



REPORT

**QUARTERLY MONITORING REPORT
FIRST QUARTER 2020
RAVENSDALE SITE (FS2041)**

28131 Ravensdale-Black Diamond Road

Ravensdale, Washington 98051

Submitted to:

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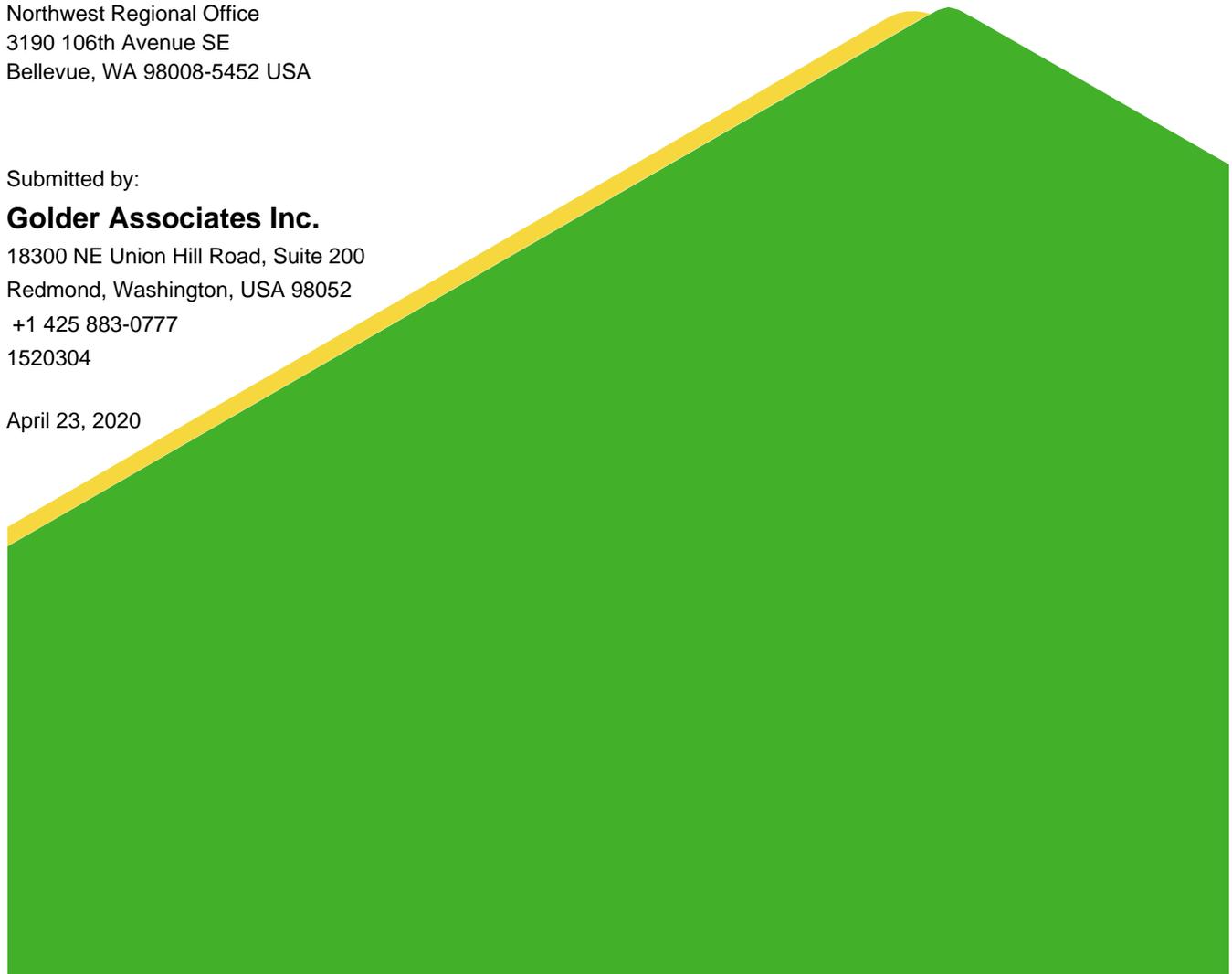
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Table of Contents

- 1.0 INTRODUCTION.....1**
- 1.1 Site Description 1
- 1.2 Purpose and Scope..... 1
- 2.0 BACKGROUND2**
- 2.1 Site Background.....2
- 2.1.1 LDA Background.....2
- 2.1.2 DSP Background.....3
- 2.2 Monitoring Locations3
- 2.2.1 LDA3
- 2.2.2 DSP3
- 2.2.3 LDA Interceptor Trench.....4
- 2.3 Mitigation Activities.....4
- 2.3.1 LDA Cover Upgrade.....4
- 2.3.2 LDA Seep Collection System Test Trenches.....4
- 2.3.3 LDA Seep Collection Ditch and Seepage Treatment System4
- 2.3.4 LDA Interceptor Trench.....5
- 2.3.5 DSP Cover Upgrade5
- 2.4 Groundwater and Surface Water Monitoring Schedule5
- 2.4.1 LDA Groundwater Sampling5
- 2.4.2 LDA Surface Water Sampling5
- 2.4.3 DSP Groundwater Sampling.....5
- 2.4.4 LDA Interceptor Trench Sampling.....6
- 3.0 OPERATIONS AND MAINTENANCE OF THE LEACHATE TREATMENT SYSTEM.....6**
- 4.0 SAMPLING ACTIVITIES.....7**
- 4.1 Common Elements.....7
- 4.1.1 Field Parameter Measurements.....7

| | | |
|------------|--|-----------|
| 4.1.2 | Laboratory Analysis | 7 |
| 4.2 | Sampling Procedures | 8 |
| 4.2.1 | LDA Groundwater Sampling | 8 |
| 4.2.2 | LDA Surface Water Sampling | 9 |
| 4.2.3 | DSP Groundwater Sampling | 9 |
| 4.2.4 | LDA Interceptor Trench Sampling..... | 10 |
| 5.0 | RESULTS..... | 10 |
| 5.1 | Preliminary Standards..... | 10 |
| 5.2 | Method Detection Limits and Reporting Limits | 10 |
| 5.3 | Data Validation | 11 |
| 5.4 | Measurement Results | 11 |
| 6.0 | LIMITATIONS..... | 12 |
| 7.0 | REFERENCES..... | 13 |

TABLES

- Table 1: First Quarter 2020 Water Level Measurements
- Table 2: First Quarter 2020 Field Parameters and Analytical Data
- Table 3: Preliminary Standards
- Table 4: Interceptor Trench Discharge Monitoring
- Table 5: First Quarter 2020 Treatment System Metals Monitoring

FIGURES

- Figure 1: Vicinity Map
- Figure 2: Site Plan

APPENDICES

APPENDIX A

Summary Data Tables for Individual Wells and Monitoring Locations

APPENDIX A-1

Summary of Lower Disposal Area – Surface Water Sampling Results

Appendix A-2

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

APPENDIX A-3

Summary of Lower Disposal Area – Bedrock Groundwater Sampling Results

APPENDIX A-4

Summary of Dale Strip Pit – Bedrock Groundwater Sampling Results

APPENDIX B

Data Graphs

APPENDIX B-1

LDA Shallow/Alluvial Monitoring Wells Data Graphs

APPENDIX C

Data Validation Reports and Laboratory Analytical Results

1.0 INTRODUCTION

This report, prepared by Golder Associates Inc. (Golder) for Holcim (US) Inc., presents the results of surface water and groundwater monitoring conducted at the Ravensdale Site during the first quarter of 2020. The quarterly monitoring was completed during February 2020.

1.1 Site Description

The Ravensdale Site (Site) is located at 28131 Ravensdale-Black Diamond Road in Ravensdale, Washington. Figure 1 shows the Site location. For the purposes of this monitoring report, the Site is comprised of two distinct areas: the Lower Disposal Area (LDA) and the Dale Strip Pit (DSP). The LDA encompasses about 7 acres and is in the northwestern portion of the Site. The DSP, an area of about 6 acres, is in the southeastern portion of the Site. The LDA and DSP are shown in Figure 2.

Historically, sand and coal mining operations occurred on the Site. The Site is currently owned and operated by the Reserve Silica Corporation and is in the reclamation phase. The Site's historical background and previous environmental investigations are discussed further in Section 2.0.

1.2 Purpose and Scope

The purpose of the quarterly monitoring activities is to assess the groundwater and surface water conditions with respect to potential impact from buried cement kiln dust (CKD). Previously, quarterly monitoring and reporting activities were conducted under requirements of Post-Closure Care and Maintenance Permits issued by Public Health – Seattle and King County (Public Health). The Site entered Agreed Order (AO) No. DE 16052 in December 2019, which requires that the Site complete a Remedial Investigation/Feasibility Study (RI/FS) under the Model Toxics Control Act (MTCA) and complete any necessary interim remedial actions as agreed upon by the Washington State Department of Ecology (Ecology). An RI Work Plan is being prepared under the requirements of the AO. The Work Plan and supporting Sampling and Analysis Plan will describe the monitoring that will occur in association with the RI. Until the RI Work Plan is completed and approved by Ecology, groundwater and surface water monitoring will continue under the requirements provided in the 2020 Post-Closure Care and Maintenance Permit (PR0015708).

Monitoring and reporting are conducted in accordance with procedures established in the *Sampling and Analysis and Quality Assurance Project Plan* (SAP/QAPP) (ARCADIS 2006). The SAP/QAPP was approved by the Interagency Group (Washington State Department of Ecology, Public Health – Seattle and King County, and King County Department of Development and Environmental Services) in a letter to ARCADIS U.S., Inc. (ARCADIS) dated August 3, 2006 (Ecology 2006). Modifications to the SAP/QAPP related to sampling locations, test parameters, and sampling frequency were agreed upon as documented in the ARCADIS March 3, 2008 letter to Ecology. Modifications to the sampling frequency for a period of 3 years were agreed upon as documented in the Golder April 9, 2015 letter to Public Health and a subsequent approval letter from Public Health dated April 7, 2016. An additional 2-year extension of the modifications to the sampling frequency was subsequently approved by Public Health in a letter dated October 10, 2019. The variance expires on October 10, 2021.

The groundwater and surface water monitoring scope of work includes the following:

- Quarterly collection of groundwater samples from six on-site shallow/alluvial groundwater monitoring wells (MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, and MW-6A) as part of the LDA monitoring program.

- Annual collection of groundwater samples from three on-site bedrock groundwater monitoring wells (MWB-1LDA, MWB-2LDA, and MWB-3LDA) as part of the LDA monitoring program.
- Annual collection of groundwater samples from four on-site bedrock groundwater-monitoring wells (MWB-1SDSP, MWB-1DDSP, MWB-5DSP, MWB-6DSP) as part of the DSP monitoring program.
- Semi-annual measurement of water levels and field parameters in monitoring wells MWB-2DSP and MWB-4SDSP.
- Quarterly collection of surface water samples from Infiltration Ponds #1, Weir (or the constructed wetlands located upstream if the Weir is dry), South Pond, and Still Well as part of the LDA surface water sampling program.
- Annual collection of water samples from the culvert that discharges from the former mine Portal (the Portal) as part of the DSP sampling program.
- Measurement of field parameters in water purged from the groundwater monitoring wells and directly from the surface water areas. Field parameters include: groundwater level readings (in wells only), pH, conductivity, temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity.
- Analysis of the groundwater, surface water, and quality control samples for some combination of dissolved arsenic, lead, iron, manganese, potassium, and total dissolved solids (TDS).
- Analysis of duplicate samples for quality control.
- Quarterly Interceptor Trench monitoring for instantaneous flow volume and sampling for pH, TDS, and turbidity.

Figure 2 shows the location of the monitoring wells and surface water collection points. Table 1 presents construction details and water levels for each monitoring well.

2.0 BACKGROUND

2.1 Site Background

The following is a brief description of the historical mining and reclamation activities that occurred at the Site as provided by ARCADIS (ARCADIS 2009). This section also includes a discussion of the quarterly monitoring program.

2.1.1 LDA Background

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

Historically, high pH seepage surfaced along the slope west of the LDA. The outbreaks are primarily located along the northern half of the western boundary of the LDA. 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 2.3.3 of this report), which then

flowed inside a pipe to the infiltration ponds. In 2018, a water treatment system was constructed, and the high pH water captured by the collection ditch is currently piped to on-site treatment area for pH neutralization and dissolved metals removal. The treated water discharges from the treatment system to the infiltration ponds.

2.1.2 DSP Background

The DSP was created to mine the Dale No. 4 coal seam from the surface 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 Monitoring Locations

2.2.1 LDA

Shallow/alluvial monitoring wells were installed near the LDA in July 2005 and are monitored to assess the shallow/alluvial groundwater conditions with respect to potential impact from the CKD. Four of the wells (MW-1A, MW-2A, MW-5A, and MW-6A) are located around the infiltration ponds. MW-3A is located west of the high pH seepage area. MW-4A, a background well, is located south of, and upstream with respect to groundwater flow and surface water drainage, the high pH seepage area.

Bedrock monitoring wells were installed along the west side of the main access road, west of the LDA, in December 2006 to assess bedrock groundwater conditions in the vicinity 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.

The LDA surface water sampling locations were chosen to evaluate the high pH seepage in the vicinity of the LDA. Infiltration Ponds #1 sampling location is situated in the westernmost infiltration pond. The infiltration ponds are located at the north end of the Site, near Ravensdale-Black Diamond Road. 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 South Pond is a closed depression located west of MWB-2LDA near the southern end of the high pH seepage zone. The Still Well is a 2-inch-diameter flush-mount well located along the high pH seepage zone west of the LDA.

The LDA groundwater and surface water sampling locations are shown in Figure 2.

2.2.2 DSP

The DSP bedrock groundwater monitoring program was required by Public Health and Ecology as a condition of the CKD exemption as a dangerous waste on December 13, 1984 (Public Health 1984). The DSP bedrock groundwater monitoring program includes four wells in the DSP area (MWB-1SDSP, MWB-1DDSP, MWB-5DSP, and MWB-6DSP), which evaluate groundwater quality beneath, upgradient, and downgradient of the DSP.

Groundwater discharging from the Portal is also monitored. The Portal was originally constructed to drain water from the Dale Strip Coal mine. There are two additional monitoring wells (MWB-2DSP and MWB-4SDSP) located in the DSP area that are being monitored for water levels and field parameters.

The DSP groundwater monitoring locations are shown in Figure 2.

2.2.3 LDA Interceptor Trench

The purpose of the Interceptor Trench is to intercept clean groundwater before the water enters the Lower Disposal Area CKD deposit and direct the water away from the deposit. 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.

2.3 Mitigation Activities

2.3.1 LDA Cover Upgrade

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

2.3.2 LDA Seep Collection System Test Trenches

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

Between October 2008 and September 2009, Golder monitored seepage flow rates from each of two test trenches and the tightline 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).

2.3.3 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 tightline that carries flow from the test trenches to the infiltration pond. 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 was operated intermittently, with system shut-downs occurring as various upgrades and modifications were completed. The upgrades were necessary to increase the long-term

operational efficiency of the treatment system. The system began continuous operations in June 2019, with only minor shutdowns occurring to complete routine maintenance.

2.3.4 LDA Interceptor Trench

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

2.3.5 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.

2.4 Groundwater and Surface Water Monitoring Schedule

Various levels of groundwater and surface water monitoring have been conducted at the Site since 2002. ARCADIS performed monthly and quarterly monitoring activities through the second quarter of 2009. Golder assumed responsibility for monitoring activities in August 2009 and conducted groundwater and surface water monitoring until April 2014. GeoEngineers performed groundwater and surface water monitoring from May to December 2014. Golder resumed the groundwater and surface monitoring in February 2015.

2.4.1 LDA Groundwater Sampling

Groundwater monitoring of the shallow/alluvial monitoring wells generally occurred on a quarterly schedule from July 2005 to September 2008. After the seep collection test trenches were installed, groundwater monitoring frequency for the four wells around the infiltration ponds was increased to monthly through September 2009. At the end of the formal test trench monitoring program in October 2009, the sampling frequency for these four wells returned to quarterly.

Groundwater monitoring of the bedrock monitoring wells generally occurred on a quarterly schedule since December 2006. A letter was submitted to Public Health dated April 9, 2015 requesting a variance to the LDA bedrock groundwater monitoring frequency. In a letter to Golder dated April 7, 2016, Public Health granted a variance for three years to reduce the monitoring frequency of the Ravensdale LDA bedrock wells to annually (Public Health 2016). Public Health subsequently granted an additional 2-year extension to the variance in a letter dated October 10, 2019 (Public Health 2019). The variance expires on October 10, 2021.

2.4.2 LDA Surface Water Sampling

Surface water monitoring of Infiltration Ponds #1, Weir (or the constructed wetlands located upstream if the Weir was dry), South Pond, and Still Well generally occurred on a monthly schedule from February 2005 to June 2008 and then was reduced to the current quarterly schedule.

2.4.3 DSP Groundwater Sampling

Groundwater monitoring of wells MWB-1SDSP and MWB-1DDSP generally occurred on a quarterly schedule starting in December 2002. Monitoring of well MWB-5DSP generally occurred on a monthly schedule from December 2006 to June 2008 and then monitoring was reduced to quarterly. Groundwater monitoring of well MWB-6DSP generally occurred on a quarterly schedule starting in December 2006. Groundwater levels and field

parameters are being measured in wells MWB-2DSP and MWB-4SDSP on a quarterly schedule. Surface water monitoring of the Portal discharge generally occurred on a quarterly schedule starting in March 2002.

In a letter to Golder dated May 16, 2012, Public Health granted a variance for three years to reduce the monitoring frequency of the Ravensdale DSP wells and Portal to semi-annually (Public Health 2012). During this variance period, groundwater monitoring of the DSP wells occurred during the first and third quarters each year. During the second and fourth quarters, only water levels were measured in these wells. This variance expired in May 2015. A letter was submitted to the Public Health dated April 9, 2015, requesting a variance to the groundwater monitoring frequency. Pending approval, sampling of the DSP and Portal was reverted to quarterly, starting with the August 2015 sampling quarter. In a letter to Golder dated April 7, 2016, Public Health granted a variance for three years to reduce the monitoring frequency of the DSP wells and Portal to annually (Public Health 2016). Public Health subsequently granted an additional 2-year extension to the variance in a letter dated October 10, 2019 (Public Health 2019). The variance expires on October 10, 2021.

2.4.4 LDA Interceptor Trench Sampling

The Interceptor Trench was monitored monthly from October 2013 to December 2014 and data showed that the water being collected and discharged is not impacted. A reduction in monitoring frequency to quarterly was approved by Public Health in an email to Joel Bolduc of Holcim dated January 2, 2015 (Public Health 2015). The Interceptor Trench is being monitored for pH, turbidity, and TDS.

3.0 OPERATIONS AND MAINTENANCE OF THE LEACHATE TREATMENT SYSTEM

The leachate treatment system first began operating in September 2018. System upgrades occurred from December 2018 to May 2019 and included various upgrades and modifications to improve long-term operating efficiency. The system began continuous operations in June 2019, with minor shutdowns occurring to complete routine maintenance and continued minor modifications to improve long term operating efficiency.

The treatment system includes a 4,200-gallon mixing tank (steel rectangular box shaped tank) that receives the influent water coming from the seepage collection ditch and piping. Water from the tank constantly flows through the CO₂ sparge unit, which continuously monitors the water pH and activates CO₂ sparging when the water pH exceeds 8.3. CO₂ sparging continues until the pH reduces to 7.5. The sparged water is pumped back into the mixing tank to maintain the neutralized the water within the tank. The influent flow, pumping from the tank and through the 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 a constant circulation effectively providing pH neutralization throughout the tank. The mixing tank contains a float switch activated discharge pump that activates when the water reaches a set height within the tank, and turns the pump off when the water is lowered to the desired height. Neutralized water pumped from the tank is discharged through filters and an iron-based adsorption media to remove arsenic, prior to discharge of the water to the Infiltration Ponds.

The continuous pH monitoring system is connected to telemetry that sends pH readings and alerts to Golder engineer's cell phones if readings outside of the set ranges occurs allowing for response and trouble shooting. Routine inspections of the treatment system are conducted approximately once every two weeks. The inspections include routine maintenance activities such as cleaning scale off pump parts, hoses, and probes to sustain continued operations of the treatment system. The treatment system has been effective in reducing the pH of the seepage water to below 8 standard units and reducing metals concentrations before discharge to the infiltration ponds. Table 5 provides the 2020 first quarter laboratory analytical data pre- and post- iron-based

adsorption media showing the reduction in lead and arsenic concentrations. The validated 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 infiltrations ponds that were historically observed in groundwater monitoring wells MW-5A and MW-6A. Additional modifications and improvements are anticipated to occur to the treatment system during the MTCA cleanup process to improve system performance, efficiency, and meet Site specific cleanup standards that are protective of human health and the environment.

4.0 SAMPLING ACTIVITIES

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

4.1 Common Elements

4.1.1 Field Parameter Measurements

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

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

4.1.2 Laboratory Analysis

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

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

| | |
|------------------------------|------------------|
| Arsenic (dissolved) | EPA Method 200.8 |
| Lead (dissolved) | EPA Method 200.8 |
| Potassium (dissolved) | EPA Method 6010C |
| Iron (dissolved) | EPA Method 6010C |
| Manganese (dissolved) | EPA Method 6010C |
| Total Dissolved Solids (TDS) | EPA Method 160.1 |

- Interceptor Trench samples were tested for the following parameters using the method indicated:

| | |
|-----------|-------------------|
| pH | Field Measurement |
| TDS | EPA Method 160.1 |
| Turbidity | Field Measurement |

- Summaries of historical analytic data for the various sampling locations are presented in Appendix A. Validated analytical laboratory data packages are provided electronically on the flash drive in Appendix C. Monitoring data will also be uploaded to Ecology's Environmental Information Management (EIM) System.

4.2 Sampling Procedures

4.2.1 LDA Groundwater Sampling

From February 12 to February 13, 2020, Golder sampled groundwater from the LDA shallow/alluvial groundwater monitoring wells (MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, and MW-6A) and bedrock monitoring wells (MWB-1LDA, MWB-2LDA, and MWB-3LDA). The following methods and procedures were used in collecting the groundwater samples:

- Depth to groundwater was measured in the wells prior to purging and sampling. Table 1 presents depth to water measurements and elevations.
- Using dedicated tubing connected to a portable, stainless steel bladder pump or a peristaltic pump (if groundwater elevation allowed), water from wells MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, and MW-6A was purged at a rate between approximately 275 and 450 milliliters (mL) per minute.
- Using the dedicated discharge tubing connected to the dedicated bladder pump, water from wells MWB-1LDA, MWB-2LDA, and MWB-3LDA was purged at a rate between approximately 350 and 400 mL per minute.
- Field parameters of pH, conductivity, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity were measured and recorded during purging at approximately five-minute intervals until parameters were stable. Parameters were considered stable when three consecutive readings of pH, temperature, and conductivity were within five percent.
- Once the field parameters stabilized, the purging phase of the process was concluded. Groundwater samples were then collected directly from the dedicated sample tubing. Samples collected for dissolved metals were field-filtered through a 0.45 µm in-line filter.
- For quality control purposes, a duplicate sample was collected from MW-2A (labeled as MW-7A) and at MWB-1LDA (labeled as MWB-7LDA).
- 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) un-preserved bottle were collected. The samples were then labeled and placed in a cooler with ice.

All groundwater and quality control samples were analyzed for the parameters listed in Section 4.1.2. Analytical results are discussed in Section 5.0, and the field parameters and analytical data are presented in Table 2.

4.2.2 LDA Surface Water Sampling

On February 12 and February 13, 2020, Golder sampled surface water from the Still Well, South Pond, Weir, and the Infiltration Ponds #1 sampling locations. The following methods and procedures were used in collecting the surface water samples:

- Field parameters of pH, conductivity, temperature, dissolved oxygen, oxidation-reduction potential, 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. Samples collected for dissolved metals were field-filtered through a 0.45 µm in-line filter.
- For quality control purposes, a duplicate sample was collected from Infiltration Ponds #1 (labeled as Infiltration Ponds #2).
- 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 then labeled and placed in a cooler with ice.
- The pH of the LDA surface water samples is typically high (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. In order to meet this requirement, the pH of the LDA surface water samples collected for metals analysis were checked at the time of sample collection using pH test paper strips. If the pH was higher than 2, nitric acid (provided by the laboratory) was added until the pH of the sample was less than 2.

All surface water and quality control samples were analyzed for the parameters listed in Section 4.1.2. Analytical results are discussed in Section 5.0, and the field parameters and analytical data are presented in Table 2.

4.2.3 DSP Groundwater Sampling

On February 13 and February 14, 2020, Golder sampled groundwater from the DSP groundwater monitoring wells (MWB-1SDSP, MWB-1DDSP, MWB-5DSP, and MWB-6DSP) and the Portal. The following methods and procedures were used in collecting the groundwater samples:

- Depth to groundwater was measured in the wells prior to purging and sampling. Table 1 presents depth to water measurements and elevations.
- Using the dedicated discharge tubing connected to the dedicated bladder pump, water from wells MWB-1DDSP, MWB-1SDSP, MWB-5DSP, and MWB-6DSP was purged at a rate between approximately 400 and 700 mL per minute.
- Field parameters of pH, conductivity, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity were measured and recorded during purging at approximately five-minute intervals until parameters were stable. Parameters were considered stable when three consecutive readings of pH, temperature, and conductivity were within five percent.
- Once the field parameters stabilized, the purging phase of the process was concluded. Groundwater samples were then collected directly from the dedicated sample tubing. Samples collected for dissolved metals were field-filtered through a 0.45 µm in-line filter.

- Grab water samples were collected from the Portal using dedicated sample tubing connected to a peristaltic pump. The water quality parameters were measured and recorded at the Portal at the time of sample collection.
- For quality control purposes, a duplicate sample was collected from MWB-6DSP (labeled as MWB-9DSP).
- Laboratory-provided containers were used to collect the samples. For each groundwater sample, one 500-mL bottle preserved with nitric acid and one 1-L un-preserved bottle were collected. The samples were then labeled and placed in a cooler with ice.

All groundwater and quality control samples were analyzed for the parameters listed in Section 4.1.2. Analytical results are discussed in Section 5.0, and the field parameters and analytical data are presented in Table 2.

In addition, water levels and field parameters were measured in DSP monitoring wells 2DSP and 4SDSP.

4.2.4 LDA Interceptor Trench Sampling

On February 13, 2020, Golder sampled groundwater from the Interceptor Trench. The following methods and procedures were used in collecting the groundwater sample:

- Field pH, turbidity, and the flow rate at the Interceptor Trench outfall were measured and recorded.
- Grab water samples were collected from the Interceptor Trench by placing the sample bottles under the flow of water. pH and turbidity were measured and recorded at the Interceptor Trench at the time of sample collection.
- 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. Analytical results are discussed in Section 5.0, and the field parameters and analytical data are presented in Table 4.

5.0 RESULTS

5.1 Preliminary Standards

Preliminary standards have been established from the Washington State Administrative Code (WAC) 173-200 and 246-290-310(3)(a) for some of the field parameters and analytes measured as part of the monitoring program. These standards are presented in Table 3.

5.2 Method Detection Limits and Reporting Limits

The Method Detection Limit (MDL) is the minimum concentration of an analyte that the laboratory can detect using the specified analytical method and equipment. The Reporting Limit (RL) is the lowest concentration that the laboratory can report with certainty after adjustments have been made for sample dilution, sample weight, and other factors.

Where the laboratory analytical results indicate non-detection (ND), the concentration of an analyte is below the MDL. On the trend graphs presented in Appendix B, non-detections for sampling events prior to the December 2009 fourth quarter monitoring were plotted as fifty percent of the RL value. Beginning with the December 2009 fourth quarter monitoring event, non-detections are plotted as the MDL value, which is more representative of actual laboratory results. Method Detection Limits are not available for all the historical data; therefore, non-

detect data prior to December 2009 remains plotted as fifty percent of the RL value. For TDS results, non-detect data are plotted at the RL.

5.3 Data Validation

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 2014) and the Site Sampling and Analysis and Quality Assurance Project Plan (ARCADIS 2006). Data reporting qualifiers are included with the analytical results in Appendix A. Copies of the data validation checklist are included in Appendix C, along with the raw analytical data packages provided by the laboratory. The data validation review found that all the data were considered valid and usable.

5.4 Measurement Results

A summary of the groundwater field parameters and analytical results for the monitoring are included in Table 2. Interceptor Trench results are provided in Table 4. Trend graphs of pH, TDS, and arsenic and potassium concentrations measured in each monitoring well are presented in Appendix B.

Results observed during this monitoring round were generally consistent with previous sampling rounds. pH levels and arsenic concentrations detected in the infiltration ponds and the two groundwater monitoring wells (MW-5A and MW-6A) located immediately downgradient of the infiltration ponds continue to attenuate in response to operation of the treatment system. Concentrations of arsenic in the infiltration ponds, MW-5A, and MW-6A over the past 2 monitoring events have been detected at levels that are approximately one order of magnitude lower than that encountered during the May 2019 monitoring round. Concentrations of lead in the infiltration ponds, MW-5A, and MW-6A have also steadily decreased from levels encountered during the May 2019 monitoring round. Concentrations of lead detected in all samples were below the preliminary standard. Monitoring results since May 2019 indicate a sustained decrease in both arsenic and lead concentrations in the infiltration ponds and in groundwater beneath and in immediately downgradient of the infiltration ponds. As the treatment system upgrades are completed and the system is running continuously, subsequent sampling rounds will establish long-term concentration trends under seepage treatment conditions.

6.0 LIMITATIONS

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

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

[https://golderassociates.sharepoint.com/sites/11287g/groundwater monitoring/golder reports/2020 year/2020 1q/draft/1520304-r-rev0-ravensdale 2020 q1 monitoring-042320.docx](https://golderassociates.sharepoint.com/sites/11287g/groundwater%20monitoring/golder%20reports/2020%20year/2020%201q/draft/1520304-r-rev0-ravensdale%2020%20q1%20monitoring-042320.docx)

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TABLES

Table 1: First Quarter 2020 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 msl) | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) |
| LDA - Shallow/Alluvial Groundwater | MW-1A | 2/12/2020 | 44 | 28-43 | 2-26 | 2 | 609.83 | 20.38 | 589.45 |
| | MW-2A | 2/12/2020 | 40 | 25-40 | 2-23 | 2 | 603.61 | 14.21 | 589.40 |
| | MW-3A | 2/12/2020 | 20 | 4-20 | 2-4 | 2 | 685.51 | 5.10 | 680.41 |
| | MW-4A | 2/12/2020 | 20 | 5-20 | 2-4 | 2 | 701.85 | 3.70 | 698.15 |
| | MW-5A | 2/12/2020 | 40 | 25-40 | 2-23 | 2 | 607.61 | 18.23 | 589.38 |
| | MW-6A | 2/12/2020 | 39 | 24-39 | 2-22 | 2 | 605.35 | 15.95 | 589.40 |
| LDA - Bedrock Groundwater | MWB-1LDA | 2/12/2020 | 135 | 115-135 | - | 2 | 701.08 | 22.04 | 679.04 |
| | MWB-2LDA | 2/12/2020 | 125 | 110-125 | - | 2 | 738.06 | 35.10 | 702.96 |
| | MWB-3LDA | 2/12/2020 | 145 | 125-145 | - | 2 | 740.59 | 1.69 | 738.90 |
| DSP - Bedrock Groundwater | MWB-1SDSP | 2/12/2020 | 165 | 150-160 | 138-148 | 2 | 932.69 | 31.08 | 901.61 |
| | MWB-1DDSP | 2/12/2020 | 270 | 255-265 | 243-253 | 2 | 931.77 | 44.28 | 887.49 |
| | MWB-2DSP | 2/12/2020 | 256 | 236-256 | - | 2 | 931.22 | 177.10 | 754.12 |
| | MWB-4SDSP | 2/12/2020 | 36 | 25-36 | - | 2 | 928.81 | 16.60 | 912.21 |
| | MWB-5DSP | 2/12/2020 | 83 | 73-83 | - | 2 | 931.45 | 16.70 | 914.75 |
| | MWB-6DSP | 2/12/2020 | 195 | 120-195 | - | 2 | Note 1 | 20.79 | Note 1 |

Notes:

- Not measured or not available
- feet bgs Feet below ground surface
- feet bmp Feet below measuring point
- feet msl Feet above mean sea level
- TOC Top of casing inside PVC well

Note 1 MWB-6DSP casing was raised by Reserve Silica in between August and November 2019. The New TOC elevation has not been surveyed.

Table 2: First Quarter 2020 Field Parameters and Analytical Data

| Sample Area | Sample Location ID | Date Sampled | Field Parameters | | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--|--------------------------------------|--------------|--------------------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------|--------------|----------|---------------|-----------|
| | | | TOC Elevation (feet msl) | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese | Potassium |
| LDA - Shallow/Alluvial Groundwater | MW-1A | 2/12/2020 | 609.83 | 20.38 | 589.45 | 9.0 | 381 | 2.58 | 191.6 | 1.33 | 7.15 | 268 | 0.00125 | 0.0083 J | 0.0001 U | 0.0228 | 26.6 |
| | MW-2A | 2/12/2020 | 603.61 | 14.21 | 589.40 | 8.1 | 319 | 9.95 | 189.3 | 14.6 | 7.27 | 277 | 0.00195 | 0.0093 J | 0.0001 U | 0.001 U | 56.3 |
| | MW-2A dupl MW-7A | 2/12/2020 | - | - | - | - | - | - | - | - | - | 259 | 0.00203 | 0.0105 J | 0.0001 U | 0.0014 | 56.5 |
| | MW-3A | 2/12/2020 | 685.51 | 5.10 | 680.41 | 7.8 | 349 | 0.37 | -62.4 | 1.40 | 7.25 | 287 | 0.00186 | 0.257 | 0.0001 U | 0.476 | 74.2 |
| | MW-4A | 2/13/2020 | 701.85 | 3.70 | 698.15 | 7.9 | 284 | 2.98 | 102.2 | 0.91 | 6.18 | 283 | 0.000176 J | 0.067 | 0.0001 U | 0.0723 | 0.859 |
| | MW-5A | 2/12/2020 | 607.61 | 18.23 | 589.38 | 7.0 | 533 | 7.58 | 140.4 | 10.6 | 8.32 | 463 | 0.00631 | 0.0436 J | 0.000145 | 0.0015 | 183 |
| | MW-6A | 2/12/2020 | 605.35 | 15.95 | 589.40 | 7.7 | 438 | 1.40 | 150.6 | 19.7 | 8.13 | 379 | 0.00212 | 0.0144 J | 0.0001 U | 0.0023 | 122 |
| LDA - Bedrock Groundwater ³ | MWB-1LDA | 2/13/2020 | 701.08 | 22.04 | 679.04 | 10.1 | 280 | 0.34 | -133.4 | 0.57 | 7.51 | 207 | 0.00882 | 0.231 | 0.0001 U | 0.0428 | 1.05 |
| | MWB-1LDA dupl MWB-7LDA | 2/13/2020 | - | - | - | - | - | - | - | - | - | 214 | 0.00853 | 0.222 | 0.0001 U | 0.0429 | 1.05 |
| | MWB-2LDA | 2/13/2020 | 738.06 | 35.10 | 702.96 | 10.8 | 261 | 0.39 | -135.9 | 0.96 | 7.50 | 185 | 0.00545 | 0.349 | 0.0001 U | 0.018 | 1.15 |
| | MWB-3LDA | 2/13/2020 | 740.59 | 1.69 | 738.90 | 10.7 | 180 | 3.20 | 88.5 | 1.21 | 7.11 | 140 | 0.00169 | 0.05 U | 0.0001 U | 0.0062 | 0.92 |
| LDA- Surface Water | South Pond | 2/13/2020 | - | - | - | 4.3 | 1032 | 2.51 | -126.9 | 6.10 | 10.46 | 927 | 0.0281 | 0.466 | 0.013 | 0.068 | 348 |
| | Still Well | 2/13/2020 | - | 0.00 | - | 7.6 | 4936 | 0.37 | -139.0 | 2.56 | 12.66 | 1630 | 0.0486 | 0.0136 J | 0.00608 | 0.0031 | 490 |
| | Weir | 2/12/2020 | - | - | - | 7.2 | 401 | 8.41 | -38.3 | 2.47 | 7.53 | 348 | 0.00481 | 0.0201 J | 0.0001 U | 0.0106 | 87 |
| | Infiltration #1 | 2/12/2020 | - | - | - | 7.8 | 971 | 7.99 | 150.3 | 16.0 | 7.92 | 836 | 0.0143 | 0.0234 J | 0.00396 | 0.0279 | 243 |
| | Infiltration #1 dupl Infiltration #2 | 2/12/2020 | - | - | - | - | - | - | - | - | - | 819 | 0.0148 | 0.0207 J | 0.00378 | 0.0282 | 245 |

Table 2: First Quarter 2020 Field Parameters and Analytical Data

| Sample Area | Sample Location ID | Date Sampled | Field Parameters | | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--|------------------------|--------------|--------------------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------|------|----------|-----------|-----------|
| | | | TOC Elevation (feet msl) | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese | Potassium |
| DSP - Bedrock Groundwater ³ | MWB-1SDSP | 2/14/2020 | 932.69 | 31.08 | 901.61 | 10.6 | 1249 | 0.38 | -82.2 | 0.10 | 6.61 | 1230 | 0.0183 | - | 0.0001 U | - | 6.36 |
| | MWB-1DDSP | 2/14/2020 | 931.77 | 44.28 | 887.49 | 10.3 | 760 | 0.30 | -169.3 | 1.09 | 7.11 | 717 | 0.00456 | - | 0.0001 U | - | 4.07 |
| | MWB-2DSP | 2/13/2020 | 931.22 | 177.10 | 754.12 | 9.3 | 453 | 3.03 | 91.0 | 2.31 | 7.56 | - | - | - | - | - | - |
| | MWB-4SDSP | 2/13/2020 | 928.81 | 16.60 | 912.21 | 10.8 | 458 | 8.74 | 68.0 | 1.98 | 7.83 | - | - | - | - | - | - |
| | MWB-5DSP | 2/14/2020 | 931.45 | 16.70 | 914.75 | 10.9 | 626 | 0.34 | -99.8 | 0.33 | 6.88 | 524 | 0.00431 | - | 0.0001 U | - | 2.65 |
| | MWB-6DSP | 2/13/2020 | Note 5 | 20.79 | Note 5 | 10.6 | 387 | 0.39 | -76.5 | 1.05 | 7.13 | 313 | 0.0014 | - | 0.0001 U | - | 1.33 |
| | MWB-6DSP dupl MWB-9DSP | 2/13/2020 | - | - | - | - | - | - | - | - | - | 313 | 0.00136 | - | 0.0001 U | - | 1.31 |
| | Portal | 2/13/2020 | - | - | - | 9.2 | 382 | 9.19 | -1.3 | 13.4 | 6.93 | 259 | 0.00365 | - | 0.0001 U | - | 16.7 |
| Preliminary Standard ^a | | | - | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - |

Notes:
bold Bold values indicate parameter results above the Preliminary Standard.
 - Not measured or not available.
 * Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date.
 < Analyte not detected above the reporting limit shown.
 a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest.
 b Site background arsenic value to be determined (TBD).
 J Data validation code; estimated value.
 J+ Data validation code; estimated value with positive bias
 U Data validation code; not detected at the Reporting Limit (RL).
 1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012.
 2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016.
 3 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated October 10, 2019.
 4 ORP measurements not available due to faulty sensor.
 5 MWB-6DSP casing was raised by Reserve Silica in between August and November 2019. The New TOC elevation has not been surveyed.
 DRY Location is dry. Unable to collect field parameters or samples.

TOC Top of casing inside PVC well
 °C Degrees Celsius
 feet bmp Feet below measuring point
 feet msl Feet above mean sea level
 mg/L Milligrams per liter
 mV Millivolts
 NTU Nephelometric Turbidity Unit
 µmhos/cm Micromhos per centimeter

Table 3: Preliminary Standards

| Parameter | Preliminary Standard | Reference |
|------------------------|----------------------|--------------------------------|
| Conductivity | 700 µmhos/cm | WAC 246-290-310(3)(a) |
| pH | 6.5 – 8.5 | WAC 173-200; WSDOE Permit 2005 |
| Turbidity | None | None |
| Total Dissolved Solids | 500 mg/L | WAC 173-200 |
| Dissolved Iron | 0.3 mg/L | WAC 173-200 |
| Dissolved Lead | 0.05 mg/L | WAC 173-200 |
| Dissolved Manganese | 0.05 mg/L | WAC 173-200 |
| Dissolved Arsenic | TBD | TBD |
| Dissolved Potassium | None | None |

Notes:

| | |
|----------|--|
| µmhos/cm | Micromhos per centimeter |
| mg/L | Milligrams per liter |
| WAC | Washington State Administrative Code |
| WSDOE | Washington State Department of Ecology |
| TBD | Site background arsenic value to be determined |

Table 4: Interceptor Trench Discharge Monitoring

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

Table 4: Interceptor Trench Discharge Monitoring

| Date Sampled | Time Sampled | Flow (gpm) | Field pH (standard units) | Turbidity (NTU) | Total Dissolved Solids (mg/L) |
|--------------|--------------|------------|---------------------------|-----------------|-------------------------------|
| 28-Feb-18 | 10:16 | 2.2 | 7.02 | 37.9 | 381 |
| 2-May-18 | 11:45 | 1.2 | 7.46 | 2.9 | 339 |
| 22-Aug-18 | 10:00 | 0.1 | 7.32 | 19.3 | 287 |
| 7-Nov-18 | 14:40 | 0.3 | 7.24 | 3.1 | 342 |
| 13-Mar-19 | 11:31 | 1.4 | 7.61 | 19.4 | 313 |
| 9-May-19 | 10:30 | 0.9 | 7.77 | 8.9 | 394 |
| 26-Aug-19 | 18:15 | 0.4 | 7.25 | 26.4 | 361 |
| 14-Nov-19 | 13:30 | 0.4 | 7.05 | 34.5 | 447 |
| 13-Feb-20 | 12:35 | 1.6 | 6.95 | 1.8 | 306 |

Notes:

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

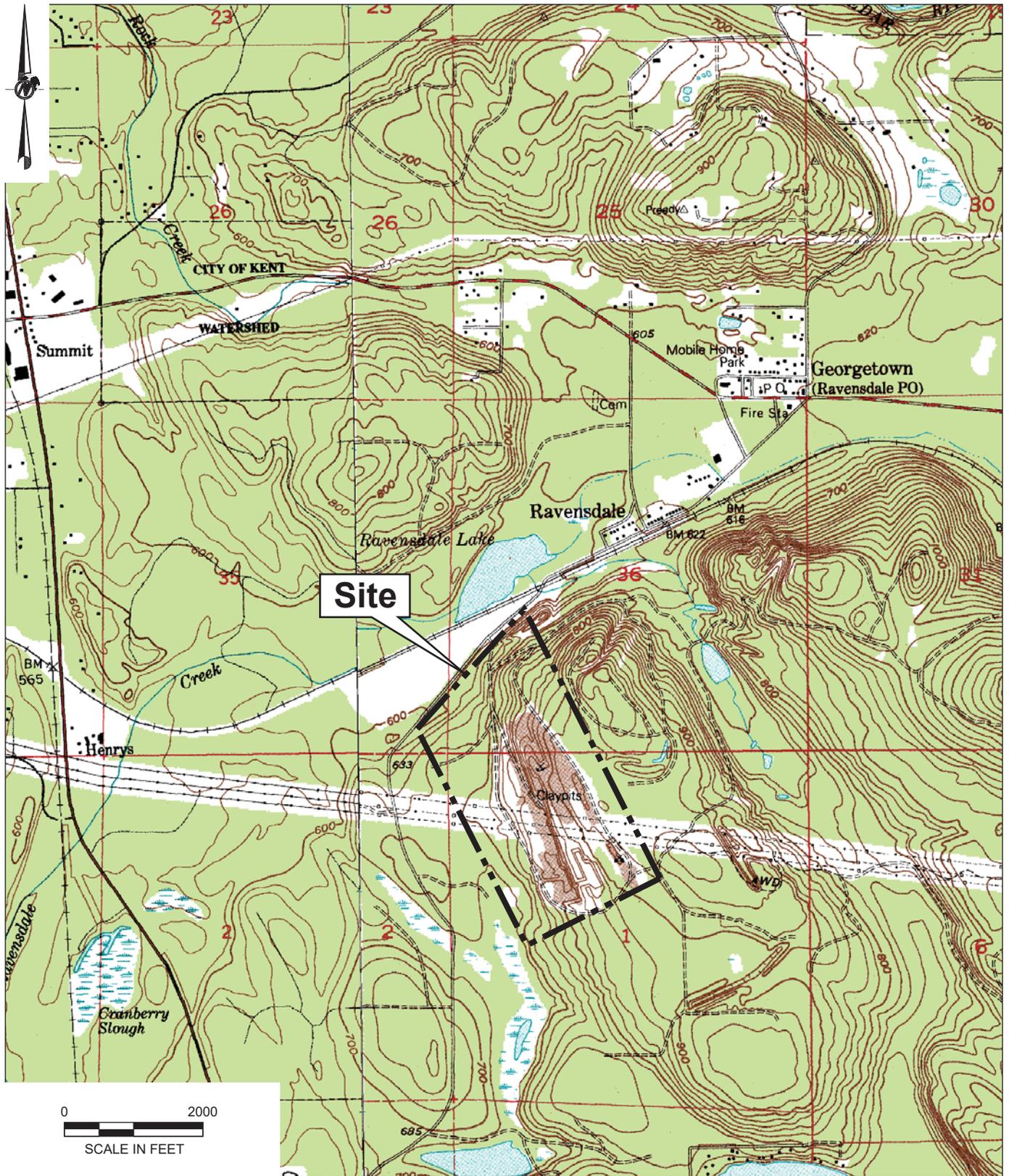
Table 5: First Quarter 2020 Treatment System Metals Monitoring

| Sample Location | Sample ID | Date Sampled | Arsenic (mg/L) | Lead (mg/L) |
|-----------------|---------------|--------------|----------------|-------------|
| Influent | Tank-Effluent | 20-Feb-20 | 0.0307 | 0.0364 |
| Effluent | As2-Effluent | 20-Feb-20 | 0.0043 | 0.0128 |

Notes:

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

FIGURES



G:\HOLCIM\Ravensdale\99_PROJECTS\1520304_2015\morning\700\02_PRODUCTION\IND\1520304_700_001.indd

CLIENT

HOLCIM (US). INC.

CONSULTANT



YYYY-MM-DD 2018-03-22

PREPARED REDMOND

DESIGN

REVIEW

APPROVED

PROJECT

RAVENSDALE

TITLE

VICINITY MAP

PROJECT No.
1520304

Phase
719

Rev.

Figure

1

APPENDIX A

**Summary Data Tables for Individual
Wells and Monitoring Locations**

APPENDIX A-1

Summary of Lower Disposal Area – Surface Water Sampling Results

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

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

| Date Sampled | Field Parameters | | | | | | General Chemistry | | Dissolved Metals (mg/L) | | | | |
|-------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------------------|-------------------------|----------|-----------|-----------|-----------|
| | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | pH measured in lab (standard units) | Arsenic | Iron | Lead | Manganese | Potassium |
| 1-Feb-05 | 8.10 | 10658 | - | - | 6.59 | 12.87 | 2860 | 12.58 | 0.04990 | <0.100 | 0.00552 | <0.0100 | - |
| 9-Mar-05 | 13.23 | 7393 | - | - | 7.42 | 12.51 | 2860 | 12.53 | 0.11500 | 0.228 | 0.01470 | <0.0100 | - |
| 5-Apr-05 | 9.50 | 11310 | - | - | 10.90 | 12.44 | 2900 | 12.32 | 0.05560 | <0.100 | 0.01160 | <0.0200 | - |
| 10-May-05 | 13.99 | 11871 | - | - | 3.60 | 12.53 | 2810 | 12.57 | 0.05540 | <0.100 | 0.01250 | <0.0200 | - |
| 7-Jun-05 | 13.83 | 10888 | - | - | 22.60 | 12.54 | 2490 | 12.51 | <0.00500 | <0.100 | <0.00500 | <0.0200 | - |
| 15-Jul-05 ^a | 18.21 | 11331 | - | - | 14.80 | 12.50 | 3800 | 12.6 | 0.00272 | <0.150 | 0.00607 | <0.0100 | - |
| 15-Jul-05 ^b | - | - | - | - | - | - | 2540 | 12.61 | 0.03980 | <0.100 | 0.00757 | <0.0200 | - |
| 9-Aug-05 ^a | 21.45 | 12087 | - | - | 17.90 | 11.78 | 3500 | 12.6 | 0.12000 | 0.288 | 0.01090 | 0.0101 | - |
| 9-Aug-05 ^b | - | - | - | - | - | - | 2820 | 12.46 | 0.09150 | <0.100 | 0.00953 | <0.0200 | - |
| 14-Sept-05 ^a | 17.38 | 9507 | - | - | 14.00 | 12.36 | 3600 | 12.5 | 0.11800 | <0.750 | 0.01120 | <0.0500 | - |
| 14-Sept-05 ^b | - | - | - | - | - | - | 2830 | 12.61 | 0.11500 | 0.363 | 0.01440 | - | - |
| 5-Oct-05 | 13.31 | 11481 | - | - | 62.70 | 12.47 | 3020 | 12.6 | 0.08520 | <0.100 | 0.01190 | <0.0200 | - |
| 9-Nov-05 | 9.58 | 14417 | - | - | 11.00 | 12.34 | 3400 | 12.6 | 0.07400 | <0.150 | <0.01000 | <0.0100 | - |
| 9-Dec-05 | 6.18 | 7138 | - | - | 12.50 | 12.82 | 2800 | 12.6 | 0.01450 | <0.150 | 0.00107 | <0.0100 | - |
| 19-Jan-06 | 8.66 | 8265 | 1.74 | - | 11.80 | 13.06 | 1900 J | 12.6 J | 0.01520 J | <0.150 | <0.00100 | <0.0100 | - |
| 16-Feb-06 | 8.13 | 9019 | 2.81 | 195.6 | 6.16 | 12.27 | 3200 J | 12.6 | 0.01340 J | <0.150 | 0.00189 | <0.0100 | - |
| 15-Mar-06 | 7.98 | 9033 | 0.79 | 114.8 | 8.93 | 12.60 | 3300 J | 12.6 | 0.00236 | <0.150 | 0.00250 J | <0.0100 | - |
| 7-Apr-06 | 9.98 | 10450 | 0.57 | 34.8 | 6.08 | 12.51 | 3400 | 12.6 | 0.01520 | <0.150 | 0.00283 | <0.0100 | - |
| 16-May-06 | 12.79 | 11060 | 0.14 | 45.4 | 9.28 | 12.40 | 3500 | 12.6 | 0.00404 | <0.150 | 0.00159 | <0.0100 | - |
| 23-Jun-06 | 13.29 | 11680 | 0.44 | - | 14.60 | 12.90 | 3600 | 12.6 | 0.05260 | <0.150 | 0.01650 | <0.0100 | - |
| 20-Jul-06 | 16.20 | 12240 | 0.14 | -217.8 | 10.40 | 12.47 | 4300 | 12.7 | 0.01930 | <0.150 | 0.00357 | <0.0100 | - |
| 22-Aug-06 | 17.14 | 10920 | 1.22 | -146.0 | 13.30 | 12.66 | 3800 | 12.7 | 0.14400 | <0.150 | 0.00914 J | <0.0100 | - |
| 26-Sep-06 | 15.72 | 9599 | 0.42 | -263.3 | 61.40 | 12.59 | 3800 | 12.5 | 0.12300 | 0.171 | 0.00463 | 0.0154 | - |
| 26-Oct-06 | 10.99 | 9955 | 0.88 | -207.5 | 82.30 | 12.93 | 3600 | 12.6 | 0.16100 | <1.500 | 0.01950 | <0.1000 | - |
| 15-Nov-06 | 10.58 | 12040 | 1.82 | 149.2 | 188.00 | 12.87 | 3400 | 12.5 | 0.03060 J | <0.150 | 0.00450 | <0.0100 | - |
| 20-Dec-06 | 8.85 | 10990 | 0.71 | -152.0 | 32.80 | 13.02 | 2600 J | 12.8 | 0.05260 | <0.150 | 0.01300 | <0.0100 | - |
| 24-Jan-07 | 8.29 | 10440 | 0.97 | -139.8 | 13.70 | 13.05 | 2500 J | 12.4 | 0.05860 | <0.150 | 0.01310 | <0.0100 | - |
| 12-Feb-07 | 8.88 | 10590 | 0.86 | -125.8 | 56.40 | 13.06 | 3400 | 12.5 | 0.06130 | <0.150 | 0.01400 | <0.0100 | - |
| 27-Mar-07 | 9.45 | 9163 | 1.25 | -42.4 | 18.40 | 11.53 | 2900 J | 12.5 J | 0.04410 | <0.150 | 0.00181 | <0.0100 | - |
| 18-Apr-07 | 8.90 | 8155 | 2.63 | 2.3 | 37.20 | 12.77 | 3300 J | 12.4 | 0.02930 | <0.150 | 0.00198 | <0.0100 | - |
| 31-May-07 | 20.12 | 11050 | 5.30 | -153.9 | 9.31 | 11.59 | 2800 J | 12.5 | 0.04850 | <0.150 | 0.01510 J | <0.0100 | - |
| 20-Jun-07 | 18.28 | 12000 | 5.41 | -122.5 | 16.10 | 12.04 | 4300 J | 12.4 J | 0.02680 | <0.150 | 0.00233 | <0.0100 | - |
| 31-Jul-07 | 16.53 | 12200 | 1.70 | -151.6 | 24.80 | 12.48 | 6000 | 12.6 J | 0.08760 | <0.150 | 0.00103 | <0.0100 | - |
| 29-Aug-07 | 17.00 | 9570 | 1.12 | -183.1 | 268.00 | 12.78 | 4600 J | 12.6 J | 0.10600 | <0.150 | 0.00946 | <0.0100 | - |
| 27-Sep-07 | 14.49 | 8263 | 52.40 | -183.0 | 211.00 | 12.42 | 2800 | 12.5 J | 0.12500 | <0.150 | 0.01540 | <0.0100 | - |
| 26-Oct-07 | 9.49 | 6144 | 4.88 | -147.2 | 92.40 | 12.85 | 3300 J | 12.3 J | 0.12400 | 0.260 | 0.02490 | 0.0101 | - |
| 30-Nov-07 | 5.53 | 7703 | 2.13 | -122.6 | 127.00 | 12.67 | 2200 | 12.4 J | 0.17400 | 0.184 | 0.01410 | <0.0100 | - |
| 12-Dec-07 | 5.24 | 11609 | 3.43 | -144.8 | 116.00 | 12.60 | 4100 | 12.4 J | 0.11000 | <0.150 | 0.01130 | <0.0100 | - |
| 24-Jan-08 | 3.73 | 9649 | 13.81 | -138.0 | - | 10.74 | 2500 | 11.8 J | 0.10100 | 1.530 | 0.00974 | 0.0815 | - |
| 28-Feb-08 | - | - | - | - | 51.20 | - | 2900 | 12.4 J | 0.05850 | <0.150 | 0.01260 | <0.0100 | - |
| 25-Mar-08 | 7.06 | 8623 | 5.52 | -11.2 | 17.40 | 11.26 | 3400 | 12.5 J | 0.07430 | <0.150 | 0.01040 | <0.0100 | - |
| 29-Apr-08 | 9.74 | 11332 | 4.29 | -1.3 | 27.70 | 12.82 | 3000 J | 12.5 J | 0.07660 | <0.150 | 0.01330 | <0.0100 | - |
| 20-May-08 | 14.53 | 11955 | 1.74 | -35.8 | 72.70 | 12.82 | 3400 | 12.5 J | 0.08730 | <0.150 | 0.01510 | <0.0100 | - |
| 18-Jun-08 | 12.77 | 10267 | 3.34 | -27.0 | 34.00 | 12.86 | 3200 J | 12.4 J | 0.06320 | <0.150 | 0.01690 | <0.0100 | - |
| 26-Aug-08 | 15.86 | 7703 | 1.06 | -72.8 | 38.30 | 12.67 | 2600 J | 12.2 J | 0.43000 | 1.220 | 0.03500 | 0.0497 | 759 |
| 20-Nov-08 | 9.59 | 8762 | 0.91 | -65.6 | 74.10 | 13.32 | 3500 | 12.4 J | 0.07000 | <0.150 | 0.01680 | <0.0100 | 848 |
| 12-Feb-09 | 3.25 | 554 | 14.29 | - | 108.00 | 13.03 | 550 | 11.8 J | 0.04720 | <0.150 | 0.01370 | <0.0100 | 551 |
| 19-May-09 | 11.53 | 276 | 8.80 | 26.0 | 43.40 | 9.83 | 2500 J | 12.4 J | 0.03780 | <0.150 | 0.01500 | <0.0100 | 689 |
| 22-Sep-09 | 12.47 | 9760 | 1.50 | 159.1 | 625.00 | 12.47 | 3000 | - | 0.16000 | 0.200 | 0.03700 | 0.0100 J | 990 |
| 15-Dec-09 | 5.20 | 11650 | 1.90 | 237.0 | 26.30 | 12.85 | 3000 | - | 0.08600 | 0.067 J | 0.02100 | 0.0047 J | 900 J |
| 22-Mar-10 | 9.70 | 1035 | - | 182.0 | 19.40 | 12.58 | 3000 | - | 0.07300 | <0.200 | 0.01700 | <0.0200 | 870 |
| 17-Jun-10 | 11.70 | 9610 | 0.08 | - | 6.59 | 12.48 | 2700 | - | 0.06600 | 0.095 J | 0.01500 | 0.0020 J | 780 |
| 21-Sep-10 | 15.00 | 6710 | 1.26 | 152.6 | 140.00 | 12.29 | 2400 | - | 0.30000 | 1.100 J+ | 0.03900 | 0.0300 J+ | 570 |
| 8-Dec-10 | 8.30 | 10110 | 1.00 | - | 5.44 | 12.63 | 2600 | - | 0.06400 | <0.200 | 0.01000 | <0.0200 | 860 |
| 30-Mar-11 | 8.60 | 4810 | 0.46 | 136.3 | 13.70 | 14.31 | 2500 J | - | 0.06500 | <0.200 | 0.00960 | <0.0200 | 720 |
| 21-Jun-11 | 16.60 | 10420 | 1.63 | 111.9 | 3.40 | 12.36 | 5200 | - | 0.06000 | <0.200 | 0.00910 | 0.0017 J | 770 |

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

| Date Sampled | Field Parameters | | | | | | General Chemistry | | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------------------|-------------------------|----------|------------|-----------|-----------|
| | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | pH measured in lab (standard units) | Arsenic | Iron | Lead | Manganese | Potassium |
| 28-Sep-11 | 14.80 | 5270 | 2.34 | 70.0 | 66.70 | 12.17 | 2200 | - | 0.22000 | 0.360 | 0.01100 | 0.0072 J | 1000 |
| 15-Dec-11 | 6.00 | 7330 | 2.47 | 104.2 | 18.30 | 13.09 | 2800 | - | 0.08300 | <0.200 | 0.00290 | <0.0200 | 880 |
| 21-Mar-12 | 5.50 | 11040 | 3.15 | 294.2 | 12.00 | 12.39 | 2600 | - | 0.06700 | <0.200 | 0.00470 | <0.0200 | 760 |
| 19-Jun-12 | 5.50 | 11040 | 3.15 | 294.2 | 12.00 | 12.39 | 2600 | - | 0.05800 | <0.200 | 0.00670 | <0.0200 | 690 |
| 20-Sep-12 | 16.10 | 9560 | 3.27 | 76.0 | 10.70 | 12.35 | 2900 | - | 0.08400 | <0.200 | 0.00300 | <0.0200 | 830 |
| 19-Dec-12 | 4.10 | 1320 | 10.11 | 303.1 | 5.86 | 9.69 | 700 | - | 0.07500 | 0.690 | 0.00430 | 0.0710 | 250 |
| 26-Feb-13 | 7.30 | 9950 | 1.77 | 161.8 | 25.50 | 12.66 | 2000 | - | 0.07000 | <0.500 | 0.00029 J | <0.0200 | 720 |
| 23-May-13 | 11.50 | 8040 | 2.23 | 266.8 | 22.70 | 12.47 | 2500 | - | 0.05700 | <0.500 | 0.00340 | <0.0200 | 690 |
| 22-Aug-13 | 17.40 | 8810 | 2.42 | 10.8 | 38.50 | 12.79 | 2590 | - | 0.05780 | <0.100 | 0.00150 | 0.0020 | 863 |
| 19-Nov-13 | 9.00 | 7090 | 2.47 | 79.0 | 62.80 | 12.54 | 2720 | - | 0.05250 | <0.100 | 0.00420 | <0.0200 | 909 |
| 1-Apr-14 | 10.30 | 6080 | 0.55 | 128.2 | 37.10 | 6.08 | 1890 | - | 0.05460 | <0.100 | 0.00110 | <0.0013 | 687 |
| 22-May-14 | 13.60 | 7360 | 1.22 | 34.4 | - | 11.75 | 2330 | - | 0.06090 | <0.100 | 0.00200 | <0.0020 | 689 |
| 13-Aug-14 | 18.26 | 7844 | 0.33 | 1.2 | 7.30 | 12.53 | 2770 | - | 0.07000 | <0.100 | 0.00210 | <0.0020 | 849 |
| 12-Nov-14 | 9.00 | 585 | 3.17 | -47.8 | 17.50 | 12.93 | 2450 | - | 0.08320 | <0.100 | 0.00390 | <0.0020 | 837 |
| 12-Feb-15 | 10.70 | 7540 | 2.68 | -18.6 | 9.64 | 12.71 | 2150 | - | 0.05160 | <0.100 | 0.00030 | <0.0020 | 690 |
| 4-May-15 | 12.90 | 9140 | 2.73 | 110.4 | 26.80 | 13.02 | 2520 | - | 0.05460 | <0.100 | 0.00022 J | <0.0020 | 734 |
| 5-Aug-15 | 19.50 | 8060 | 2.58 | -29.8 | 61.10 | 12.62 | 2980 | - | 0.06390 | <0.250 | 0.00170 | 0.0047 J | 898 |
| 3-Nov-15 | 11.10 | 5150 | 0.37 | 38.6 | 171.00 | 8.93 | 1840 | - | 0.10900 | 0.270 | 0.02170 | 0.0130 | 747 |
| 9-Feb-16 | 9.70 | 7390 | 0.78 | 80.8 | 7.79 | 13.07 | 2170 | - | 0.05360 | <0.100 | 0.00120 | 0.0060 | 601 |
| 3-May-16 | 14.70 | 7530 | 1.40 | 358.1 | 2.65 | 12.98 | 2480 | - | 0.0542 | <0.100 | 0.00170 J- | 0.0020 | 711 |
| 22-Aug-16 | 20.50 | 8 | 2.10 | - | 59.00 | 12.95 | 2780 | - | 0.09130 | <0.250 | 0.00587 | 0.0023 J | 831 |
| 1-Nov-16 | 12.30 | 2884 | 2.66 | -72.1 | 19.10 | 13.17 | 2620 | - | 0.04620 | <0.100 | 0.00964 | <0.0020 | 841 |
| 31-Jan-17 | 7.40 | 8510 | 2.37 | -167.0 | 7.35 | 13.17 | 2050 | - | 0.05250 | 0.026 J | 0.00119 | 0.0016 J | 582 |
| 31-May-17 | 14.60 | 7500 | 2.44 | - | 4.17 | 12.89 | 1900 | - | 0.04540 | 0.011 J | 0.00068 J+ | 0.0007 J | 615 |
| 17-Aug-17 | 18.30 | 8460 | 3.35 | -84.0 | 15.90 | 12.79 | 2680 | - | 0.05680 | 0.003 J | 0.00214 | 0.0013 J | 750 |
| 9-Nov-17 | 8.20 | 7215 | 3.48 | 90.9 | 18.20 | 12.65 | 2360 | - | 0.0621 | <0.1 | 0.00352 | 0.0025 | 822 |
| 27-Feb-18 | 6.60 | 5312 | 3.75 | 2.3 | 2.49 | 12.11 | 1970 | - | 0.0502 | <0.1 | 0.00753 | 0.0025 | 521 |
| 2-May-18 | 11.10 | 8260 | 1.70 | - | 13.00 | 12.92 | 2360 | - | 0.0434 | 0.133 | 0.02170 J+ | 0.0088 | 552 |
| 21-Aug-18 | 20.22 | 6260 | 4.71 | -42.1 | 5.84 | 12.58 | 2100 | - | 0.0522 | 0.10 U | 0.000138 | <0.002 | 629 |
| 7-Nov-18 | 9.70 | 995 | 6.72 | 126.8 | 20.60 | 9.15 | 1880 | - | 0.644 | 1.35 | 0.0802 | 0.0491 | 502 J+ |
| 11-Mar-19 | 10.60 | 1354 | 5.93 | -18.7 | 7.19 | 10.31 | 1710 | - | 0.0528 | 0.0091 J | 0.0212 | 0.0013 J | 501 |
| 9-May-19 | 13.80 | 6973 | 6.40 | 18.1 | 16.70 | 12.36 | 1980 | - | 0.0416 | 0.0079 J | 0.0134 | 0.0008 J | 521 |
| 26-Aug-19 | 17.80 | 6405 | 3.91 | Note 1 | 5.15 | 12.56 | 2570 | - | 0.0425 | <0.1 | 0.0154 | 0.001 J | 722 |
| 14-Nov-19 | 9.70 | 6065 | 0.41 | -53.3 | 12.00 | 12.67 | 1750 | - | 0.167 | 0.121 J | 0.0239 | 0.0065 | 563 |
| 13-Feb-20 | 7.60 | 4936 | 0.37 | -139.0 | 2.56 | 12.66 | 1630 | - | 0.04860 | 0.0136 J | 0.00608 | 0.0031 | 490 |
| Preliminary Standard ^c | - | 700 | - | - | - | 6.5-8.5 | 500 | 6.5-8.5 | TBD ^d | 0.3 | 0.05 | 0.05 | - |

Notes:

- Not analyzed or not available
- < Analyte not detected above the reporting limit shown
- a North Creek Analytical, Inc.
- b Severn Trent Laboratories
- c Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest
- d Site background arsenic value to be determined (TBD)
- 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 msl Feet above mean sea level
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | General Chemistry | | Dissolved Metals (mg/L) | | | | |
|-------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------------------|-------------------------|----------|----------|-----------|-----------|
| | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | pH measured in lab (standard units) | Arsenic | Iron | Lead | Manganese | Potassium |
| 1-Feb-05 | 8.17 | 1315 | - | - | 8.13 | 9.95 | 874 | 9.75 | 0.08490 | 0.234 | 0.00499 | 0.0249 | - |
| 9-Mar-05 | 14.04 | 1183 | - | - | 23.00 | 9.59 | 960 | 9.46 | 0.09620 | 0.470 | 0.00392 | 0.0321 | - |
| 5-Apr-05 | 11.00 | 1115 | - | - | 43.70 | 9.80 | 800 | 9.49 | 0.06230 | 0.574 | 0.00321 | <0.0200 | - |
| 10-May-05 | 14.91 | 1275 | - | - | 564.00 | 9.83 | 844 | 9.79 | 0.07650 | 0.790 | <0.00500 | 0.0462 | - |
| 7-Jun-05 | 15.11 | 1140 | - | - | 239.00 | 9.61 | 804 | 9.53 | 0.08430 | 0.722 | <0.00500 | 0.0327 | - |
| 15-Jul-05 ^a | 23.56 | 1276 | - | - | 94.40 | 9.30 | 1100 | 9.54 | 0.09250 | <0.300 | 0.00414 | 0.0534 | - |
| 15-Jul-05 ^b | - | - | - | - | - | - | 874 | 9.45 | 0.09990 | 0.533 | 0.00382 | <0.0200 | - |
| 9-Aug-05 ^a | 19.05 | 1744 | - | - | 57.20 | 9.44 | 1000 | 9.22 | 0.12300 | 0.792 | 0.00510 | 0.0499 | - |
| 9-Aug-05 ^b | - | - | - | - | - | - | 1030 | 9.05 | 0.14000 | 0.339 | 0.00612 | 0.0308 | - |
| 14-Sept-05 ^a | 13.59 | 1154 | - | - | 99.80 | 8.97 | 790 | 9.04 | 0.11000 | <0.750 | 0.00354 | <0.0500 | - |
| 14-Sept-05 ^b | - | - | - | - | - | - | 806 | 9.03 | 0.11800 | 0.877 | 0.00518 | - | - |
| 5-Oct-05 | 14.82 | 970 | - | - | 82.70 | 8.98 | 736 | 8.73 | 0.08930 | 0.329 | 0.00283 | 0.0263 | - |
| 9-Nov-05 | 8.43 | 1285 | - | - | 135.00 | 8.83 | 970 | 9.28 | 0.04600 | 0.194 | <0.01000 | 0.0295 | - |
| 9-Dec-05 | 2.12 | 1361 | - | - | 14.20 | 9.71 | 980 | 9.54 | 0.06460 | 0.179 | 0.00311 | 0.0399 | - |
| 19-Jan-06 | 6.66 | 728 | 7.96 | - | 64.70 | 10.13 | 470 J | 9.77 | 0.04070 | 0.181 | 0.00229 | 0.0402 | - |
| 16-Feb-06 | 2.63 | 624 | 9.75 | 30.3 | 25.20 | 8.54 | 530 J | 8.99 | 0.01330 | <0.150 | <0.00100 | 0.1190 | - |
| 15-Mar-06 | 7.16 | 639 | 11.61 | 236.8 | 23.10 | 9.22 | 530 J | 9.19 | 0.02250 | 0.167 | <0.00100 | 0.0791 | - |
| 7-Apr-06 | 11.91 | 1013 | 10.81 | 27.8 | 18.80 | 9.98 | 780 | 9.72 | 0.06380 | 0.344 | 0.00324 | 0.0483 | - |
| 16-May-06 | 15.58 | 1160 | 7.58 | 50.6 | 16.50 | 9.57 | 950 | 9.65 | 0.07790 | 0.462 | 0.00249 | 0.0505 | - |
| 23-Jun-06 | 18.63 | 1261 | 7.41 | - | 126.00 | 9.85 | 920 | 9.35 | 0.07070 | 0.228 | 0.00365 | 0.0366 | - |
| 20-Jul-06 | 20.65 | 932 | 5.36 | -35.1 | 279.00 | 8.94 | 980 | 8.79 | 0.10800 | 0.287 | 0.00348 | 0.0285 | - |
| 22-Aug-06 | 15.65 | 860 | 7.64 | 86.5 | 218.00 | 9.22 | 760 | 9.15 | 0.11600 | 0.734 | 0.00384 | 0.0237 | - |
| 26-Sep-06 | 21.86 | 903 | 8.98 | -72.8 | 263.00 | 8.89 | 820 | 8.76 | 0.07580 | 0.616 | 0.00306 | 0.0558 | - |
| 26-Oct-06 | 11.04 | 702 | 9.97 | 90.4 | 221.00 | 8.56 | 760 | 8.59 | 0.06830 | <1.500 | 0.00166 | <0.1000 | - |
| 15-Nov-06 | 7.73 | 715 | 9.21 | 149.2 | 33.60 | 9.07 | 500 | 9.25 | 0.02080 | 0.174 | 0.00229 | 0.0367 | - |
| 20-Dec-06 | 4.98 | 1082 | 9.05 | 86.3 | 9.29 | 9.78 | 680 | 9.83 | 0.05130 | 0.269 | 0.00267 | 0.0549 | - |
| 24-Jan-07 | 2.12 | 1058 | 10.71 | 130.4 | 20.50 | 9.97 | 640 J | 9.97 | 0.06610 | <0.150 | 0.00758 | 0.0403 | - |
| 12-Feb-07 | 10.10 | 1218 | 12.40 | -61.8 | 103.00 | 9.98 | 860 | 9.97 | 0.09010 | 0.642 | 0.00449 | 0.0451 | - |
| 27-Mar-07 | 7.94 | 772 | 9.67 | 13.3 | 25.50 | 8.27 | 540 J | 9.96 J | 0.04980 | <0.150 | 0.00274 | 0.0336 | - |
| 18-Apr-07 | 7.52 | 2418 | 9.23 | 84.4 | 58.10 | 11.73 | 1400 | 11.4 J | 0.07920 | 0.212 | 0.01050 | 0.0296 | - |
| 31-May-07 | 15.45 | 1879 | 6.47 | -92.2 | 3.15 | 9.79 | 1300 | 10 J | 0.16500 | <0.750 | 0.00811 | 0.1340 | - |
| 20-Jun-07 | 24.18 | 1925 | 10.88 | -52.1 | 251.00 | 10.24 | 1300 J | 10.1 J | 0.14400 | <0.150 | 0.00534 | <0.0100 | - |
| 31-Jul-07 | 19.05 | 1418 | 5.97 | -36.1 | 128.00 | 9.81 | 1200 | 9.4 J | 0.14000 | 1.070 | 0.00723 | 0.0433 | - |
| 29-Aug-07 | 18.00 | 1193 | 5.60 | -35.4 | 158.00 | 9.29 | 1300 J | 9.48 J | 0.16400 | 0.427 J | 0.00701 | 0.0277 J | - |
| 27-Sep-07 | 14.97 | 987 | 5.44 | 45.9 | 186.00 | 8.99 | 970 | 9.15 J | 0.19600 | 0.438 | 0.00549 | 0.0326 | - |
| 26-Oct-07 | 2.66 | 504 | 6.02 | 63.1 | 282.00 | 8.64 | 770 J | 8.17 J | 0.04290 | 0.422 | 0.00225 | 0.0602 | - |
| 30-Nov-07 | 1.86 | 955 | 9.77 | 190.1 | 163.00 | 10.02 | 570 | 8.9 J | 0.04890 | 0.205 | 0.00162 | 0.0271 | - |
| 12-Dec-07 | 4.22 | 790 | 11.11 | 126.8 | 56.00 | 9.40 | 520 | 9.05 J | 0.03430 | 0.179 | 0.00167 | 0.0175 | - |
| 24-Jan-08 | 2.12 | 875 | 19.35 | 142.0 | - | 8.68 | 640 | 9.24 J | 0.04280 | 0.162 | 0.00166 | 0.0155 | - |
| 28-Feb-08 | - | - | - | - | 25.60 | - | 510 | 9.18 J | 0.04130 | <0.150 | 0.00266 | 0.0159 | - |
| 25-Mar-08 | 5.27 | 937 | 14.46 | 91.0 | 86.80 | 9.60 | 630 | 9.55 J | 0.05020 | 0.180 | 0.00215 | 0.0213 | - |
| 29-Apr-08 | 9.02 | 1079 | 10.56 | 190.8 | 61.30 | 9.87 | 670 J | 9.76 J | 0.06600 | 0.27 J | 0.00287 | 0.0286 | - |
| 20-May-08 | 15.42 | 1191 | 7.58 | 160.0 | 91.40 | 9.75 | 820 | 9.7 J | 0.08590 | 0.334 | 0.00485 | 0.0432 | - |
| 18-Jun-08 | 12.94 | 1124 | 9.62 | 167.3 | 76.90 | 9.65 | 810 J | 9.55 J | 0.07760 | 0.486 | 0.00367 | 0.0222 | - |
| 26-Aug-08 | 15.95 | 880 | 3.75 | 53.5 | 490.00 | 8.00 | 650 J | 7.81 J | 0.07690 | 0.334 | 0.00164 | 0.0713 | 144 |
| 20-Nov-08 | 6.91 | 897 | 7.02 | 183.5 | 376.00 | 10.22 | 960 | 10.1 J | 0.08720 | 0.196 | 0.00421 | 0.0584 J | 313 |
| 12-Feb-09 | 1.29 | - | 13.72 | - | 10.20 | 10.52 | 800 | 10.1 J | 0.11800 | 0.177 | 0.00584 | 0.0561 | 271 |
| 19-May-09 | 11.90 | 862 | 6.52 | 71.9 | 133.00 | 9.59 | 840 J | 9.9 J | 0.09130 | 0.350 | 0.00399 | 0.0366 | 238 |
| 18-Nov-09 | 5.70 | 852 | 6.61 | 185.9 | 68.00 | 9.88 | 490 | - | 0.04000 | 0.700 | 0.00440 | 0.0350 | 160 |
| 15-Dec-09 | 2.30 | 1162 | 8.22 | 460.1 | 63.30 | 9.97 | 640 | - | 0.07100 | 0.850 | 0.00720 | 0.0500 | 220 |
| 24-Mar-10 | 13.00 | 1299 | 5.83 | 408.2 | 13.00 | 10.48 | 1,000 | - | 0.14000 | 0.720 | 0.00850 | 0.0370 | 340 |
| 17-Jun-10 | 12.00 | 947 | 4.45 | 332.1 | 33.60 | 10.56 | 540 | - | 0.06200 | 0.660 | 0.00620 | 0.0630 | 220 |
| 22-Sep-10 | 15.60 | 1736 | 3.14 | 342.5 | 33.00 | 9.84 | 1300 | - | 0.13000 | 2.900 | 0.02100 | 0.1700 J+ | 360 |
| 8-Dec-10 | 5.40 | 1382 | 7.73 | 371.1 | 12.10 | 10.75 | 870 | - | 0.10000 | 0.490 | 0.01200 | 0.0370 | 300 |
| 29-Mar-11 | 9.60 | 627 | 5.16 | 577.6 | 19.80 | 11.05 | 760 J | - | 0.07800 | 0.200 J+ | 0.00310 | 0.0210 | 270 |

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

| Date Sampled | Field Parameters | | | | | | General Chemistry | | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------------------|-------------------------|----------|------------|-----------|-----------|
| | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | pH measured in lab (standard units) | Arsenic | Iron | Lead | Manganese | Potassium |
| 21-Jun-11 | 21.00 | 1778 | 5.46 | 239.1 | 11.60 | 10.44 | 1700 J | - | 0.07800 | 0.810 | 0.01100 | 0.0650 | 340 |
| 27-Sep-11 | 14.80 | 1382 | 3.98 | 239.8 | 33.40 | 9.58 | 1600 | - | 0.12000 | 1.600 | 0.01300 | 0.0820 | 670 |
| 14-Dec-11 | 3.10 | 1046 | 5.60 | 281.7 | 15.70 | 9.93 | 1100 | - | 0.08700 | 1.100 | 0.01400 | 0.0630 | 330 |
| 20-Mar-12 | 6.10 | 986 | 11.04 | 271.1 | 11.70 | 10.32 | 500 | - | 0.07100 | 0.470 | 0.00330 | 0.0590 | 180 |
| 19-Jun-12 | 14.80 | 862 | 7.83 | 352.2 | 38.80 | 9.57 | 500 | - | 0.06400 | 0.560 J+ | 0.00370 | 0.0540 | 180 |
| 20-Sep-12 | 12.40 | 1961 | 1.81 | 419.0 | 10.30 | 9.43 | 4600 J | - | 0.13000 | 0.480 | 0.00210 | 0.0470 | 440 |
| 19-Dec-12 | 4.10 | 1320 | 10.11 | 303.1 | 5.86 | 9.69 | 700 | - | 0.07500 | 0.690 | 0.00430 | 0.0710 | 250 |
| 25-Feb-13 | 7.10 | 1963 | 9.30 | 234.7 | 26.60 | 11.30 | 1000 | - | 0.09000 | 0.100 J | 0.00600 | 0.0230 | 370 |
| 22-May-13 | 10.50 | 4380 | 7.72 | 411.7 | 202.00 | 12.56 | 1400 | - | 0.02500 | <0.500 | 0.01100 | 0.0064 J | 530 |
| 21-Aug-13 | 20.10 | 12850 | 1.24 | -2.3 | 18.20 | 12.18 | 3430 | - | 0.10600 | 0.270 | 0.04750 | 0.0210 | 1180 |
| 20-Nov-13 | 5.70 | 1198 | 8.03 | 131.9 | 22.20 | 10.23 | 704 | - | 0.04130 | 0.210 | 0.00620 | 0.0400 | 260 |
| 1-Apr-14 | 9.80 | 1708 | 9.77 | 136.4 | 8.79 | 12.26 | 832 | - | 0.02410 | 0.049 J | 0.00300 | 0.0050 J+ | 317 |
| 23-May-14 | 12.63 | 6574 | 8.63 | 120.8 | - | 12.61 | 2120 | - | 0.00480 | <0.100 | 0.03540 | <0.0020 | 811 |
| 13-Aug-14 | 18.99 | 3273 | 6.29 | 77.7 | 89.00 | 12.34 | 1660 | - | 0.07140 | <0.100 | 0.00630 J | 0.0070 | 548 |
| 11-Nov-14 | 8.80 | 578 | 3.55 | 179.2 | 62.50 | 12.73 | 2000 | - | 0.05670 | <0.100 | 0.02040 | <0.0020 | 739 |
| 11-Feb-15 | 9.70 | 487 | 9.97 | 66.2 | 42.00 | 9.40 | 337 | - | 0.00910 | 0.120 | 0.00090 | 0.0120 | 87.7 |
| 4-May-15 | 14.30 | 4210 | 5.60 | 281.2 | 7.67 | 12.53 | 1670 | - | 0.03530 | 0.039 J | 0.00740 | 0.0014 J | 589 |
| 5-Aug-15 | 19.90 | 4890 | 5.14 | 18.8 | 89.80 | 11.79 | 3080 | - | 0.08540 | 0.390 | 0.01810 | 0.0120 | 1150 |
| 3-Nov-15 | 9.20 | 760 | 6.39 | 129.9 | 34.60 | 9.78 | 707 | - | 0.02350 | 0.270 | 0.00530 | 0.0150 | 235 |
| 9-Feb-16 | 10.20 | - | 10.29 | 100.3 | 8.01 | 12.78 | 1330 | - | 0.00530 | <0.1000 | 0.02480 | 0.0030 | 530 |
| 2-May-16 ^e | - | - | - | - | - | - | 2490 | - | 0.02400 | 0.0754 J | 0.0370 J- | 0.0041 J | 996 |
| 23-Aug-16 | 19.30 | 4250 | 3.95 | 386.5 | 46.30 | 11.76 | 2970 | - | 0.10500 | 0.404 | 0.01430 | 0.0113 | 989 |
| 1-Nov-16 | 11.70 | 229 | 9.26 | 185.2 | 48.90 | 10.33 | 508 | - | 0.01260 | 0.155 | 0.00079 | 0.0067 | 164 |
| 1-Feb-17 | 2.40 | 8890 | 10.78 | 26.1 | 3.17 | 13.36 | 2220 | - | 0.01010 | <0.250 | 0.04680 | <0.0050 | 854 |
| 30-May-17 | 14.70 | 6800 | 56.90 | 17.7 | 1.38 | 12.73 | 1720 | - | 0.00175 | 0.030 J | 0.03160 J+ | 0.0009 J | 759 |
| 17-Aug-17 | 18.10 | 5410 | 3.88 | -19.5 | 14.90 | 11.93 | 3080 | - | 0.06260 | 0.122 J | 0.03280 | 0.0111 | 1150 |
| 10-Nov-17 | 7.90 | 2016 | 7.72 | 64.4 | 30.70 | 12.00 | 1520 | - | 0.063 | 0.156 | 0.0322 | 0.0141 | 578 |
| 27-Feb-18 | 5.70 | 5062 | 8.76 | 42.0 | 3.74 | 12.28 | 1620 | - | 0.015 | <0.1 | 0.0546 | <0.002 | 678 |
| 1-May-18 | 12.30 | 6620 | 5.25 | - | 1.94 | 12.73 | 2070 | - | 0.00242 | 0.0117 J | 0.03010 J+ | 0.0010 J | 745 |
| 21-Aug-18 | 23.85 | 5058 | 2.95 | 106.0 | 5.62 | 11.64 | 3090 | - | 0.0773 | 0.25 U | 0.0288 | 0.0094 | 1200 |
| 6-Nov-18 | 11.70 | 1078 | 3.50 | -5.4 | 46.90 | 8.48 | 1180 | - | 0.00603 | <0.5 | 0.00544 | 0.0298 | 359 J+ |
| 13-Mar-19 | 3.90 | 331 | 8.08 | 183.7 | 29.10 | 10.72 | 455 | - | 0.0119 | 0.131 | 0.00221 | 0.0053 | 185 |
| 8-May-19 | 17.20 | 6113 | 6.38 | 6.4 | 6.17 | 12.39 | 2040 | - | 0.0077 | 0.0246 J | 0.0268 | 0.0018 J | 830 |
| 26-Aug-19 | 24.22 | 4177 | 2.47 | Note 1 | 7.21 | 9.12 | 2840 | - | 0.0172 J | 0.405 J | 0.00527 J | 0.0172 J | 1020 |
| 13-Nov-19 | 8.70 | 2523 | 1.61 | -201.7 | 33.00 | 8.67 | 1930 | - | 0.0325 | 0.211 | 0.00444 | 0.024 | 726 |
| 12-Feb-20 | 7.80 | 971 | 7.99 | 150.3 | 16.00 | 7.92 | 836 | - | 0.0143 | 0.0234 J | 0.00396 | 0.0279 | 243 |
| Preliminary Standard ^c | - | 700 | - | - | - | 6.5-8.5 | 500 | 6.5-8.5 | TBD ^d | 0.3 | 0.05 | 0.05 | - |

Notes:

- Not analyzed or not available
- < Analyte not detected above the reporting limit shown
- a North Creek Analytical, Inc.
- b Severn Trent Laboratories
- c Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest
- d Site background arsenic value to be determined (TBD)
- e 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 msl Feet above mean sea level
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | General Chemistry | | Dissolved Metals (mg/L) | | | | |
|-------------------------|------------------|-------------------------|-------------------------|------------------------------------|-----------------|---------------------|----------------------|-------------------------------|-------------------------------------|-------------------------|----------|----------|-----------|-----------|
| | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (mV) | Turbidity (NTU) | pH (standard units) | Weir Flow Rate (gpm) | Total Dissolved Solids (mg/L) | pH measured in lab (standard units) | Arsenic | Iron | Lead | Manganese | Potassium |
| 1-Feb-05 | 8.47 | 2205 | - | - | 6.24 | 10.23 | - | 1440 | 10.37 | 0.14900 | 0.323 | 0.01070 | 0.0569 | - |
| 9-Mar-05 | 11.38 | 2054 | - | - | 7.80 | 10.15 | 2.64 | 1630 | 10.11 | 0.20000 | 0.526 | 0.01190 | 0.0938 | - |
| 5-Apr-05 | 7.7 | 2169 | - | - | 7.99 | 10.42 | 10.00 | 1420 | 10.18 | 0.12900 | 1.150 | 0.00861 | 0.0540 | - |
| 10-May-05 | 14.1 | 1912 | - | - | 562.00 | 9.87 | 25.00 | 1210 | 9.85 | 0.10500 | 1.460 | 0.00763 | 0.0818 | - |
| 7-Jun-05 | 15.74 | 2588 | - | - | 11.60 | 10.03 | 6.82 | 1570 | 10.18 | 0.13800 | 1.470 | 0.01010 | 0.1170 | - |
| 15-Jul-05 ^a | 20.38 | 3184 | - | - | 8.91 | 10.36 | 0.94 | 3200 | 10.3 | 0.19200 | 0.367 | 0.00998 | 0.2060 | - |
| 15-Jul-05 ^b | - | - | - | - | - | - | - | 1990 | 10.44 | 0.18900 | 1.460 | 0.01080 | 0.1640 | - |
| 9-Aug-05 ^a | - | - | - | - | - | - | - | Dry | - | - | - | - | - | - |
| 9-Aug-05 ^b | - | - | - | - | - | - | - | Dry | - | - | - | - | - | - |
| 14-Sept-05 ^a | 15.60 | 3792 | - | - | 14.50 | 9.92 | 0.07 | 2800 | 10 | 0.20800 | 1.250 | 0.05780 | 0.1000 | - |
| 14-Sept-05 ^b | - | - | - | - | - | - | - | 2730 | 10.16 | 0.22300 | 1.070 | 0.07330 | - | - |
| 5-Oct-05 | 12.96 | 3237 | - | - | 4.99 | 9.89 | 0.32 | 2150 | 9.97 | 0.17000 | 1.430 | 0.01250 | 0.2250 | - |
| 9-Nov-05 | 8.40 | 2545 | - | - | 13.80 | 9.64 | 7.50 | 1900 | 9.88 | 0.07820 | 0.167 | <0.01000 | 0.0835 | - |
| 9-Dec-05 | 3.34 | 1377 | - | - | 8.03 | 10.43 | 5.00 | 1700 | 10.4 | 0.13000 | 0.189 | 0.00612 | 0.0857 | - |
| 19-Jan-06 | 7.37 | 1424 | 7.92 | - | 12.20 | 10.61 | 7.50 | 1000 J | 10.4 | 0.08950 | 0.449 | 0.00481 | 0.1040 | - |
| 16-Feb-06 | 3.74 | 1680 | 12.19 | * | 14.60 | 10.78 | 7.50 | 1400 J | 10.8 | 0.10500 | 0.343 | 0.00546 | 0.0817 | - |
| 15-Mar-06 | 7.21 | 1634 | 12.61 | 194.4 | 7.44 | 10.63 | 5.28 | 1300 J | 10.7 | 0.12800 | 0.204 | 0.00638 | 0.0750 | - |
| 7-Apr-06 | 14.33 | 2055 | 8.54 | 55.3 | 9.21 | 10.84 | 3.17 | 1500 | 10.4 | 0.14300 | 0.552 | 0.00663 | 0.1140 | - |
| 16-May-06 | 21.65 | 2474 | 6.09 | 11.6 | 9.37 | 10.69 | 0.83 | 2000 | 10.6 | 0.15700 | 0.921 | 0.00819 | 0.2000 | - |
| 23-Jun-06 | 24.58 | 2820 | 6.66 | - | 15.40 | 11.64 | 0.63 | 1400 | 10.6 | 0.15400 | 0.210 | 0.01310 | 0.1090 | - |
| 20-Jul-06 | 21.17 | 3291 | 8.56 | -85.5 | 68.30 | 10.75 | Dry* | 2300 | 10.8 | 0.13100 | 0.454 | 0.00941 | 0.0406 | - |
| 22-Aug-06 | - | - | - | - | - | - | - | Dry | - | - | - | - | - | - |
| 26-Sep-06 | 16.38 | 2997 | 3.00 | -57.1 | 31.60 | 9.92 | Dry* | 2900 | 9.94 | 0.10300 | 1.070 | 0.01680 | 0.1010 | - |
| 26-Oct-06 | 11.00 | 2650 | 5.35 | 59.6 | 25.80 | 9.65 | 0.63 | 2300 | 9.45 | 0.13200 | 2.220 | 0.02630 | <0.100 | - |
| 15-Nov-06 | 8.51 | 1708 | 8.16 | -35.7 | 34.70 | 10.15 | 17.14 | 1200 | 10.1 | 0.06740 | 0.518 | 0.00807 | 0.0794 | - |
| 20-Dec-06 | 5.07 | 1927 | 8.84 | 14.8 | 7.94 | 10.67 | 10.91 | 1200 | 10.5 | 0.09970 | 0.384 | 0.00478 | 0.0844 | - |
| 24-Jan-07 | 2.30 | 1846 | 10.72 | 5.9 | 11.70 | 10.37 | 9.00 | 1100 J | 10.6 | 0.12600 | 0.359 | 0.01610 | 0.0729 | - |
| 12-Feb-07 | 9.26 | 1777 | 11.75 | -91.3 | 26.70 | 10.56 | 6.00 | 1100 | 10.3 | 0.13900 | 0.283 | 0.00712 | 0.0808 | - |
| 27-Mar-07 | 8.71 | 1219 | 9.18 | -12.6 | 13.80 | 8.70 | 24.00 | 840 J | 10.2 J | 0.08850 | 0.289 | 0.00486 | 0.0821 | - |
| 18-Apr-07 | 7.39 | 4563 | 8.65 | 41.0 | 16.80 | 12.12 | 9.00 | 2000 | 11.9 J | 0.09750 | 0.830 | 0.03250 | 0.0408 | - |
| 31-May-07 | - | 3916 | 6.33 | -149.5 | 10.70 | 10.96 | 1.36 | 2100 | 11.5 J | 0.27500 | <0.750 | 0.02290 | 0.1560 | - |
| 20-Jun-07 | 22.59 | 3336 | 8.50 | -20.4 | 42.50 | 10.46 | 0.29 | 2400 J | 10.4 J | 0.25500 | <0.150 | 0.02740 | 0.0309 | - |
| 31-Jul-07 | 18.94 | 3915 | 7.85 | -69.2 | 41.30 | 10.92 | 0.06 | 3300 | 10.8 J | 0.23600 | 1.100 | 0.01260 | 0.0846 | - |
| 29-Aug-07 | 21.52 | 2406 | 5.75 | -5.3 | 24.10 | 9.72 | Dry* | 2300 J | 9.53 J | 0.12900 | 0.627 | 0.00845 | 0.1940 | - |
| 27-Sep-07 | 13.88 | 2009 | 5.75 | 15.5 | 28.30 | 9.56 | 0.06 | 1600 | 9.51 J | 0.20700 | 1.150 | 0.00437 | 0.4170 | - |
| 26-Oct-07 | 7.68 | 1662 | 9.06 | 80.5 | 13.00 | 9.92 | 2.04 | 1800 J | 9.74 J | 0.13200 | 0.591 | 0.00753 | 0.1960 | - |
| 30-Nov-07 | 4.34 | 2446 | 9.63 | 26.7 | 11.70 | 9.86 | 2.63 | 1600 | 9.74 J | 0.13500 | 0.432 | 0.00827 | 0.1000 | - |
| 12-Dec-07 | 5.88 | 2056 | 10.34 | 39.3 | 10.30 | 10.18 | 2.63 | 1500 | 9.85 J | 0.10500 | 0.324 | 0.00573 | 0.0784 | - |
| 24-Jan-08 | 3.05 | 1601 | 15.03 | 42.3 | - | 9.40 | 2.63 | 1000 | 9.73 J | 0.08740 | 0.451 | 0.00406 | 0.1500 | - |
| 28-Feb-08 | - | - | - | - | 9.22 | - | 4.13 | 1200 | 10.1 J | 0.11800 | 0.260 | 0.00892 | 0.0714 | - |
| 25-Mar-08 | 6.80 | 1622 | 12.37 | 95.1 | 16.40 | 9.98 | 5.25 | 1100 | 9.98 J | 0.11000 | 0.307 | 0.00386 | 0.0683 | - |
| 29-Apr-08 | 7.53 | 1997 | 9.10 | 137.4 | 11.90 | 10.29 | 7.50 | 1100 J | 10.4 J | 0.12400 | 0.328 | 0.00705 | 0.0789 | - |
| 20-May-08 | 16.35 | 2504 | 9.03 | 77.4 | 32.90 | 10.92 | 7.50 | 1700 | 10.8 J | 0.14600 | 0.558 | 0.01470 | 0.1580 | - |
| 18-Jun-08 | 11.82 | 2925 | 8.32 | 68.3 | 25.70 | 11.14 | 1.69 | 1800 J | 10.9 J | 0.20800 | 0.351 | 0.00848 | 0.1540 | - |
| 26-Aug-08 | 17.69 | 3376 | 7.98 | 62.8 | 41.10 | 10.43 | 0.84 | 2200 J | 10.3 J | 0.28700 | 0.391 | 0.01320 | 0.4630 | 647 |
| 20-Nov-08 | 8.10 | 1447 | 9.65 | 112.0 | 43.70 | 11.00 | 11.25 | 1400 | 10.6 J | 0.12100 | 0.386 | 0.01620 | 0.0888 | 485 |
| 12-Feb-09 | 2.99 | 1214 | 14.46 | - | 14.60 | 10.93 | 4.06 | 1200 | 10.6 J | 0.21900 | 0.410 | 0.01180 | 0.0986 | 434 |
| 19-May-09 | 13.05 | 1962 | 7.92 | 32.6 | 36.70 | 10.23 | 7.50 | 1800 J | 10.8 J | 0.21000 | 0.620 | 0.01370 | 0.1430 | 521 |
| 24-Sep-09 | 16.30 | 2792 | 1.59 | 263.8 | 13.70 | 8.82 | Dry* | 2400 | - | 0.13000 | 8.600 | 0.05300 | 0.6400 | 730 |
| 15-Dec-09 | 2.80 | 1702 | 7.47 | 343.0 | - | 10.18 | 6.67 | 1200 | - | 0.17000 | 2.300 | 0.02200 | 0.1200 | 330 |
| 24-Mar-10 | 13.80 | 2629 | 2.09 | 270.7 | 263.00 | 11.46 | 6.03 | 1800 | - | 0.18000 | 0.660 | 0.02000 | 0.0360 | 600 |
| 17-Jun-10 | 12.00 | 1876 | 0.01 | - | 157.00 | 10.76 | 14.15 | 1200 | - | 0.02700 | 1.600 | 0.00390 | 0.1700 | 410 |
| 20-Sep-10 | 11.40 | 3100 | 6.34 | 198.6 | 12.20 | 10.63 | 2.38 | 2800 | - | 0.25000 | 4.800 | 0.04000 | 0.4600 | 580 |
| 7-Dec-10 | 6.60 | 2455 | 4.03 | 154.0 | 11.00 | 11.61 | 16.69 | 1600 | - | 0.24000 | 1.300 | 0.02600 | 0.0710 | 510 |
| 30-Mar-11 | 8.10 | 848 | 0.22 | 136.1 | 31.50 | 13.08 | 58.61 | 940 J | - | 0.09100 | 0.720 J+ | 0.00990 | 0.0500 | 330 |
| 22-Jun-11 | 14.40 | 2286 | 5.68 | 164.2 | 13.20 | 11.28 | 5.68 | 2600 J | - | 0.12000 | 1.200 | 0.02500 | 0.1000 | 490 |
| 27-Sep-11 | 16.20 | 1911 | 4.62 | 253.4 | 39.10 | 10.07 | 13.40 | 2100 | - | 0.17000 | 4.900 | 0.04500 | 0.4400 | 880 |
| 15-Dec-11 | 4.10 | 1439 | 7.40 | 139.4 | 10.60 | 10.33 | 6.65 | 1400 | - | 0.18000 | 2.000 | 0.02100 | 0.1100 | 500 |
| 20-Mar-12 | 5.20 | 1687 | 8.50 | 27.5 | 9.60 | 11.17 | 60.00 | 410 | - | 0.13000 | 0.970 | 0.00740 | 0.1700 | 290 |
| 18-Jun-12 | 14.70 | 2336 | 0.11 | 326.9 | 15.60 | 11.25 | 60.00 | 410 | - | 0.13000 | 1.000 J+ | 0.00980 | 0.0540 | 430 |

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

| Date Sampled | Field Parameters | | | | | | | General Chemistry | | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|------------------|-------------------------|-------------------------|------------------------------------|-----------------|---------------------|----------------------|-------------------------------|-------------------------------------|-------------------------|----------|------------|-----------|-----------|
| | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (mV) | Turbidity (NTU) | pH (standard units) | Weir Flow Rate (gpm) | Total Dissolved Solids (mg/L) | pH measured in lab (standard units) | Arsenic | Iron | Lead | Manganese | Potassium |
| 20-Sep-12 | 15.30 | 2972 | 7.81 | 106.0 | 12.10 | 9.55 | 0.10 | 1400 J | - | 0.13000 | 0.460 | 0.00220 | 0.0480 | 450 |
| 18-Dec-12 | 4.80 | 1908 | 9.34 | -14.2 | 7.41 | 10.28 | 18.50 | 870 | - | 0.12000 | 1.100 | 0.00810 | 0.3000 | 390 |
| 26-Feb-13 | 5.80 | 6470 | 11.27 | 161.6 | 22.00 | 12.46 | 9.90 | 1800 | - | 0.09900 | <0.500 | 0.06200 | 0.0200 | 710 |
| 23-May-13 | 10.50 | 1625 | 9.14 | 291.8 | 14.40 | 9.93 | 4.84 | 980 | - | 0.09400 | 2.100 | 0.02100 | 0.1500 | 310 |
| 21-Aug-13 | 15.70 | 7260 | 7.69 | 51.6 | 9.00 | 10.71 | 0.32 | 2780 | - | 0.34200 | 0.770 | 0.01830 | 0.1610 | 954 |
| 19-Nov-13 | 8.10 | 2032 | 10.00 | 87.4 | 9.95 | 11.19 | 25.40 | 1270 | - | 0.07080 | 0.350 | 0.01690 | 0.0800 | 487 |
| 1-Apr-14 | 13.70 | 3420 | 9.11 | 129.4 | 59.00 | 12.57 | 20.77 | 1300 | - | 0.03730 | 0.120 | 0.01200 | 0.0160 | 572 |
| 23-May-14 | 12.83 | 986 | 11.63 | 105.7 | - | 9.36 | - | 822 | - | 0.04700 | 0.550 | 0.01390 | 0.1950 | 274 |
| 13-Aug-14 | 18.38 | 2000 | 5.52 | 63.6 | 8.93 | 8.02 | 2.00 | 1250 | - | 0.01340 | 0.050 | 0.00060 | 0.4140 | 326 |
| 11-Nov-14 | 6.70 | 259 | 9.77 | 164.8 | 4.27 | 8.09 | 1.50 | 955 | - | 0.01900 | 0.080 | 0.00020 | 0.0780 | 315 |
| 12-Feb-15 | 10.00 | 669 | 11.13 | 142.9 | 2.75 | 8.62 | 40.00 | 1490 | - | 0.01490 | 0.310 | 0.00180 | 0.2020 | 155 |
| 4-May-15 | 13.70 | 1293 | 8.69 | 181.7 | 155.00 | 9.38 | 0.09 | 1100 | - | 0.04330 | 0.660 | 0.01130 | 0.1700 | 292 |
| 5-Aug-15 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 3-Nov-15 | 9.70 | 1296 | 7.66 | 165.6 | 13.70 | 8.03 | 1.98 | 1200 | - | 0.01140 | 0.120 | 0.00080 | 0.1690 | 355 |
| 9-Feb-16 | 9.10 | 838 | 8.79 | 181.4 | 2.17 | 7.87 | 0.69 | 529 | - | 0.00780 | 0.110 | 0.00050 J+ | 0.0630 | 145 |
| 2-May-16 | 23.40 | 1126 | 6.16 | 128.1 | 7.59 | 7.63 | Dry* | 688 | - | 0.00760 | 0.023 J | 0.00006 J- | 0.3240 | 162 |
| 23-Aug-16 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 1-Nov-16 | 11.70 | 332 | 7.12 | 97.5 | 7.71 | 7.76 | 7.24 | 703 | - | 0.00918 | 0.097 | 0.00030 | 0.0223 | 207 |
| 1-Feb-17 | 2.30 | 925 | 11.55 | 39.1 | 2.04 | 7.71 | 0.30 | 567 | - | 0.00490 | <0.050 | 0.00009 J | 0.0397 | 135 |
| 30-May-17 | 13.30 | 817 | 57.50 | 8.3 | 22.20 | 7.40 | 0.30 | 516 | - | 0.01310 | 0.526 | 0.00008 J+ | 3.4700 | 94 |
| 17-Aug-17 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 9-Nov-17 | 7.00 | 851 | 7.57 | 88.0 | 67.30 | 8.43 | - | 865 | - | 0.0366 | 1.33 | 0.0107 | 0.284 | 236 |
| 27-Feb-18 | 5.50 | 498 | 10.68 | 106.0 | 5.39 | 8.60 | - | 503 | - | 0.00970 | 0.174 | 0.00123 | 0.0488 | 127 |
| 1-May-18 | 12.80 | 894 | 8.87 | - | 2.39 | 7.97 | - | 656 | - | 0.00781 | 0.0212 J | <0.00010 J | 0.0762 | 195 |
| 21-Aug-18 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 7-Nov-18 | 8.50 | 1079 | 7.37 | 166.6 | 5.48 | 7.94 | - | 1030 | - | 0.01570 | <0.05 | 0.000089 J | 0.0244 | 322 J+ |
| 11-Mar-19 | 5.00 | 525 | 9.79 | 146.3 | 1.28 | 7.76 | - | 541 | - | 0.00421 | 0.0035 J | <0.0001 | 0.0050 | 133 |
| 9-May-19 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 26-Aug-19 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 14-Nov-19 | 7.40 | 842 | 4.10 | 214.3 | 19.00 | 7.74 | Dry* | 783 | - | 0.01130 | 0.0146 J | 0.000076 J | 0.1560 | 242 |
| 12-Feb-20 | 7.20 | 401 | 8.41 | -38.3 | 2.47 | 7.53 | 3.96 | 348 | - | 0.00481 | 0.0201 J | 0.0001 U | 0.0106 | 87 |
| Preliminary Standard ^c | - | 700 | - | - | - | 6.5-8.5 | - | 500 | 6.5-8.5 | TBD ^d | 0.3 | 0.05 | 0.05 | - |

Notes:

- * Sample collected from constructed wetland (alternative sampling location) upstream of weir
- Not analyzed or not available
- Dry Weir dry; unable to collect field parameters or samples
- < Analyte not detected above the reporting limit shown
- a North Creek Analytical, Inc.
- b Severn Trent Laboratories
- c Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest
- d Site background arsenic value to be determined (TBD)
- 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 msl Feet above mean sea level
- gpm Gallons per minute
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | General Chemistry | | Dissolved Metals (mg/L) | | | | |
|-------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------------------|-------------------------|---------|---------|-----------|-----------|
| | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | pH measured in lab (standard units) | Arsenic | Iron | Lead | Manganese | Potassium |
| 1-Feb-05 | 7.13 | 9580 | - | - | 4.19 | 13.02 | 4080 | 12.61 | 0.17400 | 1.140 | 0.02430 | 0.0694 | - |
| 9-Mar-05 | 14.28 | 9979 | - | - | 6.79 | 12.52 | 4640 | 12.57 | 0.24000 | 0.988 | 0.04210 | 0.0853 | - |
| 5-Apr-05 | 9.90 | 10820 | - | - | 43.50 | 11.99 | 3830 | 12.31 | 0.13300 | 2.520 | 0.00985 | 0.1280 | - |
| 10-May-05 | 15.10 | 6091 | - | - | 45.60 | 12.14 | 3270 | 12.4 | 0.09290 | 0.866 | 0.02550 | 0.0339 | - |
| 7-Jun-05 | 14.49 | 8257 | - | - | 24.20 | 12.19 | 3780 | 12.32 | 0.13200 | 1.540 | 0.02470 | 0.0526 | - |
| 15-Jul-05 ^a | 18.34 | 6937 | - | - | 6.89 | 11.69 | 5000 | 11.6 | 0.28100 | 1.260 | 0.03180 | 0.0922 | - |
| 15-Jul-05 ^b | - | - | - | - | - | - | 4260 | 11.8 | 0.23700 | 0.286 | 0.03420 | <0.0200 | - |
| 9-Aug-05 ^a | 23.53 | 7654 | - | - | 17.1 | 10.26 | 6600 | 10.3 | 0.32200 | 8.360 | 0.04450 | 0.1480 | - |
| 9-Aug-05 ^b | - | - | - | - | - | - | 5580 | 10.35 | 0.34000 | 0.648 | 0.03710 | 0.0828 | - |
| 14-Sept-05 ^a | 18.55 | 6730 | - | - | 10.00 | 10.51 | 5100 | 11.1 | 0.23500 | 1.860 | 0.01930 | 0.1550 | - |
| 14-Sept-05 ^b | - | - | - | - | - | - | 4750 | 11.78 | 0.26800 | 2.270 | 0.03420 | - | - |
| 5-Oct-05 | 12.14 | 4323 | - | - | 17.60 | 9.80 | 3090 | 10.15 | 0.13000 | 0.947 | 0.02650 | 0.0638 | - |
| 9-Nov-05 | 6.78 | 3784 | - | - | 11.80 | 11.12 | 2600 | 11.5 | 0.12100 | 0.504 | 0.02170 | 0.0802 | - |
| 9-Dec-05 | 3.22 | 8745 | - | - | 12.90 | 12.85 | 3900 | 12.3 | 0.17500 | 5.720 | 0.01410 | 0.1490 | - |
| 19-Jan-06 | 7.73 | 5215 | 5.43 | - | 13.30 | 12.52 | 2000 J | 12.3 J | 0.02030 | 0.556 | 0.00324 | 0.0355 | - |
| 16-Feb-06 | 3.96 | 9342 | 8.97 | 231.2 | 9.08 | 12.30 | 4100 J | 12.6 | 0.04300 | 1.480 | 0.02560 | 0.0548 | - |
| 15-Mar-06 | 8.72 | 12910 | 9.59 | 222.1 | 7.64 | 12.60 | 5100 J | 12.7 | 0.03860 | <0.150 | 0.04180 | <0.0100 | - |
| 7-Apr-06 | 14.26 | 15220 | 6.90 | 18.9 | 3.65 | 12.92 | 5700 | 12.7 | 0.04850 | 0.382 | 0.06560 | 0.0119 | - |
| 16-May-06 | 19.75 | 10880 | 2.61 | 33.8 | 15.40 | 12.46 | 5100 | 12.6 | 0.13000 | 3.200 | 0.09210 | 0.0916 | - |
| 23-Jun-06 | 22.76 | 7586 | 2.98 | - | 14.10 | 12.65 | 5100 | 11.9 | 0.13000 | 0.606 | 0.05790 | 0.0618 | - |
| 20-Jul-06 | 24.33 | 7457 | 0.73 | -148.4 | 16.70 | 11.33 | 6400 | 11.5 | 0.27200 | 1.180 | 0.05130 | 0.0418 | - |
| 22-Aug-06 | 15.03 | 7481 | 3.75 | 61.0 | 14.10 | 10.40 | 6100 | 10.3 | 0.31800 | 0.824 | 0.03320 | 0.0390 | - |
| 26-Sep-06 | 17.30 | 8409 | 1.31 | -312.4 | 15.10 | 12.38 | 5500 | 12.2 | 0.23000 | 0.966 | 0.04570 | 0.0490 | - |
| 26-Oct-06 | 10.95 | 6075 | 4.10 | -265.6 | 13.30 | 12.18 | 4600 | 11.7 | 0.24300 | 3.980 | 0.04150 | <0.2000 | - |
| 15-Nov-06 | 8.07 | 5022 | 7.71 | -152.7 | 21.50 | 12.24 | 2600 | 11.9 | 0.07620 | 0.217 | 0.00368 | 0.1110 | - |
| 20-Dec-06 | 6.32 | 9148 | 5.73 | -139.6 | 12.20 | 12.85 | 2900 J | 12.6 | 0.04610 | 1.630 | 0.00128 | 0.0820 | - |
| 24-Jan-07 | 2.15 | 12690 | 9.24 | -98.4 | 9.74 | 13.10 | 3000 J | 12.4 | 0.01920 | <0.150 | 0.02680 | <0.0100 | - |
| 12-Feb-07 | 9.35 | 14110 | 8.43 | -86.7 | 32.50 | 13.13 | 4700 | 12.6 | 0.09620 | <0.150 | 0.08350 | 0.0233 | - |
| 27-Mar-07 | 9.16 | 10560 | 8.41 | -46.2 | 7.42 | 11.31 | 2900 J | 12.5 J | 0.00598 | <0.150 | 0.01450 | <0.0100 | - |
| 18-Apr-07 | 8.27 | 14570 | 8.32 | 10.8 | 10.30 | 12.79 | 5200 | 12.5 J | 0.01980 | <0.300 | 0.02210 | <0.0200 | - |
| 31-May-07 | 23.66 | 13410 | 6.42 | -95.0 | 31.20 | 11.77 | 5100 | 12.5 J | 0.07840 | <1.500 | 0.05040 | <0.100 | - |
| 20-Jun-07 | 26.35 | 10050 | 5.53 | -195.7 | 27.90 | 12.29 | 5300 J | 12.4 J | 0.11200 | 0.315 | 0.03820 | 0.0207 | - |
| 31-Jul-07 | 21.39 | 6666 | 4.76 | -106.4 | 72.00 | 10.86 | 6300 | 10.9 J | 0.20800 | 2.540 | 0.06880 | 0.1160 | - |
| 29-Aug-07 | 22.61 | 6950 | 1.57 | -193.4 | 61.80 | 12.05 | 6300 J | 11.7 J | 0.14900 | 0.835 | 0.03060 | 0.0710 | - |
| 27-Sep-07 | 11.45 | 5059 | 2.66 | -180.4 | 78.40 | 11.43 | 4800 | 11.3 J | 0.19000 | 1.430 | 0.01740 | 0.1140 | - |
| 26-Oct-07 | 6.98 | 4147 | 1.44 | -204.7 | 39.50 | 12.48 | 3900 J | 11.8 J | 0.16800 | 1.510 | 0.02550 | 0.0861 | - |
| 30-Nov-07 | 2.86 | 5030 | 8.50 | -74.9 | 12.40 | 12.20 | 2600 | 11.7 J | 0.12100 | 0.885 | 0.01430 | 0.1120 | - |
| 12-Dec-07 | 4.45 | 3564 | 2.03 | -141.8 | 20.70 | 10.93 | 2700 | 11 J | 0.07930 | 1.130 | 0.00987 | 0.1640 | - |
| 24-Jan-08 | 1.13 | 4859 | 4.10 | -186.8 | - | 11.19 | 2200 | 12.4 J | 0.08610 | <0.150 | 0.00679 | <0.0100 | - |
| 28-Feb-08 | - | - | - | - | 18.10 | - | 2800 | 11.2 J | 0.18300 | 0.499 | 0.07340 | 0.0279 | - |
| 25-Mar-08 | 7.37 | 5413 | 7.88 | -58.2 | 122.00 | 12.29 | 2900 | 11.7 J | 0.18200 | 0.548 | 0.01300 | 0.0583 | - |
| 29-Apr-08 | 8.43 | 3685 | 9.04 | 59.3 | 19.20 | 11.63 | 2400 J | 11.2 J | 0.15200 | 0.708 | 0.01600 | 0.0520 | - |
| 20-May-08 | 18.03 | 3554 | 6.69 | 58.0 | 156.00 | 11.01 | 2100 | 10.8 J | 0.13700 | 0.406 | 0.03830 | 0.0688 | - |
| 18-Jun-08 | 13.01 | 5680 | 6.46 | 57.5 | 71.80 | 11.14 | 4000 J | 11 J | 0.27900 | 0.381 | 0.03440 | 0.0423 | - |
| 26-Aug-08 | 18.02 | 2800 | 5.72 | 16.9 | 49.80 | 10.08 | 2500 J | 9.9 J | 0.09170 | 0.404 | 0.01860 | 0.0532 | 557 |
| 20-Nov-08 | 7.46 | 2011 | 9.04 | 38.3 | 23.60 | 10.49 | 2300 | 10.1 J | 0.07290 | 1.980 | 0.00920 | 0.1710 | 566 |
| 12-Feb-09 | 1.63 | 1870 | 11.74 | - | 46.10 | 10.83 | 2300 | 10.6 J | 0.12900 | 0.982 | 0.01720 | 0.1130 | 738 |
| 19-May-09 | 12.73 | 1895 | 5.37 | -16.4 | 168.00 | 9.82 | 1700 J | 9.94 J | 0.07890 | 1.320 | 0.01130 | 0.0736 | 515 |
| 23-Sep-09 | 21.50 | 4190 | 0.09 | 175.1 | 14.40 | 9.70 | 4100 | - | 0.12000 | 4.500 | 0.09900 | 0.0890 | 1300 |
| 14-Dec-09 | + | + | + | + | + | + | + | + | + | + | + | + | + |
| 22-Mar-10 | 13.10 | 2480 | - | 342.0 | 15.60 | 10.05 | 1700 | - | 0.07600 | 5.700 | 0.03400 | 0.1400 | 520 |
| 17-Jun-10 | 13.40 | 2429 | 5.14 | - | 26.10 | 10.77 | 2100 | - | 0.12000 | 7.700 | 0.08900 | 0.1100 | 630 |
| 21-Sep-10 | 16.30 | 2733 | 1.10 | 216.8 | 21.50 | 9.81 | 2200 | - | 0.02500 | 4.400 J | 0.02700 | 0.2400 | 510 |
| 8-Dec-10 | 6.00 | 1994 | 2.70 | - | 18.70 | 10.05 | 1400 | - | 0.05300 | 6.000 | 0.01800 | 0.2100 | 490 |
| 30-Mar-11 | 9.10 | 509 | 0.37 | 179.2 | 13.80 | 12.04 | 730 J | - | 0.03600 | 3.000 | 0.01400 | 0.0760 | 260 |
| 21-Jun-11 | 21.60 | 2092 | 1.90 | 192.2 | 13.60 | 10.07 | 2800 J | - | 0.06200 | 4.300 | 0.02900 | 0.0890 | 380 |

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

| Date Sampled | Field Parameters | | | | | | General Chemistry | | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------------------|-------------------------|-------|------------|-----------|-----------|
| | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | pH measured in lab (standard units) | Arsenic | Iron | Lead | Manganese | Potassium |
| 27-Sep-11 | 14.60 | 1516 | 9.34 | 220.4 | 32.50 | 9.34 | 1800 | - | 0.07800 | 2.800 | 0.03600 | 0.0580 | 780 |
| 15-Dec-11 | 3.00 | 1449 | 1.90 | 94.6 | 13.80 | 10.75 | 2100 | - | 0.14000 | 6.200 | 0.07400 | 0.0810 | 630 |
| 21-Mar-12 | 2.60 | 1088 | 8.10 | 285.7 | 13.10 | 9.95 | 780 | - | 0.03000 | 2.800 | 0.00720 | 0.0580 | 240 |
| 19-Jun-12 | 17.10 | 1747 | 5.54 | 345.3 | 10.80 | 9.93 | 780 | - | 0.07000 | 4.200 | 0.02900 | 0.0620 | 400 |
| 20-Sep-12 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 19-Dec-12 | 4.00 | 1771 | 6.37 | 104.0 | 6.12 | 10.71 | 1300 | - | 0.04700 | 4.000 | 0.01800 | 0.0960 | 440 |
| 26-Feb-13 | 6.90 | 3720 | 5.40 | 196.7 | 10.60 | 11.86 | 1100 | - | 0.14000 | 4.000 | 0.03900 | 0.1000 | 690 |
| 23-May-13 | 11.50 | 2335 | 5.21 | 323.5 | 44.10 | 12.48 | 1800 | - | 0.13000 | 3.100 | 0.05000 | 0.0510 | 530 |
| 22-Aug-13 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 19-Nov-13 | 8.20 | 1256 | 4.12 | 79.3 | 18.20 | 9.89 | 1260 | - | 0.03980 | 0.650 | 0.02040 | 0.0590 | 487 |
| 1-Apr-14 | 15.30 | 2053 | 4.42 | 130.9 | 772.00 | 11.27 | 1800 | - | 0.11300 | 1.270 | 0.04220 | 0.0520 | 649 |
| 23-May-14 | 14.15 | 2187 | 5.50 | 77.3 | - | 10.19 | 1860 | - | 0.11200 | 1.180 | 0.02360 | 0.0840 | 623 |
| 13-Aug-14 | 20.29 | 1298 | 5.35 | 40.1 | 24.80 | 9.63 | 949 | - | 0.04490 | 0.560 | 0.02280 | 0.0480 | 306 |
| 12-Nov-14 | 1.30 | 315 | 4.55 | -0.5 | 22.10 | 10.45 | 2440 | - | 0.12200 | 1.160 | 0.03420 | 0.0480 | 804 |
| 12-Feb-15 | 11.10 | 1267 | 4.01 | -8.2 | 23.90 | 10.20 | 905 | - | 0.02720 | 2.500 | 0.00960 | 0.0440 | 320 |
| 4-May-15 | 15.60 | 3200 | 4.35 | 240.5 | 9.21 | 10.42 | 2280 | - | 0.15400 | 1.320 | 0.03080 | 0.0580 | 774 |
| 5-Aug-15 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 3-Nov-15 | 8.30 | 1143 | 2.01 | 88.1 | 35.40 | 9.22 | 1050 | - | 0.02800 | 0.660 | 0.02820 | 0.0430 | 364 |
| 9-Feb-16 | 7.30 | 1672 | 3.45 | 95.9 | 7.79 | 10.45 | 1170 | - | 0.05100 J+ | 0.880 | 0.03400 | 0.0540 | 410 |
| 3-May-16 | 14.20 | 3150 | 3.61 | 335.2 | 63.80 | 10.35 | 2260 | - | 0.14800 | 1.430 | 0.09790 J- | 0.0600 | 777 |
| 24-Aug-16 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 1-Nov-16 | 12.10 | 401 | 5.56 | -65.9 | 15.00 | 9.43 | 742 | - | 0.02190 | 0.423 | 0.01410 | 0.0213 | 356 |
| 1-Feb-17 | 2.10 | 2064 | 4.82 | 5.0 | 17.80 | 10.27 | 1330 | - | 0.05760 | 0.963 | 0.13900 | 0.0693 | 455 |
| 31-May-17 | 14.50 | 2594 | 5.36 | - | 22.70 | 9.93 | 1920 | - | 0.10500 | 0.888 | 0.05150 J+ | 0.0472 | 664 |
| 17-Aug-17 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 9-Nov-17 | 6.50 | 1049 | 6.38 | 92.3 | 14.40 | 10.13 | 1260 | - | 0.0588 | 1.46 | 0.0534 J+ | 0.0661 | 441 |
| 27-Feb-18 | 6.50 | 1379 | 4.05 | -71.0 | 6.11 | 10.94 | 865 | - | 0.06170 | 0.752 | 0.0477 J- | 0.0267 | 429 |
| 2-May-18 | 11.60 | 2547 | - | - | 25.30 | 10.36 | 1860 | - | 0.08590 | 0.886 | 0.02670 J+ | 0.0436 | 611 |
| 22-Aug-18 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 7-Nov-18 | 9.70 | 995 | 6.72 | 126.8 | 20.60 | 9.15 | 1040 | - | 0.07600 | 0.950 | 0.06550 | 0.0450 | 333 J+ |
| 11-Mar-19 | 10.60 | 1354 | 5.93 | -18.7 | 7.19 | 10.31 | 1270 | - | 0.04930 | 0.708 | 0.04170 | 0.0833 | 458 |
| 9-May-19 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 26-Aug-19 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | - | Dry | Dry | Dry | Dry | Dry |
| 14-Nov-19 | 8.70 | 1180 | 5.98 | 30.9 | 7.38 | 9.03 | 1120 | - | 0.0672 | 0.787 | 0.0764 | 0.0599 | 418 |
| 13-Feb-20 | 4.30 | 1032 | 2.51 | -126.9 | 6.10 | 10.46 | 927 | - | 0.0281 | 0.466 | 0.0130 | 0.0680 | 348 |
| Preliminary Standard ^c | - | 700 | - | - | - | 6.5-8.5 | 500 | 6.5-8.5 | TBD ^d | 0.3 | 0.05 | 0.05 | - |

Notes:

- Not analyzed or not available
- < Analyte not detected above the reporting limit shown
- + South Pond frozen; unable to collect field parameters or samples
- Dry South Pond dry; unable to collect field parameters or samples
- a North Creek Analytical, Inc.
- b Severn Trent Laboratories
- c Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest
- d Site background arsenic value to be determined (TBD)
- 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 msl Feet above mean sea level
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit

APPENDIX A-2

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--------------|----------------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|----------|------------|-----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 15-Jul-05 | 35.43 | 574.40 | 15.17 | 883 | - | - | 358.00 | 7.03 | 664 | 0.00847 | <0.100 | <0.00200 | 0.6020 | - |
| 9-Nov-05 | 31.83 | 578.00 | 10.77 | 1037 | - | - | 22.20 | 6.89 | 680 | 0.00345 | <0.150 | <0.00100 | 0.0286 | - |
| 15-Feb-06 | 23.91 | 585.92 | 9.14 | 623 | 1.53 | 497.4 | 6.76 | 7.26 | 470 J | 0.00325 | <0.150 | <0.00100 | <0.0100 | - |
| 17-May-06 | 31.91 | 577.92 | 11.32 | 1029 | 1.33 | 121.6 | 10.30 | 7.18 | 600 | 0.00518 | <0.150 | <0.00100 | 0.3160 | - |
| 23-Aug-06 | 35.35 | 574.48 | 19.21 | 481 | 5.97 | 60.4 | 6.30 | 6.67 | 340 | 0.00170 | <0.150 | <0.00100 | 0.0234 | - |
| 14-Nov-06 | 20.00 | 589.83 | 10.35 | 635 | 4.55 | 95.1 | 22.20 | 7.23 | 550 | 0.00307 | <0.150 | <0.00100 | 0.0131 | - |
| 14-Feb-07 | 29.29 | 580.54 | 11.13 | 435 | 3.88 | 85.6 | 32.10 | 6.76 | 260 | 0.00200 | <0.150 | <0.00100 | 0.0116 | - |
| 30-May-07 | 32.90 | 576.93 | 10.30 | 545 | 6.63 | 145.7 | 6.93 | 6.81 | 320 | 0.00248 | <0.150 | <0.00100 | <0.0100 | - |
| 27-Aug-07 | 35.68 | 574.15 | 10.49 | 428 | 7.13 | 76.7 | 8.65 | 6.95 | 260 J | 0.00187 | <0.150 | <0.00100 | 0.0189 | - |
| 29-Nov-07 | 32.75 | 577.08 | 10.10 | 625 | 7.14 | 144.3 | 12.20 | 6.96 | 340 J | 0.00232 | <0.150 | <0.00100 | <0.0100 | - |
| 27-Feb-08 | 27.83 | 582.00 | - | - | - | - | 19.60 | - | 320 | 0.00258 | <0.150 | <0.00100 | <0.0100 | - |
| 20-May-08 | 31.86 | 577.97 | 10.22 | 471 | 6.38 | 177.0 | 109.00 | 6.48 | 290 J | 0.00224 | <0.150 | <0.00100 | 0.0253 | - |
| 27-Aug-08 | 36.04 | 573.79 | 9.84 | 427 | 7.40 | 118.4 | 63.60 | 7.08 | 260 | 0.00205 | <0.150 | <0.00100 | 0.0173 | 23.0 |
| 26-Sep-08 | Test Trench Drain Line Installed | | | | | | | | | | | | | |
| 16-Oct-08 | 35.65 | 574.18 | 9.51 | 443 | 9.78 | 113.9 | 38.00 | 7.38 | 260 J | 0.00179 | <0.150 | <0.00100 | 0.0136 | 22.9 |
| 20-Nov-08 | 25.62 | 584.21 | 9.49 | 563 | 6.11 | 231.0 | 5.48 | 7.18 | 430 | 0.00368 | <0.150 | <0.00100 | <0.0100 | 106.0 |
| 30-Dec-08 | 23.14 | 586.69 | 9.84 | 402 | 8.40 | 106.9 | 8.92 | 7.25 | 280 J | 0.00247 | <0.150 | <0.00100 | 0.0130 | 43.9 |
| 15-Jan-09 | 20.66 | 589.17 | 8.40 | 336 | 9.65 | 229.6 | 1.07 | 6.88 | 290 | 0.00225 | <0.150 | <0.00100 | <0.0100 | 35.7 |
| 12-Feb-09 | 30.00 | 579.83 | 9.05 | 372 | 8.46 | - | 16.70 | 7.34 | 320 | 0.00193 | <0.150 | <0.00100 | 0.0165 | 27.0 |
| 12-Mar-09 | 31.30 | 578.53 | 9.13 | 409 | 8.60 | 174.9 | 15.80 | 7.03 | 340 | 0.00166 | <0.150 | <0.00100 | <0.0100 | 20.6 |
| 16-Apr-09 | 23.88 | 585.95 | 8.17 | 343 | 10.24 | 131.8 | 13.50 | 6.78 | 310 | 0.00177 | <0.150 | <0.00100 | <0.0100 | 24.6 |
| 19-May-09 | 30.50 | 579.33 | 8.99 | 392 | 8.69 | 82.6 | 23.70 | 7.75 | 340 J | 0.00156 | <0.150 | <0.00100 | <0.0100 | 19.6 |
| 23-Jun-09 | 34.00 | 575.83 | 9.21 | 480 | 9.56 | 79.0 | 22.90 | 7.89 | 430 | <0.00200 | <0.200 | <0.00200 | <0.0200 | 20.0 |
| 25-Aug-09 | 36.95 | 572.88 | 13.10 | 373 | 6.47 | 311.9 | 4.98 | 6.76 | 270 J+ | 0.00064 J | <0.200 | <0.00200 | 0.0042 J | 17.0 |
| 23-Sep-09 | 37.12 | 572.71 | 11.30 | 336 | 6.90 | 368.3 | 21.30 | 6.73 | 240 | <0.00200 | 0.054 J | 0.00018 J | 0.0120 J | 14.0 |
| 15-Dec-09 | 28.30 | 581.53 | 9.20 | 643 | 5.30 | 567.0 | 18.00 | 6.72 | 330 | <0.00200 | 0.033 J | <0.00200 | 0.0065 J | 26.0 |
| 24-Mar-10 | 30.03 | 579.80 | 9.80 | 562 | 5.72 | 545.9 | 5.04 | 6.74 | 370 | 0.00190 J | <0.200 | <0.00200 | <0.0200 U | 19.0 |
| 16-Jun-10 | 23.55 | 586.28 | 9.20 | 506 | 5.93 | 405.4 | 16.10 | 6.53 | <40 | 0.00360 | 0.110 J | <0.00200 | 0.0110 J | 20.0 |
| 21-Sep-10 | 35.89 | 573.94 | 10.40 | 593 | 4.82 | 288.5 | 117.00 | 6.96 | 370 | 0.00260 | <0.200 | 0.00023 J | 0.0350 J+ | 19.0 |
| 7-Dec-10 | 27.39 | 582.44 | 10.00 | 504 | 1.45 | 198.4 | 139.00 | 7.15 | 330 | 0.00230 | 0.650 | <0.00200 | 0.1700 | 14.0 |
| 29-Mar-11 | 29.76 | 580.07 | 8.10 | 247 | 2.47 | 169.0 | 6.81 | 7.14 | 300 | 0.00240 | 0.290 J+ | <0.00200 | 0.0540 | 15.0 |
| 21-Jun-11 | 30.45 | 579.38 | 9.30 | 606 | 4.58 | 332.9 | 3.56 | 7.17 | 400 J | <0.00500 | <0.200 | <0.00200 | 0.0100 J | 16.0 |
| 27-Sep-11 | 36.65 | 573.18 | 9.90 | 366 | 7.27 | 356.2 | 2.18 | 6.85 | 310 | <0.00500 | <0.200 | <0.00200 | 0.0060 J | 17.0 |
| 14-Dec-11 | 31.53 | 578.30 | 9.20 | 407 | 1.97 | 234.7 | 20.40 | 7.09 | 370 | <0.00500 | 0.330 | <0.00200 | 0.0860 | 16.0 |
| 20-Mar-12 | 21.60 | 588.23 | 7.70 | 561 | 7.06 | 385.4 | 4.80 | 7.18 | 280 | 0.00230 | <0.200 | <0.00040 | 0.0029 J | 16.0 |
| 19-Jun-12 | 21.60 | 588.23 | 10.00 | 575 | 7.04 | 378.2 | 5.60 | 7.31 | 330 | 0.00250 | <0.200 | <0.00040 | 0.0068 J | 16.0 |
| 19-Sep-12 | 36.42 | 573.41 | 11.30 | 561 | 8.76 | 286.0 | 2.49 | 7.02 | 310 | 0.00240 | <0.200 | <0.00040 | <0.0200 | 17.0 |
| 19-Dec-12 | 23.43 | 586.40 | 9.30 | 671 | 6.67 | 348.2 | 0.74 | 7.26 | <20 | 0.00170 | <0.200 | <0.00040 | <0.0200 | 17.0 |
| 25-Feb-13 | 29.32 | 580.51 | 8.00 | 572 | 9.51 | 337.0 | 26.00 | 7.28 | 300 | 0.00250 | <0.500 | <0.00040 | <0.0200 | 16.0 |
| 22-May-13 | 31.23 | 578.60 | 9.00 | 518 | 8.59 | 397.7 | 4.68 | 7.40 | 310 | 0.00180 | <0.500 | <0.00040 | <0.0200 | 15.0 |
| 21-Aug-13 | 37.02 | 572.81 | 10.20 | 534 | 9.27 | 152.7 | 1.46 | 7.11 | 227 | 0.00120 | <0.050 | <0.00010 | 0.0030 | 14.1 |
| 20-Nov-13 | 29.69 | 580.14 | 9.50 | 852 | 7.62 | 243.5 | 39.50 | 6.75 | 419 | 0.00160 | <0.050 | <0.00010 | 0.0020 | 19.9 |
| 1-Apr-14 | 23.29 | 586.54 | 8.90 | 347 | 7.60 | 248.1 | 2.54 | 7.30 | 247 | 0.00200 | <0.050 | <0.00010 | <0.0007 | 16.5 |
| 21-May-14 | 28.31 | 581.52 | 9.50 | 349 | 4.02 | 178.6 | - | 7.12 | 280 | 0.00180 | <0.050 | <0.00010 | 0.0150 | 15.1 |
| 13-Aug-14 | 36.52 | 573.31 | 12.10 | 441 | 9.22 | 51.9 | 6.20 | 7.10 | 283 | 0.00140 | <0.050 | <0.00010 | 0.0030 | 15.2 |
| 13-Nov-14 | 31.63 | 578.20 | 11.50 | 438 | 8.80 | 173.0 | 14.70 | 7.10 | 352 | 0.00160 | <0.050 | <0.00010 | 0.0020 | 17.1 |
| 11-Feb-15 | 23.02 | 586.81 | 9.40 | 498 | 3.89 | 98.1 | 10.50 | 7.72 | 319 | 0.00910 | 0.180 | 0.00030 | 0.0040 | 42.9 |
| 4-May-15 | 31.93 | 577.90 | 9.80 | 578 | 7.35 | 416.9 | 1.05 | 7.26 | 413 | 0.00170 | 0.008 J | <0.00010 | 0.0100 | 16.0 |
| 6-Aug-15 | 37.65 | 572.18 | 10.70 | 447 | 0.17 | 71.6 | 49.00 | 7.21 | 343 | 0.00390 | 0.110 | <0.00010 | 0.2140 | 10.3 |
| 4-Nov-15 | 32.89 | 576.94 | 9.50 | 657 | 8.56 | 240.5 | 5.70 | 6.92 | 554 | 0.00230 | 0.013 J | <0.00010 | <0.0010 | 49.3 |
| 10-Feb-16 | 25.39 | 584.44 | 9.80 | 322 | 7.36 | 204.8 | 3.21 | 7.31 | 202 | 0.00200 | 0.0076 J | <0.00010 | 0.0070 | 22.2 |
| 2-May-16 | 32.32 | 577.51 | 10.80 | 579 | 5.95 | 250.2 | 4.70 | 7.02 | 350 | 0.00180 | <0.050 | 0.00004 J- | 0.0040 | 17.8 |
| 23-Aug-16 | 37.66 | 572.17 | 11.00 | 488 | 1.34 | 459.9 | 259.00 | 7.08 | 413 | 0.00388 | 0.130 | 0.00007 J | 0.6220 | 14.6 |
| 2-Nov-16 | 31.30 | 578.53 | 9.70 | 280 | 3.94 | 225.0 | 6.13 | 7.18 | 531 | 0.00213 | <0.050 | 0.00012 | 0.0020 | 37.7 |
| 1-Feb-17 | 29.01 | 580.82 | 8.60 | 510 | 5.26 | 187.7 | 0.97 | 7.04 | 270 | 0.00147 | <0.050 | <0.00010 | 0.0035 | 19.0 |
| 30-May-17 | 28.47 | 581.36 | 9.50 | 483 | 6.89 | 4.7 | 4.85 | 6.96 | 290 | 0.00209 | 0.005 J | <0.00010 | 0.0034 | 15.7 |
| 17-Aug-17 | 36.30 | 573.53 | 10.50 | 536 | 3.79 | 82.5 | 6.44 | 6.96 | 283 | 0.00155 | 0.061 | <0.00010 | 0.0524 | 15.5 |
| 9-Nov-17 | 32.20 | 577.63 | 9.20 | 460 | 5.89 | 75.1 | 2.70 | 7.01 | 380 | 0.00163 | <0.05 | <0.0001 | 0.0019 | 16.3 |
| 27-Feb-18 | 25.18 | 584.65 | 8.90 | 215 | 7.35 | 121.6 | 6.04 | 6.31 | 186 | 0.00172 | <0.05 | <0.0001 | 0.0084 | 15.5 |

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

| Date Sampled* | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|----------|------------|----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 1-May-18 | 26.98 | 582.85 | 9.50 | 391 | 7.82 | - | 3.06 | 6.94 | 214 | 0.00165 | 0.0042 J | <0.00010 J | <0.0003 | 14.1 |
| 21-Aug-18 | 37.29 | 572.54 | 10.02 | 266 | 7.37 | 75.6 | 129.00 | 6.84 | 215 | 0.00151 | 0.148 | <0.0001 | 0.0150 | 13.3 |
| 6-Nov-18 | 34.18 | 575.65 | 9.60 | 340 | 9.13 | 215.4 | 1.00 | 6.93 | 327 | 0.00167 | <0.05 | <0.0001 | <0.001 | 16.6 |
| 11-Mar-19 | 27.75 | 582.08 | 8.90 | 323 | 5.65 | 185.3 | 4.29 | 6.94 | 269 | 0.00136 | <0.05 | <0.0001 | 0.0111 | 14.4 |
| 8-May-19 | 30.05 | 579.78 | 9.80 | 448 | 7.77 | 97.6 | 1.11 | 6.87 | 320 | 0.00125 | 0.0068 J | <0.0001 | 0.0005 J | 15.1 |
| 26-Aug-19 | 37.02 | 572.81 | 9.83 | 329 | 1.16 | Note 1 | 7.97 | 7.11 | 258 | 0.00090 | 0.0039 J | <0.0001 | 0.0317 | 10.7 |
| 13-Nov-19 | 35.13 | 574.70 | 9.20 | 376 | 5.50 | 144.0 | 8.26 | 6.87 | 320 | 0.00123 | 0.0133 J | <0.0001 | 0.0055 | 15.8 |
| 12-Feb-20 | 20.38 | 589.45 | 9.00 | 381 | 2.58 | 191.6 | 1.33 | 7.15 | 268 | 0.00125 | 0.0083 J | 0.0001 U | 0.0228 | 26.6 |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - |

Notes:

Top of casing elevation (feet msl): 609.83

- Not measured or not available

< Analyte not detected above the reporting limit shown

* Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--------------|---|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|----------|-----------|-----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 15-Jul-05 | 29.18 | 574.43 | 13.78 | 853 | - | - | 28.30 | 7.70 | 606 | <0.00200 | <0.100 | <0.00200 | 0.2090 | - |
| 9-Nov-05 | 25.64 | 577.97 | 10.95 | 860 | - | - | 3.82 | 7.43 | 550 | 0.00131 | <0.150 | <0.00100 | 0.4490 | - |
| 15-Feb-06 | 17.64 | 585.97 | 7.81 | 709 | 0.82 | 467.7 | 3.96 | 7.86 | 520 J | 0.00106 | <0.150 | <0.00100 | 0.1340 | - |
| 17-May-06 | 25.76 | 577.85 | 9.67 | 810 | 2.17 | 246.1 | 3.01 | 7.06 | 490 | 0.00113 | <0.150 | <0.00100 | 0.0596 | - |
| 23-Aug-06 | 29.13 | 574.48 | 12.86 | 759 | 2.60 | 12.0 | 9.82 | 7.40 | 570 | 0.00154 | <0.150 | <0.00100 | 0.2300 | - |
| 14-Nov-06 | 13.74 | 589.87 | 10.44 | 649 | 3.72 | 63.6 | 9.78 | 7.72 | 460 | 0.00136 | <0.150 | <0.00100 | 0.0553 | - |
| 14-Feb-07 | 22.09 | 581.52 | 10.77 | 648 | 1.69 | 11.5 | 52.40 | 7.51 | 380 | 0.00107 | <0.150 | <0.00100 | 0.1650 | - |
| 30-May-07 | 26.72 | 576.89 | 11.46 | 732 | 2.05 | 72.2 | 12.80 | 7.44 | 480 | 0.00117 | <0.150 | <0.00100 | 0.1870 | - |
| 27-Aug-07 | 29.45 | 574.16 | 10.80 | 829 | 7.41 | 62.8 | 117.00 | 7.58 | 590 J | 0.00109 | <0.150 | <0.00100 | 0.1160 | - |
| 29-Nov-07 | 26.57 | 577.04 | 10.74 | 899 | 2.00 | 81.1 | 392.00 | 6.05 | 490 | 0.00103 | <0.150 | <0.00100 | 0.1260 | - |
| 27-Feb-08 | 21.45 | 582.16 | - | - | - | - | 446.00 | - | 400 | 0.00109 | <0.150 | <0.00100 | 0.1230 | - |
| 20-May-08 | 25.73 | 577.88 | 9.48 | 706 | 3.07 | 110.2 | 419.00 | 7.26 | 420 J | 0.00121 | <0.150 | <0.00100 | 0.0835 | - |
| 27-Aug-08 | 29.84 | 573.77 | 9.87 | 824 | 4.74 | 91.5 | 571.00 | 7.43 | 550 J | 0.00130 | <0.150 | <0.00100 | 0.0929 | 65.1 |
| 26-Sep-08 | <i>Test Trench Drain Line Installed</i> | | | | | | | | | | | | | |
| 16-Oct-08 | 29.13 | 574.48 | 9.76 | 820 | 4.56 | 53.6 | 227.00 | 7.33 | 520 J | 0.00130 | <0.150 | <0.00100 | 0.0496 | 76.3 |
| 20-Nov-08 | 19.48 | 584.13 | 9.31 | 462 | 5.24 | 240.1 | 6.16 | 7.35 | 360 | 0.00176 | <0.150 | <0.00100 | 0.0149 | 67.0 |
| 30-Dec-08 | 16.93 | 586.68 | 9.85 | 480 | 6.18 | 66.8 | 56.10 | 7.35 | 390 J | 0.00155 | <0.150 | <0.00100 | 0.0157 | 61.5 |
| 15-Jan-09 | 14.46 | 589.15 | 7.71 | 402 | 7.47 | 177.8 | 1.61 | 7.61 | 360 | 0.00157 | <0.150 | <0.00100 | <0.0100 | 58.5 |
| 12-Feb-09 | 23.84 | 579.77 | 9.63 | - | 8.72 | - | 74.90 | 7.54 | 390 | 0.00130 | <0.150 | <0.00100 | 0.0371 J | 48.1 |
| 12-Mar-09 | 25.15 | 578.46 | 9.11 | 454 | 7.22 | 163.7 | 573.00 | 7.19 | 400 | 0.00117 | <0.150 | <0.00100 | 0.0135 | 43.1 |
| 16-Apr-09 | 17.72 | 585.89 | 8.40 | 417 | 8.27 | 126.4 | 128.00 | 7.26 | 400 | 0.00140 | <0.150 | <0.00100 | 0.0107 | 48.8 |
| 19-May-09 | 24.38 | 579.23 | 8.80 | 448 | 6.88 | 72.0 | 178.00 | 7.95 | 410 J | 0.00110 | <0.150 | <0.00100 | <0.0100 | 44.0 |
| 23-Jun-09 | 27.85 | 575.76 | 8.95 | 507 | 7.76 | 61.9 | 256.00 | 8.07 | 490 | <0.00200 | <0.200 | <0.00200 | <0.0200 | 39.0 |
| 25-Aug-09 | 30.68 | 572.93 | 10.50 | 707 | 6.94** | 307.4 | 4.38 | 7.17 | 530 J+ | <0.00200 | 0.091 J | 0.00018 J | 0.0300 | 49.0 |
| 23-Sep-09 | 30.84 | 572.77 | 11.20 | 661 | 5.41 | 374.7 | 15.00 | 7.28 | 500 | <0.00200 | <0.200 | <0.00200 | 0.0041 J | 51.0 |
| 15-Dec-09 | 22.10 | 581.51 | 9.50 | 720 | 5.10 | 579.0 | 39.00 | 6.92 | 380 | <0.00200 | <0.200 | <0.00200 | <0.0200 | 42.0 |
| 24-Mar-10 | 23.82 | 579.79 | 10.00 | 602 | 4.10 | 535.3 | 43.30 | 6.93 | 370 | 0.00170 J | 0.062 J | <0.00200 | <0.0200 U | 39.0 |
| 17-Jun-10 | 17.45 | 586.16 | 9.30 | 547 | 4.06 | - | 157.00 | 6.57 | 350 | 0.00390 | 0.063 J | <0.00200 | 0.0030 J | 39.0 |
| 22-Sep-10 | 29.66 | 573.95 | 10.20 | 722 | 5.77 | 360.2 | 7.20 | 7.22 | 450 | 0.00330 | <0.200 | <0.00200 | <0.0200 | 55.0 |
| 8-Dec-10 | 22.10 | 581.51 | 9.90 | 566 | 6.69 | - | 64.60 | 7.09 | 350 | <0.00200 | <0.200 | <0.00200 | 0.0018 J | 35.0 |
| 29-Mar-11 | 19.94 | 583.67 | 8.40 | 251 | 6.95 | 620.0 | 28.00 | 7.13 | 250 J | 0.00140 J | <0.200 | <0.00200 | 0.0030 J | 30.0 |
| 21-Jun-11 | 24.25 | 579.36 | 9.90 | 628 | 5.23 | 344.3 | 37.00 | 7.29 | 410 J | <0.00500 | <0.200 | <0.00200 | 0.0056 J | 28.0 |
| 28-Sep-11 | 30.41 | 573.20 | 9.50 | 58 | 6.54 | 481.7 | 13.80 | 7.24 | 500 | <0.00500 | <0.200 | <0.00200 | <0.0200 | 54.0 |
| 14-Dec-11 | 25.35 | 578.26 | 9.30 | 441 | 3.86 | 346.5 | 386.00 | 7.26 | 440 | <0.00500 | <0.200 | <0.00200 | 0.0037 J | 29.0 |
| 20-Mar-12 | 15.45 | 588.16 | 7.70 | 580 | 1.53 | 382.0 | 32.30 | 7.40 | 280 | 0.00220 | 0.200 | <0.00040 | <0.0200 | 26.0 |
| 19-Jun-12 | 23.88 | 579.73 | 9.00 | 590 | 1.85 | 388.1 | 55.70 | 7.74 | 320 | 0.00250 | <0.200 | <0.00040 | <0.0200 | 23.0 |
| 19-Sep-12 | 30.18 | 573.43 | 11.10 | 695 | 7.03 | 297.0 | 9.31 | 7.41 | 420 | 0.00270 | <0.200 | <0.00040 | <0.0200 | 42.0 |
| 19-Dec-12 | 17.24 | 586.37 | 9.40 | 704 | 6.33 | 317.0 | 55.20 | 7.40 | 310 | 0.00170 | <0.200 | <0.00040 | <0.0200 | 25.0 |
| 25-Feb-13 | 23.12 | 580.49 | 9.10 | 585 | 6.04 | 339.0 | 110.00 | 7.46 | 370 | 0.00250 | <0.500 | <0.00040 | <0.0200 | 24.0 |
| 22-May-13 | 25.05 | 578.56 | 8.60 | 537 | 8.41 | 391.5 | 12.30 | 7.51 | 310 | 0.00190 | <0.500 | <0.00040 | <0.0200 | 22.0 |
| 21-Aug-13 | 30.75 | 572.86 | 10.60 | 684 | 8.42 | 150.2 | 5.85 | 7.74 | 419 | 0.00150 | <0.050 | 0.00020 | 0.0020 | 27.7 |
| 20-Nov-13 | 23.51 | 580.10 | 9.60 | 513 | 6.19 | 230.4 | 32.10 | 6.81 | 364 | 0.00130 | <0.050 | <0.00010 | 0.0010 | 27.5 |
| 1-Apr-14 | 17.11 | 586.50 | 8.50 | 386 | 7.32 | 243.1 | 14.60 | 7.46 | 294 | 0.00140 | 0.009 J | <0.00010 | <0.0005 | 31.7 |
| 21-May-14 | 22.07 | 581.54 | 9.10 | 365 | 6.02 | 212.7 | - | 6.93 | 273 | 0.00130 | <0.050 | <0.00010 | <0.0010 | 24.7 |
| 12-Aug-14 | 31.32 | 572.29 | 13.16 | 552 | 6.56 | 76.7 | 6.80 | 7.36 | 394 | 0.00150 | <0.050 | <0.00010 | <0.0010 | 25.3 |
| 13-Nov-14 | 25.48 | 578.13 | 12.30 | 460 | 7.22 | 189.8 | 7.20 | 7.19 | 367 | 0.00140 | <0.050 | <0.00010 | 0.0010 | 25.5 |
| 11-Feb-15 | 16.83 | 586.78 | 9.30 | 447 | 6.76 | 134.4 | 36.60 | 7.52 | 286 | 0.00170 | 0.026 J | <0.00010 | 0.0007 J | 30.4 |
| 4-May-15 | 25.78 | 577.83 | 10.20 | 619 | 6.27 | 407.1 | 7.70 | 7.36 | 382 | 0.00140 | <0.050 | <0.00010 | 0.0004 J | 25.2 |
| 6-Aug-15 | 31.87 | 571.74 | 11.30 | 500 | 9.18 | 207.1 | 28.10 | 7.23 | 394 | 0.00150 | <0.050 | <0.00010 | 0.0030 | 22.0 |
| 4-Nov-15 | 26.74 | 576.87 | 9.90 | 481 | 8.76 | 222.6 | 16.80 | 6.88 | 381 | 0.00110 | <0.050 | <0.00010 | 0.0190 | 21.8 |
| 10-Feb-16 | 19.19 | 584.42 | 9.00 | 376 | 7.35 | 206.0 | 40.20 | 7.68 | 261 | 0.00360 | 0.0140 J | <0.00010 | 0.0040 | 37.1 |
| 2-May-16 | 26.14 | 577.47 | 11.30 | 552 | 3.19 | 194.5 | 87.80 | 7.35 | 344 | 0.00210 | 0.0045 J | 0.00001 J | 0.0020 | 31.2 |
| 23-Aug-16 | 31.64 | 571.97 | 10.50 | 545 | 7.62 | 486.5 | 10.80 | 7.18 | 412 | 0.00154 | <0.050 | <0.00010 | 0.0011 | 32.6 |
| 2-Nov-16 | 25.12 | 578.49 | 10.20 | 220 | 4.01 | 238.9 | 245.00 | 7.19 | 431 | 0.00140 | <0.050 | <0.00010 | 0.0015 | 30.6 |
| 1-Feb-17 | 22.84 | 580.77 | 9.10 | 580 | 5.06 | 186.3 | 13.60 | 7.35 | 317 | 0.00317 | 0.010 J | <0.00010 | <0.0010 | 51.1 |
| 30-May-17 | 22.31 | 581.30 | 9.40 | 520 | 7.01 | 5.0 | 40.20 | 7.18 | 322 | 0.00178 | 0.010 J | <0.00010 | <0.0010 | 34.1 |
| 17-Aug-17 | 30.08 | 573.53 | 10.60 | 626 | 5.63 | 134.2 | 32.30 | 7.21 | 370 | 0.00128 | 0.014 J | <0.00010 | 0.0009 J | 28.9 |
| 9-Nov-17 | 26.04 | 577.57 | 9.80 | 480 | 5.79 | 74.4 | 68.80 | 7.00 | 391 | 0.00139 | <0.05 | <0.0001 | 0.0005 J | 25.4 |
| 27-Feb-18 | 19.03 | 584.58 | 8.80 | 293 | 7.43 | 185.2 | 15.10 | 6.90 | 254 | 0.00398 | <0.05 | <0.0001 | <0.001 | 41.9 |

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

| Date Sampled [*] | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|----------|------------|----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 1-May-18 | 20.84 | 582.77 | 9.10 | 531 | 7.46 | - | 25.00 | 7.35 | 316 | 0.00300 | 0.0216 J | <0.00010 J | 0.0018 | 40.6 |
| 21-Aug-18 | 31.09 | 572.52 | 10.39 | 437 | 7.33 | 115.2 | 19.10 | 7.04 | 358 | 0.00148 | 0.05 U | <0.0001 | 0.0011 | 26.9 |
| 6-Nov-18 | 28.00 | 575.61 | 9.70 | 420 | 8.17 | 210.3 | 6.74 | 6.97 | 418 | 0.00130 | <0.05 | <0.0001 | <0.001 | 23.4 |
| 11-Mar-19 | 21.61 | 582.00 | 9.00 | 351 | 9.20 | 187.1 | 20.60 | 7.11 | 312 | 0.00157 | 0.0057 J | <0.0001 | 0.0012 | 32.7 |
| 8-May-19 | 23.88 | 579.73 | 9.80 | 443 | 8.05 | 109.6 | 7.79 | 7.06 | 316 | 0.00166 | 0.005 J | <0.0001 | 0.0005 J | 32.9 |
| 26-Aug-19 | 30.90 | 572.71 | 10.91 | 495 | 8.65 | Note 1 | 12.70 | 6.91 | 394 | 0.00128 | <0.05 | <0.0001 | 0.0004 J | 21.1 |
| 13-Nov-19 | 28.91 | 574.70 | 9.80 | 506 | 7.81 | 180.4 | 14.40 | 6.87 | 429 | 0.00134 | 0.0031 J | <0.0001 | <0.001 | 22.9 |
| 12-Feb-20 | 14.21 | 589.40 | 8.10 | 319 | 9.95 | 189.3 | 14.60 | 7.27 | 277 | 0.00195 | 0.0093 J | 0.0001 U | 0.001 U | 56.3 |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - |

Notes:

Top of casing elevation (feet msl): 603.61

- Not measured or not available

< Analyte not detected above the reporting limit shown

* Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date

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

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|---------|------------|----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 15-Jul-05 | 6.09 | 679.42 | 13.80 | 1124 | - | - | 30.30 | 6.96 | 922 | 0.00241 | <0.100 | <0.00200 | 0.6280 | - |
| 10-Nov-05 | 5.50 | 680.01 | 10.80 | 1518 | - | - | 2.32 | 6.88 | 960 | 0.01050 | 4.800 | <0.00100 | 3.6000 | - |
| 15-Feb-06 | 5.31 | 680.20 | 9.52 | 1357 | 0.46 | 217.4 | 58.20 | 6.33 | 930 J | 0.00666 | 4.290 | <0.00100 | 2.8500 | - |
| 16-May-06 | 6.25 | 679.26 | 10.40 | 1296 | 0.96 | 91.0 | 11.40 | 6.91 | 910 | 0.01010 | 6.560 | <0.00100 | 3.3800 | - |
| 22-Aug-06 | 8.85 | 676.66 | 12.84 | 1362 | 1.28 | -64.8 | 56.00 | 6.97 | 900 | 0.01210 | 7.060 | <0.00100 | 2.8500 | - |
| 13-Nov-06 | 5.03 | 680.48 | 11.24 | 1392 | 2.12 | -74.4 | 234.00 | 6.89 | 910 | 0.00573 | 4.750 | <0.00100 | 2.6900 | - |
| 16-Feb-07 | 5.55 | 679.96 | 8.99 | 1155 | 0.75 | -71.3 | 12.30 | 6.96 | 770 | 0.00374 | 3.770 J | <0.00100 | 2.6100 J | - |
| 30-May-07 | 6.72 | 678.79 | 11.86 | 1297 | 0.75 | -25.2 | 12.50 | 7.04 | 790 | 0.00520 | 5.840 | <0.00100 | 2.2200 | - |
| 27-Aug-07 | 8.38 | 677.13 | 12.65 | 1483 | 0.71 | -96.3 | 15.30 | 6.73 | 1100 J | 0.00874 | 9.160 | <0.00100 | 2.3200 | - |
| 28-Nov-07 | 5.66 | 679.85 | 10.47 | 1363 | 1.05 | -72.9 | 26.90 | 7.31 | 730 | 0.00424 | 5.460 | <0.00100 | 2.2700 | - |
| 27-Feb-08 | 5.57 | 679.94 | - | - | - | - | 121.00 | - | 860 | 0.00976 | 5.990 | <0.00100 | 2.4900 | - |
| 19-May-08 | 5.94 | 679.57 | 9.39 | 1346 | 0.66 | -52.6 | 20.00 | 6.93 | 820 J | 0.00664 | 8.740 | <0.00100 | 2.3300 | - |
| 26-Aug-08 | 6.44 | 679.07 | 12.15 | 1495 | 0.85 | -53.6 | 5.85 | 6.88 | 820 | 0.00342 | 2.610 | <0.00100 | 1.5300 | 30.3 |
| 18-Nov-08 | 5.50 | 680.01 | 10.50 | 975 | 1.87 | -67.4 | 225.00 | 6.93 | 880 J | 0.00748 | 10.100 | <0.00100 | 2.2900 | 62.5 |
| 11-Feb-09 | 5.62 | 679.89 | 7.67 | 877 | 0.98 | - | 68.00 | 7.28 | 810 | 0.00520 | 5.710 | <0.00100 | 2.2700 | 50.6 |
| 19-May-09 | 5.60 | 679.91 | 8.52 | 847 | 0.91 | -63.4 | 52.00 | 8.21 | 750 J | 0.00251 | <0.150 | <0.00100 | 2.2000 | 49.5 |
| 22-Sep-09 | 8.36 | 677.15 | 15.70 | 1149 | 0.10 | 132.1 | 75.10 | 7.05 | 910 | 0.00660 | 5.200 | <0.00200 | 1.8000 | 53.0 |
| 17-Dec-09 | 4.59 | 680.92 | 8.90 | 1300 | 0.40 | 194.0 | 401.00 | 7.08 | 710 | <0.00200 | 0.740 | <0.00200 | 2.2000 | 62.0 |
| 24-Mar-10 | 5.40 | 680.11 | 11.20 | 1010 | 0.12 | - | 226.00 | 6.76 | 800 | 0.00380 | 4.400 | <0.00200 | 2.1000 | 46.0 |
| 16-Jun-10 | 5.27 | 680.24 | 10.10 | 1123 | 0.20 | 188.0 | 6.19 | 8.43 | 570 | 0.01300 | 6.400 | <0.00200 | 1.9000 | 49.0 |
| 21-Sep-10 | 6.01 | 679.50 | 12.70 | 1314 | 0.19 | 177.7 | 2.97 | 6.91 | 1,000 | 0.00620 | 2.800 | 0.00019 J | 1.3000 | 160.0 |
| 7-Dec-10 | 5.23 | 680.28 | 9.70 | 1183 | 0.23 | 182.7 | 25.30 | 6.86 | 840 | 0.00320 | 4.100 | <0.00200 | 1.9000 | 82.0 |
| 30-Mar-11 | 5.04 | 680.47 | 8.30 | 498 | 0.28 | 174.0 | 4.93 | 7.89 | 700 | 0.00360 | 3.700 | <0.00200 | 1.4000 | 36.0 |
| 22-Jun-11 | 6.77 | 678.74 | 9.70 | 895 | 0.43 | 172.2 | 9.18 | 7.01 | 700 J | <0.00500 | 5.100 | <0.00200 | 1.5000 | 34.0 |
| 28-Sep-11 | 7.83 | 677.68 | 12.60 | 99 | 0.18 | 141.8 | 6.07 | 6.83 | 840 | 0.00880 | 7.700 | <0.00200 | 2.7000 | 83.0 |
| 15-Dec-11 | 5.40 | 680.11 | 9.00 | 785 | 0.60 | 179.8 | 24.40 | 6.98 | 760 | 0.00450 J | 2.400 | <0.00200 | 1.9000 | 73.0 |
| 20-Mar-12 | 4.96 | 680.55 | 7.10 | 1092 | 0.16 | 22.6 | 12.10 | 7.11 | 470 | 0.00520 | 2.300 | <0.00200 | 1.6000 | 73.0 |
| 19-Jun-12 | 6.76 | 678.75 | 10.30 | 1077 | 0.11 | 198.6 | 11.30 | 7.07 | 660 | 0.01200 | 8.500 | <0.0004 | 1.8000 | 78.0 |
| 20-Sep-12 | 8.67 | 676.84 | 12.30 | 1235 | 0.15 | 111.0 | 1.96 | 6.99 | 710 | 0.01100 | 7.500 | 0.00005 J | 2.1000 | 100.0 |
| 18-Dec-12 | 4.98 | 680.53 | 8.70 | 1450 | 0.30 | -40.6 | 18.70 | 7.25 | 740 | 0.00480 | 1.800 | <0.00040 | 1.6000 | 150.0 |
| 26-Feb-13 | 5.25 | 680.26 | 7.80 | 1211 | 0.15 | 186.6 | 27.80 | 7.21 | 740 | 0.00470 | 3.100 | <0.00040 | 2.0000 | 98.0 |
| 23-May-13 | 6.56 | 678.95 | 9.90 | 1000 | 0.18 | 242.3 | 16.90 | 7.21 | 460 | 0.01400 | 5.100 | 0.00280 | 0.9100 | 150.0 |
| 21-Aug-13 | 9.01 | 676.50 | 12.10 | 917 | 0.12 | -14.2 | 1.24 | 7.27 | 772 | 0.00760 | 5.210 | 0.00005 J | 1.8100 | 94.0 |
| 19-Nov-13 | 6.09 | 679.42 | 9.90 | 697 | 0.07 | 61.8 | 2.93 | 6.77 | 852 | 0.01230 | 9.660 | 0.00020 | 1.5300 | 169.0 |
| 1-Apr-14 | 5.75 | 679.76 | 9.00 | 722 | 0.10 | 131.3 | 4.47 | 7.07 | 624 | 0.01050 | 11.100 | 0.00006 J | 1.7600 | 104.0 |
| 22-May-14 | 5.80 | 679.71 | 9.80 | 580 | 1.08 | 185.3 | - | 6.85 | 494 | 0.00520 | 4.170 | 0.00010 | 1.4300 | 66.5 |
| 13-Aug-14 | 8.54 | 676.97 | 11.48 | 915 | 2.85 | -67.6 | 8.16 | 7.09 | 740 | 0.00690 | 5.140 | <0.00010 | 1.5100 | 116.0 |
| 12-Nov-14 | 5.97 | 679.54 | 11.10 | 314 | 2.79 | -85.1 | 15.30 | 6.87 | 744 | 0.00690 | 3.400 | <0.00010 | 2.0000 | 89.1 |
| 12-Feb-15 | 5.50 | 680.01 | 9.80 | 980 | 0.52 | -54.5 | 1.28 | 7.04 | 696 | 0.00420 | 3.570 | <0.00010 | 2.1900 | 73.2 |
| 4-May-15 | 5.80 | 679.71 | 10.80 | 994 | 0.17 | 143.4 | 15.40 | 7.12 | 701 | 0.00930 | 7.970 | <0.00010 | 1.8800 | 100.0 |
| 5-Aug-15 | 10.12 | 675.39 | 12.60 | 881 | 0.13 | -90.4 | 0.89 | 7.07 | 724 | 0.00730 | 5.000 | <0.00010 | 2.0000 | 70.3 |
| 3-Nov-15 | 5.30 | 680.21 | 12.00 | 865 | 1.23 | 105.5 | 5.06 | 6.97 | 1020 | 0.00170 | 0.180 | 0.00020 | 0.6750 | 195.0 |
| 9-Feb-16 | 5.14 | 680.37 | 9.10 | 954 | 0.55 | 154.6 | 4.82 | 7.03 | 625 | 0.00340 | 3.000 | <0.00010 | 1.8700 | 92.7 |
| 2-May-16 | 4.74 | 680.77 | 11.30 | 844 | 0.19 | 96.8 | 2.21 | 7.16 | 621 | 0.01050 | 7.310 | 0.00004 J- | 1.7200 | 105.0 |
| 23-Aug-16 | 9.04 | 676.47 | 13.20 | 946 | 0.03 | 156.2 | 3.48 | 6.97 | 924 | 0.00819 | 6.780 | 0.00009 J | 1.7000 | 148.0 |
| 1-Nov-16 | 6.18 | 679.33 | 11.90 | 349 | 0.15 | 18.5 | 2.43 | 7.11 | 744 | 0.00263 | 0.730 | <0.00010 | 0.8630 | 180.0 |
| 1-Feb-17 | 5.91 | 679.60 | 7.50 | 1114 | 0.17 | -67.4 | 6.05 | 7.08 | 694 | 0.00640 | 4.810 | <0.00010 | 1.9200 | 100.0 |
| 30-May-17 | 7.40 | 678.11 | 10.40 | 753 | 2.20 | 8.6 | 3.28 | 7.12 | 465 | 0.00952 | 5.240 | <0.00010 | 1.3800 | 89.3 |
| 17-Aug-17 | 9.71 | 675.80 | 12.40 | 1101 | 0.25 | -60.2 | 3.39 | 7.01 | 737 | 0.00847 | 5.730 | <0.00010 | 2.1700 | 72.0 |
| 9-Nov-17 | 6.06 | 679.45 | 9.60 | 833 | 0.64 | 75.3 | 2.01 | 7.08 | 748 | 0.00184 | <0.05 | <0.0001 | 0.5540 | 191.0 |

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

| Date Sampled* | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|---------|------------|--------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 27-Feb-18 | 5.16 | 680.35 | 7.60 | 791 | 0.21 | -75.4 | 9.52 | 6.64 | 506 | 0.00297 | 1.410 | <0.0001 | 1.3800 | 92.0 |
| 1-May-18 | 5.41 | 680.10 | 10.00 | 847 | 0.93 | - | 5.82 | 7.36 | 547 | 0.00381 | 0.961 | <0.00010 J | 0.8960 | 120.0 |
| 21-Aug-18 | 10.81 | 674.70 | 14.54 | 909 | 2.96 | -17.2 | 1.67 | 6.92 | 722 | 0.00648 | 2.610 | <0.0001 | 2.0700 | 101.0 |
| 7-Nov-18 | 5.85 | 679.66 | 11.20 | 931 | 0.66 | 179.0 | 0.87 | 6.97 | 828 | 0.00203 | <0.05 | 0.000073 J | 0.2780 | 202 J+ |
| 11-Mar-19 | 5.26 | 680.25 | 6.10 | 478 | 1.25 | 53.7 | 2.39 | 7.34 | 486 | 0.00144 | 0.051 | <0.0001 | 0.3490 | 125.0 |
| 9-May-19 | 5.44 | 680.07 | 10.20 | 678 | 3.72 | -9.4 | 1.85 | 7.04 | 574 | 0.00302 | 0.274 | 0.000083 J | 0.5940 | 143.0 |
| 26-Aug-19 | 9.30 | 676.21 | 13.96 | 1041 | 0.60 | Note 1 | 0.02 | 6.83 | 843 | 0.00615 | 2.160 | <0.0001 | 2.3600 | 142.0 |
| 13-Nov-19 | 5.58 | 679.93 | 9.40 | 803 | 0.31 | 12.8 | 0.02 | 6.97 | 724 | 0.00220 | 0.132 | 0.000077 J | 0.4760 | 174.0 |
| 12-Feb-20 | 5.10 | 680.41 | 7.80 | 349 | 0.37 | -62.4 | 1.40 | 7.25 | 287 | 0.00186 | 0.257 | 0.0001 U | 0.4760 | 74.2 |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - |

Notes:

Top of casing elevation (feet msl): 685.51

- Not measured or not available

< Analyte not detected above the reporting limit shown

* Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|---------|----------|-----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 15-Jul-05 | 4.60 | 697.25 | 12.43 | 629 | - | - | 6.07 | 6.45 | 490 | <0.00200 | <0.100 | <0.00200 | 0.4260 | - |
| 10-Nov-05 | 3.70 | 698.15 | 11.98 | 441 | - | - | 7.40 | 6.22 | 290 | <0.00100 | <0.150 | <0.00100 | 0.0991 | - |
| 19-Jan-06 | 3.56 | 698.29 | 8.29 | 319 | 0.42 | - | 1.46 | 6.53 | 290 J | <0.00100 | <0.150 | <0.00100 | 0.0908 | - |
| 15-Feb-06 | 3.82 | 698.03 | 8.32 | 326 | 0.62 | 99.7 | 3.50 | 7.39 | 220 J | <0.00100 | <0.150 | <0.00100 | 0.0341 | - |
| 15-Mar-06 | 3.79 | 698.06 | 7.58 | 254 | 0.87 | 201.9 | 0.82 | 6.65 | 210 J | <0.00100 | <0.150 | <0.00100 | 0.0650 | - |
| 7-Apr-06 | 3.87 | 697.98 | 9.36 | 295 | 0.55 | 157.4 | 0.24 | 6.34 | 220 | <0.00100 | <0.150 | <0.00100 | 0.0724 | - |
| 16-May-06 | 4.92 | 696.93 | 10.80 | 321 | 0.45 | 142.1 | 0.99 | 6.36 | 220 | <0.00100 | <0.150 | <0.00100 | 0.0376 | - |
| 23-Jun-06 | 4.41 | 697.44 | 12.62 | 316 | 0.57 | - | 2.05 | 6.25 | 200 | <0.00100 | <0.150 | 0.00264 | 0.0638 | - |
| 20-Jul-06 | 6.90 | 694.95 | 13.43 | 347 | 0.23 | -20.9 | 0.32 | 6.11 | 120 | <0.00100 | <0.150 | <0.00100 | 0.1040 | - |
| 22-Aug-06 | 8.46 | 693.39 | 13.68 | 406 | 0.90 | 153.5 | 2.20 | 6.13 | 280 | <0.00100 | <0.150 | <0.00100 | 0.1510 | - |
| 26-Sep-06 | 6.50 | 695.35 | 14.59 | 417 | 2.47 | -35.2 | 2.42 | 6.33 | 290 | <0.00100 | <0.150 | <0.00100 | 0.0835 | - |
| 26-Oct-06 | 5.98 | 695.87 | 12.82 | 434 | 3.30 | 124.1 | 0.82 | 6.12 | 320 | <0.00100 | <0.150 | <0.00100 | 0.2160 | - |
| 13-Nov-06 | 3.02 | 698.83 | 11.70 | 386 | 5.06 | 187.8 | 2.47 | 6.13 | 280 | <0.00100 | <0.150 | <0.00100 | 0.0442 | - |
| 20-Dec-06 | 3.60 | 698.25 | 9.64 | 379 | 4.30 | 150.5 | 1.03 | 6.07 | 250 | <0.00100 | <0.150 | <0.00100 | 0.0568 | - |
| 23-Jan-07 | 3.68 | 698.17 | 8.37 | 239 | 3.96 | 58.9 | 0.66 | 6.28 | 220 | <0.00100 | <0.150 | <0.00100 | 0.1800 | - |
| 14-Feb-07 | 3.74 | 698.11 | 8.18 | 325 | 2.85 | 110.8 | 0.53 | 6.25 | 210 | <0.00100 | <0.150 | <0.00100 | 0.0398 | - |
| 27-Mar-07 | 3.32 | 698.53 | 8.27 | 289 | 2.07 | 61.5 | 0.88 | 6.83 | 210 J | <0.00100 | <0.150 | <0.00100 | 0.2290 | - |
| 17-Apr-07 | 3.89 | 697.96 | 9.59 | 306 | 1.80 | 102.3 | 2.31 | 6.34 | 190 | <0.00100 | <0.150 | <0.00100 | 0.2220 | - |
| 30-May-07 | 4.70 | 697.15 | 11.27 | 285 | 1.78 | 101.7 | 1.37 | 6.37 | 180 | <0.00100 | <0.150 | <0.00100 | 0.0246 | - |
| 20-Jun-07 | 4.69 | 697.16 | 12.37 | 350 | 1.67 | 9.3 | 1.25 | 6.90 | 240 J | <0.00100 | <0.150 | <0.00100 | 0.0321 | - |
| 31-Jul-07 | 6.38 | 695.47 | 14.57 | 402 | 1.15 | 5.5 | 0.60 | 6.37 | 250 | 0.00129 | <0.150 | <0.00100 | 0.0307 | - |
| 29-Aug-07 | 7.44 | 694.41 | 13.78 | 353 | 1.11 | 128.3 | 1.87 | 6.18 | 280 J | <0.00100 | <0.150 | <0.00100 | 0.0490 | - |
| 27-Sep-07 | 8.25 | 693.60 | 13.60 | 375 | 0.96 | 142.6 | 0.70 | 6.70 | 300 | <0.00100 | <0.150 | <0.00100 | 0.1170 | - |
| 26-Oct-07 | 4.09 | 697.76 | 12.16 | 343 | 2.27 | 75.9 | 3.93 | 6.10 | 310 J | <0.00100 | <0.150 | <0.00100 | 0.0117 | - |
| 29-Nov-07 | 3.93 | 697.92 | 10.13 | 428 | 3.17 | 197.3 | 1.63 | 6.32 | 270 | <0.00100 | <0.150 | <0.00100 | 0.0164 | - |
| 12-Dec-07 | 5.82 | 696.03 | 9.51 | 384 | 3.37 | 185.0 | 0.80 | 6.06 | 260 | <0.00100 | <0.150 | <0.00100 | 0.0392 | - |
| 24-Jan-08 | 3.86 | 697.99 | 7.74 | 354 | 3.09 | 109.0 | - | 6.35 | 250 | <0.00100 | <0.150 | <0.00100 | 0.0376 | - |
| 28-Feb-08 | 4.04 | 697.81 | - | - | - | - | 1.06 | - | 220 | <0.00100 | <0.150 | <0.00100 | 0.0275 | - |
| 19-May-08 | 4.35 | 697.50 | 9.79 | 329 | 1.38 | 209.2 | 1.20 | 6.08 | 200 J | <0.00100 | <0.150 | <0.00100 | 0.0191 | - |
| 26-Aug-08 | 7.83 | 694.02 | 12.66 | 431 | 1.38 | 210.5 | 0.28 | 6.19 | 270 | <0.00100 | <0.150 | <0.00100 | 0.0493 | <3.0 |
| 18-Nov-08 | 3.64 | 698.21 | 10.43 | 235 | 3.95 | 217.5 | 0.66 | 6.03 | 210 | <0.00100 | <0.150 | <0.00100 | 0.0208 | <3.0 |
| 11-Feb-09 | 4.09 | 697.76 | 7.24 | 188 | 2.13 | - | 0.12 | 6.54 | 180 | <0.00100 | <0.150 | <0.00100 | 0.0180 | <3.0 |
| 19-May-09 | 3.79 | 698.06 | 8.19 | 173 | 1.28 | 111.9 | 1.78 | 7.18 | 170 J | <0.00100 | <0.150 | <0.00100 | 0.0163 | <3.0 |
| 22-Sep-09 | 9.70 | 692.15 | 16.50 | 440 | 0.82 | 383.3 | 12.50 | 6.31 | 370 J | <0.00200 | <0.200 | <0.00200 | 0.0700 | 1.2 J |
| 17-Dec-09 | 3.47 | 698.38 | 9.20 | 311 | 4.37 | 470.0 | 16.00 | 6.25 | 110 | <0.00200 | <0.200 | <0.00200 | 0.0200 J | 0.7 J |
| 24-Mar-10 | 3.87 | 697.98 | 9.40 | 410 | 0.34 | 204.8 | 30.70 | 6.65 | 240 | 0.00081 J | <0.200 | <0.00200 | 0.1700 | 1.3 J |
| 16-Jun-10 | 3.77 | 698.08 | 10.30 | 298 | 0.99 | 397.8 | 1.11 | 7.40 | 180 | 0.00360 | 0.049 J | <0.00200 | 0.0320 | 0.9 J |
| 21-Sep-10 | 5.82 | 696.03 | 13.70 | 350 | 1.01 | 302.5 | 1.04 | 6.25 | 200 | 0.00140 J | <0.200 | 0.0002 J | <0.0200 | 1.2 J |
| 7-Dec-10 | 3.83 | 698.02 | 9.60 | 283 | 0.72 | 405.6 | 0.42 | 6.16 | 190 | <0.00200 | <0.200 | <0.00200 | 0.0090 J | 0.8 J |
| 30-Mar-11 | 3.91 | 697.94 | 8.20 | 133 | 0.51 | 248.2 | 0.29 | 9.87 | 140 J | 0.00035 J | <0.200 | <0.00200 | 0.0091 J | 5.0 |
| 22-Jun-11 | 3.99 | 697.86 | 11.00 | 219 | 0.16 | 222.5 | 0.22 | 6.13 | 160 | <0.00500 | 0.180 J | <0.00200 | 0.1900 | 0.7 J |
| 28-Sep-11 | 8.54 | 693.31 | 14.30 | 35 | 0.26 | 333.9 | 2.45 | 6.30 | 270 | <0.00500 | 0.110 J | <0.00200 | 0.1300 | 2.1 J |
| 15-Dec-11 | 4.12 | 697.73 | 9.40 | 217 | 1.15 | 414.3 | 2.74 | 6.28 | 200 | <0.00500 | <0.200 | <0.00200 | 0.0170 J | 1.2 J |
| 21-Mar-12 | 3.35 | 698.50 | 8.40 | 346 | 0.42 | 438.4 | 0.48 | 6.14 | 220 | 0.00480 | <0.200 | <0.00040 | 0.0280 | 1.3 J |
| 19-Jun-12 | 3.78 | 698.07 | 11.30 | 290 | 0.09 | 314.0 | 0.46 | 6.28 | 170 J+ | 0.00130 | <0.200 | <0.00040 | 0.0710 | <3.3 |
| 20-Sep-12 | 8.53 | 693.32 | 14.40 | 419 | 0.26 | 309.0 | 1.07 | 6.39 | 240 | 0.00160 | 0.085 J | <0.00040 | 0.1300 | 2.9 J |
| 18-Dec-12 | 3.49 | 698.36 | 9.10 | 491 | 2.56 | 264.4 | 1.38 | 6.63 | 170 | <0.00100 | <0.200 | <0.00040 | 0.0480 | 1.2 J |
| 26-Feb-13 | 3.91 | 697.94 | 8.40 | 324 | 2.59 | 404.2 | 1.01 | 7.03 | 140 | <0.00110 | <0.500 | <0.00040 | 0.0079 J | 3.4 |
| 23-May-13 | 3.76 | 698.09 | 10.60 | 338 | 1.15 | 465.9 | 0.57 | 6.31 | 190 | <0.00100 | <0.500 | <0.00040 | 0.0060 J | <3.3 |
| 22-Aug-13 | 8.28 | 693.57 | 13.10 | 284 | 0.33 | 32.2 | 0.89 | 6.34 | 220 | 0.00040 | <0.050 | <0.00010 | 0.0320 | 1.3 |
| 19-Nov-13 | 3.33 | 698.52 | 10.30 | 323 | 1.70 | 109.2 | 0.64 | 6.27 | 200 | 0.00020 | <0.050 | <0.00010 | 0.0070 | 0.8 |
| 1-Apr-14 | 3.69 | 698.16 | 8.20 | 244 | 0.45 | 180.7 | 0.28 | 6.33 | 173 | 0.00018 J | <0.050 | <0.00010 | 0.0050 J+ | 0.7 |
| 22-May-14 | 4.52 | 697.33 | 10.80 | 195 | 0.65 | 75.0 | - | 7.20 | 152 | 0.00030 | <0.050 | 0.00010 | 0.0240 | 0.6 |
| 13-Aug-14 | 7.56 | 694.29 | 12.62 | 269 | 0.44 | 37.7 | 1.12 | 5.89 | 181 | 0.00080 | 0.200 | <0.00010 | 0.0930 | 0.9 |
| 12-Nov-14 | 3.73 | 698.12 | 11.70 | 231 | 1.29 | 108.2 | 1.32 | 6.17 | 191 | 0.00030 | <0.050 | <0.00010 | 0.0450 | 1.0 |
| 11-Feb-15 | 3.50 | 698.35 | 9.20 | 270 | 0.53 | -34.2 | 0.73 | 6.30 | 170 | 0.00020 | 0.021 J | <0.00010 | 0.0160 | 0.7 |
| 4-May-15 | 4.69 | 697.16 | 10.90 | 250 | 0.28 | 378.1 | 0.57 | 6.29 | 341 | 0.00020 | 0.012 J | <0.00010 | 0.0790 | 0.6 |
| 5-Aug-15 | 9.44 | 692.41 | 13.90 | 316 | 0.72 | -38.1 | 1.16 | 6.45 | 262 | 0.00030 | <0.050 | <0.00010 | 0.0150 | 1.2 |
| 3-Nov-15 | 4.21 | 697.64 | 11.80 | 192 | 8.59 | 205.6 | 5.39 | 6.34 | 166 | 0.00020 J | <0.050 | <0.00010 | 0.0008 J | 0.8 |
| 9-Feb-16 | 3.82 | 698.03 | 9.20 | 292 | 4.61 | 230.7 | 0.49 | 6.45 | 164 | 0.00017 J | <0.050 | <0.00010 | 0.0050 | 0.8 |

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|----------|------------|----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 3-May-16 | 4.61 | 697.24 | 10.90 | 310 | 2.39 | 253.0 | 1.01 | 6.34 | 178 | 0.00030 | <0.050 | 0.00001 J- | 0.0020 | 0.9 |
| 24-Aug-16 | 8.76 | 693.09 | 13.20 | 287 | 1.24 | 490.4 | 1.01 | 6.35 | 177 | 0.00020 J | <0.050 | <0.00010 | 0.0093 | 0.8 |
| 1-Nov-16 | 3.34 | 698.51 | 12.20 | 100 | 3.69 | 177.2 | 0.40 | 6.38 | 205 | 0.00019 J | <0.050 | <0.00010 | 0.0062 | 1.0 |
| 2-Feb-17 | 3.94 | 697.91 | 7.80 | 363 | 3.11 | 190.0 | 0.10 | 6.39 | 223 | 0.00017 J | <0.050 | <0.00010 | 0.0080 | 0.8 |
| 31-May-17 | 4.68 | 697.17 | 10.30 | 300 | 4.50 | - | 2.48 | 6.30 | 182 | 0.00020 | <0.050 | <0.00010 | 0.0145 | 0.8 |
| 18-Aug-17 | 8.61 | 693.24 | 12.70 | 393 | 0.51 | 120.2 | 0.87 | 6.44 | 228 | 0.00031 | 0.096 | <0.00010 | 0.0516 | 1.3 |
| 10-Nov-17 | 3.58 | 698.27 | 11.00 | 264 | 3.88 | 56.5 | 0.76 | 6.01 | 217 | 0.000186 J | <0.05 | <0.0001 | 0.0054 | 0.7 |
| 27-Feb-18 | 3.76 | 698.09 | 8.30 | 302 | 3.19 | 221.1 | 0.55 | 6.29 | 238 | 0.000176 J | <0.05 | <0.0001 | 0.0045 | 0.9 |
| 2-May-18 | 4.02 | 697.83 | 10.00 | 343 | 3.02 | - | 0.59 | 6.36 | 215 | 0.00015 J | 0.0026 J | <0.00010 J | 0.0045 | 1.0 |
| 22-Aug-18 | 9.35 | 692.50 | 12.17 | 330 | 1.99 | 142.0 | 2.31 | 6.27 | 265 | 0.00032 | 0.05 U | <0.0001 | 0.0310 | 1.2 |
| 7-Nov-18 | 5.25 | 696.60 | 11.70 | 317 | 5.45 | 124.4 | 0.76 | 6.23 | 250 | 0.000199 J | <0.05 | <0.0001 | 0.0007 J | 0.8 |
| 11-Mar-19 | 3.96 | 697.89 | 7.60 | 226 | 3.96 | 220.8 | 0.70 | 6.38 | 233 | 0.000146 J | <0.05 | <0.0001 | 0.0034 | 0.9 |
| 9-May-19 | 4.70 | 697.15 | 12.50 | 283 | 3.60 | 82.3 | 1.56 | 6.14 | 230 | 0.000154 J | 0.007 J | <0.0001 | 0.0041 | 0.8 |
| 26-Aug-19 | 8.20 | 693.65 | 13.13 | 374 | 0.86 | Note 1 | 0.02 | 6.30 | 264 | 0.00030 | 0.0324 J | <0.0001 | 0.0547 | 0.9 |
| 14-Nov-19 | 4.35 | 697.50 | 10.80 | 309 | 3.19 | 109.5 | 0.02 | 6.15 | 240 | 0.00025 | 0.082 | <0.0001 | 0.0723 | 0.9 |
| 13-Feb-20 | 3.70 | 698.15 | 7.90 | 284 | 2.98 | 102.2 | 0.91 | 6.18 | 283 | 0.000176 J | 0.067 | 0.0001 U | 0.0723 | 0.9 |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - |

Notes:

Top of casing elevation (feet msl): 701.85

- Not measured or not available

< Analyte not detected above the reporting limit shown

* Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--------------|---|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|-----------|------------|-----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 15-Jul-05 | 33.33 | 574.28 | 12.02 | 956 | - | - | 496.00 | 7.34 | 600 | 0.00201 | <0.100 | <0.00200 | 1.1300 | - |
| 10-Nov-05 | 29.62 | 577.99 | 11.24 | 1,212 | - | - | 27.60 | 7.32 | 800 | 0.00840 | <0.150 | <0.00100 | 0.0183 | - |
| 15-Feb-06 | 21.70 | 585.91 | 6.45 | 665 | 2.59 | 280.3 | 11.10 | 7.86 | 520 J | 0.02230 | 0.256 | <0.00100 | 0.0169 | - |
| 17-May-06 | 29.80 | 577.81 | 7.74 | 831 | 0.88 | 101.9 | 8.67 | 7.79 | 580 | 0.01100 | <0.150 | <0.00100 | 0.0207 | - |
| 23-Aug-06 | 33.25 | 574.36 | 15.19 | 737 | 1.76 | 33.5 | 19.60 | 7.32 | 660 | 0.00253 | <0.150 | <0.00100 | 0.5820 | - |
| 14-Nov-06 | 17.79 | 589.82 | 10.86 | 699 | 4.50 | 76.3 | 38.70 | 7.55 | 490 | 0.00315 | <0.150 | <0.00100 | 0.0134 | - |
| 16-Feb-07 | 27.08 | 580.53 | 8.08 | 630 | 6.07 | 2.3 | 57.60 | 8.26 | 500 | 0.01440 | <0.150 UJ | <0.00100 | 0.016 J | - |
| 30-May-07 | 30.75 | 576.86 | 9.60 | 894 | 2.59 | 13.3 | 13.40 | 7.76 | 540 | 0.00843 | <0.150 | <0.00100 | <0.0100 | - |
| 29-Aug-07 | 33.60 | 574.01 | 9.56 | 684 | 7.64 | 67.0 | - | 7.10 | 670 J | 0.00197 | <0.150 | <0.00100 | 0.4540 | - |
| 29-Nov-07 | 30.60 | 577.01 | 11.00 | 1075 | 3.53 | 151.5 | 23.50 | 8.37 | 560 | 0.00517 | <0.150 | <0.00100 | <0.0100 | - |
| 27-Feb-08 | 25.68 | 581.93 | - | - | - | - | 29.90 | - | 400 | 0.01070 | <0.150 | <0.00100 | <0.0100 | - |
| 20-May-08 | 29.73 | 577.88 | 7.93 | 768 | 4.27 | 180.7 | 77.80 | 7.39 | 480 J | 0.00567 | <0.150 | <0.00100 | 0.0124 | - |
| 27-Aug-08 | 33.97 | 573.64 | 10.17 | 862 | 4.07 | 81.2 | - | 7.43 | 540 J | 0.00117 | <0.150 | <0.00100 | 0.0644 | 87.5 |
| 26-Sep-08 | <i>Test Trench Drain Line Installed</i> | | | | | | | | | | | | | |
| 16-Oct-08 | 33.55 | 574.06 | 8.89 | 845 | 5.39 | 86.3 | 852.00 | 7.53 | 440 J | 0.00103 | <0.150 | <0.00100 | 0.0578 | 90.7 |
| 20-Nov-08 | 23.48 | 584.13 | 9.34 | 577 | 5.27 | 234.3 | 9.48 | 7.50 | 470 | 0.00624 | <0.150 | <0.00200 | 0.0121 | 138.0 |
| 30-Dec-08 | 20.88 | 586.73 | 8.39 | 510 | 8.89 | 99.0 | 44.80 | 8.02 | 430 J | 0.01420 | 0.202 | 0.00111 | 0.0251 | 138.0 |
| 15-Jan-09 | 18.50 | 589.11 | 4.97 | 347 | 8.90 | 154.8 | 17.20 | 8.47 | 380 | 0.02440 | 0.172 | <0.00100 | 0.0238 J | 104.0 |
| 12-Feb-09 | 27.90 | 579.71 | 8.47 | - | 10.21 | - | 22.00 | 7.60 | 420 J | 0.00611 | <0.150 | <0.00100 | <0.0100 | 99.0 |
| 12-Mar-09 | 29.19 | 578.42 | 7.47 | 521 | 6.15 | 171.7 | 26.80 | 7.39 | 480 | 0.00897 | <0.150 | <0.00100 | <0.0100 | 124.0 |
| 16-Apr-09 | 21.70 | 585.91 | 6.99 | 456 | 7.60 | 151.6 | 72.70 | 8.66 | 470 | 0.02820 | 0.162 | 0.00101 | 0.0135 | 126.0 |
| 19-May-09 | 28.37 | 579.24 | 8.08 | 509 | 6.38 | 64.4 | 31.30 | 8.07 | 450 J | 0.00919 | <0.150 | <0.00100 | <0.0100 | 105.0 |
| 23-Jun-09 | 31.95 | 575.66 | 8.84 | 551 | 5.97 | 69.1 | 74.30 | 8.28 | 500 | 0.00430 | <0.200 | <0.00200 | <0.0200 | 71.0 |
| 25-Aug-09 | 35.08 | 572.53 | - | - | - | - | - | - | - | - | - | - | - | - |
| 24-Sep-09 | 35.29 | 572.32 | 11.70 | 714 | 2.28 | 371.9 | 258.00 | 7.26 | 550 J | 0.00076 J | 0.180 J | 0.00017 J | 0.1200 | 88.0 |
| 15-Dec-09 | 26.11 | 581.50 | 8.60 | 928 | 2.89 | 544.0 | 89.00 | 7.14 | 450 | 0.00110 J | <0.200 | <0.00200 | 0.0024 J | 110.0 |
| 24-Mar-10 | 27.86 | 579.75 | 8.30 | 697 | 3.52 | 505.1 | 18.10 | 7.47 | 450 | 0.02300 | 0.160 J | 0.00046 J | 0.0280 | 110.0 |
| 16-Jun-10 | 21.35 | 586.26 | 10.70 | 783 | 2.07 | 379.0 | 41.40 | 7.73 | 340 | 0.05300 | 0.760 | 0.00210 | 0.0300 | 150.0 |
| 22-Sep-10 | 33.88 | 573.73 | 10.40 | 938 | 4.30 | 467.1 | 7.93 | 7.10 | 620 | 0.00500 | <0.200 | <0.00200 | 0.0770 J+ | 100.0 |
| 7-Dec-10 | 25.22 | 582.39 | 10.20 | 781 | 3.86 | 353.7 | 11.10 | 7.39 | 500 | 0.01200 | 0.094 J | 0.00053 J | 0.011 J | 130.0 |
| 29-Mar-11 | 23.59 | 584.02 | 7.00 | 354 | 3.47 | 708.0 | 22.22 | 9.52 | 440 J | 0.06300 | 0.650 J+ | 0.00140 J | 0.0250 | 140.0 |
| 21-Jun-11 | 28.33 | 579.28 | 11.60 | 1000 | 2.22 | 285.3 | 10.60 | 9.06 | 1100 J | 0.04300 | 0.420 | 0.00120 J | 0.0230 | 180.0 |
| 27-Sep-11 | 34.70 | 572.91 | 12.70 | 641 | 1.46 | 307.2 | 12.80 | 7.30 | 680 | <0.00500 | 0.063 J | 0.00023 J | 0.2800 | 100.0 |
| 14-Dec-11 | 29.46 | 578.15 | 9.50 | 691 | 1.95 | 757.1 | 9.69 | 7.35 | 690 | 0.00690 | <0.200 | 0.00018 J | 0.0019 J | 180.0 |
| 20-Mar-12 | 19.50 | 588.11 | 6.20 | 841 | 3.98 | 320.2 | 8.52 | 8.25 | 350 | 0.02600 | 0.470 | 0.00100 J | 0.0300 | 140.0 |
| 19-Jun-12 | 27.91 | 579.70 | 10.20 | 800 | 3.22 | 365.9 | 2.76 | 7.66 | 510 | 0.00870 | <0.200 | <0.00040 | 0.0290 | 120.0 |
| 20-Sep-12 | 34.53 | 573.08 | 11.00 | 859 | 0.73 | 387.0 | 46.80 | 7.64 | 530 | 0.00260 | <0.200 | <0.00040 | 0.6300 | 100.0 |
| 19-Dec-12 | 21.26 | 586.35 | 8.90 | 983 | 1.73 | 279.0 | 778.00 | 7.71 | 530 | 0.01100 | 0.110 J | 0.00062 | 0.0670 | 180.0 |
| 25-Feb-13 | 27.19 | 580.42 | 7.50 | 682 | 7.61 | 330.5 | 4.36 | 7.85 | 380 | 0.01300 | <0.500 | 0.00015 J | 0.0110 J | 74.0 |
| 22-May-13 | 29.09 | 578.52 | 8.80 | 828 | 3.88 | 411.4 | 8.11 | 8.29 | 350 | 0.02500 | 0.085 J | 0.00053 | 0.0220 | 100.0 |
| 21-Aug-13 | 35.15 | 572.46 | 17.10 | 1248 | 3.41 | 114.2 | 144.00 | 7.78 | 1060 | 0.00150 | 0.060 | 0.00005 J | 0.4870 | 95.0 |
| 20-Nov-13 | 27.45 | 580.16 | 10.00 | 1032 | 4.13 | 196.5 | 31.70 | 7.18 | 699 | 0.01450 | 0.100 | 0.00140 | 0.0080 | 202.0 |
| 1-Apr-14 | 21.08 | 586.53 | 8.40 | 567 | 3.04 | 168.2 | 15.70 | 10.24 | 413 | 0.06270 | 0.210 | 0.00150 | 0.0140 | 150.0 |
| 21-May-14 | 26.11 | 581.50 | 10.30 | 670 | 0.49 | 198.4 | - | 7.45 | 565 | 0.09500 | 0.200 | 0.00160 | 0.0480 | 166.0 |
| 12-Aug-14 | 34.56 | 573.05 | 14.07 | 812 | 3.64 | 87.7 | 1519.00 | 7.51 | 560 | 0.00300 | 0.070 | <0.00010 | 0.1370 | 107.0 |
| 13-Nov-14 | 29.48 | 578.13 | 12.90 | 1135 | 3.50 | 241.7 | 10.46 | 7.69 | 956 | 0.02080 | <0.050 | 0.00010 | 0.0020 | 295.0 |
| 11-Feb-15 | 20.81 | 586.80 | 7.70 | 619 | 6.17 | 81.4 | 18.00 | 9.63 | 430 | 0.03920 | 0.380 | 0.00130 | 0.0110 | 126.0 |
| 4-May-15 | 29.80 | 577.81 | 10.50 | 924 | 2.54 | 361.3 | 8.70 | 9.74 | 623 | 0.04230 | 0.110 | 0.00050 | 0.0130 | 192.0 |
| 6-Aug-15 | 36.08 | 571.53 | 12.80 | 781 | 2.40 | 129.6 | 261.00 | 7.24 | Dry | Dry | Dry | Dry | Dry | Dry |
| 4-Nov-15 | 30.80 | 576.81 | 10.70 | 1234 | 4.98 | 205.6 | 11.80 | 7.13 | 1130 | 0.00660 | 0.048 J | 0.00030 | 0.0020 | 318.0 |
| 10-Feb-16 | 23.56 | 584.05 | 6.40 | 602 | 1.62 | 197.7 | 11.90 | 10.19 | 451 | 0.13200 | 0.190 | 0.00140 | 0.0190 | 148.0 |
| 2-May-16 | 30.19 | 577.42 | 11.50 | 1008 | 0.80 | 110.6 | 9.76 | 10.14 | 751 | 0.17100 | 0.250 | 0.00270 J | 0.0480 | 232.0 |
| 23-Aug-16 | 35.79 | 571.82 | 13.10 | 729 | 2.00 | 436.2 | 51.40 | 7.20 | 1010 | 0.00401 | <0.050 | <0.00010 | 0.1820 | 137.0 |
| 2-Nov-16 | 29.06 | 578.55 | 10.90 | 570 | 4.98 | 103.1 | 32.10 | 7.55 | 1180 | 0.01120 | 0.185 | 0.00056 | 0.0050 | 372.0 |
| 1-Feb-17 | 26.86 | 580.75 | 8.10 | 992 | 2.21 | 99.7 | 7.19 | 9.73 | 632 | 0.10900 | 0.089 | 0.00097 | 0.0179 | 194.0 |
| 30-May-17 | 26.86 | 580.75 | 10.50 | 814 | 6.12 | 5.8 | 5.74 | 9.73 | 487 | 0.04250 | 0.084 | 0.00036 J+ | 0.0044 | 168.0 |
| 17-Aug-17 | 34.23 | 573.38 | 11.70 | 1054 | 5.43 | 125.1 | 5.68 | 7.65 | 731 | 0.00652 | 0.029 J | <0.00010 | 0.0604 | 156.0 |
| 10-Nov-17 | 29.96 | 577.65 | 10.00 | 1077 | 4.65 | 85.2 | 10.50 | 7.18 | 953 | 0.00582 | 0.069 | 0.00034 | 0.0042 | 308.0 |
| 27-Feb-18 | 23.02 | 584.59 | 7.70 | 584 | 1.91 | 120.4 | 12.60 | 9.96 | 530 | 0.08630 | 0.143 | 0.00064 | 0.0068 | 174.0 |

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

| Date Sampled* | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|----------|-------------|----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 1-May-18 | 24.85 | 582.76 | 9.10 | 1082 | 2.16 | - | 11.80 | 10.34 | 682 | 0.11300 | 0.214 | 0.000775 J+ | 0.0222 | 196.0 |
| 21-Aug-18 | 35.17 | 572.44 | 14.83 | 1095 | 4.02 | 131.0 | 123.00 | 7.40 | 936 | 0.00365 | 0.05 U | <0.0001 | 0.8700 | 214.0 |
| 6-Nov-18 | 32.00 | 575.61 | 10.30 | 1192 | 5.93 | 198.1 | 2.35 | 7.49 | 1200 | 0.00487 | <0.05 | 0.000077 J | <0.001 | 363 J+ |
| 13-Mar-19 | 25.12 | 582.49 | 7.40 | 695 | 2.19 | 189.7 | 15.80 | 9.48 | 632 | 0.04410 | 0.091 | 0.00063 | 0.0076 | 200.0 |
| 8-May-19 | 27.89 | 579.72 | 10.70 | 844 | 4.95 | 60.5 | 5.19 | 9.30 | 697 | 0.04190 | 0.0953 J | 0.00068 | 0.0140 | 182.0 |
| 26-Aug-19 | 35.02 | 572.59 | 11.89 | 1111 | 1.52 | Note 1 | 22.90 | 7.26 | 995 | 0.00246 | 0.0152 J | <0.0001 | 0.9700 | 177.0 |
| 13-Nov-19 | 33.00 | 574.61 | 9.80 | 932 | 5.27 | 66.1 | 0.02 | 7.18 | 776 | 0.00389 | 0.0049 J | <0.0001 | 0.0006 J | 211.0 |
| 12-Feb-20 | 18.23 | 589.38 | 7.00 | 533 | 7.58 | 140.4 | 10.60 | 8.32 | 463 | 0.00631 | 0.0436 J | 0.000145 | 0.0015 | 183.0 |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - |

Notes:

Top of casing elevation (feet msl): 607.61

- Not measured or not available

< Analyte not detected above the reporting limit shown

* Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date

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

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--------------|----------------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|-----------|------------|-----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 15-Jul-05 | 30.89 | 574.46 | 15.26 | 735 | - | - | 303.00 | 7.60 | 612 | <0.00200 | <0.100 | <0.00200 | 0.3490 | - |
| 10-Nov-05 | 27.25 | 578.10 | 11.79 | 700 | - | - | 13.70 | 7.51 | 460 | 0.00216 | <0.150 | <0.00100 | 0.4510 | - |
| 15-Feb-06 | 19.42 | 585.93 | 6.17 | 759 | 2.00 | 162.9 | 9.42 | 8.27 | 550 J | 0.00754 | <0.150 | <0.00100 | 0.6160 | - |
| 17-May-06 | 27.55 | 577.80 | 11.99 | 835 | 1.31 | 248.3 | 4.16 | 7.46 | 550 | 0.01100 | <0.150 | <0.00100 | 0.1060 | - |
| 23-Aug-06 | 30.99 | 574.36 | 15.92 | 862 | 1.60 | -26.4 | 15.50 | 7.40 | 810 | 0.00134 | <0.150 | <0.00100 | 0.6820 | - |
| 14-Nov-06 | 15.30 | 590.05 | 10.56 | 712 | 4.59 | 84.1 | 14.50 | 7.32 | 500 | 0.00171 | <0.150 | <0.00100 | 0.0163 | - |
| 16-Feb-07 | 24.22 | 581.13 | 8.49 | 581 | 3.64 | 38.6 | 139.00 | 7.21 | 420 | 0.00160 | <0.150 UJ | <0.00100 | 0.1710 J | - |
| 30-May-07 | 28.50 | 576.85 | 13.93 | 1092 | 2.72 | 180.7 | 210.00 | 7.40 | 740 | 0.01620 | <0.150 | <0.00100 | 0.1570 | - |
| 29-Aug-07 | 31.34 | 574.01 | 10.15 | 701 | 4.48 | 84.8 | 662.00 | 7.80 | 620 J | 0.00141 | <0.150 | <0.00100 | 0.3520 | - |
| 29-Nov-07 | 28.32 | 577.03 | 11.30 | 731 | 6.23 | 154.0 | - | 6.26 | 420 | 0.00178 | <0.150 | <0.00100 | 0.1760 | - |
| 27-Feb-08 | 23.42 | 581.93 | - | - | - | - | - | - | 410 | 0.00147 | <0.150 | <0.00100 | 0.0220 | - |
| 20-May-08 | 27.49 | 577.86 | 8.14 | 791 | 3.93 | 176.5 | - | 7.64 | 540 J | 0.00818 | 0.170 | <0.00100 | 0.0410 | - |
| 27-Aug-08 | 31.72 | 573.63 | 9.33 | 776 | 4.83 | 142.0 | - | 7.32 | 660 J | 0.00186 | <0.150 | <0.00100 | 0.2660 | 109.0 |
| 26-Sep-08 | Test Trench Drain Line Installed | | | | | | | | | | | | | |
| 16-Oct-08 | 31.29 | 574.06 | 9.17 | 923 | 4.60 | 115.4 | - | 7.13 | 590 J | 0.00185 | <0.150 | <0.00100 | 0.0910 | 106.0 |
| 20-Nov-08 | 21.18 | 584.17 | 9.70 | 578 | 5.22 | 249.4 | 11.70 | 7.40 | 460 | 0.00442 | <0.150 | <0.00200 | 0.0202 | 110.0 |
| 30-Dec-08 | 18.64 | 586.71 | 8.45 | 448 | 9.27 | 137.9 | 75.80 | 7.89 | 370 J | 0.01190 | 0.209 | 0.00114 | 0.0267 | 106.0 |
| 15-Jan-09 | 16.23 | 589.12 | 6.84 | 344 | 9.25 | 181.9 | 2.77 | 7.47 | 320 | 0.00488 | <0.150 | <0.00100 | <0.0100 | 72.9 |
| 12-Feb-09 | 25.64 | 579.71 | 7.89 | - | 10.82 | - | 71.70 | 7.70 | 420 | 0.01100 | 0.177 | <0.00100 | <0.0100 | 103.0 |
| 12-Mar-09 | 26.92 | 578.43 | 7.27 | 524 | 8.31 | 166.7 | 116.00 | 7.76 | 500 | 0.02350 | 0.244 | <0.00100 | 0.0167 | 125.0 |
| 16-Apr-09 | 19.46 | 585.89 | 7.33 | 406 | 7.57 | 182.8 | 91.80 | 8.33 | 430 | 0.02410 | 0.154 | 0.00109 | 0.0244 | 101.0 |
| 19-May-09 | 26.10 | 579.25 | 9.07 | 554 | 6.39 | 65.6 | 161.00 | 8.32 | 550 J | 0.01340 | <0.150 | <0.00100 | <0.0100 | 115.0 |
| 23-Jun-09 | 29.67 | 575.68 | 9.51 | 522 | 6.05 | 71.4 | - | 8.17 | 540 | 0.00310 | <0.200 | <0.00200 | 0.0630 | 74.0 |
| 25-Aug-09 | 32.72 | 572.63 | 14.80 | 795 | 3.25 | 282.7 | 22.00 | 7.28 | 630 J | 0.00075 J | <0.200 | <0.00200 | 0.0330 | 100.0 |
| 24-Sep-09 | 32.93 | 572.42 | 10.60 | 745 | 4.02 | 361.3 | 29.80 | 7.27 | 560 J | 0.00028 J | <0.200 | <0.00200 | 0.0068 J | 100.0 |
| 15-Dec-09 | 23.87 | 581.48 | 9.50 | 815 | 4.20 | 556.0 | 20.00 | 7.15 | 450 | <0.00200 | <0.200 | <0.00200 | 0.0030 J | 120.0 |
| 24-Mar-10 | 25.61 | 579.74 | 8.50 | 704 | 4.93 | 205.6 | 20.50 | 8.53 | 490 | 0.04700 | 0.370 | 0.00090 J | <0.0200 U | 140.0 |
| 16-Jun-10 | 19.11 | 586.24 | 10.40 | 553 | 4.79 | 399.8 | 13.40 | 7.22 | 310 | 0.01600 | 0.100 J | <0.00200 | 0.0036 J | 90.0 |
| 22-Sep-10 | 31.61 | 573.74 | 11.30 | 1019 | 3.89 | 413.8 | 20.30 | 7.10 | 770 | 0.00620 | <0.200 | 0.00024 J | <0.0200 | 130.0 |
| 8-Dec-10 | 23.10 | 582.25 | 87.90 | 751 | 6.24 | 437.1 | 9.55 | 8.77 | 520 | 0.04300 | 0.220 | 0.00130 J | 0.0100 J | 130.0 |
| 29-Mar-11 | 21.32 | 584.03 | 7.10 | 303 | 4.76 | 809.4 | 13.40 | 9.35 | 350 J | 0.04300 | 0.400 J+ | 0.00055 J | 0.0110 J | 110.0 |
| 21-Jun-11 | 26.04 | 579.31 | 11.20 | 840 | 3.24 | 300.2 | 8.50 | 8.40 | 790 | 0.01800 | 0.160 J | 0.00058 J | 0.0092 J | 110.0 |
| 28-Sep-11 | 32.43 | 572.92 | 10.90 | 67 | 3.92 | 415.6 | 8.32 | 7.30 | 590 | <0.00500 | 0.040 J | 0.00019 J | 0.0025 J | 110.0 |
| 14-Dec-11 | 27.19 | 578.16 | 9.00 | 605 | 1.56 | 329.9 | 21.90 | 7.89 | 570 | 0.01100 | 0.280 | 0.00079 J | 0.0085 J | 150.0 |
| 20-Mar-12 | 17.23 | 588.12 | 6.70 | 639 | 5.03 | 362.5 | 59.90 | 7.79 | 200 | 0.01700 | 0.091 J | <0.00200 | <0.0200 | 79.0 |
| 19-Jun-12 | 25.63 | 579.72 | 9.60 | 681 | 5.24 | 373.2 | 5.94 | 7.43 | 430 | 0.00740 | <0.200 | <0.00040 | <0.0200 | 76.0 |
| 19-Sep-12 | 32.12 | 573.23 | 11.70 | 786 | 3.49 | 290.0 | 7.36 | 7.38 | 460 | 0.00570 | <0.200 | <0.00040 | <0.0200 | 81.0 |
| 19-Dec-12 | 19.00 | 586.35 | 8.90 | 977 | 4.55 | 308.0 | 26.90 | 7.98 | 440 | 0.02000 | 0.490 | 0.00130 | 0.0120 J | 150.0 |
| 25-Feb-13 | 24.93 | 580.42 | 7.10 | 766 | 7.59 | 306.9 | 6.18 | 8.20 | 450 | 0.03400 | 0.190 J | 0.00073 | 0.0120 J | 120.0 |
| 22-May-13 | 26.84 | 578.51 | 9.10 | 705 | 3.94 | 412.9 | 5.97 | 9.33 | 430 | 0.04300 | 0.150 J | 0.00052 | 0.0054 J | 140.0 |
| 21-Aug-13 | 32.84 | 572.51 | 11.20 | 879 | 4.54 | 110.2 | 8.28 | 8.28 | 548 | 0.00950 | <0.050 | <0.00010 | 0.0040 | 106.0 |
| 20-Nov-13 | 25.21 | 580.14 | 11.10 | 1264 | 4.69 | 201.4 | 30.80 | 7.55 | 640 | 0.02490 | 0.140 | 0.00190 | 0.0130 | 163.0 |
| 1-Apr-14 | 18.81 | 586.54 | 8.40 | 448 | 3.50 | 194.9 | 14.70 | 8.87 | 342 | 0.01480 | 0.060 | 0.00030 | 0.0040 J+ | 78.4 |
| 21-May-14 | 23.84 | 581.51 | 10.60 | 122 | 1.32 | 199.3 | - | 8.46 | 352 | 0.01800 | <0.050 | 0.00020 | 0.0330 | 80.4 |
| 13-Aug-14 | 32.25 | 573.10 | 12.46 | 796 | 5.77 | 54.0 | 8.01 | 8.68 | 628 | 0.01610 | <0.050 | <0.00010 | 0.0040 | 165.0 |
| 13-Nov-14 | 27.21 | 578.14 | 13.30 | 837 | 4.02 | 234.3 | 11.40 | 8.63 | 711 | 0.04410 | 0.090 | 0.00040 | 0.0030 | 203.0 |
| 11-Feb-15 | 18.54 | 586.81 | 8.40 | 609 | 1.75 | 16.0 | 87.40 | 9.71 | 435 | 0.03620 | 0.420 | 0.00100 | 0.0120 | 117.0 |
| 4-May-15 | 27.52 | 577.83 | 9.90 | 974 | 3.27 | 356.5 | 12.30 | 10.14 | 654 | 0.04160 | 0.100 | 0.00050 | 0.0070 | 199.0 |
| 6-Aug-15 | 33.98 | 571.37 | 11.70 | 822 | 1.77 | 113.7 | 4.02 | 8.83 | 670 | 0.01910 | <0.050 | <0.00010 | 0.0020 | 210.0 |
| 4-Nov-15 | 28.51 | 576.84 | 11.70 | 1207 | 4.85 | 206.3 | 21.20 | 7.48 | 1090 | 0.00770 | 0.100 | 0.00100 | 0.0060 | 370.0 |
| 10-Feb-16 | 20.96 | 584.39 | 6.90 | 712 | 2.30 | 145.8 | 20.10 | 10.82 | 575 | 0.12100 | 0.190 | 0.00110 | 0.0290 | 173.0 |
| 2-May-16 | 28.91 | 576.44 | 10.60 | 1856 | 0.19 | 111.2 | 15.60 | 11.53 | 1010 | 0.19900 | 0.220 | 0.00250 J- | 0.0250 | 347.0 |
| 23-Aug-16 | 33.58 | 571.77 | 11.40 | 1241 | 0.43 | 462.0 | 8.89 | 9.51 | 1150 | 0.03890 | 0.084 | 0.00034 | 0.0049 | 349.0 |
| 2-Nov-16 | 26.92 | 578.43 | 11.60 | 409 | 5.05 | 14.4 | 40.60 | 9.15 | 911 | 0.02560 | 0.448 | 0.00149 | 0.0133 | 297.0 |
| 1-Feb-17 | 24.61 | 580.74 | 6.20 | 1757 | 2.34 | 72.1 | 11.70 | 11.97 | 880 | 0.14100 | 0.037 J | 0.00034 | 0.0026 | 283.0 |
| 30-May-17 | 24.56 | 580.79 | 10.80 | 1026 | 2.45 | 5.7 | 16.90 | 10.50 | 629 | 0.07280 | 0.081 | 0.00052 J+ | 0.0064 | 210.0 |
| 17-Aug-17 | 32.04 | 573.31 | 13.10 | 1019 | 3.94 | 87.3 | 42.70 | 9.36 | 726 | 0.02030 | 0.048 J | 0.00015 | 0.0083 | 219.0 |
| 10-Nov-17 | 27.72 | 577.63 | 11.60 | 1090 | 4.17 | 109.6 | 38.20 | 9.12 | 931 | 0.02430 | 0.251 | 0.00277 | 0.0161 | 356.0 |
| 27-Feb-18 | 20.78 | 584.57 | 7.00 | 823 | 3.99 | 59.3 | 12.00 | 11.29 | 635 | 0.09930 | 0.077 | 0.00056 | 0.0045 | 203.0 |

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

| Date Sampled | Field Parameters | | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|-----------------------------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|------------------|-------------------------|-------------|----------|-----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation-Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | | Arsenic | Iron | Lead | Manganese | Potassium |
| 1-May-18 | 22.58 | 582.77 | 8.90 | 1442 | 3.52 | - | 17.70 | 11.49 | 817 | 0.11900 | 0.182 | 0.000831 J+ | 0.0085 | 250.0 | |
| 21-Aug-18 | 33.09 | 572.26 | 13.18 | 1153 | 1.01 | 139.8 | 9.68 | 10.06 | 989 | 0.05360 | 0.10 U | 0.00035 | 0.0102 | 334.0 | |
| 6-Nov-18 | 29.74 | 575.61 | 11.10 | 1719 | 3.85 | 218.4 | 6.49 | 8.13 | 1860 | 0.00304 | <0.1 | 0.00037 | 0.0007 J | 701 J+ | |
| 13-Mar-19 | 22.90 | 582.45 | 5.80 | 748 | 5.04 | 145.7 | 32.00 | 10.55 | 737 | 0.03910 | 0.0479 J | 0.00046 | 0.0045 | 246.0 | |
| 8-May-19 | 25.63 | 579.72 | 9.10 | 936 | 5.95 | 75.9 | 7.60 | 10.38 | 747 | 0.05470 | 0.142 | 0.00127 | 0.0071 | 246.0 | |
| 26-Aug-19 | 32.90 | 572.45 | 11.18 | 1622 | 0.88 | Note 1 | 6.57 | 8.97 | 1510 | 0.01880 | 0.0895 J | 0.00051 | 0.0169 | 478.0 | |
| 13-Nov-19 | 30.92 | 574.43 | 10.20 | 1320 | 1.45 | 172.7 | 5.10 | 8.33 | 1140 | 0.00631 | 0.0099 J | <0.0001 | 0.0027 | 422.0 | |
| 12-Feb-20 | 15.95 | 589.40 | 7.70 | 438 | 1.40 | 150.6 | 19.70 | 8.13 | 379 | 0.00212 | 0.0144 J | 0.0001 U | 0.0023 | 122.0 | |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - | |

Notes:

Top of casing elevation (feet msl): 605.35

- Not measured or not available

< Analyte not detected above the reporting limit shown

* Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

APPENDIX A-3

**Summary of Lower Disposal Area –
Bedrock Groundwater Sampling
Results**

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

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--------------|-----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|---------|-----------|-----------|---------------------------------|
| | Depth to Water* (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 19-Dec-06 | 26.51 | 674.57 | 10.96 | 546 | 0.43 | -115.4 | 1.05 | 7.70 | 310 | 0.15100 | <0.150 | <0.00100 | 0.0377 | - |
| 14-Feb-07 | 26.08 | 675.00 | 10.62 | 397 | 1.02 | -90.8 | 3.07 | 7.53 | 240 | 0.16000 | 0.208 | <0.00100 | 0.0463 | - |
| 31-May-07 | 25.96 | 675.12 | 10.83 | 386 | 0.36 | -172.8 | 4.20 | 8.20 | 220 | 0.12200 | 0.183 | <0.00100 | 0.0442 | - |
| 27-Aug-07 | 25.66 | 675.42 | 10.97 | 372 | 0.76 | -128.2 | 1.08 | 7.51 | 240 | 0.08990 | 0.166 | <0.00100 | 0.0466 | - |
| 28-Nov-07 | 26.81 | 674.27 | 10.56 | 371 | 0.42 | -121.2 | 1.29 | 8.03 | 220 | 0.08830 | <0.150 | <0.00100 | 0.0547 | - |
| 27-Feb-08 | 25.80 | 675.28 | 10.62 | 371 | 2.01 | - | 1.07 | - | 230 | 0.08090 | 0.159 | <0.00100 | 0.0553 | <3.0 |
| 20-May-08 | 25.62 | 675.46 | 10.61 | 391 | 0.36 | -53.0 | 1.11 | 7.28 | 230 | 0.06430 | 0.162 | <0.00100 | 0.0521 | - |
| 27-Aug-08 | 26.14 | 674.94 | 10.58 | 394 | 0.50 | -63.9 | 1.02 | 7.35 | 230 J | 0.06400 | 0.170 | <0.00100 | 0.0482 | <3.0 |
| 19-Nov-08 | 25.16 | 675.92 | 10.33 | 269 | 0.45 | -88.6 | 0.48 | 7.51 | 230 | 0.05960 | 0.166 | <0.00100 | 0.0536 | <3.0 |
| 11-Feb-09 | 25.08 | 676.00 | 10.04 | 268 | 0.48 | - | 0.97 | 7.89 | 230 | 0.05600 | 0.182 | <0.00100 | 0.0519 | <3.0 |
| 18-May-09 | 24.83 | 676.25 | 10.10 | 271 | 0.42 | -50.5 | 1.81 | 8.05 | 230 J | 0.04660 | <0.150 | <0.00100 | 0.0500 | <3.0 |
| 24-Sep-09 | 26.32 | 674.76 | 11.80 | 323 | 0.24 | 202.0 | 3.59 | 7.57 | 260 | 0.02700 | 0.080 J | <0.00200 | 0.0650 | 1.1 J |
| 17-Dec-09 | 25.06 | 676.02 | 10.10 | 370 | 0.94 | 179.0 | 4.16 | 7.77 | <40 | 0.03400 | 0.052 J | <0.00200 | 0.0700 | 1.2 J |
| 23-Mar-10 | 24.83 | 676.25 | 10.90 | 344 | 0.21 | 397.4 | 3.17 | 7.57 | 240 | 0.02500 | 0.058 J | <0.00200 | 0.0660 | 1.3 J |
| 15-Jun-10 | 24.38 | 676.70 | 10.50 | 355 | 0.08 | 195.5 | 0.42 | 7.66 | 150 | 0.02700 | 0.083 J | <0.00200 | 0.0590 | 1.1 J |
| 20-Sep-10 | 25.74 | 675.34 | 10.50 | 354 | 0.06 | 192.9 | 0.20 | 7.65 | 200 | 0.02200 | <0.200 | <0.00200 | 0.0660 J+ | 1.1 J |
| 6-Dec-10 | 24.59 | 676.49 | 10.00 | 347 | 0.09 | 99.3 | 0.17 | 7.86 | 230 | 0.02200 | <0.200 | <0.00200 | 0.0510 | 1.0 J |
| 28-Mar-11 | 24.01 | 677.07 | 10.00 | 173 | 0.16 | 90.6 | 0.88 | 7.58 | 200 | 0.02200 | <0.200 | <0.00200 | 0.0500 | 1.0 J |
| 20-Jun-11 | 24.11 | 676.97 | 10.30 | 330 | 0.07 | 121.5 | 0.17 | 7.65 | 250 | 0.02200 | 0.110 J | <0.00200 | 0.0510 | 0.9 J |
| 26-Sep-11 | 25.39 | 675.69 | 10.40 | 2906 | 0.06 | 123.6 | 0.43 | 7.65 | 280 | 0.01500 | 0.130 J | <0.00200 | 0.0560 | 1.1 J |
| 14-Dec-11 | 24.61 | 676.47 | 9.90 | 245 | 0.10 | 193.8 | 1.76 | 7.57 | 230 | 0.02100 | 0.110 J | <0.00200 | 0.0540 | 1.2 J |
| 21-Mar-12 | 23.70 | 677.38 | 10.10 | 392 | 0.07 | 392.0 | 0.22 | 7.47 | 240 | 0.02300 | 0.110 J | <0.00200 | 0.0480 | 1.1 J |
| 18-Jun-12 | 23.90 | 677.18 | 10.50 | 383 | 0.02 | 342.8 | 0.30 | 7.67 | 230 | 0.02000 | <0.200 | <0.00040 | 0.0510 | <3.3 |
| 19-Sep-12 | 25.38 | 675.70 | 10.30 | 402 | 0.01 | 151.0 | 0.44 | 7.63 | 220 | 0.01900 | 0.110 J | <0.00040 | 0.0550 | 1.0 J |
| 18-Dec-12 | 23.59 | 677.49 | 10.10 | 492 | 0.00 | -45.7 | 0.16 | 7.70 | 92 | 0.01700 | 0.120 J | <0.00040 | 0.0490 | 1.2 J |
| 25-Feb-13 | 23.73 | 677.35 | 9.90 | 377 | 0.00 | 177.1 | 0.37 | 7.53 | 270 J | 0.01900 | 0.140 J | <0.00040 | 0.0450 | 1.0 J |
| 22-May-13 | 23.85 | 677.23 | 9.90 | 398 | 0.00 | 430.4 | 0.44 | 7.73 | 290 | 0.01700 | 0.130 J | <0.00040 | 0.0460 | <3.3 |
| 21-Aug-13 | 25.34 | 675.74 | 10.40 | 467 | 0.01 | -31.7 | 0.55 | 7.68 | 238 | 0.01680 | 0.140 | 0.00008 J | 0.0480 | 1.1 |
| 19-Nov-13 | 24.25 | 676.83 | 10.10 | 361 | 0.00 | 70.3 | 0.32 | 7.30 | 232 | 0.01570 | 0.160 | <0.00010 | 0.0500 | 1.0 |
| 31-Mar-14 | 22.36 | 678.72 | 10.70 | 286 | 0.01 | 107.4 | 0.21 | 7.79 | 211 | 0.01380 | 0.160 | <0.00010 | 0.0490 | 1.0 |
| 21-May-14 | 23.29 | 677.79 | 8.54 | 271 | 1.35 | 54.3 | - | 7.14 | 198 | 0.01310 | 0.160 | <0.00010 | 0.0460 | 1.0 |
| 12-Aug-14 | 24.87 | 676.21 | 14.79 | 335 | 0.41 | -16.0 | 2.02 | 7.05 | 216 | 0.01190 | 0.140 | <0.00010 | 0.0450 | 1.0 |
| 11-Nov-14 | 24.96 | 676.12 | 10.10 | 262 | 0.79 | 11.1 | 1.51 | 7.49 | 221 | 0.01360 | 0.160 | <0.00010 | 0.0450 | 1.1 |
| 10-Feb-15 | 23.23 | 677.85 | 10.40 | 319 | 0.25 | -114.0 | 0.36 | 7.70 | 240 | 0.01330 | 0.160 | <0.00010 | 0.0450 | 1.0 |
| 4-May-15 | 23.62 | 677.46 | 10.20 | 370 | 0.05 | 175.1 | 0.16 | 7.70 | 224 | 0.01170 | 0.180 | <0.00010 | 0.0480 | 1.0 |
| 4-Aug-15 | 25.30 | 675.78 | 11.00 | 279 | 0.06 | -30.5 | 0.72 | 7.72 | 234 | 0.01440 | 0.180 | <0.00010 | 0.0460 | 1.0 |
| 4-Nov-15 | 25.35 | 675.73 | 10.60 | 263 | 0.00 | 51.2 | 0.46 | 7.46 | 233 | 0.01100 | 0.170 | <0.00010 | 0.0450 | 1.2 |
| 8-Feb-16 | 23.03 | 678.05 | 10.20 | 319 | 0.03 | 206.5 | 0.20 | 7.77 | 210 | 0.01210 | 0.190 | <0.00010 | 0.0480 | 1.1 |
| 2-May-16 | 23.49 | 677.59 | | | | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ |
| 22-Aug-16 | 25.00 | 676.08 | 11.10 | 323 | 0.02 | -55.2 | 1.10 | 7.64 | | | | | | Monitored Annually ¹ |
| 1-Nov-16 | 24.29 | 676.79 | | | | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ |
| 31-Jan-17 | 23.06 | 678.02 | 10.20 | 391 | 0.05 | 169.3 | 0.13 | 7.66 | 223 | 0.01190 | 0.177 | <0.00010 | 0.0418 | 1.0 |
| 30-May-17 | 22.45 | 678.63 | | | | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ |
| 16-Aug-17 | 24.27 | 676.81 | 10.70 | 385 | 0.15 | 123.4 | 0.40 | 7.64 | | | | | | Monitored Annually ¹ |
| 9-Nov-17 | 22.04 | 679.04 | | | | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ |

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | | |
|-----------------------------------|-----------------------------|----------------------------------|--------------------------------------|-------------------------|-------------------------|--|-----------------|---------------------|---------------------------------|-------------------------------|---------------------------------|----------|--------|-----------|-----------|
| | Depth to Water* (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese | Potassium |
| 28-Feb-18 | 22.04 | 679.04 | 10.10 | 276 | 0.20 | -96.4 | 0.25 | 7.44 | 221 | 0.01080 | 0.192 | <0.00010 | 0.0412 | 1.0 | |
| 1-May-18 | 22.11 | 678.97 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 22-Aug-18 | 24.42 | 676.66 | 11.37 | 277 | 5.25 | -59.6 | 0.18 | 7.61 | Monitored Annually ¹ | | | | | | |
| 6-Nov-18 | 24.57 | 676.51 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 11-Mar-19 | 22.61 | 678.47 | 10.10 | 248 | 0.60 | -70.8 | 0.68 | 7.60 | 224 | 0.00874 | 0.224 | <0.0001 | 0.0475 | 1.07 | |
| 8-May-19 | 22.68 | 678.40 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 27-Aug-19 | 24.54 | 676.54 | 11.45 | 282 | 0.58 | Note 1 | 0.04 | 7.30 | Monitored Annually ¹ | | | | | | |
| 13-Nov-19 | 24.15 | 676.93 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 13-Feb-20 | 22.04 | 679.04 | 10.10 | 280 | 0.34 | -133.4 | 0.57 | 7.51 | 207 | 0.00882 | 0.231 | 0.0001 U | 0.0428 | 1.1 | |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - | |

Note:

Top of casing elevation (feet msl): 701.08

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually.

- Not available

< Analyte not detected above the reporting limit shown

* Depth to water (DTW) measurements for all bedrock LDA wells collected on the same day; date noted is sampling date

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--------------|-----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|----------|-----------|---------------------------------|-----------|
| | Depth to Water* (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 19-Dec-06 | 36.82 | 701.24 | 12.15 | 394 | 0.57 | 114.6 | 1.84 | 7.58 | 230 | 0.00849 | <0.150 | <0.00100 | 0.0242 | - |
| 14-Feb-07 | 36.30 | 701.76 | 11.69 | 339 | 1.40 | -85.7 | 2.72 | 7.39 | 200 | 0.00609 | 0.232 | <0.00100 | 0.0266 | - |
| 31-May-07 | 36.93 | 701.13 | 12.13 | 346 | 0.20 | -223.7 | 3.04 | 8.28 | 210 | 0.00695 | 0.255 | <0.00100 | 0.0297 | - |
| 27-Aug-07 | 37.99 | 700.07 | 12.18 | 336 | 0.49 | -169.7 | 0.84 | 7.54 | 210 | 0.00749 | 0.262 | <0.00100 | 0.0313 | - |
| 28-Nov-07 | 37.89 | 700.17 | 11.82 | 338 | 0.28 | -146.6 | 1.32 | 7.93 | 250 | 0.00691 | 0.259 | <0.00100 | 0.0320 | - |
| 27-Feb-08 | 37.24 | 700.82 | 11.87 | 340 | 0.23 | - | 0.87 | 7.41 | 210 | 0.00746 | 0.254 | <0.00100 | 0.0309 | <3.0 |
| 20-May-08 | 37.31 | 700.75 | 11.91 | 359 | 0.23 | -86.6 | 0.67 | 7.27 | 200 | 0.00631 | 0.315 | <0.00100 | 0.0267 | - |
| 27-Aug-08 | 38.37 | 699.69 | 11.84 | 362 | 0.35 | -77.6 | 0.70 | 7.21 | 210 J | 0.00636 | 0.279 | <0.00100 | 0.0231 | <3.0 |
| 19-Nov-08 | 37.50 | 700.56 | 11.53 | 254 | 0.44 | -105.9 | 2.08 | 7.45 | 200 | 0.00586 | 0.279 | <0.00100 | 0.0231 | <3.0 |
| 11-Feb-09 | 37.10 | 700.96 | 11.25 | 254 | 0.48 | - | 0.63 | 7.91 | 220 | 0.00561 | 0.290 | <0.00100 | 0.0238 | <3.0 |
| 18-May-09 | 37.00 | 701.06 | 11.42 | 258 | 0.42 | -71.9 | 1.11 | 8.00 | 210 J | 0.00517 | <0.150 | <0.00100 | 0.0208 | <3.0 |
| 25-Sep-09 | 38.88 | 699.18 | 13.10 | 297 | 0.14 | 140.7 | 3.09 | 7.54 | 230 | 0.00650 | 0.250 | <0.00200 | 0.0290 | 1.2 J |
| 17-Dec-09 | 37.19 | 700.87 | 10.80 | 341 | 0.51 | 129.0 | 4.85 | 7.71 | 74 | 0.00430 | 0.250 | <0.00200 | 0.0290 | 1.1 J |
| 23-Mar-10 | 36.60 | 701.46 | 12.60 | 323 | 0.27 | 355.0 | 5.28 | 7.54 | 110 | 0.00760 | 0.220 | <0.00200 | 0.0290 | 1.2 J |
| 15-Jun-10 | 36.25 | 701.81 | 11.40 | 326 | 0.08 | 171.1 | - | 7.62 | 98 | 0.00880 | 0.310 | <0.00200 | 0.0230 | 1.1 J |
| 20-Sep-10 | 37.85 | 700.21 | 11.60 | 324 | 0.08 | 144.0 | 0.16 | 7.61 | 160 | 0.00650 | 0.310 J+ | <0.00200 | 0.0280 J+ | 1.2 J |
| 6-Dec-10 | 36.60 | 701.46 | 11.00 | 319 | 0.21 | 78.3 | 0.20 | 7.81 | 210 | 0.00290 | 0.180 J | <0.00200 | 0.0200 | 0.9 J |
| 29-Mar-11 | 35.98 | 702.08 | 11.20 | 156 | 0.15 | 215.0 | 0.75 | 7.48 | 200 | 0.00560 | 0.320 J+ | <0.00200 | 0.0200 | 1.5 J |
| 21-Jun-11 | 36.34 | 701.72 | 11.80 | 352 | 0.06 | 101.5 | 0.24 | 7.59 | 220 | <0.00500 | 0.270 | <0.00200 | 0.0280 | 1.0 J |
| 27-Sep-11 | 38.14 | 699.92 | 11.50 | 2484 | 0.06 | 114.4 | 0.45 | 7.60 | 220 | <0.00500 | 0.290 | <0.00200 | 0.0220 | 1.0 J |
| 14-Dec-11 | 36.91 | 701.15 | 11.00 | 228 | 0.05 | 127.2 | 4.04 | 7.54 | 190 | 0.00670 | 0.280 | <0.00200 | 0.0210 | 1.2 J |
| 21-Mar-12 | 35.68 | 702.38 | 11.00 | 359 | 0.05 | 93.9 | 0.30 | 7.43 | 210 | 0.00690 | 0.270 | <0.00200 | 0.0170 J | 1.1 J |
| 18-Jun-12 | 36.06 | 702.00 | 11.70 | 350 | 0.02 | 211.9 | 0.23 | 7.62 | 220 | 0.00620 | 0.350 J+ | <0.00040 | 0.0170 J | <3.3 |
| 19-Sep-12 | 38.07 | 699.99 | 11.60 | 367 | 0.00 | 102.0 | 0.34 | 7.59 | 200 | 0.00650 | 0.290 | <0.00040 | 0.0220 | 1.0 J |
| 18-Dec-12 | 34.88 | 703.18 | 10.90 | 463 | 0.00 | -97.8 | 0.17 | 7.81 | 68 | 0.00600 | 0.280 | <0.00040 | 0.0170 J | 1.2 J |
| 25-Feb-13 | 35.70 | 702.36 | 10.90 | 347 | 0.09 | 112.6 | 0.27 | 7.56 | 190 | 0.00660 | 0.270 J | <0.00040 | 0.0180 J | 1.1 J |
| 22-May-13 | 36.24 | 701.82 | 11.00 | 412 | 0.00 | 412.5 | 0.43 | 7.71 | 190 | 0.00600 | 0.280 J | <0.00040 | 0.0170 J | <3.3 |
| 20-Aug-13 | 38.13 | 699.93 | 12.20 | 406 | 0.02 | -41.5 | 0.64 | 7.48 | 211 | 0.00550 | 0.290 | <0.00010 | 0.0220 | 1.0 |
| 19-Nov-13 | 36.56 | 701.50 | 11.10 | 344 | 0.01 | 43.6 | 0.32 | 7.35 | 206 | 0.00520 | 0.310 | <0.00010 | 0.0190 | 1.1 |
| 31-Mar-14 | 35.36 | 702.70 | 11.50 | 285 | 0.00 | 93.1 | 0.31 | 7.71 | 207 | 0.00510 | 0.320 | <0.00010 | 0.0200 | 1.1 |
| 22-May-14 | 35.80 | 702.26 | 10.05 | 260 | 0.24 | 17.5 | - | 7.22 | 186 | 0.00500 | 0.310 | <0.00010 | 0.0190 | 1.0 |
| 13-Aug-14 | 37.50 | 700.56 | 13.10 | 294 | 0.57 | -37.5 | 3.28 | 7.19 | 190 | 0.00540 | 0.400 | 0.00210 J | 0.0280 | 1.1 |
| 11-Nov-14 | 37.06 | 701.00 | 10.10 | 241 | 0.68 | -39.7 | 2.10 | 7.48 | 206 | 0.00540 | 0.320 | <0.00010 | 0.0180 | 1.1 |
| 10-Feb-15 | 35.70 | 702.36 | 11.40 | 295 | 0.11 | -123.2 | 2.11 | 7.69 | 206 | 0.00510 | 0.310 | <0.00010 | 0.0190 | 1.0 |
| 4-May-15 | 36.34 | 701.72 | 11.70 | 336 | 0.05 | 340.2 | 0.72 | 7.73 | 204 | 0.00480 | 0.310 | <0.00010 | 0.0200 | 1.0 |
| 4-Aug-15 | 38.42 | 699.64 | 12.70 | 263 | 0.04 | -81.8 | 0.77 | 7.72 | 204 | 0.00580 | 0.330 | <0.00010 | 0.0200 | 1.0 |
| 4-Nov-15 | 37.81 | 700.25 | 11.60 | 244 | 0.04 | 26.9 | 2.13 | 7.45 | 201 | 0.00470 | 0.320 | <0.00010 | 0.0180 | 1.1 |
| 8-Feb-16 | 35.68 | 702.38 | 11.60 | 307 | 0.00 | 208.4 | 0.74 | 7.68 | 186 | 0.00550 | 0.330 | <0.00010 | 0.0220 | 1.1 |
| 2-May-16 | 36.03 | 702.03 | | | | Monitored Semi-Annually ¹ | | | | | | | Monitored Annually ¹ | |
| 22-Aug-16 | 37.92 | 700.14 | 12.20 | 306 | 0.02 | -137.6 | 1.58 | 7.67 | | | | | Monitored Annually ¹ | |
| 1-Nov-16 | 37.07 | 700.99 | | | | Monitored Semi-Annually ¹ | | | | | | | Monitored Annually ¹ | |
| 31-Jan-17 | 36.00 | 702.06 | 10.90 | 348 | 0.10 | 120.5 | 0.86 | 7.67 | 195 | 0.00566 | 0.306 | <0.00010 | 0.0168 | 1.1 |
| 30-May-17 | 35.44 | 702.62 | | | | Monitored Semi-Annually ¹ | | | | | | | Monitored Annually ¹ | |
| 16-Aug-17 | 37.69 | 700.37 | 12.30 | 356 | 0.14 | -77.2 | 3.27 | 7.67 | | | | | Monitored Annually ¹ | |
| 9-Nov-17 | 37.11 | 700.95 | | | | Monitored Semi-Annually ¹ | | | | | | | Monitored Annually ¹ | |

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | | |
|-----------------------------------|-----------------------------|----------------------------------|--------------------------------------|-------------------------|-------------------------|--|-----------------|---------------------|---------------------------------|-------------------------------|---------------------------------|----------|--------|-----------|-----------|
| | Depth to Water* (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese | Potassium |
| 28-Feb-18 | 34.95 | 703.11 | 10.90 | 261 | 0.21 | -115.5 | 0.80 | 7.48 | 205 | 0.00569 | 0.310 | <0.00010 | 0.0173 | 1.0 | |
| 1-May-18 | 35.11 | 702.95 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 22-Aug-18 | 37.90 | 700.16 | 12.31 | 262 | 1.64 | -80.3 | 0.92 | 7.56 | Monitored Annually ¹ | | | | | | |
| 6-Nov-18 | 37.66 | 700.40 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 12-Mar-19 | 35.68 | 702.38 | 10.70 | 239 | 0.58 | -75.1 | 0.59 | 7.48 | 188 | 0.0055 | 0.352 | <0.0001 | 0.0182 | 1.08 | |
| 8-May-19 | 35.86 | 702.20 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 27-Aug-19 | 37.85 | 700.21 | 12.30 | 265 | 0.43 | Note 1 | 0.02 | 7.46 | Monitored Annually ¹ | | | | | | |
| 13-Nov-19 | 37.22 | 700.84 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 13-Feb-20 | 35.10 | 702.96 | 10.80 | 261 | 0.39 | -135.9 | 0.96 | 7.50 | 185 | 0.00545 | 0.349 | 0.0001 U | 0.0180 | 1.2 | |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - | |

Note:

Top of casing elevation (feet msl): 738.06

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually.

- Not available

< Analyte not detected above the reporting limit shown

* Depth to water (DTW) measurements for all bedrock LDA wells collected on the same day; date noted is sampling date

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | |
|--------------|-----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|----------|-----------|-----------|---------------------------------|
| | Depth to Water* (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese |
| 19-Dec-06 | 7.08 | 733.51 | 11.37 | 670 | 0.42 | -171.2 | 1.20 | 9.23 | 500 | 0.02570 | 0.173 | <0.00100 | 0.0476 | - |
| 23-Jan-07 | 5.62 | 734.97 | 13.07 | 383 | 0.51 | -275.0 | 1.53 | 8.63 | 270 | 0.01840 | 0.450 | <0.00100 | 0.0787 | - |
| 14-Feb-07 | 5.81 | 734.78 | 12.57 | 328 | 1.09 | -158.2 | 115.00 | 7.86 | 310 | 0.01510 | <0.150 | <0.00100 | 0.0718 | - |
| 29-Mar-07 | 4.78 | 735.81 | 12.44 | 458 | 0.57 | -140.8 | 4.25 | 7.78 | 260 J | 0.03790 | 0.261 | <0.00100 | 0.0601 | - |
| 17-Apr-07 | 4.86 | 735.73 | 12.79 | 389 | 0.27 | -102.4 | 1.22 | 7.46 | 240 | 0.02300 | 0.451 | <0.00100 | 0.0900 | - |
| 31-May-07 | 6.39 | 734.20 | 12.98 | 394 | 0.29 | -223.8 | 3.32 | 8.14 | 240 | 0.02120 | 0.443 | <0.00100 | 0.0998 | - |
| 20-Jun-07 | 6.86 | 733.73 | 13.41 | 412 | 6.10 | -128.5 | 1.35 | 8.02 | 230 J | 0.02380 | 0.274 | <0.00100 | 0.0898 | - |
| 31-Jul-07 | 7.96 | 732.63 | 13.47 | 417 | 0.77 | -174.1 | 0.92 | 7.64 | 250 | 0.01890 | 0.609 | <0.00100 | 0.1190 | - |
| 27-Aug-07 | 8.50 | 732.09 | 12.84 | 395 | 0.46 | -132.4 | 1.97 | 7.43 | 250 | 0.01760 | 0.315 | <0.00100 | 0.1040 | - |
| 27-Sep-07 | 9.58 | 731.01 | 12.68 | 294 | 0.51 | -133.8 | 0.53 | 7.87 | 250 | 0.01930 | 0.451 | <0.00100 | 0.1170 | - |
| 26-Oct-07 | 9.65 | 730.94 | 12.49 | 288 | 0.84 | -111.9 | 9.83 | 7.60 | 240 J | 0.01100 | 0.949 | <0.00100 | 0.1970 | - |
| 28-Nov-07 | 10.23 | 730.36 | 11.95 | 362 | 0.64 | -86.1 | 1.58 | 7.87 | 200 | 0.01780 | 0.315 | <0.00100 | 0.0819 | - |
| 12-Dec-07 | 9.66 | 730.93 | 11.83 | 334 | 0.26 | -93.2 | 0.63 | 7.63 | 280 J | 0.01740 | 0.458 | <0.00100 | 0.0953 | - |
| 24-Jan-08 | 8.20 | 732.39 | 11.09 | 335 | 0.44 | -108.3 | - | 7.46 | 220 | 0.01920 | 0.456 | <0.00100 | 0.0861 | - |
| 26-Feb-08 | 7.61 | 732.98 | 12.26 | 337 | 0.48 | - | 2.40 | 7.45 | 210 | 0.02200 | 0.448 | <0.00100 | 0.0916 | <3.0 |
| 25-Mar-08 | 7.22 | 733.37 | 11.94 | 337 | 1.01 | -48.6 | 2.80 | 7.51 | 210 | 0.01780 | 0.296 | <0.00100 | 0.0789 | - |
| 29-Apr-08 | 6.75 | 733.84 | 12.53 | 332 | 0.77 | -50.3 | 1.95 | 7.41 | 200 J | 0.01820 | 0.449 | <0.00100 | 0.0826 | - |
| 19-May-08 | 7.17 | 733.42 | 12.37 | 336 | 0.57 | -57.2 | 2.19 | 7.34 | 200 J | 0.01870 | 0.373 | <0.00100 | 0.0758 | - |
| 18-Jun-08 | 7.26 | 733.33 | 12.11 | 323 | 0.48 | -64.1 | 0.83 | 7.13 | 190 J | 0.01950 | 0.461 | <0.00100 | 0.0896 | - |
| 26-Aug-08 | 8.78 | 731.81 | 12.31 | 329 | 1.16 | -36.5 | 2.89 | 7.30 | 200 J | 0.01770 | 0.298 | <0.00100 | 0.0532 | <3.0 |
| 19-Nov-08 | 9.03 | 731.56 | 11.91 | 243 | 0.52 | -93.1 | 1.69 | 7.40 | 190 | 0.01820 | 0.394 | <0.00100 | 0.0690 | <3.0 |
| 11-Feb-09 | 7.07 | 733.52 | 11.74 | 227 | 0.65 | - | 1.03 | 7.76 | 180 | 0.01770 | 0.582 | <0.00100 | 0.1020 | <3.0 |
| 18-May-09 | 6.50 | 734.09 | 12.11 | 225 | 0.67 | -63.9 | 1.51 | 7.83 | 190 J | 0.01290 | <0.150 | <0.00100 | 0.0886 | <3.0 |
| 25-Sep-09 | 10.47 | 730.12 | 13.50 | 260.1 | 0.36 | 215.3 | 4.14 | 7.61 | 220 | 0.01700 | 0.260 | 0.00094 J | 0.0440 | 12.0 |
| 17-Dec-09 | 8.39 | 732.20 | 11.50 | 301.0 | 0.44 | 110.0 | 3.10 | 7.71 | 270 | 0.02300 | 0.610 | <0.00200 | 0.0970 | 1.3 J |
| 23-Mar-10 | 6.46 | 734.13 | 12.20 | 294.8 | 0.43 | 332.5 | 3.52 | 7.57 | 150 J | 0.02700 | 0.380 | <0.00200 | 0.0760 | 1.3 J |
| 16-Jun-10 | 5.34 | 735.25 | 11.10 | 281.7 | 0.05 | 117.0 | - | 7.71 | 160 | 0.02700 | 0.490 | <0.00200 | 0.0760 | 1.3 J |
| 21-Sep-10 | 7.72 | 732.87 | 11.80 | 276.3 | 0.06 | 169.5 | 0.36 | 7.54 | 140 | 0.02300 | 0.600 J+ | <0.00200 | 0.0910 J+ | 1.3 J |
| 7-Dec-10 | 6.48 | 734.11 | 11.00 | 263.0 | 0.15 | 77.2 | 0.38 | 7.58 | 180 | 0.02000 | 0.360 | <0.00200 | 0.0680 | 1.2 J |
| 28-Mar-11 | 4.42 | 736.17 | 10.80 | 134.0 | 0.44 | 75.6 | 1.06 | 7.46 | 160 J | 0.02100 | 0.610 J+ | <0.00200 | 0.0720 | 1.7 J |
| 20-Jun-11 | 4.76 | 735.83 | 12.10 | 252.7 | 0.07 | 68.4 | 0.13 | 7.48 | 200 J | 0.01600 | 0.650 | <0.00200 | 0.08900 | 1.0 J |
| 27-Sep-11 | 7.86 | 732.73 | 11.90 | 2064.0 | 0.04 | 102.6 | 0.37 | 7.48 | 170 | 0.01800 | 0.620 | <0.00200 | 0.08300 | 1.1 J |
| 14-Dec-11 | 7.17 | 733.42 | 11.00 | 188.2 | 0.03 | 140.8 | 1.87 | 7.50 | 770 | 0.02200 | 0.310 | <0.00200 | 0.05600 | 1.3 J |
| 21-Mar-12 | 4.68 | 735.91 | 10.70 | 297.8 | 0.07 | 130.6 | 0.41 | 7.39 | 170 | 0.02100 | 0.360 | <0.00200 | 0.04600 | 1.1 J |
| 18-Jun-12 | 4.75 | 735.84 | 11.60 | 289.0 | 0.16 | 271.3 | 0.55 | 7.54 | 150 J+ | 0.01900 | 0.440 J+ | <0.00040 | 0.05300 | <3.3 |
| 19-Sep-12 | 7.65 | 732.94 | 12.60 | 299.9 | 0.10 | 121.0 | 0.42 | 7.50 | 160 | 0.01800 | 0.370 | <0.00040 | 0.05500 | 1.1 J |
| 18-Dec-12 | 5.58 | 735.01 | 10.90 | 384.0 | 0.03 | 15.6 | 1.39 | 7.50 | 200 | 0.01900 | 0.150 J | <0.00040 | 0.04100 | 1.3 J |
| 25-Feb-13 | 4.80 | 735.79 | 10.60 | 284.2 | 0.03 | 140.4 | 0.30 | 7.53 | 150 | 0.02200 | 0.390 J | <0.00040 | 0.05400 | 1.2 J |
| 22-May-13 | 4.81 | 735.78 | 11.00 | 294.9 | 0.14 | 387.7 | 0.52 | 7.61 | 160 | 0.01800 | 0.420 J | <0.00040 | 0.05800 | <3.3 |
| 20-Aug-13 | 7.63 | 732.96 | 12.60 | 383.0 | 0.81 | -8.4 | 0.80 | 7.26 | 164 | 0.01670 | 0.350 | <0.00010 | 0.05200 | 1.1 |
| 19-Nov-13 | 7.11 | 733.48 | 11.30 | 218.1 | 0.14 | 54.3 | 0.73 | 7.20 | 169 | 0.01660 | 0.290 | <0.00010 | 0.05200 | 1.1 |
| 1-Apr-14 | 4.08 | 736.51 | 10.70 | 222.6 | 0.15 | 158.5 | 1.12 | 7.50 | 168 | 0.01330 | 0.480 | <0.00010 | 0.07300 | 1.1 |
| 22-May-14 | 4.21 | 736.38 | 9.98 | 206.0 | 1.59 | 27.1 | - | 7.17 | 158 | 0.01120 | 0.150 | <0.00010 | 0.06500 | 1.0 |
| 13-Aug-14 | 6.95 | 733.64 | 13.50 | 237.0 | 1.14 | 9.8 | 4.70 | 6.92 | 154 | 0.01050 | 0.160 | <0.00010 | 0.07900 | 1.0 |
| 12-Nov-14 | 6.04 | 734.55 | 8.40 | 185.1 | 0.28 | -10.1 | 3.42 | 7.36 | 162 | 0.01610 | 0.440 | <0.00010 | 0.09300 | 1.1 |
| 11-Feb-15 | 4.62 | 735.97 | 11.50 | 205.1 | 1.20 | 68.1 | 1.32 | 7.41 | 169 | 0.00900 | <0.050 | <0.00010 | 0.07900 | 1.1 |
| 4-May-15 | 4.93 | 735.66 | 12.20 | 262.0 | 1.64 | 190.2 | 0.84 | 7.43 | 168 | 0.01090 | 0.640 | <0.00010 | 0.12400 | 1.0 |
| 4-Aug-15 | 7.44 | 733.15 | 13.20 | 211.3 | 1.62 | 81.9 | 2.02 | 7.39 | 173 | 0.00680 | 0.043 J | <0.00010 | 0.05100 | 1.0 |
| 5-Nov-15 | 8.14 | 732.45 | 12.50 | 186.0 | 1.49 | 166.9 | 1.87 | 7.10 | 162 | 0.00350 | 0.017 J | <0.00010 | 0.08600 | 1.0 |
| 8-Feb-16 | 3.20 | 737.39 | 11.70 | 240.5 | 2.13 | 196.9 | 0.88 | 7.23 | 150 | 0.01120 | 1.060 | <0.00010 | 0.13300 | 1.0 |
| 2-May-16 | 3.77 | 736.82 | | | | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ |
| 22-Aug-16 | 6.81 | 733.78 | 13.10 | 238.0 | 2.40 | 168.5 | 2.39 | 7.41 | | | | | | Monitored Annually ¹ |
| 1-Nov-16 | 6.59 | 734.00 | | | | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ |
| 31-Jan-17 | 4.02 | 736.57 | 11.30 | 265.8 | 2.79 | 218.2 | 1.39 | 7.34 | 154 | 0.00323 | 0.008 J | <0.00010 | 0.02720 | 1.0 |
| 30-May-17 | 2.32 | 738.27 | | | | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ |
| 16-Aug-17 | 5.48 | 735.11 | 13.20 | 258.4 | 3.54 | 92.2 | 2.50 | 7.41 | | | | | | Monitored Annually ¹ |
| 9-Nov-17 | 6.00 | 734.59 | | | | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ |

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | | | |
|-----------------------------------|-----------------------------|----------------------------------|--------------------------------------|-------------------------|-------------------------|--|-----------------|---------------------|---------------------------------|-------------------------------|---------------------------------|----------|---------|-----------|-----------|
| | Depth to Water* (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Iron | Lead | Manganese | Potassium |
| 28-Feb-18 | 1.13 | 739.46 | 10.80 | 186.9 | 4.11 | 142.0 | 1.83 | 7.18 | 159 | 0.00253 | 0.02 J | <0.00010 | 0.01230 | 0.8 | |
| 1-May-18 | 1.60 | 738.99 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 22-Aug-18 | 5.93 | 734.66 | 13.55 | 194 | 7.63 | 16.9 | 0.77 | 7.11 | Monitored Annually ¹ | | | | | | |
| 6-Nov-18 | 6.78 | 733.81 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 12-Mar-19 | 2.32 | 738.27 | 10.50 | 166 | 4.32 | 167.7 | 1.34 | 7.14 | 149 | 0.00187 | 0.0023 J | <0.0001 | <0.001 | 0.953 | |
| 8-May-19 | 2.57 | 738.02 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 27-Aug-19 | 5.76 | 734.83 | 13.62 | 192 | 3.94 | Note 1 | 0.02 | 7.09 | Monitored Annually ¹ | | | | | | |
| 13-Nov-19 | 6.00 | 734.59 | Monitored Semi-Annually ¹ | | | | | | | | Monitored Annually ¹ | | | | |
| 13-Feb-20 | 1.69 | 738.90 | 10.70 | 180 | 3.20 | 88.5 | 1.21 | 7.11 | 140 | 0.00169 | 0.05 U | 0.0001 U | 0.00620 | 0.9 | |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.3 | 0.05 | 0.05 | - | |

Note:

Top of casing elevation (feet msl): 740.59

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually.

- Not available

< Analyte not detected above the reporting limit shown

* Depth to water (DTW) measurements for all bedrock LDA wells collected on the same day; date noted is sampling date

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level NTU Nephelometric Turbidity Unit

APPENDIX A-4

Summary of Dale Strip Pit – Bedrock Groundwater Sampling Results

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

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | |
|--------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------|-----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | Arsenic | Lead | Potassium |
| 2-Dec-02 | 69.87 | 862.82 | 9.5 | 1690 | - | - | - | 7.29 | 910 | 0.04660 | 0.00268 | - |
| 3-Mar-03 | 36.83 | 895.86 | 11.5 | 1260 | - | - | 24.10 | 7.15 | 860 | 0.00973 | - | - |
| 3-May-03 | 34.88 | 897.81 | 12.8 | 1520 | - | - | 38.00 | 7.09 | 950 | - | - | - |
| 3-Aug-03 | 52.02 | 880.67 | 19.19 | 1460 | - | - | 11.40 | 7.01 | 990 | - | - | - |
| 1-Nov-03 | 53.61 | 879.08 | 11.60 | 915 | - | - | 8.97 | 7.19 | 1010 | 0.00858 | 0.00070 | - |
| 1-Feb-04 | 32.75 | 899.94 | 11.52 | 1033 | - | - | 7.36 | 6.78 | 1060 | - | - | - |
| 1-May-04 | 42.50 | 890.19 | 14.87 | 1126 | - | - | 7.53 | 7.23 | 1020 | - | - | - |
| 1-Aug-04 | 49.26 | 883.43 | 13.72 | 1234 | - | - | 8.07 | 6.98 | 981 | - | - | - |
| 1-Nov-04 | 42.81 | 889.88 | 11.88 | 1429 | - | - | 9.06 | 6.92 | 1060 | 0.01000 | <0.00100 | - |
| 1-Feb-05 | 33.62 | 899.07 | 13.06 | 1615 | - | - | 7.11 | 7.01 | 1020 | - | - | - |
| 1-May-05 | 34.88 | 897.81 | 12.91 | 1459 | - | - | 6.54 | 6.85 | 1000 | - | - | - |
| 1-Aug-05 | 43.80 | 888.89 | 10.40 | 1472 | - | - | 10.40 | 6.80 | 1090 | - | - | - |
| 1-Nov-05 | 52.80 | 879.89 | 10.40 | 1458 | - | - | 6.02 | 6.64 | 1100 | 0.01030 | <0.00100 | - |
| 1-Feb-06 | 42.70 | 889.99 | 10.40 | 1343 | 1.10 | 48.3 | 11.10 | 7.08 | 1100 J | - | - | - |
| 1-May-06 | 37.81 | 894.88 | 11.52 | 1686 | 1.64 | 49.2 | 10.50 | 6.83 | 1100 | - | - | - |
| 1-Aug-06 | 46.11 | 886.58 | 14.10 | 1357 | 2.33 | 43.0 | 10.70 | 7.11 | 1100 | - | - | - |
| 1-Nov-06 | 46.47 | 886.22 | - | - | - | - | - | - | - | - | - | - |
| 28-Dec-06 | 33.20 | 899.49 | - | - | - | - | - | - | - | - | - | - |
| 7-Feb-07 | 34.50 | 898.19 | - | - | - | - | - | - | - | - | - | - |
| 7-May-07 | 36.48 | 896.21 | 15.19 | 1484 | 0.52 | -83.4 | 6.78 | 7.60 | 1100 | - | - | - |
| 7-Aug-07 | 47.57 | 885.12 | 11.21 | 1488 | 8.80 | 107.4 | 9.53 | 6.51 | 1200 | - | - | - |
| 27-Nov-07 | 51.25 | 881.44 | 13.60 | 1483 | 1.82 | -129.5 | 434.00 | 7.11 | 1000 J | 0.00572 | <0.00100 | - |
| 8-Feb-08 | 35.12 | 897.57 | 14.71 | 1489 | 3.11 | - | 10.20 | 6.97 | 1100 | - | - | - |
| 8-May-08 | 37.60 | 895.09 | 14.50 | 1594 | 3.99 | 112.5 | 4.71 | 6.90 | 1200 J | - | - | - |
| 8-Aug-08 | 46.98 | 885.71 | 13.27 | 1617 | 2.49 | 105.3 | 5.32 | 6.96 | 1200 J | 0.00782 | <0.00100 | 5.6 |
| 1-Nov-08 | 43.35 | 889.34 | 11.17 | 1096 | 7.29 | 127.1 | 47.30 | 7.70 | 1100 | 0.00980 | <0.00100 | 5.6 |
| 11-Feb-09 | 37.00 | 895.69 | 10.28 | 1112 | 4.15 | - | 7.68 | 7.25 | 1100 | 0.00752 | <0.00100 | 5.6 |
| 9-May-09 | 36.53 | 896.16 | 13.87 | 1209 | 2.93 | 89.0 | 5.45 | 7.41 | 990 J | 0.00757 | <0.00100 | 5.6 |
| 24-Sep-09 | 53.61 | 879.08 | 12.10 | 1328 | 1.98 | 331.0 | 3.26 | 6.92 | 1200 | 0.00790 | <0.00200 | 5.7 |
| 14-Dec-09 | 33.72 | 898.97 | 10.20 | 1519 | 0.55 | 393.0 | 2.82 | 6.99 | 1100 | 0.00340 | <0.00200 | 5.7 |
| 22-Mar-10 | 35.11 | 897.58 | 10.90 | 1463 | - | 508.0 | 3.95 | 6.94 | 1200 | 0.01000 | <0.00200 | 5.6 |
| 15-Jun-10 | 33.26 | 899.43 | 11.00 | 1485 | 0.20 | 210.3 | 1.50 | 7.02 | 1100 | 0.01100 | <0.00200 | 5.9 |
| 20-Sep-10 | 45.81 | 886.88 | 11.30 | 1484 | 0.06 | 159.7 | 0.91 | 6.98 | 1100 | 0.00910 | 0.00048 J | 6.0 |
| 6-Dec-10 | 36.20 | 896.49 | 10.70 | 1494 | 0.08 | 35.4 | 0.24 | 7.21 | 1200 | 0.00680 | 0.00034 J | 5.2 |
| 28-Mar-11 | 35.07 | 897.62 | 10.70 | 749 | 0.08 | 136.8 | 0.16 | 6.88 | 1100 | 0.00680 | <0.00200 | 5.5 |
| 20-Jun-11 | 38.53 | 894.16 | 11.40 | 1439 | 0.08 | -19.2 | 0.21 | 6.99 | 1400 | 0.00460 J | <0.00200 | 5.5 |
| 26-Sep-11 | 50.43 | 882.26 | 11.20 | 1249 | 0.07 | 38.5 | 0.41 | 7.01 | 1200 | 0.00450 J | <0.00200 | 5.7 |
| 13-Dec-11 | 51.30 | 881.39 | 10.40 | 1308 | 0.06 | 50.3 | 2.03 | 7.07 | 530 | 0.00760 | <0.00200 | 6.1 |
| 22-Mar-12 | 43.75 | 888.94 | 10.60 | 1695 | 0.08 | 125.1 | 0.28 | 6.99 | 1200 | 0.01200 | <0.00200 | 5.7 |
| 18-Jun-12 | 44.86 | 887.83 | | | | | | | | | | |
| 18-Sep-12 | 55.74 | 876.95 | 12.90 | 1506 | 0.05 | 99.5 | 0.36 | 7.08 | 1300 | 0.01000 | <0.00040 | 5.8 |
| 18-Dec-12 | 41.94 | 890.75 | | | | | | | | | | |
| 21-Feb-13 | 37.86 | 894.83 | 10.40 | 1730 | 0.02 | 131.5 | 0.41 | 7.27 | 1200 | 0.01300 | <0.00040 | 6.3 |
| 22-May-13 | 39.34 | 893.35 | | | | | | | | | | |
| 20-Aug-13 | 49.40 | 883.29 | 11.90 | 1707 | 0.05 | -37.6 | 0.69 | 7.00 | 1240 | 0.01020 | <0.00010 | 6.0 |
| 19-Nov-13 | 44.94 | 887.75 | | | | | | | | | | |
| 31-Mar-14 | 33.31 | 899.38 | 11.20 | 1256 | 0.01 | 103.5 | 0.27 | 7.00 | 1200 | 0.01310 | <0.00010 | 6.6 |
| 21-May-14 | 33.37 | 899.32 | | | | | | | | | | |
| 15-Aug-14 | 45.31 | 887.38 | 13.43 | 1467 | 0.71 | -1.1 | 2.32 | 6.79 | 1150 | 0.01340 | <0.00010 | 6.1 |
| 14-Nov-14 | 44.83 | 887.86 | | | | | | | | | | |
| 10-Feb-15 | 35.97 | 896.72 | 11.00 | 1423 | 0.04 | -109.4 | 2.16 | 7.00 | 1200 | 0.01300 | <0.00010 | 6.3 |

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | | |
|-----------------------------------|----------------------------|----------------------------------|-------------------------------------|-------------------------|-------------------------|--|-----------------|---------------------|---------------------------------|-------------------------|---------------------------------|-----------|--|
| | Depth to Water (feet btpc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | Arsenic | Lead | Potassium | |
| 4-May-15 | 38.67 | 894.02 | Monitored Semiannually ¹ | | | | | | | | | | |
| 4-Aug-15 | 49.21 | 883.48 | 12.50 | 1253 | 0.04 | -100.7 | 0.26 | 7.07 | 1230 | 0.01390 | <0.00010 | 6.1 | |
| 5-Nov-15 | 56.85 | 875.84 | 11.20 | 1159 | 0.02 | 57.4 | 0.91 | 6.75 | 1190 | 0.01490 | <0.00010 | 7.0 | |
| 8-Feb-16 | 33.02 | 899.67 | 11.60 | 1429 | 0.00 | 167.6 | 0.10 | 7.05 | 1190 | 0.01940 | <0.00010 | 6.7 | |
| 2-May-16 | 37.48 | 895.21 | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | |
| 22-Aug-16 | 49.78 | 882.91 | 12.10 | 1232 | 0.06 | -143.8 | 0.77 | 7.00 | Monitored Annually ² | | | | |
| 1-Nov-16 | 47.49 | 885.20 | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | |
| 31-Jan-17 | 35.57 | 897.12 | 11.10 | 1620 | 0.05 | -241.6 | 0.24 | 6.99 | 1260 | 0.02180 | <0.00010 | 6.7 | |
| 30-May-17 | 34.70 | 897.99 | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | |
| 16-Aug-17 | 44.32 | 888.37 | 11.90 | 1621 | 0.12 | -144.5 | 0.47 | 6.97 | Monitored Annually ² | | | | |
| 9-Nov-17 | 44.71 | 887.98 | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | |
| 28-Feb-18 | 32.04 | 900.65 | 10.70 | 1278 | 0.16 | -58.5 | 0.11 | 6.82 | 1244 | 0.02240 | <0.00010 | 6.5 | |
| 1-May-18 | 33.99 | 898.70 | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | |
| 22-Aug-18 | 47.95 | 884.74 | 11.97 | 1246 | 1.17 | 4.10 | 0.17 | 6.88 | Monitored Annually ² | | | | |
| 6-Nov-18 | 52.94 | 879.75 | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | |
| 12-Mar-19 | 33.09 | 899.60 | 10.40 | 1157 | 0.55 | -23.0 | 0.62 | 6.81 | 1200 | 0.02 | <0.0001 | 0.95 | |
| 8-May-19 | 34.37 | 898.32 | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | |
| 27-Aug-19 | 47.88 | 884.81 | 12.51 | 1314 | 0.15 | Note 1 | 0.39 | 6.80 | Monitored Annually ² | | | | |
| 13-Nov-19 | 47.03 | 885.66 | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | |
| 14-Feb-20 | 31.08 | 901.61 | 10.60 | 1249 | 0.38 | -82.2 | 0.10 | 6.61 | 1230 | 0.01830 | 0.0001 U | 6.4 | |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.05 | - | |

Notes:

Top of casing elevation (feet msl): 932.69

- Not measured or not available

< Analyte not detected above the reporting limit shown

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012

2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually.

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level

NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | |
|--------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|-----------|-------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Lead |
| 2-Dec-02 | 87.28 | 844.49 | 11.1 | 557 | - | - | - | 7.72 | 540 | 0.03270 | <0.00050 | - |
| 3-Mar-03 | 48.63 | 883.14 | 12.0 | 623 | - | - | 24.00 | 7.48 | 370 | 0.00708 | - | - |
| 3-May-03 | 47.12 | 884.65 | 12.1 | 548 | - | - | 264.00 | 7.54 | 440 | - | - | - |
| 3-Aug-03 | 64.60 | 867.17 | 23.23 | 675 | - | - | 195.00 | 7.36 | 450 | - | - | - |
| 1-Nov-03 | 66.14 | 865.63 | 11.0 | 400 | - | - | 15.50 | 8.10 | 437 | 0.00603 | <0.00050 | - |
| 1-Feb-04 | 46.55 | 885.22 | 10.68 | 455 | - | - | 8.70 | 7.15 | 440 | - | - | - |
| 1-May-04 | 55.82 | 875.95 | 13.61 | 508 | - | - | 12.40 | 7.58 | 429 | - | - | - |
| 1-Aug-04 | 61.89 | 869.88 | 13.15 | 585 | - | - | 15.70 | 7.47 | 399 | - | - | - |
| 1-Nov-04 | 56.83 | 874.94 | 10.94 | 655 | - | - | 9.40 | 7.22 | 477 | 0.00308 | <0.00100 | - |
| 1-Feb-05 | 47.31 | 884.46 | 12.80 | 778 | - | - | 8.39 | 7.35 | 451 | - | - | - |
| 1-May-05 | 48.60 | 883.17 | 12.86 | 743 | - | - | 4.22 | 7.25 | 432 | - | - | - |
| 1-Aug-05 | 56.80 | 874.97 | 14.17 | 746 | - | - | 3.10 | 6.99 | 518 | - | - | - |
| 1-Nov-05 | 66.85 | 864.92 | 10.20 | 702 | - | - | 5.36 | 7.11 | 470 | 0.00360 | <0.00100 | - |
| 1-Feb-06 | 47.88 | 883.89 | 10.11 | 648 | 0.71 | 109.4 | 2.72 | 7.53 | 450 J | - | - | - |
| 1-May-06 | 52.23 | 879.54 | 12.22 | 686 | 1.82 | 43.7 | 3.68 | 7.43 | 450 | - | - | - |
| 1-Aug-06 | 59.41 | 872.36 | 12.28 | 665 | 1.06 | -74.0 | 14.20 | 7.36 | 480 | - | - | - |
| 1-Nov-06 | 61.84 | 869.93 | - | - | - | - | - | - | - | - | - | - |
| 28-Dec-06 | 48.26 | 883.51 | - | - | - | - | - | - | - | - | - | - |
| 7-Feb-07 | 49.64 | 882.13 | - | - | - | - | - | - | - | - | - | - |
| 7-May-07 | 53.24 | 878.53 | 12.44 | 722 | 0.74 | -150.8 | 6.06 | 7.94 | 470 | - | - | - |
| 7-Aug-07 | 60.45 | 871.32 | 13.76 | 712 | 0.79 | -50.0 | 4.53 | 7.28 | 500 | - | - | - |
| 27-Nov-07 | 63.40 | 868.37 | 14.41 | 711 | 0.45 | -194.4 | 7.07 | 7.34 | 470 J | 0.00289 | <0.00100 | - |
| 8-Feb-08 | 49.23 | 882.54 | 14.07 | 737 | 0.62 | - | 6.28 | 7.46 | 500 | - | - | - |
| 8-May-08 | 51.31 | 880.46 | 13.52 | 793 | 0.55 | 27.9 | 4.42 | 7.40 | 520 J | - | - | - |
| 8-Aug-08 | 59.69 | 872.08 | 13.73 | 812 | 0.67 | -24.7 | 9.33 | 7.37 | 560 J | 0.00226 | <0.00100 | <3.0 |
| 1-Nov-08 | 57.38 | 874.39 | 14.75 | 619 | 0.89 | -42.5 | 4.40 | 7.45 | 480 | 0.00222 | <0.00100 | <3.0 |
| 10-Feb-09 | 50.92 | 880.85 | 6.50 | 618 | 10.51 | - | 655.00 | 7.69 J | 530 | 0.00219 | <0.00100 | 3.0 |
| 9-May-09 | 51.25 | 880.52 | 13.95 | 637 | 2.21 | 39.3 | 5.87 | 7.74 | 540 J | 0.00242 | <0.00100 | <3.0 |
| 25-Sep-09 | 65.46 | 866.31 | 13.20 | 678 | 2.25 | 331.8 | 2.29 | 7.15 | 570 | 0.00180 J | <0.00200 | 3.3 |
| 17-Dec-09 | 49.40 | 882.37 | 10.60 | 794 | 0.99 | 224.0 | 3.97 | 7.58 | 440 | 0.00070 J | <0.00200 | 3.2 J |
| 22-Mar-10 | 49.18 | 882.59 | 10.40 | 762 | - | 245.0 | 0.74 | 7.39 | 580 | 0.00450 | <0.00200 | 3.2 J |
| 15-Jun-10 | 46.88 | 884.89 | 12.10 | 762 | 0.05 | 142.1 | 0.47 | 7.50 | 420 | 0.00550 | <0.00200 | 3.3 |
| 20-Sep-10 | 58.97 | 872.80 | 11.40 | 765 | 0.07 | 89.6 | 0.47 | 7.47 | 520 | 0.00470 | 0.00027 J | 3.4 |
| 6-Dec-10 | 50.66 | 881.11 | 10.20 | 763 | 0.19 | 58.9 | 0.32 | 7.72 | 550 | 0.00130 J | <0.00200 | 3.2 J |
| 28-Mar-11 | 48.89 | 882.88 | 10.50 | 376 | 0.55 | 165.0 | 0.73 | 7.53 | 470 | 0.00370 | <0.00200 | 3.0 J |
| 20-Jun-11 | 52.13 | 879.64 | 13.40 | 718 | 0.45 | -65.1 | 0.75 | 7.53 | 600 J | <0.00500 | <0.00200 | 3.5 |
| 26-Sep-11 | 63.02 | 868.75 | 11.80 | 633 | 1.73 | -6.0 | 1.72 | 7.61 | 560 | <0.00500 | <0.00200 | 3.5 |
| 13-Dec-11 | 63.88 | 867.89 | 8.60 | 678 | 0.69 | -24.7 | 1.95 | 7.56 | 530 | 0.00570 | <0.00200 | 4.1 |
| 22-Mar-12 | 56.96 | 874.81 | 5.60 | 877 | 1.89 | -26.6 | 0.84 | 7.69 | 540 | 0.00340 | <0.00040 | 3.0 J |
| 18-Jun-12 | 58.01 | 873.76 | | | | | | | | | | |
| 18-Sep-12 | 67.78 | 863.99 | 26.30 | 838 | 3.62 | 12.4 | 1.27 | 7.70 | 540 | 0.00310 | <0.00040 | 3.1 J |
| 18-Dec-12 | 56.10 | 875.67 | | | | | | | | | | |
| 21-Feb-13 | 51.62 | 880.15 | 4.30 | 895 | 7.54 | 31.3 | 0.83 | 8.04 | 510 | 0.00360 | <0.00040 | 3.6 |
| 22-May-13 | 53.14 | 878.63 | | | | | | | | | | |
| 20-Aug-13 | 62.35 | 869.42 | 12.30 | 526 | 0.08 | -60.4 | 2.91 | 7.47 | 585 | 0.00320 | <0.00010 | 3.2 |
| 19-Nov-13 | 58.70 | 873.07 | | | | | | | | | | |
| 31-Mar-14 | 46.60 | 885.17 | 11.10 | 622 | 0.04 | 48.4 | 0.45 | 7.52 | 561 | 0.00180 | <0.00010 | 3.3 |
| 21-May-14 | 46.96 | 884.81 | | | | | | | | | | |
| 15-Aug-14 | 58.62 | 873.15 | 12.48 | 732 | 0.90 | -62.4 | 2.04 | 7.16 | 564 | 0.00200 | 0.00020 | 3.1 |
| 14-Nov-14 | 59.59 | 872.18 | | | | | | | | | | |
| 10-Feb-15 | 49.61 | 882.16 | 10.90 | 717 | 0.03 | -114.4 | 1.82 | 7.48 | 551 | 0.00290 | <0.00010 | 3.3 |

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | |
|-----------------------------------|----------------------------|----------------------------------|-------------------------------------|-------------------------|-------------------------|--|-----------------|---------------------|---------------------------------|-------------------------|----------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | Arsenic | Lead | Potassium |
| 4-May-15 | 52.25 | 879.52 | Monitored Semiannually ¹ | | | | | | | | | |
| 4-Aug-15 | 61.71 | 870.06 | 12.00 | 618 | 0.04 | -115.0 | 0.35 | 7.56 | 552 | 0.00300 | <0.00010 | 3.4 |
| 5-Nov-15 | 68.72 | 863.05 | 11.10 | 625 | 0.05 | 27.5 | 1.26 | 7.21 | 603 | 0.00160 | <0.00010 | 3.6 |
| 8-Feb-16 | 46.93 | 884.84 | 11.40 | 794 | 0.00 | 155.1 | 0.17 | 7.57 | 599 | 0.00210 | <0.00010 | 3.8 |
| 2-May-16 | 50.77 | 881.00 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 22-Aug-16 | 62.11 | 869.66 | 11.60 | 770 | 0.04 | -251.0 | 0.86 | 7.50 | Monitored Annually ² | | | |
| 1-Nov-16 | 61.71 | 870.06 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 31-Jan-17 | 49.02 | 882.75 | 10.60 | 916 | 0.13 | -310.4 | 0.35 | 7.47 | 676 | 0.00187 | <0.00010 | 3.4 |
| 30-May-17 | 48.11 | 883.66 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 16-Aug-17 | 57.17 | 874.60 | 11.80 | 898 | 0.12 | -210.9 | 0.22 | 7.42 | Monitored Annually ² | | | |
| 9-Nov-17 | 58.71 | 873.06 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 28-Feb-18 | 45.21 | 886.56 | 10.20 | 758 | 0.19 | -166.6 | 0.20 | 7.26 | 694 | 0.00287 | <0.00010 | 3.34 |
| 1-May-18 | 47.40 | 884.37 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 22-Aug-18 | 60.25 | 871.52 | 11.58 | 705 | 2.22 | -153.0 | 0.14 | 7.37 | Monitored Annually ² | | | |
| 6-Nov-18 | 65.30 | 866.47 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 12-Mar-19 | 46.35 | 885.42 | 9.80 | 707 | 0.58 | -119.9 | 0.16 | 7.24 | 668 | 0.00496 | <0.0001 | 4.21 |
| 8-May-19 | 47.20 | 884.57 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 27-Aug-19 | 59.87 | 871.90 | 11.95 | 762 | 0.39 | Note 1 | 0.02 | 7.20 | Monitored Annually ² | | | |
| 13-Nov-19 | 60.20 | 871.57 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 14-Feb-20 | 44.28 | 887.49 | 10.30 | 760 | 0.30 | -169.3 | 1.09 | 7.11 | 717 | 0.00456 | 0.0001 U | 4.07 |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.05 | - |

Notes:

Top of casing elevation (feet msl): 931.77

- Not measured or not available

< Analyte not detected above the reporting limit shown

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012

2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually.

a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest

b Site background arsenic value to be determined (TBD)

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 msl Feet above mean sea level

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | |
|--------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|----------|-------|
| | Depth to Water (feet broc) | Groundwater Elevation (feet msI) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Lead |
| 18-Dec-06 | 20.56 | 910.89 | 11.30 | 1054 | 0.59 | -10.5 | 6.76 | 7.01 | 630 | 0.00446 | <0.00100 | - |
| 7-Jan-07 | 18.48 | 912.97 | 12.53 | 700 | 0.61 | -70.6 | 33.50 | 7.11 | 540 | 0.00519 | <0.00100 | - |
| 7-Feb-07 | 21.53 | 909.92 | 11.59 | 557 | 0.57 | -59.1 | 33.50 | 6.88 | 530 | 0.00519 | <0.00100 | - |
| 7-Mar-07 | 15.34 | 916.11 | 11.71 | 817 | 0.45 | -2.4 | 91.20 | 6.52 | 550 J | 0.00491 | <0.00100 | - |
| 7-Apr-07 | 17.97 | 913.48 | 11.96 | 909 | 0.25 | 0.2 | 121.00 | 6.91 | 560 | 0.00475 | <0.00100 | - |
| 1-May-07 | 26.92 | 904.53 | 12.55 | 880 | 4.20 | -14.3 | 63.70 | 7.13 | 540 | 0.00490 | <0.00100 | - |
| 7-Jun-07 | 29.94 | 901.51 | 13.12 | 1016 | 3.20 | -5.6 | 3.58 | 7.52 | 600 J | 0.00437 | <0.00100 | - |
| 7-Jul-07 | 35.27 | 896.18 | 13.00 | 910 | 1.74 | -27.4 | 9.97 | 7.24 | 550 | 0.00491 | <0.00100 | - |
| 7-Aug-07 | 39.55 | 891.90 | 12.40 | 1065 | 0.92 | -14.6 | 4.62 | 6.99 | 590 | 0.00446 | <0.00100 | - |
| 7-Sep-07 | 44.69 | 886.76 | 12.36 | 696 | 0.68 | -33.3 | 3.22 | 7.29 | 590 | 0.00492 | <0.00100 | - |
| 26-Oct-07 | 38.90 | 892.55 | 11.46 | 667 | 0.56 | -18.3 | 22.60 | 6.98 | 620 J | 0.00443 | <0.00100 | - |
| 27-Nov-07 | 38.79 | 892.66 | 11.71 | 914 | 0.56 | -46.7 | 3.32 | 6.91 | 560 J | 0.00490 | <0.00100 | - |
| 12-Dec-07 | 35.33 | 896.12 | 12.61 | 909 | 0.53 | -27.3 | 4.28 | 6.87 | 820 | 0.00409 | <0.00100 | - |
| 24-Jan-08 | 28.97 | 902.48 | 10.72 | 872 | 0.78 | -49.1 | - | 7.14 | 550 | 0.00472 | <0.00100 | - |
| 8-Feb-08 | 26.00 | 905.45 | 11.25 | 888 | 0.44 | - | 4.18 | 6.85 | 550 | 0.00450 | <0.00100 | - |
| 8-Mar-08 | 26.03 | 905.42 | 10.94 | 915 | 0.59 | -95.6 | 3.19 | 6.89 | 550 | 0.00521 | <0.00100 | - |
| 8-Apr-08 | 25.03 | 906.42 | 11.27 | 931 | 0.61 | -20.1 | 3.44 | 6.89 | 550 J | 0.00488 | <0.00100 | - |
| 8-May-08 | 27.33 | 904.12 | 11.68 | 949 | 0.68 | -6.7 | 5.37 | 6.62 | 580 J | 0.00534 | <0.00100 | - |
| 8-Jun-08 | 28.38 | 903.07 | 11.40 | 948 | 0.75 | -50.4 | 1.59 | 6.68 | 580 J | 0.00445 | <0.00100 | - |
| 8-Aug-08 | 39.80 | 891.65 | 11.80 | 970 | 0.68 | -78.6 | 1.72 | 6.84 | 610 J | 0.00464 | <0.00100 | <3.0 |
| 1-Nov-08 | 33.96 | 897.49 | 11.20 | 682 | 0.63 | -115.4 | 0.95 | 6.82 | 540 | 0.00480 | <0.00100 | <3.0 |
| 10-Feb-09 | 25.56 | 905.89 | 10.54 | 671 | 0.71 | -71.7 | 0.98 | 7.05 | 610 | 0.00473 | <0.00100 | <3.0 |
| 9-May-09 | 25.79 | 905.66 | 11.23 | 682 | 0.55 | -5.8 | 0.86 | 7.68 | 560 J | 0.00340 | <0.00100 | <3.0 |
| 22-Sep-09 | 46.68 | 884.77 | 18.70 | 737 | 0.64 | 214.5 | 0.99 | 6.91 | 580 J | 0.00390 | <0.00200 | 2.7 J |
| 14-Dec-09 | 30.45 | 901.00 | 9.80 | 901 | 0.18 | 200.0 | 0.70 | 6.96 | 450 | 0.00170 J | <0.00200 | 2.5 J |
| 23-Mar-10 | 19.92 | 911.53 | 11.30 | 773 | 0.25 | 148.0 | 4.40 | 6.86 | 510 | 0.00560 | <0.00200 | 2.6 J |
| 15-Jun-10 | 16.74 | 914.71 | 11.00 | 838 | 0.10 | 202.3 | 2.89 | 7.01 | 860 J | 0.00820 | <0.00200 | 2.8 J |
| 20-Sep-10 | 33.31 | 898.14 | 11.20 | 852 | 0.09 | 174.7 | 0.60 | 6.97 | 540 | 0.00620 | <0.00200 | 2.7 J |
| 6-Dec-10 | 19.81 | 911.64 | 10.80 | 838 | 0.10 | 30.5 | 0.47 | 7.17 | 530 | 0.00380 | <0.00200 | 2.3 J |
| 28-Mar-11 | 17.16 | 914.29 | 10.80 | 403 | 0.15 | 48.4 | 1.13 | 6.89 | 500 J | 0.00230 | <0.00200 | 2.3 J |
| 20-Jun-11 | 18.95 | 912.50 | 11.10 | 775 | 0.05 | -29.1 | 0.37 | 7.01 | 610 J | <0.00500 | <0.00200 | 2.4 J |
| 26-Sep-11 | 33.71 | 897.74 | 11.20 | 690 | 0.03 | -8.7 | 0.54 | 7.00 | 560 | 0.00410 J | <0.00200 | 2.8 J |
| 13-Dec-11 | 24.48 | 906.97 | 10.50 | 730 | 0.05 | 93.6 | 1.92 | 7.07 | 520 | 0.00610 | <0.00200 | 2.8 J |
| 21-Mar-12 | 15.54 | 915.91 | 10.70 | 883 | 0.06 | 106.9 | 0.34 | 6.90 | 500 | 0.00650 | <0.00200 | 2.4 J |
| 19-Jun-12 | 17.01 | 914.44 | | | | | | | | | | |
| 19-Sep-12 | 29.82 | 901.63 | 11.90 | 877 | 0.00 | 122.0 | 0.47 | 7.08 | 490 | 0.00690 | <0.00040 | 2.6 J |
| 18-Dec-12 | 17.39 | 914.06 | | | | | | | | | | |
| 21-Feb-13 | 18.84 | 912.61 | 10.60 | 875 | 0.05 | 103.3 | 0.40 | 7.32 | 510 | 0.00590 | <0.00040 | 2.6 J |
| 22-May-13 | 20.25 | 911.20 | | | | | | | | | | |
| 20-Aug-13 | 30.15 | 901.30 | 12.10 | 530 | 0.06 | -50.3 | 0.75 | 6.98 | 510 | 0.00560 | <0.00010 | 2.5 |
| 19-Nov-13 | 22.73 | 908.72 | | | | | | | | | | |
| 31-Mar-14 | 15.50 | 915.95 | 11.30 | 574 | 0.06 | 95.7 | 0.53 | 7.15 | 447 | 0.00560 | <0.00010 | 2.7 |
| 21-May-14 | 14.83 | 916.62 | | | | | | | | | | |
| 15-Aug-14 | 25.16 | 906.29 | 14.49 | 741 | 0.48 | -24.0 | 2.92 | 6.87 | 477 | 0.00590 | <0.00010 | 2.6 |
| 14-Nov-14 | 22.25 | 909.20 | | | | | | | | | | |
| 10-Feb-15 | 15.98 | 915.47 | 11.40 | 693 | 0.04 | -117.5 | 0.80 | 7.13 | 503 | 0.00590 | <0.00010 | 2.6 |
| 4-May-15 | 20.05 | 911.40 | | | | | | | | | | |
| 4-Aug-15 | 31.90 | 899.55 | 11.90 | 620 | 0.16 | -71.1 | 0.47 | 7.13 | 517 | 0.00640 | <0.00010 | 2.7 |
| 5-Nov-15 | 32.00 | 899.45 | 11.40 | 605 | 0.00 | 37.5 | 1.16 | 6.84 | 511 | 0.00530 | <0.00010 | 3.1 |
| 8-Feb-16 | 17.13 | 914.32 | 11.80 | 720 | 0.00 | 160.4 | 0.08 | 7.34 | 480 | 0.00600 | <0.00010 | 3.0 |

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | |
|-----------------------------------|----------------------------|----------------------------------|-------------------------------------|-------------------------|-------------------------|--|-----------------|---------------------|---------------------------------|-------------------------------|----------|------|
| | Depth to Water (feet btrc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Lead |
| 2-May-16 | 23.31 | 908.14 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 22-Aug-16 | 34.07 | 897.38 | 12.50 | 571 | 0.00 | - | 0.66 | 7.11 | Monitored Annually ² | | | |
| 1-Nov-16 | 26.04 | 905.41 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 31-Jan-17 | 19.36 | 912.09 | 12.20 | 808 | 0.07 | -219.2 | 0.30 | 7.21 | 509 | 0.00676 | <0.00010 | 2.8 |
| 30-Mar-17 | 17.31 | 914.14 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 16-Aug-17 | 28.13 | 903.32 | 12.40 | 826 | 0.12 | -71.9 | 0.66 | 7.10 | Monitored Annually ² | | | |
| 9-Nov-17 | 27.17 | 904.28 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 28-Feb-18 | 16.55 | 914.90 | 10.90 | 657 | 0.15 | -97.6 | 0.35 | 7.02 | 528 | 0.00539 | <0.00010 | 2.6 |
| 1-May-18 | 17.69 | 913.76 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 22-Aug-18 | 32.63 | 898.82 | 12.46 | 655 | 0.81 | -46.4 | 0.26 | 7.01 | Monitored Annually ² | | | |
| 6-Nov-18 | 32.44 | 899.01 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 12-Mar-19 | 18.84 | 912.61 | 10.90 | 597 | 0.56 | -28.1 | 0.86 | 6.96 | 512 | 0.00451 | <0.0001 | 2.89 |
| 8-May-19 | 19.75 | 911.70 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 27-Aug-19 | 33.26 | 911.70 | 13.08 | 688 | 0.26 | Note 1 | 0.02 | 6.89 | Monitored Annually ² | | | |
| 13-Nov-19 | 33.03 | 898.42 | Monitored Semiannually ² | | | | | | Monitored Annually ² | | | |
| 14-Feb-20 | 16.70 | 914.75 | 10.90 | 626 | 0.34 | -99.8 | 0.33 | 6.88 | 524 | 0.00431 | 0.0001 U | 2.65 |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.05 | - |

Notes:

- Top of casing elevation (feet msl): 931.45
- Not measured or not available
- < Analyte not detected above the reporting limit shown
- 1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012
- 2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually.
- a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest
- b Site background arsenic value to be determined (TBD)
- 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 msl Feet above mean sea level
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | |
|--------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------------|-------------------------------|----------|---------------------------------|
| | Depth to Water (feet broc) | Groundwater Elevation (feet msI) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Lead |
| 18-Dec-06 | 8.13 | 894.22 | 9.93 | 525 | 0.54 | -54.5 | 0.61 | 7.78 | 300 | 0.00537 | <0.00100 | - |
| 7-Feb-07 | 9.40 | 892.95 | 11.79 | 479 | 1.19 | -30.0 | 7.40 | 7.41 | 330 | 0.00601 | <0.00100 | - |
| 7-May-07 | 10.73 | 891.62 | 12.26 | 729 | 2.83 | -103.6 | 16.40 | 7.63 | 480 | 0.01010 | <0.00100 | - |
| 7-Aug-07 | 15.14 | 887.21 | 11.42 | 882 | 0.75 | -11.5 | 1.82 | 7.10 | 470 | 0.00325 | <0.00100 | - |
| 27-Nov-07 | 16.16 | 886.19 | 10.98 | 748 | 0.37 | -47.9 | 0.83 | 6.99 | 440 J | 0.00282 | <0.00100 | - |
| 8-Feb-08 | 9.66 | 892.69 | 11.01 | 645 | 0.31 | - | 0.90 | 7.05 | 380 | 0.00268 | <0.00100 | - |
| 8-May-08 | 10.34 | 892.01 | 11.27 | 665 | 0.64 | 13.4 | 1.52 | 6.93 | 380 J | 0.00240 | <0.00100 | - |
| 8-Aug-08 | 14.17 | 888.18 | 11.23 | 683 | 0.72 | -8.2 | 2.49 | 7.05 | 390 J | 0.00218 | <0.00100 | <3.0 |
| 1-Nov-08 | 12.98 | 889.37 | 10.61 | 488 | 0.60 | -45.6 | 1.35 | 6.80 | 380 | 0.00204 | <0.00100 | <3.0 |
| 10-Feb-09 | 9.64 | 892.71 | 10.32 | 398 | 0.52 | -57.0 | 1.20 | 7.31 | 350 | 0.00200 | <0.00100 | <3.0 |
| 9-May-09 | 9.91 | 892.44 | 10.50 | 405 | 0.73 | -4.0 | 1.26 | 7.77 | 320 J | 0.00169 | <0.00100 | <3.0 |
| 23-Sep-09 | 17.16 | 885.19 | 12.50 | 541 | 0.25 | 216.2 | 5.38 | 7.14 | 400 J | 0.00091 J | <0.00200 | 1.3 J |
| 14-Dec-09 | 12.73 | 889.62 | 9.10 | 580 | 0.47 | 231.0 | 2.70 | 7.23 | 270 | <0.00200 | <0.00200 | 1.3 J |
| 22-Mar-10 | 9.62 | 892.73 | 10.90 | 504 | - | 321.7 | 3.50 | 7.22 | 320 | 0.00200 | <0.00200 | 1.2 J |
| 15-Jun-10 | 8.30 | 894.05 | 11.00 | 495 | 0.11 | 205.1 | 1.41 | 7.29 | 320 | 0.00420 | <0.00200 | 1.3 J |
| 20-Sep-10 | 14.90 | 887.45 | 10.90 | 560 | 0.10 | 187.2 | 0.28 | 7.29 | 270 | 0.00300 | <0.00200 | 1.4 J |
| 6-Dec-10 | 10.47 | 891.88 | 10.50 | 515 | 0.12 | 87.8 | 0.14 | 7.47 | 300 | <0.00200 | <0.00200 | 1.1 J |
| 28-Mar-11 | 8.71 | 893.64 | 10.30 | 241 | 0.19 | 58.9 | 1.86 | 7.19 | 300 | <0.00200 | <0.00200 | 1.1 J |
| 20-Jun-11 | 9.87 | 892.48 | 10.80 | 477 | 0.06 | 141.2 | 0.20 | 7.27 | 340 | <0.00500 | <0.00200 | 1.1 J |
| 26-Sep-11 | 14.82 | 887.53 | 10.80 | 467 | 0.05 | 114.8 | 0.92 | 7.26 | 380 | <0.00500 | <0.00200 | 1.5 J |
| 13-Dec-11 | 13.02 | 889.33 | 10.20 | 491 | 0.06 | 131.3 | 1.69 | 7.29 | 340 | <0.00500 | <0.00200 | 1.6 J |
| 21-Mar-12 | 8.13 | 894.22 | 10.20 | 550 | 0.09 | 160.0 | 0.07 | 7.14 | 310 | 0.00250 | <0.00040 | 1.2 J |
| 18-Jun-12 | - | - | - | - | - | - | - | - | Monitored Semiannually ¹ | | | |
| 18-Sep-12 | 14.76 | 887.59 | 12.50 | 587 | 0.00 | 122.0 | 0.35 | 7.31 | 370 | 0.00280 | <0.00040 | 1.3 J |
| 18-Dec-12 | 8.16 | 894.19 | - | - | - | - | - | - | Monitored Semiannually ¹ | | | |
| 21-Feb-13 | 8.45 | 893.90 | 10.10 | 594 | 0.02 | 152.7 | 0.28 | 7.49 | 300 | 0.00190 | <0.00040 | 1.3 J |
| 22-May-13 | 9.36 | 892.99 | - | - | - | - | - | - | Monitored Semiannually ¹ | | | |
| 20-Aug-13 | 13.28 | 889.07 | 11.70 | 478 | 0.01 | -43.8 | 0.54 | 7.22 | 349 J | 0.00160 | <0.00010 | 1.3 |
| 19-Nov-13 | 9.71 | 892.64 | - | - | - | - | - | - | Monitored Semiannually ¹ | | | |
| 31-Mar-14 | 8.42 | 893.93 | 10.70 | 455 | 0.06 | 166.1 | 0.27 | 7.35 | 315 | 0.00140 | <0.00010 | 1.3 |
| 21-May-14 | 5.99 | 896.36 | - | - | - | - | - | - | Monitored Semiannually ¹ | | | |
| 14-Aug-14 | 12.03 | 890.32 | 13.45 | 512 | 0.56 | -21.4 | 1.99 | 6.95 | 317 | 0.00170 | <0.00010 | 1.3 |
| 14-Nov-14 | 10.68 | 891.67 | - | - | - | - | - | - | Monitored Semiannually ¹ | | | |
| 10-Feb-15 | 7.39 | 894.96 | 10.90 | 482 | 0.03 | -86.2 | 0.59 | 7.32 | 337 | 0.00140 | <0.00010 | 1.2 |
| 4-May-15 | 9.17 | 893.18 | - | - | - | - | - | - | Monitored Semiannually ¹ | | | |
| 4-Aug-15 | 13.64 | 888.71 | 12.40 | 449 | 0.18 | -81.7 | 0.27 | 7.33 | 385 | 0.00170 | <0.00010 | 1.3 |
| 5-Nov-15 | 13.98 | 888.37 | 11.50 | 435 | 2.23 | 85.2 | 1.09 | 7.04 | 354 | 0.00130 | <0.00010 | 1.5 |
| 8-Feb-16 | 6.74 | 895.61 | 11.50 | 495 | 0.03 | 187.2 | 0.25 | 7.39 | 297 | 0.00140 | <0.00010 | 1.4 |
| 2-May-16 | 8.64 | 893.71 | - | - | - | - | - | - | Monitored Semiannually ² | | | |
| 22-Aug-16 | 13.27 | 889.08 | 12.20 | 559 | 0.03 | -52.7 | 0.80 | 7.28 | - | - | - | Monitored Annually ² |
| 1-Nov-16 | 11.36 | 890.99 | - | - | - | - | - | - | Monitored Semiannually ² | | | |
| 31-Jan-17 | 7.91 | 894.44 | 10.90 | 539 | 0.08 | 124.4 | 0.18 | 7.31 | 321 | 0.00148 | <0.00010 | 1.3 |
| 30-May-17 | 2.65 | 899.70 | - | - | - | - | - | - | Monitored Semiannually ² | | | |
| 16-Aug-17 | 12.08 | 890.27 | 12.10 | 573 | 0.12 | -46.9 | 1.39 | 7.26 | - | - | - | Monitored Annually ² |
| 9-Nov-17 | 11.70 | 890.65 | - | - | - | - | - | - | Monitored Semiannually ² | | | |
| 28-Feb-18 | 6.50 | 895.85 | 11.00 | 423 | 0.19 | -61.0 | 0.18 | 7.12 | 138 | 0.00156 | <0.00010 | 1.2 |
| 1-May-18 | 6.80 | 895.55 | - | - | - | - | - | - | Monitored Semiannually ² | | | |
| 22-Aug-18 | 13.47 | 888.88 | 11.61 | 441 | 7.44 | 26.6 | 0.21 | 7.11 | - | - | - | Monitored Annually ² |
| 6-Nov-18 | 13.96 | 888.39 | - | - | - | - | - | - | Monitored Semiannually ² | | | |

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

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

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | |
|-----------------------------------|-------------------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|---------------------------------|-------------------------|-----------|-----------|
| | Depth to Water (feet btp) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | Arsenic | Lead | Potassium |
| 21-May-14 | Monitored Semiannually ¹ | | | | | | | | | | | |
| 15-Aug-14 | - | - | 10.01 | 595 | 10.01 | -35.2 | 6.43 | 6.99 | 427 | 0.00350 | <0.00010 | 31.5 |
| 14-Nov-14 | Monitored Semiannually ¹ | | | | | | | | | | | |
| 10-Feb-15 | - | - | 10.60 | 515 | 9.88 | 183.5 | 6.84 | 7.26 | 363 | 0.00280 | 0.00007 J | 27.2 |
| 4-May-15 | Monitored Semiannually ¹ | | | | | | | | | | | |
| 4-Aug-15 | - | - | 10.90 | 554 | 9.98 | 95.8 | 8.68 | 7.48 | 438 | 0.00260 | <0.00010 | 34.7 |
| 5-Nov-15 | - | - | 10.30 | 503 | 10.24 | 177.6 | 13.40 | 7.46 | 449 | 0.00280 | <0.00010 | 31.8 |
| 8-Feb-16 | - | - | 9.30 | 541 | 11.30 | 215.0 | 5.12 | 7.30 | 293 | 0.00320 | <0.00010 | 23.1 |
| - | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | | |
| 24-Aug-16 | - | - | 13.40 | 585 | 9.32 | 410.0 | 8.50 | 7.23 | Monitored Annually ² | | | |
| 1-Nov-16 | - | - | 10.90 | 242 | 9.13 | 51.4 | 7.57 | 7.41 | Monitored Annually ² | | | |
| 31-Jan-17 | - | - | 8.90 | 663 | 10.87 | -57.4 | 6.23 | 7.50 | 3390 | 0.00397 | <0.00010 | 29.2 |
| - | Monitored Semiannually ² | | | | | | | | Monitored Annually ² | | | |
| 17-Aug-17 | - | - | 11.40 | 712 | 9.67 | -12.4 | 9.87 | 7.30 | Monitored Annually ² | | | |
| 9-Nov-17 | Monitored Semiannually ² | | | | | | | | | | | |
| 27-Feb-18 | - | - | 9.50 | 427 | 9.94 | -46.4 | 16.70 | 7.72 | 354 | 0.00411 | <0.00010 | 20.4 |
| 1-May-18 | Monitored Semiannually ² | | | | | | | | | | | |
| 21-Aug-18 | - | - | 13.13 | 582 | 12.46 | -23.0 | 23.10 | 7.24 | Monitored Annually ² | | | |
| 6-Nov-18 | Monitored Semiannually ² | | | | | | | | | | | |
| 12-Mar-19 | - | - | 8.00 | 406 | 11.35 | -2.8 | 10.70 | 7.97 | 388 | 0.00156 | <0.0001 | 24.7 |
| 8-May-19 | Monitored Semiannually ² | | | | | | | | | | | |
| 27-Aug-19 | - | - | 10.55 | 576 | 11.80 | Note 1 | 154.00 | 6.78 | Monitored Annually ² | | | |
| 13-Nov-19 | Monitored Semiannually ² | | | | | | | | | | | |
| 13-Feb-20 | - | - | 9.20 | 382 | 9.19 | -1.3 | 13.40 | 6.93 | 259 | 0.00365 | 0.0001 U | 16.7 |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.05 | - |

Notes:

- Not measured or not available
- < Analyte not detected above the reporting limit shown
- * Measurement invalid and not shown
- 1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012
- 2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually.
- a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest
- b Site background arsenic value to be determined (TBD)
- 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 msl Feet above mean sea level
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. Total Dissolved Solids (mg/L) | Dissolved Metals (mg/L) | | |
|--------------|----------------------------|----------------------------------|------------------|-------------------------|-------------------------|--|-----------------|---------------------|---|-------------------------|----------|-----------|
| | Depth to Water (feet broc) | Groundwater Elevation (feet msI) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Arsenic | Lead | Potassium |
| 1-Mar-02 | - | - | - | 542 | - | - | - | 7.22 | 467 | - | - | - |
| 1-Jun-02 | 197.34 | 731.88 | 12.00 | 750 | - | - | - | 7.10 | 459 | - | - | - |
| 1-Sep-02 | 199.29 | 729.93 | 14.00 | 660 | - | - | - | 6.90 | 499 | - | - | - |
| 2-Dec-02 | 200.09 | 729.13 | 10.80 | 675 | - | - | - | 6.89 | 440 | <0.00100 | <0.00050 | - |
| 3-Mar-03 | 190.21 | 739.01 | 11.90 | 763 | - | - | - | 6.98 | 450 | - | - | - |
| 3-May-03 | 191.78 | 737.44 | 12.30 | 730 | - | - | 233.00 | 6.98 | 550 | - | - | - |
| 3-Aug-03 | 199.82 | 729.40 | 16.50 | 848 | - | - | 17.00 | 6.92 | 520 | - | - | - |
| 1-Nov-03 | 199.97 | 729.25 | 11.60 | 559 | - | - | 9.20 | 7.04 | 522 | 0.00098 | <0.00050 | - |
| 1-Feb-04 | 188.78 | 740.44 | 11.96 | 608 | - | - | 4.86 | 6.68 | 560 | - | - | - |
| 1-May-04 | 198.45 | 730.77 | 13.69 | 614 | - | - | 6.17 | 6.80 | 478 | - | - | - |
| 1-Aug-04 | 199.17 | 730.05 | 14.38 | 731 | - | - | 5.48 | 6.71 | 460 | - | - | - |
| 1-Nov-04 | 197.92 | 731.30 | 11.62 | 785 | - | - | 12.30 | 6.75 | 512 | <0.00100 | <0.00100 | - |
| 1-Feb-05 | 186.36 | 742.86 | 11.64 | 806 | - | - | 1.47 | 6.94 | 487 | - | - | - |
| 1-May-05 | - | - | 12.87 | 790 | - | - | 15.80 | 6.89 | 338 | - | - | - |
| 1-Aug-05 | 196.10 | 733.12 | 15.01 | 603 | - | - | 45.70 | 6.44 | 388 | - | - | - |
| 1-Nov-05 | 196.78 | 732.44 | 9.91 | 549 | - | - | 13.30 | 6.66 | 350 | <0.00100 | <0.00100 | - |
| 1-Feb-06 | 193.93 | 735.29 | 8.10 | 641 | 2.11 | 269.2 | 35.70 | 6.82 | 400 J | - | - | - |
| 1-May-06 | 197.90 | 731.32 | 10.88 | 798 | 1.67 | 27.3 | 5.38 | 6.50 | 380 | - | - | - |
| 1-Aug-06 | 198.80 | 730.42 | 11.44 | 534 | 2.52 | 205.7 | 8.74 | 6.67 | 360 | - | - | - |
| 1-Nov-06 | 187.36 | 741.86 | 10.77 | 680 | 2.12 | -19.9 | 18.90 | 7.06 | 430 | <0.00100 | <0.00100 | - |
| 28-Dec-06 | 192.37 | 736.85 | - | - | - | - | - | - | - | - | - | - |
| 7-Feb-07 | 197.46 | 731.76 | 10.24 | 621 | 0.64 | -16.7 | 27.80 | 6.89 | 420 | - | - | - |
| 7-May-07 | 198.49 | 730.73 | - | - | - | - | - | - | - | - | - | - |
| 1-Aug-07 | 198.45 | 730.77 | - | - | - | - | - | - | - | - | - | - |
| 27-Nov-07 | 196.48 | 732.74 | - | - | - | - | - | - | - | - | - | - |
| 8-Feb-08 | 191.30 | 737.92 | - | - | - | - | - | - | - | - | - | - |
| 8-May-08 | 193.95 | 735.27 | - | - | - | - | - | - | - | - | - | - |
| 27-Sep-11 | 197.32 | 731.90 | - | - | - | - | - | - | - | - | - | - |
| 13-Dec-11 | 192.15 | 737.07 | 9.60 | 421 | 2.10 | 313.0 | 16.10 | 7.49 | - | - | - | - |
| 22-Mar-12 | 183.35 | 747.87 | 8.90 | 546 | 12.83 | 166.3 | 0.56 | 7.47 | - | - | - | - |
| 18-Jun-12 | 192.54 | 738.68 | - | - | - | - | - | - | - | - | - | - |
| 18-Sep-12 | 199.51 | 731.71 | 16.20 | 508 | 2.21 | 120.0 | 1.27 | 7.58 | - | - | - | - |
| 18-Dec-12 | 184.52 | 746.70 | - | - | - | - | - | - | - | - | - | - |
| 21-Feb-13 | 190.65 | 740.57 | 7.60 | 678 | 5.33 | 342.6 | 6.61 | 8.02 | - | - | - | - |
| 22-May-13 | 198.05 | 733.17 | - | - | - | - | - | - | - | - | - | - |
| 20-Aug-13 | 200.47 | 730.75 | 13.00 | 488 | 3.26 | 90.2 | 8.47 | 7.42 | - | - | - | - |
| 19-Nov-13 | 196.59 | 734.63 | - | - | - | - | - | - | - | - | - | - |
| 31-Mar-14 | 186.78 | 744.44 | 11.40 | 421 | 7.28 | 195.1 | 1.70 | 7.47 | - | - | - | - |
| 21-May-14 | 192.27 | 738.95 | - | - | - | - | - | - | - | - | - | - |
| 15-Aug-14 | 199.97 | 731.25 | 18.90 | 492 | 0.97 | 1.4 | 52.50 | 7.01 | - | - | - | - |
| 14-Nov-14 | 196.60 | 734.62 | - | - | - | - | - | - | - | - | - | - |
| 10-Feb-15 | 183.97 | 747.25 | 10.20 | 450 | 7.65 | 121.4 | 1.02 | 7.34 | - | - | - | - |
| 4-May-15 | 194.19 | 737.03 | - | - | - | - | - | - | - | - | - | - |
| 4-Aug-15 | 198.35 | 732.87 | 13.60 | 432 | 3.07 | 18.6 | 0.27 | 7.47 | - | - | - | - |
| 3-Nov-15 | 198.25 | 732.97 | 10.30 | 405 | 2.57 | 106.2 | 7.07 | 7.35 | - | - | - | - |
| 8-Feb-16 | 188.43 | 742.79 | 12.50 | 536 | 2.77 | 189.8 | 0.25 | 7.78 | - | - | - | - |
| 2-May-16 | 195.72 | 735.50 | - | - | - | - | - | - | - | - | - | - |
| 22-Aug-16 | 197.89 | 733.33 | 14.00 | 418 | 1.27 | -123.1 | 4.36 | 7.32 | - | - | - | - |
| 1-Nov-16 | 195.49 | 735.73 | - | - | - | - | - | - | - | - | - | - |
| 31-Jan-17 | 186.94 | 744.28 | 9.20 | 506 | 5.26 | -45.4 | 0.38 | 7.45 | - | - | - | - |
| 30-May-17 | 190.62 | 740.60 | - | - | - | - | - | - | - | - | - | - |

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | |
|-----------------------------------|----------------------------|----------------------------------|-------------------------------------|-------------------------|-------------------------|--|-----------------|---------------------|------------|-------------------------------|---------|------|
| | Depth to Water (feet btrc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | | Total Dissolved Solids (mg/L) | Arsenic | Lead |
| 16-Aug-17 | 197.55 | 733.67 | 13.30 | 540 | 2.31 | 37.3 | 3.42 | 7.37 | - | - | - | - |
| 9-Nov-17 | 197.11 | 734.11 | Monitored Semiannually ¹ | | | | | | - | - | - | - |
| 28-Feb-18 | 185.96 | 745.26 | 10.10 | 390 | 5.95 | 204.7 | 1.62 | 7.15 | - | - | - | - |
| 1-May-18 | 184.95 | 746.27 | Monitored Semiannually ¹ | | | | | | - | - | - | - |
| 22-Aug-18 | 197.40 | 733.82 | 13.70 | 412 | 3.10 | 85.5 | 1.66 | 7.27 | - | - | - | - |
| 6-Nov-18 | 197.94 | 733.28 | Monitored Semiannually ¹ | | | | | | - | - | - | - |
| 12-Mar-19 | 182.84 | 748.38 | 8.70 | 332 | 6.25 | 148.4 | 1.93 | 7.28 | - | - | - | - |
| 8-May-19 | 185.36 | 745.86 | Monitored Semiannually ¹ | | | | | | - | - | - | - |
| 27-Aug-19 | 196.56 | 734.66 | 11.92 | 411 | 8.82 | Note 1 | 0.02 | 7.28 | - | - | - | - |
| 13-Nov-19 | 196.74 | 734.48 | Monitored Semiannually ¹ | | | | | | - | - | - | - |
| 13-Feb-20 | 177.10 | 754.12 | 9.30 | 453 | 3.03 | 91.0 | 2.31 | 7.56 | - | - | - | - |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.05 | - |

Notes:

- Top of casing elevation (feet msl) prior to raising casing: 929.22
- Top of casing elevation (feet msl) after raising casing (December 14, 2011): 931.22
- 1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually.
- Not measured or not available
- < Analyte not detected above the reporting limit shown
- a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest
- b Site background arsenic value to be determined (TBD)
- 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 msl Feet above mean sea level
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit

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

| Date Sampled | Field Parameters | | | | | | | | Gen. Chem. | Dissolved Metals (mg/L) | | |
|-----------------------------------|---|----------------------------------|-------------------------------------|-------------------------|-------------------------|--|-----------------|---------------------|-------------------------------|-------------------------|------|-----------|
| | Depth to Water (feet btoc) | Groundwater Elevation (feet msl) | Temperature (°C) | Conductivity (µmhos/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (Rel mV) | Turbidity (NTU) | pH (standard units) | Total Dissolved Solids (mg/L) | Arsenic | Lead | Potassium |
| 26-Sep-11 | 25.77 | 903.04 | 11.40 | 553 | 0.86 | 197.2 | - | 7.21 | - | - | - | - |
| 13-Dec-11 | 24.94 | 903.87 | 9.70 | 625 | 1.73 | 658.0 | 22.70 | 7.68 | - | - | - | - |
| 22-Mar-12 | 23.80 | 905.01 | 9.60 | 785 | 3.71 | 242.6 | 8.14 | 7.30 | - | - | - | - |
| 19-Jun-12 | 24.09 | 904.72 | - | - | - | - | - | - | - | - | - | - |
| 18-Sep-12 | 25.68 | 903.13 | 16.50 | 664 | 2.37 | 150.0 | 19.20 | 7.34 | - | - | - | - |
| 18-Dec-12 | 23.02 | 905.79 | - | - | - | - | - | - | - | - | - | - |
| 21-Feb-13 | 23.50 | 905.31 | 10.00 | 840 | 6.55 | 352.4 | 3.42 | 7.42 | - | - | - | - |
| 22-May-13 | 23.84 | 904.97 | - | - | - | - | - | - | - | - | - | - |
| 20-Aug-13 | 25.08 | 903.73 | 13.50 | 539 | 2.91 | 45.1 | 1.87 | 7.22 | - | - | - | - |
| 19-Nov-13 | 22.76 | 906.05 | - | - | - | - | - | - | - | - | - | - |
| 31-Mar-14 | 21.39 | 907.42 | 12.20 | 511 | 6.31 | 197.3 | 1.38 | 7.58 | - | - | - | - |
| 21-May-14 | 19.82 | 908.99 | - | - | - | - | - | - | - | - | - | - |
| 15-Aug-14 | 24.00 | 904.81 | 12.81 | 647 | 0.82 | 7.5 | 5.42 | 6.62 | - | - | - | - |
| 14-Nov-14 | 22.28 | 906.53 | - | - | - | - | - | - | - | - | - | - |
| 10-Feb-15 | 21.10 | 907.71 | 12.30 | 636 | 2.56 | -71.9 | 1.11 | 7.11 | - | - | - | - |
| 4-May-15 | 22.65 | 906.16 | - | - | - | - | - | - | - | - | - | - |
| 5-Aug-15 | 24.65 | 904.16 | 13.50 | 563 | 3.21 | 116.4 | 55.20 | 7.42 | - | - | - | - |
| 3-Nov-15 | 23.87 | 904.94 | 12.20 | 493 | 4.65 | 114.4 | 5.78 | 7.52 | - | - | - | - |
| 8-Feb-16 | 19.39 | 909.42 | 15.80 | 670 | 3.92 | 163.5 | 5.06 | 7.59 | - | - | - | - |
| 2-May-16 | 20.99 | 907.82 | Monitored Semiannually ¹ | | | | | - | - | - | - | - |
| 22-Aug-16 | 24.42 | 904.39 | 17.60 | 527 | 5.01 | 106.0 | 1.39 | 7.44 | - | - | - | - |
| 1-Nov-16 | 21.31 | 907.50 | Monitored Semiannually ¹ | | | | | - | - | - | - | - |
| 31-Jan-17 | 21.11 | 907.70 | 12.10 | 680 | 2.75 | -146.1 | 1.48 | 7.35 | - | - | - | - |
| 30-May-17 | 18.49 | 910.32 | Monitored Semiannually ¹ | | | | | - | - | - | - | - |
| 17-Aug-17 | 22.58 | 906.23 | 12.60 | 673 | 5.22 | 177.8 | 1.97 | 7.15 | - | - | - | - |
| 9-Nov-17 | 20.72 | 908.09 | Monitored Semiannually ¹ | | | | | - | - | - | - | - |
| 28-Feb-18 | 17.09 | 911.72 | 11.10 | 509 | 8.34 | 29.0 | 0.72 | 7.37 | - | - | - | - |
| 1-May-18 | 17.76 | 911.05 | Monitored Semiannually ¹ | | | | | - | - | - | - | - |
| 22-Aug-18 | Could not be safely accessed due to wasp nests. | | | | | | | | - | - | - | - |
| 6-Nov-18 | 21.70 | 907.11 | Monitored Semiannually ¹ | | | | | - | - | - | - | - |
| 12-Mar-19 | 18.30 | 910.51 | 10.10 | 215 | 9.65 | 18.9 | 0.39 | 7.86 | - | - | - | - |
| 8-May-19 | 19.09 | 909.72 | Monitored Semiannually ¹ | | | | | - | - | - | - | - |
| 27-Aug-19 | 22.85 | 905.96 | 14.79 | 562 | 8.59 | Note 1 | 3.60 | 7.80 | - | - | - | - |
| 13-Nov-19 | 21.95 | 906.86 | Monitored Semiannually ¹ | | | | | - | - | - | - | - |
| 13-Feb-20 | 16.60 | 912.21 | 10.80 | 458 | 8.74 | 68.0 | 1.98 | 7.83 | - | - | - | - |
| Preliminary Standard ^a | - | - | - | 700 | - | - | - | 6.5-8.5 | 500 | TBD ^b | 0.05 | - |

Notes:

- Top of casing elevation (feet msl) prior to DSP Cover Upgrade: 935.82
- Top of casing elevation (feet msl) after DSP Cover Upgrade (completed July 2011): 928.81
- 1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016, extended October 10, 2019. Field parameters collected semi-annually, analytical samples collected annually.
- Not measured or not available
- a Preliminary standard is the standard listed or the site-specific (natural) background concentration, whichever is highest
- b Site background arsenic value to be determined (TBD)
- °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 msl Feet above mean sea level NTU Nephelometric Turbidity Unit

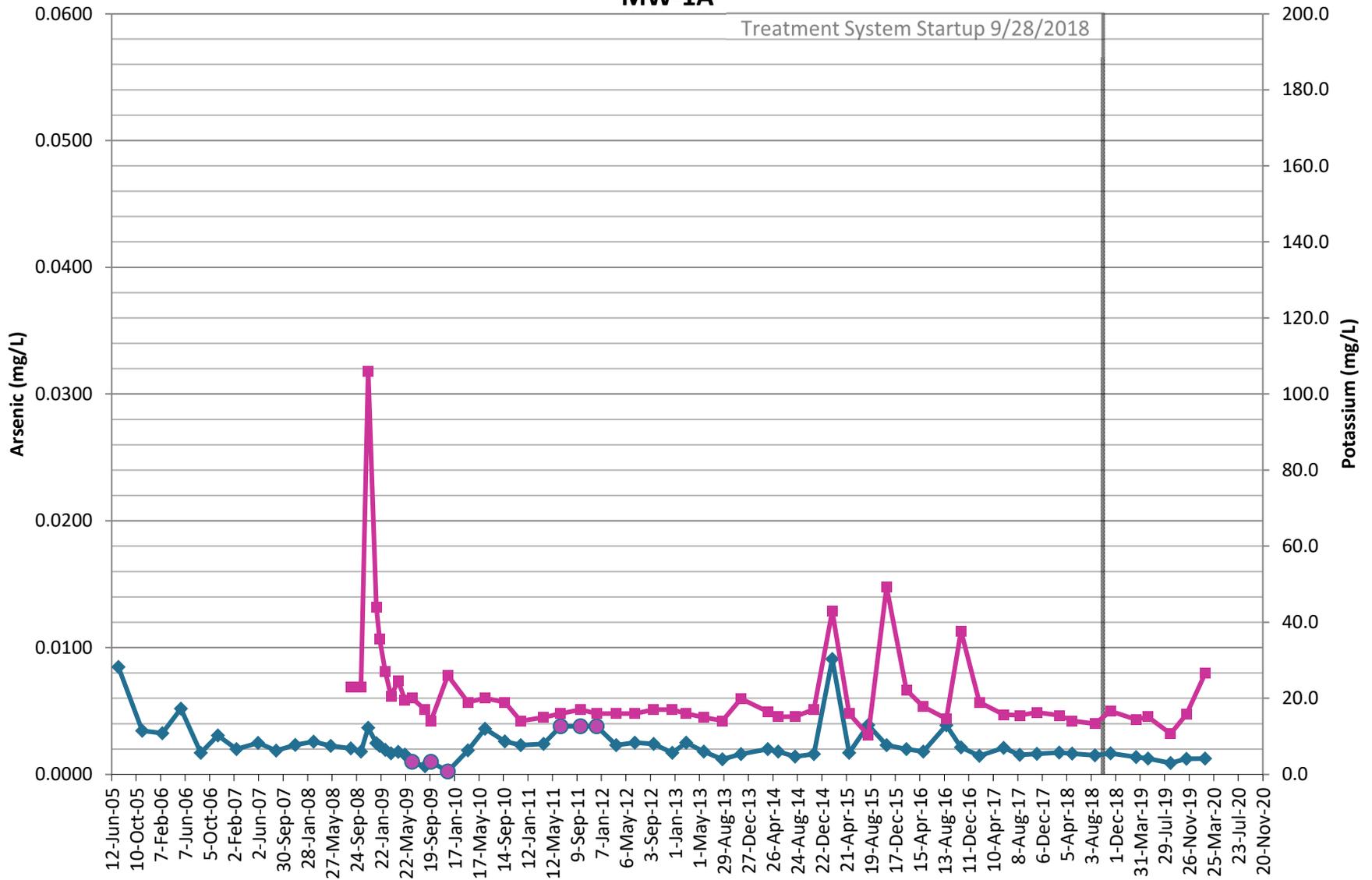
APPENDIX B

Data Graphs

APPENDIX B-1

LDA Shallow/Alluvial Monitoring Wells Data Graphs

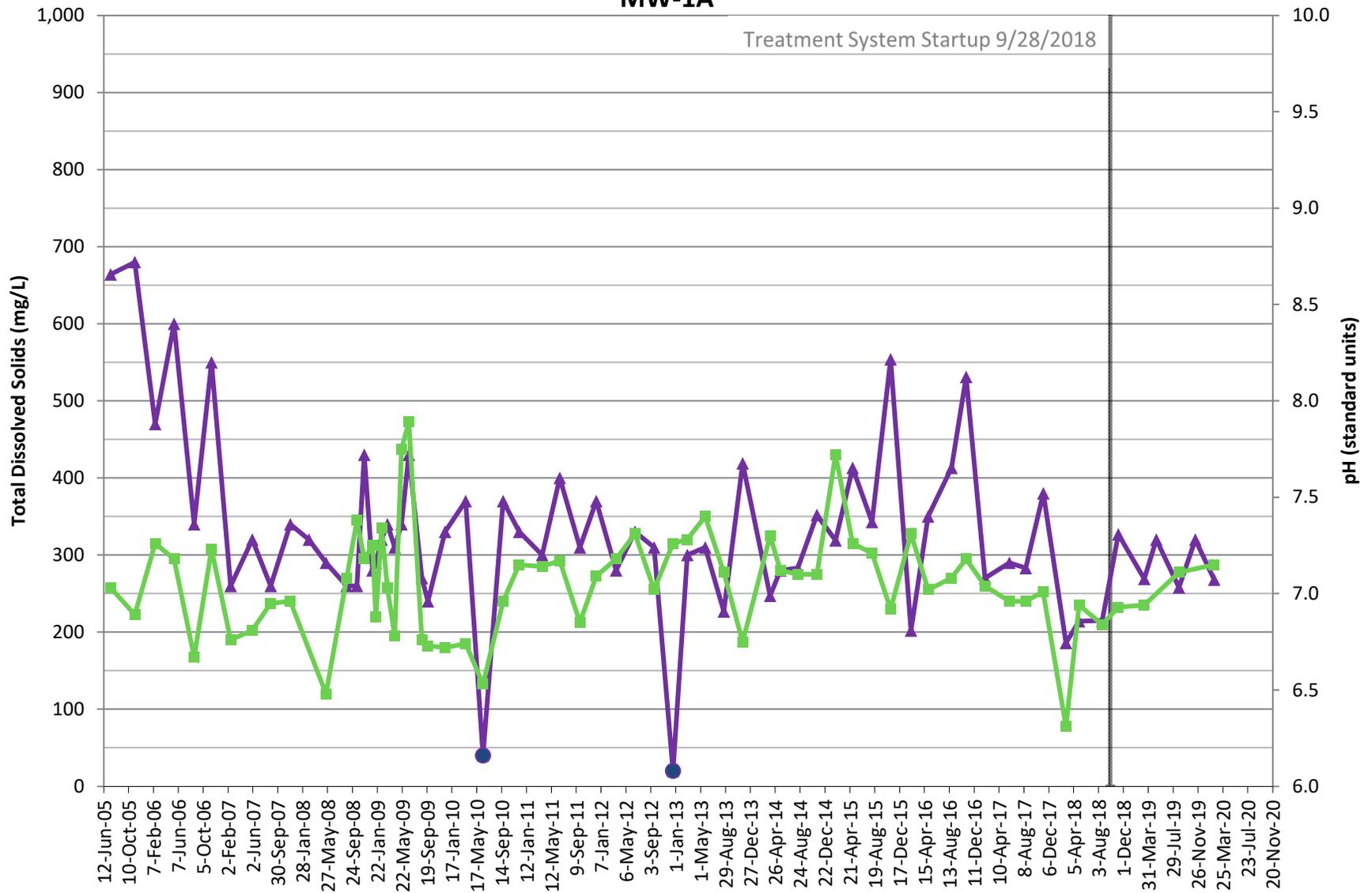
LDA Shallow/Alluvial Monitoring Wells MW-1A



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

◆ Arsenic
 ● Arsenic Non-Detections
 ■ Potassium

LDA Shallow/Alluvial Monitoring Wells MW-1A



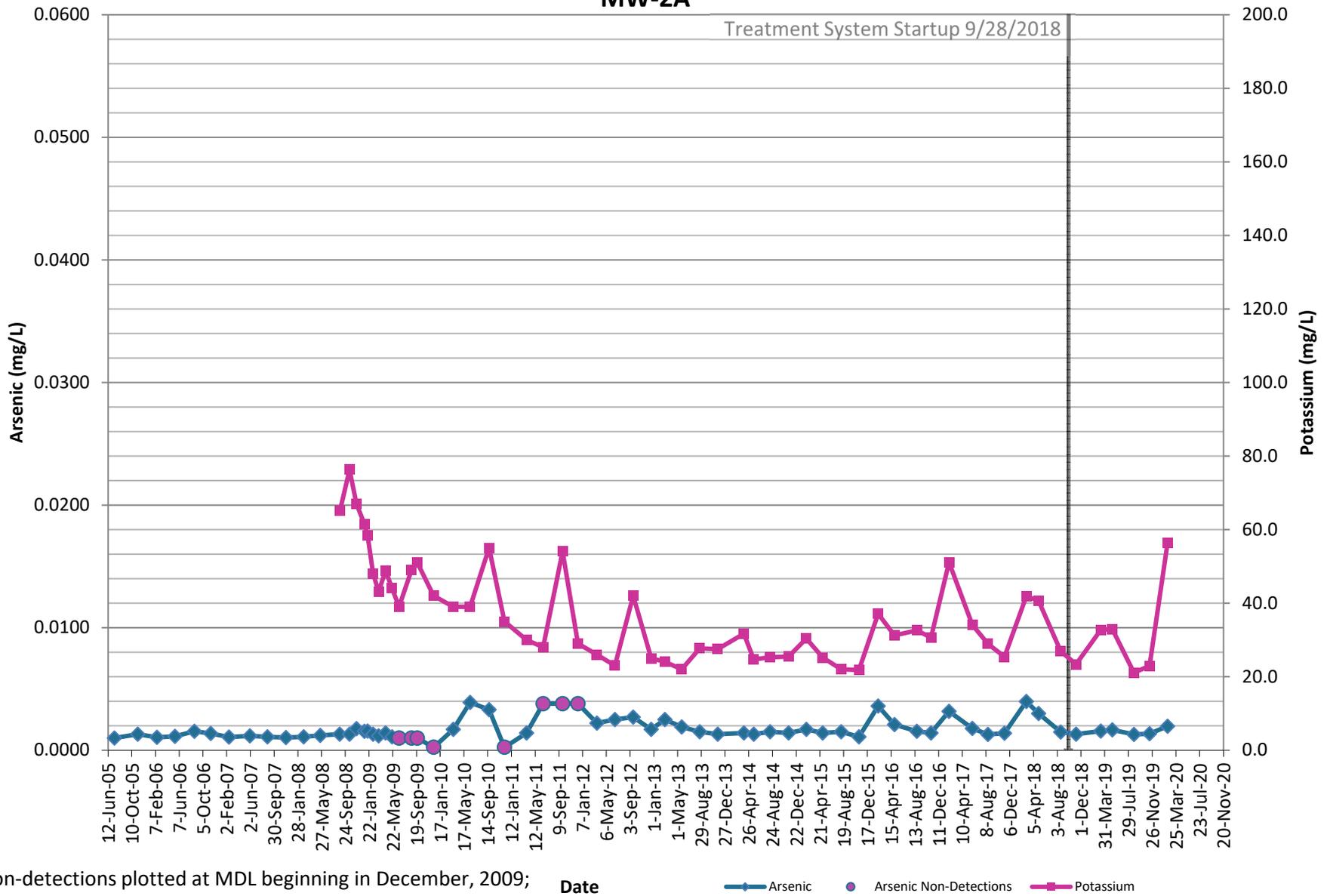
Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

Date

—▲ TDS
 ● TDS Non-Detections
 —■ pH

LDA Shallow/Alluvial Monitoring Wells

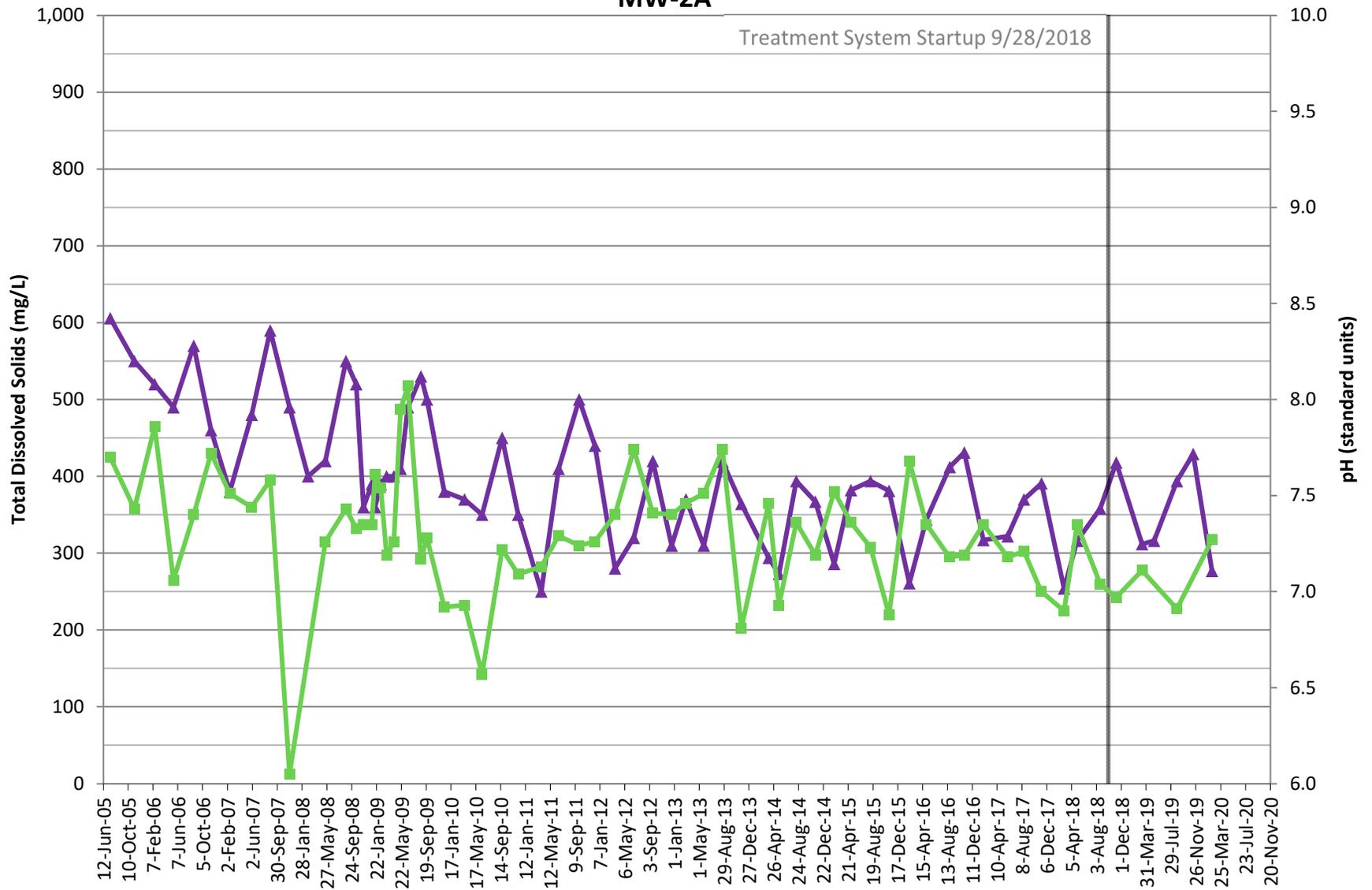
MW-2A



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

LDA Shallow/Alluvial Monitoring Wells

MW-2A



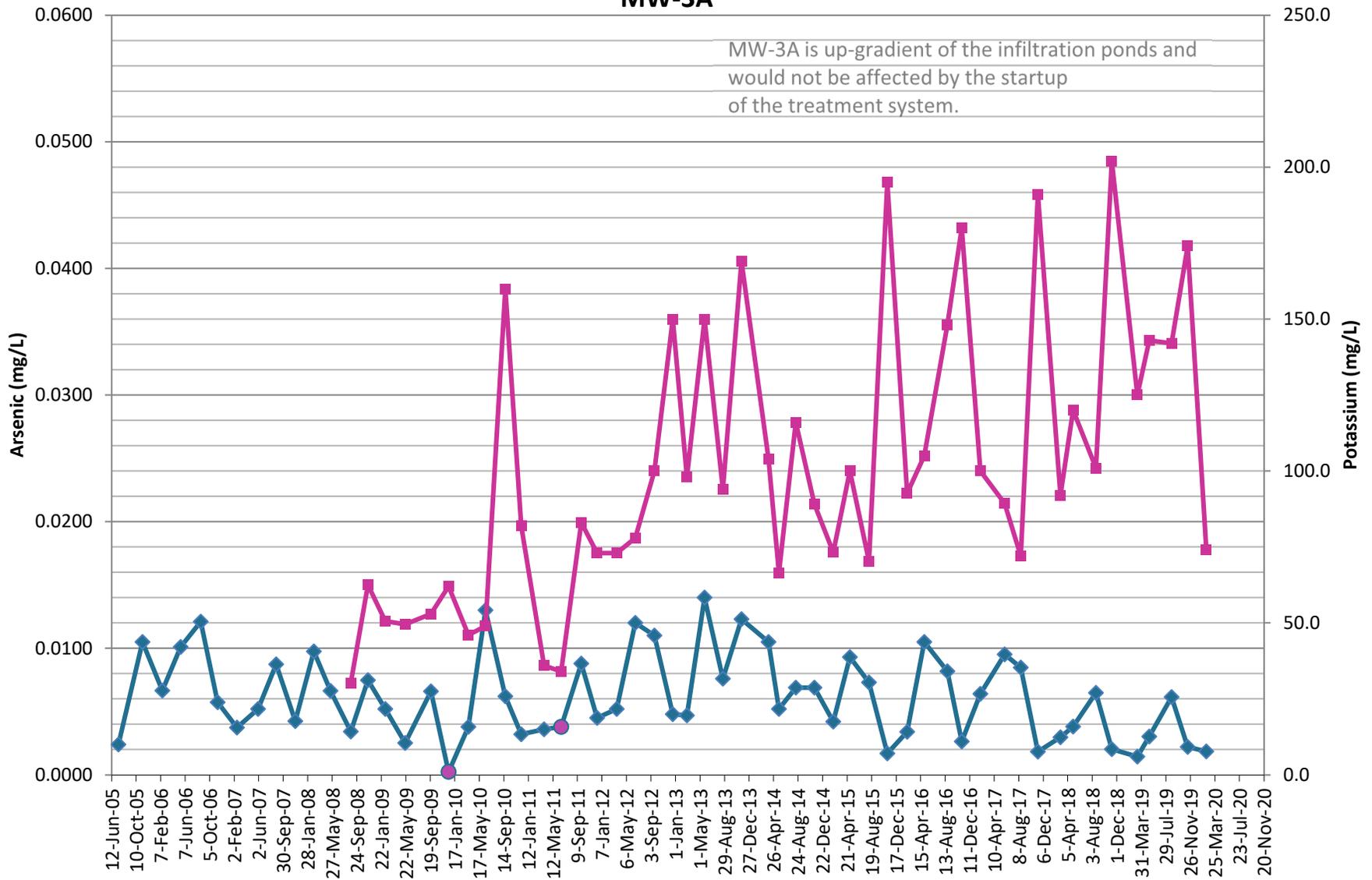
Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

Date

TDS

pH

LDA Shallow/Alluvial Monitoring Wells MW-3A



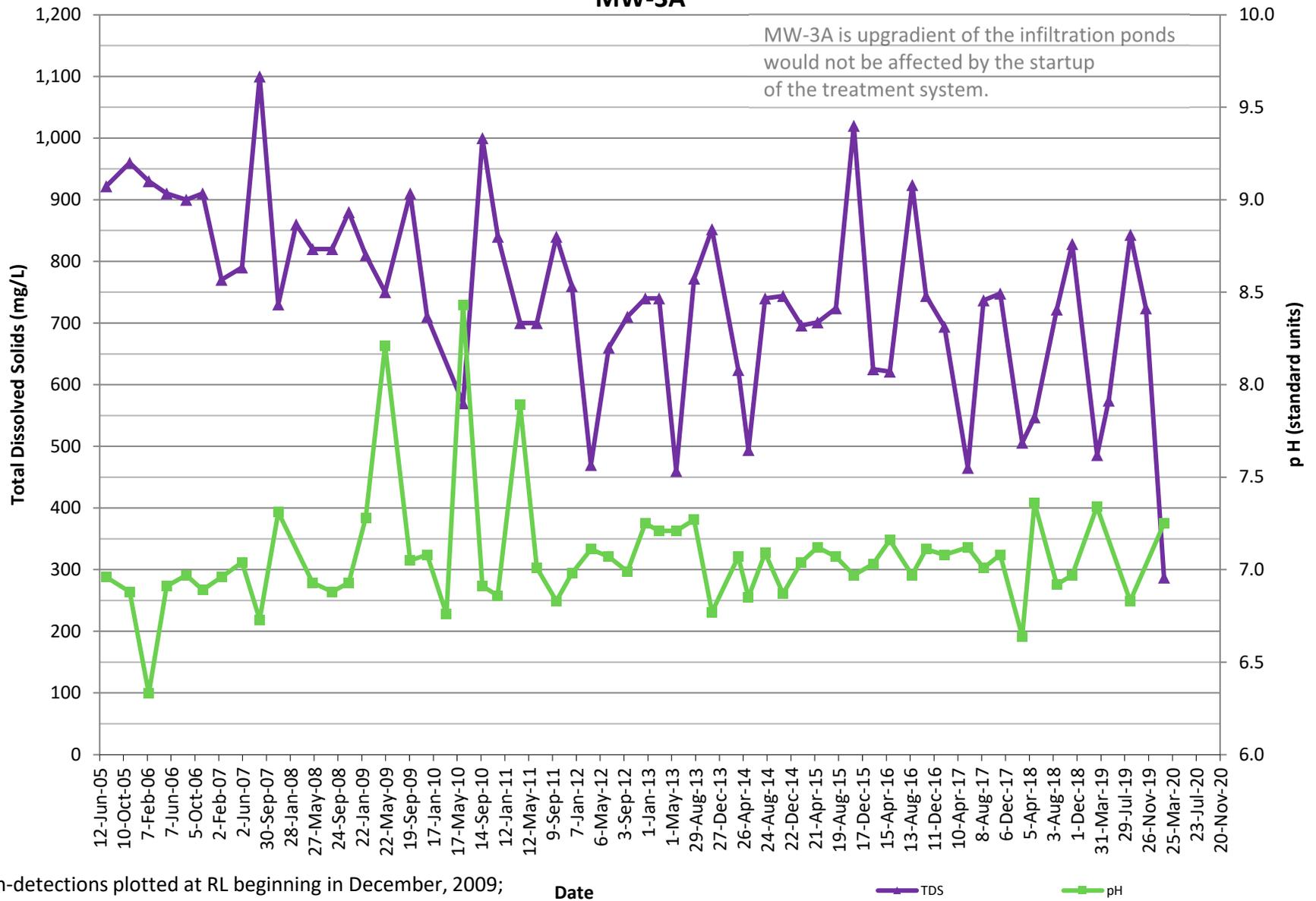
Non-detections plotted at MDL beginning in December, 2009;
prior non-detections plotted at 50% of the RL

Date

◆ Arsenic
 ● Arsenic Non-Detections
 ■ Potassium

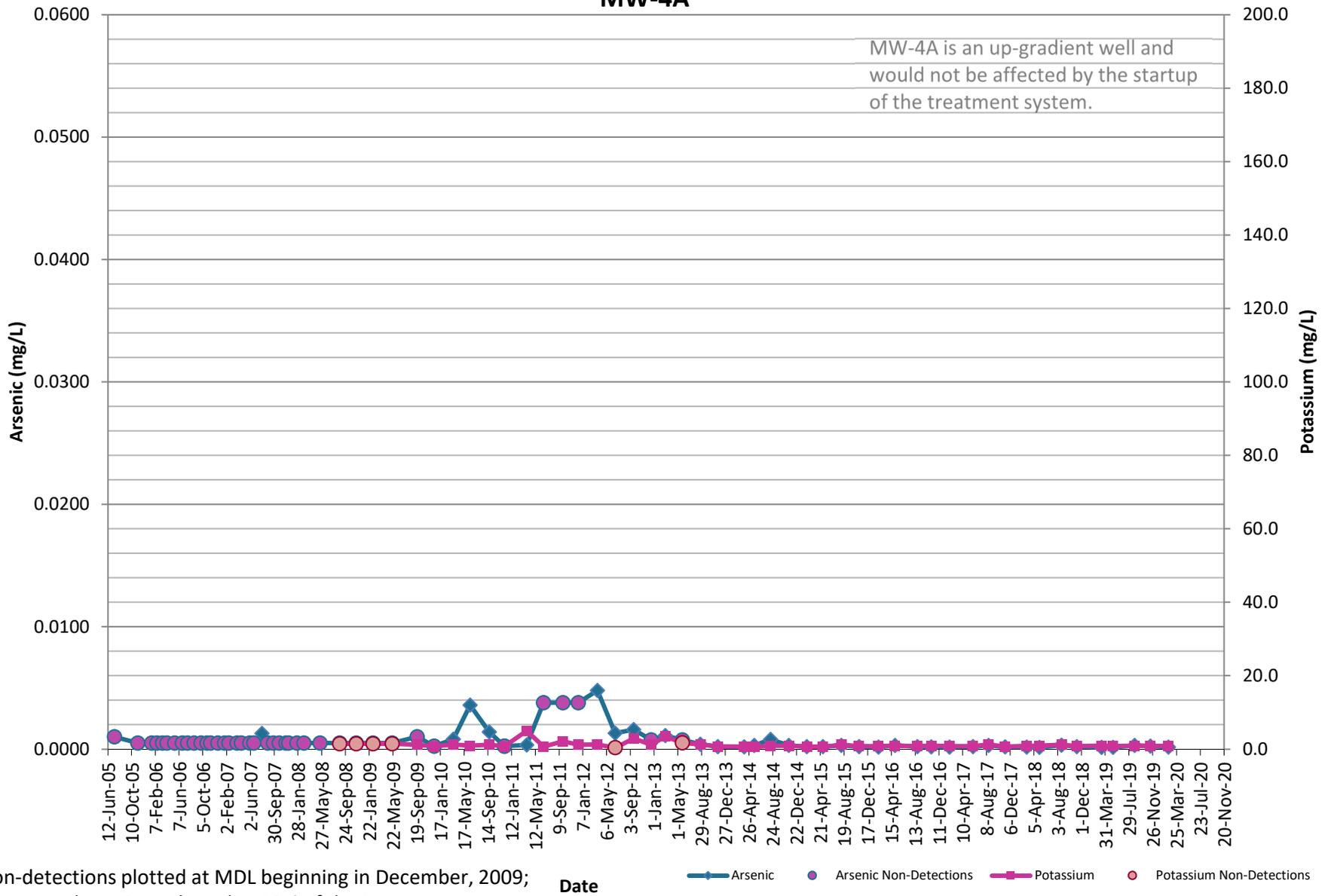
LDA Shallow/Alluvial Monitoring Wells

MW-3A



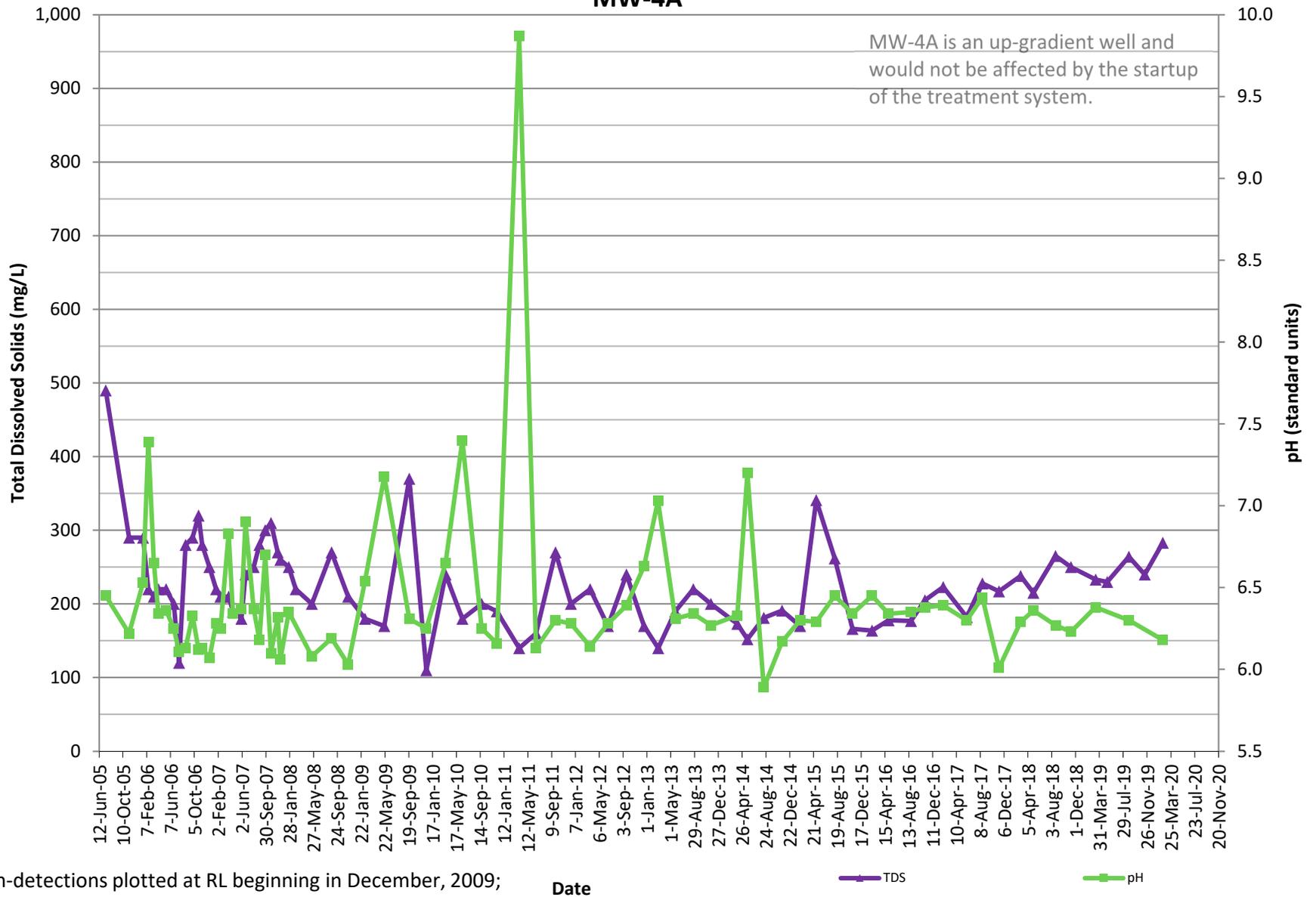
Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

LDA Shallow/Alluvial Monitoring Wells MW-4A



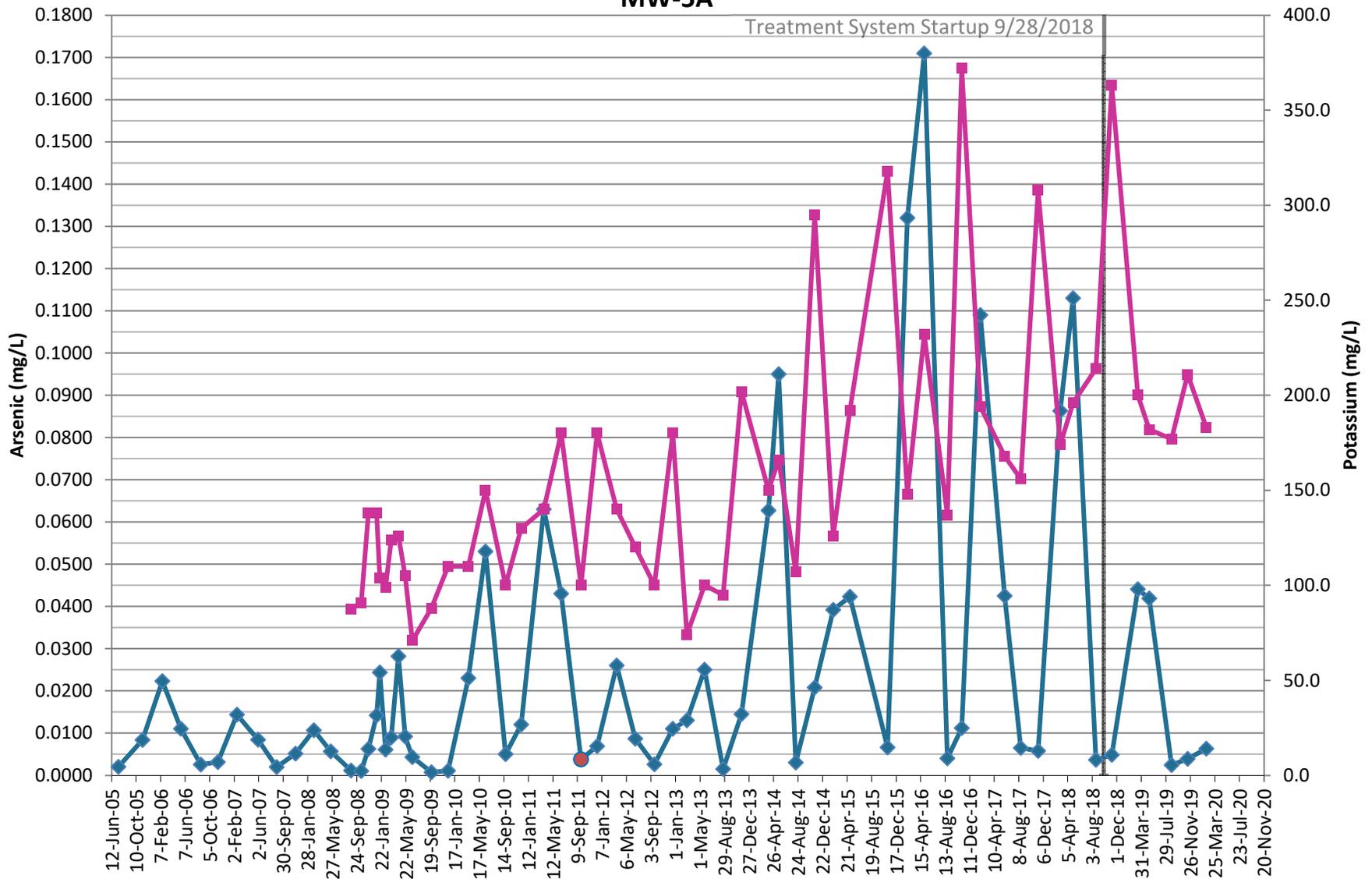
Non-detections plotted at MDL beginning in December, 2009;
prior non-detections plotted at 50% of the RL

LDA Shallow/Alluvial Monitoring Wells MW-4A



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

LDA Shallow/Alluvial Monitoring Wells MW-5A



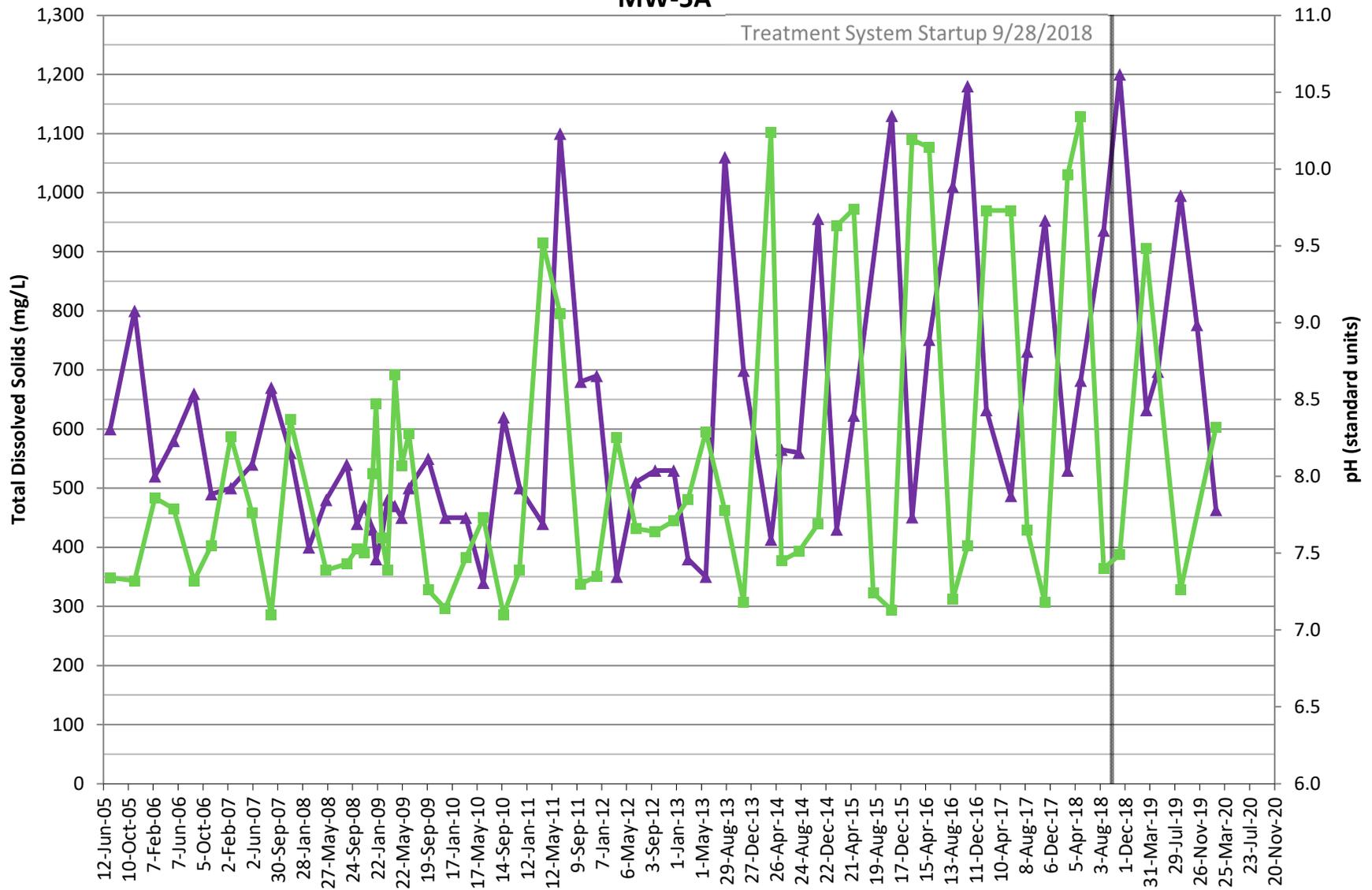
Non-detections plotted at MDL beginning in December, 2009;
prior non-detections plotted at 50% of the RL

Date

◆ Arsenic
 ● Arsenic Non-Detections
 ■ Potassium

LDA Shallow/Alluvial Monitoring Wells

MW-5A



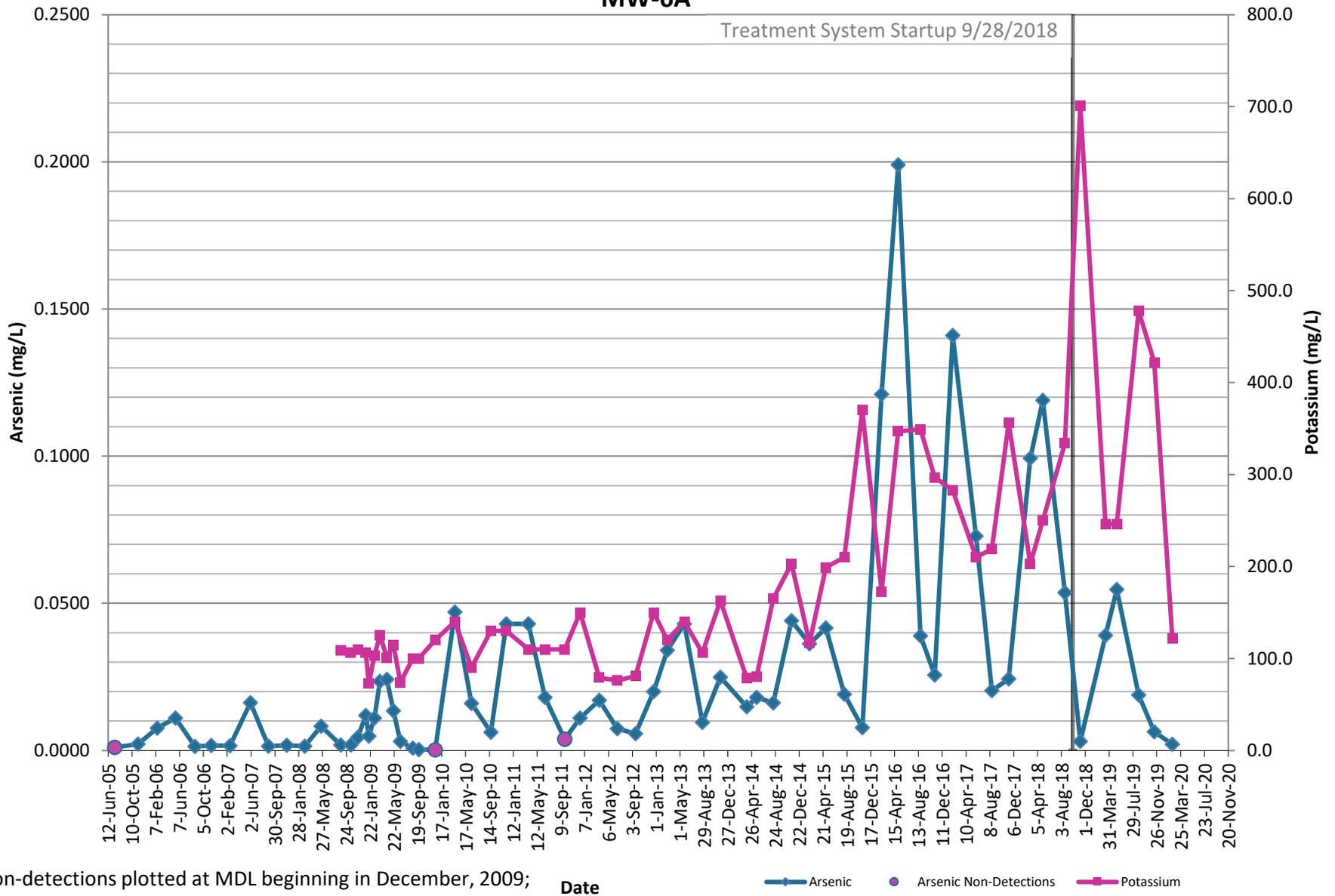
Non-detections plotted at RL beginning in December, 2009; no prior non-detections.

Date

TDS

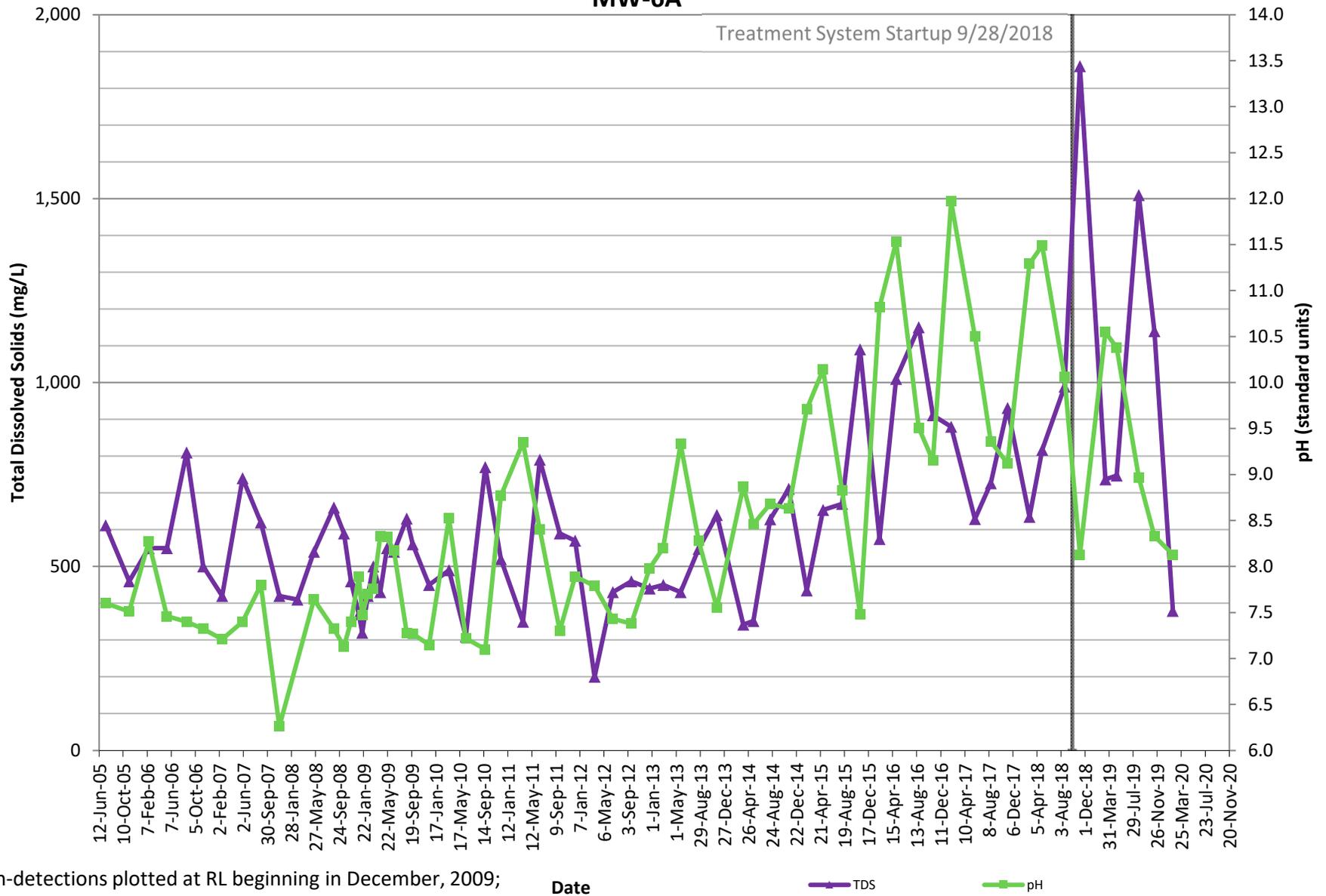
pH

LDA Shallow/Alluvial Monitoring Wells MW-6A



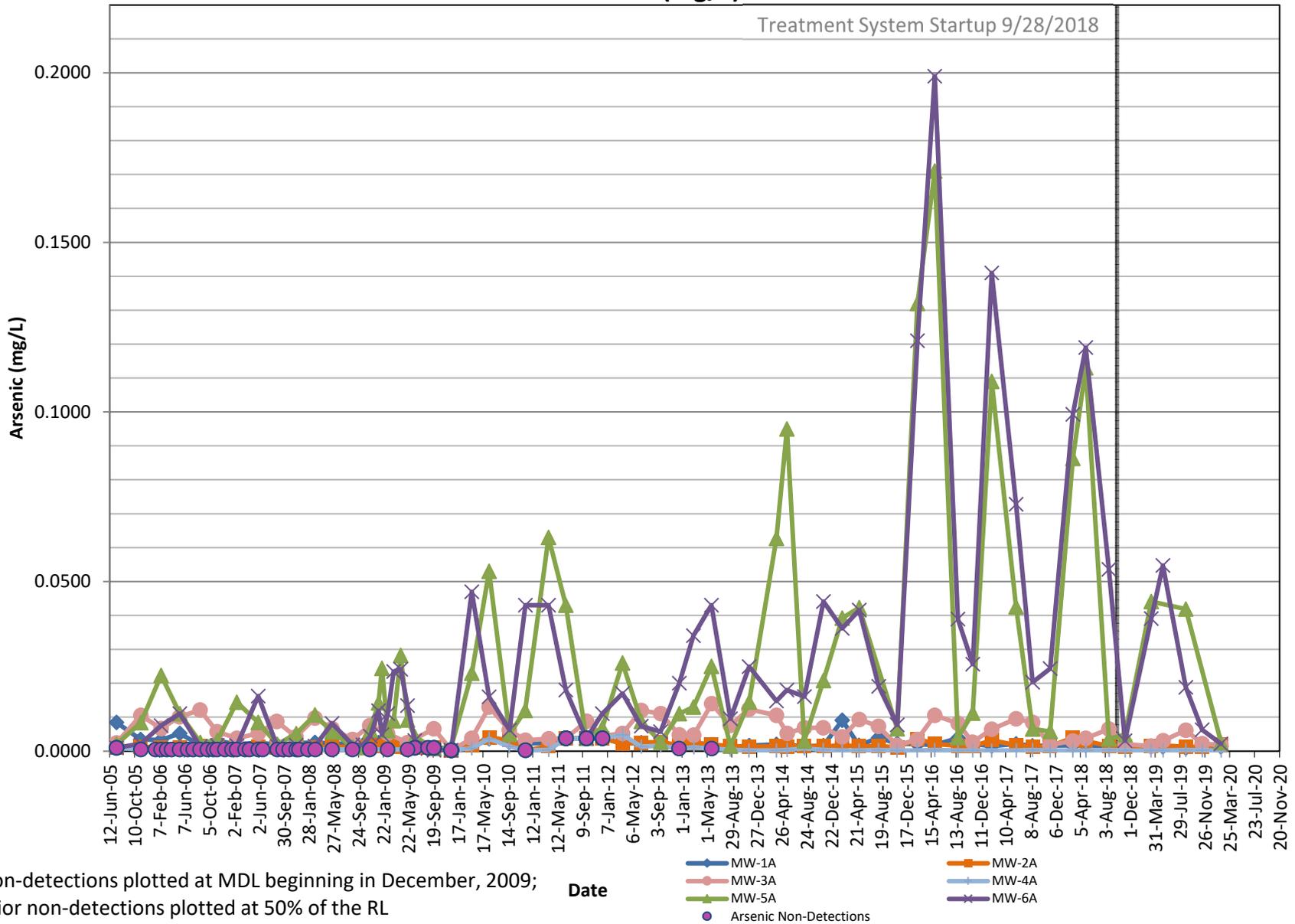
Non-detections plotted at MDL beginning in December, 2009;
prior non-detections plotted at 50% of the RL

LDA Shallow/Alluvial Monitoring Wells MW-6A

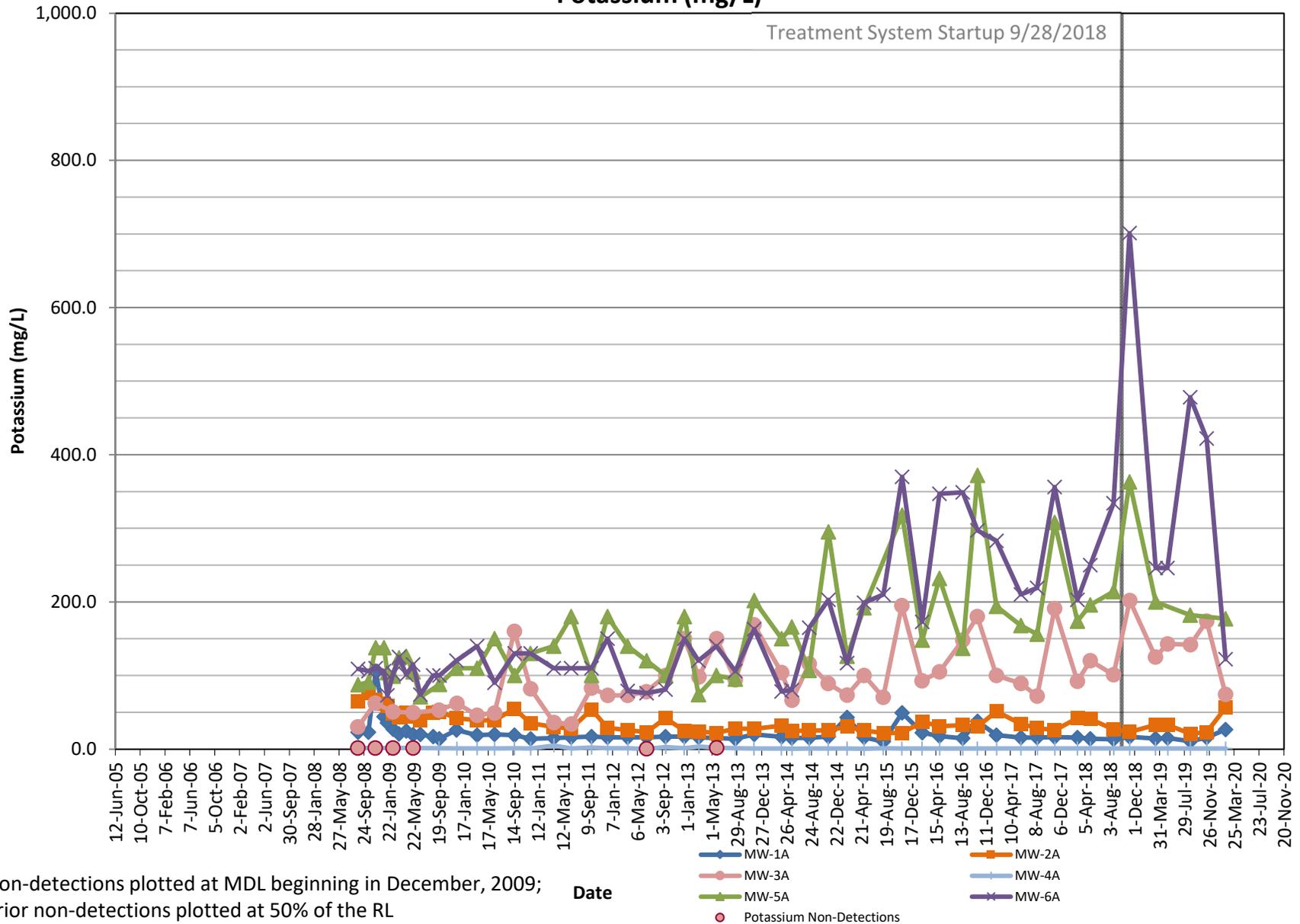


Non-detections plotted at RL beginning in December, 2009;
no prior non-detections.

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

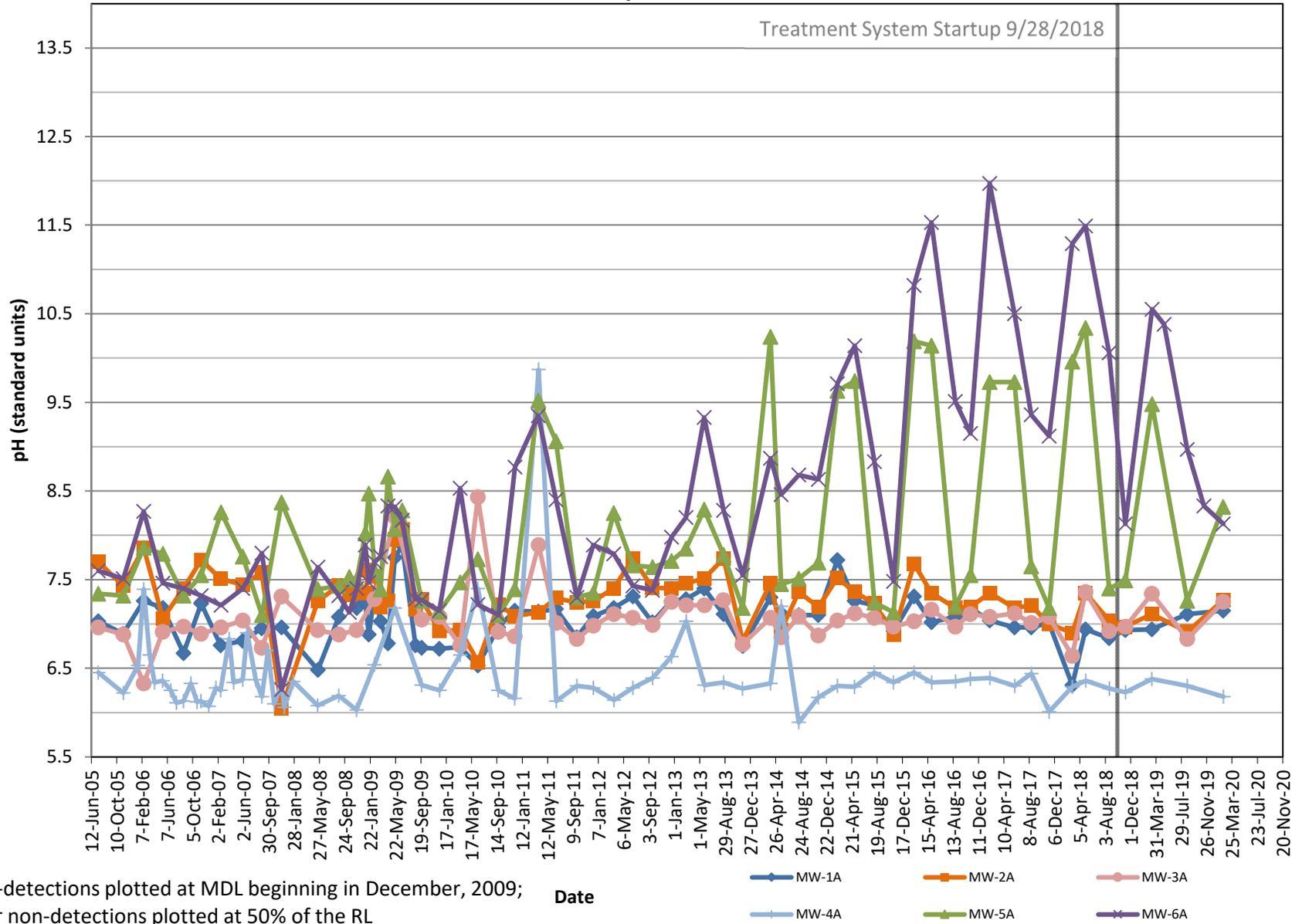


LDA Shallow/Alluvial Monitoring Wells Potassium (mg/L)



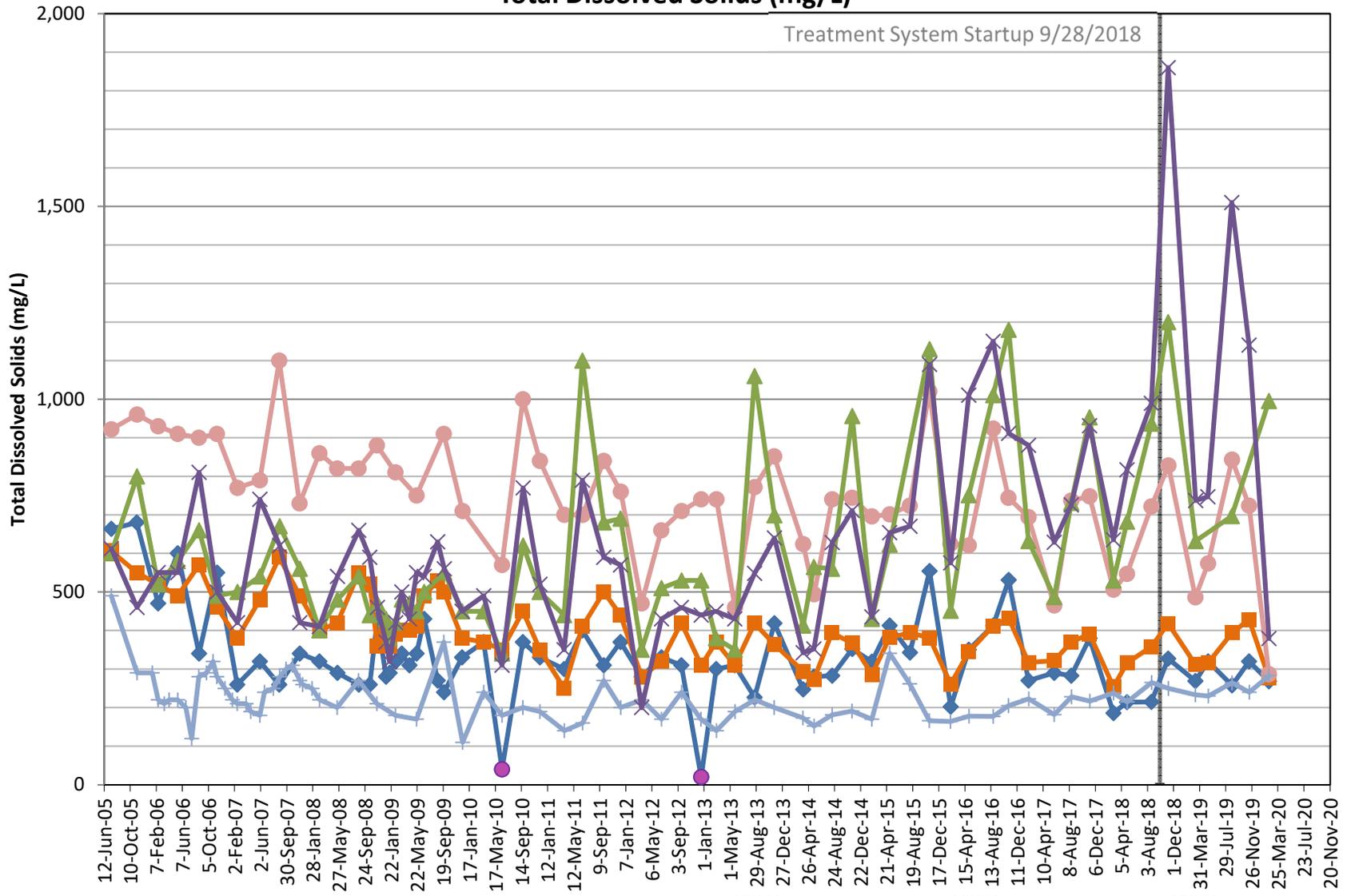
LDA Shallow/Alluvial Monitoring Wells

pH



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

LDA Shallow/Alluvial Monitoring Wells Total Dissolved Solids (mg/L)



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

Date

- ◆ MW-1A
- MW-2A
- MW-3A
- + MW-4A
- ▲ MW-5A
- × MW-6A
- TDS Non-Detections

APPENDIX C

**Data Validation Reports and
Laboratory Analytical Results**

DATA VALIDATION CHECKLIST

| | |
|----------------------------------|---|
| Project Name: | Ravensdale Project |
| Project Number: | 152030420 |
| Sample Identification(s): | EB, Infiltration #1, Infiltration #2, MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, MW-6A, MW-7A, MWB-1LDA, MWB-2LDA, MWB-3LDA, MWB-7LDA, MWB-1SDSP, MWB-1DDSP, MWB-5DSP, MWB-6DSP, MWB-9DSP, South Pond, Still Well, Weir, Portal, Interceptor Trench |
| Sample Date(s): | 2/12, 2/13, 2/14/2020 |
| Sample Team: | Reno Gregory, Tom Haskins, Golder Associates |
| Sample Matrix: | Aqueous |
| Analyzing Laboratory: | Analytical Resources, Inc. – Tukwila, WA |
| Analyses: | TDS (SM 2540 C), Metals (EPA 6010C, 200.8): Dissolved As, Pb, K, Fe, Mn |
| Laboratory Report No.: | 20B0193 |

FIELD DATA PACKAGE DOCUMENTATION

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

QC – quality control

COMMENTS:

Performance was acceptable, with no exceptions.

**ANALYTICAL DATA PACKAGE DOCUMENTATION
GENERAL INFORMATION**

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

QA – quality assurance

COMMENTS:

Performance was acceptable, with the following notes:

- The reporting limits (RLs) and method detection limits (MDLs) of Analytical Resources Inc. were reviewed to ensure data quality objectives were met. The following table is a comparison of the laboratory RLs and MDLs as compared to the preliminary standards for the site. All RLs and MDLs were less than the preliminary standards.

| Parameter | Preliminary Standards | | Analytical Resources Inc. | | |
|-------------------------------------|-----------------------|--------|---------------------------|-----------|------------|
| | Method | (mg/L) | Method | RL (mg/L) | MDL (mg/L) |
| Total Dissolved Solids (TDS) | EPA 160.1 | 500 | SM 2540 C | 5 | 5 |
| Iron | EPA 6010B | 0.3 | EPA 6010C | 0.05 | 0.0013 |
| Manganese | EPA 6010B | 0.05 | EPA 6010C | 0.001 | 0.0003 |
| Potassium | EPA 6010B | NA | EPA 6010C | 0.5 | 0.052 |
| Arsenic | EPA 6020 | TBD | EPA 200.8 | 0.0002 | 0.000022 |
| Lead | EPA 6020 | 0.05 | EPA 200.8 | 0.0001 | 0.000068 |

INORGANIC ANALYSES

| Metals (EPA 6010/6020) | Reported | | Performance Acceptable | | Not Required |
|---------------------------------------|----------|-----|------------------------|-----|--------------|
| | NO | YES | NO | YES | |
| 1. Holding times | | X | | X | |
| 2. Reporting limits | | X | | X | |
| 3. Blanks | | | | | |
| a. Method blanks | | X | | X | |
| b. Equipment rinsate blanks | | X | | X | |
| 4. Laboratory control sample (LCS) %R | | X | | X | |
| 5. Matrix spike (MS) %R | | X | | X | |
| 6. LCS duplicate (LCSD) %R | X | | | | X |
| 7. MS duplicate (MSD) %R | | X | | X | |
| 8. MS / MSD RPD | | X | | X | |
| 9. LCS / LCSD RPD | X | | | | X |
| 10. Laboratory Duplicate RPD | | X | | X | |
| 11. Field duplicate comparison | | X | | X | |

%R – percent recovery RPD – relative percent difference

COMMENTS:

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

- The Method Blank (BIB0590-BLK1) has a low detection of dissolved iron at 0.0013 J mg/L, equal to the detection limit of 0.0013 mg/L. Following the Guidelines and using professional judgment, when the blank contamination is between the MDL and RL, associated results that are between the MDL and RL are qualified as non-detect (U) and reported at the RL, while detections greater than the RL do not require qualification. Qualifications required from this method blank contamination are provided at the end of this report.
- The Equipment Blank (EB) had a low detection of dissolved iron (0.0024 J mg/L) and of dissolved potassium (0.0859 J mg/L). Validation guidelines do not require qualification of equipment blank data. Following historic project practice, no formal qualifications are applied, but it is advisory that low detections of iron and potassium in the primary samples may be biased high.
- Field duplicates were collected at MW-2A (field duplicate ID is MW-7A), Infiltration #1 (field duplicate ID is Infiltration #2), MWB-1LDA (field duplicate ID is MWB-7LDA), and MWB-6DSP (field duplicate ID is MWB-9DSP). All precision is acceptable.
- The laboratory did not provide LCSD results. This QC element is not required because sufficient precision and accuracy data was provided by the lab with laboratory duplicate, MS/MSD, and LCS analyses.

GENERAL WET CHEMISTRY

| TDS (EPA 160.1) | Reported | | Performance Acceptable | | Not Required |
|---------------------------------------|----------|-----|------------------------|-----|--------------|
| | NO | YES | NO | YES | |
| 1. Holding times | | X | | X | |
| 2. Reporting limits | | X | | X | |
| 3. Blanks | | | | | |
| a. Method blanks | | X | | X | |
| b. Equipment rinsate blanks | | X | | X | |
| 4. Laboratory control sample (LCS) %R | | X | | X | |
| 5. Matrix spike (MS) %R | X | | | | X |
| 6. LCS duplicate (LCSD) %R | X | | | | X |
| 7. MS duplicate (MSD) %R | X | | | | X |
| 8. MS/MSD RPD | X | | | | X |
| 9. LCS/LCSD RPD | X | | | | X |
| 10. Laboratory Duplicate RPD | | X | | X | |
| 11. Field duplicate comparison | | X | | X | |

%R – percent recovery RPD – relative percent difference

COMMENTS:

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

- The Equipment Blank (EB) had a detection of TDS at 14 mg/L. Validation guidelines do not require qualification of equipment blank data. Following historic project practice, no formal qualifications are applied, but it is advisory that low detections of TDS in the primary samples may be biased high.
- Field duplicates were collected at MW-2A (field duplicate ID is MW-7A), Infiltration #1 (field duplicate ID is Infiltration #2), MWB-1LDA (field duplicate ID is MWB-7LDA), and MWB-6DSP (field duplicate ID is MWB-9DSP). All precision is acceptable.
- The laboratory did not provide LCSD, MS, or MSD results. These QC elements are not required because sufficient precision and accuracy data was provided by the lab with laboratory duplicate and LCS analyses.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

| | |
|----------------------------------|---|
| Project Name: | Ravensdale Project |
| Project Number: | 152030420 |
| Sample Identification(s): | EB, Infiltration #1, Infiltration #2, MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, MW-6A, MW-7A, MWB-1LDA, MWB-2LDA, MWB-3LDA, MWB-7LDA, MWB-1SDSP, MWB-1DDSP, MWB-5DSP, MWB-6DSP, MWB-9DSP, South Pond, Still Well, Weir, Portal, Interceptor Trench |
| Sample Date(s): | 2/12, 2/13, 2/14/2020 |
| Sample Team: | Reno Gregory, Tom Haskins, Golder Associates |
| Sample Matrix: | Aqueous |
| Analyzing Laboratory: | Analytical Resources, Inc. – Tukwila, WA |
| Analyses: | TDS (SM 2540 C), Metals (EPA 6010C, 200.8): Dissolved As, Pb, K, Fe, Mn |
| Laboratory Report No.: | 20B0193 |

| Sample ID | Analyte(s) | Old Result | Old Qualifier | New Result | New Qualifier | Reason(s) |
|-------------|-----------------|-------------|---------------|-------------|---------------|--|
| MWB-3LDA | Iron, Dissolved | 0.0156 mg/L | J | 0.0500 mg/L | U | Batch Method Blank detection of 0.0013 J mg/L |
| All samples | All analytes | - | | | - | Remove any lab applied "D" and "HC" qualifiers |

| | |
|---------------------------------|------------------------------|
| VALIDATION PERFORMED BY: | Joseph Xi, Golder Associates |
| DATE: | March 6, 2020 |



Analytical Resources, Incorporated
Analytical Chemists and Consultants

28 February 2020

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

RE: Ravensdale

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

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

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

Associated Work Order(s)
20B0193

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 enclosed 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, Inc.



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



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

| | | |
|--|---|---|
| ARI Assigned Number: 20B0193 | Turn-around Requested: Standard | Page: 1 of 3 |
| ARI Client Company: Golder | Phone: 425-883-0777 | Date: 2/12/20 |
| Client Contact: Joseph Xi Gary Zimmerman | No. of Coolers: 3 | Ice Present? Yes Cooler Temps: See CRF |

| Client Project Name: Ravensdale | | | | | Analysis Requested | | | | | | | | Notes/Comments | |
|---|---------|-------------------------------|--------|----------------|--------------------|----------------------|-------|---------------------|--|--|--|--|----------------|---------------------------------|
| Sample ID | Date | Time | Matrix | No. Containers | TDS | Dissolved As, Fe, Pb | Mn, K | Dissolved As, Pb, K | | | | | | |
| MW-1A | 2/12/20 | 1005 | W | 2 | X | X | | | | | | | | |
| MW-2A | 2/12/20 | 1115 | W | 2 | X | X | | | | | | | | |
| MW-7A | 2/12/20 | 1120 | W | 2 | X | X | | | | | | | | |
| MW-6A | 2/12/20 | 1250 | W | 2 | X | X | | | | | | | | |
| MW-5A | 2/12/20 | 1410 | W | 2 | X | X | | | | | | | | |
| Infiltration #1 | 2/12/20 | 1445 | W | 2 | X | X | | | | | | | | |
| Infiltration #2 | 2/12/20 | 1450 | W | 2 | X | X | | | | | | | | |
| EB | 2/12/20 | 1510 | W | 2 | X | X | | | | | | | | |
| MW-3A | 2/12/20 | 1650 ^{RG} | W | 2 | X | X | | | | | | | | Time 1615 |
| Weir | 2/12/20 | 1630 | W | 4 | X | X | | | | | | | | Additional 2 bottles for MS/MSD |

| | | | | |
|--|---|---|---------------------------------|-----------------------------|
| Comments/Special Instructions • Metals field filtered with 0.45µm filter • Analyze in accordance with MSA between Golder and ARI • Analyze metals MS/MSD w/ extra bottles from Weir | Relinquished by: (Signature) <i>Reno Gregory</i> | Received by: (Signature) <i>Kenny Dang</i> | Relinquished by: (Signature) | Received by: (Signature) |
| | Printed Name: Reno Gregory | Printed Name: Kenny Dang | Printed Name: | Printed Name: |
| | Company: Golder | Company: ARI | Company: | Company: |
| | Date & Time: 2/14/20 1218 | Date & Time: 2/14/2020 1218 | Date & Time: | Date & Time: |

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

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

Chain of Custody Record & Laboratory Analysis Request



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

| | | |
|--|--|------------------------------|
| ARI Assigned Number: 20B0193 | Turn-around Requested: Standard | Page: 2 of 3 |
| ARI Client Company: Golder | Phone: | Date: 2/13/20 |
| Client Contact: Joseph X: Gary Zimmerman | | Ice Present? Yes |
| Client Project Name: Ravensdale | | No. of Coolers: 3 |
| Client Project #: 1520304-719 | Samplers: Tom Haskins Reno Gregory | Cooler Temps: See CRF |

| Sample ID | Date | Time | Matrix | No. Containers | Analysis Requested | | | | | | | | Notes/Comments | | |
|--------------------|---------|------|--------|----------------|--------------------|----------------------------|---------------------|---|--|--|--|--|----------------|--|--------------------|
| | | | | | TDS | Dissolved As, Fe, Pb Mn, K | Dissolved As, Pb, K | | | | | | | | |
| Still Well | 2/13/20 | 0910 | W | 2 | X | X | | | | | | | | | EIM Format for EDD |
| South Pond | 2/13/20 | 0935 | W | 2 | X | X | | | | | | | | | |
| MWB - 1LDA | 2/13/20 | 1035 | W | 2 | X | X | | | | | | | | | |
| MWB - 7LDA | 2/13/20 | 1040 | W | 2 | X | X | | | | | | | | | |
| MWB - 2LDA | 2/13/20 | 1125 | W | 2 | X | X | | | | | | | | | |
| MWB - 3LDA | 2/13/20 | 1225 | W | 2 | X | X | | | | | | | | | |
| Interceptor Trench | 2/13/20 | 1235 | W | 1 | X | | | | | | | | | | |
| MW - 4A | 2/13/20 | 1330 | W | 2 | X | X | | | | | | | | | |
| MWB - 6DSP | 2/13/20 | 1445 | W | 2 | X | | | X | | | | | | | |
| MWB - 9DSP | 2/13/20 | 1450 | W | 2 | X | | | X | | | | | | | |

| | | | | |
|--|--|--|---------------------------------|-----------------------------|
| Comments/Special Instructions • Metals field filtered with 0.45µm filter • Analyze in accordance w/ MSA between Golder and ARI | Relinquished by: (Signature) <i>[Signature]</i> | Received by: (Signature) <i>[Signature]</i> | Relinquished by: (Signature) | Received by: (Signature) |
| | Printed Name: Reno Gregory | Printed Name: Kenny Dang | Printed Name: | Printed Name: |
| | Company: Golder | Company: ARI | Company: | Company: |
| | Date & Time: 2/14/20 1218 | Date & Time: 2/14/2020 1218 | Date & Time: | Date & Time: |

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

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Chain of Custody Record & Laboratory Analysis Request



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 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

| | | |
|--|--|------------------------------|
| ARI Assigned Number: 2030193 | Turn-around Requested: Standard | Page: 3 of 3 |
| ARI Client Company: Golder | Phone: | Date: 2/13/20 |
| Client Contact: Joseph Xi Gary Zimmerman | | Ice Present? Yes |
| Client Project Name: Ravensdale | | No. of Coolers: 3 |
| Client Project #: 1520304.719 | Samplers: Tom Hasking Reno Gregory | Cooler Temps: See CRF |

| Sample ID | Date | Time | Matrix | No. Containers | Analysis Requested | | | | | | Notes/Comments | | | | |
|---|---------|------|--------|----------------|--------------------|-----------------------------|---------------------|--|--|--|----------------|---|--|--|--|
| | | | | | TDS | Dissolved As, Fe, Pb, Mn, K | Dissolved As, Pb, K | | | | | | | | |
| Portal | 2/13/20 | 1550 | W | 2 | X | | X | | | | | EIM Format for EDD | | | |
| MWB - ISDSP | 2/14/20 | 0825 | W | 2 | X | | X | | | | | | | | |
| MWB - IDDSP | 2/14/20 | 0905 | W | 2 | X | | X | | | | | | | | |
| MWB - 5 DSP | 2/14/20 | 1000 | W | 2 | X | | X | | | | | | | | |
| Comments/Special Instructions: • Metals field filtered with 0.45µm filter • Analyze in accordance w/ MSA between Golder and ARI | | | | | | | | | | | | Relinquished by: (Signature) <i>[Signature]</i> Printed Name: Reno Gregory Company: Golder Date & Time: 2/14/20 1218 | Received by: (Signature) <i>[Signature]</i> Printed Name: Kenny Dang Company: ARI Date & Time: 2/14/2020 1218 | Relinquished by: (Signature) Printed Name: Company: Date & Time: | Received by: (Signature) Printed Name: Company: Date & Time: |

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

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



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|--------------------|---------------|--------|-------------------|-------------------|
| MW-1A | 20B0193-01 | Water | 12-Feb-2020 10:05 | 14-Feb-2020 12:15 |
| MW-2A | 20B0193-02 | Water | 12-Feb-2020 11:15 | 14-Feb-2020 12:15 |
| MW-7A | 20B0193-03 | Water | 12-Feb-2020 11:20 | 14-Feb-2020 12:15 |
| MW-6A | 20B0193-04 | Water | 12-Feb-2020 12:50 | 14-Feb-2020 12:15 |
| MW-5A | 20B0193-05 | Water | 12-Feb-2020 14:10 | 14-Feb-2020 12:15 |
| Infiltration #1 | 20B0193-06 | Water | 12-Feb-2020 14:45 | 14-Feb-2020 12:15 |
| Infiltration #2 | 20B0193-07 | Water | 12-Feb-2020 14:50 | 14-Feb-2020 12:15 |
| EB | 20B0193-08 | Water | 12-Feb-2020 15:10 | 14-Feb-2020 12:15 |
| MW-3A | 20B0193-09 | Water | 12-Feb-2020 16:15 | 14-Feb-2020 12:15 |
| Weir | 20B0193-10 | Water | 12-Feb-2020 16:30 | 14-Feb-2020 12:15 |
| Still Well | 20B0193-11 | Water | 13-Feb-2020 09:10 | 14-Feb-2020 12:15 |
| South Pond | 20B0193-12 | Water | 13-Feb-2020 09:35 | 14-Feb-2020 12:15 |
| MWB-1LDA | 20B0193-13 | Water | 13-Feb-2020 10:35 | 14-Feb-2020 12:15 |
| MWB-7LDA | 20B0193-14 | Water | 13-Feb-2020 10:40 | 14-Feb-2020 12:15 |
| MWB-2LDA | 20B0193-15 | Water | 13-Feb-2020 11:25 | 14-Feb-2020 12:15 |
| MWB-3LDA | 20B0193-16 | Water | 13-Feb-2020 12:25 | 14-Feb-2020 12:15 |
| Interceptor Trench | 20B0193-17 | Water | 13-Feb-2020 12:35 | 14-Feb-2020 12:15 |
| MW-4A | 20B0193-18 | Water | 13-Feb-2020 13:30 | 14-Feb-2020 12:15 |
| MWB-6DSP | 20B0193-19 | Water | 13-Feb-2020 14:45 | 14-Feb-2020 12:15 |
| MWB-9DSP | 20B0193-20 | Water | 13-Feb-2020 14:50 | 14-Feb-2020 12:15 |
| Portal | 20B0193-21 | Water | 13-Feb-2020 15:50 | 14-Feb-2020 12:15 |
| MWB-1SDSP | 20B0193-22 | Water | 14-Feb-2020 08:25 | 14-Feb-2020 12:15 |
| MWB-1DDSP | 20B0193-23 | Water | 14-Feb-2020 09:05 | 14-Feb-2020 12:15 |
| MWB-5DSP | 20B0193-24 | Water | 14-Feb-2020 10:00 | 14-Feb-2020 12:15 |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Work Order Case Narrative

Dissolved Metals - EPA Method 200.8 and 6010C

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

Initial and continuing calibrations were within method requirements.

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

The LCS percent recoveries were within 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 LCS percent recoveries were within control limits.



WORK ORDER

20B0193

| | |
|---------------------------|-------------------------------|
| Client: Golder Associates | Project Manager: Kelly Bottem |
| Project: Ravensdale | Project Number: Ravensdale |

Preservation Confirmation

| Container ID | Container Type | pH | |
|--------------|--------------------------------|----|------|
| 20B0193-01 A | HDPE NM, 1000 mL | | |
| 20B0193-01 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-02 A | HDPE NM, 1000 mL | | |
| 20B0193-02 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-03 A | HDPE NM, 1000 mL | | |
| 20B0193-03 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-04 A | HDPE NM, 1000 mL | | |
| 20B0193-04 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-05 A | HDPE NM, 1000 mL | | |
| 20B0193-05 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-06 A | HDPE NM, 1000 mL | | |
| 20B0193-06 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-07 A | HDPE NM, 1000 mL | | |
| 20B0193-07 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-08 A | HDPE NM, 1000 mL | | |
| 20B0193-08 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-09 A | HDPE NM, 1000 mL | | |
| 20B0193-09 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-10 A | HDPE NM, 1000 mL | | |
| 20B0193-10 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-10 C | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-10 D | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-11 A | HDPE NM, 1000 mL | | |
| 20B0193-11 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-12 A | HDPE NM, 1000 mL | | |
| 20B0193-12 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-13 A | HDPE NM, 1000 mL | | |
| 20B0193-13 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-14 A | HDPE NM, 1000 mL | | |
| 20B0193-14 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-15 A | HDPE NM, 1000 mL | | |
| 20B0193-15 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-16 A | HDPE NM, 1000 mL | | |
| 20B0193-16 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-17 A | HDPE NM, 1000 mL | | |



WORK ORDER

20B0193

| | |
|----------------------------------|--------------------------------------|
| Client: Golder Associates | Project Manager: Kelly Bottem |
| Project: Ravensdale | Project Number: Ravensdale |

| | | | |
|--------------|--------------------------------|----|------|
| 20B0193-18 A | HDPE NM, 1000 mL | | |
| 20B0193-18 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-19 A | HDPE NM, 1000 mL | | |
| 20B0193-19 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-20 A | HDPE NM, 1000 mL | | |
| 20B0193-20 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-21 A | HDPE NM, 1000 mL | | |
| 20B0193-21 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-22 A | HDPE NM, 1000 mL | | |
| 20B0193-22 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-23 A | HDPE NM, 1000 mL | | |
| 20B0193-23 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |
| 20B0193-24 A | HDPE NM, 1000 mL | | |
| 20B0193-24 B | HDPE NM, 500 mL, 1:1 HNO3 (FF) | <2 | Pass |

KD
Preservation Confirmed By

2/14/2020
Date



Cooler Receipt Form

ARI Client: Golder Assoc.

Project Name: Ravensdale

COC No(s): _____ (NA)

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

Assigned ARI Job No: 20B0193

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 1215 0.3 0.6 1.0

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO 5206

Cooler Accepted by: KD Date: 2/14/2020 Time: 1215

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: KD Date: 2/14/2020 Time: 1305 Labels checked by: KD

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

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---------------------|------------------|---------------------|------------------|
| | | | |
| | | | |
| | | | |
| | | | |

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-1A
20B0193-01 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 10:05 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 20:43 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-01 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-1A
20B0193-01 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|---------------------------------|--|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 10:05 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 20:43 |
| Sample Preparation: | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix |
| | Preparation Batch: BIB0472 |
| | Sample Size: 25 mL |
| | Final Volume: 25 mL |
| | Extract ID: 20B0193-01 B 01 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 1.25 | ug/L | |



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Redmond WA, 98052-3333

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-1A
20B0193-01 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|-------------------------------|-----------------------------------|-----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sampled: 02/12/2020 10:05 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0589 | Analyzed: 02/27/2020 11:21 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-01 B 02 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0083 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0228 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 26.6 | mg/L | |



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Redmond WA, 98052-3333

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-1A
20B0193-01 (Water)

Wet Chemistry

Method: SM 2540 C-97 Sampled: 02/12/2020 10:05
Instrument: BAL2 Analyst: KLE Analyzed: 02/16/2020 17:36

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 20B0193-01
Preparation Batch: BIB0376 Sample Size: 100 mL
Prepared: 02/16/2020 Final Volume: 200 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 268 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-2A
20B0193-02 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 11:15 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 20:47 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-02 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-2A
20B0193-02 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|---------------------------------|--|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 11:15 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 20:47 |
| Sample Preparation: | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix |
| | Preparation Batch: BIB0472 |
| | Sample Size: 25 mL |
| | Prepared: 02/20/2020 |
| | Final Volume: 25 mL |
| | Extract ID: 20B0193-02 B 01 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 1.95 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-2A
20B0193-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010C Sampled: 02/12/2020 11:15
Instrument: ICP2 Analyst: TCH Analyzed: 02/27/2020 11:26

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 20B0193-02 B 02
Preparation Batch: BIB0589 Sample Size: 25 mL
Prepared: 02/26/2020 Final Volume: 25 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0093 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | ND | mg/L | U |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 56.3 | mg/L | |



Golder Associates
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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-2A
20B0193-02 (Water)

Wet Chemistry

Method: SM 2540 C-97 Sampled: 02/12/2020 11:15
Instrument: BAL2 Analyst: KLE Analyzed: 02/16/2020 17:36

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 20B0193-02
Preparation Batch: BIB0376 Sample Size: 200 mL
Prepared: 02/16/2020 Final Volume: 200 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Dissolved Solids | | 1 | 5 | 5 | 277 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-7A
20B0193-03 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 11:20 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 21:29 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-03 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-7A
20B0193-03 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|---------------------------------|--|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 11:20 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 21:29 |
| Sample Preparation: | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix |
| | Preparation Batch: BIB0472 |
| | Prepared: 02/20/2020 |
| | Sample Size: 25 mL |
| | Final Volume: 25 mL |
| | Extract ID: 20B0193-03 B 01 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 2.03 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-7A
20B0193-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010C
Instrument: ICP2 Analyst: TCH

Sampled: 02/12/2020 11:20

Analyzed: 02/27/2020 11:30

Sample Preparation: Preparation Method: WMN (No Prep) Sample Size: 25 mL
Preparation Batch: BIB0589 Final Volume: 25 mL
Prepared: 02/26/2020 Extract ID: 20B0193-03 B 02

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0105 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0014 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 56.5 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-7A
20B0193-03 (Water)

Wet Chemistry

Method: SM 2540 C-97

Sampled: 02/12/2020 11:20

Instrument: BAL2 Analyst: KLE

Analyzed: 02/16/2020 17:36

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 20B0193-03

Preparation Batch: BIB0376

Sample Size: 200 mL

Prepared: 02/16/2020

Final Volume: 200 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 5 | 5 | 259 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-6A
20B0193-04 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 12:50 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 21:33 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-04 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-6A
20B0193-04 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 12:50 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 21:33 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-04 B 01 |
| Preparation Batch: BIB0472 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 2.12 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-6A
20B0193-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010C Sampled: 02/12/2020 12:50
Instrument: ICP2 Analyst: TCH Analyzed: 02/27/2020 11:35

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 20B0193-04 B 02
Preparation Batch: BIB0589 Sample Size: 25 mL
Prepared: 02/26/2020 Final Volume: 25 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0144 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0023 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 122 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-6A
20B0193-04 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/12/2020 12:50 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-04 |
| | Sample Size: 100 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 379 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-5A
20B0193-05 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 14:10 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 21:37 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-05 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | 0.145 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-5A
20B0193-05 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 14:10 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 21:37 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-05 B 01 |
| Preparation Batch: BIB0472 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 6.31 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-5A
20B0193-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010C Sampled: 02/12/2020 14:10
Instrument: ICP2 Analyst: TCH Analyzed: 02/27/2020 12:16

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 20B0193-05 B 02
Preparation Batch: BIB0589 Sample Size: 25 mL
Prepared: 02/26/2020 Final Volume: 25 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0436 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0015 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 183 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-5A
20B0193-05 (Water)

Wet Chemistry

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

Sampled: 02/12/2020 14:10
Analyzed: 02/16/2020 17:36

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BIB0376
Prepared: 02/16/2020

Sample Size: 100 mL
Final Volume: 200 mL

Extract ID: 20B0193-05

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 463 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Infiltration #1
20B0193-06 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 14:45 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 21:40 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-06 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | 3.96 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Infiltration #1
20B0193-06 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|---------------------------------|--|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 14:45 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 21:40 |
| Sample Preparation: | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix |
| | Preparation Batch: BIB0472 |
| | Prepared: 02/20/2020 |
| | Sample Size: 25 mL |
| | Final Volume: 25 mL |
| | Extract ID: 20B0193-06 B 01 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 14.3 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Infiltration #1
20B0193-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010C Sampled: 02/12/2020 14:45
Instrument: ICP2 Analyst: TCH Analyzed: 02/27/2020 12:21

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 20B0193-06 B 02
Preparation Batch: BIB0589 Sample Size: 25 mL
Prepared: 02/26/2020 Final Volume: 25 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0234 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0279 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 243 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

Infiltration #1
20B0193-06 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/12/2020 14:45 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-06 |
| | Sample Size: 75 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 13 | 13 | 836 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Infiltration #2
20B0193-07 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 14:50 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 21:44 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-07 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | 3.78 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Infiltration #2
20B0193-07 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|---------------------------------|--|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 14:50 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 21:44 |
| Sample Preparation: | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix |
| | Preparation Batch: BIB0472 |
| | Prepared: 02/20/2020 |
| | Sample Size: 25 mL |
| | Final Volume: 25 mL |
| | Extract ID: 20B0193-07 B 01 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 14.8 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Infiltration #2
20B0193-07 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/12/2020 14:50 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0589 | Final Volume: 25 mL | Analyzed: 02/27/2020 12:25 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-07 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0207 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0282 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 245 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Infiltration #2
20B0193-07 (Water)

Wet Chemistry

Method: SM 2540 C-97 Sampled: 02/12/2020 14:50
Instrument: BAL2 Analyst: KLE Analyzed: 02/16/2020 17:36

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 20B0193-07
Preparation Batch: BIB0376 Sample Size: 75 mL
Prepared: 02/16/2020 Final Volume: 200 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 13 | 13 | 819 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

EB
20B0193-08 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 15:10 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 21:48 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-08 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

EB
20B0193-08 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 15:10 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 21:48 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-08 B 01 |
| Preparation Batch: BIB0472 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | ND | ug/L | U |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

EB
20B0193-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010C Sampled: 02/12/2020 15:10
Instrument: ICP2 Analyst: TCH Analyzed: 02/27/2020 12:30
Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 20B0193-08 B 02
Preparation Batch: BIB0589 Sample Size: 25 mL
Prepared: 02/26/2020 Final Volume: 25 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0024 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | ND | mg/L | U |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 0.0859 | mg/L | J |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

EB
20B0193-08 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/12/2020 15:10 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-08 |
| | Sample Size: 200 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|-----------|-------|-------|
| Dissolved Solids | | 1 | 5 | 5 | 14 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-3A
20B0193-09 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 16:15 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 21:52 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-09 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-3A
20B0193-09 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 16:15 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 21:52 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-09 B 01 |
| Preparation Batch: BIB0472 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 1.86 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-3A
20B0193-09 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/12/2020 16:15 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0589 | Final Volume: 25 mL | Analyzed: 02/27/2020 13:21 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-09 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|--------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.257 | mg/L | |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.476 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 74.2 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-3A
20B0193-09 (Water)

Wet Chemistry

Method: SM 2540 C-97 Sampled: 02/12/2020 16:15
Instrument: BAL2 Analyst: KLE Analyzed: 02/16/2020 17:36

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 20B0193-09
Preparation Batch: BIB0376 Sample Size: 100 mL
Prepared: 02/16/2020 Final Volume: 200 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 287 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

Weir
20B0193-10 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/12/2020 16:30 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 19:56 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-10 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

Weir
20B0193-10 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/12/2020 16:30 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 19:56 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-10 B 01 |
| Preparation Batch: BIB0472 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 4.81 | ug/L | |



| | | |
|---|--|--------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|--------------------------------|

Weir
20B0193-10 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/12/2020 16:30 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0589 | Final Volume: 25 mL | Analyzed: 02/27/2020 12:38 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-10 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0201 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0106 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 86.9 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

Weir
20B0193-10 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/12/2020 16:30 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-10 |
| | Sample Size: 100 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 348 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Still Well
20B0193-11 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 09:10 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 21:56 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-11 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | 6.08 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

Still Well
20B0193-11 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 09:10 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 21:56 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-11 B 01 |
| Preparation Batch: BIB0472 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 48.6 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Still Well
20B0193-11 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|-------------------------------|-----------------------------------|
| Method: EPA 6010C | Sampled: 02/13/2020 09:10 |
| Instrument: ICP2 Analyst: TCH | Analyzed: 02/27/2020 15:09 |
| Sample Preparation: | Preparation Method: WMN (No Prep) |
| | Preparation Batch: BIB0589 |
| | Prepared: 02/26/2020 |
| | Sample Size: 25 mL |
| | Final Volume: 25 mL |
| | Extract ID: 20B0193-11 B 02 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 2 | 0.0026 | 0.100 | 0.0136 | mg/L | J, D |
| Manganese, Dissolved | 7439-96-5 | 2 | 0.0007 | 0.0020 | 0.0031 | mg/L | D |
| Potassium, Dissolved | 7440-09-7 | 2 | 0.104 | 1.00 | 490 | mg/L | D |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

Still Well
20B0193-11 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/13/2020 09:10 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-11 |
| | Sample Size: 10 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Dissolved Solids | | 1 | 100 | 100 | 1630 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

South Pond
20B0193-12 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 09:35 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/21/2020 01:06 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-12 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 2 | 0.136 | 0.200 | 13.0 | ug/L | D |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

South Pond
20B0193-12 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 09:35 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/21/2020 01:06 |
| Sample Preparation: | Extract ID: 20B0193-12 B 01 |
| Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | |
| Preparation Batch: BIB0472 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | 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 | 28.1 | ug/L | D |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

South Pond
20B0193-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010C Sampled: 02/13/2020 09:35
Instrument: ICP2 Analyst: TCH Analyzed: 02/27/2020 14:55

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 20B0193-12 B 02
Preparation Batch: BIB0590 Sample Size: 25 mL
Prepared: 02/26/2020 Final Volume: 25 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 5 | 0.0065 | 0.250 | 0.466 | mg/L | D |
| Manganese, Dissolved | 7439-96-5 | 5 | 0.0017 | 0.0050 | 0.0680 | mg/L | D |
| Potassium, Dissolved | 7440-09-7 | 5 | 0.260 | 2.50 | 348 | mg/L | D |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

South Pond
20B0193-12 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/13/2020 09:35 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-12 |
| | Sample Size: 75 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 13 | 13 | 927 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-1LDA
20B0193-13 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 10:35 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/20/2020 22:01 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-13 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-1LDA
20B0193-13 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 10:35 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 22:01 |
| Sample Preparation: | Extract ID: 20B0193-13 B 01 |
| Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | |
| Preparation Batch: BIB0472 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 8.82 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-1LDA
20B0193-13 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/13/2020 10:35 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0590 | Final Volume: 25 mL | Analyzed: 02/27/2020 13:42 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-13 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.231 | mg/L | |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0428 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 1.05 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-1LDA
20B0193-13 (Water)

Wet Chemistry

| | | | |
|-------------------------------|--------------------------------------|----------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sample Size: 200 mL | Sampled: 02/13/2020 10:35 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Final Volume: 200 mL | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | | Extract ID: 20B0193-13 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 5 | 5 | 207 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-7LDA
20B0193-14 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 10:40 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0472 | Analyzed: 02/21/2020 00:13 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-14 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-7LDA
20B0193-14 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 10:40 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/21/2020 00:13 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-14 B 01 |
| Preparation Batch: BIB0472 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 8.53 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-7LDA
20B0193-14 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/13/2020 10:40 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0590 | Final Volume: 25 mL | Analyzed: 02/27/2020 13:33 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-14 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.222 | mg/L | |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0429 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 1.05 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-7LDA
20B0193-14 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/13/2020 10:40 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-14 |
| | Sample Size: 200 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 5 | 5 | 214 | mg/L | |



Golder Associates
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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-2LDA
20B0193-15 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 11:25 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0473 | Analyzed: 02/20/2020 20:51 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-15 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



Golder Associates
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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-2LDA
20B0193-15 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 11:25 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/20/2020 20:51 |
| Sample Preparation: | Extract ID: 20B0193-15 B 01 |
| Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | |
| Preparation Batch: BIB0473 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 5.45 | ug/L | |



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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-2LDA
20B0193-15 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010C Sampled: 02/13/2020 11:25
Instrument: ICP2 Analyst: TCH Analyzed: 02/27/2020 14:14

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 20B0193-15 B 02
Preparation Batch: BIB0590 Sample Size: 25 mL
Prepared: 02/26/2020 Final Volume: 25 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.349 | mg/L | |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0180 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 1.15 | mg/L | |



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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-2LDA
20B0193-15 (Water)

Wet Chemistry

Method: SM 2540 C-97

Sampled: 02/13/2020 11:25

Instrument: BAL2 Analyst: KLE

Analyzed: 02/16/2020 17:36

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 20B0193-15

Preparation Batch: BIB0376

Sample Size: 200 mL

Prepared: 02/16/2020

Final Volume: 200 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 5 | 5 | 185 | mg/L | |



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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-3LDA
20B0193-16 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 12:25 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0473 | Analyzed: 02/21/2020 00:18 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-16 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-3LDA
20B0193-16 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 12:25 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/21/2020 00:18 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-16 B 01 |
| Preparation Batch: BIB0473 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 1.69 | ug/L | |



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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-3LDA
20B0193-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010C
Instrument: ICP2 Analyst: TCH

Sampled: 02/13/2020 12:25

Analyzed: 02/27/2020 14:19

Sample Preparation: Preparation Method: WMN (No Prep) Sample Size: 25 mL
Preparation Batch: BIB0590 Final Volume: 25 mL
Prepared: 02/26/2020 Extract ID: 20B0193-16 B 02

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0156 | mg/L | J |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0062 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 0.915 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-3LDA
20B0193-16 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/13/2020 12:25 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-16 |
| | Sample Size: 200 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 5 | 5 | 140 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

Interceptor Trench
20B0193-17 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/13/2020 12:35 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-17 |
| | Sample Size: 100 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 306 | mg/L | |



Golder Associates
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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-4A
20B0193-18 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 13:30 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0473 | Analyzed: 02/21/2020 00:36 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-18 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-4A
20B0193-18 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 13:30 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/21/2020 00:36 |
| Sample Preparation: | Extract ID: 20B0193-18 B 01 |
| Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | |
| Preparation Batch: BIB0473 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|--------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 0.176 | ug/L | J |



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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MW-4A
20B0193-18 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|-------------------------------|-----------------------------------|-----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sampled: 02/13/2020 13:30 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0590 | Analyzed: 02/27/2020 14:23 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-18 B 02 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|---------------|-------|-------|
| Iron, Dissolved | 7439-89-6 | 1 | 0.0013 | 0.0500 | 0.0670 | mg/L | |
| Manganese, Dissolved | 7439-96-5 | 1 | 0.0003 | 0.0010 | 0.0723 | mg/L | |
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 0.859 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MW-4A
20B0193-18 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/13/2020 13:30 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-18 |
| | Sample Size: 200 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 5 | 5 | 283 | mg/L | |



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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-6DSP
20B0193-19 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 14:45 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0473 | Analyzed: 02/21/2020 00:40 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-19 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-6DSP
20B0193-19 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 14:45 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/21/2020 00:40 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-19 B 01 |
| Preparation Batch: BIB0473 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 1.40 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-6DSP
20B0193-19 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/13/2020 14:45 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0590 | Final Volume: 25 mL | Analyzed: 02/27/2020 14:27 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-19 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 1.33 | mg/L | |



Golder Associates
18300 NE Union Hill Road Suite 200
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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-6DSP
20B0193-19 (Water)

Wet Chemistry

Method: SM 2540 C-97

Sampled: 02/13/2020 14:45

Instrument: BAL2 Analyst: KLE

Analyzed: 02/16/2020 17:36

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 20B0193-19

Preparation Batch: BIB0376

Sample Size: 100 mL

Prepared: 02/16/2020

Final Volume: 200 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 313 | mg/L | |



Golder Associates
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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-9DSP
20B0193-20 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 14:50 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0473 | Analyzed: 02/21/2020 00:44 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-20 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-9DSP
20B0193-20 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 14:50 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/21/2020 00:44 |
| Sample Preparation: | Extract ID: 20B0193-20 B 01 |
| Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | |
| Preparation Batch: BIB0473 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 1.36 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-9DSP
20B0193-20 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/13/2020 14:50 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0590 | Final Volume: 25 mL | Analyzed: 02/27/2020 14:32 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-20 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 1.31 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-9DSP
20B0193-20 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/13/2020 14:50 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0376 | Analyzed: 02/16/2020 17:36 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-20 |
| | Sample Size: 100 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 313 | mg/L | |



Golder Associates
18300 NE Union Hill Road Suite 200
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Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Portal
20B0193-21 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/13/2020 15:50 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0473 | Analyzed: 02/21/2020 00:47 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-21 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

Portal
20B0193-21 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/13/2020 15:50 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/21/2020 00:47 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0193-21 B 01 |
| Preparation Batch: BIB0473 | Sample Size: 25 mL |
| Prepared: 02/20/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 3.65 | ug/L | |



| | | |
|---|--|---------------------------------------|
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|---|--|---------------------------------------|

Portal
20B0193-21 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/13/2020 15:50 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0590 | Final Volume: 25 mL | Analyzed: 02/27/2020 14:37 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-21 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 16.7 | mg/L | |



| | | |
|---|--|---------------------------------------|
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|---|--|---------------------------------------|

Portal
20B0193-21 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/13/2020 15:50 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0377 | Analyzed: 02/16/2020 17:48 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-21 |
| | Sample Size: 100 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 259 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-1SDSP
20B0193-22 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/14/2020 08:25 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0473 | Analyzed: 02/21/2020 00:51 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-22 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-1SDSP
20B0193-22 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|---------------------------------|--|
| Method: EPA 200.8 UCT-KED | Sampled: 02/14/2020 08:25 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/21/2020 00:51 |
| Sample Preparation: | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix |
| | Preparation Batch: BIB0473 |
| | Prepared: 02/20/2020 |
| | Sample Size: 25 mL |
| | Final Volume: 25 mL |
| | Extract ID: 20B0193-22 B 01 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 18.3 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-1SDSP
20B0193-22 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|-------------------------------|-----------------------------------|-----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sampled: 02/14/2020 08:25 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0590 | Analyzed: 02/27/2020 14:41 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-22 B 02 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 6.36 | mg/L | |



Golder Associates
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Redmond WA, 98052-3333

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-1SDSP
20B0193-22 (Water)

Wet Chemistry

Method: SM 2540 C-97 Sampled: 02/14/2020 08:25
Instrument: BAL2 Analyst: KLE Analyzed: 02/16/2020 17:48

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 20B0193-22
Preparation Batch: BIB0377 Sample Size: 75 mL
Prepared: 02/16/2020 Final Volume: 200 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Dissolved Solids | | 1 | 13 | 13 | 1230 | mg/L | |



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Redmond WA, 98052-3333

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-1DDSP
20B0193-23 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/14/2020 09:05 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0473 | Analyzed: 02/21/2020 00:55 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-23 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



Golder Associates
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Redmond WA, 98052-3333

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-1DDSP
20B0193-23 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED
Instrument: ICPMS1 Analyst: MCB
Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BIB0473
Prepared: 02/20/2020

Sampled: 02/14/2020 09:05
Analyzed: 02/21/2020 00:55
Extract ID: 20B0193-23 B 01

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 4.56 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-1DDSP
20B0193-23 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/14/2020 09:05 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0590 | Final Volume: 25 mL | Analyzed: 02/27/2020 14:46 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-23 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 4.07 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-1DDSP
20B0193-23 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/14/2020 09:05 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0377 | Analyzed: 02/16/2020 17:48 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-23 |
| | Sample Size: 100 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 717 | mg/L | |



Golder Associates
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Redmond WA, 98052-3333

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-5DSP
20B0193-24 (Water)

Metals and Metallic Compounds (dissolved)

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/14/2020 10:00 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0473 | Analyzed: 02/21/2020 01:00 |
| Sample Preparation: | Prepared: 02/20/2020 | Extract ID: 20B0193-24 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|-----------------|------------|----------|-----------------|-----------------|--------|-------|-------|
| Lead, Dissolved | 7439-92-1 | 1 | 0.0680 | 0.100 | ND | ug/L | U |



Golder Associates
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Redmond WA, 98052-3333

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

MWB-5DSP
20B0193-24 (Water)

Metals and Metallic Compounds (dissolved)

| | |
|---------------------------------|--|
| Method: EPA 200.8 UCT-KED | Sampled: 02/14/2020 10:00 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/21/2020 01:00 |
| Sample Preparation: | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix |
| | Preparation Batch: BIB0473 |
| | Sample Size: 25 mL |
| | Final Volume: 25 mL |
| | Extract ID: 20B0193-24 B 01 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|--------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic, Dissolved | 7440-38-2 | 1 | 0.0220 | 0.200 | 4.31 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-5DSP
20B0193-24 (Water)

Metals and Metallic Compounds (dissolved)

| | | | |
|-------------------------------|-----------------------------------|-----------------------------|----------------------------|
| Method: EPA 6010C | Preparation Method: WMN (No Prep) | Sample Size: 25 mL | Sampled: 02/14/2020 10:00 |
| Instrument: ICP2 Analyst: TCH | Preparation Batch: BIB0590 | Final Volume: 25 mL | Analyzed: 02/27/2020 14:50 |
| Sample Preparation: | Prepared: 02/26/2020 | Extract ID: 20B0193-24 B 02 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|----------------------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Potassium, Dissolved | 7440-09-7 | 1 | 0.0520 | 0.500 | 2.65 | mg/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|---------------------------------------|

MWB-5DSP
20B0193-24 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 C-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/14/2020 10:00 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0377 | Analyzed: 02/16/2020 17:48 |
| Sample Preparation: | Prepared: 02/16/2020 | Extract ID: 20B0193-24 |
| | Sample Size: 100 mL | |
| | Final Volume: 200 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Dissolved Solids | | 1 | 10 | 10 | 524 | mg/L | |



Golder Associates
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Redmond WA, 98052-3333

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BIB0472 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

| QC Sample/Analyte | Isotope | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|-----------------------------------|---------|--------|-----------------|-----------------|-------|--|---------------|------|-------------|------|-----------|-------|
| Blank (BIB0472-BLK1) | | | | | | Prepared: 20-Feb-2020 Analyzed: 20-Feb-2020 19:31 | | | | | | |
| Lead, Dissolved | 208 | ND | 0.0680 | 0.100 | ug/L | | | | | | | U |
| Arsenic, Dissolved | 75a | ND | 0.0220 | 0.200 | ug/L | | | | | | | U |
| LCS (BIB0472-BS1) | | | | | | Prepared: 20-Feb-2020 Analyzed: 20-Feb-2020 19:35 | | | | | | |
| Lead, Dissolved | 208 | 23.7 | 0.0680 | 0.100 | ug/L | 25.0 | | 95.0 | 80-120 | | | |
| Arsenic, Dissolved | 75a | 24.0 | 0.0220 | 0.200 | ug/L | 25.0 | | 95.9 | 80-120 | | | |
| Duplicate (BIB0472-DUP1) | | | | | | Source: 20B0193-10 Prepared: 20-Feb-2020 Analyzed: 20-Feb-2020 20:01 | | | | | | |
| Lead, Dissolved | 208 | ND | 0.0680 | 0.100 | ug/L | | ND | | | | | U |
| Arsenic, Dissolved | 75a | 4.75 | 0.0220 | 0.200 | ug/L | | 4.81 | | | 1.09 | 20 | |
| Matrix Spike (BIB0472-MS1) | | | | | | Source: 20B0193-10 Prepared: 20-Feb-2020 Analyzed: 20-Feb-2020 20:06 | | | | | | |
| Lead, Dissolved | 208 | 23.6 | 0.0680 | 0.100 | ug/L | 25.0 | ND | 94.6 | 75-125 | | | |
| Arsenic, Dissolved | 75a | 29.5 | 0.0220 | 0.200 | ug/L | 25.0 | 4.81 | 98.9 | 75-125 | | | |

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



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BIB0473 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

| QC Sample/Analyte | Isotope | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---------|--------|-----------------|-----------------|-------|--|---------------|------|-------------|------|-----------|-------|
| Blank (BIB0473-BLK1) | | | | | | Prepared: 20-Feb-2020 Analyzed: 20-Feb-2020 19:39 | | | | | | |
| Lead, Dissolved | 208 | ND | 0.0680 | 0.100 | ug/L | | | | | | | U |
| Arsenic, Dissolved | 75a | ND | 0.0220 | 0.200 | ug/L | | | | | | | U |
| LCS (BIB0473-BS1) | | | | | | Prepared: 20-Feb-2020 Analyzed: 20-Feb-2020 19:43 | | | | | | |
| Lead, Dissolved | 208 | 25.0 | 0.0680 | 0.100 | ug/L | 25.0 | | 99.9 | 80-120 | | | |
| Arsenic, Dissolved | 75a | 24.2 | 0.0220 | 0.200 | ug/L | 25.0 | | 96.8 | 80-120 | | | |
| Duplicate (BIB0473-DUP1) | | | | | | Source: 20B0193-15 Prepared: 20-Feb-2020 Analyzed: 20-Feb-2020 20:55 | | | | | | |
| Lead, Dissolved | 208 | ND | 0.0680 | 0.100 | ug/L | | ND | | | | | U |
| Arsenic, Dissolved | 75a | 5.29 | 0.0220 | 0.200 | ug/L | | 5.45 | | | 2.98 | 20 | |
| Matrix Spike (BIB0473-MS1) | | | | | | Source: 20B0193-15 Prepared: 20-Feb-2020 Analyzed: 20-Feb-2020 20:59 | | | | | | |
| Lead, Dissolved | 208 | 23.7 | 0.0680 | 0.100 | ug/L | 25.0 | ND | 94.6 | 75-125 | | | |
| Arsenic, Dissolved | 75a | 29.4 | 0.0220 | 0.200 | ug/L | 25.0 | 5.45 | 95.8 | 75-125 | | | |
| Recovery limits for target analytes in MS/MSD QC samples are advisory only. | | | | | | | | | | | | |
| Matrix Spike Dup (BIB0473-MSD1) | | | | | | Source: 20B0193-15 Prepared: 20-Feb-2020 Analyzed: 20-Feb-2020 21:05 | | | | | | |
| Lead, Dissolved | 208 | 23.6 | 0.0680 | 0.100 | ug/L | 25.0 | ND | 94.2 | 75-125 | 0.42 | 20 | |
| Arsenic, Dissolved | 75a | 29.6 | 0.0220 | 0.200 | ug/L | 25.0 | 5.45 | 96.5 | 75-125 | 0.52 | 20 | |

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



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BIB0589 - WMN (No Prep)

Instrument: ICP2 Analyst: TCH

| QC Sample/Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|--------|-----------------|-----------------|-------|-------------|--|------|-------------|------|-----------|-------|
| Blank (BIB0589-BLK1) | | | | | | | | | | | |
| | | | | | | Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 12:12 | | | | | |
| Iron, Dissolved | ND | 0.0013 | 0.0500 | mg/L | | | | | | | U |
| Manganese, Dissolved | ND | 0.0003 | 0.0010 | mg/L | | | | | | | U |
| Potassium, Dissolved | ND | 0.0520 | 0.500 | mg/L | | | | | | | U |
| LCS (BIB0589-BS1) | | | | | | | | | | | |
| | | | | | | Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 12:54 | | | | | |
| Iron, Dissolved | 2.10 | 0.0013 | 0.0500 | mg/L | 2.00 | | 105 | 80-120 | | | |
| Manganese, Dissolved | 0.487 | 0.0003 | 0.0010 | mg/L | 0.500 | | 97.4 | 80-120 | | | |
| Potassium, Dissolved | 10.1 | 0.0520 | 0.500 | mg/L | 10.0 | | 101 | 80-120 | | | |
| Duplicate (BIB0589-DUP1) | | | | | | | | | | | |
| | | | | | | Source: 20B0193-10 Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 12:34 | | | | | |
| Iron, Dissolved | 0.0218 | 0.0013 | 0.0500 | mg/L | | 0.0201 | | | 7.82 | 20 | J |
| Manganese, Dissolved | 0.0106 | 0.0003 | 0.0010 | mg/L | | 0.0106 | | | 0.11 | 20 | |
| Potassium, Dissolved | 86.5 | 0.0520 | 0.500 | mg/L | | 86.9 | | | 0.37 | 20 | |
| Matrix Spike (BIB0589-MS1) | | | | | | | | | | | |
| | | | | | | Source: 20B0193-10 Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 12:43 | | | | | |
| Iron, Dissolved | 2.09 | 0.0013 | 0.0500 | mg/L | 2.00 | 0.0201 | 104 | 75-125 | | | |
| Manganese, Dissolved | 0.497 | 0.0003 | 0.0010 | mg/L | 0.500 | 0.0106 | 97.4 | 75-125 | | | |
| Potassium, Dissolved | 96.6 | 0.0520 | 0.500 | mg/L | 10.0 | 86.9 | 97.0 | 75-125 | | | |
| Recovery limits for target analytes in MS/MSD QC samples are advisory only. | | | | | | | | | | | |
| Matrix Spike Dup (BIB0589-MSD1) | | | | | | | | | | | |
| | | | | | | Source: 20B0193-10 Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 12:49 | | | | | |
| Iron, Dissolved | 2.08 | 0.0013 | 0.0500 | mg/L | 2.00 | 0.0201 | 103 | 75-125 | 0.56 | 20 | |
| Manganese, Dissolved | 0.488 | 0.0003 | 0.0010 | mg/L | 0.500 | 0.0106 | 95.5 | 75-125 | 1.90 | 20 | |
| Potassium, Dissolved | 95.8 | 0.0520 | 0.500 | mg/L | 10.0 | 86.9 | 89.8 | 75-125 | 0.75 | 20 | |
| Recovery limits for target analytes in MS/MSD QC samples are advisory only. | | | | | | | | | | | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BIB0590 - WMN (No Prep)

Instrument: ICP2 Analyst: TCH

| QC Sample/Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|-----------------------------|--------|-----------------|-----------------|-------|-------------|---|------|-------------|-----|-----------|-------|
| Blank (BIB0590-BLK1) | | | | | | Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 13:13 | | | | | |
| Iron, Dissolved | 0.0013 | 0.0013 | 0.0500 | mg/L | | | | | | | J |
| Manganese, Dissolved | ND | 0.0003 | 0.0010 | mg/L | | | | | | | U |
| Potassium, Dissolved | ND | 0.0520 | 0.500 | mg/L | | | | | | | U |

| | | | | | | | | | | | |
|--------------------------|-------|--------|--------|------|-------|---|------|--------|--|--|--|
| LCS (BIB0590-BS1) | | | | | | Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 13:58 | | | | | |
| Iron, Dissolved | 2.12 | 0.0013 | 0.0500 | mg/L | 2.00 | | 106 | 80-120 | | | |
| Manganese, Dissolved | 0.488 | 0.0003 | 0.0010 | mg/L | 0.500 | | 97.6 | 80-120 | | | |
| Potassium, Dissolved | 10.2 | 0.0520 | 0.500 | mg/L | 10.0 | | 102 | 80-120 | | | |

| | | | | | | | | | | | |
|---------------------------------|--------|--------|--------|------|--|--|--|--|------|----|--|
| Duplicate (BIB0590-DUP1) | | | | | | Source: 20B0193-13 Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 13:37 | | | | | |
| Iron, Dissolved | 0.225 | 0.0013 | 0.0500 | mg/L | | 0.231 | | | 2.46 | 20 | |
| Manganese, Dissolved | 0.0424 | 0.0003 | 0.0010 | mg/L | | 0.0428 | | | 0.99 | 20 | |
| Potassium, Dissolved | 1.04 | 0.0520 | 0.500 | mg/L | | 1.05 | | | 0.40 | 20 | |

| | | | | | | | | | | | |
|-----------------------------------|-------|--------|--------|------|-------|--|------|--------|--|--|--|
| Matrix Spike (BIB0590-MS1) | | | | | | Source: 20B0193-13 Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 13:46 | | | | | |
| Iron, Dissolved | 2.35 | 0.0013 | 0.0500 | mg/L | 2.00 | 0.231 | 106 | 75-125 | | | |
| Manganese, Dissolved | 0.527 | 0.0003 | 0.0010 | mg/L | 0.500 | 0.0428 | 96.8 | 75-125 | | | |
| Potassium, Dissolved | 11.3 | 0.0520 | 0.500 | mg/L | 10.0 | 1.05 | 103 | 75-125 | | | |

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

| | | | | | | | | | | | |
|--|-------|--------|--------|------|-------|--|------|--------|------|----|--|
| Matrix Spike Dup (BIB0590-MSD1) | | | | | | Source: 20B0193-13 Prepared: 26-Feb-2020 Analyzed: 27-Feb-2020 13:52 | | | | | |
| Iron, Dissolved | 2.30 | 0.0013 | 0.0500 | mg/L | 2.00 | 0.231 | 103 | 75-125 | 2.41 | 20 | |
| Manganese, Dissolved | 0.520 | 0.0003 | 0.0010 | mg/L | 0.500 | 0.0428 | 95.5 | 75-125 | 1.32 | 20 | |
| Potassium, Dissolved | 11.0 | 0.0520 | 0.500 | mg/L | 10.0 | 1.05 | 99.9 | 75-125 | 2.36 | 20 | |

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



| | | |
|---|--|--------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|--------------------------------|

Wet Chemistry - Quality Control

Batch BIB0376 - No Prep Wet Chem

Instrument: BAL2 Analyst: KLE

| QC Sample/Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------------------------------|--------|-----------------|-----------------|-------|-------------|--|------|-------------|------|-----------|-------|
| Blank (BIB0376-BLK1) | | | | | | Prepared: 16-Feb-2020 Analyzed: 16-Feb-2020 17:36 | | | | | |
| Dissolved Solids | ND | 5 | 5 | mg/L | | | | | | | U |
| LCS (BIB0376-BS1) | | | | | | Prepared: 16-Feb-2020 Analyzed: 16-Feb-2020 17:36 | | | | | |
| Dissolved Solids | 498 | 10 | 10 | mg/L | 500 | | 99.6 | 90-110 | | | |
| Duplicate (BIB0376-DUP1) | | | | | | Source: 20B0193-10 Prepared: 16-Feb-2020 Analyzed: 16-Feb-2020 17:36 | | | | | |
| Dissolved Solids | 352 | 10 | 10 | mg/L | | 348 | | | 1.14 | 20 | |



| | | |
|---|--|--------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 28-Feb-2020 14:01 |
|---|--|--------------------------------|

Wet Chemistry - Quality Control

Batch BIB0377 - No Prep Wet Chem

Instrument: BAL2 Analyst: KLE

| QC Sample/Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------------------------------|--------|-----------------|-----------------|-------|-------------|--|------|-------------|-------|-----------|-------|
| Blank (BIB0377-BLK1) | | | | | | Prepared: 16-Feb-2020 Analyzed: 16-Feb-2020 17:48 | | | | | |
| Dissolved Solids | ND | 5 | 5 | mg/L | | | | | | | U |
| LCS (BIB0377-BS1) | | | | | | Prepared: 16-Feb-2020 Analyzed: 16-Feb-2020 17:48 | | | | | |
| Dissolved Solids | 498 | 10 | 10 | mg/L | 500 | | 99.6 | 90-110 | | | |
| Duplicate (BIB0377-DUP1) | | | | | | Source: 20B0193-21 Prepared: 16-Feb-2020 Analyzed: 16-Feb-2020 17:48 | | | | | |
| Dissolved Solids | 312 | 10 | 10 | mg/L | | 259 | | | 18.60 | 20 | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Certified Analyses included in this Report

| Analyte | Certifications |
|-----------------------------------|----------------------------|
| EPA 200.8 in Water | |
| Lead-208 | NELAP,WADOE,WA-DW,DoD-ELAP |
| EPA 200.8 UCT-KED in Water | |
| Arsenic-75a | NELAP,WADOE,WA-DW,DoD-ELAP |
| EPA 6010C in Water | |
| Iron | WADOE,NELAP,DoD-ELAP |
| Potassium | WADOE,NELAP,DoD-ELAP |
| Manganese | WADOE,NELAP,DoD-ELAP |
| SM 2540 C-97 in Water | |
| Dissolved Solids | DoD-ELAP,WADOE,WA-DW,NELAP |

| Code | Description | Number | Expires |
|----------|--|--------------|------------|
| ADEC | Alaska Dept of Environmental Conservation | 17-015 | 01/31/2021 |
| CALAP | California Department of Public Health CAELAP | 2748 | 06/30/2019 |
| DoD-ELAP | DoD-Environmental Laboratory Accreditation Program | 66169 | 01/01/2021 |
| NELAP | ORELAP - Oregon Laboratory Accreditation Program | WA100006-012 | 05/12/2020 |
| WADOE | WA Dept of Ecology | C558 | 06/30/2019 |
| WA-DW | Ecology - Drinking Water | C558 | 06/30/2019 |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
28-Feb-2020 14:01

Notes and Definitions

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

DATA VALIDATION CHECKLIST

| | |
|----------------------------------|---|
| Project Name: | Ravensdale Project |
| Project Number: | 1520304.420 |
| Sample Identification(s): | Tank-Influent, Tank-Effluent, As2-Effluent |
| Sample Date(s): | 2/20/2020 |
| Sample Team: | Turner Doggett, Joseph Xi, Golder Associates |
| Sample Matrix: | Aqueous |
| Analyzing Laboratory: | Analytical Resources, Inc. – Tukwila, WA |
| Analyses: | TSS (SM 2540 D-97), Metals (EPA 6010C, 200.8): Total As, Pb |
| Laboratory Report No.: | 20B0268 |

FIELD DATA PACKAGE DOCUMENTATION

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

QC – quality control

COMMENTS:

Performance was acceptable, with no exceptions.

**ANALYTICAL DATA PACKAGE DOCUMENTATION
GENERAL INFORMATION**

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

QA – quality assurance

COMMENTS:

Performance was acceptable, with no exceptions.

INORGANIC ANALYSES

| Metals (EPA 6010/6020) | Reported | | Performance Acceptable | | Not Required |
|---------------------------------------|----------|-----|------------------------|-----|--------------|
| | NO | YES | NO | YES | |
| 1. Holding times | | X | | X | |
| 2. Reporting limits | | X | | X | |
| 3. Blanks | | | | | |
| a. Method blanks | | X | | X | |
| b. Equipment rinsate blanks | X | | | | X |
| 4. Laboratory control sample (LCS) %R | | X | | X | |
| 5. Matrix spike (MS) %R | X | | | | X |
| 6. LCS duplicate (LCSD) %R | X | | | | X |
| 7. MS duplicate (MSD) %R | X | | | | X |
| 8. MS / MSD RPD | X | | | | X |
| 9. LCS / LCSD RPD | X | | | | X |
| 10. Laboratory Duplicate RPD | X | | | | X |
| 11. Field duplicate comparison | X | | | | X |

%R – percent recovery RPD – relative percent difference

COMMENTS:

Performance was acceptable, with no exceptions.

- The laboratory did not provide LCSD, MS, MSD, or laboratory duplicate results. These QC elements are not required because sufficient precision and accuracy data was provided by the lab with LCS analyses.

GENERAL WET CHEMISTRY

| TDS (EPA 160.1) | Reported | | Performance Acceptable | | Not Required |
|---------------------------------------|----------|-----|------------------------|-----|--------------|
| | NO | YES | NO | YES | |
| 1. Holding times | | X | | X | |
| 2. Reporting limits | | X | | X | |
| 3. Blanks | | | | | |
| a. Method blanks | | X | | X | |
| b. Equipment rinsate blanks | X | | | | X |
| 4. Laboratory control sample (LCS) %R | | X | | X | |
| 5. Matrix spike (MS) %R | X | | | | X |
| 6. LCS duplicate (LCSD) %R | X | | | | X |
| 7. MS duplicate (MSD) %R | X | | | | X |
| 8. MS/MSD RPD | X | | | | X |
| 9. LCS/LCSD RPD | X | | | | X |
| 10. Laboratory Duplicate RPD | | X | | X | |
| 11. Field duplicate comparison | X | | | | X |

%R – percent recovery RPD – relative percent difference

COMMENTS:

Performance was acceptable, with no exceptions.

- The laboratory did not provide LCSD, MS, or MSD results. These QC elements are not required because sufficient precision and accuracy data was provided by the lab with laboratory duplicate and LCS analyses.

**DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES**

| | |
|----------------------------------|---|
| Project Name: | Ravensdale Project |
| Project Number: | 1520304.420 |
| Sample Identification(s): | Tank-Influent, Tank-Effluent, As2-Effluent |
| Sample Date(s): | 2/20/2020 |
| Sample Team: | Turner Doggett, Joseph Xi, Golder Associates |
| Sample Matrix: | Aqueous |
| Analyzing Laboratory: | Analytical Resources, Inc. – Tukwila, WA |
| Analyses: | TSS (SM 2540 D-97), Metals (EPA 6010C, 200.8): Total As, Pb |
| Laboratory Report No.: | 20B0268 |

| Sample ID | Analyte(s) | Old Result | Old Qualifier | New Result | New Qualifier | Reason(s) |
|-------------|--------------|------------|---------------|------------|---------------|--|
| All samples | All analytes | - | | | - | Remove any lab applied “D” and “HC” qualifiers |

| | |
|---------------------------------|------------------------------|
| VALIDATION PERFORMED BY: | Joseph Xi, Golder Associates |
| DATE: | April 17, 2020 |



Analytical Resources, Incorporated
Analytical Chemists and Consultants

27 February 2020

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

RE: Ravensdale

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

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

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

Associated Work Order(s)
20B0268

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 enclosed 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, Inc.



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



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

| | | |
|--|--|--|
| ARI Assigned Number: 2080268 | Turn-around Requested: Standard (10 Day) | Page: 1 of 1 |
| ARI Client Company: Golder | Phone: 425 883 0777 | Date: 2/20/20 Ice Present? Yes |
| Client Contact: Joseph Xi | No. of Coolers: 1 | Cooler Temps: 0.1 |

| Client Project Name: Reversdale | Analysis Requested | Notes/Comments | | | | | | | | | | | | | | | | | | | | |
|---|--|------------------------|---------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Client Project #: 1520304.419 | <table border="1"> <tr> <th>Total Suspended Solids</th> <th>Total Metals As, Pb</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> <tr> <td></td> </tr> </table> | Total Suspended Solids | Total Metals As, Pb | | | | | | | | | | | | | | | | | | | Report to MDL As MDL d. 00076mg/k Client specific to SD |
| Total Suspended Solids | Total Metals As, Pb | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Samplers: Joseph Xi, Turner Doggett | | | | | | | | | | | | | | | | | | | | | | |

| Sample ID | Date | Time | Matrix | No. Containers | Total Suspended Solids | Total Metals As, Pb | | | | | | | | |
|---------------|---------|------|--------|----------------|------------------------|---------------------|--|--|--|--|--|--|--|--|
| Tank-Influent | 2/20/20 | 1355 | W | 1 | X | | | | | | | | | |
| Tank-Effluent | 2/20/20 | 1400 | W | 2 | X | X | | | | | | | | |
| As2-Effluent | 2/20/20 | 1420 | W | 1 | | X | | | | | | | | |
| | | | | | | | | | | | | | | |
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| | | | | |
|--|---|--|---------------------------------|-----------------------------|
| Comments/Special Instructions Analyze in accordance with MSA between ARI and Golder. | Relinquished by: (Signature) Turner Doggett | Received by: (Signature) [Signature] | Relinquished by: (Signature) | Received by: (Signature) |
| | Printed Name: Turner Doggett | Printed Name: Kenny Dang | Printed Name: | Printed Name: |
| | Company: Golder | Company: ARI | Company: | Company: |
| | Date & Time: 2/21/20 1:03pm | Date & Time: 2/21/2020 1303 | Date & Time: | Date & Time: |

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

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



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
27-Feb-2020 11:56

ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---------------|---------------|--------|-------------------|-------------------|
| Tank-Influent | 20B0268-01 | Water | 20-Feb-2020 13:55 | 21-Feb-2020 13:03 |
| Tank-Effluent | 20B0268-02 | Water | 20-Feb-2020 14:00 | 21-Feb-2020 13:03 |
| As2-Effluent | 20B0268-03 | Water | 20-Feb-2020 14:20 | 21-Feb-2020 13:03 |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
27-Feb-2020 11:56

Work Order Case Narrative

Total Metals - EPA Method 200.8

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

Initial and continuing calibrations were within method requirements.

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

The LCS percent recoveries were within 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 LCS percent recoveries were within control limits.



WORK ORDER

20B0268

| | |
|----------------------------------|--------------------------------------|
| Client: Golder Associates | Project Manager: Kelly Bottem |
| Project: Ravensdale | Project Number: Ravensdale |

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

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

Date Due: 06-Mar-2020 18:00 (10 day TAT)

Received By: Kenny Dang

Date Received: 21-Feb-2020 13:03

Logged In By: Kenny Dang

Date Logged In: 21-Feb-2020 15:13

| | |
|---|--|
| Samples Received at: 0.1°C | |
| Intact, properly signed and dated custody seals attached to outside of cooler(s).....No | Custody papers included with the cooler..... Yes |
| Custody papers properly filled out (in, signed, analyses requested, etc).....Yes | Was a temperature blank included in the cooler..... No |
| Was sufficient ice used (if appropriate).....Yes | All bottles sealed in individual plastic bags..... No |
| All bottles arrived in good condition (unbroken).....Yes | All bottle labels complete and legible..... Yes |
| Number of containers listed on COC match number received.....Yes | Bottle labels and tags agree with COC..... Yes |
| Correct bottles used for the requested analyses.....Yes | All VOC vials free of air bubbles..... No |
| Analyses/bottles require preservation (attach preservation sheet excluding VOC).....Yes | Sufficient amount of sample sent in each bottle..... Yes |
| Sample split at ARI.....No | |

20B0268-01 Tank-Influent [Water] Sampled 20-Feb-2020 13:55

| | | | |
|--------------------------------------|------------|----|-----------|
| Solids, Total Suspended SM 2540 D-97 | 03/06/2020 | 10 | 2/27/2020 |
|--------------------------------------|------------|----|-----------|

20B0268-02 Tank-Effluent [Water] Sampled 20-Feb-2020 14:00

| | | | |
|--------------------------------------|------------|----|-----------|
| Met 200.8 - As UCT | 03/06/2020 | 10 | 8/18/2020 |
| Met 200.8 - Pb | 03/06/2020 | 10 | 8/18/2020 |
| Solids, Total Suspended SM 2540 D-97 | 03/06/2020 | 10 | 2/27/2020 |

20B0268-03 As2-Effluent [Water] Sampled 20-Feb-2020 14:20

| | | | |
|--------------------|------------|----|-----------|
| Met 200.8 - As UCT | 03/06/2020 | 10 | 8/18/2020 |
| Met 200.8 - Pb | 03/06/2020 | 10 | 8/18/2020 |

Preservation Confirmation

| Container ID | Container Type | pH |
|--------------|---------------------------|----------|
| 20B0268-01 A | HDPE NM, 1000 mL | |
| 20B0268-02 A | HDPE NM, 1000 mL | |
| 20B0268-02 B | HDPE NM, 500 mL, 1:1 HNO3 | < 2 Pass |
| 20B0268-03 A | HDPE NM, 500 mL, 1:1 HNO3 | < 2 Pass |

KD
Preservation Confirmed By

2/21/2020
Date



Cooler Receipt Form

ARI Client: Golden Assoc.

Project Name: Ravensdale

COC No(s): _____ (NA)

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

Assigned ARI Job No: 20B0268

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 1303 0.1
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO 5206

Cooler Accepted by: KO Date: 2/21/2020 Time: 1303

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: KO Date: 2/21/2020 Time: 1513 Labels checked by: KO

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

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---------------------|------------------|---------------------|------------------|
| | | | |
| | | | |
| | | | |

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 27-Feb-2020 11:56 |
|---|--|---------------------------------------|

Tank-Influent
20B0268-01 (Water)

Wet Chemistry

| | | | |
|-------------------------------|--------------------------------------|------------------------|----------------------------|
| Method: SM 2540 D-97 | Preparation Method: No Prep Wet Chem | Sample Size: 500 mL | Sampled: 02/20/2020 13:55 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0527 | Final Volume: 1000 mL | Analyzed: 02/23/2020 15:57 |
| Sample Preparation: | Prepared: 02/23/2020 | Extract ID: 20B0268-01 | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|-----------|-------|-------|
| Suspended Solids | | 1 | 2 | 2 | 11 | mg/L | |



| | | |
|---|--|--------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 27-Feb-2020 11:56 |
|---|--|--------------------------------|

Tank-Effluent
20B0268-02 (Water)

Metals and Metallic Compounds

| | | |
|---------------------------------|--|-----------------------------|
| Method: EPA 200.8 | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Sampled: 02/20/2020 14:00 |
| Instrument: ICPMS1 Analyst: MCB | Preparation Batch: BIB0536 | Analyzed: 02/24/2020 20:54 |
| Sample Preparation: | Prepared: 02/24/2020 | Extract ID: 20B0268-02 B 01 |
| | Sample Size: 25 mL | |
| | Final Volume: 25 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|---------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Lead | 7439-92-1 | 1 | 0.0680 | 0.100 | 36.4 | ug/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
27-Feb-2020 11:56

Tank-Effluent
20B0268-02 (Water)

Metals and Metallic Compounds

| | |
|---------------------------------|--|
| Method: EPA 200.8 UCT-KED | Sampled: 02/20/2020 14:00 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/24/2020 20:54 |
| Sample Preparation: | Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix |
| | Preparation Batch: BIB0536 |
| | Sample Size: 25 mL |
| | Final Volume: 25 mL |
| | Extract ID: 20B0268-02 B 01 |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|---------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic | 7440-38-2 | 1 | 0.0220 | 0.200 | 30.7 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 27-Feb-2020 11:56 |
|---|--|---------------------------------------|

Tank-Effluent
20B0268-02 (Water)

Wet Chemistry

| | | |
|-------------------------------|--------------------------------------|----------------------------|
| Method: SM 2540 D-97 | Preparation Method: No Prep Wet Chem | Sampled: 02/20/2020 14:00 |
| Instrument: BAL2 Analyst: KLE | Preparation Batch: BIB0527 | Analyzed: 02/23/2020 15:57 |
| Sample Preparation: | Prepared: 02/23/2020 | Extract ID: 20B0268-02 |
| | Sample Size: 995 mL | |
| | Final Volume: 1000 mL | |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|------------------|------------|----------|-----------------|-----------------|------------|-------|-------|
| Suspended Solids | | 1 | 1 | 1 | 129 | mg/L | |



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Gary Zimmerman

Reported:
27-Feb-2020 11:56

As2-Effluent
20B0268-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8
Instrument: ICPMS1 Analyst: MCB
Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BIB0536
Prepared: 02/24/2020

Sampled: 02/20/2020 14:20
Analyzed: 02/24/2020 20:58
Extract ID: 20B0268-03 A 02

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|---------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Lead | 7439-92-1 | 1 | 0.0680 | 0.100 | 12.8 | ug/L | |



| | | |
|---|--|---------------------------------------|
| Golder Associates 18300 NE Union Hill Road Suite 200 Redmond WA, 98052-3333 | Project: Ravensdale Project Number: Ravensdale Project Manager: Gary Zimmerman | Reported: 27-Feb-2020 11:56 |
|---|--|---------------------------------------|

As2-Effluent
20B0268-03 (Water)

Metals and Metallic Compounds

| | |
|--|-----------------------------|
| Method: EPA 200.8 UCT-KED | Sampled: 02/20/2020 14:20 |
| Instrument: ICPMS1 Analyst: MCB | Analyzed: 02/24/2020 20:58 |
| Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix | Extract ID: 20B0268-03 A 02 |
| Preparation Batch: BIB0536 | Sample Size: 25 mL |
| Prepared: 02/24/2020 | Final Volume: 25 mL |

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|---------|------------|----------|-----------------|-----------------|-------------|-------|-------|
| Arsenic | 7440-38-2 | 1 | 0.0220 | 0.200 | 4.26 | ug/L | |



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27-Feb-2020 11:56

Metals and Metallic Compounds - Quality Control

Batch BIB0536 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

| QC Sample/Analyte | Isotope | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|-----------------------------|---------|--------|-----------------|-----------------|-------|---|---------------|------|-------------|-----|-----------|-------|
| Blank (BIB0536-BLK1) | | | | | | Prepared: 24-Feb-2020 Analyzed: 24-Feb-2020 16:02 | | | | | | |
| Lead | 208 | ND | 0.0680 | 0.100 | ug/L | | | | | | | U |
| Arsenic | 75a | ND | 0.0220 | 0.200 | ug/L | | | | | | | U |
| LCS (BIB0536-BS1) | | | | | | Prepared: 24-Feb-2020 Analyzed: 24-Feb-2020 16:06 | | | | | | |
| Lead | 208 | 24.5 | 0.0680 | 0.100 | ug/L | 25.0 | | 97.9 | 80-120 | | | |
| Arsenic | 75a | 24.3 | 0.0220 | 0.200 | ug/L | 25.0 | | 97.3 | 80-120 | | | |



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Wet Chemistry - Quality Control

Batch BIB0527 - No Prep Wet Chem

Instrument: BAL2 Analyst: KLE

| QC Sample/Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------------------------------|--------|-----------------|-----------------|-------|-------------|--|------|-------------|-------|-----------|-------|
| Blank (BIB0527-BLK1) | | | | | | Prepared: 23-Feb-2020 Analyzed: 23-Feb-2020 15:57 | | | | | |
| Suspended Solids | ND | 1 | 1 | mg/L | | | | | | | U |
| LCS (BIB0527-BS1) | | | | | | Prepared: 23-Feb-2020 Analyzed: 23-Feb-2020 15:57 | | | | | |
| Suspended Solids | 50 | 1 | 1 | mg/L | 50.00 | | 99.8 | 90-110 | | | |
| Duplicate (BIB0527-DUP1) | | | | | | Source: 20B0268-01 Prepared: 23-Feb-2020 Analyzed: 23-Feb-2020 15:57 | | | | | |
| Suspended Solids | 13 | 2 | 2 | mg/L | | 11 | | | 13.10 | 20 | |



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27-Feb-2020 11:56

Certified Analyses included in this Report

| Analyte | Certifications |
|-----------------------------------|----------------------------|
| EPA 200.8 in Water | |
| Lead-208 | NELAP,WADOE,WA-DW,DoD-ELAP |
| EPA 200.8 UCT-KED in Water | |
| Arsenic-75a | NELAP,WADOE,WA-DW,DoD-ELAP |
| SM 2540 D-97 in Water | |
| Suspended Solids | DoD-ELAP,WADOE,NELAP |

| Code | Description | Number | Expires |
|----------|--|--------------|------------|
| ADEC | Alaska Dept of Environmental Conservation | 17-015 | 01/31/2021 |
| CALAP | California Department of Public Health CAELAP | 2748 | 06/30/2019 |
| DoD-ELAP | DoD-Environmental Laboratory Accreditation Program | 66169 | 01/01/2021 |
| NELAP | ORELAP - Oregon Laboratory Accreditation Program | WA100006-012 | 05/12/2020 |
| WADOE | WA Dept of Ecology | C558 | 06/30/2019 |
| WA-DW | Ecology - Drinking Water | C558 | 06/30/2019 |



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Notes and Definitions

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



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