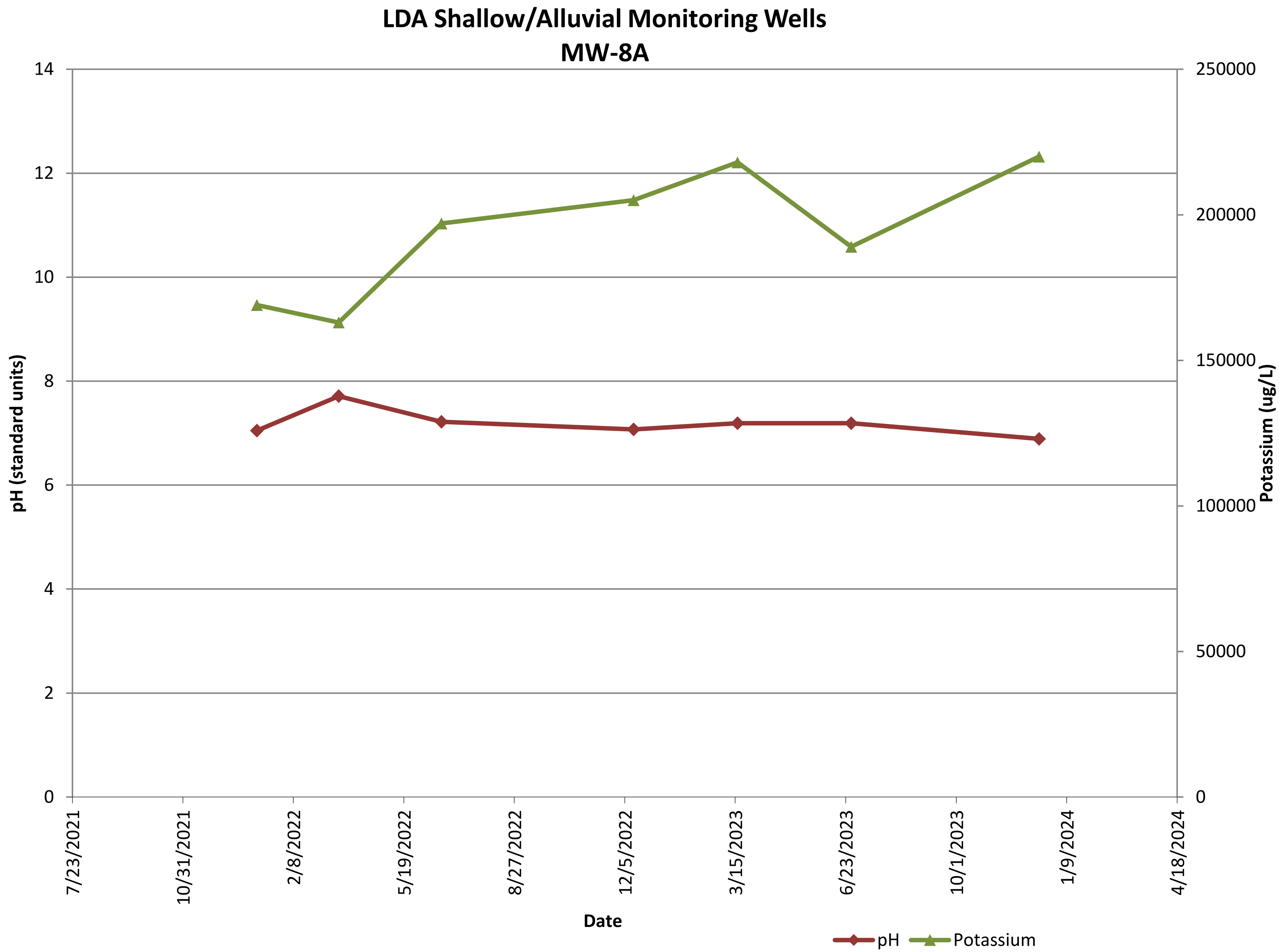
LDA Shallow/Alluvial Monitoring Wells
MW-7A
pH (standard units)
Potassium (ug/L)
Date
0
2
4
6
8
10
12
14
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
pH
Potassium



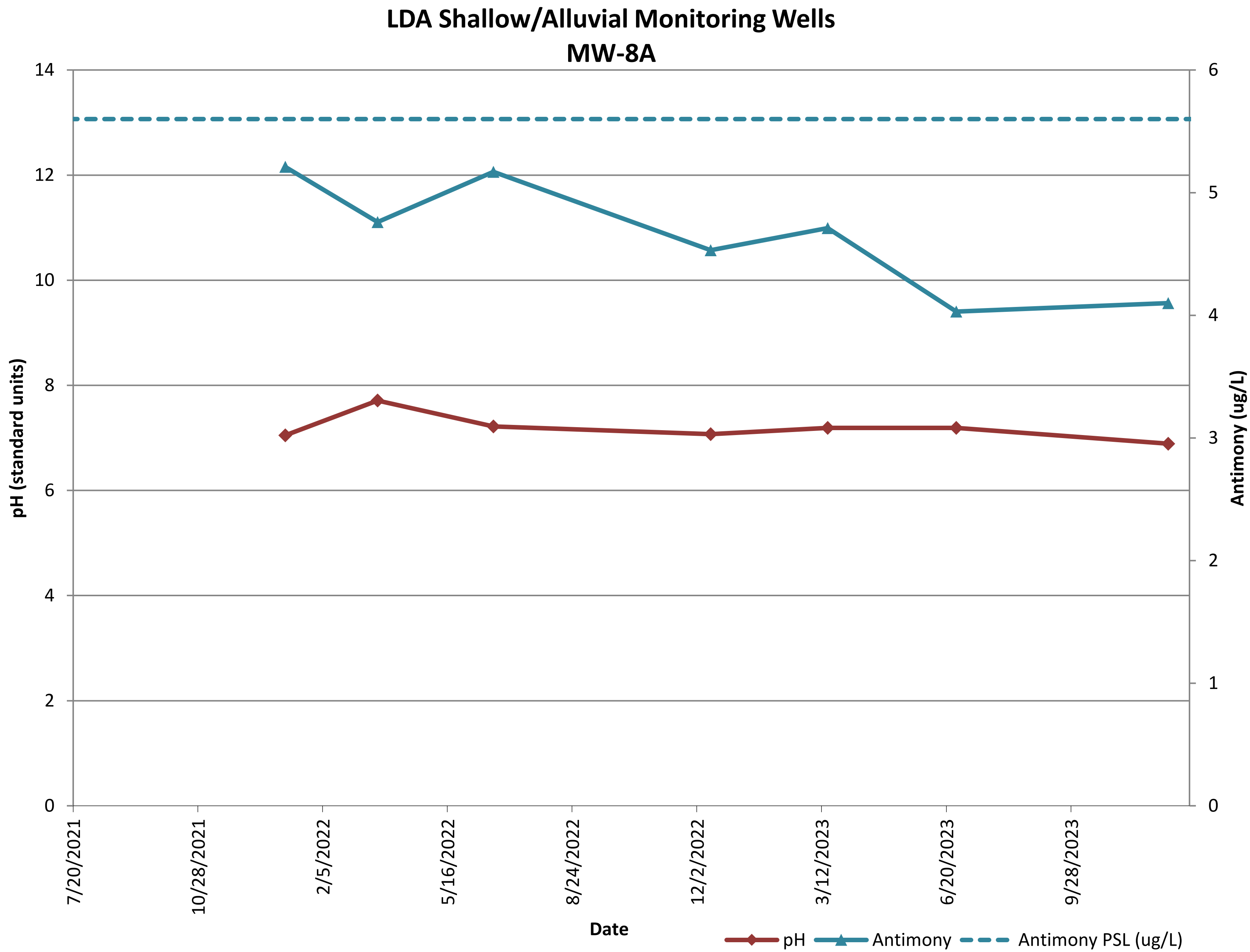
LDA Shallow/Alluvial Monitoring Wells
MW-7A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
7
6
5
4
3
2
1
0
7/20/2021
10/28/2021
2/5/2022
5/16/2022
8/24/2022
12/2/2022
3/12/2023
6/20/2023
9/28/2023
Date
pH
Antimony
Antimony PSL (ug/L)


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

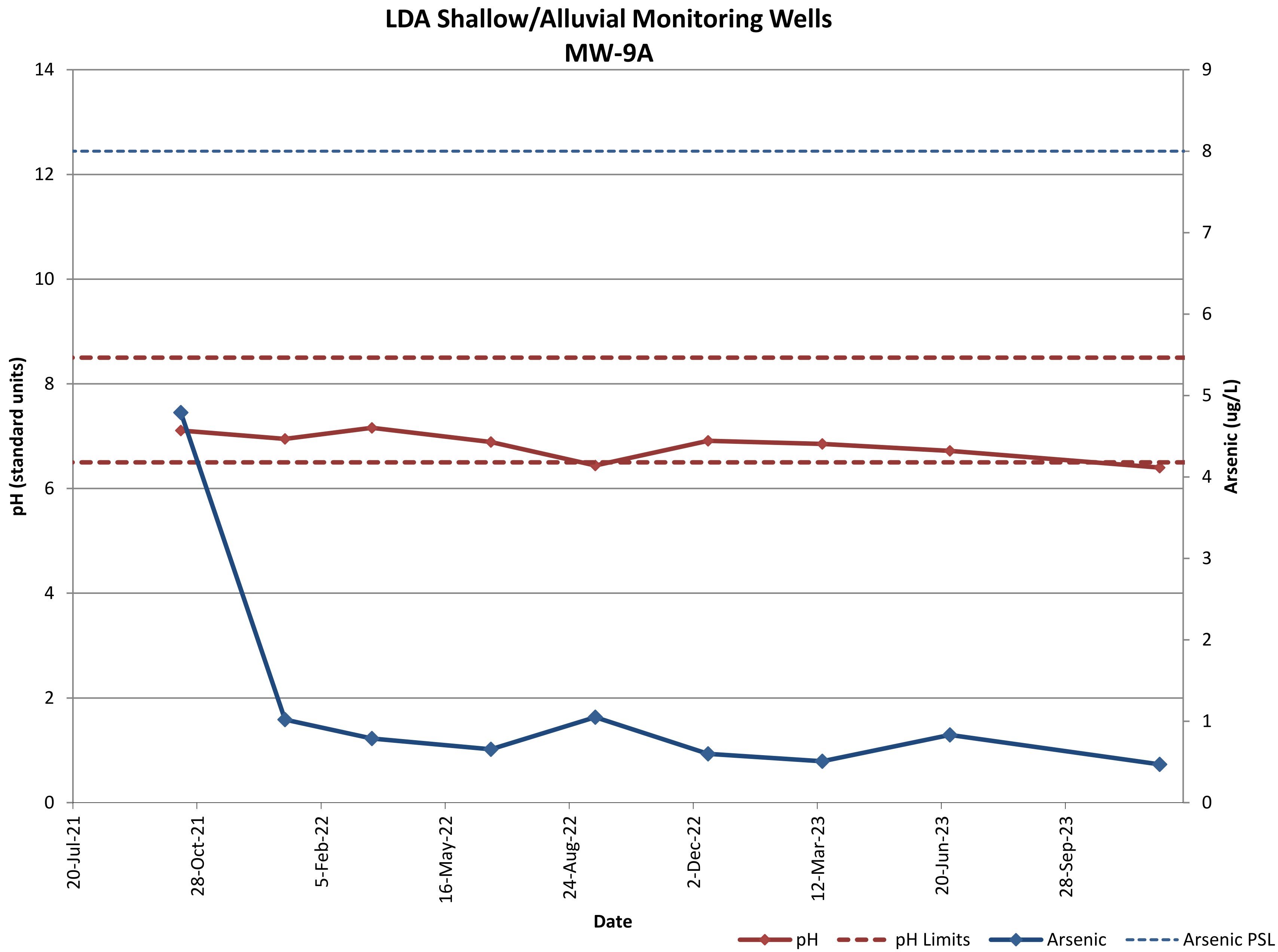

LDA Shallow/Alluvial Monitoring Wells
MW-8A
pH (standard units)
Total Dissolved Solids (mg/L)
0
2
4
6
8
10
12
14
0
100
200
300
400
500
600
700
800
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
Date
pH
TDS



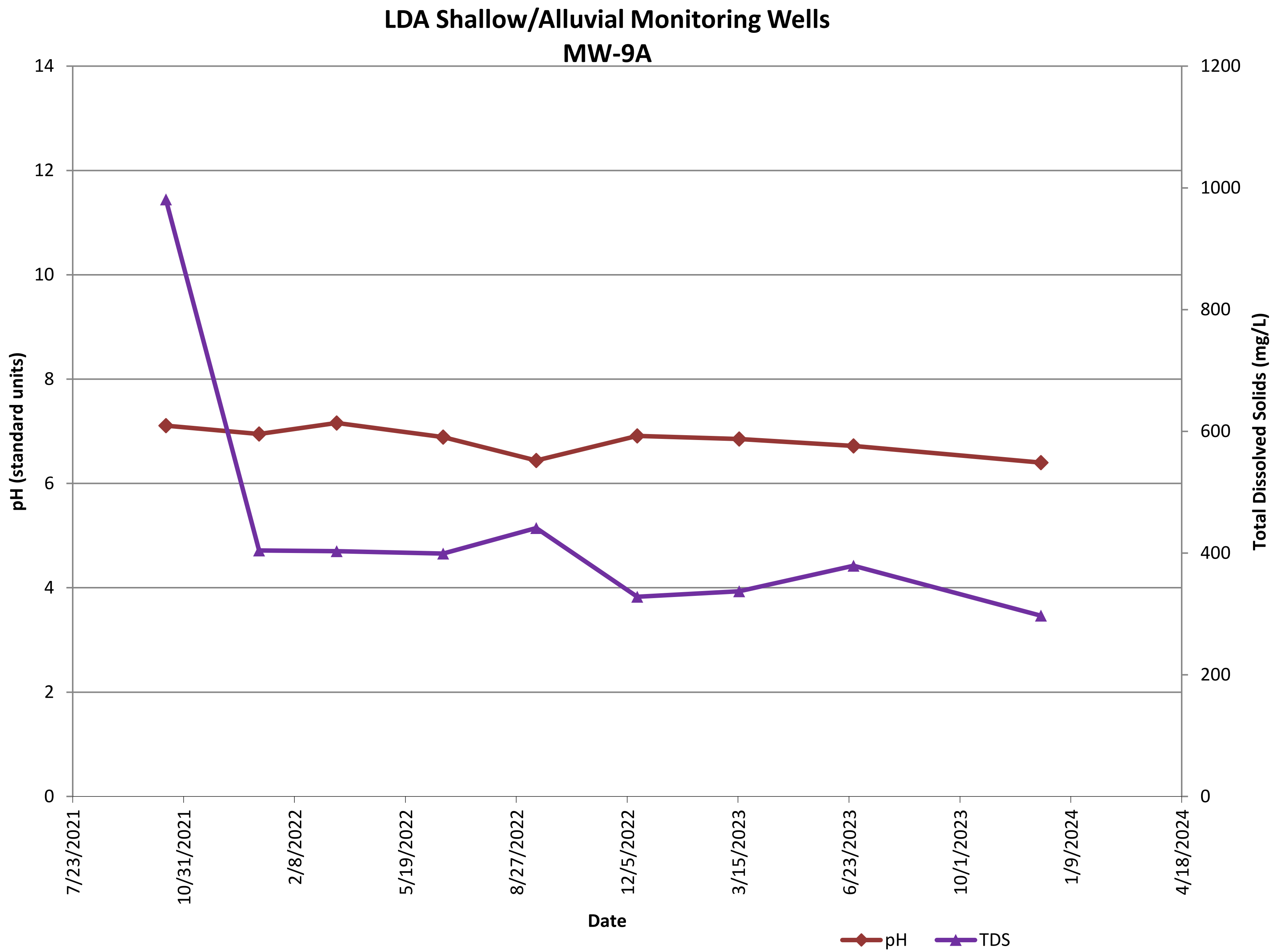
LDA Shallow/Alluvial Monitoring Wells
MW-8A
pH (standard units)
Potassium (ug/L)
0
2
4
6
8
10
12
14
0
50000
100000
150000
200000
250000
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
Date
pH
Potassium



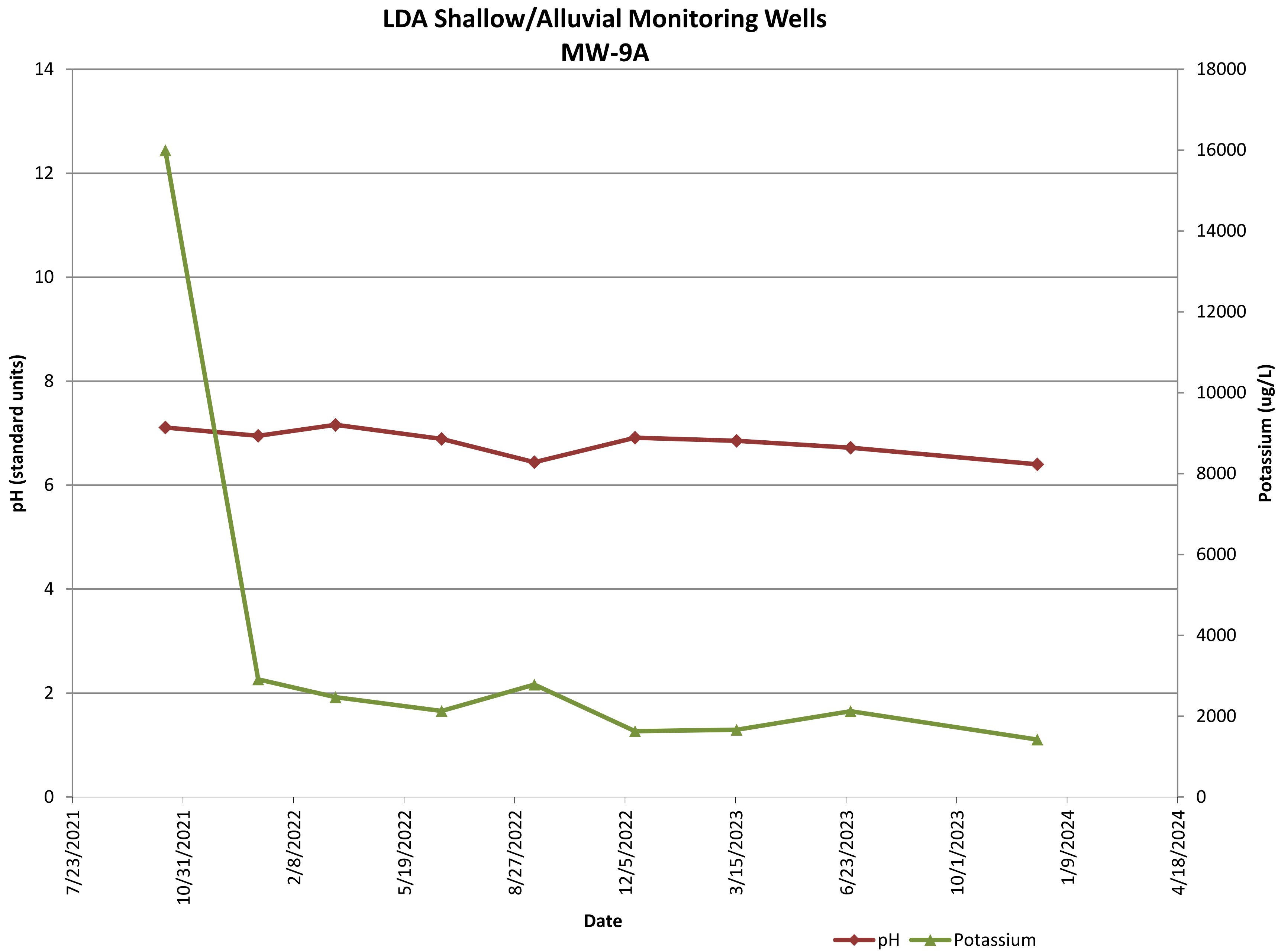
LDA Shallow/Alluvial Monitoring Wells
MW-8A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
7/20/2021
10/28/2021
2/5/2022
5/16/2022
8/24/2022
12/2/2022
3/12/2023
6/20/2023
9/28/2023
Date
pH
Antimony
Antimony PSL (ug/L)



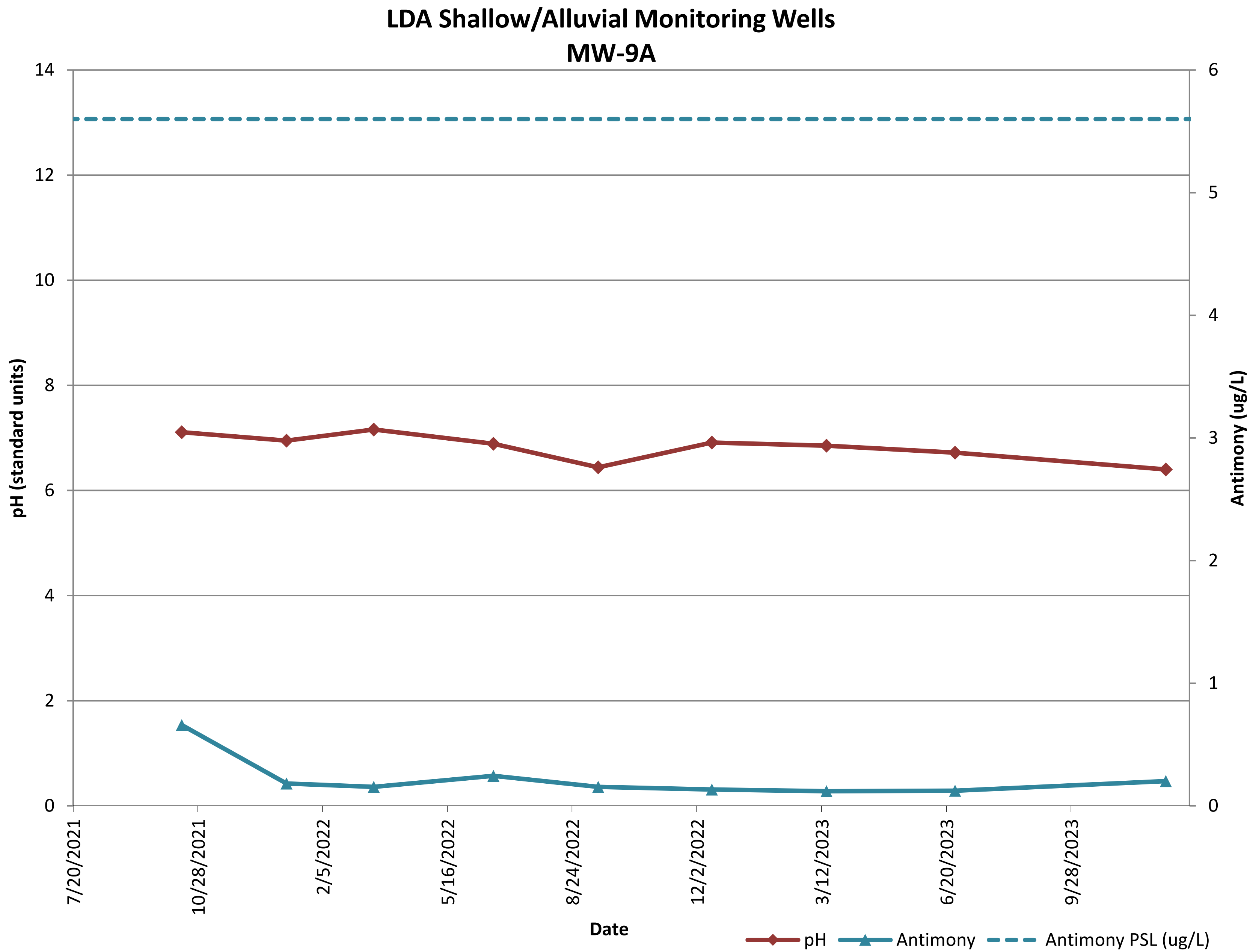
LDA Shallow/Alluvial Monitoring Wells
MW-9A
pH (standard units)
Arsenic (ug/L)
0
2
4
6
8
10
12
14
0
1
2
3
4
5
6
7
8
9
20-Jul-21
28-Oct-21
5-Feb-22
16-May-22
24-Aug-22
2-Dec-22
12-Mar-23
20-Jun-23
28-Sep-23
Date
pH
pH Limits
Arsenic
Arsenic PSL



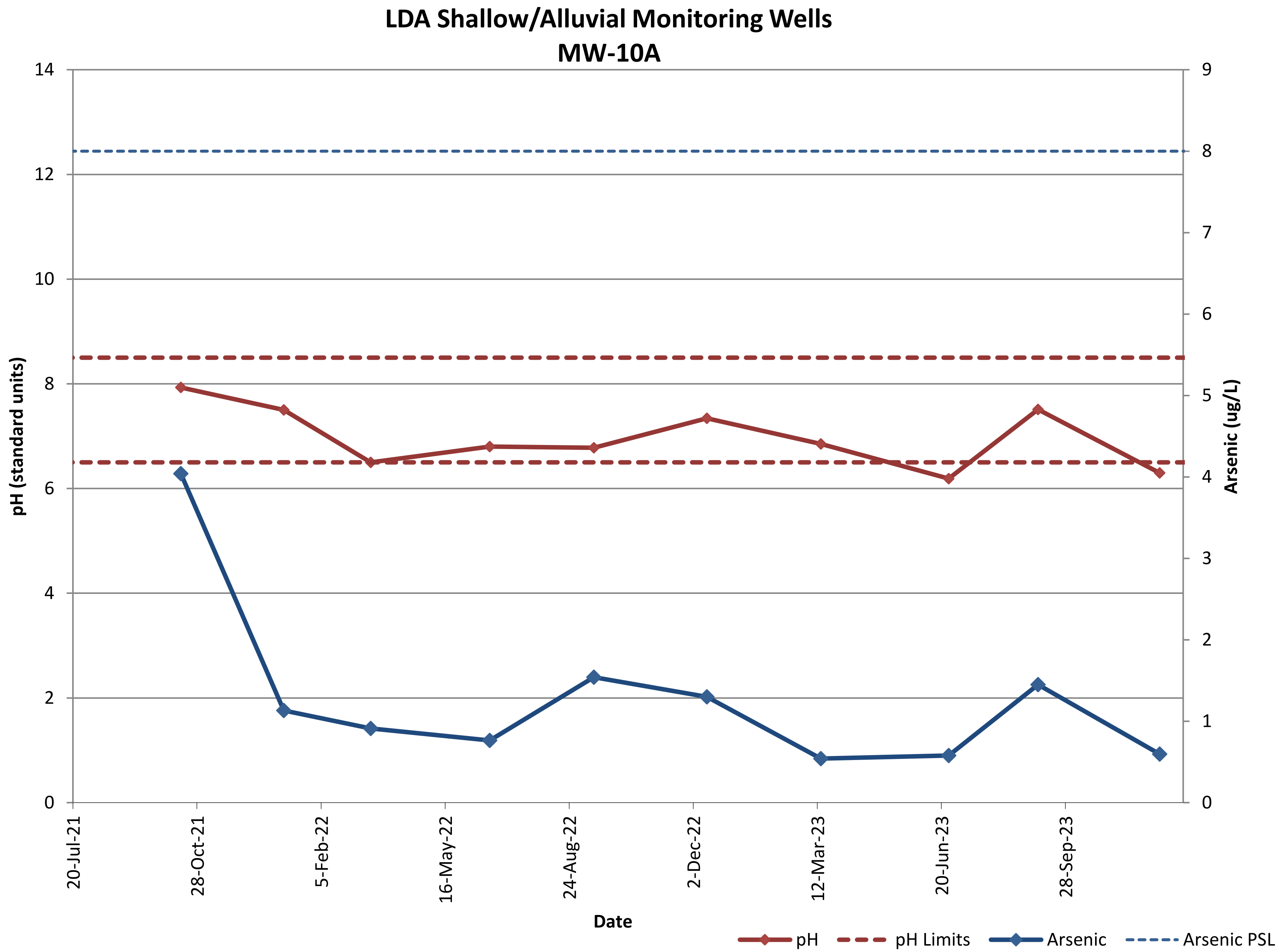
LDA Shallow/Alluvial Monitoring Wells
MW-9A
pH (standard units)
Total Dissolved Solids (mg/L)
Date
14
12
10
8
6
4
2
0
1200
1000
800
600
400
200
0
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
pH
TDS



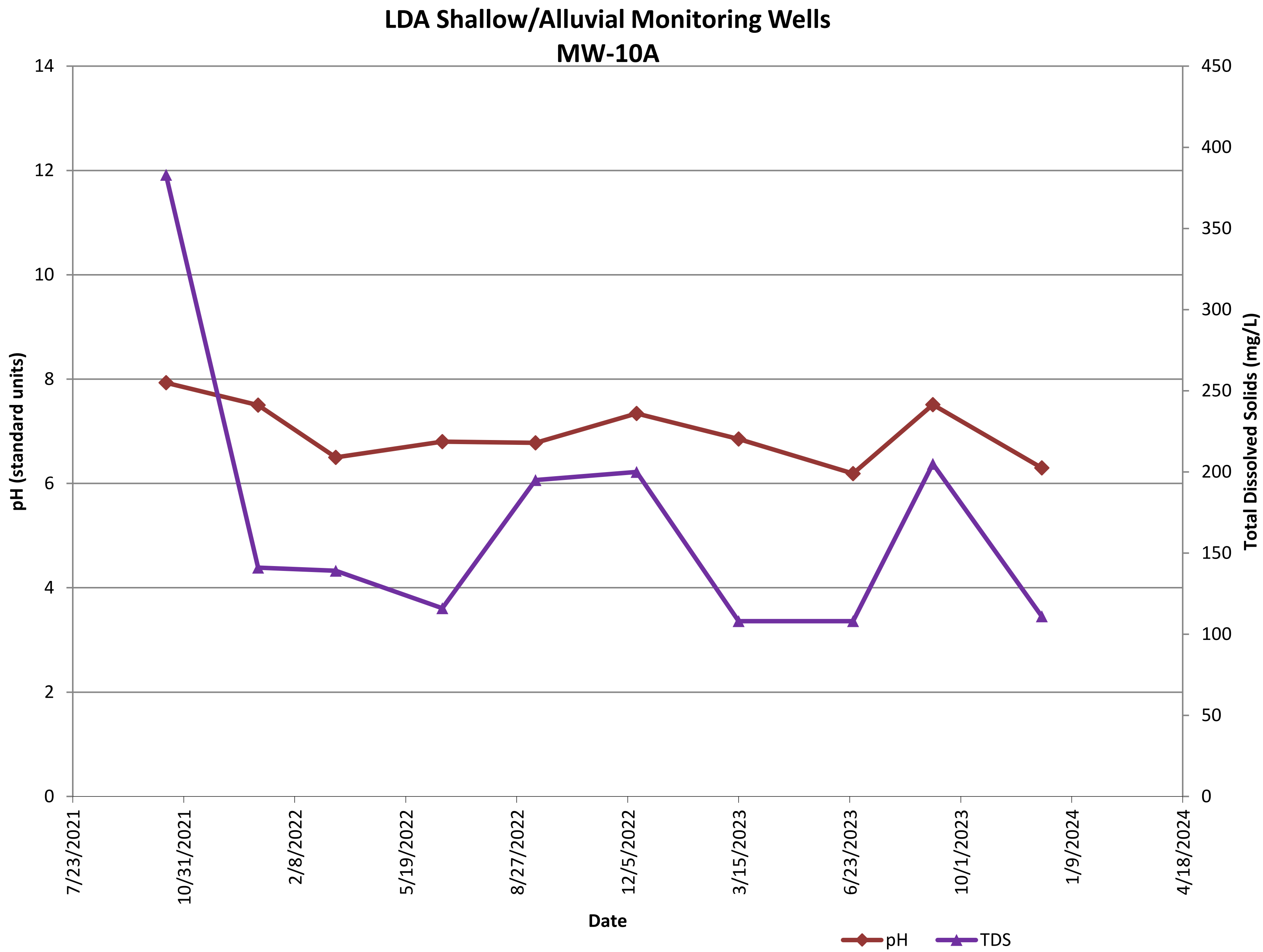
LDA Shallow/Alluvial Monitoring Wells
MW-9A
pH (standard units)
Potassium (ug/L)
Date
0
2
4
6
8
10
12
14
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
pH
Potassium



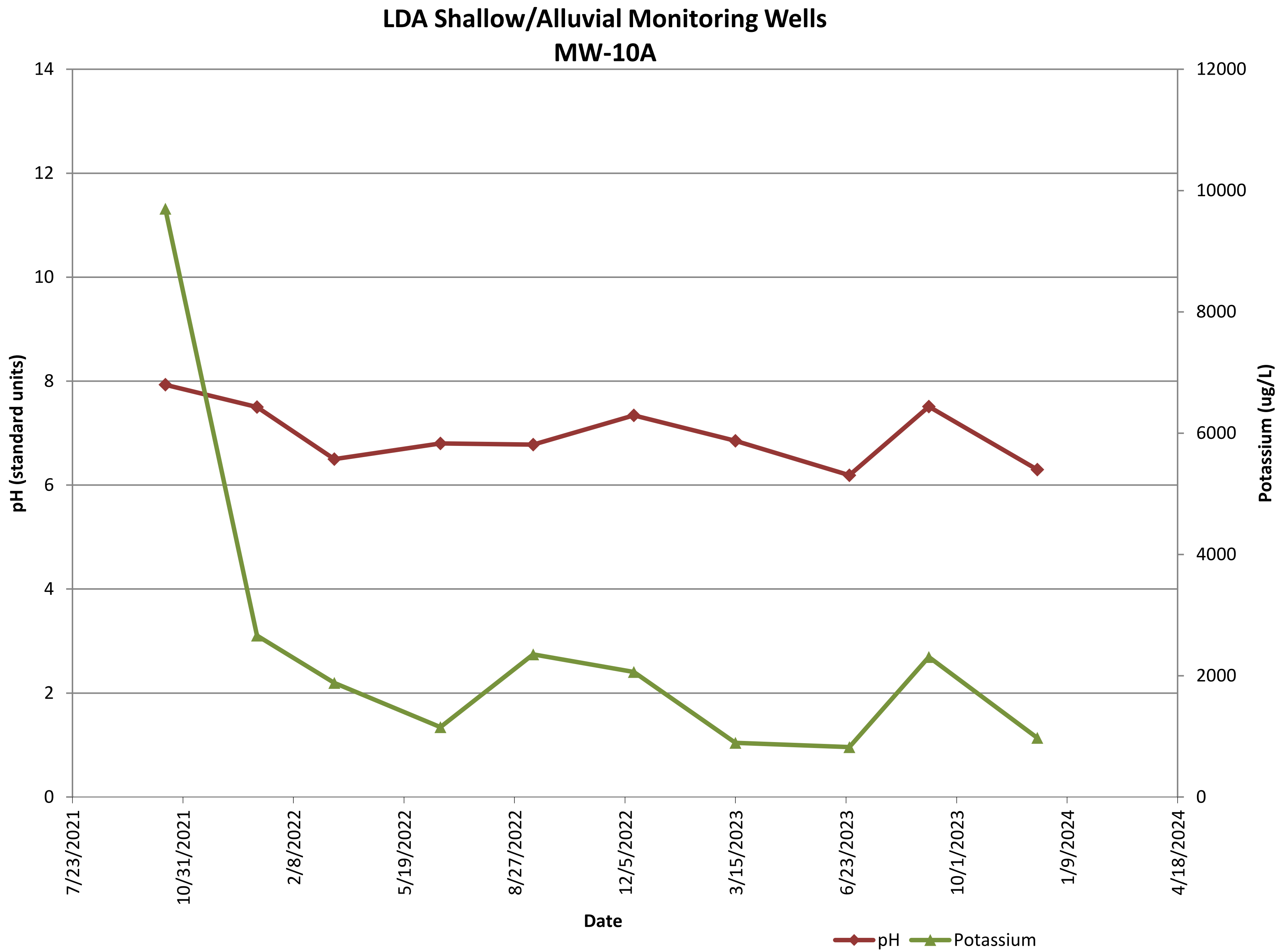
LDA Shallow/Alluvial Monitoring Wells
MW-9A
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
7/20/2021
10/28/2021
2/5/2022
5/16/2022
8/24/2022
12/2/2022
3/12/2023
6/20/2023
9/28/2023
Date
pH
Antimony
Antimony PSL (ug/L)

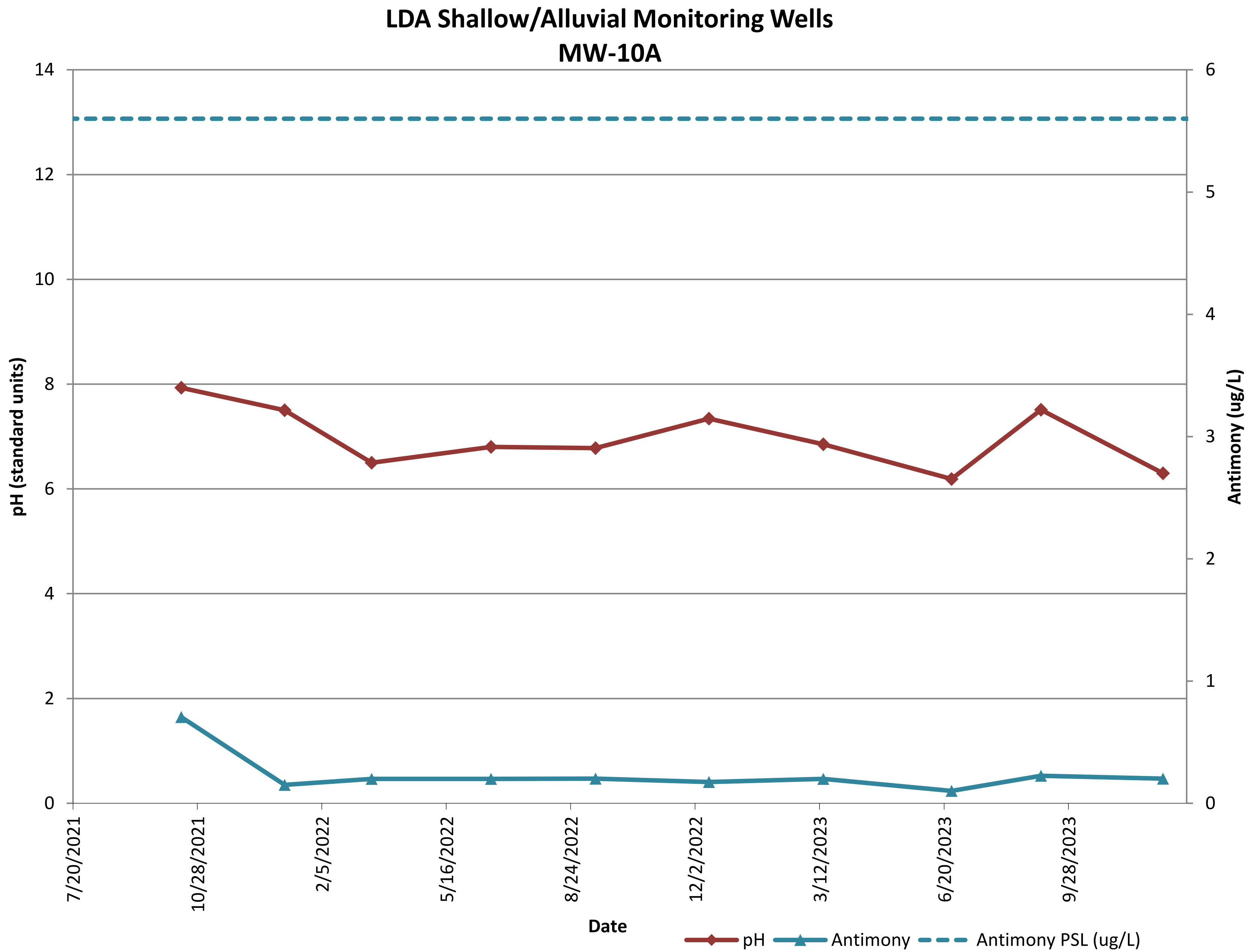


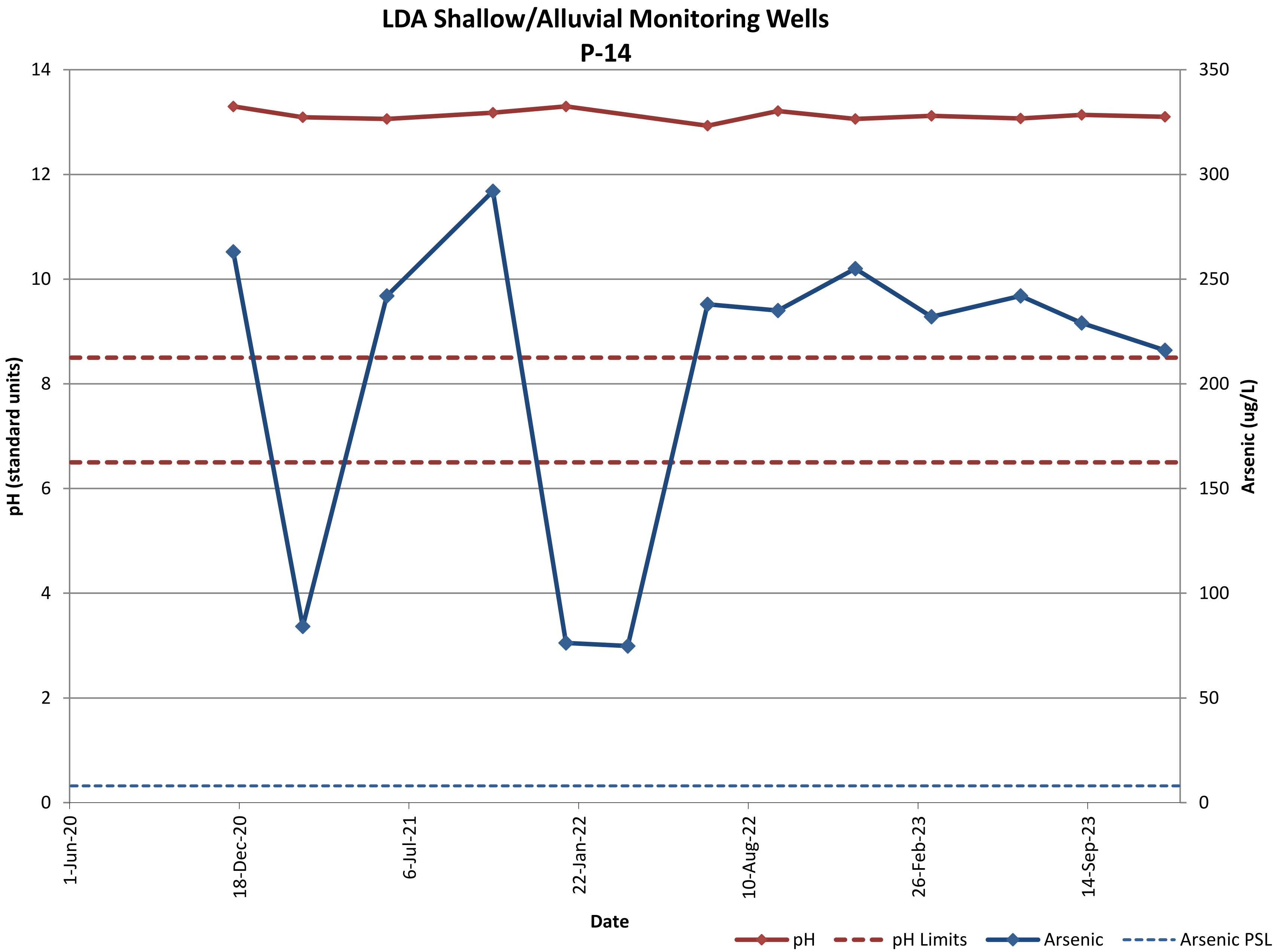
LDA Shallow/Alluvial Monitoring Wells
MW-10A
pH (standard units)
Arsenic (ug/L)
0
2
4
6
8
10
12
14
0
1
2
3
4
5
6
7
8
9
20-Jul-21
28-Oct-21
5-Feb-22
16-May-22
24-Aug-22
2-Dec-22
12-Mar-23
20-Jun-23
28-Sep-23
Date
pH
pH Limits
Arsenic
Arsenic PSL



LDA Shallow/Alluvial Monitoring Wells
MW-10A
pH (standard units)
Total Dissolved Solids (mg/L)
Date
14
12
10
8
6
4
2
0
450
400
350
300
250
200
150
100
50
0
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
pH
TDS

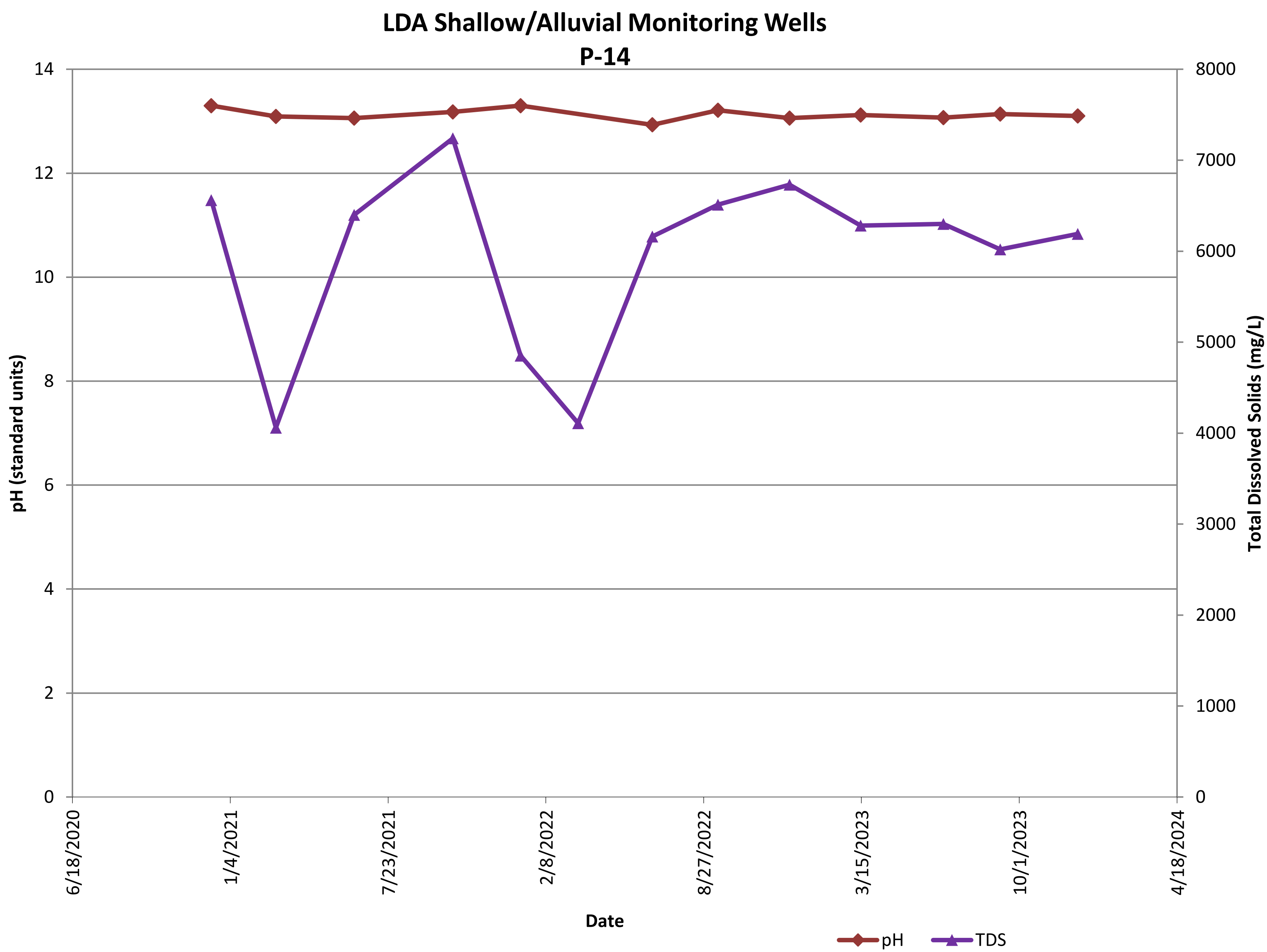

LDA Shallow/Alluvial Monitoring Wells
MW-10A
pH (standard units)
Potassium (ug/L)
14
12
10
8
6
4
2
0
12000
10000
8000
6000
4000
2000
0
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
Date
pH
Potassium


LDA Shallow/Alluvial Monitoring Wells
MW-10A
pH (standard units)
Antimony (ug/L)
Date
0
2
4
6
8
10
12
14
0
1
2
3
4
5
6
7/20/2021
10/28/2021
2/5/2022
5/16/2022
8/24/2022
12/2/2022
3/12/2023
6/20/2023
9/28/2023
pH
Antimony
Antimony PSL (ug/L)

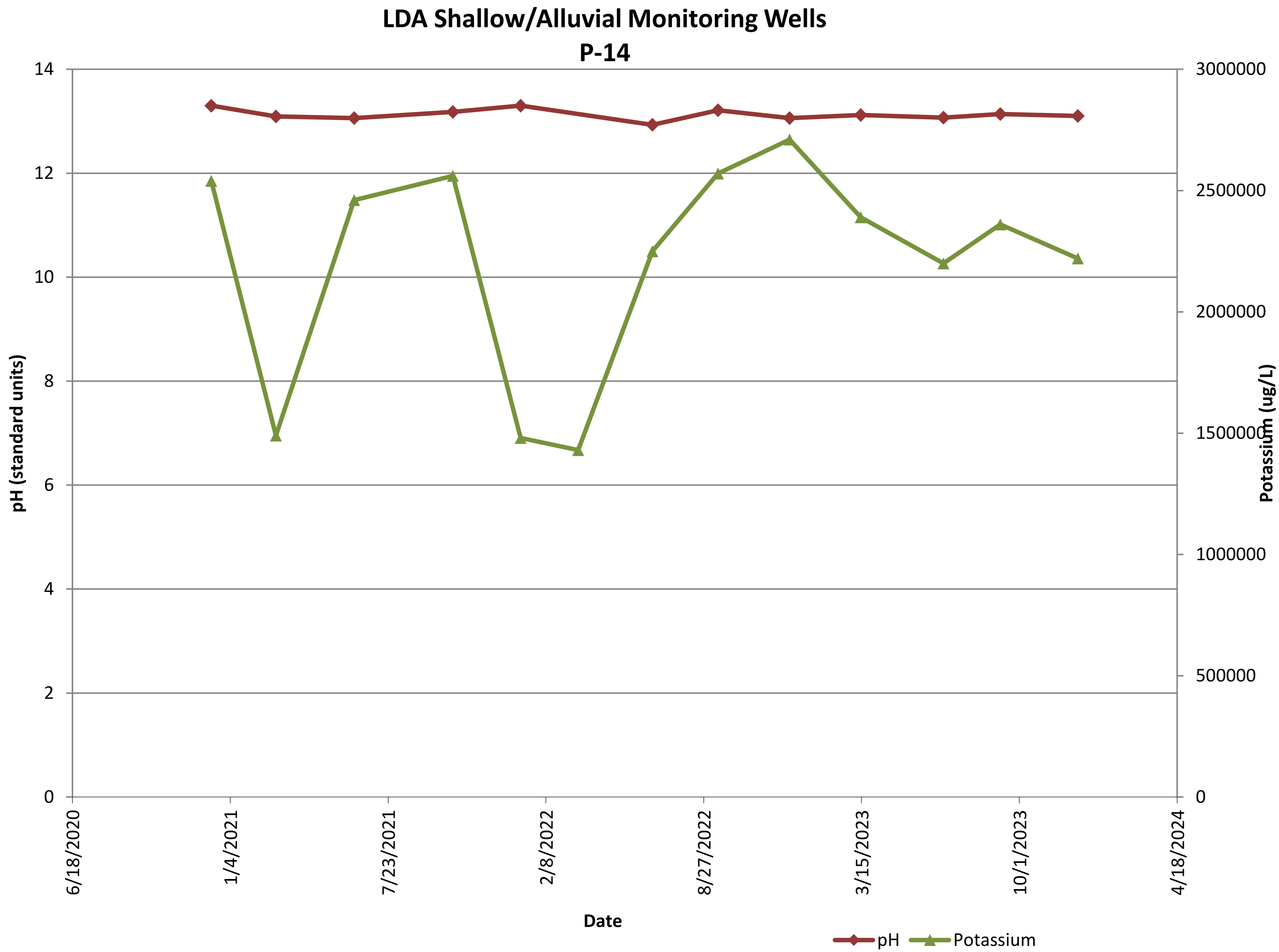


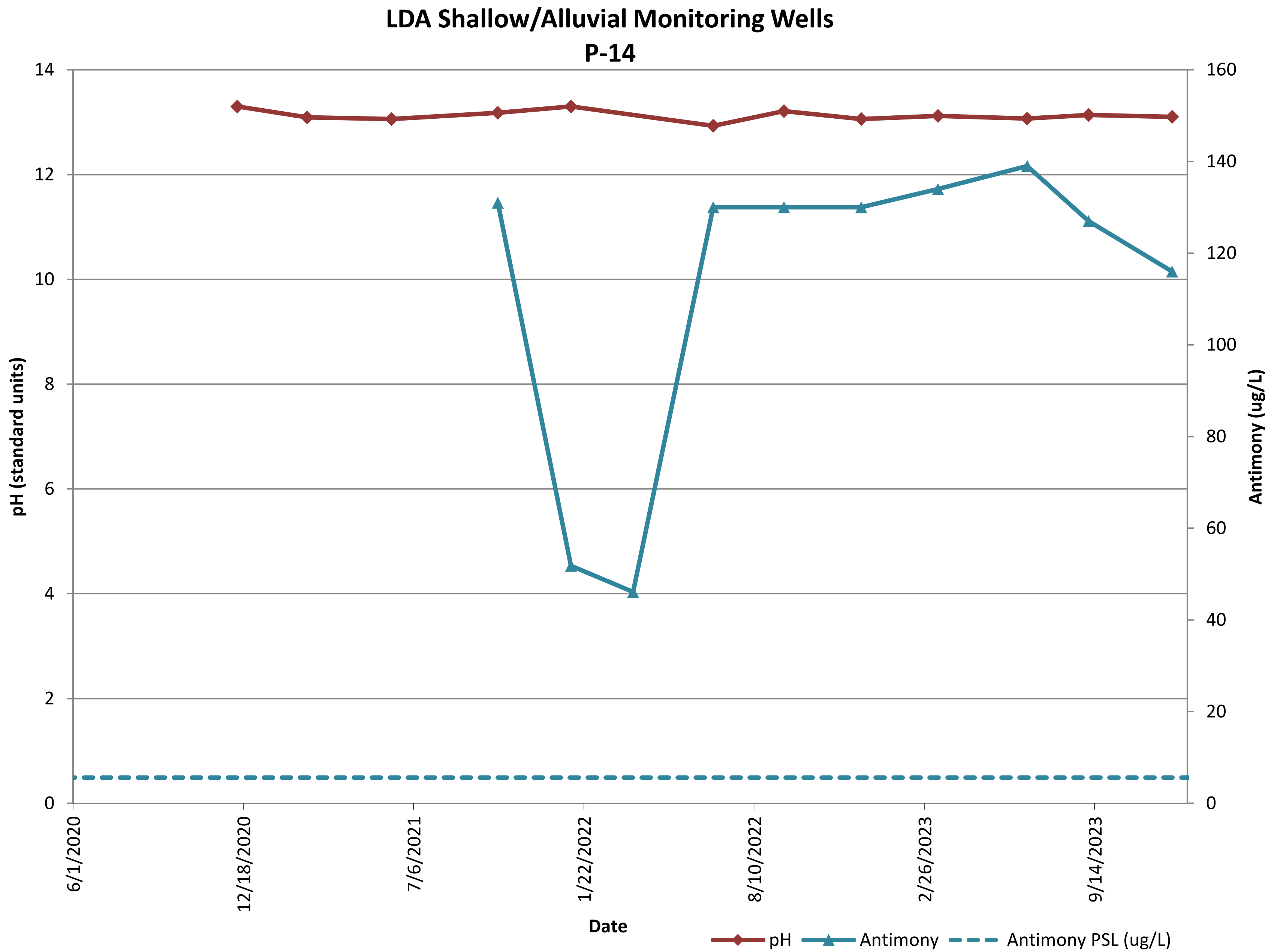
1520304_LDA Infiltration GW Graphs - 2023 Q4_022924.xlsm

152030420

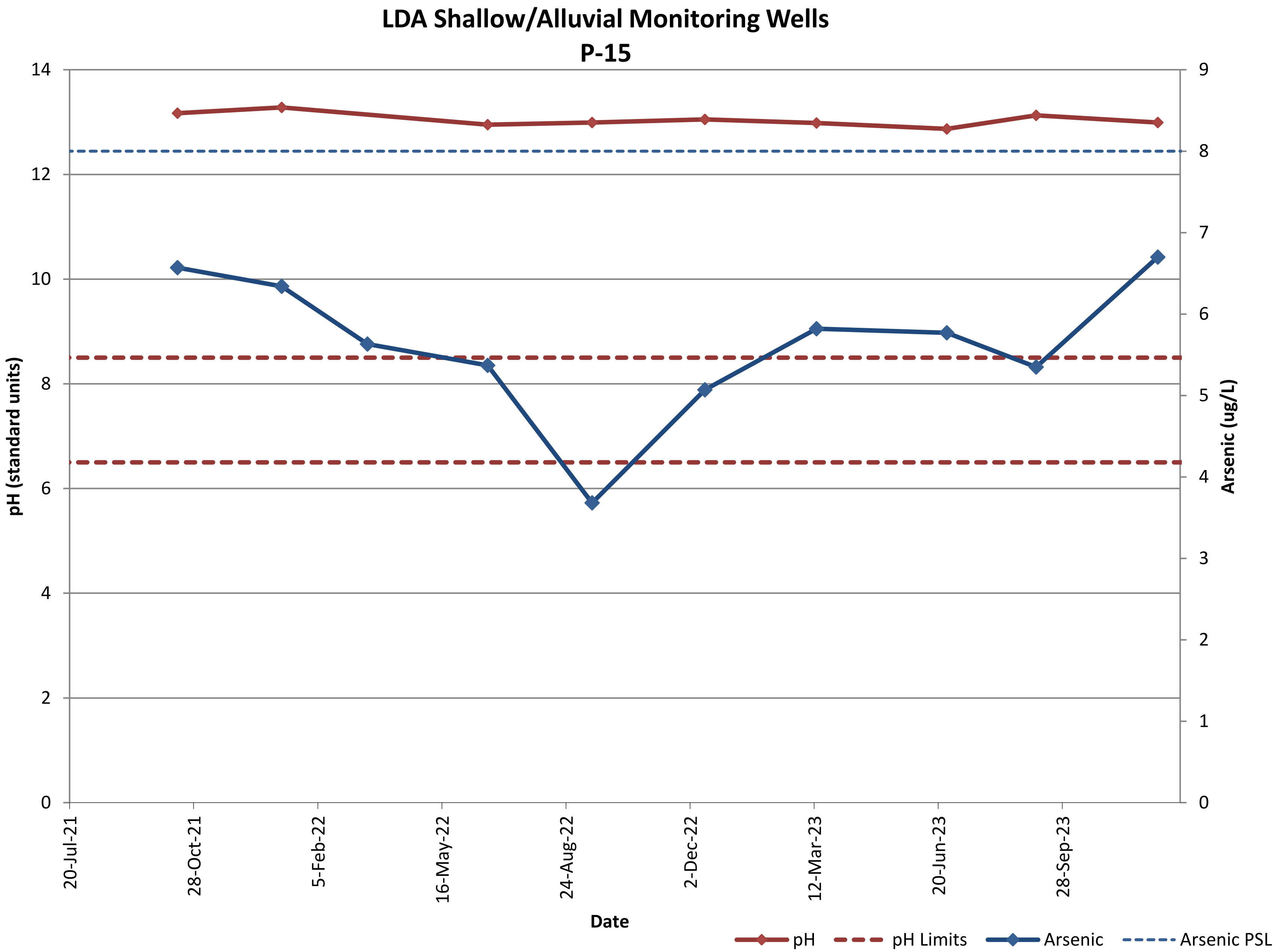


LDA Shallow/Alluvial Monitoring Wells
P-14
pH (standard units)
Total Dissolved Solids (mg/L)
Date
0
2
4
6
8
10
12
14
0
1000
2000
3000
4000
5000
6000
7000
8000
6/18/2020
1/4/2021
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
pH
TDS

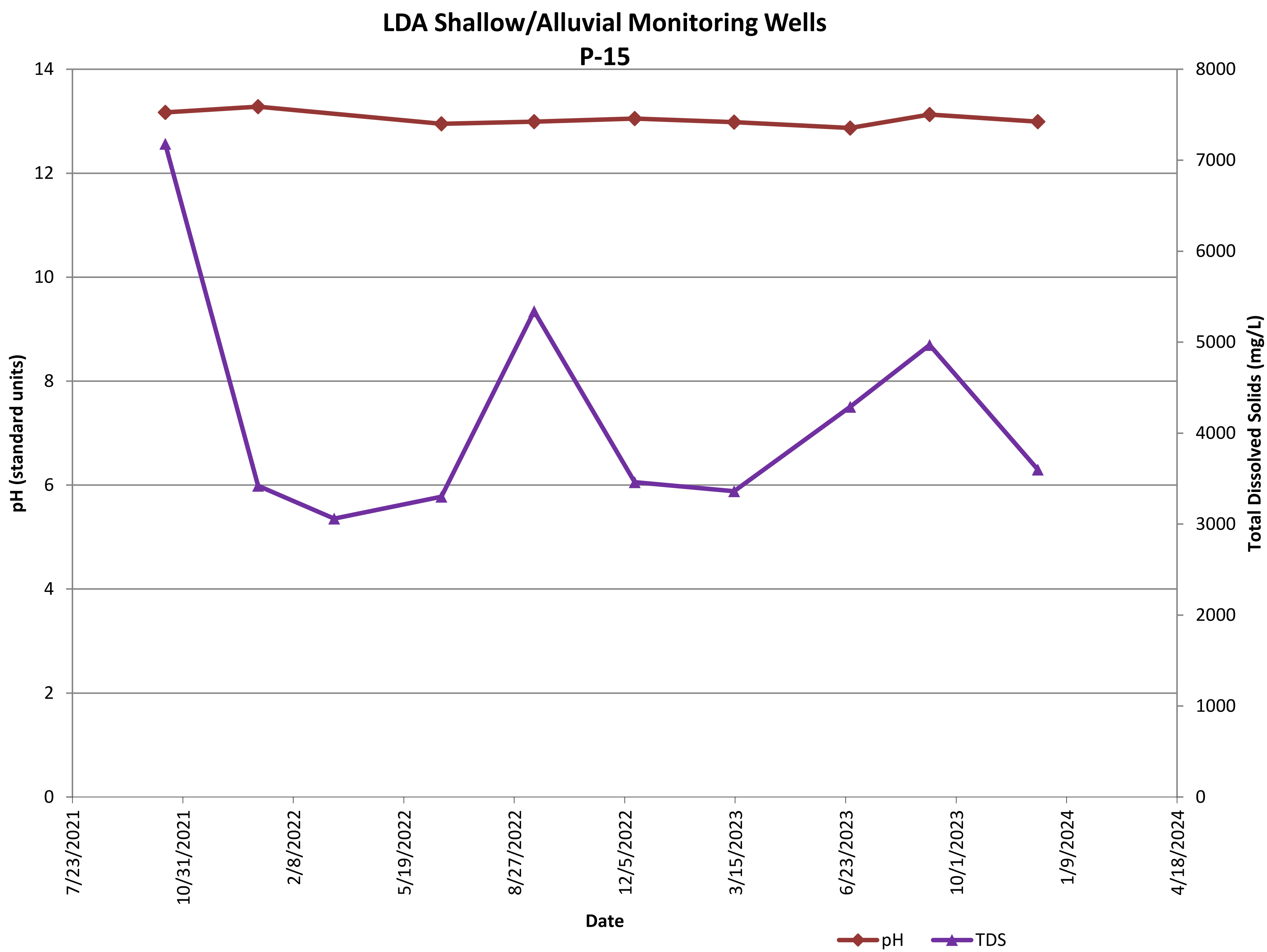

LDA Shallow/Alluvial Monitoring Wells
P-14
pH (standard units)
Potassium (ug/L)
0
2
4
6
8
10
12
14
0
500000
1000000
1500000
2000000
2500000
3000000
6/18/2020
1/4/2021
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
Date
pH
Potassium



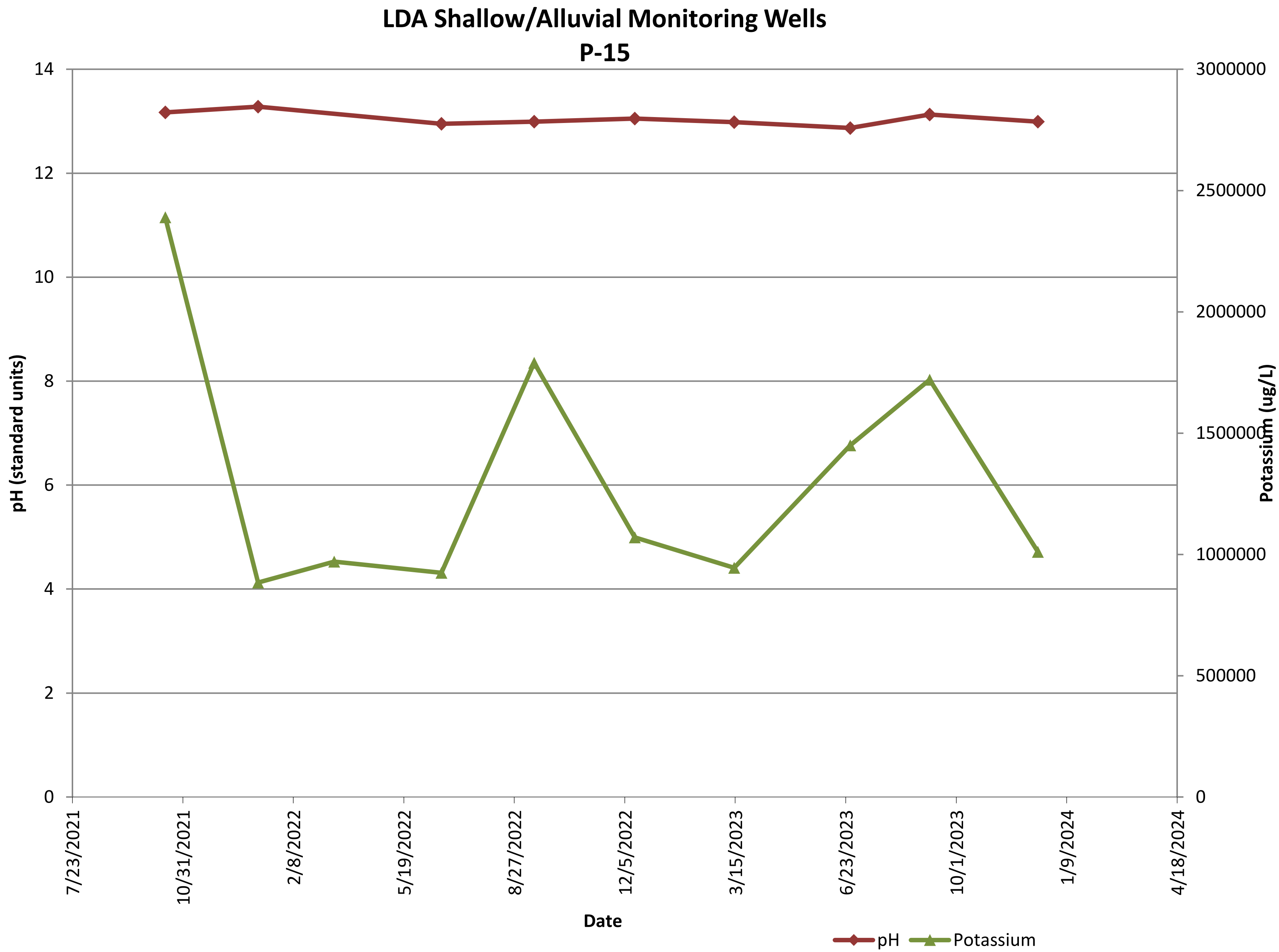
LDA Shallow/Alluvial Monitoring Wells
P-14
pH (standard units)
Antimony (ug/L)
Date
14
12
10
8
6
4
2
0
160
140
120
100
80
60
40
20
0
6/1/2020
12/18/2020
7/6/2021
1/22/2022
8/10/2022
2/26/2023
9/14/2023
pH
Antimony
Antimony PSL (ug/L)



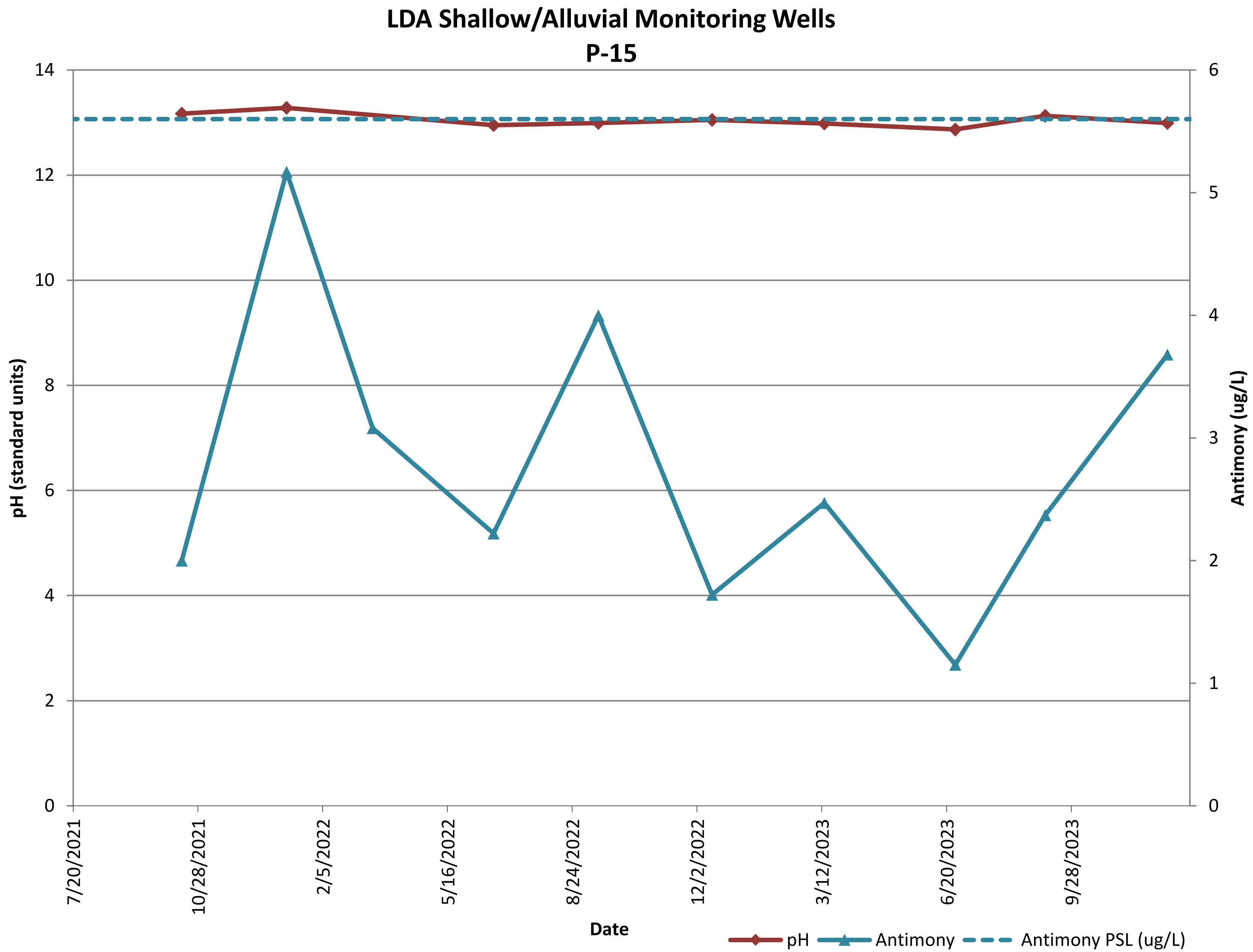
LDA Shallow/Alluvial Monitoring Wells
P-15
pH (standard units)
Arsenic (ug/L)
Date
0
2
4
6
8
10
12
14
0
1
2
3
4
5
6
7
8
9
20-Jul-21
28-Oct-21
5-Feb-22
16-May-22
24-Aug-22
2-Dec-22
12-Mar-23
20-Jun-23
28-Sep-23
pH
pH Limits
Arsenic
Arsenic PSL

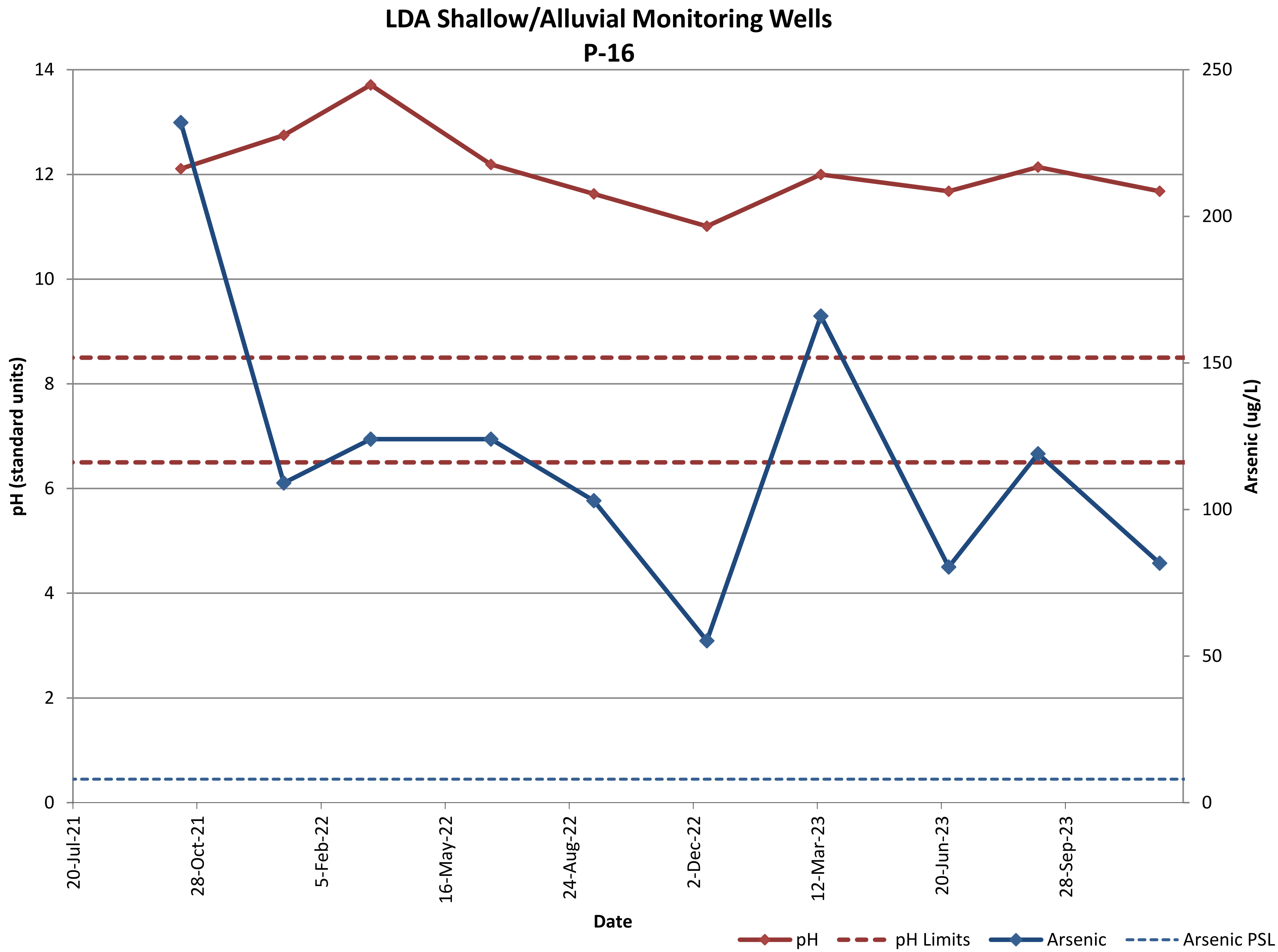


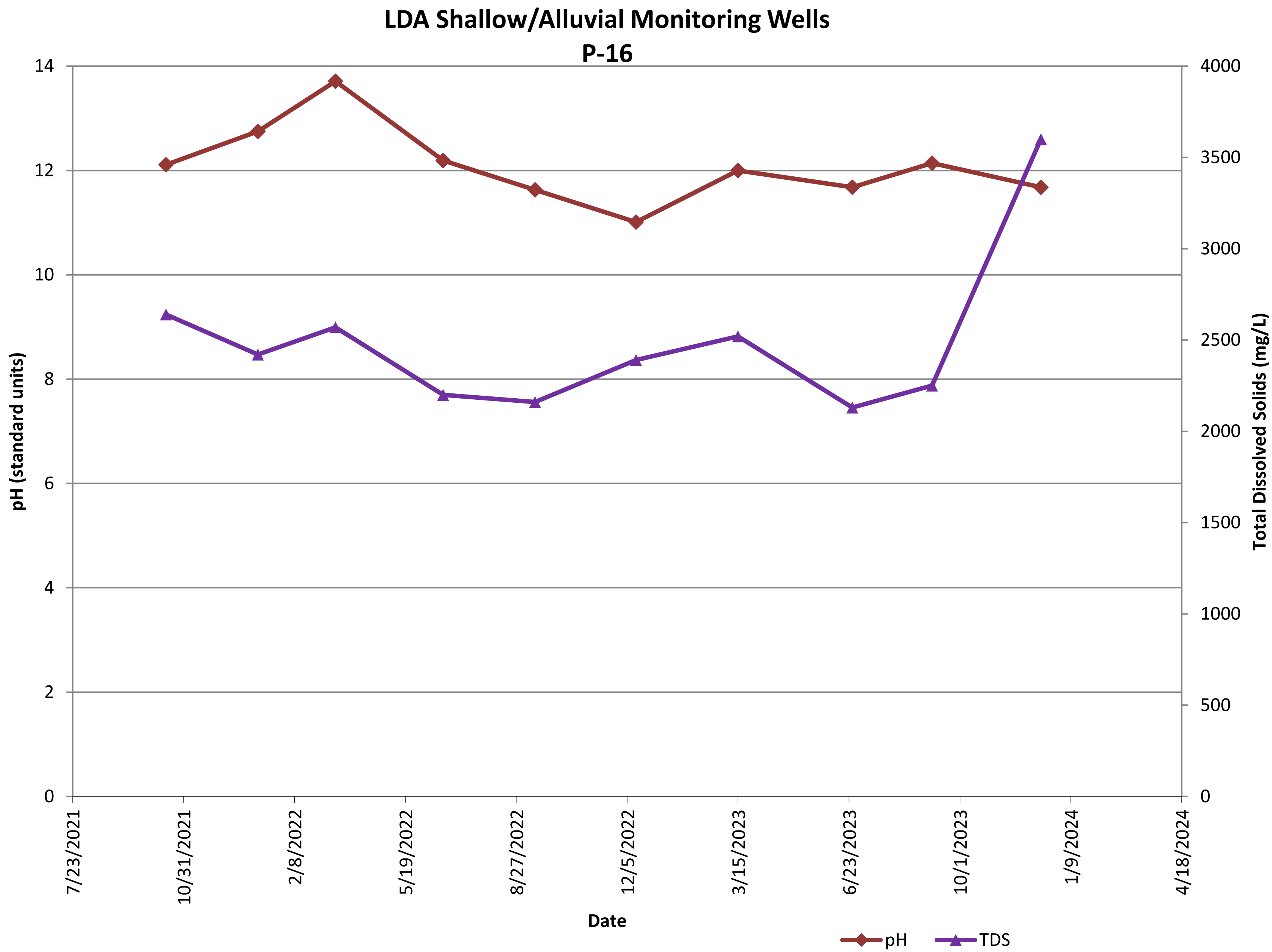
LDA Shallow/Alluvial Monitoring Wells
P-15
pH (standard units)
Total Dissolved Solids (mg/L)
Date
0
2
4
6
8
10
12
14
0
1000
2000
3000
4000
5000
6000
7000
8000
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
pH
TDS

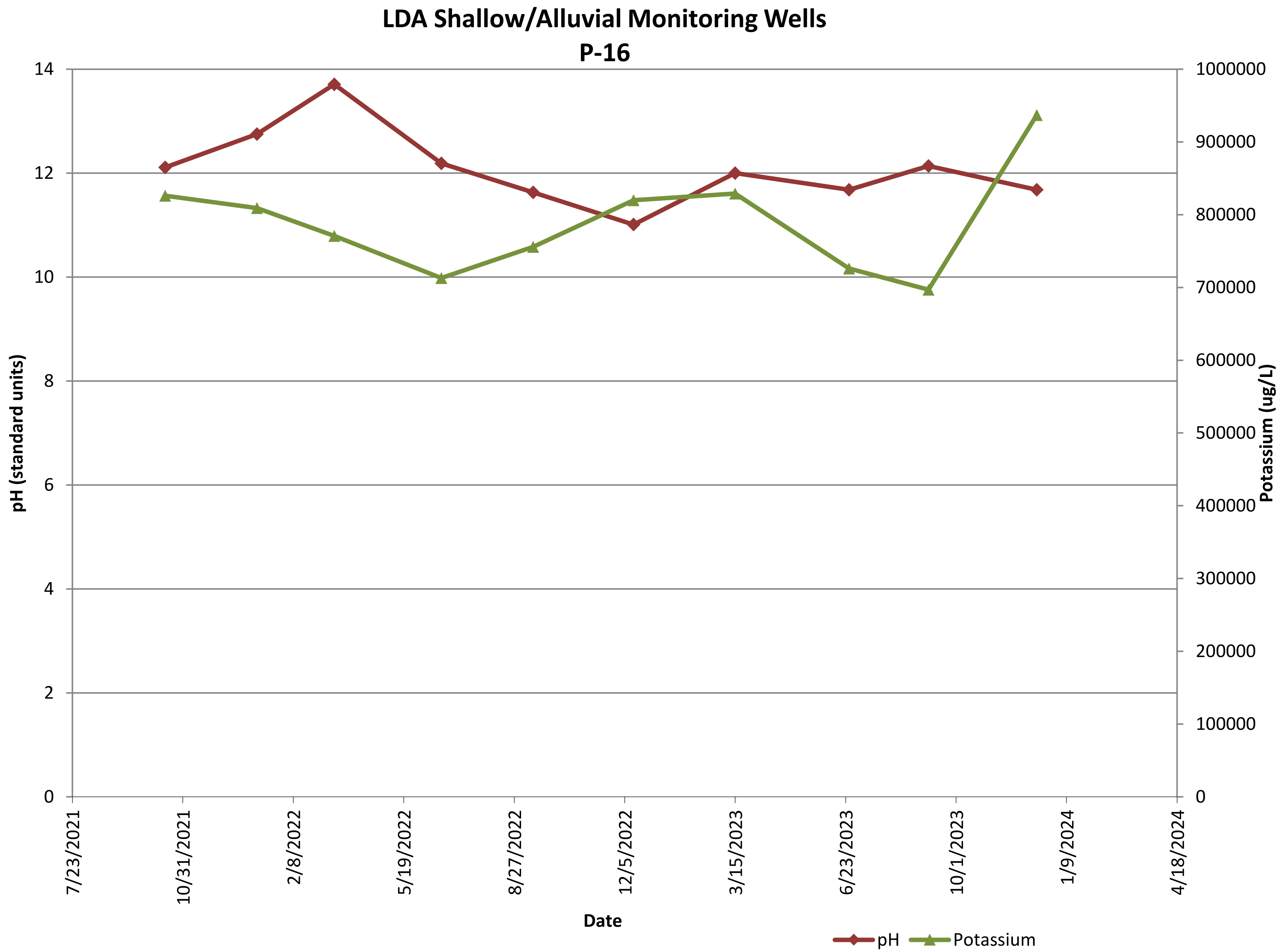


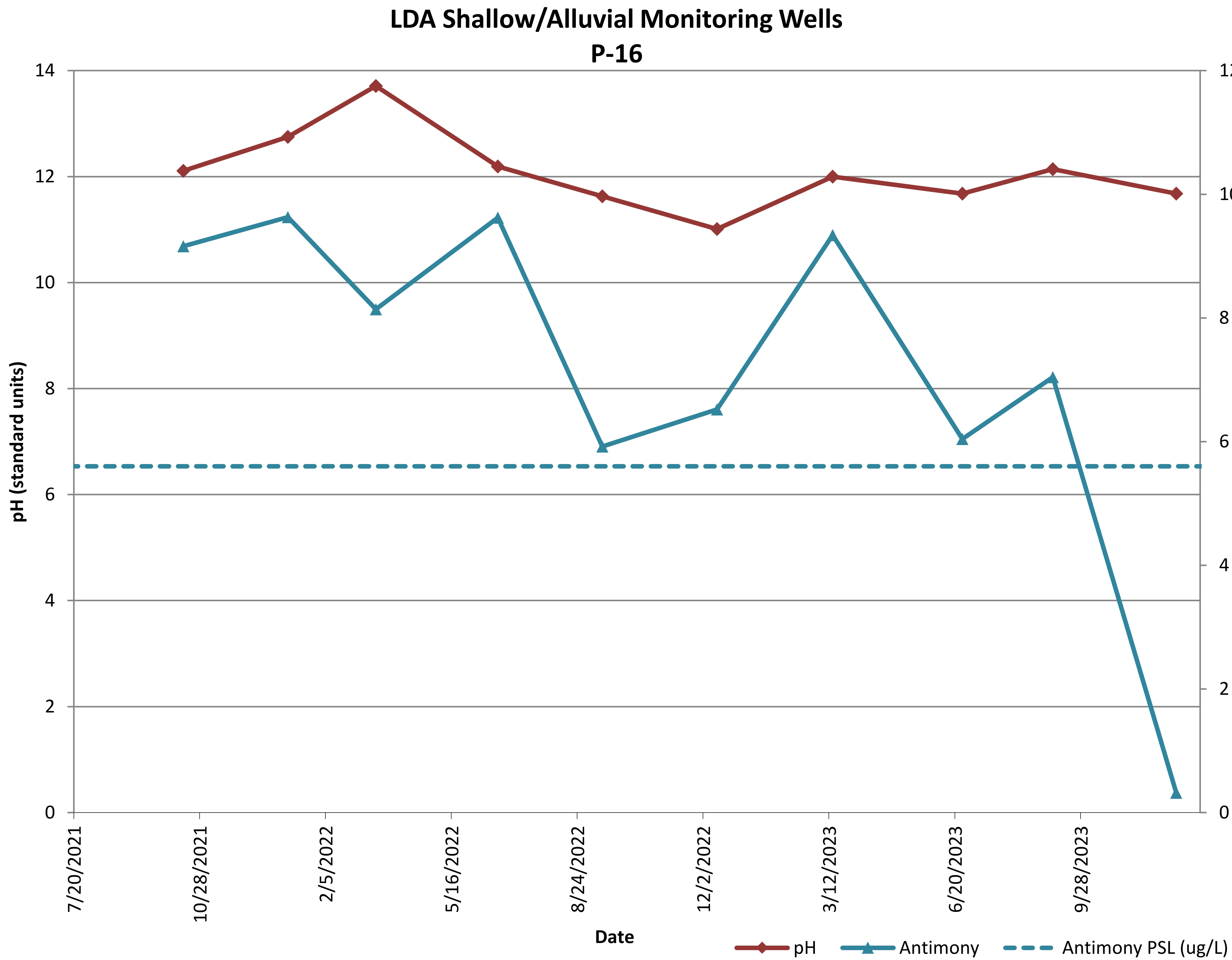
LDA Shallow/Alluvial Monitoring Wells
P-15
pH (standard units)
Potassium (ug/L)
14
12
10
8
6
4
2
0
3000000
2500000
2000000
1500000
1000000
500000
0
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
Date
pH
Potassium


LDA Shallow/Alluvial Monitoring Wells
P-15
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
7/20/2021
10/28/2021
2/5/2022
5/16/2022
8/24/2022
12/2/2022
3/12/2023
6/20/2023
9/28/2023
Date
pH
Antimony
Antimony PSL (ug/L)


LDA Shallow/Alluvial Monitoring Wells
P-16
pH (standard units)
Arsenic (ug/L)
0
2
4
6
8
10
12
14
0
50
100
150
200
250
20-Jul-21
28-Oct-21
5-Feb-22
16-May-22
24-Aug-22
2-Dec-22
12-Mar-23
20-Jun-23
28-Sep-23
Date
pH
pH Limits
Arsenic
Arsenic PSL

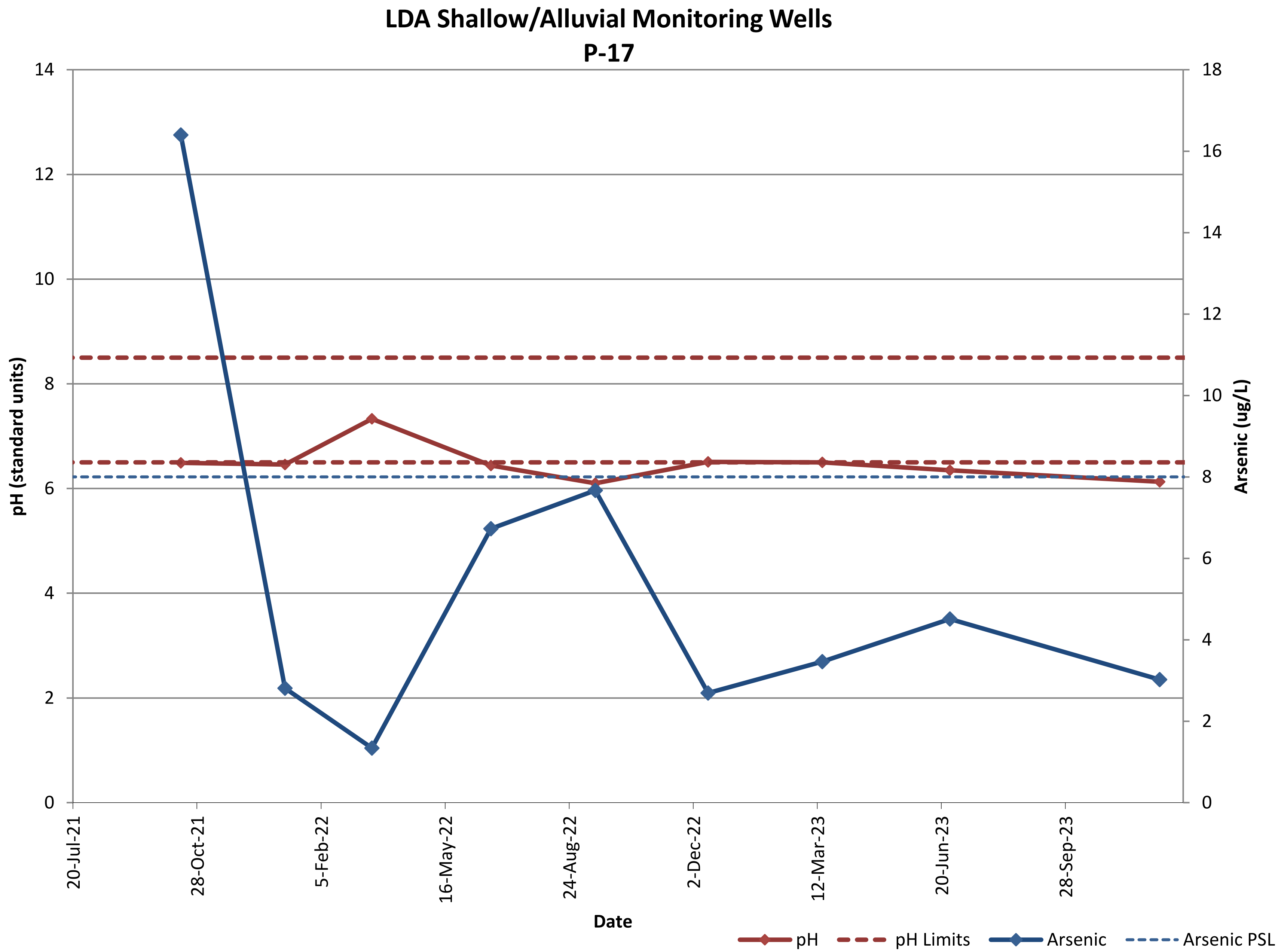

LDA Shallow/Alluvial Monitoring Wells
P-16
pH (standard units)
Total Dissolved Solids (mg/L)
Date
0
2
4
6
8
10
12
14
0
500
1000
1500
2000
2500
3000
3500
4000
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
pH
TDS


LDA Shallow/Alluvial Monitoring Wells
P-16
pH (standard units)
Potassium (ug/L)
Date
14
12
10
8
6
4
2
0
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
pH
Potassium

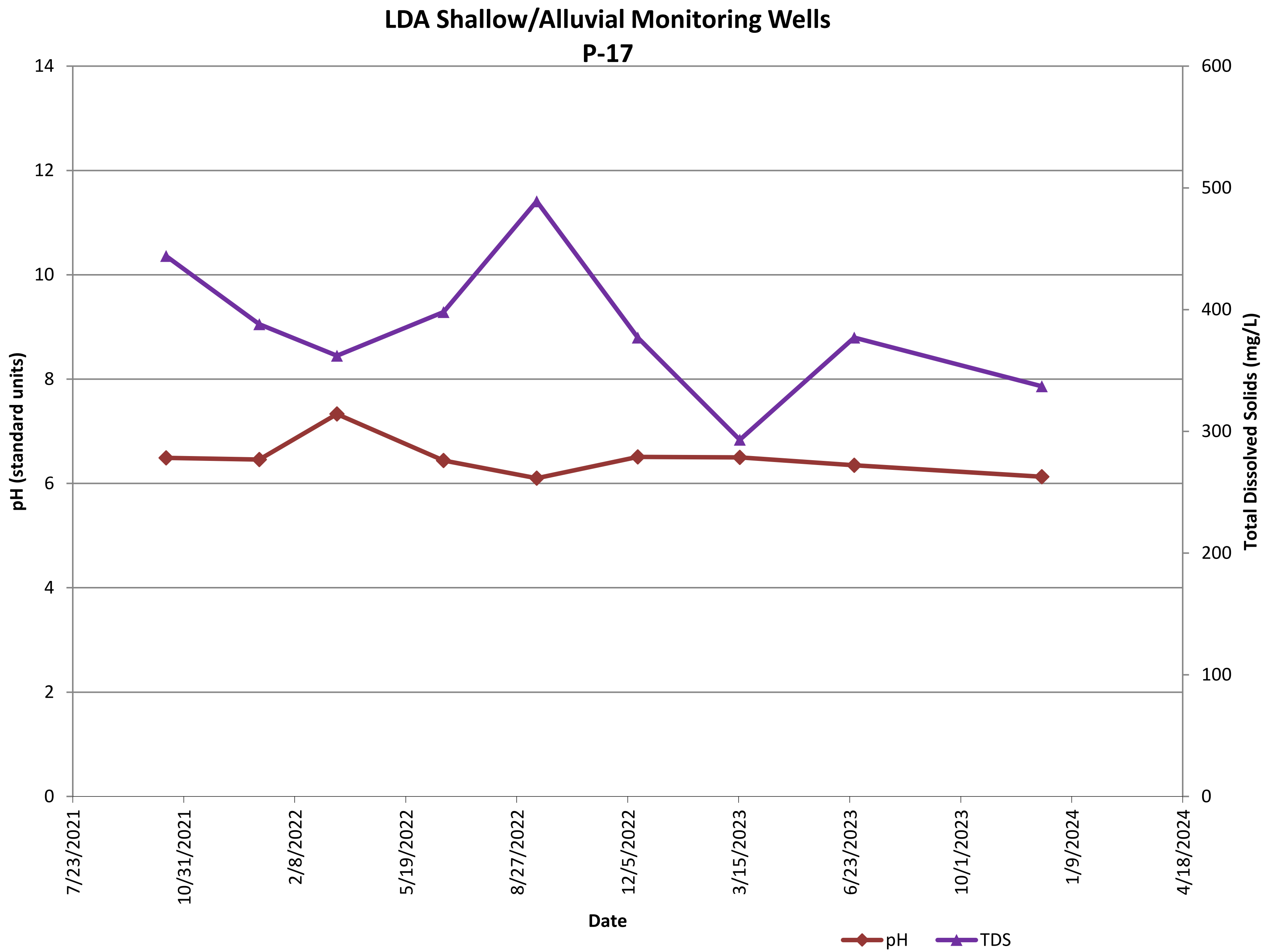


1520304_LDA Infiltration GW Graphs - 2023 Q4_022924.xlsm

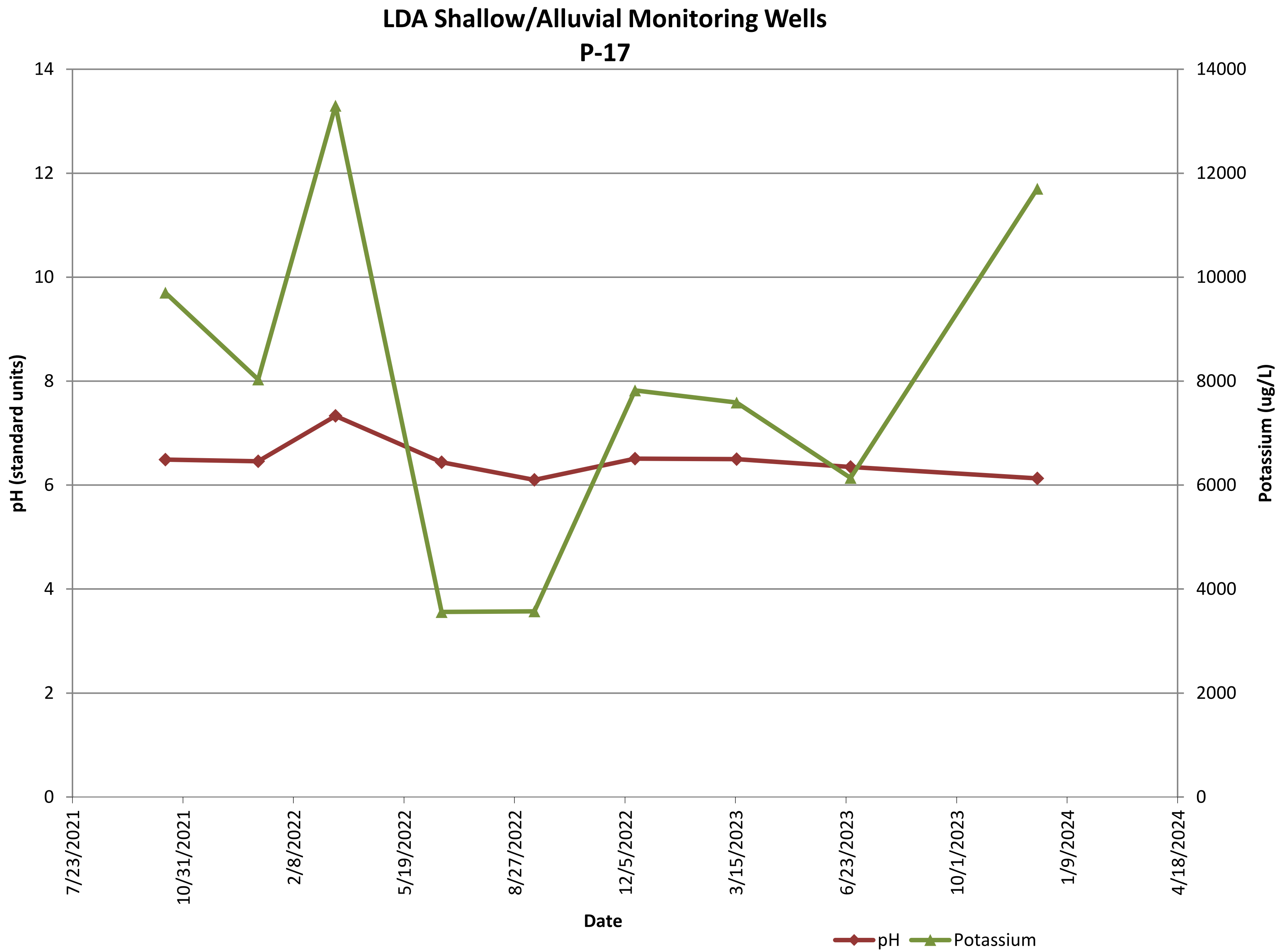
152030420

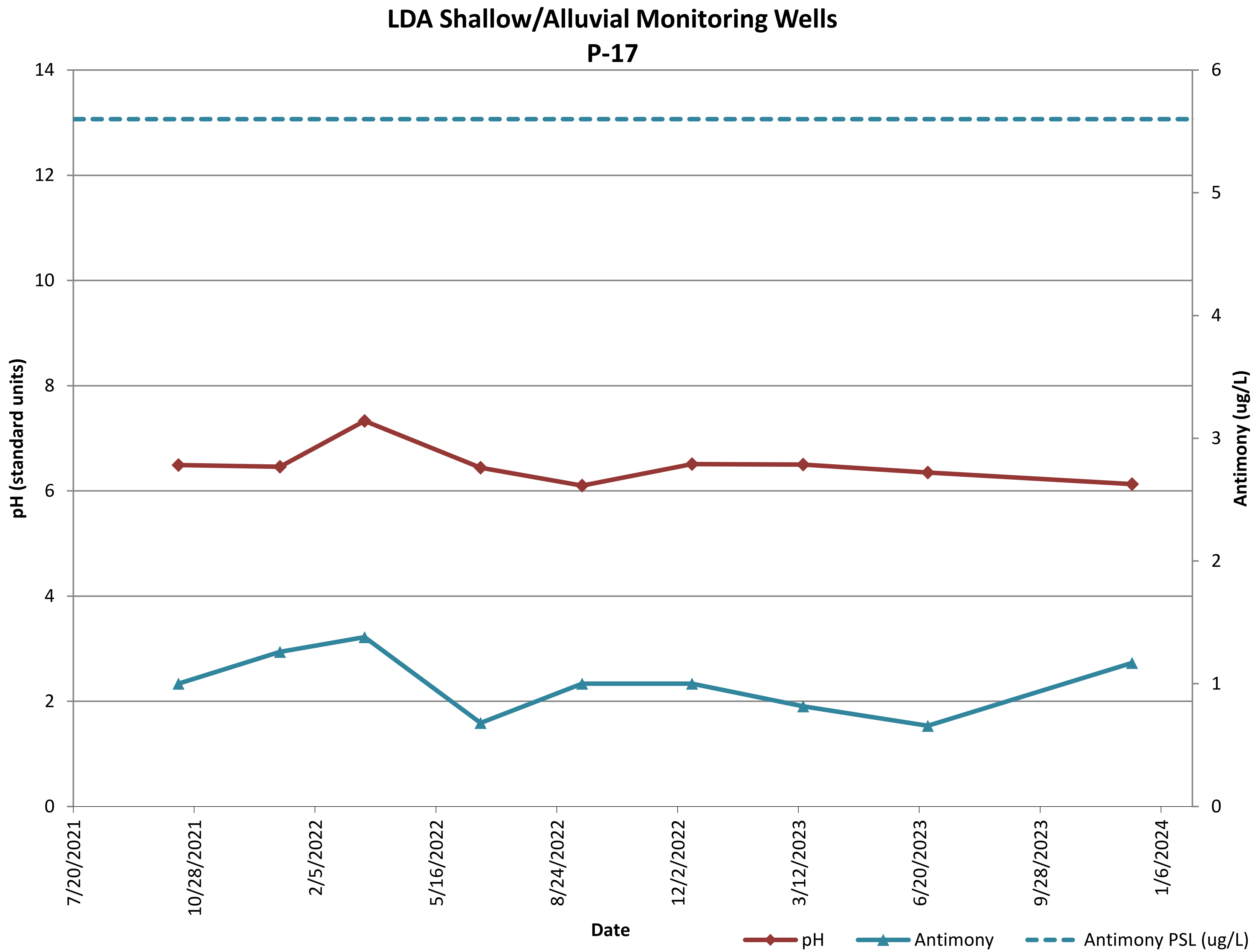


LDA Shallow/Alluvial Monitoring Wells
P-17
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
18
16
14
12
10
8
6
4
2
0
20-Jul-21
28-Oct-21
5-Feb-22
16-May-22
24-Aug-22
2-Dec-22
12-Mar-23
20-Jun-23
28-Sep-23
Date
pH
pH Limits
Arsenic
Arsenic PSL



LDA Shallow/Alluvial Monitoring Wells
P-17
pH (standard units)
Total Dissolved Solids (mg/L)
Date
14
12
10
8
6
4
2
0
600
500
400
300
200
100
0
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
pH
TDS


LDA Shallow/Alluvial Monitoring Wells
P-17
pH (standard units)
Potassium (ug/L)
0
2
4
6
8
10
12
14
0
2000
4000
6000
8000
10000
12000
14000
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
Date
pH
Potassium



LDA Shallow/Alluvial Monitoring Wells
P-17
pH (standard units)
Antimony (ug/L)
14
12
10
8
6
4
2
0
6
5
4
3
2
1
0
7/20/2021
10/28/2021
2/5/2022
5/16/2022
8/24/2022
12/2/2022
3/12/2023
6/20/2023
9/28/2023
1/6/2024
Date
pH
Antimony
Antimony PSL (ug/L)

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):	Infiltration Ponds-1223, South-Pond-1223, Still Well-1223, Interceptor Trench-1223, , MW-35A-1223, MW-1A-1223, MW-2A-1223, MW-3A-1223, MW-4A-1223, MW-5A-1223, MW-6A-1223, MW-7A-1223, MW-8A-1223, MW-9A-1223, MW-10A-1223, P-14-1223, P-15-1223, P-16-1223, P-17-1223, MW-45A-1223, Baja Well-1223, and MW-99-1-1223
Sample Date(s):	12/12/23, 12/13/23, 12/14/23, and 12/15/23
Sample Team:	Sean Johnson, 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.:	23L0486

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 no exceptions.

ANALYTICAL DATA PACKAGE DOCUMENTATION

GENERAL INFORMATION

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

QA – quality assurance

COMMENTS:

Performance was acceptable.

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					
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				
7. MS duplicate (MSD) %R		X		X	
8. MS / MSD RPD		X		X	
9. LCS / LCSD RPD	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:

- Certain MS recoveries are above QC limits. Using professional judgement, when associated samples have a native concentration 4x greater than the spike, no qualifications are required.

Sample ID	Method	Analyte	MS/MSD Recovery (%)	QC limits	Units
Infiltration Ponds-1223	6010D	Potassium, Dissolved	**336/--**	75-125	mg/L

- Field duplicates are as follows: MW-35A-1223 is a duplicate for Infiltration Ponds-1223 and MW-45A-1223 is a field duplicate for MW-2A-1223.

- The lab duplicate was outside the QC limits for dissolved lead. Using professional judgement, associated samples were qualified as estimated. -02

- The following analyte for field duplicate pair MW-35A-1223 / Infiltration Ponds-1223 exceeded RPD limit of 40% for dissolved lead. Following guidelines, samples were qualified as estimated (J).

- The field blank is MW-99-1223. All results were non-detect and 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 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

	Reported		Performance Acceptable		Not Required
TDS (SM 2540C)	NO	YES	NO	YES	
1. Holding times		X		X	
2. Reporting limits		X		X	
3. Blanks					
a. Method blanks		X		X	
b. Equipment rinsate blanks		X		X	
4. Laboratory control sample (LCS) %R		X		X	
5. Matrix spike (MS) %R		X		X	
6. LCS duplicate (LCSD) %R	X				
7. MS duplicate (MSD) %R	X				
8. MS/MSD RPD	X				
9. LCS/LCSD RPD	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-1223 is a duplicate for Infiltration Ponds-1223 and MW-45A-1223 is a field duplicate for MW-2A-1223.

- The field blank is MW-99-1223. All results were non-detect and 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 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.

DATA VALIDATION CHECKLIST

SUMMARY AND DATA QUALIFIER CODES

Project Name:	Ravensdale Project
Project Number:	GL152030402.001/03.LBR
Sample Identification(s):	Infiltration Ponds-1223, South-Pond-1223, Still Well-1223, Interceptor Trench-1223, , MW-35A-1223, MW-1A-1223, MW-2A-1223, MW-3A-1223, MW-4A-1223, MW-5A-1223, MW-6A-1223, MW-7A-1223, MW-8A-1223, MW-9A-1223, MW-10A-1223, P-14-1223, P-15-1223, P-16-1223, P-17-1223, MW-45A-1223, Baja Well-1223, and MW-99-1-1223
Sample Date(s):	12/12/23, 12/13/23, 12/14/23, and 12/15/23
Sample Team:	Sean Johnson, 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)
Laboratory Report No.:	23L0486

Sample ID	Analyte(s)	Old Result	Old Qualifier	New Result	New Qualifier	Reason(s)
MW-35A-1223	Dissolved, Lead	--	--	--	J	Field duplicate RPD exceeded
Infiltration Ponds-1223	Dissolved, Lead	--	--	--	J	Field duplicate and lab duplicate RPD exceeded

VALIDATION PERFORMED BY:	Julia Campbell, WSP
DATE:	2/6/24
PEER REVIEW PERFORMED BY:	**Michael Shadle, WSP**
DATE:	2/23/24

	Infiltration Ponds	MW-35A Duplicate					
Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Antimony	22.7	21.6	5%	ug/L		0.4	0.202
Arsenic	15.3	14.4	6%	ug/L		0.4	0.0746
Potassium	447	438	2%	mg/L		1	0.214
Lead	2.16	2.09	3%	ug/L		0.2	0.103
Vanadium	3.31	3.09	7%	ug/L		0.4	0.111
Total Dissolved Solids	1240	1320	6%	ug/L		13	13
Antimony, dissolved	21.1	22	4%	ug/L		0.4	0.202
Arsenic, dissolved	14	14.6	4%	ug/L		0.4	0.044
Potassium, dissolved	429	440	3%	ug/L		1	0.214
Lead, dissolved	0.978	0.638	42%	ug/L	J	0.2	0.136
Vanadium, dissolved	2.67	2.74	3%	mg/L		0.4	0.111

	MW-2A	MW-45A Duplicate					
Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Antimony	3.53	3.52	0%	ug/L		0.4	0.202
Arsenic	1.94	1.98	2%	ug/L		0.4	0.0746
Potassium	133	131	2%	ug/L		0.5	0.107
Lead	0.103	0.103	0%	mg/L		0.2	0.103
Vanadium	1.5	1.48	1%	ug/L		0.4	0.111
Total Dissolved Solids	529	552	4%	mg/L		10	10

Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

11 January 2024

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

RE: Ravensdale (Ravensdale)

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

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

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

Associated Work Order(s)	Associated SDG ID(s)
23L0486	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

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.

Kelly Bottem

Kelly Bottem, Client Services Manager

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 23L0486	Turn-around Requested: Standard	Date: 12/18/23	**Analytical Resources, Incorporated** Analytical Chemists and Consultants 4611 South 134th Place, Suite 100 Tukwila, WA 98168 206-695-6200 206-695-6201 (fax)
ARI Client Company: WSP	Phone: (425) 883-0777	Page: 1 of 3	
Client Contact: Gary Zimmerman		No. of Coolers: 2 Cooler Temps: 0.3 0.8	
Client Project Name: Ravensdale 2023 Q4 Sampling			
Client Project #: GL152030402.001	Samplers: AU + TK		

Sample ID	Date	Time	Matrix	No. Containers	Total Metals: As, Pb, Sb, V, K	TDS	Dissolved Metals: As, Pb, Sb, V, K						Notes/Comments
Infiltration Ponds-1223	12/15/23	1330	W	3	X	X	X						
South Pond-1223	~~12/23~~ 12/13/23	1105	W	2	X	X							
Still Well-1223	12/15/23	1235	W	2	X	X							
Interceptor Trench-1223	12/12/23	1525	W	1		X							
MW-35A-1223	12/15/23	1335	W	3	X	X	X						
MW-1A-1223	12/12/23	1130	W	2	X	X							
MW-2A-1223	12/12/23	1220	W	2	X	X							
MW-3A-1223	12/13/23	1330	W	2	X	X							
MW-4A-1223	12/11/23	1055	W	6	X	X							MS/MSD
MW-5A-1223	12/12/23	1450	W	2	X	X							

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
Analyze in accordance with MSA between Golder/WSP and ARI.	(Signature) [signature]	(Signature) [signature]	(Signature)	(Signature)
	Printed Name: Andrew Luser	Printed Name: Matthew Ponel	Printed Name:	Printed Name:
Ecology EIM EDD.	Company: WSP	Company: ARI	Company:	Company:
	Date & Time: 12/18/23 1121	Date & Time: 12/18/23 1121	Date & Time:	Date & Time:

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

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 23L0486	Turn-around Requested: Standard	Date: 12/18/23	Page: 2 of 3
ARI Client Company: WSP	Phone: (425) 883-0777	No. of Coolers: 2	Cooler Temps: 0.3 0.8
Client Contact: Gary Zimmerman			
Client Project Name: Ravensdale 2023 Q4 Sampling			
Client Project #: GL152030402.001	Samplers: AW + TK		

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

Sample ID	Date	Time	Matrix	No. Containers	Total Metals: As, Pb, Sb, V, K	TDS	Dissolved Metals: As, Pb, Sb, V, K						Notes/Comments
MW-6A-1223	12/12/23	1350	W	2	X	X							
MW-7A-1223	12/15/23	1555	W	2	X	X							
MW-8A-1223	12/15/23	1505	W	2	X	X							
MW-9A-1223	12/13/23	1536	W	2	X	X							
MW-10A-1223	12/13/23	1210	W	2	X	X							
P-14-1223	12/14/23	1315	W	2	X	X							
P-15-1223	12/14/23	1440	W	2	X	X							
P-16-1223	12/13/23	1055	W	2	X	X							
P-17-1223	12/13/23	1445	W	2	X	X							
MW-45A-1223	12/12/23	1225	W	2	X	X							

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
Analyze in accordance with MSA between Golder/WSP and ARI.	(Signature) [signature]	(Signature) [signature]	(Signature)	(Signature)
Ecology EIM EDD.	Printed Name: Andrew Wiser	Printed Name: Matthew Perrin	Printed Name:	Printed Name:
	Company: WSP	Company: ARI	Company:	Company:
	Date & Time: 12/18/23 1121	Date & Time: 12/18/23 1121	Date & Time:	Date & Time:

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Chain of Custody Record & Laboratory Analysis Request

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ARI Client Company: WSP	Phone: (425) 883-0777	Page: 3 of 3	
Client Contact: Gary Zimmerman		No. of Coolers: 2 / Cooler Temps: 0.8 03	
Client Project Name: Ravensdale 2023 Q4 Sampling			
Client Project #: GL152030402.001	Samplers: AW + TK		

Sample ID	Date	Time	Matrix	No. Containers	Total Metals: As, Pb, Sb, V, K	TDS	Dissolved Metals: As, Pb, Sb, V, K						Notes/Comments
Basin Well-1223	12/15/23	1405	W	2	X	X							
MW-99-1-1223	12/15/23	1340	W	2	X	X							

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
Analyze in accordance with MSA between Golder/WSP and ARI. Ecology EIM EDD.	(Signature) [signature]	(Signature) [signature]	(Signature)	(Signature)
	Printed Name: Andrew Wheeler	Printed Name: Matthew Rome	Printed Name:	Printed Name:
	Company: WSP	Company: ARI	Company:	Company:
	Date & Time: 12/18/23 1121	Date & Time: 12/18/23 1121	Date & Time:	Date & Time:

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Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Infiltration Ponds-1223	23L0486-01	Water	15-Dec-2023 13:30	18-Dec-2023 11:21
Infiltration Ponds-1223	23L0486-02	Water	15-Dec-2023 13:30	18-Dec-2023 11:21
South-Pond-1223	23L0486-03	Water	13-Dec-2023 11:05	18-Dec-2023 11:21
Still Well-1223	23L0486-04	Water	15-Dec-2023 12:35	18-Dec-2023 11:21
Interceptor Trench-1223	23L0486-05	Water	12-Dec-2023 15:25	18-Dec-2023 11:21
MW-35A-1223	23L0486-06	Water	15-Dec-2023 13:35	18-Dec-2023 11:21
MW-35A-1223	23L0486-07	Water	15-Dec-2023 13:35	18-Dec-2023 11:21
MW-1A-1223	23L0486-08	Water	12-Dec-2023 11:30	18-Dec-2023 11:21
MW-2A-1223	23L0486-09	Water	12-Dec-2023 12:20	18-Dec-2023 11:21
MW-3A-1223	23L0486-10	Water	13-Dec-2023 13:30	18-Dec-2023 11:21
MW-4A-1223	23L0486-11	Water	12-Dec-2023 11:30	18-Dec-2023 11:21
MW-5A-1223	23L0486-12	Water	12-Dec-2023 14:50	18-Dec-2023 11:21
MW-6A-1223	23L0486-13	Water	12-Dec-2023 13:50	18-Dec-2023 11:21
MW-7A-1223	23L0486-14	Water	15-Dec-2023 15:55	18-Dec-2023 11:21
MW-8A-1223	23L0486-15	Water	15-Dec-2023 15:05	18-Dec-2023 11:21
MW-9A-1223	23L0486-16	Water	13-Dec-2023 15:35	18-Dec-2023 11:21
MW-10A-1223	23L0486-17	Water	13-Dec-2023 12:10	18-Dec-2023 11:21
P-14-1223	23L0486-18	Water	14-Dec-2023 13:15	18-Dec-2023 11:21
P-15-1223	23L0486-19	Water	14-Dec-2023 14:40	18-Dec-2023 11:21
P-16-1223	23L0486-20	Water	13-Dec-2023 10:55	18-Dec-2023 11:21
P-17-1223	23L0486-21	Water	13-Dec-2023 14:45	18-Dec-2023 11:21
MW-45A-1223	23L0486-22	Water	12-Dec-2023 12:25	18-Dec-2023 11:21
Baja Well-1223	23L0486-23	Water	15-Dec-2023 14:05	18-Dec-2023 11:21
MW-99-1-1223	23L0486-24	Water	15-Dec-2023 13:40	18-Dec-2023 11:21

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

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 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 sample duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 12/18/2023 12:45:52PM

WORK ORDER

23L0486

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

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

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

Preservation Confirmation

Container ID	Container Type	pH	
23L0486-01 A	HDPE NM, 1000 mL		
23L0486-01 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (P)
23L0486-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23L0486-03 A	HDPE NM, 1000 mL		
23L0486-03 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-04 A	HDPE NM, 1000 mL		
23L0486-04 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-05 A	HDPE NM, 1000 mL		
23L0486-06 A	HDPE NM, 1000 mL		
23L0486-06 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-07 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23L0486-08 A	HDPE NM, 1000 mL		
23L0486-08 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-09 A	HDPE NM, 1000 mL		
23L0486-09 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-10 A	HDPE NM, 1000 mL		
23L0486-10 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-11 A	HDPE NM, 1000 mL		
23L0486-11 B	HDPE NM, 1000 mL		
23L0486-11 C	HDPE NM, 1000 mL		
23L0486-11 D	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-11 E	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-11 F	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-12 A	HDPE NM, 1000 mL		
23L0486-12 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-13 A	HDPE NM, 1000 mL		
23L0486-13 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-14 A	HDPE NM, 1000 mL		
23L0486-14 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-15 A	HDPE NM, 1000 mL		
23L0486-15 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-16 A	HDPE NM, 1000 mL		
23L0486-16 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-17 A	HDPE NM, 1000 mL		

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 12/18/2023 12:45:52PM

WORK ORDER

23L0486

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

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

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

23L0486-17 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (P)
23L0486-18 A	HDPE NM, 1000 mL		
23L0486-18 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-19 A	HDPE NM, 1000 mL		
23L0486-19 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-20 A	HDPE NM, 1000 mL		
23L0486-20 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-21 A	HDPE NM, 1000 mL		
23L0486-21 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-22 A	HDPE NM, 1000 mL		
23L0486-22 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-23 A	HDPE NM, 1000 mL		
23L0486-23 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0486-24 A	HDPE NM, 1000 mL		
23L0486-24 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P

JBr
Preservation Confirmed By

12/18/23
Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: WSP

Project Name: Ravensdale Q4

COC No(s): ______ NA

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

Assigned ARI Job No: 23L0486

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) 0.3 0.8

Time 1121

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

Temp Gun ID#: SC0e7208

Cooler Accepted by: MD Date: 12/18/23 Time: 1121

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: JJB Date: 12/18/23 Time: 1232 Labels checked by: JJB

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Inflitration Ponds-1223

23L0486-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED   Sampled: 12/15/2023 13:30

Instrument: ICPMS1   Analyst: HAL   Analyzed: 12/28/2023 23:51

Sample Preparation: Preparation Method: REN - EPA 3010A M   Extract ID: 23L0486-01 B 01

Preparation Batch: BLL0721   Sample Size: 25 mL

Prepared: 12/27/2023   Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	15.3	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Inflitration Ponds-1223

23L0486-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/15/2023 13:30

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:51

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-01 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	22.7	ug/L	D
Lead	7439-92-1	2	0.103	0.200	2.16	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	3.31	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Inflitration Ponds-1223

23L0486-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/15/2023 13:30

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 11:06

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-01 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	447	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Inflitration Ponds-1223

23L0486-01 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/15/2023 13:30

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-01

Preparation Batch: BLL0554 — Sample Size: 75 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	1240	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Inflitration Ponds-1223

23L0486-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 12/15/2023 13:30

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:46

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-02 A 02

Preparation Batch: BLL0791 — Sample Size: 25 mL

Prepared: 12/29/2023 — 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	14.0	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Inflitration Ponds-1223

23L0486-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 12/15/2023 13:30

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:46

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-02 A 02

Preparation Batch: BLL0791 — Sample Size: 25 mL

Prepared: 12/29/2023 — 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	21.1	ug/L	D
Lead, Dissolved	7439-92-1	2	0.136	0.200	0.978	ug/L	D
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	2.67	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Inflitration Ponds-1223

23L0486-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 12/15/2023 13:30

Instrument: ICP3 Analyst: DOE — Analyzed: 12/20/2023 10:19

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 23L0486-02 A 01

Preparation Batch: BLL0509 — Sample Size: 25 mL

Prepared: 12/18/2023 — 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	429	mg/L	D

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

South-Pond-1223

23L0486-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/13/2023 11:05

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:55

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-03 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	21.1	ug/L	D

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

South-Pond-1223

23L0486-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/13/2023 11:05

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:55

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-03 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	3.98	ug/L	D
Lead	7439-92-1	2	0.103	0.200	15.8	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	53.4	ug/L	D

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

South-Pond-1223

23L0486-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/13/2023 11:05

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 11:09

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-03 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	394	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

South-Pond-1223

23L0486-03 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/13/2023 11:05

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-03

Preparation Batch: BLL0554 — Sample Size: 75 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	1180	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Still Well-1223
23L0486-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/15/2023 12:35
Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:59

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-04 B 01
Preparation Batch: BLL0721 — Sample Size: 25 mL
Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	35.8	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Still Well-1223

23L0486-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/15/2023 12:35

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:59

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-04 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	25.5	ug/L	D
Lead	7439-92-1	2	0.103	0.200	4.91	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	2.87	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Still Well-1223
23L0486-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/15/2023 12:35

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 11:11

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-04 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	367	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Still Well-1223

23L0486-04 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/15/2023 12:35

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-04

Preparation Batch: BLL0554 — Sample Size: 50 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1120	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Interceptor Trench-1223

23L0486-05 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/12/2023 15:25

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-05

Preparation Batch: BLL0554 — Sample Size: 100 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	244	mg/L	

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-35A-1223

23L0486-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/15/2023 13:35

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:03

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-06 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	14.4	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-35A-1223

23L0486-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/15/2023 13:35

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:03

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-06 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.204	0.400	21.6	ug/L	D
Lead	7439-92-1	2	0.103	0.200	2.09	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	3.09	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-35A-1223

23L0486-06 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/15/2023 13:35

Instrument: ICP3 Analyst: SH — Analyzed: 12/27/2023 12:21

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-06 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	438	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-35A-1223

23L0486-06 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/15/2023 13:35

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-06

Preparation Batch: BLL0554 — Sample Size: 50 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1320	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-35A-1223

23L0486-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 12/15/2023 13:35

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:41

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-07 A 02

Preparation Batch: BLL0791 — Sample Size: 25 mL

Prepared: 12/29/2023 — 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	14.6	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-35A-1223

23L0486-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 12/15/2023 13:35

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:41

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-07 A 02

Preparation Batch: BLL0791 — Sample Size: 25 mL

Prepared: 12/29/2023 — 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	22.0	ug/L	D
Lead, Dissolved	7439-92-1	2	0.136	0.200	0.638	ug/L	D
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	2.74	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-35A-1223

23L0486-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D — Sampled: 12/15/2023 13:35

Instrument: ICP3 Analyst: DOE — Analyzed: 12/20/2023 10:22

Sample Preparation: Preparation Method: WMN (No Prep) — Extract ID: 23L0486-07 A 01

Preparation Batch: BLL0509 — Sample Size: 25 mL

Prepared: 12/18/2023 — 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	440	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-1A-1223

23L0486-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/12/2023 11:30

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:12

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-08 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.39	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-1A-1223

23L0486-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/12/2023 11:30

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:12

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-08 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.71	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	0.986	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-1A-1223

23L0486-08 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/12/2023 11:30

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 09:16

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-08 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	43.4	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-1A-1223

23L0486-08 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/12/2023 11:30

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-08

Preparation Batch: BLL0554 — Sample Size: 100 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	424	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-2A-1223

23L0486-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/12/2023 12:20

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:08

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-09 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.94	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-2A-1223

23L0486-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/12/2023 12:20

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:08

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-09 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	3.53	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	1.50	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-2A-1223

23L0486-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/12/2023 12:20

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 09:41

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-09 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	133	mg/L	

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-2A-1223

23L0486-09 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/12/2023 12:20

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-09

Preparation Batch: BLL0554 — Sample Size: 100 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	529	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-3A-1223

23L0486-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/13/2023 13:30

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:36

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-10 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	3.70	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-3A-1223

23L0486-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/13/2023 13:30

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:36

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-10 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	4.61	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.208	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	0.816	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-3A-1223

23L0486-10 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/13/2023 13:30

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 09:44

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-10 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	82.9	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-3A-1223

23L0486-10 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/13/2023 13:30

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-10

Preparation Batch: BLL0554 — Sample Size: 100 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	343	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-4A-1223

23L0486-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/12/2023 11:30

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 03:45

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-11 D 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.218	ug/L	J, D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-4A-1223

23L0486-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/12/2023 11:30

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 03:45

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-11 D 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — 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	5	0.257	0.500	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	1.25	ug/L	D

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-4A-1223

23L0486-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/12/2023 11:30

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 08:45

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-11 F 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.527	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-4A-1223

23L0486-11 (Water)

Wet Chemistry

Method: SM 2540 C-97 | Sampled: 12/12/2023 11:30

Instrument: BAL2 Analyst: EML2 | Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem | Extract ID: 23L0486-11

Preparation Batch: BLL0554 | Sample Size: 100 mL

Prepared: 12/19/2023 | Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	255	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-5A-1223

23L0486-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/12/2023 14:50

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:32

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-12 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	2.69	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-5A-1223

23L0486-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/12/2023 14:50

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:32

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-12 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	4.62	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	1.71	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-5A-1223

23L0486-12 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/12/2023 14:50

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 09:47

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-12 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	225	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-5A-1223

23L0486-12 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/12/2023 14:50

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-12

Preparation Batch: BLL0554 — Sample Size: 75 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	847	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-6A-1223

23L0486-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/12/2023 13:50

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:44

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-13 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	2.09	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-6A-1223

23L0486-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/12/2023 13:50

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:44

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-13 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	6.48	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.254	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	1.00	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-6A-1223

23L0486-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/12/2023 13:50

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 09:50

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-13 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	266	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-6A-1223

23L0486-13 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/12/2023 13:50

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-13

Preparation Batch: BLL0554 — Sample Size: 100 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	766	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-7A-1223

23L0486-14 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/15/2023 15:55

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:49

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-14 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.95	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-7A-1223

23L0486-14 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/15/2023 15:55

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:49

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-14 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	4.03	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	1.25	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-7A-1223

23L0486-14 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/15/2023 15:55

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 09:53

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-14 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	113	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-7A-1223

23L0486-14 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/15/2023 15:55

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-14

Preparation Batch: BLL0554 — Sample Size: 100 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	577	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-8A-1223

23L0486-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/15/2023 15:05

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:40

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-15 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	5.52	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-8A-1223

23L0486-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/15/2023 15:05

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/29/2023 00:40

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-15 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	4.10	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.148	ug/L	J, D
Vanadium	7440-62-2	2	0.111	0.400	3.64	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-8A-1223

23L0486-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/15/2023 15:05

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 09:56

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-15 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	220	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-8A-1223

23L0486-15 (Water)

Wet Chemistry

Method: SM 2540 C-97 | Sampled: 12/15/2023 15:05

Instrument: BAL2 Analyst: EML2 | Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem | Extract ID: 23L0486-15

Preparation Batch: BLL0554 | Sample Size: 100 mL

Prepared: 12/19/2023 | Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	760	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-9A-1223

23L0486-16 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/13/2023 15:35

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 01:57

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-16 B 02

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.470	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-9A-1223

23L0486-16 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/13/2023 15:35

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 01:57

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-16 B 02

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — 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	0.846	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-9A-1223

23L0486-16 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/13/2023 15:35

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 09:58

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-16 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	1.42	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-9A-1223

23L0486-16 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/13/2023 15:35

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-16

Preparation Batch: BLL0554 — Sample Size: 100 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	297	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-10A-1223

23L0486-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED | Sampled: 12/13/2023 12:10

Instrument: ICPMS2 Analyst: MCB | Analyzed: 01/06/2024 02:02

Sample Preparation: Preparation Method: REN - EPA 3010A M | Extract ID: 23L0486-17 B 02

Preparation Batch: BLL0721 | Sample Size: 25 mL

Prepared: 12/27/2023 | Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.596	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-10A-1223
23L0486-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/13/2023 12:10
Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:02

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-17 B 02
Preparation Batch: BLL0721 — Sample Size: 25 mL
Prepared: 12/27/2023 — 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	0.746	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-10A-1223

23L0486-17 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/13/2023 12:10

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 10:01

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-17 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.977	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-10A-1223

23L0486-17 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/13/2023 12:10

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-17

Preparation Batch: BLL0554 — Sample Size: 200 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	111	mg/L	

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-14-1223

23L0486-18 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/14/2023 13:15

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:18

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-18 B 02

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	216	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-14-1223

23L0486-18 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/14/2023 13:15

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:18

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-18 B 02

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	10	1.01	2.00	116	ug/L	D
Lead	7439-92-1	10	0.513	1.00	6.93	ug/L	D
Vanadium	7440-62-2	10	0.556	2.00	17.2	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-14-1223

23L0486-18 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/14/2023 13:15

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 11:16

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-18 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	10	1.07	5.00	2220	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-14-1223

23L0486-18 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/14/2023 13:15

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-18

Preparation Batch: BLL0555 — Sample Size: 50 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	6190	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-15-1223

23L0486-19 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/14/2023 14:40

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:12

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-19 B 02

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	6.70	ug/L	D

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-15-1223

23L0486-19 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/14/2023 14:40

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:12

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-19 B 02

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	3.68	ug/L	D
Lead	7439-92-1	5	0.257	0.500	111	ug/L	D
Vanadium	7440-62-2	5	0.278	1.00	0.480	ug/L	J, D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-15-1223

23L0486-19 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/14/2023 14:40

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 10:44

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-19 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	1010	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-15-1223

23L0486-19 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/14/2023 14:40

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-19

Preparation Batch: BLL0555 — Sample Size: 10 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	100	100	3600	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-16-1223

23L0486-20 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/13/2023 10:55

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/08/2024 23:28

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-20 B 02
Preparation Batch: BLL0721 — Sample Size: 25 mL
Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	81.7	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-16-1223

23L0486-20 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/13/2023 10:55

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 02:07

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-20 B 02

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	0.322	ug/L	J, D
Lead	7439-92-1	5	0.257	0.500	0.675	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	223	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-16-1223

23L0486-20 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/13/2023 10:55

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 11:19

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-20 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	937	mg/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-16-1223

23L0486-20 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/13/2023 10:55

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-20

Preparation Batch: BLL0555 — Sample Size: 20 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	50	50	3600	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-17-1223

23L0486-21 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED | Sampled: 12/13/2023 14:45

Instrument: ICPMS1 Analyst: HAL | Analyzed: 12/28/2023 23:39

Sample Preparation: Preparation Method: REN - EPA 3010A M | Extract ID: 23L0486-21 B 01

Preparation Batch: BLL0721 | Sample Size: 25 mL

Prepared: 12/27/2023 | Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	3.02	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-17-1223

23L0486-21 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/13/2023 14:45

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:39

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-21 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.17	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	1.32	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-17-1223

23L0486-21 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/13/2023 14:45

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 10:21

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-21 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	11.7	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

P-17-1223

23L0486-21 (Water)

Wet Chemistry

Method: SM 2540 C-97 Sampled: 12/13/2023 14:45

Instrument: BAL2 Analyst: EML2 Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23L0486-21

Preparation Batch: BLL0555 Sample Size: 100 mL

Prepared: 12/19/2023 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	337	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-45A-1223

23L0486-22 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/12/2023 12:25

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:43

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-22 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.98	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-45A-1223
23L0486-22 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/12/2023 12:25
Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:43

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-22 B 01
Preparation Batch: BLL0721 — Sample Size: 25 mL
Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	3.52	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	1.48	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-45A-1223

23L0486-22 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/12/2023 12:25

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 10:24

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-22 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	131	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-45A-1223

23L0486-22 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/12/2023 12:25

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-22

Preparation Batch: BLL0555 — Sample Size: 100 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	552	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Baja Well-1223

23L0486-23 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/15/2023 14:05

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:47

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-23 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.324	ug/L	J, D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Baja Well-1223

23L0486-23 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/15/2023 14:05

Instrument: ICPMS1 Analyst: HAL — Analyzed: 12/28/2023 23:47

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-23 B 01

Preparation Batch: BLL0721 — Sample Size: 25 mL

Prepared: 12/27/2023 — 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	1.74	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	0.444	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Baja Well-1223

23L0486-23 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/15/2023 14:05

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 10:27

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-23 B 01

Preparation Batch: BLL0586 — Sample Size: 25 mL

Prepared: 12/20/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	3.58	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Baja Well-1223

23L0486-23 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/15/2023 14:05

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-23

Preparation Batch: BLL0555 — Sample Size: 100 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	361	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-99-1-1223

23L0486-24 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/15/2023 13:40

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/28/2023 19:06

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-24 B 02

Preparation Batch: BLL0750 — Sample Size: 25 mL

Prepared: 12/28/2023 — 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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-99-1-1223

23L0486-24 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/15/2023 13:40

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/28/2023 19:06

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-24 B 02

Preparation Batch: BLL0750 — Sample Size: 25 mL

Prepared: 12/28/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-99-1-1223

23L0486-24 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 12/15/2023 13:40

Instrument: ICP3 Analyst: SH — Analyzed: 12/26/2023 10:30

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 23L0486-24 B 01

Preparation Batch: BLL0587 — Sample Size: 25 mL

Prepared: 12/20/2023 — 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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-99-1-1223

23L0486-24 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 12/15/2023 13:40

Instrument: BAL2 Analyst: EML2 — Analyzed: 12/19/2023 16:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 23L0486-24

Preparation Batch: BLL0555 — Sample Size: 200 mL

Prepared: 12/19/2023 — Final Volume: 200 mL

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

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

MW-99-1-1223

23L0486-24RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 12/15/2023 13:40

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/06/2024 06:47

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23L0486-24RE1 B 03

Preparation Batch: BMA0085 — Sample Size: 25 mL

Prepared: 12/28/2023 — 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

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLL0586 - 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 (BLL0586-BLK1)				Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 08:39							
Potassium	ND	0.107	0.500	mg/L							U
LCS (BLL0586-BS1)				Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 08:42							
Potassium	10.1	0.107	0.500	mg/L	10.0		101	80-120			
Duplicate (BLL0586-DUP1)	**Source: 23L0486-11**			Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 08:48							
Potassium	0.546	0.107	0.500	mg/L		0.527			3.56	20	
Matrix Spike (BLL0586-MS1)	**Source: 23L0486-11**			Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 08:50							
Potassium	10.7	0.107	0.500	mg/L	10.0	0.527	102	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLL0586-MSD1)	**Source: 23L0486-11**			Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 08:53							
Potassium	10.9	0.107	0.500	mg/L	10.0	0.527	103	75-125	1.35	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLL0587 - 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 (BLL0587-BLK1)				Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 08:33							
Potassium	ND	0.107	0.500	mg/L							U
LCS (BLL0587-BS1)				Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 08:36							
Potassium	10.0	0.107	0.500	mg/L	10.0		100	80-120			
Duplicate (BLL0587-DUP1)	**Source: 23L0486-24**			Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 10:32							
Potassium	ND	0.107	0.500	mg/L		ND					U
Matrix Spike (BLL0587-MS1)	**Source: 23L0486-24**			Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 10:35							
Potassium	10.2	0.107	0.500	mg/L	10.0	ND	102	75-125			

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

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLL0587-MSD1)	**Source: 23L0486-24**			Prepared: 20-Dec-2023 Analyzed: 26-Dec-2023 10:38							
Potassium	10.5	0.107	0.500	mg/L	10.0	ND	105	75-125	2.15	20	

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

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLL0721 - 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 (BLL0721-BLK1)						Prepared: 27-Dec-2023 Analyzed: 28-Dec-2023 20:44						
Antimony	121	ND	0.101	0.200	ug/L							U
Antimony	123	ND	0.102	0.200	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Vanadium	51a	ND	0.0556	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
LCS (BLL0721-BS1)						Prepared: 27-Dec-2023 Analyzed: 28-Dec-2023 20:48						
Antimony	121	24.5	0.101	0.200	ug/L	25.0		97.9	80-120			
Antimony	123	24.5	0.102	0.200	ug/L	25.0		98.0	80-120			
Lead	208	26.9	0.0513	0.100	ug/L	25.0		108	80-120			
Vanadium	51a	23.8	0.0556	0.200	ug/L	25.0		95.2	80-120			
Arsenic	75a	24.3	0.0373	0.200	ug/L	25.0		97.2	80-120			

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLL0721-DUP1)		**Source: 23L0486-11**				Prepared: 27-Dec-2023 Analyzed: 06-Jan-2024 03:50						
Antimony	121	ND	0.202	0.400	ug/L		ND					U
Arsenic	75a	0.206	0.0746	0.400	ug/L		0.218			5.66	20	J, D
Duplicate (BLL0721-DUP2)		**Source: 23L0486-11**				Prepared: 27-Dec-2023 Analyzed: 09-Jan-2024 02:17						
Lead	208	ND	0.257	0.500	ug/L		ND					U
Vanadium	51a	1.31	0.278	1.00	ug/L		1.25			5.09	20	D
Matrix Spike (BLL0721-MS1)		**Source: 23L0486-11**				Prepared: 27-Dec-2023 Analyzed: 06-Jan-2024 03:54						
Antimony	121	24.0	0.202	0.400	ug/L	25.0	ND	96.1	75-125			D
Arsenic	75a	25.5	0.0746	0.400	ug/L	25.0	0.218	101	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike (BLL0721-MS2)		**Source: 23L0486-11**				Prepared: 27-Dec-2023 Analyzed: 09-Jan-2024 02:22						
Lead	208	24.3	0.257	0.500	ug/L	25.0	ND	97.2	75-125			D
Vanadium	51a	23.6	0.278	1.00	ug/L	25.0	1.25	89.5	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BLL0721-MSD1)		**Source: 23L0486-11**				Prepared: 27-Dec-2023 Analyzed: 06-Jan-2024 04:00						
Antimony	121	24.0	0.202	0.400	ug/L	25.0	ND	96.1	75-125	0.00		D

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Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLL0721 - EPA 200.8 UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLL0721-MSD1)		**Source: 23L0486-11**			Prepared: 27-Dec-2023 Analyzed: 06-Jan-2024 04:00							
Arsenic	75a	24.2	0.0746	0.400	ug/L	25.0	0.218	96.1	75-125	5.04	20	D

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

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLL0721-MSD2)		**Source: 23L0486-11**			Prepared: 27-Dec-2023 Analyzed: 09-Jan-2024 02:27							
Lead	208	23.2	0.257	0.500	ug/L	25.0	ND	92.8	75-125	4.61	20	D
Vanadium	51a	22.8	0.278	1.00	ug/L	25.0	1.25	86.0	75-125	3.79	20	D

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLL0750 - 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 (BLL0750-BLK3)					Prepared: 28-Dec-2023 Analyzed: 02-Jan-2024 19:49							
Vanadium	51a	ND	0.0556	0.200	ug/L							U
LCS (BLL0750-BS3)					Prepared: 28-Dec-2023 Analyzed: 02-Jan-2024 19:54							
Vanadium	51a	24.1	0.0556	0.200	ug/L	25.0		96.5	80-120			

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLL0750-BLK1)					Prepared: 28-Dec-2023 Analyzed: 28-Dec-2023 16:38							
Lead	208	ND	0.0513	0.100	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
LCS (BLL0750-BS1)					Prepared: 28-Dec-2023 Analyzed: 28-Dec-2023 16:43							
Lead	208	24.2	0.0513	0.100	ug/L	25.0		96.7	80-120			
Arsenic	75a	24.5	0.0373	0.200	ug/L	25.0		97.9	80-120			
Duplicate (BLL0750-DUP1)		**Source: 23L0486-24**			Prepared: 28-Dec-2023 Analyzed: 28-Dec-2023 19:12							
Lead	208	ND	0.103	0.200	ug/L		ND					U
Arsenic	75a	ND	0.0746	0.400	ug/L		ND					U
Duplicate (BLL0750-DUP2)		**Source: 23L0486-24**			Prepared: 28-Dec-2023 Analyzed: 09-Jan-2024 03:10							
Vanadium	51a	ND	0.111	0.400	ug/L		ND					U
Matrix Spike (BLL0750-MS1)		**Source: 23L0486-24**			Prepared: 28-Dec-2023 Analyzed: 28-Dec-2023 19:17							
Lead	208	25.0	0.103	0.200	ug/L	25.0	ND	100	75-125			D
Arsenic	75a	24.4	0.0746	0.400	ug/L	25.0	ND	97.6	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike (BLL0750-MS2)		**Source: 23L0486-24**			Prepared: 28-Dec-2023 Analyzed: 09-Jan-2024 03:14							
Vanadium	51a	23.3	0.111	0.400	ug/L	25.0	ND	93.1	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BLL0750-MSD1)		**Source: 23L0486-24**			Prepared: 28-Dec-2023 Analyzed: 28-Dec-2023 19:21							
Lead	208	24.3	0.103	0.200	ug/L	25.0	ND	97.2	75-125	2.84	20	D
Arsenic	75a	24.0	0.0746	0.400	ug/L	25.0	ND	96.0	75-125	1.62	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BLL0750-MSD2)		**Source: 23L0486-24**			Prepared: 28-Dec-2023 Analyzed: 09-Jan-2024 03:18							

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLL0750 - EPA 200.8

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLL0750-MSD2)		**Source: 23L0486-24**			Prepared: 28-Dec-2023 Analyzed: 09-Jan-2024 03:18							
Vanadium	51a	22.4	0.111	0.400	ug/L	25.0	ND	89.6	75-125	3.87	20	D

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMA0085 - EPA 200.8

Instrument: ICPMS2   Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BMA0085-DUP1)		**Source: 23L0486-24RE1**		Prepared: 04-Jan-2024		Analyzed: 06-Jan-2024 06:52						
Antimony	121	ND	0.202	0.400	ug/L		ND					U
Matrix Spike (BMA0085-MS1)		**Source: 23L0486-24RE1**		Prepared: 04-Jan-2024		Analyzed: 06-Jan-2024 06:56						
Antimony	121	22.6	0.202	0.400	ug/L	25.0	ND	90.2	75-125			D

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

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BMA0085-MSD1)		**Source: 23L0486-24RE1**		Prepared: 04-Jan-2024		Analyzed: 06-Jan-2024 07:02						
Antimony	121	22.9	0.202	0.400	ug/L	25.0	ND	91.7	75-125	1.64	20	D

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLL0509 - 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 (BLL0509-BLK1)				Prepared: 18-Dec-2023 Analyzed: 19-Dec-2023 14:00							
Potassium, Dissolved	ND	0.107	0.500	mg/L							U
LCS (BLL0509-BS1)				Prepared: 18-Dec-2023 Analyzed: 19-Dec-2023 14:02							
Potassium, Dissolved	11.4	0.108	0.505	mg/L	10.0		114	80-120			
Duplicate (BLL0509-DUP1)		**Source: 23L0486-02**		Prepared: 18-Dec-2023 Analyzed: 21-Dec-2023 13:01							
Potassium, Dissolved	447	0.214	1.00	mg/L		429			4.24	20	D
Matrix Spike (BLL0509-MS1)		**Source: 23L0486-02**		Prepared: 18-Dec-2023 Analyzed: 21-Dec-2023 13:03							
Potassium, Dissolved	462	0.216	1.01	mg/L	10.0	429	336	75-125			HC, D

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLL0791 - EPA 200.8

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLL0791-BLK1)					Prepared: 29-Dec-2023 Analyzed: 05-Jan-2024 20:53							
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 (BLL0791-BLK2)					Prepared: 29-Dec-2023 Analyzed: 09-Jan-2024 02:46							
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
LCS (BLL0791-BS1)					Prepared: 29-Dec-2023 Analyzed: 05-Jan-2024 20:58							
Antimony, Dissolved	121	21.4	0.101	0.200	ug/L	25.0		85.6	80-120			
Vanadium, Dissolved	51a	23.8	0.0556	0.200	ug/L	25.0		95.2	80-120			
Arsenic, Dissolved	75a	23.7	0.0373	0.200	ug/L	25.0		95.0	80-120			
LCS (BLL0791-BS2)					Prepared: 29-Dec-2023 Analyzed: 09-Jan-2024 02:50							
Lead, Dissolved	208	23.6	0.0513	0.100	ug/L	25.0		94.4	80-120			
Duplicate (BLL0791-DUP1)			**Source: 23L0486-02**		Prepared: 29-Dec-2023 Analyzed: 06-Jan-2024 02:51							
Antimony, Dissolved	121	21.7	0.202	0.400	ug/L		21.1			2.75	20	D
Vanadium, Dissolved	51a	2.63	0.111	0.400	ug/L		2.67			1.44	20	D
Arsenic, Dissolved	75a	14.3	0.0746	0.400	ug/L		14.0			1.98	20	D
Duplicate (BLL0791-DUP2)			**Source: 23L0486-02**		Prepared: 29-Dec-2023 Analyzed: 09-Jan-2024 04:17							
Lead, Dissolved	208	0.586	0.103	0.200	ug/L		0.978			50.10	20	L, D
Matrix Spike (BLL0791-MS1)			**Source: 23L0486-02**		Prepared: 29-Dec-2023 Analyzed: 06-Jan-2024 02:56							
Antimony, Dissolved	121	45.9	0.202	0.400	ug/L	25.0	21.1	99.3	75-125			D
Vanadium, Dissolved	51a	25.7	0.111	0.400	ug/L	25.0	2.67	92.3	75-125			D
Arsenic, Dissolved	75a	38.4	0.0746	0.400	ug/L	25.0	14.0	97.5	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike (BLL0791-MS2)			**Source: 23L0486-02**		Prepared: 29-Dec-2023 Analyzed: 09-Jan-2024 04:21							
Lead, Dissolved	208	21.0	0.103	0.200	ug/L	25.0	0.978	80.0	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BLL0791-MSD1)			**Source: 23L0486-02**		Prepared: 29-Dec-2023 Analyzed: 06-Jan-2024 03:03							
Antimony, Dissolved	121	44.5	0.202	0.400	ug/L	25.0	21.1	93.8	75-125	3.06	20	D
Vanadium, Dissolved	51a	25.2	0.111	0.400	ug/L	25.0	2.67	90.3	75-125	1.93	20	D
Arsenic, Dissolved	75a	38.8	0.0746	0.400	ug/L	25.0	14.0	99.0	75-125	1.00	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLL0791 - EPA 200.8

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLL0791-MSD2)		**Source: 23L0486-02**			Prepared: 29-Dec-2023 Analyzed: 09-Jan-2024 04:25							
Lead, Dissolved	208	21.3	0.103	0.200	ug/L	25.0	0.978	81.2	75-125	1.50	20	D

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BLL0554 - SM 2540 C-97

Instrument: BAL2 Analyst: EML2

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLL0554-BLK1)				Prepared: 19-Dec-2023 Analyzed: 19-Dec-2023 16:41							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BLL0554-BS1)				Prepared: 19-Dec-2023 Analyzed: 19-Dec-2023 16:41							
Dissolved Solids	465	10	10	mg/L	500		93.0	90-110			
Duplicate (BLL0554-DUP1)	**Source: 23L0486-11**			Prepared: 19-Dec-2023 Analyzed: 19-Dec-2023 16:41							
Dissolved Solids	248	10	10	mg/L		255			2.78	20	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BLL0555 - SM 2540 C-97

Instrument: BAL2 Analyst: EML2

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLL0555-BLK1)				Prepared: 19-Dec-2023 Analyzed: 19-Dec-2023 16:41							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BLL0555-BS1)				Prepared: 19-Dec-2023 Analyzed: 19-Dec-2023 16:41							
Dissolved Solids	487	10	10	mg/L	500		97.4	90-110			
Duplicate (BLL0555-DUP1)	**Source: 23L0486-18**			Prepared: 19-Dec-2023 Analyzed: 19-Dec-2023 16:41							
Dissolved Solids	6240	20	20	mg/L		6190			0.74	20	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

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-97 in Water	
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2024
WADOE	WA Dept of Ecology	C558	06/30/2024
WA-DW	Ecology - Drinking Water	C558	06/30/2024

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	11-Jan-2024 16:27

Notes and Definitions

B	This analyte was detected in the method blank.
D	The reported value is from a dilution
HC	The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
J	Estimated concentration value detected below the reporting limit.
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** MW-7A - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 15, 2023 **Time** 15:55

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 2.53 ft BTOC (December 15, 2023 3:24 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 12/15/2023
Time Begin Purge 15:30
Time Collect Sample 15:55

Water Level (ft bmp)	**Time**	**pH**	**Cond. (uS/cm)**	**Temp (°C)**	**DO (mg/L)**	**ORP (rel mV)**	**Turbidity (NTU)**
2.53	15:30	7.2	1,139	9.1	8.01	333.3	3.69
2.52	15:36	7.2	1,139	9	7.18	344.7	3.46
2.52	15:40	7.2	1,148	9.1	6.79	348.4	3.89
2.52	15:45	7.22	1,165	9.2	6.52	351.0	3.29
2.52	15:50	7.22	1,161	9.2	6.34	353.1	2.88
2.52	15:53	7.22	1,163	9.2	6.27	354.3	4.79

Comments:

Flow Rate: 300 mL/min

Sampler [signature] **Date** December 15, 2023

Supervisor ______ **Date** ______

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** MW-8A - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 15, 2023 **Time** 15:05

Media Groundwater **Station** MW-8A

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 11.34 ft BTOC (December 15, 2023 2:23 PM); Well total depth at 26' BGS

Screen Interval: 16' - 26' BGS

Pump Intake: ~ 22' 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-8A
Date 12/15/2023
Time Begin Purge 14:24
Time Collect Sample 15:05

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
11.35	14:30	6.89	1,481	9.9	8.19	303.1	59.6
11.35	14:35	6.88	1,462	9.9	7.13	317.9	46.2
	14:40	6.89	1,456	9.9	6.54	326.6	31.3
11.35	14:45	6.89	1,448	9.9	6.08	333.4	24.1
11.35	14:50	6.89	1,443	9.9	5.78	338.6	24.5
11.35	14:55	6.89	1,441	9.9	5.57	342.6	13.8
11.35	15:00	6.89	1,444	9.9	5.39	346.3	7.93
	15:03	6.89	1,434	9.8	5.3	348.7	6.22

Comments:

Flow Rate: 300 mL/min

Sampler ____________ **Date** December 15, 2023

Supervisor ____________ **Date** ____________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** Infiltration Ponds / MW-35A - 1223

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 December 15, 2023 **Time** 13:35

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 0 ft BTOC (December 15, 2023 1:30 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
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 12/15/2023

Time Begin Purge 13:30

Time Collect Sample 13:35

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	14:14	8.49	2,395	6.9	9.94	163.0	3.19

Comments:

Flow Rate: ______ mL/min

Sampler ____________________ **Date** December 15, 2023

Supervisor ____________________ **Date** ____________________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** Still Well - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 15, 2023 **Time** 12:35

Media Surface Water **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 ft BTOC (December 15, 2023 12:35 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 Still Well
Date 12/15/2023
Time Begin Purge 12:35
Time Collect Sample 12:35

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
0	12:54	12.38	4,630	10.3	9.48	81.6	6.81

Comments:

Flow Rate: ______ mL/min

Sampler ______________ **Date** December 15, 2023

Supervisor ______________ **Date** ______________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** P-15 - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 14, 2023 **Time** 14:40

Media Groundwater **Station** P-15

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 15.53 ft BTOC (December 14, 2023 1:30 PM); Well total depth at 34' BGS

Screen Interval: 24'- 34' 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 P-15
Date 12/14/2023
Time Begin Purge 13:49
Time Collect Sample 14:40

Water Level (ft bmp)	**Time**	**pH**	**Cond. (uS/cm)**	**Temp (°C)**	**DO (mg/L)**	**ORP (rel mV)**	**Turbidity (NTU)**
15.91	13:55	12.99	16,171	11.4	5.91	-329.7	2.29
15.91	14:00	12.98	16,016	11.4	5.22	-331.2	3.14
15.9	14:05	12.98	15,633	11.4	4.77	-330.7	3.14
15.9	14:10	12.98	15,727	11.4	4.42	-340.8	1.94
15.91	14:15	12.98	15,839	11.4	4.17	-349.6	1.89
15.91	14:20	12.99	15,910	11.4	3.92	-359.2	1.84
15.91	14:25	12.99	15,928	11.5	3.71	-364.4	1.52
15.91	14:30	12.99	15,952	11.5	3.58	-367.4	1.63
15.91	14:35	12.99	15,982	11.5	3.43	-370.7	1.92

Comments:

Flow Rate: 200 mL/min

Sampler ______ **Date** December 14, 2023

Supervisor ______ **Date** ______

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** P-14 - 1223

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 December 14, 2023 **Time** 13:15

Media Groundwater **Station** P-14

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 28.05 ft BTOC (December 14, 2023 11:45 PM); Well total depth at 50' BGS

Screen Interval: 40'- 50' BGS

Pump Intake: ~ 45' 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 P-14
Date 12/14/2023
Time Begin Purge 12:07
Time Collect Sample 13:15

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
28.22	12:15	12.89	10,454	12	7.23	-570.9	2.40
28.35	12:20	12.95	14,590	12	6.43	-606.4	1.52
28.36	12:25	13	18,770	12	5.69	-436.9	1.95
28.36	12:30	13.02	21,094	12	5.3	-438.1	3.65
28.36	12:35	13.05	23,585	12	4.81	-445.3	1.21
28.36	12:40	13.06	24,472	12.1	4.59	-444.1	1.16
28.36	12:45	13.07	25,434	12	4.31	-434.2	0.96
28.36	12:50	13.08	25,908	12	4.15	-428.4	0.95
28.36	12:55	13.09	26,334	12	3.95	-425.5	1.17
28.36	13:00	13.09	26,656	12	3.8	-422.4	1.05
28.36	13:05	13.1	26,917	12	3.67	-410.0	1.04
28.36	13:08	13.1	27,034	12	3.57	-409.4	0.75
28.36	13:11	13.1	27,153	12	3.49	-407.7	.64

Comments:

Flow Rate: 300 mL/min

Sampler [signature] **Date** December 14, 2023

Supervisor ______ **Date** ______

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale

Project No. 152030402

Site Location Ravensdale, WA

Sample ID MW-4A - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 14, 2023

Time 10:55

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 3.65 ft BTOC (December 14, 2023 10:06 AM); Well total depth at 20' BGS

Screen Interval: 5' - 20' BGS

Pump Intake: ~ 12' BGS

Sample Description MS MSD taken

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID MW-4A

Date 12/14/2023

Time Begin Purge 10:10

Time Collect Sample 10:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
3.73	10:15	6.37	614	10	8.39	196.4	4.51
4.23	10:20	6.39	598	9.9	7.57	217.7	4.38
4.29	10:25	6.38	562	9.8	7.2	221.7	3.93
4.31	10:30	6.38	543	9.8	6.96	223.1	2.65
4.35	10:35	6.37	525	9.8	6.84	224.7	1.65
4.37	10:40	6.37	512	9.7	6.74	225.9	1.35
4.39	10:45	6.37	502	9.7	6.67	226.2	1.39
4.4	10:50	6.37	497	9.7	6.6	227.1	1.20

Comments:

Flow Rate: 350 mL/min

Sampler ______________ **Date** December 14, 2023

Supervisor ______________ **Date** ______________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** MW-9A - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 13, 2023 **Time** 15:06

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 2.48 ft BTOC (December 13, 2023 3:05 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 12/13/2023
Time Begin Purge 15:06
Time Collect Sample 15:06

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
5.23	15:10	6.45	623	9.1	7.25	97.6	2.55
6.25	15:15	6.42	622	9.1	7.11	110.6	1.92
7.25	15:20	6.41	622	9	7.01	118.2	1.81
8.13	15:25	6.4	622	9.1	6.91	123.6	2.97
8.47	15:30	6.4	623	9.1	6.85	127.8	3.20

Comments:

Flow Rate: 250 mL/min

Sampler ____________________ **Date** December 13, 2023

Supervisor ____________________ **Date** ____________________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** P-17 - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 13, 2023 **Time** 14:45

Media Groundwater **Station** P-17

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 4.28 ft BTOC (December 13, 2023 1:51 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 P-17
Date 12/13/2023
Time Begin Purge 13:55
Time Collect Sample 14:45

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
5.16	14:00	6.26	621	9.3	6.39	76.2	88
5.25	14:05	6.2	648	9.5	5.71	27.2	34.1
5.26	14:10	6.13	711	9.7	5.1	-16.8	20.7
5.27	14:15	6.13	721	9.8	4.69	-31.9	15.6
5.28	14:20	6.14	715	9.7	4.49	-38.7	15.2
5.31	14:25	6.13	714	9.8	38.6	-44.3	13.6
5.33	14:30	6.13	721	9.8	4.08	-51.1	11.6
5.34	14:35	6.13	717	9.8	3.93	-55.6	9.96
5.34	14:40	6.13	711	9.7	3.78	-60.2	9.25

Comments:

Flow Rate: 300 mL/min

Sampler ______ **Date** December 13, 2023

Supervisor ______ **Date** ______

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** MW-3A - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 13, 2023 **Time** 12:35

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 5.14 ft BTOC (December 13, 2023 12:32 PM); 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 12/13/2023
Time Begin Purge 12:36
Time Collect Sample 12:35

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
5.17	12:40	6.52	1,292	9.9	7.65	0.6	56.0
5.2	12:45	6.54	1,204	9.8	6.68	17.2	17.8
5.22	12:50	6.54	1,154	9.8	6.17	24.9	6.29
5.21	12:55	6.53	1,126	9.8	5.7	30.8	3.10
5.21	13:00	6.53	1,110	9.8	5.28	35.3	3.19
5.21	13:05	6.63	1,066	9.6	5.03	37.2	4.60
5.21	13:10	6.68	841	9.5	4.85	43.3	3.49
5.21	13:15	6.71	731	9.5	4.65	44.8	3.7
5.21	13:20	6.72	719	9.5	4.48	45.2	3.03
5.21	13:25	6.73	712	9.4	4.35	43.8	2.87

Comments:

Flow Rate: 300 mL/min

Sampler ________________ **Date** December 13, 2023

Supervisor ________________ **Date** ________________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** MW-10A - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 13, 2023 **Time** 00:10

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 6.01 ft BTOC (December 13, 2023 11:30 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 12/13/2023
Time Begin Purge 11:32
Time Collect Sample 00:10

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
7.37	11:35	7.25	466	10.2	8.53	66.3	4.91
9.35	11:40	6.59	300.5	10.2	8.58	102.3	6.51
10.13	11:45	6.48	273.2	10.3	8.65	113.7	5.44
11.21	11:50	6.38	259.2	10.3	8.79	128.9	4.38
12.09	11:55	6.34	254.1	10.4	8.85	138.3	4.13
5.02	12:00	6.32	250	10.3	8.94	145.8	12.51
12.86	12:05	6.3	247	10.3	8.99	151.0	4.99
13.11	12:10	6.3	247.7	10.3	9.01	154.4	4.23

Comments:

Flow Rate: 250 mL/min

Sampler [signature] **Date** December 13, 2023

Supervisor ________ **Date** ________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** South Pond - 1223

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 December 13, 2023 **Time** 11:05

Media Surface Water **Station** South Pond

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 (December 13, 2023 11:05 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 South Pond

Date 12/13/2023

Time Begin Purge 11:05

Time Collect Sample 11:05

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	11:05	9	2,217	5.5	7.86	-41.2	8.63

Comments:

Flow Rate: ______ mL/min

Sampler ______________ **Date** December 13, 2023

Supervisor ______________ **Date** ______________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** P-16 - 1223

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date December 13, 2023 **Time** 10:55

Media Groundwater **Station** P-16

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 2.68 ft BTOC (December 13, 2023 9:48 AM); Well total depth at 10' BGS

Screen Interval: 5'- 10' BGS

Pump Intake: ~ 8' 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 P-16
Date 12/13/2023
Time Begin Purge 09:50
Time Collect Sample 10:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
4.41	09:55	10.53	3,140	9.5	7.28	-305	60.5
4.52	10:00	10.77	3,368	9.6	6.83	-385.3	71.1
4.65	10:05	11.39	4,036	9.5	6.15	-641.3	73.00
4.63	10:10	11.53	4,523	9.5	5.71	-762.8	88.4
4.71	10:15	11.56	4,916	9.5	5.38	-805.1	84.1
4.71	10:20	11.63	5,287	9.5	5.09	-789.4	69.5
4.71	10:25	11.67	5,608	9.5	4.87	-782.3	37.5
4.71	10:30	11.68	5,836	9.5	4.64	-782.3	26.5
4.71	10:35	11.68	5,936	9.5	4.48	-784.3	31.6
4.71	10:40	11.68	6,064	9.5	4.34	-791.5	38.4
4.71	10:45	11.68	6,190	9.5	4.19	-798.0	37.6
4.71	10:50	11.68	6,284	9.5	4.08	-804.2	36.4

Comments:

Flow Rate: 350 mL/min

Sampler ______________ **Date** December 13, 2023

Supervisor ______________ **Date** ______________

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale

Project No. 152030402

Site Location Ravensdale, WA

Sample ID Interceptor Trench - 1223

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 December 12, 2023

Time 15:28

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 (December 12, 2023 3:28 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

SAMPLE INTEGRITY DATA SHEET

Well ID Interceptor Trench

Date 12/12/2023

Time Begin Purge 15:25

Time Collect Sample 15:28

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	15:25	6.98	472.5	9.8	9.18	139.2	1.51

Comments:

Flow Rate: 18000 mL/min

Sampler ____________ **Date** December 12, 2023

Supervisor ____________ **Date** ____________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** MW-5A - 1223

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 December 12, 2023 **Time** 14:50

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 19.96 ft BTOC (December 12, 2023 2:09 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 12/12/2023

Time Begin Purge 14:03

Time Collect Sample 14:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
19.96	14:10	7.27	1,927	9.6	7.35	141.7	2.33
19.96	14:14	7.25	1,912	9.6	6.54	139.2	4.52
19.96	14:20	7.18	1,619	9.6	6.12	138.9	6.41
19.96	14:25	7.08	1,389	9.7	6.22	143.2	6.46
19.96	14:31	7.06	1,317	9.7	6.35	147.2	5.70
19.96	14:35	7.06	1,287	9.6	6.41	149.3	4.67
19.96	14:40	7.06	1,266	9.6	6.43	151.2	4.72
19.96	14:45	7.07	1,260	9.7	6.44	152.6	2.92

Comments:

Flow Rate: 400 mL/min

Sampler __________ **Date** December 12, 2023

Supervisor __________ **Date** __________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** MW-6A - 1223

Sampling Location Monitoring Well

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

Type of Sampler Bladder Pump

Date December 12, 2023 **Time** 13:50

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 17.75 ft BTOC (December 12, 2023 1:08 PM); 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 12/12/2023

Time Begin Purge 13:11

Time Collect Sample 13:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
17.75	13:15	7.46	1,368	9.8	9.01	112.9	17.1
17.75	13:20	7.46	1,334	9.6	8.47	119.9	9.99
17.75	13:26	7.4	1,278	9.4	8.2	125.4	8.42
17.75	13:30	7.33	1,218	9.4	8.09	129.1	8.20
17.75	13:35	7.31	1,182	9.4	7.95	132.7	5.76
17.75	13:40	7.32	1,174	9.4	7.84	135.4	4.72
17.75	13:45	7.33	1,170	9.4	7.75	137.3	4.99

Comments:

Flow Rate: 500 mL/min

Sampler ________ **Date** December 12, 2023

Supervisor ________ **Date** ________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** MW-2A / MW-45A - 1223

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 December 12, 2023 **Time** 00:20

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 16.04 ft BTOC (December 12, 2023 11:55 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
2-1000 mL	Total Dissolved Solids	HDPE	N/A
2-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID MW-2A / MW-45A
Date 12/12/2023
Time Begin Purge 11:55
Time Collect Sample 00:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
16.04	00:00	7.05	908	9.8	8.94	121.2	8.14
16.04	12:05	7.03	905	9.9	8.74	128.9	6.71
16.04	12:10	7.02	901	9.9	8.67	132.3	6.50
16.04	12:15	7.01	895	9.9	8.6	135.8	5.45
16.04	12:18	7.01	894	9.9	8.57	137.0	4.29

Comments:

Flow Rate: 400 mL/min

MW-45A-1223 (duplicate sampled at 1225)

Sampler [signature] **Date** December 12, 2023

Supervisor ______________ **Date** ______________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA **Sample ID** MW-1A - 1223

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 December 12, 2023 **Time** 11:30

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 22.16 ft BTOC (December 12, 2023 10:41 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 12/12/2023
Time Begin Purge 10:45
Time Collect Sample 11:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
22.22	10:55	6.68	826	9.2	7.91	65.7	3.47
22.22	11:00	6.66	813	9.2	7.82	83.9	2.58
22.22	11:05	6.66	814	9.2	7.72	98.2	2.72
22.22	11:10	6.67	814	9.3	7.65	105.9	3.06
22.22	11:15	6.68	810	9.2	7.6	113.4	2.01
22.22	11:20	6.69	810	9.2	7.58	117.0	2.33
22.22	11:25	6.7	806	9.2	7.53	120.7	1.27

Comments:

Flow Rate: 400 mL/min

Sampler ________ **Date** December 12, 2023

Supervisor ________ **Date** ________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-99-1 - 1223

Sampling Location QA/QC Blank

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

Type of Sampler Grab

Date December 15, 2023 **Time** 13:40

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:

Screen Interval:

Pump Intake:

Sample Description

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID MW-99-1
Date 12/15/2023
Time Begin Purge 13:40
Time Collect Sample 13:40

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

Comments: Equipment Blank

Sampler [signature] **Date** December 15, 2023

Supervisor ____________ **Date** ____________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Baja Well - 1223

Sampling Location Monitoring Well

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

Type of Sampler Grab

Date December 15, 2023 **Time** 14:05

Media Groundwater **Station** Baja Well

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

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

SWL:

Screen Interval:

Pump Intake:

Sample Description

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID Baja Well - 1223

Date 12/15/2023

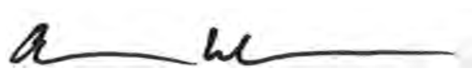
Time Begin Purge 14:05

Time Collect Sample 14:05

Water Level (ft bmp)	**Time**	**pH**	**Cond. (uS/cm)**	**Temp (°C)**	**DO (mg/L)**	**ORP (rel mV)**	**Turbidity (NTU)**
	14:05	6.78	696	9.6	10.02	244.5	6.48

Comments:

Flow Rate: ______ mL/min

Sampler  **Date** December 15, 2023

Supervisor ______________________ **Date** ______________________

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Weir or Constructed Wetlands - 0224

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 December 13, 2023 **Time** 12:36

Media Surface Water **Station** Weir or Constructed Wetlands

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 (December 13, 2023 12:36 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 Weir or Constructed Wetlands
Date 12/13/2023
Time Begin Purge 12:36
Time Collect Sample 12:36

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

Comments: Weir is dry, no sample taken

Flow Rate: ______ mL/min

Sampler ____________________ **Date** February 1, 2024

Supervisor ____________________ **Date** ____________________

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