



REPORT

QUARTERLY MONITORING REPORT SECOND QUARTER 2024 RESERVE SILICA RECLAMATION SITE

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1.0 INTRODUCTION

This report, prepared by WSP USA Inc. (WSP) for Holcim (US) Inc., presents the results of surface water and groundwater monitoring conducted at the Reserve Silica Reclamation Site (Site) during the second quarter of 2024. The Site is located at 26000 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. Groundwater and surface water monitoring at the Site is currently being conducted in accordance with the Work Plan and supporting documents. Historical groundwater and surface water monitoring activities at the Site were conducted under the requirements of Post-Closure Care and Maintenance Permits issued by Public Health – Seattle and King County (Public Health). The second quarter monitoring event was conducted in June 2024.

2.0 BACKGROUND

2.1 Site Background

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

2.1.1 Lower Disposal Area Background

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

Historically, high pH seepage surfaced along the slope west of the LDA. The outbreaks are primarily located along the northern half of the western boundary of the LDA and records as early as 1987 indicate a leachate collection system was implemented for the LDA seepage. The leachate drained through low-lying, marshy areas and commingled with stormwater before flowing to the three Infiltration Ponds (the Infiltration Ponds as shown in Figure 2) near the 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 Interim Actions

2.2.1 LDA Cover Upgrade

During September and October 2007, the existing soil cover on the LDA was regraded to provide positive drainage at all locations, reduce overly steep slope areas, and place a minimum 2-foot-thick, clean soil cover over the entire known extent of the LDA at that time, 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 (CO₂) sparging to neutralize pH levels and arsenic and lead adsorption using an iron-based adsorption media.

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

2.2.4 LDA Interceptor Trench

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

2.2.5 DSP Cover Upgrade

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

3.0 MONITORING PROGRAM

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

3.1 LDA Sampling Locations

The LDA groundwater and surface water sampling locations are shown in Figure 2. Monitoring well construction details are provided in Table 1. Shallow monitoring wells were installed near the LDA in July 2005 and are monitored to assess the shallow groundwater conditions with respect to potential impact from the CKD. Four of the wells (MW-1A, MW-2A, MW-5A, and MW-6A) are located around the Infiltration Ponds. MW-3A is located west of the high pH seepage area. MW-4A, a background well, is located south of, and upgradient with respect to groundwater flow and surface water drainage of the high pH seepage area. The Still Well is a 2-inch-diameter flush-mount well, connected to a horizontal seep collection pipe, located within the high pH seepage zone west of the LDA.

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

- MW-7A and MW-8A were installed west and southwest of the Infiltration Ponds to evaluate groundwater gradients and groundwater quality.
- MW-9A and MW-10A are located west of the high pH seepage area and the South Pond, near the western property boundary to evaluate groundwater gradients and groundwater quality.

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

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

In 2006, bedrock monitoring wells were installed along the west side of the main access road, west of the LDA. The bedrock wells were installed to assess groundwater conditions in the bedrock immediately downgradient of the LDA. MWB-1LDA is located near the northern tip of the LDA, MWB-2LDA is located near the center of the LDA,

and MWB-3 LDA is located near the southern end of the LDA. In accordance with the Work Plan, field parameters are monitored in the LDA bedrock monitoring wells semi-annually, and the wells are sampled annually.

3.2 DSP Sampling Locations

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

3.3 LDA Interceptor Trench

The purpose of the Interceptor Trench is to intercept clean shallow groundwater from the southern and southeast end of the LDA. The interceptor trench is approximately 220 feet and 20 feet, it is filled with gravel with a perforated drainage pipe in the bottom that discharges from the hillside to the south of the LDA. Monitoring is performed at the Interceptor Trench outfall for flow, pH, turbidity, and total dissolved solids. The purpose of the monitoring is to ensure that the trench is not collecting impacted groundwater.

4.0 SAMPLING ACTIVITIES

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

4.1 Procedures

4.1.1 Water Level and Field Parameter Measurements

Depth to water measurements were collected from all monitoring wells at the Site during the period of June 17 to 19, 2024. Table 1 presents depth to water measurements and elevations. Groundwater elevation contour map is provided in Figure 3.

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 June 17 to 19, 2024, WSP sampled groundwater from shallow groundwater monitoring wells outside of the LDA (MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, MW-6A, MW-7A, MW-8A, MW-9A, MW-10A, and the Still Well).

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, and MW-10A 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 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 receipt at the laboratory and additional nitric acid was added until the pH was less than 2 if necessary.

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

4.1.4 LDA Surface Water Sampling

On June 17, 2024, the South Pond and Weir surface water monitoring locations were dry, and no samples could be collected. On June 18, 2024, WSP collected samples from the Infiltration Ponds surface water monitoring location. The following methods and procedures were used to collect surface water samples:

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

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 June 17, 2024, WSP sampled groundwater from the Interceptor Trench outfall. The following methods and procedures were used to collect the sample:

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

The Interceptor Trench sample was analyzed for the parameters listed in Section 4.1.2. Field parameters and analytical data are presented in Table 3.

5.0 RESULTS

Analytical results from the June 2024 monitoring round are presented in Table 2. Table 3 presents the current and historical summary of the Interceptor Trench monitoring data. Historical summary tables of analytical results at each sampling location are provided in Appendix A and concentrations trend graphs for key parameters are provided in Appendix B. All analytical data were subject to a data validation review. Data validation was conducted in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA 2020), the SAP, and the QAPP (Golder 2021). Data reporting qualifiers are included

with the analytical results in Appendix A. The data validation review found that all the data were considered valid and usable. The data validation and raw analytical data packages provided by the laboratory are provided in Appendix C. Data collected during this sampling round will be combined with all RI data to complete the evaluations and requirements of the RI/FS.

6.0 OPERATIONS AND MAINTENANCE OF THE LEACHATE TREATMENT SYSTEM

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

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

The treatment system includes a 4,200-gallon mixing tank (steel rectangular box-shaped tank) that receives the influent water coming from the seepage collection ditch and piping. Water from the tank constantly flows through the carbon dioxide (CO₂) sparge unit, which continuously monitors the water pH and activates CO₂ sparging when the water pH exceeds 8.5. CO₂ 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 CO₂ sparge unit, and discharge from the sparge unit back into the tank are all specifically located in different areas of the mixing tank to provide constant circulation effectively providing pH neutralization throughout the tank. The mixing tank contains a float switch-activated discharge pump that activates when the water reaches a set height within the tank and turns the pump off when the water is lowered to the desired height. Neutralized water pumped from the tank is discharged through filters and an iron-based adsorption media to remove arsenic, prior to discharge of the water to the Infiltration Ponds.

The continuous pH monitoring system is connected to telemetry that sends pH readings and alerts to WSP engineer's cell phones if readings outside of the set ranges occur allowing for response and troubleshooting. Routine inspections of the treatment system are conducted approximately once every two weeks. The inspections include routine maintenance activities such as cleaning scale off pump parts, hoses, and probes to sustain continued operations of the treatment system. The treatment system has been effective in reducing the pH of the seepage water to below 8 standard units and reducing metals concentrations before discharge to the Infiltration Ponds. Typical maintenance downtime of less than 1 day occasionally occurs. Optimization of the metals adsorption system continues, as calcium carbonate clogging of the adsorption system frequently arises. Table 4 provides the 2024 second 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: Second Quarter 2024 Water Level Measurements

Sample Area	Sample Location ID	Date Measured	Well Data				Water Levels		
			Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Bentonite Seal (feet bgs)	Casing Diameter (inches)	TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)
LDA - Shallow Groundwater	MW-1A	6/18/2024	44	28-43	2-26	2	613.44	32.56	580.88
	MW-2A	6/18/2024	40	25-40	2-23	2	607.21	26.42	580.79
	MW-3A	6/17/2024	20	4-20	2-4	2	689.11	5.61	683.50
	MW-4A	6/17/2024	20	5-20	2-4	2	705.45	4.00	701.45
	MW-5A	6/18/2024	40	25-40	2-23	2	611.23	30.41	580.82
	MW-6A	6/18/2024	39	24-39	2-22	2	608.95	28.14	580.81
	MW-7A	6/19/2024	20	10-20	2-7	2	592.69	12.25	580.44
	MW-8A	6/19/2024	26	16-26	2-13	2	601.49	21.53	579.96
	MW-9A	6/17/2024	13	8-13	2-5	2	697.29	2.65	694.64
	MW-10A	6/17/2024	29	9-29	2-6	2	698.02	7.15	690.87

- 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: Second Quarter 2024 Field Parameters and Analytical Data

Sample Area	Sample Location ID	Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)				
			TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)*	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (umhos/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 [§]			-	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.5	80
LDA - Shallow Groundwater	MW-1A	6/18/2024	613.44	32.56	580.88	8.8	700	12.5	119.2	0.39	6.64	335	0.87	1.14	13900	0.103 U	0.684
	MW-2A	6/18/2024	607.21	26.42	580.79	8.9	763	11.61	137.9	0.56	6.80	389	1.13	0.978	20500	0.103 U	0.954
	MW-2A Duplicate (MW-45A)	6/18/2024	-	-	-	-	-	-	-	-	-	368	1.4	1.04	20600	0.103 U	0.904
	MW-3A	6/17/2024	689.11	5.61	683.50	10.6	983	5.34	-34.5	0.58	7.06	544	1.16	9.66	118000	0.134 J	0.454
	MW-4A	6/17/2024	705.45	4.00	701.45	10.8	451.3	6.22	77.4	0.62	6.26	226	0.202 U	0.18 J	452 J	0.103 U	0.85
	MW-5A	6/18/2024	611.23	30.41	580.82	9.9	2,586	8.65	176.1	0.88	7.51	1430	7.1	3.91	456000	0.103 U	1.81
	MW-6A	6/18/2024	608.95	28.14	580.81	7.72	1,515	11.01	176	0.49	7.72	784	5.06	1.49	270000	0.103 U	0.458
	MW-7A	6/17/2024	592.69	12.25	580.44	11.8	810	6.53	154.4	0.35	6.83	405	0.924	1.44	29800	0.103 U	0.996
	MW-8A	6/17/2024	601.49	21.53	579.96	10.1	1,378	8.54	167.8	0.83	7.14	719	4.28	5.97	195000	0.103 U	3.38
	MW-9A	6/17/2024	697.29	2.65	694.64	10.4	590	8.77	132.1	1.21	6.76	305	0.204 J	0.472	2140	0.103 U	0.848
	MW-10A	6/17/2024	697.29	7.15	690.87	9.8	197	12.65	198.6	3.18	6.40	115	0.202 U	0.548	883	0.104 J	0.806
	Still Well	6/18/2024	-	-	-	13.4	5,636	10.88	95	3.5	12.21	1540	16.8	48.5	408000	5.82	2.88
LDA- Surface Water	South Pond	6/17/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Weir	6/17/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Infiltration Ponds	6/18/2024	-	-	-	15.80	3495	10.86	173	4.69	8.41	1920	9.87	9.44	814000	0.162 J	0.65
	Infiltration Ponds Duplicate (MW-35A)	6/18/2024	-	-	-	-	-	-	-	-	-	1940	9.92	9.53	729000	0.900	0.844

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

-
- *
- a
- b
- J
- J+
- J-
- U
- DRY
- Not measured or not collected.
- Depth to water (DTW) measurements for all shallow wells collected on the same day; date noted is sampling date.
- Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
- LDA and DSP bedrock wells are monitored semi-annually
- Data validation code; estimated value.
- Data validation code; estimated value with high bias
- Data validation code; estimated value with low bias.
- Data validation code; not detected at the Reporting Limit (RL).
- Location is dry. Unable to collect field parameters or samples.

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



Table 3: Interceptor Trench Discharge Monitoring

Date Sampled	Time Sampled	Flow (gpm)	Field pH (standard units)	Turbidity (NTU)	Total Dissolved Solids (mg/L)
19-Oct-13	8:45	0.3	7.47	-	-
19-Nov-13	9:25	0.7	7.52	-	-
23-Dec-13	15:25	1.2	7.27	-	-
20-Jan-14	11:15	0.8	7.58	1	277
-	-	-	-	-	-
31-Mar-14	11:12	1	7.22	1.6	257
22-Apr-14	16:05	3.6	6.85	474	214
27-May-14	15:30	0.8	7.12	21.9	294
27-Jun-14	11:10	0.3	7.13	13.3	136
31-Jul-14	19:45	0.2	6.95	4.1	305
28-Aug-14	14:00	0.1	7.2	1.8	294
29-Sep-14	13:39	0.1	7.87	1.4	340
29-Oct-14	11:45	0.3	7.03	1.1	319
24-Nov-14	11:50	0.8	7.09	0.7	229
22-Dec-14	8:00	0.4	7.08	0.4	253
30-Jan-15 ¹	10:10	1.1	7.09	0.7	270
4-May-15	9:30	0.31	7.54	2.05	290
4-Aug-15	12:20	0.06	7.61	1.51	268
3-Nov-15	13:15	0.8	7.38	36.9	320
8-Feb-16	10:40	1.9	7.23	9.29	279
2-May-16	16:00	0.5	7.77	22.5	431
22-Aug-16	11:00	0.08	7.78	3.34	302
1-Nov-16	11:40	2.4	8.16	96.3	345
2-Feb-17	9:25	4.5	7.61	0.85	514
30-May-17	15:45	4.5	7.33	4.04	324
18-Aug-17	8:50	0.1	7.57	34	300
10-Nov-17	11:20	1.1	6.81	12.9	365
28-Feb-18	10:16	2.22	7.02	37.9	381
2-May-18	11:45	1.18	7.46	2.89	339
22-Aug-18	10:00	0.13	7.32	19.3	287
7-Nov-18	14:40	0.33	7.24	3.05	342
13-Mar-19	11:31	1.43	7.61	19.4	313
9-May-19	10:30	0.88	7.77	8.9	394
26-Aug-19	18:15	0.42	7.25	26.4	361
14-Nov-19	13:30	0.42	7.05	34.5	447
13-Feb-20	12:35	1.58	6.95	1.76	306
13-Aug-20	12:00	0.21	7.32	20.8	339
10-Dec-20	12:22	3.8	7.7	228	691
4-Mar-21	12:20	3.5	7.23	116	584
10-Jun-21	13:10	0.2	7.02	6.31	360
15-Oct-21	13:55	0.2	7.08	31	382
7-Jan-22	11:58	9.2	7.43	6.23	288
17-Mar-22	15:25	3.5	11.75 [^]	3.24	368
22-Jun-22	14:05	2.2	6.94	6.21	415
23-Sep-22	14:46	0.11	7.54	4.77	330
14-Dec-22	9:20	0.79	7.19	2.27	279
13-Mar-23	9:25	2.25	6.9	1.07	232
27-Jun-23	9:55	0.33	7.05	7.31	381
7-Sep-23	14:38	-	7.68	21.5	295
12-Dec-23	15:28	4.76	6.98	1.51	244
6-Mar-24	14:30	3.17	8.39	2.31	359
17-Jun-24	15:40	1.98	7.04	8.04	448

- 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: Second Quarter 2024 Treatment System Metals Monitoring

Sample Location	Sample ID	Date Sampled	pH (standard units)	Total Antimony (ug/L)	Dissolved Antimony (ug/L)	Total Arsenic (ug/L)	Dissolved Arsenic (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Vanadium (ug/L)	Dissolved Vanadium (ug/L)
pH Tank Influent	Tank-Influent	18-Jun-24	-	13	13.4	13.4	13.7	99.8	99.4	3.78	1.62
pH Tank Effluent/Filter Media Influent	Sand-Effluent	18-Jun-24	-	13	13.3	26.5	25.4	48.4	1.34	3.55	3.53
Filter Media Effluent	As-Effluent	18-Jun-24	-	13.6	13.3	25.5	24.5	44.1	0.74	3.6	3.42

-

ug/L

J

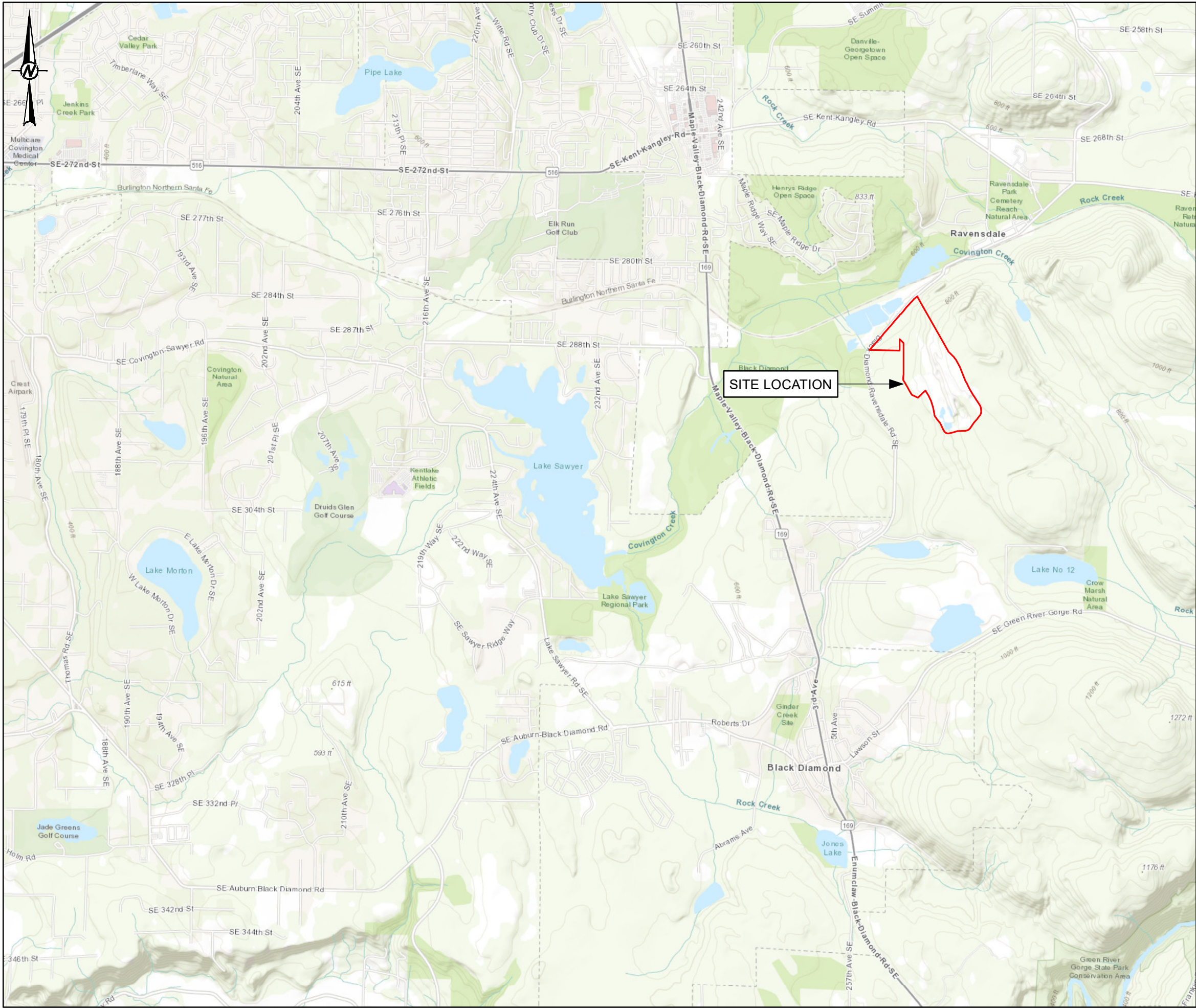
Not measured or not available

Micrograms per liter

Data validation code; estimated value

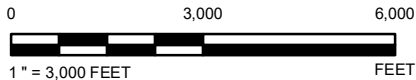
FIGURES

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LEGEND

Property Boundary



REFERENCE(S)

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

CLIENT

HOLCIM

PROJECT

RI WORK PLAN 2020
RAVENSDALE, WA

TITLE

SITE LOCATION MAP

CONSULTANT



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

PROJECT NO.

31406578.8318

PHASE

300

REV.

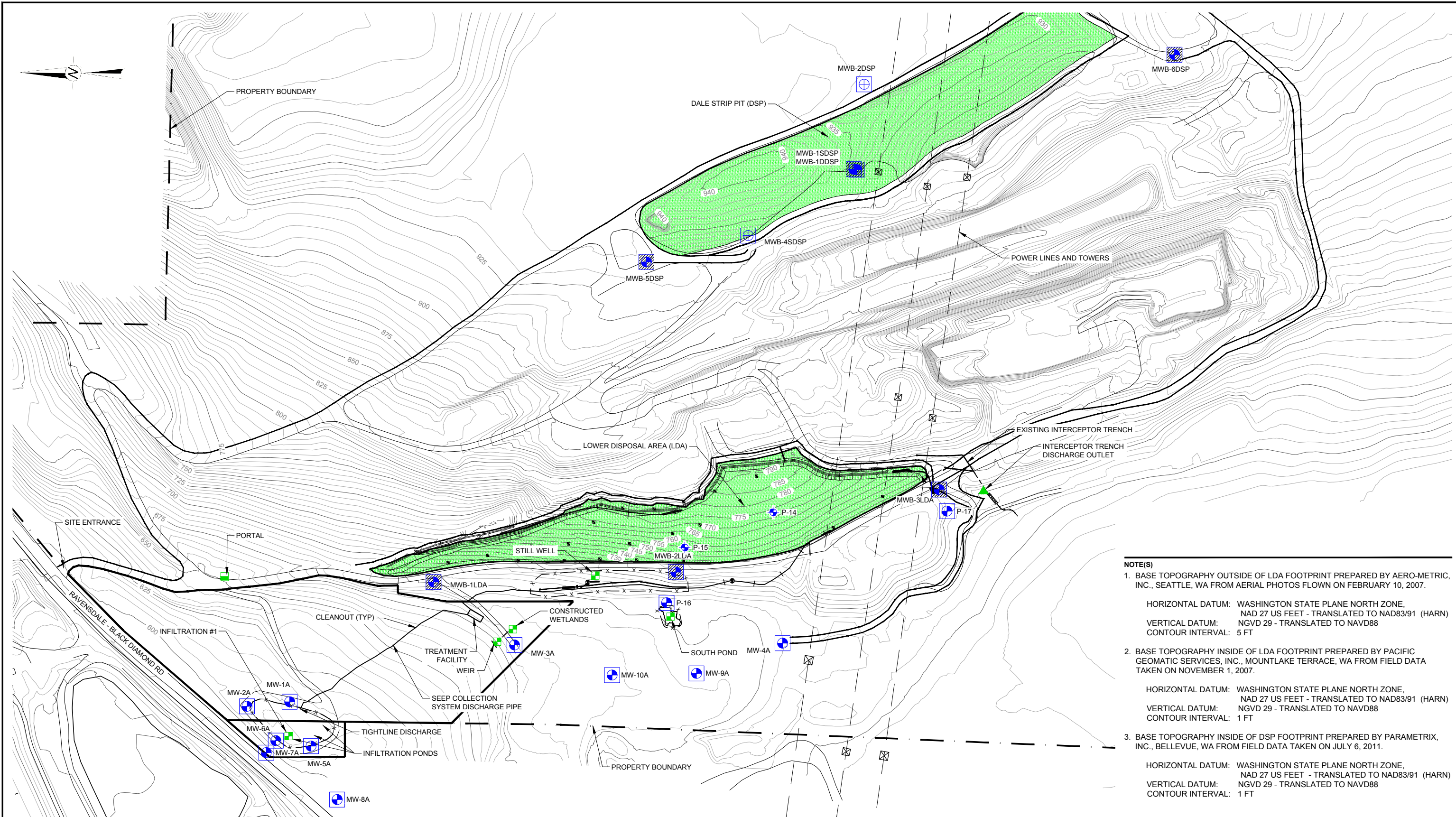
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FIGURE

1

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

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NOTE(S)

1. BASE TOPOGRAPHY OUTSIDE OF LDA FOOTPRINT PREPARED BY AERO-METRIC, INC., SEATTLE, WA FROM AERIAL PHOTOS FLOWN ON FEBRUARY 10, 2007.

HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 27 US FEET - TRANSLATED TO NAD83/91 (HARN)
VERTICAL DATUM: NGVD 29 - TRANSLATED TO NAVD88
CONTOUR INTERVAL: 5 FT

2. BASE TOPOGRAPHY INSIDE OF LDA FOOTPRINT PREPARED BY PACIFIC GEOMATIC SERVICES, INC., MOUNTLAKE TERRACE, WA FROM FIELD DATA TAKEN ON NOVEMBER 1, 2007.

HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 27 US FEET - TRANSLATED TO NAD83/91 (HARN)
VERTICAL DATUM: NGVD 29 - TRANSLATED TO NAVD88
CONTOUR INTERVAL: 1 FT

3. BASE TOPOGRAPHY INSIDE OF DSP FOOTPRINT PREPARED BY PARAMETRIX, INC., BELLEVUE, WA FROM FIELD DATA TAKEN ON JULY 6, 2011.

HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 27 US FEET - TRANSLATED TO NAD83/91 (HARN)
VERTICAL DATUM: NGVD 29 - TRANSLATED TO NAVD88
CONTOUR INTERVAL: 1 FT

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



CLIENT
HOLCIM

CONSULTANT



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

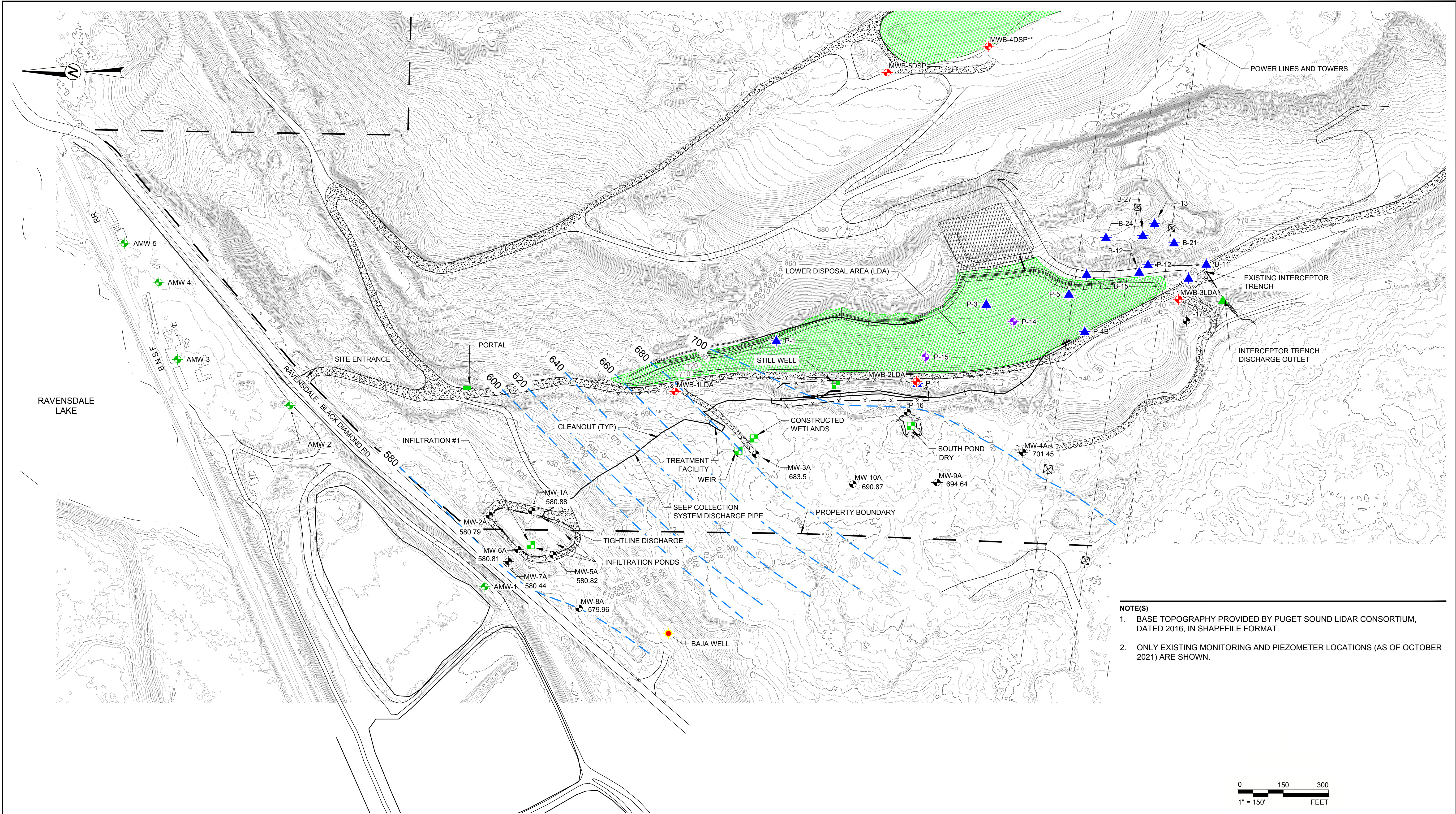
PROJECT
RI WORK PLAN 2020
RAVENSDALE, WA

TITLE
SITE PLAN

PROJECT NO.	Task	REV.	FIGURE
31406578.8318	300	0	2

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3 AND 1 in

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

CLIENT
HOLCIM

CONSULTANT



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

PROJECT JUNE 17-19, 2024 GROUNDWATER ELEVATIONS RAVENSDALE, WA			
TITLE SHALLOW GROUNDWATER ELEVATIONS			
PROJECT NO. 31406578.8318	TASK 300	REV. 0	FIGURE 3

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

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

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 Infiltration Ponds

Table A-1B Weir

Table A-1C South Pond

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

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

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

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

Notes:

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

- Not analyzed or not available

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

a North Creek Analytical, Inc.

b Severn Trent Laboratories

c Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

d Field parameters for Infiltration Ponds #1 were inadvertently not collected during May 2016 sampling

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L

mV

NTU

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

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

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

Date Sampled	Field Parameters							Gen-Chem Total Dissolved Solids (mg/L)	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)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.5	-	80
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	-
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	-
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	-
12-Sep-22	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	0.113 J+	111000	1.01

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

Date Sampled	Field Parameters							Gen-Chem	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)	pH (standard units)	Weir Flow Rate (gpm)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.5	-	80
15-Mar-23	5.10	758.2	6.46	202.5	9.22	7.49	0.1	437	5.92	3.49	0.197	96000	0.825
26-Jun-23	DRY	DRY	DRY	DRY	DRY	DRY		DRY	DRY	DRY	DRY	DRY	DRY
7-Sep-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
5-Mar-24	4.10	673	7.31	117.1	9.45	7.09	1.59	445	5.28	4.74	2.23	76800	1.16
17-Jun-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

Notes:

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

* Sample collected from constructed wetland (alternative sampling location) upstream of weir

- Not analyzed or not available

Dry Weir dry; unable to collect field parameters or samples

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

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

gpm Gallons per minute

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters						Gen-Chem Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
1-Feb-05	7.13	9580	-	-	4.19	13.02	4080	-	174	24.3	-	-
9-Mar-05	14.28	9979	-	-	6.79	12.52	4640	-	240	42.1	-	-
5-Apr-05	9.90	10820	-	-	43.50	11.99	3830	-	133	9.85	-	-
10-May-05	15.10	6091	-	-	45.60	12.14	3270	-	92.9	25.5	-	-
7-Jun-05	14.49	8257	-	-	24.20	12.19	3780	-	132	24.7	-	-
15-Jul-05 ^a	18.34	6937	-	-	6.89	11.69	5000	-	281	31.8	-	-
15-Jul-05 ^b	-	-	-	-	-	-	4260	-	237	34.2	-	-
9-Aug-05 ^a	23.53	7654	-	-	17.1	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	-

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

Date Sampled	Field Parameters						Gen-Chem Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
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

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

Date Sampled	Field Parameters						Gen-Chem Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
6-Jan-22	4.50	305	10.57	-30.2	4.07	9.42	300	2.29	4.42	2.29	77100	4.27
17-Mar-22	8.80	997	8.53	-66.4	4.54	11.32	912	4.85	22.60	16.70	358000	37.80
21-Jun-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
12-Sep-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-22	4.1	1319	8.1	-51.9	15.8	9.45	1170	17.5	40.5	33.1	384000	79.3
15-Mar-23	8.9	1467	10.36	-7.6	6.57	9.33	913	2.75	8.5	4.84	347000	12.3
26-Jun-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Sep-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-23	5.2	2217	7.86	-41.2	8.63	9	1180	3.98	21.1	15.8	394000	53.4
5-Mar-24	10.5	2327	7.99	-12.1	6.72	9.9	1220	3.99	21.6	15.2	435000	75.1
17-Jun-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

Notes:

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

-	Not analyzed or not available											
	Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.											
+	South Pond frozen; unable to collect field parameters or samples											
Dry	South Pond dry; unable to collect field parameters or samples											
a	North Creek Analytical, Inc.											
b	Severn Trent Laboratories											
c	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022											
U	Data validation code; not detected at the Reporting Limit (RL)											
J	Data validation code; estimated value											
J+	Data validation code; estimated value with positive bias											
°C	Degrees Celsius											
µmhos/cm	Micromhos per centimeter						mg/L					
feet bmp	Feet below measuring point						mV					
feet NAVD88	Feet NAVD88 Datum						NTU					

APPENDIX A-2

Summary of Lower Disposal Area – Shallow Groundwater Sampling Results

Table A-2A Well MW-1A
Table A-2B Well MW-2A
Table A-2C Well MW-3A
Table A-2D Well MW-4A
Table A-2E Well MW-5A
Table A-2F Well MW-6A
Table A-2G Well MW-7A
Table A-2H Well MW-8A
Table A-2I Well MW-9A
Table A-2J Well MW-10A
Table A-2K Still Well

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (umhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	35.43	578.01	15.17	883	-	-	358	7.03	664	-	8.47	2 U	-	-
9-Nov-05	31.83	581.61	10.77	1037	-	-	22.2	6.89	680	-	3.45	1 U	-	-
15-Feb-06	23.91	589.53	9.14	623	1.53	497.4	6.76	7.26	470 J	-	3.25	1 U	-	-
17-May-06	31.91	581.53	11.32	1029	1.33	121.6	10.3	7.18	600	-	5.18	1 U	-	-
23-Aug-06	35.35	578.09	19.21	481	5.97	60.4	6.3	6.67	340	-	1.7	1 U	-	-
14-Nov-06	20.00	593.44	10.35	635	4.55	95.1	22.2	7.23	550	-	3.07	1 U	-	-
14-Feb-07	29.29	584.15	11.13	435	3.88	85.6	32.1	6.76	260	-	2	1 U	-	-
30-May-07	32.90	580.54	10.30	545	6.63	145.7	6.93	6.81	320	-	2.48	1 U	-	-
27-Aug-07	35.68	577.76	10.49	428	7.13	76.7	8.65	6.95	260 J	-	1.87	1 U	-	-
29-Nov-07	32.75	580.69	10.10	625	7.14	144.3	12.2	6.96	340 J	-	2.32	1 U	-	-
27-Feb-08	27.83	585.61	-	-	-	-	19.6	-	320	-	2.58	1 U	-	-
20-May-08	31.86	581.58	10.22	471	6.38	177.0	109	6.48	290 J	-	2.24	1 U	-	-
27-Aug-08	36.04	577.40	9.84	427	7.40	118.4	63.6	7.08	260	-	2.05	1 U	23000	-
26-Sep-08	Test Trench Drain Line Installed													
16-Oct-08	35.65	577.79	9.51	443	9.78	113.9	38	7.38	260 J	-	1.79	1 U	22900	-
20-Nov-08	25.62	587.82	9.49	563	6.11	231.0	5.48	7.18	430	-	3.68	1 U	106000	-
30-Dec-08	23.14	590.30	9.84	402	8.40	106.9	8.92	7.25	280 J	-	2.47	1 U	43900	-
15-Jan-09	20.66	592.78	8.40	336	9.65	229.6	1.07	6.88	290	-	2.25	1 U	35700	-
12-Feb-09	30.00	583.44	9.05	372	8.46	-	16.7	7.34	320	-	1.93	1 U	27000	-
12-Mar-09	31.30	582.14	9.13	409	8.60	174.9	15.8	7.03	340	-	1.66	1 U	20600	-
16-Apr-09	23.88	589.56	8.17	343	10.24	131.8	13.5	6.78	310	-	1.77	1 U	24600	-
19-May-09	30.50	582.94	8.99	392	8.69	82.6	23.7	7.75	340 J	-	1.56	1 U	19600	-
23-Jun-09	34.00	579.44	9.21	480	9.56	79.0	22.9	7.89	430	-	2 U	2 U	20000	-
25-Aug-09	36.95	576.49	13.10	373	6.47	311.9	4.98	6.76	270 J+	-	0.64 J	2 U	17000	-
23-Sep-09	37.12	576.32	11.30	336	6.90	368.3	21.3	6.73	240	-	2 U	0.18 J	14000	-
15-Dec-09	28.30	585.14	9.20	643	5.30	567.0	18	6.72	330	-	2 U	2 U	26000	-
24-Mar-10	30.03	583.41	9.80	562	5.72	545.9	5.04	6.74	370	-	1.9 J	2 U	19000	-
16-Jun-10	23.55	589.89	9.20	506	5.93	405.4	16.1	6.53	40 U	-	3.6	2 U	20000	-
21-Sep-10	35.89	577.55	10.40	593	4.82	288.5	117	6.96	370	-	2.6	0.23 J	19000	-
7-Dec-10	27.39	586.05	10.00	504	1.45	198.4	139	7.15	330	-	2.3	2 U	14000	-
29-Mar-11	29.76	583.68	8.10	247	2.47	169.0	6.81	7.14	300	-	2.4	2 U	15000	-
21-Jun-11	30.45	582.99	9.30	606	4.58	332.9	3.56	7.17	400 J	-	5 U	2 U	16000	-
27-Sep-11	36.65	576.79	9.90	366	7.27	356.2	2.18	6.85	310	-	5 U	2 U	17000	-
14-Dec-11	31.53	581.91	9.20	407	1.97	234.7	20.4	7.09	370	-	5 U	2 U	16000	-
20-Mar-12	21.60	591.84	7.70	561	7.06	385.4	4.8	7.18	280	-	2.3	0.4 U	16000	-
19-Jun-12	21.60	591.84	10.00	575	7.04	378.2	5.6	7.31	330	-	2.5	0.4 U	16000	-
19-Sep-12	36.42	577.02	11.30	561	8.76	286.0	2.49	7.02	310	-	2.4	0.4 U	17000	-
19-Dec-12	23.43	590.01	9.30	671	6.67	348.2	0.74	7.26	20 U	-	1.7	0.4 U	17000	-
25-Feb-13	29.32	584.12	8.00	572	9.51	337.0	26	7.28	300	-	2.5	0.4 U	16000	-
22-May-13	31.23	582.21	9.00	518	8.59	397.7	4.68	7.40	310	-	1.8	0.4 U	15000	-
21-Aug-13	37.02	576.42	10.20	534	9.27	152.7	1.46	7.11	227	-	1.2	0.1 U	14100	-
20-Nov-13	29.69	583.75	9.50	852	7.62	243.5	39.5	6.75	419	-	1.6	0.1 U	19900	-
1-Apr-14	23.29	590.15	8.90	347	7.60	248.1	2.54	7.30	247	-	2	0.1 U	16500	-
21-May-14	28.31	585.13	9.50	349	4.02	178.6	-	7.12	280	-	1.8	0.1 U	15100	-
13-Aug-14	36.52	576.92	12.10	441	9.22	51.9	6.2	7.10	283	-	1.4	0.1 U	15200	-
13-Nov-14	31.63	581.81	11.50	438	8.80	173.0	14.7	7.10	352	-	1.6	0.1 U	17100	-
11-Feb-15	23.02	590.42	9.40	498	3.89	98.1	10.5	7.72	319	-	9.1	0.3	42900	-
4-May-15	31.93	581.51	9.80	578	7.35	416.9	1.05	7.26	413	-	1.7	0.1 U	16000	-
6-Aug-15	37.65	575.79	10.70	447	0.17	71.6	49	7.21	343	-	3.9	0.1 U	10300	-
4-Nov-15	32.89	580.55	9.50	657	8.56	240.5	5.7	6.92	554	-	2.3	0.1 U	49300	-
10-Feb-16	25.39	588.05	9.80	322	7.36	204.8	3.21	7.31	202	-	2	0.1 U	22200	-
2-May-16	32.32	581.12	10.80	579	5.95	250.2	4.7	7.02	350	-	1.8	0.04 J	17800	-
23-Aug-16	37.66	575.78	11.00	488	1.34	459.9	259	7.08	413	-	3.88	0.07 J	14600	-
2-Nov-16	31.30	582.14	9.70	280	3.94	225.0	6.13	7.18	531	-	2.13	0.12	37700	-
1-Feb-17	29.01	584.43	8.60	510	5.26	187.7	0.97	7.04	270	-	1.47	0.1 U	19000	-
30-May-17	28.47	584.97	9.50	483	6.89	4.7	4.85	6.96	290	-	2.09	0.1 U	15700	-
17-Aug-17	36.30	577.14	10.50	536	3.79	82.5	6.44	6.96	283	-	1.55	0.1 U	15500	-
9-Nov-17	32.20	581.24	9.20	460	5.89	75.1	2.7	7.01	380	-	1.63	0.1 U	16300	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btpc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
9-Dec-20	32.05	581.39	9.10	425	7.17	211.0	1.57	6.86	347	-	1.11	0.1 U	17100	-
3-Mar-21	27.01	586.43	8.60	383	5.71	248.0	0.6	6.83	299	-	1.16	0.1 U	17400	-
9-Jun-21	35.32	578.12	9.20	422	8.47	151.0	2.22	6.68	310	-	1.39	0.1 U	16300	-
12-Oct-21	33.84	579.60	9.30	329	9.07	160.8	1.55	6.34	236 J-	0.846	1.13	0.1 U	12500	0.801
5-Jan-22	25.20	588.24	9.20	344	7.96	170.2	0.67	6.54	255	1.06	1.02	0.1 U	18100	0.782
16-Mar-22	23.67	589.77	9.30	386	7.79	155.0	0.96	5.60	350	1.58	1.33	0.1 U	36800	0.887
23-Jun-22	27.91	585.53	9.80	356	7.21	152.8	2.55	6.93	281	1.08	1.04	0.1 U	16500	0.86
23-Sep-22	37.05	576.39	13.2	312.5	6.93	128.4	2.84	6.91	222	0.83	1.2	0.137	14100	0.786
13-Dec-22	32.35	581.09	9.4	394.6	8.79	99.3	0.31	6.77	234	0.955	1.13	0.1 U	14500	0.791
13-Mar-23	29.36	584.08	8	584.2	9.22	90.2	0.29	6.85	298	0.86	1.27	0.053 J	14000	0.935
28-Jun-23	34.78	578.66	9.4	527	9.69	277.4	0.85	6.68	363	0.87	1.18	0.1 U	16600	0.862
5-Sep-23	37.62	575.82	9.5	586.1	5.14	77.6	3.75	6.97	360 J-	0.41	3.82	0.586	13300	2.23
12-Dec-23	22.16	591.28	9.2	806	7.53	120.7	1.27	6.7	424	1.71	1.39	0.103 U	43400	0.986
4-Mar-24	26.79	586.65	8.4	437.2	8.26	194.8	0.42	6.56	274 J	0.83	1.02	0.103 U	13400	0.614
18-Jun-24	32.56	580.88	8.8	700	12.5	119.2	0.39	6.64	335	0.87	1.14	0.103 U	13900	0.684

Notes:

Top of casing elevation (feet NAVD88): 613.44

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

- Not measured or not available

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

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	29.18	578.03	13.78	853	-	-	28.3	7.7	606	-	2 U	2 U	-	-
9-Nov-05	25.64	581.57	10.95	860	-	-	3.82	7.43	550	-	1.31	1 U	-	-
15-Feb-06	17.64	589.57	7.81	709	0.82	467.7	3.96	7.86	520 J	-	1.06	1 U	-	-
17-May-06	25.76	581.45	9.67	810	2.17	246.1	3.01	7.06	490	-	1.13	1 U	-	-
23-Aug-06	29.13	578.08	12.86	759	2.6	12	9.82	7.4	570	-	1.54	1 U	-	-
14-Nov-06	13.74	593.47	10.44	649	3.72	63.6	9.78	7.72	460	-	1.36	1 U	-	-
14-Feb-07	22.09	585.12	10.77	648	1.69	11.5	52.4	7.51	380	-	1.07	1 U	-	-
30-May-07	26.72	580.49	11.46	732	2.05	72.2	12.8	7.44	480	-	1.17	1 U	-	-
27-Aug-07	29.45	577.76	10.8	829	7.41	62.8	117	7.58	590 J	-	1.09	1 U	-	-
29-Nov-07	26.57	580.64	10.74	899	2	81.1	392	6.05	490	-	1.03	1 U	-	-
27-Feb-08	21.45	585.76	-	-	-	-	446	-	400	-	1.09	1 U	-	-
20-May-08	25.73	581.48	9.48	706	3.07	110.2	419	7.26	420 J	-	1.21	1 U	-	-
27-Aug-08	29.84	577.37	9.87	824	4.74	91.5	571	7.43	550 J	-	1.3	1 U	65100	-
26-Sep-08	Test Trench Drain Line Installed													
16-Oct-08	29.13	578.08	9.76	820	4.56	53.6	227	7.33	520 J	-	1.3	1 U	76300	-
20-Nov-08	19.48	587.73	9.31	462	5.24	240.1	6.16	7.35	360	-	1.76	1 U	67000	-
30-Dec-08	16.93	590.28	9.85	480	6.18	66.8	56.1	7.35	390 J	-	1.55	1 U	61500	-
15-Jan-09	14.46	592.75	7.71	402	7.47	177.8	1.61	7.61	360	-	1.57	1 U	58500	-
12-Feb-09	23.84	583.37	9.63	-	8.72	-	74.9	7.54	390	-	1.3	1 U	48100	-
12-Mar-09	25.15	582.06	9.11	454	7.22	163.7	573	7.19	400	-	1.17	1 U	43100	-
16-Apr-09	17.72	589.49	8.4	417	8.27	126.4	128	7.26	400	-	1.4	1 U	48800	-
19-May-09	24.38	582.83	8.8	448	6.88	72	178	7.95	410 J	-	1.1	1 U	44000	-
23-Jun-09	27.85	579.36	8.95	507	7.76	61.9	256	8.07	490	-	2 U	2 U	39000	-
25-Aug-09	30.68	576.53	10.5	707	6.94*	307.4	4.38	7.17	530 J+	-	2 U	0.18 J	49000	-
23-Sep-09	30.84	576.37	11.2	661	5.41	374.7	15	7.28	500	-	2 U	2 U	51000	-
15-Dec-09	22.10	585.11	9.5	720	5.1	579	39	6.92	380	-	2 U	2 U	42000	-
24-Mar-10	23.82	583.39	10	602	4.1	535.3	43.3	6.93	370	-	1.7 J	2 U	39000	-
17-Jun-10	17.45	589.76	9.3	547	4.06	-	157	6.57	350	-	3.9	2 U	39000	-
22-Sep-10	29.66	577.55	10.2	722	5.77	360.2	7.2	7.22	450	-	3.3	2 U	55000	-
8-Dec-10	22.10	585.11	9.9	566	6.69	-	64.6	7.09	350	-	2 U	2 U	35000	-
29-Mar-11	19.94	587.27	8.4	251.3	6.95	620	28	7.13	250 J	-	1.4 J	2 U	30000	-
21-Jun-11	24.25	582.96	9.9	628	5.23	344.3	37	7.29	410 J	-	5 U	2 U	28000	-
28-Sep-11	30.41	576.8	9.5	57.5	6.54	481.7	13.8	7.24	500	-	5 U	2 U	54000	-
14-Dec-11	25.35	581.86	9.3	441	3.86	346.5	386	7.26	440	-	5 U	2 U	29000	-
20-Mar-12	15.45	591.76	7.7	580	1.53	382	32.3	7.4	280	-	2.2	0.4 U	26000	-
19-Jun-12	23.88	583.33	9	590	1.85	388.1	55.7	7.74	320	-	2.5	0.4 U	23000	-
19-Sep-12	30.18	577.03	11.1	695	7.03	297	9.31	7.41	420	-	2.7	0.4 U	42000	-
19-Dec-12	17.24	589.97	9.4	704	6.33	317	55.2	7.4	310	-	1.7	0.4 U	25000	-
25-Feb-13	23.12	584.09	9.1	585	6.04	339	110	7.46	370	-	2.5	0.4 U	24000	-
22-May-13	25.05	582.16	8.6	537	8.41	391.5	12.3	7.51	310	-	1.9	0.4 U	22000	-
21-Aug-13	30.75	576.46	10.6	684	8.42	150.2	5.85	7.74	419	-	1.5	0.2	27700	-
20-Nov-13	23.51	583.7	9.6	513	6.19	230.4	32.1	6.81	364	-	1.3	0.1 U	27500	-
1-Apr-14	17.11	590.1	8.5	386	7.32	243.1	14.6	7.46	294	-	1.4	0.1 U	31700	-
21-May-14	22.07	585.14	9.1	365	6.02	212.7	-	6.93	273	-	1.3	0.1 U	24700	-
12-Aug-14	31.32	575.89	13.16	552	6.56	76.7	6.8	7.36	394	-	1.5	0.1 U	25300	-
13-Nov-14	25.48	581.73	12.3	459.5	7.22	189.8	7.2	7.19	367	-	1.4	0.1 U	25500	-
11-Feb-15	16.83	590.38	9.3	447	6.76	134.4	36.6	7.52	286	-	1.7	0.1 U	30400	-
4-May-15	25.78	581.43	10.2	619	6.27	407.1	7.7	7.36	382	-	1.4	0.1 U	25200	-
6-Aug-15	31.87	575.34	11.3	500	9.18	207.1	28.1	7.23	394	-	1.5	0.1 U	22000	-
4-Nov-15	26.74	580.47	9.9	481	8.76	222.6	16.8	6.88	381	-	1.1	0.1 U	21800	-
10-Feb-16	19.19	588.02	9	376	7.35	206	40.2	7.68	261	-	3.6	0.1 U	37100	-
2-May-16	26.14	581.07	11.3	552	3.19	194.5	87.8	7.35	344	-	2.1	0.01 J	31200	-
23-Aug-16	31.64	575.57	10.5	545	7.62	486.5	10.8	7.18	412	-	1.54	0.1 U	32600	-
2-Nov-16	25.12	582.09	10.2	220	4.01	238.9	245	7.19	431	-	1.4	0.1 U	30600	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
9-Jun-21	29.14	578.07	9.1	459.8	8.65	193.6	1.34	6.88	360 J	-	1.25	0.058 J	21800	-
12-Oct-21	27.75	579.46	10.4	595	9.33	188.2	0.56	6.53	439 J-	1.19	1.1	0.1 U	21900	1.07
6-Jan-22	19.05	588.16	10.2	466.3	4.66	197.7	2.69	7.14	368	3.24	1.89	0.1 U	80700	1.19
16-Mar-22	17.54	589.67	8.4	304.1	9.88	154.6	6.43	6	291	3.26	1.85	0.218	60900	1.15
23-Jun-22	21.76	585.45	9.5	442.6	6.06	158.8	1.49	7.10	369	1.94	1.5	0.1 U	37500	1.15
23-Sep-22	30.87	576.34	11.2	471.5	8.5	190.3	2.04	6.82	351	0.923	1.17	0.13	23300	1.18
13-Dec-22	26.24	580.97	9.9	557	8.35	117.4	4.38	6.81	319	1.17	1.28 J	0.218 J+	21800	1.59
14-Mar-23	23.24	583.97	8.6	664.2	7.67	174.1	0.97	7.08	368	1.65	1.49	0.1 U	28800	1.03
28-Jun-23	28.64	578.57	10.5	521	9.26	275.7	2.1	6.79	361	1.05	1.12	0.371 J	19600	1.02
5-Sep-23	31.49	575.72	9.6	699	11.67	128.3	3.01	7.06	400 J-	0.74	1.1	0.383 J	19800	1.06
12-Dec-23	16.04	591.17	9.9	894	8.57	137	4.29	7.01	529	3.53	1.94	0.103 U	133000	1.5
4-Mar-24	20.65	586.56	8.9	505	8.82	218.3	1.74	6.87	360 J	2.27	1.39	0.103 U	71900	0.97
18-Jun-24	26.42	580.79	8.9	763	11.61	137.9	0.56	6.8	389	1.13	0.978	0.103 U	20500	0.954

Notes:

Top of casing elevation (feet NAVD88): 607.21

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

- Not measured or not available

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

* Dissolved Oxygen meter working incorrectly at the time of sample collection

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

mg/L Milligrams per liter

feet bmp Feet below measuring point

mV Millivolts

feet NAVD88 Feet NAVD88 Datum

NTU Nephelometric Turbidity Unit

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

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

Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-		5.6	8	2.5	-	80
4-Mar-21	5.26	683.85	7	364	0.59	47	1.54	7.42	319	-	-	1.52	0.134	74200	-
9-Jun-21	6.24	682.87	11.4	706	0.96	-50.2	4.12	7.03	540	-	-	6.48	0.204	124000	-
12-Oct-21	5.34	683.77	12.3	1611	2.92	133.4	5.25	6.63	1070 J-	-	15.6	3.31	0.4	93200	2.14
6-Jan-22	5.10	684.01	7.5	269.6	2.33	189.1	1.84	7.38	242	-	8.89	2.04	0.265	53400	2.61
17-Mar-22	4.97	684.14	7.5	269.6	2.33	189.1	1.84	7.38	252	-	3.39	1.98	0.169	53200	0.88
21-Jun-22	5.21	683.9	11.2	439.4	0.19	181.3	0.66	7.03	368	-	0.966	3.66	0.075 J	75400	0.39
13-Sep-22	11.25	677.86	15.3	910	4.92	85.7	9.15	6.49	689	-	0.973	5.42	0.137	91100	0.507
12-Dec-22	5.32	683.79	7.7	817	4.09	205.2	1.29	7.15	475	-	9.5	1.72	0.115 J+	99800	1.26
15-Mar-23	5.02	684.09	6.1	669.2	1.38	203.9	0.95	7.34	393	-	5.15	2.42	0.147	91100	1.19
26-Jun-23	7.35	681.76	11.7	802	0.65	-21.3	4.65	6.78	699	-	5.91	11.7	0.558	144000	1.07
6-Sep-23	13.95	675.16	13.8	1227	2.17	18	3.14	6.89	747 J-	-	0.717	4.08	0.126	95900	0.483
13-Dec-23	5.14	683.97	9.4	712	4.35	43.8	2.87	6.73	343	-	4.61	3.7	0.208	82900	0.816
5-Mar-24	5.05	684.06	7.5	620	5.62	93.3	4.58	6.74	356	-	1.55	4.65	0.336	66200	0.604
17-Jun-24	5.61	683.5	10.6	983	5.34	-34.5	0.58	7.06	544	-	1.16	9.66	0.134 J	118000	0.454

Notes:

Top of casing elevation (feet NAVD88): 689.11

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

- Not measured or not available

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

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

mg/L Milligrams per liter

feet bmp Feet below measuring point

mV Millivolts

feet NAVD88 Feet NAVD88 Datum

NTU Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	4.60	700.85	12.43	629	-	-	6.07	6.45	490	-	2 U	2 U	-	-
10-Nov-05	3.70	701.75	11.98	441	-	-	7.4	6.22	290	-	1 U	1 U	-	-
19-Jan-06	3.56	701.89	8.29	319	0.42	-	1.46	6.53	290 J	-	1 U	1 U	-	-
15-Feb-06	3.82	701.63	8.32	326	0.62	99.7	3.5	7.39	220 J	-	1 U	1 U	-	-
15-Mar-06	3.79	701.66	7.58	254	0.87	201.9	0.82	6.65	210 J	-	1 U	1 U	-	-
7-Apr-06	3.87	701.58	9.36	295	0.55	157.4	0.24	6.34	220	-	1 U	1 U	-	-
16-May-06	4.92	700.53	10.8	321	0.45	142.1	0.99	6.36	220	-	1 U	1 U	-	-
23-Jun-06	4.41	701.04	12.62	316	0.57	-	2.05	6.25	200	-	1 U	2.64	-	-
20-Jul-06	6.90	698.55	13.43	347	0.23	-20.9	0.32	6.11	120	-	1 U	1 U	-	-
22-Aug-06	8.46	696.99	13.68	406	0.9	153.5	2.2	6.13	280	-	1 U	1 U	-	-
26-Sep-06	6.50	698.95	14.59	417	2.47	-35.2	2.42	6.33	290	-	1 U	1 U	-	-
26-Oct-06	5.98	699.47	12.82	434	3.3	124.1	0.82	6.12	320	-	1 U	1 U	-	-
13-Nov-06	3.02	702.43	11.7	386	5.06	187.8	2.47	6.13	280	-	1 U	1 U	-	-
20-Dec-06	3.60	701.85	9.64	379	4.3	150.5	1.03	6.07	250	-	1 U	1 U	-	-
23-Jan-07	3.68	701.77	8.37	239	3.96	58.9	0.66	6.28	220	-	1 U	1 U	-	-
14-Feb-07	3.74	701.71	8.18	325	2.85	110.8	0.53	6.25	210	-	1 U	1 U	-	-
27-Mar-07	3.32	702.13	8.27	289	2.07	61.5	0.88	6.83	210 J	-	1 U	1 U	-	-
17-Apr-07	3.89	701.56	9.59	306	1.8	102.3	2.31	6.34	190	-	1 U	1 U	-	-
30-May-07	4.70	700.75	11.27	285	1.78	101.7	1.37	6.37	180	-	1 U	1 U	-	-
20-Jun-07	4.69	700.76	12.37	350	1.67	9.3	1.25	6.9	240 J	-	1 U	1 U	-	-
31-Jul-07	6.38	699.07	14.57	402	1.15	5.5	0.6	6.37	250	-	1.29	1 U	-	-
29-Aug-07	7.44	698.01	13.78	353	1.11	128.3	1.87	6.18	280 J	-	1 U	1 U	-	-
27-Sep-07	8.25	697.20	13.6	375	0.96	142.6	0.7	6.7	300	-	1 U	1 U	-	-
26-Oct-07	4.09	701.36	12.16	343	2.27	75.9	3.93	6.1	310 J	-	1 U	1 U	-	-
29-Nov-07	3.93	701.52	10.13	428	3.17	197.3	1.63	6.32	270	-	1 U	1 U	-	-
12-Dec-07	5.82	699.63	9.51	384	3.37	185	0.8	6.06	260	-	1 U	1 U	-	-
24-Jan-08	3.86	701.59	7.74	354	3.09	109	-	6.35	250	-	1 U	1 U	-	-
28-Feb-08	4.04	701.41	-	-	-	-	1.06	-	220	-	1 U	1 U	-	-
19-May-08	4.35	701.10	9.79	329	1.38	209.2	1.2	6.08	200 J	-	1 U	1 U	-	-
26-Aug-08	7.83	697.62	12.66	431	1.38	210.5	0.28	6.19	270	-	1 U	1 U	3000 U	-
18-Nov-08	3.64	701.81	10.43	235	3.95	217.5	0.66	6.03	210	-	1 U	1 U	3000 U	-
11-Feb-09	4.09	701.36	7.24	188	2.13	-	0.12	6.54	180	-	1 U	1 U	3000 U	-
19-May-09	3.79	701.66	8.19	173	1.28	111.9	1.78	7.18	170 J	-	1 U	1 U	3000 U	-
22-Sep-09	9.70	695.75	16.5	440	0.82	383.3	12.5	6.31	370 J	-	2 U	2 U	1200 J	-
17-Dec-09	3.47	701.98	9.2	311	4.37	470	16	6.25	110	-	2 U	2 U	700 J	-
24-Mar-10	3.87	701.58	9.4	410	0.34	204.8	30.7	6.65	240	-	0.81 J	2 U	1300 J	-
16-Jun-10	3.77	701.68	10.3	298	0.99	397.8	1.11	7.4	180	-	3.6	2 U	900 J	-
21-Sep-10	5.82	699.63	13.7	350	1.01	302.5	1.04	6.25	200	-	1.4 J	0.2 J	1200 J	-
7-Dec-10	3.83	701.62	9.6	283	0.72	405.6	0.42	6.16	190	-	2 U	2 U	800 J	-
30-Mar-11	3.91	701.54	8.2	133.3	0.51	248.2	0.29	9.87	140 J	-	0.35 J	2 U	5000	-
22-Jun-11	3.99	701.46	11	219.3	0.16	222.5	0.22	6.13	160	-	5 U	2 U	700 J	-
28-Sep-11	8.54	696.91	14.3	34.5	0.26	333.9	2.45	6.3	270	-	5 U	2 U	2100 J	-
15-Dec-11	4.12	701.33	9.4	217	1.15	414.3	2.74	6.28	200	-	5 U	2 U	1200 J	-
21-Mar-12	3.35	702.10	8.4	346	0.42	438.4	0.48	6.14	220	-	4.8	0.4 U	1300 J	-
19-Jun-12	3.78	701.67	11.3	290.1	0.09	314	0.46	6.28	170 J+	-	1.3	0.4 U	3300 U	-
20-Sep-12	8.53	696.92	14.4	419	0.26	309	1.07	6.39	240	-	1.6	0.4 U	2900 J	-
18-Dec-12	3.49	701.96	9.1	491	2.56	264.4	1.38	6.63	170	-	1 U	0.4 U	1200 J	-
26-Feb-13	3.91	701.54	8.4	324	2.59	404.2	1.01	7.03	140	-	1.1	0.4 U	3400	-
23-May-13	3.76	701.69	10.6	338	1.15	465.9	0.57	6.31	190	-	1 U	0.4 U	3300 U	-
22-Aug-13	8.28	697.17	13.1	284.2	0.33	32.2	0.89	6.34	220	-	0.4	0.1 U	1260	-
19-Nov-13	3.33	702.12	10.3	323	1.7	109.2	0.64	6.27	200	-	0.2	0.1 U	750	-
1-Apr-14	3.69	701.76	8.2	243.6	0.45	180.7	0.28	6.33	173	-	0.18 J	0.1 U	710	-
22-May-14	4.52	700.93	10.8	195	0.65	75	-	7.2	152	-	0.3	0.1	600	-
13-Aug-14	7.56	697.89	12.62	269	0.44	37.7	1.12	5.89	181	-	0.8	0.1 U	890	-
12-Nov-14	3.73	701.72	11.7	230.9	1.29	108.2	1.32	6.17	191	-	0.3	0.1 U	950	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoC)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
13-Feb-20	3.70	701.75	7.9	283.7	2.98	102.2	0.91	6.18	283	-	0.176 J	0.1 U	859	-
13-Aug-20	7.73	697.72	13.5	334.3	0.62	58.3	0.51	6.19	238	-	0.711	0.1 U	921	-
10-Dec-20	3.45	702.00	9.8	364	6.11	169	1.56	6.51	297	-	0.296	0.1 U	1260	-
4-Mar-21	3.72	701.73	8.3	304	2.83	137	0.49	6.47	255	-	0.192 J	0.1 U	876	-
10-Jun-21	5.32	700.13	11.9	338.7	1.23	108.5	0.73	6.09	220	-	0.228	0.1 U	787	-
15-Oct-21	7.69	697.76	12.6	341.3	6.91	133.9	20.5	6.37	363 J	0.18 J	0.99	0.151	1480	4.09
7-Jan-22	3.40	702.05	8.7	248.4	4.37	211.1	3.08	6.29	270	0.2 U	0.383	0.1 U	774 J	1.73
18-Mar-22	3.52	701.93	9.1	340.6	3.26	123.8	1.85	6.63	320	0.2 U	0.279	0.1 U	1140	1.53
22-Jun-22	3.83	701.62	10.1	327.8	1.36	114.5	0.46	6.36	263	0.2 U	0.201	0.1 U	666	1.16
14-Sep-22	8.9	696.55	13.4	389.4	2.46	87.6	2.53	6.02	330	0.2 U	0.385	0.1 U	1080	1.19
14-Dec-22	3.88	701.57	9.1	278	7.03	135.4	0.44	6.35	224	0.2 U	0.188 J	0.1 U	583	1.42
16-Mar-23	3.39	702.06	7.9	468.9	4.44	111.7	2.92	6.3	264	0.2 U	0.159 J	0.1 U	616	1.13
27-Jun-23	6.27	699.18	11.4	308.1	3.02	74.9	1.06	6.2	246	0.2 U	0.19 J	0.5 U	745	1.24
8-Sep-23	9.88	695.57	12.8	560.7	1.14	57.3	9.67	6.45	329 J	0.101 U	0.317	0.0513 U	1170	1.14
14-Dec-23	3.78	701.67	9.7	497	6.6	227.1	1.2	6.37	255	0.202 U	0.218 J	0.257 U	527	1.25
7-Mar-24	3.72	701.73	8.7	576	4.82	171.9	0.66	6.37	320	0.202 U	0.4 U	0.103 U	708	1.18
17-Jun-24	4.00	701.45	10.8	451.3	6.22	77.4	0.62	6.26	226	0.202 U	0.18 J	0.103 U	452 J	0.85

Notes:

Top of casing elevation (feet NAVD88): 705.45

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

- Not measured or not available

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

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (umhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Jul-05	33.33	577.90	12.02	956	-	-	496	7.34	600	-	2.01	2 U	-	-
10-Nov-05	29.62	581.61	11.24	1212	-	-	27.6	7.32	800	-	8.4	1 U	-	-
15-Feb-06	21.70	589.53	6.45	665	2.59	280.3	11.1	7.86	520 J	-	22.3	1 U	-	-
17-May-06	29.80	581.43	7.74	831	0.88	101.9	8.67	7.79	580	-	11	1 U	-	-
23-Aug-06	33.25	577.98	15.19	737	1.76	33.5	19.6	7.32	660	-	2.53	1 U	-	-
14-Nov-06	17.79	593.44	10.86	699	4.5	76.3	38.7	7.55	490	-	3.15	1 U	-	-
16-Feb-07	27.08	584.15	8.08	630	6.07	2.3	57.6	8.26	500	-	14.4	1 U	-	-
30-May-07	30.75	580.48	9.6	894	2.59	13.3	13.4	7.76	540	-	8.43	1 U	-	-
29-Aug-07	33.60	577.63	9.56	684	7.64	67	-	7.1	670 J	-	1.97	1 U	-	-
29-Nov-07	30.60	580.63	11	1075	3.53	151.5	23.5	8.37	560	-	5.17	1 U	-	-
27-Feb-08	25.68	585.55	-	-	-	-	29.9	-	400	-	10.7	1 U	-	-
20-May-08	29.73	581.50	7.93	768	4.27	180.7	77.8	7.39	480 J	-	5.67	1 U	-	-
27-Aug-08	33.97	577.26	10.17	862	4.07	81.2	-	7.43	540 J	-	1.17	1 U	87500	-
26-Sep-08	Test Trench Drain Line Installed													
16-Oct-08	33.55	577.68	8.89	845	5.39	86.3	852	7.53	440 J	-	1.03	1 U	90700	-
20-Nov-08	23.48	587.75	9.34	577	5.27	234.3	9.48	7.5	470	-	6.24	2 U	138000	-
30-Dec-08	20.88	590.35	8.39	510	8.89	99	44.8	8.02	430 J	-	14.2	1.11	138000	-
15-Jan-09	18.50	592.73	4.97	347	8.9	154.8	17.2	8.47	380	-	24.4	1 U	104000	-
12-Feb-09	27.90	583.33	8.47	-	10.21	-	22	7.6	420 J	-	6.11	1 U	99000	-
12-Mar-09	29.19	582.04	7.47	521	6.15	171.7	26.8	7.39	480	-	8.97	1 U	124000	-
16-Apr-09	21.70	589.53	6.99	456	7.6	151.6	72.7	8.66	470	-	28.2	1.01	126000	-
19-May-09	28.37	582.86	8.08	509	6.38	64.4	31.3	8.07	450 J	-	9.19	1 U	105000	-
23-Jun-09	31.95	579.28	8.84	551	5.97	69.1	74.3	8.28	500	-	4.3	2 U	71000	-
25-Aug-09	35.08	576.15	-	-	-	-	-	-	-	-	-	-	-	-
24-Sep-09	35.29	575.94	11.7	714	2.28	371.9	258	7.26	550 J	-	0.76 J	0.17 J	88000	-
15-Dec-09	26.11	585.12	8.6	928	2.89	544	89	7.14	450	-	1.1 J	2 U	110000	-
24-Mar-10	27.86	583.37	8.3	697	3.52	505.1	18.1	7.47	450	-	23	0.46 J	110000	-
16-Jun-10	21.35	589.88	10.7	783	2.07	379	41.4	7.73	340	-	53	0.0021	150000	-
22-Sep-10	33.88	577.35	10.4	938	4.3	467.1	7.93	7.1	620	-	5	2 U	100000	-
7-Dec-10	25.22	586.01	10.2	781	3.86	353.7	11.1	7.39	500	-	12	0.53 J	130000	-
29-Mar-11	23.59	587.64	7	354	3.47	708	22.22	9.52	440 J	-	63	1.4 J	140000	-
21-Jun-11	28.33	582.90	11.6	1000	2.22	285.3	10.6	9.06	1100 J	-	43	1.2 J	180000	-
27-Sep-11	34.70	576.53	12.7	641	1.46	307.2	12.8	7.3	680	-	5 U	0.23 J	100000	-
14-Dec-11	29.46	581.77	9.5	691	1.95	757.1	9.69	7.35	690	-	6.9	0.18 J	180000	-
20-Mar-12	19.50	591.73	6.2	841	3.98	320.2	8.52	8.25	350	-	26	1 J	140000	-
19-Jun-12	27.91	583.32	10.2	800	3.22	365.9	2.76	7.66	510	-	8.7	0.4 U	120000	-
20-Sep-12	34.53	576.70	11	859	0.73	387	46.8	7.64	530	-	2.6	0.4 U	100000	-
19-Dec-12	21.26	589.97	8.9	983	1.73	279	778	7.71	530	-	11	0.62	180000	-
25-Feb-13	27.19	584.04	7.5	682	7.61	330.5	4.36	7.85	380	-	13	0.15 J	74000	-
22-May-13	29.09	582.14	8.8	828	3.88	411.4	8.11	8.29	350	-	25	0.53	100000	-
21-Aug-13	35.15	576.08	17.1	1248	3.41	114.2	144	7.78	1060	-	1.5	0.05 J	95000	-
20-Nov-13	27.45	583.78	10	1032	4.13	196.5	31.7	7.18	699	-	14.5	1.4	202000	-
1-Apr-14	21.08	590.15	8.4	567	3.04	168.2	15.7	10.24	413	-	62.7	1.5	150000	-
21-May-14	26.11	585.12	10.3	670	0.49	198.4	-	7.45	565	-	95	1.6	166000	-
12-Aug-14	34.56	576.67	14.07	812	3.64	87.7	1519	7.51	560	-	3	0.1 U	107000	-
13-Nov-14	29.48	581.75	12.9	1135	3.5	241.7	10.46	7.69	956	-	20.8	0.1	295000	-
11-Feb-15	20.81	590.42	7.7	619	6.17	81.4	18	9.63	430	-	39.2	1.3	126000	-
4-May-15	29.80	581.43	10.5	924	2.54	361.3	8.7	9.74	623	-	42.3	0.5	192000	-
6-Aug-15	36.08	575.15	12.8	781	2.4	129.6	261	7.24	DRY	-	DRY	DRY	DRY	-
4-Nov-15	30.80	580.43	10.7	1234	4.98	205.6	11.8	7.13	1130	-	6.6	0.3	318000	-
10-Feb-16	23.56	587.67	6.4	602	1.62	197.7	11.9	10.19	451	-	132	1.4	148000	-
2-May-16	30.19	581.04	11.5	1008	0.8	110.6	9.76	10.14	751	-	171	2.7 J	232000	-
23-Aug-16	35.79	575.44	13.1	729	2	436.2	51.4	7.2	1010	-	4.01	0.1 U	137000	-
2-Nov-16	29.06	582.17	10.9	570	4.98	103.1	32.1	7.55	1180	-	11.2	0.56	372000	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	163000 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	-
9-Jun-21	33.20	578.03	9.3	875	5.23	184	1.26	7.27	700	-	2.62	0.063 J	205000	-
13-Oct-21	31.70	579.53	9.5	1934	5.97	194	9.56	7.22	DRY	DRY	DRY	DRY	DRY	DRY
5-Jan-22	23.00	588.23	9.2	972	4.7	271.1	1.4	7.18	829	6.42	3.38	0.085 J	252000	1.8
16-Mar-22	21.48	589.75	7.8	724	7.0	187	2.65	6.6	711	6.01	4.02	0.11	223000	1.52
23-Jun-22	25.74	585.49	9.6	969	3.5	173.1	1.13	7.38	881	5.49	3.29	0.093 J	251000	1.82
23-Sep-22	35	576.23	11.5	1640	3.45	223.6	1.35	7.42	1720	4.57	3.21	0.156 J	455000	1.58
13-Dec-22	30.22	581.01	10.4	928	7.08	109.2	2.27	7.04	634	3.54	1.89	0.105 J+	173000	1.25
13-Mar-23	27.15	584.08	8.1	1685	5.49	172.5	1.43	7.47	1090	5.83	3.39	0.068 J	318000	1.64
26-Jun-23	32.57	578.66	11.1	1559	4.28	74.7	1.29	7.49	1510	6.99	4.55	0.2 U	475000	2.17
5-Sep-23	35.67	575.56	Insufficient depth of water to sample											
12-Dec-23	19.96	591.27	9.7	1260	6.44	152.6	2.92	7.07	847	4.62	2.69	0.103 U	225000	1.71
4-Mar-24	24.62	586.61	8.4	1191	6.08	237	0.63	7.35	984 J	6.37	4.28	0.103 U	294000	1.62
18-Jun-24	30.41	580.82	9.9	2586	8.65	176.1	0.88	7.51	1430	7.1	3.91	0.103 U	456000	1.81

Notes:

Top of casing elevation (feet NAVD88): 611.23

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

- Not measured or not available

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

Dry Well went dry during sampling. Unable to collect sample.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
9-Jun-21	31.07	577.88	9.8	2077	4.83	197.3	1.81	8.08	1900	-	5.03	0.094 J	707000	-
13-Oct-21	29.39	579.56	11.2	2509	4.77	188.6	13.1	7.64	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	20.72	588.23	7.3	1136	8.21	229.4	2.04	7.98	1040	7.89	2.41	0.115	333000	0.912
16-Mar-22	19.23	589.72	7.3	828	7.3	176.4	3.63	7.57	808	7.90	2.85	0.155	255000	0.935
23-Jun-22	23.49	585.46	11.2	916	3.74	163.1	0.76	7.66	836	7.00	2.09	0.073 J	265000	0.977
23-Sep-22	32.92	576.03	14.8	2281	3.73	199.3	2.05	8.05	2150	7.64	4.97	0.2 U	646000	2.52
13-Dec-22	27.98	580.97	12.4	1915	6.1	80.4	3.77	7.98	1350	12.4	5.64	0.865 J+	495000	1.26
14-Mar-23	24.91	584.04	6.8	2029	8.44	212.6	0.76	7.71	1190	6.7	1.87	0.1 U	387000	0.801
28-Jun-23	30.50	578.45	11	1640	2.57	222.4	1.22	7.78	1310	7.07	3.92	0.052 J	446000	1.73
5-Sep-23	Below Pump	-	11.6	2869	4.79	184.9	4.83	7.9	1930 J-	7.37	4.56	0.1	566000	2.33
12-Dec-23	17.75	591.2	9.4	1170	7.75	137.3	4.99	7.33	766	6.48	2.09	0.254	266000	1
4-Mar-24	22.36	586.59	7.3	1215	7.46	232.5	0.84	7.59	1070 J	7.92	2.83	0.103 U	359000	0.928
18-Jun-24	28.14	580.81	7.72	1515	11.01	176	0.49	7.72	784	5.06	1.49	0.103 U	270000	0.458

Notes:

Top of casing elevation (feet NAVD88): 608.95

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward.

Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

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

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
13-Oct-21	13.61	579.08	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
10-Jan-22	4.73	587.96	7.00	467	5.45	197.0	2.99	7.34	419	3.89	2.07	0.1 U	98000	1.04
21-Mar-22	3.21	589.48	7.3	691	6.38	66.2	1.52	7.46	632	6.23	2.88	0.071 J	179000	1.34
22-Jun-22	7.45	585.24	12	541	1.88	107.5	0.47	7.21	387	2.91	1.78	0.1 U	65500	1.19
14-Sep-22	16.9	575.79	13.6	548	4.46	141	0.5	6.31	444	1.63	1.49	0.1 U	54000	1.16
14-Dec-22	12	580.69	8	514	5.35	170.1	0.41	7.07	335	1.64	1.18	0.1 U	42700	0.798
17-Mar-23	8.90	583.79	5.3	755	2.7	205.3	0.85	7.16	412	1.51	1.45	0.1 U	55300	0.774
28-Jun-23	14.57	578.12	13	561	0.46	119.6	0.42	6.83	364	0.785	1.24	0.407	26200	1.02
7-Sep-23	17.51	575.18	12	868	4.05	44	0.47	6.87	493 J-	1.3	1.43	0.0513 U	35100	1.07
15-Dec-23	2.53	590.16	9.2	1163	6.27	354.3	4.79	7.22	577	4.03	1.95	0.103 U	113000	1.25
6-Mar-24	6.52	586.17	6.4	850	7.35	254.1	0.66	7.24	588	3.01	2.14	0.103 U	111000	0.97
17-Jun-24	12.25	580.44	11.8	810	6.53	154.4	0.35	6.83	405	0.924	1.44	0.103 U	29800	0.996

Notes:

Top of casing elevation (feet NAVD88): 592.69

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

- Not measured or not available

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

^a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
13-Oct-21	23.91	577.58	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	13.55	587.94	9.5	670	3.99	239.1	4.50	7.05	595	5.21	6.64	0.1 U	169000	3.87
21-Mar-22	12.11	589.38	8.0	587	7.13	45	3.32	7.71	536	4.76	7.48	0.1 U	163000	3.84
22-Jun-22	16.4	585.09	9.4	773	2.99	96	0.94	7.22	699	5.17	8.13	0.1 U	197000	4.73
12-Sep-22	26	575.49	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-22	21.16	580.33	10.4	1011	6.13	122.1	1.22	7.07	721	4.53	5.37	0.1 U	205000	3.61
17-Mar-23	17.86	583.63	9.2	1216	4.6	214.5	0.8	7.19	714	4.71	7.2	0.1 U	218000	4.22
28-Jun-23	24.08	577.41	10.2	845	1.85	176.3	0.58	7.19	656	4.03	5.91	0.1 U	189000	3.62
7-Sep-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
15-Dec-23	11.34	590.15	9.8	1434	5.3	348.7	6.22	6.89	760	4.1	5.52	0.148 J	220000	3.64
6-Mar-24	15.41	586.08	8.3	926	8.1	304.5	0.74	7.06	622	4.93	6.67	0.103 U	159000	3.44
17-Jun-24	21.53	579.96	10.1	1378	8.54	167.8	0.83	7.14	719	4.28	5.97	0.103 U	195000	3.38

Notes:

Top of casing elevation (feet NAVD88): 601.49

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

- Not measured or not available

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

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
15-Oct-21	4.38	692.91	12.20	956	1.45	-93.2	2.70	7.11	981 J-	0.659	4.79	0.139	16000	1.2
7-Jan-22	2.45	694.84	8.50	381	4.86	189.9	1.43	6.95	404	0.181 J	1.02	0.056 J	2910	1.03
18-Mar-22	2.38	694.91	8.50	423	5.19	138.3	1.17	7.16	403	0.154 J	0.788	0.1 U	2470	0.776
22-Jun-22	2.38	694.91	10.5	485.8	4.42	72.8	0.85	6.89	399	0.244	0.656	0.052 J	2130	0.916
14-Sep-22	8.7	688.59	13.5	509	3.84	130.2	1.09	6.44	441	0.154 J	1.05	0.1 U	2780	1.13
14-Dec-22	2.5	694.79	8	413.5	7.42	135.6	0.53	6.91	328	0.132 J	0.599	0.1 U	1630	0.867
16-Mar-23	2.39	694.9	6.6	556.2	5.25	120.9	1.6	6.85	337	0.119 J	0.508	0.1 U	1660	0.812
27-Jun-23	5.19	692.1	11.1	468.4	2.6	44.3	7.31	6.72	379	0.123 J	0.832	0.5 U	2120	1.3
8-Sep-23	11.47	685.82	Insufficient depth of water to sample											
13-Dec-23	2.48	694.81	9.1	623	6.85	127.8	3.2	6.4	297	0.202 U	0.47	0.103 U	1420	0.846
7-Mar-24	2.58	694.71	7.6	610	6.61	186.2	1.46	6.89	360	0.202 U	0.436	0.103 U	1790	0.64 J
17-Jun-24	2.65	694.64	10.4	590	8.77	132.1	1.21	6.76	305	0.204 J	0.472	0.103 U	2140	0.848

Notes:

Top of casing elevation (feet NAVD88): 697.29

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

- Not measured or not available

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

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

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

Notes:

Top of casing elevation (feet NAVD88): 698.02

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

- Not measured or not available

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

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

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

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

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

Notes:

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

- Not analyzed or not available

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

a North Creek Analytical, Inc.

b Severn Trent Laboratories

c Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L

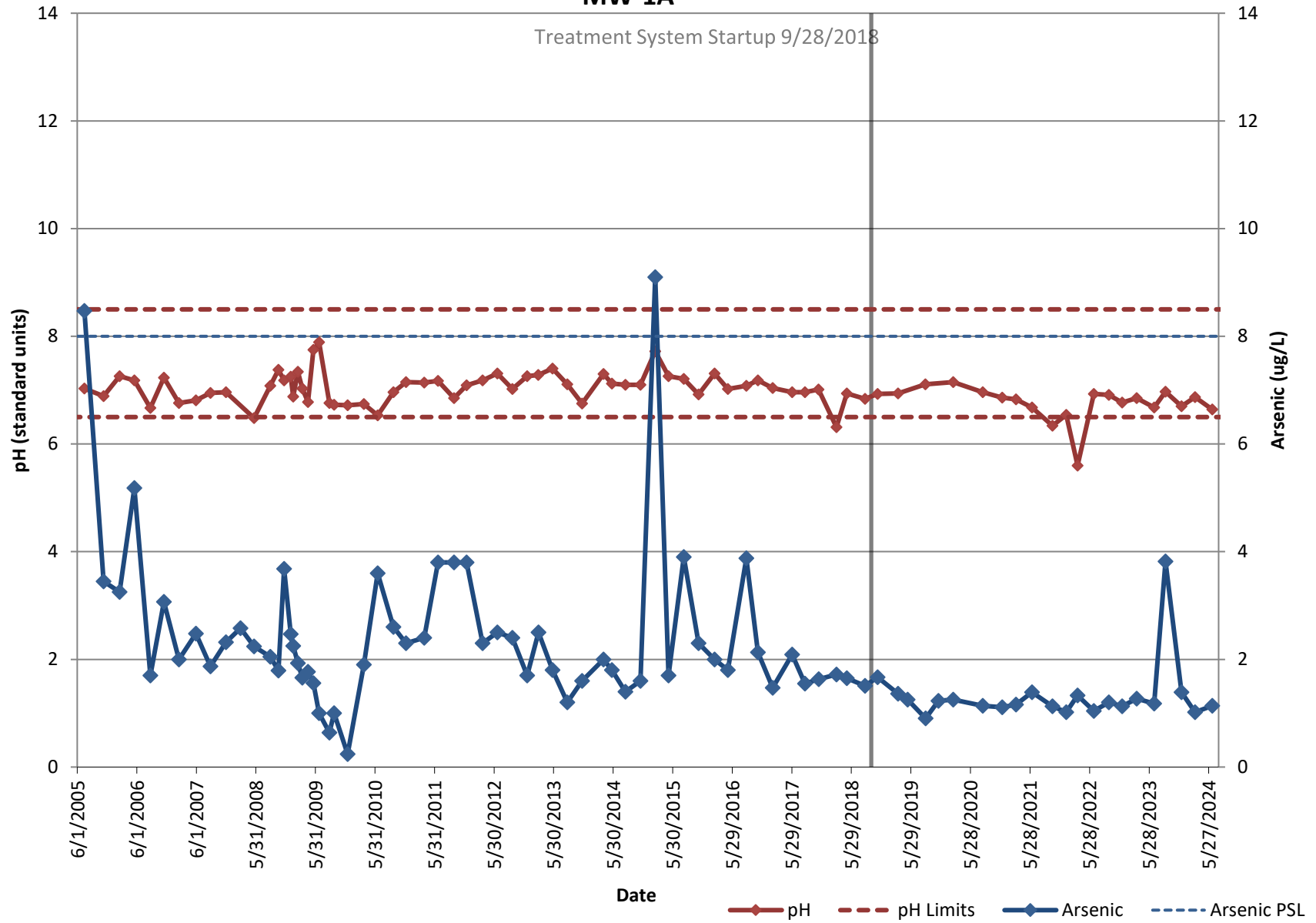
mV

NTU

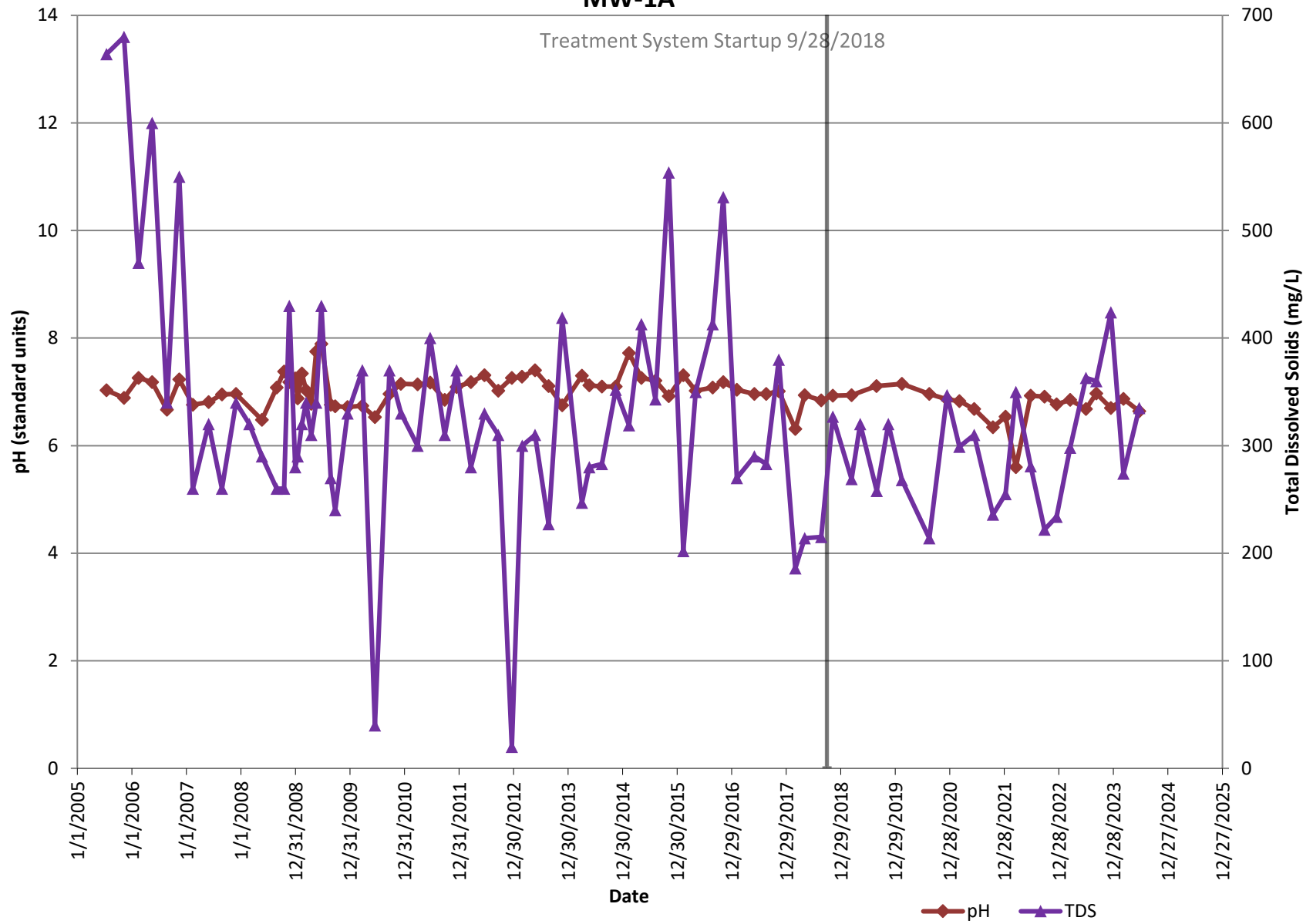
APPENDIX B

LDA Shallow Monitoring Wells Data Graphs

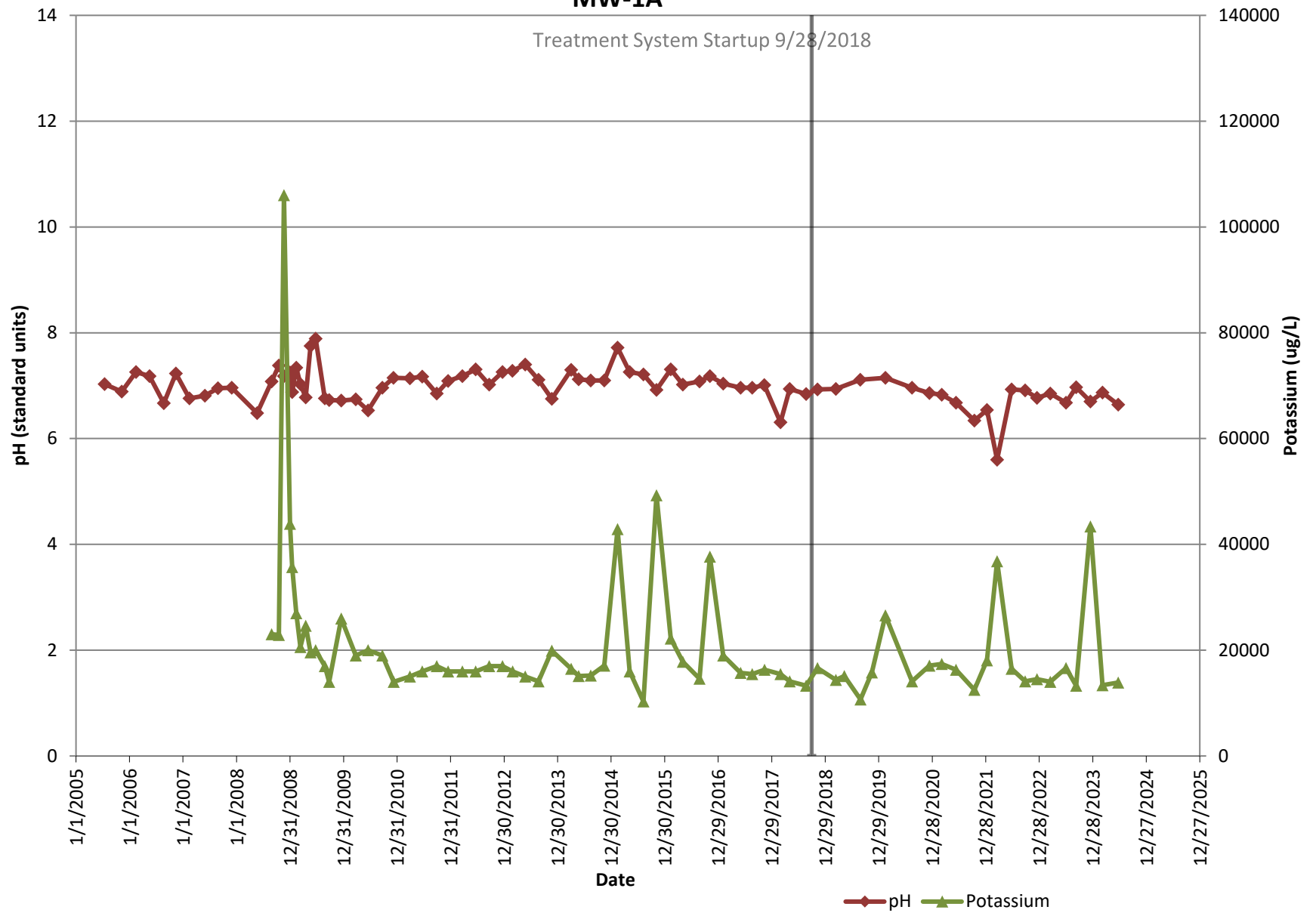
LDA Shallow Monitoring Wells MW-1A



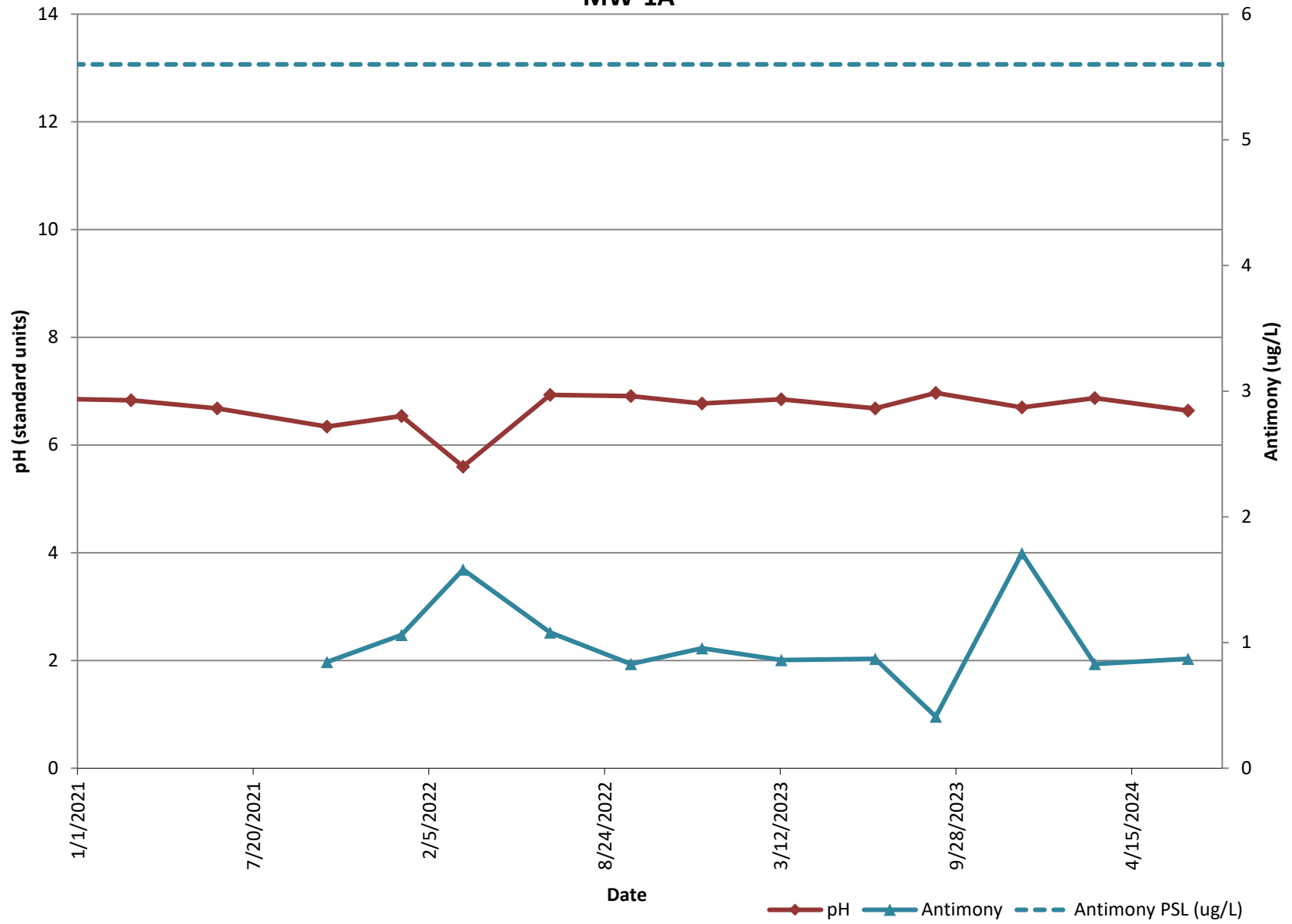
LDA Shallow Monitoring Wells MW-1A



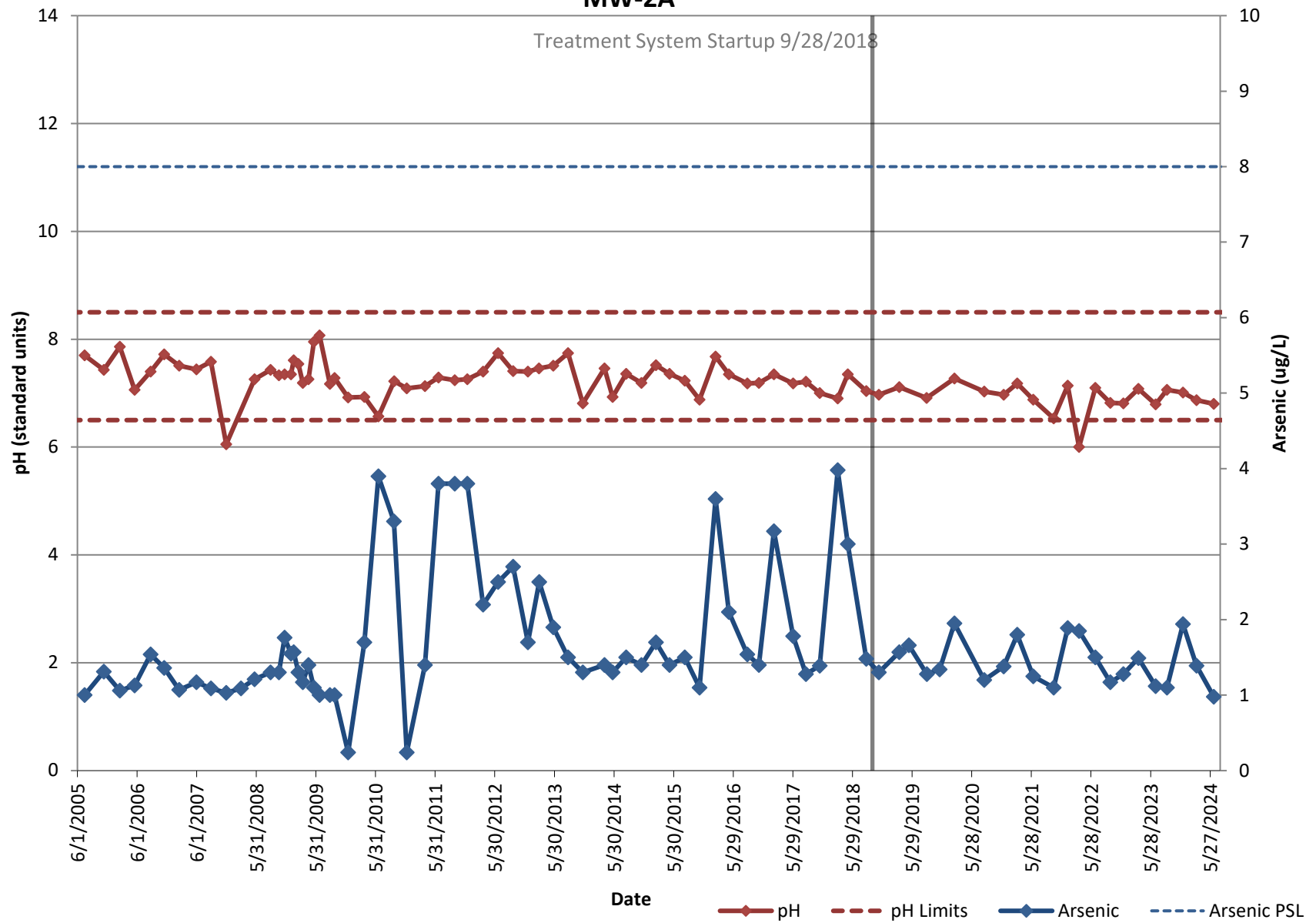
LDA Shallow Monitoring Wells MW-1A



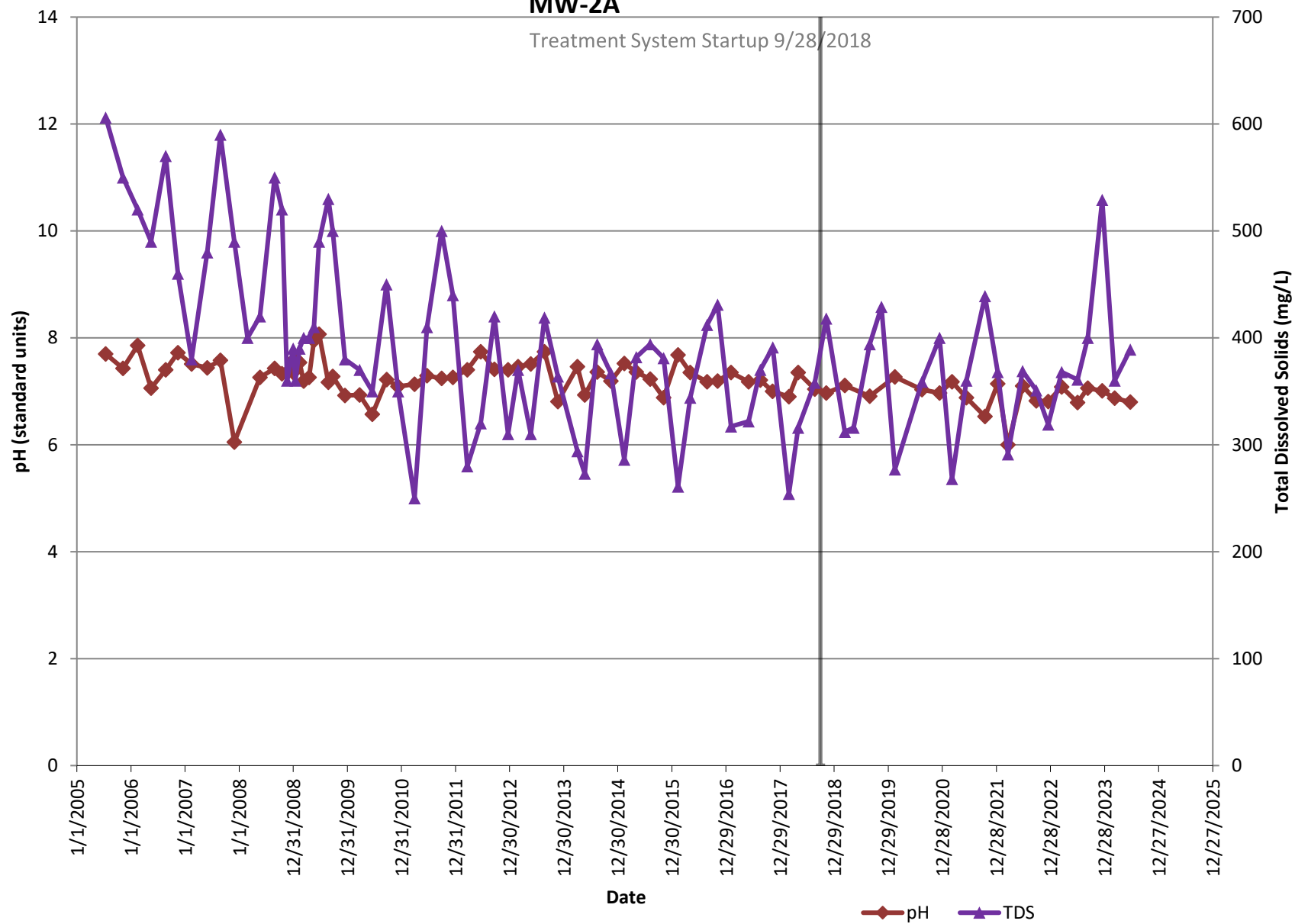
LDA Shallow Monitoring Wells MW-1A



LDA Shallow Monitoring Wells MW-2A



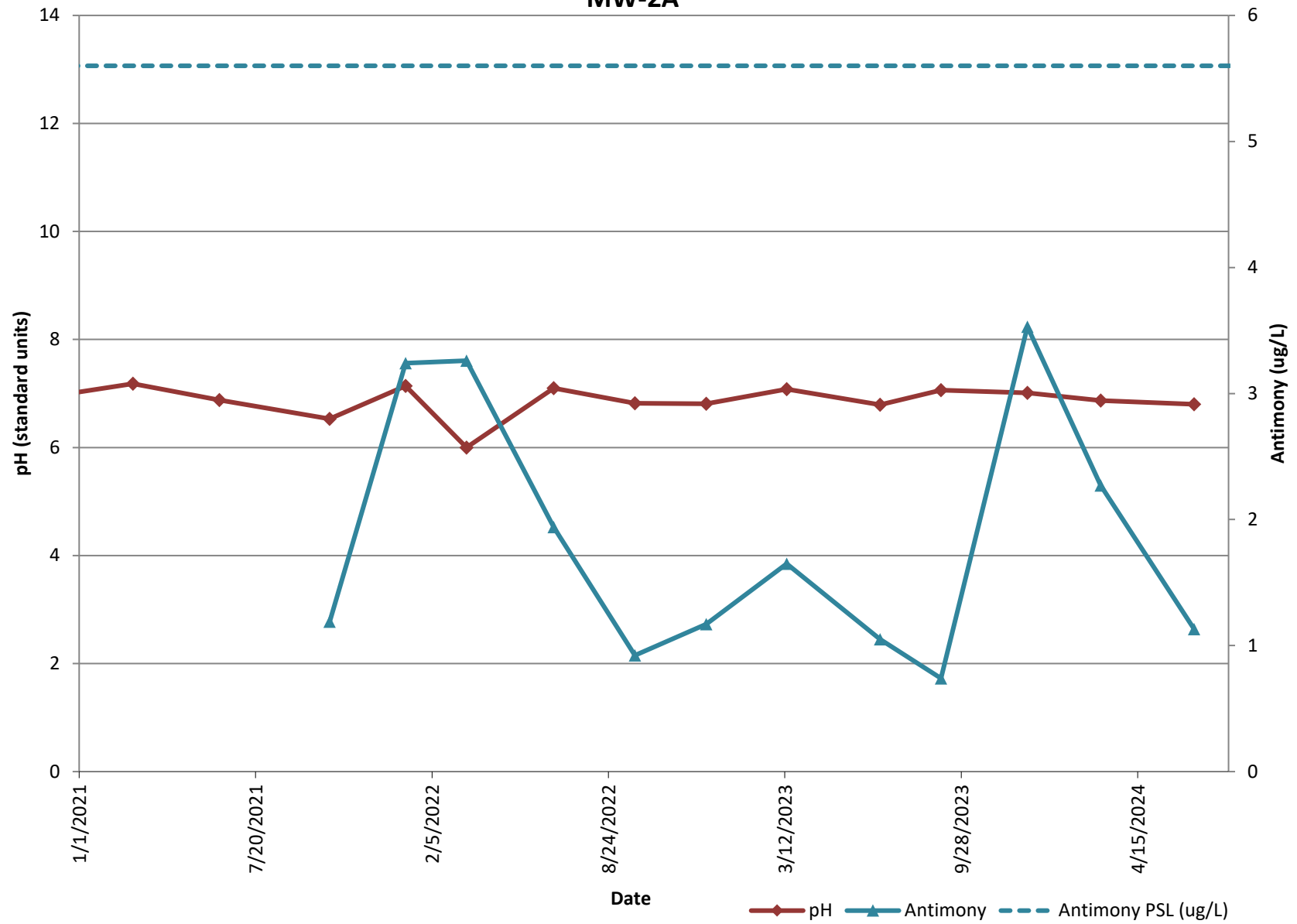
LDA Shallow Monitoring Wells MW-2A



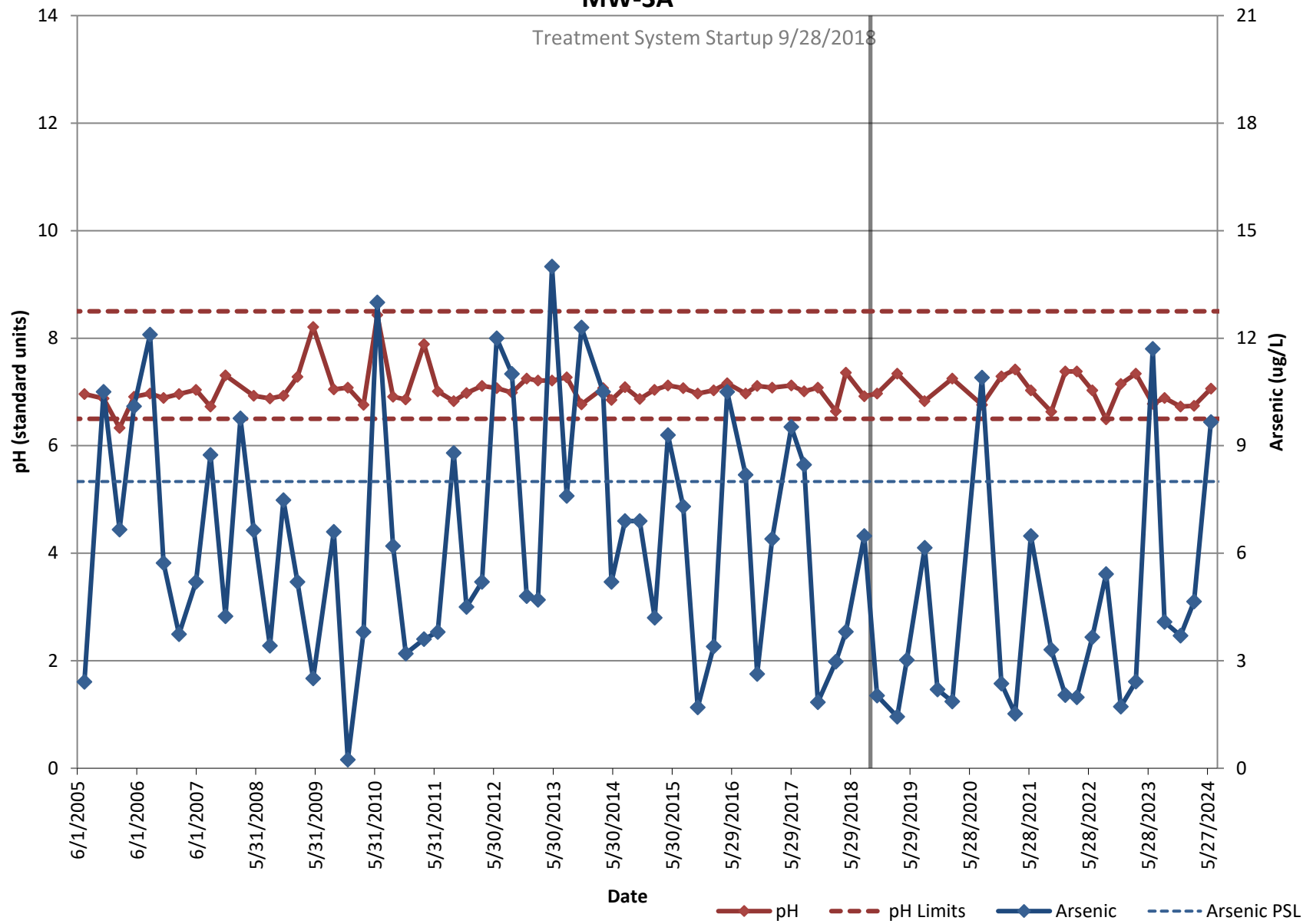
LDA Shallow Monitoring Wells MW-2A



LDA Shallow Monitoring Wells MW-2A

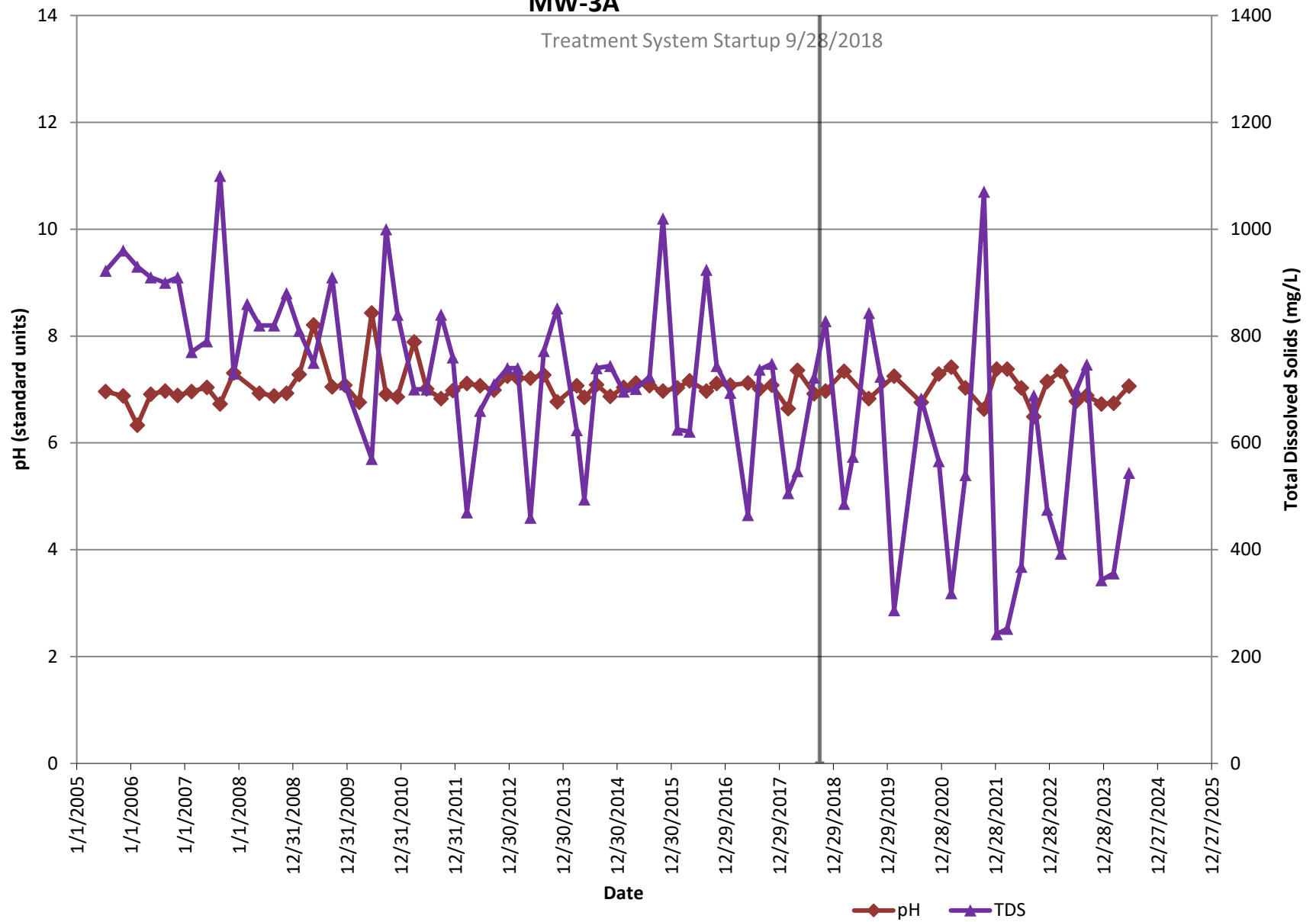


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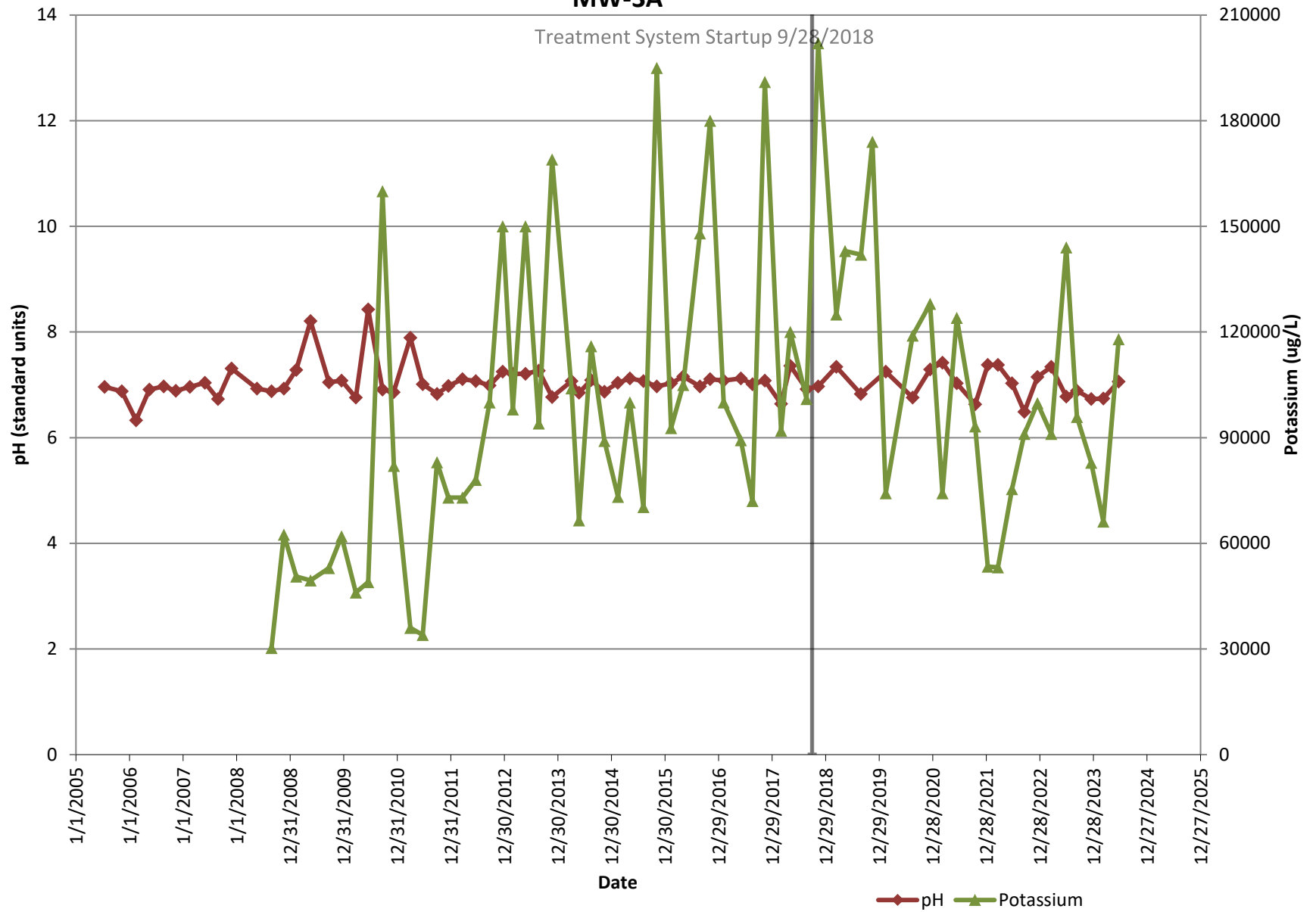


LDA Shallow Monitoring Wells

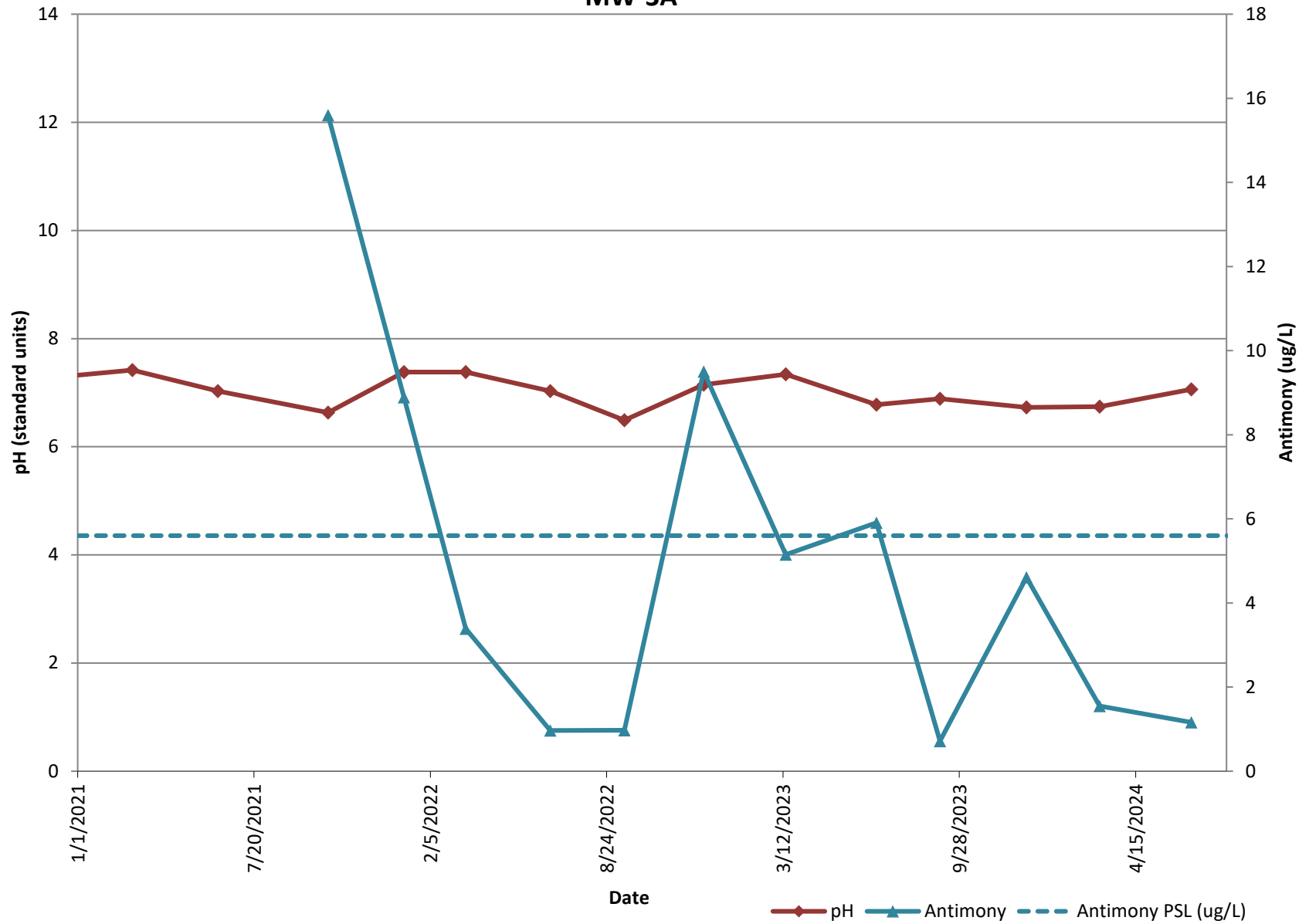
MW-3A



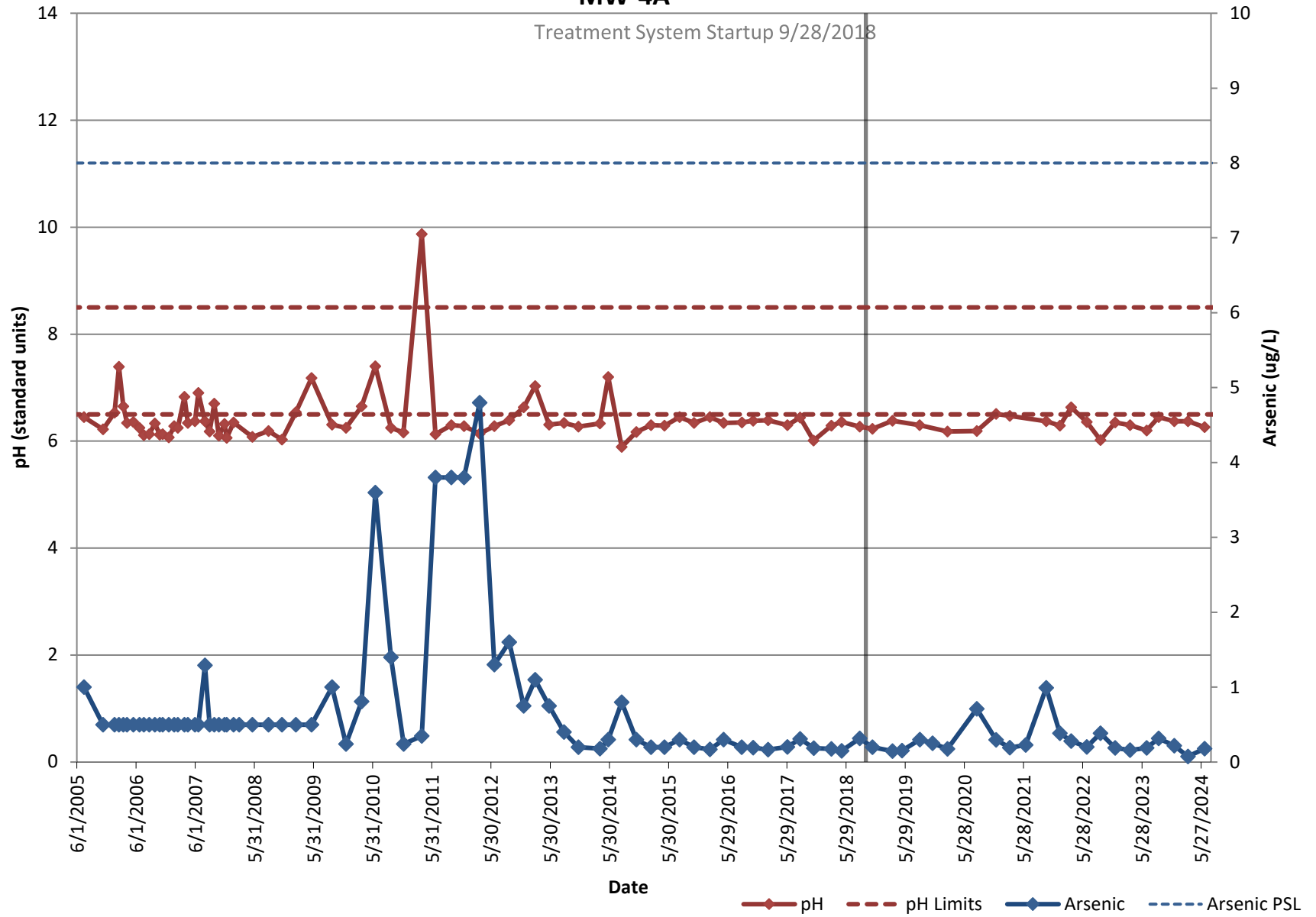
LDA Shallow Monitoring Wells MW-3A



LDA Shallow Monitoring Wells MW-3A

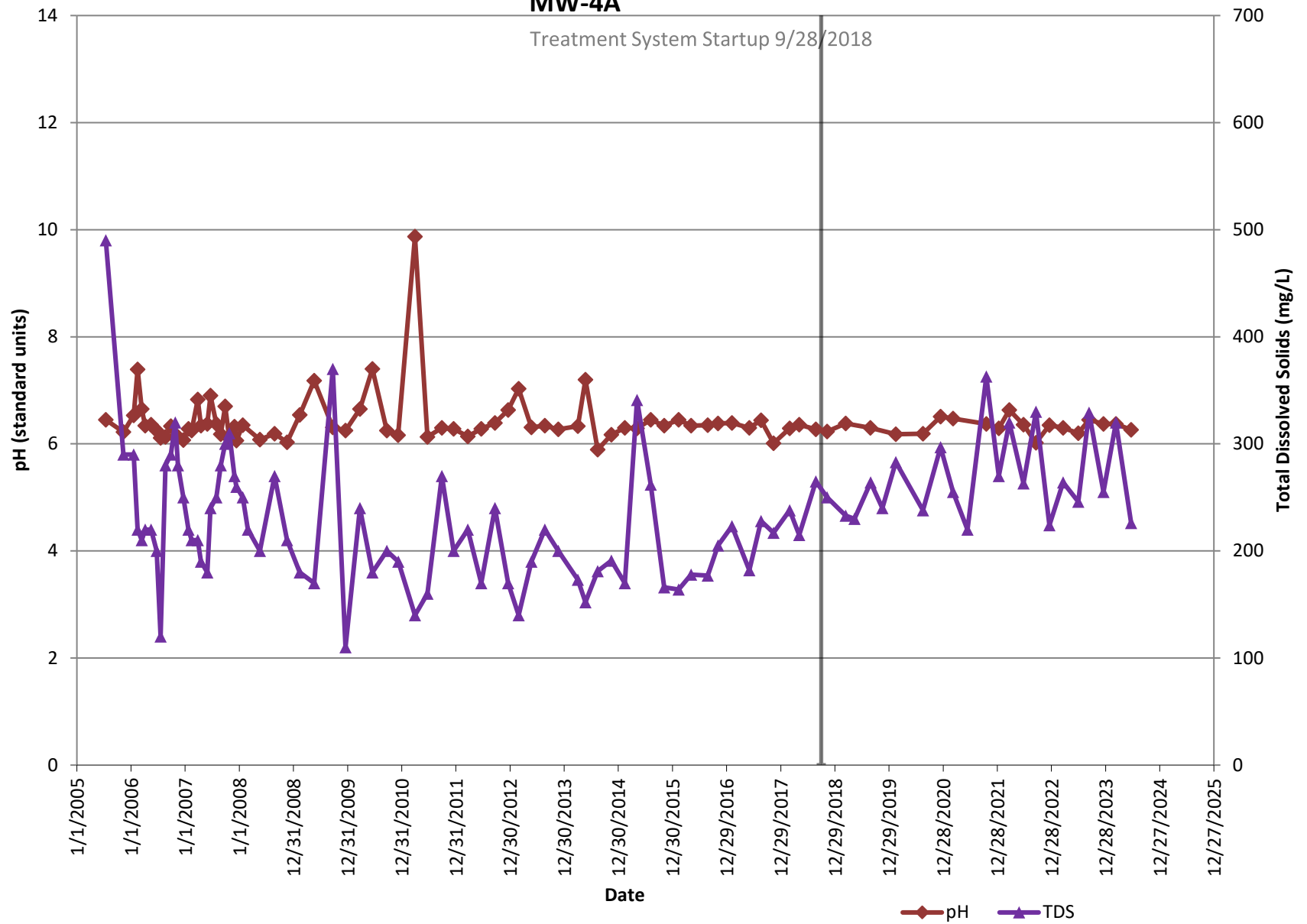


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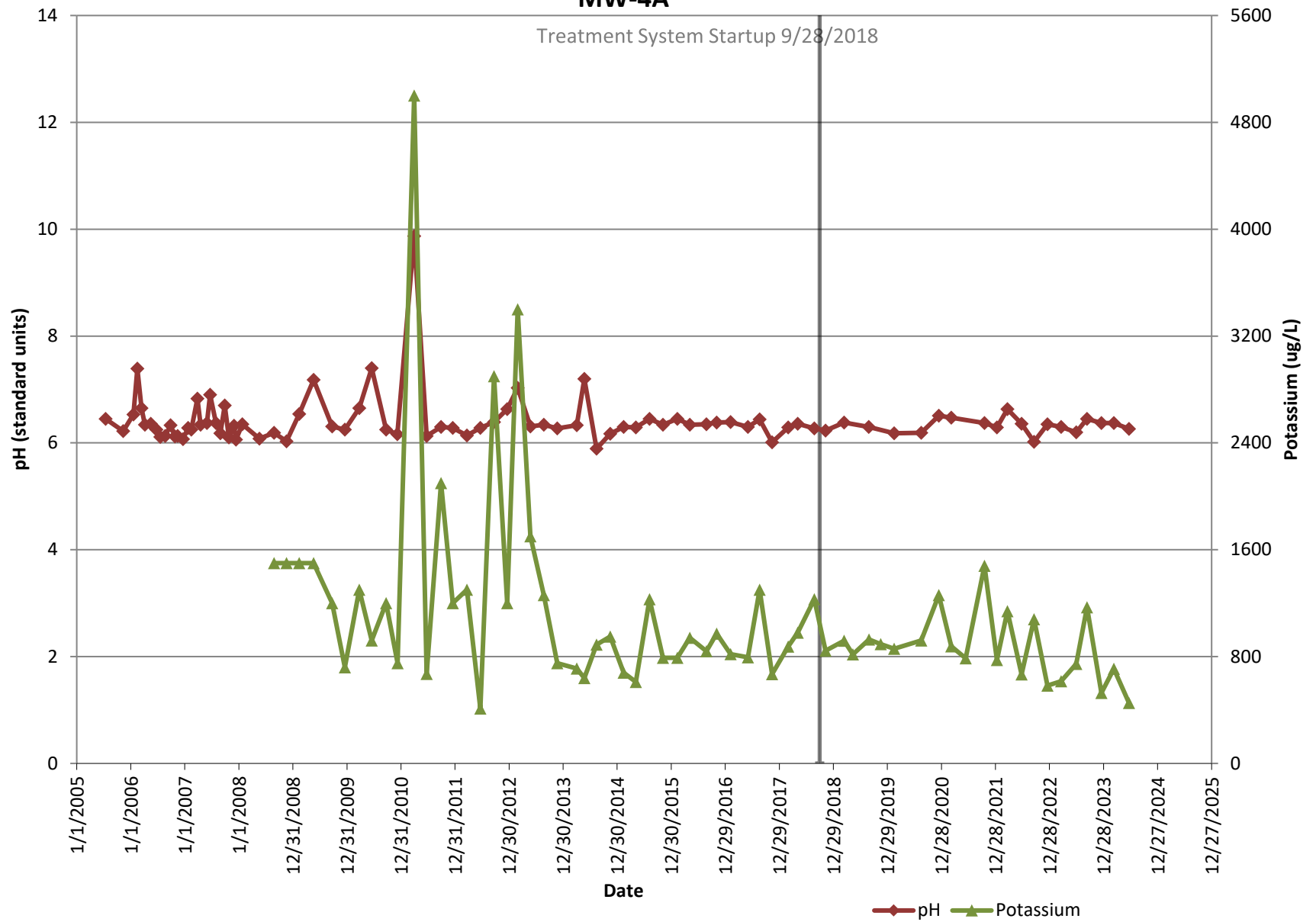


LDA Shallow Monitoring Wells

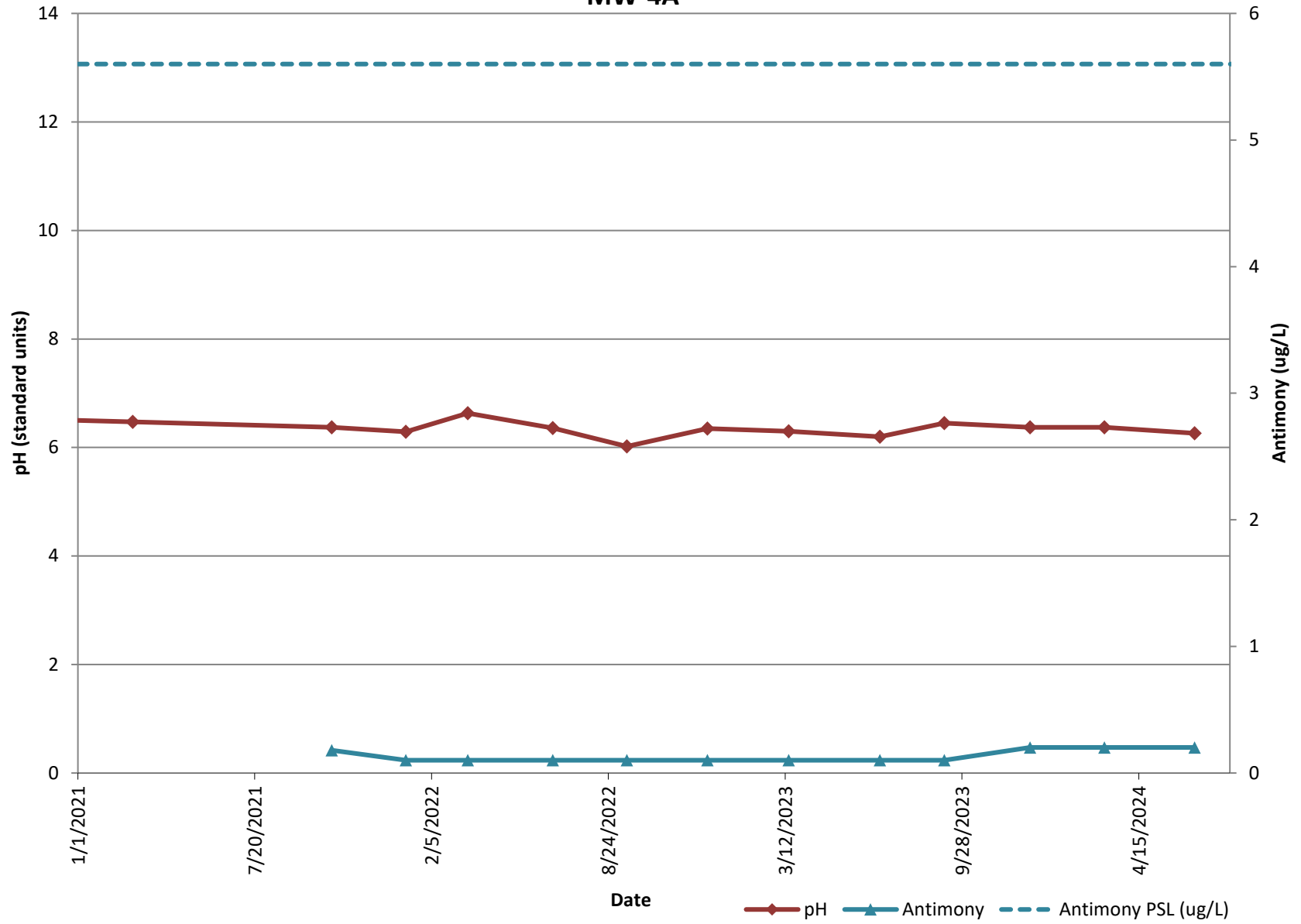
MW-4A



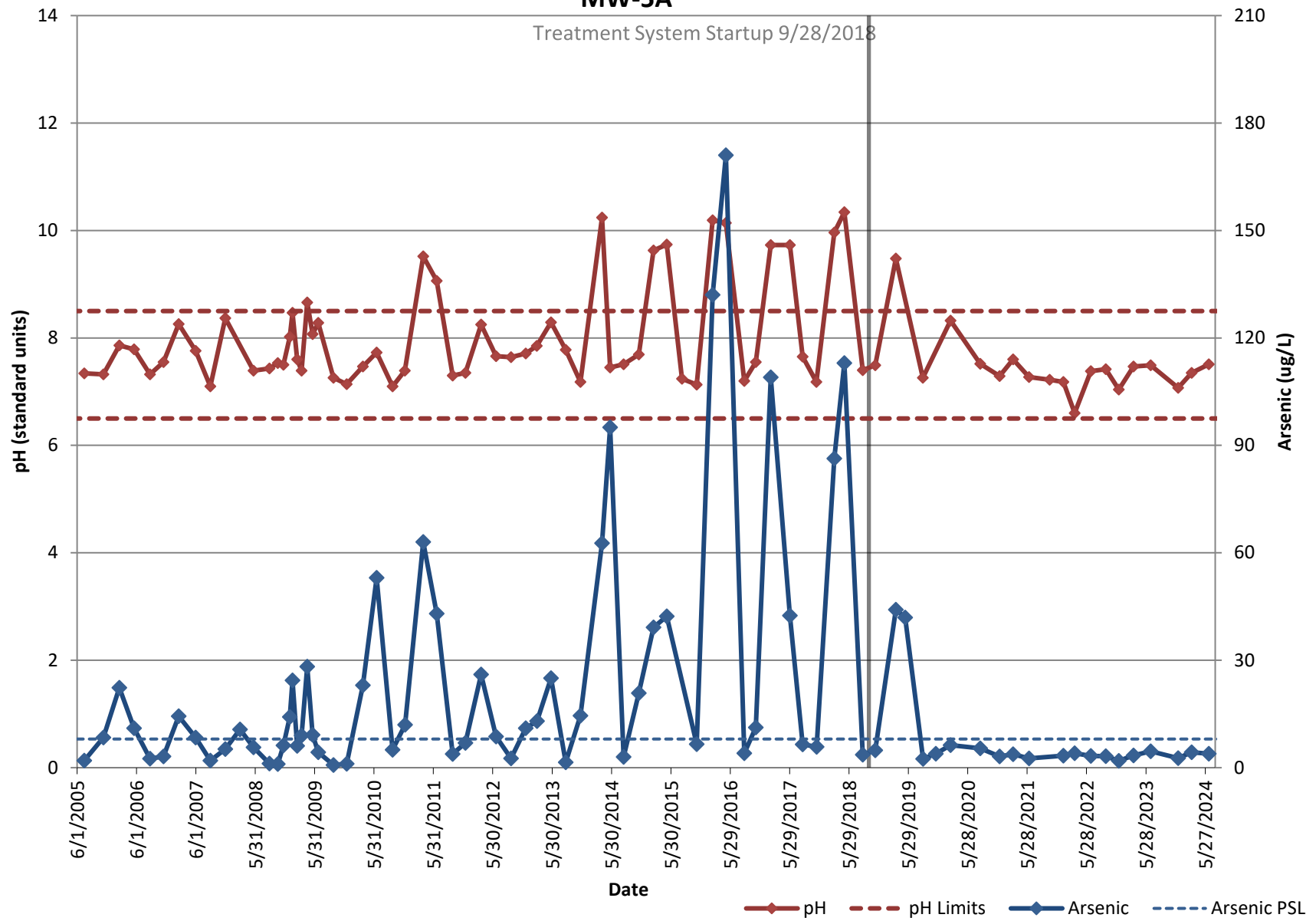
LDA Shallow Monitoring Wells MW-4A



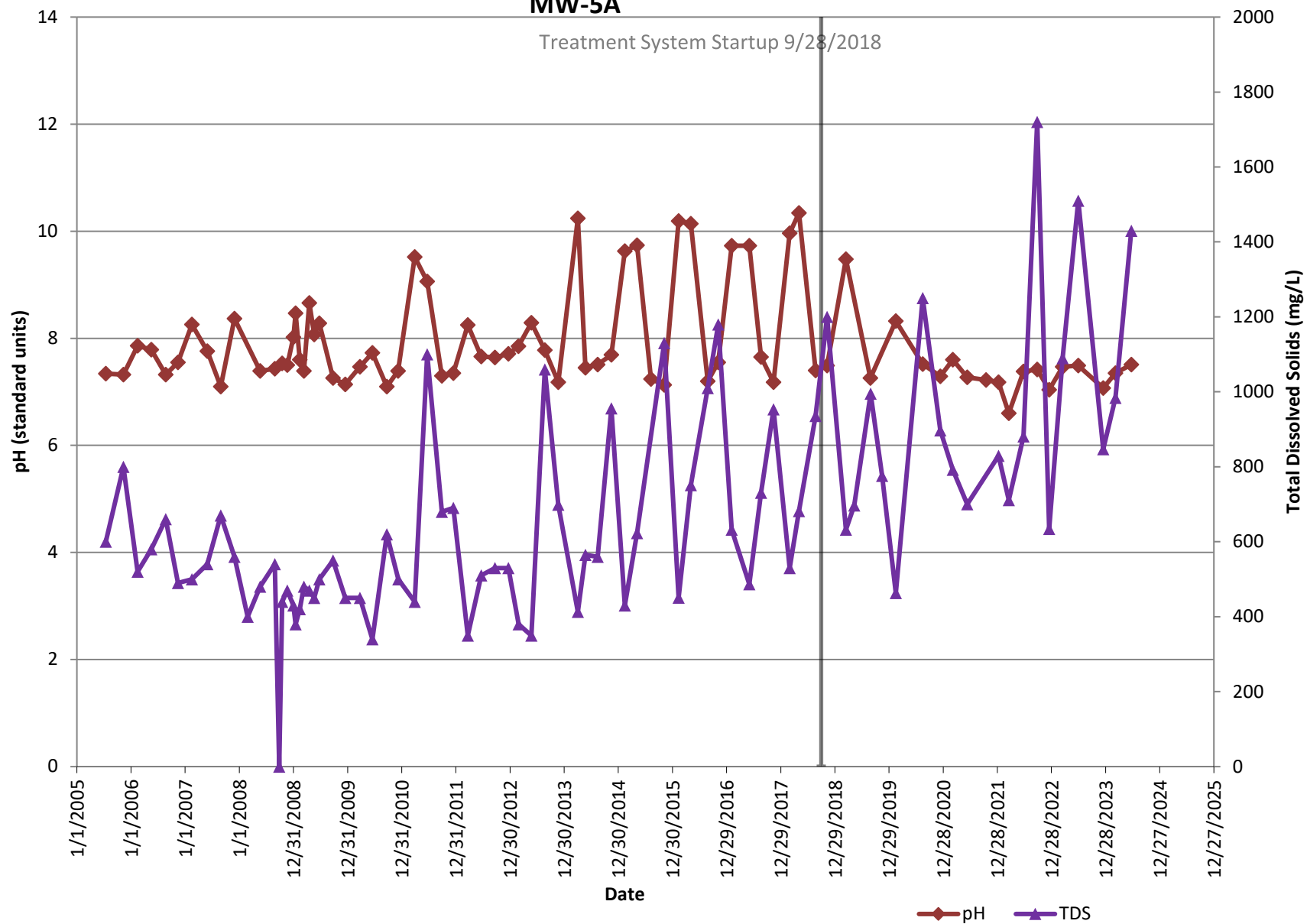
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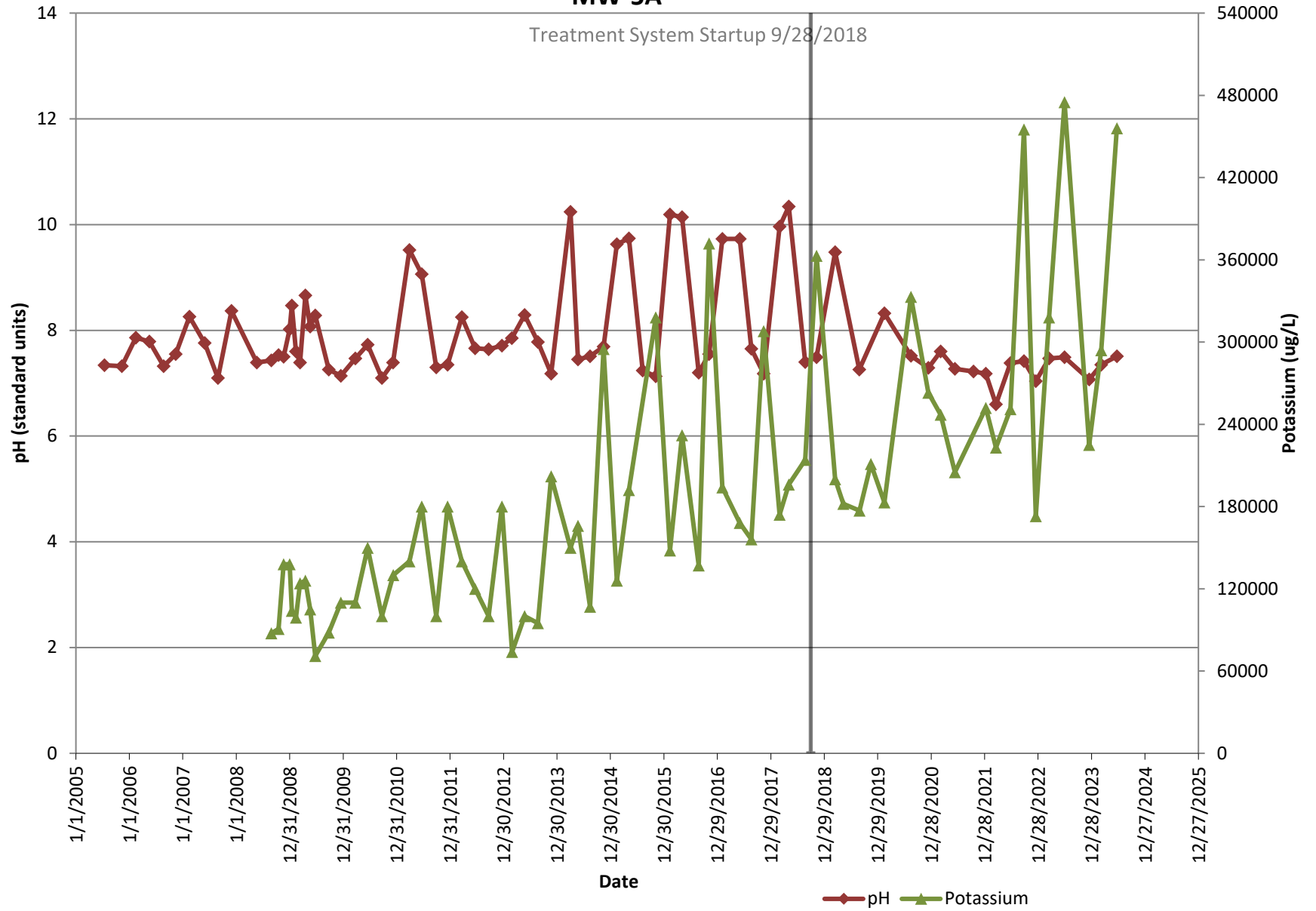
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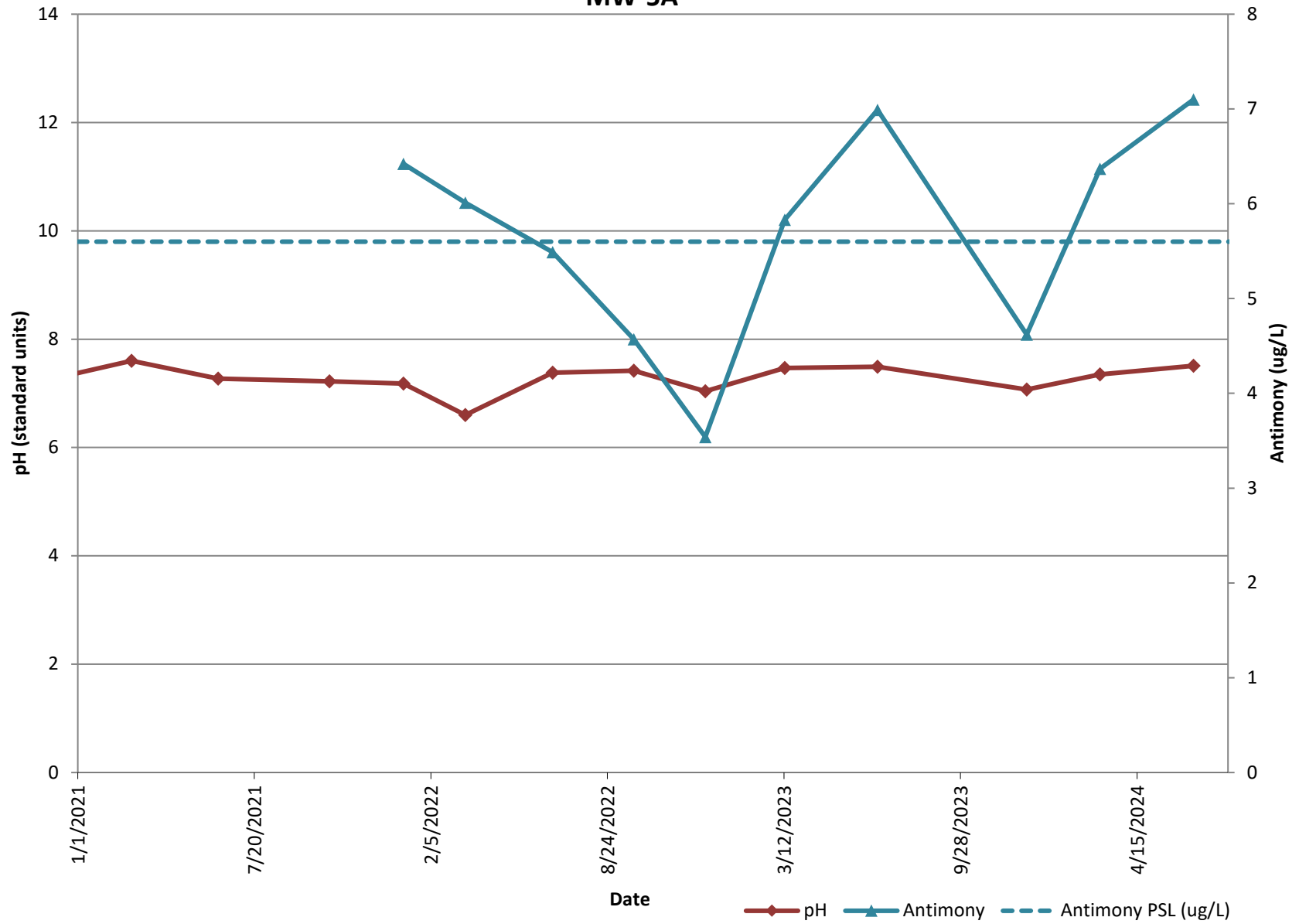
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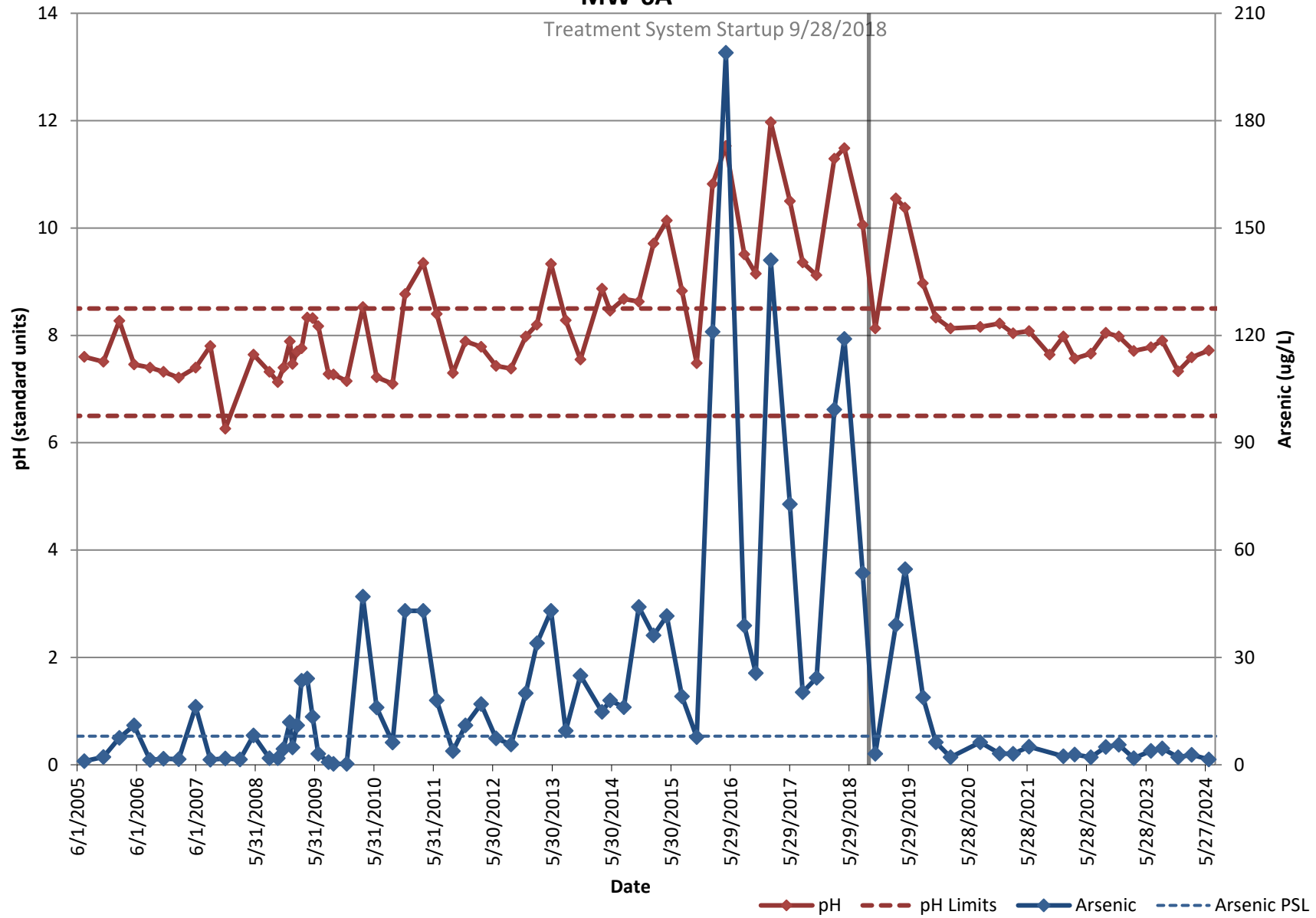
LDA Shallow Monitoring Wells MW-5A



LDA Shallow Monitoring Wells MW-5A

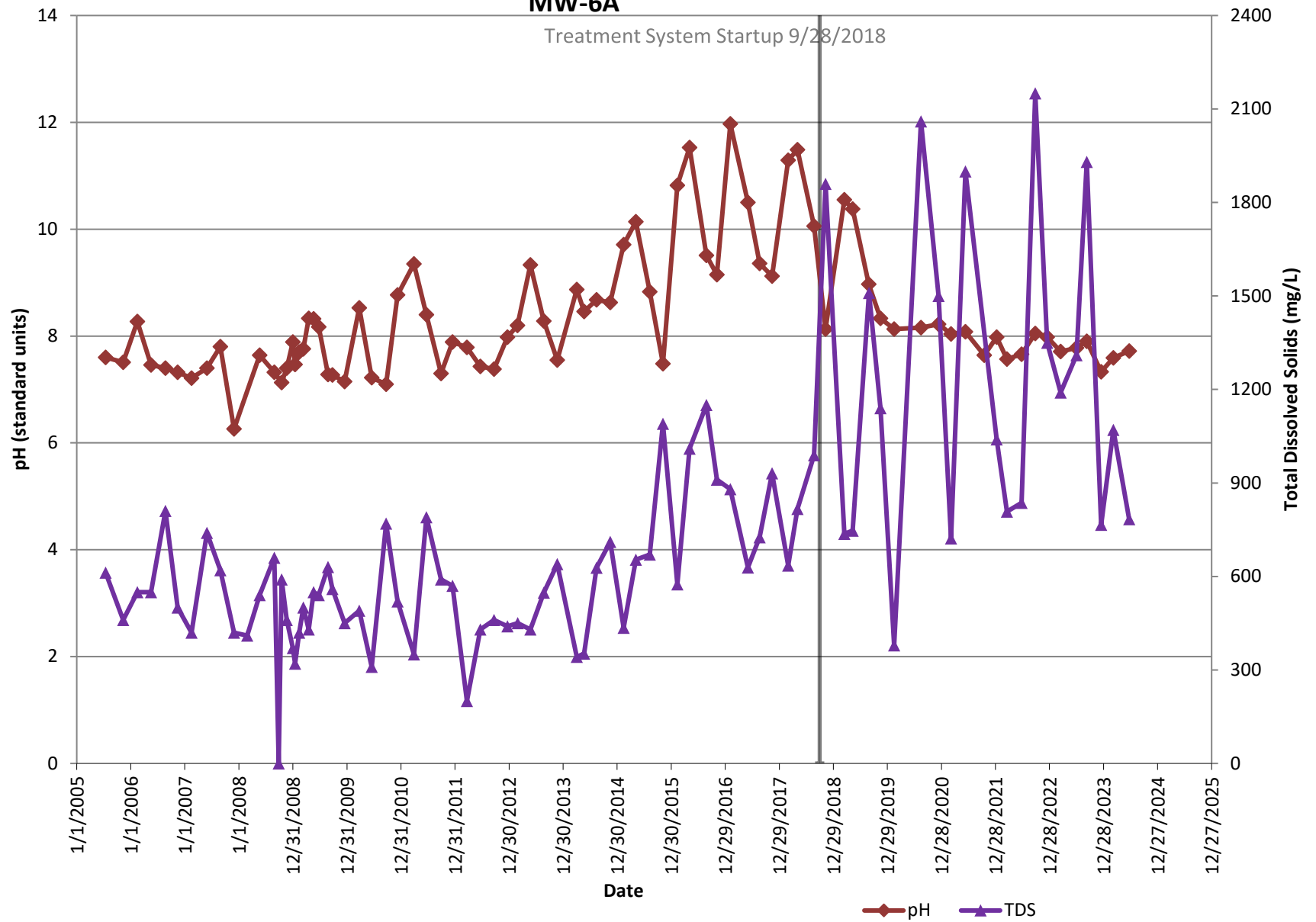


LDA Shallow Monitoring Wells MW-6A

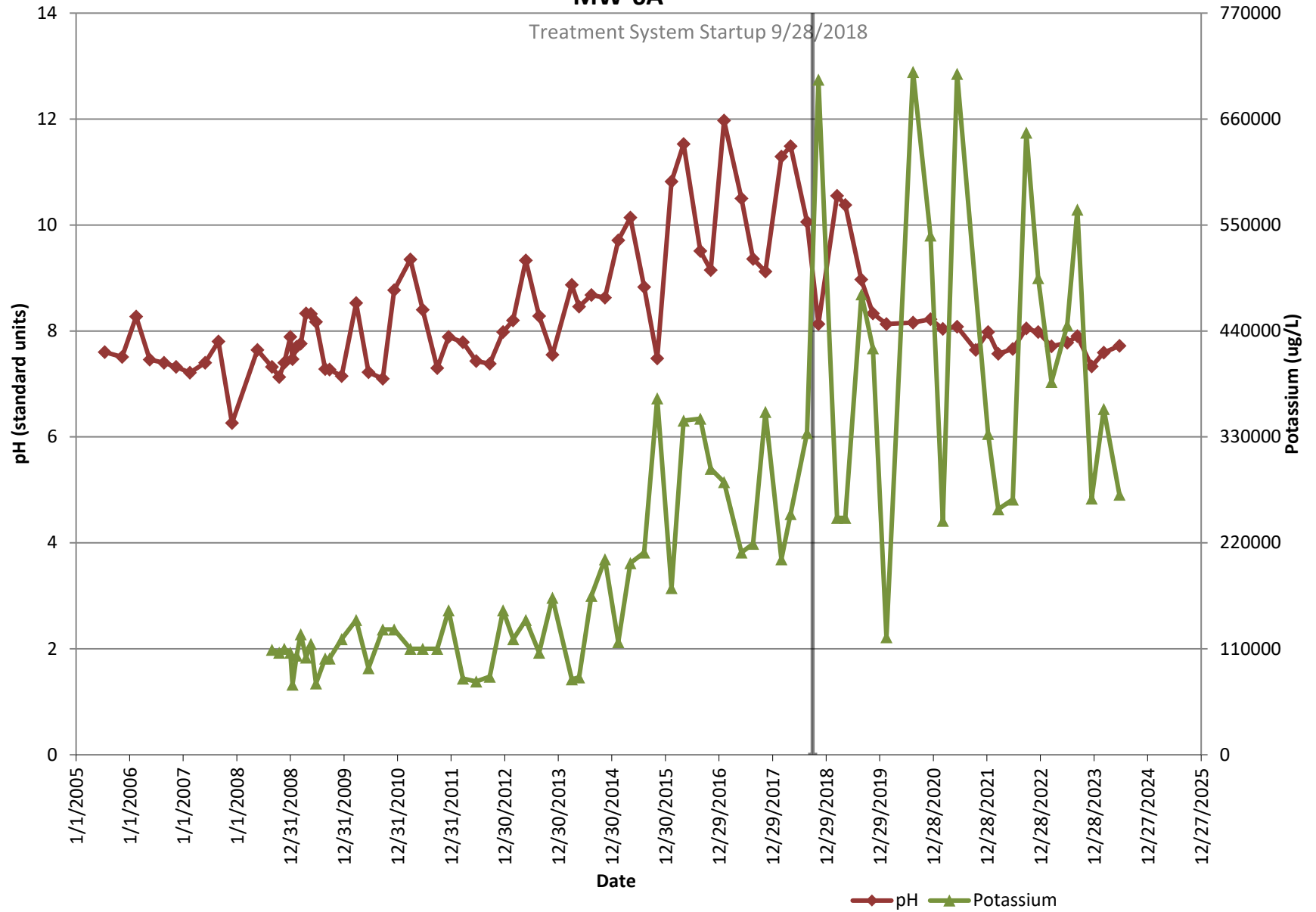


LDA Shallow Monitoring Wells

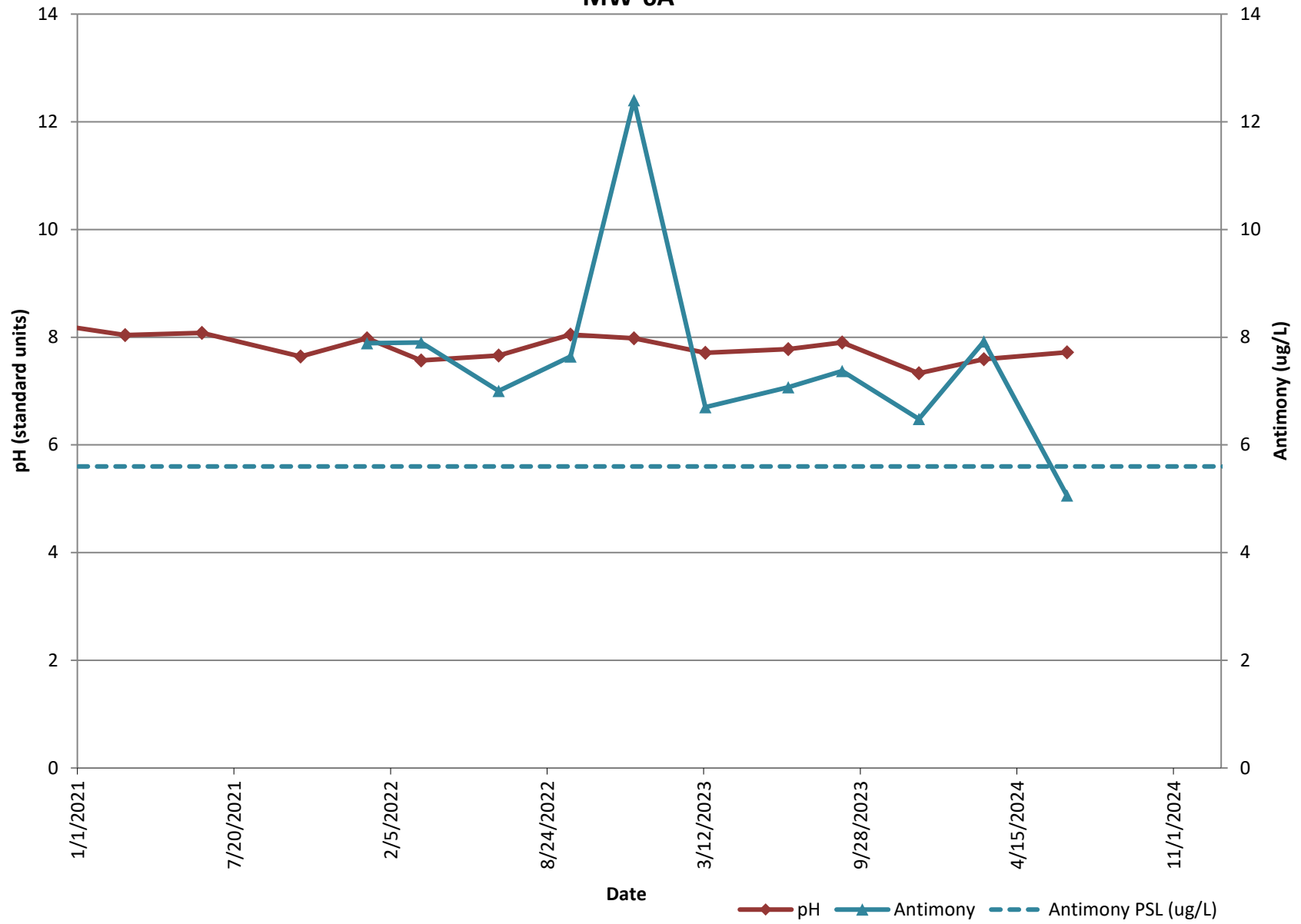
MW-6A



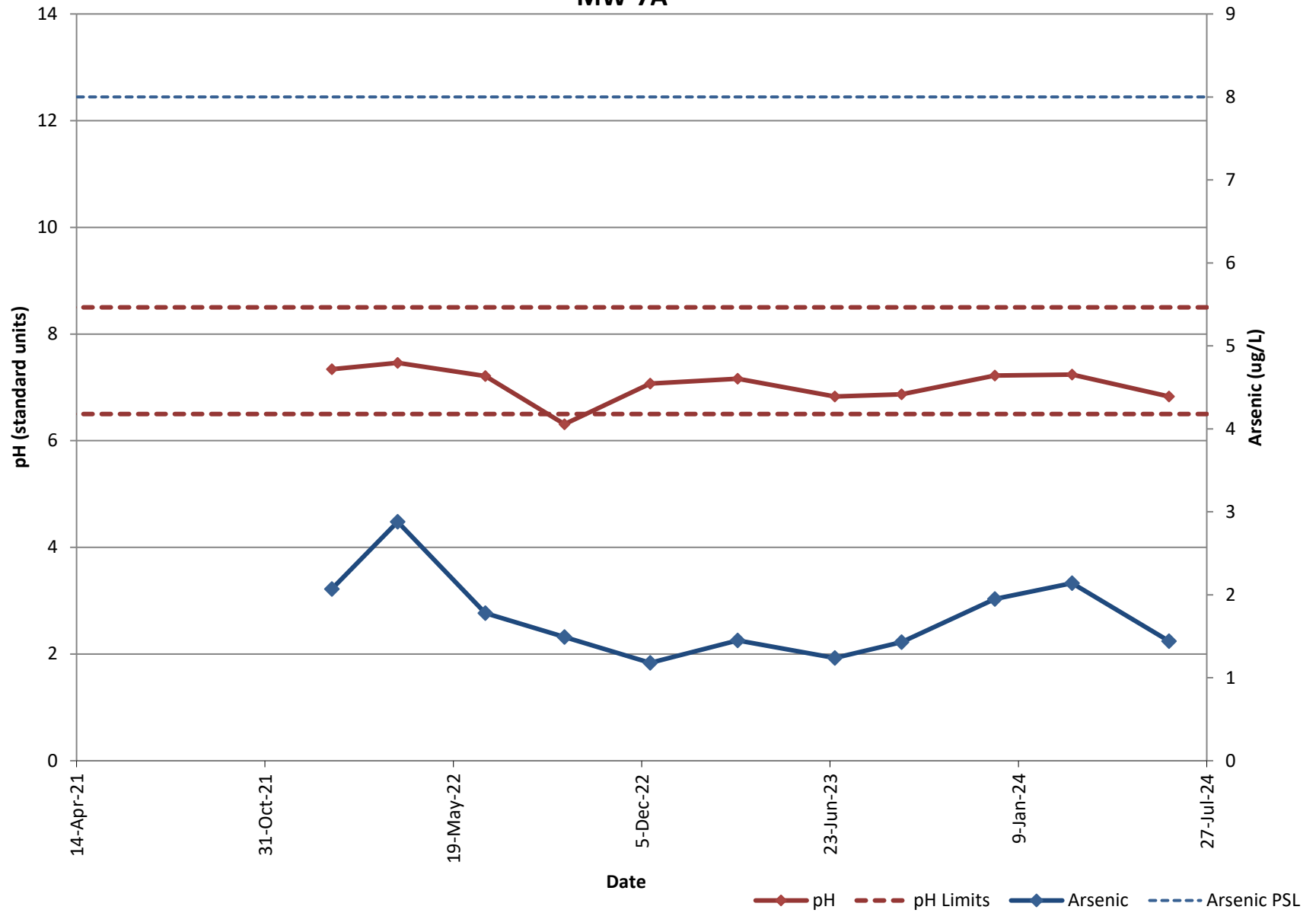
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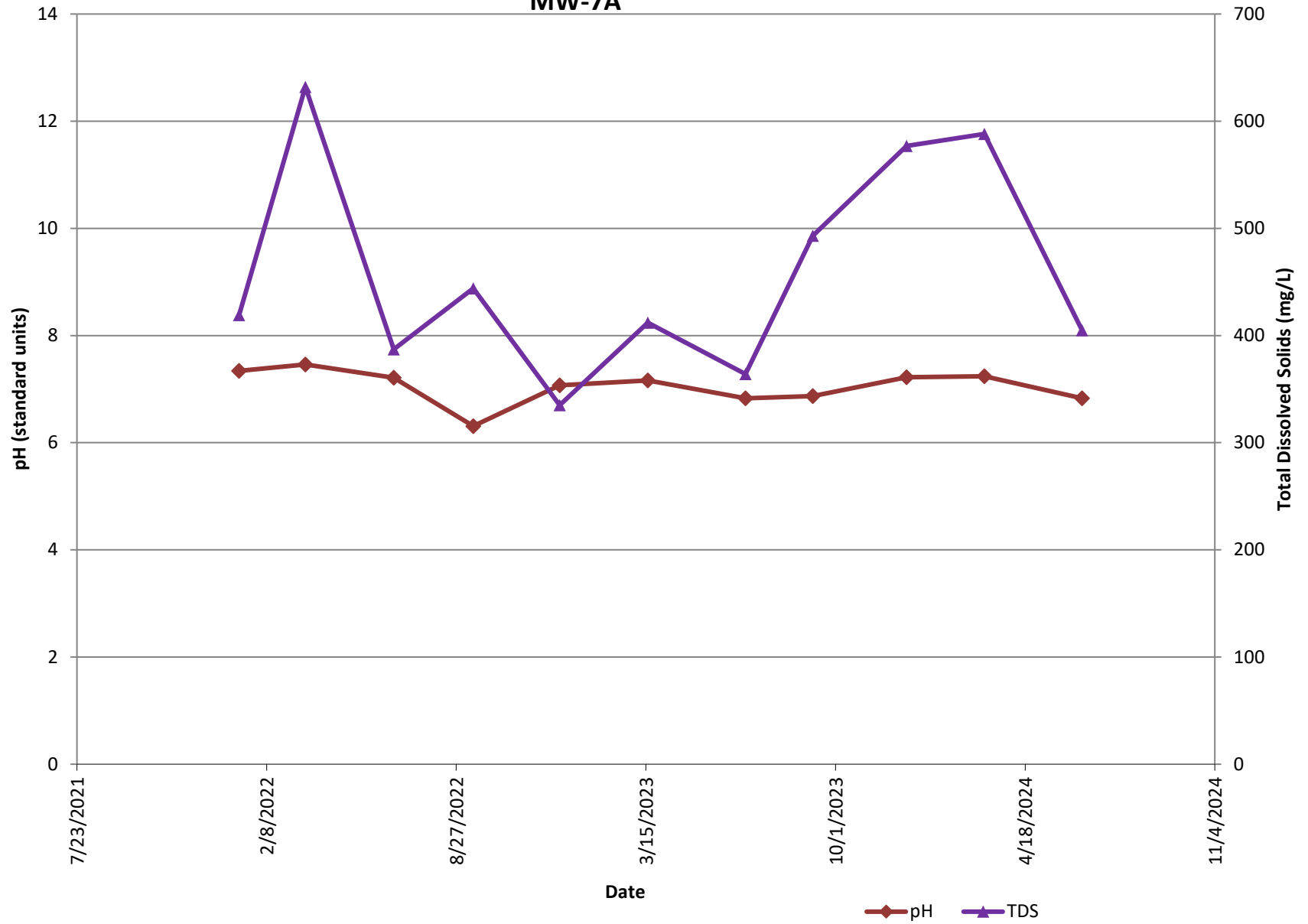
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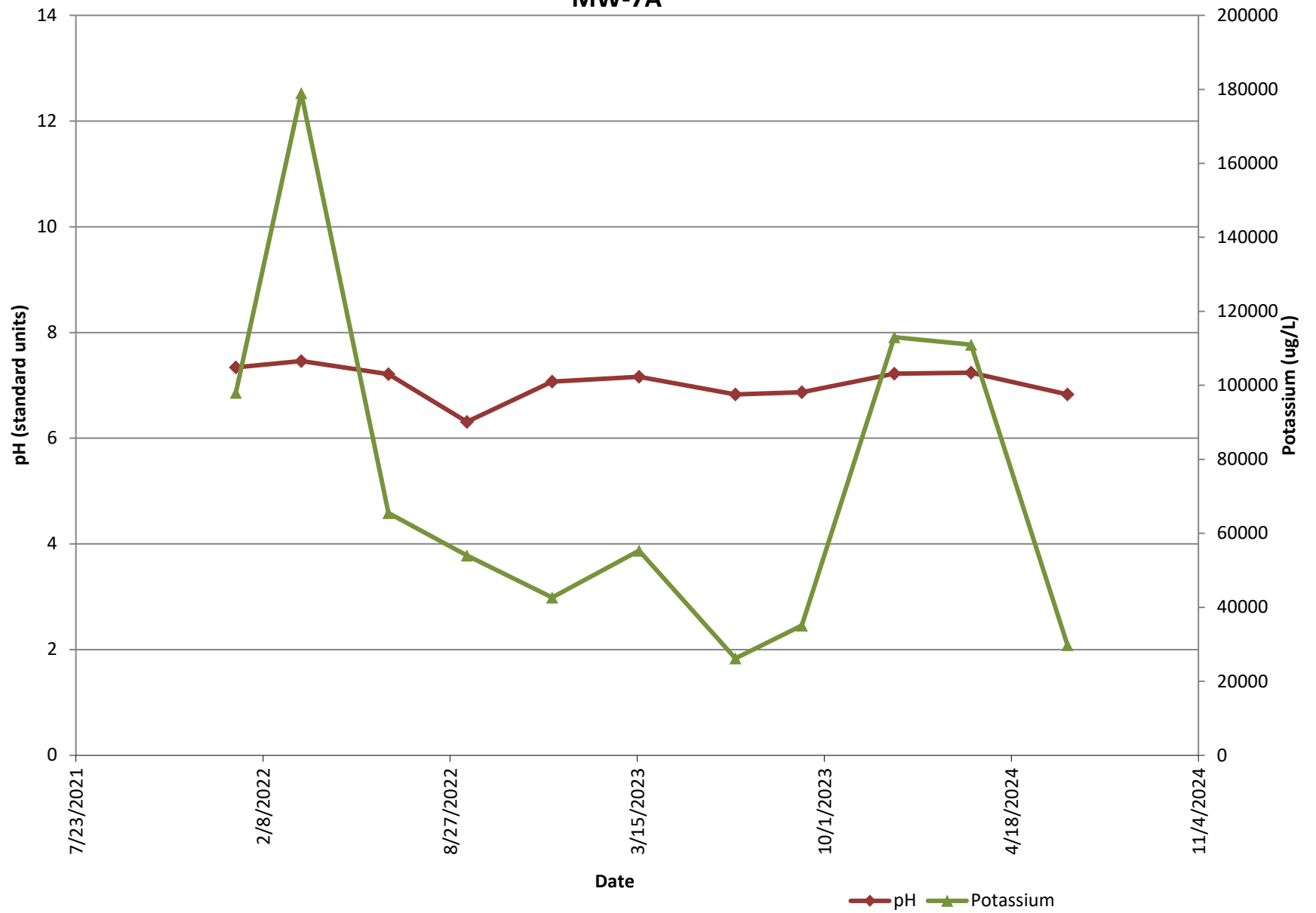
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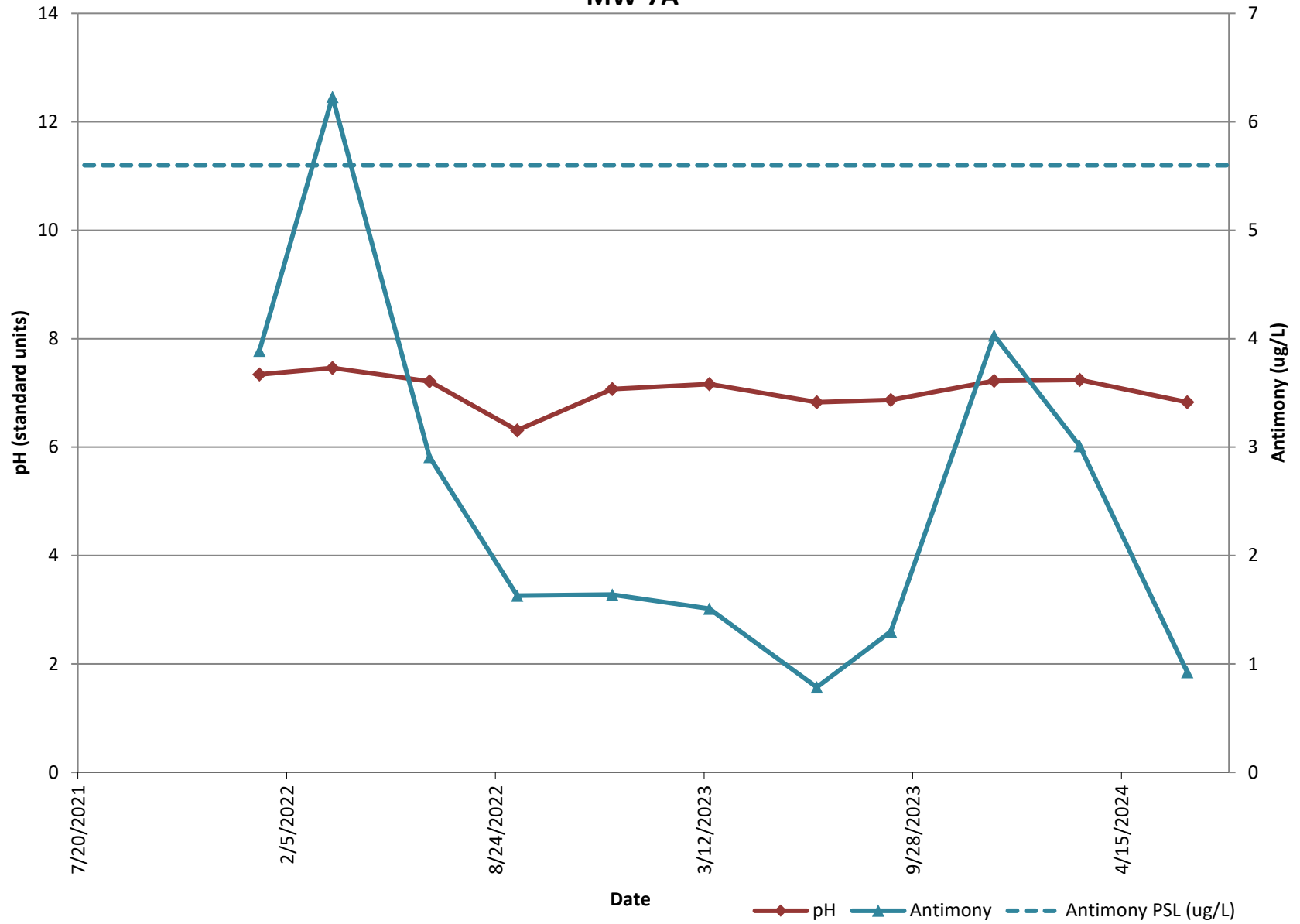
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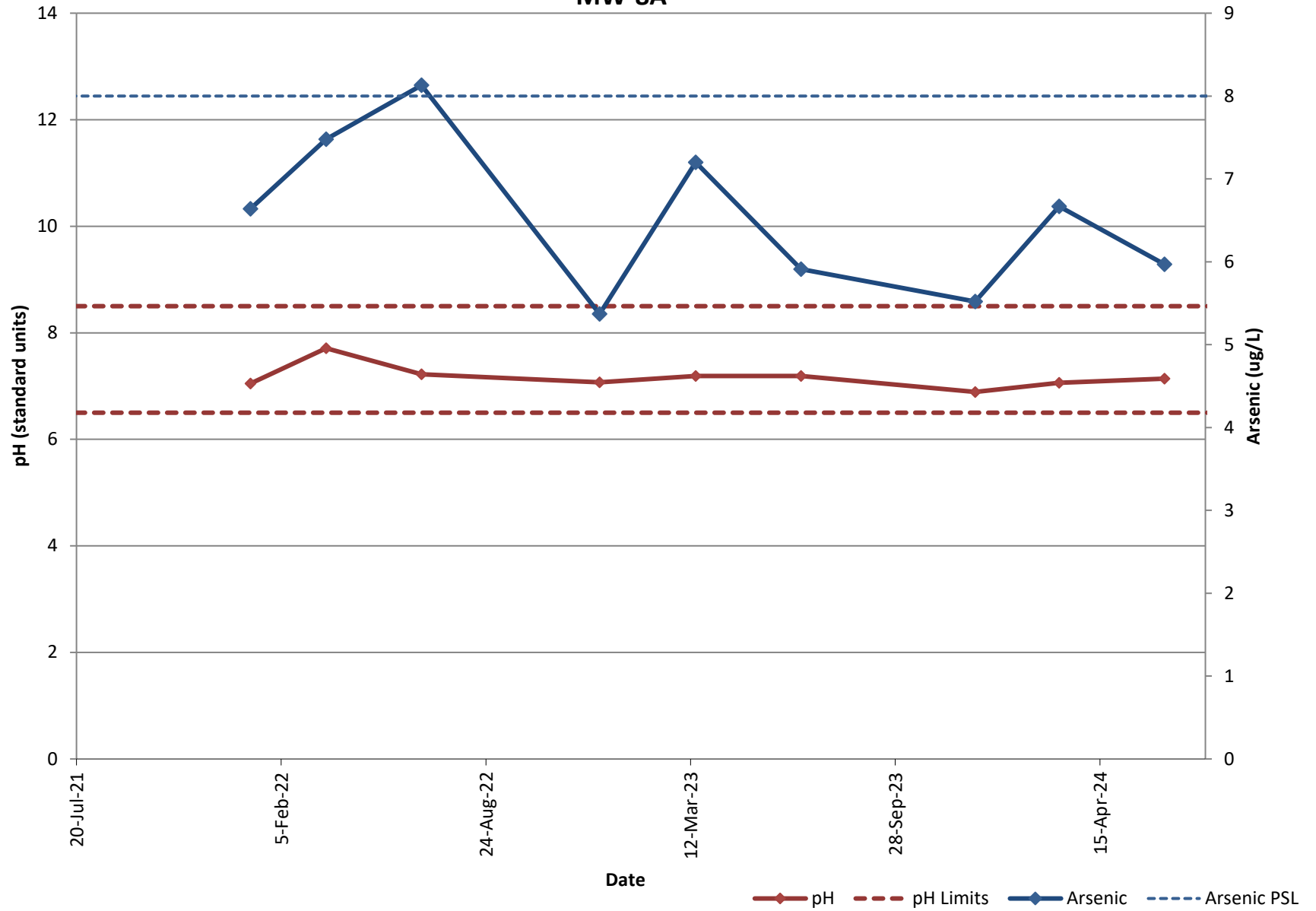
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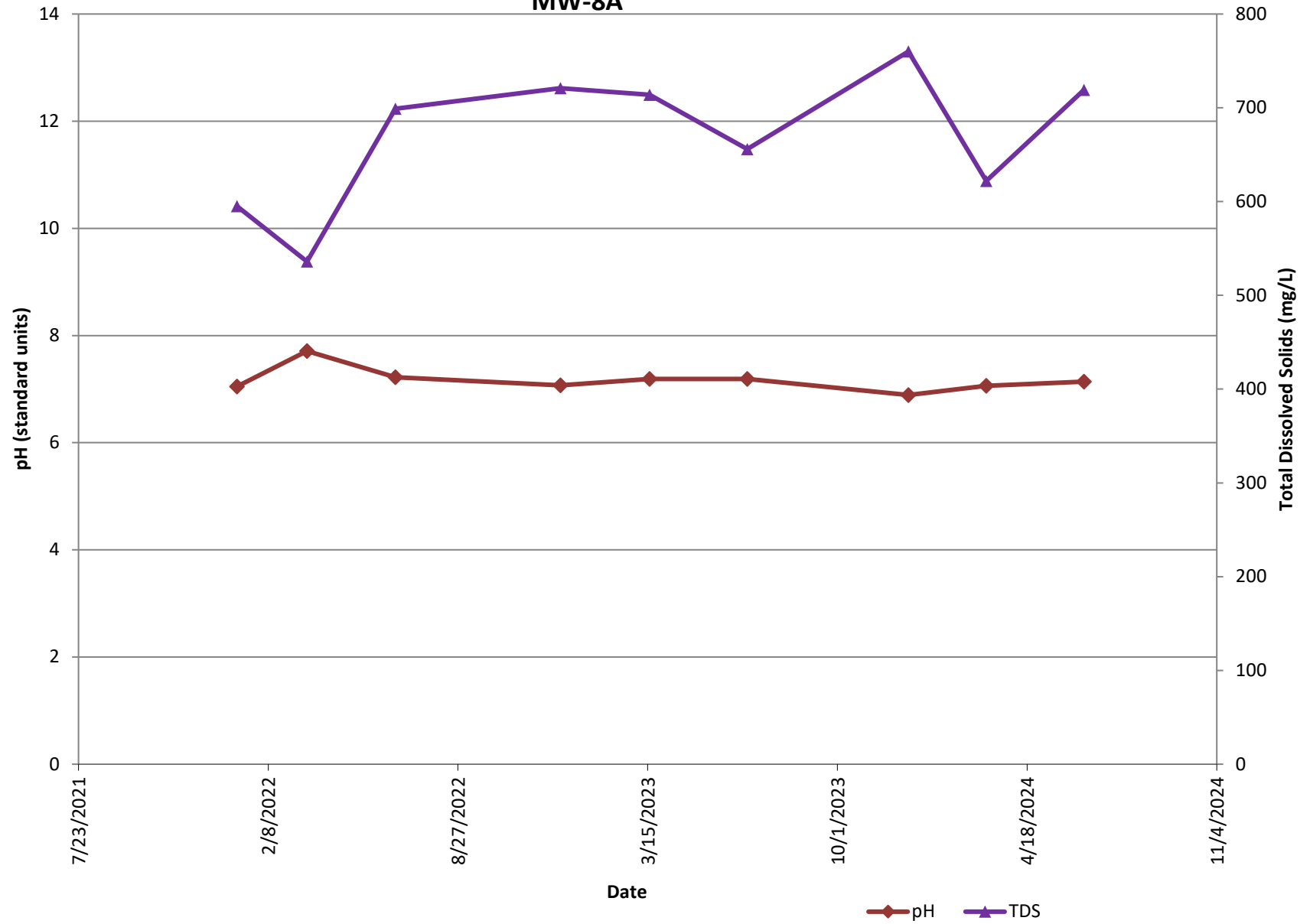
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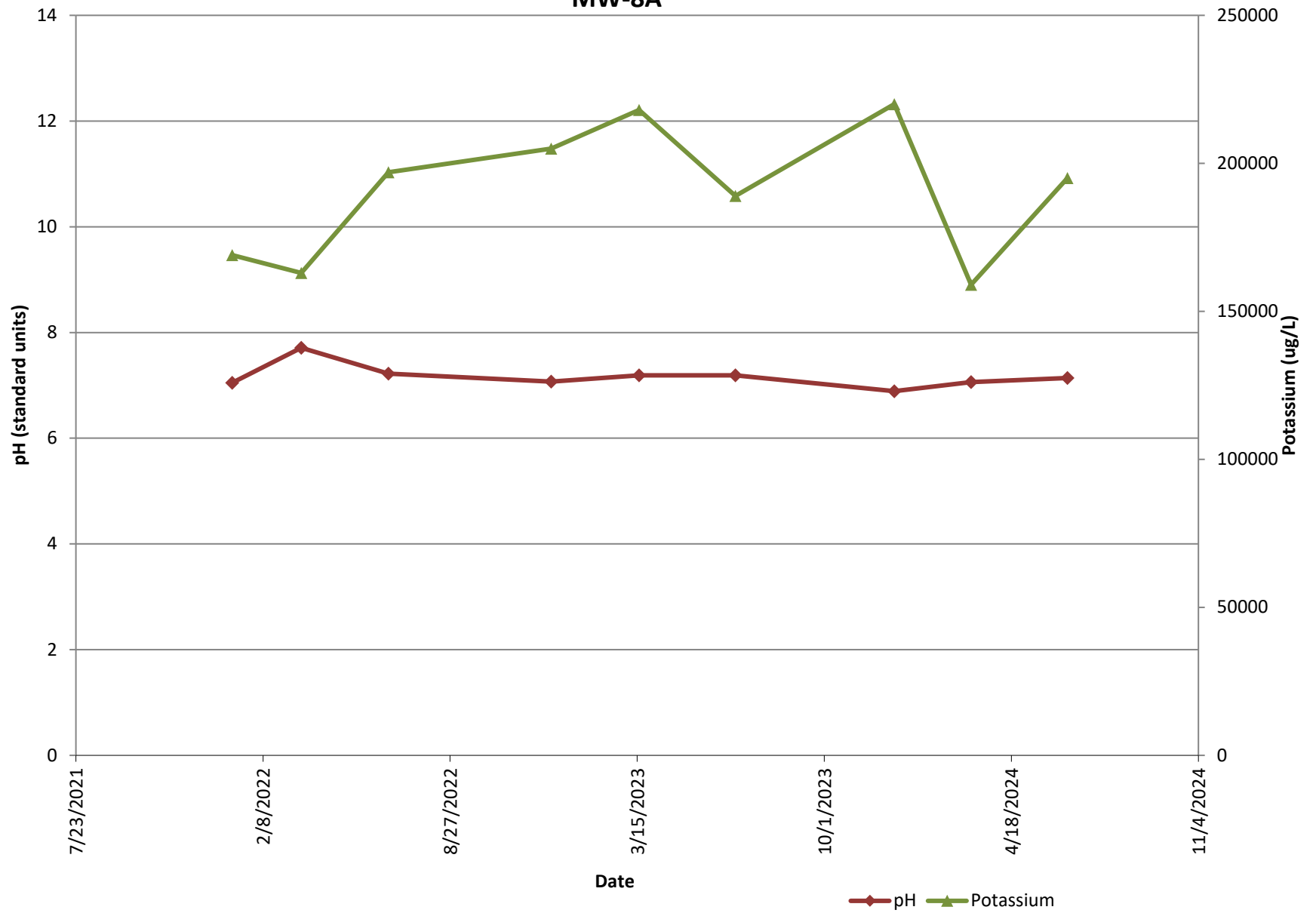
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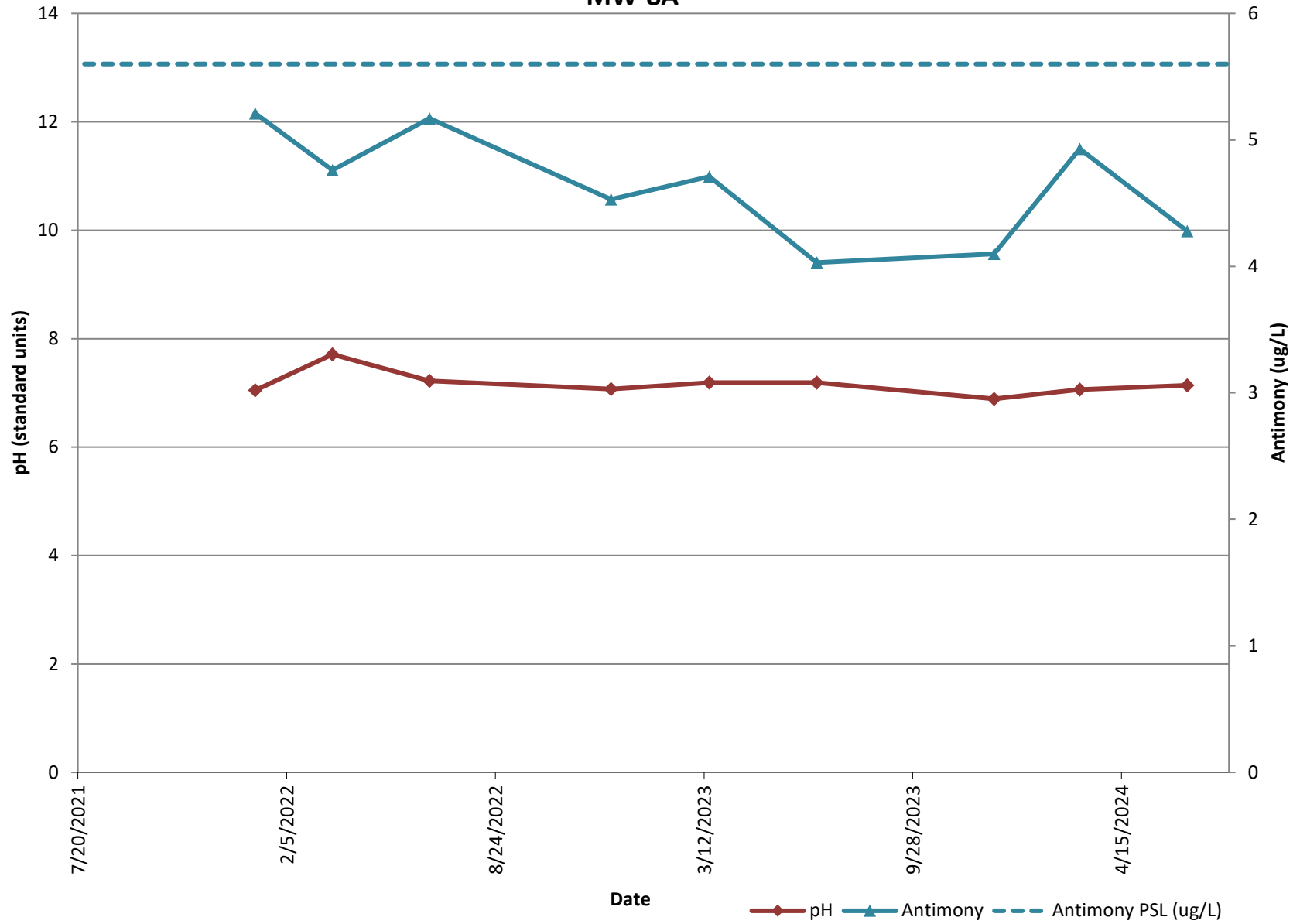
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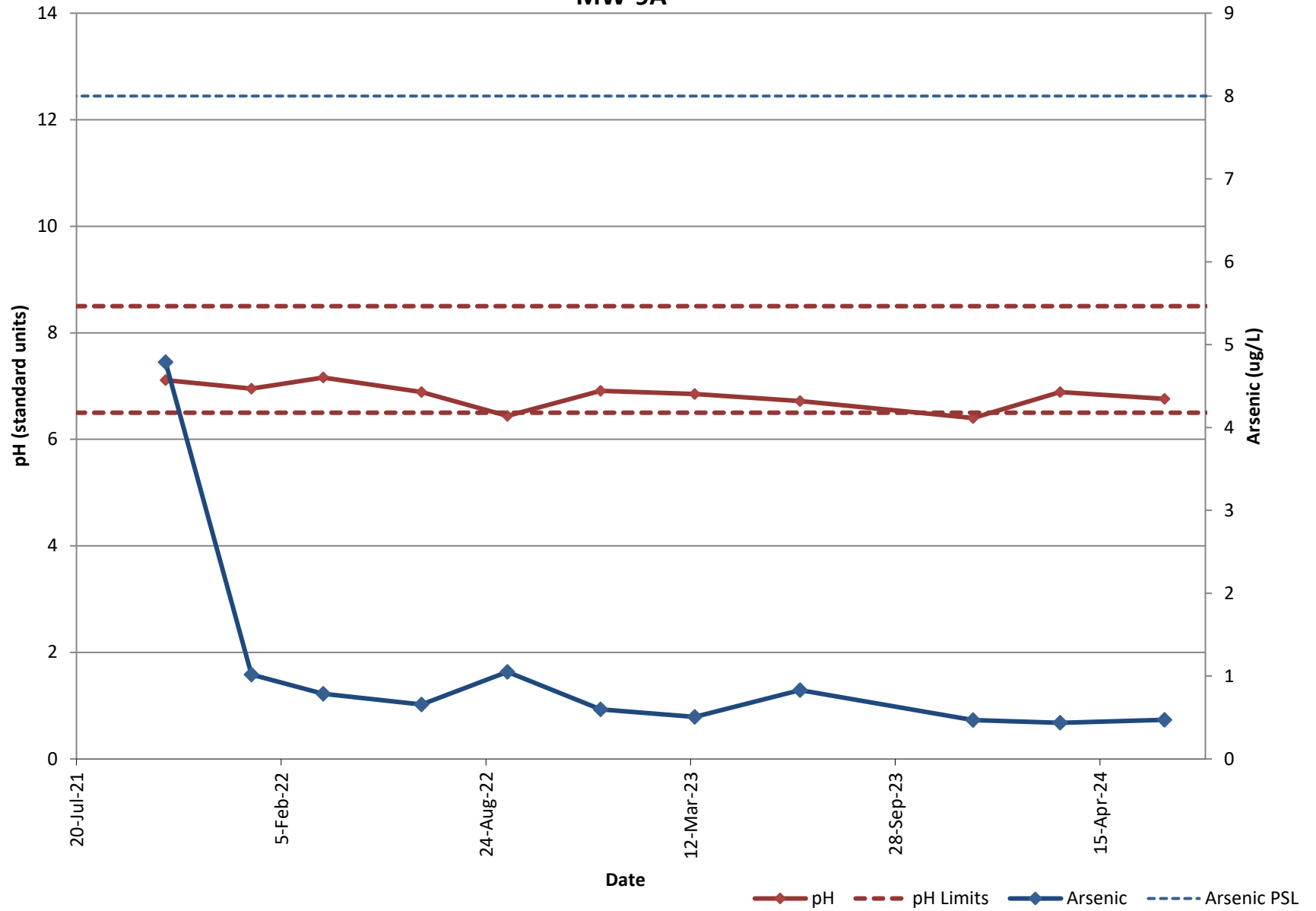
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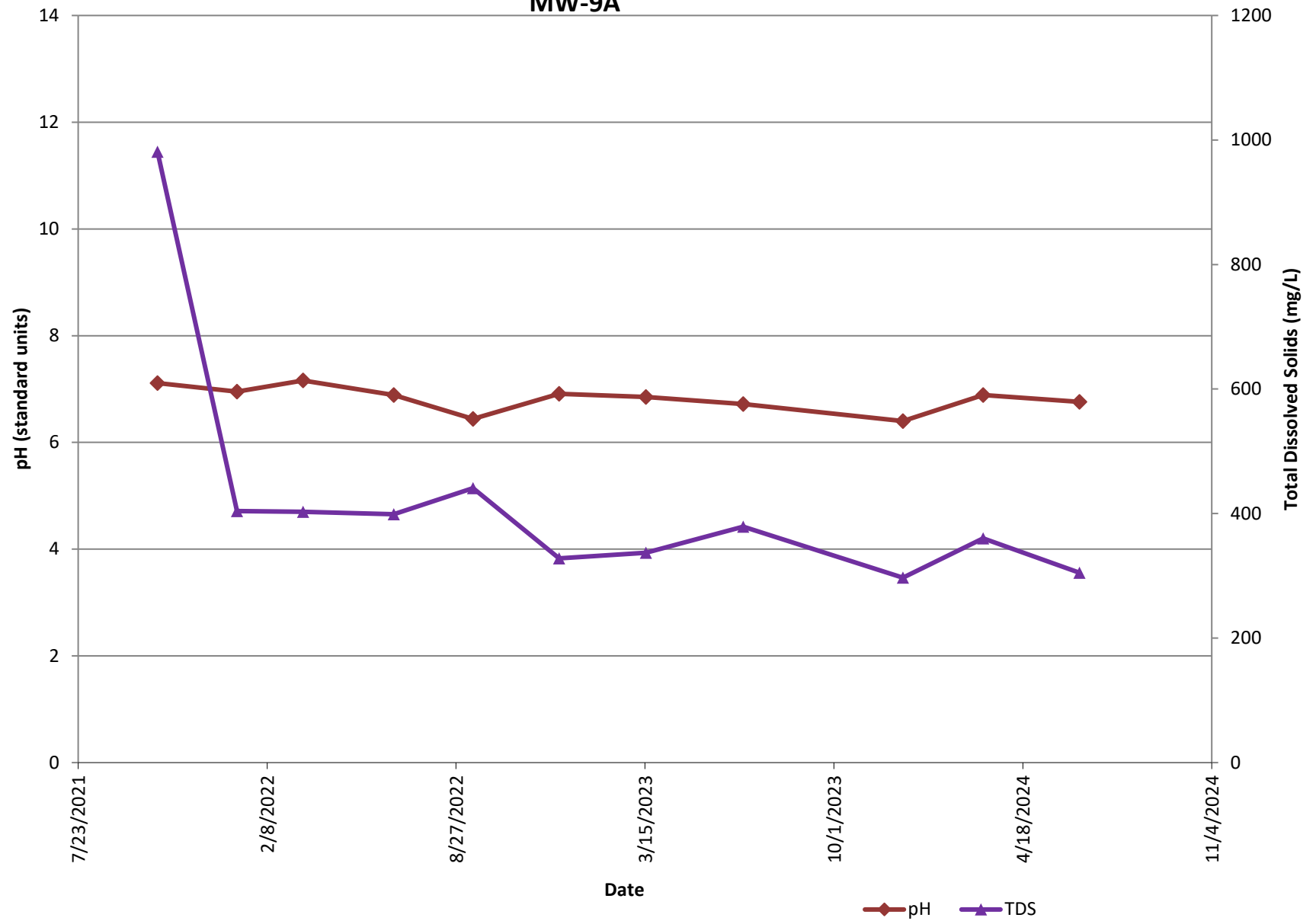
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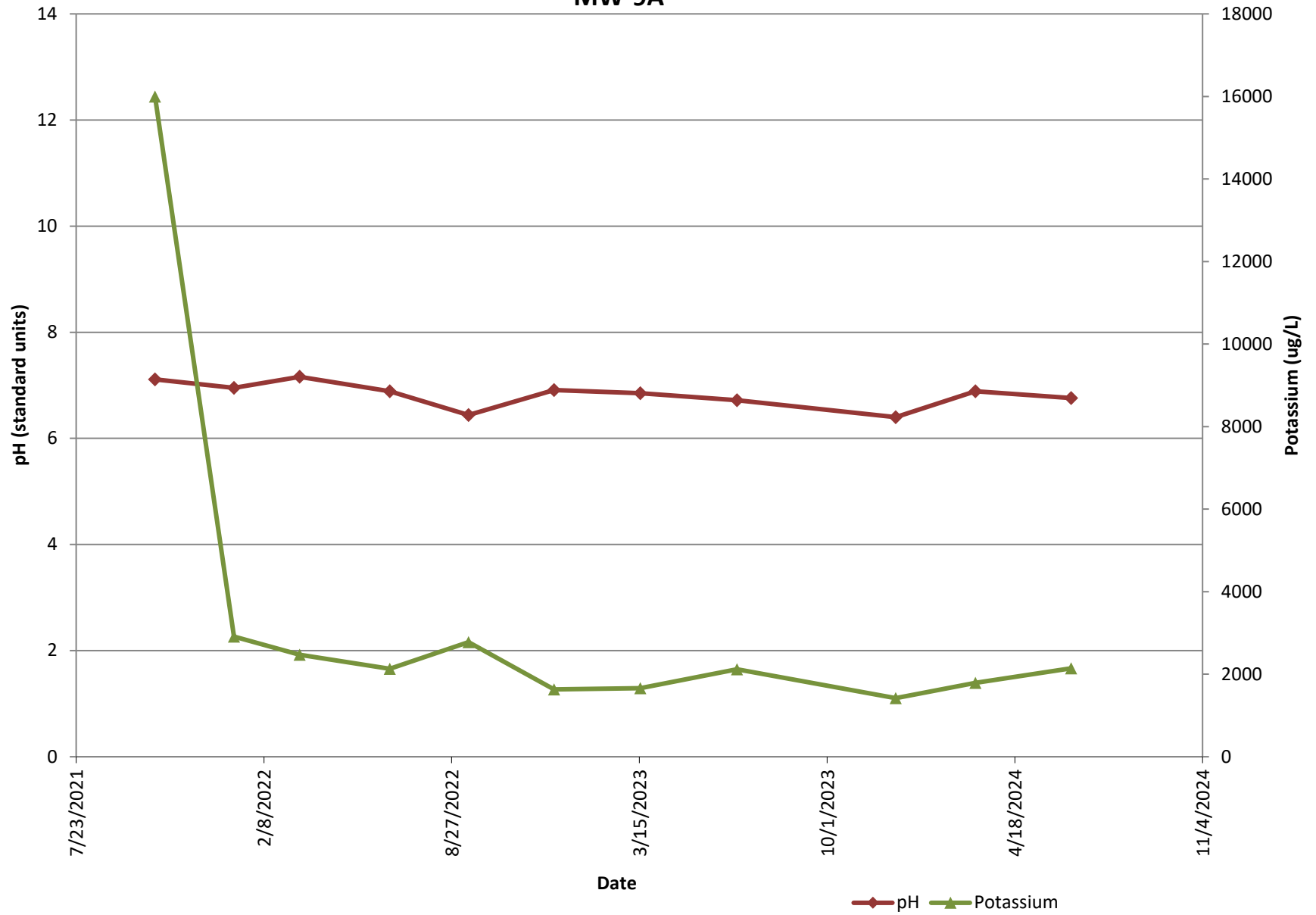
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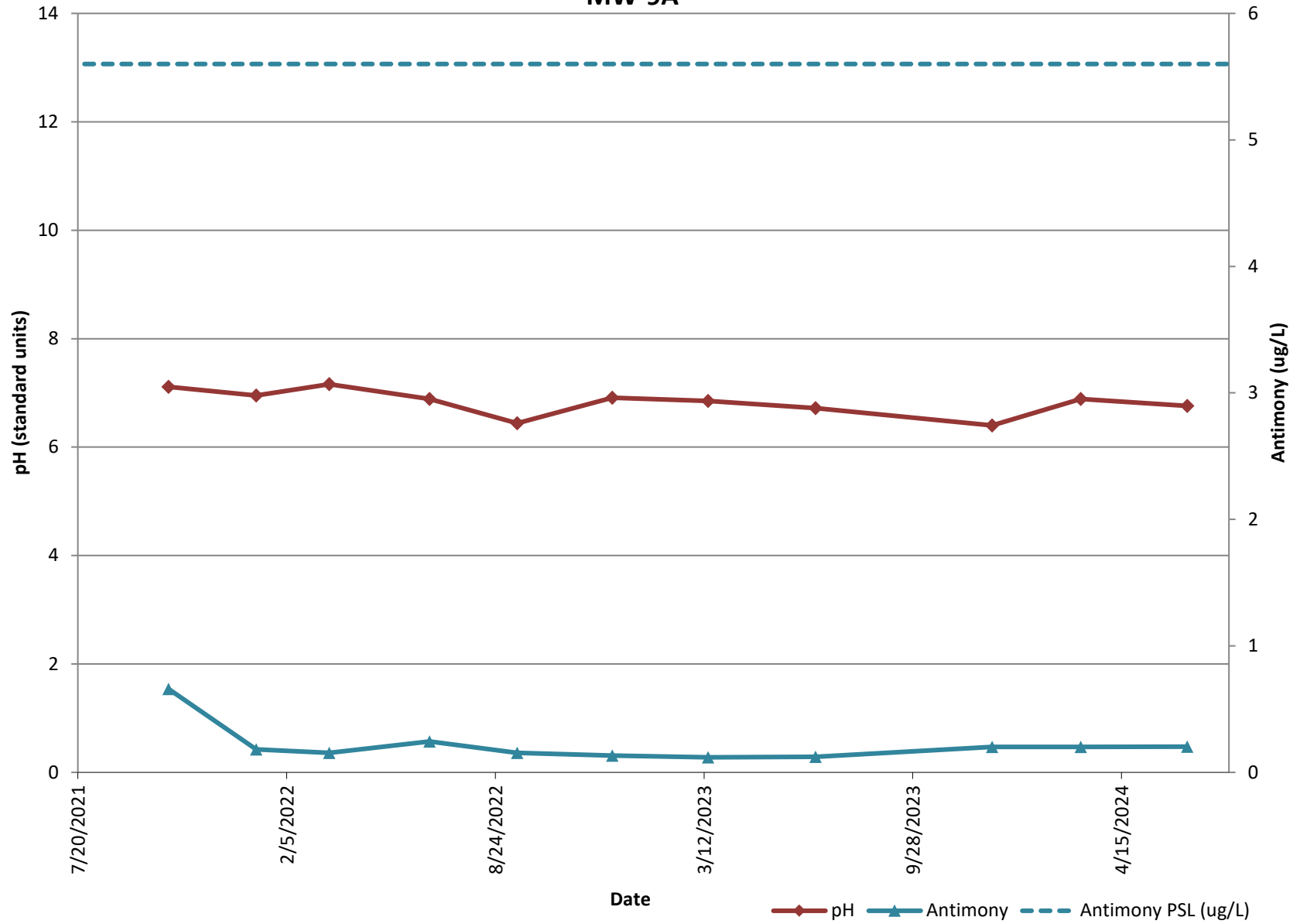
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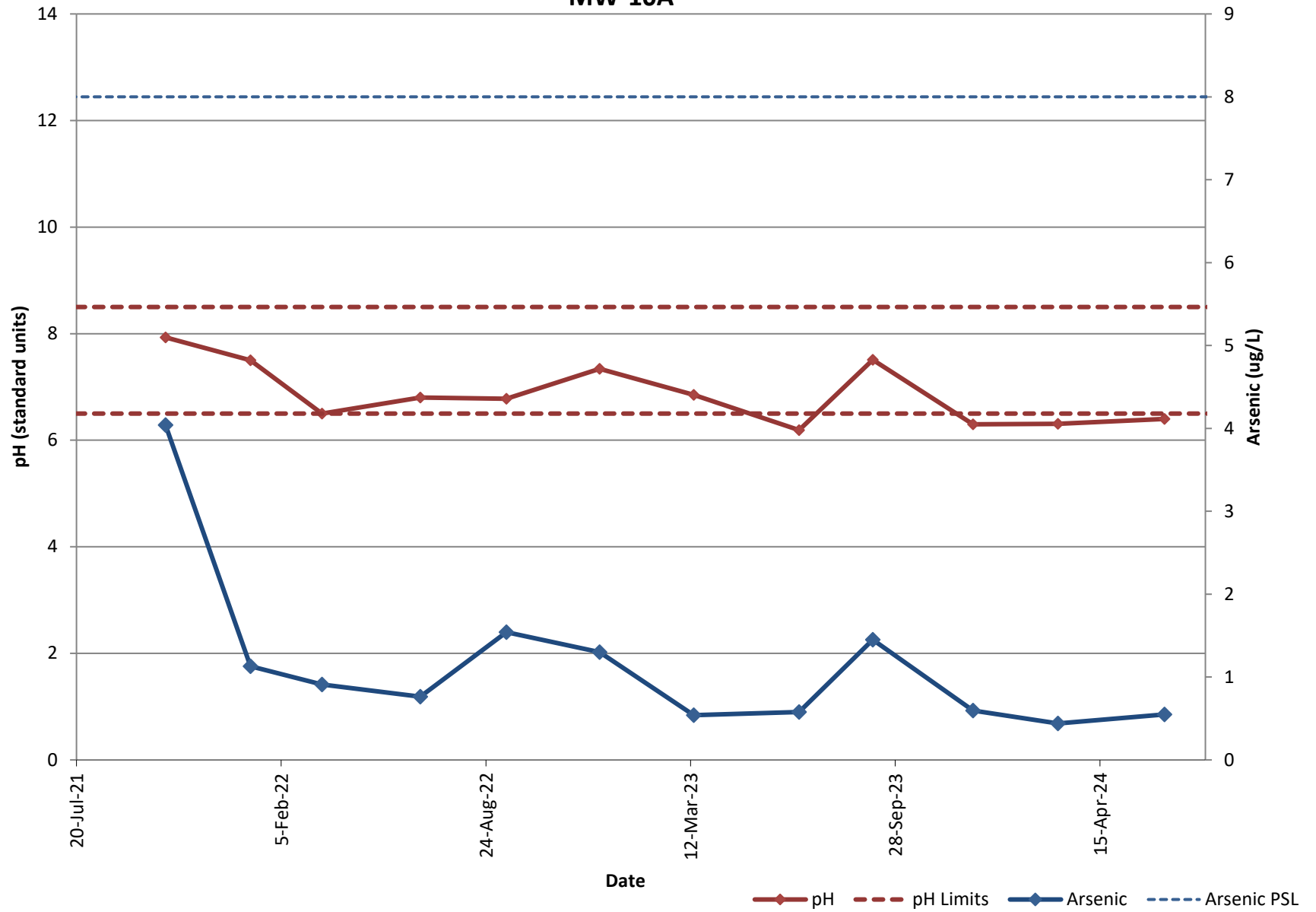
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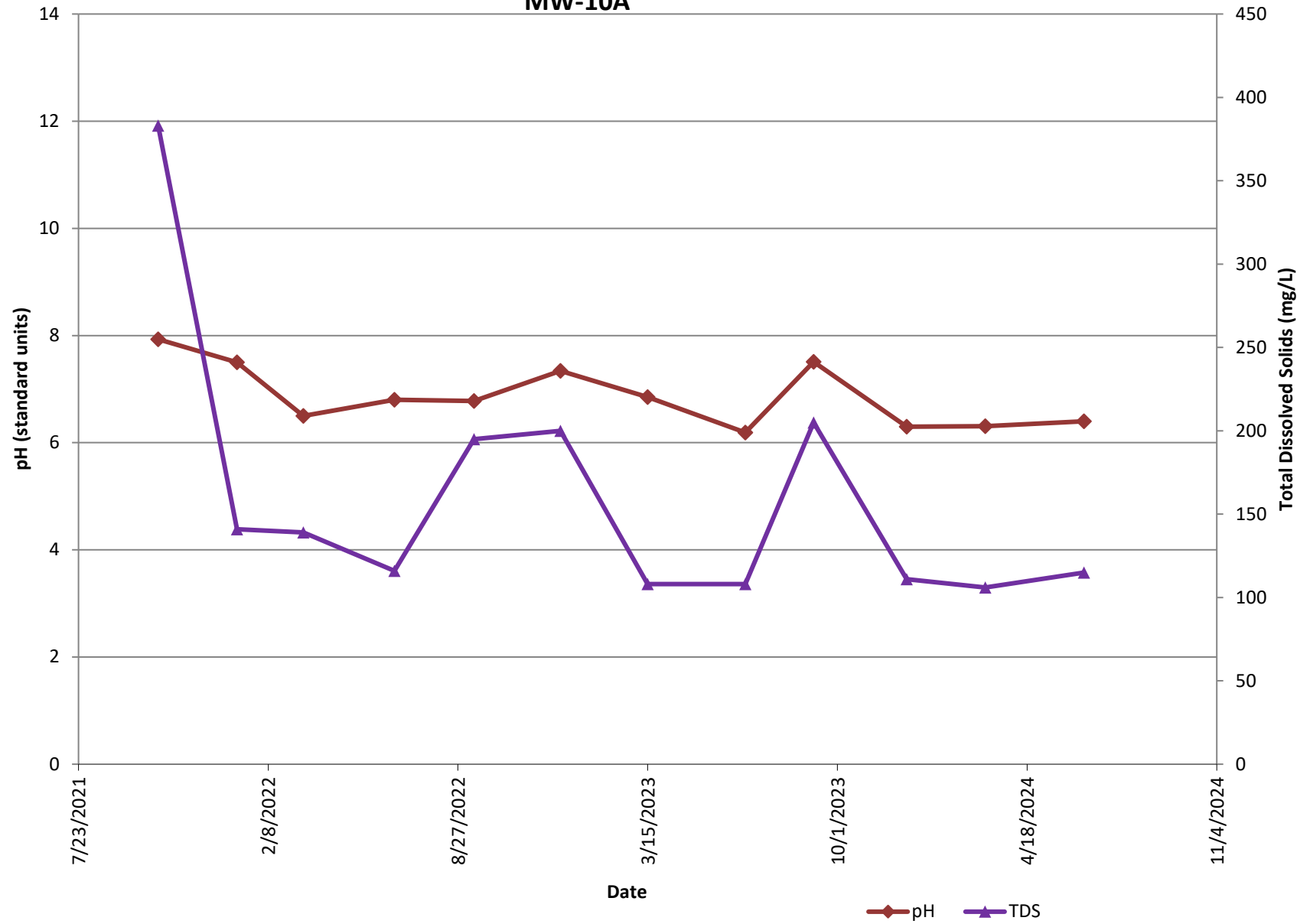
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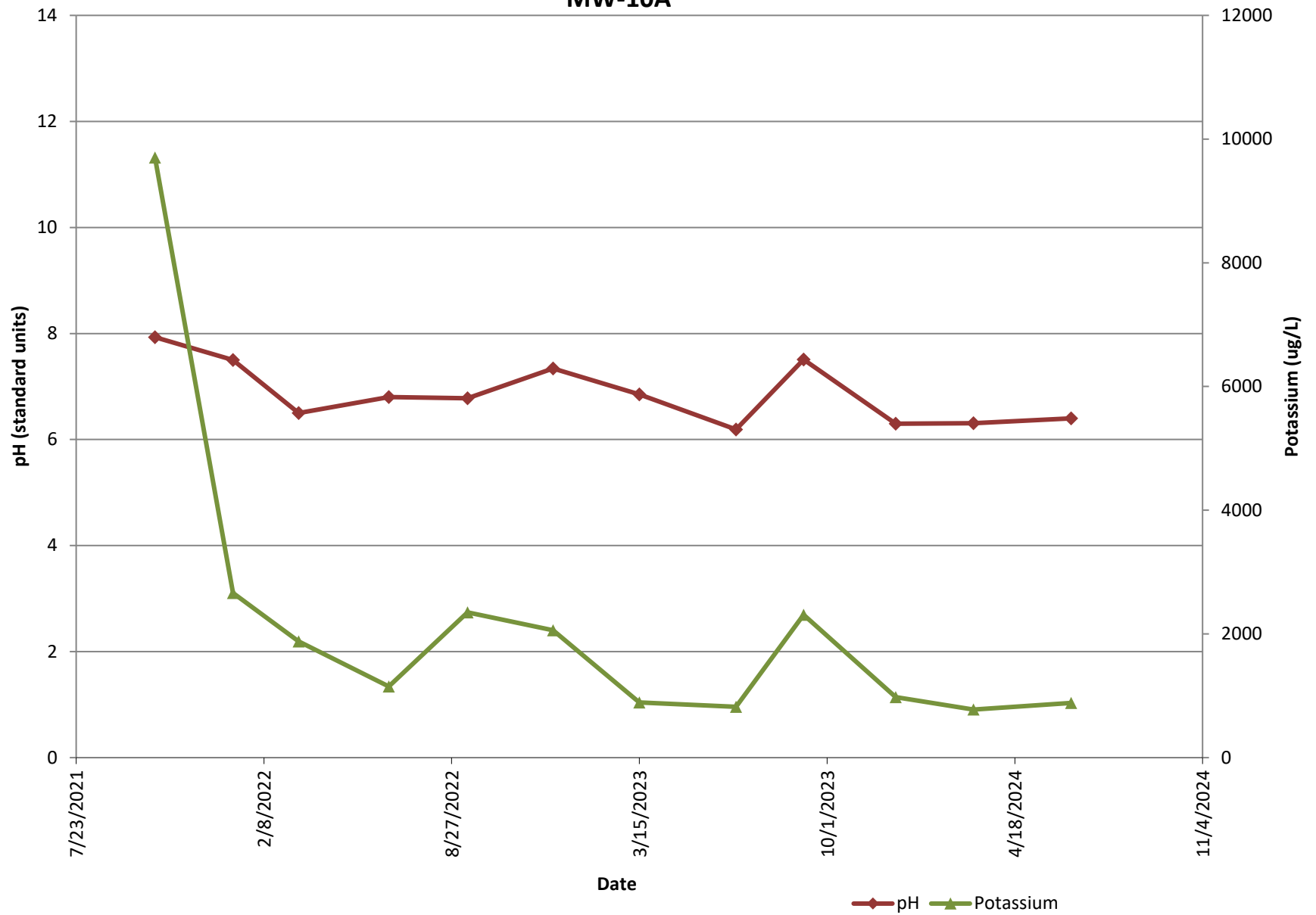
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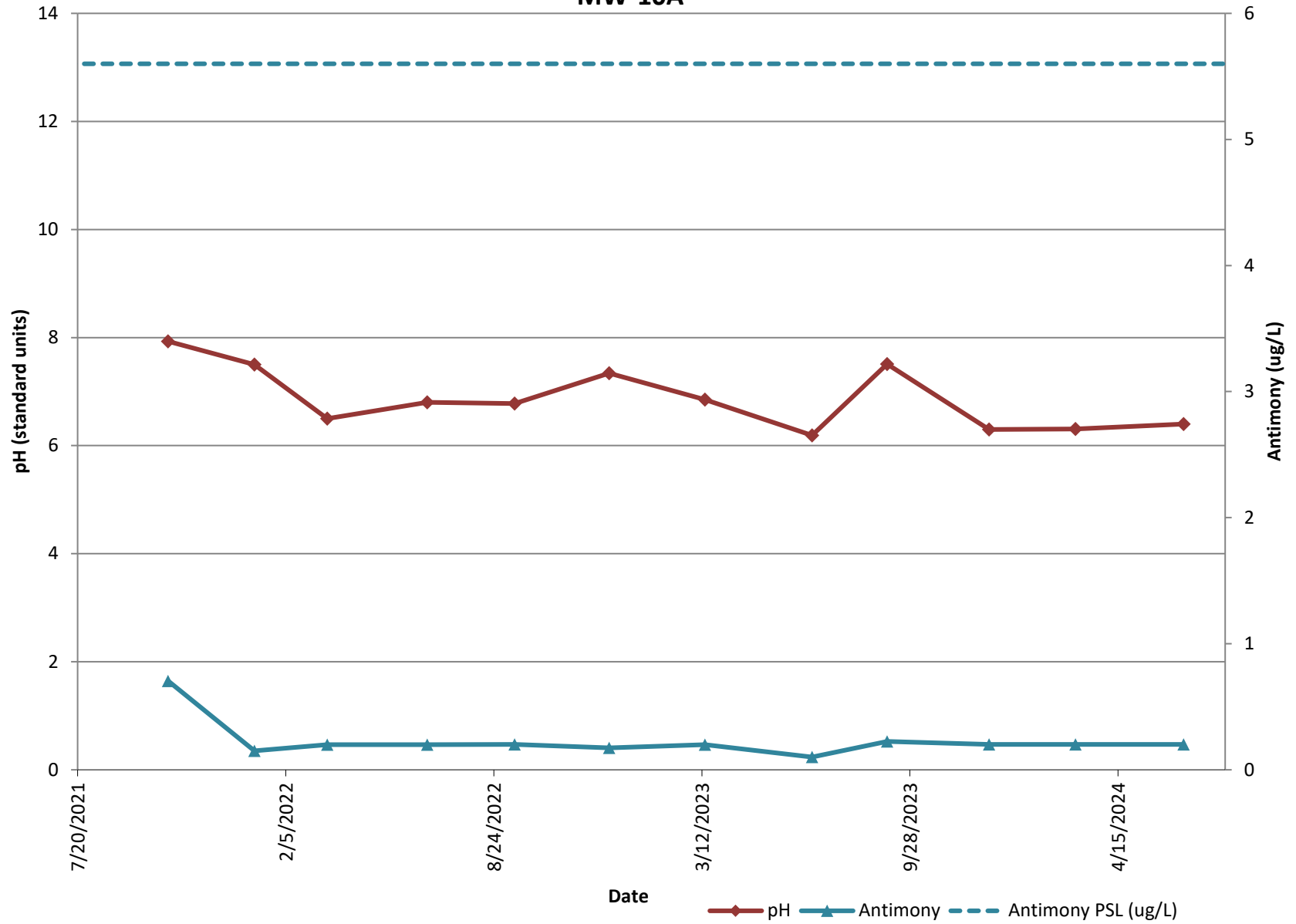
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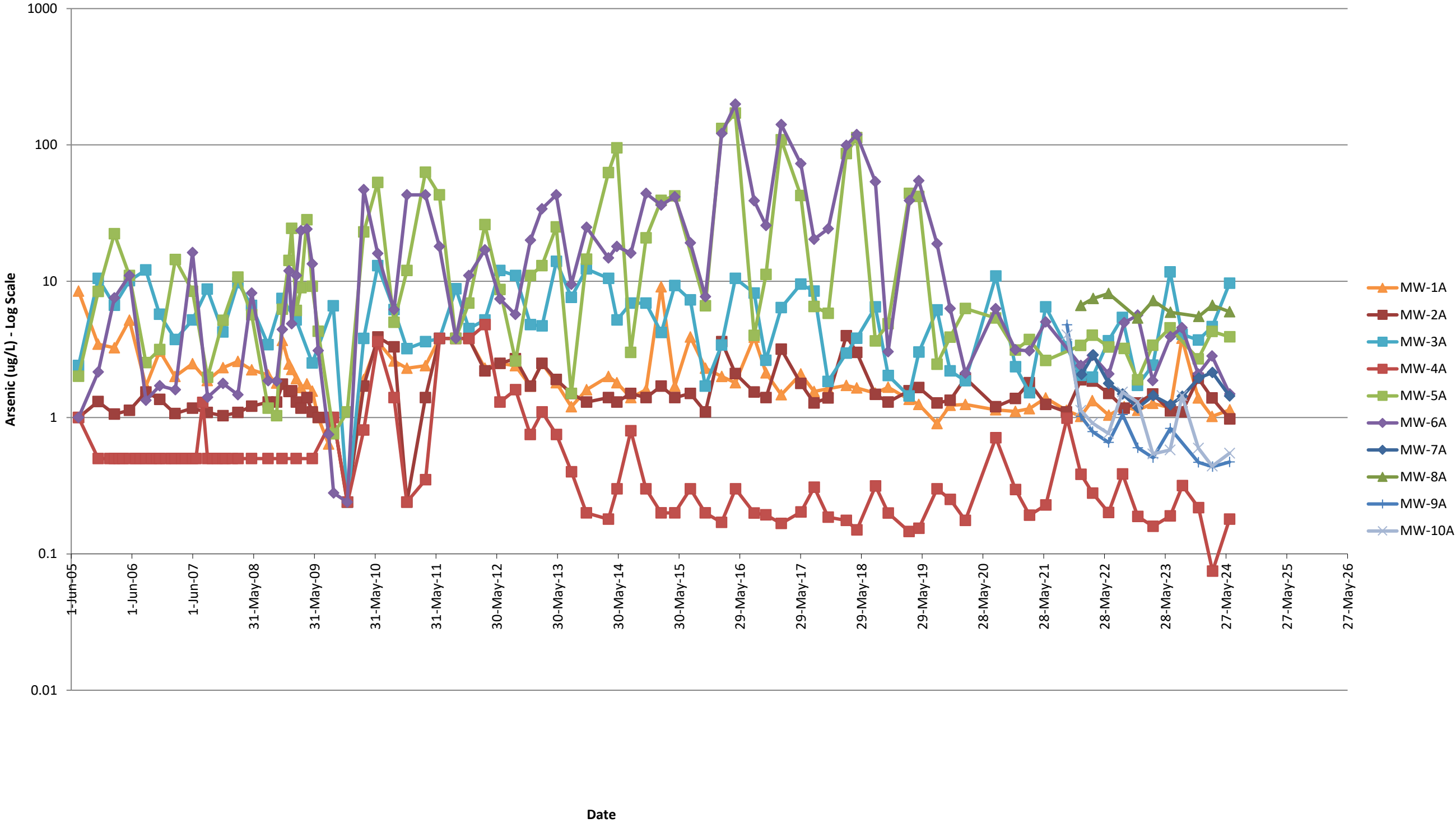
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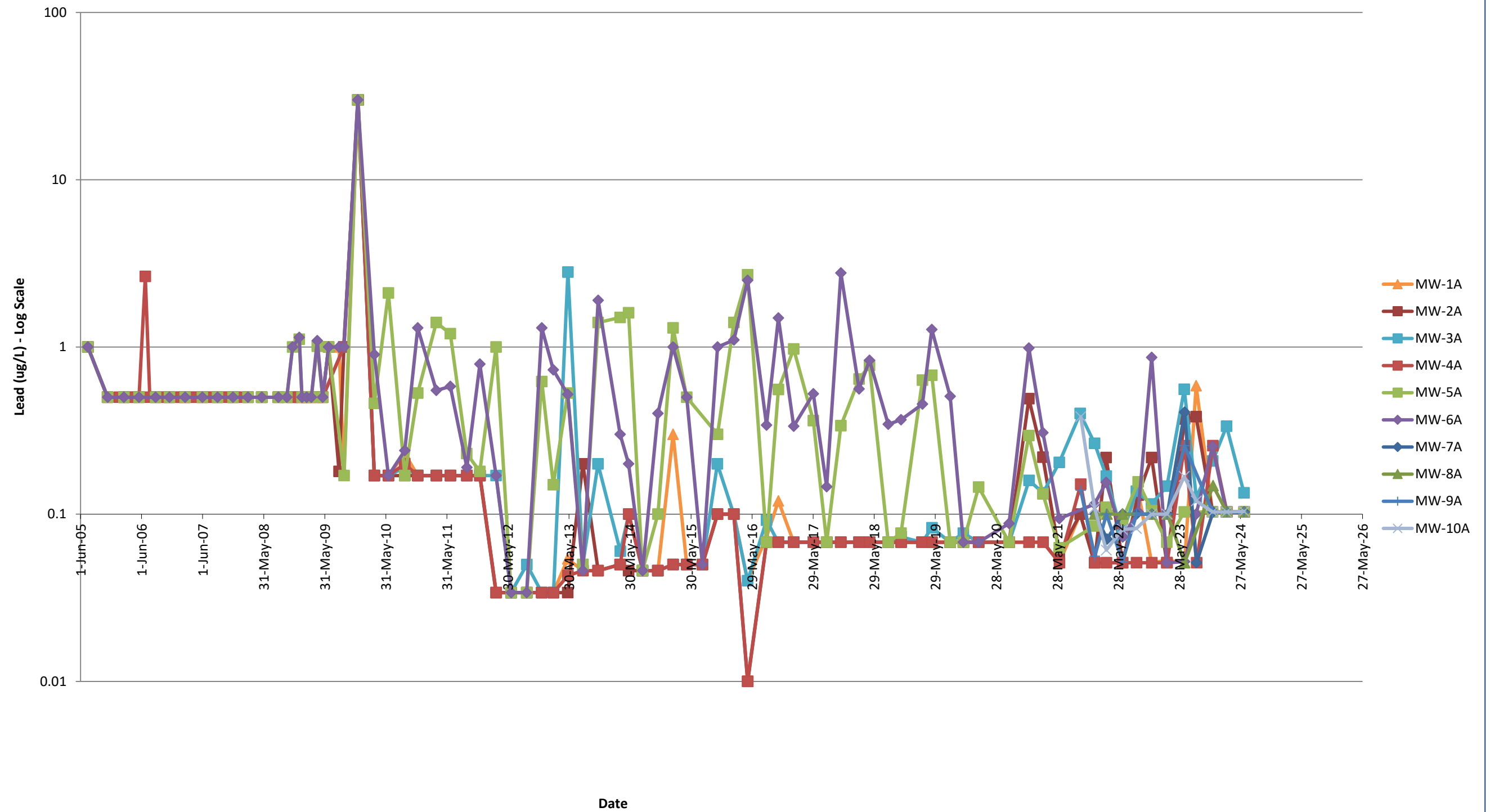
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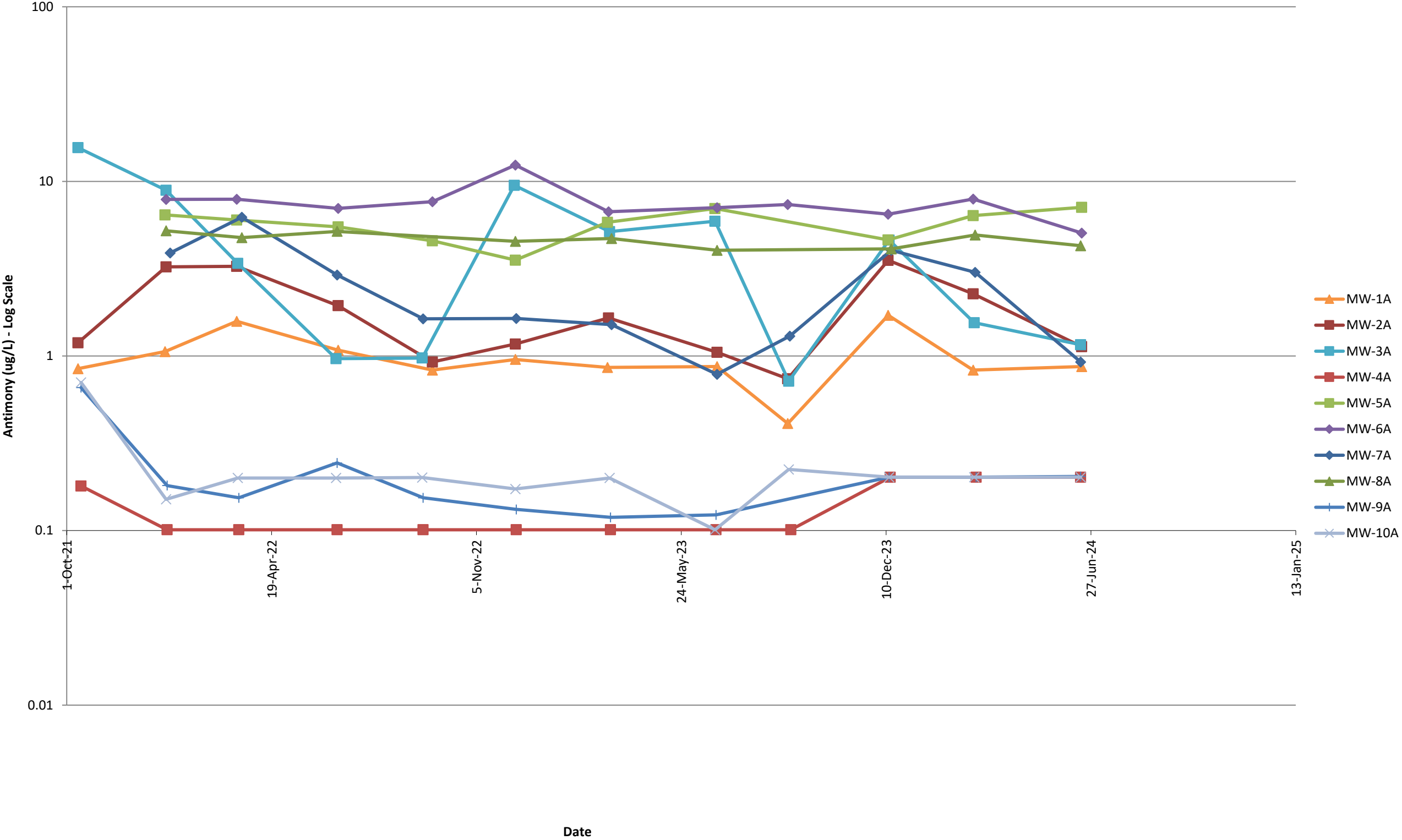
LDA Shallow Monitoring Wells



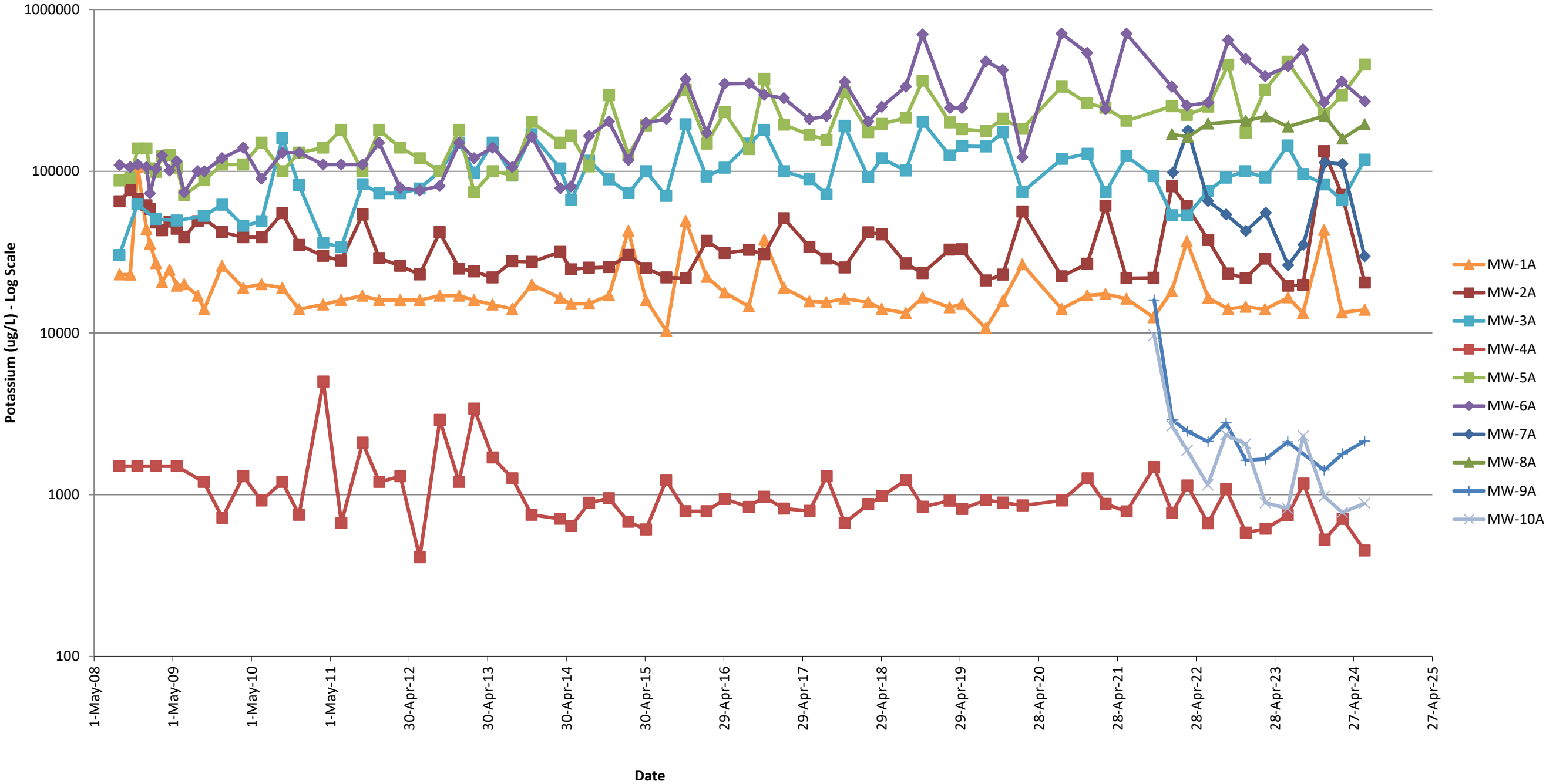
LDA Shallow Monitoring Wells



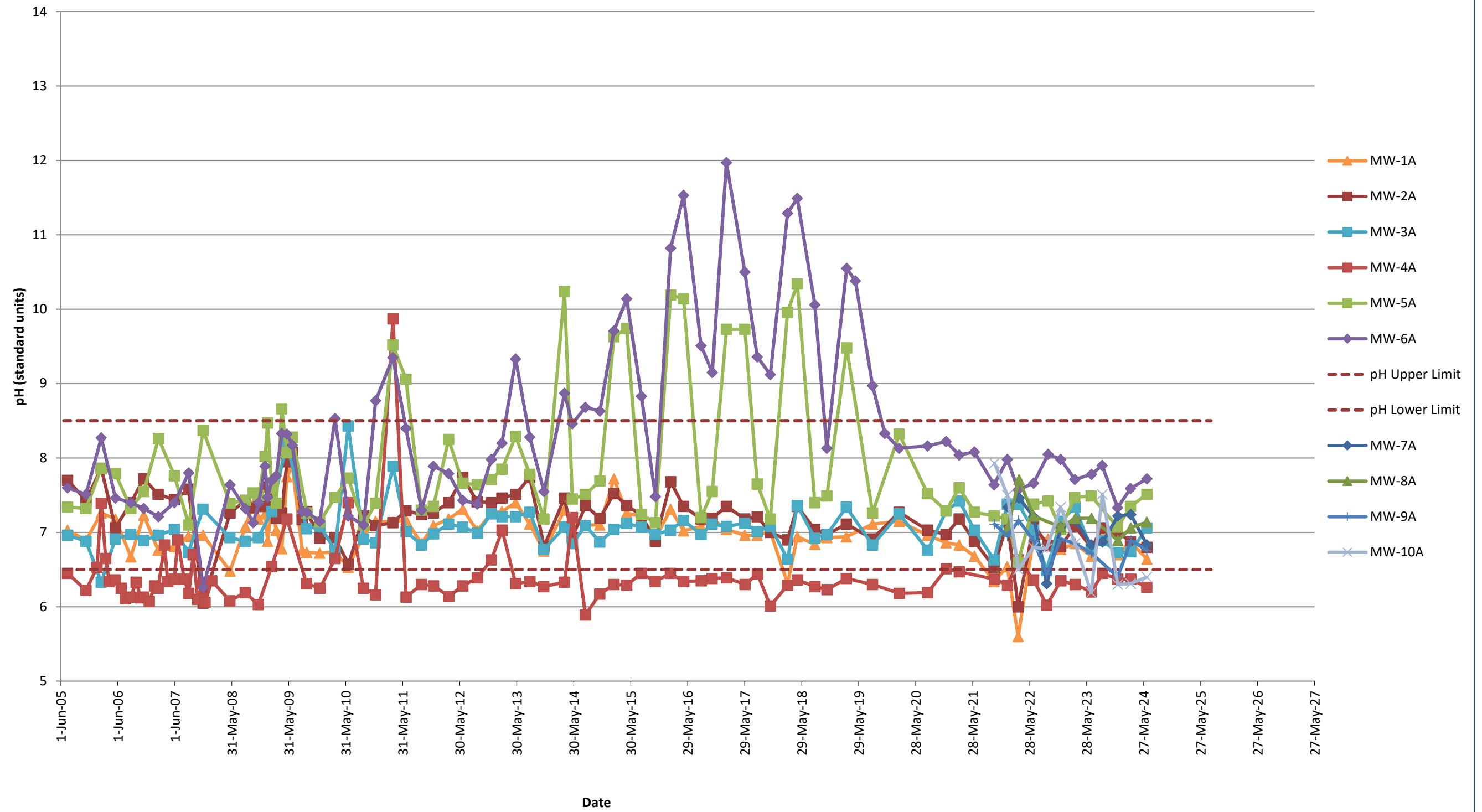
LDA Shallow Monitoring Wells



LDA Shallow Monitoring Wells



LDA Shallow Monitoring Wells



APPENDIX C

**Data Validation Report and
Laboratory Analytical Results**

Data Validation Checklist

Project Name:	Ravensdale Project
Project Number:	GL152030402.001/03.LBR
Sample Identification(s):	MW-1A-0624, MW-2A-0624, MW-3A-0624, MW-4A-0624, MW-5A-0624, MW-6A-0624, MW-7A-0624, MW-8A-0624, MW-9A-0624, MW-10A-0624, MW-45A-0624 (Field duplicate), MW-99-1-0624 (Field blank), Infiltration Ponds – 0624, Still Well – 0624, Interceptor Trench – 0624, and MW-35A-0624 (Field duplicate)
Sample Date(s):	6/17/2024, 6/18/2024, and 6/19/2024
Sample Team:	Andrew Waser, WSP
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources, Inc. – Tukwila, WA
Analyses:	TDS (SM2540C); Total Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED), Dissolved Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED)
Laboratory Report No.:	24F0455

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.

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:

Dissolved sodium was analyzed for sample Infiltration Ponds-0624 (lab ID 24F0455-14RE1). This analyte was not requested on the chain-of-custody, and the laboratory did not include any mention of why they ran this analyte within the narrative. Although no qualification was applied, the end user is alerted that the laboratory reported an analyte that was not requested.

Inorganic Analyses

Metals (EPA 6010/200.8) (E200.8 UCT-KED)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X		X	
2. Reporting limits		X		X	
3. Blanks		X		X	
a. Method blanks		X		X	
b. Equipment /Rinsate blanks		X		X	
4. Laboratory control sample (LCS) %R		X		X	
5. Matrix spike (MS) %R		X	X		
6. LCS duplicate (LCSD) %R	X				
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:

- The MS/MSD that didn't meet QC limits was for the dissolved sodium analyte, an analyte that was not requested on the COC. Therefore, QC was not assessed for dissolved sodium. All other MS/MSDs were within QC limits.
- Field duplicates are as follows: MW-35A-0624 is a duplicate for Infiltration Ponds-0624, and MW-45A-0624 is a field duplicate for MW-2A-0624. Samples Infiltration Ponds-0624 and MW-35A-0624 had RPD exceedances over the 40% limit for total and dissolved lead, and were qualified as estimated, J.
- 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

TDS (SM 2540C)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X		X	
2. Reporting limits		X		X	
3. Blanks		X		X	
a. Method blanks		X		X	
b. Equipment rinsate blanks		X		X	
4. Laboratory control sample (LCS) %R		X		X	
5. Matrix spike (MS) %R	X			X	
6. LCS duplicate (LCSD) %R	X				
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:

Field duplicates are as follows: MW-35A-0624 is a duplicate for Infiltration Ponds-0624, and MW-45A-0624 is a field duplicate for MW-2A-0624. All were within QC limits; no qualifications were required.

Data Validation Checklist
Summary and Data Qualifier Codes

Project Name:	Ravensdale Project
Project Number:	GL152030402.001/03.LBR
Sample Identification(s):	MW-1A-0624, MW-2A-0624, MW-3A-0624, MW-4A-0624, MW-5A-0624, MW-6A-0624, MW-7A-0624, MW-8A-0624, MW-9A-0624, MW-10A-0624, MW-45A-0624 (Field duplicate), MW-99-1-0624 (Field blank), Infiltration Ponds – 0624, Still Well – 0624, Interceptor Trench – 0624, and MW-35A-0624 (Field duplicate)
Sample Date(s):	6/17/2024, 6/18/2024, and 6/19/2024
Sample Team:	Andrew Waser, WSP
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources, Inc. – Tukwila, WA
Analyses:	TDS (SM2540C); Total Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED), Dissolved Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED)
Laboratory Report No.:	24F0455

Sample ID	Analyte(s)	Old Result	Old Qualifier	New Result	New Qualifier	Reason(s)
Infiltration Ponds- 0624	Lead	--	--	--	J	Field duplicate RPD exceedance
MW-35A-0624	Dissolved lead	--	--	--	J	Field duplicate RPD exceedance
Infiltration Ponds-0624	Lead	--	--	--	J	Field duplicate RPD exceedance
MW-35A-0624	Dissolved lead	--	--	--	J	Field duplicate RPD exceedance

Validation Performed By:	Andrea McClure, WSP
Date:	7/31/2024
Peer Review Performed By:	Michael Shadle
Date:	08/05/2024

Infiltration Ponds		MW-35A Duplicate					
Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Antimony	9.87	9.92	1%	ug/L		0.4	0.202
Arsenic	9.44	9.53	1%	ug/L		0.4	0.0746
Potassium	775	729	6%	mg/L		2.5	0.534
Lead	0.162	0.9	139%	ug/L	J	0.2	0.103
Vanadium	0.65	0.844	26%	ug/L		0.4	0.111
Total Dissolved Solids	1920	1940	1%	ug/L		20	20
Antimony, dissolved	9.81	9.57	2%	ug/L		0.4	0.202
Arsenic, dissolved	9.58	9.73	2%	ug/L		0.4	0.04
Potassium, dissolved	814	768	6%	ug/L		2.5	0.534
Lead, dissolved	0.168	0.914	138%	ug/L	J	0.2	0.136
Vanadium, dissolved	0.716	0.782	9%	mg/L		0.4	0.111
Sodium, dissolved	264	250	5%	mg/L		250	9.5

MW-2A		MW-45A Duplicate					
Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Antimony	1.13	1.4	21%	ug/L		0.4	0.202
Arsenic	0.978	1.04	6%	ug/L		0.4	0.0746
Potassium	20.5	20.6	0%	ug/L		0.5	0.107
Vanadium	0.954	0.904	5%	ug/L		0.4	0.111
Total Dissolved Solids	389	368	6%	mg/L		10	10



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

11 July 2024

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

RE: Ravensdale (GL152030402.001)

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

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

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

Associated Work Order(s)
24F0455

Associated SDG ID(s)
N/A

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

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

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

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



Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 24F0455		Turn-around Requested: Standard		Date: 6/18/24		
ARI Client Company: WSP		Phone: (425) 883-0777		Page: 1 of 2		
Client Contact: Gary Zimmerman		No. of Coolers:		Cooler Temps:		
Client Project Name: Ravensdale 2024 Q2 Sampling		Analysis Requested				Notes/Comments
Client Project #: GL152030402.001		Total Metals: As, Pb, Sb, V, K				
Sample ID		Date	Time	Matrix	No. Containers	
MW-1A-0624	6/18/24	1055	W	2	X	X
MW-2A-0624	6/18/24	1155	W	2	X	X
MW-3A-0624	6/17/24	1310	V	2 ^{AU}	X	X
MW-4A-0624	6/17/24	1425	W	6 ^{AU}	X	X
MW-5A-0624	6/18/24	1415	W	2	X	X
MW-6A-0624	6/18/24	1305	W	2	X	X
MW-7A-0624	6/19/24	1245	W	2	X	X
MW-8A-0624	6/19/24	1355	W	2	X	X
MW-9A-0624	6/17/24	1520	W	2	X	X
MW-10A-0624	6/17/24	1125	W	2	X	X
Comments/Special Instructions		Relinquished by: (Signature) <i>[Signature]</i>		Received by: (Signature) <i>[Signature]</i>		
Analyze in accordance with MSA between Golder/WSP and ARI.		Printed Name: Andrew Waser		Printed Name: Matthew Dain		
Ecology EIM EDD.		Company: WSP		Company: ARI		
		Date & Time: 6/19/24 1517		Date & Time: 06/19/24 1517		



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

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 24F0455	Turn-around Requested: Standard	Date: 6/19/24
ARI Client Company: WSP	Phone: (425) 883-0777	Page: 2 of 2
Client Contact: Gary Zimmerman		No. of Coolers: Cooler Temps:



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

Client Project Name: Ravensdale 2024 Q2 Sampling					Analysis Requested								Notes/Comments
Client Project #: GL152030402.001		Samplers:			Total Metals: As, Pb, Sb, V, K	TDS	Dissolved Metals: As, Pb, Sb, V, K						
Sample ID	Date	Time	Matrix	No. Containers									
MW-45A-0624	6/18/24	1200	W	2	X	X							
MW-99-1-0624	6/19/24	1215	W	2	X	X							
Infiltration Ponds-0624	6/18/24	1440	W	3	X	X	X						
Still Well-0624	6/18/24	1525	W	2	X	X							
Interceptor Trench-0624	6/17/24	1540	W	2	X	X							
MW-35A-0624	6/18/24	1445	W	3	X	X	X						

Comments/Special Instructions Analyze in accordance with MSA between Golder/WSP and ARI. Ecology EIM EDD.	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Andrew Vaser	Printed Name: Matthew Danos	Printed Name:	Printed Name:
	Company: WSP	Company: ARI	Company:	Company:
	Date & Time: 6/19/24 1517	Date & Time: 06/19/24 1517	Date & Time:	Date & Time:



WSP USA, Inc.

840 HOWE STREET, #1000

VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale

Project Number: GL152030402.001

Project Manager: Accounts Payable

Reported:

11-Jul-2024 10:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1A-0624	24F0455-01	Water	18-Jun-2024 10:55	19-Jun-2024 15:17
MW-2A-0624	24F0455-02	Water	18-Jun-2024 11:55	19-Jun-2024 15:17
MW-3A-0624	24F0455-03	Water	17-Jun-2024 13:10	19-Jun-2024 15:17
MW-4A-0624	24F0455-04	Water	17-Jun-2024 14:25	19-Jun-2024 15:17
MW-5A-0624	24F0455-05	Water	18-Jun-2024 14:15	19-Jun-2024 15:17
MW-6A-0624	24F0455-06	Water	18-Jun-2024 13:05	19-Jun-2024 15:17
MW-7A-0624	24F0455-07	Water	19-Jun-2024 12:45	19-Jun-2024 15:17
MW-8A-0624	24F0455-08	Water	19-Jun-2024 13:55	19-Jun-2024 15:17
MW-9A-0624	24F0455-09	Water	17-Jun-2024 15:20	19-Jun-2024 15:17
MW-10A-0624	24F0455-10	Water	17-Jun-2024 11:25	19-Jun-2024 15:17
MW-45A-0624	24F0455-11	Water	18-Jun-2024 12:00	19-Jun-2024 15:17
MW-99-1-0624	24F0455-12	Water	19-Jun-2024 12:15	19-Jun-2024 15:17
Infiltration Ponds - 0624	24F0455-13	Water	18-Jun-2024 14:40	19-Jun-2024 15:17
Infiltration Ponds - 0624	24F0455-14	Water	18-Jun-2024 14:40	19-Jun-2024 15:17
Still Well - 0624	24F0455-15	Water	18-Jun-2024 15:25	19-Jun-2024 15:17
Interceptor Trench - 0624	24F0455-16	Water	17-Jun-2024 15:40	19-Jun-2024 15:17
MW-35A-0624	24F0455-17	Water	18-Jun-2024 14:45	19-Jun-2024 15:17
MW-35A-0624	24F0455-18	Water	18-Jun-2024 14:45	19-Jun-2024 15:17



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Work Order Case Narrative

Total and Dissolved metals Metals - EPA Method 200.8 and 6010D

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

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

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

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

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



WORK ORDER

24F0455

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

Client: WSP USA, Inc.

Project Manager: Kelly Bottem

Project: Ravensdale

Project Number: GL152030402.001

Preservation Confirmation

Container ID	Container Type	pH
24F0455-01 A	HDPE NM, 1000 mL	
24F0455-01 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-02 A	HDPE NM, 1000 mL	
24F0455-02 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-03 A	HDPE NM, 1000 mL	
24F0455-03 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-04 A	HDPE NM, 1000 mL	
24F0455-04 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-04 C	HDPE NM, 1000 mL	
24F0455-04 D	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-04 E	HDPE NM, 1000 mL	
24F0455-04 F	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-05 A	HDPE NM, 1000 mL	
24F0455-05 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-06 A	HDPE NM, 1000 mL	
24F0455-06 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-07 A	HDPE NM, 1000 mL	
24F0455-07 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-08 A	HDPE NM, 1000 mL	
24F0455-08 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-09 A	HDPE NM, 1000 mL	
24F0455-09 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-10 A	HDPE NM, 1000 mL	
24F0455-10 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-11 A	HDPE NM, 1000 mL	
24F0455-11 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-12 A	HDPE NM, 1000 mL	
24F0455-12 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-13 A	HDPE NM, 1000 mL	
24F0455-13 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-14 A	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-15 A	HDPE NM, 1000 mL	
24F0455-15 B	HDPE NM, 500 mL, 1:1 HNO3	L2 p
24F0455-16 A	HDPE NM, 1000 mL	



WORK ORDER

24F0455

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

Client: WSP USA, Inc.

Project Manager: Kelly Bottem

Project: Ravensdale

Project Number: GL152030402.001

24F0455-16 B HDPE NM, 500 mL, 1:1 HNO₃

LZP

24F0455-17 A HDPE NM, 1000 mL

24F0455-17 B HDPE NM, 500 mL, 1:1 HNO₃

LZP

24F0455-18 A HDPE NM, 500 mL, 1:1 HNO₃

LZP

SA

Preservation Confirmed By

06/19/24

Date



Cooler Receipt Form

ARI Client: WSP

Project Name: Rammsdale

COC No(s): NA

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

Assigned ARI Job No: 24F0455

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? _____

YES NO

Were custody papers included with the cooler? _____

YES NO

Were custody papers properly filled out (ink, signed, etc.) _____

YES NO

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

Time 1517

1.2 4.7 1.4

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

Temp Gun ID#: 5009708

Cooler Accepted by: MD

Date: 06/19/24

Time: 1517

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: SA

Date: 6/19/24

Time: 1639

Labels checked by: MD

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

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

Additional Notes, Discrepancies, & Resolutions:

By: _____

Date: _____



WSP USA, Inc.

840 HOWE STREET, #1000

VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale

Project Number: GL152030402.001

Project Manager: Accounts Payable

Reported:

11-Jul-2024 10:48

MW-1A-0624
24F0455-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/18/2024 10:55

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:20

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Preparation Batch: BMG0054

Prepared: 07/02/2024

Sample Size: 25 mL

Final Volume: 25 mL

Extract ID: 24F0455-01 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.14	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-1A-0624
24F0455-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/18/2024 10:55

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:20

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-01 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	0.870	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	0.684	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-1A-0624
24F0455-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/18/2024 10:55

Analyzed: 07/01/2024 20:01

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-01 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	13.9	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-1A-0624
24F0455-01 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/18/2024 10:55

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-01

Preparation Batch: BMF0614

Sample Size: 150 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	7	7	335	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-2A-0624
24F0455-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/18/2024 11:55

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:25

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-02 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.978	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-2A-0624
24F0455-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/18/2024 11:55

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:25

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-02 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.13	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	0.954	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-2A-0624
24F0455-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 06/18/2024 11:55

Instrument: ICP3 Analyst: SH

Analyzed: 07/01/2024 20:04

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24F0455-02 B 01

Preparation Batch: BMF0757

Sample Size: 25 mL

Prepared: 06/28/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	20.5	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-2A-0624
24F0455-02 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/18/2024 11:55

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-02

Preparation Batch: BMF0614

Sample Size: 100 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	389	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-3A-0624
24F0455-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/17/2024 13:10

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:49

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-03 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	9.66	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-3A-0624
24F0455-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/17/2024 13:10

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:49

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-03 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.16	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.134	ug/L	J, D
Vanadium	7440-62-2	2	0.111	0.400	0.454	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-3A-0624
24F0455-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/17/2024 13:10
Analyzed: 07/01/2024 20:07

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-03 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	118	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-3A-0624
24F0455-03 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/17/2024 13:10

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-03

Preparation Batch: BMF0614

Sample Size: 100 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	544	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-4A-0624
24F0455-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/17/2024 14:25

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 23:35

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-04 B 02

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.180	ug/L	J, D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-4A-0624
24F0455-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/17/2024 14:25

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 23:35

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-04 B 02

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	0.850	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-4A-0624
24F0455-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 06/17/2024 14:25

Instrument: ICP3 Analyst: SH

Analyzed: 06/29/2024 16:44

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24F0455-04 F

Preparation Batch: BMF0757

Sample Size: 25 mL

Prepared: 06/28/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.452	mg/L	J



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-4A-0624
24F0455-04 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/17/2024 14:25

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-04

Preparation Batch: BMF0614

Sample Size: 200 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	226	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-5A-0624
24F0455-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/18/2024 14:15

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:54

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-05 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	3.91	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-5A-0624
24F0455-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/18/2024 14:15

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:54

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-05 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	7.10	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	1.81	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-5A-0624
24F0455-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/18/2024 14:15

Analyzed: 07/03/2024 19:41

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-05 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	456	mg/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-5A-0624
24F0455-05 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/18/2024 14:15

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-05

Preparation Batch: BMF0614

Sample Size: 50 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1430	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-6A-0624
24F0455-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/18/2024 13:05

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:59

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-06 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.49	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-6A-0624
24F0455-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/18/2024 13:05

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 00:59

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-06 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	5.06	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	0.458	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-6A-0624
24F0455-06 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/18/2024 13:05
Analyzed: 07/01/2024 20:13

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757 Sample Size: 25 mL
Prepared: 06/28/2024 Final Volume: 25 mL

Extract ID: 24F0455-06 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	270	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-6A-0624
24F0455-06 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/18/2024 13:05

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-06

Preparation Batch: BMF0614

Sample Size: 75 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	784	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-7A-0624
24F0455-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/19/2024 12:45

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 01:04

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-07 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.44	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-7A-0624
24F0455-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/19/2024 12:45

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 01:04

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-07 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	0.924	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	0.996	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-7A-0624
24F0455-07 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/19/2024 12:45
Analyzed: 07/01/2024 20:16

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-07 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	29.8	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-7A-0624
24F0455-07 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/19/2024 12:45

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-07

Preparation Batch: BMF0614

Sample Size: 100 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	405	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-8A-0624
24F0455-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/19/2024 13:55

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 23:30

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-08 B 02

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	5.97	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-8A-0624
24F0455-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/19/2024 13:55

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 23:30

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-08 B 02

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	2	0.202	0.400	4.28	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	3.38	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-8A-0624
24F0455-08 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/19/2024 13:55
Analyzed: 07/01/2024 20:41

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-08 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	195	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-8A-0624
24F0455-08 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/19/2024 13:55

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-08

Preparation Batch: BMF0614

Sample Size: 75 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	719	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-9A-0624
24F0455-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/17/2024 15:20

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 01:52

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-09 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.472	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-9A-0624
24F0455-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/17/2024 15:20

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 01:52

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-09 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	2	0.202	0.400	0.204	ug/L	J, D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	0.848	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-9A-0624
24F0455-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/17/2024 15:20
Analyzed: 07/01/2024 20:44

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-09 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	2.14	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-9A-0624
24F0455-09 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/17/2024 15:20

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-09

Preparation Batch: BMF0614

Sample Size: 150 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	7	7	305	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-10A-0624
24F0455-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/17/2024 11:25

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 01:57

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-10 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.548	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-10A-0624
24F0455-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/17/2024 11:25

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 01:57

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-10 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	0.104	ug/L	J, D
Vanadium	7440-62-2	2	0.111	0.400	0.806	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-10A-0624
24F0455-10 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 06/17/2024 11:25

Instrument: ICP3 Analyst: SH

Analyzed: 07/01/2024 20:47

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24F0455-10 B 01

Preparation Batch: BMF0757

Sample Size: 25 mL

Prepared: 06/28/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.883	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-10A-0624
24F0455-10 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/17/2024 11:25

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-10

Preparation Batch: BMF0614

Sample Size: 200 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	115	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-45A-0624
24F0455-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/18/2024 12:00

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:02

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-11 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.04	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-45A-0624
24F0455-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/18/2024 12:00

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:02

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-11 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.40	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	0.904	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-45A-0624
24F0455-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/18/2024 12:00

Analyzed: 07/01/2024 20:50

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-11 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	20.6	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-45A-0624
24F0455-11 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/18/2024 12:00

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-11

Preparation Batch: BMF0614

Sample Size: 100 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	368	mg/L	



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-99-1-0624
24F0455-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/19/2024 12:15

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:07

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-12 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

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



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-99-1-0624
24F0455-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/19/2024 12:15

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:07

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-12 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

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



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-99-1-0624
24F0455-12 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/19/2024 12:15

Analyzed: 07/01/2024 20:53

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-12 B 01

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



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-99-1-0624
24F0455-12 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/19/2024 12:15

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-12

Preparation Batch: BMF0614

Sample Size: 200 mL

Prepared: 06/24/2024

Final Volume: 200 mL

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



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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Infiltration Ponds - 0624
24F0455-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/18/2024 14:40

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:12

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-13 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	9.44	ug/L	D



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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Infiltration Ponds - 0624
24F0455-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/18/2024 14:40

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:12

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-13 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	9.87	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.162	ug/L	J, D
Vanadium	7440-62-2	2	0.111	0.400	0.650	ug/L	D



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Infiltration Ponds - 0624
24F0455-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 06/18/2024 14:40

Instrument: ICP3 Analyst: SH

Analyzed: 07/03/2024 20:34

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24F0455-13 B 01

Preparation Batch: BMF0757

Sample Size: 25 mL

Prepared: 06/28/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	814	mg/L	D



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Infiltration Ponds - 0624
24F0455-13 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/18/2024 14:40

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-13

Preparation Batch: BMF0614

Sample Size: 50 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1920	mg/L	



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Infiltration Ponds - 0624
24F0455-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED

Sampled: 06/18/2024 14:40

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 23:40

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-14 A 03

Preparation Batch: BMG0055

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	9.58	ug/L	D



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Infiltration Ponds - 0624
24F0455-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8	Sampled: 06/18/2024 14:40
Instrument: ICPMS2 Analyst: HAL	Analyzed: 07/03/2024 23:40
Sample Preparation:	Extract ID: 24F0455-14 A 03
Preparation Method: REN - EPA 3010A M	
Preparation Batch: BMG0055	Sample Size: 25 mL
Prepared: 07/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	2	0.202	0.400	9.81	ug/L	D
Lead, Dissolved	7439-92-1	2	0.136	0.200	0.168	ug/L	J, D
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	0.716	ug/L	D



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Infiltration Ponds - 0624
24F0455-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/18/2024 14:40
Analyzed: 07/01/2024 21:34

Sample Preparation: Preparation Method: WMN (No Prep)
Preparation Batch: BMF0769
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-14 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	0.534	2.50	775	mg/L	D



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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Infiltration Ponds - 0624
24F0455-14RE1 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D

Sampled: 06/18/2024 14:40

Instrument: ICP3 Analyst: SH

Analyzed: 07/08/2024 18:32

Sample Preparation:

Preparation Method: WMN (No Prep)

Extract ID: 24F0455-14RE1 A 01

Preparation Batch: BMF0769

Sample Size: 25 mL

Prepared: 06/28/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sodium, Dissolved	7440-23-5	5	9.50	250	264	mg/L	D



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Still Well - 0624
24F0455-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/18/2024 15:25

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:18

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-15 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	48.5	ug/L	D



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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Still Well - 0624
24F0455-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/18/2024 15:25

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:18

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-15 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	16.8	ug/L	D
Lead	7439-92-1	2	0.103	0.200	5.82	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	2.88	ug/L	D



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Still Well - 0624
24F0455-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/18/2024 15:25
Analyzed: 07/03/2024 20:40

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-15 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	408	mg/L	D



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Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Still Well - 0624
24F0455-15 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/18/2024 15:25

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-15

Preparation Batch: BMF0614

Sample Size: 20 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	50	50	1540	mg/L	



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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Interceptor Trench - 0624
24F0455-16 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/17/2024 15:40

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:23

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-16 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	2.06	ug/L	D



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Interceptor Trench - 0624
24F0455-16 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/17/2024 15:40

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:23

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-16 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	2	0.202	0.400	0.854	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.304	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	1.57	ug/L	D



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Interceptor Trench - 0624
24F0455-16 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/17/2024 15:40
Analyzed: 07/01/2024 21:05

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BMF0757
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-16 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	8.91	mg/L	



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Interceptor Trench - 0624
24F0455-16 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/17/2024 15:40

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-16

Preparation Batch: BMF0614

Sample Size: 100 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	448	mg/L	



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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-35A-0624
24F0455-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/18/2024 14:45

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:28

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-17 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	9.53	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-35A-0624
24F0455-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/18/2024 14:45

Instrument: ICPMS2 Analyst: HAL

Analyzed: 07/03/2024 02:28

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24F0455-17 B

Preparation Batch: BMG0054

Sample Size: 25 mL

Prepared: 07/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	9.92	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.900	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	0.844	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-35A-0624
24F0455-17 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 06/18/2024 14:45

Instrument: ICP3 Analyst: SH

Analyzed: 07/03/2024 19:56

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24F0455-17 B 01

Preparation Batch: BMF0757

Sample Size: 25 mL

Prepared: 06/28/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	729	mg/L	D



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-35A-0624
24F0455-17 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 06/18/2024 14:45

Instrument: BAL2 Analyst: LERB

Analyzed: 06/24/2024 13:12

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24F0455-17

Preparation Batch: BMF0614

Sample Size: 50 mL

Prepared: 06/24/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1940	mg/L	



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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-35A-0624
24F0455-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED
Instrument: ICPMS2 Analyst: HAL

Sampled: 06/18/2024 14:45
Analyzed: 07/03/2024 00:15

Sample Preparation: Preparation Method: REN - EPA 3010A M
Preparation Batch: BMG0055 Sample Size: 25 mL
Prepared: 07/02/2024 Final Volume: 25 mL

Extract ID: 24F0455-18 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	9.73	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-35A-0624
24F0455-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8	Sampled: 06/18/2024 14:45
Instrument: ICPMS2 Analyst: HAL	Analyzed: 07/03/2024 00:15
Sample Preparation:	Extract ID: 24F0455-18 A
Preparation Method: REN - EPA 3010A M	
Preparation Batch: BMG0055	Sample Size: 25 mL
Prepared: 07/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	2	0.202	0.400	9.57	ug/L	D
Lead, Dissolved	7439-92-1	2	0.136	0.200	0.914	ug/L	D
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	0.782	ug/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

MW-35A-0624
24F0455-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 06/18/2024 14:45
Analyzed: 07/01/2024 21:31

Sample Preparation: Preparation Method: WMN (No Prep)
Preparation Batch: BMF0769
Prepared: 06/28/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24F0455-18 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	0.534	2.50	768	mg/L	D



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMF0757 - 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 (BMF0757-BLK1)						Prepared: 28-Jun-2024 Analyzed: 29-Jun-2024 16:06					
Potassium	ND	0.107	0.500	mg/L							U
LCS (BMF0757-BS1)						Prepared: 28-Jun-2024 Analyzed: 29-Jun-2024 16:09					
Potassium	10.4	0.107	0.500	mg/L	10.0		104	80-120			
Duplicate (BMF0757-DUP1)						Source: 24F0455-04 Prepared: 28-Jun-2024 Analyzed: 29-Jun-2024 16:47					
Potassium	0.434	0.107	0.500	mg/L		0.452			4.13	20	J
Matrix Spike (BMF0757-MS1)						Source: 24F0455-04 Prepared: 28-Jun-2024 Analyzed: 29-Jun-2024 16:50					
Potassium	10.9	0.107	0.500	mg/L	10.0	0.452	104	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BMF0757-MSD1)						Source: 24F0455-04 Prepared: 28-Jun-2024 Analyzed: 29-Jun-2024 16:53					
Potassium	11.2	0.107	0.500	mg/L	10.0	0.452	107	75-125	2.40	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMG0054 - EPA 200.8

Instrument: ICPMS2 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMG0054-BLK1)			Prepared: 02-Jul-2024 Analyzed: 02-Jul-2024 19:09									
Antimony	121	ND	0.101	0.200	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Vanadium	51a	ND	0.0556	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
LCS (BMG0054-BS1)			Prepared: 02-Jul-2024 Analyzed: 02-Jul-2024 19:14									
Antimony	121	25.4	0.101	0.200	ug/L	25.0		101	80-120			
Lead	208	26.3	0.0513	0.100	ug/L	25.0		105	80-120			
Vanadium	51a	26.4	0.0556	0.200	ug/L	25.0		106	80-120			
Arsenic	75a	24.7	0.0373	0.200	ug/L	25.0		98.7	80-120			
Duplicate (BMG0054-DUP1)			Source: 24F0455-04		Prepared: 02-Jul-2024 Analyzed: 03-Jul-2024 02:56							
Antimony	121	ND	0.202	0.400	ug/L		ND					U
Lead	208	ND	0.103	0.200	ug/L		ND					U
Vanadium	51a	0.912	0.111	0.400	ug/L		0.850			7.04	20	D
Arsenic	75a	0.190	0.0746	0.400	ug/L		0.180			5.41	20	J, D
Matrix Spike (BMG0054-MS1)			Source: 24F0455-04		Prepared: 02-Jul-2024 Analyzed: 03-Jul-2024 03:01							
Antimony	121	25.0	0.202	0.400	ug/L	25.0	ND	99.9	75-125			D
Lead	208	25.3	0.103	0.200	ug/L	25.0	ND	101	75-125			D
Vanadium	51a	23.9	0.111	0.400	ug/L	25.0	0.850	92.4	75-125			D
Arsenic	75a	24.4	0.0746	0.400	ug/L	25.0	0.180	96.9	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BMG0054-MSD1)			Source: 24F0455-04		Prepared: 02-Jul-2024 Analyzed: 03-Jul-2024 03:06							
Antimony	121	24.9	0.202	0.400	ug/L	25.0	ND	99.4	75-125	0.48	20	D
Lead	208	25.1	0.103	0.200	ug/L	25.0	ND	100	75-125	1.05	20	D
Vanadium	51a	24.1	0.111	0.400	ug/L	25.0	0.850	93.1	75-125	0.77	20	D
Arsenic	75a	24.5	0.0746	0.400	ug/L	25.0	0.180	97.1	75-125	0.25	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BMF0769 - 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 (BMF0769-BLK1)						Prepared: 28-Jun-2024 Analyzed: 01-Jul-2024 17:20					
Potassium, Dissolved	ND	0.107	0.500	mg/L							U
LCS (BMF0769-BS1)						Prepared: 28-Jun-2024 Analyzed: 01-Jul-2024 17:23					
Potassium, Dissolved	10.6	0.108	0.505	mg/L	10.0		106	80-120			
Duplicate (BMF0769-DUP1)						Source: 24F0455-14 Prepared: 28-Jun-2024 Analyzed: 01-Jul-2024 21:37					
Potassium, Dissolved	776	0.534	2.50	mg/L		775			0.17	20	D
Duplicate (BMF0769-DUP2)						Source: 24F0455-14 Prepared: 28-Jun-2024 Analyzed: 08-Jul-2024 18:35					
Sodium, Dissolved	269	9.50	250	mg/L		282			4.71	20	D
Matrix Spike (BMF0769-MS1)						Source: 24F0455-14 Prepared: 28-Jun-2024 Analyzed: 01-Jul-2024 21:40					
Potassium, Dissolved	784	0.540	2.53	mg/L	10.0	775	89.8	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BMF0769-MS2)						Source: 24F0455-14 Prepared: 28-Jun-2024 Analyzed: 08-Jul-2024 18:38					
Sodium, Dissolved	281	9.60	253	mg/L	10.0	282	-12.	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BMF0769-MSD1)						Source: 24F0455-14 Prepared: 28-Jun-2024 Analyzed: 01-Jul-2024 21:43					
Potassium, Dissolved	787	0.540	2.53	mg/L	10.0	775	121	75-125	0.40	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BMF0769-MSD2)						Source: 24F0455-14 Prepared: 28-Jun-2024 Analyzed: 08-Jul-2024 18:41					
Sodium, Dissolved	273	9.60	253	mg/L	10.0	282	-91.5	75-125	2.87	20	HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BMG0055 - EPA 200.8

Instrument: ICPMS2 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMG0055-BLK1)			Prepared: 02-Jul-2024 Analyzed: 02-Jul-2024 22:23									
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Vanadium, Dissolved	51a	ND	0.0556	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
LCS (BMG0055-BS1)			Prepared: 02-Jul-2024 Analyzed: 02-Jul-2024 22:28									
Antimony, Dissolved	121	25.4	0.101	0.200	ug/L	25.0		102	80-120			
Lead, Dissolved	208	26.3	0.0513	0.100	ug/L	25.0		105	80-120			
Vanadium, Dissolved	51a	26.7	0.0556	0.200	ug/L	25.0		107	80-120			
Arsenic, Dissolved	75a	24.9	0.0373	0.200	ug/L	25.0		99.8	80-120			
Duplicate (BMG0055-DUP1)			Source: 24F0455-14		Prepared: 02-Jul-2024 Analyzed: 03-Jul-2024 01:14							
Antimony, Dissolved	121	9.50	0.202	0.400	ug/L		9.81			3.17	20	D
Lead, Dissolved	208	0.152	0.103	0.200	ug/L		0.168			10.00	20	J, D
Vanadium, Dissolved	51a	0.680	0.111	0.400	ug/L		0.716			5.16	20	D
Arsenic, Dissolved	75a	9.21	0.0746	0.400	ug/L		9.58			3.94	20	D
Matrix Spike (BMG0055-MS1)			Source: 24F0455-14		Prepared: 02-Jul-2024 Analyzed: 03-Jul-2024 01:19							
Antimony, Dissolved	121	34.7	0.202	0.400	ug/L	25.0	9.81	99.7	75-125			D
Lead, Dissolved	208	23.7	0.103	0.200	ug/L	25.0	0.168	94.2	75-125			D
Vanadium, Dissolved	51a	24.8	0.111	0.400	ug/L	25.0	0.716	96.5	75-125			D
Arsenic, Dissolved	75a	33.5	0.0746	0.400	ug/L	25.0	9.58	95.6	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BMG0055-MSD1)			Source: 24F0455-14		Prepared: 02-Jul-2024 Analyzed: 03-Jul-2024 01:24							
Antimony, Dissolved	121	34.7	0.202	0.400	ug/L	25.0	9.81	99.4	75-125	0.24	20	D
Lead, Dissolved	208	24.0	0.103	0.200	ug/L	25.0	0.168	95.3	75-125	1.24	20	D
Vanadium, Dissolved	51a	24.6	0.111	0.400	ug/L	25.0	0.716	95.4	75-125	1.14	20	D
Arsenic, Dissolved	75a	33.2	0.0746	0.400	ug/L	25.0	9.58	94.5	75-125	0.89	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BMF0614 - SM 2540 C-11

Instrument: BAL2 Analyst: LERB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMF0614-BLK1)						Prepared: 24-Jun-2024 Analyzed: 24-Jun-2024 13:12					
Dissolved Solids	ND	5	5	mg/L							U
LCS (BMF0614-BS1)						Prepared: 24-Jun-2024 Analyzed: 24-Jun-2024 13:12					
Dissolved Solids	483	10	10	mg/L	500		96.6	90-110			
Duplicate (BMF0614-DUP1)						Source: 24F0455-04 Prepared: 24-Jun-2024 Analyzed: 24-Jun-2024 13:12					
Dissolved Solids	226	5	5	mg/L		226			0.00		



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

Project: Ravensdale
Project Number: GL152030402.001
Project Manager: Accounts Payable

Reported:
11-Jul-2024 10:48

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
Sodium-1	DoD-ELAP
SM 2540 C-11 in Water	
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2025
WADOE	WA Dept of Ecology	C558	06/30/2024
WA-DW	Ecology - Drinking Water	C558	06/30/2024



WSP USA, Inc.

840 HOWE STREET, #1000

VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale

Project Number: GL152030402.001

Project Manager: Accounts Payable

Reported:

11-Jul-2024 10:48

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
HC	The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

APPENDIX D

Sample Integrity Data Sheets

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Weir - 0724

Sampling Location Surface Water Monitoring Point

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

Type of Sampler _____

Date July 24, 2024 **Time** 11:51

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 (June 17, 2024 11:51 AM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description DRY - No sample taken

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID _____ Weir or Constructed Wetlands _____

Date 06/17/2024

Time Begin Purge 11:51

Time Collect Sample 11:51

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

Comments:

Flow Rate: _____ mL/min

DRY - No sample taken

Sampler 

Date July 24, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID South Pond - 0724

Sampling Location Surface Water Monitoring Point

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

Type of Sampler _____

Date July 24, 2024 **Time** 10:17

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 (June 17, 2024 10:17 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description DRY - No sample taken

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID South Pond

Date 06/17/2024

Time Begin Purge 10:17

Time Collect Sample 10:17

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

Comments:

Flow Rate: _____ mL/min

DRY - No sample taken

Sampler 

Date July 24, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-8A - 0624

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date June 19, 2024 **Time** 12:45

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 21.53 ft BTOC (June 19, 2024 12:10 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 06/19/2024

Time Begin Purge 12:11

Time Collect Sample 12:45

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
21.55	12:15	7.04	1,480	10.8	10.44	163	2.62
21.55	12:20	7.09	1,430	10.4	9.88	164.9	1.29
21.55	12:25	7.1	1,407	10.2	9.36	167.1	0.89
21.55	12:30	7.11	1,396	10.2	9.05	167.3	0.92
21.55	12:35	7.13	1,393	10.1	8.79	167.5	0.84
21.55	12:40	7.14	1,378	10.1	8.54	167.8	0.83

Comments:

Flow Rate: 200 mL/min

Sampler 

Date June 19, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-7A - 0624

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date June 19, 2024 **Time** 13:50

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 12.25 ft BTOC (June 19, 2024 1:13 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 06/19/2024

Time Begin Purge 13:35

Time Collect Sample 13:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
12.25	13:20	6.87	824	12.1	9.75	152.4	11.5
12.25	13:25	6.28	826	12	8.85	153.6	2.59
12.25	13:30	6.81	831	11.9	8.08	154.2	0.82
12.25	13:35	6.82	815	11.9	7.75	154.8	4.21
12.25	13:40	6.82	813	11.8	7.22	154.6	1.04
12.25	13:45	6.83	812	11.8	6.82	154.4	0.52
12.25	13:50	6.83	810	11.8	6.53	154.4	0.35

Comments:

Flow Rate: 250 mL/min

Sampler 

Date June 19, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Still Well - 0624

Sampling Location Monitoring Well

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

Type of Sampler Grab

Date June 18, 2024 **Time** 15:25

Media Groundwater **Station** Still Well

Sample Type: grab time composite space composite

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

SWL: Depth to water at ft BTOC (June 18, 2024 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
1-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID Still Well

Date 06/18/2024

Time Begin Purge 15:25

Time Collect Sample 15:25

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	15:25	12.21	5,636	13.4	10.88	95.0	3.50

Comments:

Flow Rate: _____ mL/min

Sampler 

Date June 18, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Infiltration Ponds / MW-35A - 0624

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump, Grab

Date June 18, 2024 **Time** 14:40

Media Surface Water **Station** Infiltration Ponds / MW-35A

Sample Type: grab time composite space composite

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

SWL: Depth to water at ft BTOC (June 18, 2024 2:50 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	Dissolved Metals	HDPE	HNO3
2-500 mL	Total Metals	HDPE	HNO3

SAMPLE INTEGRITY DATA SHEET

Well ID Infiltration Ponds / MW-35A

Date 06/18/2024

Time Begin Purge 14:40

Time Collect Sample 14:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	14:50	8.41	3,495	15.8	10.86	173	4.69

Comments:

Flow Rate: _____ mL/min

MW-35A-0624 at 14:45

Sampler 

Date June 18, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-5A - 0624

Sampling Location Monitoring Well

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

Type of Sampler _____

Date June 18, 2024 **Time** 14:15

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 30.41 ft BTOC (June 18, 2024 1:36 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-5A

Date 06/18/2024

Time Begin Purge 13:39

Time Collect Sample 14:15

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
30.48	13:45	7.5	2,862	10	10.72	177.2	0.67
30.42	13:50	7.49	2,880	9.9	10.14	177.6	0.54
30.41	13:55	7.49	2,887	9.8	9.35	177.7	0.46
30.4	14:00	7.5	2,827	10	8.88	177.2	0.67
30.43	14:05	7.52	2,702	9.9	8.7	176.5	1.29
30.41	14:10	7.51	2,586	9.9	8.65	176.1	0.88

Comments:

Flow Rate: 300 mL/min

Sampler 

Date June 18, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-6A - 0624

Sampling Location Monitoring Well

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

Type of Sampler Bladder Pump (dedicated), Grab

Date June 18, 2024 **Time** 13:05

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 28.14 ft BTOC (June 18, 2024 12:31 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 06/18/2024

Time Begin Purge 12:32

Time Collect Sample 13:05

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
28.21	12:35	7.76	1,696	9.9	12.45	179.6	0.78
28.17	12:40	7.74	1,598	9.6	11.93	178.5	0.68
28.16	12:45	7.75	1,569	9.5	11.52	177.5	0.41
28.17	12:50	7.74	1,547	9.2	11.3	176.8	0.49
28.17	12:55	7.74	1,530	9.2	11.15	176.3	0.49
28.17	13:00	7.72	1,515	9.1	11.01	176.0	0.49

Comments:

Flow Rate: 300 mL/min

Sampler 

Date June 18, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-2A / MW-45A - 0624

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 June 18, 2024 **Time** 11:55

Media Groundwater **Station** MW-2A

Sample Type: grab time composite space composite

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

SWL: Depth to water at 26.42 ft BTOC (June 18, 2024 11:15 AM); Well total depth at 40' BGS

Screen Interval: 24'- 40' BGS

Pump Intake: ~ 30' BGS

Sample Description _____

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID MW-2A / MW-45A

Date 06/18/2024

Time Begin Purge 11:19

Time Collect Sample 11:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
26.45	11:25	6.91	762	9.2	13.01	134.9	3.61
26.54	11:30	6.84	763	9	12.56	134.2	2.66
26.42	11:35	6.81	762	8.9	12.22	134.7	1.35
26.46	11:40	6.8	763	8.9	11.96	135.6	0.75
26.5	11:45	6.8	763	8.9	11.78	136.7	0.68
26.54	11:50	6.8	763	8.9	11.61	137.9	0.56

Comments:

Flow Rate: 300 mL/min

Sampler 

Date June 18, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-1A - 0624

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 June 18, 2024 **Time** 10:55

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 32.56 ft BTOC (June 18, 2024 10:28 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 06/18/2024

Time Begin Purge 10:25

Time Collect Sample 10:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
32.56	10:30	6.62	773	8.8	12.8	111.4	0.77
32.58	10:35	6.59	699	8.8	12.73	112.2	0.47
32.56	10:40	6.61	695	8.8	12.66	114.7	.45
32.57	10:45	6.63	698	8.8	12.56	117.3	0.53
12.56	10:50	6.64	700	8.8	12.5	119.2	0.39

Comments:

Flow Rate: 300 mL/min

Sampler 

Date June 18, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Interceptor Trench - 0624

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 June 17, 2024 **Time** 15:40

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 (June 17, 2024 3:39 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
1-500 mL	Total Metals	HDPE	HNO3
1-1000 mL	Total Dissolved Solids	HDPE	N/A

SAMPLE INTEGRITY DATA SHEET

Well ID _____ Interceptor Trench _____

Date 06/17/2024

Time Begin Purge 15:40

Time Collect Sample 15:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	15:39	7.04	806	13.9	11.2	107.1	8.04

Comments:

Flow Rate: 7500 mL/min

Sampler 

Date June 17, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-9A - 0624

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date June 17, 2024 **Time** 15:20

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 2.65 ft BTOC (June 17, 2024 2:52 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 06/17/2024

Time Begin Purge 14:52

Time Collect Sample 15:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
3.9	14:55	6.86	616	10.8	10.26	132.4	4.0
5.33	15:00	6.79	607	10.6	9.69	131.0	2.93
6.48	15:05	6.77	591	10.6	9.27	130.9	1.80
7.12	15:10	6.76	588	10.5	8.99	131	1.31
8.03	15:15	6.76	590	10.4	8.77	132.1	1.21

Comments:

Flow Rate: 200 mL/min

Sampler 

Date June 17, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-4A - 0624

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date June 17, 2024 **Time** 14:25

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 4 ft BTOC (June 17, 2024 1:31 PM); Well total depth at 20' BGS

Screen Interval: 5' - 20' BGS

Pump Intake: ~ 12' BGS

Sample Description _____

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID MW-4A

Date 06/17/2024Time Begin Purge 13:32Time Collect Sample 14:25

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
4.32	13:35	6.66	657	10.5	9.57	14.1	2.46
4.35	13:40	6.43	651	10.6	8.33	27	1.06
4.4	13:45	6.35	604	10.6	7.5	36.6	1.35
4.45	13:50	6.33	514	10.6	6.94	41.9	1.01
4.45	13:55	6.31	486.7	10.8	6.71	50.1	0.66
4.45	14:00	6.3	464	10.9	6.54	56.5	0.83
4.45	14:05	6.29	454.4	10.9	6.44	62.9	0.69
4.45	14:10	6.27	451.3	10.9	6.36	68.4	0.50
4.45	14:15	6.27	450.8	10.9	6.29	73.5	0.59
4.45	14:20	6.26	451.4	10.8	6.22	77.4	0.62

Comments:

Flow Rate: 300 mL/min

Sampler

Date June 17, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-3A - 0624

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date June 17, 2024 **Time** 13:10

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 5.61 ft BTOC (June 17, 2024 11:46 AM); Well total depth at 20' BGS

Screen Interval: 4' - 20' BGS

Pump Intake: ~ 12' BGS

Sample Description _____

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID MW-3A

Date 06/17/2024Time Begin Purge 11:46

Time Collect Sample 13:10

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
5.71	12:00	6.78	1,022	10.1	10.8	198.1	7.29
5.74	12:05	6.85	1,031	10.1	9.52	175.0	4.10
5.72	12:10	6.88	1,029	10.1	8.75	155.5	3.37
5.72	12:15	6.97	994	10.1	8.06	124.0	-
5.7	12:20	7.03	974	10.2	7.59	100.4	1.01
5.75	12:25	7.05	967	10.3	7.21	80.7	1.00
5.76	12:30	7.06	965	10.4	6.84	58.2	1.04
5.76	12:35	7.06	967	10.4	6.57	40.4	1.03
5.76	12:40	7.06	971	10.5	6.32	22.9	0.73
5.75	12:45	7.06	972	10.6	6.11	8.3	.80
5.75	12:50	7.06	978	10.6	5.86	-7.6	0.75
5.75	12:55	7.06	980	10.6	5.7	-17.1	0.71
5.75	13:00	7.06	982	10.5	5.61	-28.0	0.74
5.75	13:05	7.06	982	10.6	5.44	-30.1	0.58
5.75	13:10	7.06	983	10.6	5.34	-34.5	0.58

Comments:

Flow Rate: 300 mL/min

Sampler

Date June 17, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale Project No. 152030402

Site Location Ravensdale, WA

Sample ID MW-10A - 0624

Sampling Location Monitoring Well

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

Type of Sampler _____

Date June 17, 2024 Time 11:25

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 7.15 ft BTOC (June 17, 2024 10:28 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
1-500 mL	Total Metals	HDPE	HNO3
1-1000 mL	Total Dissolved Solids	HDPE	N/A

SAMPLE INTEGRITY DATA SHEET

Well ID	MW-10A
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Date 06/17/2024Time Begin Purge 10:35

Time Collect Sample 11:25

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
9.2	10:40	6.12	229	9.9	13.06	177.9	3.33
10.4	10:45	6.21	224.5	9.9	12.88	183.6	2.72
11.21	10:50	6.28	221.5	9.8	12.81	185.8	1.76
12.06	10:55	6.32	217.4	9.8	12.74	188.2	1.93
12.28	11:00	6.36	215	9.8	12.71	190.1	2.21
12.76	11:05	7.6	210.9	9.8	12.69	191.5	2.26
13.02	11:08	7	208	9.8	12.69	192.6	2.13
13.48	11:11	6.41	205.4	9.8	12.68	193.5	1.63
13.7	11:14	6.42	201.6	9.8	12.64	193.8	2.24
13.9	11:17	6.41	197	9.8	12.65	194.6	1.93
14.17	11:20	6.41	193.7	9.8	12.66	196.4	2.14
14.45	11:23	6.4	197.4	9.8	12.65	198.6	3.18

Comments:

Flow Rate: 100 mL/min

Sampler

Date June 17, 2024

Supervisor _____

Date _____

