FINAL

BASELINE MONITORING REPORT

2024 Annual Baseline Monitoring Report
Red Devil Mine, Alaska

Order Number: 140L6322P0046

Submitted to:
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BUREAU OF LAND MANAGEMENT
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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
BLM	Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant(s) of concern
DO	dissolved oxygen
DoD	Department of Defense
DQO	data quality objectives
DTW	depth to water
E&E	Ecology and Environment Inc.
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
ft btoc	feet below top of casing
IDW	investigation-derived waste
MCAWW	Methods for the Chemical Analysis of Water and Waste
mg/L	milligrams per liter
MPA	Main Processing Area
MPC	measurement performance criteria
MS/MSD	matrix spike/matrix spike duplicates
MW	monitoring well
ng/L	nanograms per liter
No.	Order Number
ORP	oxidation reduction potential
PARCC	precision, accuracy, representativeness, completeness, and. comparability
PPE	personal protective equipment
QAPP	Quality Assurance Project Plan
QC	quality control
RDM	Red Devil Mine
Report	2024 Annual Baseline Monitoring Report

RI	Remedial Investigation
ROD	Record of Decision
RPD	relative percent difference
SMA	Surface Mined Area
Sundance	Sundance Consultants, LLC
TAL	target analyte list
TDS	total dissolved solids
TSS	total suspended solids
U.S.	United States
Work Plan	Final Work Plan, Groundwater and Surface Water Baseline Monitoring, Red Devil Mine, Alaska
µg/L	micrograms per liter

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1 INTRODUCTION

This 2024 Annual Baseline Monitoring Report (Report) presents the findings of the 2024 spring and fall baseline groundwater and surface water monitoring efforts performed at the Red Devil Mine (RDM) site (Figure 1-1). The RDM is an abandoned mercury mine and ore processing facility located on public lands managed by the Bureau of Land Management (BLM) in southwest Alaska. Historical mining activities included underground and surface mining and ore processing. On-site ore processing included crushing, retorting/furnacing, milling, and flotation. Sundance Consultants, LLC (Sundance), prepared this Report on behalf of the BLM under Order Number (No.) 140L6322P00460001.

This Report summarizes the field activities, procedures, and results for the 2024 spring and fall baseline monitoring of groundwater and surface water efforts performed at RDM site.

1.1 PURPOSE AND OBJECTIVES

As stated in the Record of Decision (ROD), Baseline monitoring has been conducted at the site to establish a statistical basis for comparing physical and chemical conditions prior to, during, and after completion of cleanup actions. Baseline monitoring data have been used to support the Remedial Investigation (RI) and Supplemental RI work at the site.

The purpose of baseline monitoring was to collect surface water and groundwater samples, as well as stream discharge and groundwater elevation data during spring and fall to inform remedial actions at the RDM. Baseline monitoring expands upon work that began during the 2011–2014 RI (Ecology and Environment, Inc. [E&E], 2014) and continued through the 2015–2018 Supplemental RI (E&E, 2018) and simultaneous annual baseline monitoring for groundwater and surface water during spring and fall.

1.2 PROJECT LOCATION, SETTING, AND AREAS

The RDM site is located approximately 250 miles west of Anchorage, Alaska. Located on the southwest bank of the Kuskokwim River, approximately 2 miles southeast of the village of Red Devil, the site is 8 miles northwest of the village of Sleetmute, and 75 miles northeast of Aniak, the largest village in the region. Fifteen villages are located downstream of Red Devil on the Kuskokwim River. The legal description for the RDM site is Township 19 North, Range 44 West, Southeast Quarter of Section 6, Sleetmute D-4 Quadrangle, Seward Meridian. The RDM site's approximate coordinates are 61° 45' 38.1" north latitude and 157° 18' 42.7" west longitude (North American Datum 1927). The RDM site is in a remote location, and access to the site is available by boat or barge on the Kuskokwim River or by means of an airstrip at the nearby village of Red Devil. An unimproved road leads from the airstrip through the village of Red Devil to the RDM site. Access to the RDM site is restricted by two locked gates, one on the unimproved road and a boat landing along the Kuskokwim River.

Historical mining operations left tailings and other remnants that have affected local soil, surface water, sediment, and groundwater. Based on the locations of tailings and other features, baseline monitoring is focused on surface water and groundwater in the following areas as shown on historical Figure 1-2 (E&E, 2021):

- **Main Processing Area (MPA)**—The MPA contained most of the former site structures and was where ore beneficiation and mineral processing was conducted. The area is split by Red Devil Creek. Underground mine openings (e.g., shafts, adits, and stopes to the surface) and ore processing and mine support facilities (e.g., housing and warehousing) were located on the west side of Red Devil Creek until 1955. After 1955, all ore processing was conducted at structures and facilities on the east side of Red Devil Creek.
    - The MPA includes three monofills, which are essentially landfills that contain demolished mine structure debris and other material. Two of the monofills, #1 and #3, are unlined. Monofill #2, on the east side of Red Devil Creek, is an engineered and lined containment structure for building debris and materials from the demolished post 1955 retort structure.
- **Surface Mined Area (SMA)**—The SMA is located west of the MPA where historical surface exploration and mining occurred. The SMA is partially underlain by underground mine workings. The "Dolly Sluice" and "Rice Sluice" and their respective deltas on the bank of the Kuskokwim River are associated with the SMA.
- **Vicinity of Proposed Repository**—The Proposed Repository is located uphill of the SMA on the north side of Red Devil Creek.
- **Red Devil Creek**—Red Devil Creek extends from a reservoir upstream of the MPA to the creek's delta at its confluence with the Kuskokwim River.
- **"Yellow Boy" Seep (RD05)**—The "Yellow Boy" Seep is located on the north bank of Red Devil Creek downgradient of the former mine operations and tailings area.

1.3 REMEDIAL GOALS

Remedial goals were established in the ROD (BLM, 2022) for the following compounds:

- Antimony – 7.8 micrograms per liter (µg/L) (0.0078 milligrams per liter [mg/L])
- Arsenic – 0.52 µg/L (0.00052 mg/L)
- Mercury – 0.52 µg/L (520 nanograms per liter [ng/L])

2 BASELINE MONITORING FIELD ACTIVITIES

All field activities were performed in accordance with the Final Work Plan, Groundwater and Surface Water Baseline Monitoring, Red Devil Mine, Alaska ([Work Plan], BLM, 2019), and the addendum to the Work Plan (Sundance, 2023). Spring and fall field activities occurred from 30 May to 6 June 2024, and 06 September to 12 September 2024, respectively.

Specific field tasks included the following.

- Inspection of the monitoring well (MW) network including an assessment of current well conditions, and stickup and casing measurements. The inspections were documented on MW integrity checklists and in the field notebook, and each well was photographed.
- Synoptic depth to groundwater was measured within all accessible MWs at RDM during a single 24-hour period.
- Although some wells have experienced frost jacking, only MW54 experienced any issues to casing integrity. The casing was bent, and a pump got stuck 3' higher in the well than where it should sit.
- Data download of continuous water level readings recorded from pressure transducers installed in wells MW50, MW51, MW53, MW54, MW56, MW57, MW58, and MW59 (barometric measurements only) as shown on Figure 1-1.
- Collection of groundwater and surface water samples, and stream discharge gauging.

A tailgate safety meeting was held with the field team before the start of each day. The field team held undocumented impromptu safety breaks to discuss changing site or field activity conditions and how they may apply to health and safety.

Field documentation of the MW survey, groundwater sampling, and surface water sampling are provided in Appendix A (Field Documentation), Appendix B (Photograph Documentation), and Appendix C (Supplemental Data).

2.1 WELL INSPECTIONS AND GROUNDWATER ELEVATIONS

An initial site walk was conducted to assess site conditions, assess the operational status of the MW network, and clear the trail system from recent deadfall. During well inspections, it was observed that the pump is stuck in well MW54 and won't move up or down. Well MW54 was sampled during both the spring and fall events.

Groundwater elevation during the spring and fall 2024 baseline monitoring events consisted of the following:

- Measuring static water levels at all accessible MWs at the RDM site within a 24-hour period to collect a "synaptic snapshot" of groundwater levels.
- Downloading of continuous water level measurements from pressure transducers installed within specific MWs.

The groundwater static water levels were measured on 31 May 2024 and 06 September 2024. Synaptic groundwater elevations for spring and fall 2024 are provided in Table 2-1. Pressure transducer data was downloaded during the spring and fall 2024 field events, and the transducers were then reinstalled at MW50, MW51, MW53, MW54, MW56, MW57, MW58, and MW59.

Based on static water elevations, stream elevations, and discharge measurements along Red Devil Creek, and excluding transducer data, groundwater potentiometric surface and surface water discharge maps for the spring and fall 2024 baseline monitoring were generated and are presented on Figure 2-1 and Figure 2-2.

Pressure transducer data logger files containing depth of submersion time series data were corrected for barometric pressure and converted to groundwater elevations. Spring and fall groundwater well and stream gauging data is included in Appendix C. Spring and Fall 2024 Stream Gauging are found in Appendices C.1 and C.2, respectively, and Spring and Fall 2024 Transducer data are found in Appendices C.3 and C.4, respectively. The resulting groundwater elevation time series plots are presented in Appendix C.5.

2.2 RED DEVIL CREEK AND SEEP DISCHARGE GAUGING

During the 2024 baseline monitoring spring and fall events, Red Devil Creek and Seep discharge gauging was conducted at five locations along Red Devil Creek between the creek's mouth at the Kuskokwim River and the historical reservoir located south-southwest of the MPA. Surface water monitoring locations are illustrated on Figure 1-1.

Surface water discharge was measured at established monitoring locations following the mid-section methodology described in the Work Plan (BLM, 2019). At the "Yellow Boy" Seep (RD05), discharge was measured using the timed fill method described in the Work Plan (BLM, 2019). Surface water discharge rates are tabulated in Table 2-2.

2.3 GROUNDWATER SAMPLING

Groundwater sampling during the 2024 baseline monitoring spring and fall events was conducted at 28 existing MWs identified on Figure 1-1. Groundwater samples were collected for the following analyses:

- Total target analyte list (TAL) metals by United States (U.S.) Environmental Protection Agency (EPA) Method 6010D/6020B.
- Mercury by EPA Method 7470A.
- Total low-level mercury by EPA Method 1631E.
- Dissolved low-level mercury by EPA Method 1631E.
- Field water quality parameters including temperature, specific conductivity, dissolved oxygen (DO), pH, oxidation reduction potential (ORP), and turbidity.

Field water quality measurements were collected at each MW prior to groundwater sample collection. Groundwater samples were collected using low-flow sampling methodologies described in the Work Plan (BLM, 2019 and Sundance, 2023) utilizing dedicated bladder pumps with a maximum flow rate of 0.5 liters per minute. Sample collection methods are summarized in

Table 2-3 and a sample matrix is provided for the spring and fall events as Tables 2-4 and 2-5, respectively.

2.4 SURFACE WATER SAMPLING

Surface water sampling during the 2024 baseline monitoring spring and fall events was conducted at five locations from just upstream of RDM (historical reservoir) to the point where Red Devil Creek discharges into the Kuskokwim River as identified on Figure 1-1.

Surface water samples were collected for the following analyses and methods:

- Total TAL metals by EPA Method 6010D/6020B and Mercury by EPA Method 7470A.
- Total low-level mercury by EPA Method 1631E.
- Total Suspended Solids (TSS) by EPA Method 160.2.
- Total Dissolved Solids (TDS) by EPA Method 160.1.
- Inorganic ions by EPA Methods for the Chemical Analysis of Water and Waste (MCAWW) 300.0.
- Carbonate alkalinity by EPA Method 310.1.
- Nitrate/nitrite by MCAWW 353.2.
- Field water quality parameters, including temperature, specific conductivity, DO, pH, ORP, and turbidity.

Surface water samples were collected using a battery-operated peristaltic pump outfitted with certified-clean, dedicated silicone tubing following sampling methodologies described in the Work Plan (BLM, 2019).

2.5 SAMPLE HANDLING

Sample handling (e.g., chain-of-custody and field documentation) was conducted as described in the Work Plan (BLM, 2019).

2.6 QUALITY CONTROL SAMPLES

Field quality control (QC) samples, including field duplicates and matrix spike/matrix spike duplicates (MS/MSD), were collected for all matrices (e.g., groundwater and surface water) and analytes as described in the Work Plan (BLM, 2019).

2.7 INVESTIGATION-DERIVED WASTE MANAGEMENT

Investigation-derived waste (IDW) generated during the 2024 baseline monitoring spring and fall events included the following:

- Purge water generated during groundwater sample collection.
- Used dedicated and disposable sampling equipment, personal protective equipment (PPE), and paper towels.
- Decontamination fluids generated during groundwater sampling.

IDW was managed in accordance with the Work Plan (BLM, 2019). Purge water, decontamination water, paper towels, used tubing, and disposable PPE were disposed of in accordance with the procedures described in the Work Plan (BLM, 2019 and Sundance, 2023).

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3 DEVIATIONS

During the 2024 baseline monitoring spring and fall field activities, the following deviations were made from the Work Plan (BLM, 2019). These deviations did not affect project data quality objectives (DQOs). Deviations resulted from field conditions, field observations, field access, available resources on a remote site, and schedule adjustments. Deviations were documented in the field logbooks provided in Appendix A. There were four deviations from the Work Plan (BLM, 2019):

- MW12 was not gauged in spring or fall due to a blockage inside the well casing that has existed since 2021. The well is no longer accessible for measurement or sampling.
- In spring 2024, neither temperature nor turbidity stabilized after 110 minutes of low-flow purging at MW16. The sample was collected after 110 minutes.
- In fall 2024, turbidity did not stabilize after 105 minutes of purging and measurements at MW29. The sample was collected after 105 minutes.
- In fall 2024, MW06, MW09, MW10, MW16, MW17, MW27, MW28, MW33, MW53, MW54, MW55, and MW58 were sampled with a peristaltic pump due to the compressor/pump failure to function.

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4 BASELINE MONITORING RESULTS

4.1 GROUNDWATER MONITORING RESULTS

Analytical results for groundwater samples collected during the 2024 spring and fall baseline monitoring event are presented in Table 4-1 and Table 4-2. Maps of all sampling locations with corresponding analytical results for the three primary contaminants of concern (COCs), antimony, arsenic, and mercury (represented as total low-level mercury and dissolved low level mercury) are presented on Figure 4-1 through Figure 4-6. Analytical Laboratory Data Reports are included in Appendix D with Data Validation Reports in Appendix E.

4.1.1 2024 Spring Groundwater Results

Twenty-eight primary groundwater samples were collected during the 2024 spring monitoring event. Duplicate samples were collected from the following MWs per the Final Baseline Quality Assurance Project Plan (QAPP), which is included as an appendix to the Work Plan (BLM, 2019): MW16, MW17, and MW43. A summary of analytical results for groundwater samples is provided in Table 4-1 and shown on Figure 4-1 through Figure 4-3.

- Antimony went from being non-detect in three samples in Spring 2023 (MW45, MW46, and MW51) to being non-detect in 12 samples in Spring 2024 (MW29, MW44, MW45, MW46, MW47, MW49, MW51, MW52, MW53, MW54, MW56, and MW57). Antimony detected concentrations ranged from 0.00091 J+ to 0.61 J+ (mg/L) with the highest concentration in groundwater sample 0624MW16GW and its duplicate 0624MW16GW99 at MW16 located in the pre-1955 MPA area.
- Arsenic was detected in all groundwater samples except for MW46, MW47, MW53, and MW56. Arsenic concentrations ranged from 0.001 to 0.99 mg/L with the highest concentration in groundwater sample 0624MW26GW at MW26 located in the pre-1955 MPA area.
- Low-level total mercury was detected in all groundwater samples via Method 1631E. Total mercury concentrations ranged from 0.87 to 4,100 (ng/L) with the highest concentration in groundwater sample 0624MW42GW at MW42 located in the vicinity of the proposed repository.
- Low-level dissolved mercury was detected in all groundwater samples except MW40, MW44, MW54, and MW58. Dissolved mercury was not detected in the duplicate sample for MW43; however, it was detected in the primary sample at a concentration of 0.68 J+ ng/L. Dissolved mercury concentrations ranged from 0.63 J+ to 1,000 J+ ng/L with the highest concentration in groundwater sample 0624MW27GW at MW27 in the pre-1955 MPA area.

4.1.2 2024 Fall Groundwater Results

Twenty-eight primary groundwater samples were collected during the 2024 fall event. Duplicate samples were collected from the following four MWs per the Work Plan (BLM, 2019): MW27, MW28, MW33, and MW43. A summary for analytical results for groundwater samples is provided in Table 4-2 and shown on Figure 4-4 through Figure 4-6.

- Antimony was detected in 19 of 28 groundwater samples via method 6020B. Antimony detected concentrations ranged from 0.00016 J to 0.39 J+ mg/L with the highest concentration in groundwater sample 0924MW33GW at MW33 (field duplicate 0924MW33GW-99 at MW33 measured 0.27 J+ mg/L) located in the SMA.
- Arsenic was detected in 27 of the 28 primary groundwater samples. Groundwater sample 0924MW47GW at MW47 was non-detect. Arsenic concentrations ranged from 0.00024 J to 1.2 mg/L with the highest concentration in groundwater sample 0924MW16GW at MW16 located in the pre-1955 MPA area.
- Low-level total mercury was detected in all groundwater samples via method 1631E. Total mercury concentrations ranged from 0.54 J+ to 1,100 ng/L with the highest concentration in groundwater sample 0924MW53GW at MW53 in the vicinity of the proposed repository.
- Low-level dissolved mercury was detected in all groundwater samples via method 1631E. Dissolved mercury concentrations ranged from 0.54 J+ to 600 J+ ng/L with the highest concentration in groundwater sample 0924MW27GW-99, the field dupe at MW27 in the pre-1955 MPA area. The primary sample detected 550 J+ ng/L dissolved mercury.

4.2 SURFACE WATER RESULTS

Analytical results for surface water sampling conducted during the 2024 spring and fall baseline monitoring events are presented in Table 4-3 and Table 4-4. Maps of all sampling locations with corresponding analytical results are presented on Figure 4-7 through Figure 4-8.

4.2.1 2024 Spring Surface Water Results

During the 2024 spring baseline monitoring event, five surface water samples were collected from Red Devil Creek. A duplicate sample was taken from location RD08. A summary of analytical results for spring surface water samples is provided in Table 4-3 and shown on Figure 4-7.

- Antimony was detected in all surface water samples. Antimony concentrations ranged from 0.0015 J+ to 0.19 J+ mg/L with the highest concentration in surface water sample 0624RD08SW at RD08. A field duplicate was taken at RD08, 0624RD08SW99, which was analyzed to have 0.18 J+ mg/L Antimony.
- Arsenic was detected in all surface water samples. Arsenic concentrations ranged from 0.0011 to 0.64 mg/L with the highest concentration in surface water sample 0624RD05SW at RD05.
- Mercury was detected in all surface water samples via Method 1631E. Total mercury concentrations ranged from 2.8 to 55 ng/L with the highest concentration in surface water sample 0624RD06SW at RD06.

4.2.2 2024 Fall Surface Water Results

During the 2024 fall baseline monitoring event, five surface water samples and one field duplicate sample at location RD08, were collected from Red Devil Creek. A summary for analytical results for fall surface water samples is provided in Table 4-4 and shown on Figure 4-8.

- Antimony was detected in all surface water samples. Antimony concentrations ranged from 0.0015 J+ to 0.2 J+ mg/L, with the highest concentration in surface water sample 0924RD08SW99, field duplicate of 0924RD08SW (0.19 J+ mg/L Antimony), at RD08.
- Arsenic was detected in all surface water samples. Arsenic concentrations ranged from 0.0011 to 0.69 mg/L with the highest concentration in surface water sample 0924RD05SW at RD05.
- Mercury was detected in all surface water samples via Method 1631E. Total mercury concentrations ranged from 2.4 to 51 J ng/L with the highest concentration in surface water sample 0924RD08SW at RD08 (concentration was 34 J ng/L in the RD08 field duplicate 0924RD08SS99).

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5 DATA USABILITY ASSESSMENT

A third-party data validation was performed on 100% of the surface water and groundwater analytical data generated during the 2024 spring and fall sampling events. The validation was inclusive of validation levels Stage 2B (90%) and Stage 4 (10%). The data were validated in accordance with the QAPP (BLM, 2019), EPA National Functional Guidelines for Inorganic Superfund Methods Data Review (EPA, 2017), and the Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories Version 5.1 (DoD, 2017).

DQOs are both qualitative and quantitative statements that define the type, quality, and quantity of data necessary to support the decision-making process during project activities. To ensure the collection of data of the type and quality required for project decision-making, data validation results were evaluated for the DQO data quality indicators of precision, bias (accuracy), representativeness, comparability, and completeness (formerly precision, accuracy, representativeness, completeness, and comparability [PARCC] parameters), as outlined in the QAPP. Data quality indicators were evaluated according to analytical and field QC activity and associated measurement performance criteria (MPC). The results of the evaluation were used to assess data usability and completeness.

Spring surface water and groundwater samples were qualified as non-detect (U) for low-level detections or estimated (J or J+) in method blanks, continuing calibration blanks, initial calibration blanks, equipment blanks, or trip blank samples for metals, low-level mercury, and general chemistry analyses for one or more of the following analytes during the spring sampling event:

- Antimony
- Barium
- Chromium
- Low-Level Mercury
- Manganese
- Nickel
- Nitrate/Nitrite
- Potassium
- Silver
- Thallium
- Zinc

During the spring sampling event, metals field duplicate pairs 0624MW16GW / 0624MW16GW99, 0624MW17GW / 0624MW17GW99, 0624MW43GW / 0624MW43GW99, and 0624RD08SW / 0624RD08SW99 had relative percent differences (RPDs) lower than the control limit for total and dissolved 1631E mercury (except 0624MW16GW / 0624MW16GW99) and nitrate/nitrite (except 0624RD08SW / 0624RD08SW99). Associated sample results in the field duplicate pairs outside of control limits were qualified as (J) for detects. Fall surface water and

groundwater data were qualified as non-detect (U) for low-level detections or estimated (J or J+) in method blanks, continuing calibration blanks, initial calibration blanks, equipment blanks, or trip blank samples for metals and low-level mercury analyses for one or more of the following analytes during the fall sampling event:

- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Manganese
- Nickel
- Thallium
- Vanadium
- Zinc
- Low-Level Mercury

During the fall sampling event, accuracy/bias qualifications did not impact data usability. Field duplicate pairs included: 0924MW43GW / 0924MW43GW-99, 0924MW33GW / 0924MW33GW-99, 0924MW27GW / 0924MW27GW-99, 0924MW28GW / 0924MW28GW-99, and 0924RD08SW / 0924RD08SW-99. All field duplicate control limits were met.

Analytical laboratory reports are provided in Appendix D. Further detailed data validation and quality assessment information is provided in Appendix E.

5.1 DATA USABILITY ASSESSMENT

The analytical data completeness for the fall and spring sampling events is 100%. No sample results were rejected or unsuitable for use in project decision-making. Metals, mercury, and anion samples were qualified as estimated (J or U) for low-level field and analytical blank contamination during both events, indicating minor uncertainty in sample representativeness. In addition, sample results were qualified as estimated (J or U) for minor deviations in accuracy/bias and field precision during both sampling events, indicating minor uncertainty. However, qualified data are considered acceptable for use in project decision-making.

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6 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

During the 2024 Annual Baseline Monitoring field efforts, samples were collected from groundwater MWs in three areas: the MPA, the SMA, and the vicinity of the Proposed Repository. Additionally, surface water samples were collected from Red Devil Creek and a perennial seep that discharges into Red Devil Creek. The analytical results of these groundwater and surface water samples were reviewed and compared with historical data to identify concentration trends.

Analytical results are consistent with past sampling results.

6.1 RELIABILITY OF GROUNDWATER ELEVATION DATA

Frost jacking has been noted for select wells at RDM. Frost jacking of wells occurs due to freeze-thaw processes creating an upward expansion of the soil, which can change the height of the well casing and sometimes separating casing sections (Alaska Department of Environmental Conservation [ADEC], 2013). In wells where frost jacking has occurred, the casing height cannot be reliably measured, since it cannot be accurately determined how much casing separation is occurring under the ground surface. Therefore, depth to water (DTW) measurements based on the top of casing height, measured as feet below top of casing (ft btoc), becomes unreliable.

Graphs of groundwater elevation are provided in Appendix F.1. These graphs show relatively consistent groundwater elevations over time. Well damage due to frost jacking has occurred but has not had a significant impact on the calculated groundwater elevations or projected flow direction over time. The groundwater flow direction shown on Figures 2-1 and 2-2 is consistent with groundwater flow maps from previous monitoring events.

It may be necessary to re-survey the well casing elevations, to ensure accurate groundwater elevations are calculated for future monitoring events.

6.2 GROUNDWATER

The groundwater analytical results from the 2024 sampling efforts are generally consistent with results from historical sampling efforts at RDM as seen in Final 2020 Baseline Monitoring Report, Red Devil Mine, Alaska (E&E, 2021).

Groundwater elevation results for the 2024 sampling efforts are consistent with trends defined during the RI/Feasibility Study (FS).

The water table surface in the upper SMA and the MPA mimics topography and flows toward Red Devil Creek. Groundwater flow in the lower SMA is locally perturbed by historical mine workings. Although the underground workings have very likely collapsed, this tunnel network is much more conductive than the surrounding bedrock. Consequently, the water table is depressed around the workings. Because the conductivity of the bedrock aquifer is relatively low, the depressed water table extends only a short distance outside of the zone where the tunnel network is prevalent, creating a very steep gradient. The overall effect of the underground workings is very localized (refer to Figure 2-1 and Figure 2-2). In general, groundwater flow within the entire SMA is toward Red Devil Creek.

Continuous groundwater elevation data recorded in 2024 using transducers extends the temporal trends established in previous years, as shown in Appendix C.5. In late spring, groundwater

elevations rise quickly to a maximum elevation that correlates with spring breakup. The seasonal maximum elevation lasts only a few days, followed by a recession that extends until the following spring. Water table elevations vary slightly over the summer and fall months in response to local precipitation. Once subsurface freezing becomes prevalent during the winter, water table elevations decrease steadily until the following spring breakup, which is typically in May.

The concentrations of the three primary COCs, antimony, arsenic, and mercury, in the groundwater samples from the 2024 baseline monitoring events are generally within the range expected based on review of data collected during the RI and previous baseline monitoring. A few significant changes were observed at:

- MW17, an increase in the concentration of antimony.
- MW53, an increase in the concentration of total mercury.
- MW58, an increase in the concentration of arsenic.

The highest COC concentrations occur in the MWs installed in tailings/waste rock in the MPA. Concentrations of these primary COCs are highly variable in the SMA, reflecting the influence of natural mineralization in the immediate vicinity of each MW. In general, groundwater COC concentrations do not appear to be influenced by seasonal water level fluctuations. Minor fluctuations can be seen in some MWs but are generally not consistent across all MWs. Graphs of water level measurements and groundwater primary COC concentrations for all MWs are presented in Appendix F.1.

6.3 SURFACE WATER

The surface water analytical results from the 2024 sampling efforts are consistent with results from historical sampling efforts at RDM as seen in Final 2020 Baseline Monitoring Report, Red Devil Mine (E&E, 2021).

The 2024 concentrations of the three primary COCs (antimony, arsenic, and mercury) in the surface water samples are within the range established during the RI. The highest concentrations were detected in samples collected from RD05 (the seep), RD06, and RD08. Comparison of COC concentrations with stream discharge data indicates no correlation. Graphs of surface water primary COC concentrations and discharge measurements for all locations are found in Appendix F.2.

6.4 RECOMMENDATIONS

Groundwater sampling and analysis has evolved through the RI/FS phases of this Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) project from characterization to baseline monitoring. Initial goals of groundwater sampling and analysis were consistent with the overall objectives of the RI and were focused primarily on the area along the lower reach of Red Devil Creek referred to as the MPA. Additional MWs have been installed since the initial RI was completed that have broadened our understanding of flow within the bedrock aquifer in areas that are influenced by natural mineralization but are not affected by the tailings and waste rock. The BLM selected a preferred remedial action alternative in the ROD (BLM, 2022) that involves consolidating tailings/waste rock in an engineered repository located in the SMA. Consequently, groundwater characterization emphasizing the area dominated by tailings

and a broad range of potential contaminants has transitioned to baseline monitoring of upper elevations (upgradient of the tailings) and more focus on the contaminants that are responsible for most of the environmental risk estimated for the site.

Based on the data collected during 2024, continued monitoring of the same scope is recommended until remedial action has been implemented. Baseline monitoring should continue to document progress toward achieving remedial action objectives.

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FIGURES

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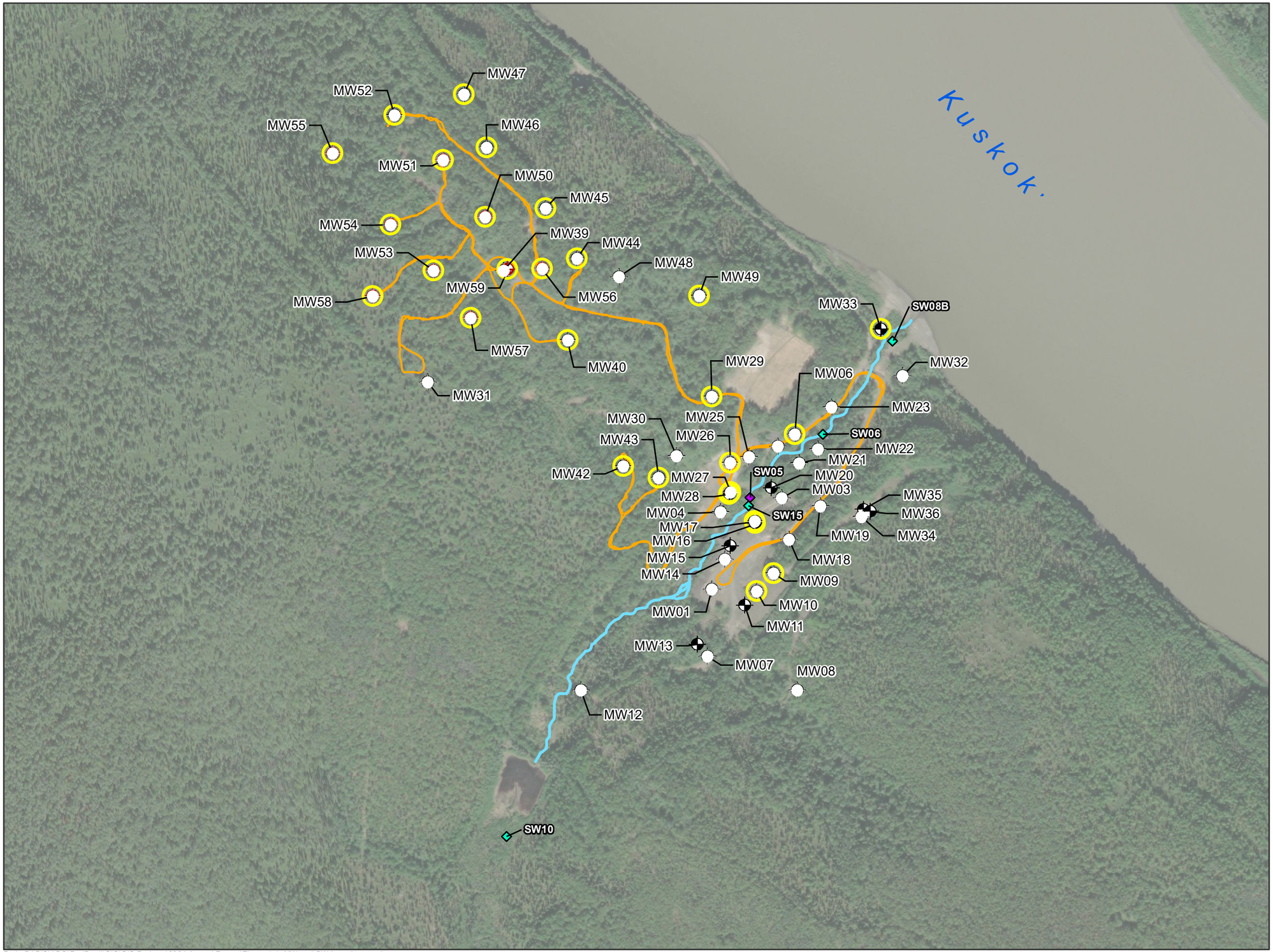


Legend

- Monitoring Well Location
- Transducer Well Location
- Sampled MW Location
- Surface Water Location
- Seep Location
- ATV Track
- Red Devil Creek

0 375 750

Feet

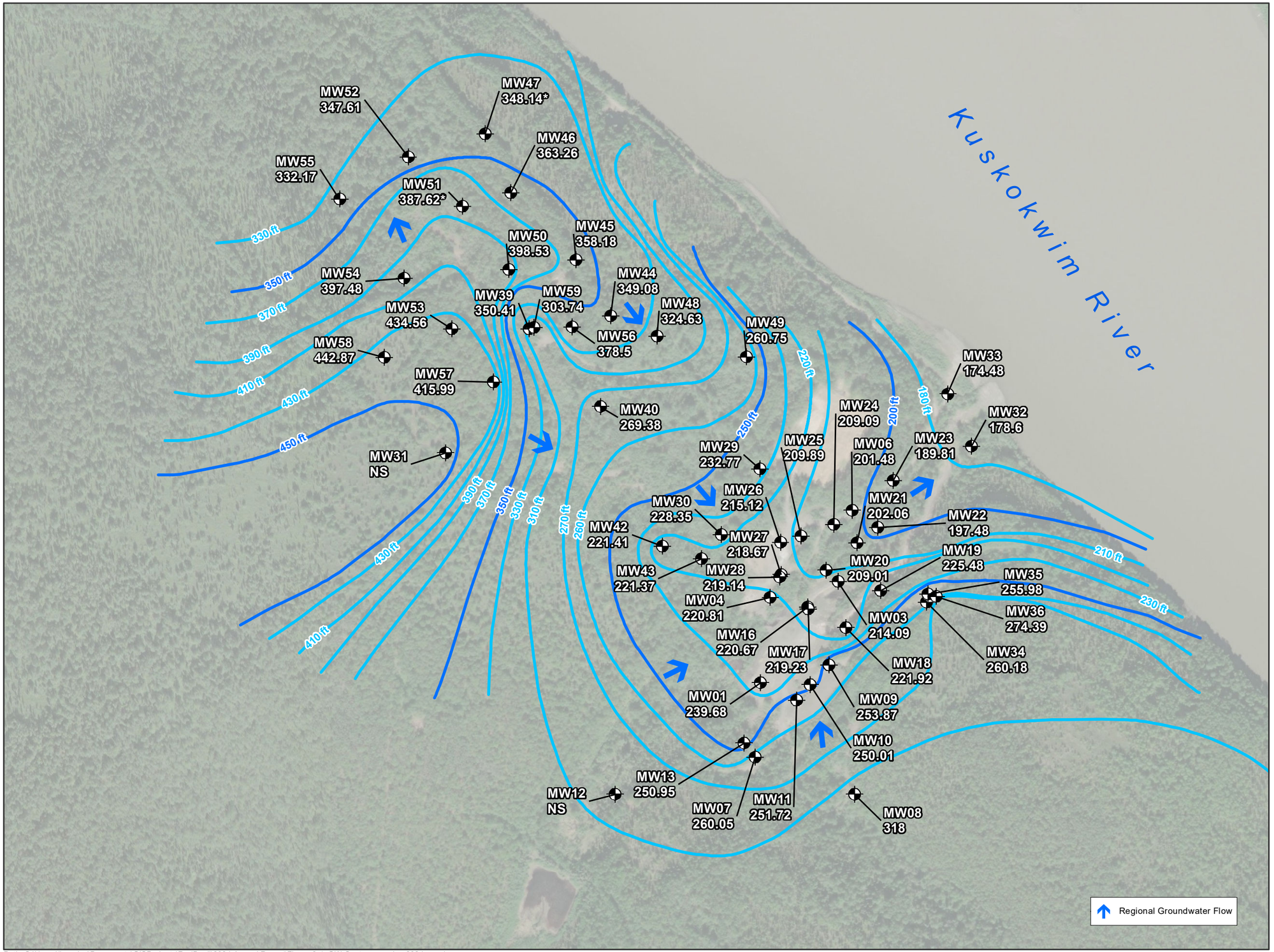
Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Surface Water and Monitoring Well Locations

Figure 1-1

Path: P:\GIS\ABQ\RedDevil\GIS\GIS Projects\2024 Annual Report\Figure 1-1. MW and SW Locations.mxd



Legend

Monitoring Well

Groundwater Contour

10-Foot GW Contour

50-Foot GW Contour

Note:
*MW51 and MW47 are depth to water from the day of sampling.

Acronyms:
ft = feet
GW= groundwater
MW= monitoring well
NS= not sampled

0 375 750
Feet

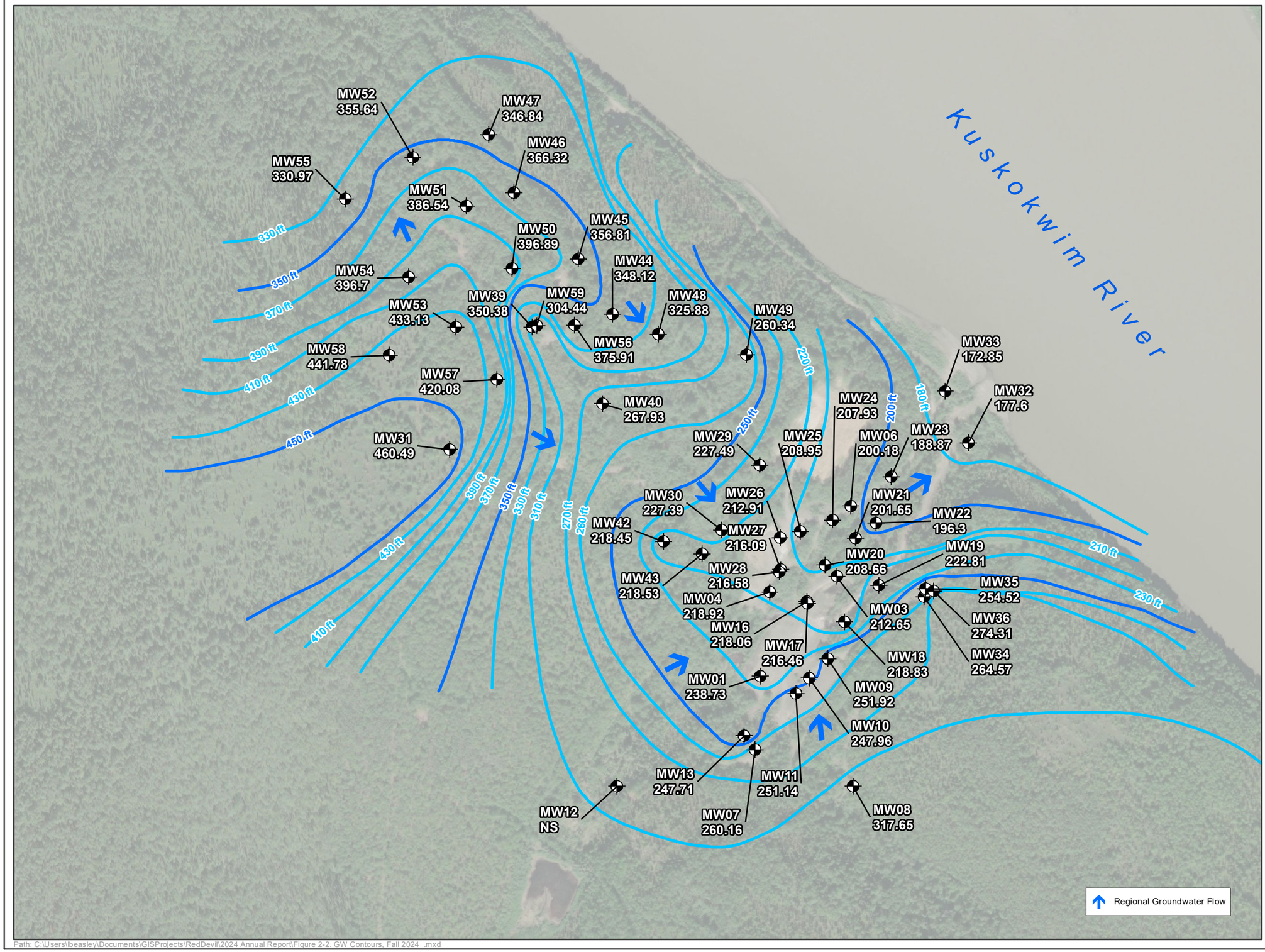
Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Groundwater Potentiometric Surface-Spring 2024

Figure 2-1

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 2-1. GW Contours, spring 2024 .mxd



Legend

Monitoring Well

Groundwater Contour

10-Foot GW Contour

50-Foot GW Contour

Acronyms:
ft = feet
GW= groundwater
MW= monitoring well
NS= not sampled

0 375 750
Feet

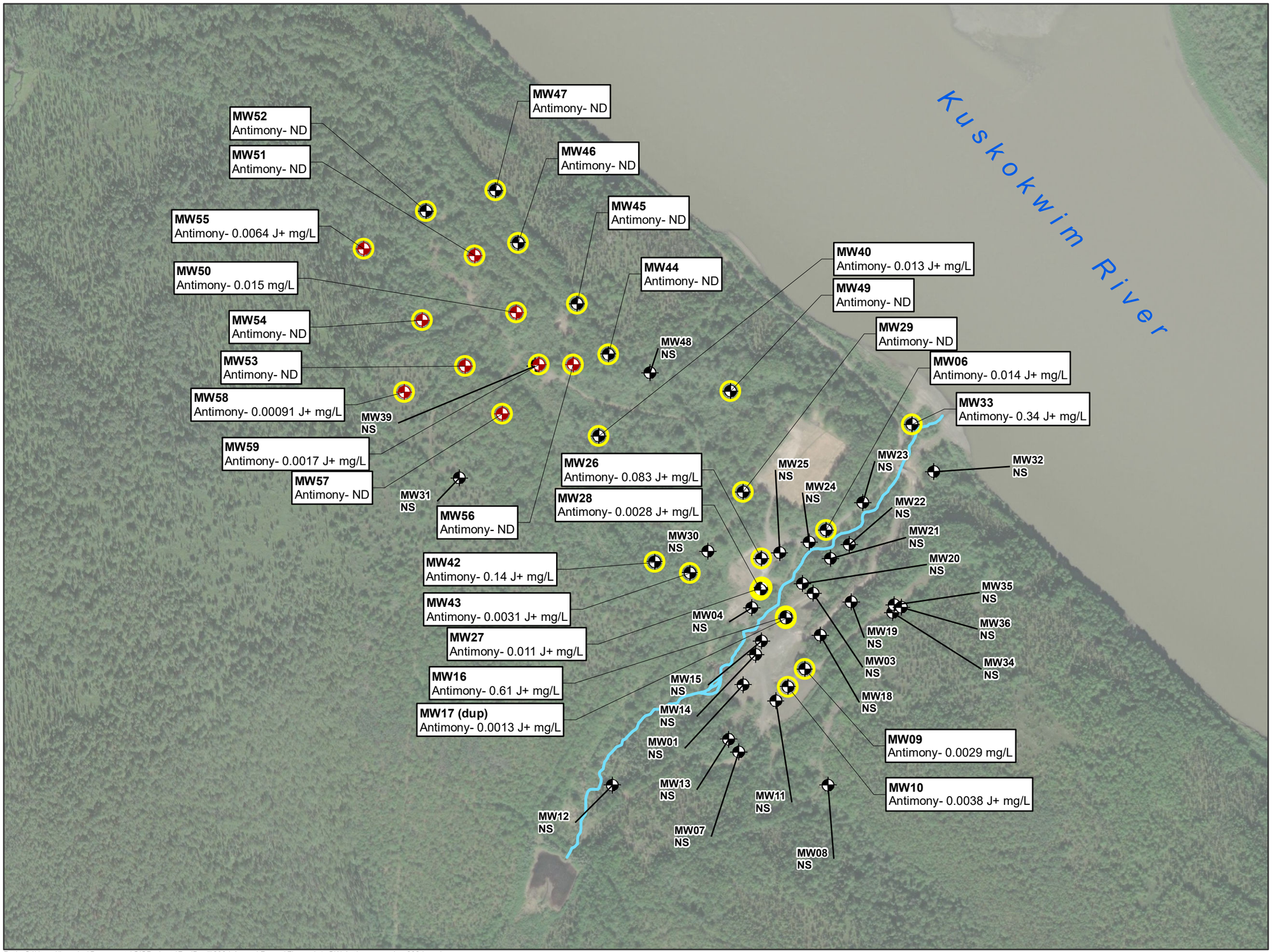
Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Groundwater Potentiometric Surface-Fall 2024

Figure 2-2

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 2-2. GW Contours, Fall 2024 .mxd



Legend

- Monitoring Well Location
- Transducer Well Location
- Sampled MW Location
- Red Devil Creek

Acronyms and Analytical Notes:
mg/L = milligrams per liter
dup = duplicate result
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
MW = monitoring well
ND = not detected
NS = not sampled

0 375 750
Feet

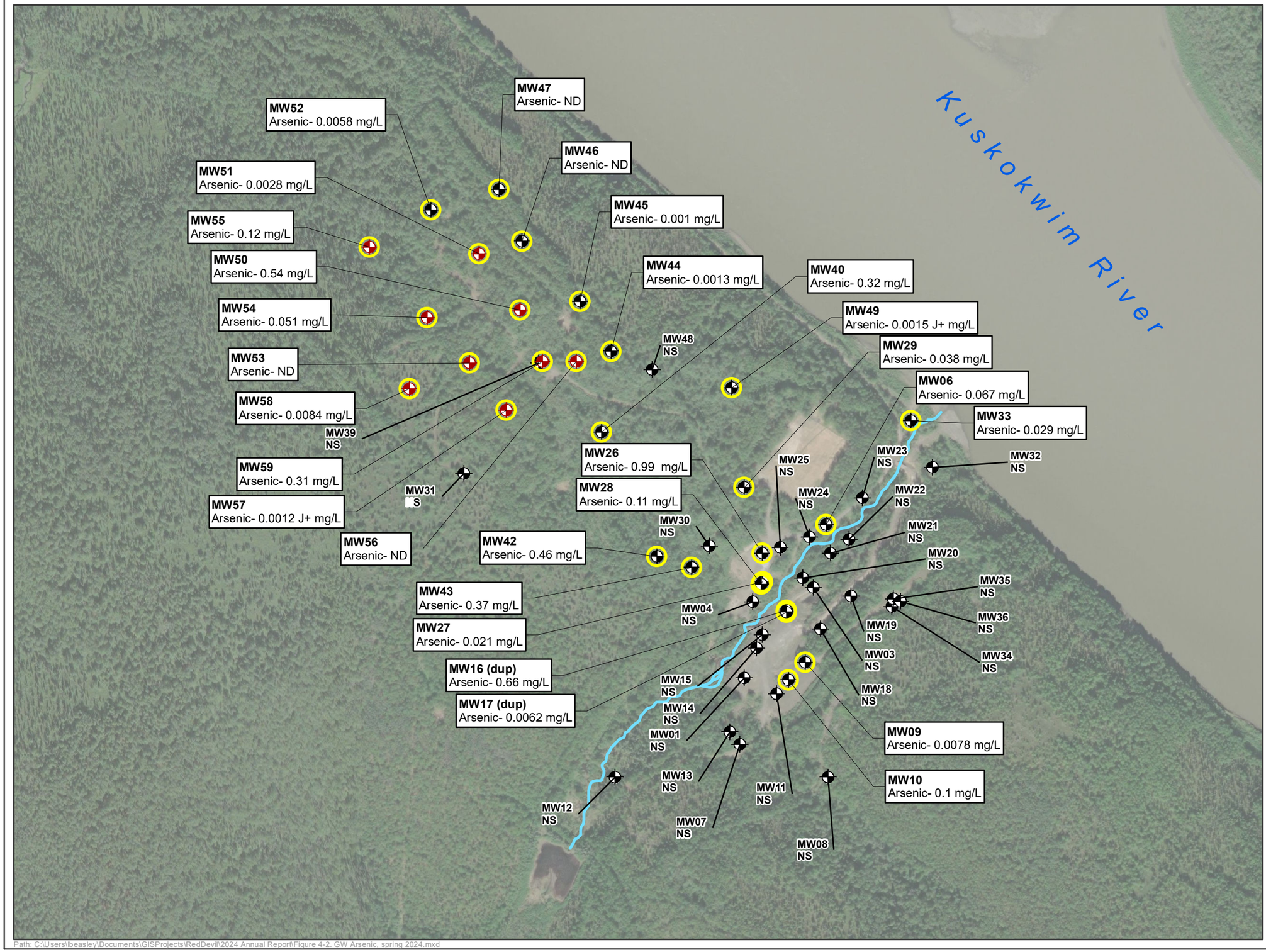
Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Groundwater Sample Results, Spring 2024, Antimony

Figure 4-1

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 4-1. GW Antimony, spring 2024.mxd



Legend

- Monitoring Well Location
- Transducer Well Location
- Sampled MW Location
- Red Devil Creek

Acronyms and Analytical Notes:
mg/L = milligrams per liter
dup = duplicate result
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
The associated result is estimated.
MW = monitoring well
ND = not detected
NS = not sampled

0 375 750
Feet

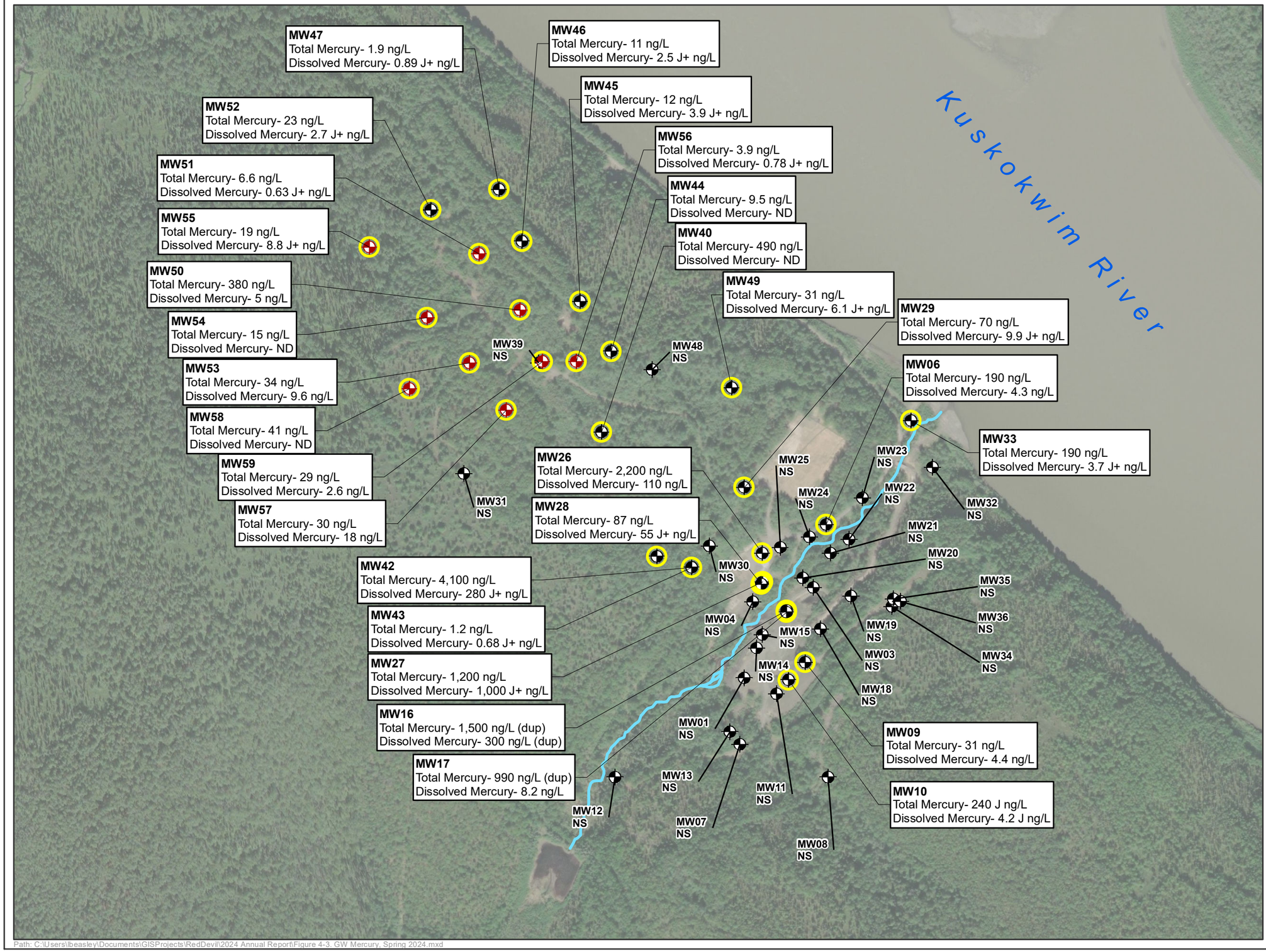
Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Groundwater Sample Results, Spring 2024, Arsenic

Figure 4-2

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 4-2. GW Arsenic, spring 2024.mxd



Legend

- Monitoring Well Location
- Transducer Well Location
- Sampled MW Location
- Red Devil Creek

Acronyms and Analytical Notes:
ng/L = nanograms per liter
dup = duplicate result
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
MW = monitoring well
ND = not detected
NS = not sampled

0 375 750
Feet

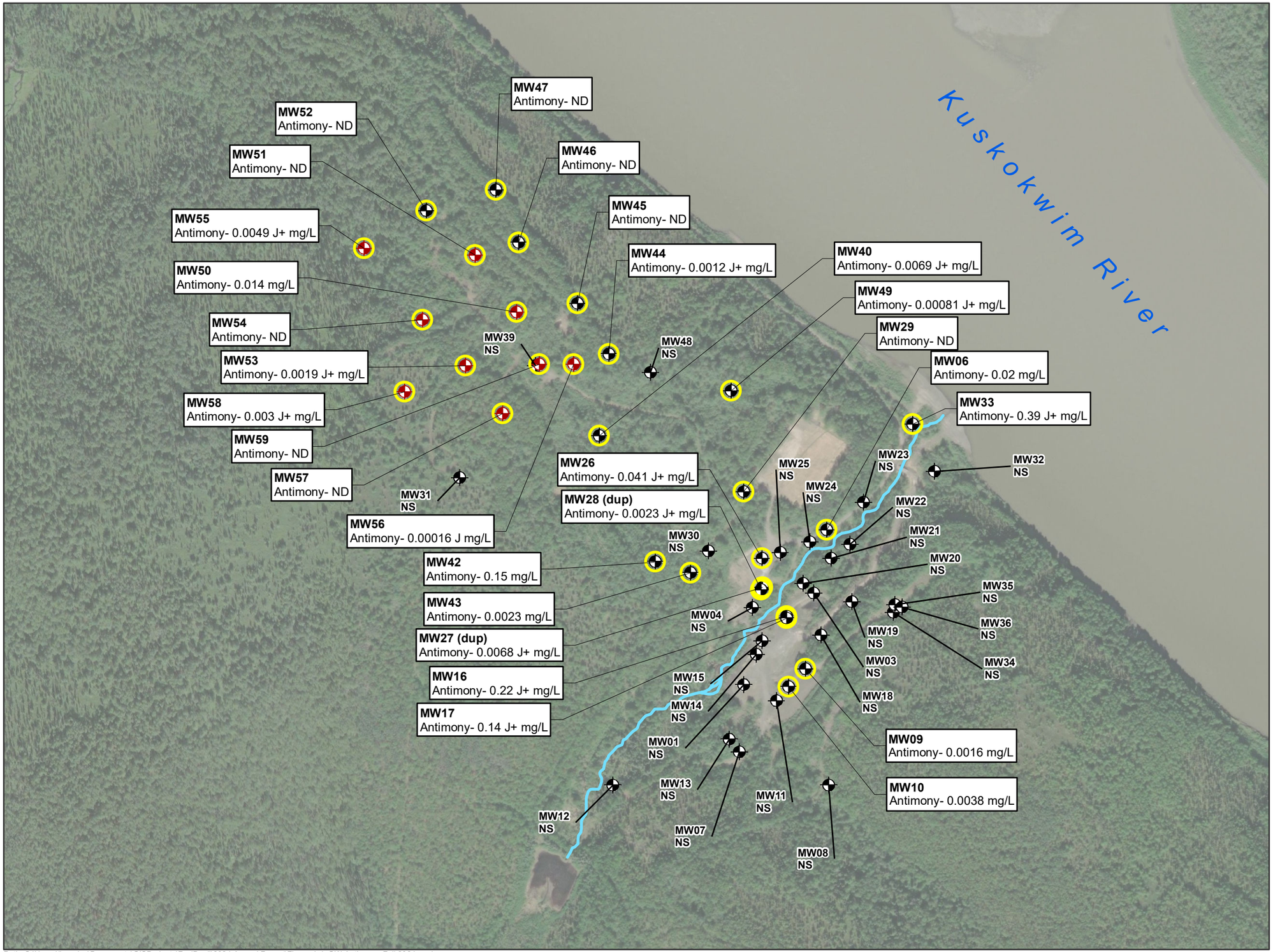
Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Groundwater Sample Results, Spring 2024, Total and Dissolved Mercury

Figure 4-3

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 4-3. GW Mercury, Spring 2024.mxd



Legend

- Monitoring Well Location
- Transducer Well Location
- Sampled MW Location
- Red Devil Creek

Acronyms and Analytical Notes:
mg/L = milligrams per liter
dup = duplicate result
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
MW = monitoring well
ND = non detected
NS = not sampled

0 375 750
Feet

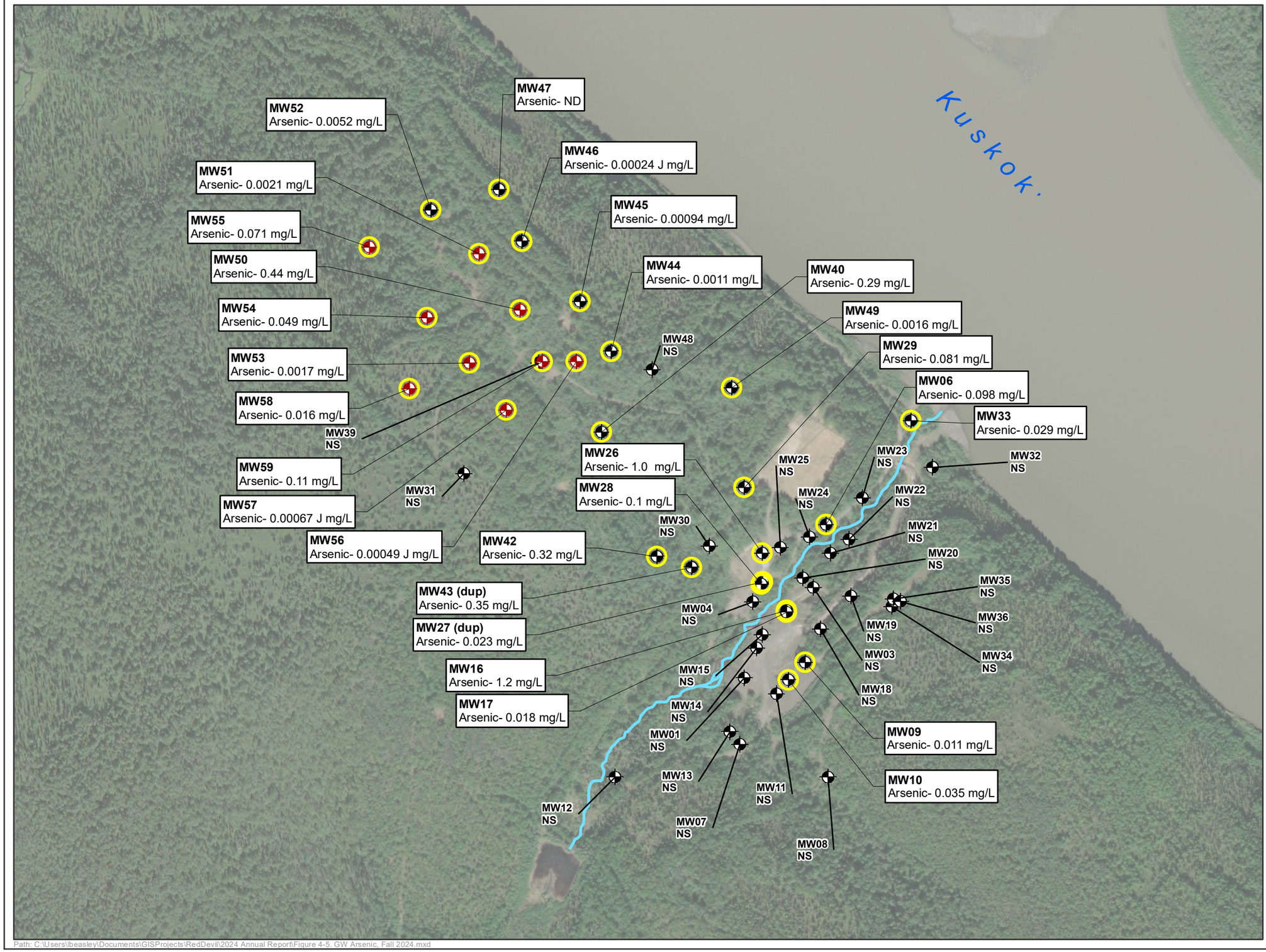
Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Groundwater Sample Results, Fall 2024, Antimony

Figure 4-4

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 4-4. GW Antimony, Fall 2024.mxd



Legend

- Monitoring Well Location
- Transducer Well Location
- Sampled MW Location
- Red Devil Creek

Acronyms and Analytical Notes:
mg/L = milligrams per liter
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
MW = monitoring well
ND = not detected
NS = not sampled

0 375 750
Feet

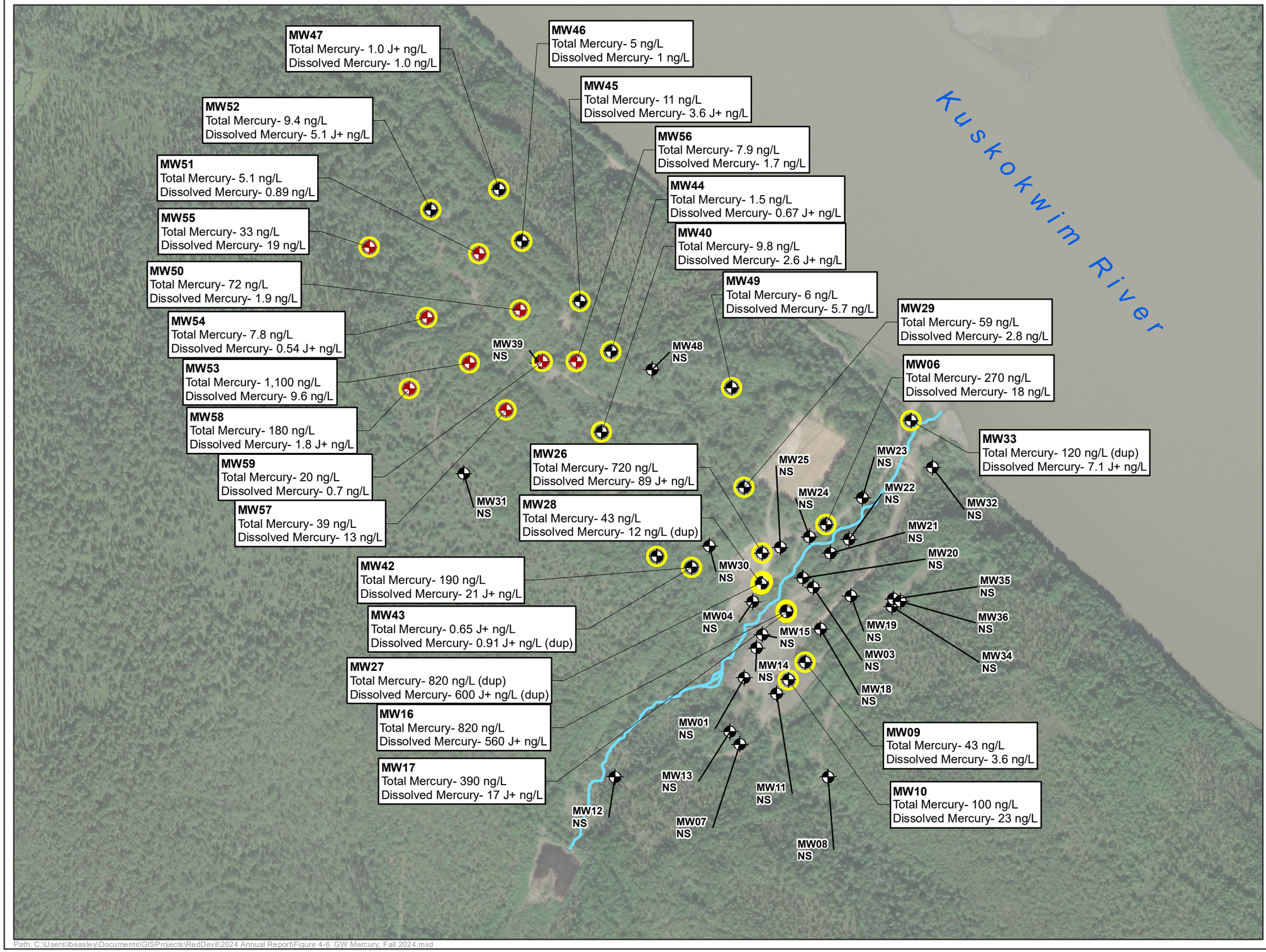
Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Groundwater Sample Results, Fall 2024 Arsenic

Figure 4-5

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 4-5. GW Arsenic, Fall 2024.mxd



Legend

- Monitoring Well Location
- Transducer Well Location
- Sampled MW Location
- Red Devil Creek

Acronyms and Analytical Notes:
ng/L = nanograms per liter
dup = duplicate result
J = The analyte was detected.
The associated result is estimated.
J+ = The analyte was detected.
The associated result is estimated with high bias.
MW = monitoring well
NS = not sampled

0 375 750
Feet

Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Groundwater Sample Results,
Fall 2024, Total and Dissolved Mercury

Figure 4-6

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 4-6. GW Mercury, Fall 2024.mxd

Kuskokwim River

RD06SW
Antimony- 0.16 J+ mg/L
Arsenic- 0.059 mg/L
Total Mercury- 55 ng/L

RD08BSW
Antimony- 0.019 J+ mg/L
Arsenic- 0.061 mg/L (dup)
Total Mercury- 53 ng/L

RD05SW
Antimony- 0.091 J+ mg/L
Arsenic- 0.64 mg/L
Total Mercury- 47 ng/L

RD15SW
Antimony- 0.038 J+ mg/L
Arsenic- 0.013 mg/L
Total Mercury- 51 ng/L

RD010SW
Antimony- 0.0015 J+ mg/L
Arsenic- 0.0011 mg/L
Total Mercury- 2.8 ng/L

Legend

- Surface Water Location
- Seep Location
- Red Devil Creek

Acronyms and Analytical Notes:
mg/L = milligrams per liter
ng/L = nanograms per liter
dup = duplicate result
J+ = The analyte was detected.
The associated result is estimated with high bias.
SW = surface water

0 375 750
Feet

Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Surface Water Analytical Results- Spring 2024

Figure 4-7

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 4-7. SW Results, Spring 2024.mxd

Kuskokwim River

RD06SW
Antimony- 0.19 J+ mg/L
Arsenic- 0.066 mg/L
Total Mercury- 25 ng/L

RD08BSW
Antimony- 0.019 J+ mg/L
Arsenic- 0.068 mg/L
Total Mercury- 51 J ng/L

RD05SW
Antimony- 0.058 J+ mg/L
Arsenic- 0.69 mg/L
Total Mercury- 35 ng/L

RD15SW
Antimony- 0.04 J+ mg/L
Arsenic- 0.036 mg/L
Total Mercury- 11 ng/L

RD010SW
Antimony- 0.0015 J+ mg/L
Arsenic- 0.0011 mg/L
Total Mercury- 2.4 ng/L

Legend

- Surface Water Location
- Seep Location
- Red Devil Creek

Acronyms and Analytical Notes:
mg/L = milligrams per liter
ng/L = nanograms per liter
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
SW = surface water

0 375 750
Feet

Imagery: Esri, 2013

2024 Annual Baseline Summary Report
Red Devil Mine, Alaska

Surface Water Analytical Results- Fall 2024

Figure 4-8

Path: C:\Users\lbeasley\Documents\GISProjects\RedDevil\2024 Annual Report\Figure 4-8. SW Results, Fall 2024.mxd

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TABLES

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Table 2-1
Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)	Notes
MW01												
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	20.11	8/28/2021	9:19	237.40	
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	17.97	6/1/2022	10:34	239.54	
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	19.23	8/22/2022	10:06	238.28	
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	18.66	6/14/2023	10:45	238.85	
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	17.69	9/7/2023	9:12	239.82	
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	17.83	5/31/2024	10:39	239.68	
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	18.78	9/6/2024	NR	238.73	
MW03												
MW03	B03	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	20.82	8/28/2021	11:05	209.95	
MW03	B03	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	16.51	6/1/2022	12:47	214.26	
MW03	B04	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	20.15	8/22/2022	9:42	210.62	
MW03	B04	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	18.14	6/14/2023	9:51	212.63	
MW03	B04	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	16.26	9/7/2023	11:02	214.51	
MW03	B04	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	16.68	5/31/2024	10:55	214.09	
MW03	B04	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	18.12	9/6/2024	NR	212.65	
MW04												
MW04	B04	30.5	20.0 - 30.0	239.92	242.12	25.3 - TD	NR	27.69	8/28/2021	12:50	214.43	
MW04	B04	30.5	20.0 - 30.0	239.92	242.12	25.3 - TD	NR	NR	NR	NR	NR	
MW04	B04	30.5	20.0 - 30.1	239.92	242.12	25.3 - TD	NR	26.35	8/22/2022	11:47	215.77	
MW04	B04	30.5	20.0 - 30.1	239.92	242.12	25.3 - TD	NR	21.10	6/14/2023	13:23	221.02	
MW04	B04	30.5	20.0 - 30.1	239.92	242.12	25.3 - TD	NR	22.10	9/7/2023	12:27	220.02	
MW04	B04	30.5	20.0 - 30.1	239.92	242.12	25.3 - TD	NR	21.31	5/31/2024	12:53	220.81	
MW04	B04	30.5	20.0 - 30.1	239.92	242.12	25.3 - TD	NR	23.20	9/6/2024	NR	218.92	
MW06												
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	19.02	8/28/2021	11:55	198.47	
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	15.95	6/1/2022	13:37	201.54	
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	19.06	8/22/2022	14:37	198.43	
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	16.54	6/14/2023	12:07	200.95	
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	10.35	9/7/2023	16:09	207.14	
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	16.01	5/31/2024	11:56	201.48	
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	17.31	9/6/2024	NR	200.18	
MW07												
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.93	8/28/2021	10:32	259.96	
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.63	6/1/2022	10:51	260.26	
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	21.94	8/22/2022	10:50	258.95	
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.86	6/14/2023	10:52	260.03	
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.46	9/7/2023	10:29	260.43	
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.84	5/31/2024	9:37	260.05	
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.73	9/6/2024	NR	260.16	
MW08												
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	14.27	8/28/2021	10:25	317.05	
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	13.33	6/1/2022	11:25	317.99	
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	13.70	8/22/2022	10:43	317.62	
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	13.68	6/14/2023	11:14	317.64	
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	12.21	9/7/2023	10:17	319.11	
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	13.32	5/31/2024	9:45	318.00	
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	13.67	9/6/2024	NR	317.65	

Table 2-1
Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)	Notes
MW09												
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	25.37	8/28/2021	9:48	251.91	
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	25.42	6/1/2022	11:45	251.86	
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	27.33	8/22/2022	10:20	249.95	
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	25.11	6/14/2023	11:28	252.17	
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	23.33	9/7/2023	9:40	253.95	
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	23.41	5/31/2024	10:23	253.87	
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	25.36	9/6/2024	NR	251.92	
MW10												
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	30.01	8/28/2021	9:43	246.20	
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	26.28	6/1/2022	11:40	249.93	
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	27.04	8/22/2022	10:16	249.17	
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	27.64	6/14/2023	11:26	248.57	
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	23.55	9/7/2023	9:30	252.66	
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	26.20	5/31/2024	10:27	250.01	
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	28.25	9/6/2024	NR	247.96	
MW11												
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	23.55	8/28/2021	9:38	247.75	
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	19.21	6/1/2022	11:34	252.09	
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	22.16	8/22/2022	10:13	249.14	
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	20.40	6/14/2023	11:19	250.90	
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	21.10	9/7/2023	9:21	250.20	
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	19.58	5/31/2024	10:33	251.72	
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	20.16	9/6/2024	NR	251.14	
MW12												
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	8/28/2021	10:44		Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	6/1/2022	11:11		Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	8/22/2022	10:59		Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	6/14/2023	11:00		Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	9/7/2023	NR		Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	5/31/2024	NR		Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	9/6/2024	NR		Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW13												
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	31.72	DRY	8/28/2021	10:37		Frost jacked, unusable for DTW measurements
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	24.37	6/1/2022	10:56	252.33	Frost jacked, unusable for DTW measurements
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	30.9	8/22/2022	10:54	245.8	Frost jacked, unusable for DTW measurements
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	28.81	6/14/2023	10:54	247.89	Frost jacked, unusable for DTW measurements
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	22.08	9/7/2023	10:33	254.62	Frost jacked, unusable for DTW measurements
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	25.75	5/31/2024	9:39	250.95	
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	28.99	9/6/2024	NR	247.71	

Table 2-1
Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)	Notes
MW14												
MW14	11MP25SB	36.0	25.0 - 35.0	246.71	249.01	25.7 - TD	--	--	--	--		Decommissioned in 2014 NTCRA
MW15												
MW15	11MP29SB	26.0	15.0 - 25.0	242.63	244.93	16.2 - TD	--	--	--	--		Decommissioned in 2014 NTCRA
MW16												
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	13.49	8/28/2021	11:01	214.60	
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	7.00	6/1/2022	12:42	221.09	
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	12.55	8/22/2022	9:19	215.54	
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	9.99	6/14/2023	9:46	218.10	
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	8.04	9/7/2023	10:57	220.05	
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	7.42	5/31/2024	10:50	220.67	
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	10.03	9/6/2024	NR	218.06	
MW17												
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	15.82	8/28/2021	10:58	212.84	
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	9.15	6/1/2022	12:38	219.51	
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	15.02	8/22/2022	9:17	213.64	
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	11.97	6/14/2023	9:41	216.69	
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	8.97	9/7/2023	10:53	219.69	
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	9.43	5/31/2024	10:47	219.23	
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	12.20	9/6/2024	NR	216.46	
MW18												
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	29.87	8/28/2021	11:18	213.96	
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	21.80	6/1/2022	13:14	222.03	
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	28.72	8/22/2022	9:08	215.11	
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	24.80	6/14/2023	10:23	219.03	
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	21.95	9/7/2023	11:31	221.88	
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	21.91	5/31/2024	11:27	221.92	
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	25.00	9/6/2024	NR	218.83	
MW19												
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	21.81	8/28/2021	11:24	218.19	
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	15.65	6/1/2022	13:08	224.35	
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	20.93	8/22/2022	904	219.07	
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	16.88	6/14/2023	10:19	223.12	
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	15.12	9/7/2023	11:26	224.88	
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	14.52	5/31/2024	11:24	225.48	
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	17.19	9/6/2024	NR	222.81	
MW20												
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	7.67	8/28/2021	11:09	207.53	
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	6.16	6/1/2022	12:52	209.04	
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	7.40	8/22/2022	9:46	207.80	
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	6.66	6/14/2023	9:58	208.54	
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	5.80	9/7/2023	11:08	209.40	
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	6.19	5/31/2024	11:00	209.01	
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	6.54	9/6/2024	NR	208.66	
MW21												
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.96	8/28/2021	11:40	201.17	
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	7.97	6/1/2022	12:57	202.16	
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.64	8/22/2022	9:50	201.49	
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.36	6/14/2023	10:04	201.77	
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.15	9/7/2023	11:14	201.98	
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.07	5/31/2024	11:08	202.06	
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.48	9/6/2024	NR	201.65	

Table 2-1
Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)	Notes
MW22												
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	9.97	8/28/2021	11:37	195.13	
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	6.71	6/1/2022	13:02	198.39	
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	9.72	8/22/2022	9:55	195.38	
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	8.61	6/14/2023	10:09	196.49	
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	7.74	9/7/2023	11:20	197.36	
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	7.62	5/31/2024	11:12	197.48	
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	8.80	9/6/2024	NR	196.30	
MW23												
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	16.38	8/28/2021	11:51	187.78	
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	14.41	6/1/2022	17:49	189.75	
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	16.31	8/22/2022	11:11	187.85	
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	14.91	6/14/2023	12:01	189.25	
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	15.70	9/7/2023	16:13	188.46	
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	14.35	5/31/2024	11:50	189.81	
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	15.29	9/6/2024	NR	188.87	
MW24												
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	17.45	8/28/2021	11:58	206.06	
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	14.60	6/1/2022	13:56	208.91	
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	17.41	8/22/2022	11:27	206.10	
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	15.26	6/14/2023	12:59	208.25	
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	15.93	9/7/2023	16:06	207.58	
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	14.42	5/31/2024	12:00	209.09	
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	15.58	9/6/2024	NR	207.93	
MW25												
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	32.26	8/28/2021	12:39	207.50	
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	29.95	6/1/2022	13:51	209.81	
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	31.93	8/22/2022	11:31	207.83	
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	30.86	6/14/2023	13:04	208.90	
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	30.64	9/7/2023	12:12	209.12	
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	29.87	5/31/2024	12:36	209.89	
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	30.81	9/6/2024	NR	208.95	
MW26												
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	36.15	8/28/2021	12:34	209.78	
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	30.99	6/1/2022	13:45	214.94	
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	33.54	8/22/2022	11:34	212.39	
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	32.69	6/14/2023	13:08	213.24	
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	31.85	9/7/2023	12:06	214.08	
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	30.81	5/31/2024	12:40	215.12	
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	33.02	9/6/2024	NR	212.91	
MW27												
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	30.92	8/28/2021	12:43	212.02	
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	24.78	6/1/2022	14:01	218.16	
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	30.01	8/22/2022	11:39	212.93	
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	26.23	6/14/2023	13:14	216.71	
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	27.01	9/7/2023	12:18	215.93	
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	24.27	5/31/2024	12:46	218.67	
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	26.85	9/6/2024	NR	216.09	

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Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)	Notes
MW28												
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	29.51	8/28/2021	12:46	212.43	
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	23.07	6/1/2022	14:04	218.87	
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	28.56	8/22/2022	11:41	213.38	
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	24.94	6/14/2023	13:16	217.00	
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	24.84	9/7/2023	12:22	217.10	
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	22.80	5/31/2024	12:49	219.14	
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	25.36	9/6/2024	NR	216.58	
MW29												
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	64.00	9/1/2021	15:00	218.25	
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	63.49	6/1/2022	14:38	218.76	
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	64.43	8/22/2022	12:50	217.82	
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	53.68	6/14/2023	13:57	228.57	
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	59.79	9/7/2023	15:48	222.46	
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	49.48	5/31/2024	13:34	232.77	
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	54.76	9/6/2024	NR	227.49	
MW30												
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	54.19	8/28/2021	16:21		Suspected Dry. Water Elevation <223.7 feet
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	50.56	6/1/2022	14:45	226.85	
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	52.56	8/22/2022	12:57	224.85	
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	51.38	6/14/2023	14:00	226.03	
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	51.40	9/7/2023	15:55	226.01	
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	49.06	5/31/2024	13:14	228.35	
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	50.02	9/6/2024	NR	227.39	
MW31												
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	39.02	8/28/2021	15:09	458.97	
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	36.09	6/1/2022	16:50	461.90	
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	38.50	8/22/2022	16:32	459.49	
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	38.29	6/14/2023	16:53	459.70	
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	34.37	9/7/2023	14:30	463.62	
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	NR	5/31/2024	NR		Pump stuck above water level
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	37.5	9/6/2024	NR	460.49	
MW32												
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	19.28	8/28/2021	11:31	177.30	
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	17.75	6/1/2022	13:25	178.83	
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	7.60	8/22/2022	8:55	188.98	
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	16.61	6/14/2023	9:16	179.97	
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	17.43	9/7/2023	11:52	179.15	
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	17.98	5/31/2024	11:43	178.60	
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	18.98	9/6/2024	NR	177.60	
MW33												
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	8.12	8/28/2021	16:53	170.80	
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	3.72	6/1/2022	17:55	175.20	
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	6.67	8/22/2022	8:38	172.25	
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	5.45	6/14/2023	9:08	173.47	
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	4.23	9/7/2023	16:17	174.69	
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	4.44	5/31/2024	17:09	174.48	
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	6.07	9/6/2024	NR	172.85	

Table 2-1
Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)	Notes
MW34												
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	34.59	8/28/2021	9:55	259.66	
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	26.84	6/1/2022	11:56	267.41	
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	34.48	8/22/2022	10:24	259.77	
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	29.62	6/14/2023	9:08	264.63	
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	29.76	9/7/2023	9:45	264.49	
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	34.07	5/31/2024	10:04	260.18	
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	29.68	9/6/2024	NR	264.57	
MW35												
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	39.18	8/28/2021	9:59	250.08	
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	33.18	6/1/2022	12:01	256.08	
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	39.63	8/22/2022	10:27	249.63	
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	35.16	6/14/2023	11:40	254.10	
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	35.30	9/7/2023	9:53	253.96	
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	33.28	5/31/2024	10:07	255.98	
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	34.74	9/6/2024	NR	254.52	
MW36												
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	16.39	8/28/2021	10:02	273.64	
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.46	6/1/2022	12:05	274.57	
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.72	8/22/2022	10:31	274.31	
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.84	6/14/2023	11:46	274.19	
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.52	9/7/2023	9:57	274.51	
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.64	5/31/2024	10:10	274.39	
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.72	9/6/2024	NR	274.31	
MW39												
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	84.79	8/28/2021	15:35		Dry (Water Elevation <349.8 feet)
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	57.82	6/1/2022	16:30	377.44	
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	84.87	8/22/2022	15:01	350.39	
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	Dry	6/14/2023	15:55	Dry	
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	84.05	9/7/2023	14:08	351.21	
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	84.85	5/31/2024	15:15	350.41	
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	84.88	9/6/2024	NR	350.38	
MW40												
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	128.91	8/28/2021	15:45	266.27	
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	125.78	6/1/2022	16:18	269.40	
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	128.93	8/22/2022	16:43	266.25	
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	127.32	6/14/2023	15:47	267.86	
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	128.17	9/7/2023	15:31	267.01	
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	125.80	5/31/2024	15:33	269.38	
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	127.25	9/6/2024	NR	267.93	
MW42												
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	128.68	8/28/2021	16:31	213.66	
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	121.49	6/1/2022	14:18	220.85	
MW42	SM70b	139.0	119 - 139	339.85	342.34	--	NR	127.58	8/22/2022	12:04	214.76	
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	122.62	6/14/2023	13:41	219.72	
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	124.35	9/7/2023	12:44	217.99	
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	120.93	5/31/2024	13:26	221.41	
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	123.89	9/6/2024	NR	218.45	

Table 2-1
Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)	Notes
MW43												
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	90.14	8/28/2021	16:38	213.55	
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	82.92	6/1/2022	14:26	220.77	
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	88.92	8/22/2022	11:55	214.77	
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	84.40	6/14/2023	13:33	219.29	
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	85.66	9/7/2023	12:52	218.03	
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	82.32	5/31/2024	13:06	221.37	
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	85.16	9/6/2024	NR	218.53	
MW44												
MW44	SM72	69	48-68	378.92	381.59	--	NR	35.42	8/28/2021	15:56	346.17	
MW44	SM72	69	48-68	378.92	381.59	--	NR	32.45	6/1/2022	15:06	349.14	
MW44	SM72	69	48-68	378.92	381.59	--	NR	35.01	8/22/2022	13:11	346.58	
MW44	SM72	69	48-68	378.92	381.59	--	NR	33.28	6/14/2023	14:25	348.31	
MW44	SM72	69	48-68	378.92	381.59	--	NR	32.45	9/7/2023	13:03	349.14	
MW44	SM72	69	48-68	378.92	381.59	--	NR	32.51	5/31/2024	14:14	349.08	
MW44	SM72	69	48-68	378.92	381.59	--	NR	33.47	9/6/2024	NR	348.12	
MW45												
MW45	SM73	82	61-81	397.70	400.37	--	NR	46.72	8/28/2021	13:40	353.65	
MW45	SM73	82	61-81	397.70	400.37	--	NR	40.20	6/1/2022	15:32	360.17	
MW45	SM73	82	61-81	397.70	400.37	--	NR	44.84	8/22/2022	13:37	355.53	
MW45	SM73	82	61-81	397.70	400.37	--	NR	43.27	6/14/2023	15:07	357.10	
MW45	SM73	82	61-81	397.70	400.37	--	NR	42.02	9/7/2023	13:25	358.35	
MW45	SM73	82	61-81	397.70	400.37	--	NR	42.19	5/31/2024	14:30	358.18	
MW45	SM73	82	61-81	397.70	400.37	--	NR	43.56	9/6/2024	NR	356.81	
MW46												
MW46	SM74	57	36-56	399.62	402.50	--	NR	35.63	8/28/2021	13:32	366.87	
MW46	SM74	57	36-56	399.62	402.50	--	NR	32.01	6/1/2022	15:39	370.49	
MW46	SM74	57	36-56	399.62	402.50	--	NR	34.00	8/22/2022	13:42	368.50	
MW46	SM74	57	36-56	399.62	402.50	--	NR	33.33	6/14/2023	15:15	369.17	
MW46	SM74	57	36-56	399.62	402.50	--	NR	31.95	9/7/2023	13:32	370.55	
MW46	SM74	57	36-56	399.62	402.50	--	NR	39.24	5/31/2024	14:34	363.26	
MW46	SM74	57	36-56	399.62	402.50	--	NR	36.18	9/6/2024	NR	366.32	
MW47												
MW47	SM75	67	46-66	380.67	383.67	--	NR	39.06	8/28/2021	13:25	344.61	
MW47	SM75	67	46-66	380.67	383.67	--	NR	35.62	6/1/2022	15:50	348.05	
MW47	SM75	67	46-66	380.67	383.67	--	NR	37.45	8/22/2022	13:48	346.22	
MW47	SM75	67	46-66	380.67	383.67	--	NR	36.25	6/14/2023	15:24	347.42	
MW47	SM75	67	46-66	380.67	383.67	--	NR	34.79	9/7/2023	13:40	348.88	
MW47	SM75	67	46-66	380.67	383.67	--	NR	48.31	5/31/2024	14:42	335.36	
MW47	SM75	67	46-66	380.67	383.67	--	NR	36.83	9/6/2024	NR	346.84	
MW48												
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	20.19	8/28/2021	16:02	331.32	
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	18.96	6/1/2022	14:58	332.55	
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	19.28	8/22/2022	13:04	332.23	
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	19.30	6/14/2023	14:18	332.21	
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	18.39	9/7/2023	15:40	333.12	
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	26.88	5/31/2024	13:47	324.63	
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	25.63	9/6/2024	NR	325.88	

Table 2-1
Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)	Notes
MW49												
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	30.31	8/28/2021	16:10	273.47	
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	27.57	6/1/2022	17:40	276.21	
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	31.56	8/22/2022	12:44	272.22	
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	28.59	6/14/2023	14:09	275.19	
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	28.30	9/7/2023	16:00	275.48	
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	43.03	5/31/2024	13:56	260.75	
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	43.44	9/6/2024	NR	260.34	
MW50												
MW50	SM78	92	71-91	439.58	442.6501	--	NR	49.26	8/28/2021	14:30	393.39	
MW50	SM78	92	71-91	439.58	442.6501	--	NR	44.50	6/1/2022	17:01	398.15	
MW50	SM78	92	71-91	439.58	442.6501	--	NR	49.50	8/22/2022	15:01	393.15	
MW50	SM78	92	71-91	439.58	442.6501	--	NR	45.91	6/14/2023	16:08	396.74	
MW50	SM78	92	71-91	439.58	442.6501	--	NR	46.69	9/7/2023	15:00	395.96	
MW50	SM78	92	71-91	439.58	442.6501	--	NR	44.12	5/31/2024	16:53	398.53	
MW50	SM78	92	71-91	439.58	442.6501	--	NR	45.76	9/6/2024	NR	396.89	
MW51												
MW51	SM79	77	56-76	422.38	425.05	--	NR	40.28	8/28/2021	14:03	384.77	
MW51	SM79	77	56-76	422.38	425.05	--	NR	37.11	6/1/2022	17:08	387.94	
MW51	SM79	77	56-76	422.38	425.05	--	NR	42.33	8/22/2022	15:22	382.72	
MW51	SM79	77	56-76	422.38	425.05	--	NR	38.18	6/14/2023	16:16	386.87	
MW51	SM79	77	56-76	422.38	425.05	--	NR	39.43	9/7/2023	15:15	385.62	
MW51	SM79	77	56-76	422.38	425.05	--	NR	59.02	5/31/2024	16:45	366.03	
MW51	SM79	77	56-76	422.38	425.05	--	NR	38.51	9/6/2024	NR	386.54	
MW52												
MW52	SM80	56	35-55	383.91	386.83	--	NR	34.17	8/28/2021	13:17	352.66	
MW52	SM80	56	35-55	383.91	386.83	--	NR	28.74	6/1/2022	15:58	358.09	
MW52	SM80	56	35-55	383.91	386.83	--	NR	32.40	8/22/2022	13:55	354.43	
MW52	SM80	56	35-55	383.91	386.83	--	NR	29.80	6/14/2023	15:29	357.03	
MW52	SM80	56	35-55	383.91	386.83	--	NR	30.77	9/7/2023	13:44	356.06	
MW52	SM80	56	35-55	383.91	386.83	--	NR	39.22	5/31/2024	14:49	347.61	
MW52	SM80	56	35-55	383.91	386.83	--	NR	31.19	9/6/2024	NR	355.64	
MW53												
MW53	SM81	62	41-61	460.82	463.7785	--	NR	34.08	8/28/2021	14:56	429.70	
MW53	SM81	62	41-61	460.82	463.7785	--	NR	28.78	6/1/2022	17:20	435.00	
MW53	SM81	62	41-61	460.82	463.7785	--	NR	34.17	8/22/2022	16:10	429.61	
MW53	SM81	62	41-61	460.82	463.7785	--	NR	30.10	6/14/2023	16:29	433.68	
MW53	SM81	62	41-61	460.82	463.7785	--	NR	31.93	9/7/2023	14:37	431.85	
MW53	SM81	62	41-61	460.82	463.7785	--	NR	29.22	5/31/2024	16:10	434.56	
MW53	SM81	62	41-61	460.82	463.7785	--	NR	30.65	9/6/2024	NR	433.13	
MW54												
MW54	SM82	50	29-49	423.01	425.7406	--	NR	30.52	8/28/2021	14:17	395.22	
MW54	SM82	50	29-49	423.01	425.7406	--	NR	28.30	6/1/2022	17:14	397.44	
MW54	SM82	50	29-49	423.01	425.7406	--	NR	29.65	8/22/2022	15:33	396.09	
MW54	SM82	50	29-49	423.01	425.7406	--	NR	28.93	6/14/2023	16:22	396.81	
MW54	SM82	50	29-49	423.01	425.7406	--	NR	28.65	9/7/2023	15:20	397.09	
MW54	SM82	50	29-49	423.01	425.7406	--	NR	28.26	5/31/2024	16:36	397.48	
MW54	SM82	50	29-49	423.01	425.7406	--	NR	29.04	9/6/2024	NR	396.70	

Table 2-1
Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)	Notes
MW55												
MW55	SM83	27	10-20	341.26	344.09	--	NR	14.08	8/28/2021	13:10	330.01	
MW55	SM83	27	10-20	341.26	344.09	--	NR	11.66	6/1/2022	16:06	332.43	
MW55	SM83	27	10-20	341.26	344.09	--	NR	12.73	8/22/2022	14:05	331.36	
MW55	SM83	27	10-20	341.26	344.09	--	NR	12.79	6/14/2023	15:37	331.30	
MW55	SM83	27	10-20	341.26	344.09	--	NR	11.79	9/7/2023	13:51	332.30	
MW55	SM83	27	10-20	341.26	344.09	--	NR	11.92	5/31/2024	14:56	332.17	
MW55	SM83	27	10-20	341.26	344.09	--	NR	13.12	9/6/2024	NR	330.97	
MW56												
MW56	SM84	76	55-75	408.55	411.329	--	NR	37.93	8/28/2021	13:46	373.40	
MW56	SM84	76	55-75	408.55	411.329	--	NR	32.35	6/1/2022	15:00	378.98	
MW56	SM84	76	55-75	408.55	411.329	--	NR	34.66	8/22/2022	13:18	376.67	
MW56	SM84	76	55-75	408.55	411.329	--	NR	34.69	6/14/2023	14:35	376.64	
MW56	SM84	76	55-75	408.55	411.329	--	NR	31.79	9/7/2023	13:12	379.54	
MW56	SM84	76	55-75	408.55	411.329	--	NR	32.83	5/31/2024	14:23	378.50	
MW56	SM84	76	55-75	408.55	411.329	--	NR	35.42	9/6/2024	NR	375.91	
MW57												
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	35.75	8/28/2021	15:17	428.06	
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	30.52	6/1/2022	16:43	433.29	
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	37.56	8/22/2022	16:25	426.25	
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	32.31	6/14/2023	16:44	431.50	
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	35.62	9/7/2023	14:15	428.19	
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	47.82	5/31/2024	15:57	415.99	
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	43.73	9/6/2024	NR	420.08	
MW58												
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	31.76	8/28/2021	14:43	440.96	
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	29.81	6/1/2022	17:28	442.91	
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	30.35	8/22/2022	16:00	442.37	
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	30.83	6/14/2023	16:35	441.89	
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	29.43	9/7/2023	14:47	443.29	
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	29.85	5/31/2024	16:27	442.87	
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	30.94	9/6/2024	NR	441.78	
MW59												
MW59	SM87	161.5	140-160	432.63	435.4785	--	NR	131.74	8/28/2021	15:28	303.74	
MW59	SM87	161.5	140-160	432.63	435.4785	--	NR	132.56	6/1/2022	16:33	302.92	
MW59	SM87	162.5	140-160	432.63	435.4785	--	NR	132.20	8/22/2022	14:18	303.28	
MW59	SM87	162.5	140-160	432.63	435.4785	--	NR	132.18	6/14/2023	15:56	303.30	
MW59	SM87	162.5	140-160	432.63	435.4785	--	NR	132.03	9/7/2023	14:03	303.45	
MW59	SM87	162.5	140-160	432.63	435.4785	--	NR	131.74	5/31/2024	15:10	303.74	
MW59	SM87	162.5	140-160	432.63	435.4785	--	NR	131.04	9/6/2024	NR	304.44	

Notes
Elevation datum: NAVD88 estimated using GEOID09 based on surveys performed prior to 2018.
Where wells are noted to be damaged, the groundwater elevation is an estimate.
TOC refers to the top of PVC inner casing.

Acronyms and Abbreviations

bgs = below ground surface
GW = groundwater
ID = identification
NAVD88 = North American Vertical Datum, 1988
NR = Not Recorded
NTCRA = non-time-critical removal action
PVC = polyvinyl chloride
TD = Total depth
TOC = Top of Casing
-- = No information available

Table 2-2
Red Devil Creek and Seep Discharge Gauging

	Estimated Discharge (cfs) by Date														
Location[1]	**RD02**	**RD03**	**RD10**	**RD14**	**RD04**	**RD12**	**RD13**	**RD15**	**RD05 (seep)**	**RD16**	**RD09**	**RD06**	**RD07**	**RD08**	**RD08B***
Average Spring	--	--	4.67	6.67	12.67	10.53	--	4.58	0.11	6.88	7.80	5.85	--	6.35	2.58
Average Fall	5.96	4.09	2.31	2.57	4.70	6.02	--	2.25	0.10	0.54	3.77	2.98	5.61	2.98	2.33
8/18/2011	5.96	4.09	5.52	--	5.95	8.24	--	--	0.18	--	5.98	6.81	7.61	7.19	NR
5/26/2012	NR	NR	12.18	--	12.67	10.53	--	--	NR	--	13.36	14.47	NR	14.20	NR
9/12/2012	NR	NR	4.64	--	3.45	3.79	--	--	0.16	--	3.40	3.80	3.61	3.09	NR
6/19/2015	NR	NR	1.25	1.41	NR	NR	NR	1.40	0.23	1.61	1.40	1.54	NR	1.90	NR
9/2/2015	NR	NR	0.48	0.54	NR	NR	NR	0.67	0.19	0.60	0.80	0.79	NR	0.81	NR
9/28/2016	NR	NR	2.45	3.01	NR	NR	NR	3.53	0.35	NR	2.43	5.51	NR	NR	NR
6/1/2017	NR	NR	1.20	1.54	NR	NR	NR	1.91	0.01	NR	1.55	1.26	NR	2.15	NR
9/16/2017	NR	NR	5.22	6.35	NR	NR	NR	6.85	0.05	NR	6.23	7.08	NR	7.38	NR
5/19/2018	NR	NR	11.60	10.84	NR	NR	NR	15.80	0.33	NR	14.87	13.69	NR	10.41	NR
5/18/2019	NR	NR	11.47	12.87	NR	NR	NR	13.04	0.12	12.14	NR	15.15	NR	13.12	NR
9/10/2019	NR	NR	0.42	0.37	NR	NR	NR	0.41	0.01	0.47	NR	0.33	NR	0.26	NR
6/17/2020	NR	NR	0.54	NR	NR	NR	NR	0.88	0.17	NR	NR	1.11	NR	1.28	NR
9/2/2020	NR	NR	0.40	NR	NR	NR	NR	0.39	0.03	NR	NR	0.43	NR	0.44	NR
6/9/2021	NR	NR	1.47	NR	NR	NR	NR	1.68	0.04	NR	NR	1.78	NR	1.39	NR
9/3/2021	NR	NR	0.76	NR	NR	NR	NR	1.75	0.03	NR	NR	1.23	NR	1.66	NR
6/6/2022	NR	NR	1.39	NR	NR	NR	NR	2.13	0.05	NR	NR	2.61	NR	NR	2.34
8/27/2022	NR	NR	2.89	NR	NR	NR	NR	2.59	0.04	NR	NR	2.60	NR	NR	3.64
6/19/2023	NR	NR	0.67	NR	NR	NR	NR	1.18	0.04	NR	NR	1.12	NR	NR	1.33
9/12/2023	NR	NR	1.76	NR	NR	NR	NR	2.30	0.04	NR	NR	2.56	NR	NR	2.16
6/7/2024	NR	NR	4.90	NR	NR	NR	NR	3.16	0.04	NR	NR	5.78	NR	NR	4.06
9/12/2024	NR	NR	0.85	NR	NR	NR	NR	1.77	0.01	NR	NR	1.59	NR	NR	1.18

Notes:

[1] Locations are organized from upstream to downstream along Red Devil Creek to the Kuskokwim River.

[*] RD08 was washed out due to the spring breakup flooding and replaced by RD08B in June 2022.

Acronyms and Abbreviations:

cfs = cubic feet per second

NR = Not Recorded; Station not monitored

RD = Red Devil

-- = Station not established

Table 2-3
Sample Method Summary

Location	Sample ID	Type	Pump Type	Transducer	Matrix
MW06	MM24MW06GW	Well	Bladder		GW
MW09	MM24MW09GW	Well	Bladder		GW
MW10	MM24MW10GW	Well	Bladder		GW
MW16	MM24MW16GW	Well	Bladder		GW
MW17	MM24MW17GW	Well	Bladder		GW
MW26	MM24MW26GW	Well	Bladder		GW
MW27	MM24MW27GW	Well	Bladder		GW
MW28	MM24MW28GW	Well	Bladder		GW
MW29	MM24MW29GW	Well	Bladder		GW
MW33	MM24MW33GW	Well	Bladder		GW
MW40	MM24MW40GW	Well	Bladder		GW
MW42	MM24MW42GW	Well	Bladder		GW
MW43	MM24MW43GW	Well	Bladder		GW
MW44	MM24MW44GW	Well	Bladder		GW
MW45	MM24MW45GW	Well	Bladder		GW
MW46	MM24MW46GW	Well	Bladder		GW
MW47	MM24MW47GW	Well	Bladder		GW
MW49	MM24MW49GW	Well	Bladder		GW
MW50	MM24MW50GW	Well	Bladder	X	GW
MW51	MM24MW51GW	Well	Bladder	X	GW
MW52	MM24MW52GW	Well	Bladder		GW
MW53	MM24MW53GW	Well	Bladder	X	GW
MW54	MM24MW54GW	Well	Bladder	X	GW
MW55	MM24MW55GW	Well	Bladder		GW
MW56	MM24MW56GW	Well	Bladder	X	GW
MW57	MM24MW57GW	Well	Bladder	X	GW
MW58	MM24MW58GW	Well	Bladder	X	GW
MW59	MM24MW59GW	Well	Bladder	X	GW
RD10	MM24RD10SW	Stream	Peristaltic		SW
RD15	MM24RD15SW	Stream	Peristaltic		SW
RD05	MM24RD05SW	Stream	Peristaltic		SW
RD06	MM24RD06SW	Stream	Peristaltic		SW
RD08B	MM24RD08BSW	Stream	Peristaltic		SW
RD08B	MM24RD08BSW	Stream	Peristaltic		SW

Acronyms and Abbreviations:

GW = groundwater

ID = identification

SW = surface water

In fall 2024, MW06, MW09, MW10, MW16, MW17, MW27, MW28, MW33, MW53, MW54, MW55, and MW58 were sampled with a peristaltic pump due to one compressor/pump failure to function.

Table 2-4
Sample Matrix - Spring 2024

			Method:	TDS	TSS	LL Mercury		Inorganic Ions (Cl, F, SO4)	Alkalinity	Nitrate-Nitrite	Total TAL Metals	Total TAL Metals	Mercury
				160.1	160.2	1631E		300	EPA 310.1	353.2	6020B	6010D	EPA 7470A
Location	Sample ID	Date	Sample Type			Dissolved	Total				Total	Total	Total
MW06	0624MW06GW	6/1/2024 14:45	N			X	X				X	X	X
MW09	0624MW09GW	6/1/2024 10:15	N			X	X				X	X	X
MW10	0624MW10GW	6/1/2024 12:20	N			X	X				X	X	X
MW16	0624MW16GW	6/1/2024 16:05	N			X	X				X	X	X
	0624MW16GW99	6/1/2024 16:15	FD			X	X				X	X	X
MW17	0624MW17GW	6/1/2024 11:30	N			X	X				X	X	X
	0624MW17GW99	6/1/2024 11:40	FD			X	X				X	X	X
MW26	0624MW26GW	6/1/2024 16:30	N			X	X				X	X	X
MW27	0624MW27GW	6/4/2024 13:35	N			X	X				X	X	X
MW28	0624MW28GW	6/4/2024 14:15	N			X	X				X	X	X
MW29	0624MW29GW	6/4/2024 10:30	N			X	X				X	X	X
MW33	0624MW33GW	6/5/2024 15:40	N			X	X				X	X	X
MW40	0624MW40GW	6/5/2024 14:35	N			X	X				X	X	X
MW42	0624MW42GW	6/5/2024 13:00	N			X	X				X	X	X
MW43	0624MW43GW	6/4/2024 11:55	N			X	X				X	X	X
	0624MW43GW99	6/4/2024 12:00	FD			X	X				X	X	X
MW44	0624MW44GW	6/3/2024 14:40	N			X	X				X	X	X
MW45	0624MW45GW	6/3/2024 13:10	N			X	X				X	X	X
MW46	0624MW46GW	6/3/2024 12:15	N			X	X				X	X	X
MW47	0624MW47GW	6/3/2024 11:30	N			X	X				X	X	X
MW49	0624MW49GW	6/4/2024 10:00	N			X	X				X	X	X
MW50	0624MW50GW	6/2/2024 14:15	N			X	X				X	X	X
MW51	0624MW51GW	6/2/2024 9:50	N			X	X				X	X	X
MW52	0624MW52GW	6/3/2024 10:45	N			X	X				X	X	X
MW53	0624MW53GW	6/2/2024 12:50	N			X	X				X	X	X
MW54	0624MW54GW	6/2/2024 10:30	N			X	X				X	X	X
MW55	0624MW55GW	6/3/2024 10:25	N			X	X				X	X	X
MW56	0624MW56GW	6/3/2024 14:50	N			X	X				X	X	X
MW57	0624MW57GW	6/2/2024 16:20	N			X	X				X	X	X
MW58	0624MW58GW	6/2/2024 12:05	N			X	X				X	X	X
MW59	0624MW59GW	6/2/2024 16:50	N			X	X				X	X	X
RD05	0624RD05SW	6/6/2024 11:50	N	X	X		X	X	X	X	X	X	X
RD06	0624RD06SW	6/6/2024 11:05	N	X	X		X	X	X	X	X	X	X
RD08	0624RD08SW	6/6/2024 10:15	N	X	X		X	X	X	X	X	X	X
	0624RD08SW99	6/6/2024 10:15	FD	X	X		X	X	X	X	X	X	X
RD10	0624RD10SW	6/6/2024 13:00	N	X	X		X	X	X	X	X	X	X
RD15	0624RD15SW	6/6/2024 12:15	N	X	X		X	X	X	X	X	X	X
EB01	0624EB01GW	6/7/2024 12:30	EB				X				X	X	X
EB02	0624EB02GW	6/7/2024 12:35	EB				X				X	X	X
TB01	0624TB01GW	6/1/2024 8:00	TB				X						
TB02	0624TB02GW	6/1/2024 8:05	TB				X						
TB03	0624TB03GW	6/1/2024 8:10	TB				X						
TB04	0624TB04GW	6/1/2024 8:15	TB				X						

Acronyms and Abbreviations:

EB = equipment blank

FD = field duplicate

N = primary sample

TB = trip blank

Table 2-5
Sample Matrix - Fall 2024

			Method:	TDS	TSS	LL Mercury		Inorganic Ions (Cl, F, SO4)	Alkalinity	Nitrate-Nitrite	Total TAL Metals	Total TAL Metals	Mercury
				160.1	160.2	1631E		300	EPA 310.1	353.2	6010D	6020B	EPA 7470A
Location	Sample ID	Date	Sample Type			Dissolved	Total				Total	Total	Total
EB01	0924EB01GW	9/12/2024 13:50	EB				X				X	X	X
EB02	0924EB02GW	9/12/2024 13:55	EB				X				X	X	X
MW06	0924MW06GW	9/7/2024 12:30	N			X	X				X	X	X
MW09	0924MW09GW	9/7/2024 14:50	N			X	X				X	X	X
MW10	0924MW10GW	9/7/2024 15:55	N			X	X				X	X	X
MW16	0924MW16GW	9/8/2024 12:00	N			X	X				X	X	X
MW17	0924MW17GW	9/8/2024 13:10	N			X	X				X	X	X
MW26	0924MW26GW	9/8/2024 13:35	N			X	X				X	X	X
MW27	0924MW27GW	9/9/2024 10:00	N			X	X				X	X	X
	0924MW27GW-99	9/9/2024 10:05	FD			X	X				X	X	X
MW28	0924MW28GW	9/9/2024 11:20	N			X	X				X	X	X
	0924MW28GW-99	9/9/2024 11:25	FD			X	X				X	X	X
MW29	0924MW29GW	9/7/2024 18:20	N			X	X				X	X	X
MW33	0924MW33GW	9/8/2024 14:50	N			X	X				X	X	X
	0924MW33GW-99	9/8/2024 14:55	FD			X	X				X	X	X
MW40	0924MW40GW	9/9/2024 11:50	N			X	X				X	X	X
MW42	0924MW42GW	9/11/2024 13:45	N			X	X				X	X	X
MW43	0924MW43GW	9/7/2024 15:20	N			X	X				X	X	X
	0924MW43GW-99	9/7/2024 15:25	FD			X	X				X	X	X
MW44	0924MW44GW	9/8/2024 17:05	N			X	X				X	X	X
MW45	0924MW45GW	9/11/2024 11:45	N			X	X				X	X	X
MW46	0924MW46GW	9/11/2024 11:10	N			X	X				X	X	X
MW47	0924MW47GW	9/11/2024 9:20	N			X	X				X	X	X
MW49	0924MW49GW	9/10/2024 17:15	N			X	X				X	X	X
MW50	0924MW50GW	9/10/2024 13:30	N			X	X				X	X	X
MW51	0924MW51GW	9/10/2024 9:35	N			X	X				X	X	X
MW52	0924MW52GW	9/8/2024 11:05	N			X	X				X	X	X
MW53	0924MW53GW	9/10/2024 11:05	N			X	X				X	X	X
MW54	0924MW54GW	9/9/2024 13:05	N			X	X				X	X	X
MW55	0924MW55GW	9/8/2024 10:25	N			X	X				X	X	X
MW56	0924MW56GW	9/10/2024 16:10	N			X	X				X	X	X
MW57	0924MW57GW	9/10/2024 14:30	N			X	X				X	X	X
MW58	0924MW58GW	9/9/2024 15:10	N			X	X				X	X	X
MW59	0924MW59GW	9/9/2024 17:35	N			X	X				X	X	X
RD05	0924RD05SW	9/12/2024 10:55	N	X	X		X	X	X	X	X	X	X
RD06	0924RD06SW	9/12/2024 10:30	N	X	X		X	X	X	X	X	X	X
RD08	0924RD08SW	9/12/2024 9:45	N	X	X		X	X	X	X	X	X	X
	0924RD08SW99	9/12/2024 9:50	FD	X	X		X	X	X	X	X	X	X
RD10	0924RD10SW	9/12/2024 11:45	N	X	X		X	X	X	X	X	X	X
RD15	0924RD15SW	9/12/2024 10:45	N	X	X		X	X	X	X	X	X	X
TB01	0924TB01GW	9/7/2024 7:00	TB				X						
TB02	0924TB02GW	9/8/2024 7:00	TB				X						
TB03	0924TB03GW	9/9/2024 7:00	TB				X						
TB04	0924TB04GW	9/10/2024 7:00	TB				X						

Acronyms and Abbreviations:

EB = equipment blank

FD = field duplicate

N = primary sample

TB = trip blank

Table 4-1
Groundwater Baseline Analytical Data - Spring 2024

				Geographic Area		Pre-1955 Main Processing Area															
				Station ID		MW06		MW09		MW10	MW16				MW17				MW26		MW27		MW28		MW29	
				SampleID		0624MW06GW		0624MW09GW		0624MW10GW	0624MW16GW		0624MW16GW99		0624MW17GW		0624MW17GW99		0624MW26GW		0624MW27GW		0624MW28GW		0624MW29GW	
				Date		6/1/2024		6/1/2024		6/1/2024	6/1/2024		6/1/2024		6/1/2024		6/1/2024		6/1/2024		6/4/2024		6/4/2024		6/4/2024	
				Sample Type		N		N		N	N		N		N		N		N		N		N		N	
Method	**Analyte**	**CAS**	**Prep**	**Unit**	**RG**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**
1631E																										
	Mercury	7439-97-6	Dissolved	ng/L	520	**4.3**		**4.4**		**4.2**	**200**	J	**300**		**8.2**		**7.9**		**110**		**1000**	J+	**55**	J+	**9.9**	J+
	Mercury	7439-97-6	Total	ng/L	520	**190**		**31**		**240**	**820**	J	**1500**		**950**		**990**		**2200**		**1200**		**87**		**70**	
6020B																										
	Aluminum	7429-90-5	Total	mg/L	NS	**0.3**		**0.04**		**0.14**	**0.43**		**0.58**		**0.48**		**0.52**		**0.12**		**0.013**	J	<0.04	U	**0.63**	
	Antimony	7440-36-0	Total	mg/L	0.0078	**0.014**	J+	**0.0029**		**0.0038**	**0.61**	J+	**0.61**	J+	**0.012**		**0.013**	J+	**0.083**	J+	**0.011**	J+	**0.0028**	J+	<0.0008	U
	Arsenic	7440-38-2	Total	mg/L	0.00052	**0.067**		**0.0078**		**0.1**	**0.58**		**0.66**		**0.0056**		**0.0062**		**0.99**		**0.021**		**0.11**		**0.038**	
	Barium	7440-39-3	Total	mg/L	NS	**0.098**		**0.35**		**0.098**	**0.041**		**0.045**		**0.042**		**0.043**		**0.42**		**0.034**		**0.044**		**0.14**	
	Beryllium	7440-41-7	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Cadmium	7440-43-9	Total	mg/L	NS	<0.0004	U	**0.000058**	J	<0.0004	**0.00014**	J	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Chromium	7440-47-3	Total	mg/L	NS	**0.0014**	J+	<0.0008	U	**0.00091**	**0.0014**	J+	**0.0019**	J+	**0.00094**	J+	**0.001**	J+	**0.0011**	J+	<0.0008	U	<0.0008	U	**0.0016**	J+
	Cobalt	7440-48-4	Total	mg/L	NS	**0.0019**		**0.00056**	J+	<0.0004	**0.0052**		**0.0055**		<0.0004	U	<0.0004	U	**0.02**		**0.00043**	J+	**0.0029**		**0.0014**	
	Copper	7440-50-8	Total	mg/L	NS	<0.002	U	<0.002	U	<0.002	**0.0051**	J+	**0.005**	J+	<0.002	U	<0.002	U	**0.0025**	J+	<0.002	U	<0.002	U	<0.002	U
	Iron	7439-89-6	Total	mg/L	NS	**5.5**		**0.97**		**1.5**	**5.7**		**6.8**		**0.31**		**0.37**		**42**		<0.1	U	**1.1**		**2**	
	Lead	7439-92-1	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	**0.00055**		**0.00065**		<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Manganese	7439-96-5	Total	mg/L	NS	**0.68**	J+	**2.4**		**0.16**	**2.9**		**3**		**0.013**		**0.014**	J+	**4.9**		**0.21**		**0.83**		**0.34**	
	Nickel	7440-02-0	Total	mg/L	NS	**0.0039**	J+	<0.003	U	<0.003	**0.0053**	J+	**0.0056**	J+	<0.003	U	<0.003	U	**0.016**		**0.0078**		**0.0079**		**0.0053**	J+
	Selenium	7782-49-2	Total	mg/L	NS	<0.008	U	<0.008	U	<0.008	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U
	Silver	7440-22-4	Total	mg/L	NS	**0.0015**		<0.0004	U	<0.0004	**0.000054**	J	**0.000034**	J	**0.000044**	J	**0.000045**	J	**0.000025**	J	<0.0004	U	<0.0004	U	<0.0004	U
	Thallium	7440-28-0	Total	mg/L	NS	<0.001	U	<0.001	U	<0.001	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
	Vanadium	7440-62-2	Total	mg/L	NS	**0.001**	J	<0.004	U	**0.00098**	**0.0019**	J	**0.0023**	J	**0.001**	J	**0.0012**	J	**0.00084**	J	<0.004	U	<0.004	U	**0.0022**	J
	Zinc	7440-66-6	Total	mg/L	NS	<0.007	U	<0.007	U	<0.007	<0.007	U	**0.0073**	J+	<0.007	U	<0.007	U	<0.007	U	<0.007	U	<0.007	U	<0.007	U
6010D																										
	Calcium	7440-70-2	Total	mg/L	NS	**32**		**29**		**20**	**18**		**19**		**18**		**19**		**45**		**69**		**37**		**44**	
	Magnesium	7439-95-4	Total	mg/L	NS	**30**		**20**		**29**	**37**		**38**		**13**		**13**		**26**		**44**		**30**		**45**	
	Potassium	9/7/7440	Total	mg/L	NS	<3.3	U	<3.3	U	<3.3	<3.3	U	<3.3	U	<3.3	U	<3.3	U	<3.3	U	<3.3	U	<3.3	U	<3.3	U
	Sodium	7440-23-5	Total	mg/L	NS	**4.1**		**2.7**		**3.1**	**3.6**		**3.7**		**2.4**		**2.4**		**3.3**		**12**		**9.8**		**2.2**	
7470A																										
	Mercury	7439-97-6	Total	mg/L	0.00052	**0.000061**	J	<0.0003	U	**0.00014**	**0.00081**		**0.0011**		**0.0011**		**0.0012**		**0.0019**		**0.0011**		<0.0003	U	**0.000054**	J
Field Parameters																										
	Temperature			Deg C	NS	5.18		4.33		5.83	6.96		-		4.89		-		7.00		4.46		4.92		4.06	
	SC			µS/cm	NS	227		172		197	254		-		115		-		339		379		226		311	
	DO			mg/L	NS	3.06		3.79		2.78	1.7		-		9.66		-		9.82		6.82		1.57		0.92	
	pH			pH Units	NS	7.19		7.19		7.65	6.45		-		7.1		-		6.95		6.13		6.96		6.73	
	ORP			mV	NS	21.8		31.5		16.5	45.8		-		95.6		-		2.0		39.6		9.5		48.7	
	Turbidity			NTU	NS	8.77		2.34		6.41	18.39		-		8.47		-		8.87		0.00		1.48		17.5	

Acronyms and Abbreviations:
µS/cm = microsiemens per centimeter
Deg C = degrees Celsius
DO = dissolved Oxygen
GC/MS = Gas Chromatography/Mass Spectrometry
ICP/MS = Inductively Coupled Plasma/Mass Spectrometry
mg/L = milligrams per liter
mV = millivolts
NS = no standard
ng/L = nanograms per liter
NTU = Nephelometric Turbidity Units
ORP = oxygen reduction potential
pH = potential of Hydrogen
SC = specific conductivity
RG = remedial goals (ROD Table 8-1, Jan 2024)
Data Qualifiers:
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
U = The analyte was analyzed for but not detected.

Table 4-1
Groundwater Baseline Analytical Data - Spring 2024

				Geographic Area		Surface Mined Area		Vicinity of the Proposed Repository								
				Station ID		MW33	MW40	MW42	MW43		MW44	MW45	MW46	MW47	MW49	MW50
				SampleID		0624MW33GW	0624MW40GW	0624MW42GW	0624MW43GW	0624MW43GW99	0624MW44GW	0624MW45GW	0624MW46GW	0624MW47GW	0624MW49GW	0624MW50GW
				Date		6/5/2024	6/5/2024	6/5/2024	6/4/2024	6/4/2024	6/3/2024	6/3/2024	6/3/2024	6/3/2024	6/4/2024	6/2/2024
				Sample Type		N	N	N	N	N	N	N	N	N	N	N
Method	**Analyte**	**CAS**	**Prep**	**Unit**	**RG**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**
1631E																
	Mercury	7439-97-6	Dissolved	ng/L	520	**3.7** J+	<0.5 U	**280** J+	**0.68** J+	<0.5 U	<0.5 U	**3.9** J+	**2.5** J+	**0.89** J+	**6.1** J+	**5**
	Mercury	7439-97-6	Total	ng/L	520	**190**	**490**	**4100**	**1.2**	**0.87**	**9.5**	**12**	**11**	**1.9**	**31**	**380**
6020B																
	Aluminum	7429-90-5	Total	mg/L	NS	**0.19**	**0.12**	**3**	**0.0075** J	**0.0079** J	**0.11**	**0.026** J	**0.11**	**0.0099** J	**0.05**	**0.18**
	Antimony	7440-36-0	Total	mg/L	0.0078	**0.34** J+	**0.013** J+	**0.14** J+	**0.0031** J+	**0.0027** J+	<0.0008 U	<0.0008 U	<0.0008 U	<0.0008 U	<0.0008 U	**0.015**
	Arsenic	7440-38-2	Total	mg/L	0.00052	**0.029**	**0.32**	**0.46**	**0.37**	**0.35**	**0.0013**	**0.001**	<0.001 U	<0.001 U	**0.0015** J+	**0.54**
	Barium	7440-39-3	Total	mg/L	NS	**0.034**	**0.13**	**0.16**	**0.13**	**0.12**	**0.028**	<0.0012 U	**0.0026** J+	<0.0012 U	**0.0012** J+	**0.28**
	Beryllium	7440-41-7	Total	mg/L	NS	<0.0004 U	<0.0004 U	**0.0003** J	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Cadmium	7440-43-9	Total	mg/L	NS	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Chromium	7440-47-3	Total	mg/L	NS	**0.00095**	<0.0008 U	**0.0081**	<0.0008 U	<0.0008 U	<0.0008 U	<0.0008 U	<0.0008 U	<0.0008 U	<0.0008 U	<0.0008 U
	Cobalt	7440-48-4	Total	mg/L	NS	<0.0004 U	**0.032**	**0.0059**	**0.019**	**0.019**	**0.003**	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	**0.0033**
	Copper	7440-50-8	Total	mg/L	NS	**0.0032**	<0.002 U	**0.0079**	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	**0.011**	<0.002 U	<0.002 U
	Iron	7439-89-6	Total	mg/L	NS	**0.33**	**0.89**	**3.5**	**3.7**	**3.7**	**1.7**	<0.1 U	**0.11** J+	<0.1 U	<0.1 U	**3.1**
	Lead	7439-92-1	Total	mg/L	NS	**0.00076** J+	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Manganese	7439-96-5	Total	mg/L	NS	**0.012** J+	**0.33**	**0.27**	**2.5**	**2.5**	**0.83**	<0.002 U	**0.0022** J+	<0.002 U	**0.021** J+	**1** J+
	Nickel	7440-02-0	Total	mg/L	NS	<0.003 U	**0.11**	**0.098**	**0.052**	**0.052**	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	**0.011**
	Selenium	7782-49-2	Total	mg/L	NS	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U
	Silver	7440-22-4	Total	mg/L	NS	**0.00044**	<0.0004 U	**0.000076** J	<0.0004 U	<0.0004 U	<0.0004 U	**0.000057** J	<0.0004 U	<0.0004 U	<0.0004 U	**0.00011** J
	Thallium	7440-28-0	Total	mg/L	NS	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U
	Vanadium	7440-62-2	Total	mg/L	NS	**0.00084** J	**0.0005** J	**0.013**	<0.004 U	<0.004 U	**0.0006** J	<0.004 U	**0.0006** J	<0.004 U	<0.004 U	**0.00067** J
	Zinc	7440-66-6	Total	mg/L	NS	<0.007 U	<0.007 U	**0.015** J+	<0.007 U	<0.007 U	<0.007 U	<0.007 U	<0.007 U	**0.016** J+	<0.007 U	<0.007 U
6010D																
	Calcium	7440-70-2	Total	mg/L	NS	**17**	**47**	**52**	**20**	**20**	**37**	**18**	**10**	**14**	**9.1**	**66**
	Magnesium	7439-95-4	Total	mg/L	NS	**13**	**52**	**45**	**15**	**15**	**33**	**17**	**11**	**15**	**6.9**	**55**
	Potassium	9/7/7440	Total	mg/L	NS	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U
	Sodium	7440-23-5	Total	mg/L	NS	**4.2**	**1.9**	**2.4**	**2.9**	**2.9**	**2**	**1.1**	**1.2**	**1.6**	**1.4**	**2.2**
7470A																
	Mercury	7439-97-6	Total	mg/L	0.00052	**0.00012** J	<0.0003 U	**0.0037**	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	**0.00084**
Field Parameters																
	Temperature			Deg C	NS	3.37	4.18	5.13	3.82	-	4.11	4.16	3.74	5.61	2.94	4.23
	SC			µS/cm	NS	95	289	283	118	-	223	120	73	112	55	411
	DO			mg/L	NS	8.39	2.17	1.97	1.87	-	0.57	7.44	12.47	8.2	8	4.7
	pH			pH Units	NS	6.45	7.04	6.77	6.64	-	7.09	6.63	6.61	6.82	5.87	6.82
	ORP			mV	NS	33.8	34	46.2	31.4	-	-0.6	11	145.4	11.4	127.7	18.4
	Turbidity			NTU	NS	7.01	7.07	115.4	4.82	-	8.00	0.92	3.21	0.4	1.58	26.71

Acronyms and Abbreviations:
µS/cm = microsiemens per centimeter
Deg C = degrees Celsius
DO = dissolved Oxygen
GC/MS = Gas Chromatography/Mass Spectrometry
ICP/MS = Inductively Coupled Plasma/Mass Spectrometry
mg/L = milligrams per liter
mV = millivolts
NS = no standard
ng/L = nanograms per liter
NTU = Nephelometric Turbidity Units
ORP = oxygen reduction potential
pH = potential of Hydrogen
SC = specific conductivity
RG = remedial goals (ROD Table 8-1, Jan 2024)
Data Qualifiers:
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias
U = The analyte was analyzed for but not detected.

Table 4-1
Groundwater Baseline Analytical Data - Spring 2024

				Geographic Area		Vicinity of the Proposed Repository								
				Station ID		MW51	MW52	MW53	MW54	MW55	MW56	MW57	MW58	MW59
				SampleID		0624MW51GW	0624MW52GW	0624MW53GW	0624MW54GW	0624MW55GW	0624MW56GW	0624MW57GW	0624MW58GW	0624MW59GW
				Date		6/2/2024	6/3/2024	6/2/2024	6/2/2024	6/3/2024	6/3/2024	6/2/2024	6/2/2024	6/2/2024
				Sample Type		N	N	N	N	N	N	N	N	N
Method	**Analyte**	**CAS**	**Prep**	**Unit**	**RG**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**
1631E														
	Mercury	7439-97-6	Dissolved	ng/L	520	**0.63** J+	**2.7** J+	**9.6**	<0.5 U	**8.8** J+	**0.78** J+	**18**	<0.5 U	**2.6**
	Mercury	7439-97-6	Total	ng/L	520	**6.6**	**23**	**34**	**15**	**19**	**3.9**	**30**	**41**	**29**
6020B														
	Aluminum	7429-90-5	Total	mg/L	NS	**0.047**	**0.14**	**0.041**	**0.01** J	**0.011** J	**0.014** J	**0.11**	**0.24**	**0.52**
	Antimony	7440-36-0	Total	mg/L	0.0078	<0.0008 U	<0.0008 U	<0.0008 U	<0.0008 U	**0.0064** J+	<0.0008 U	<0.0008 U	**0.00091** J+	**0.0017** J+
	Arsenic	7440-38-2	Total	mg/L	0.00052	**0.0028**	**0.0058**	<0.001 U	**0.051**	**0.012**	<0.001 U	**0.0012** J+	**0.0084**	**0.31**
	Barium	7440-39-3	Total	mg/L	NS	**0.03**	**0.0038** J+	**0.14**	**0.13**	**0.088**	**0.052**	**0.0058** J+	**0.12**	**0.38**
	Beryllium	7440-41-7	Total	mg/L	NS	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Cadmium	7440-43-9	Total	mg/L	NS	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Chromium	7440-47-3	Total	mg/L	NS	<0.0008 U	**0.00082** J+	<0.0008 U	<0.0008 U	<0.0008 U	<0.0008 U	**0.0022** J+	**0.0017** J+	**0.0022** J+
	Cobalt	7440-48-4	Total	mg/L	NS	**0.00086** J+	<0.0004 U	<0.0004 U	**0.0013** J+	**0.00088** J+	**0.00082** J+	<0.0004 U	**0.00073** J+	**0.0012** J+
	Copper	7440-50-8	Total	mg/L	NS	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U
	Iron	7439-89-6	Total	mg/L	NS	**0.28**	**0.11** J+	<0.1 U	**3.4** J+	**7.5**	<0.1 U	<0.1 U	**5.4**	**5.7**
	Lead	7439-92-1	Total	mg/L	NS	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Manganese	7439-96-5	Total	mg/L	NS	**0.1**	**0.013** J+	**0.049** J+	**0.35**	**0.29**	**0.82**	**0.0043** J+	**0.18**	**0.58** J+
	Nickel	7440-02-0	Total	mg/L	NS	<0.003 U	<0.003 U	<0.003 U	**0.0065** J+	<0.003 U	**0.0069** J+	<0.003 U	**0.0039** J+	**0.003** J+
	Selenium	7782-49-2	Total	mg/L	NS	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U
	Silver	7440-22-4	Total	mg/L	NS	**0.00014** J	<0.0004 U	**0.000075** J	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	**0.000058** J	<0.0004 U
	Thallium	7440-28-0	Total	mg/L	NS	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U
	Vanadium	7440-62-2	Total	mg/L	NS	**0.00061** J	**0.0006** J	<0.004 U	**0.00056** J	<0.004 U	<0.004 U	<0.004 U	**0.0012** J	**0.0019** J
	Zinc	7440-66-6	Total	mg/L	NS	<0.007 U	<0.007 U	<0.007 U	<0.007 U	<0.007 U	<0.007 U	<0.007 U	<0.007 U	<0.007 U
6010D														
	Calcium	7440-70-2	Total	mg/L	NS	**21**	**8.8**	**20**	**38**	**19**	**47**	**6.5**	**30**	**55**
	Magnesium	7439-95-4	Total	mg/L	NS	**19**	**5.3**	**11**	**37**	**15**	**42**	**3.4**	**23**	**51**
	Potassium	9/7/7440	Total	mg/L	NS	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U
	Sodium	7440-23-5	Total	mg/L	NS	**1.9**	**2.3**	**1.9**	**1.6**	**1.5**	**1.3**	**2**	**1.6**	**1.6**
7470A														
	Mercury	7439-97-6	Total	mg/L	0.00052	<0.0003 U	<0.0003 U	**0.00012** J	<0.0003 U	<0.0003 U	<0.0003 U	**0.000051** J	**0.000085** J	<0.0003 U
Field Parameters														
	Temperature			Deg C	NS	3.14	5.05	5.07	3.80	3.54	4.38	4.15	4.8	10.22
	SC			µS/cm	NS	132	57	104	265	140	288	38	189	427
	DO			mg/L	NS	12.31	10.65	11.15	2.3	3.55	2.28	12.69	1.86	1.33
	pH			pH Units	NS	6.71	6.08	6.56	6.9	6.5	6.84	6.26	7.44	6.98
	ORP			mV	NS	12.5	174.5	109.3	0.0	11.0	7.6	44	1.8	-12.0
	Turbidity			NTU	NS	1.76	4.12	1.11	8.94	7.28	1.39	0.05	9.71	51.24

Acronyms and Abbreviations:
µS/cm = microsiemens per centimeter
Deg C = degrees Celsius
DO = dissolved Oxygen
GC/MS = Gas Chromatography/Mass Spectrometry
ICP/MS = Inductively Coupled Plasma/Mass Spectrometry
mg/L = milligrams per liter
mV = millivolts
NS = no standard
ng/L = nanograms per liter
NTU = Nephelometric Turbidity Units
ORP = oxygen reduction potential
pH = potential of Hydrogen
SC = specific conductivity
RG = remedial goals (ROD Table 8-1, Jan 2024)
Data Qualifiers:
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias
U = The analyte was analyzed for but not detected.

Table 4-2
Groundwater Baseline Analytical Data - Fall 2024

				Geographic Area		Pre-1955 Main Processing Area												Surface Mined Area					
				Station ID		MW06		MW09		MW10		MW16		MW17		MW26		MW27		MW28		MW29		MW33				MW40	
				SampleID		0924MW06GW		0924MW09GW		0924MW10GW		0924MW16GW		0924MW17GW		0924MW26GW		0924MW27GW	0924MW27GW-99	0924MW28GW	0924MW28GW-99	0924MW29GW		0924MW33GW		0924MW33GW-99		0924MW40GW	
				Date		9/7/2024		9/7/2024		9/7/2024		9/8/2024		9/8/2024		9/8/2024		9/9/2024	9/9/2024	9/9/2024	9/9/2024	9/7/2024		9/8/2024		9/8/2024		9/9/2024	
				Sample Type		N		N		N		N		N		N		N	FD	N	FD	N		N		FD		N	
Method	**Analyte**	**CAS**	**Prep**	**Unit**	**RG**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**
1631E																													
	Mercury	7439-97-6	Dissolved	ng/L	520	**18**		**3.6**		**23**		**560**	J+	**17**	J+	**89**	J+	**550**	J+	**600**	J+	**11**	J+	**12**		**2.8**		**7.1**	J+	**6.4**	J+	**2.6**	J+
			Total	ng/L	520	**270**		**43**		**100**		**820**		**390**		**720**		**800**		**820**		**43**		**35**		**59**		**42**		**120**		**9.8**	
6010D																															
	Calcium	7440-70-2	Total	mg/L	NS	**28**		**30**		**18**		**23**		**17**		**52**		**73**		**75**		**33**		**34**		**45**		**16**		**16**		**42**	
	Magnesium	7439-95-4	Total	mg/L	NS	**29**		**22**		**29**		**46**		**14**		**33**		**49**		**49**		**30**		**28**		**48**		**12**		**12**		**50**	
	Potassium	7440-09-07	Total	mg/L	NS	**1.2**	J	**0.58**	J	**0.85**	J	**1.6**	J	**0.38**	J	**2.7**	J	**1**	J	**1**	J	<3.3	U	**0.82**	J	**1**	J	**0.66**	J	**0.64**	J	<3.3	U
	Sodium	7440-23-5	Total	mg/L	NS	**3.9**	J+	**2.6**	J+	**3.2**	J+	**4.4**		**2.3**		**4.2**		**15**		**15**		**10**		**11**		**2.2**	J+	**4.3**		**4.4**		**1.6**	
6020B																															
	Aluminum	7429-90-5	Total	mg/L	NS	**1.1**		**0.1**		**0.027**	J	**0.024**	J	**0.017**	J	**0.019**	J	**0.0097**	J	**0.013**	J	<0.04	U	**0.0087**	J	**0.31**		**0.069**	J	**0.041**		**0.03**	J
	Antimony	7440-36-0	Total	mg/L	0.0078	**0.02**		**0.0016**		**0.0038**		**0.22**	J+	**0.14**	J+	**0.041**	J+	**0.0067**	J+	**0.0068**	J+	**0.0022**	J+	**0.0023**	J+	<0.0008	U	**0.39**	J+	**0.37**	J+	**0.0069**	J+
	Arsenic	7440-38-2	Total	mg/L	0.00052	**0.098**		**0.011**		**0.035**		**1.2**		**0.018**		**1**		**0.022**		**0.023**		**0.1**		**0.092**		**0.081**		**0.029**		**0.026**		**0.29**	
	Barium	7440-39-3	Total	mg/L	NS	**0.11**		**0.35**		**0.076**		**0.046**		**0.031**		**0.45**		**0.036**		**0.037**		**0.045**		**0.047**		**0.16**		**0.036**		**0.031**		**0.13**	
	Beryllium	7440-41-7	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Cadmium	7440-43-9	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Chromium	7440-47-3	Total	mg/L	NS	**0.0024**		**0.00036**	J	**0.00056**	J	**0.0004**	J	**0.00019**	J	**0.00032**	J	**0.00055**	J	**0.00061**	J	<0.0008	U	**0.00018**	J	**0.0013**		**0.00053**	J	**0.00042**	J	**0.00019**	J
	Cobalt	7440-48-4	Total	mg/L	NS	**0.0028**		**0.00071**		**0.00006**	J	**0.0078**	J+	<0.0004	U	**0.022**	J+	**0.0019**		**0.0019**	J+	**0.0032**	J+	**0.0029**		**0.0011**	J+	<0.0004	U	<0.0004	U	**0.028**	J+
	Copper	7440-50-8	Total	mg/L	NS	**0.0022**		<0.01	U	**0.00094**	J	**0.0011**	J	**0.00075**	J	**0.00093**	J	<0.002	U	<0.002	U	<0.002	U	<0.002	U	**0.0011**	J	**0.031**		**0.025**		<0.002	U
	Iron	7439-89-6	Total	mg/L	NS	**7.6**		**1.4**		**0.27**		**15**		**0.027**	J	**48**		**0.024**	J	**0.031**	J	**1**		**0.87**		**3**		**0.12**		**0.062**	J	**0.89**	
	Lead	7439-92-1	Total	mg/L	NS	**0.00077**	J+	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	**0.00043**		<0.0004	U	**0.00056**	J+	<0.0004	U	**0.000088**	J
	Manganese	7439-96-5	Total	mg/L	NS	**0.75**		**2.7**		**0.029**		**5.6**		**0.0039**		**6.3**		**1.1**		**1.1**		**0.94**		**0.93**		**0.36**		**0.0037**		**0.0021**		**0.28**	
	Nickel	7440-02-0	Total	mg/L	NS	**0.0052**		**0.0015**	J	**0.0009**	J	**0.0034**		**0.00042**	J	**0.015**		**0.024**		**0.024**		**0.0091**		**0.0083**		**0.0042**		**0.0012**	J	**0.0011**	J	**0.1**	
	Selenium	7782-49-2	Total	mg/L	NS	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	ND		<0.008	U
	Silver	7440-22-4	Total	mg/L	NS	**0.000033**	J	**0.000025**		<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	ND		**0.000039**	J
	Thallium	7440-28-0	Total	mg/L	NS	**0.00005**	J	**0.000035**		<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	ND		<0.001	U
	Vanadium	7440-62-2	Total	mg/L	NS	**0.0033**	J	ND		<0.004	U	**0.00063**	J	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	**0.0015**	J	**0.00052**	J	ND		<0.004	U
	Zinc	7440-66-6	Total	mg/L	NS	**0.0085**	J+	<0.007	U	<0.007	U	**0.0047**	J	**0.0041**	J	**0.0025**	J	**0.0085**		**0.009**		**0.0018**	J	<0.007	U	<0.007	U	**0.04**		**0.031**		**0.0036**	J
7470A																															
	Mercury	7439-97-6	Total	mg/L	0.00052	**0.00027**	J	<0.0003	U	**0.000088**	J	**0.00044**	J+	**0.00042**	J+	**0.00047**	J+	**0.00047**	J+	**0.00053**	J+	<0.00008	UJ	<0.0003	U	**0.000052**	J	<0.000083	UJ	<0.000067	UJ	<0.000059	UJ
Field Parameters																															
	Temperature			Deg C	NS	5.2		6.1		7.0		8.2		7.5		9.0		5.4				5.2				8.8		5.1				5.7	
	SC			µS/cm	NS	360.7		320.4		310.7		534		199.7		662		780				409.1				554		195.3				540	
	DO			mg/L	NS	3.01		11.17		12.26		0.68		11.49		0.37		2.59				3.06				0.46		11.99				3.86	
	pH			pH Units	NS	6.78		6.81		7.37		6.54		7.16		6.53		6.34				7.09				6.78		6.27				7.08	
	ORP			mV	NS	-0.9		-3.0		58.9		-43.9		52.3		-233.8		19.4				111.1				-18		-255.3				0.4	
	Turbidity			NTU	NS	110.7		4.61		2.7		2.27		1.48		15.51		2.5				1.08				37.69		5.17				6.61	

Acronyms and Abbreviations:
µS/cm = microsiemens per centimeter
Deg C = degrees Celsius
DO = dissolved Oxygen
GC/MS = Gas Chromatography/Mass Spectrometry
ICP/MS = Inductively Coupled Plasma/Mass Spectrometry
mg/L = milligrams per liter
mV = millivolts
ND = not detected
NS = no standard
ng/L = nanograms per liter
NTU = Nephelometric Turbidity Units
ORP = oxygen reduction potential
pH = potential of Hydrogen
SC = specific conductivity
RG = remedial goals (ROD Table 8-1, Jan 2024)
Data Qualifiers:
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
U = The analyte was analyzed for but not detected.

Table 4-2
Groundwater Baseline Analytical Data - Fall 2024

				Geographic Area		Vicinity of the Proposed Repository																	
				Station ID		MW42	MW43		MW44	MW45	MW46	MW47	MW49	MW50	MW51	MW52	MW53	MW54					
				SampleID		0924MW42GW	0924MW43GW	0924MW43GW-99	0924MW44GW	0924MW45GW	0924MW46GW	0924MW47GW	0924MW49GW	0924MW50GW	0924MW51GW	0924MW52GW	0924MW53GW	0924MW54GW					
				Date		9/11/2024	9/7/2024	9/7/2024	9/8/2024	9/11/2024	9/11/2024	9/11/2024	9/10/2024	9/10/2024	9/10/2024	9/8/2024	9/10/2024	9/9/2024					
				Sample Type		N	N	FD	N	N	N	N	N	N	N	N	N	N					
Method	**Analyte**	**CAS**	**Prep**	**Unit**	**RG**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**
1631E																							
	Mercury	7439-97-6	Dissolved	ng/L	520	**21**	J+	**0.71**	J+	**0.91**	J+	**0.67**	J+	**3.6**	J+	**1**		**1**		**5.7**		**1.9**		**0.89**		**5.1**	J+	**9.6**		**0.54**	J+
			Total	ng/L	520	**190**		**0.65**	J+	**0.54**	J+	**1.5**		**11**		**5**		**1**	J+	**6**		**72**		**5.1**		**9.4**		**1100**		**7.8**	
6010D																							
	Calcium	7440-70-2	Total	mg/L	NS	**32**		**20**		**20**		**36**		**17**		**14**		**15**		**9**		**63**		**16**		**9.1**		**15**		**38**	
	Magnesium	7439-95-4	Total	mg/L	NS	**31**		**15**		**15**		**33**		**17**		**16**		**19**		**7.6**		**61**		**18**		**5.6**		**8.1**		**38**	
	Potassium	7440-09-07	Total	mg/L	NS	<3.3	U	**0.49**	J	**0.47**	J	**0.46**	J	**0.51**	J	<3.3	U	**0.48**	J	**0.47**	J	<3.3	U	<3.3	U	**0.21**	J	<3.3	U	<3.3	U
	Sodium	7440-23-5	Total	mg/L	NS	**1.7**		**2.8**	J+	**2.8**	J+	**2**		**1.1**		**1.2**		**1.7**	J+	**1.4**		**2**	J+	**1.8**		**2.3**		**2.5**	J+	**1.9**	
6020B																							
	Aluminum	7429-90-5	Total	mg/L	NS	**0.15**		<0.04	U	<0.04	U	**0.014**	J	**0.02**	J	**0.027**	J	<0.04	U	**0.045**		**0.021**	J	**0.041**		**0.0093**	J	**0.23**		**0.018**	J
	Antimony	7440-36-0	Total	mg/L	0.0078	**0.15**		**0.0023**		**0.0022**		**0.0012**	J+	<0.0008	U	<0.0008	U	<0.0008	U	**0.00081**	J+	**0.014**		<0.0008	U	<0.0008	U	**0.0019**	J+	<0.0008	U
	Arsenic	7440-38-2	Total	mg/L	0.00052	**0.32**		**0.34**		**0.35**		**0.0011**		**0.00094**		**0.00024**	J	<0.001	U	**0.0016**		**0.44**		**0.0021**		**0.0052**		**0.0017**		**0.049**	
	Barium	7440-39-3	Total	mg/L	NS	**0.12**		**0.13**		**0.13**		**0.025**		**0.0017**		**0.0013**	J+	**0.00078**	J	**0.0016**		**0.28**		**0.023**		**0.0018**		**0.13**		**0.12**	
	Beryllium	7440-41-7	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	ND		<0.0004	U	<0.0004	U
	Cadmium	7440-43-9	Total	mg/L	NS	**0.000042**	J	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	ND		<0.0004	U	<0.0004	U
	Chromium	7440-47-3	Total	mg/L	NS	**0.00057**	J	<0.0008	U	<0.0008	U	<0.0008	U	**0.00031**	J	**0.00022**	J	<0.0008	U	**0.00057**	J	**0.00045**	J	**0.00029**	J	**0.00043**	J	**0.0022**		**0.00017**	J
	Cobalt	7440-48-4	Total	mg/L	NS	**0.00082**		**0.018**		**0.019**		**0.0031**	J+	<0.0004	U	<0.0004	U	<0.0004	U	**0.000075**	J	**0.003**	J+	**0.00086**		<0.0004	U	**0.0013**	J+	**0.0012**	
	Copper	7440-50-8	Total	mg/L	NS	**0.0008**	J	<0.002	U	<0.01	U	**0.004**		<0.002	U	<0.002	U	<0.002	U	<0.002	U	**0.0018**	J	<0.002	U	<0.002	U	**0.0044**		<0.002	U
	Iron	7439-89-6	Total	mg/L	NS	**1.1**		**3.4**		**3.5**		**1.6**		**0.11**		**0.026**	J	<0.1	U	**0.043**	J	**1.8**		**0.17**		**0.041**	J	**0.39**		**2.8**	
	Lead	7439-92-1	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	**0.00091**	J+	<0.0004	U
	Manganese	7439-96-5	Total	mg/L	NS	**0.33**		**2.7**		**2.7**		**0.83**		**0.0012**	J	**0.00086**	J	**0.0017**	J	**0.02**		**0.97**		**0.1**		**0.0055**		**0.24**		**0.33**	
	Nickel	7440-02-0	Total	mg/L	NS	**0.0093**		**0.051**		**0.052**		**0.003**		**0.0009**	J	**0.0006**	J	**0.00059**	J	**0.0017**	J	**0.0088**		**0.0013**	J	**0.00091**	J	**0.0047**		**0.0058**	
	Selenium	7782-49-2	Total	mg/L	NS	<0.008	U	<0.008	U	<0.008	U	<0.008	U	ND		<0.008	U	<0.008	U	<0.008	U	<0.008	U	ND		<0.008	U	<0.008	U	<0.008	U
	Silver	7440-22-4	Total	mg/L	NS	<0.0004	U	**0.000031**	J	**0.000089**	J	**0.00004**	J	**0.00031**	J	**0.000036**	J	<0.0004	U	<0.0004	U	**0.00011**	J	**0.00024**	J	<0.0004	U	**0.00014**	J	<0.004	U
	Thallium	7440-28-0	Total	mg/L	NS	**0.000051**	J	<0.001	U	<0.001	U	<0.001	U	<0.001	U	**0.000033**	J	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
	Vanadium	7440-62-2	Total	mg/L	NS	**0.0006**	J	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	**0.0007**	J	<0.004	U
	Zinc	7440-66-6	Total	mg/L	NS	**0.005**	J	<0.007	U	<0.007	U	**0.013**		<0.007	U	<0.007	U	**0.0021**	J	**0.0051**	J	**0.0083**		**0.0021**	J	**0.0017**	J	**0.038**		<0.007	U
7470A																							
	Mercury	7439-97-6	Total	mg/L	0.00052	**0.00039**	J+	<0.0003	U	<0.0003	U	<0.000061	UJ	<0.00007	UJ	<0.0003	U	<0.0003	U	<0.0003	U	**0.00013**	J	<0.0003	U	<0.000059	UJ	**0.00019**	J	<0.000058	UJ
Field Parameters																							
	Temperature			Deg C	NS	7.1		6.7				5.7		3.5		3.2		3.9		4.0		4.8		4.0		8.6		4.0		4.3	
	SC			µS/cm	NS	375		245.3				409.6		210.5		187.7		212.5		117.7		703		209.2		105		164.3		444.9	
	DO			mg/L	NS	2.1		9.27				0.93		16.49		11.39		9.12		9.64		11.38		14.83		8.65		8.65		0.94	
	pH			pH Units	NS	6.84		6.64				7.12		6.68		6.72		6.72		5.92		6.74		6.58		5.94		6.52		7.07	
	ORP			mV	NS	30		8.8				-39.2		146.2		142		144.9		157.6		25.3		157.1		-103.7		143.1		-308.2	
	Turbidity			NTU	NS	14.76		1.77				9.7		0.00		0.00		0.00		3.37		9.48		4.14		0.32		34.61		11.21	

Acronyms and Abbreviations:
µS/cm = microsiemens per centimeter
Deg C = degrees Celsius
DO = dissolved Oxygen
GC/MS = Gas Chromatography/Mass Spectrometry
ICP/MS = Inductively Coupled Plasma/Mass Spectrometry
mg/L = milligrams per liter
mV = millivolts
ND = not detected
NS = no standard
ng/L = nanograms per liter
NTU = Nephelometric Turbidity Units
ORP = oxygen reduction potential
pH = potential of Hydrogen
SC = specific conductivity
RG = remedial goals (ROD Table 8-1, Jan 2024)
Data Qualifiers:
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bia
U = The analyte was analyzed for but not detected.

Table 4-2
Groundwater Baseline Analytical Data - Fall 2024

				Geographic Area		Vicinity of the Proposed Repository									
				Station ID		MW55		MW56		MW57		MW58		MW59	
				SampleID		0924MW55GW		0924MW56GW		0924MW57GW		0924MW58GW		0924MW59GW	
				Date		9/8/2024		9/10/2024		9/10/2024		9/9/2024		9/9/2024	
				Sample Type		N		N		N		N		N	
Method	**Analyte**	**CAS**	**Prep**	**Unit**	**RG**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**
1631E															
	Mercury	7439-97-6	Dissolved	ng/L	520	**19**		**1.7**		**13**		**1.8**	J+	**0.7**	
			Total	ng/L	520	**33**		**7.9**		**39**		**180**		**20**	
6010D															
	Calcium	7440-70-2	Total	mg/L	NS	**16**		**42**		**6.6**		**22**		**49**	
	Magnesium	7439-95-4	Total	mg/L	NS	**13**		**32**		**4**		**20**		**53**	
	Potassium	7440-09-07	Total	mg/L	NS	**0.7**	J	<3.3	U	**0.33**	J	<3.3	U	<3.3	U
	Sodium	7440-23-5	Total	mg/L	NS	**1.8**		**1.4**		**2**		**3.3**		**1.5**	J+
6020B															
	Aluminum	7429-90-5	Total	mg/L	NS	**0.019**	J	**0.038**	J	**0.067**		**0.62**		**0.1**	
	Antimony	7440-36-0	Total	mg/L	0.0078	**0.0049**	J+	**0.00016**	J	<0.0008	U	**0.003**	J+	<0.0008	U
	Arsenic	7440-38-2	Total	mg/L	0.00052	**0.071**		**0.00049**	J	**0.00067**	J	**0.016**		**0.11**	
	Barium	7440-39-3	Total	mg/L	NS	**0.12**		**0.041**		**0.0053**		**0.12**		**0.32**	
	Beryllium	7440-41-7	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	U	**0.00018**	J	<0.0004	U
	Cadmium	7440-43-9	Total	mg/L	NS	<0.0004	U	<0.004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Chromium	7440-47-3	Total	mg/L	NS	**0.00029**	J	**0.00072**	J	**0.00072**	J	**0.0026**		**0.00051**	J
	Cobalt	7440-48-4	Total	mg/L	NS	**0.00084**	J+	**0.0023**		**0.000044**	J	**0.00094**	J+	**0.00074**	J+
	Copper	7440-50-8	Total	mg/L	NS	**0.00067**	J	**0.00097**	J	<0.002	U	**0.0037**		<0.002	U
	Iron	7439-89-6	Total	mg/L	NS	**31**		<0.1	U	**0.045**	J	**8**		**2.1**	
	Lead	7439-92-1	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	U	**0.00065**	J+	**0.0054**	
	Manganese	7439-96-5	Total	mg/L	NS	**0.59**		**1.8**		**0.0017**	J	**0.2**		**0.41**	
	Nickel	7440-02-0	Total	mg/L	NS	**0.0019**	J	**0.014**		**0.0017**	J	**0.0064**		**0.0021**	J
	Selenium	7782-49-2	Total	mg/L	NS	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U
	Silver	7440-22-4	Total	mg/L	NS	<0.0004	U	**0.000036**	J	<0.0004	U	**0.00007**	J	<0.0004	U
	Thallium	7440-28-0	Total	mg/L	NS	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
	Vanadium	7440-62-2	Total	mg/L	NS	<0.004	U	<0.004	U	<0.004	U	**0.0022**	J	**0.00049**	J
	Zinc	7440-66-6	Total	mg/L	NS	**0.0018**	J	**0.0044**	J	**0.0026**	J	**0.016**		**0.0013**	J
7470A															
	Mercury	7439-97-6	Total	mg/L	0.00052	<0.0003	U	<0.0003	U	<0.0003	U	<0.00022	UJ	<0.0003	U
Field Parameters															
	Temperature			Deg C	NS	4.2		5.6		4.4		6.7		8.8	
	SC			µS/cm	NS	303.3		407.2		77.6		262.3		589	
	DO			mg/L	NS	0.87		3.99		12.7		10.71		1.5	
	pH			pH Units	NS	6.42		6.88		6.23		7.59		7.05	
	ORP			mV	NS	-44.4		122.3		129.9		-349.1		-27.7	
	Turbidity			NTU	NS	4.13		5.77		1.38		78.25		8.44	

Acronyms and Abbreviations:
µS/cm = microsiemens per centimeter
Deg C = degrees Celsius
DO = dissolved Oxygen
GC/MS = Gas Chromatography/Mass Spectrometry
ICP/MS = Inductively Coupled Plasma/Mass Spectrometry
mg/L = milligrams per liter
mV = millivolts
ND = not detected
NS = no standard
ng/L = nanograms per liter
NTU = Nephelometric Turbidity Units
ORP = oxygen reduction potential
pH = potential of Hydrogen
SC = specific conductivity
RG = remedial goals (ROD Table 8-1, Jan 2024)
Data Qualifiers:
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bia
U = The analyte was analyzed for but not detected.

Table 4-3
Surface Water Baseline Analytical Data - Spring 2024

				Geographic Area		Vicinity of the Proposed Repository					
				Station ID		RD05	RD06	RD08		RD10	RD15
				SampleID		0624RD05SW	0624RD06SW	0624RD08SW	0624RD08SW99	0624RD10SW	0624RD15SW
				Date		6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024
				Sample Type		N	N	N	N	N	N
Method	**Analyte**	**CAS**	**Prep Type**	**Unit**	**RG**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**	**Result Flag**
160.1											
	Total Dissolved Solids			mg/L	NS	**280**	**150**	**51**	**86**	**54**	**310**
160.2											
	Total Suspended Solids			mg/L	NS	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
1631E											
	Mercury	7439-97-6	Total	ng/L	520	**47**	**55**	**53**	**47**	**2.8**	**51**
300											
	Chloride	16887-00-6		mg/L	NS	**0.65** J	**0.56** J	**0.58** J	**0.56** J	**0.53** J	**0.53** J
	Fluoride	16984-48-8		mg/L	NS	<0.45 U	<0.45 U	<0.45 U	<0.45 U	<0.45 U	<0.45 U
	Sulfate	14808-79-8		mg/L	NS	**32**	**9.8**	**9.8**	**9.8**	**8.3**	**8.1**
310.1											
	Alkalinity			mg/L	NS	**260**	**76**	**76**	**77**	**67**	**67**
	Bicarbonate Alkalinity as CaCO3			mg/L	NS	**260**	**76**	**76**	**77**	**67**	**67**
	Carbonate Alkalinity as CaCO3			mg/L	NS	<7 U	<7 U	<7 U	<7 U	<7 U	<7 U
353.2											
	Nitrate Nitrite as N			mg/L	NS	**0.22** J+	**0.2** J+	**2.4** J	**18** J	**0.085** J+	**0.23** J+
6010D											
	Calcium	7440-70-2	Total	mg/L	NS	**40**	**14**	**15**	**15**	**14**	**13**
	Magnesium	7439-95-4	Total	mg/L	NS	**46**	**9.6**	**9.7**	**10**	**8.5**	**8**
	Potassium	9/7/7440	Total	mg/L	NS	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U
	Sodium	7440-23-5	Total	mg/L	NS	**8.5**	**1.8**	**1.8**	**1.9**	**1.5**	**1.4**
6020B											
	Aluminum	7429-90-5	Total	mg/L	NS	**0.0082** J	**0.042**	**0.037** J	**0.053**	**0.048**	**0.066**
	Antimony	7440-36-0	Total	mg/L	0.0078	**0.091** J+	**0.16** J+	**0.19** J+	**0.18** J+	**0.0015** J+	**0.038** J+
	Arsenic	7440-38-2	Total	mg/L	0.00052	**0.64**	**0.059**	**0.06**	**0.061**	**0.0011**	**0.013**
	Barium	7440-39-3	Total	mg/L	NS	**0.099**	**0.025**	**0.026**	**0.026**	**0.028**	**0.03**
	Beryllium	7440-41-7	Total	mg/L	NS	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Cadmium	7440-43-9	Total	mg/L	NS	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Chromium	7440-47-3	Total	mg/L	NS	**0.00024** J	**0.00034** J	**0.00032** J	**0.00039** J	**0.00055** J	**0.00042** J
	Cobalt	7440-48-4	Total	mg/L	NS	**0.0031**	**0.00016** J	**0.00013** J	**0.00015** J	**0.00007** J	**0.000091** J
	Copper	7440-50-8	Total	mg/L	NS	<0.002 U	**0.00088** J	**0.0012** J	**0.00097** J	**0.0013** J	**0.0015** J
	Iron	7439-89-6	Total	mg/L	NS	**1.2**	**0.14**	**0.12**	**0.15**	**0.11**	**0.16**
	Lead	7439-92-1	Total	mg/L	NS	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Manganese	7439-96-5	Total	mg/L	NS	**0.19**	**0.02**	**0.019**	**0.021**	**0.031**	**0.016**
	Nickel	7440-02-0	Total	mg/L	NS	**0.016**	**0.0011** J	**0.00093** J	**0.00089** J	**0.0005** J	**0.00063** J
	Selenium	7782-49-2	Total	mg/L	NS	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U
	Silver	7440-22-4	Total	mg/L	NS	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
	Thallium	7440-28-0	Total	mg/L	NS	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U
	Vanadium	7440-62-2	Total	mg/L	NS	**0.00055** J	**0.0007** J	**0.0006** J	**0.00071** J	<0.004 U	**0.00079** J
	Zinc	7440-66-6	Total	mg/L	NS	**0.0034** J	**0.0012** J	**0.0011** J	**0.0012** J	**0.002** J	**0.0012** J
EPA 7470A											
	Mercury	7439-97-6	Total	mg/L	0.00052	<0.0003 U	**0.000055** J	**0.000073** J	**0.000063** J	<0.0003 U	<0.0003 U
Field Parameters											
	Temperature			Deg C	NS	3.5	4.88	4.68	-	5.57	5.45
	SC			µS/cm	NS	246	72	72	-	60	63
	DO			mg/L	NS	3.88	19.21	20.24	-	13.36	12.7
	pH			pH Units	NS	7.05	7.67	7.66	-	7.89	7.8
	ORP			mV	NS	19.8	23.2	30.2	-	-4.8	17.8
	Turbidity			NTU	NS	8.41	0	4.01	-	0	0

Acronyms and Abbreviations

µS/cm = microsiemens per centimeter
Deg C = degrees Celsius
DO = dissolved Oxygen
EPA = United States Environmental Protection Agency
GC/MS = Gas Chromatography/Mass Spectrometry
ICP/MS = Inductively Coupled Plasma/Mass Spectrometry
mg/L = milligrams per liter
mV = millivolts
NS = no standard
ng/L = nanograms per liter
NTU = Nephelometric Turbidity Units
ORP = oxygen reduction potential
pH = potential of Hydrogen
SC = specific conductivity
RG = remedial goals (ROD Table 8-1, Jan 2024)

Data Qualifiers:

J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
U = The analyte was analyzed for but not detected.

Table 4-4
Surface Water Baseline Analytical Data - Fall 2024

				Geographic Area		Vicinity of the Proposed Repository											
				Station ID		RD05		RD06		RD08		RD08		RD10		RD15	
				SampleID		0924RD05SW		0924RD06SW		0924RD08SW		0924RD08SW99		0924RD10SW		0924RD15SW	
				Date		9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/12/2024	
				Sample Type		N		N		N		FD		N		N	
Method	**Analyte**	**CAS**	**Prep**	**Unit**	**RG**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**
160.1																	
	Total Dissolved Solids	(blank)		mg/L	NS	**220**		**79**		**110**		**110**		**100**		**100**	
160.2																	
	Total Suspended Solids	(blank)		mg/L	NS	**2.3**		<1.3	U	**1.3**		<1.3	U	<1.3	U	<1.3	U
1631E																	
	Mercury	7439-97-6	Total	ng/L	520	**35**		**25**		**51**	J	**34**	J	**2.4**		**11**	
300																	
	Chloride	16887-00-6		mg/L	NS	**0.58**	J	**0.7**	J	**0.61**	J	**0.57**	J	**0.53**	J	**0.54**	J
	Fluoride	16984-48-8		mg/L	NS	**0.21**	J	<0.45	U	<0.45	U	<0.45	U	<0.45	U	<0.45	U
	Sulfate	14808-79-8		mg/L	NS	**32**		**10**		**10**		**10**		**8.5**		**8.9**	
310.1																	
	Alkalinity	(blank)		mg/L	NS	**250**		**89**		**81**	J	**87**		**80**		**78**	
	Bicarbonate Alkalinity as CaCO3	(blank)		mg/L	NS	**250**		**89**		**81**	J	**87**		**80**		**78**	
	Carbonate Alkalinity as CaCO3	(blank)		mg/L	NS	<7	U	<7	U	<7	U	<7	U	<7	U	<7	U
353.2																	
	Nitrate Nitrite as N	(blank)		mg/L	NS	**0.25**		**0.34**		**0.38**		**0.4**		**0.31**		**0.38**	
6010D																	
	Calcium	7440-70-2	Total	mg/L	NS	**40**		**18**		**18**		**18**		**18**		**17**	
	Magnesium	7439-95-4	Total	mg/L	NS	**47**		**12**		**12**		**12**		**10**		**11**	
	Potassium	7440-09-07	Total	mg/L	NS	<3.3	U	<3.3	U	<3.3	U	<3.3	U	<3.3	U	<3.3	U
	Sodium	7440-23-5	Total	mg/L	NS	**9.7**		**2.2**		**2.3**		**2.2**		**1.6**		**1.9**	
6020B																	
	Aluminum	7429-90-5	Total	mg/L	NS	<0.04	U	**0.014**	J	**0.093**		**0.07**		**0.023**	J	**0.017**	J
	Antimony	7440-36-0	Total	mg/L	0.0078	**0.058**	J+	**0.19**	J+	**0.19**	J+	**0.2**	J+	**0.0015**	J+	**0.04**	J+
	Arsenic	7440-38-2	Total	mg/L	0.00052	**0.69**		**0.066**		**0.068**		**0.067**		**0.0011**		**0.036**	
	Barium	7440-39-3	Total	mg/L	NS	**0.1**		**0.028**		**0.031**		**0.03**		**0.025**		**0.026**	
	Beryllium	7440-41-7	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Cadmium	7440-43-9	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Chromium	7440-47-3	Total	mg/L	NS	<0.0008	U	**0.00017**	J	**0.00028**	J	**0.00024**	J	**0.00017**	J	<0.0008	U
	Cobalt	7440-48-4	Total	mg/L	NS	**0.0038**	J+	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Copper	7440-50-8	Total	mg/L	NS	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U
	Iron	7439-89-6	Total	mg/L	NS	**1.6**		**0.14**		**0.25**		**0.2**		**0.099**	J	**0.15**	
	Lead	7439-92-1	Total	mg/L	NS	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
	Manganese	7439-96-5	Total	mg/L	NS	**0.25**		**0.03**		**0.032**		**0.029**		**0.02**		**0.027**	
	Nickel	7440-02-0	Total	mg/L	NS	**0.015**		**0.00088**	J	**0.0011**	J	**0.00097**	J	**0.00033**	J	**0.00085**	J
	Selenium	7782-49-2	Total	mg/L	NS	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U	<0.008	U
	Silver	7440-22-4	Total	mg/L	NS	<0.0004	U	**0.000033**	J	<0.0004	U	<0.0004	U	**0.000027**	J	<0.0004	U
	Thallium	7440-28-0	Total	mg/L	NS	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
	Vanadium	7440-62-2	Total	mg/L	NS	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U
	Zinc	7440-66-6	Total	mg/L	NS	**0.0022**	J	<0.007	U	**0.0014**	J	**0.0012**	J	<0.007	U	<0.007	U
7470A																	
	Mercury	7439-97-6	Total	mg/L	0.00052	<0.0003	U	<0.0003	U	**0.0001**	J+	**0.000069**	J	<0.0003	U	<0.0003	U
	Mercury	7439-97-6	Total	mg/L	0.00052	**0.000059**	J B	**0.000074**	J B	**0.0001**	J B	**0.000069**	J	**0.000055**	J B	**0.000059**	J B
Field Parameters																	
	Temperature			Deg C	NS	3.7		5.9		5.9				6.2		6	
	SC			µS/cm	NS	537		181.5		182.5				160.6		157.4	
	DO			mg/L	NS	5.02		15.94		13.8				15.66		15.38	
	pH			pH Units	NS	7.16		7.82		7.89				7.95		8.07	
	ORP			mV	NS	12.2		13.5		43.1				35.5		15.4	
	Turbidity			NTU	NS	22.03		1.4		2.17				0.01		1.26	

Acronyms and Abbreviations

µS/cm = microsiemens per centimeter
Deg C = degrees Celsius
DO = dissolved Oxygen
GC/MS = Gas Chromatography/Mass Spectrometry
ICP/MS = Inductively Coupled Plasma/Mass Spectrometry
mg/L = milligrams per liter
mV = millivolts
NS = no standard
ng/L = nanograms per liter
NTU = Nephelometric Turbidity Units
ORP = oxygen reduction potential
pH = potential of Hydrogen
SC = specific conductivity
RG = remedial goals (ROD Table 8-1, Jan 2024)

Data Qualifiers:

B = Compound was found in the blank and the sample.
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
U = The analyte was analyzed for but not detected.

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APPENDICES

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APPENDIX A FIELD DOCUMENTATION

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A.1 TAILGATE SAFETY FIELD FORMS

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Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: BU04-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 5-31-24	**Time:** 0730
PM: EVA MOORE	**SSHO:** RILEY WITTLER	
SUXOS: —		

Weather

	AM	PM
Temperature	40°	55°
Wind	10W	10W
Humidity	—	—
Comments	NA	NA

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:
GAUGE ALL WELLS ; COLLECT TRANSDUCER DATA,

Hazards Related to Task: (check all that apply)

- [x] Biological Hazards
- [ ] Chemicals
- [ ] Contaminant Exposure
- [x] Dehydration
- [ ] Explosives
- [ ] Extreme Weather (heat/cold)
- [x] Pinch
- [ ] Radiation
- [x] Slip/Trip/Fall
- [ ] Spills
- [ ] Sun Exposure
- [x] Vehicle Operations
- [ ] Weather (rain/snow/wind)
- [x] Wildlife
- [ ] Other:

Additional Safety Topics or Discussions:
WILDLIFE, ATV OPERATIONS

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: BU06-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 6-1-24	**Time:** 0730
PM: EVA MOORE	**SSHO:** WILLEM MARTIN	
SUXOS: —		

Weather

	AM	PM
Temperature	40°	60°
Wind	low	low
Humidity	high	high
Comments	—	—

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

GAS CAN SAFETY

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☐ Chemicals
- ☐ Contaminant Exposure
- ☒ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☐ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

GROUND WATER SAMPLING

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number:	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 10-2-24	**Time:** 0730
PM: EVA MOORE	**SSHO:** WILLEM MARTIN	
SUXOS: —		

Weather

	AM	PM
Temperature	50°	60°
Wind	low	low
Humidity	high	high
Comments	RAIN	

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

GROUND WATER SAMPLING, ATV'S SAMPLING EQUIPMENT

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☐ Chemicals
- ☐ Contaminant Exposure
- ☒ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☐ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

BEARS

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number:	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 6-3-24	**Time:** 0745
PM: EVA MOORE	**SSHO:** WILLEM MARTIN	
SUXOS: —		

Weather

	AM	PM
Temperature	50°	60°
Wind	low	low
Humidity	high	high
Comments	—	—

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

GROUND WATER SAMPLE, ATVs SAMPLING EQUIPMENT

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☒ Chemicals
- ☐ Contaminant Exposure
- ☒ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☐ Sun Exposure
- ☒ Vehicle Operations
- ☐ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

PPE - MAKE SURE SAFETY GLASSES ARE WORN

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: BU06-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 6-4-24	**Time:** 0730
PM: EVA MOORE	**SSHO:** WILLEM MARTIN	
SUXOS: —		

Weather

	AM	PM
Temperature	40°	40°
Wind	low	low
Humidity	high	high
Comments	RAIN	RAIN

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

GROUND WATER SAMPLE - ATVs SAMPLING EQUIPMENT

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☐ Chemicals
- ☐ Contaminant Exposure
- ☒ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☐ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

SLIPS, TRIPS & FALLS

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number:	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 6-5-24	**Time:** 0730
PM: EVA MOORE	**SSHO:** WILLEM MARTIN	
SUXOS: –		

Weather

	AM	PM
Temperature	40°	59°
Wind	low	low
Humidity	hi	hi
Comments	cloudy	cloudy

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:
GROUND WATER SAMPLE – DROPPING RENTAL PUMP / WELL MAINTENENCE

Hazards Related to Task: (check all that apply)

☐ Biological Hazards	☐ Extreme Weather (heat/cold)	☐ Sun Exposure
☐ Chemicals	☒ Pinch	☒ Vehicle Operations
☐ Contaminant Exposure	☐ Radiation	☒ Weather (rain/snow/wind)
☒ Dehydration	☒ Slip/Trip/Fall	☒ Wildlife
☐ Explosives	☐ Spills	☐ Other:

Additional Safety Topics or Discussions:
PINCH POINTS WHEN MESSING W/ WELLS

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: SU06-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 09-06-2024	**Time:** 0700
PM: EVA MOORE	**SSHO:** —	
SUXOS: —		

Weather

	AM	PM
Temperature	47°	59°
Wind	10W	10W
Humidity	96%	96%
Comments	—	—

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:
WELL GAUGING & ROAD CLEARING

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☐ Chemicals
- ☐ Contaminant Exposure
- ☒ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☐ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:
ATV OPERATION, WILDLIFE SAFETY, PINCH POINTS

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: BU06-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 09-07-2024	**Time:** 0730
PM: EVA MOORE	**SSHO:** —	
SUXOS: —		

Weather

	AM	PM
Temperature	59°	45°
Wind	low	low
Humidity	high	high
Comments	—	—

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

START GW MONITORING

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☒ Chemicals
- ☐ Contaminant Exposure
- ☐ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☐ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

DEHYDRATION

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: BV06-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 09-08-2024	**Time:** 0715
PM: EVA MOORE	**SSHO:** —	
SUXOS:		

Weather

	AM	PM
Temperature	47°	57°
Wind	low	low
Humidity	high	high
Comments	—	—

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

GW SAMPLING

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☒ Chemicals
- ☐ Contaminant Exposure
- ☒ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☒ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

ATV SAFETY

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: BV06-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 09-09-2024	**Time:** 0715
PM: EVA MOORE	**SSHO:** —	
SUXOS: —		

Weather

	AM	PM
Temperature	46°	57°
Wind	LOW	LOW
Humidity	high	high
Comments	—	—

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

GW SAMPLING

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☐ Chemicals
- ☐ Contaminant Exposure
- ☒ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☒ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

WEATHER

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: BU06-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 09-10-2024	**Time:** 0645
PM: EVA MOORE	**SSHO:** —	
SUXOS:		

Weather

	AM	PM
Temperature	44°	53°
Wind	10W	10W
Humidity	high	high
Comments		

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

GW SAMPLING

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☐ Chemicals
- ☐ Contaminant Exposure
- ☒ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☐ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

FATIGUE

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: BV06-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 09-11-2024	**Time:** 0700
PM: EVA MOORE	**SSHO:** –	
SUXOS:		

Weather

	AM	PM
Temperature	40°	53°
Wind	low	low
Humidity	high	high
Comments	RAIN	RAIN

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

GW SAMPLING & TRANSDUCER

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☐ Chemicals
- ☐ Contaminant Exposure
- ☐ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☐ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

SLIPS, TRIPS & FALLS

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

Sundance Consulting Inc.

Tailgate Safety Meeting & Job Safety Analysis

Project & Personnel Information

Project Name: Red Devil Mine Annual Monitoring		
Contract Number: BU06-010	**Task Order:** NA	
Project Location: Red Devil Mine	**Date:** 09-12-24	**Time:** 0730
PM: EVA MOORE	**SSHO:** —	
SUXOS:		

Weather

	AM	PM
Temperature	41°	50°
Wind	8mph	13mph
Humidity	high	high
Comments		

Activities, Hazards, Equipment & Safety

Activities to be Performed & Equipment Used:

STREAM GAUGING / SAMPLING

Hazards Related to Task: (check all that apply)

- ☐ Biological Hazards
- ☐ Chemicals
- ☐ Contaminant Exposure
- ☐ Dehydration
- ☐ Explosives
- ☐ Extreme Weather (heat/cold)
- ☒ Pinch
- ☐ Radiation
- ☒ Slip/Trip/Fall
- ☐ Spills
- ☐ Sun Exposure
- ☒ Vehicle Operations
- ☒ Weather (rain/snow/wind)
- ☒ Wildlife
- ☐ Other:

Additional Safety Topics or Discussions:

SLIPS ON ROCKS WHEN TAKING STREAM MEASURMENTS

Signatures

Personnel Name	Organization	Personnel's Signature
Riley Wittler	Sundance	
Willem Martin	Sundance	

A.2 MONITORING WELL INTEGRITY CHECKLISTS

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Monitoring Well Integrity Checklist

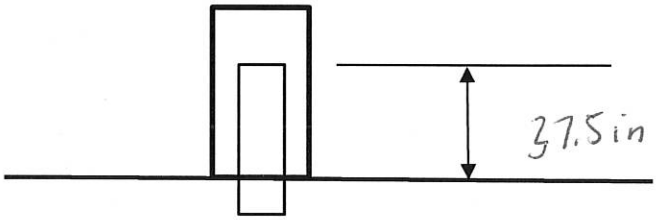
Well ID: MW01 Inspector's name: R. Witter

Date: 5-31-24

Time: 1039 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 39 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed 24

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 25
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

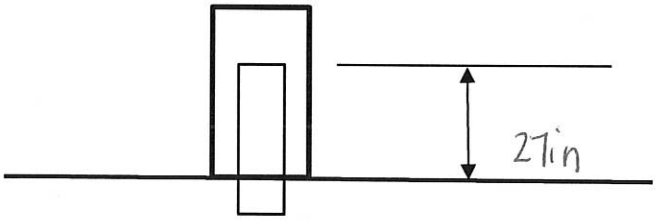
Well ID: MW03 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1055 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 34in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed 36

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 37
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

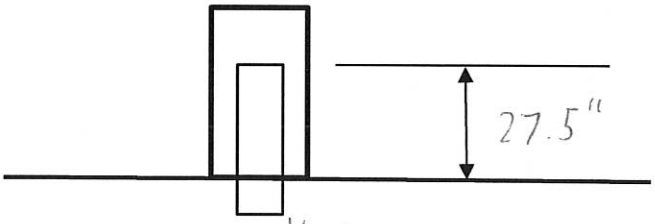
Well ID: MW4 Inspector's name: W. Martin

Date: 5/31/24

Time: 1253 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 36"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed 64

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 65
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? _____
2. Dedicated pump present? Condition? _____
3. Were there any issues in collecting samples?

_____

Comments:

J-Plug too big, does not fit well

Monitoring Well Integrity Checklist

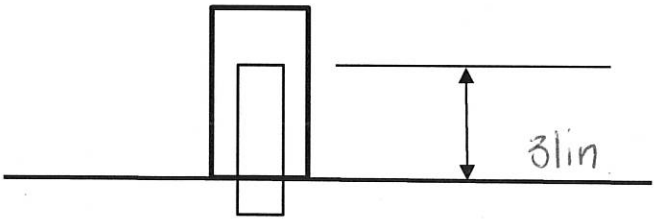
Well ID: MW06 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1156 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? YES
2. Frost jacking measures: Stick up height from ground surface 35in



3. Is the well lid/vault secure? YES
4. Is well clearly labeled? NO
5. Photographs of well closed 52

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 53
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? ~~YES - good~~ NO - BALL VALVE REPAIRED
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

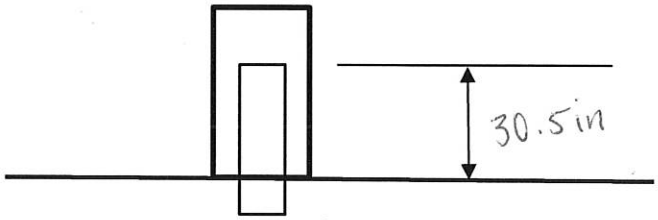
Well ID: MW1 Inspector's name: R. Wittler

Date: 5-31-24

Time: 0927 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 35 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed 3

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 4
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? NO
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

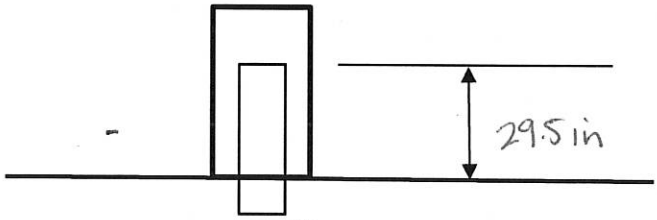
Well ID: MW8 Inspector's name: R. Wittler

Date: 5-31-24

Time: 0945 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 39in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed 1

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 8
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

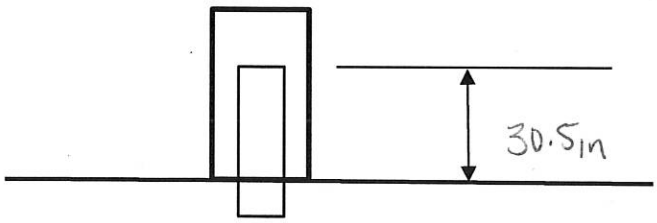
Well ID: MW09 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1024 Inspector's signature: R Wittler

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 45.5 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? NO
5. Photographs of well closed 16

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 17
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples?
   NO

Comments:

NA

Monitoring Well Integrity Checklist

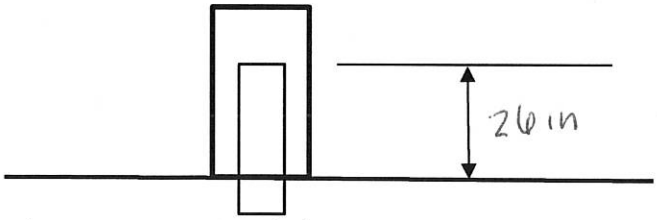
Well ID: MW10 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1027 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 37 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed 19

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 20
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? ~~yes - good~~ RW NO - BALL VALVE & BLADDER REPAIRED
3. Were there any issues in collecting samples? no

Comments:

FROST JACKED 6 in - concrete

Monitoring Well Integrity Checklist

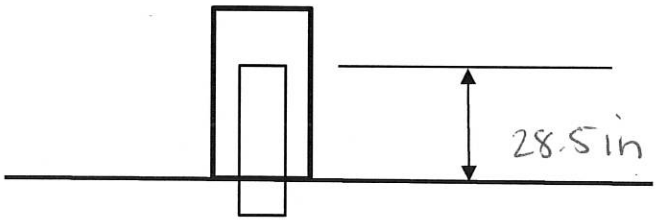
Well ID: MW11 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1033 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 36 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed 22

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 23
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

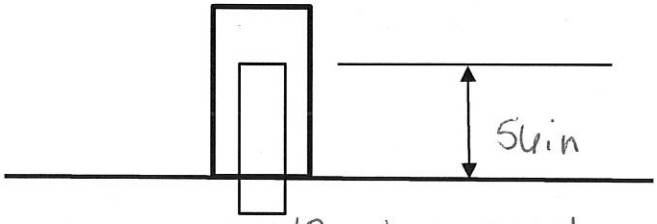
Well ID: MW12 Inspector's name: R. Nittler

Date: 5-31-24

Time: 0931 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? NA
2. Frost jacking measures: Stick up height from ground surface VAULT 43 in



3. Is the well lid/vault secure? NO but locked
4. Is well clearly labeled? NO
5. Photographs of well closed 1

After removing lid before sampling well

1. Is gasket worn or damaged? NA
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 2
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? NO
2. Dedicated pump present? Condition? NO
3. Were there any issues in collecting samples?
   yes - cannot collect due to collapsed PVC

Comments:

Monitoring Well Integrity Checklist

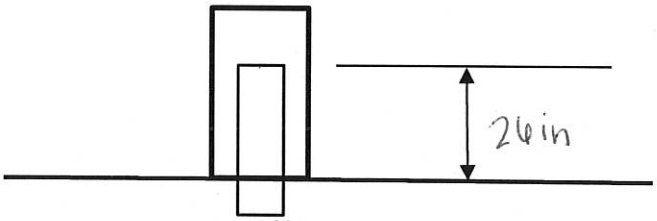
Well ID: MW13 Inspector's name: R. Wittler

Date: 5-31-24

Time: 0939 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 34in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed 5

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 6
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

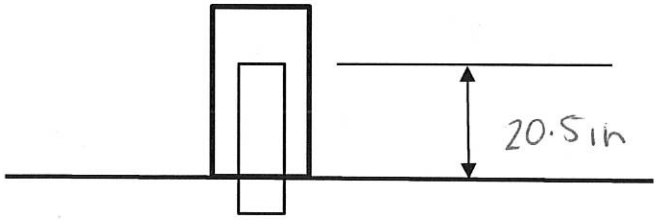
Well ID: MW16 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1050 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? ~~Yes~~
2. Frost jacking measures: Stick up height from ground surface 31 in



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed 34

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? ~~Yes~~ NO
3. Any odors? NO
4. Photographs of well with lid off 35
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? ~~Yes~~ wm NO, Stuck ball valve
2. Dedicated pump present? Condition? ~~Yes - good~~ wm Yes, Stuck ball valve
3. Were there any issues in collecting samples?
   wm ~~AV~~ Yes, needed to pull pump and fix ball valve

Comments:

Monitoring Well Integrity Checklist

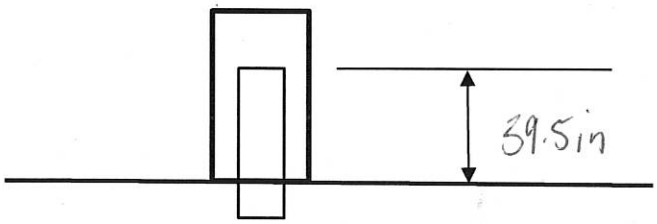
Well ID: MW17 Inspector's name: R Wittler

Date: 5-31-24

Time: 1047 Inspector's signature: R Wittler

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? FROST JACKED
2. Frost jacking measures: Stick up height from ground surface 41 -in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed 32

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 33
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes- good
3. Were there any issues in collecting samples?
   no

Comments:
FROST JACKED 6in

Monitoring Well Integrity Checklist

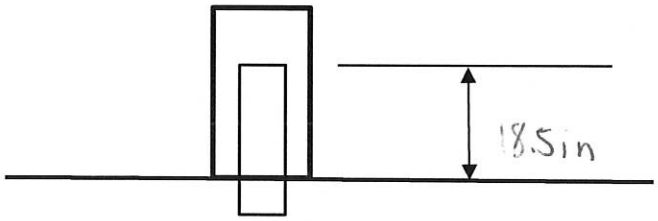
Well ID: MW18 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1127 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 34.5in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed 46

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 47
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?
   NA

Comments:

SAND COVERING WELL HEAD - MOST LIKELY FROM FROST JACKING

Monitoring Well Integrity Checklist

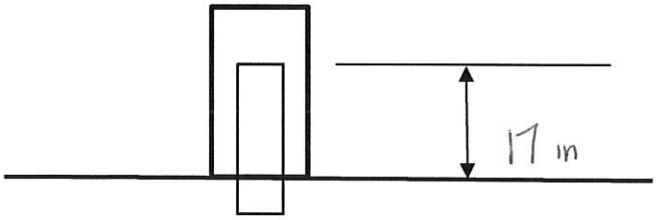
Well ID: MW19 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1124 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 28 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed y4

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 45
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?
   NA

Comments:

Monitoring Well Integrity Checklist

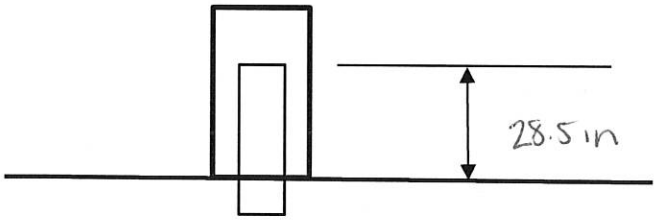
Well ID: MW20 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1100 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 37 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed ~~37~~ 38

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off ~~38~~ 39
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

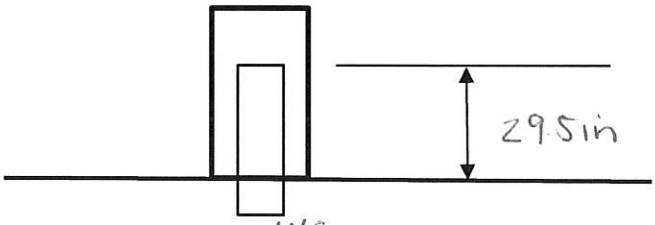
Well ID: MW21 Inspector's name: R Wittler

Date: 5-31-24

Time: 1108 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? WFS
2. Frost jacking measures: Stick up height from ground surface 29.5 in



3. Is the well lid/vault secure? WFS
4. Is well clearly labeled? ND
5. Photographs of well closed 40

After removing lid before sampling well

1. Is gasket worn or damaged? ND
2. Is vault flooded? ND
3. Any odors? ND
4. Photographs of well with lid off 41
5. Transducer present? Condition? ND

During Groundwater Sampling

1. Is well operational? WFS
2. Dedicated pump present? Condition? ND
3. Were there any issues in collecting samples? NA

Comments:

3in FROST JACK

Monitoring Well Integrity Checklist

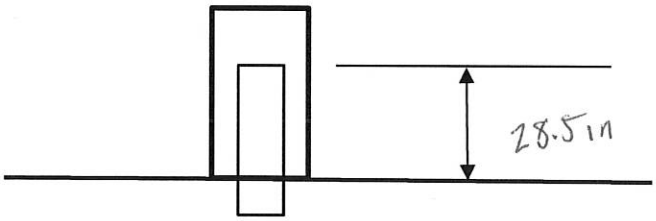
Well ID: MW22 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1112 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 31 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed 42

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 43
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?
   NA

Comments:

Monitoring Well Integrity Checklist

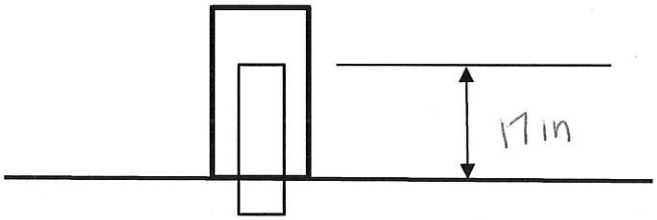
Well ID: MW23 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1150 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 31 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed SD

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off SI
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

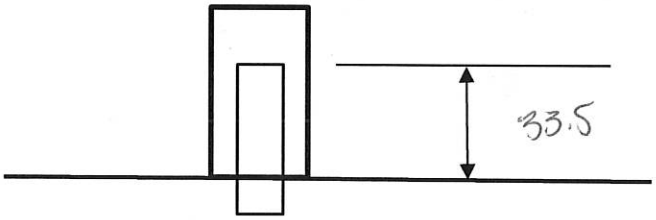
Well ID: MW24 Inspector's name: R. Wittler

Date: 1200

Time: 5-31-24 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 33



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed S4

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off S5
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?
   NA

Comments:

Monitoring Well Integrity Checklist

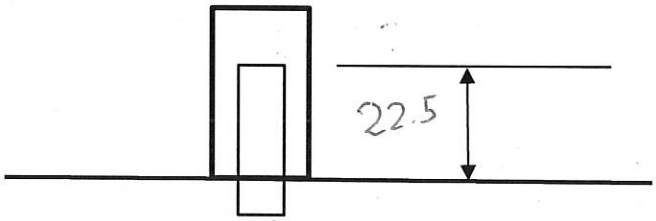
Well ID: MW25 Inspector's name: W. Martin

Date: 5/31/24

Time: 1233 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 35.5



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled?
5. Photographs of well closed 56

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 57
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational?
2. Dedicated pump present? Condition?
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

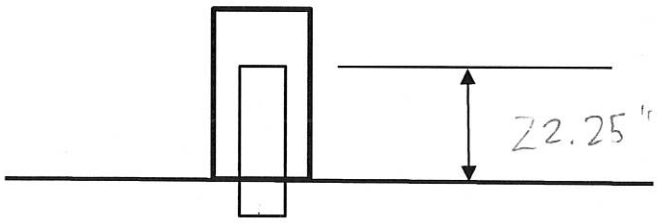
Well ID: MW 26 Inspector's name: W. Martin

Date: 5/31/24

Time: 1239 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 32.5"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed 58

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 59
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES - COLLAPSED - NEEDED REPAIR
3. Were there any issues in collecting samples?

Comments:

2 inches of cement pad are frost-jacked

Monitoring Well Integrity Checklist

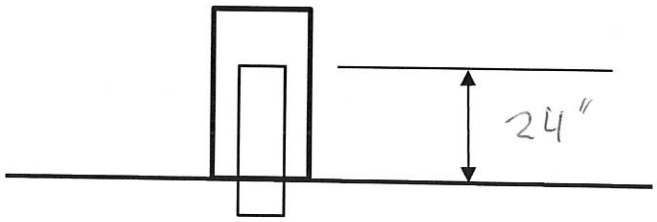
Well ID: MW27 Inspector's name: W. Martin

Date: 5/31/24

Time: 1241 Inspector's signature: WM

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 32"



3. Is the well lid/vault secure?
4. Is well clearly labeled?
5. Photographs of well closed 60

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? No
3. Any odors? NO
4. Photographs of well with lid off 61
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? good
3. Were there any issues in collecting samples? no

Comments:

cement pad frost jacked 1"

Monitoring Well Integrity Checklist

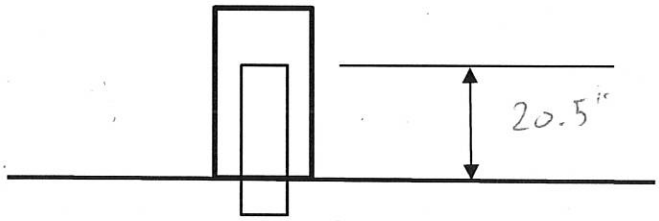
Well ID: MW28 Inspector's name: W. Martin

Date: 5/31/24

Time: 1249 Inspector's signature: W. Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 30.5"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 62

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off 63
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? NO

Comments: cement pad frost-jacked 2"

Monitoring Well Integrity Checklist

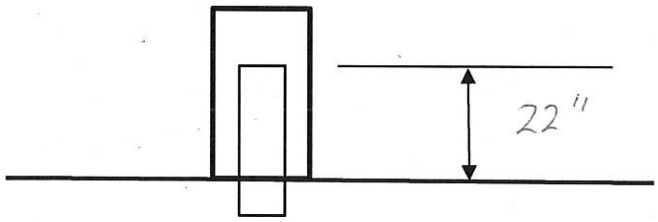
Well ID: MW29 Inspector's name: W. Martin

Date: 5/31/24

Time: 1332 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 33"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 72

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 73
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES-WORKING
3. Were there any issues in collecting samples? NO

Comments: 2" of frost jack

Monitoring Well Integrity Checklist

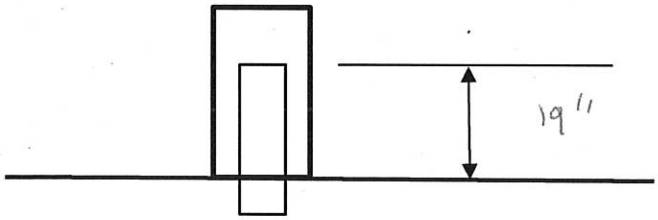
Well ID: MW 30 Inspector's name: W. Martin

Date: 5/31/24

Time: 1312 Inspector's signature: W

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 28"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed 68

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 69
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational?
2. Dedicated pump present? Condition?
3. Were there any issues in collecting samples?

Comments: 2" frost jacked up on cement pad

Monitoring Well Integrity Checklist

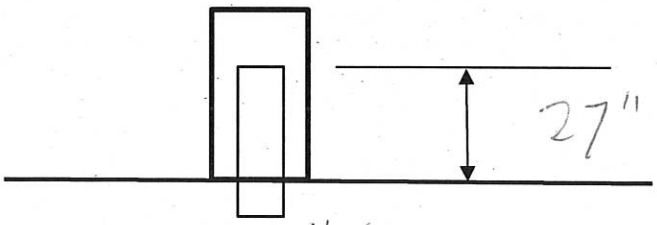
Well ID: MW31 Inspector's name: W. Martin

Date: 5/31/21

Time: 1545 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 31"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 98

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 99
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? _____
2. Dedicated pump present? Condition? _____
3. Were there any issues in collecting samples?

_____

Comments:

_____

_____

_____

_____

Monitoring Well Integrity Checklist

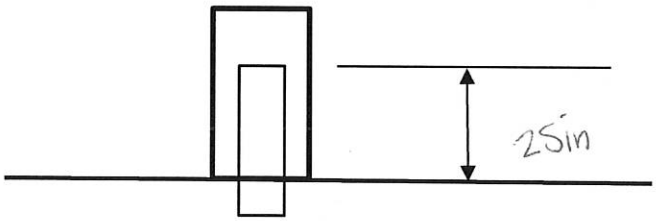
Well ID: MW32 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1143 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 43in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed 48

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 49
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

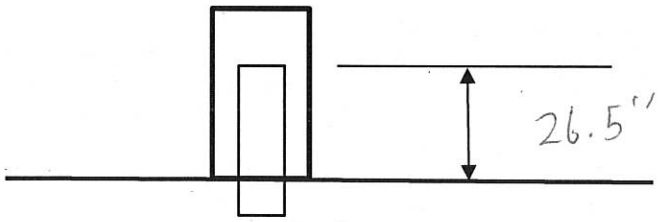
Well ID: MW33 Inspector's name: W. Martin

Date: 5

Time: Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 30 ½



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 130

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 131
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

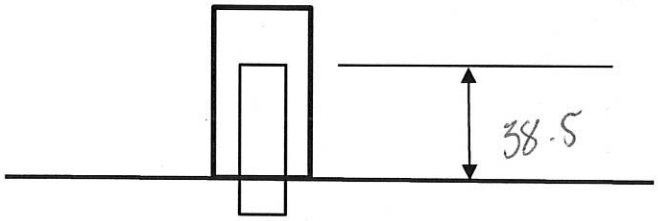
Well ID: MW34 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1004 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 45.5



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? NO
5. Photographs of well closed 9

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 10
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples? NA

Comments:

Monitoring Well Integrity Checklist

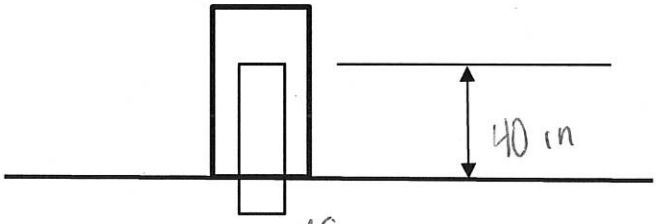
Well ID: MW35 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1007 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 45.5 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed 11

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off 13
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?
   NA

Comments:

Monitoring Well Integrity Checklist

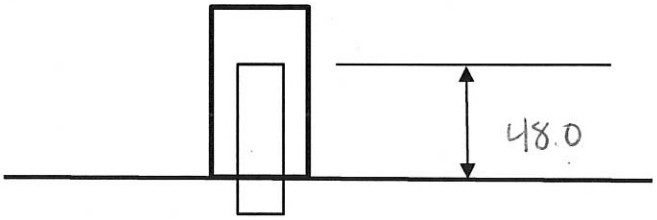
Well ID: MW36 Inspector's name: R. Wittler

Date: 5-31-24

Time: 1010 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? NO
2. Frost jacking measures: Stick up height from ground surface 47.5



3. Is the well lid/vault secure? NO
4. Is well clearly labeled? NO
5. Photographs of well closed 14

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 15
5. Transducer present? Condition?

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? NO
3. Were there any issues in collecting samples? NA

Comments:

FROST JACKED 0.5 in

Monitoring Well Integrity Checklist

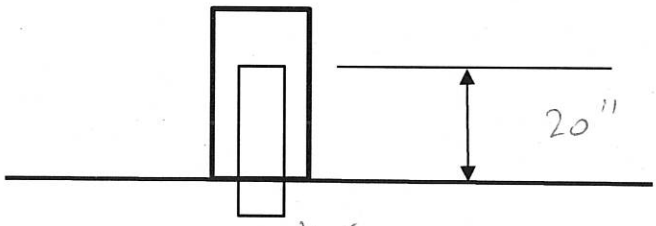
Well ID: MW 39 Inspector's name: W. Martin

Date: 5/31/24

Time: 15:15 Inspector's signature: W.M

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Frost jacked
2. Frost jacking measures: Stick up height from ground surface 30.5"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 94

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 95
5. Transducer present? Condition? ~~95WM~~ Yes, good

During Groundwater Sampling

1. Is well operational?
2. Dedicated pump present? Condition?
3. Were there any issues in collecting samples?

Comments: J-plug does not fit, Frost jacked ~~36.5"~~ LM 6.5"

Monitoring Well Integrity Checklist

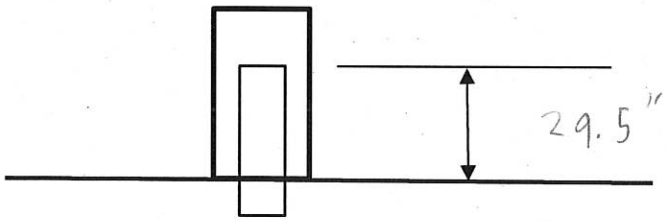
Well ID: MW40 Inspector's name: W. Martin

Date: 5/31/24

Time: 1532 Inspector's signature: Wi Mar

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 42"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 96

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 97
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES - WORKING
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

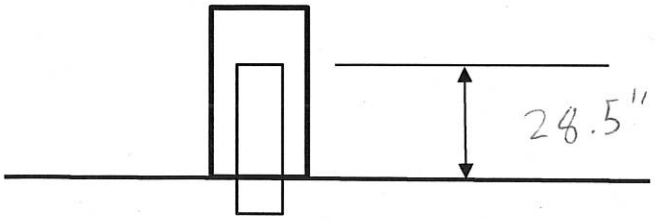
Well ID: MW 42 Inspector's name: W. Martin

Date: 5/31/24

Time: 1324 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 31"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 70

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 71
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? YES- WORKING
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

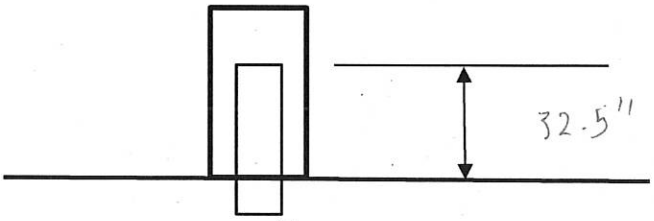
Well ID: MW13 Inspector's name: W. Martin

Date: 5/31/24

Time: 1304 Inspector's signature: W

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 34



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 66

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? No
3. Any odors? NO
4. Photographs of well with lid off 67
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples?
   Took a long time for water to reach surface

Comments:

Monitoring Well Integrity Checklist

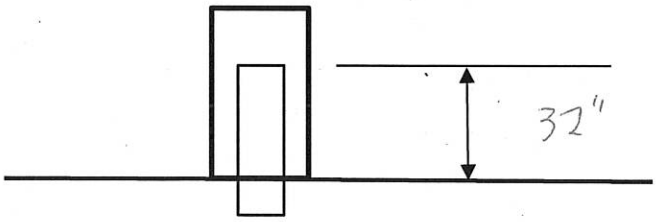
Well ID: MW45 Inspector's name: W. Martin

Date: 5/31/24

Time: 1430 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 33"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 82

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 83
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES- WORKING
3. Were there any issues in collecting samples? NO

Comments: NA

Monitoring Well Integrity Checklist

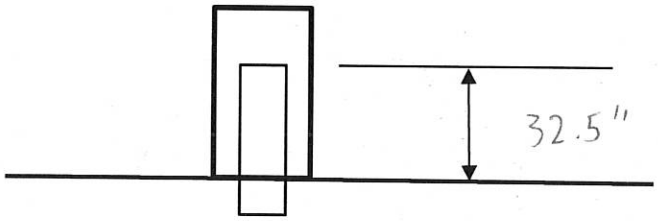
Well ID: MW 44 Inspector's name: W. Martin

Date: 5/31/24

Time: 1412 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 37"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 78

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 79
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

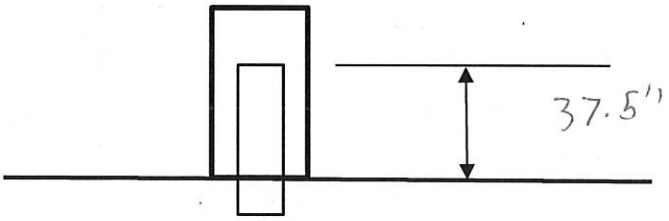
Well ID: MW46 Inspector's name: W. Martin

Date: 5/31/24

Time: 1434 Inspector's signature: WM

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 42.5"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 84

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 85
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples?
   NO

Comments: —

Monitoring Well Integrity Checklist

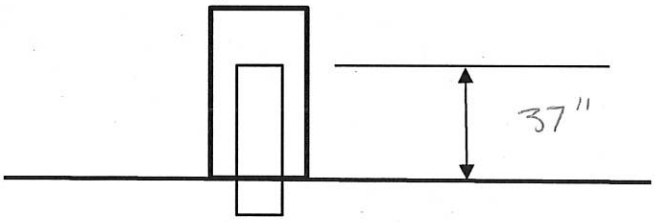
Well ID: MW47 Inspector's name: W. Martin

Date: 5/31/24

Time: 14:42 Inspector's signature: W. Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 40"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed 86

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off 87
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES - WORKING
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

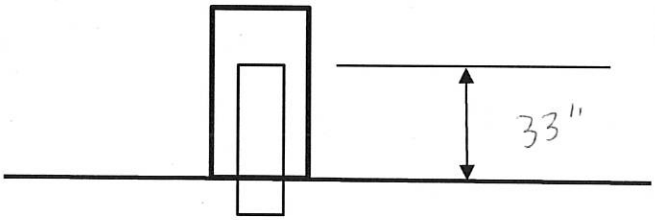
Well ID: MW-48 Inspector's name: W. Martin

Date: 5/31/24

Time: 1340 Inspector's signature: W

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 37"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed Y4

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 75
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? _____
2. Dedicated pump present? Condition? _____
3. Were there any issues in collecting samples?

_____

Comments:

_____

_____

_____

_____

Monitoring Well Integrity Checklist

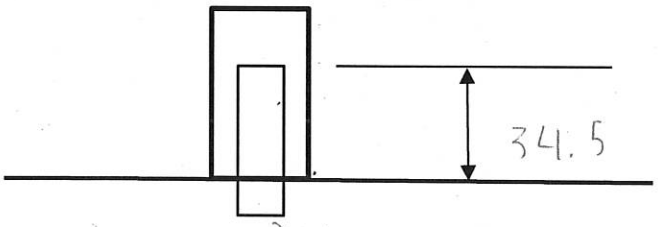
Well ID: MW 49 Inspector's name: W. Martin

Date: 5/31/24

Time: 1356 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 10.5



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 76

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 77
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

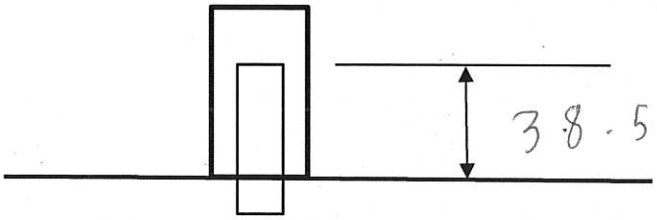
Well ID: MW50 Inspector's name: W. Martin

Date: 5/31/24

Time: 1653 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? _____
2. Frost jacking measures: Stick up height from ground surface 42.5"



3. Is the well lid/vault secure? YES
4. Is well clearly labeled? NO
5. Photographs of well closed 125

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 126
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES - WORKING
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

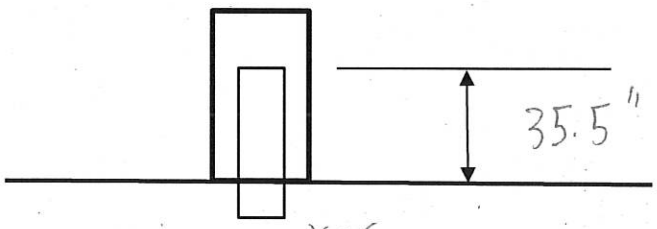
Well ID: MW51 Inspector's name: W. Martin

Date: 5/31/21

Time: 1643 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 39"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? No
5. Photographs of well closed 116

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 117
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES - good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

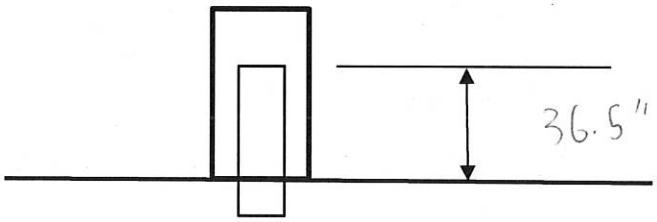
Well ID: MW52 Inspector's name: W. Martin

Date: 5/31/24

Time: 1447 Inspector's signature: Wm

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 43"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 88

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off ~~88~~ wm 89
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

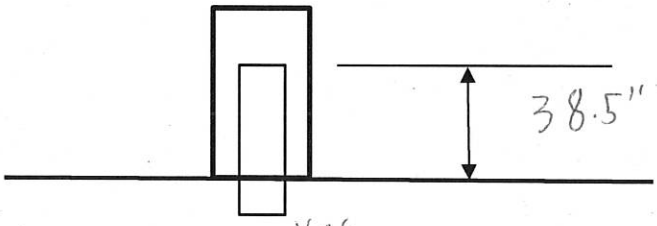
Well ID: MW-53 Inspector's name: W. Martin

Date: 5/31/21

Time: 1609 Inspector's signature: W. Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 43"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed 102

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off 103
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

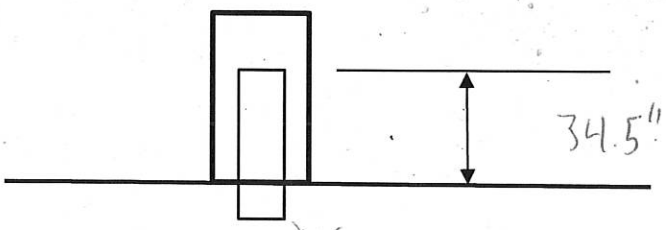
Well ID: MW54 Inspector's name: W. Martin

Date: 5/31/24

Time: 1634 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 42.5"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? No
5. Photographs of well closed 106

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off 107
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? _____
2. Dedicated pump present? Condition? _____
3. Were there any issues in collecting samples?

_____

Comments:

After sampling pump was pulled ~3' for transducer install. It became stuck and could not be pulled or dropped. It was tested and is still operational

Monitoring Well Integrity Checklist

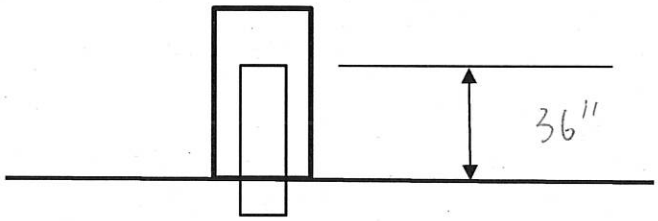
Well ID: MW55 Inspector's name: W. Martin

Date: 5/31/24

Time: 1456 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 13"



3. Is the well lid/vault secure? _____
4. Is well clearly labeled? Yes
5. Photographs of well closed 90

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? No
4. Photographs of well with lid off 91
5. Transducer present? Condition? Yes NO, transducer not found

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? yes - WORKING
3. Were there any issues in collecting samples?
   NO

Comments: –

Monitoring Well Integrity Checklist

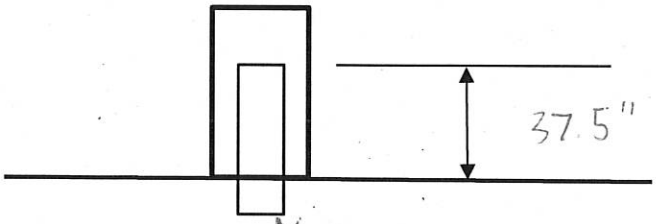
Well ID: MW 56 Inspector's name: W. Martin

Date: 5/31/24

Time: 1418 Inspector's signature: W

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 42"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 80

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 81
5. Transducer present? Condition? Yes, Loud

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES- WORKING
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

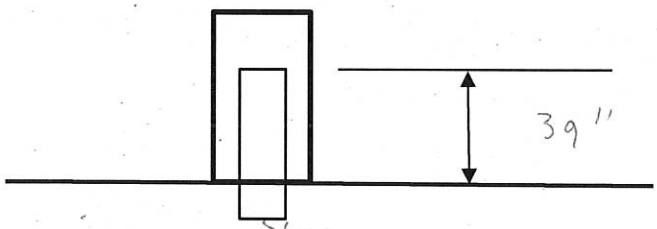
Well ID: MW 57 Inspector's name: W. Martin

Date: 5/31/24

Time: 1556 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 41"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 100

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off 101
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes - good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

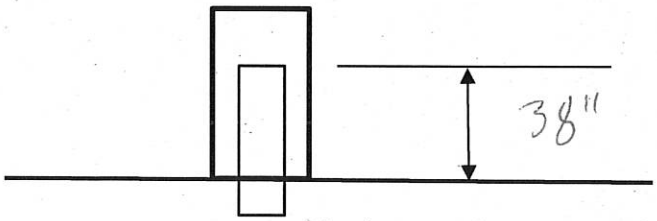
Well ID: MW 58 Inspector's name: W. Martin

Date: 5/31/24

Time: 1625 Inspector's signature: W Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 41"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? NO
5. Photographs of well closed 104

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 105
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES - PUMP PULLED - BALLVALVE STUCK BLADDER COLLAPSED
3. Were there any issues in collecting samples?

Comments:

PUMP TURNING ORANGE BALL VALVE DEGRADING

Monitoring Well Integrity Checklist

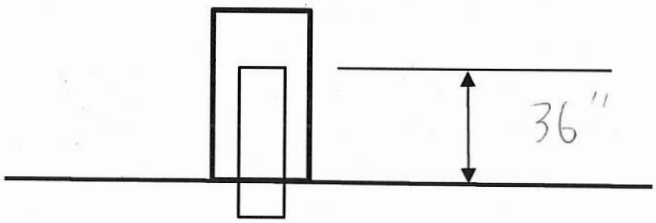
Well ID: MW59 Inspector's name: W. Martin

Date: 5/31/24

Time: 1510 Inspector's signature: W M

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 29.5"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed 92

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off 93
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? YS
2. Dedicated pump present? Condition? YES - good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

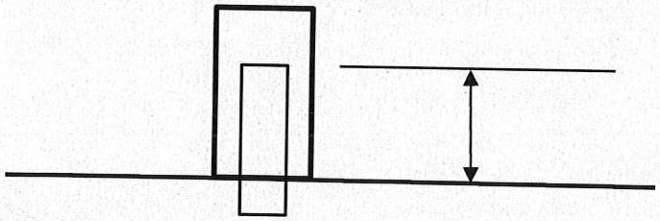
Well ID: MW12 Inspector's name: W. Martin

Date: 9/6/24

Time: 0920 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? NO
2. Frost jacking measures: Stick up height from ground surface 43.5"



3. Is the well lid/vault secure? NO
4. Is well clearly labeled? Yes
5. Photographs of well closed

After removing lid before sampling well

1. Is gasket worn or damaged? Yes
2. Is vault flooded? Yes
3. Any odors? NO
4. Photographs of well with lid off
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? N/A
2. Dedicated pump present? Condition? N/A
3. Were there any issues in collecting samples? N/A

Comments:

casing is jacked out of stickup 12" and is collapsed

Monitoring Well Integrity Checklist

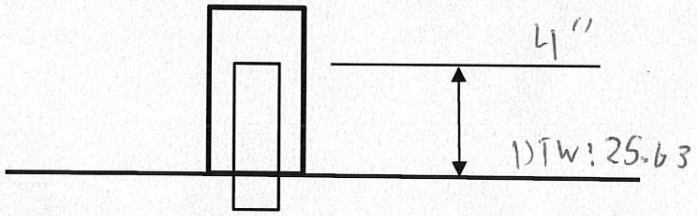
Well ID: MW48 Inspector's name: W. Martin

Date: 9/6/24

Time: 1610 Inspector's signature: W Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 38"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? N/A
2. Dedicated pump present? Condition? N/A
3. Were there any issues in collecting samples? N/A

Comments:

—

Monitoring Well Integrity Checklist

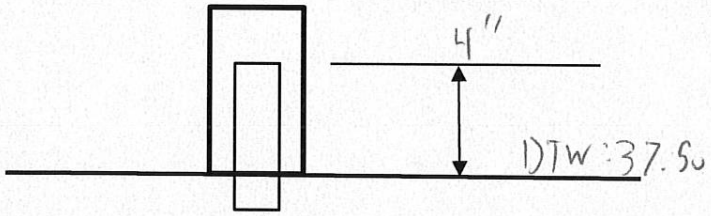
Well ID: MW31 Inspector's name: W. Martin

Date: 9/6/24

Time: 1538 Inspector's signature: W Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 31"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? N/A
2. Dedicated pump present? Condition? N/A
3. Were there any issues in collecting samples?
   N/A

Comments:

Monitoring Well Integrity Checklist

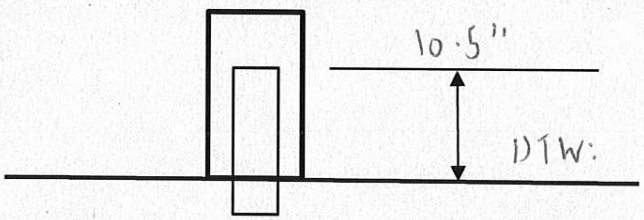
Well ID: MW 39 Inspector's name: W. Martin

Date: 9/6/24

Time: 1453 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 30.5' + 6" Frost Jack



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off Yes
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? N/A
2. Dedicated pump present? Condition? N/A
3. Were there any issues in collecting samples?
   N/A

Comments:

-

Monitoring Well Integrity Checklist

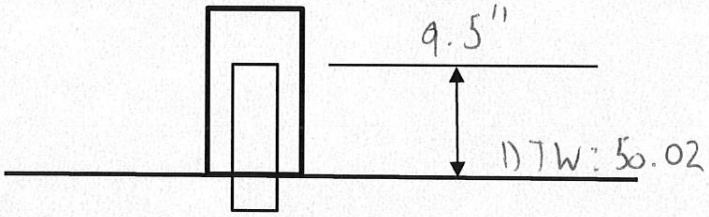
Well ID: MW36 Inspector's name: W. Martin

Date: 9/6/24

Time: 1345 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 28"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? N/A
2. Dedicated pump present? Condition? N/A
3. Were there any issues in collecting samples? N/A

Comments:

Monitoring Well Integrity Checklist

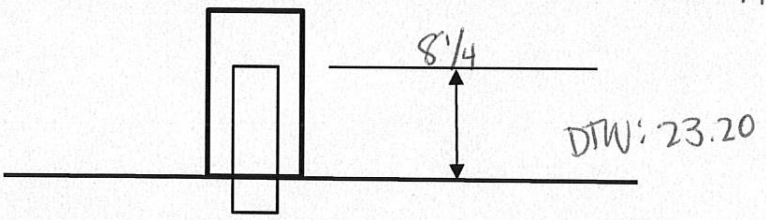
Well ID: MW04 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1315 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 35 3/4



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

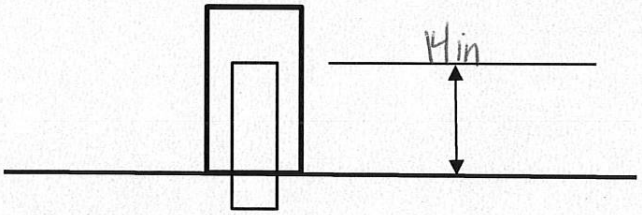
Well ID: MW25 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1258 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? YES
2. Frost jacking measures: Stick up height from ground surface 36 7/8 in



DTW: 30.81

3. Is the well lid/vault secure? YES
4. Is well clearly labeled? YES
5. Photographs of well closed YES

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off YES
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? NO
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

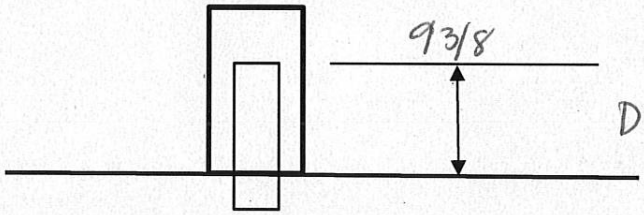
Well ID: MW24 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1222 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 32.5



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

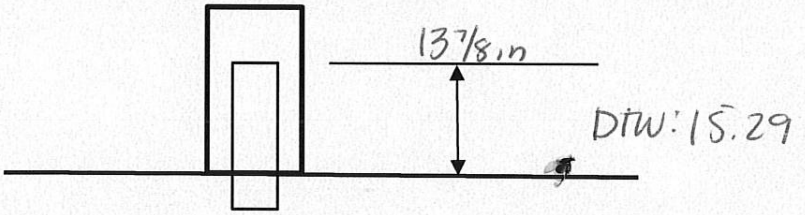
Well ID: MW23 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1213 Inspector's signature: R

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 30.25 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

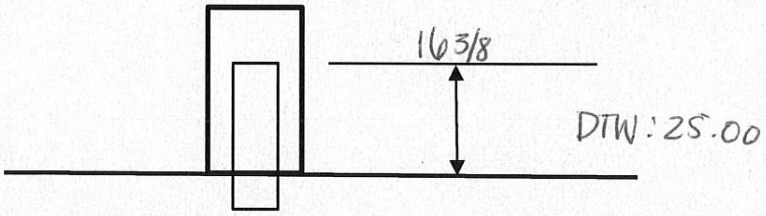
Well ID: MW18 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1157 Inspector's signature: Rwlyn

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 34.5



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? nv

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

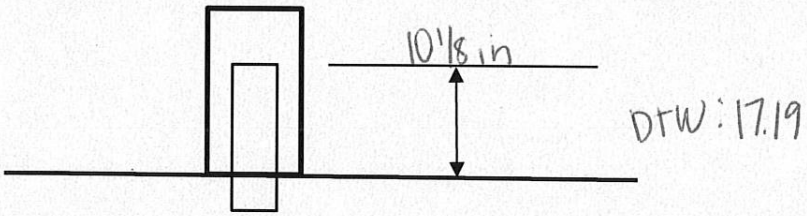
Well ID: MW19 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 1150 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 28.5 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

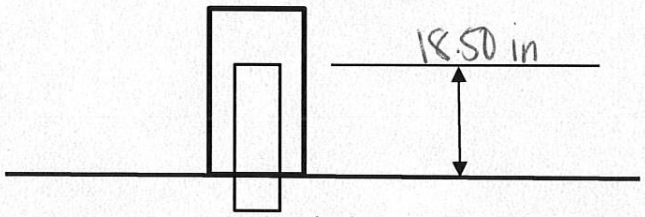
Well ID: MW32 Inspector's name: R. WITTER

Date: 07-06-2024

Time: 1143 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? YES
2. Frost jacking measures: Stick up height from ground surface 43in



3. Is the well lid/vault secure? YES
4. Is well clearly labeled? NO
5. Photographs of well closed YES

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off YES
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? NO
3. Were there any issues in collecting samples?
   —

Comments:

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Monitoring Well Integrity Checklist

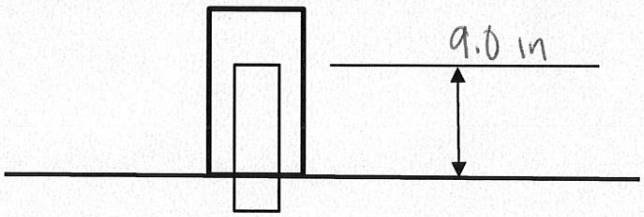
Well ID: MW22 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1129 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 39.0 in



DTW: 8.80

3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

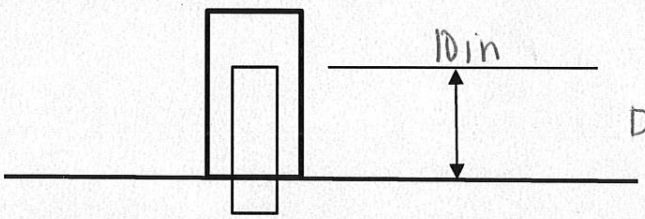
Well ID: MW21 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1125 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 30 in FJ: 3in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

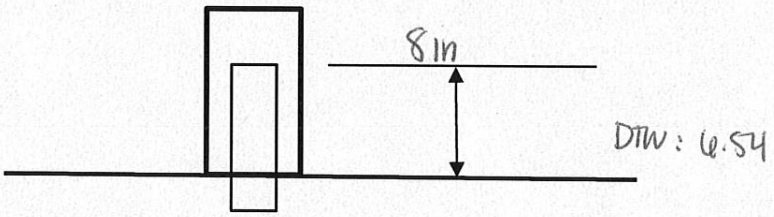
Well ID: MW20 Inspector's name: R. WITTER

Date: 09.06.2024

Time: 1118 Inspector's signature: Rey

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 37 5/8 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

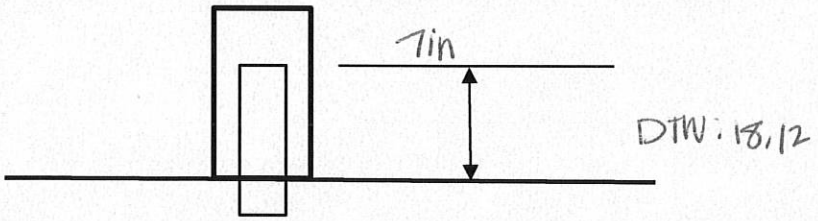
Well ID: MW03 Inspector's name: K. WITTER

Date: 09-06-2024

Time: 1110 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 33.75 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

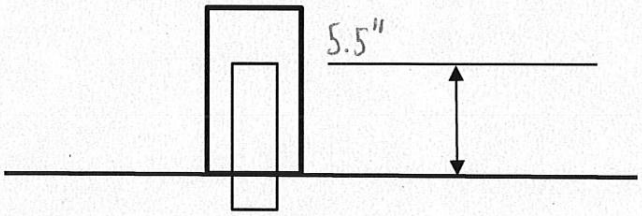
Well ID: MW7 Inspector's name: R. WITTLER

Date: 9-6-2024

Time: 0930 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 35 3/4"



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? NO
3. Were there any issues in collecting samples?

Comments:

N/A

Monitoring Well Integrity Checklist

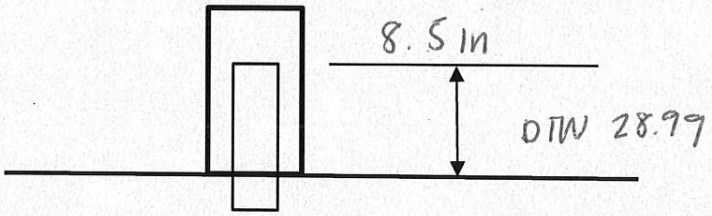
Well ID: MW13 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 0936 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 34 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

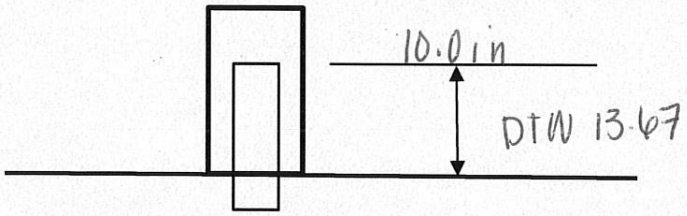
Well ID: MW08 Inspector's name: R. WITTLER

Date: 9-6-2024

Time: 0948 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? YES
2. Frost jacking measures: Stick up height from ground surface 39.25 in



3. Is the well lid/vault secure? YES
4. Is well clearly labeled? NO
5. Photographs of well closed YES

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off YES
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? NO
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

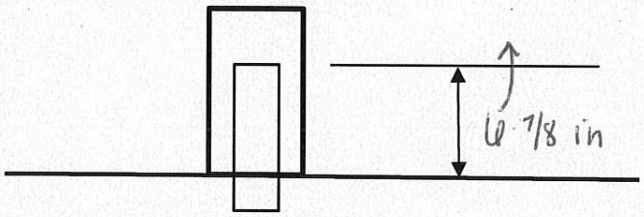
Well ID: MW11 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 0958 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 30 in - 1 in FROST JACKED



DTW: 20.16

3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? N/A
2. Dedicated pump present? Condition? N/A
3. Were there any issues in collecting samples?

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Comments:

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Monitoring Well Integrity Checklist

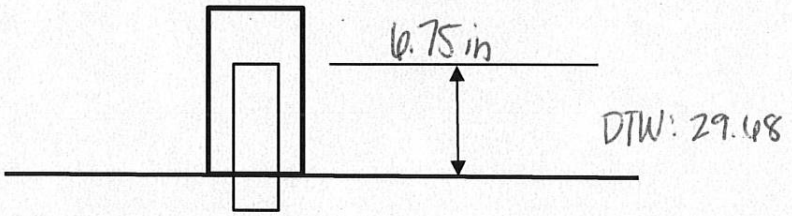
Well ID: MW34 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 1019 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 45.5 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? NO
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off yes
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? N/A
2. Dedicated pump present? Condition? N/A
3. Were there any issues in collecting samples? N/A

Comments:

Monitoring Well Integrity Checklist

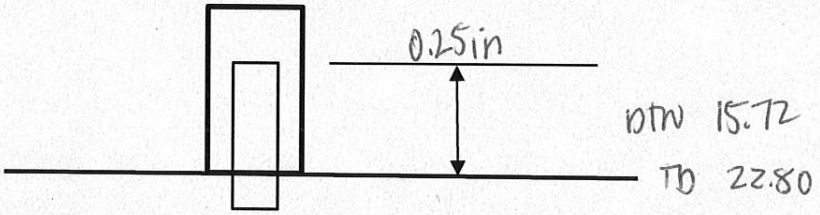
Well ID: MW36 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1026 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 47.75 in - FJ 0.25



3. Is the well lid/vault secure? no
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

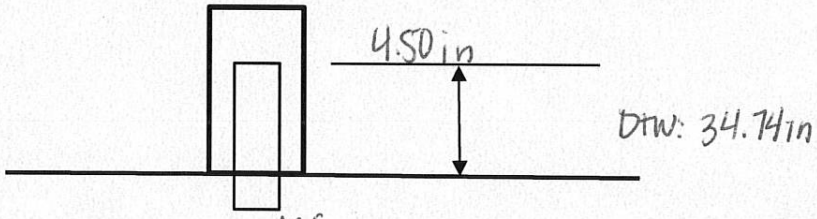
Well ID: MW35 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 1031 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 4.50 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

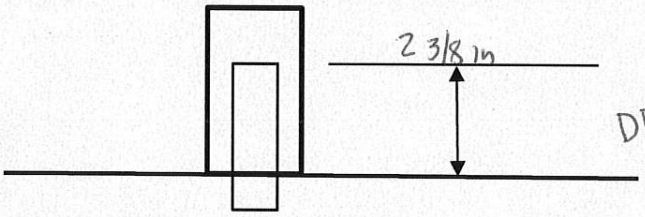
Well ID: MW01 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 1056 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 39.7/8



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? no
3. Were there any issues in collecting samples?

Comments:

Monitoring Well Integrity Checklist

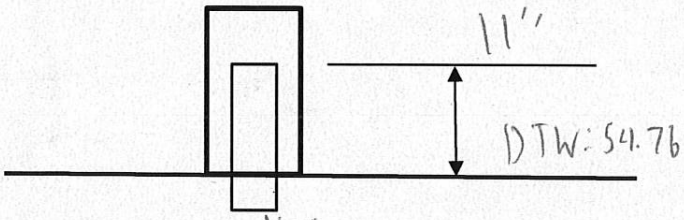
Well ID: MW29 Inspector's name: W. Martin

Date: 9/6/24

Time: 1616 Inspector's signature: WM

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 34"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? NO

Comments:

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Monitoring Well Integrity Checklist

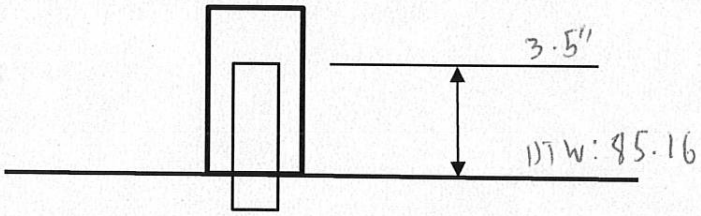
Well ID: MW43 Inspector's name: W. Martin

Date: 9/6/24

Time: 1338 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 33.5"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? No
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

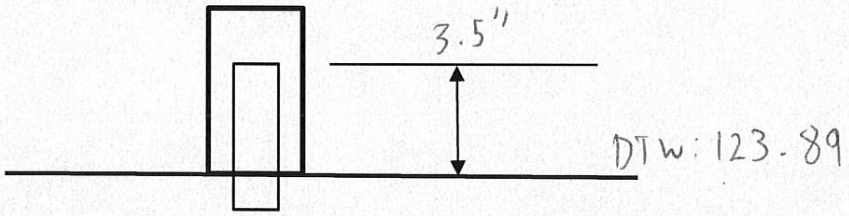
Well ID: MW42 Inspector's name: W. Martin

Date: 9/6/24

Time: 1330 Inspector's signature: W. Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 32"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes, for 3 cycles then no
2. Dedicated pump present? Condition? Yes, good. Bladder and ball valve were good.
3. Were there any issues in collecting samples?
   could not get a steady flow for more than 3 cycles

Comments:

Monitoring Well Integrity Checklist

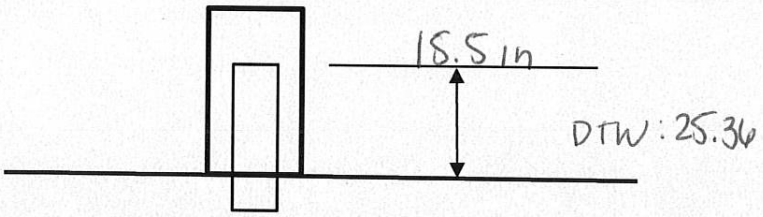
Well ID: MW09 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 1009 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 44 7/8 in - 1



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

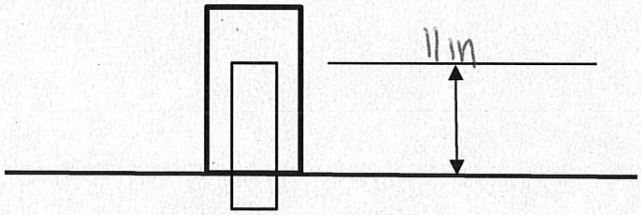
Well ID: MW10 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1003 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 31in - FJ 5in



DTW 28.25

3. Is the well lid/vault secure? no
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

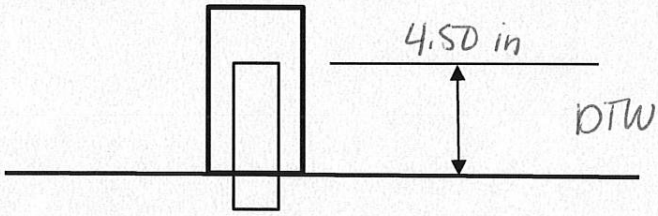
Well ID: ~~MW26~~ MW64 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 1218 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 35.25 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

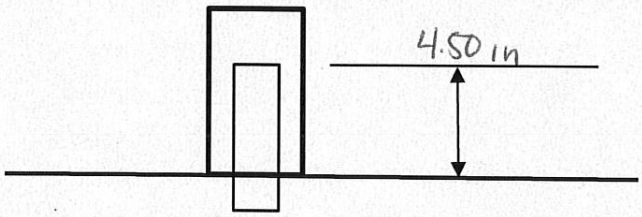
Well ID: MW33 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 1206 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 29.25 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

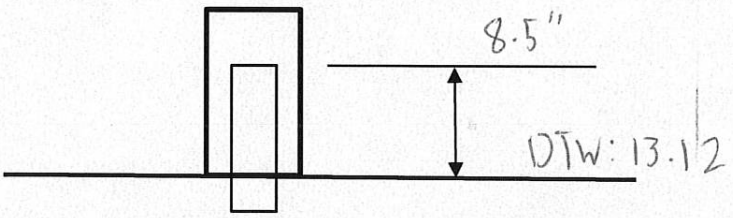
Well ID: MW55 Inspector's name: W. Martin

Date: 9/6/24

Time: 1406 Inspector's signature: Wm

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 43"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

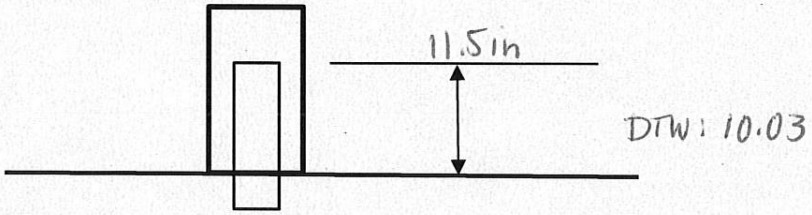
Well ID: MW16 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1106 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? _____
2. Frost jacking measures: Stick up height from ground surface 31.25 in FJ: 3in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

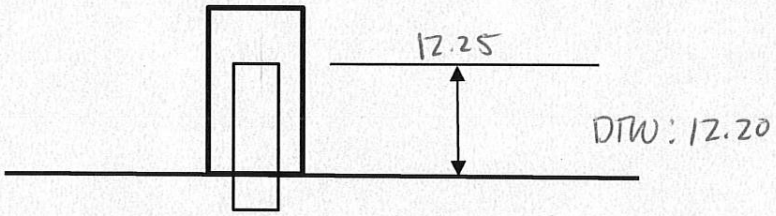
Well ID: MW17 Inspector's name: R. WITTLER

Date: 09-06-2024

Time: 1103 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 34 1/8 FJ 6in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

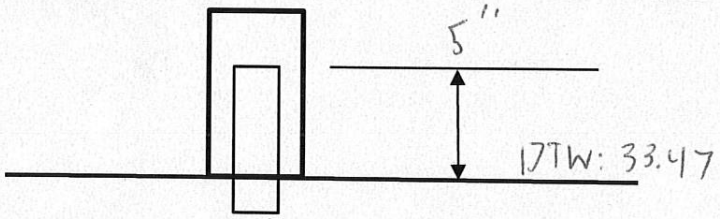
Well ID: MW 424 Inspector's name: W. Martin

Date: 9/6/24

Time: 1603 Inspector's signature: W Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? _____
2. Frost jacking measures: Stick up height from ground surface 37.75"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

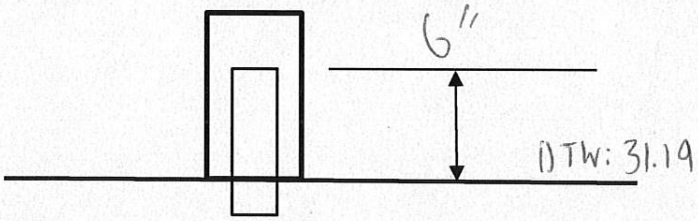
Well ID: MW52 Inspector's name: W. Martin

Date: 9/6/24

Time: 1414 Inspector's signature: Wi Mart

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 44.25"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? No

Comments:

Monitoring Well Integrity Checklist

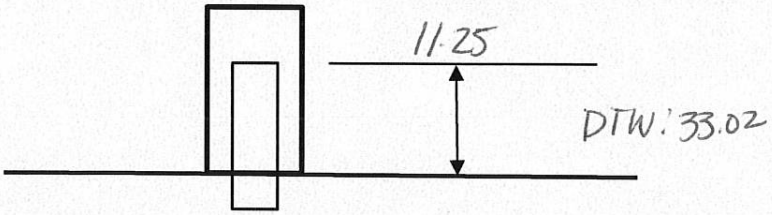
Well ID: MW24 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1303 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? yes
2. Frost jacking measures: Stick up height from ground surface 32.75 in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? yes
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

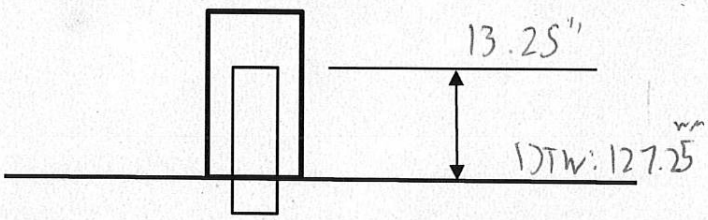
Well ID: MW 40 Inspector's name: W. Martin

Date: 9/6/24

Time: 1555 Inspector's signature: W. Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 30.5" + 10" Frost Jacks



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples?
   No

Comments:

Monitoring Well Integrity Checklist

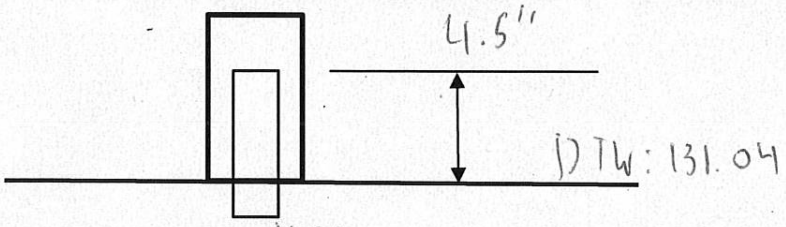
Well ID: MW59 Inspector's name: W. Martin

Date: 9/6/24

Time: 1412-17 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 40"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? ~~Yes~~ WM NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? ~~NA~~ WM N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

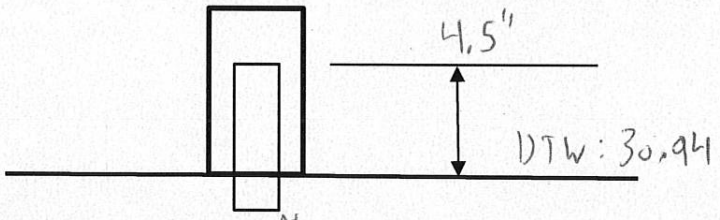
Well ID: MW58 Inspector's name: W. Martin

Date: 9/6/24

Time: 1523 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 42.25"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? No
4. Photographs of well with lid off Yes
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES - good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

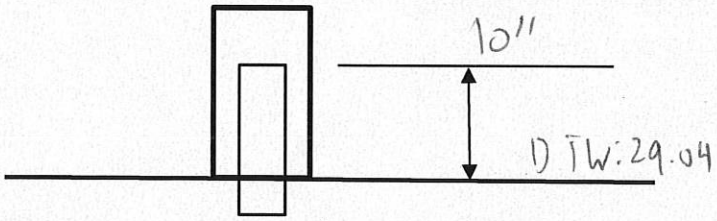
Well ID: MW 54 Inspector's name: W. Martin

Date: 9/6/24

Time: 1507 Inspector's signature: WMar

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 42.5



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? No
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES - good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

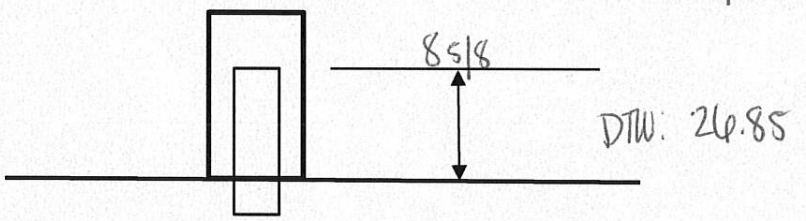
Well ID: MW27 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1307 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? YES
2. Frost jacking measures: Stick up height from ground surface 32 1/8



3. Is the well lid/vault secure? YES
4. Is well clearly labeled? YES
5. Photographs of well closed YES

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off YES
5. Transducer present? Condition? NO

During Groundwater Sampling

1. Is well operational? YES
2. Dedicated pump present? Condition? YES - good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

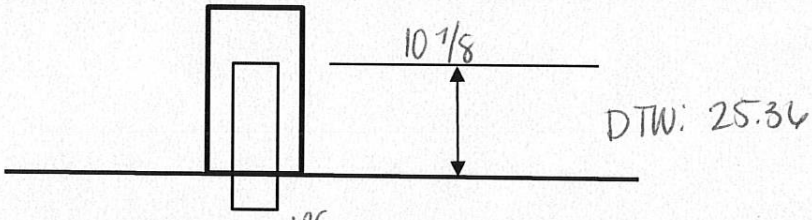
Well ID: MW28 Inspector's name: R. WITTER

Date: 09-06-2024

Time: 1310 Inspector's signature:

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? 10 7/8" yes
2. Frost jacking measures: Stick up height from ground surface 30 1/8 FJ: 11in



3. Is the well lid/vault secure? yes
4. Is well clearly labeled? no
5. Photographs of well closed yes

After removing lid before sampling well

1. Is gasket worn or damaged? no
2. Is vault flooded? no
3. Any odors? no
4. Photographs of well with lid off yes
5. Transducer present? Condition? no

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes-good
3. Were there any issues in collecting samples?
   no

Comments:

Monitoring Well Integrity Checklist

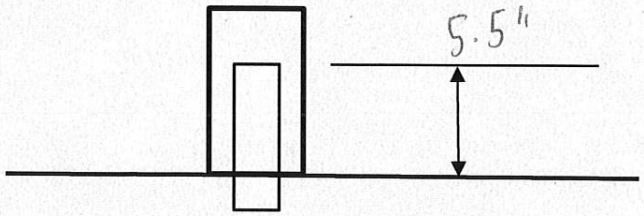
Well ID: MW 53 Inspector's name: W. Martin

Date: 9/6/24

Time: 1530 Inspector's signature: Wm Mtz

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 40"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes - good
3. Were there any issues in collecting samples? NO

Comments: —

Monitoring Well Integrity Checklist

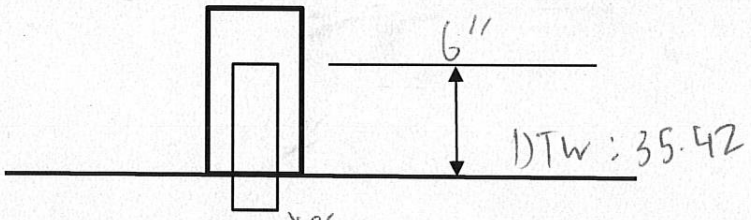
Well ID: MW56 Inspector's name: W. Martin

Date: 9/6/24

Time: 1435 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 42"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? No
4. Photographs of well with lid off Yes
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes - good
3. Were there any issues in collecting samples? no

Comments:

Monitoring Well Integrity Checklist

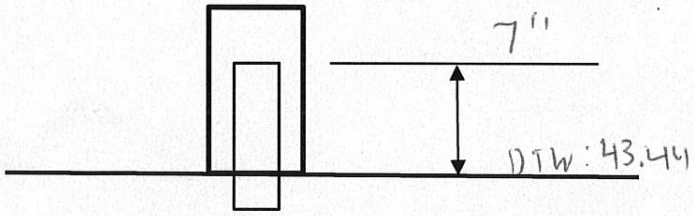
Well ID: MW49 Inspector's name: W. Martin

Date: 9/6/24

Time: 1621 Inspector's signature: Wm Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 40"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? yes- good
3. Were there any issues in collecting samples? NO.

Comments:

Monitoring Well Integrity Checklist

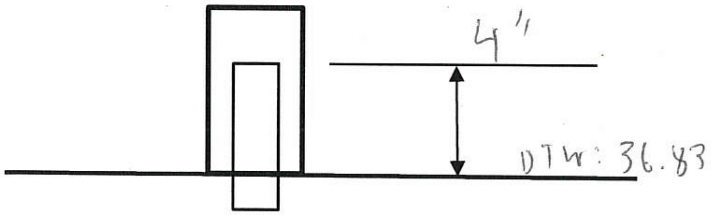
Well ID: MW 47 Inspector's name: W. Martin

Date: 9/6/24

Time: 1418 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 40"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes-good
3. Were there any issues in collecting samples? no

Comments:

Sundance Consulting Inc.
May 2021

Monitoring Well Integrity Checklist

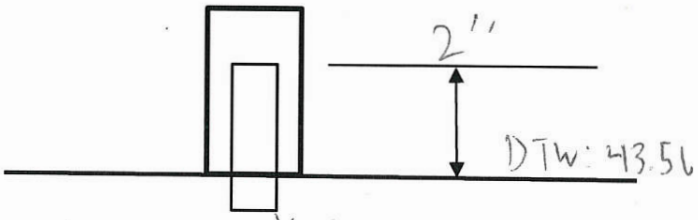
Well ID: MW45 Inspector's name: W. Martin

Date: 9/6/24

Time: 1430 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 34"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? good
3. Were there any issues in collecting samples? NO

Comments:

Monitoring Well Integrity Checklist

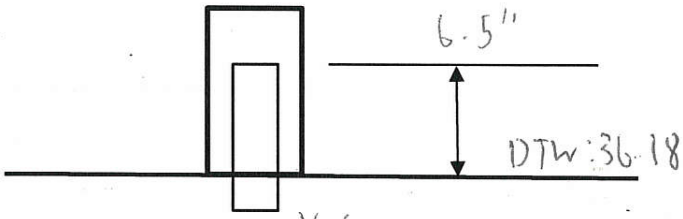
Well ID: MW-16 Inspector's name: W. Martin

Date: 9/6/24

Time: 1423 Inspector's signature: W Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? _____
2. Frost jacking measures: Stick up height from ground surface 42.5"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? No
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? N/A

During Groundwater Sampling

1. Is well operational? yes
2. Dedicated pump present? Condition? yes-good
3. Were there any issues in collecting samples? NO

Comments: —

Monitoring Well Integrity Checklist

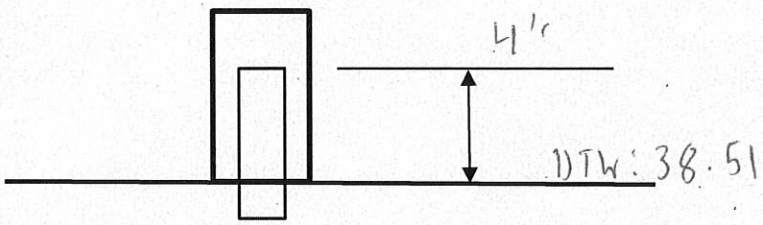
Well ID: MW51 Inspector's name: W. Martin

Date: 9/6/24

Time: 1500 Inspector's signature: W Martin

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 39"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? NO
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples?
   Yes

Comments:

Monitoring Well Integrity Checklist

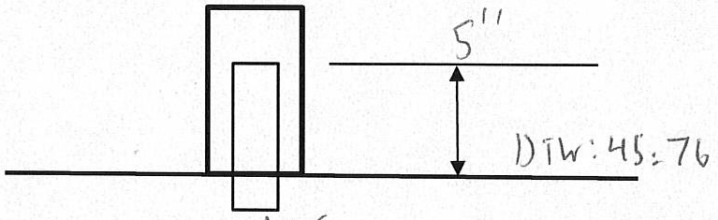
Well ID: MW50 Inspector's name: W. Martin

Date: 9/6/24

Time: 1513 Inspector's signature: [signature]

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 43.5'



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off NO
5. Transducer present? Condition? Yes, good

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? Yes

Comments:

Monitoring Well Integrity Checklist

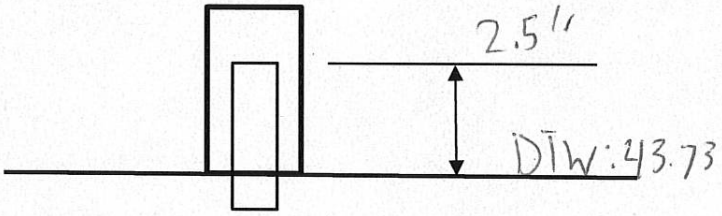
Well ID: MW 57 Inspector's name: W. Martin

Date: 9/6/24

Time: 1545 Inspector's signature: Tim Mar

Before Opening Monitoring Well

1. Is well cement pad or stickup in good condition? Yes
2. Frost jacking measures: Stick up height from ground surface 40.25"



3. Is the well lid/vault secure? Yes
4. Is well clearly labeled? Yes
5. Photographs of well closed Yes

After removing lid before sampling well

1. Is gasket worn or damaged? No
2. Is vault flooded? NO
3. Any odors? NO
4. Photographs of well with lid off Yes
5. Transducer present? Condition?

During Groundwater Sampling

1. Is well operational? Yes
2. Dedicated pump present? Condition? Yes, good
3. Were there any issues in collecting samples? NO

Comments:

A.3 FIELD NOTEBOOKS

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Location RED DEVIL Date 5-30-24

Project / Client RED DEVIL MONITORING
BLM SPRING 24

TEAM: RILEY WITTLER, WILLEM MARTIN
WEATHER: 55°, SUNNY, NO BREEZE
1530: DEPART ANCORAGE FOR RED DEVIL
1645: ARRIVE IN RED DEVIL UNPACK PLANE & MEET JIM GRAHAM FOR 1 ATV. AND CHECK ROAD FOR ACCESABILITY - ROAD IS CLEAR ENOUGH.
2015: MEET HENRY HILL FOR SECOND ATV. & PREP FOR TOMORROW.

RW

Location RED DEVIL Date 5-31-24

Project / Client RED DEVIL MINE MONITORING
BLM SPRING 24

TEAM: RILEY WITTLER, WILLEM MARTIN
WEATHER: SUNNY, COOL
PLAN: GUAGUE WELLS, COLLET TRANSDUCER DATA
0730: SAFTEY TAILGATE
0745: LEAVE LODGE FOR MINE
0900: ARRIVE @ MINE AFTER CLEARING ROAD
0931: MW12 - CANNOT GAUGE - COLLAPSE PVC
0937: MW-7 - 20.84 bgs TOC
0939: MW13 - 25.75 bgs TOC
0945: MW8 - ~~5213~~ 6 RW 13.32 bgs TOC
1004: MW34 - 34.07 bgs TOC
1007: MW35 - 33.28 bgs TOC
1010: MW36 - 15.64 bgs TOC
1023: MW09 - 23.41 bgs TOC
1027: MW10 - 26.20 bgs TOC
1033: MW11 - 19.58 bgs TOC
1039: MW01 - 17.83 bgs TOC
1047: MW17 - 9.43 bgs TOC
1050: MW16 - 7.42 bgs TOC
1055: MW03 - 16.08 bgs TOC
1100: MW20 - 6.19 bgs TOC
1108: MW21 - 8.07 bgs TOC

Rite in the Rain

Location RED DEVIL Date 5-31-24

Project / Client RED DEVIL MONITORING SPRING 24

1112:	MW22 -	7.62	bgs TOC
1124:	MW19 -	14.52	bgs TOC
1127.	MW18 —	21.71	bgs TOC
1143:	MW32 -	17.98	bgs TOC
1150:	MW23 -	14.35	bgs TOC
1156:	MW06 -	16.01	bgs TOC
1200:	MW24 -	14.42	bgs TOC
1236	MW25	29.87	bgs TOC
1240:	MW26	30.81	bgs TOC
1246	MW27	24.27	bgs TOC
1249	MW28	22.80	bgs TOC
1253	MW4	21.31	bgs TOC
1306	MW43	82.32	bgs TOC
1314	MW30	49.06	bgs TOC
1326	MW42	120.93	bgs TOC
1334	MW29	49.48	bgs TOC
1347	MW48	26.88	bgs TOC
1356	MW49	43.03	bgs TOC
1414	MW44	32.51	bgs TOC
1423	MW56	32.83	bgs TOC
1430	MW45	42.19	bgs TOC
1434	MW46	39.24	bgs TOC
1442	MW47	46.31	bgs TOC
1449	MW52	39.22	bgs TOC
1456	MW55	11.92	bgs TOC

Location RED DEVIL MINE Date 5-31-24

Project / Client RED DEVIL MONITORING SPRING 24

1510	MW58	131.74	bgs TOC
1515	MW39	84.85	bgs TOC
1533:	MW40	125.80	bgs TOC
1544:	MW31, unable to gauge, pump sinks above waterline		
1557	MW57	47.82	bgs TOC
1610	MW53	29.22	bgs TOC
1627	MW59	29.85	bgs TOC
1636	MW54	28.26	bgs TOC
1645	MW51	59.02	bgs TOC
1653	MW50	44.12	bgs TOC
1709	MW33	41.44	bgs TOC
1715	ATV at will dies while riding go BACK TO LODGE TO RETRIEVE GAS.		
1806:	ATV WORKS RETURN TO LODGE		
1830:	AT LODGE		

Location RED DEVIL MINE Date 6-1-24

Project / Client RED DEVIL MONITORING SPRING 24

TEAM: RILEY WITTLER, WILLEM MARTIN

WEATHER: CLOUDY ~50°

0730: SAFETY & FIELD PREP

0830: LEVE LODGE FOR MINE

0915: ARRIVE AT MW09

0940: START PURGE ON MW09 - 0.15 L/min

1015: SAMPLE MW09

1030: MOVE TO MW10 & SET UP

1045: BLADDER PUMP NOT WORKING, TRY MULTIPLE SETTINGS & NO WATER RECOVERY - DECIDE TO PULL PUMP - PUMP BLADDER COLLAPSED. FIX BLADDER & DROP BACK DOWN HOLE

1130: START PURGE ON MW10

1220: SAMPLE MW10

1240: MOVE TO MW06 STOP TO HELP WILLEM PULL PUMP

1320: ARRIVE @ MW06 & SET UP PULL PUMP COLLAPSED BLADDER & STUCK BALL VALVE - FIXED

1410: START PURGE ON G MW06.

1445: SAMPLE MW06

1500: PACK UP & GO TO MW26

Location RED DEVIL MINE Date 6-1-24

Project / Client RED DEVIL MONITORING SPRING 24

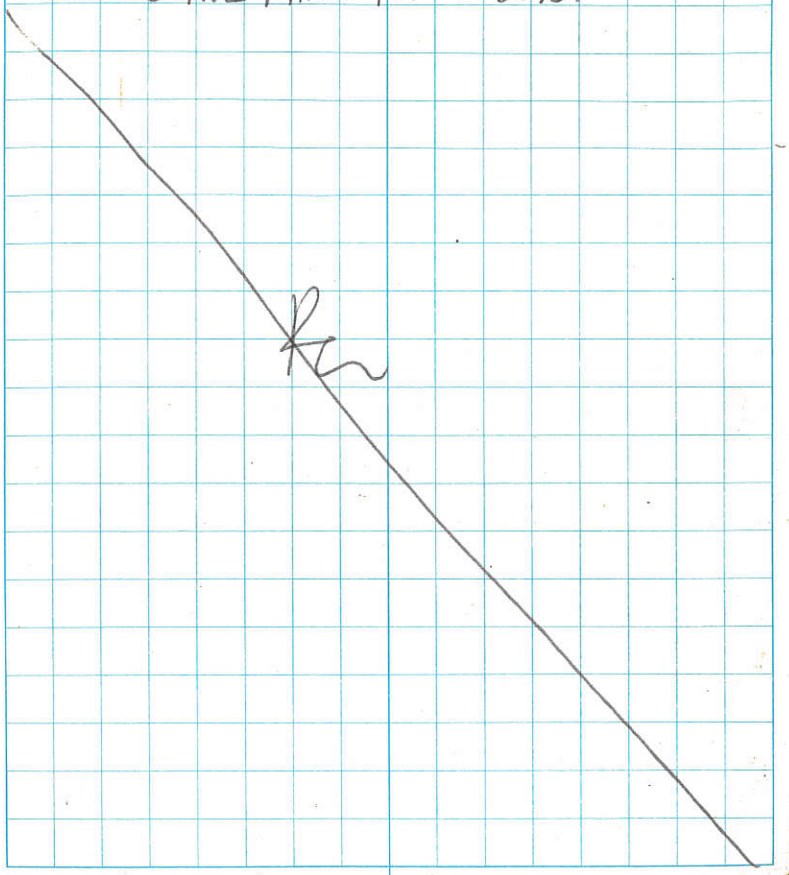
1530: ARRIVE @ MW36 & SET UP

1550: START PURGE ⇒ PUMP NEEDED TO BE PULLED

1630: SAMPLE MW26

1645: CLEAN UP & MEET WILLEM

1705: LEAVE MINE FOR LODGE.



Location RED DEVIL MINE Date 6-2-24

Project / Client RED DEVIL MONITORING SPRING 24

TEAM: RILEY WITTER, WILLEM MARTIN

WEATHER: CLOUDY, RAINY SOs

0730: SAFETY TAILGATE & FIELD PREP

0800: LEAVE LODGE FOR MINE

0845: ARRIVE AT MW51

0905: START PURGE ON MW51

0950: SAMPLE MW51

0955: END PURGE & PACK UP

1015: MOVE TO MW58

1020: ARRIVE AT MW58 & SET UP

1205: SAMPLE MW58

1220: LEVE MW58 FOR MW50

1230: ARRIVE A MW50 & SET UP

1310: START PURGE ON MW50

1415: SAMPLE MW50

1425: STOP PURGE & PACK UP

1442: GO TO MW59 TO HELP WILL

1530: ARRIVE AT MW57

1545: START PURGE ON MW57.

1620: SAMPLE MW57

1630: END PURGE & PACK UP

1645: LEAVE MW57. FOR MW54

1730: TRIED TO PULL PUMP & IT'S STUCK NO MOVEMENT

~~LEVED~~ LEAVE PUMP PULLED OUT ~3FT

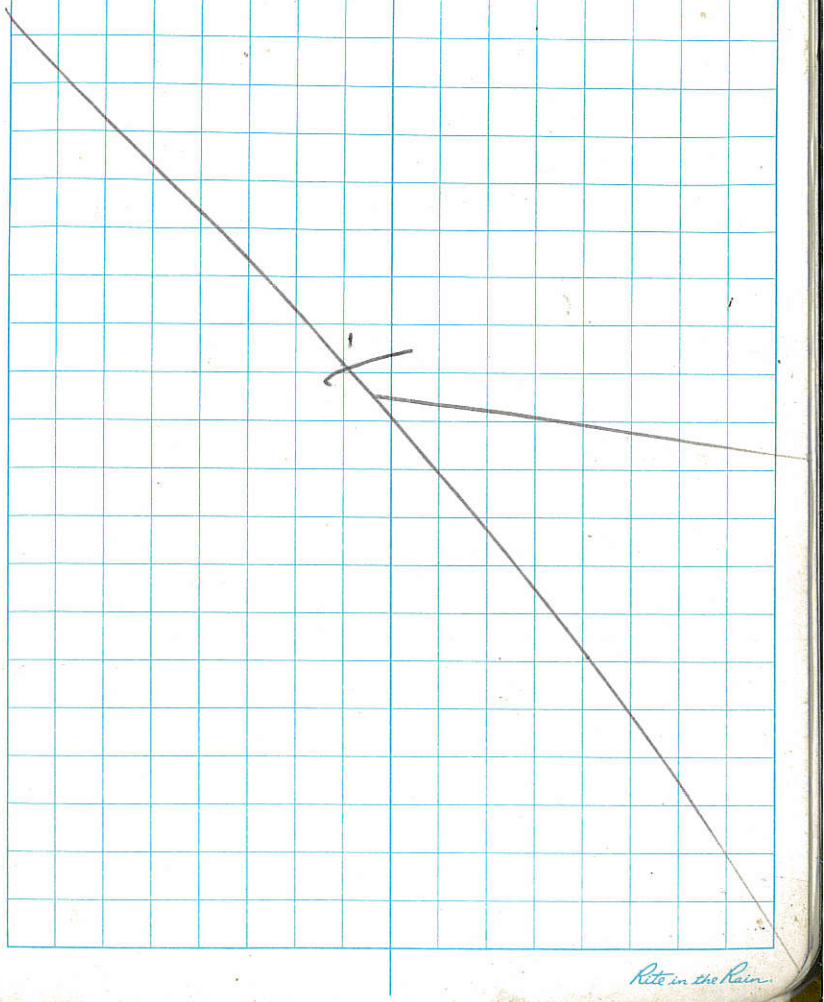
Location RED DEVIL MINE Date 6-2-24

Project / Client RED DEVIL MONITORING SPRING 24

PUMP IS STILL SAMPLEBLE BUT MAY REQUIRED - WILL ASSESS LATER

1605: LEVE MINE

1640: ARRIVE AT LODGE



Location RED DEVIL MINE Date 6-3-24

Project / Client RED DEVIL MONITORING SPRING 24

TEAM: RILEY WITTIER, WILLEM MARTIN
WEATHER: SUNNY 50's TO 60's
0745: PREP FOR FIELD & SAFETY TAILGATE
0900: ARRIVE AT MINE
0920: ARRIVE AT MW55 & SET UP
0940: START PURGE ON MW55
1025: SAMPLE MW55
1037: END PURGE & PACK UP
1045: LEAVE FOR MW47
1050: ARRIVE AT MW47 & SETUP
1105: START PURGE ON MW47
~~1145: RW~~
1130: SAMPLE MW47
1145: END PURGE & PACK UP
1220: ARRIVE @ MW45
1235: START PURGE ON MW45
1310: SAMPLE MW45
1320: STOP PURGE & PACK UP
1332: LEAVE MW45 FOR MW49 TO get PAPERWORK FROM WILL
1400: ARRIVE @ MW56.
1405: START PURGE ON MW56.
1450: SAMPLE MW56
1500: END PURGE & PACK UP
1400: ARRIVE @ LODGE

Location RED DEVIL MINE Date 6-4-24

Project / Client RED DEVIL MONITORING SPRING 24

TEAM: RILEY WITTIER, WILLEM MARTIN
WEATHER: CLOUDY, RAINY, COOL
0715: PREP FOR FIELD
0730: SAFETY TAILGATE.
0810: LEAVE FOR MINE
0850: ARRIVE @ MW40 & SET UP
0940: MW40 NOT WORKING - PULLED PUMP - IN GOOD CONDITION - TRIED VARIOUS SETTINGS STILL NOT WORKING WILL COME BACK W/ SPARE PUMP
0945: LEAVE MW40
0950: ARRIVE AT MW29
1000: START PURGE ON MW29
1030 SAMPLE MW29
1047: STOP PURGE & PACK UP
1055: LEAVE MW29 FOR MW43 MW42
1105: ARRIVE AT MW42.
1300: MW42 WON'T SAMPLE WILL COME BACK W/ OTHER PUMP
1305: ARRIVE @ MW27
1335 SAMPLE MW27
1440: LEAVE MINE
1505: ARRIVE AT LODGE

RW

Location RED DEVIL Date 6-5-24

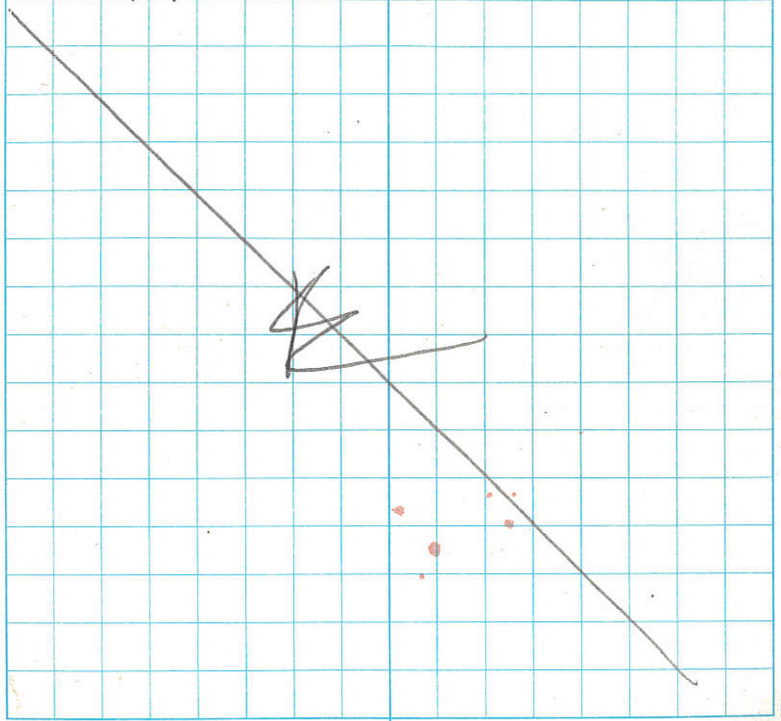
Project / Client RED DEVIL MINE MONITORING SPRING 24

TEAM: RILEY WITTLER, WILLEM MARTIN
WEATHER: CLOUDY 50's
0730: SAFETY TAILGATE & FIELD PREP
0815: LEAVE LODGE FOR MINE
0845: ARRIVE AT MW40. & START PULLING PUMP & DROPPING RENTAL
1100: DROPPED RENTAL BLADDER PUMP (QED SAMPLE PRO) with new tubing and TRIED PREVIOUS PUMP PARAMETERS & PRESSURE NO WATER VARIED PRESSURE NO WATER. PULLED QED-BLADDER FULL ASSESSED CONNECTIONS DROPPED DOWN. STILL NOT WORKING. PULLED & DROPPED NEW GEOTECH BLADDER & NO WATER TO SURFACE AFTER VARING PRESSURE.
1130: LEAVE MW40 FOR MW42
1140: ARRIVE at MW42
1200: MPSD WILL NOT WORK CHAGE EQUIPMENT TO WILL'S - WATER STARTS PURGING
1300: SAMPLED MW42
1320: END PURGE & PACK UP

Location RED DEVIL Date 6-5-24

Project / Client RED DEVIL MINE MONITORING SPRING 24

1325: LEAVE MW42 FOR MW40
1335: ARRIVE AT MW40
~~1338~~ 1350: START PURGE
1435 SAMPLE MW40
1450: LEAVE MW40 FOR MW33
1540: SAMPLE MW33
~~1550~~
1600: LEAVE MINE
1630: ARRIVE AT LODGE



Location RED DEVIL MINE Date 6-6-24

Project / Client RED DEVIL MONITORING SPRING 24

TEAM: RILEY WITTLER, WILLEM MARTIN
WEATHER: PARTLY CLOUDY HI 55°
0730: SAFETY TAILGATE, FIELD PREP
0900: LEAVE FOR DUMP
0910: DROP TRASH
0925: ARRIVE AT MINE
0945: START SW08B gauging/SAMPLING
1015: SAMPLE SW08B
1030: START STREAM SURVEY on RD08

	DEPTH (FT)	WIDTH (FT)	FLOW (FT/S)
1	0.20	0.5	0.38
2	0.40	0.5	0.77
3	0.80	0.5	2.32
4	0.80	0.5	1.81
5	0.85	0.5	1.00
6	1.00	0.5	0.84
7	0.70	0.5	1.45
8	0.70	0.5	0.91
9	0.50	0.5	0.83
10	0.40	0.5	0.66
11	0.20	0.5	0.38
12	0.20	0.5	0.91
13	0.10	0.5	0.06
14	0.10	0.5	0.04

Location RED DEVIL MINE Date 6-6-24

Project / Client RED DEVIL MONITORING SPRING 24

1155: ARRIVE AT SW06 START gauging/SAMPLING
1105: SAMPLE RD06
1115: START SURVEY on RD06

	DEPTH (FT)	WIDTH (FT)	FLOW (FT/S)
1	1.20	0.5	0.27
2	1.00	0.5	1.05
3	1.60	0.5	2.00
4	1.40	0.5	2.30
5	1.00	0.5	2.11
6	0.50	0.5	0.76
7	0.20	0.5	0.78
8	0.20	0.5	1.77
9	0.40	0.5	1.14
10	0.20	0.5	1.39
11	0.10	0.5	0.31

1150: SAMPLE ~~RD15~~ RD06
STREAM FLOW @ SEEP 30 L/min.
~~1224:~~
1215: SAMPLE ~~SD~~ RD15

SEE NEXT PAGE →

46 Location RED DEVIL MINE Date 6-6-24

Project / Client RED DEVIL SPRING 24

RD15 STREAM

1226: START RD15

	DEPTH	WIDTH	FLOW
1	0.0	0.5	
2	0.10	0.5	0.64
3	0.30	0.5	0.99
4	1.40	0.5	1.24
5	1.80	0.5	1.29
6	1.20	0.5	1.53
7	0.80	0.5	1.05
8	0.60	0.5	0.90
9	0.70	0.5	0.08
10	0.20	0.5	0.08
11	0.10	0.5	0.02

1300: SAMPLE RD10

BIO: START GAUGING RD10

	DEPTH	WIDTH	FLOW
1	1.5	0.5	0.06
2	1.5	0.5	0.44
3	1.7	0.5	1.11
4	1.7	0.5	1.16
5	1.4	0.5	1.91
6	1.00	0.5	1.49
7	0.80	0.5	1.10
8	0.40	0.5	0.34
9	0.20	0.5	0.07

	D	W	F
10	0.2	0.5	0.07

Location Red Devil Date 6/1/24

Project / Client

weather: cloudy, 50's

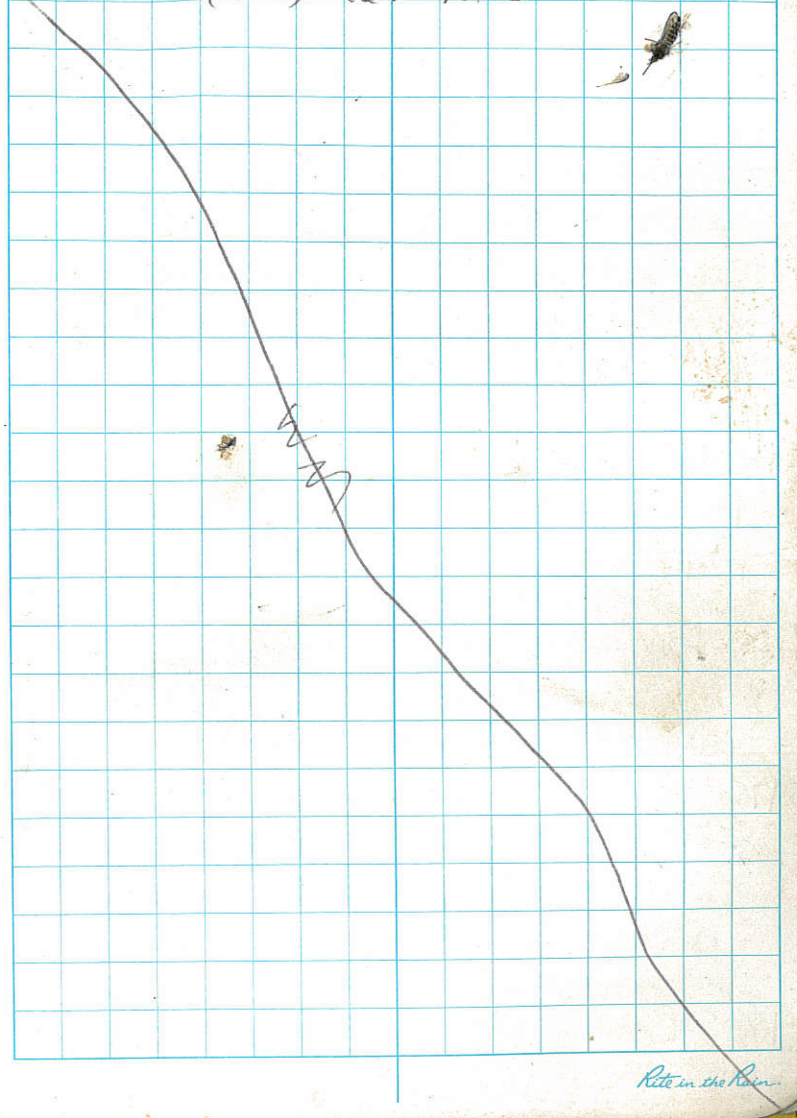
0730: Safety Brief
0740: Calibration and loading up
0830: Leave, see bear behind village
0915: Arrive at MW09
0950: Arrive at MW17
1020: Done troubleshooting MP50, had release valve needed to be fixed.
1130: Sample MW17, primary, DUP, MS/MSD
1230: Done with MW17 1140: MW1799
1240: start on MW16
1300: Troubleshoot bladder pump with Riley, reshape collapsed bladder, and unstick ball valve.
1315: Allowing well to recharge, ~ 1.5 ft drawdown during bladder pump testing
1345: Leave to help Riley
1410: Back at MW16 1605: SAMPLED PRIMARY
1615: Sampled DUP
1651: Left MW16 for Riley at MW26
1655: Arrive at MW16 and load up
1705: Leave site
1735: Back at house
~~1743: Leave MW59~~ WM

WM

Location Date

Project / Client

Frank Marley fmarley@blm.gov
(907) 267-1226



Rite in the Rain

Location Red Devil Date 6/2/24

Project / Client Red Devil Baseline Monitoring

40s, Rain, Cloudy

0800: Leave for mine
0840: Arrive at MW 54
0915: Trouble shooting, start purge [1030]: SAMPLE 54
1123: Transducer dropped, bladder pump stuck ~3 ft. of well tubes sticking out. Leaving
1140: At MW53 after going to MW58 by mistake
[1250]: Sample MW53
1330: Transducer dropped
1335: Left MW53
1340: Arrive at MW59, MP50 fan is broken
1426: Compressor fan broke off in 4 spots, fit back together, needs heat to melt into place
1520: MP50 fixed, begin MW59
[1650]: Sample MW59
1735: Deploy Barologger in MW39
1743: Leave MW59
1750: Arrive at MW54 to meet Riley. Pump is stuck and 3 ft of tubing is exposed. Still operational but cannot move. Water from this morning was very dirty, possible precipitates blocking it.
1805: Leave Site
1840: Arrive at house

Location Red Devil Date 6/3/24

Project / Client Red Devil Baseline Monitoring

partly / sunny

0845: Leave house after calibrating, safety, tailgate, loading up
0930: Arrive at MW52
[1040]: Sample MW52
1105: Leave MW ~~58~~ 52
1110: Arrive at MW46
[1215]: Sample MW46
1235: Leave MW46
1245: Arrive at MW44
1305: Start purging
[1410]: Sample MW44
~~1440~~: Leave MW44 to meet Riley at flat area near MW26
~~1515~~ 1525: Leave site
1600: Arrive at house

Location Red Devil Date 6/4/24

Project / Client Red Devil monitoring

Cold, 40s, rainy

0800: calibrate, safety, tailgate, pickup, and leave

0840: onsite

0850: Retrieve MP50 from MW44

0900: Arrive at MW44

1000: Sample MW44

1020: Leave MW44

1030: Arrive at MW43

1155: Sample MW43

1200: Sample MW43 dup.

1210: Leave MW43

1315: Arrive at MW29

1415: Sampled MW29

1440: Leave site

1505: Make it to barge

Location Red Devil Date 6/5/24

Project / Client Red Devil monitoring

Cloudy, Hi: 55°, Lo: 39°

0700: Calibrate and safety, tailgate

0815: Leave for site

0845: Arrive at MW40, tried purging again, installed QED sample pro bladder pump (did not work), tried an extra Geotech bladder pump (did not work)

1130: Leave MW40

1140: Arrived at MW42

1200: Switched to mini MP50, well works now

1300: Sampled MW42

1325: Left MW42

1335: Arrived at MW40

1435: Sampled MW40

1450: Left MW40

1455: Arrive at MW~~33~~ nn 33

1540: Sample MW33, MS/MSD

1605: Leave site

1630: Back at house

136

Location Red Devil Date 6/6/24

Project / Client Red Devil monitoring

Partly cloudy, Hi: 55, Lo: 40

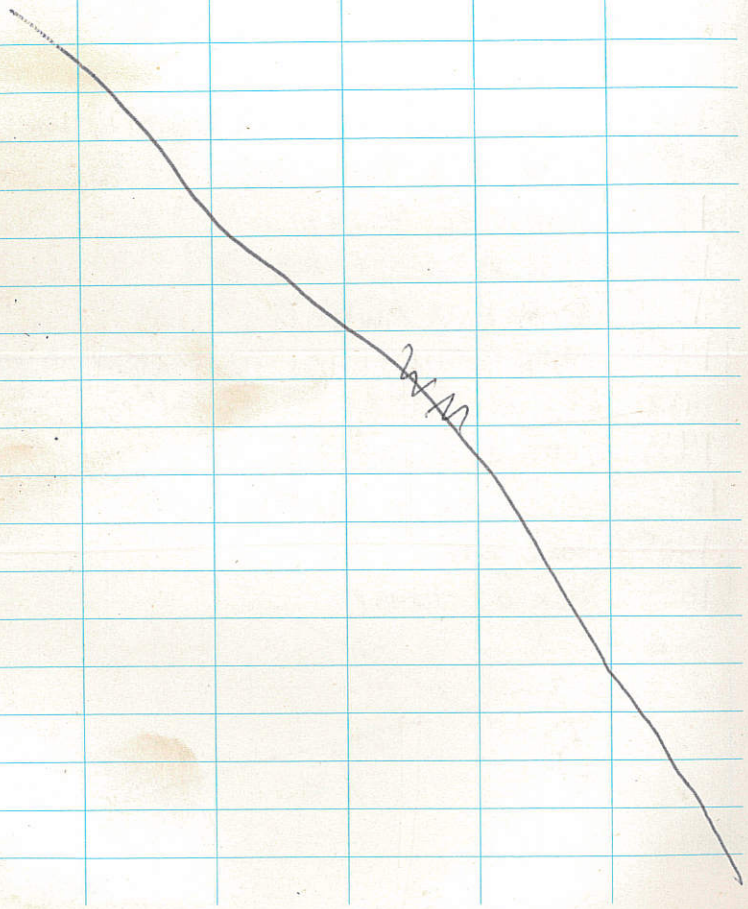
0730: Safety, tailgate, calibration, phone calls

0900: Leave for dump

0910: Arrive at dump, leave for site

0925: on-site, SWO 813

1000: Look at Red Devil Field book 1 for Field info



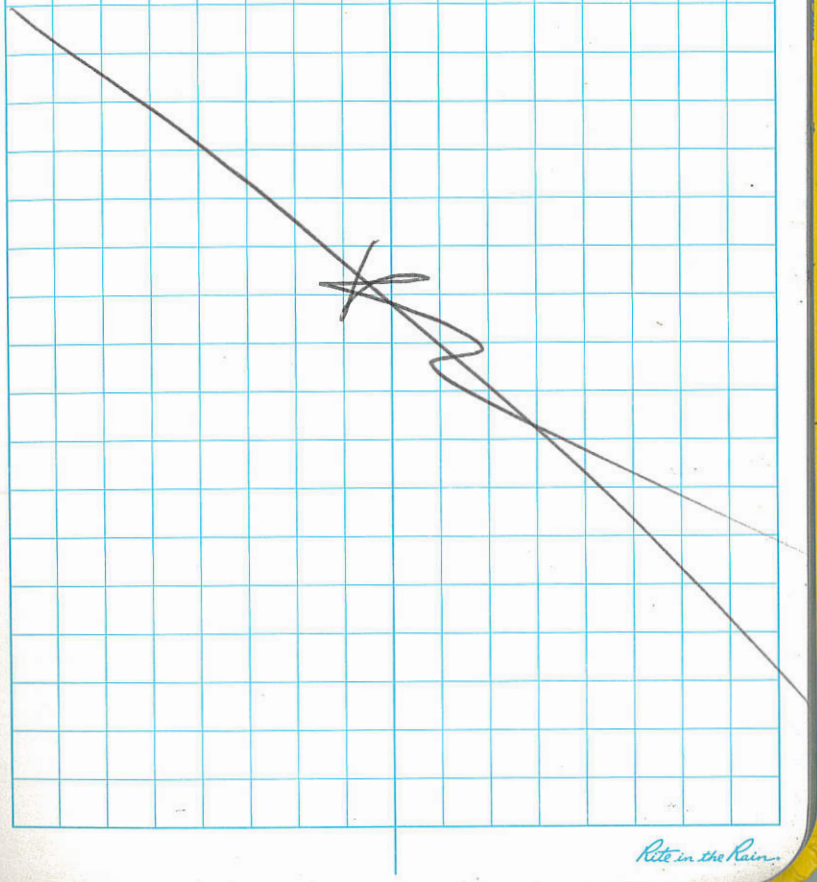
CONTENTS

PAGE	REFERENCE	DATE

Location RED DEVIL Date 09-05-2024

Project / Client RED DEVIL MONITORING FALL 24

WEATHER: 58° SUNNY
STAFF: WILLEM MARTIN, RILEY WITTLER
1145: LEAVE ANCHORAGE FOR RED DEVIL
1345: ARRIVE IN RED DEVIL
GET ATVS, GO TO LODGE &
PREP FOR TOMORROW.



Location RED DEVIL MINE Date 09-06-2024

Project / Client RED DEVIL MONITORING

FALL 24

WEATHER: HI 60° LOW 46° CLOUDY

STAFF: R. WITTLER W. MARTIN

0700: SAFETY TAILGATE & PREP FOR DAY

0845: LEAVE LODGE FOR MINE

0910: ARRIVE AT MINE

0915: ARRIVE AT MW12

0920: START GAUGING WELLS

WELL ID	DTW TOC
MW12	CANNOT GAUGE
MW7	20.73
MW13	28.99
MW08	13.67
MW11	20.16
MW10	28.25
MW09	25.36
MW34	29.68
MW36	15.72
MW35	34.14
MW01	18.78
MW17	12.20
MW16	10.03
MW03	18.12
MW20	6.54
MW21	8.48
MW22	880

Location RED DEVIL MINE Date 09-06-2024

Project / Client RED DEVIL MINE MONITORING

FALL 24

WELL ID	DTW	
MW32	18.98	
MW19	17.19	
MW18	25.00	
MW33	6.07	
MW23	15.29	
MW24 06 WM	17.31	
MW24	15.58	
MW25	30.81	
MW26	33.07	
MW27	~~28.85~~ RW	26.85
MW28	25.36	
MW04	23.20	
MW42	123.89	
MW43	85.16	
MW30	50.02	
MW55	13.12	
MW52	31.19	
MW47	36.83	
MW46	36.18	
MW45	43.56	
MW56	35.42	
MW59	131.04	
MW39	84.88	

Location REI DEVIL MINE Date 9/6/24

Project / Client REI DEVIL MONITORING

Fall 2024

Weird	DTW
MW51	38.51
MW54	29.04
MW50	45.76
MW58	30.94
MW53	30.65
MW31	37.50
MW57	43.73
MW40	127.25
MW48	25.63
MW29	54.76
MW49	43.44
MW44	33.47

1645: LEAVE MINE FOR LODGE

1715: ARRIVE AT LODGE

Location RED DEVIL MINE Date 09-07-24

Project / Client RED DEVIL MONITORING

FALL 24

WEATHER: Hi 59° LOW 45° SUNNY

STAFF: RWITTLER W. MARTIN

0730: TAILGATE & CALIBRATE

0800: ONLY ONE USABLE CONTROL / COMPRESSOR HAVE TO USE PERI PUMP ON SHALLOW WELLS

1045: LEAVE LODGE FOR MINE

1115: ARRIVE AT MINE

1130: SET UP ON MW06

1145: START PURGE ON MW06

1230: SAMPLE MW06 & MS/MSD

1300: MOVE TO MW26 & ATTEMPT PERI PUMP TOO DEEP

1350: MOVE TO ~~MW10~~ MW09

1355: ARRIVE AT ~~MW10~~ MW09 & SET UP

1415: START PURGE

1450: SAMPLE MW09

1505: END PURGE & BACK UP

1515: SET UP ON MW10

1555: SAMPLE MW10

1610: END PURGE

1625: LEAVE MW10 FOR MW29

1630: ARRIVE AT MW29

1840: LEAVE MINE

1900: AT LODGE

Rite in the Rain

Location RED DEVIL Date 09-08-2024

Project / Client RED DEVIL MINE MONITORING
FALL 24

WEATHER: Hi 57° low 47° CLOUDY
STAFF: R. WITTLER, W. MARTIN
0715: SAFETY TAILGATE & PREP FOR DAY
0840: LEAVE LODGE FOR MINE
0910: ARRIVE AT MINE
0920: ARRIVE AT MW55 & SET UP
0940: START PURGE
~~1040~~: SAMPLE MW55
1025: ↗
1040: END PURGE & PACK UP
1050: LEAVE MW55 FOR MW
1105: ARRIVE AT MW 16 & MW17 & SETUP
1125: START PURGE ON MW16
1200: SAMPLE MW16
1235: START PURGE ON MW17
1310: SAMPLE MW17
1325: END PURGE & PACKUP
1335: LEAVE MW17 FOR MW33
1345: ARRIVE AT MW33
1450: SAMPLE MW33 & MS/MSD
1455: SAMPLE MW33 DUP
1515: END PURGE & PACK UP
1540: LEAVE MW33 FOR MW
1550: ARRIVE AT MW44
1800: ARRIVE AT LODGE

Location RED DEVIL MINE Date 09-09-2024

Project / Client RED DEVIL MINE MONITORING
FALL 24

WEATHER: Hi 57° low 46° CLOUDY
STAFF: R. WITTLER W. MARTIN
0715: TAILGATE & PREP FOR DAY
0820: LEAVE FOR MINE
0950: ARRIVE AT MW27 & MW28
AND START SET UP ON MW27
1000: SAMPLE MW27
1005: SAMPLE MW27 DUP
1030: SET UP ON MW28 & START PURGE
1120: SAMPLE MW28
1125: SAMPLE MW28 DUP
1135: END PURGE & PACK UP
1152: LEAVE FOR MW 54
1205: ARRIVE AT MW54 & SETUP
1305: SAMPLE MW54
1325: END PURGE & PACK UP
1510: SAMPLE MW58
1550: LEAVE MW58 FOR MW53
1555: ARRIVE AT MW53 & SET UP
1715: PERI NOT WORKING
MAY BE TOO DEEP WILL TRY AGAIN
TOMORROW
1840: BACK AT LODGE

Rite in the Rain.

Location RED DEVIL MINE Date 0910-2024

Project / Client RED DEVIL MONITORING

FALL 24'

WEATHER: HI 53° LOW 44° CLOUDY
STAFF: R. WITTLER, W. MARTIN
0645: TAILGATE & PREP FOR DAY
0745: LEAVE LODGE FOR MINE
0815: ARRIVE AT MINE
0830: ARRIVE AT MW53 & SET UP
0945: GET PURGE ON MW53
1015: PERI DIES WILL COMES TO HELP WITH BLADDER
1050: START PURGE AGAIN
1105: SAMPLE MW53
1127: LEAVE MW53 FOR MW50
1430: SAMPLE MW57
1445: LEAVE MW57 FOR MW56
1450: ARRIVE AT MW56 & SET UP
1610: SAMPLE MW56
1620: LEAVE MW56 FOR MW49
1625: ARRIVE AT MW49
1715: SAMPLE MW49
1730: LEAVE MINE
1800: ARRIVE AT LODGE

Location RED DEVIL MINE Date 09-11-2024

Project / Client RED DEVIL MONITORING

FALL 24

WEATHER: LOW 43° HI 53°
STAFF: R. WITTLER, W. MARTIN
0700: TAILGATE & PREP FOR DAY
0810: LEAVE LODGE
0835: ARRIVE AT MINE
0843: ARRIVE AT MW47
0920: SAMPLE MW47
0940: SAMPLED & BACK UP WAIT
1010 FOR WILL TO RETURN FROM DROPPING TRANSDUCERS
1015: WILL BACK AT MW47
1016: LEK ARRIVE AT MW46
1018: START PURGE ON MW46
1110: SAMPLE MW46
1122: ARRIVE AT MW45
1125: START PURGE ON MW45
1145: SAMPLE MW45
1200: LEAVE MW45 FOR MW42
1208: ARRIVE AT MW42
1210: START PURGE
1345: SAMPLE MW42
1420: LEAVE MW42
1445: AT LODGE

Location RED DEVIL MINE Date 9-12-2024

Project / Client RED DEVIL MONITORING

FALL 24

WEATHER: HI 50° LOW 43° RAIN

STAFF: R. WITTER W. MARTIN

730: TAILGATE & PREP FOR DAY

900: LEAVE FOR MINE

930: ARRIVE AT MINE

945: SAMPLE 0924 RDO8SW

RDO8 GAUGING

	DEPTH	WIDTH	FLOW
1	0.1	0.5	0.1
2	0.15	0.5	0.25
3	0.3	0.5	1.43
4	0.3	0.5	1.49
5	0.3	0.5	1.00
6	0.3	0.5	0.60
7	0.3	0.5	1.15
8	0.2	0.5	1.64
9	0.1	0.5	1.56
10	0.2	0.5	0.48
11	0.1	0.5	0.24
12	0.1	0.5	0.03

SAMPLE 0924 RDO6SW

1030 ↗

Location RED DEVIL MINE Date 9-12-24

Project / Client RED DEVIL MINE MONITORING

FALL 24

RDO6 GAUGING

	DEPTH	WIDTH	FLOW
1	0.8	0.5	0.25
2	0.4	0.5	2.01
3	0.5	0.5	2.18
4	0.5	0.5	1.98
5	0.3	0.5	0.39
6	0.1	0.5	0.18
7	0.1	0.5	0.22
8	0.1	0.5	0.18
9	0.1	0.5	0.11

1045: SAMPLE ~~RDT~~ 0924 RD15SW

RD15 GAUGING

	DEPTH	WIDTH	FLOW
1	0.1	0.5	0.13
2	0.1	0.5	0.05
3	0.1	0.5	1.80
4	0.2	0.5	1.53
5	0.3	0.5	2.15
6	0.2	0.5	2.07
7	0.2	0.5	1.65
8	0.2	0.5	1.37
9	0.3	0.5	2.34
10	0.3	0.5	2.24

Location RED DEVIL MINE Date 09-12-24

Project / Client RED DEVIL MINE MONITORING FALL 24

1055: SAMPLE 0924RD05SW

RD05: 14 L/min

1140: SAMPLE 0924RD10SW

RD10 GAUGING

~~FLOW DEPTH RATE~~

	DEPTH	WIDTH	FLOW
1	0.5	0.5	0.22
2	0.4	0.5	0.56
3	0.5	0.5	0.59
4	0.4	0.5	0.93
5	0.4	0.5	1.09
6	0.2	0.5	0.53
7	0.1	0.5	0.30
8	0.1	0.5	0.22

1230: LEAVE MINE FOR LODGE

1300: ARRIVE AT LODGE

Location Date

Project / Client

CONTENTS

REFERENCE	DATE

Location Red Devil Mine Date 9/7/2024 3

Project / Client Red Devil Monitoring

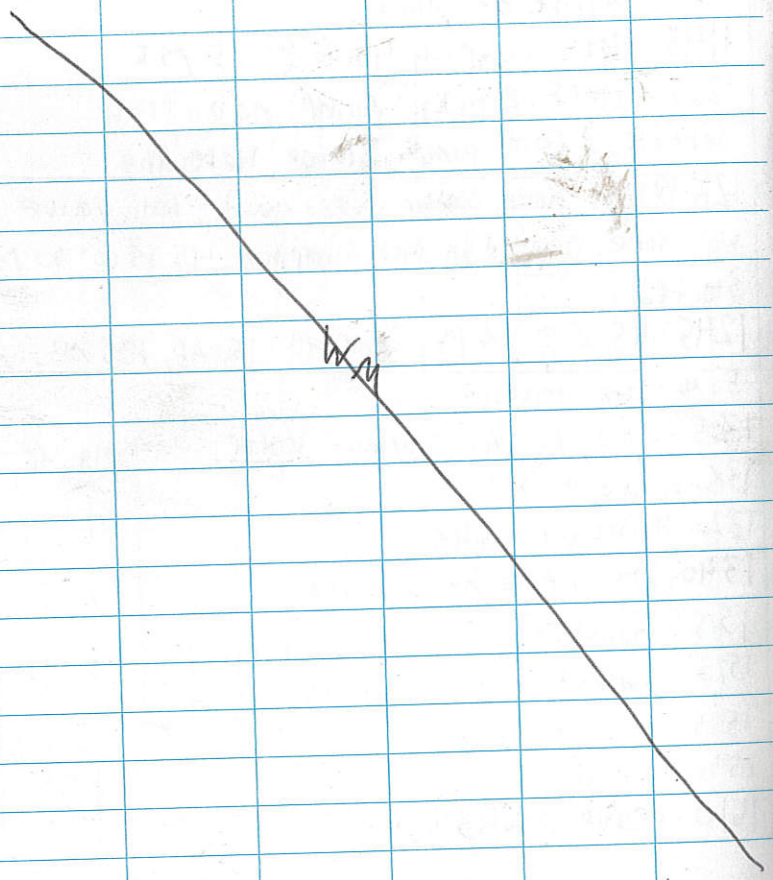
Team: W. Martin, R. Wittler
Weather: 45°-55°, partly cloudy, calm
0730: Calibration
0800: Fix pumps and retrofit hoses to work.
1045: Leave RD
1125: Arrive at MW42
1145: Start pumping 45, 15 @ 75 PSI
1205: Start pulling pump, no airflow detected from pump through waterline
125: Bladder pulled, Bladder looked good, ball valve was free. Dropped in and pumping 45, 15 @ 90 PSI started.
1245: 45, 15 @ 100 PSI netted 150 mL, 135 mL, 50 mL, then trickles
1305: Unable to pull any more water, packing up
135: Leave MW42
1320: Arrive at MW43
1340: Start purging/pumping
1515: Stabalize
1520: Collect sample primary
1525: Collect sample dup.
1550: Done sampling
1610: Leave MW43

Rite in the Rain

Location RED DEVIL MINE Date 9/7/2024

Project / Client Red Devil Mine Monitoring

1620: Arrive at MW29
1630: Start pumping
1820: Sampled, ORP and Turb. did not stabilize.
1840: Done sampling
1845: Leave MW29 for lodge
1915: Arrive at RD Lodge



Location RED DEVIL MINE Date 9/8/24

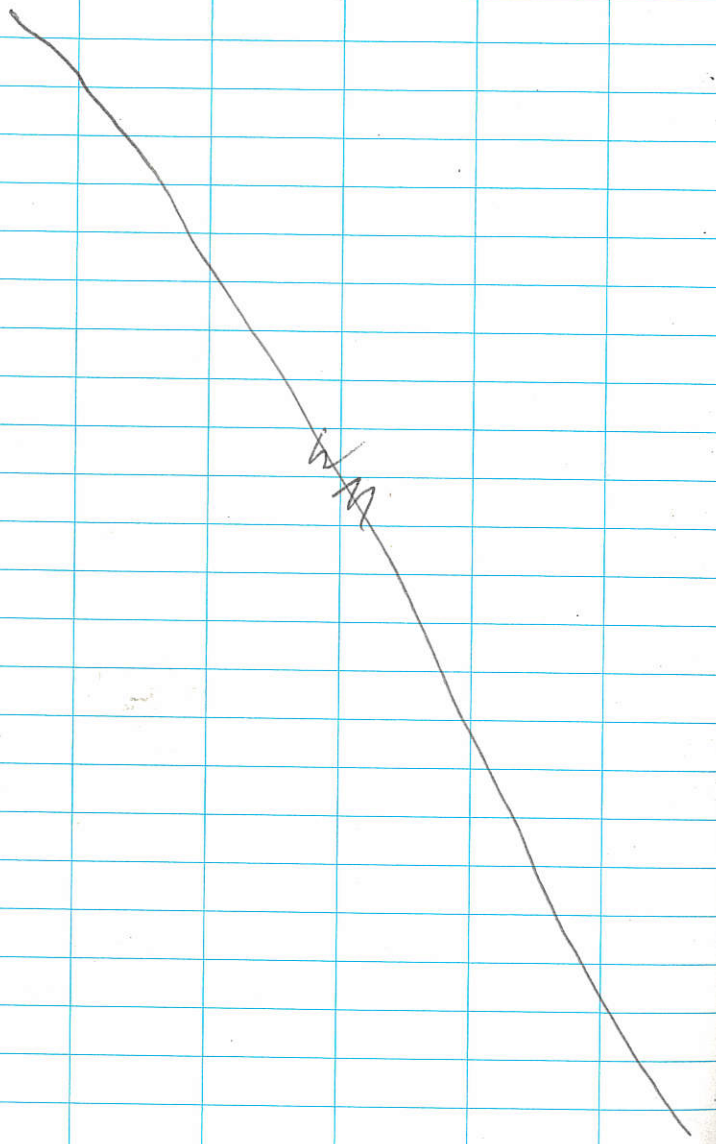
Project / Client Red Devil Monitoring

0730: calibrate
0830: Leave RD Lodge
0915: Arrive at MW52
0935: start purging
1100: Done purging
1105: Sample
1115: Done sampling
1135: Leave MW52
1145: Arrive at MW26
1155: Start purging
1330: Stop purging
1335: Sample
1400: Dont sampling
1405: Leave MW26
1405: Arrive at MW28
1420: Talk to Riley, decision made to switch to MW44 + MW49 because MW28 and MW27 are shallow enough for the peri. pump.
1435: Leave MW28
1445: Arrive at MW44
1455: Start pumping, No paperwork from prior sampling events, ~~dto~~ dialing it in.
1705: SAMPLE MW44
1725: Leave MW44

Location Red Devil Mine AWM Date 9/8/24

Project / Client Red Devil Mine Monitoring

1800: Camp at RD Lodge



Location RED DEVIL MINE AWM Date 9/9/24

Project / Client Red Devil Mine Monitoring

Team: W. Martin, R. Wittier

Weather: mid 40s, foggy

0725: Calibrating

0815: Leave RD Lodge

0950 0905: Arrive at MW27 to give Riley her equipment

0905: Arrive at MW40

0915: Begin pumping MW40

0935: Bubbles consistently being produced at 40, 20 @ 100 PSI, but no drawdown detected.

0945: Drawdown is detected, maybe 0.01 drawdown

0950: Changed settings to 35, 25 @ 110 PSI, more bubbles, stronger drawdown

1005: Bubbles stopped, then came back smaller

1010: Changed settings to 30, 30 @ 115 PSI, lots of bubbles, sustained drawdown

1025: Water in tubes. 25, 35 @ 100 PSI

1150: Sample MW40

1225: Leave MW40

1230: Arrive at MW59

1235: Start pumping MW59 40, 20 @ 70 PSI

1245: Change settings to 40, 20 @ 100 PSI, experience drawdown and bubbling out of water tube

Location Red Devil Mine Date 9/9/24

Project / Client Red Devil Monitoring

1440: MW59 stabilized, but flow has slowed to a few drops. compressor no longer able to reach 100psi in recharge period to offer adequate pumping pressure.

1515: Determine battery is too weak to pump. Leave to MW58 to discuss w/ Riley

1520: Meet w/ Riley. Decision made to get new battery and move forward w/ MW~~58~~ 59.

1535: Leave MW58 for RD Lodge.

1400: Arrive at house for battery

1405: Leave for mine

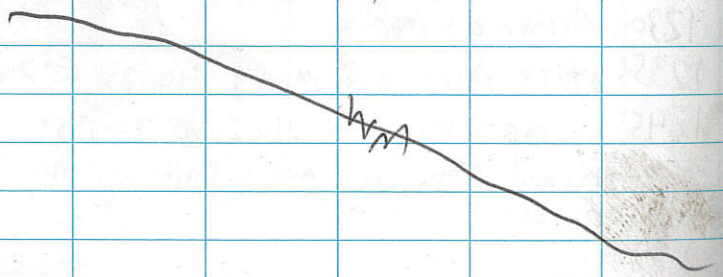
1625: Arrive back at MW59, and set up pump again

1735: SAMPLE MW59

1800: Done sampling

1810: Leave RD mine

1840: Back at RD Lodge



Location Red Devil Mine Date 9/10/24

Project / Client Red Devil Monitoring

Team: W. Martin, R. Witter

Weather: Cloudy, 40s

0740: Leave RD Lodge

0820: Arrive at MW51

0830: Start purging

0935: Sample MW59

1000: Leave MW59

1005: Arrive at MW50

1025: Get water at 11,4 @ 60 PSI. Pack up to assist Riley's sampling.

1030: Leave to MW53

1031: On stand-by, Riley's pump may work

1040: Leave for Riley at MW53

1042: Arrive at MW53

1110: Leave MW53

1112: Arrive at MW50

1330: Sample MW MW50

1340: Done Sampling

1345: Leave MW50

1350: Arrive at MW57, Riley to do readings

1430: Sample MW57

1450: Leave MW57 for MW56

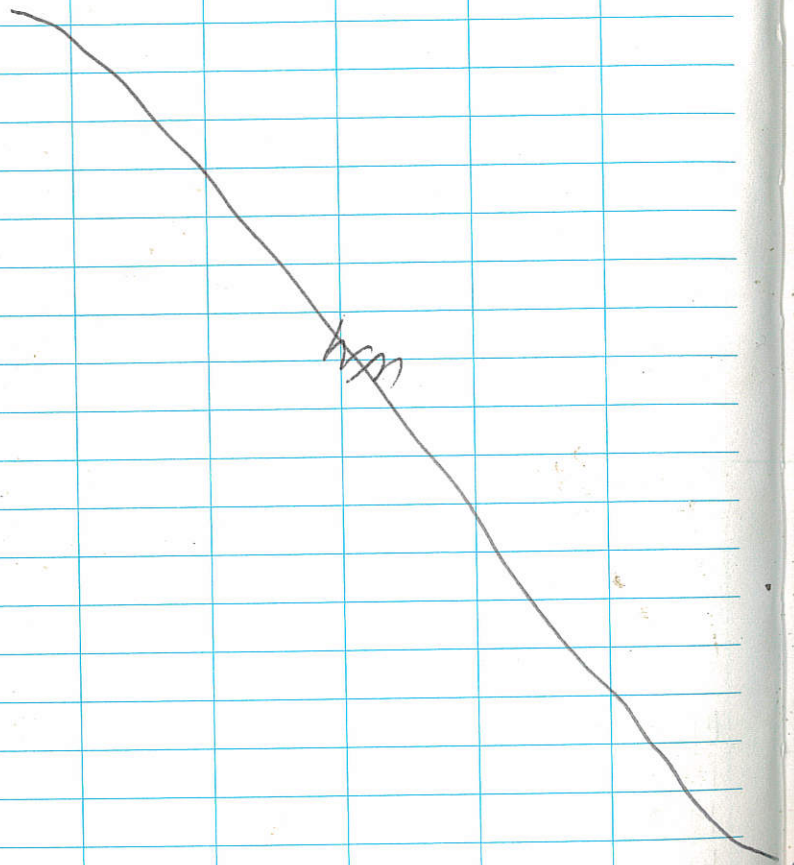
1455: Arrive at MW56

1610: Sample MW56

Location Red Devil mine Date 9/10/24

Project / Client Red Devil Monitoring

1630: Arrive at MW49. Out of gas, switched to reserve tank.
1715: Sampled MW44
1730: Leave MW44
1800: Arrive at RD lodge



Location Red Devil Mine Date 9/11/24

Project / Client Red Devil Monitoring

Team: W. Martin, R. Witter
weather: 40s, partly cloudy
0710: calibrations
0810: Leave RD Lodge
0835: Arrive at RD mine
0843: Arrive at MW47
0852: Leave to do Transducers
0856: Arrive at MW56 overhand knot
0904: Secured w/ Bowline, MW56 transducer dropped
0910: Leave MW56
0912: Arrive at MW59/MW39
0918: Secured w/ Bowline + overhand knot, MW39 Barologger dropped
0920: Leave MW39
0922: Arrive at MW57
0925: Secured w/ Bowline + overhand knot, MW57 transducer dropped
0926: Leave MW57
0930: Arrive at MW50
0936: Secured w/ Bowline + overhand knot, MW50 Transducer dropped.
0937: Leave MW50
0939: Arrive at MW53

Location Red Devil Mine Date 9/11/24

Project / Client Red Devil Monitoring

0944. Secured w/ Bowline + overhand knot, MW53 transducer dropped
0945: Left MW53
0947: Arrive at MW58
0954: Secured w/ Bowline + overhand knot, MW58 transducer dropped
0955: Left MW58
0958: Arrive at MW54
1000: Secured w/ Bowline + overhand knot, MW54 transducer dropped.
1001: Left MW54
1002: Arrived at MW51
1004: Secured w/ Bowline + over hand knot, MW51 transducer dropped
1006: Left MW51 hm MW47
1010: Arrive at ~~MW44~~, pack up
1015: Leave ~~MW44~~ hm MW47
1016: Arrive at MW46
1018: Start purging MW47
1110: Sample MW46
1120: Leave MW46
1122: Arrive MW45
1125: Start purging MW45
1145: Sample MW45
1200: Leave MW45 for MW42

Location Red Devil Mine Date 9/11/24

Project / Client Red Devil Monitoring

1208: Arrive at MW40
1210: Begin purging
1212: Switch batteries for compressor, unable to get over 50psI
1213: Switch compressor, Still unable to get over 50 psI
1222: Got water @ 0.025L per minute. Leaky air line in well.
1345: Sampled ~~MW45~~ hm MW42
1420: Leave MW42
1445: Back at RD Lodge

A.4 GROUNDWATER SAMPLING FORMS

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Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW06
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-1-24	**Samplers:**	R. WITTLER
Time Start:	1410		
Time Finish:	1455	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	23.50	ft	**Screened Interval (ft.):**	13.0-23.0
DTW (ft. bTOC):	16.14	ft		
Water Column:	7.36	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	4.45	L	Water Column x L/ft	
Three Well Volumes:	13.35	L	Liters in Well x 3	
Sample Depth:	20	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J024116
Water Level Meter:	HERON DIPPER D2	**Serial No.:**	0762-12
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200341
Pump Type:	BLADDER/MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 20 PSI 0.16 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 11 Seconds Refill 4 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 20 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 11 Seconds Refill 4 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW06	Sample ID: AGMW06 RW 0624MW06GW	Sample Time: 1445
Date: 6-1-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes: PULLED PUMP - COLLAPSED BLADDER		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1410	START PURGING									
1415	0.8	6.96	242	3.26	7.32	66	50.28	16.24	0.16	
1420	1.6	10.16	234	2.54	7.27	18.3	45.16	16.24	0.16	
1425	2.4	5.47	228	4.95	7.21	20.3	20.29	16.24	0.16	
1430	3.2	5.15	226	3.09	7.20	20.8	19.92	16.24	0.16	
1435	4.0	5.19	227	3.02	7.20	21.0	10.77	16.24	0.16	
1440	4.8	5.17	226	3.08	7.19	21.6	8.74	16.24	0.16	
1445	5.6	5.18	227	3.06	7.19	21.8	8.77	16.24	0.16	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: [signature]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW09
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	10-1-24	**Samplers:**	R. Wittler
Time Start:	0940		
Time Finish:	1027	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	30.71 ft	**Screened Interval (ft.):**	20-30 ft
DTW (ft. bTOC):	23.51 ft		
Water Column:	7.2 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	4.36 L	Water Column x L/ft	
Three Well Volumes:	13.08 L	Liters in Well x 3	
Sample Depth:	~28 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J102416
Water Level Meter:	HERON DIPPER D2	**Serial No.:**	0762-12
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200344l
Pump Type:	BLADDER / MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: 0.15 L/min

☑ Bladder Pump : Optimum Flow Rate Set at 11 Seconds Refill 4 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: ~~20 set~~ RW 20 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 11 Seconds Refill 4 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW09	Sample ID: 0624MW09GW	Sample Time: 1015
Date: 6-1-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0940	START PURGING									
0945	0.75	4.98	256	6.85	7.80	130.8	2.71	24.71	0.15	
0950	1.50	4.51	176	4.22	7.23	31.8	2.13	24.72	0.15	
0955	2.25	4.35	171	3.94	7.23	27.5	2.37	25.21	0.15	
1000	3.00	4.33	170	3.85	7.20	28.9	2.37	25.50	0.15	
1005	3.75	4.32	171	3.82	7.20	30.3	2.36	25.76	0.15	
1010	4.50	4.33	172	3.79	7.19	31.5	2.34	26.21	0.15	STABLE – SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: _____

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW10
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	10-1-24	**Samplers:**	R. WITTLER
Time Start:	1130		
Time Finish:	1229	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	101 ft	**Screened Interval (ft.):**	50-60
DTW (ft. bTOC):	26.50 ft		
Water Column:	34.50 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	20.90 L	Water Column x L/ft	
Three Well Volumes:	62.7 L	Liters in Well x 3	
Sample Depth:	56.0 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J024416
Water Level Meter:	HERON DIPPER D2	**Serial No.:**	07162-12
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200341
Pump Type:	BLADDER/MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 40 PSI 0.05 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 11 Seconds Refill 4 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 40 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 11 Seconds Refill 4 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW10	Sample ID: D024MW10GW	Sample Time: 1220
Date: 6-1-24	Dup. Sample ID: —	Dup. Sample Time: —

Notes: BLADDER COLLAPSED - PUMP PULLED & REPAIRED

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1130	START PURGING									
1135	0.25	6.09	206	5.85	7.70	13.3	80.1	27.81	0.05	TURBITITY HIGH DUE TO PULLING PUMP
1140	0.50	5.67	201	4.42	7.72	17.6	75.4	28.25	0.05	
1145	0.75	5.80	199	3.55	7.71	16.1	60.0	28.71	0.05	
1150	1.00	5.77	198	3.10	7.69	16.2	53.2	28.85	0.05	
1155	1.25	5.82	198	2.90	7.67	16.8	46.53	29.01	0.05	
1200	1.50	5.81	197	2.80	7.66	17.0	19.29	29.10	0.05	
12005	1.75	5.84	198	2.79	7.66	16.8	10.97	29.16	0.05	
1210	2.00	5.83	197	2.78	7.65	16.5	9.60	2923	0.05	
1215	2.25	5.83	197	2.79	7.64	16.6	8.12	29.31	0.05	
1220	2.50	5.83	197	2.78	7.65	16.5	6.41	29.37	0.05	STABLE - SAMPLED
							RW			

Sampled? : Yes ☒ No ☐

Initial of Sampler: RW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW16
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6/17/24	**Samplers:**	W. Martin
Time Start:	1210		
Time Finish:	1651	**Checked By:**	

Well & Purge Information

TD (ft. bTOC):	24.12	ft	**Screened Interval (ft.):**	11 - 21
DTW (ft. bTOC):	7.81	ft		
Water Column:	16.31	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	9.87	L	Water Column x L/ft	
Three Well Volumes:	29.62	L	Liters in Well x 3	
Sample Depth:	~20	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	~~EST~~ YSI 556 MPS	**Serial No.:**	06624121
Water Level Meter:	Diver-T2	**Serial No.:**	0705-T2
Turbidity Meter:	MicroTPW	**Serial No.:**	20140413 42
Pump Type:	MP 50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 17 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☐ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 17 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	2	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	2	No	HCl	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	2	Yes	HCl	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW16	Sample ID: 0624MW166W	Sample Time: 1605
Date: 06/01/24	Dup. Sample ID: 0624 MW16 6W	Dup. Sample Time: 1615
Notes: Unable to stabilize		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1415	START PURGING								0.1	
1420	0.5	9.37	318	3.68	6.40	45.2	—	7.81	0.1	Turb. Not taken
1425	1.0	8.92	308	3.00	6.38	49.8	36.83	7.84	0.1	
1430	1.5	6.63	291	3.27	6.35	52.3	31.35	7.84	0.1	
1435	1.75	6.79	288	2.06	6.34	52.5	35.68	7.84	0.05	Adjusted pressure to 17 psi to maintain drawdown
1440	2.0	7.12	292	2.44	6.34	53.3	38.21	7.84	0.05	Started at 12", 3" @ 20psi
1445	2.25	7.37	291	1.32	6.33	54.1	34.9	7.84	0.05	Sun came out
1450	2.50	7.33	287	1.45	6.36	53.3	34.76	7.84	0.05	
1455	2.75	7.07	285	1.84	6.38	52.7	32.78	7.84	0.05	
1500	3.00	6.77	280	2.00	6.40	51.9	31.19	7.84	0.05	
1505	3.25	6.57	276	1.67	6.42	50.9	32.60	7.84	0.05	
1510	3.50	6.61	273	5.31	6.42	49.8	29.41	7.84	0.05	
1515	3.75	6.71	272	2.19	6.43	49.2	29.49	7.84	0.05	
1520	4.0	6.94	272	2.16	6.42	48.6	22.58	7.84	0.05	
1525	4.25	6.85	271	1.91	6.42	48.7	20.49	7.84	0.05	
1530	4.50	6.75	270	1.97	6.42	48.6	20.29	7.84	0.05	
1535	4.75	6.73	267	1.77	6.42	48.0	18.01	7.84	0.05	
1540	5.0	6.62	265	2.09	6.43	47.6	19.19	7.84	0.05	
1545	5.25	6.70	264	2.19	6.43	47.1	17.11	7.84	0.05	Turn YSI back on,
1550	5.50	6.25	256	8.90	6.44	46.5	18.39	7.84	0.05	
1550	5.75	6.50	256	1.82	6.44	46.3	15.10	7.84	0.05	
1555	6.0	5.95	254	1.70	6.45	45.8	18.39	7.84	0.05	
										Sampled 1605

Sampled? : Yes ☑ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW17
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6/1/24	**Samplers:**	W. Martin
Time Start:	0955		
Time Finish:	1230	**Checked By:**	PW

Well & Purge Information

TD (ft. bTOC):	47.94	ft	**Screened Interval (ft.):**	41.5-51.5
DTW (ft. bTOC):	9.71	ft		
Water Column:	38.23	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	23.13	L	Water Column x L/ft	
Three Well Volumes:	69.39	L	Liters in Well x 3	
Sample Depth:	~50	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06G2421
Water Level Meter:	Dipper-T2	**Serial No.:**	0705-T2
Turbidity Meter:	Micro TPW	**Serial No.:**	20140434 2
Pump Type:	MP50	**Serial No.:**	418634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 35 psi = 0.1 L/min

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 35 psi

Sample Collection Information

MS/MSD? : **Yes** ☒ **No** ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	4	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	4	No	HCl	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	4	Yes	HCl	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW17	Sample ID: 0624MW17GW	Sample Time: 1130
Date: 6/1/24	Dup. Sample ID: ~~0624MW99GW~~ WM 0624MW6W99	Dup. Sample Time: 1140

Notes: MS/MSD collected

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1028	START PURGING								0.1	
1033	0.5	5.1	123	10.48	7.15	78.3	30.66	9.72	0.1	
1038	1.0	5.05	121	~~82.90~~ 9.33 WM	7.12	83.7	34.14	9.72	0.1	
1043	1.5	4.79	117	10.10	7.13	84.4	28.95	9.72	0.1	
1048	2.0	4.93	116	9.83	7.12	83.9	24.66	9.72	0.1	
1053	2.5	4.74	114	9.92	7.12	86.6	20.21	9.72	0.1	
1058	3.0	4.78	114	9.82	7.12	87.5	16.51	9.72	0.1	
1103	3.5	4.71	114	9.71	7.12	88.9	13.97	9.72	0.1	
1108	4.0	4.83	114	9.95	7.11	91.5	11.09	9.72	0.1	YSI shut off, turned back on
1113	4.5	4.82	114	9.90	7.11	92.2	9.71	9.72	0.1	
1118	5.0	4.81	115	9.64	7.11	94.1	9.81	9.72	0.1	
1123	5.5	4.89	115	9.66	7.10	95.6	8.47	9.72	0.1	Stabilized

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW26
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-1-24	**Samplers:**	K. WITTLER
Time Start:	1550		
Time Finish:	1645	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	43 ft	**Screened Interval (ft.):**	32-42
DTW (ft. bTOC):	30.94 ft		
Water Column:	12.06 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	7.29 L	Water Column x L/ft	
Three Well Volumes:	21.99 L	Liters in Well x 3	
Sample Depth:	~35 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J02416
Water Level Meter:	HERON DIPPER D2	**Serial No.:**	072612
Turbidity Meter:	MICRO TPN	**Serial No.:**	20200344 1
Pump Type:	BLADDER / MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: 30 PSI 0.05 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: 30 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	KW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	KW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	KW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW26	Sample ID: 0624MW26GW	Sample Time: 1630
Date: 6-1-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1550	START PURGING									
1555	0.25	8.74	365	13.39	6.91	39.75	59.4	30.94	0.05	
1600	0.50	7.97	355	8.31	6.93	-43.7	24.74	30.94	0.05	
1605	0.75	7.47	349	7.93	6.90	-5.0	15.76	30.94	0.05	
1610	1.00	7.09	344	8.54	6.91	1.6	12.55	30.94	0.05	
1615	1.25	7.22	342	8.76	6.92	2.4	10.80	30.94	0.05	
1620	1.50	6.93	340	9.82	6.93	2.5	9.97	30.94	0.05	
1625	1.75	7.01	340	9.83	6.94	1.9	8.72	30.94	0.05	
1630	2.00	7.00	339	9.82	6.95	2.0	8.87	30.94	0.05	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: JW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW27
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	10-4-24	**Samplers:**	R. WITTLER
Time Start:	1315		
Time Finish:	1345	**Checked By:**	W. martin

Well & Purge Information

TD (ft. bTOC):	34	ft	**Screened Interval (ft.):**	23-33
DTW (ft. bTOC):	25.13	ft		
Water Column:	~~13.5~~ 8.87	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	5.40	L	Water Column x L/ft	
Three Well Volumes:	16.2	L	Liters in Well x 3	
Sample Depth:	30	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J024116
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200344 1
Pump Type:	BLADDER/MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 25 PS 0.15 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 12.5 Seconds Refill 25 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @25 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 12.5 Seconds Refill 2.5 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	K
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	K
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	K

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW27	Sample ID: 0024 MW27GW	Sample Time: 1335
Date: 10-4-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1315	START PURGING									
1320	0.75	4.69	382	10.21	6.21	46.0	13.49	25.13	0.15	
1325	1.50	4.49	378	6.95	6.16	40.6	2.27	25.13	0.15	
1330	2.25	4.46	379	7.17	6.13	39.2	0.00	25.13	0.15	
1335	3.00	4.46	379	6.82	6.13	39.6	0.00	25.13	0.15	STABLE-SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler:

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	~~WM-17~~ MW28
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6/4/24	**Samplers:**	W. Martin
Time Start:	1315		
Time Finish:	1440	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	61	ft	**Screened Interval (ft.):**	53-63
DTW (ft. bTOC):	23.65	ft		
Water Column:	40.35	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	244.41	L	Water Column x L/ft	
Three Well Volumes:	73.24	L	Liters in Well x 3	
Sample Depth:	~59	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06G2421
Water Level Meter:	Heron	**Serial No.:**	0705-T2
Turbidity Meter:	MicroTPW	**Serial No.:**	20142043412
Pump Type:	MP50	**Serial No.:**	418634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 26 Seconds Refill 4 Seconds Discharge 630 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 26 Seconds Refill 4 Seconds Discharge 630 PSI

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW28	Sample ID: 0624MW28GW	Sample Time: 1415
Date: 6/4/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes: Raining		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1330	START PURGING							23.64	0.1	
1335	0.5	4.94	226	3.25	6.98	8.3	5.86	23.64	0.1	
1340	1.0	4.88	225	2.34	6.98	1.8	3.25	23.64	0.1	
1345	1.5	4.80	225	2.07	6.98	1.41	1.89	23.64	0.1	
1350	2.0	4.80	226	1.78	6.97	4.5	1.12	23.64	0.1	
1355	2.5	4.78	226	1.83	6.96	4.6	0.54	23.64	0.1	
1400	3.0	4.77	226	1.55	6.96	4.8	1.04	23.64	0.1	
1405	3.5	4.94	226	1.56	6.96	5.9	2.75	23.64	0.1	
1410	4.0	4.92	226	1.57	6.96	9.5	1.48	23.64	0.1	Stabilized
										Sampled 1415

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW29
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-4-24	**Samplers:**	R. WITTLER
Time Start:	1000		
Time Finish:	1047	**Checked By:**	V. Martin

Well & Purge Information

TD (ft. bTOC):	70	ft	**Screened Interval (ft.):**	59-69
DTW (ft. bTOC):	51.20	ft		
Water Column:	18.8	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	11.37	L	Water Column x L/ft	
Three Well Volumes:	34.12	L	Liters in Well x 3	
Sample Depth:	~60	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J024116
Water Level Meter:	HERON DIPPER-T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200344
Pump Type:	BLADDER/MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 40 PSI 0.05 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: 40 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW29	Sample ID: 0624MW29GW	Sample Time: 1030
Date: 6-4-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1000	START PURGING									
1005	0.25	4.89	421	1.42	6.48	120.9	24.59	51.20	0.05	
1010	0.50	4.61	382	1.07	6.63	78.0	24.41	51.20	0.05	
1015	0.75	4.21	337	0.91	6.70	58.2	18.13	51.20	0.05	
1020	1.00	4.07	319	0.90	6.72	53.8	18.07	51.20	0.05	
1025	1.25	4.07	310	0.91	6.72	49.9	17.97	51.20	0.05	
1030	1.50	4.06	311	0.92	6.73	48.7	17.50	51.20	0.05	STABLE - SAMPLED

RW

Sampled? : Yes ☒ No ☐

Initial of Sampler: RW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW33
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6/5/24	**Samplers:**	W. Martin, R. Wittler
Time Start:	1455		
Time Finish:	1605	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	WM ~~4.95~~ 23	ft	**Screened Interval (ft.):**	12-22
DTW (ft. bTOC):	4.95	ft		
Water Column:	18.05	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	10.92	L	Water Column x L/ft	
Three Well Volumes:	32.76	L	Liters in Well x 3	
Sample Depth:	20	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J024116
Water Level Meter:	Heron Dipper T2	**Serial No.:**	0762
Turbidity Meter:	Micro TPW	**Serial No.:**	20200341111
Pump Type:	BLADDER MP50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 20 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 20 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☒ ***No*** ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	✓
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	✓
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	✓

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW33	Sample ID: 0624MW33GW	Sample Time: 1540
Date: 6-5-24	Dup. Sample ID: –	Dup. Sample Time: –
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1500	START PURGING							4.95	0.2	
1505	1.0	4.11	101	13.16	6.60	37.3	61.64	4.95	0.2	
1510	2.0	3.72	98	11.34	6.57	35.2	19.62	4.95	0.2	
1515	3.0	3.58	97	9.84	6.49	33.9	44.43	4.95	0.2	BLACK FLOATIES
1520	4.0	3.55	96	8.74	6.48	33.6	29.94	4.95	0.2	
1525	5.0	3.51	96	8.60	6.48	33.2	16.69	4.95	0.2	
1530	6.0	3.47	96	8.45	6.47	33.3	16.94	4.95	0.2	
1535	7.0	3.37	95	8.44	6.46	33.6	11.58	4.95	0.2	
1540	8.0	3.37	95	8.39	6.45	33.8	7.01	4.95	0.2	STABLE SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: [signature]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW40
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-5-24	**Samplers:**	W. Martin, R. Wittler
Time Start:	1345		
Time Finish:	1445	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	140	ft	**Screened Interval (ft.):**	119-139
DTW (ft. bTOC):	RW ~~126.42~~ 126.64	ft		
Water Column:	13.36	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	8.08	L	Water Column x L/ft	
Three Well Volumes:	24.24	L	Liters in Well x 3	
Sample Depth:	~137	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J02416
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200344 1
Pump Type:	BLADDER / MP50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 70 PSI

☑ Bladder Pump : Optimum Flow Rate Set at 1/10 ~~35~~ WM Seconds Refill 20 ~~25~~ WM Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 70 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 1/10 ~~35~~ WM Seconds Refill 20 ~~25~~ WM Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW4C	Sample ID: 0624mw406w	Sample Time: 1435
Date: 6/5/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1350	START PURGING							126.64	0.1	
1355	0.5	5.76	306	10.77	7.14	31.6	59.08	126.64	0.1	
1400	1.0	4.85	298	6.06	7.08	31.3	15.86	126.64	0.1	
1405	1.5	4.39	292	4.04	7.05	33.4	13.93	126.64	0.1	
1410	2.0	4.20	289	2.73	7.05	34.1	7.47	126.64	0.1	
1415	2.5	4.13	288	2.55	7.04	34.5	8.91	126.64	0.1	
1420	3.0	4.16	288	2.28	7.04	34.5	7.41	126.64	0.1	
1425	3.5	4.12	288	2.15	7.04	34.3	4.61	126.64	0.1	
1430	4.0	4.18	289	2.17	7.04	34.0	7.07	126.64	0.1	
										Sampled 1435

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW42
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	10-5-24	**Samplers:**	R. MILLER
Time Start:	1205		
Time Finish:	1325	**Checked By:**	RM

Well & Purge Information

TD (ft. bTOC):	140 ft	**Screened Interval (ft.):**	119-139
DTW (ft. bTOC):	~~121.75~~ 122.03 ft		
Water Column:	17.97 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	10.87 L	Water Column x L/ft	
Three Well Volumes:	32.61 L	Liters in Well x 3	
Sample Depth:	135 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11024146
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0742
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200341
Pump Type:	BLADDER/MP50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 75 PSI 0.1 L/min

☑ Bladder Pump : Optimum Flow Rate Set at 95 Seconds Refill 15 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 75 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 95 Seconds Refill 15 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	R
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	R
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	R

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW42	Sample ID: 0624 MW42 GW	Sample Time: 1300
Date: 6-5-24	Dup. Sample ID: –	Dup. Sample Time: –
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1205	START PURGING									
1210	0.5	5.66	324	13.17	6.58	172.9	196.2	122.03	0.1	
1215	1.0	5.36	291	7.03	6.75	192.7	100.3	122.03	0.1	
1220	1.5	5.17	281	5.06	6.76	52.0	240.2	122.03	0.1	
1225	2.0	5.12	280	3.01	6.76	50.3	233.7	122.03	0.1	
1230	2.5	5.10	282	2.21	6.77	49.4	209.5	122.03	0.1	
1235	3.0	5.12	283	1.98	6.77	48.9	174.1	122.03	0.1	
1240	3.5	5.12	284	2.03	6.77	47.9	187.4	122.03	0.1	
1245	4.0	5.17	284	1.94	6.77	47.1	141.4	122.03	0.1	
1250	4.5	5.21	284	1.98	6.77	46.6	123.8	122.03	0.1	
1255	5.0	5.12	283	1.90	6.77	48.0	115.9	122.03	0.1	
1300	5.5	5.13	283	1.97	6.77	46.2	115.4	122.03	0.1	

Sampled? : Yes ☒ No ☐

Initial of Sampler: _____

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW43
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	06/04/24	**Samplers:**	W. Martin
Time Start:	1030		
Time Finish:	1310	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	118.5	ft	**Screened Interval (ft.):**	98-118
DTW (ft. bTOC):	83.0	ft		
Water Column:	35.5	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	21.48	L	Water Column x L/ft	
Three Well Volumes:	64.43	L	Liters in Well x 3	
Sample Depth:	110	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06G2421
Water Level Meter:	Heron	**Serial No.:**	0705-T2
Turbidity Meter:	Micro TPW	**Serial No.:**	20H04342
Pump Type:	MP50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☑ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge @ 55 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☑ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge @ 55PSI

Sample Collection Information

MS/MSD? : Yes ☐ No ☑

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	W.M
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	W.M
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	W.M

W.M

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW43	Sample ID: 0624MW43GW		Sample Time: 1155
Date: 6/4/24	Dup. Sample ID: 0624MW43GW99		Dup. Sample Time: 1200
Notes: Raining, Dup collected			

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1100	START PURGING							83.18	0.05	
1105	0.25	4.03	119	6.32	6.67	37.6	5.73	83.18	0.05	
1110	0.50	4.00	121	2.84	6.63	29.6	4.35	83.18	0.05	
1115	0.75	3.83	118	2.59	6.64	28.0	11.02	83.18	0.05	
1120	1.0	3.83	120	2.73	6.65	28.7	31.02	83.18	0.05	
1125	1.25	3.78	119	2.61	6.65	29.7	30.12	83.18	0.05	
1130	1.5	3.75	119	2.49	6.64	30.6	19.28	83.18	0.05	
1135	1.75	3.71	120	1.97	6.64	30.5	11.09	83.18	0.05	
1140	2.0	3.70	120	1.89	6.65	30.4	7.24	83.18	0.05	
1145	2.25	3.73	120	1.88	6.65	30.2	5.14	83.18	0.05	
1150	2.5	3.82	118	1.87	6.64	31.1	4.82	83.18	0.05	Stabilized sampled at 1155

Sampled? : Yes ☑ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW4L1
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	06/03/24	**Samplers:**	W. Martin
Time Start:	1245		
Time Finish:	1500	**Checked By:**	RN

Well & Purge Information

TD (ft. bTOC):	69	ft	**Screened Interval (ft.):**	48-68
DTW (ft. bTOC):	32.76	ft		
Water Column:	36.24	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	21.93	L	Water Column x L/ft	
Three Well Volumes:	65.74	L	Liters in Well x 3	
Sample Depth:	~60	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06G2421
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0705-T2
Turbidity Meter:	Micro TPW	**Serial No.:**	201404342
Pump Type:	MP50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12.5 Seconds Refill 2.5 Seconds Discharge @ 35 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12.5 Seconds Refill 2.5 Seconds Discharge @ 35 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW44	Sample ID: 0624MW44GW	Sample Time: 1440
Date: 6-3-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1305	START PURGING							32.89 ~~0.075~~ WM	0.1	
1310	0.5	5.95	233	11.35	7.08	106.0	60.28	32.89	0.1	
1315	1.0	4.95	227	3.27	7.10	30.6	139.4	32.89	0.1	
1320	1.5	4.85	226	1.88	7.11	3.4	303.9	32.89	0.1	orange, turbid water with particulate
1325	2.0	4.53	224	1.45	7.11	3.3	198.2	32.89	0.1	
1330	2.5	4.57	225	1.02	7.11	7.5	298.0	32.90	0.1	
1335	3.0	~~4.49~~ 4.43 WM	223	0.91	7.12	11.5	352.2	32.90	0.1	
1340	3.5	4.41	222	0.79	7.12	10.9	174.4	32.91	0.1	
1345	4.0	4.43	223	0.72	7.12	17.6	218.7	32.91	0.1	
1350	4.5	4.29	222	0.71	7.12	18.1	278.2	32.91	0.1	
1355	5.0	4.15	223	0.81	7.10	16.4	186.9	32.92	0.1	
1400	5.5	4.18	223	0.87	7.08	6.4	68.14	32.93	0.1	
1405	6.0	4.23	225	0.78	7.08	0.9	28.02	32.93	0.1	
1410	6.5	4.32	226	0.72	7.09	-3.7	18.71	32.94	0.1	
1415	7.0	4.416	227	0.65	7.08	-5.8	12.75	32.94	0.1	
1420	7.5	4.30	226	0.62	7.09	-3.7	12.97	32.94	0.1	
1425	8.0	4.20	225	0.59	7.10	2.5	9.02	32.95	0.1	
1430	8.5	4.16	224	0.56	7.10	-0.8	8.44	32.95	0.1	
1435	~~9.0~~	4.11	223	0.57	7.09	-0.6	8.00	32.96	0.1	stable
		Not used WM								sampled 1440

Sampled? : Yes ☑ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW45
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	07-3-24	**Samplers:**	R. WITTLER
Time Start:	1235		
Time Finish:	1320	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	82 ft	**Screened Interval (ft.):**	61-81
DTW (ft. bTOC):	42.46 ft		
Water Column:	39.54 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	23.92 L	Water Column x L/ft	
Three Well Volumes:	71.76 L	Liters in Well x 3	
Sample Depth:	~70 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J 02416
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	202003441
Pump Type:	BLADDER / MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 38 PSI 0.1 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 38 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: ~~MW47~~ MW45	Sample ID: ~~0624MW47GW~~ 0624MW45GW	Sample Time: 1310
Date: 6-3-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1235	START PURGING									
1240	0.5	4.48	123	10.97	6.68	8.7	2.91	42.46	0.1	
1245	1.0	4.33	121	10.25	6.67	8.2	1.94	42.46	0.1	
1250	1.5	4.15	121	9.18	7.30	8.0	0.81	42.46	0.1	
1255	2.0	4.16	121	8.20	6.64	9.7	0.62	42.46	0.1	
1300	2.5	4.16	121	7.85	6.63	10.7	0.60	42.46	0.1	
1305	3.0	4.15	120	7.63	6.63	10.8	0.57	42.46	0.1	
1310	3.5	4.16	120	7.44	6.63	11.0	0.92	42.46	0.1	STABLE - SAMPLED

RW

Sampled? : Yes ☑ No ☐

Initial of Sampler: RW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW46
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	06/03/24	**Samplers:**	W. Martin
Time Start:	1110		
Time Finish:	1235	**Checked By:**	

Well & Purge Information

TD (ft. bTOC):	57	ft	**Screened Interval (ft.):**	35-56
DTW (ft. bTOC):	38.83	ft		
Water Column:	18.17	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	10.99	L	Water Column x L/ft	
Three Well Volumes:	32.98	L	Liters in Well x 3	
Sample Depth:	~46	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06B2421
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0705-T2
Turbidity Meter:	MicroTPW	**Serial No.:**	20140434 2
Pump Type:	MP50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge 30 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge 30 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW-416	Sample ID: 0624MW416GW	Sample Time: 1215
Date: 06/03/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1125	START PURGING							38.83	0.05	
1130	0.25	6.45	84	16.51	6.70	144.5	6.62	38.83	0.05	Originally set to 12", 3", 25PSI
1135	0.75	5.14	79	12.74	6.65	142.7	6.87	38.83	0.1	Adjusted to 12", 3", 30 PSI
1140	1.25	4.43	75	10.55	6.63	141.1	~~6.63~~ 6.22	38.83	0.1	
1145	1.75	4.01	73	10.83	6.62	140.8	5.17	38.83	0.1	
1150	2.25	3.86	73	13.00	6.62	141.5	3.97	38.83	0.1	
1155	2.75	3.83	72	11.36	6.62	142.4	3.67	38.83	0.1	
1200	3.25	3.80	73	11.72	6.61	143.4	4.32	38.83	0.1	
1205	3.75	3.77	73	12.64	6.61	144.5	4.01	38.83	0.1	
1210	4.25	3.74	73	12.47	6.61	145.4	3.21	38.83	0.1	Stabilized
										Sampled 1215

Sampled? : Yes ☒ No ☐

Initial of Sampler: _____

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW47
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-3-24	**Samplers:**	R. WITTIER
Time Start:	1105		
Time Finish:	1145	**Checked By:**	J. martin

Well & Purge Information

TD (ft. bTOC):	67	ft	**Screened Interval (ft.):**	46-56
DTW (ft. bTOC):	35.53	ft		
Water Column:	31.47	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	19.04	L	Water Column x L/ft	
Three Well Volumes:	57.12	L	Liters in Well x 3	
Sample Depth:	~51	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J022116
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200344
Pump Type:	BLADDER / MP50	**Serial No.:**	099598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 35 PSI @ 0.1 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 35 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW47	Sample ID: 0624MW47GW	Sample Time: 1130
Date: 6-3-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1105	START PURGING									
1110	0.5	6.09	119	12.16	6.85	13.1	6.40	35.53	0.1	
1115	1.0	5.66	114	9.80	6.82	11.7	0.00	35.53	0.1	
1120	1.5	5.60	113	8.87	6.82	11.9	0.57	35.53	0.1	
1125	2.0	5.61	113	8.26	6.82	11.2	0.47	35.53	0.1	
1130	2.5	5.61	112	8.02	6.82	11.4	0.40	35.53	0.1	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: RW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW49
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	06/04/24	**Samplers:**	W. Mart, JM
Time Start:	0906		
Time Finish:	1020	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	61.7	ft	**Screened Interval (ft.):**	40-60
DTW (ft. bTOC):	42.79	ft		
Water Column:	18.91	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	11.441	L	Water Column x L/ft	
Three Well Volumes:	34.32	L	Liters in Well x 3	
Sample Depth:	~50	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06G7421
Water Level Meter:	Heron	**Serial No.:**	0705-T2
Turbidity Meter:	MicroTPW	**Serial No.:**	20140342
Pump Type:	MP50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 10 Seconds Refill 5 Seconds Discharge @ 30 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 10 Seconds Refill 5 Seconds Discharge @ 30 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	WM
			WM			

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW19	Sample ID: 0624MW19GW	Sample Time: 1000
Date: 06/04/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes: Raining		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0920	START PURGING							42.79	0.15	
0935	0.75	3.70	92	9.10	5.91	133.2	4.89	42.79	0.15	
0940	1.5	3.19	59	8.28	5.90	116.0	3.89	42.79	0.15	
0945	2.25	3.05	56	8.07	5.89	120.9	4.06	42.79	0.15	
0950	3.0	2.97	55	8.33	5.88	123.9	2.60	42.79	0.15	
0955		2.94	55	8.00	5.87	127.7	1.58	42.79	0.15	Stabilized
										Sampled 1000

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW50
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-2-24	**Samplers:**	R. WITTLER
Time Start:	1310		
Time Finish:	1425	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	92	ft	**Screened Interval (ft.):**	71-91
DTW (ft. bTOC):	~~34.50~~ 44.50	ft		
Water Column:	47.5	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	28.73	L	Water Column x L/ft	
Three Well Volumes:	86.19	L	Liters in Well x 3	
Sample Depth:	~82	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J024116
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200344
Pump Type:	BLADDER/MPSO	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 55 PSI 0.1 L/min

☑ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 55 PSI

☒ Bladder Pump : Optimum Flow Rate Set at _____ Seconds Refill _____ Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RT
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW50	Sample ID: 0624MW50GW	Sample Time: 1415
Date: 6-2-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes: INITIAL HIGH TURB - RED, ORANGE COLORING & SEDIMENT		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1310	START PURGING									
1315	0.5	4.10	418	8.21	6.88	14.5	700.3	44.50	0.1	RED, ORANGE COLORING → EXTREMELY HIGH TURB
1320	1.0	3.85	418	5.73	6.86	14.2	506.2	44.50	0.1	
1325	1.5	3.73	417	4.17	6.86	15.3	248.1	44.50	0.1	
1330	2.0	3.65	415	3.73	6.85	17.2	168.8	44.50	0.1	
1335	2.5	3.65	415	3.62	6.84	18.7	100.2	44.50	0.1	
1340	3.0	3.96	419	4.95	6.89	17.9	96.13	44.50	0.1	
1345	3.5	3.92	417	3.26	6.86	19.3	64.2	44.50	0.1	
1350	4.0	3.97	414	3.44	6.84	20.0	58.25	44.50	0.1	
1355	4.5	4.05	411	3.59	6.83	18.2	40.49	44.50	0.1	
1400	5.0	4.12	411	3.66	6.83	18.6	35.02	44.50	0.1	
1405	5.5	4.22	411	4.74	6.82	18.3	22"27.42	44.50	0.1	
1410	6.0	4.23	411	4.69	6.82	18.4	26.29	44.50	0.1	
1415	6.5	4.23	411	4.70	6.83	18.4	26.71	44.50	0.1	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: _____

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW51
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-2-24	**Samplers:**	R. WITTLER
Time Start:	0905		
Time Finish:	0955	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	77.0	ft	**Screened Interval (ft.):**	56-76
DTW (ft. bTOC):	37.34	ft		
Water Column:	39.66	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	23.99	L	Water Column x L/ft	
Three Well Volumes:	71.97	L	Liters in Well x 3	
Sample Depth:	~67	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J024116
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	202003441
Pump Type:	BLADDER/MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 55 PSI 0.2 L/min

☑ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 55 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW51	Sample ID: 0624MW51GW	Sample Time: 0950
Date: 6-2-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0905	START PURGING									
0910	1.0	4.00	137	14.01	6.36	141.0	36.90	37.34	0.2	
0915	2.0	3.34	114	10.27	6.50	61.5	20.34	37.34	0.2	
0920	3.0	5.22	119	14.66	6.57	46.7	6.23	37.34	0.2	
0925	4.0	3.20	122	14.02	6.60	35.1	5.79	37.34	0.2	
0930	5.0	3.16	125	13.39	6.62	18.0	5.13	37.34	0.2	
0935	6.0	3.14	128	12.90	6.65	13.8	4.61	37.34	0.2	
0940	7.0	3.13	129	12.48	6.66	12.5	2.02	37.34	0.2	
0945	8.0	3.14	130	12.27	6.70	12.4	1.94	37.34	0.2	
0950	9.0	3.14	132	12.31	6.71	12.5	1.76	37.34	0.2	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: _____

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW52
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	06/03/21	**Samplers:**	W. Martin
Time Start:	0930		
Time Finish:	1100	**Checked By:**	DW

Well & Purge Information

TD (ft. bTOC):	59.33	ft	**Screened Interval (ft.):**	35-55
DTW (ft. bTOC):	29.07	ft		
Water Column:	30.26	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	18.31	L	Water Column x L/ft	
Three Well Volumes:	54.92	L	Liters in Well x 3	
Sample Depth:	~50	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06G2421
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0705-T2
Turbidity Meter:	MicroTPW	**Serial No.:**	20140413 42
Pump Type:	MP50	**Serial No.:**	418634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 30 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 30 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	WM
			WM			

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW52	Sample ID: 0624MW52GW	Sample Time: 1045
Date: 06/03/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0955	START PURGING							29.20	0.05	
1000	0.25	6.03	155	18.40	5.97	197.5	4.71	29.20	0.05	
1005	0.50	5.50	99	13.50	6.06	213.5	3.12	29.20	0.05	
1010	0.75	5.33	69	11.31	6.06	191.7	2.29	29.20	0.05	
1015	1	5.21	64	11.09	6.06	185.1	2.41	29.20	0.05	
1020	1.25	5.04	60	11.01	6.08	179.9	2.01	29.20	0.05	
1025	1.5	5.05	59	10.77	6.08	175.8	1.86	29.20	0.05	
1030	1.75	5.07	58	10.91	6.08	175.0	2.89	29.20	0.05	
1035	2.0	5.10	57	10.82	6.08	174.8	3.71	29.20	0.05	
1040	2.25	5.05	57	10.65	6.08	174.5	4.12	29.20	0.05	Stabilized
					WM					Sampled 1045

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW 53
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6/02/24	**Samplers:**	W. Martin
Time Start:	1140		
Time Finish:	~~1210~~ 1250	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	62 ft	**Screened Interval (ft.):**	41-61
DTW (ft. bTOC):	29.42 ft		
Water Column:	32.58 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	19.71 L	Water Column x L/ft	
Three Well Volumes:	59.13 L	Liters in Well x 3	
Sample Depth:	~53 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06G2421
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0705-T2
Turbidity Meter:	MicroTPW	**Serial No.:**	20140343
Pump Type:	MP-50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: —

☒ Bladder Pump : Optimum Flow Rate Set at 24 Seconds Refill 6 Seconds Discharge @ 27.5 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: —

☒ Bladder Pump : Optimum Flow Rate Set at 24 Seconds Refill 6 Seconds Discharge @ 27.5 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW53	Sample ID: ~~[illegible] 6WM~~ 0624MW536W	Sample Time: 12.50
Date: 6/02/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW 29.61 (ft)	Flow Rate L/min	Color/Odor/Notes
1215	START PURGING							~~29.48~~	0.05	
1220		5.46	101	15.61	6.59	88.5	—	29.61	0.05	TURB. NOT TAKEN
1225		5.44	102	14.34	6.57	89.8	19.43	29.61	0.05	
1230		5.39	102	12.05	6.54	97.7	10.68	29.61	0.05	
1235		5.23	102	11.64	6.56	101.5	4.16	29.62	0.05	
1240		5.11	104	11.35	6.56	105.4	1.67	29.64	0.05	
1245		5.07	104	11.15	6.56	109.3	1.11	29.66	0.05	Stable
										Sampled 12.50

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW54
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6/21/24	**Samplers:**	W. Martin
Time Start:	0940		
Time Finish:	1123	**Checked By:**	PW

Well & Purge Information

TD (ft. bTOC):	50	ft	**Screened Interval (ft.):**	29-49
DTW (ft. bTOC):	28.34	ft		
Water Column:	21.66	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	13.10	L	Water Column x L/ft	
Three Well Volumes:	39.31	L	Liters in Well x 3	
Sample Depth:	40	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06G2421
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0705-T2
Turbidity Meter:	MicroTPW	**Serial No.:**	20141043 42
Pump Type:	MP-50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 25 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 25 PSI

Sample Collection Information

MS/MSD? : **Yes** ☐ **No** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	WM
						WM

Low-Flow Groundwater Sample & Stabilization Form

WM

Well ID: MW54	Sample ID: ~~0621-MW-54~~ 0621-MW54 GW	Sample Time: 1030
Date: 6/02/24	Dup. Sample ID: —	Dup. Sample Time:

Notes: Total LL mer. bottle had low perservative

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
~~1115~~ 0915	START PURGING								0.1	very orange water
~~1120~~ 0920	0.5	4.76	276	4.74	6.89	-7.1	130.2	28.41	0.1	
~~1125~~ 0925	1.0	4.71	273	3.86	6.90	-7.1	41.41	28.41	0.1	
~~1130~~ 0930	1.5	4.22	268	3.51	6.91	-1.2	29.37	28.41	0.1	water is clear
~~1135~~ 0935	2.0	4.18	268	3.41	6.92	1.6	24.44	28.45	0.1	
~~1140~~ 0940	2.5	4.12	267	3.32	6.92	3.9	29.21	28.46	0.1	
~~1145~~ 0945	3.0	4.04	267	3.23	6.92	5.1	27.05	28.46	0.1	
~~1150~~ 0950	3.5	4.00	267	3.12	6.92	5.2	17.11	28.46	0.1	
~~1155~~ 0955	4.0	3.95	267	2.97	6.92	4.3	12.45	28.47	0.1	
~~1200~~ 1000	4.5	3.88	267	2.84	6.92	3.2	9.83	28.47	0.1	
1005	5.0	3.84	266	2.71	6.92	2.5	23.74	28.47	0.1	
1010	5.5	3.77	266	2.61	6.91	2.0	18.69	28.47	0.1	
1015	6.0	3.74	266	2.48	6.91	1.7	9.98	28.47	0.1	
1020	6.5	3.77	265	2.36	6.90	0.6	8.10	28.48	0.1	
1025	7.0	3.80	265	2.30	6.90	0.0	8.94	28.48	0.1	
										Sampled at 1030

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW55
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-3-24	**Samplers:**	R. WITTLER
Time Start:	0940		
Time Finish:	1037	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	22.57 ft	**Screened Interval (ft.):**	10-20
DTW (ft. bTOC):	12.30 ft		
Water Column:	10.45 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	6.33 L	Water Column x L/ft	
Three Well Volumes:	19.00 L	Liters in Well x 3	
Sample Depth:	~17 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J024116
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	202003141
Pump Type:	BLADDER/MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 30 PSI 0.15 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 13.5 Seconds Refill 1.5 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 30 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 13.5 Seconds Refill 1.5 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW55	Sample ID: 0624MW55GW	Sample Time: 1025
Date: 6-3-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0940	START PURGING									
0945	0.75	3.69	180	11.05	6.46	6.7	140.41	12.30	0.15	
0950	1.50	3.58	170	7.38	6.46	5.8	92.82	12.30	0.15	
0955	2.25	3.45	166	5.67	6.46	6.8	37.80	12.30	0.15	
1000	3.00	3.40	159	5.14	6.46	7.5	21.65	12.30	0.15	
1005	3.75	3.50	152	4.52	6.47	8.6	15.24	12.30	0.15	
1010	4.50	3.52	147	4.10	6.48	9.4	12.02	12.30	0.15	
1015	5.25	3.45	144	3.77	6.49	10.3	11.50	12.30	0.15	
1020	6.00	3.60	143	3.56	6.50	10.6	7.57	12.30	0.15	
1025	6.75	3.54	140	3.55	6.50	11.0	7.28	12.30	0.15	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: RW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW57p
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-3-21	**Samplers:**	R. WITTLER
Time Start:	~~1205~~ 1405		
Time Finish:	1500	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	76 ft	**Screened Interval (ft.):**	55-75
DTW (ft. bTOC):	33.51 ft		
Water Column:	42.50 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	25.71 L	Water Column x L/ft	
Three Well Volumes:	77.13 L	Liters in Well x 3	
Sample Depth:	~76 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J024116
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	20200344
Pump Type:	BLADDER / MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 40 PSI 0.1 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 40 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW
			RW			

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW56	Sample ID: 0624MW56GW	Sample Time: 1450
Date: 6-3-24	Dup. Sample ID: –	Dup. Sample Time: –
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1405	START PURGING									
1410	0.5	5.62	290	7.22	6.92	-11.4	24.12	33.51	0.1	BLACK FLOATIES IN WATER
1415	1.0	5.20	282	5.16	6.86	-0.2	19.82	33.51	0.1	
1420	1.5	4.72	281	5.00	6.86	1.4	11.82	33.51	0.1	
1425	2.0	4.50	280	4.47	6.85	3.8	5.99	33.51	0.1	
1430	2.5	4.40	280	3.87	6.85	6.9	2.68	33.51	0.1	
1435	3.0	4.35	282	2.90	6.84	6.8	2.24	33.51	0.1	
1440	3.5	4.38	285	2.36	6.84	7.3	1.37	33.51	0.1	
1445	4.0	4.37	288	2.27	6.84	7.7	1.36	33.51	0.1	
1450	4.5	4.38	288	2.23	6.85	7.6	1.39	33.51	0.1	STABLE - SAMPLED

PUMP

Sampled? : Yes ☒ No ☐

Initial of Sampler: DW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW57
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-2-24	**Samplers:**	R. WITTER
Time Start:	1545		
Time Finish:	1630	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	60	ft	**Screened Interval (ft.):**	37.5-57.5
DTW (ft. bTOC):	47.91	ft		
Water Column:	12.09	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	7.31	L	Water Column x L/ft	
Three Well Volumes:	21.93	L	Liters in Well x 3	
Sample Depth:	~50	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J022416
Water Level Meter:	HERON DIPPER T2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	202003441
Pump Type:	BLADDER / MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @30 PSI 0.15 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 13 Seconds Refill 2 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @30 PSI

☒ Bladder Pump : Optimum Flow Rate Set at 13 Seconds Refill 2 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW57	Sample ID: 0624MW57GW	Sample Time: 1620
Date: 6-2-24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1545	START PURGING									
1550	0.75	5.05	49	17.56	6.57	39.1	11.14	47.91	0.15	
1555	1.50	4.49	41	15.08	6.40	32.0	5.94	47.91	0.15	
1600	2.25	4.28	38	14.22	6.33	32.1	2.21	47.91	0.15	
1605	3.00	4.21	36	13.38	6.28	39.7	0.65	47.91	0.15	
1610	3.75	4.15	37	12.96	6.26	41.4	0.17	47.91	0.15	
1615	4.50	4.15	38	12.71	6.26	43.4	0.10	47.91	0.15	
1620	5.25	4.15	38	12.69	6.26	44.0	0.05	47.91	0.15	STABLE – SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: [signature]

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Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW58
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	6-2-24	**Samplers:**	R. WITTLER
Time Start:	1050		
Time Finish:	~~128 PM~~ 1215	**Checked By:**	W. ~~AA~~ Martin

Well & Purge Information

TD (ft. bTOC):	58	ft	**Screened Interval (ft.):** 30.6-55.6
DTW (ft. bTOC):	30.08	ft	
Water Column:	27.92	ft	TD-DTW=Water Column
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table
Liters in Well:	16.90	L	Water Column x L/ft
Three Well Volumes:	50.7	L	Liters in Well x 3
Sample Depth:	~45.8	ft	Depth of Pump Intake

Well Volume Calculation

Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556	**Serial No.:**	11J102416
Water Level Meter:	HERON DIPPER T-2	**Serial No.:**	0762
Turbidity Meter:	MICRO TPW	**Serial No.:**	202003441
Pump Type:	BLADDER/MP50	**Serial No.:**	049598

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 35 PSi 0.1 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 35 PSi

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	RW

RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW58	Sample ID: 0624MW58GW	Sample Time: 1205
Date: 6-2-24	Dup. Sample ID: —	Dup. Sample Time: —

Notes:
PUMP PULLED

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1050	START PURGING									
1055	0.5	5.08	189	10.36	7.37	1.8	121.8	30.08	0.1	HIHG TURBITITY- YELLOW ORANGE
1100	1.0	4.92	189	5.08	7.40	2.1	146.8	30.08	0.1	
1105	1.5	4.77	189	3.91	7.43	0.1	100.2	30.08	0.1	
1110	2.0	4.77	190	3.51	7.43	0.5	124.3	30.08	0.1	
1115	2.5	4.75	190	2.62	7.43	1.2	114.4	30.08	0.1	
1120	3.0	4.85	189	2.32	7.43	0.6	115.4	30.08	0.1	
1125	3.5	5.03	190	2.16	7.43	1.0	97.96	30.08	0.1	
1130	4.0	4.98	190	2.02	7.43	1.3	91.70	30.08	0.1	
1135	4.5	4.94	190	1.95	7.43	1.1	80.20	30.08	0.1	
1140	5.0	4.91	189	1.91	7.43	1.2	74.98	30.08	0.1	
1145	5.5	4.82	189	1.91	7.44	1.5	47.38	30.08	0.1	
1150	6.0	4.82	188	1.91	7.44	1.5	43.91	30.08	0.1	
1155	6.5	4.80	189	1.89	7.44	1.8	24.26	30.08	0.1	
1200	7.0	4.80	189	1.87	7.44	1.8	15.97	30.08	0.1	
1205	7.5	4.80	189	1.86	7.44	1.8	9.71	30.08	0.1	STABLE SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: KW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW5a
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	06/02/21	**Samplers:**	W. Martin
Time Start:	1520		
Time Finish:	1735	**Checked By:**	BL

Well & Purge Information

TD (ft. bTOC):	161.5	ft	**Screened Interval (ft.):**	140 - 160
DTW (ft. bTOC):	131.61	ft		
Water Column:	29.89	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	18.08	L	Water Column x L/ft	
Three Well Volumes:	54.25	L	Liters in Well x 3	
Sample Depth:	153	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	06G2421
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0705-T2
Turbidity Meter:	micro TPW	**Serial No.:**	20140434?7
Pump Type:	MP-50	**Serial No.:**	48634

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☑ Bladder Pump : Optimum Flow Rate Set at 38 Seconds Refill 22 Seconds Discharge @ 70 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☐ Bladder Pump : Optimum Flow Rate Set at 38 Seconds Refill 22 Seconds Discharge @ 70 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW59	Sample ID: 0624MW59GW	Sample Time: 1650
Date: 06/02/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1545	START PURGING							131.61		
1550	0.1	7.88	394	11.95	7.12	128.3	335.3	131.61	0.07	Large orange particles in water
1555	0.2	7.78	398	7.74	7.09	104.1	254.5	131.61	0.02	
1600	0.3	8.01	401	6.69	7.07	75.1	147.6	131.61	0.02	Sun came out
1605	0.3	8.63	407	4.59	7.03	29.2	87.13	131.61	0.02	
1610	0.4	8.84	410	2.94	6.99	14.4	83.80	131.61	0.02	
1615	0.5	9.12	412	2.37	6.99	9.6	66.56	131.61	0.02	
1620	0.6	9.24	415	1.77	6.97	-2.3	76.17	131.61	0.02	
1625	0.7	9.57	417	1.58	6.98	-2.7	68.83	131.61	0.02	
1630	0.8	9.78	420	1.54	6.98	-8.3	49.56	131.61	0.02	
1635	0.9	10.03	422	1.62	6.98	-10.4	53.20	131.61	0.02	
1640	1.0	10.14	425	1.43	6.98	-10.4	48.07	131.61	0.02	
1645	1.1	10.22	427	1.33	6.98	-12.0	51.24	131.61	0.02	Stabilized
										sampled 1650

Sampled? : Yes ☒ No ☐

Initial of Sampler: W.A

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW06
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-07-2024	**Samplers:**	R. WITTER
Time Start:	1140		
Time Finish:	1300	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	23.50	ft	**Screened Interval (ft.):**	13.0-23.0
DTW (ft. bTOC):	17.61	ft		
Water Column:	5.89	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	3.56	L	Water Column x L/ft	
Three Well Volumes:	10.69	L	Liters in Well x 3	
Sample Depth:	20	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 55" PRO QUATRO	**Serial No.:**	23t101217
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	2024030153
Pump Type:	PERI PUMP	**Serial No.:**	98012

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.200 L/min

☐ Bladder Pump : Optimum Flow Rate Set at ___ Seconds Refill ___ Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.200L/min

☐ Bladder Pump : Optimum Flow Rate Set at ___ Seconds Refill ___ Seconds Discharge

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	~~HCl~~ NA	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	~~HCl~~ NA	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW06 | Sample ID: 0924MW06GW | Sample Time: 1230

Date: 09-07-2024 | Dup. Sample ID: ~ | Dup. Sample Time: ~

Notes: MS/MSD

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1145	START PURGING									
1150	1.00	5.3	369.5	2.07	6.66	20.3	252.1	17.61	0.200	
1155	2.00	5.2	368.9	4.05	6.69	14.2	208.6	17.61	0.200	
1200	3.00	5.3	368.8	4.25	6.73	8.8	207.6	17.61	0.200	
1205	4.00	5.2	367.2	3.10	6.78	4.1	204.8	17.61	0.200	
1210	5.00	5.2	367.0	2.50	6.77	3.2	167.5	17.61	0.200	
1215	6.00	5.2	365.5	2.99	6.80	0.4	158.8	17.61	0.200	
1220	7.00	5.2	366.1	2.97	6.79	-0.8	114.0	17.61	0.200	
1225	8.00	5.2	359.9	3.00	6.78	-1.0	112.1	17.61	0.200	
1230	9.00	5.2	360.7	3.01	6.78	-0.9	110.7	17.61	0.200	TURBITITY HIGH BUT STABLE SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: [illegible]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	~~MW26~~ RW MW10
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-07-2024	**Samplers:**	R. WITTLER
Time Start:	~~1440~~ 1530		
Time Finish:	1620	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	61 ft	**Screened Interval (ft.):**	50-60
DTW (ft. bTOC):	29.65 ft		
Water Column:	31.35 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	18.96 L	Water Column x L/ft	
Three Well Volumes:	56.88 L	Liters in Well x 3	
Sample Depth:	56.0 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	23H101217
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	2024030153
Pump Type:	PERI PUMP	**Serial No.:**	9801 2

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.1 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.1 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RT
Total LL Mercury	1	No	~~HCl~~ N/A	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	~~HCl~~ N/A	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW10 | Sample ID: 0924MW10GW | Sample Time: 1555

Date: 09-07-2024 | Dup. Sample ID: — | Dup. Sample Time: —

Notes:

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1535	0.10	START PURGING								
1540	0.50	7.0	309.0	13.82	7.34	58.4	4.69	29.65	0.10	
1545	1.00	7.0	311.0	12.74	7.37	58.2	2.56	29.65	0.10	
1550	1.50	7.0	310.2	12.51	7.37	58.2	3.04	29.65	0.10	
1555	2.00	7.0	310.7	12.26	7.37	58.9	2.70	29.65	0.10	STABLE
										SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: [illegible]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW09
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-07-2024	**Samplers:**	R. WITTLER
Time Start:	1410		
Time Finish:	1505	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	30.71 ft	**Screened Interval (ft.):**	20-30
DTW (ft. bTOC):	26.35 ft		
Water Column:	4.36 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	2.63 L	Water Column x L/ft	
Three Well Volumes:	7.91 L	Liters in Well x 3	
Sample Depth:	~28 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	23H101217
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	2024030153
Pump Type:	PERI PUMP	**Serial No.:**	98012

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.200 mL/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.200 mL/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RL
Total LL Mercury	1	No	~~HCl~~ R NA	1631 LL Hg	8oz Glass	RL
Dissolved LL Mercury	1	Yes	~~HCl~~ R NA	1631 LL Hg	8oz Glass	RL

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW09 | Sample ID: 0924MW09GW | Sample Time: 1450

Date: 09-07-2024 | Dup. Sample ID: — | Dup. Sample Time: —

Notes:

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1415	0.200			START PURGING						
1420	1.0	5.8	286.4	13.98	6.91	-32.0	36.93	26.35	0.200	
1425	2.0	5.8	294.5	13.05	6.87	-18.7	16.33	26.35	0.200	
1430	3.0	6.0	312.0	11.70	6.80	-3.5	8.46	26.35	0.200	
1435	4.0	6.0	316.0	11.43	6.79	-2.5	7.67	26.35	0.200	
1440	5.0	6.0	320.1	11.15	6.80	-3.0	7.16	26.35	0.200	
1445	6.0	6.0	320.6	11.19	6.81	-3.1	5.79	26.35	0.200	
1450	7.0	6.1	320.4	11.17	6.81	-3.0	4.61	26.35	0.200	STABLE SAMPLED

Sampled? : Yes ☑ No ☐

Initial of Sampler: [illegible]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW43
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/7/24	**Samplers:**	W. Martin
Time Start:	1340		
Time Finish:	1515	**Checked By:**	DW

Well & Purge Information

TD (ft. bTOC):	118.5 ft	**Screened Interval (ft.):**	98-118
DTW (ft. bTOC):	85.30 ft		
Water Column:	33.2 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	20.09 L	Water Column x L/ft	
Three Well Volumes:	60.26 L	Liters in Well x 3	
Sample Depth:	110 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	WM ~~06 62429~~ 20H104432
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0763
Turbidity Meter:	MicroTPW 2000	**Serial No.:**	201909329
Pump Type:	MP101H	**Serial No.:**	MP201H-1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 15 Seconds Refill 15 Seconds Discharge @ 60 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 15 ~~60~~ WM Seconds Refill 15 Seconds Discharge @ 60 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	2	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	2	No	~~HCl~~ WM NA	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	2	Yes	HCl WM NA	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW43 | Sample ID: 0924MW43GW | Sample Time: 1520

Date: 9/7/24 | Dup. Sample ID: 0924MW43GW99 | Dup. Sample Time: 1525

Notes: —

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1340	START PURGING									
1345	0.25	10.2	241.1	8.73	6.80	-292.1	3.37	85.30	0.05	
1350	0.50	7.8	237.4	7.69	6.63	-203.7	1.54	85.30	0.05	
1355	0.75	7.2	233.7	7.06	6.61	-193.0	2.32	85.30	0.05	
1400	1.0	6.4	233.6	6.32	6.58	-176.5	0.64	85.30	0.05	
1405	1.25	5.9	235.5	5.49	6.58	-160.0	2.33	85.30	0.05	
1410	1.50	5.8	241.3	3.60	6.62	-118.5	6.31	85.30	0.05	
1415	1.75	5.9	243.1	2.73	6.65	-176.6	9.52	85.30	0.05	Turn YSI back on
1420	2.0	6.0	244.1	9.24	6.65	-132.1	15.21	85.30	0.05	
1425	2.25	6.0	244.4	10.75	6.65	-102.4	12.50	85.31	0.05	
1430	2.50	6.0	244.1	10.74	6.65	-75.4	11.21	85.31	0.05	
1435	2.75	6.0	245.0	10.65	6.65	-52.1	8.95	85.31	0.05	
1440	3.0	6.2	245.0	10.44	6.65	-35.1	4.22	85.31	0.05	
1445	3.25	6.2 WM	245.3	10.21	6.65	-26.2	2.24	85.31	0.05	
1450	3.50	6.3	244.8	10.06	6.65	-18.0	2.20	85.32	0.05	
1455	3.75	6.3	245.2	9.89	6.65	-8.7	2.31	85.32	0.05	
1500	4.0	6.2	245.3	9.88	6.65	-5.5	1.63	85.32	0.05	
1505	4.25	6.6	244.8	9.51	6.65	1.6	1.25	85.32	0.05	
1510	4.50	6.6	245.5	9.415	6.64	4.7	1.02	85.32	0.05	
1515	4.75	6.7	245.3	9.27	6.641	8.8	1.77	85.32	0.05	

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW29
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/7/24	**Samplers:**	W. Martin
Time Start:	1635		
Time Finish:	1820	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	70 ft	**Screened Interval (ft.):**	59-69
DTW (ft. bTOC):	55.11 ft		
Water Column:	~~9.01~~ VM 14.98 WM ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	9.01 L	Water Column x L/ft	
Three Well Volumes:	27.03 L	Liters in Well x 3	
Sample Depth:	~60 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI 556 MPS	**Serial No.:**	20H1044432
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0763
Turbidity Meter:	MicroTPW 2000	**Serial No.:**	207909329
Pump Type:	MP101H	**Serial No.:**	MP101H-1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 221 Seconds Refill 6 Seconds Discharge @ 40 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 221 Seconds Refill 6 Seconds Discharge @ 40 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	~~HCl~~ WM N/A	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	~~HCl~~ WM N/A	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW29	Sample ID: 0924_MW29GW	Sample Time: 1820
Date: 9/7/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes: —		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1635	START PURGING									
1640	0.25	10.0	567	2.33	6.75	-181.7	3.29	~~15.19~~ 55.19	0.05	
1645	0.50	9.3	573	1.98	6.77	-158.5	17.79	~~15.19~~ 55.19	0.05	
1650	0.75	9.0	586	1.08	6.77	-126.8	40.07	~~15.19~~ 55.19	0.05	
1655	1.0	8.8	588	0.70	6.78	-95.2	37.49	~~15.19~~ 55.19	0.05	
1700	1.25	8.7	583	0.58	6.78	-80.7	34.86	~~15.19~~ 55.19	0.05	
1705	1.50	8.8	575	0.51	6.78	-67.8	35.20	~~15.19~~ 55.19	0.05	
1710	1.75	8.7	567	0.49	6.78	-51.8	32.32	~~15.19~~ 55.19	0.05	
1715	2.0	8.8	565	0.55	6.81	-144.1	34.40	~~15.19~~ 55.19	0.05	Turned YSI Station, explains ORP variance
1720	2.25	8.7	562	0.48	6.78	-150.5	34.89	~~15.19~~ 55.19	0.05	
1725	2.5	8.8	560	0.47	6.78	-137.4	33.14	55.19	0.05	
1730	2.75	8.7	560	0.46	6.78	-115.2	31.38	55.19	0.05	
1735	3.0	8.6	558	0.46	6.78	-92.9	32.19	55.19	0.05	
1740	3.25	8.6	557	0.48	6.78	-71.8	27.87	55.19	0.05	
~~1745~~	3.5	8.8	557	0.46	6.78	-65.6	28.94	55.19	0.05	
1750	3.75	8.8	558	0.45	6.78	-53.0	27.28	55.19	0.05	
1755	4.00	8.9	556	0.45	6.78	-43.3	29.11	55.19	0.05	
1800	4.25	8.9	557	0.45	6.79	-46.9	24.11	55.19	0.05	
1805	4.50	8.8	557	0.47	6.78	-34.0	26.56	55.19	0.05	
1810	4.75	8.8	554	0.45	6.78	-33.8	26.73	55.19	0.05	
1815	5.0	8.8	554	0.46	6.78	-18.0	37.69	55.19	0.05	Sampling, deviation due to ORP, Turb. instability

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW26
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/8/24	**Samplers:**	W. Mathin
Time Start:	1215		
Time Finish:	1335	**Checked By:**	

Well & Purge Information

TD (ft. bTOC):	43	ft	**Screened Interval (ft.):**	32-42
DTW (ft. bTOC):	33.27	ft		
Water Column:	9.72	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	5.89	L	Water Column x L/ft	
Three Well Volumes:	17.66	L	Liters in Well x 3	
Sample Depth:	~35	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI Pro Quatro	**Serial No.:**	20H104432
Water Level Meter:	Heron Dipper T2	**Serial No.:**	0763
Turbidity Meter:	MicroTPW 2000	**Serial No.:**	20190932 9
Pump Type:	MP10H	**Serial No.:**	MP10H-1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 27 Seconds Refill 3 Seconds Discharge @ 30 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 27 Seconds Refill 3 Seconds Discharge @ 30 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl WM N/A	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl WM N/A	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW26	Sample ID: 0924 MW26 GW	Sample Time: 1335
Date: 9/8/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1215	START PURGING									
1220	0.25	7.6	668	0.76	6.46	-505	36.52	34.42	0.05	
1225	0.50	7.8	662	0.49	6.49	-469.6	36.46	34.42	0.05	
1230	0.75	7.9	665	0.39	6.51	-422.1	30.20	34.42	0.05	
1235	1.0	7.8	668	0.35	6.52	-383.5	28.20	34.42	0.05	
1240	1.25	7.8	666	0.34	6.52	-362.5	22.34	34.42	0.05	
1245	1.50	8.3	661	0.36	6.52	-328.2	20.93	34.42	0.05	
1250	1.75	8.5	666	0.35	6.52	-312.3	18.90	34.42	0.05	
1255	2.0	8.7	667	0.34	6.52	-291.2	17.27	34.42	0.05	
1300	2.25	8.6	669	0.36	6.52	-275.5	16.89	34.42	0.05	
1305	2.50	8.8	668	0.35	6.53	-260.1	14.70	34.42	0.05	Sun came out
1310	2.75	9.3	662	0.34	6.53	-252.6	16.09	34.42	0.05	
1315	3.0	9.7	664	0.39	6.52	-243.7	14.57	34.42	0.05	
1320	3.25	9.1	668	0.40	6.53	-232.6	14.08	34.42	0.05	Cloudy
1325	3.5	9.0	666	0.37	6.53	-231.7	15.63	34.42	0.05	
1330	3.75	9.0	662	0.37	6.53	-233.8	15.51	34.42	0.05	Sample

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW52
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/8/24	**Samplers:**	W. Martin
Time Start:	0935		
Time Finish:	1105	**Checked By:**	

Well & Purge Information

TD (ft. bTOC):	59.33	ft	**Screened Interval (ft.):**	35-55
DTW (ft. bTOC):	31.69	ft		
Water Column:	27.64	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	16.72	L	Water Column x L/ft	
Three Well Volumes:	50.17	L	Liters in Well x 3	
Sample Depth:	~50	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI Pro Quatro	**Serial No.:**	~~20H~~ wm 20H104432
Water Level Meter:	Heron Dipper T2	**Serial No.:**	0763
Turbidity Meter:	Micro TPW 2000	**Serial No.:**	20190329
Pump Type:	MP10H	**Serial No.:**	MP10H-1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: 0.05 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 30 psi

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: 0.05 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 12 Seconds Refill 3 Seconds Discharge @ 30 psi

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	~~HCl~~ WM N/A	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	~~HCl~~ WM N/A	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW 52 | Sample ID: 0924 MW52 GW | Sample Time: 1105

Date: 9/8/24 | Dup. Sample ID: — | Dup. Sample Time: —

Notes:

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0935	START PURGING									
0940	0.25	9.0	165.6	10.46	5.27	-488.6	6.20	33.72	0.05	
0945	0.50	8.7	159.1	10.45	5.40	-480.2	3.78	33.72	0.05	
0950	0.75	7.9	141.7	10.37	5.67	-450.8	0.0	33.72	0.05	
0955	1.0	7.8	124.0	9.52	5.83	-402.7	1.0	33.72	0.05	
1000	1.25	7.9	114.3	9.21	5.87	~~-~~-363.3	1.08	33.72	0.05	
1005	1.50	8.0	111.6	9.06	5.89	-333.5	0.59	33.72	0.05	
1010	1.75	8.1	110.1	9.04	5.90	-304.1	0.49	33.72	0.05	
1015	2.0	8.1	107.6	8.39	5.91	-269.9	0.09	33.72	0.05	
1020	2.25	8.1	107.3	8.22	5.92	-259.8	0.00	33.72	0.05	
1025	2.50	8.2	106.8	8.21	5.93	-249.9	0.09	33.72	0.05	
1030	2.75	8.3	106.8	8.59	5.93	-241.4	0.50	33.72	0.05	
1035	3.0	8.1	106.3	9.05	5.93	-229.7	0.01	33.72	0.05	
1040	3.25	8.0	105.7	8.88	5.94	-222.7	0.37	33.72	0.05	
1045	3.5	8.1	105.9	8.56	5.94	-170.4	0.26	33.72	0.05	
1050	3.75	8.3	106.2	8.51	5.94	-128.6	0.13	33.72	0.05	
1055	4.0	8.4	105.4	8.51	5.94	-123.3	0.0	33.72	0.05	
1100	4.25	8.6	105.0	8.65	5.94	-103.7	0.32	33.72	0.05	Temp + ORP did not Stabilize, sampled

Sampled? : Yes ☒ No ☐

Initial of Sampler: WM

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	~~WMW-28~~ MW-24
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/8/24	**Samplers:**	W. Martin
Time Start:	1520		
Time Finish:	1705	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	69 ft	**Screened Interval (ft.):**	48-68
DTW (ft. bTOC):	~~25.67~~ WM 33.73 ft		
Water Column:	35.21 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	21.34 L	Water Column x L/ft	
Three Well Volumes:	64.02 L	Liters in Well x 3	
Sample Depth:	~60 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO Quatro	**Serial No.:**	23H101217
Water Level Meter:	Heron Dipper T2	**Serial No.:**	0763
Turbidity Meter:	MicroTPW 2a0	**Serial No.:**	20190329
Pump Type:	MP10H	**Serial No.:**	MP10H-1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 50 Seconds Refill 10 Seconds Discharge @ 35 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 50 Seconds Refill 10 Seconds Discharge @ 35 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	[illegible]
Total LL Mercury	1	No	~~HCl~~ K NA	1631 LL Hg	8oz Glass	[illegible]
Dissolved LL Mercury	1	Yes	~~HCl~~ K NA	1631 LL Hg	8oz Glass	[illegible]

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW-44 | Sample ID: 0924 MW-44 GW | Sample Time: 1705

Date: 9/8/24 | Dup. Sample ID: — | Dup. Sample Time: —

Notes:

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1520	START PURGING									
1525	0.25	5.6	413.4	9.00	7.09	-16.3	74.71	33.85	0.05	
1530	0.50	5.5	412.2	7.64	7.12	-24.8	127.9	33.85	0.05	
1535	0.75	5.5	411.2	6.84	7.16	-27.4	182.8	33.85	0.05	
1540	1.0	5.6	408.2	6.29	7.16	-29.0	114.5	33.85	0.05	
1545	1.25	5.5	407.7	6.09	7.16	-28.0	192.3	33.85	0.05	
1550	1.50	5.6	405.7	5.86	7.15	-28.9	126.8	33.85	0.05	Lots of particulates, appear orange ~~ant~~ WM
1555	1.75	5.4	406.7	5.83	7.15	-30.3	109.4	33.85	0.05	
1600	2.0	5.5	406.3	5.72	7.15	-30.5	~~107.~~ 103.7	33.85	0.05	
1605	2.25	5.6	408.6	7.73	7.13	-29.1	194.3	33.85	0.05	Knocked cell over, affected DO. WM
1610	2.50	5.7	411.3	1.64	7.15	-31.1	141.7	33.85	0.05	
1615	2.75	5.6	410.6	1.21	7.12	-30.7	119.9	33.85	0.05	
1620	3.0	5.6	410.8	1.07	7.12	-30.1	139.4	33.85	0.05	
1625	3.25	5.5	411.9	1.12	7.12	-30.2	110.6	33.85	0.05	
1630	3.5	5.7	411.2	1.17	7.12	-27.8	189.0	33.85	0.05	
1635	3.75	5.8	411.2	1.09	7.11	-30.9	112.5	33.85	0.05	
1640	4.0	5.8	411.3	1.01	7.11	-35.2	63.99	33.85	0.05	
1645	4.25	5.7	411.4	0.98	7.12	-36.6	33.62	33.85	0.05	
1650	4.50	5.7	410.3	0.95	7.12	-37.4	27.12	33.85	0.05	
1655	4.75	5.8	409.8	0.96	7.12	-38.3	15.68	33.85	0.05	
1700	5.0	5.7	409.6	0.93	7.12	-39.2	9.69	33.85	0.05	

Sampled? : Yes ☒ No ☐

Initial of Sampler: [signature]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW33
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-08-2024	**Samplers:**	R. WITTLER
Time Start:	1400		
Time Finish:	1517	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	23 ft	**Screened Interval (ft.):**	12-22
DTW (ft. bTOC):	6.40 ft		
Water Column:	16.6 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	10.04 L	Water Column x L/ft	
Three Well Volumes:	30.12 L	Liters in Well x 3	
Sample Depth:	20 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	20H104432
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	2024030153
Pump Type:	PERI	**Serial No.:**	98012

Purge Method:

☑ Peristaltic Pump ☐ Inertial ☐ Other: 0.2 # 4/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.2 4/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sample Collection Information

MS/MSD? : Yes ☒ No ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	4	No	Nitric	6020B LL, 7470A	250 ml Plastic	R
Total LL Mercury	4	No	~~HCl~~ K NA	1631 LL Hg	8oz Glass	K
Dissolved LL Mercury	4	Yes	~~HCl~~ K NA	1631 LL Hg	8oz Glass	K

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW33	Sample ID: 0924MW33GW	Sample Time: 1450
Date: 09-08-2024	Dup. Sample ID: 0924MW33GW99	Dup. Sample Time: 1455
Notes: —		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1410	0.2	START PURGING								
1415	1.0	5.8	197.8	7.50	6.40	-498.6	0.79	6.40	0.2	
1420	2.0	5.4	196.6	8.76	6.33	-432.0	0.56	6.40	0.2	
1425	3.0	5.3	197.0	11.99	6.30	-375.5	2.31	6.40	0.2	
1430	4.0	5.3	196.4	12.15	6.29	-340.1	0.00	6.40	0.2	
1435	5.0	5.2	195.4	12.19	6.29	-287.6	7.76	6.40	0.2	
1440	6.0	5.2	195.1	12.09	6.28	-264.6	0.35	6.40	0.2	
1445	7.0	5.1	195.4	12.01	6.28	-258.8	8.00	6.40	0.2	
1450	7.5	5.1	195.3	11.99	6.27	-255.3	5.17	6.40	0.2	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler:

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW17
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-08-2024	**Samplers:**	K. WITTLER
Time Start:	1235		
Time Finish:	1325	**Checked By:**	WM

Well & Purge Information

TD (ft. bTOC):	47.94	ft	**Screened Interval (ft.):**	41.5-51.5
DTW (ft. bTOC):	12.89	ft		
Water Column:	35.05	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	21.21	L	Water Column x L/ft	
Three Well Volumes:	63.63	L	Liters in Well x 3	
Sample Depth:	~50	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	23H101217
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	2024030153
Pump Type:	PERI PUMP	**Serial No.:**	98012

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.1 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.1 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	KL
Total LL Mercury	1	No	~~HCl~~ NA	1631 LL Hg	8oz Glass	K
Dissolved LL Mercury	1	Yes	~~HCl~~ NA	1631 LL Hg	8oz Glass	K

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW17	Sample ID: 0924MW17GW	Sample Time: 1310
Date: 09-08-2024	Dup. Sample ID: —	Dup. Sample Time: —
Notes: —		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1235	0.1	START PURGING								
1240	0.5	8.2	204.8	10.67	7.21	4.2	3.63	12.89	0.1	
1245	1.0	7.7	200.9	10.54	7.15	17.7	3.19	12.89	0.1	
1250	1.5	7.5	200.2	10.83	7.16	25.8	1.99	12.89	0.1	
1255	2.0	7.4	200.0	11.29	7.16	33.6	3.20	12.89	0.1	
1300	2.5	7.4	199.7	11.43	7.16	43.2	1.93	12.89	0.1	
1305	3.0	7.4	199.2	11.40	7.16	48.9	2.05	12.89	0.1	
1310	3.5	7.5	199.7	11.49	7.16	52.3	1.48	12.89	0.1	STABLE — SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: RW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW16
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-08-2024	**Samplers:**	R. WITTLER
Time Start:	1120		
Time Finish:	1220	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	24.12 ft	**Screened Interval (ft.):**	11-21
DTW (ft. bTOC):	10.68 ft		
Water Column:	13.44 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	8.13 L	Water Column x L/ft	
Three Well Volumes:	24.39 L	Liters in Well x 3	
Sample Depth:	~20 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	23H10217
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	2024030153
Pump Type:	PERI PUMP	**Serial No.:**	98012

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.05 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.05 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	~~HCl~~ NA	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	~~HCl~~ NA	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW16	Sample ID: 0924MW16GW	Sample Time: 1200
Date: 09-08-2024	Dup. Sample ID: —	Dup. Sample Time: —

Notes: —

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1125	0.05	START PURGING								
1130	0.25	8.6	510	1.27	6.50	-27.2	15.57	10.68	0.05	
1135	0.50	8.4	522	0.97	6.53	-36.8	11.00	10.68	0.05	
1140	0.75	8.5	525	0.86	6.54	-40.1	9.19	10.68	0.05	
1150 1145	1.00	8.4	528	0.79	6.54	-42.3	9.61	10.68	0.05	
1150	1.25	8.3	531	0.72	6.54	-43.1	5.64	10.68	0.05	
1155	1.50	8.3	533	0.66	6.54	-43.5	2.86	10.68	0.05	
1200	1.75	8.2	534	0.68	6.54	-43.9	2.27	10.68	0.05	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: MW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW55
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-08-2024	**Samplers:**	R.WITTER
Time Start:	0935		
Time Finish:	1040	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	22.57 ft	**Screened Interval (ft.):**	10-20
DTW (ft. bTOC):	13.96 ft		
Water Column:	8.61 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	5.21 L	Water Column x L/ft	
Three Well Volumes:	15.63 L	Liters in Well x 3	
Sample Depth:	~17 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATTRO	**Serial No.:**	23H101217
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	20240330153
Pump Type:	PERI PUMP	**Serial No.:**	98012

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.15 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.15 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RE
Total LL Mercury	1	No	~~HCl~~ NA	1631 LL Hg	8oz Glass	RE
Dissolved LL Mercury	1	Yes	~~HCl~~ NA	1631 LL Hg	8oz Glass	RE

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW55 | Sample ID: 0924MW55GW | Sample Time: 1025

Date: 09-08-2024 | Dup. Sample ID: — | Dup. Sample Time: —

Notes: —

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0940	0.15	START PURGING								
0945	0.75	4.9	208.3	5.57	5.64	105.0	198.6	13.96	0.15	
0950	1.50	4.6	~~*200~~ 362.1	1.89	6.13	-5.6	148.0	13.96	0.15	
0955	2.25	4.4	362.1	1.26	6.20	-34.2	52.86	13.96	0.15	
1000	3.00	4.4	357.2	1.02	6.24	-42.8	33.23	13.96	0.15	
1005	3.75	4.3	336.8	0.87	6.29	-46.1	24.86	13.96	0.15	
1010	4.50	4.3	315.0	0.89	6.34	-46.2	18.49	13.96	0.15	
1015	5.25	4.2	304.9	0.85	6.39	-46.9	11.26	13.96	0.15	
1020	6.00	4.3	301.2	0.89	6.40	-46.1	10.06	13.96	0.15	
1025	6.75	4.2	303.3	0.87	6.42	-44.4	4.13	13.96	0.15	STABLE SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: KW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW58
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-09-2024	**Samplers:**	R. WITTER
Time Start:	1400		
Time Finish:	1550	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	58 ft	**Screened Interval (ft.):**	36-55.6
DTW (ft. bTOC):	31.20 ft		
Water Column:	26.80 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	16.21 L	Water Column x L/ft	
Three Well Volumes:	48.64 L	Liters in Well x 3	
Sample Depth:	~45.8 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	20H104432
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	201909329
Pump Type:	PERI PUMP	**Serial No.:**	98012

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.05 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.05 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	R
Total LL Mercury	1	No	~~HCl~~ R NA	1631 LL Hg	8oz Glass	R
Dissolved LL Mercury	1	Yes	~~HCl~~ R NA	1631 LL Hg	8oz Glass	R

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW58	Sample ID: 0924MW58GW	Sample Time: 1570
Date: 09-09-2024	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
	START PURGING									
1450	0.25	6.7	260.4	8.64	7.60	-369.0	80.82	31.20	0.05	
1455	0.50	6.8	260.7	9.56	7.60	-359.0	83.80	31.20	0.05	
1500	0.75	6.8	261.1	10.79	7.60	-355.0	79.08	31.20	0.05	
1505	1.00	6.7	262.2	10.77	7.59	-350.5	78.10	31.20	0.05	
1510	1.25	6.7	262.3	10.71	7.59	-349.1	78.25	31.20	0.05	STABLE – SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: KL

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW28
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-09-2024	**Samplers:**	R. WITTLER
Time Start:	1025		
Time Finish:	1140	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	64	ft	**Screened Interval (ft.):**	53-63
DTW (ft. bTOC):	25.95	ft		
Water Column:	38.05	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	23.02	L	Water Column x L/ft	
Three Well Volumes:	69.06	L	Liters in Well x 3	
Sample Depth:	~59	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	20H104432
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	201909329
Pump Type:	PERI PUMP	**Serial No.:**	98012

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.15 L/min

☐ Bladder Pump : Optimum Flow Rate Set at ___ Seconds Refill ___ Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.15 L/min

☐ Bladder Pump : Optimum Flow Rate Set at ___ Seconds Refill ___ Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☑

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	2	No	Nitric	6020B LL, 7470A	250 ml Plastic	R
Total LL Mercury	2	No	~~Her~~ NA	1631 LL Hg	8oz Glass	R
Dissolved LL Mercury	2	Yes	~~Her~~ NA	1631 LL Hg	8oz Glass	R

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW28 | Sample ID: 0924MW28GW | Sample Time: 1120

Date: 09-09-2024 | Dup. Sample ID: 0924MW28GW-99 | Dup. Sample Time: 1125

Notes: —

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1035	0.15	START PURGING								
1040	0.75	5.4	421.5	4.88	7.18	-475.5	1.84	25.95	0.15	
1045	1.50	5.3	413.6	4.42	7.13	120.6	4.78	25.95	0.15	
1050	2.25	5.3	410.5	4.16	7.12	140.0	2.67	25.95	0.15	
1055	3.00	5.3	407.9	4.15	7.10	139.5	2.27	25.95	0.15	
1100	3.75	5.2	408.4	3.84	7.08	139.6	2.63	25.95	0.15	
1105	4.50	5.2	408.6	3.82	7.08	129.5	1.24	25.95	0.15	
1110	5.25	5.3	409.1	3.30	7.08	120.1	0.60	25.95	0.15	
1115	6.00	5.2	408.2	3.22	7.09	115.3	0.94	25.95	0.15	
1120	6.75	5.2	409.1	3.06	7.09	111.1	1.08	25.95	0.15	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: RW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW27
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-09-2024	**Samplers:**	R. WITTLER
Time Start:	0905		
Time Finish:	1022	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	34 ft	**Screened Interval (ft.):**	23-33
DTW (ft. bTOC):	27.20 ft		
Water Column:	10.8 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	4.11 L	Water Column x L/ft	
Three Well Volumes:	12.33 L	Liters in Well x 3	
Sample Depth:	30 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	20H104432
Water Level Meter:	SOLINST 101	**Serial No.:**	29750
Turbidity Meter:	MICRO TPW	**Serial No.:**	~~2024~~ R 20190329
Pump Type:	PERI PUMP	**Serial No.:**	98012

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.15 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.15 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	2	No	Nitric	6020B LL, 7470A	250 ml Plastic	RE
Total LL Mercury	2	No	~~HCl~~ NA	1631 LL Hg	8oz Glass	R
Dissolved LL Mercury	2	Yes	~~HCl~~ NA	1631 LL Hg	8oz Glass	R

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW27 | Sample ID: 0924MW27GW | Sample Time: 1000

Date: 09-09-2024 | Dup. Sample ID: 0924MW27GW-99 | Dup. Sample Time: 1005

Notes:

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0920	0.15	START PURGING								
0925	0.75	5.7	788	3.83	6.17	-507.6	5.63	27.20	0.15	ORP SENSOR NOT WORKING CORRECTLY
0930	1.50	5.4	781	2.77	6.26	-437.7	5.47	27.20	0.15	
0935	2.25	5.4	781	3.07	6.29	-371.9	4.58	27.20	0.15	
0940	3.00	5.4	781	2.98	6.31	38.5	4.08	27.20	0.15	
0945	3.75	5.4	780	2.82	6.33	12.2	2.75	27.20	0.15	
0950	4.50	5.4	779	2.65	6.34	12.3	3.06	27.20	0.15	
0955	5.25	5.4	780	2.61	6.34	17.5	2.43	27.20	0.15	
1000	6.00	5.4	780	2.59	6.34	19.4	2.50	27.20	0.15	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: RW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW54
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-09-2024	**Samplers:**	R. WITTLER
Time Start:	1225		
Time Finish:	1325	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	50	ft	**Screened Interval (ft.):**	29-49
DTW (ft. bTOC):	29.20	ft		
Water Column:	20.80	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	12.60	L	Water Column x L/ft	
Three Well Volumes:	37.8	L	Liters in Well x 3	
Sample Depth:	~40	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	20H1044432
Water Level Meter:	SOLINST 100m	**Serial No.:**	29750
Turbidity Meter:	MICROTPW	**Serial No.:**	201909329
Pump Type:	PERI PUMP	**Serial No.:**	98012

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.1 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: 0.1 L/min

☐ Bladder Pump : Optimum Flow Rate Set at — Seconds Refill — Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	K
Total LL Mercury	1	No	HCl K NA	1631 LL Hg	8oz Glass	K
Dissolved LL Mercury	1	Yes	HCl K NA	1631 LL Hg	8oz Glass	K

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW54	Sample ID: 0924 MW54 GW	Sample Time: ++	1305
Date: 09-09-2024	Dup. Sample ID: —	Dup. Sample Time: —	
Notes:			

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1225	0.1	START PURGING								
1230	0.5	4.5	423.6	2.73	7.06	-490.9	38.60	29.20	0.1	ORP SENSOR NOT WORKING PROPERLY
1235	1.0	4.3	441.2	1.82	7.08	-414.7	34.52	29.20	0.1	
1240	1.5	4.3	441.3	1.65	7.07	-368.7	26.17	29.20	0.1	
1245	2.0	4.2	443.9	1.42	7.07	-341.7	22.3	29.20	0.1	
1250	2.5	4.2	444.8	1.28	7.08	-323.9	13.79	29.20	0.1	
1255	3.0	4.3	443.7	1.02	7.08	-311.9	12.12	29.20	0.1	
1300	3.5	4.2	444.9	1.00	7.08	-309.7	12.41	29.20	0.1	
1305	4.0	4.3	444.9	0.94	7.07	-308.2	11.21	29.20	0.1	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: RZ

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW40
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/9/24	**Samplers:**	W. Martin
Time Start:	1025		
Time Finish:	1150	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	140	ft	**Screened Interval (ft.):**	119-139
DTW (ft. bTOC):	127.36	ft		
Water Column:	12.64	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	7.65	L	Water Column x L/ft	
Three Well Volumes:	22.94	L	Liters in Well x 3	
Sample Depth:	~137	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI Pro Quatro	**Serial No.:**	23H101217
Water Level Meter:	Heron DipperT2	**Serial No.:**	0763
Turbidity Meter:	MicroTPW 2000	**Serial No.:**	20240301153
Pump Type:	MP10H	**Serial No.:**	MP10H-1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 25 Seconds Refill 35 Seconds Discharge @ 100 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 25 Seconds Refill 35 Seconds Discharge @ 100PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	~~Her~~ NA	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	~~Her~~ NA	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW40	Sample ID: 0924MW40GW	Sample Time: 1150
Date: 9/9/24	Dup. Sample ID: —	Dup. Sample Time: —

Notes: —

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1025	START PURGING									
1030	0.15	6.1	569	11.08	7.02	99.2	8.13	127.37	0.03	
1035	0.30	5.7	552	10.94	7.0	47.4	6.52	127.37	0.03	
1040	0.45	5.7	546	6.27	7.03	27.3	8.45	127.37	0.03	
1045	0.60	5.7	544	8.62	7.07	16.2	14.23	127.37	0.03	
1050	0.75	5.7	542	7.66	7.08	11.7	13.39	127.37	0.03	
1055	0.90	5.7	541	6.33	7.08	8.0	14.61	127.37	0.03	
1100	1.05	5.6	542	8.50	7.07	5.9	36.36	127.37	0.03	Orange particulate in water
1105	1.20	5.6	541	7.92	7.07	5.6	130.2	127.37	0.03	Increasing particulate, some up to 1mm wide
1110	1.35	5.7	539	6.75	7.08	4.4	74.61	127.37	0.03	
1115	1.50	5.8	539	9.43	7.08	3.4	71.62	127.37	0.03	Particulate dropping
1120	1.65	5.8	539	7.85	7.08	3.0	51.25	127.37	0.03	
1125	1.80	5.9	539	4.53	7.09	3.5	42.17	127.37	0.03	
1130	1.95	5.7	541	4.15	7.07	2.4	26.69	127.37	0.03	
1135	2.10	5.8	540	4.02	7.08	0.8	16.05	127.37	0.03	
1140	2.25	5.8	539	4.07	7.08	0.5	12.04	127.37	0.03	
1145	2.40	5.7	540	3.86	7.08	0.4	6.61	127.37	0.03	

Sampled? : Yes ☑ No ☐

Initial of Sampler:

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW59
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/9/24	**Samplers:**	W. Martin
Time Start:	1325		
Time Finish:	1735	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	161.5 ft	**Screened Interval (ft.):**	140-160
DTW (ft. bTOC):	131.90 ft		
Water Column:	29.6 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	17.91 L	Water Column x L/ft	
Three Well Volumes:	53.72 L	Liters in Well x 3	
Sample Depth:	153 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI Pro Quatro	**Serial No.:**	23H101217
Water Level Meter:	Heron Dipper T2	**Serial No.:**	0763
Turbidity Meter:	Micro TPW 2000 WM	**Serial No.:**	202403153
Pump Type:	MP101	**Serial No.:**	1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 300 Seconds Refill 30 Seconds Discharge @ 100 psi.

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 300 Seconds Refill 30 Seconds Discharge @ 100 psi

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	~~HCl~~ NA ☒	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	~~HCl~~ NA ☒	1631 LL Hg	8oz Glass	WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW59 | Sample ID: 0924MW59GW | Sample Time: 1735

Date: 9/9/24 | Dup. Sample ID: — | Dup. Sample Time: —

Notes: —

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1325	START PURGING									
1330	0.25	10.6	591	11.47	7.77	55.7	4.58	130.95	0.05	
1335	0.5	8.9	598	12.33	7.62	58.3	5.43	130.95	0.05	
1340	0.75	7.5	591	11.22	7.33	63.9	8.30	130.95	0.05	
1345	1.0	7.3	595	5.64	7.11	45.1	33.14	130.95	0.05	Tiny orange particles
1350	1.25	7.1	597	3.91	7.06	22.7	37.97	130.95	0.05	
1355	1.50	7.5	594	3.02	7.05	7.1	39.35	130.95	0.05	Sun came out
1400	1.75	7.5	595	3.04	7.05	-1.9	30.51	130.95	0.05	
1405	2.0	7.7	595	2.44	7.04	-8.2	30.68	130.95	0.05	
1410	2.25	7.9	593	2.25	7.04	-10.8	29.86	130.95	0.05	
1415	2.50	8.3	591	2.18	7.04	-13.9	24.20	130.95	0.05	
1420	2.75	9.3	587	1.79	7.04	-17.6	20.77	130.95	0.05	
1425	3.0	9.41	589	1.75	7.04	-17.7	19.73	130.95	0.05	
1430	3.25	9.9	591	1.77	7.04	-19.2	18.17	130.95	0.05	
1435	3.50	10.4	592	1.81	7.04	-20.7	17.71	130.95	0.05	
1440	3.75	10.5	592	1.83	7.04	-20.8	16.37	130.95	0.05	Pump issues, no sample collected
1645	4.0	8.1	589	4.61	7.04	1.6	22.52	130.95	0.05	
1650	4.25	8.1	591	3.73	7.04	-5.4	15.21	130.95	0.05	
1655	4.50	8.2	591	2.93	7.04	-10.9	19.60	130.95	0.05	
1700	4.75	8.41	591	2.74	7.04	-13.6	22.30	130.95	0.05	
1705	5.0	8.5	591	2.34	7.04	-17.2	21.43	130.95	0.05	
1710	5.25	8.9	591	1.86	7.06	-20.8	20.00	130.95	0.05	
1715	5.5	9.0	589	1.82	7.06	-23.7	12.50	130.95	0.05	
1720	5.75	9.0	591	1.42	7.05	-25.8	13.76	130.95	0.05	
1725	6.0	8.9	590	1.46	7.05	-26.6	10.68	130.95	0.05	
1730	6.25	8.8	589	1.50	7.05	-27.7	8.42	130.95	0.05	Stable

Sampled? : Yes ☒ No ☐

Initial of Sampler:

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW50
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/10/24	**Samplers:**	W. Martin
Time Start:	1130		
Time Finish:	1330	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	92 ft	**Screened Interval (ft.):**	71-91
DTW (ft. bTOC):	116.13 ft		
Water Column:	15.87 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	~~72.75~~ WM 27.75 L	Water Column x L/ft	
Three Well Volumes:	83.25 L	Liters in Well x 3	
Sample Depth:	~82 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI pro Quatro	**Serial No.:**	23H101217
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0763
Turbidity Meter:	Micro TPW 2000	**Serial No.:**	20241030153
Pump Type:	MP10H	**Serial No.:**	MP10H-11416

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 23 Seconds Refill 7 Seconds Discharge 870 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 23 Seconds Refill 7 Seconds Discharge 870 PSI

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl WM N/A	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl WM N/A	1631 LL Hg	8oz Glass	WM

WM

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW50 | Sample ID: 0924/MW50GW | Sample Time: 1330

Date: 9/10/24 | Dup. Sample ID: — | Dup. Sample Time:

Notes: —

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1130	START PURGING									
1135	0.5	4.3	721	11.19	6.73	81.0	70.70	47.02	0.1	
1140	1.0	4.0	723	4.18	6.75	58.1	101.40	47.02	0.1	
1145	1.5	4.1	721	7.66	6.76	47.0	158.1	47.02	0.1	Lots of air in the line
1150	2.0	4.0	720	6.81	6.75	40.4	142.6	47.02	0.1	
1155	2.5	4.0	719	13.41	6.74	36.4	65.45	47.02	0.1	
1200	~~2.75~~	3.9	717	2.59	6.73	35.7	59.33	47.02	0.1	
1205	~~3.0~~	4.0	713	10.19	6.73	31.6	43.50	47.02	0.1	
1210	~~3.5~~	4.2	707	7.34	6.74	28.2	49.31	47.02	0.1	
1215	4.5	4.5	704	5.73	6.74	26.0	41.08	47.02	0.1	
1220	5.0	4.5	~~6~~ 712	7.05	6.75	25.8	37.82	47.02	0.1	
1225	5.5	4.6	712	6.89	6.75	26.3	31.57	47.02	0.1	
1230	6.0	4.7	709	9.24	6.75	25.8	30.09	47.02	0.1	
1235	6.5	4.6	707	9.23	6.74	25.5	29.09	47.02	0.1	
1240	7.0	4.7	708	9.08	6.75	25.4	25.75	47.02	0.1	
1245	7.5	4.7	706	11.24	6.74	25.1	27.40	47.02	0.1	
1250	8.0	4.7	705	10.94	6.74	25.0	20.59	47.02	0.1	
1255	8.5	4.7	705	10.57	6.74	25.0	17.15	47.02	0.1	
1300	9.0	4.7	705	10.26	6.74	25.4	16.61	47.02	0.1	
1305	9.5	4.7	703	9.14	6.74	25.4	20.15	47.02	0.1	
1310	10.0	4.7	703	10.41	6.74	25.1	13.30	47.02	0.1	
1315	10.5	4.7	703	12.21	6.74	25.2	20.51	47.03	0.1	
1320	11.0	4.8	703	11.61	6.74	~~25.1~~ 25.1	19.48	47.03	0.1	
1325	11.5	4.8	703	11.38	6.74	25.3	9.48	47.03	0.1	Stable

Sampled? : Yes ☒ No ☐

Initial of Sampler: K

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW51
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/10/24	**Samplers:**	V. Martin
Time Start:	0850		
Time Finish:	0935	**Checked By:**	CLU

Well & Purge Information

TD (ft. bTOC):	77.0	ft	**Screened Interval (ft.):**	56-76
DTW (ft. bTOC):	39.00	ft		
Water Column:	~~39.00~~ 38	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	22.99	L	Water Column x L/ft	
Three Well Volumes:	68.97	L	Liters in Well x 3	
Sample Depth:	~67	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI Pro Quatro	**Serial No.:**	23H101217
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0763
Turbidity Meter:	Micro TPW 2000	**Serial No.:**	2024030153
Pump Type:	MP10H	**Serial No.:**	MP10H-1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 10.5 Seconds Refill 4.5 Seconds Discharge @ 55 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 10.5 Seconds Refill 4.5 Seconds Discharge @ PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl WM N/A	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl WM N/A	1631 LL Hg	8oz Glass	WM
			WM			

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW5i	Sample ID: 0924MW5i GW	Sample Time: 0935
Date: 9/10/21	Dup. Sample ID: —	Dup. Sample Time: —
Notes: —		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0850	START PURGING									
0855	0.5	4.8	215.4	16.47	6.37	179.3	14.66	39.08	0.1	
0900	1.0	4.2	203.6	15.15	6.49	157.8	12.38	39.08	0.1	
0905	1.5	4.1	204.3	10.08	~~6.32~~ 6.33 WM	163.2	11.74	39.08	0.1	
0910	2.0	4.1	206.9	14.99	6.51	160.5	8.28	39.08	0.1	
WM 0915	2.5	4.0	208.4	13.41	6.56	158.3	6.75	39.08	0.1	
0920	3.0	4.0	209.5	14.63	6.58	158.2	8.52	39.08	0.1	
0925	3.5	4.0	209.8	14.83	6.58	157.9	5.05	39.08	0.1	
0930	4.0	4.0	209.2	14.83	6.58	157.1	4.14	39.08	0.1	Stable

Sampled? : Yes ☒ No ☐

Initial of Sampler: W

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW56
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/10/24	**Samplers:**	W. Martin
Time Start:	1505		
Time Finish:	1610	**Checked By:**	

Well & Purge Information

TD (ft. bTOC):	62 ft	**Screened Interval (ft.):**	41-61
DTW (ft. bTOC):	36.55 ft		
Water Column:	25.45 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	15.39 L	Water Column x L/ft	
Three Well Volumes:	46.19 L	Liters in Well x 3	
Sample Depth:	53 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI Pro Quatro	**Serial No.:**	23H101217
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0763
Turbidity Meter:	MicroTPW 2000	**Serial No.:**	2024030153
Pump Type:	MP10H	**Serial No.:**	WM MP10H-1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 23 Seconds Refill 7 Seconds Discharge @ 35 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 23 Seconds Refill 7 Seconds Discharge @ 35 PSI

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☐

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl WM N/A	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl WM N/A	1631 LL Hg	8oz Glass	WM
			WM			

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW56 | Sample ID: 0924MW56GW | Sample Time: 1610

Date: 09-10-2024 | Dup. Sample ID: — | Dup. Sample Time: —

Notes:

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1505	START PURGING									
1510	0.25	5.6	492	4.75	6.95	99.1	11.26	36.75	0.05	
1510	0.50	5.8	484	5.83	6.91	98.3	21.45	36.75	0.05	
1515	0.75	6.0	460	5.21	6.91	100.4	15.98	36.75	0.05	
1520	1.0	6.3	446.6	5.08	6.91	103.4	14.28	36.75	0.05	
1525	1.25	6.5	438.3	5.05	6.90	105.6	15.51	36.75	0.05	
1530	1.50	6.7	432.1	5.13	6.90	108.4	7.74	36.75	0.05	
1535	1.75	7.0	427.9	4.60	6.89	110.6	5.99	36.75	0.05	
1540	2.00	7.2	425.1	5.07	6.89	112.5	3.09	36.75	0.05	
1545	2.25	7.4	421.1	5.00	6.89	114.2	5.95	36.75	0.05	
1550	2.50	6.0	418.1	4.92	6.88	117.8	9.65	36.75	0.05	Adjusted pressure from 30 psi to 35 psi for better flow
1555	2.75	5.6	410.7	4.39	6.87	120.1	5.92	36.75	0.05	
1600	3.0	5.5	409.1	4.13	6.88	121.2	6.45	36.75	0.05	
1605	3.25	5.6	407.2	3.99	6.88	122.3	5.77	36.75	0.05	Stable

Sampled? : Yes ☒ No ☐

Initial of Sampler: [illegible]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW57
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-10-2024	**Samplers:**	R. WITTER
Time Start:	1350		
Time Finish:	1480	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	60 ft	**Screened Interval (ft.):**	37.5-57.5
DTW (ft. bTOC):	33.11 ft		
Water Column:	26.89 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	16.27 L	Water Column x L/ft	
Three Well Volumes:	48.81 L	Liters in Well x 3	
Sample Depth:	~53 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	23H101217
Water Level Meter:	HERON DIPPER	**Serial No.:**	0763
Turbidity Meter:	MICRO TPW	**Serial No.:**	201909329
Pump Type:	BLADDER / MP10	**Serial No.:**	1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 30 PSI 0.15 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 30 PSI 0.15 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	[illegible]
Total LL Mercury	1	No	~~HCl~~ N/A	1631 LL Hg	8oz Glass	[illegible]
Dissolved LL Mercury	1	Yes	~~HCl~~ N/A	1631 LL Hg	8oz Glass	[illegible]

Low-Flow Groundwater Sample & Stabilization Form

Well ID:	MW57	Sample ID:	0924 MW57 GW.	Sample Time:	1430
Date:	09-10-2024	Dup. Sample ID:	—	Dup. Sample Time:	—

Notes:

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1355	START PURGING									
1400	0.75	5.0	94.0	13.87	6.28	62.0	4.50	33.15	0.15	
1405	1.50	4.8	89.4	12.73	6.26	100.9	3.20	33.15	0.15	
1410	2.25	4.8	89.2	12.37	6.26	107.0	2.50	33.15	0.15	
1415	3.00	4.9	86.0	12.94	6.25	116.0	2.36	33.15	0.15	
1420	3.75	4.6	79.7	12.64	6.24	126.9	1.52	33.15	0.15	
1425	4.50	4.5	78.2	12.84	6.23	125.7	1.28	33.15	0.15	
1430	5.25	4.4	77.6	12.70	6.23	129.9	1.38	33.15	0.15	STABLE – SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: [illegible]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW49
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-10-2024	**Samplers:**	R. WITTLER
Time Start:	1635		
Time Finish:	1720	**Checked By:**	V. Martin

Well & Purge Information

TD (ft. bTOC):	61.7 ft	**Screened Interval (ft.):**	40-60
DTW (ft. bTOC):	29.49 ft		
Water Column:	32.21 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	19.50 L	Water Column x L/ft	
Three Well Volumes:	58.5 L	Liters in Well x 3	
Sample Depth:	~50 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	23H101217
Water Level Meter:	HERON T2	**Serial No.:**	0763
Turbidity Meter:	MICRO TPW	**Serial No.:**	20190329
Pump Type:	BLADDER/MP10	**Serial No.:**	1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 30 PSI 0.1 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 30 PSI 0.1 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	K
Total LL Mercury	1	No	~~HCl~~ K NA	1631 LL Hg	8oz Glass	K
Dissolved LL Mercury	1	Yes	~~HCl~~ K NA	1631 LL Hg	8oz Glass	K

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW49 | Sample ID: 0924MW49GW | Sample Time: 1715

Date: 09-10-2024 | Dup. Sample ID: — | Dup. Sample Time: —

Notes:

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1640	0.1	START PURGING								
1645	0.5	5.2	119.9	10.07	5.94	98.4	11.00	29.49	0.1	
1650	1.0	5.4	118.8	9.50	5.95	115.9	9.27	29.49	0.1	
1655	1.5	5.7	118.2	9.04	5.96	128.0	6.50	29.49	0.1	
1700	2.0	4.1	119.8	9.73	5.94	144.8	3.16	29.49	0.1	
1705	2.5	4.0	118.3	9.96	5.91	148.5	3.63	29.49	0.1	
1710	3.0	3.9	117.8	9.61	5.92	153.6	3.02	29.49	0.1	
1715	3.5	4.0	117.7	9.64	5.92	157.6	3.37	29.49	0.1	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: KW

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW53
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-10-2024	**Samplers:**	R. WITTLER
Time Start:	0940		
Time Finish:	1115	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	62 ft	**Screened Interval (ft.):**	41-61
DTW (ft. bTOC):	31.35 ft		
Water Column:	30.65 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	18.54 L	Water Column x L/ft	
Three Well Volumes:	55.62 L	Liters in Well x 3	
Sample Depth:	~53 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	20H10443 2
Water Level Meter:	SOLINST 101	**Serial No.:**	0763
Turbidity Meter:	MICRO TPW	**Serial No.:**	20190 9329
Pump Type:	PERI PUMP	**Serial No.:**	1146

Purge Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.05 L/min

☐ Bladder Pump : Optimum Flow Rate Set at _____ Seconds Refill _____ Seconds Discharge

Sampling Method:

☒ Peristaltic Pump ☐ Inertial ☐ Other: 0.05 L/min

☐ Bladder Pump : Optimum Flow Rate Set at _____ Seconds Refill _____ Seconds Discharge

Sample Collection Information

MS/MSD? : ***Yes*** ☐ ***No*** ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	RW
Total LL Mercury	1	No	~~HCl~~ NA	1631 LL Hg	8oz Glass	RW
Dissolved LL Mercury	1	Yes	~~HCl~~ NA	1631 LL Hg	8oz Glass	RW

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW53	Sample ID: MW53	Sample Time: ~~1015~~ RW 1105
Date: 09-10-2024	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0940	0.05	START PURGING								
0945	0.25	6.5	152.7	11.62	6.65	-214.7	18.96	31.35	0.05	
0950	0.50	6.7	150.3	11.50	6.66	-164.9	17.16	31.35	0.05	
0955	0.75	6.5	148.6	11.80	6.72	-140.0	15.50	31.35	0.05	
1000	1.00	6.7	148.1	11.81	6.66	143.7	17.21	31.35	0.05	
1005	1.25	6.4	147.8	11.52	6.79	141.5	16.40	31.35	0.05	
1010	1.50	6.4	147.6	11.01	6.78	142.2	16.50	31.35	0.05	
1015	1.75	6.4	147.5	10.96	6.78	142.3	16.21	31.35	0.05	STABLE - PERI DIES SWITCH TO BLADDER
1050	2.25	4.3	172.4	8.99	6.55	143.5	24.49	31.35	0.1	
1055	3.75	4.0	166.6	8.81	6.52	142.8	32.93	31.35	0.1	
1100	4.25	4.0	164.0	8.65	6.52	143.0	34.31	31.35	0.1	
1105	4.75	4.0	164.3	8.65	6.52	143.1	34.61	31.35	0.1	

Sampled? : Yes ☑ No ☐

Initial of Sampler: [illegible]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW45
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-11-2024	**Samplers:**	R. WITTLER
Time Start:	1125		
Time Finish:	1155	**Checked By:**	W. Martin

Well & Purge Information

TD (ft. bTOC):	82 ft	**Screened Interval (ft.):**	61-81
DTW (ft. bTOC):	44.42 ft		
Water Column:	37.58 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	22.73 L	Water Column x L/ft	
Three Well Volumes:	68.21 L	Liters in Well x 3	
Sample Depth:	~70 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	23H101217
Water Level Meter:	HERON T2	**Serial No.:**	10763
Turbidity Meter:	MICRO TPW	**Serial No.:**	2024030153
Pump Type:	BLADDER/MP10	**Serial No.:**	1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 38 PSI 0.15 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: 38 PSI 0.15 L/min

☒ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	R
Total LL Mercury	1	No	~~Herk~~ N/A	1631 LL Hg	8oz Glass	R
Dissolved LL Mercury	1	Yes	~~Herk~~ N/A	1631 LL Hg	8oz Glass	R

Low-Flow Groundwater Sample & Stabilization Form

Well ID:	MW45	Sample ID:	0924MW45GW	Sample Time:	1145
Date:	09-11-2024	Dup. Sample ID:	—	Dup. Sample Time:	—

Notes:

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1125	START PURGING									
1130	0.75	3.5	209.8	19.40	6.68	149.4	1.24	44.42	0.15	
1135	1.50	3.4	211.7	16.23	6.65	148.0	0.01	44.42	0.15	
1140	2.25	3.4	210.3	17.32	6.68	145.9	0.00	44.42	0.15	
1145	3.00	3.5	210.5	16.49	6.68	146.2	0.00	44.42	0.15	STABLE - SAMPLED

Sampled? : Yes ☒ No ☐

Initial of Sampler: [illegible]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW47
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	09-11-2024	**Samplers:**	P. WITTER, W MARTIN
Time Start:	0850		
Time Finish:	0930	**Checked By:**	W. martin

Well & Purge Information

TD (ft. bTOC):	67 ft	**Screened Interval (ft.):**	46-56
DTW (ft. bTOC):	37.63 ft		
Water Column:	29.37 ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	17.77 L	Water Column x L/ft	
Three Well Volumes:	53.31 L	Liters in Well x 3	
Sample Depth:	~51 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI PRO QUATRO	**Serial No.:**	23H101217
Water Level Meter:	HERON T2	**Serial No.:**	0763
Turbidity Meter:	MICRO TPW	**Serial No.:**	20240301553
Pump Type:	BLADDER / MP10	**Serial No.:**	1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 30 PSI 0.1 L/min

☑ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other: @ 30 PSI 0.1 L/min

☑ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	[illegible]
Total LL Mercury	1	No	~~HCl~~ N/A	1631 LL Hg	8oz Glass	R
Dissolved LL Mercury	1	Yes	~~HCl~~ N/A	1631 LL Hg	8oz Glass	R

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW47	Sample ID: 0924MW47GW	Sample Time: 0920
Date: 09-11-2024	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) * ± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
0850	0.1	START PURGING								
0855	0.5	4.0	257.4	12.51	6.57	151.1	0.00	37.63	0.1	
0900	1.0	4.0	213.0	9.76	6.73	142.9	0.00	37.63	0.1	
0905	2.0	3.9	212.8	9.48	6.78	140.2	0.00	37.63	0.1	
0910	3.0	3.9	212.8	9.14	6.78	141.9	0.00	37.63	0.1	
0915	4.0	3.9	212.5	9.12	6.72	144.9	0.00	37.63	0.1	STABLE-SAMPLED
~~0920~~										

Sampled? : Yes ☒ No ☐

Initial of Sampler: V

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW-10
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/11/24	**Samplers:**	W.Martin
Time Start:	1225		
Time Finish:	1345	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	140 ft	**Screened Interval (ft.):**	119-139
DTW (ft. bTOC):	124.49 ft		
Water Column:	ft	TD-DTW=Water Column	
Liter/Foot:	0.605 L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	9.38 L	Water Column x L/ft	
Three Well Volumes:	28.15 L	Liters in Well x 3	
Sample Depth:	135 ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI Pro Quatro	**Serial No.:**	23H101217
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0763
Turbidity Meter:	MicroTPW 2000	**Serial No.:**	20240300153
Pump Type:	MP10H	**Serial No.:**	1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 25 Seconds Refill 35 Seconds Discharge @ 100 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 25 Seconds Refill 35 Seconds Discharge @ 100PSI

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	~~HCl~~ N/A	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	~~HCl~~ N/A	1631 LL Hg	8oz Glass	WM
			WM			

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW-12	Sample ID: 0924 MW12 GW	Sample Time: 1345
Date: 9/11/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1225	START PURGING									
1230	0.125	7.0	409.2	17.20	7.03	72.1	118.4	124.52	0.025	
1235	0.250	6.9	404.8	13.09	6.92	67.1	187.7	124.52	0.025	
1240	0.375	6.7	397.8	7.51	6.87	41.9	199.4	124.52	0.025	
1245	0.50	6.8	388.5	5.42	6.85	27.4	135.6	124.52	0.025	
1250	0.750	6.9	383.5	2.90	6.85	22.2	68.09	124.52	0.025	
1255	1.0	7.1	381.3	2.63	6.85	22.2	47.93	124.52	0.025	
1300	1.125	7.3	380.2	2.31	6.84	22.4	40.60	124.52	0.025	
1305	1.250	7.4	379.7	2.27	6.84	22.5	36.83	124.52	0.025	
1310	1.375	7.7	379.1	2.10	6.84	23.3	32.48	124.52	0.025	
1315	1.50	7.4	379.1	1.99	6.84	24.9	29.16	124.52	0.025	
1320	1.750	7.0	378.2	1.97	6.84	26.8	23.36	124.52	0.025	
1325	2.0	7.0	376.5	1.88	6.84	28.0	19.23	124.52	0.025	
1330	2.125	6.9	376.4	1.89	6.84	29.0	14.79	124.52	0.025	
1335	2.250	7.0	375.8	2.02	6.84	29.6	15.06	124.52	0.025	
1340	2.375	7.1	375.0	2.10	6.84	30.0	14.76	124.52	0.025	Stable - Sampled

Sampled? : Yes ☒ No ☐

Initial of Sampler: [signature]

Low-Flow Groundwater Sampling & Stabilization Form

Client/Site:	BLM Red Devil Mine	**Well ID.:**	MW46
Contract No.:	140L6322P0046	**Project No.:**	BU06-010
Date:	9/11/24	**Samplers:**	W. Martin
Time Start:	1020		
Time Finish:	1110	**Checked By:**	RW

Well & Purge Information

TD (ft. bTOC):	57	ft	**Screened Interval (ft.):**	35-56
DTW (ft. bTOC):	34.37	ft		
Water Column:	22.63	ft	TD-DTW=Water Column	
Liter/Foot:	0.605	L/ft	See ***Well Volume Calculation*** table	
Liters in Well:	13.69	L	Water Column x L/ft	
Three Well Volumes:	41.08	L	Liters in Well x 3	
Sample Depth:	246	ft	Depth of Pump Intake	

Well Volume Calculation	
Well Diameter	L/ft
5/8"	0.06
2"	0.605
4"	2.47

Field Equipment

Multiparameter Water Quality Meter:	YSI Pro Quatro	**Serial No.:**	23H101217
Water Level Meter:	Heron Dipper-T2	**Serial No.:**	0763
Turbidity Meter:	Micro TPW 2000	**Serial No.:**	202403015 3
Pump Type:	mp101	**Serial No.:**	1146

Purge Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge @30 PSI

Sampling Method:

☐ Peristaltic Pump ☐ Inertial ☐ Other:

☒ Bladder Pump : Optimum Flow Rate Set at 20 Seconds Refill 10 Seconds Discharge @30 PSI

Sample Collection Information

MS/MSD? : Yes ☐ No ☒

Parameter	# Containers	Filtered?	Preservative	Method	Container Type	Initials
TAL Metals	1	No	Nitric	6020B LL, 7470A	250 ml Plastic	WM
Total LL Mercury	1	No	HCl WM N/A	1631 LL Hg	8oz Glass	WM
Dissolved LL Mercury	1	Yes	HCl WM N/A	1631 LL Hg	8oz Glass	WM
			WM			

Low-Flow Groundwater Sample & Stabilization Form

Well ID: MW416	Sample ID: 0924/MW466W	Sample Time: 1110
Date: 9/11/24	Dup. Sample ID: —	Dup. Sample Time: —
Notes:		

Purging and *Stabilization Data

Time (24 hrs)	Volume Removed (L)	Temp *± 3% °C, min ± 0.2°C	Spec. Cond. (µS/cm) *± 3%	DO (mg/L) *± 10%	pH *± 0.1	ORP (mV) *± 10 mV	Turbidity (NTU) *± 10%	DTW (ft)	Flow Rate L/min	Color/Odor/Notes
1020	START PURGING							34.45		
1025	0.75	3.3	185.1	17.01	6.70	143.3	6.00	~~34.5~~ wm	0.15	
1030	1.5	3.4	186.2	12.60	6.72	138.1	2.91	34.45	0.15	
1035	2.25	3.4	188.1	11.94	6.78	135.9	1.96	34.45	0.15	
1040	3.0	3.4	188.9	11.74	6.64	144.3	0.97	34.45	0.15	
1045	3.75	3.5	189.8	11.63	6.70	141.6	1.06	34.45	0.15	
1050	4.5	3.5	190.0	11.63	6.77	138.2	0.35	34.45	0.15	
1055	5.25	3.2	189.9	11.56	6.75	139.8	0.06	34.45	0.15	
1100	6.0	3.2	188.2	11.42	6.68	143.5	0.00	34.45	0.15	
1105	6.75	3.2	187.7	11.39	6.72	142.0	0.00	34.45	0.15	Stable - sample
1110										

Sampled? : Yes ☑ No ☐

Initial of Sampler: [signature]

A.5 SURFACE WATER SAMPLING FORMS

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Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: PPR
Sample Team: GG/NP RW WM

Sample Location: RD 05
Sample ID: ~~0923RD SW~~ 0624 RD05SW
Date: 6-6-24
Time: 1150
COC #:
Trip Blank ID:

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL		plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	RW
Total LL Mercury	8 oz		glass	Unfiltered	HCl	4° C	90 days	RW
TSS and TDS**	1 L		plastic	Unfiltered	None	4° C	7 days	RW
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL		plastic	Unfiltered	None	4° C	28 days/ 14 days	RW
Nitrate-Nitrite	250 mL		plastic	Unfiltered	Sulfuric	4° C	28 days	RW

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: RW

Reviewed By:

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
1203	3.50	246	3.88	7.05	19.8	8.41	—

Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: PERI
Sample Team: ~~GG/NP~~ RW, NM

Sample Location: RD
Sample ID: ~~0923RD SW~~ 0624RDDUPSW
Date: 6-6-24
Time: 1165
COC #:
Trip Blank ID:

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL		plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	
Total LL Mercury	8 oz		glass	Unfiltered	HCl	4° C	90 days	
TSS and TDS**	1 L		plastic	Unfiltered	None	4° C	7 days	
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL		plastic	Unfiltered	None	4° C	28 days/ 14 days	
Nitrate-Nitrite	250 mL		plastic	Unfiltered	Sulfuric	4° C	28 days	

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: RW

Reviewed By:

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
1112	4.88	72	19.21	7.67	23.7	0.00	

Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: PERI PUMP
Sample Team: ~~GG/NP~~ RW/NM

Sample Location: RD 08
Sample ID: ~~0923RD SW~~ RW 0624RD08SW
Date: 6-6-24
Time: 1015
COC #:
Trip Blank ID:

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL		plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	
Total LL Mercury	8 oz		glass	Unfiltered	HCl	4° C	90 days	
TSS and TDS**	1 L		plastic	Unfiltered	None	4° C	7 days	
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL		plastic	Unfiltered	None	4° C	28 days/ 14 days	
Nitrate-Nitrite	250 mL		plastic	Unfiltered	Sulfuric	4° C	28 days	

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: RW

Reviewed By:

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
1025	4.108	72	20.24	7.66	30.2	4.01	-

Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: PERI
Sample Team: GG/NP

Sample Location: RD10
Sample ID: ~~0923RD SW~~ 0624RD10SW
Date: 6-26-24
Time: 1306
COC #:
Trip Blank ID:

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL		plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	
Total LL Mercury	8 oz		glass	Unfiltered	HCl	4° C	90 days	
TSS and TDS**	1 L		plastic	Unfiltered	None	4° C	7 days	
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL		plastic	Unfiltered	None	4° C	28 days/ 14 days	
Nitrate-Nitrite	250 mL		plastic	Unfiltered	Sulfuric	4° C	28 days	

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: FW

Reviewed By:

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
1307	5.57	100	13.36	7.89	-4.8	0.00	—

Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: PERI
Sample Team: ~~GG/NP~~ RW WM

Sample Location: RD15
Sample ID: ~~0923RD SW~~ 0624RD15SW
Date: 6-6-24
Time: 1215
COC #:
Trip Blank ID:

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL		plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	RW
Total LL Mercury	8 oz		glass	Unfiltered	HCl	4° C	90 days	RW
TSS and TDS**	1 L		plastic	Unfiltered	None	4° C	7 days	RW
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL		plastic	Unfiltered	None	4° C	28 days/ 14 days	RW
Nitrate-Nitrite	250 mL		plastic	Unfiltered	Sulfuric	4° C	28 days	RW

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: RW

Reviewed By:

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
1223	5.45	603	12.70	7.80	17.8	0.00	

Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: PER
Sample Team: ~~GG/NP~~ KW WM

Sample Location: RD 05
Sample ID: ~~0923RD SW~~ K 8924 RD05 SW
Date: 9-12-24
Time: 1055
COC #: —
Trip Blank ID: —

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL	1	plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	K
Total LL Mercury	8 oz	1	glass	Unfiltered	HCl	4° C	90 days	K
TSS and TDS**	1 L	1	plastic	Unfiltered	None	4° C	7 days	K
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL	1	plastic	Unfiltered	None	4° C	28 days/ 14 days	K
Nitrate-Nitrite	250 mL	1	plastic	Unfiltered	Sulfuric	4° C	28 days	K

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: R WITTACK **Reviewed By:** W. Martin

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
1100	3.7	537	5.02	7.16	12.2	22.03	—

Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: PERI
Sample Team: ~~GG/NP~~ KW WM

Sample Location: RD 10
Sample ID: ~~0923RD SW~~ K 0924RD10SW
Date: 09-12-24
Time: 1145
COC #: —
Trip Blank ID: —

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL	1	plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	KW
Total LL Mercury	8 oz	1	glass	Unfiltered	HCl	4° C	90 days	KW
TSS and TDS**	1 L	1	plastic	Unfiltered	None	4° C	7 days	KW
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL	1	plastic	Unfiltered	None	4° C	28 days/ 14 days	KW
Nitrate-Nitrite	250 mL	1	plastic	Unfiltered	Sulfuric	4° C	28 days	KW

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: K. WITTER **Reviewed By:** W. Martin

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
1150	6.2	160.6	15.66	7.95	35.5	0.01	—

Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: PERI
Sample Team: ~~GG/NP~~ KW WM

Sample Location: RD08
Sample ID: ~~0923RD SW~~ 0924RD08SW
Date: 09-12-24
Time: 0945
COC #: —
Trip Blank ID: —

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL	1	plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	
Total LL Mercury	8 oz	1	glass	Unfiltered	HCl	4° C	90 days	
TSS and TDS**	1 L	1	plastic	Unfiltered	None	4° C	7 days	
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL	1	plastic	Unfiltered	None	4° C	28 days/ 14 days	
Nitrate-Nitrite	250 mL	1	plastic	Unfiltered	Sulfuric	4° C	28 days	

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: R. WITTER **Reviewed By:** W. Martin

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
0950	5.9	182.5	13.8	7.89	43.1	2.17	—

Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: PERI
Sample Team: ~~GG/NP~~ RW WM

Sample Location: RD06
Sample ID: ~~0923RD SW~~ 0924RD06SW
Date: 09-12-24
Time: 1030
COC #: —
Trip Blank ID: —

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL	1	plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	K
Total LL Mercury	8 oz	1	glass	Unfiltered	HCl	4° C	90 days	K
TSS and TDS**	1 L	1	plastic	Unfiltered	None	4° C	7 days	K
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL	1	plastic	Unfiltered	None	4° C	28 days/ 14 days	K
Nitrate-Nitrite	250 mL	1	plastic	Unfiltered	Sulfuric	4° C	28 days	K

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: R. WITTER **Reviewed By:** W. Martin

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
1035	5.9	181.5	15.94	7.82	13.5	1.40	—

Surface Water
Sample Collection Log

Project Name: Red Devil Mine
Project No.: BU06-010
Sample Type: SW
Pump Type: ~~PERI~~
Sample Team: ~~GG/NP~~ KW WM

Sample Location: RD
Sample ID: ~~0923RD SW~~ 0924RD15SW
Date: 9-12-24
Time: 1045
COC #: —
Trip Blank ID: —

Methods (listed in prioritized order)	Sample Volume	Bottle Count	Bottle Type	Filtered/ Unfiltered	Preservative	Temperature	Hold Time	Initials
TAL Metals	250 mL	1	plastic	Unfiltered	Nitric	ambient	180 days/ 28 days*	K
Total LL Mercury	8 oz	1	glass	Unfiltered	HCl	4° C	90 days	K
TSS and TDS**	1 L	1	plastic	Unfiltered	None	4° C	7 days	K
Inorganic Ions (Cl, F, SO_4) and Alkalinity***	250 mL	1	plastic	Unfiltered	None	4° C	28 days/ 14 days	K
Nitrate-Nitrite	250 mL	1	plastic	Unfiltered	Sulfuric	4° C	28 days	K

Comments: * The TAL Hg analyzed by EPA Method 7470A has a 28 day hold time
**The TSS andTDS are sampled together in a 1 L container.
***The Inorganic Ions and Alkalinity are sampled together in a 250 ml container.

Logged By: R WITTER **Reviewed By:** W. Martin

Time	Temp °C	Spec Con µS/cm	DO mg/L	pH	ORP	Turb. NTU	Notes
1050	6.0	157.4	15.36	8.07	15.4	1.26	—

A.6 CALIBRATION LOGS

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Water Quality Meter Calibration Log

Model: YSI 556 MPS

Serial Number: 11J102416

Date, Time, Temp	Calibration Information	Initial Cal. Readings	Final Calibration Readings
Date: 6-1-24	pH (4.0)	3.90	4.00
Time: 0730	pH (7.0)	6.69	7.00
	pH (10.0)	10.14	10.00
Temp:	Spec. Cond. (µS/cm)	1.446	1.413
	DO (mg/L)	95.7%	98.9%
	ORP (mV)	248.9	240.0
Date: 6-2-24	pH (4.0)	4.26	4.00
Time: 0715	pH (7.0)	6.82	7.00
	pH (10.0)	10.14	10.00
Temp:	Spec. Cond. (µS/cm)	1287	1.413
	DO (mg/L)	246.5	240.0 ↓
	ORP (mV)	75.7%	98.9%
Date: 6/3/24	pH (4.0)	4.03	4.00
Time: 0750	pH (7.0)	6.98	7.00
	pH (10.0)	10.12	10.02
Temp:	Spec. Cond. (µS/cm)	1.468	1.413
	DO (mg/L)	105.4	97.5
	ORP (mV)	236.9	240.0
Date: 6/4/24	pH (4.0)	3.99	4.00
Time: 0720	pH (7.0)	6.93	7.00
	pH (10.0)	10.13	10.02
Temp:	Spec. Cond. (µS/cm)	1.489	1.413
	DO (mg/L)	~~24~~ 98.7	97.7
	ORP (mV)	242.0	240.0
Date: 6-5-24	pH (4.0)	4.02	4.00
Time: 0710	pH (7.0)	6.90	7.00
	pH (10.0)	10.11	10.00
Temp:	Spec. Cond. (µS/cm)	1.350	1.413
	DO (mg/L)	99.0	98.2
	ORP (mV)	241.7	240.0
Date: 6-6-24	pH (4.0)	4.03	4.0
Time: 0750	pH (7.0)	6.95	7.00
	pH (10.0)	10.12	10.02
Temp:	Spec. Cond. (µS/cm)	1.469	1.413
	DO (mg/L)	85.4	99.3
	ORP (mV)	237.0	240.0

Water Quality Meter Calibration Log

Model: YSI 556 MPS

Serial Number: 06062421

Date, Time, Temp	Calibration Information	Initial Cal. Readings	Final Calibration Readings
Date: 6-1-24	pH (4.0)	4.01	4.00
	pH (7.0)	6.94	7.00
Time: 0730	pH (10.0)	10.12	10.00
	Spec. Cond. (µS/cm)	1.307	1.413
Temp:	DO (mg/L)	95.5%	98.4%
	ORP (mV)	248.6	240.0
Date: 6-2-24	pH (4.0)	4.29	4.00
	pH (7.0)	6.80	7.00
Time: 0715	pH (10.0)	10.13	10.00
	Spec. Cond. (µS/cm)	1.363	1.413
Temp:	DO (mg/L)	105.9%	97.9%
	ORP (mV)	243.1	240.0
Date: 6/3/24	pH (4.0)	4.00	4.00
	pH (7.0)	6.95	7.00
Time: 0806	pH (10.0)	10.09	10.02
	Spec. Cond. (µS/cm)	1.560	1.413
Temp:	DO (mg/L)	88.7	97.6
	ORP (mV)	240.8	240
Date: 6/4/24	pH (4.0)	4.04	4.0
	pH (7.0)	6.93	7.0
Time: 0720	pH (10.0)	~~10.13~~ 10.06	10.02
	Spec. Cond. (µS/cm)	1.567	1.413
Temp:	DO (mg/L)	105.3	97.7
	ORP (mV)	238.9	240.0
Date: 6-5-24	pH (4.0)	4.04	4.00
	pH (7.0)	6.96	7.00
Time: 0710	pH (10.0)	10.07	10.00
	Spec. Cond. (µS/cm)	1.507	1.413
Temp:	DO (mg/L)	102.6	98.2
	ORP (mV)	241.6	240.0
Date:	pH (4.0)		
	pH (7.0)		
Time:	pH (10.0)		
	Spec. Cond. (µS/cm)		
Temp:	DO (mg/L)		
	ORP (mV)		

Turbidity Calibration Log

Model: MicroTPW

Serial Number: 20200324141

Date & Time & Temp	Manufacturer Calibration Standard	Calibration Reading	Acceptable (✓)
Date: 6/1/24	1000 NTU	992.6 NTU	✓
	10 NTU	9.86 NTU	✓
Time: 7:15	0.02	0.02	✓
Date: 6/2/24	1000 NTU	1000 NTU	✓
	10 NTU	10 NTU	✓
Time: 0720	0.02 NTU	0.02 NTU	✓
Date: 6-3-24	1000 NTU	1000 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0750	0.02 NTU	0.02 NTU	✓
Date: 6-4-24	1000 NTU	1000 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0720	0.02 NTU	0.02	✓
Date: 06/05/24	1000 NTU	1000 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0710	0.02 NTU	0.02 NTU	✓
Date: 6-6-24	1000 NTU	1000 NTU	
	10.0 NTU	10.0 NTU	
Time: 0750	0.02 NTU	0.02 NTU	
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Turbidity Calibration Log

Model: MicroTPW

Serial Number: 20140 4342

Date & Time & Temp	Manufacturer Calibration Standard	Calibration Reading	Acceptable (✓)
Date: 6/1/24	1000 NTU	1042 NTU	✓
	10 NTU	10.1 NTU	✓
Time: 0725	0.2 NTU	0.0 NTU	✓
Date: 6/2/24	1000 NTU	1000 NTU	✓
	10 NTU	10.0 NTU	✓
Time: 0725	0.02 NTU	0.02 NTU	✓
Date: 6-3-24	1000 NTU	1000 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0750	0.02 NTU	0.02 NTU	✓
Date: 6-4-24	1000 NTU	1000 NTU	✓
	10 NTU	10.0 NTU	✓
Time: 0720	0.02 NTU	0.02 NTU	✓
Date: 6-5-24	1000 NTU	1000.0 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0710	0.02 NTU	0.02 NTU	✓
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Water Quality Meter Calibration Log

Model: YSI PRO QUATRO

Serial Number: 23H101217

Date, Time, Temp	Calibration Information	Initial Cal. Readings	Final Calibration Readings
Date: 09-07-24	pH (4.0)	4.02	4.00
	pH (7.0)	6.92	7.00
Time: 0730	pH (10.0)	10.15	10.00
	Spec. Cond. (µS/cm)	1440	1413
Temp: 46°	DO (mg/L)	99.9%	100%
	ORP (mV)	239.4	240.0
Date: 09-07-24	pH (4.0)	4.09	4.00
	pH (7.0)	6.91	7.00
Time: 0730	pH (10.0)	10.01	10.00
	Spec. Cond. (µS/cm)	1892	1.143
Temp: 47°	DO (mg/L)	94.6%	99.6%
	ORP (mV)	236.7	240.0
Date: 09-08-24	pH (4.0)	4.01	4.0
	pH (7.0)	6.98	7.0
Time: 0720	pH (10.0)	9.97	10.0
	Spec. Cond. (µS/cm)	1721	1413
Temp: 46°	DO (mg/L)	92.2	99.6
	ORP (mV)	320	240
Date: 09-10-24	pH (4.0)	4.01	4.0
	pH (7.0)	6.83	7.0
Time: 0650	pH (10.0)	10.17	10.0
	Spec. Cond. (µS/cm)	1781	1413
Temp: 44°	DO (mg/L)	95.2%	99.6%
	ORP (mV)	239.8	240
Date: 09-11-24	pH (4.0)	4.08	4.0
	pH (7.0)	6.84	7.0
Time: 0705	pH (10.0)	10.04	10.0
	Spec. Cond. (µS/cm)	1.973	1413
Temp: 45°	DO (mg/L)	97.0%	99.1%
	ORP (mV)	232.4	240
Date: 9/12/24	pH (4.0)	4.22	4.0
	pH (7.0)	6.95	7.0
Time: 0740	pH (10.0)	10.12	10.00
	Spec. Cond. (µS/cm)	2.014	n.r. 1.413
Temp: 43°	DO (mg/L)	113.2 %	98.2 %
	ORP (mV)	240.9	240.0

Water Quality Meter Calibration Log

Model: YSI PRO QUATRO

Serial Number: 20H104432

Date, Time, Temp	Calibration Information	Initial Cal. Readings	Final Calibration Readings
Date: 09-07-24	pH (4.0)	4.05	4.00
Time: 0730	pH (7.0)	6.83	7.00
	pH (10.0)	10.10	10.00
Temp: 46°	Spec. Cond. (µS/cm)	1413	1413
	DO (mg/L)	99.8	100%
	ORP (mV)	263.6	240.0
Date: 9/7/24	pH (4.0)	4.21	4.00
Time: 0725	pH (7.0)	7.04	7.00
	pH (10.0)	10.12	10.00
Temp: 47°	Spec. Cond. (µS/cm)	1851	1413
	DO (mg/L)	97.0	99.4
	ORP (mV)	420	240
Date: 09-08-24	pH (4.0)	4.05	4.0
Time: 0720	pH (7.0)	5.78	7.0
	pH (10.0)	10.11	10.0
Temp: 46°	Spec. Cond. (µS/cm)	1871	1413
	DO (mg/L)	99.4	99.4
	ORP (mV)	-360	240
Date: 9-10-24	pH (4.0)	4.22	4.0
Time: 0650	pH (7.0)	6.98	7.0
	pH (10.0)	10.17	10.0
Temp: 44	Spec. Cond. (µS/cm)	1824	1413
	DO (mg/L)	99.9%	99.4%
	ORP (mV)	239.8	240
Date:	pH (4.0)		
Time:	pH (7.0)		
	pH (10.0)		
Temp:	Spec. Cond. (µS/cm)		
	DO (mg/L)		
	ORP (mV)		
Date:	pH (4.0)		
Time:	pH (7.0)		
	pH (10.0)		
Temp:	Spec. Cond. (µS/cm)		
	DO (mg/L)		
	ORP (mV)		

Turbidity Calibration Log

Model: MicroTPW 2000

Serial Number: 20190329

Date & Time & Temp	Manufacturer Calibration Standard	Calibration Reading	Acceptable (✓)
Date: 9/7/24	1000 NTU	1000 NTU	✓
	10 NTU	10.0 NTU	✓
Time: 0730	0.02 ~~0.2 WM~~ NTU	0.02 NTU	✓
Date: 9/8/24	1000 NTU	1000 NTU	✓
	10 NTU	10.0	✓
Time: 0720	0.02 NTU	0.02	✓
Date: 9/8/24	1000 NTU	1000 NTU	✓
	10 NTU	10.0 NTU	✓
Time: 0725	0.02 NTU	0.02 NTU	✓
Date: ~~9/9/24 WM~~ 9/10/24	1000 NTU	1000 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0700	0.02	0.02 NTU	✓
Date: 9/12/24	1000 NTU	1000 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0805	0.02	0.02 NTU	✓
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Turbidity Calibration Log

Model: MicroTPW 2000

Serial Number: 2024030153

Date & Time & Temp	Manufacturer Calibration Standard	Calibration Reading	Acceptable (✓)
Date: 9/7/24	1000 NTU	1000 NTU	✓
	10 NTU	10.0 NTU	✓
Time: 0740	0.02 NTU	0.02 NTU	✓
Date: 9/8/24	1000 NTU	1000 NTU	✓
	10 NTU	10 NTU	✓
Time: 0720	0.02 NTU	0.02	✓
Date: 9/9/24	1000 NTU	1000 NTU	✓
	10 NTU	10.0 NTU	✓
Time:	0.02 NTU	0.02 NTU	✓
Date: 9/10/24	100 NTU	1000 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0700	0.02 NTU	0.02 NTU	✓
Date: 9/11/24	1000 NTU	1000 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0710	0.02 NTU	0.02 NTU	✓
Date: 9/12/24	1000 NTU	1000 NTU	✓
	10.0 NTU	10.0 NTU	✓
Time: 0802	0.02 NTU	0.02 NTU	✓
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APPENDIX B SPRING AND FALL PHOTOGRAPH DOCUMENTATION

Appendix B. Table of Contents – Spring 2024

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Photograph 2-1. Initial IDW from MW54, 6/1/2024.

Photograph 2-2. MW54 tubing sticking out from the well after pump got stuck during transducer install, 6/4/2024.

Photograph 2-3. Downstream view of Red Devil Creek below the engineered and stabilized section, 6/6/2024.

Photograph 2-4. RD05 seep location with precipitate plume extending into Red Devil Creek, 6/6/2024.

Photograph 2-5. Revegetated slope along the reworked and engineered section of Red Devil Creek, 6/6/2024.

Photograph 2-6. Overview of engineered slope and covered stockpile, 6/6/2024.

Photograph 2-7. Overview of lower soil stockpile with cover and sandbags intact, 6/6/2024.

Photograph 2-8. RD08 sample collection point, 6/6/2024.

Photograph 2-9. Discoloration and rusting of bladder pump on MW50, 6/2/2024.

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Appendix B. Table of Contents – Fall 2024

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Photograph 2-1. Engineered slope and covered stockpile, 9/12/2024.

Photograph 2-2. Upstream view of Red Devil Creek along the engineered and stabilized section, 9/12/2024.

Photograph 2-3. Downslope view of Red Devil Creek above the engineered and stabilized section, 9/12/2024.

Photograph 2-4. Engineered slope and covered stockpile, 9/12/2024.

Photograph 2-5. Engineered slope and covered stockpile, 9/12/2024.

Photograph 2-6. Engineered slope and covered stockpile, 9/12/2024.

Photograph 2-7. Engineered slope and covered stockpile, 9/12/2024.

Photograph 2-8. Settling of soil and separation of the ground surface around the concrete base of MW10, 9/09/2024.

Photograph 2-9. MW36 frost jacked with collapsed PVC, 9/6/2024

Photograph 2-10. MW12 frost jacked with collapsed PVC, 9/6/2024.

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APPENDIX C SUPPLEMENTAL DATA

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C.1 2024 SPRING STREAM GAUGING DATA

(Provided on CD)

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C.2 2024 FALL STREAM GAUGING DATA

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C.3 2024 SPRING TRANSDUCER DATA

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C.4 2024 FALL TRANSDUCER DATA

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C.5 GROUNDWATER ELEVATION PLOTS

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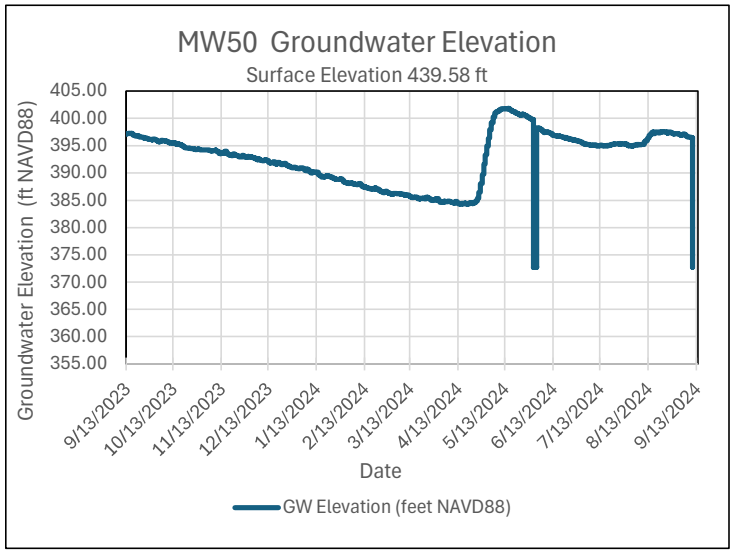
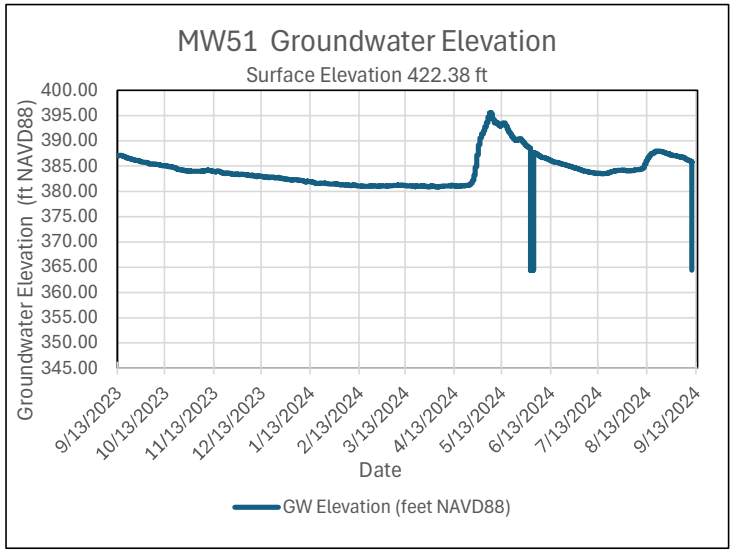
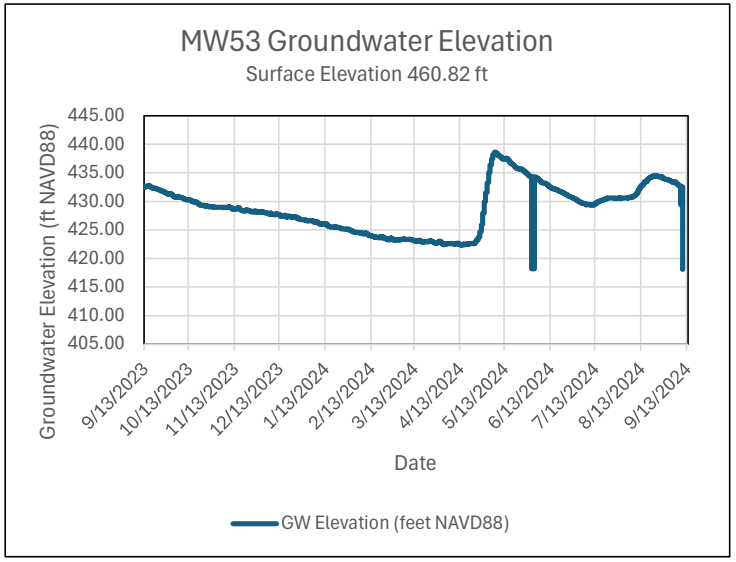
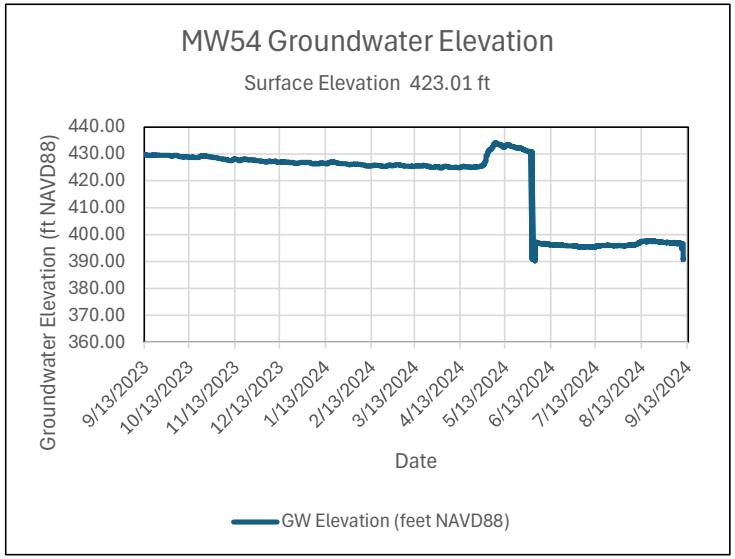
Appendix C.5: Groundwater Elevation Plots

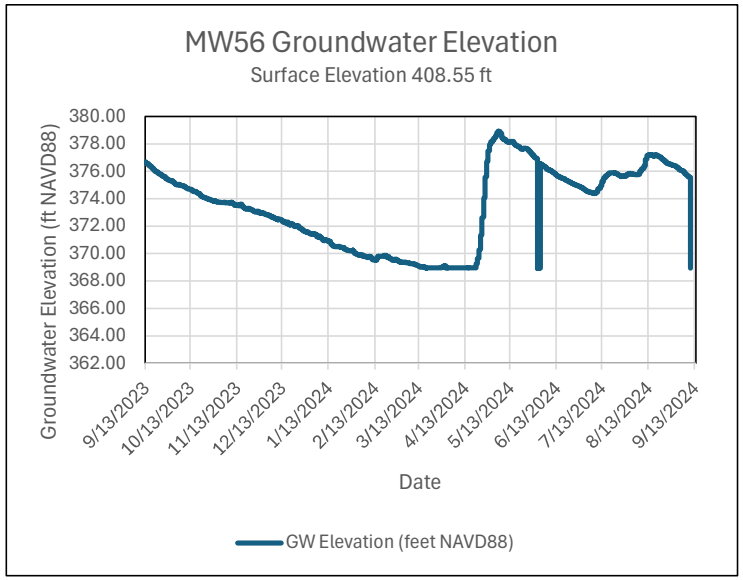


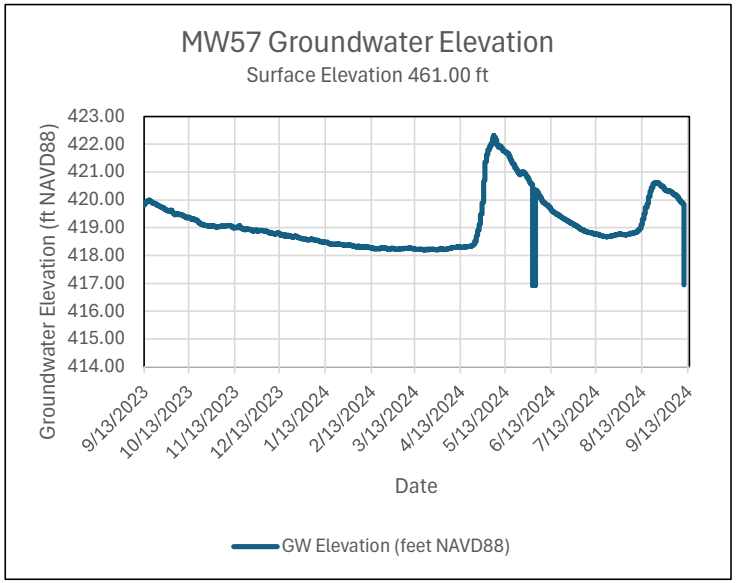


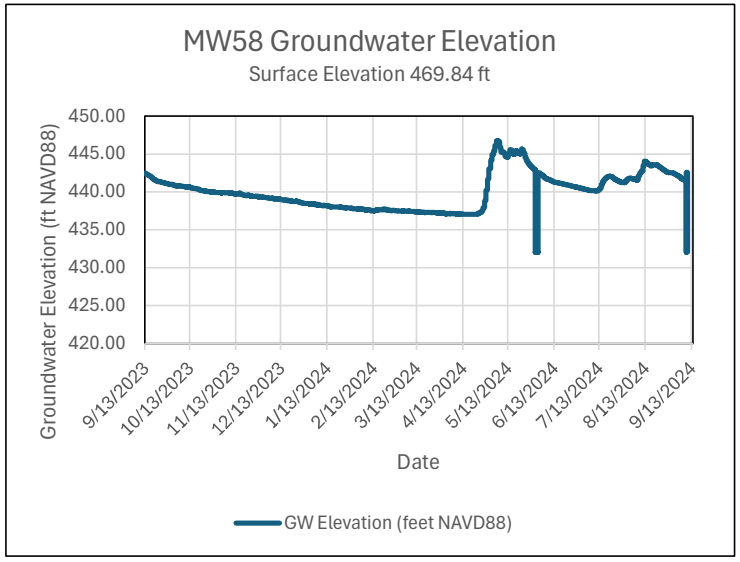


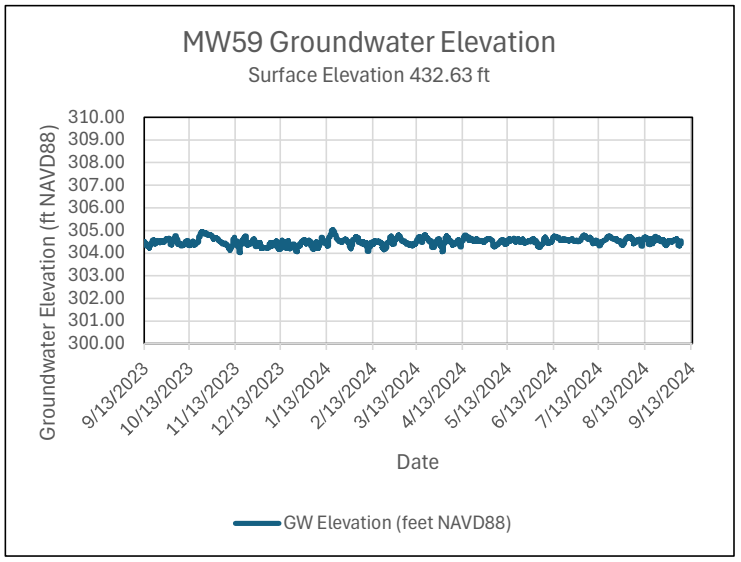


Appendix C.5: Groundwater Elevation Plots









APPENDIX D ANALYTICAL LABORATORY REPORTS

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D.1 2024 SPRING ANALYTICAL LABORATORY REPORT

(Provided on CD)

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D.2 2024 FALL ANALYTICAL LABORATORY REPORT

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APPENDIX E DATA VALIDATION REPORTS

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E.1 2024 SPRING DATA VALIDATION REPORTS

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I. Project Information

File Name:	580-140945-1 DV Report.0_Metals_GenChem_2B_rv01				
Analysis:	MT, Hg, LLHg, WC				
SDG#:	580-140945-1	Reviewer:	RJT	Rev Date:	7/02/2024
Matrix:	Surface Water Groundwater	2nd Rev:	CTD	2nd Rev Date:	7/11/2024
Validation Level:	Stage2B	# Samples:	43	# RE/DL:	0

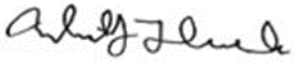
II. Secondary Review List

Narrative:	**Form Is:**
Qualifications in text match Form Is	"U" / "J" lab codes carried over
Spell check	Appropriate qual codes used
Pagination, appropriate headers/footers	Form I IDs match sample ID table
Correct project site name/manager on cover and introduction pages	

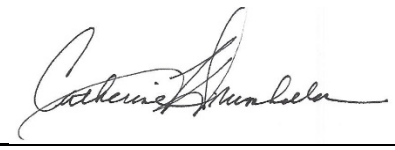
Required Edits/Changes:
NA

Revision (include revision #, date and reason):
Revision 0

Validator Signature:



Review Signature:



Data Validation Report

Red Devil Mine, Alaska

Sample Delivery Group

580-140945-1

Prepared for

Sundance Consulting, Inc.
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Attention:
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Tables

III. Acronyms and Abbreviations

°C	Celsius
%	Percent
%D	percent difference
CCAL	continuing calibration
CCB	continuing calibration blank
CCV	continuing calibration verification
COC	chain of custody
CLP	Contract Laboratory Program
DL	detection limit
DISS	dissolved
EPA	US Environmental Protection Agency
EB	equipment blank
FB	field blank
FD	field duplicate
GW	ground water
ICAL	initial calibration
ICB	initial calibration blank
ICV	initial calibration verification
ID	Identifier
IS	internal standard
J	estimated value
LCS	laboratory control sample
LL Hg	low level mercury
LOD	limit of detection
LOQ	limit of quantification
MB	method blank
MS	matrix spike
MSD	matrix spike duplicate
ND	nondetect
QAPP	Quality Assurance Program Plan
QC	quality control
QSM	Quality Systems Manual
R	Rejected
RL	reporting limit
RPD	relative percent difference
RRF	relative response factor
RSD	relative standard deviation
SDG	sample delivery group
TB	trip blank
TDS	total dissolved solids
TSS	total suspended solids
SW	surface water
U	not detected
UJ	not detected; associated value is an estimate

IV. Introduction

Project Name: Red Devil Mine
Sample Delivery Group: 580-140945-1
Client Project Manager: Eva Moore, P.G.
Matrix: Groundwater and Surface Water
QC Level: Stage 2B
No. of Samples: 43
Laboratory: Eurofins Seattle

Table 1 – Sample Summary

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
1	0624MW09GW 0624MW09GW DISS	580-140945-1	GW	06/01/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
2	0624MW17GW 0624MW17GW DISS	580-140945-2	GW	06/01/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
3	0624MW17GW99 0624MW17GW99 DISS	580-140945-3	GW	06/01/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
4	0624MW10GW 0624MW10GW DISS	580-140945-4	GW	06/01/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
5	0624MW16GW 0624MW16GW DISS	580-140945-5	GW	06/01/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
6	0624MW16GW99 0624MW16GW99 DISS	580-140945-6	GW	06/01/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
7	0624MW06GW 0624MW06GW DISS	580-140945-7	GW	06/01/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
8	0624MW26GW 0624MW26GW DISS	580-140945-8	GW	06/01/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
9	0624MW53GW 0624MW53GW DISS	580-140945-9	GW	06/02/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
10	0624MW50GW 0624MW50GW DISS	580-140945-10	GW	06/02/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
11	0624MW59GW 0624MW59GW DISS	580-140945-11	GW	06/02/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
12	0624MW57GW 0624MW57GW DISS	580-140945-12	GW	06/02/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
13	0624MW54GW 0624MW54GW DISS	580-140945-13	GW	06/02/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
14	0624MW51GW 0624MW51GW DISS	580-140945-14	GW	06/02/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
15	0624MW58GW 0624MW58GW DISS	580-140945-15	GW	06/02/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
16	0624MW55GW 0624MW55GW DISS	580-140945-16	GW	06/03/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
17	0624MW47GW 0624MW47GW DISS	580-140945-17	GW	06/03/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
18	0624MW45GW 0624MW45GW DISS	580-140945-18	GW	06/03/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
19	0624MW56GW 0624MW56GW DISS	580-140945-19	GW	06/03/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
20	0624MW46GW 0624MW46GW DISS	580-140945-20	GW	06/03/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
21	0624MW44GW 0624MW44GW DISS	580-140945-21	GW	06/03/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
22	0624MW52GW 0624MW52GW DISS	580-140945-22	GW	06/03/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
23	0624MW29GW 0624MW29GW DISS	580-140945-23	GW	06/04/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
24	0624MW49GW 0624MW49GW DISS	580-140945-24	GW	06/04/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
25	0624MW43GW 0624MW43GW DISS	580-140945-25	GW	06/04/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
26	0624MW43GW99 0624MW43GW99 DISS	580-140945-26	GW	06/04/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
27	0624MW28GW 0624MW28GW DISS	580-140945-27	GW	06/04/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
28	0624MW27GW 0624MW27GW DISS	580-140945-28	GW	06/04/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
29	0624MW42GW 0624MW42GW DISS	580-140945-29	GW	06/05/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
30	0624MW40GW 0624MW40GW DISS	580-140945-30	GW	06/05/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
31	0624MW33GW 0624MW33GW DISS	580-140945-31	GW	06/05/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
32	0624EB01GW	580-140945-32	EB	06/07/24	6020B, 6010D, 7470A, 1631E	Stage 2B
33	0624EB02GW	580-140945-33	EB	06/07/24	6020B, 6010D, 7470A, 1631E	Stage 2B
34	0624RD08SW	580-140945-34	SW	06/06/24	6020B, 6010D, 7470A, 1631E, 353.2,	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
					310.1, 160.1, 160.2	
35	0624RD08SW99	580-140945-35	SW	06/06/24	6020B, 6010D, 7470A, 1631E, 353.2, 310.1, 160.1, 160.2	Stage 2B
36	0624RD06SW	580-140945-36	SW	06/06/24	6020B, 6010D, 7470A, 1631E, 353.2, 310.1, 160.1, 160.2	Stage 4
37	0624RD05SW	580-140945-37	SW	06/06/24	6020B, 6010D, 7470A, 1631E, 353.2, 310.1, 160.1, 160.2	Stage 2B
38	0624RD15SW	580-140945-38	SW	06/06/24	6020B, 6010D, 7470A, 1631E, 353.2, 310.1, 160.1, 160.2	Stage 2B
39	0624RD10SW	580-140945-38* *The Lab has two samples with the number 580-140945-38	SW	06/06/24	6020B, 6010D, 7470A, 1631E, 353.2, 310.1, 160.1, 160.2	Stage 2B
40	0624TB01GW	580-140945-40	TB	06/01/24	1631E	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
41	0624TB02GW	580-140945-41	TB	06/01/24	1631E	Stage 2B
42	0624TB03GW	580-140945-42	TB	06/01/24	1631E	Stage 2B
43	0624TB04GW	580-140945-43	TB	06/01/24	1631E	Stage 2B

V. Sample Management

The case narrative, the sample receiving checklist, chain-of-custody (COC) records for sample delivery group (SDG) 580-140945-1 were reviewed and the review findings are listed below.

- The laboratory's Login Sample Receipt Checklist and the COCs noted all coolers were received within the temperature limits of ≤6°C and ≥0°C.
- The samples were received intact, and properly preserved, as applicable.
- Sample receipt exceptions:
  - The laboratory assigned sample number 580-140945-38 to two field samples (0624RD15SW and 0624RD10SW. For purposes of clarity, any references to these samples in the report will include the laboratory sample number as well as the field sample number.
- The COC information agrees with the laboratory report for requested field samples and tests, as applicable.
- The laboratory's Sample Receiving Checklists note that the cooler's custody seals, if present, are intact.
- Total and dissolved volumes were received at the lab for the ground water (GW) low level mercury (LL Hg) sample analyses performed by Method 1631E. The dissolved sample volumes were field filtered.
- Field and laboratory personnel signed and dated the COCs.

Table 2 – Data Qualifier Definitions

Qualifier	Definition
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
NJ	The analyte has been "tentatively identified" or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

VI. SW-846 Methods 6020B, 6010D AND 7470A — Metals and Mercury

Robert Thielke of Guardian Data Validation reviewed the SDG July 2, 2024.

VI.1. Holding Times

Analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

VI.2. Tuning and Calibration

All 6020B ICP/MS tuning criteria were met. Mass calibrations were ≤0.1 atomic mass unit (amu) from the true value. Resolution was <0.9 amu full width at 10% peak height and all %RSDs were ≤5%.
A blank and five standards were used in the initial calibration. Correlation coefficients were ≥0.995.

For all ICP/MS and ICP analytes the reported ICV and CCV recoveries were within 90-110% and the low-level CCV recoveries were within 80-120%.

A blank and 5 non-zero standards were used for the CVAA calibration. The initial (ICV) and continuing calibration recoveries (CCV) were within 90-110%.

VI.3. Laboratory Quality Control Samples

VI.3.1. Calibration Blanks and Method Blanks

No target analytes were reported in the method blanks (MB) or bracketing calibration blanks (ICB/CCB) of sufficient concentration to warrant qualification of site sample results except as noted in the table below. For the positive blank concentrations, associated detected sample results that were below the reporting limit (RL) were qualified as non-detect (U) at the RL. Associated detected sample results that were greater than RL and <5× the blank concentration were qualified as estimated with high bias (J+) using professional judgement.

Table 3 – Metals and Mercury Calibration Blanks and Method Blanks

Analyte	Blank Concentration	Qualified Samples
Lead MB 461974/22-A	0.0000546 mg/L	0624MW09GW (580-140945-1) – 0.00040 U 0624MW17GW (580-140945-2) – 0.00040 U 0624MW17GW99 (580-140945-3) – 0.00040 U 0624MW10GW (580-140945-4) – 0.00040 U 0624MW06GW (580-140945-7) – 0.00040 U 0624MW26GW (580-140945-8) – 0.00040 U 0624MW50GW (580-140945-10) – 0.00040 U 0624MW59GW (580-140945-11) – 0.00040 U
Antimony MB 462091/21-A	0.000186 mg/L	0624MW58GW (580-140945-15) – J+ 0624MW47GW (580-140945-17) – 0.0008 U 0624MW45GW (580-140945-18) – 0.0008 U 0624MW46GW (580-140945-20) – 0.0008 U 0624MW52GW (580-140945-22) – 0.0008 U 0624MW29GW (580-140945-23) – 0.0008 U 0624MW49GW (580-140945-24) – 0.0008 U 0624EB01GW (580-140945-32) – 0.0008 U 0624EB02GW (580-140945-33) – 0.0008 U
Thallium MB 462354/24-A	0.0000366 mg/L	0624RD08SW (580-140945-34) - 0.0010 U 0624RD05SW (580-140945-37) - 0.0010 U 0624RD10SW (580-140945-39) - 0.0010 U
Potassium MB 461974/22-A	1.97 mg/L	0624MW09GW (580-140945-1) – 3.3 U 0624MW17GW (580-140945-2) – 3.3 U 0624MW17GW99 (580-140945-3) – 3.3 U 0624MW10GW (580-140945-4) – 3.3 U 0624MW16GW (580-140945-5) – 3.3 U 0624MW16GW99 (580-140945-6) – 3.3 U 0624MW06GW (580-140945-7) – 3.3 U 0624MW26GW (580-140945-8) – 3.3 U 0624MW53GW (580-140945-9) – 3.3 U 0624MW50GW (580-140945-10) – 3.3 U 0624MW59GW (580-140945-11) – 3.3 U 0624MW57GW (580-140945-12) – 3.3 U
Magnesium MB 462893/17-A	0.0537 mg/L	None

Analyte	Blank Concentration	Qualified Samples
Potassium CCB 462121/24 Potassium CCB 462121/44 Potassium CCB 462121/56 Potassium CCB 462236/16 Potassium CCB 462236/53 Potassium CCB 462504/26 Potassium CCB 462504/36 Potassium CCB 463081/34	0.368 J mg/L 0.322 J mg/L 0.240 J mg/L 0.177 J mg/L 0.170 J mg/L 0.184 J mg/L 0.183 J mg/L 0.111 J mg/L	0624MW09GW (580-140945-1) – 3.3 U 0624MW17GW (580-140945-2) – 3.3 U 0624MW17GW99 (580-140945-3) – 3.3 U 0624MW10GW (580-140945-4) – 3.3 U 0624MW16GW (580-140945-5) – 3.3 U 0624MW16GW99 (580-140945-6) – 3.3 U 0624MW06GW (580-140945-7) – 3.3 U 0624MW26GW (580-140945-8) – 3.3 U 0624MW53GW (580-140945-9) – 3.3 U 0624MW50GW (580-140945-10) – 3.3 U 0624MW59GW (580-140945-11) – 3.3 U 0624MW57GW (580-140945-12) – 3.3 U 0624MW54GW (580-140945-13) – 3.3 U 0624MW51GW (580-140945-14) – 3.3 U 0624MW58GW (580-140945-15) – 3.3 U 0624MW55GW (580-140945-16) – 3.3 U 0624MW47GW (580-140945-17) – 3.3 U 0624MW45GW (580-140945-18) – 3.3 U 0624MW56GW (580-140945-19) – 3.3 U 0624MW46GW (580-140945-20) – 3.3 U 0624MW44GW (580-140945-21 – 3.3 U 0624MW52GW (580-140945-22) – 3.3 U 0624MW29GW (580-140945-23) – 3.3 U 0624MW49GW (580-140945-24) – 3.3 U 0624MW43GW (580-140945-25) – 3.3 U 0624MW43GW99 (580-140945-26) – 3.3 U 0624MW28GW (580-140945-27) – 3.3 U 0624MW27GW (580-140945-28) – 3.3 U 0624MW42GW (580-140945-29) – 3.3 U 0624MW40GW (580-140945-30) – 3.3 U 0624MW33GW (580-140945-31) – 3.3 U 0624RD08SW (580-140945-34) – 3.3 U 0624RD08SW99 (580-140945-35) – 3.3 U 0624RD06SW (580-140945-36) – 3.3 U 0624RD05SW (580-140945-37) – 3.3 U 0624RD15SW (580-140945-38) – 3.3 U 0624RD10SW (580-140945-39) – 3.3 U
Antimony ICB 463061/11	0.172 J mg/L	0624RD10SW (580-140945-39) – J+
Cadmium ICB 462233/11 Cadmium ICB 462292/11 Cadmium ICB 462636/11 Cadmium ICB 463061/11	0.0553 J mg/L 0.0499 J mg/L 0.0499 J mg/L 0.0490 J mg/L	0624MW16GW99 (580-140945-6) - 0.0004 U 0624MW27GW (580-140945-28) - 0.0004 U 0624MW42GW (580-140945-29) - 0.0004 U

Analyte	Blank Concentration	Qualified Samples
Lead ICB 462233/11 Lead ICB 462292/11 Lead ICB 462636/11 Lead ICB 463061/11	0.0715 J mg/L 0.0621 J mg/L 0.0621 J mg/L 0.104 J mg/L	0624MW58GW (580-140945-15) - 0.0004 U 0624MW55GW (580-140945-16) - 0.0004 U 0624MW47GW (580-140945-17) – J+ 0624MW46GW (580-140945-20) - 0.0004 U 0624MW44GW (580-140945-21) - 0.0004 U 0624MW52GW (580-140945-22) - 0.0004 U 0624MW29GW (580-140945-23) - 0.0004 U 0624MW43GW (580-140945-25) - 0.0004 U 0624MW43GW99 (580-140945-26) - 0.0004 U 0624MW42GW (580-140945-29) – J+ 0624MW40GW (580-140945-30) - 0.0004 U 0624MW33GW (580-140945-31) – J+ 0624EB01GW (580-140945-32) - 0.0004 U 0624EB02GW (580-140945-33) - 0.0004 U 0624RD05SW (580-140945-37) - 0.0004 U 0624RD15SW (580-140945-38) - 0.0004 U 0624RD10SW (580-140945-39) - 0.0004 U
Silver ICB 463061/11	0.0516 J mg/L	0624RD10SW (580-140945-39) - 0.0004 U
Thallium ICB 462233/11 Thallium ICB 462292/11 Thallium ICB 462636/11 Thallium ICB 463061/11	0.147 J mg/L 0.0974 J mg/L 0.125 J mg/L 0.126 J mg/L	0624MW42GW (580-140945-29) - 0.0010 U 0624MW33GW (580-140945-31) - 0.0010 U 0624RD08SW (580-140945-34) - 0.0010 U 0624RD05SW (580-140945-37) - 0.0010 U 0624RD10SW (580-140945-39) - 0.0010 U

Analyte	Blank Concentration	Qualified Samples
Antimony CCB 462125/15 Antimony CCB 462125/26 Antimony CCB 462125/38 Antimony CCB 462125/49 Antimony CCB 462125/58 Antimony CCB 462233/68 Antimony CCB 462233/79 Antimony CCB 462233/99 Antimony CCB 462636/26 Antimony CCB 462636/37 Antimony CCB 462636/49 Antimony CCB 463061/27 Antimony CCB 463061/39	0.174 J mg/L 0.161 J mg/L 0.130 J mg/L 0.428 J mg/L 0.172 J mg/L 0.267 J mg/L 0.310 J mg/L 0.161 J mg/L 0.150 J mg/L 0.199 J mg/L 0.142 J mg/L 0.171 J mg/L 0.179 J mg/L	0624MW09GW (580-140945-1) – J+ 0624MW17GW (580-140945-2) – J+ 0624MW17GW99 (580-140945-3) – J+ 0624MW10GW (580-140945-4) – J+ 0624MW16GW (580-140945-5) – J+ 0624MW16GW99 (580-140945-6) – J+ 0624MW06GW (580-140945-7) – J+ 0624MW26GW (580-140945-8) – J+ 0624MW53GW (580-140945-9) – 0.0008 U 0624MW50GW (580-140945-10) – J+ 0624MW59GW (580-140945-11) – J+ 0624MW57GW (580-140945-12) – 0.0008 U 0624MW54GW (580-140945-13) – 0.0008 U 0624MW58GW (580-140945-15) – J+ 0624MW55GW (580-140945-16) – J+ 0624MW47GW (580-140945-17) – 0.0008 U 0624MW45GW (580-140945-18) – 0.0008 U 0624MW46GW (580-140945-20) – 0.0008 U 0624MW52GW (580-140945-22) – 0.0008 U 0624MW29GW (580-140945-23) – 0.0008 U 0624MW49GW (580-140945-24) – 0.0008 U 0624MW43GW (580-140945-25) – J+ 0624MW43GW99 (580-140945-26) – J+ 0624MW28GW (580-140945-27) – J+ 0624MW27GW (580-140945-28) – J+ 0624MW42GW (580-140945-29) – J+ 0624MW40GW (580-140945-30) – J+ 0624MW33GW (580-140945-31) – J+ 0624EB01GW (580-140945-32) – 0.0008 U 0624EB02GW (580-140945-33) – 0.0008 U 0624RD08SW (580-140945-34) – J+ 0624RD08SW99 (580-140945-35) – J+ 0624RD06SW (580-140945-36) – J+ 0624RD05SW (580-140945-37) – J+ 0624RD15SW (580-140945-38) – J+ 0624RD10SW (580-140945-39) – J+
Cadmium CCB 462292/15	0.0373 J mg/L	None
Lead CCB 462125/11 Lead CCB 462125/15 Lead CCB 462125/26	0.0660 J mg/L 0.0527 J mg/L 0.0424 J mg/L	0624MW17GW (580-140945-17) - 0.0004 U

Analyte	Blank Concentration	Qualified Samples
Manganese CCB 462125/58	0.482 J mg/L	0024MW17GW (580-140945-2) – J+ 0624MW17GW99 (580-140945-3) – J+ 0624MW10GW (580-140945-4) – J+ 0624MW06GW (580-140945-7) – J+ 0624MW53GW (580-140945-9) – J+ 0624MW50GW (580-140945-10) – J+ 0624MW59GW (580-140945-11) – J+ 0624MW57GW (580-140945-12) – J+
Thallium CCB 462125/11 Thallium CCB 462125/15 Thallium CCB 462125/26 Thallium CCB 462125/38 Thallium CCB 462125/49 Thallium CCB 462125/58 Thallium CCB 462233/42 Thallium CCB 462233/51 Thallium CCB 462233/68 Thallium CCB 462233/79 Thallium CCB 462233/91 Thallium CCB 462233/99 Thallium CCB 462292/15 Thallium CCB 462292/27 Thallium CCB 462292/39 Thallium CCB 462636/15 Thallium CCB 462636/26 Thallium CCB 462636/37 Thallium CCB 462636/49 Thallium CCB 462636/61 Thallium CCB 463061/27 Thallium CCB 463061/39	0.108 J mg/L 0.110 J mg/L 0.168 J mg/L 0.133 J mg/L 0.127 J mg/L 0.145 J mg/L 0.121 J mg/L 0.120 J mg/L 0.107 J mg/L 0.131 J mg/L 0.122 J mg/L 0.0991 J mg/L 0.126 J mg/L 0.107 J mg/L 0.0926 J mg/L 0.149 J mg/L 0.160 J mg/L 0.149 J mg/L 0.137 J mg/L 0.120 J mg/L 0.156 J mg/L 0.141 J mg/L	0624MW17GW (580-140945-2) – 0.0010 U 0624MW16GW99 (580-140945-6) - 0.0010 U 0624MW42GW (580-140945-29) - 0.0010 U 0624MW33GW (580-140945-31) - 0.0010 U 0624RD08SW (580-140945-34) - 0.0010 U 0624RD05SW (580-140945-37) - 0.0010 U 0624RD10SW (580-140945-39) - 0.0010 U
Iron CCB 462770/78	47.7 J mg/L	0624MW54GW (580-140945-13) – J+

VI.3.2. Interference Check Samples

Interference Check Samples (ICSA/B): ICSAB recoveries were within the control limits of 80-120% or ±2× the reporting limit, whichever is greater. No interferents were present at concentrations comparable to those of the ICSAs. Therefore, no further action is needed.

VI.3.3. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

Target analytes were recovered within the control limits of 70-130% recovery (%R), and the relative percent difference (RPDs) were ≤20%. The ICP/MS LCS/LCSD analyses were performed at 20× due to the calibration range.

VI.3.4. Laboratory Duplicates

Laboratory duplicate analyses were performed on samples 0624MW09GW, 0624MW33GW, 0624MW47GW, 0624EB01GW, 0624MW43GW99, and 0624MW17GW for Mercury; and samples 0624MW17GW, 0624RD05SW, and 0624MW33GW for ICP and ICP-MS. Original and duplicate sample values ≥5× the RL were within the control limit of 20% Relative Percent Difference (RPD). The control limit of ±RL was met when the sample or duplicate result was <5× the RL. All results were within control limit criteria.

VI.3.5. Matrix Spike/Matrix Spike Duplicate

MS/MSD analyses were performed on samples 0624MW09GW, 0624MW33GW, 0624MW47GW, 0624EB01GW, 0624MW43GW99, and 0624MW17GW for Mercury; and samples 0624MW17GW, 0624RD05SW, and 0624MW33GW for ICP and ICP-MS. MS recoveries were not assessed when the parent sample concentrations were more than 4× the spike amount. Recoveries for all target analytes met control limits of 71-125%R for Mercury and 80-120% for all other metals, and the RPDs were ≤20%. Sample qualifications were not assigned.

VI.3.6. Post Digestion Spike

The laboratory performed ICP/MS and ICP post digestion spike (PDS) analyses for samples 0624MW17GW, 0624RD05SW, and 0624MW33GW for all reported analytes, and the recoveries were within control limit criteria. The ICP/MS PDS analyses were performed at 20× due to the calibration range.

VI.3.7. Serial Dilution

ICP/MS and ICP serial dilution analysis was performed on samples 0624MW17GW, 0624RD05SW, and 0624MW33GW for ICP and ICP-MS. Results were not assessed unless the parent sample concentration was >50× the MDL. The control limit of ≤10% difference (%D) of the original sample results was met for all target analytes.

VI.3.8. Internal Standards Performance

According to the raw data sample results, all ICP and ICPMS sample internal standard intensities were within the control limits of 60-125% of the calibration blank with the exception of Li/1 for several samples. However, there were no analytes associated with Li/1. Sample qualifications were not required.

VI.3.9. Sample Result Verification

Sample result verification is not applicable for Stage 2B validation samples. Detects below the RL were qualified as estimated (J). Non-detects are valid to the RL.

VI.4. Field QC Samples

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. The remaining detects were used to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VI.4.1. Field Blanks and Equipment Blanks

Field blank samples were not identified in this SDG for these analyses.

Equipment blank samples 0624EB01GW and 0624EB02GW were collected and associated with the GW samples as listed in the table below:

Table 4 – Metals and Mercury Equipment Blank Association

Equipment Blanks		
Blank ID	**0624EB01GW** **0624EB02GW**	
Associated Samples	0624MW09GW	0624MW55GW
	0624MW17GW	0624MW47GW
	0624MW17GW99	0624MW45GW
	0624MW10GW	0624MW56GW
	0624MW16GW	0624MW46GW
	0624MW16GW99	0624MW44GW
	0624MW06GW	0624MW52GW
	0624MW26GW	0624MW29GW
	0624MW53GW	0624MW49GW
	0624MW50GW	0624MW43GW
	0624MW59GW	0624MW43GW99
	0624MW57GW	0624MW28GW
	0624MW54GW	0624MW27GW
	0624MW51GW	0624MW42GW
	0624MW58GW	0624MW40GW
		0624MW33GW

Antimony, arsenic, barium, calcium, chromium, cobalt, copper, iron, lead, manganese, nickel, and zinc were detected in 0624EB01GW at 0.00023 J, 0.00025 J, 0.0034, 0.20 J, 0.00056 J, 0.00028 J, 0.00093 J, 0.023 J, 0.000046 J, 0.0064, 0.0015 J and 0.0096 mg/L, respectively. Antimony, barium, calcium, chromium, copper, iron, lead, manganese, nickel, and zinc were detected in 0624EB02GW at 0.00052 J, 0.00050 J, 0.079 J, 0.00043 J, 0.0013 J, 0.032 J, 0.000060 J, 0.00054 J, 0.0013 J, and 0.0013 J mg/L, respectively.

For EB detects, associated detected sample results that were below the reporting limit (RL) were qualified as non-detect (U) at the RL. Associated detected sample results that were greater than RL and <5× the blank concentration were qualified as estimated with high bias (J+).

Table 5 – Metals and Mercury Equipment Blank Qualifiers

Analyte	EB Blank concentration	Qualified Samples
EB01, EB02		
Antimony	0.00052 J mg/L	0624MW53GW (580-140945-9) – 0.00080 U 0624MW59GW (580-140945-11) – J+ 0624MW57GW (580-140945-12) – 0.00080 U 0624MW54GW (580-140945-13) – 0.00080 U

Analyte	EB Blank concentration	Qualified Samples
		0624MW58GW (580-140945-15) – J+ 0624MW55GW (580-140945-16) – J+ 0624MW47GW (580-140945-17) – 0.00080 U 0624MW45GW (580-140945-18) – 0.00080 U 0624MW46GW (580-140945-20) – 0.00080 U 0624MW52GW (580-140945-22) – 0.00080 U 0624MW29GW (580-140945-23) – 0.00080 U 0624MW49GW (580-140945-24) – 0.00080 U
Arsenic	0.00025 J mg/L	0624MW53GW (580-140945-9) – 0.0010 U 0624MW57GW (580-140945-12) – J+ 0624MW56GW (580-140945-19) – 0.0010 U 0624MW46GW (580-140945-20) – 0.0010 U 0624MW49GW (580-140945-24) – J+
Barium	0.0034 mg/L	0624MW57GW (580-140945-12) – J+ 0624MW47GW (580-140945-17) - 0.0012 U 0624MW45GW (580-140945-18) - 0.0012 U 0624MW46GW (580-140945-20) – J+ 0624MW52GW (580-140945-22) – J+ 0624MW49GW (580-140945-24) – J+
Calcium	0.20 J mg/L	None
Chromium	0.00056 J mg/L	0624MW09GW (580-140945-1) – 0.00080 U 0624MW17GW (580-140945-2) – J+ 0624MW17GW99 (580-140945-3) – J+ 0624MW10GW (580-140945-4) – J+ 0624MW16GW (580-140945-5) – J+ 0624MW16GW99 (580-140945-6) – J+ 0624MW06GW (580-140945-7) – J+ 0624MW26GW (580-140945-8) – J+ 0624MW53GW (580-140945-9) – 0.00080 U 0624MW50GW (580-140945-10) – 0.00080 U 0624MW59GW (580-140945-11) – J+ 0624MW57GW (580-140945-12) – J+ 0624MW54GW (580-140945-13) – 0.00080 U 0624MW51GW (580-140945-14) – 0.00080 U 0624MW58GW (580-140945-15) – J+ 0624MW55GW (580-140945-16) – 0.00080 U 0624MW47GW (580-140945-17) – 0.00080 U 0624MW45GW (580-140945-18) – 0.00080 U 0624MW56GW (580-140945-19) – 0.00080 U 0624MW46GW (580-140945-20) – 0.00080 U 0624MW44GW (580-140945-21) – 0.00080 U 0624MW52GW (580-140945-22) – J+ 0624MW29GW (580-140945-23) – J+ 0624MW49GW (580-140945-24) – 0.00080 U 0624MW43GW (580-140945-25) – 0.00080 U 0624MW43GW99 (580-140945-26) – 0.00080 U 0624MW28GW99 (580-140945-27) – 0.00080 U 0624MW27GW99 (580-140945-28) – 0.00080 U 0624MW40GW99 (580-140945-30) – 0.00080 U

Analyte	EB Blank concentration	Qualified Samples
Cobalt	0.00028 J mg/L	0624MW09GW (580-140945-1) – J+ 0624MW17GW (580-140945-2) – 0.00040 U 0624MW17GW99 (580-140945-3) – 0.00040 U 0624MW10GW (580-140945-4) – 0.00040 U 0624MW53GW (580-140945-9) – 0.00040 U 0624MW59GW (580-140945-11) – J+ 0624MW57GW (580-140945-12) – 0.00040 U 0624MW54GW (580-140945-13) – J+ 0624MW51GW (580-140945-14) – J+ 0624MW58GW (580-140945-15) – J+ 0624MW55GW (580-140945-16) – J+ 0624MW56GW (580-140945-19) – J+ 0624MW46GW (580-140945-20) – 0.00040 U 0624MW52GW (580-140945-22) – 0.00040 U 0624MW49GW (580-140945-24) – 0.00040 U 0624MW27GW (580-140945-28) – J+ 0624MW33GW (580-140945-31) – 0.00040 U
Copper	0.0013 J mg/L	0624MW10GW (580-140945-4) – 0.002 U 0624MW16GW (580-140945-5) – J+ 0624MW16GW99 (580-140945-6) – J+ 0624MW06GW (580-140945-7) – 0.002 U 0624MW26GW (580-140945-8) – J+ 0624MW59GW (580-140945-11) – 0.002 U 0624MW58GW (580-140945-15) – 0.002 U 0624MW55GW (580-140945-16) – 0.002 U 0624MW29GW (580-140945-23) – 0.002 U 0624MW28GW (580-140945-27) – 0.002 U 0624MW27GW (580-140945-28) – 0.002 U 0624MW33GW (580-140945-31) – J+
Iron	0.032 J mg/L	0624MW53GW (580-140945-9) – 0.10 U 0624MW57GW (580-140945-12) – 0.10 U 0624MW47GW (580-140945-17) – 0.10 U 0624MW45GW (580-140945-18) – 0.10 U 0624MW56GW (580-140945-19) – 0.10 U 0624MW46GW (580-140945-20) – J+ 0624MW52GW (580-140945-22) – J+ 0624MW49GW (580-140945-24) – 0.10 U 0624MW27GW (580-140945-28) – 0.10 U
Lead	0.000060 J mg/L	0624MW09GW (580-140945-1) – 0.00040 U 0624MW17GW (580-140945-2) – 0.00040 U 0624MW17GW99 (580-140945-3) – 0.00040 U 0624MW10GW (580-140945-4) – 0.00040 U 0624MW06GW (580-140945-7) – 0.00040 U 0624MW26GW (580-140945-8) – 0.00040 U 0624MW50GW (580-140945-10) – 0.00040 U 0624MW59GW (580-140945-11) – 0.00040 U 0624MW58GW (580-140945-15) – 0.00040 U 0624MW55GW (580-140945-16) – 0.00040 U 0624MW46GW (580-140945-20) – 0.00040 U 0624MW44GW (580-140945-21) – 0.00040 U

Analyte	EB Blank concentration	Qualified Samples
		0624MW52GW (580-140945-22) – 0.00040 U 0624MW29GW (580-140945-23) – 0.00040 U 0624MW43GW (580-140945-25) – 0.00040 U 0624MW43GW99 (580-140945-26) – 0.00040 U 0624MW40GW (580-140945-30) – 0.00040 U
Manganese	0.0064 mg/L	0624MW17GW (580-140945-2) – J+ 0624MW17GW99 (580-140945-3) – J+ 0624MW57GW (580-140945-12) – J+ 0624MW47GW (580-140945-17) – 0.0020 U 0624MW45GW (580-140945-18) – 0.0020 U 0624MW46GW (580-140945-20) – J+ 0624MW52GW (580-140945-22) – J+ 0624MW49GW (580-140945-24) – J+ 0624MW33GW (580-140945-31) – J+
Nickel	0.0015 J mg/L	0624MW09GW (580-140945-1) – 0.0030 U 0624MW17GW (580-140945-2) – 0.0030 U 0624MW17GW99 (580-140945-3) – 0.0030 U 0624MW10GW (580-140945-4) – 0.0030 U 0624MW16GW (580-140945-5) – J+ 0624MW16GW99 (580-140945-6) – J+ 0624MW06GW (580-140945-7) – J+ 0624MW53GW (580-140945-9) – 0.0030 U 0624MW59GW (580-140945-11) – J+ 0624MW57GW (580-140945-12) – 0.0030 U 0624MW54GW (580-140945-13) – J+ 0624MW51GW (580-140945-14) – 0.0030 U 0624MW58GW (580-140945-15) – J+ 0624MW55GW (580-140945-16) – 0.0030 U 0624MW47GW (580-140945-17) – 0.0030 U 0624MW45GW (580-140945-18) – 0.0030 U 0624MW56GW (580-140945-19) – J+ 0624MW46GW (580-140945-20) – 0.0030 U 0624MW44GW (580-140945-21) – 0.0030 U 0624MW52GW (580-140945-22) – 0.0030 U 0624MW29GW (580-140945-23) – J+ 0624MW49GW (580-140945-24) – 0.0030 U 0624MW33GW (580-140945-31) – 0.0030 U
Zinc	0.0096 mg/L	0624MW09GW (580-140945-1) – 0.0070 U 0624MW17GW (580-140945-2) – 0.0070 U 0624MW17GW99 (580-140945-3) – 0.0070 U 0624MW10GW (580-140945-4) – 0.0070 U 0624MW16GW (580-140945-5) – 0.0070 U 0624MW16GW99 (580-140945-6) – J+ 0624MW06GW (580-140945-7) – 0.0070 U 0624MW26GW (580-140945-8) – 0.0070 U 0624MW53GW (580-140945-9) – 0.0070 U 0624MW50GW (580-140945-10) – 0.0070 U 0624MW59GW (580-140945-11) – 0.0070 U 0624MW57GW (580-140945-12) – 0.0070 U 0624MW51GW (580-140945-14) – 0.0070 U

Analyte	EB Blank concentration	Qualified Samples
		0624MW58GW (580-140945-15) – 0.0070 U 0624MW55GW (580-140945-16) – 0.0070 U 0624MW47GW (580-140945-17) – J+ 0624MW45GW (580-140945-18) – 0.0070 U 0624MW56GW (580-140945-19) – 0.0070 U 0624MW46GW (580-140945-20) – 0.0070 U 0624MW44GW (580-140945-21) – 0.0070 U 0624MW52GW (580-140945-22) – 0.0070 U 0624MW29GW (580-140945-23) – 0.0070 U 0624MW49GW (580-140945-24) – 0.0070 U 0624MW43GW (580-140945-25) – 0.0070 U 0624MW43GW99 (580-140945-26) – 0.0070 U 0624MW28GW (580-140945-27) – 0.0070 U 0624MW27GW (580-140945-28) – 0.0070 U 0624MW42GW (580-140945-29) – J+ 0624MW40GW (580-140945-30) – 0.0070 U 0624MW33GW (580-140945-31) – 0.0070 U

VI.4.2. Field Duplicates

Samples 0624MW17GW and 0624MW17GW99, 0624MW16GW and 0624MW16GW99, 0624MW43GW and 0624MW43GW99, and 0624RD08SW and 0624RD08SW99 were identified as field duplicates. The control limits of ≤30% for all target analytes greater than 5x RL and ±RL for all results <5x RL were met.

VII. EPA Method 1631, Revision E – Total and Dissolved Mercury

Robert Thielke of Guardian Data Validation reviewed the SDG July 2, 2024.

VII.1. Holding Times

Sample preservation and analytical holding times of 28 days were met. The samples analyzed for dissolved mercury were filtered in the field.

VII.2. Calibration

A blank and 5 non-zero standards were used for the cold vapor atomic fluorescence spectrometry calibration. Calibration criteria were met. ICV and CCV %Rs were within the laboratory control limits of 77-123%R.

VII.3. Laboratory QC Samples

VII.3.1. Calibration Blanks and Method Blanks

No mercury was reported in the method blanks (MB) or bracketing calibration blanks (ICB/CCB) of sufficient concentration to warrant qualification of site sample results except as noted in the table below. For the positive blank concentrations, associated detected sample results that were below the reporting limit (RL)were qualified as non-detect (U) at the RL. Associated detected sample results that were greater

than RL and <5× the blank concentration were qualified as estimated with high bias (J+).

Table 6 – Method 1631E Calibration Blanks and Method Blanks

Analyte	Blank concentration (ng/L)	Qualified Samples
Mercury CCB 2149/94	0.312 J mg/L	0624MW54GW Diss (580-140945-13) – (0.5 U)

VII.3.2. Laboratory Control Sample/Laboratory Control Sample Duplicate

Target analytes were recovered within the laboratory control limits of 77-123% recovery, and the RPDs were ≤24%. Sample qualification was not required.

VII.3.3. Matrix Spike/Matrix Spike Duplicate

MS/MSD analyses were performed on Samples 0624MW17GW (total), 0624MW59GW (total), 0624MW55GW (total), 0624MW33GW (total), 0624MW29GW (total), 0624MW28GW (total), 0624MW17GW (dissolved), and 0624MW33GW (dissolved) from this SDG. The recoveries and RPDs were within the laboratory established control limits of 71-125%R and 24% RPD with the exception of the outlier noted in the table below:

Table 7 – Method 1631E Matrix Spike/Matrix Spike Duplicate

Analyte	%R	Parent Sample	Qualifier	Qualified Samples
Low Level Mercury (dissolved)	199%	0624MW33GW	J+ Detected Results	580-140945-15, -16, -17, –18, – 19, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -30, -31

VII.4. Field QC Samples

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. The remaining detects were used to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VII.4.1. Field Blanks, Equipment Blanks, and Trip Blanks

Field blank samples were not identified in this SDG for these analyses. Equipment blank samples 0624EB01GW and 0624EB02GW were collected and associated with the GW samples as listed in the table below.

Table 8 – Method 1631 Equipment Blank Association

Equipment Blanks		
Blank ID	**0624EB01GW 0624EB02GW**	
Associated Samples	0624MW09GW	0624MW55GW
	0624MW17GW	0624MW47GW
	0624MW17GW99	0624MW45GW
	0624MW10GW	0624MW56GW
	0624MW16GW	0624MW46GW
	0624MW16GW99	0624MW44GW
	0624MW06GW	0624MW52GW
	0624MW26GW	0624MW29GW
	0624MW53GW	0624MW49GW
	0624MW50GW	0624MW43GW
	0624MW59GW	0624MW43GW99
	0624MW57GW	0624MW28GW
	0624MW54GW	0624MW27GW
	0624MW51GW	0624MW42GW
	0624MW58GW	0624MW40GW
		0624MW33GW

There were sample qualifications required for the 0624EB01GW (0.49 J ng/L) and 0624EB01GW (0.22 J ng/L) detect as listed in the table below.

Table 9 – Method 1631 Equipment Blank Qualifications

Analyte	Equipment Blank Concentration (ng/L)	Qualified Samples
Low Level Mercury	0624EB01GW (0.49 J ng/L)	0624MW54GW Diss (580-140945-13) – (0.5 U) 0624MW51GW Diss (580-140945-14) – J+ 0624MW58GW Diss (580-140945-15) - (0.5 U) 0624MW47GW Diss (580-140945-17) – J+ 0624MW56GW Diss (580-140945-19) – J+ 0624MW44GW Diss (580-140945-21) – (0.5 U) 0624MW43GW Diss (580-140945-25) – J+ 0624MW43GW99 Diss (580-140945-26) – (0.5 U) 0624MW40GW Diss (580-140945-30) – (0.5 U)

Trip blank samples 0624TB01GW, 0624TB02GW, 0624TB03GW and 0624TB04SW were shipped with the low-level mercury samples. Each trip blank was associated with the samples shipped in the same cooler. All trip blank results were non-detected.

VII.4.2. Field Duplicates

Samples 0624MW17GW and 0624MW17GW99, 0624MW16GW and 0624MW16GW99, 0624MW43GW and 0624MW43GW99, and 0624RD08SW and 0624RD08SW99 were identified as field duplicates. The control limits of ≤30% for all target analytes greater than 5x RL and ±RL for all results <5x RL were met except as noted in the table below. Associated results in the field duplicate pair were qualified as estimated (J) for detects.

Table 10 – Method 1631 Mercury Field Duplicates

Field duplicate samples	Analyte	RPD/±RL
0624MW16GW/0624MW16GW99	Hg (200 / 300 ng/L)	40%RPD

VII.5. Sample Result Verification and Reported Detection Limits

The laboratory analyzed for low level mercury by EPA Method 1631E. Total mercury was analyzed for six surface water (SW) samples. Total and dissolved mercury was analyzed for the groundwater (GW) samples.

Sample result verification is not applicable for Level 2B validation samples. Detects reported below the RL were qualified as estimated (J).Non-detects are valid to the RL. Multiple samples were analyzed at dilutions to bring detects within the calibration linear range due to the level of mercury found in the samples.

VIII. Various EPA Methods – General Minerals

Robert Thielke of Guardian Data Validation reviewed the SDG July 2, 2024.

VIII.1. Holding Times and Sample Management

Table 11 specifies the method holding times for general chemistry analyses.

Table 3 – General Minerals Analytical Method Holding Times

Analytical Method	Analysis Holding Time (days)
353.2 Nitrate/Nitrite (NO3+NO2 as N)	28
300.0 Anions (SO4, Cl-, F-)	28
310.1 Alkalinity	14
160.1 Total Dissolved Solids (TDS)	7
160.2 Total Suspended Solids (TSS)	7

The analytical holding times were met for all sample analyses. No qualifications were required.

VIII.2. Calibration

ICV and CCV recoveries associated with reported sample results were within the laboratory control limits.

VIII.3. Laboratory QC Samples

VIII.3.1. Calibration Blanks and Method Blanks

No reported detects in the method blanks (MB) or bracketing calibration blanks (ICB/CCB) were of sufficient concentration to warrant qualification of site sample results.

Table 12 – General Minerals Calibration Blanks and Method Blanks

Analyte	Blank concentration (ng/L)	Qualified Samples
Nitrate/Nitrite	0.0648J mg/L	0624RD06SW (580-140945-36)– J+ 0624RD05SW (580-140945-37)– J+ 0624RD15SW (580-140945-38)– J+ 0624RD10SW (580-140945-39)– J+

VIII.3.2. Laboratory Control Samples

LCS and LCSD (as appropriate) recoveries and RPDs were within laboratory control limits.

VIII.3.3. Laboratory Duplicates

Laboratory duplicate analyses were performed on Sample 0624RD08SW (580-140945-34). for Method 310.1. RPDs were within laboratory control limits.

VIII.3.4. Matrix Spike/Matrix Spike Duplicate

MS/MSD analyses were performed on Sample 0624RD10SW (580-140945-4) for Method 300.0. The spike recoveries and RPDs were within laboratory control limits.

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VIII.4. Sample Result Verification

Sample result verification is not applicable for Level 2B validation samples. Detects reported below the RL were qualified as estimated (J). Non-detects are valid to the RL.

VIII.5. Field QC Samples

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. The remaining detects were used to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VIII.5.1. Field Blanks and Equipment Blanks

Field blank or equipment blank samples were not analyzed for these surface water sample analyses.

VIII.5.2. Field Duplicates

Samples 0624RD08SW and 0624RD008SW99 were identified as the field duplicate pair. The control limits of ≤30% for all target analytes greater than 5x RL and ±RL for all results <5x RL were met with the exception of those identified in the table below. Associated results in the field duplicate pair were qualified as estimated (J) for detects.

Table 13 – General Minerals Field Duplicates

Field duplicate samples	Analyte	RPD/±RL
0624RD08SW / 0624RD008SW99	Nitrate/Nitrite (2.4 / 18 mg/L)	152.9% RPD

IX. Overall Assessment

Samples required qualification due to quality control exceedances and procedural issues. No samples were rejected in this SDG. Stage 2B validation was performed on all samples.

X. Data Qualification Summary

Table 4 – Data Qualification Summary Table

Sample Analyte Qualifier Reason	Analyte	Qualifier	Reason
580-140945-1, -2, -3, -4, -7, -8, -10, -11	Lead	U at RL (detects < RL)	MB detects
580-140945-17, -18, -20, -22, -23, -24, -32, -33	Antimony	U at RL (detects < RL)	MB detects
580-140945-15	Antimony	J+	MB detects
580-140945-34, -37, --39	Thallium	U at RL (detects < RL)	MB detects
580-140945-1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12	Potassium	U at RL (detects < RL)	MB detects
580-140945-1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -34, -35, -36, -37, -38, -39	Potassium	U at RL (detects < RL)	ICB/CCB detects
580-140945-39	Antimony	J+	ICB/CCB detects
580-140945-6, -28, -29	Cadmium	U at RL (detects < RL)	ICB/CCB detects
580-140945-15, -16, -20, -21, -22, -23, -25, -26, -30, -32, -33, -37, -38, -39	Lead	U at RL (detects < RL)	ICB/CCB detects

Sample Analyte Qualifier Reason	Analyte	Qualifier	Reason
580-140945-17, -29, -31	Lead	J+	ICB/CCB detects
580-140945-39	Silver	U at RL (detects < RL)	ICB/CCB detects
580-140945-2, -6, -29, -31, -34, -37, -39	Thallium	U at RL (detects < RL)	ICB/CCB detects
580-140945-9, -12, -13, -17, -18, -20, -22, -23, -24, -32, -33	Antimony	U at RL (detects < RL)	ICB/CCB detects
580-140945-1, -2, -3, -4, -5, -6, -7, -8, -10, -11, -15, -16, -25, -26, -27, -28, -29, -30, -31, -34, -35, -36, -37, -38, -39	Antimony	J+	ICB/CCB detects
580-140945-2, -3, -4, -7, -9, -10, -11, -12	Manganese	J+	ICB/CCB detects
580-140945-13	Iron	J+	ICB/CCB detects
580-140945-9, -12, -13, -17, -18, -20, -22, -23, -24, -32, -33	Antimony	U at RL (detects < RL)	Field Blank detects
580-140945-11, 15, -16	Antimony	J+	Field Blank detects
580-140945-9, -19, -20	Arsenic	U at RL (detects < RL)	Field Blank detects
580-140945-12, 24	Arsenic	J+	Field Blank detects
580-140945-17, -18	Barium	U at RL (detects < RL)	Field Blank detects

Sample Analyte Qualifier Reason	Analyte	Qualifier	Reason
580-140945-12, 20, -22, -24	Barium	J+	Field Blank detects
580-140945-1, -9, -10, -13, -14, -16, -17, -18, -19, -20, -21, -24, -25, -26, -27, -28, -30	Chromium	U at RL (detects < RL)	Field Blank detects
580-140945--2, -3, -4, -5, -6, -7, -8, -11, -12, -15, -22, -23	Chromium	J+	Field Blank detects
580-140945-2, -3, -4, -9, -12, -20, -22, -24, -31	Cobalt	U at RL (detects < RL)	Field Blank detects
580-140945-1, -11, --13, -14, -15, -16, -19, -28	Cobalt	J+	Field Blank detects
580-140945-4, -7, -11, -15, -16, -23, -27, -28	Copper	U at RL (detects < RL)	Field Blank detects
580-140945-5, -6, -8, -31	Copper	J+	Field Blank detects
580-140945-9, -12, -17, -18, -19, -24, -28	Iron	U at RL (detects < RL)	Field Blank detects
580-140945-20, -22	Iron	J+	Field Blank detects
580-140945-1, -2, -3, -4, -7, -8, -10, -11, -15, -16, -20, -21, -22, -23, -25, -26, -30	Lead	U at RL (detects < RL)	Field Blank detects
580-140945-17, -18	Manganese	U at RL (detects < RL)	Field Blank detects
580-140945-2, -3, -12, -20, -22, -24, -31	Manganese	J+	Field Blank detects
580-140945-1, -2, --3, -4, -9, -12, -14, -16, -17, -18, -20, -21, -22,	Nickel	U at RL (detects < RL)	Field Blank detects

Sample Analyte Qualifier Reason	Analyte	Qualifier	Reason
-24, -31			
580-140945-5, -6, -7, -11, -13, -15, -19, -23	Nickel	J+	Field Blank detects
580-140945-1, -2, -3, -4, --5, -7, -8, 9, -10, -11, -12, -14, -15, -16, -18, -19, -20, -21, -22, -23, -24, -25, -26, -27, -28, -30, -31	Zinc	U at RL (detects < RL)	Field Blank detects
580-140945—6, -17, -29	Zinc	J+	Field Blank detects
580-140945-13 (Diss)	LL Mercury	U at RL (detects < RL)	MB detect
580-140945-14(Diss), -15 (Diss), -16(Diss), -17(Diss), –18(Diss), –19(Diss), -20(Diss), -21 (Diss)-22(Diss), -23(Diss), -24(Diss), -25(Diss), -26 (Diss), -27(Diss), -28(Diss), -29(Diss), -30(Diss), -31(Diss)	LL Mercury (Dissolved)	J+ (detects)	MS %Recovery greater than Upper Control Limit
580-140945-13 (Diss), 15 (Diss), -21 (Diss), -26 (Diss), -30 (Diss)	LL Mercury	U at RL (detects < RL)	Field Blank detects
580-140945-14 (Diss), -17 (Diss), -19 (Diss), -25 (Diss)	LL Mercury	J+	Field Blank detects
580-140945-4 (Total and Dissolved), -5 (Total and Dissolved)	LL Mercury	J	Field Duplicate RPD
580-140945-34, -35	Method 353.2 NO3+NO2	J (detects)	Field Duplicate RPD

Sample Analyte Qualifier Reason	Analyte	Qualifier	Reason
580-140945-36, -37, -38, -39	Method 353.2 NO3+NO2	J+-(detects)	CCB Result

XI. References

- Department of Defense (DOD), 2017. DoD Quality Systems Manual for Environmental Laboratories, Version 5.1. January 2017.
- EPA, 2017. *EPA National Functional Guidelines for Inorganic Superfund Methods Data Review*, EPA/540-R-2017-001.
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- U.S. Department of the Interior Bureau of Land Management, 2019. *FINAL Work Plan 2019 Groundwater and Surface Water Baseline Monitoring, Red Devil Mine, Alaska*. May 2019.
- EPA, 1998. *Test Methods for Evaluating Solid Waste (*SW-846), Revision 2. July 2014. Method 6020B.
- EPA, 1998. *Test Methods for Evaluating Solid Waste (*SW-846), Revision 4. 2014. Method 6010D.
- EPA, 1993, *Test Methods for Evaluating Solid Waste (*SW-846*),* Revision 1. September 1994. Method 7470A.
- EPA, 1993. Determination of Inorganic Anions by Ion Chromatography, Revision 2.1. August 1993. Method 300.0.
- EPA, 1993. Determination of Nitrate-Nitrite Nitrogen by Automated Colorimetry, Revision 2.0. August 1993. Method 353.2.
- EPA, 1971. Alkalinity, Editorial Revision. 1978. Method 310.1.
- EPA, 1971. Residue, Filterable. 1971. Method 160.1.
- EPA, 1971. Residue, Non-Filterable. 1971. Method 160.2.
- EPA, 2002. Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry, Revision E. August 2002. Method 1631.

E.2 2024 FALL DATA VALIDATION REPORT

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I. Project Information

File Name:	580-143875-1 DV Report.0_Metals_GenChem_2B_review				
Analysis:	MT, Hg, LLHg, WC				
SDG#:	580-143875-1	Reviewer:	RJT	Rev Date:	11/07/2024
Matrix:	Surface Water Groundwater	2nd Rev:	CTD	2nd Rev Date:	11/24/2024
Validation Level:	Stage2B	# Samples:	44	# RE/DL:	0

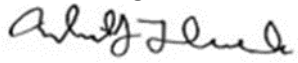
II. Secondary Review List

Narrative:	**Form Is:**
Qualifications in text match EDD	"U" / "J" lab codes carried over
Spell check	Appropriate qual codes used
Pagination, appropriate headers/footers	Form I IDs match sample ID table
Correct project site name/manager on cover and introduction pages	

Required Edits/Changes:
NA

Revision (include revision #, date and reason):
Revision 0

Validator Signature:



Review Signature:

Data Validation Report

Red Devil Mine, Alaska

Sample Delivery Group

580-143875-1

Prepared for

Sundance Consulting, Inc.
8210 Louisiana Blvd NE Suite C
Albuquerque, NM 87113
Attention:
Eva Moore P.G.

11/27/2024

Table of Contents

Tables

III. Acronyms and Abbreviations

°C	Celsius
%	Percent
%D	percent difference
CCAL	continuing calibration
CCB	continuing calibration blank
CCV	continuing calibration verification
COC	chain of custody
CLP	Contract Laboratory Program
DL	detection limit
DISS	dissolved
EPA	US Environmental Protection Agency
EB	equipment blank
FB	field blank
FD	field duplicate
GW	ground water
ICAL	initial calibration
ICB	initial calibration blank
ICV	initial calibration verification
ID	Identifier
IS	internal standard
J	estimated value
LCS	laboratory control sample
LL Hg	low level mercury
LOD	limit of detection
LOQ	limit of quantification
MB	method blank
MS	matrix spike
MSD	matrix spike duplicate
ND	nondetect
QAPP	Quality Assurance Program Plan
QC	quality control
QSM	Quality Systems Manual
R	Rejected
RL	reporting limit
RPD	relative percent difference
RRF	relative response factor
RSD	relative standard deviation
SDG	sample delivery group
TB	trip blank
TDS	total dissolved solids
TSS	total suspended solids
SW	surface water
U	not detected
UJ	not detected; associated value is an estimate

IV. Introduction

Project Name: Red Devil Mine
Sample Delivery Group: 580-143875-1
Client Project Manager: Eva Moore, P.G.
Matrix: Groundwater and Surface Water
QC Level: Stage 2B
No. of Samples: 44
Laboratory: Eurofins Seattle

Table 1 – Sample Summary

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
1	0924MW06GW 0924MW06GW DISS	580-143875-1	GW	09/07/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
2	0924MW09GW 0924MW09GW DISS	580-143875-2	GW	09/07/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
3	0924MW43GW 0924MW43GW DISS	580-143875-3	GW	09/07/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
4	0924MW43GW-99 0924MW43GW-99 DISS	580-143875-4	GW	09/07/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
5	0924TB01GW	580-143875-5	TB	09/07/24	1631E	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
6	0924TB02GW	580-143875-6	TB	09/08/24	1631E	Stage 2B
7	0924TB03GW	580-143875-7	TB	09/09/24	1631E	Stage 2B
8	0924TB04GW	580-143875-8	TB	09/10/24	1631E	Stage 2B
9	0924MW10GW 0924MW10GW DISS	580-143875-9	GW	09/07/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
10	0924MW29GW 0924MW29GW DISS	580-143875-10	GW	09/07/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
11	0924MW55GW 0924MW55GW DISS	580-143875-11	GW	09/08/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
12	0924MW52GW 0924MW52GW DISS	580-143875-12	GW	09/08/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
13	0924MW16GW 0924MW16GW DISS	580-143875-13	GW	09/08/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
14	0924MW17GW 0924MW17GW DISS	580-143875-14	GW	09/08/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
15	0924MW26GW 0924MW26GW DISS	580-143875-15	GW	09/08/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
16	0924MW33GW 0924MW33GW DISS	580-143875-16	GW	09/08/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
17	0924MW33GW-99 0924MW33GW-99 DISS	580-143875-17	GW	09/08/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
18	0924MW44GW 0924MW44GW DISS	580-143875-18	GW	09/08/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
19	0924MW27GW 0924MW27GW DISS	580-143875-19	GW	09/09/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
20	0924MW27GW-99 0924MW27GW-99 DISS	580-143875-20	GW	09/09/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
21	0924MW28GW 0924MW28GW DISS	580-143875-21	GW	09/09/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
22	0924MW40GW 0924MW40GW DISS	580-143875-22	GW	09/09/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
23	0924MW54GW 0924MW54GW DISS	580-143875-23	GW	09/09/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
24	0924MW58GW 0924MW58GW DISS	580-143875-24	GW	09/09/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
25	0924MW28GW-99 0924MW28GW-99 DISS	580-143875-25	GW	09/09/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
26	0924MW59GW 0924MW59GW DISS	580-143875-26	GW	09/09/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
27	0924MW51GW 0924MW51GW DISS	580-143875-27	GW	09/10/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
28	0924MW53GW 0924MW53GW DISS	580-143875-28	GW	09/10/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
29	0924MW50GW 0924MW50GW DISS	580-143875-29	GW	09/10/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
30	0924MW57GW 0924MW57GW DISS	580-143875-30	GW	09/10/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
31	0924MW56GW 0924MW56GW DISS	580-143875-31	GW	09/10/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
32	0924MW49GW 0924MW49GW DISS	580-143875-32	GW	09/10/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
33	0924MW47GW 0924MW47GW DISS	580-143875-33	GW	09/11/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
34	0924MW46GW	580-143875-34	GW	09/11/24	6020B, 6010D,	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
	0924MW46GW DISS				7470A, 1631E 1631E	
35	0924MW45GW 0924MW45GW DISS	580-143875-35	GW	09/11/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
36	0924MW42GW 0924MW42GW DISS	580-143875-36	GW	09/11/24	6020B, 6010D, 7470A, 1631E 1631E	Stage 2B
37	0924EB01GW	580-143875-37	EB	09/12/24	6020B, 6010D, 7470A, 1631E	Stage 2B
38	0924EB02GW	580-143875-38	EB	09/12/24	6020B, 6010D, 7470A, 1631E	Stage 2B
39	0924RD08SW	580-143875-39	SW	09/12/24	6020B, 6010D, 7470A, 1631E 300.0 353.2, 310.1, 160.1, 160.2	Stage 2B
40	0924RD08SW99	580-143875-40	SW	09/12/24	6020B, 6010D, 7470A, 1631E 300.0 353.2, 310.1,	Stage 2B

Sample Count	Field Sample ID	Lab Sample ID	Matrix	Collection	Method	Validation Level
					160.1, 160.2	
41	0924RD06SW	580-143875-41	SW	09/12/24	6020B, 6010D, 7470A, 1631E 300.0 353.2, 310.1, 160.1, 160.2	Stage 2B
42	0924RD05SW	580-143875-42	SW	09/12/24	6020B, 6010D, 7470A, 1631E 300.0 353.2, 310.1, 160.1, 160.2	Stage 2B
43	0924RD15SW	580-143875-43	SW	09/12/24	6020B, 6010D, 7470A, 1631E 300.0 353.2, 310.1, 160.1, 160.2	Stage 2B
44	0924RD10SW	580-143875-44	SW	09/12/24	6020B, 6010D, 7470A, 1631E 300.0 353.2, 310.1, 160.1, 160.2	Stage 2B

V. Sample Management

The case narrative, the sample receiving checklist, chain-of-custody (COC) records for sample delivery group (SDG) 580-143875-1 were reviewed and the review findings are listed below.

- The laboratory's Login Sample Receipt Checklist and the COCs noted all coolers were received within the temperature limits of ≤6°C and ≥0°C.
- The samples were received intact, and properly preserved except as noted below:
    - Sample 16, Container B arrived at the laboratory with a broken lid. No volume appears to be lost. Lid was replaced.
    - Sample 0924RD08SW99 (580-143875-40) did not have a nitric acid container provided for metals analysis. Client identified the sample as a field duplicate and requested to pull an aliquot from the primary sample.
- The COC information agrees with the laboratory report for requested field samples and tests, as applicable.
- The laboratory's Sample Receiving Checklists note that the cooler's custody seals are intact.
- Total and dissolved volumes were received at the lab for the ground water (GW) low level mercury (LL Hg) sample analyses performed by Method 1631E. The dissolved sample volumes were field filtered.
- Field and laboratory personnel signed and dated the COCs.

Table 2 – Data Qualifier Definitions

Qualifier	Definition
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
NJ	The analyte has been "tentatively identified" or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

VI. SW-846 Methods 6020B, 6010D AND 7470A — Metals and Mercury

Robert Thielke of Guardian Data Validation reviewed the SDG November 4, 2024.

VI.1. Holding Times

Analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

VI.2. Tuning and Calibration

All 6020B ICP/MS tuning criteria were met. Mass calibrations were ≤0.1 atomic mass unit (amu) from the true value. Resolution was <0.9 amu full width at 10% peak height and all %RSDs were ≤5%.
A blank and five standards were used in the initial calibration. Correlation coefficients were ≥0.995.

For all ICP/MS and ICP analytes the reported ICV and CCV recoveries were within 90-110% and the low-level CCV recoveries were within 80-120%.

A blank and 5 non-zero standards were used for the CVAA calibration. The initial (ICV) and continuing calibration recoveries (CCV) were within 90-110% with the exception of the analytes listed in Table 3 below:

Table 3 – Metals and Mercury Initial Calibration and Continuing Calibration

Analyte	Calibration Verification Recovery	Qualified Samples
Sodium CCVL 580-473676/98	127%	0924MW59GW (580-143875-26) -J+ 0924MW53GW (580-143875-28) -J+ 0924MW50GW (580-143875-29) -J+ 0924MW47GW (580-143875-33) -J+ 0924MW06GW (580-143875-1) -J+ 0924MW09GW (580-143875-2) -J+ 0924MW43GW (580-143875-3) -J+ 0924MW43GW-99 (580-143875-4) -J+ 0924MW10GW (580-143875-9) -J+ 0924MW29GW (580-143875-10) -J+

VI.3. Laboratory Quality Control Samples

VI.3.1. Calibration Blanks and Method Blanks

No target analytes were reported in the method blanks (MB) or bracketing calibration blanks (ICB/CCB) of sufficient concentration to warrant qualification of site sample results except as noted in the table below. For the positive blank concentrations, associated detected sample results that were below the reporting limit (RL) were qualified as non-detect (U) at the RL. Associated detected sample results that were greater than RL and <5× the blank concentration were qualified as estimated with high bias (J+) using professional judgement.

Table 4 – Metals and Mercury Calibration Blanks and Method Blanks

Analyte	Blank Concentration	Qualified Samples
Antimony MB 473236/26-A Antimony MB 473625/14-A	0.000137 mg/L 0.000139 mg/L	0924MW29GW (580-143875-10) -0.00080 U
Copper MB 473236/26-A Copper MB 473236/26-A Copper MB 473769/14-A	0.00274 J mg/L 0.00115 J mg/L 0.00388 J mg/L	None
Iron MB 473771/26-A Iron MB 473769/14-A	0.0417 J mg/L 0.104 J mg/L	0924MW56GW (580-143875-31) – 0.10 U
Lead MB 473771/26-A Lead MB 473769/14-A Lead MB 474152/18-A Lead MB 473625/14-A	0.000497 J mg/L 0.000647 J mg/L 0.0000634 J mg/L 0.000106 J mg/L	0924EB02GW (580-143875-38) – 0.00040 U 0924RD08SW (580-143875-39) – 0.00040 U 0924RD08SW99 (580-143875-40) – 0.00040 U 0924RD06SW (580-143875-41) – 0.00040 U 0924RD05SW (580-143875-42) – 0.00040 U 0924RD15SW (580-143875-43) – 0.00040 U 0924RD10SW (580-143875-44) – 0.00040 U 0924MW56GW (580-143875-31) – 0.00040 U

Analyte	Blank Concentration	Qualified Samples
		0924MW10GW (580-143875-9) – 0.00040 U 0924MW29GW (580-143875-10) – 0.00040 U 0924MW28GW (580-143875-21) – 0.00040 U 0924MW47GW (580-143875-33) – 0.00040 U 0924MW06GW (580-143875-1) – J+ 0924MW09GW (580-143875-2) – 0.00040 U
Manganese MB 473236/26-A Manganese MB 473771/26-A	0.000499 J mg/L 0.000755 J mg/L	None
Zinc MB 473236/26-A Zinc MB 473771/26-A Zinc MB 473769/14-A	0.000947 J mg/L 0.00185 J mg/L 0.0114 J mg/L	0924MW06GW (580-143875-1) – J+ 0924MW09GW (580-143875-2) - 0.0070 U 0924MW43GW (580-143875-3) - 0.0070 U 0924MW43GW-99 (580-143875-4) - 0.0070 U 0924MW10GW (580-143875-9) - 0.0070 U 0924MW29GW (580-143875-10) - 0.0070 U 0924MW28GW-99 (580-143875-25) - 0.0070 U 0924MW54GW (580-143875-23) - 0.0070 U 0924MW56GW (580143875-31) - 0.0070 U
Sodium CCB 473676/58 Sodium CCB 473676/84 Sodium CCB 473676/97 Sodium CCB 473676/110 Sodium CCB 473676/116 Sodium CCB 473990/46 Sodium CCB 473990/59 Sodium CCB 473990/68	0.125 J mg/L 0.137 J mg/L 0.220 J mg/L 0.123 J mg/L 0.107 J mg/L 0.569 mg/L 0.210 J mg/L 0.317 J mg/L	None
Magnesium CCB 473990/46	0.0729 J mg/L	None
Calcium CCB 473990/15	0.0471 J mg/L	None
Potassium CCB 473676/58 Potassium CCB 473676/71 Potassium CCB 473676/84 Potassium CCB 473676/97 Potassium CCB 473676/110 Potassium CCB 473676/116 Potassium CCB 473848/15 Potassium CCB 473848/27 Potassium CCB 473848/36 Potassium CCB 473990/15 Potassium CCB 473990/26 Potassium CCB 473990/33 Potassium CCB 473990/46 Potassium CCB 473990/59	0.312 J mg/L 0.292 J mg/L 0.365 J mg/L 0.424 J mg/L 0.353 J mg/L 0.263 J mg/L 0.234 J mg/L 0.333 J mg/L 0.234 J mg/L 0.250 J mg/L 0.234 J mg/L 0.250 J mg/L 2.13 J mg/L 0.842 J mg/L	0924MW46GW (580-143875-34) – 3.3 U 0924MW42GW (580-143875-36) – 3.3 U 0924MW28GW (580-143875-21) – 3.3 U 0924MW40GW (580-143875-22) – 3.3 U 0924MW58GW (580-143875-24) – 3.3 U 0924MW59GW (580-143875-26) – 3.3 U 0924MW53GW (580-143875-28) – 3.3 U 0924MW50GW (580-143875-29) – 3.3 U 0924MW47GW (580-143875-33) – 3.3 U 0924MW51GW (580-143875-27) – 3.3 U 0924MW54GW (580-143875-23) – 3.3 U 0924MW56GW (580-143875-31) – 3.3 U 0924MW28GW-99 (580-143875-25) – 3.3 U 0924RD10SW (580-143875-44) – 3.3 U

Analyte	Blank Concentration	Qualified Samples
Potassium CCB 473990/68	0.727 J mg/L	0924RD08SW (580-143875-39) – 3.3 U 0924RD08SW99 (580-143875-40) – 3.3 U 0924RD06SW (580-143875-41) – 3.3 U 0924RD05SW (580-143875-42) – 3.3 U 0924RD15SW (580-143875-43) – 3.3 U
Cadmium ICB 473556/12 Cadmium ICB 473670/12 Cadmium ICB 473801/12 Cadmium ICB 474254/13 Cadmium ICB 474385/12	0.0776 J mg/L 0.0511 J mg/L 0.0442 J mg/L 0.0640 J mg/L 0.0756 J mg/L	0924MW16GW (580-143875-13) - 0.0004 U 0924MW33GW-99 (580-143875-17) - 0.0004 U 0924MW27GW (580-143875-19) - 0.0004 U 0924MW27GW-99 (580-143875-20) - 0.0004 U 0924MW53GW (580-143875-28) - 0.0004 U 0924MW06GW (580-143875-1) - 0.0004 U
Cobalt ICB 473556/12 Cobalt ICB 473801/12 Cobalt ICB 474385/12	0.0544 J mg/L 0.0624 J mg/L 0.0441 J mg/L	0924RD08SW (580-143875-39) - 0.0040 U 0924RD08SW99 (580-143875-40) - 0.0040 U 0924RD06SW (580-143875-41) - 0.0040 U 0924RD05SW (580-143875-42) – J+ 0924RD15SW (580-143875-43) - 0.0040 U 0924RD10SW (580-143875-44) - 0.0040 U 0924MW29GW (580-143875-10) – J+ 0924MW28GW (580-143875-21) – J+ 0924MW40GW (580-143875-22) – J+ 0924MW58GW (580-143875-24) – J+ 0924MW59GW (580-143875-26) – J+ 0924MW53GW (580-143875-28) – J+ 0924MW50GW (580-143875-29) – J+ 0924MW55GW (580-143875-11) – J+ 0924MW52GW (580-143875-12) - 0.0040 U 0924MW16GW (580-143875-13) – J+ 0924MW26GW (580-143875-15) – J+ 0924MW33GW (580-143875-16) - 0.0040 U 0924MW33G-99 (580-143875-17) - 0.0040 U 0924MW44GW (580-143875-18) – J+ 0924MW27GW (580-143875-19) – J+ 0924MW27GW-99 (580-143875-20) – J+
Lead ICB 473556/12 Lead ICB 473670/12 Lead ICB 473801/12 Lead ICB 474004/13 Lead ICB 474254/13	0.0883 J mg/L 0.0926 J mg/L 0.0940 J mg/L 0.0571 J mg/L 0.0590 J mg/L 0.0616 J mg/L	0924MW33GW (580-143875-16) – J+ 0924MW33GW-99 (580-143875-17) - 0.0004 U 0924MW28GW (580-143875-21) - 0.0004 U 0924MW40G80-143875-22) - 0.0004 U 0924MW58GW (580-143875-24) – J+ 0924MW53GW (580-143875-28) – J+ 0924MW50GW (580-143875-29) - 0.0004 U 0924MW47GW (580-143875-33) - 0.0004 U 0924MW42GW (580-143875-36) - 0.0004 U 0924MW56GW (580-143875-31) - 0.0004 U 0924MW06GW (580-143875-1) – J+ 0924MW10GW (580-143875-9) - 0.0004 U 0924MW29GW (580-143875-10) - 0.0004 U

Analyte	Blank Concentration	Qualified Samples
Antimony CCB 473556/29	0.277 J mg/L	0924MW55GW (580-143875-11) – J+
Antimony CCB 473556/40	0.203 J mg/L	0924MW52GW (580-143875-12) – 0.0008 U
Antimony CCB 473670/30	0.141 J mg/L	0924MW16GW (580-143875-13) – J+
Antimony CCB 473670/39	0.290 J mg/L	0924MW17GW (580-143875-14) – J+
Antimony CCB 473801/28	0.236 J mg/L	0924MW26GW (580-143875-15) – J+
Antimony CCB 473801/40	0.134 J mg/L	0924MW33GW (580-143875-16) – J+
Antimony CCB 473801/52	0.184 J mg/L	0924MW33GW-99 (580-143875-17) – J+
Antimony CCB 473801/80	0.151 J mg/L	0924MW44GW (580-143875-18) – J+
Antimony CCB 474004/52	0.147 J mg/L	0924MW27GW (580-143875-19) – J+
Antimony CCB 474004/64	0.174 J mg/L	0924MW27GW-99 (580-143875-20) – J+
Antimony CCB 474004/76	0.146 J mg/L	0924MW51GW (580-143875-27) – 0.0008 U
Antimony CCB 474004/88	0.187 J mg/L	0924MW57GW (580-143875-30) – 0.0008 U
Antimony CCB 474004/180	0.217 J mg/L	0924MW49GW (580-143875-32) – J+
Antimony CCB 474004/185	0.161 J mg/L	0924EB01GW (580-143875-37) – 0.0008 U
Antimony CCB 474077/71	0.159 J mg/L	0924MW28GW (580-143875-21) – J+
Antimony CCB 474077/82	0.216 J mg/L	0924MW40GW (580-143875-22) – J+
Antimony CCB 474077/87	0.168 J mg/L	0924MW58GW (580-143875-24) – J+
Antimony CCB 474254/44	0.135 J mg/L	0924MW59GW (580-143875-26) – 0.0008 U
Antimony CCB 474254/56	0.159 J mg/L	0924MW53GW (580-143875-28) – J+
Antimony CCB 474254/64	0.150 J mg/L	0924MW46GW (580-143875-34) – 0.0008 U
Antimony CCB 474254/70	0.143 J mg/L	0924MW42GW (580-143875-36) – J+
Antimony CCB 474385/63	0.217 J mg/L	0924MW54GW (580-143875-23) – 0.0008 U
Antimony CCB 474385/75	0.165 J mg/L	0924MW28GW-99 (580-143875-25) – J+
Antimony CCB 474385/84	0.224 J mg/L	0924RD08SW (580-143875-39) – J+
Antimony CCB 474541/22	0.400 J mg/L	0924RD08SW99 (580-143875-40) – J+
Antimony CCB 474541/34	0.373 J mg/L	0924RD06SW (580-143875-41) – J+
Antimony CCB 474541/46	0.418 J mg/L	0924RD05SW (580-143875-42) – J+
		0924RD15SW (580-143875-43) – J+
		0924RD10SW (580-143875-44) – J+
Lead CCB 474077/71	22.4 J mg/L	0924EB02GW (580-143875-38) - 0.0004 U
Lead CCB 474385/63	0.0901 J mg/L	0924RD08SW (580-143875-39) - 0.0004 U
Lead CCB 474385/75	0.0565 J mg/L	0924RD08SW99 (580-143875-40) - 0.0004 U
Lead CCB 474385/84	0.0414 J mg/L	0924RD06SW (580-143875-41) - 0.0004 U
Lead CCB 474541/22	0.0348 J mg/L	0924RD05SW (580-143875-42) - 0.0004 U
Lead CCB 474541/34	0.0330 J mg/L	0924RD15SW (580-143875-43) - 0.0004 U
		0924RD10SW (580-143875-44) - 0.0004 U
Thallium CCB 473801/52	0.0305 J mg/L	0924RD10SW (580-143875-44) – 0.0010 U
Thallium CCB 474385/63	0.0305 J mg/L	
Mercury ICB 473679/2	0.0000520 J mg/L	0924RD06SW (580-143875-41) - 0.0003 U
		0924RD05SW (580-143875-42) - 0.0003 U
		0924RD15SW (580-143875-43) - 0.0003 U
		0924RD10SW (580-143875-44) - 0.0003 U
		0924MW52GW (580-143875-12) - 0.0003 U
		0924MW16GW (580-143875-13) – J+
		0924MW17GW (580-143875-14) – J+
		0924MW26GW (580-143875-15) – J+
		0924MW33GW (580-143875-16) - 0.0003 U

Analyte	Blank Concentration	Qualified Samples
		0924MW33GW-99 (580-143875-17) - 0.0003 U 0924MW44GW (580-143875-18) - 0.0003 U 0924MW27GW (580-143875-19) - J+ 0924MW27GW-99 (580-143875-20) – J+ 0924MW28GW (580-143875-21) - 0.0003 U 0924MW40GW (580-143875-22) - 0.0003 U 0924MW54GW (580-143875-23) – 0.0003 U 0924MW58GW (580-143875-24) - 0.0003 U 0924MW45GW (580-143875-35) - 0.0003 U 0924MW42GW (580-143875-36) – J+ 0924EB01GW (580-143875-37) - 0.0003 U 0924EB02GW (580-143875-38) - 0.0003 U
Mercury CCB 473679/5 Mercury CCB 473679/17 Mercury CCB 473679/29 Mercury CCB 473679/41 Mercury CCB 473679/53 Mercury CCB 473679/65	0.0000514 J mg/L 0.0000514 J mg/L 0.0000573 J mg/L 0.0000564 J mg/L 0.0000554 J mg/L 0.0000522 J mg/L	0924RD06SW (580-143875-41) - 0.0003 U 0924RD05SW (580-143875-42) - 0.0003 U 0924RD15SW (580-143875-43) - 0.0003 U 0924RD10SW (580-143875-44) - 0.0003 U 0924MW52GW (580-143875-12) - 0.0003 U 0924MW16GW (580-143875-13) – J+ 0924MW17GW (580-143875-14) – J+ 0924MW26GW (580-143875-15) – J+ 0924MW33GW (580-143875-16) - 0.0003 U 0924MW33GW-99 (580-143875-17) - 0.0003 U 0924MW44GW (580-143875-18) - 0.0003 U 0924MW27GW (580-143875-19) - J+ 0924MW27GW-99 (580-143875-20) – J+ 0924MW28GW (580-143875-21) - 0.0003 U 0924MW40GW (580-143875-22) - 0.0003 U 0924MW54GW (580-143875-23) – 0.0003 U 0924MW58GW (580-143875-24) - 0.0003 U 0924MW45GW (580-143875-35) - 0.0003 U 0924MW42GW (580-143875-36) – J+ 0924EB01GW (580-143875-37) - 0.0003 U 0924EB02GW (580-143875-38) - 0.0003 U

VI.3.2. Interference Check Samples

Interference Check Samples (ICSA/B): ICSAB recoveries were within the control limits of 80-120% or ±2× the reporting limit, whichever is greater. No interferents were present at concentrations comparable to those of the ICSAs. Therefore, no further action is needed.

VI.3.3. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

Target analytes were recovered within the control limits of 70-130% recovery (%R), and the relative percent difference (RPDs) were ≤20%.

VI.3.4. Laboratory Duplicates

Laboratory duplicate analyses were performed on samples 0924MW06GW, 0924MW28GW-99, 0924MW59GW, 0924MW55GW, 0924MW33GW, and 0924RD06SW for Mercury; and samples 0924MW33GW, 0924MW06GW, 0924MW46GW, 0924MW42GW, 0924EB01GW, 0924MW29GW, and 0924RD10SW for ICP and ICP-MS. Original and duplicate sample values ≥5× the RL were within the control limit of 20% Relative Percent Difference (RPD). The control limit of ±RL was met when the sample or duplicate result was <5× the RL. All results were within control limit criteria with the following exceptions:

- Aluminum (25% RPD) and Lead (23% RPD) exceeded the RPD criteria in sample 0924MW33GW. Qualify the Aluminum and Lead result in sample 0924MW33GW as estimated (J). Note that Lead was qualified J+ due to calibration blank results.

VI.3.5. Matrix Spike/Matrix Spike Duplicate

MS/MSD analyses were performed on samples 0924MW06GW, 0924MW28GW-99, 0924MW59GW, 0924MW55GW, 0924MW33GW, and 0924RD06SW for Mercury; and samples 0924MW33GW, 0924MW06GW, 0924MW46GW, 0924MW42GW, 0924EB01GW, 0924MW29GW, and 0924RD10SW for ICP and ICP-MS. MS recoveries were not assessed when the parent sample concentrations were more than 4× the spike amount. Recoveries for all target analytes met control limits of 75-125%R, and the RPDs were ≤20% with the following exception:

Table 5 – Metals and Mercury Matrix Spike/Matrix Spike Duplicate Recoveries

Analyte	%R	Parent Sample	Qualifier	Qualified Samples
Mercury	154% Rec	0924MW33GW	J+ Detected Results	580-143875-12 through -24, -35 through -39
Cadmium	121% Rec	0924RD10SW	J+ Detected Results	None

VI.3.6. Post Digestion Spike

The laboratory performed ICP/MS and ICP post digestion spike (PDS) analyses for samples 0624MW17GW, 0624RD05SW, and 0624MW33GW for all reported analytes, and the recoveries were within control limit criteria. The ICP/MS PDS analyses were performed at 20× due to the calibration range.

VI.3.7. Serial Dilution

ICP/MS and ICP serial dilution analysis was performed on samples 0924MW06GW, 0924MW33GW, 0924MW46GW, 0924EB01GW, and 0924RD10SW for ICP and ICP-MS. Results were not assessed unless the parent sample concentration was >50× the MDL. The control limit of ≤10% difference (%D) of the original sample results was met for all target analytes.

VI.3.8. Internal Standards Performance

According to the raw data sample results, all ICP and ICPMS sample internal standard intensities were within the control limits of 60-125% of the calibration blank. Sample qualifications were not required.

VI.3.9. Sample Result Verification

Sample result verification is not applicable for Stage 2B validation samples. Detects below the RL were qualified as estimated (J). Non-detects are valid to the RL.

VI.4. Field QC Samples

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. The remaining detects were used to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VI.4.1. Field Blanks and Equipment Blanks

Field blank samples were not identified in this SDG for these analyses.

Equipment blank samples 0924EB01GW and 0924EB02GW were collected and associated with the GW samples as li listed in the table below:

Table 6 – Metals and Mercury Equipment Blank Association

Equipment Blanks		
Blank ID	**0924EB01GW 0924EB02GW**	
Associated Samples	0924MW06GW	0924MW09GW
	0924MW43GW	0924MW43GW-99
	0924MW10GW	0924MW29GW
	0924MW55GW	0924MW52GW
	0924MW16GW	0924MW17GW
	0924MW26GW	0924MW33GW
	0924MW33GW-99	0924MW44GW
	0924MW27GW	0924MW27GW
	0924MW28GW	0924MW54GW
	0924MW58GW	0924MW28GW-99
	0924MW59GW	0924MW51GW
	0924MW53GW	0924MW50GW
	0924MW57GW	0924MW56GW
	0924MW49GW	0924MW47GW
	0924MW46GW	0924MW45GW
		0924MW42GW

Antimony (0.00014 J), barium (0.00026 J), and mercury (0.000051 J) were detected in 0924EB01GW. Lead (0.000062 J) and mercury (0.000051 J) were detected in 0624EB02GW.

For EB detects, associated detected sample results that were below the reporting limit (RL) were qualified as non-detect (U) at the RL. Associated detected sample results that were greater than RL and <5× the blank concentration were qualified as estimated with high bias (J+).

Table 7 – Metals and Mercury Equipment Blank Qualifiers

Analyte	EB Blank concentration	Qualified Samples
0924EB01GW 0924EB02GW		
Antimony	0.00014 J mg/L	No action was taken because the EB was qualified as U due to calibration blank results.
Barium	0.00026 J mg/L	0924MW46GW (580-143875-34) – J+
Lead	0.000060 J mg/L	No action was taken because the EB was qualified as U due to calibration blank results.
Mercury	0.000051 J mg/L	No action was taken because the EB was qualified as U due to calibration blank results.

VI.4.2. Field Duplicates

Samples 0924MW43GW and 0924MW43GW-99, 0924MW33GW and 0924MW33GW-99, 0924MW27GW and 0924MW27GW-99, 0924MW28GW and 0924MW28GW-99, and 0924RD08SW and 0924RD08SW-99 were identified as field duplicates. The control limits of ≤30% for all target analytes greater than 5x RL and ±RL for all results <5x RL were met.

VII. EPA Method 1631, Revision E – Total and Dissolved Mercury

Robert Thielke of Guardian Data Validation reviewed the SDG November 5, 2024.

VII.1. Holding Times

Sample preservation and analytical holding times of 28 days were met. The samples analyzed for dissolved mercury were filtered in the field.

VII.2. Calibration

A blank and 5 non-zero standards were used for the cold vapor atomic fluorescence spectrometry calibration. Calibration criteria were met. ICV and CCV %Rs were within the laboratory control limits of 77-123%R.

VII.3. Laboratory QC Samples

VII.3.1. Calibration Blanks and Method Blanks

No mercury was reported in the method blanks (MB) or bracketing calibration blanks (ICB/CCB) of sufficient concentration to warrant qualification of site sample results except as noted in the table below. For the positive blank concentrations, associated detected sample results that were below the reporting limit (RL)were qualified as non-detect (U) at the RL. Associated detected sample results that were greater than RL and <5× the blank concentrations were qualified as estimated with high bias (J+).

Table 8 – Method 1631E Calibration Blanks and Method Blanks

Analyte	Blank concentration (ng/L)	Qualified Samples
Mercury ICB 2866/10	0.262 J ng/L	0924MW47GW Total (580-143875-33) – J+ 0924MW43GW Total (580-143875-3) – J+ 0924MW43GW-99 Total (580-143875-4) – J+
Mercury CCB 2872/46	0.211 J ng/L	0924MW43GW Diss (580-143875-3) – J+ 0924MW43GW-99 Diss (580-143875-4) – J+ 0924MW44GW Diss (580-143875-18) – J+

VII.3.2. Laboratory Control Sample/Laboratory Control Sample Duplicate

Target analytes were recovered within the laboratory control limits of 77-123% recovery, and the RPDs were ≤24%. Sample qualification was not required.

VII.3.3. Matrix Spike/Matrix Spike Duplicate

MS/MSD analyses were performed on Samples 0624MW17GW (total), 0624MW59GW (total), 0624MW55GW (total), 0624MW33GW (total), 0624MW29GW (total), 0624MW28GW (total), 0624MW17GW (dissolved), and 0624MW33GW (dissolved) from this SDG. The recoveries and RPDs were within the laboratory established control limits of 71-125%R and 24% RPD with the exception of the outlier noted below:

Table 9 – Method 1631E Matrix Spike/Matrix Spike Duplicate

Analyte	%R	Parent Sample	Qualifier	Qualified Samples
Low Level Mercury (dissolved)	69%	0924MW06GW (Dissolved)	J Detected Results UJ Non-detected Results	580-143875-12 through -24 and -35 through -36 (Dissolved)
Low Level Mercury (dissolved)	196%	0924MW06GW (Dissolved)	J Detected Results	580-143875-12 through -24 and -35 through -39 (Dissolved)

The RPD for Mercury in sample 0924MW06GW Diss was 146%. There were sample results that were qualified as both J+ and J-. This combined with the RPD Result leads to detected results to be qualified as J.

VII.4. Field QC Samples

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. The remaining detects were used to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VII.4.1. Field Blanks, Equipment Blanks, and Trip Blanks

Trip blank samples 0924TB01GW, 0924TB02GW, 0924TB03GW, and 0924TB04GW were identified in this SDG for these analyses. All results were non-detected.

Equipment blank samples 0624EB01GW and 0624EB02GW were collected and associated with the GW samples as listed in the table below.

Table 10 – Method 1631 Equipment Blank Association

Equipment Blanks		
Blank ID	**0624EB01GW 0624EB02GW**	
Associated Samples	0624MW09GW	0624MW55GW
	0624MW17GW	0624MW47GW
	0624MW17GW99	0624MW45GW
	0624MW10GW	0624MW56GW
	0624MW16GW	0624MW46GW
	0624MW16GW99	0624MW44GW
	0624MW06GW	0624MW52GW
	0624MW26GW	0624MW29GW
	0624MW53GW	0624MW49GW
	0624MW50GW	0624MW43GW
	0624MW59GW	0624MW43GW99
	0624MW57GW	0624MW28GW
	0624MW54GW	0624MW27GW
	0624MW51GW	0624MW42GW
	0624MW58GW	0624MW40GW
		0624MW33GW

All sample results were non detected.

VII.4.2. Field Duplicates

Samples 0924MW43GW and 0924MW43GW-99, 0924MW33GW and 0924MW33GW-99, 0924MW27GW and 0924MW27GW-99, 0924MW28GW and 0924MW28GW-99, and 0924RD08SW and 0924RD08SW-99 were identified as field duplicates. The control limits of ≤30% for all target analytes greater than 5x RL and ±RL for all results <5x RL were met except as noted in the table below. Associated results in the field duplicate pair were qualified as estimated (J) for detects.

Table 11 – Method 1631 Mercury Field Duplicates

Field duplicate samples	Analyte	RPD/±RL
0924MW33GW/ 0924MW33GW99 Total	Hg 42/120 ng/L	109% RPD
0924RD08SW/ 0924RD08SW99 Total	Hg 34/51 ng/L	40% RPD

VII.5. Sample Result Verification and Reported Detection Limits

The laboratory analyzed for low level mercury by EPA Method 1631E. Total mercury was analyzed for six surface water (SW) samples. Total and dissolved mercury was analyzed for the groundwater (GW) samples.

Sample result verification is not applicable for Level 2B validation samples. Detects reported below the RL were qualified as estimated (J).Non-detects are valid to the RL. Multiple samples were analyzed at dilutions to bring detects within the calibration linear range due to the level of mercury found in the samples.

VIII. Various EPA Methods – General Minerals

Robert Thielke of Guardian Data Validation reviewed the SDG November 6, 2024.

VIII.1. Holding Times and Sample Management

Table 12 specifies the method holding times for general chemistry analyses.

Table 12 – General Minerals Analytical Method Holding Times

Analytical Method	Analysis Holding Time (days)
353.2 Nitrate/Nitrite (NO3+NO2 as N)	28
300.0 Anions (SO4, Cl-, F-)	28
310.1 Alkalinity	14
160.1 Total Dissolved Solids (TDS)	7
160.2 Total Suspended Solids (TSS)	7

The analytical holding times were met for all sample analyses. No qualifications were required.

VIII.2. Calibration

ICV and CCV recoveries associated with reported sample results were within the laboratory control limits.

VIII.3. Laboratory QC Samples

VIII.3.1. Calibration Blanks and Method Blanks

No reported detects in the method blanks (MB) or bracketing calibration blanks (ICB/CCB) were of sufficient concentration to warrant qualification of site sample results.

VIII.3.2. Laboratory Control Samples

LCS and LCSD (as appropriate) recoveries and RPDs were within laboratory control limits.

VIII.3.3. Laboratory Duplicates

Laboratory duplicate analyses were performed on Sample 0924RD08SW (580-143875-39). for Method 310.1. RPDs for Alkalinity/Bicarbonate Alkalinity of 24% were outside laboratory control limits. As a result the Alkalinity/Bicarbonate Alkalinity for sample 0924RD08SW were qualified as estimated J.

VIII.3.4. Matrix Spike/Matrix Spike Duplicate

MS/MSD analyses were performed on Sample 0924RD08SW (580-143875-39) for Method 300.0. The spike recoveries and RPDs were within laboratory control limits.

VIII.4. Sample Result Verification

Sample result verification is not applicable for Level 2B validation samples. Detects reported below the RL were qualified as estimated (J). Non-detects are valid to the RL.

VIII.5. Field QC Samples

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. The remaining detects were used to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VIII.5.1. Field Blanks and Equipment Blanks

Field blank or equipment blank samples were not analyzed for these surface water sample analyses.

VIII.5.2. Field Duplicates

Samples 0924RD08SW and 0924RD08SW99 were identified as the field duplicate pair. The control limits of ≤30% for all target analytes greater than 5x RL and ±RL for all results <5x RL were met

IX. Overall Assessment

Samples required qualification due to quality control exceedances and procedural issues. No samples were rejected in this SDG. Stage 2B validation was performed on all samples.

X. Data Qualification Summary

Table 13 – Data Qualification Summary Table

Sample	Analyte	Qualifier	Reason
580-143875 -2, -9, -10, -21, -31, -33, -38, -39, -40, -41, -42, -43, -44	Lead	U at RL (detects < RL)	MB detects
580-143875-1	Lead	J+	MB detects
580-143875-10	Antimony	U at RL (detects < RL)	MB detects
580-143875-31	Iron	U at RL (detects < RL)	MB detects
580-143875-2, -3, -4, -9, --10, -23, --25, -31	Zinc	U at RL (detects < RL)	MB detects

Sample	Analyte	Qualifier	Reason
580-143875-1	Zinc	J+	MB detects
580-143875-21, -22, -23, -24, -26, -27, -28, -29, -31, -34, -36, -39, -40, -41. -42, -43, -44	Potassium	U at RL (detects < RL)	ICB/CCB detects
580-143875-1, -13, -17, -19, -20, -28	Cadmium	U at RL (detects < RL)	ICB/CCB detects
580-143875-12, -16, -17, -39, -40, -41, -43, -44	Cobalt	U at RL (detects < RL)	ICB/CCB detects
580-143875-10, -11, --13, -15, -18, -19, -20, -21, -22, -24, --26, -28, -29, -42	Cobalt	J+	ICB/CCB detects
580-143875-9, -10, -17, -21, -22, -29, -31, -33, -36, -38, -39, -40, 41, -42, 43, -44	Lead	U at RL (detects < RL)	ICB/CCB detects
580-143875-1, -16, -24, -28	Lead	J+	ICB/CCB detects
580-143875-12, -23, -26, -27, -30, -34, -37	Antimony	U at RL (detects < RL)	ICB/CCB detects
580-143875-11, -13, -14, -15, -16, -17, -18, -19, -20, -21, -22, -24, 25, -28, -32, -36, -39, -40, -41, -42, -43, -44	Antimony	J+	ICB/CCB detects
580-143875-44	Thallium	U at RL (detects < RL)	ICB/CCB detects
580-143875-12, -16, -17, -18, -21, -22, -23, -24, -35, -37, -38, 41, -42, -43, -44	Mercury	U at RL (detects < RL)	ICB/CCB detects
580-143875-13, -14, --15, -19, -20, -36	Mercury	J+	ICB/CCB detects
580-143875-1, -2. -3, -4, -9. 10. -26, -28, -29, -33	Sodium	J+	CCVL >UCL
580-143875-16	Aluminum	J	Sample Duplicate

Sample	Analyte	Qualifier	Reason
580-143875-16	Lead	J	Sample Duplicate
580-143875-12 through -24, -35 through -39	Mercury	J+ Several results were also qualified U due to blank results. For these samples a UJ qualifier was applied.	MSD Recoveries
580-143875-34	Barium	J+	Field Blank detects
580-143875-3, -4, -18 (Diss)	LL Mercury	J+	ICB/CCB detect
580-143875-3, -4, -33 (Total)	LL Mercury	J+	ICB/CCB detect
580-143875-12 through -24 and -35 through -36 (Diss)	LL Mercury	J+ (detects)	MS %Recovery <LCL and >UCL, RPD outside criteria.
580-143875-39, -40 (Total)	LL Mercury	J (detects)	Field Duplicate RPD
580-143875-39	Method 310.1 Alkalinity/ Bicarbonate Alkalinity	J (detects)	Laboratory Duplicate RPD

XI. References

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APPENDIX F TREND GRAPHS

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F.1 GROUNDWATER TREND GRAPHS

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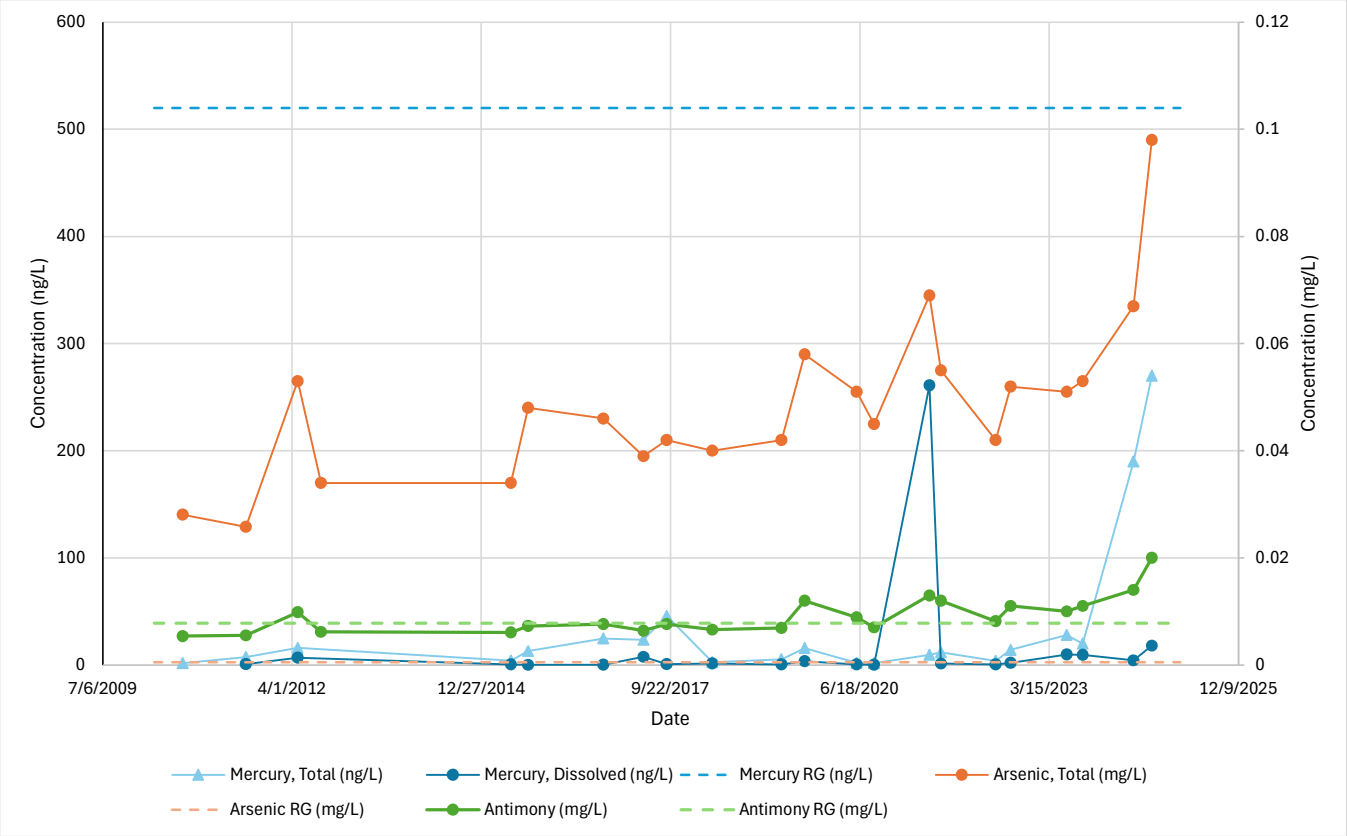
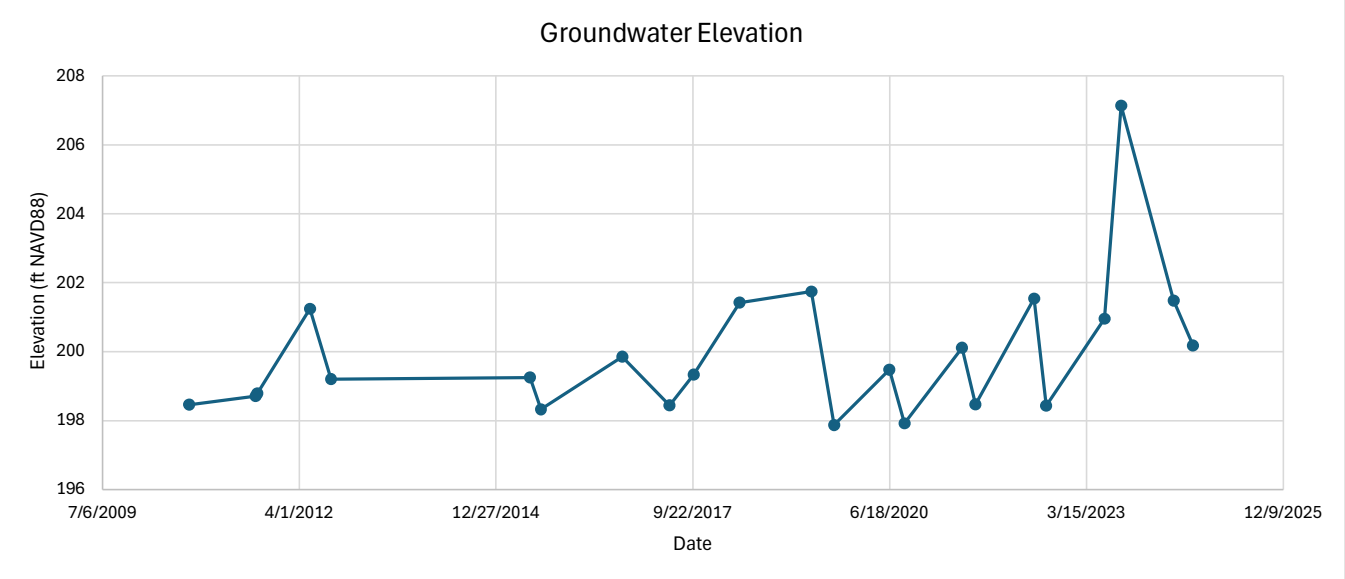
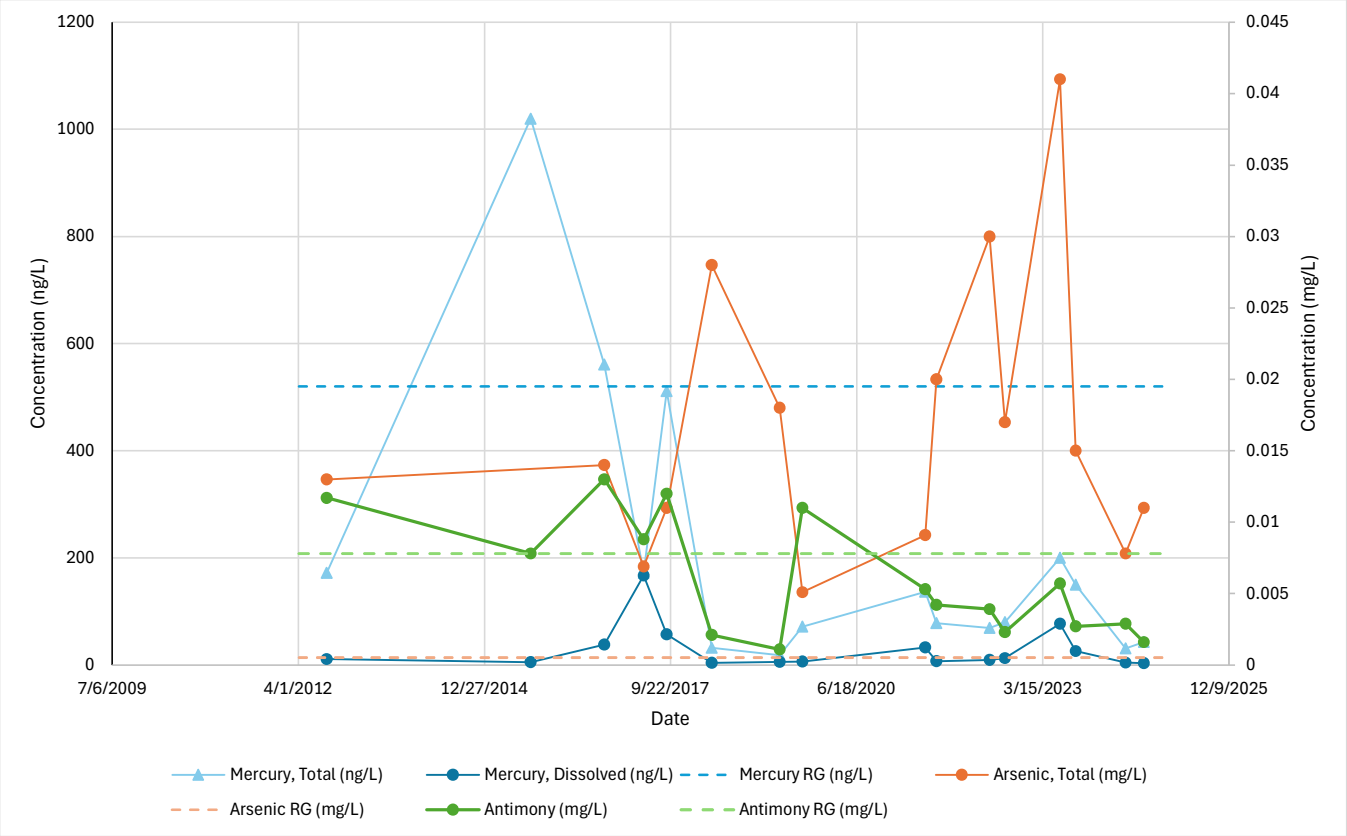
MW06
Groundwater Concentrations and Elevations

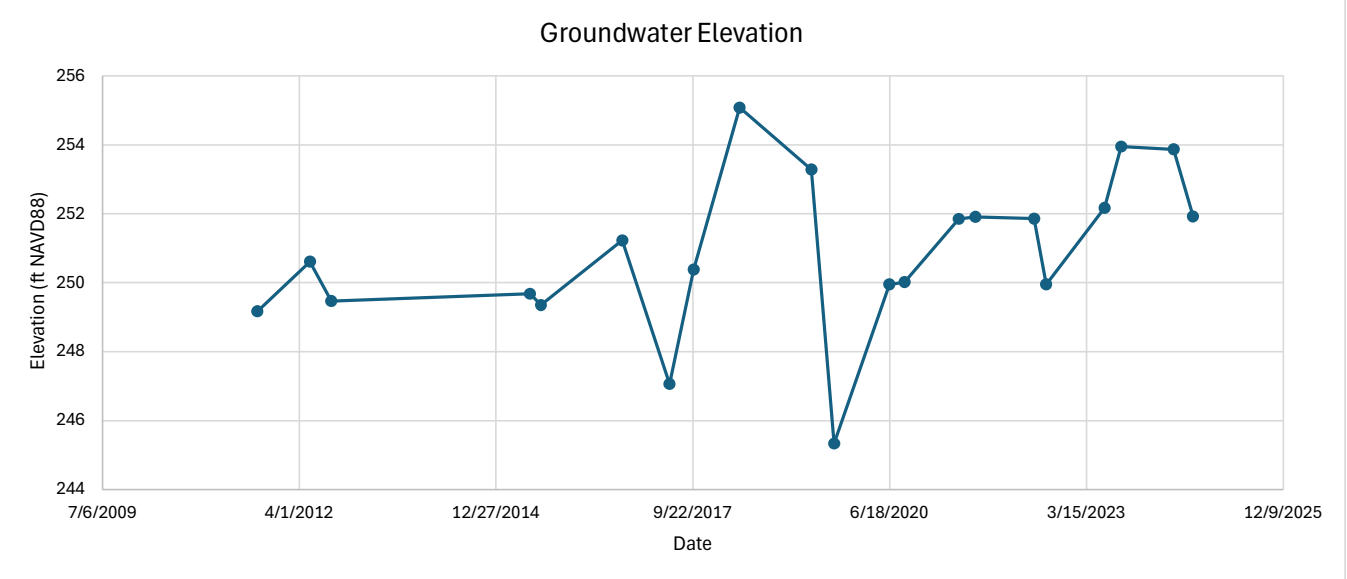




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

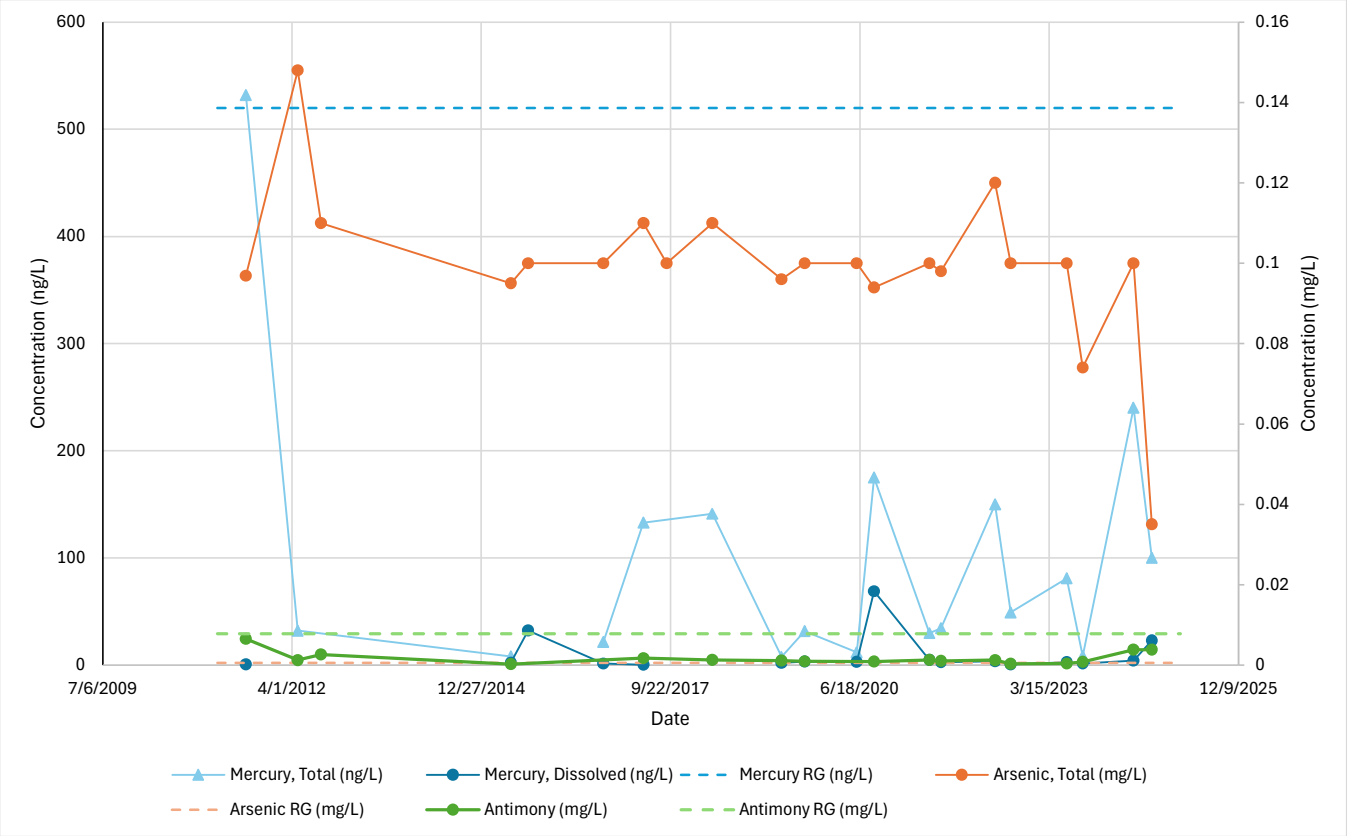
MW09
Groundwater Concentrations and Elevations

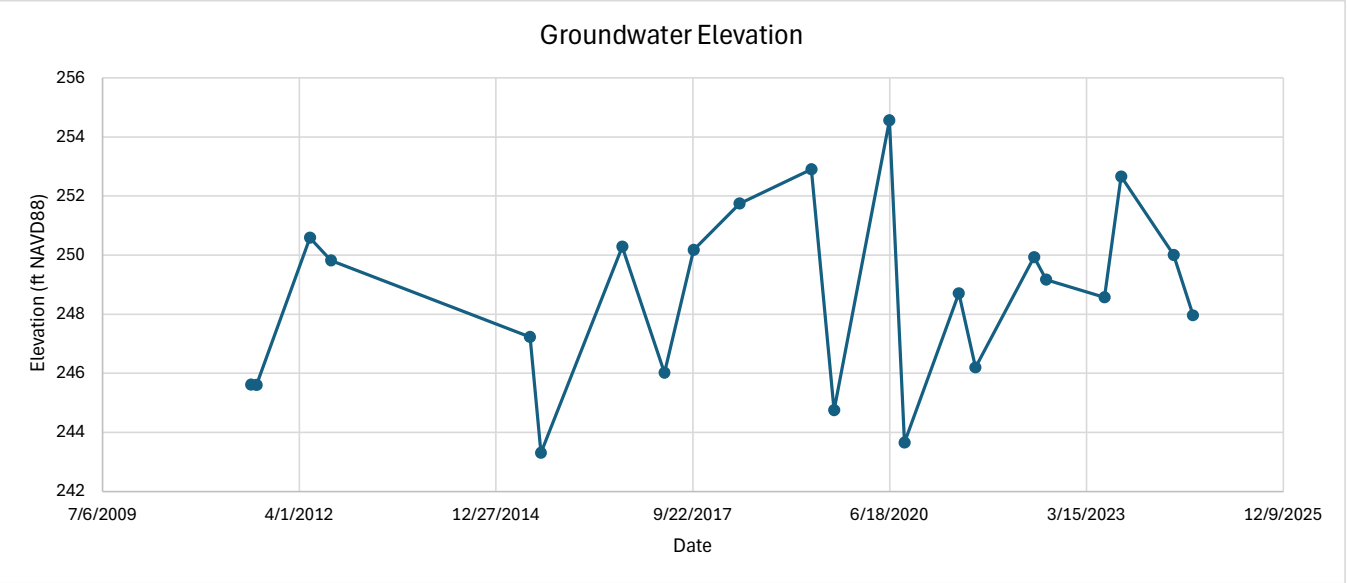




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

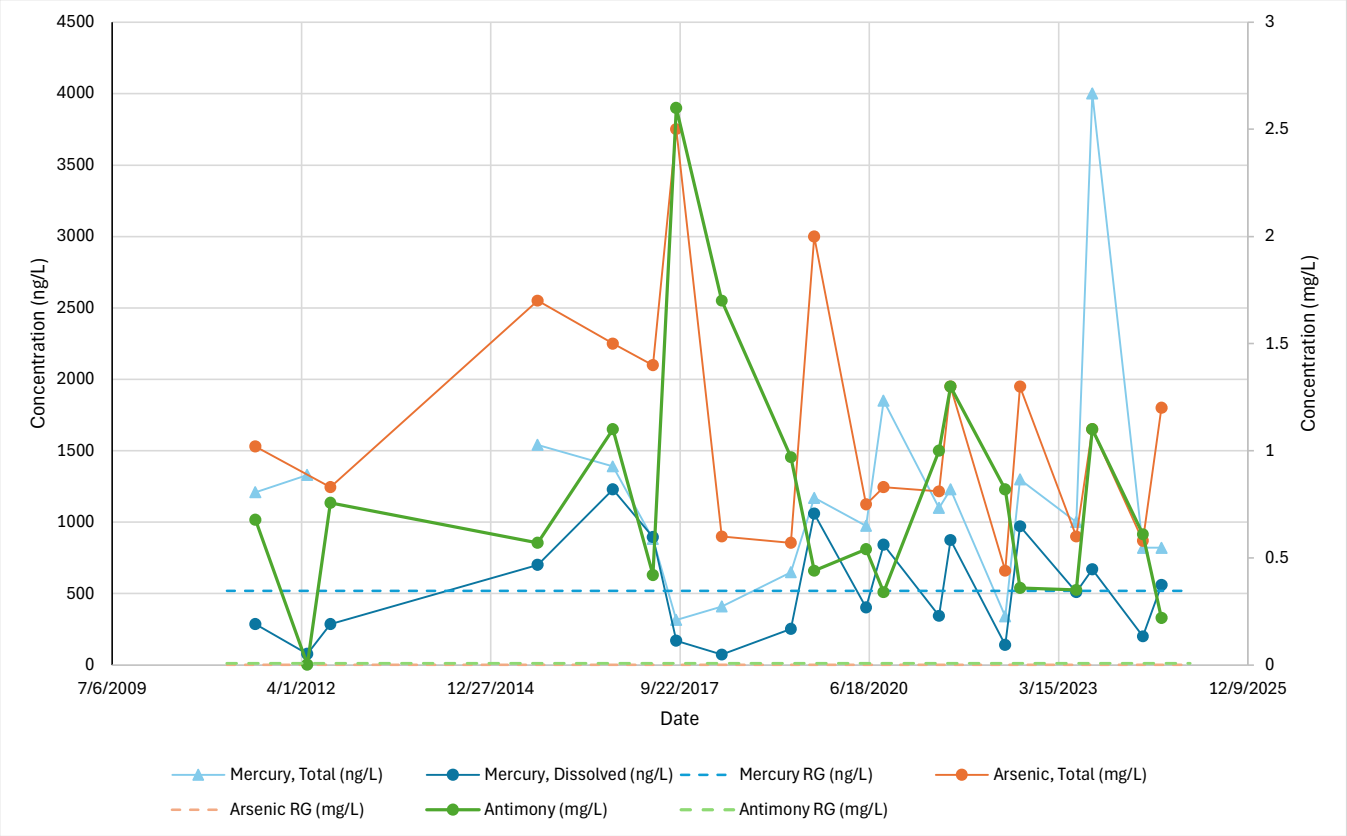
MW10
Groundwater Concentrations and Elevations

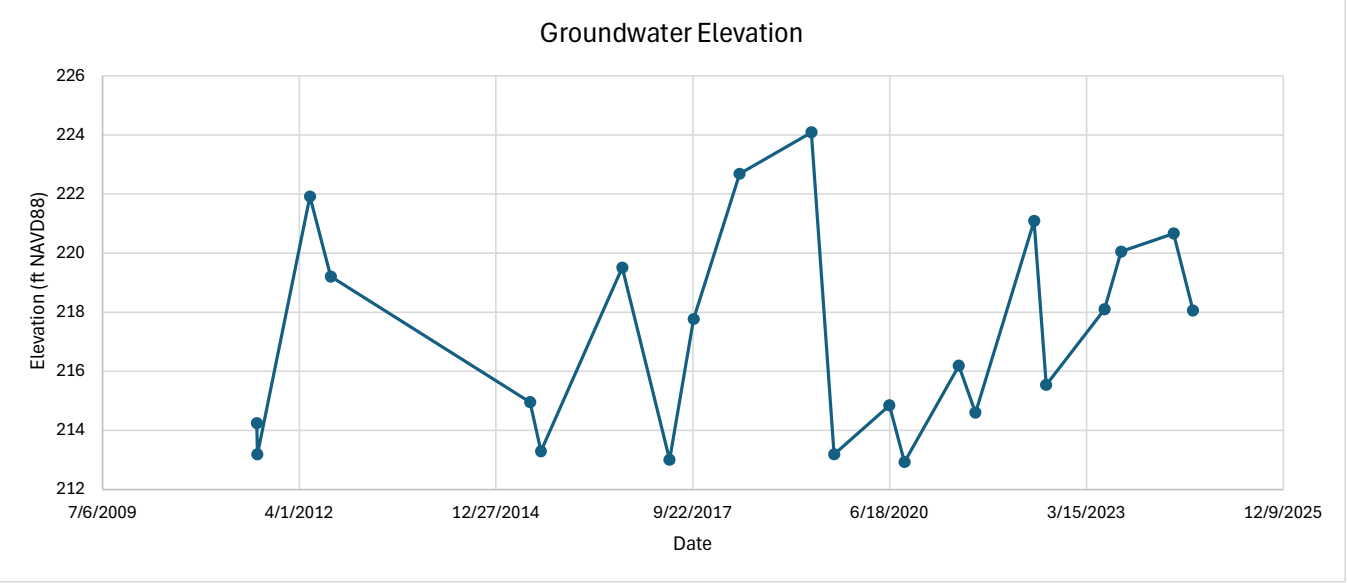




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

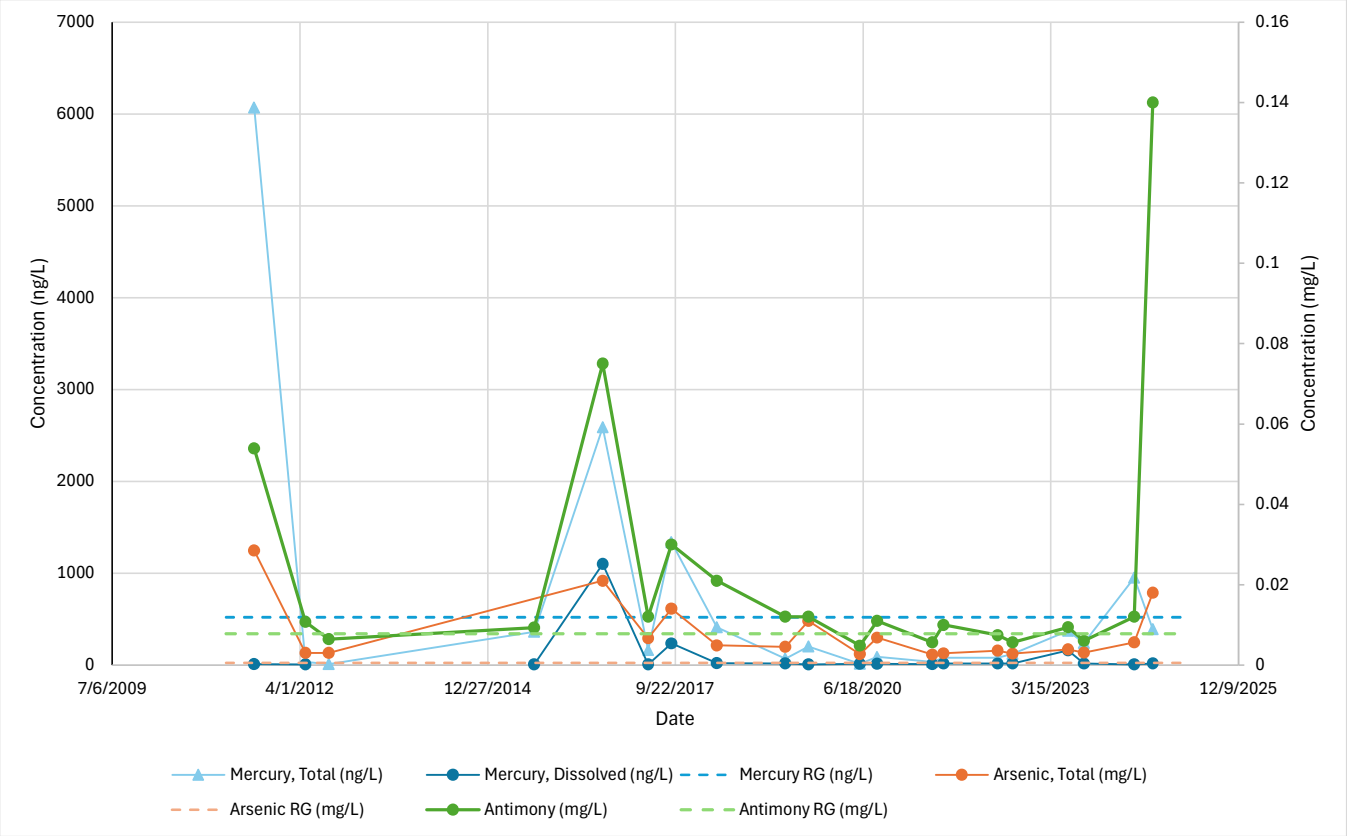
MW16
Groundwater Concentrations and Elevations

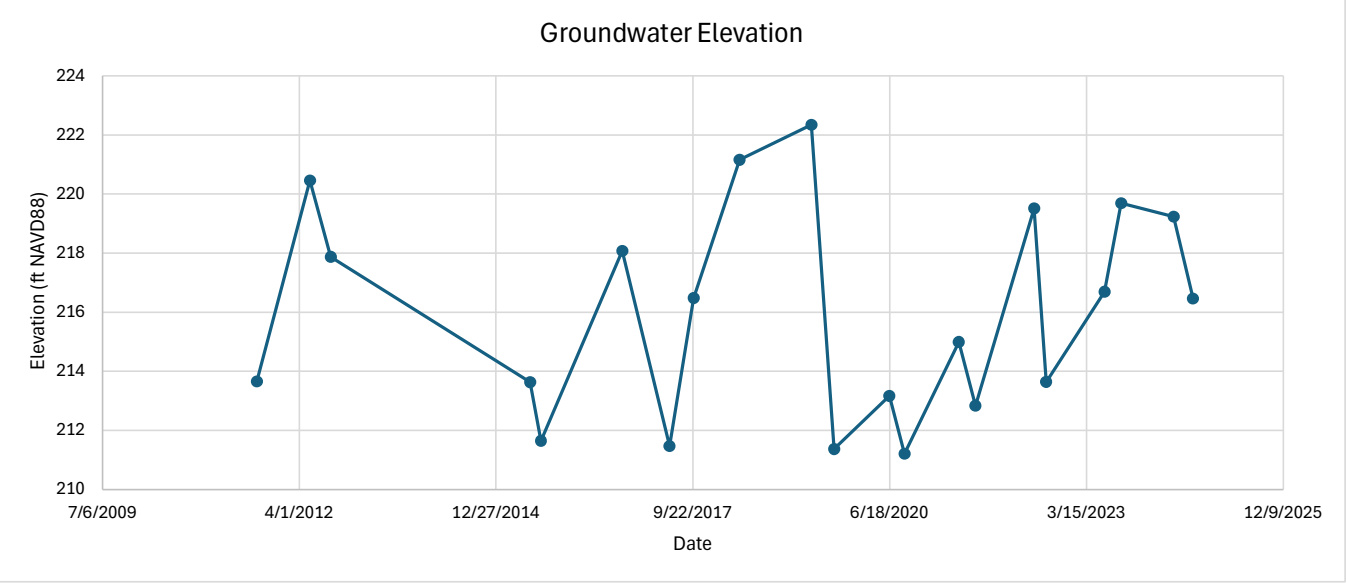




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

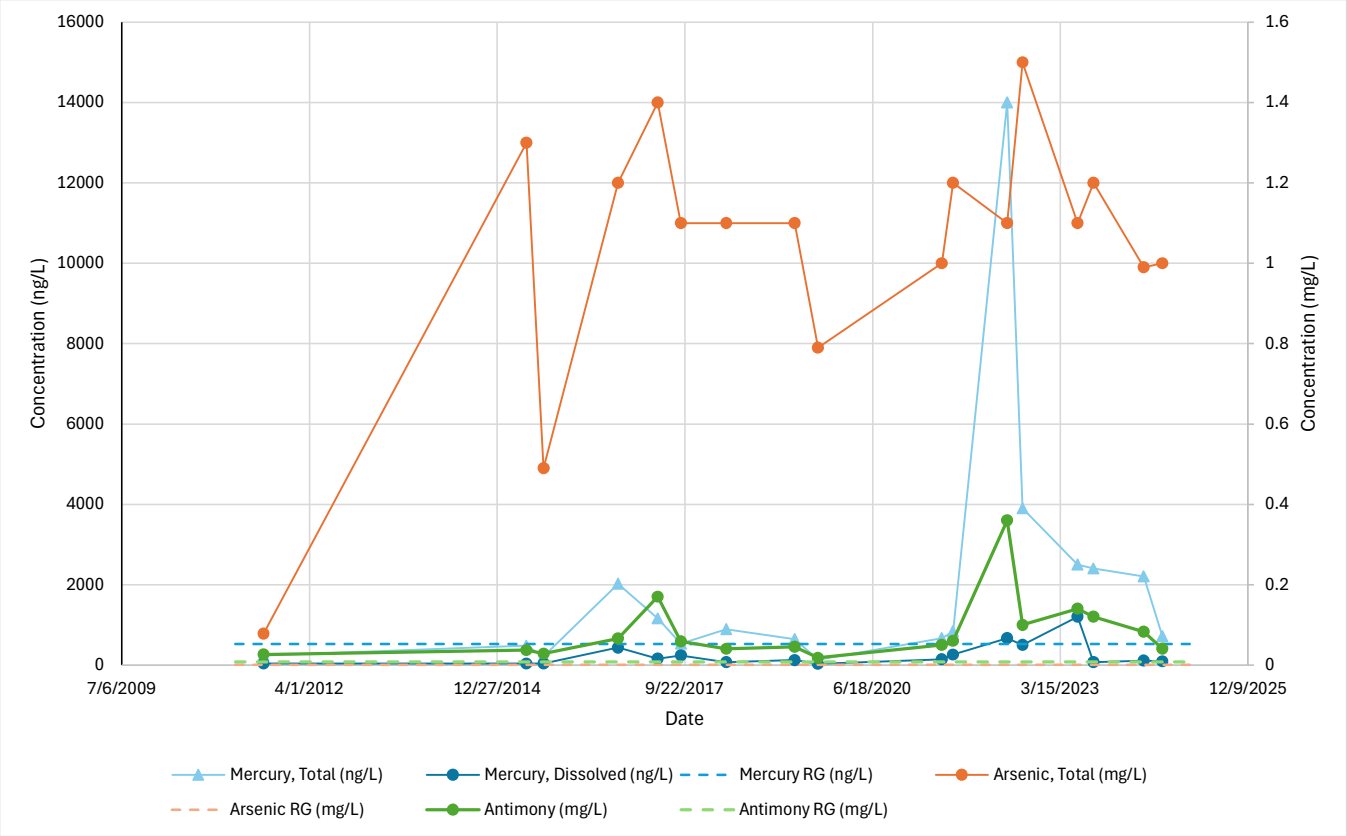
MW17
Groundwater Concentrations and Elevations

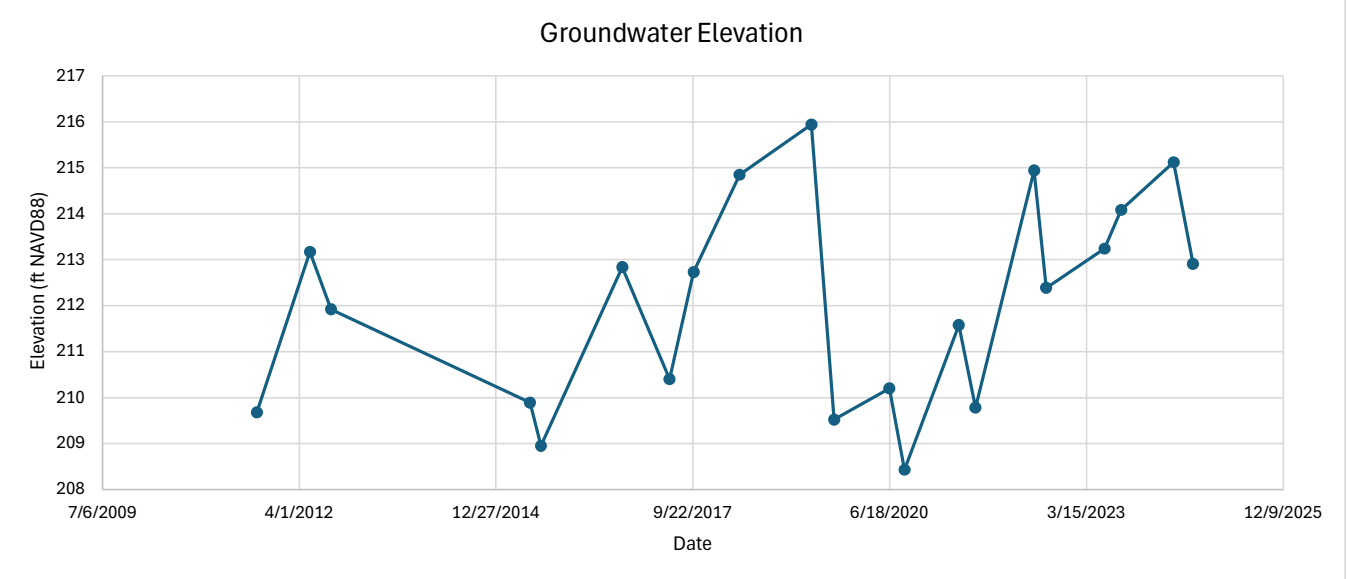




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

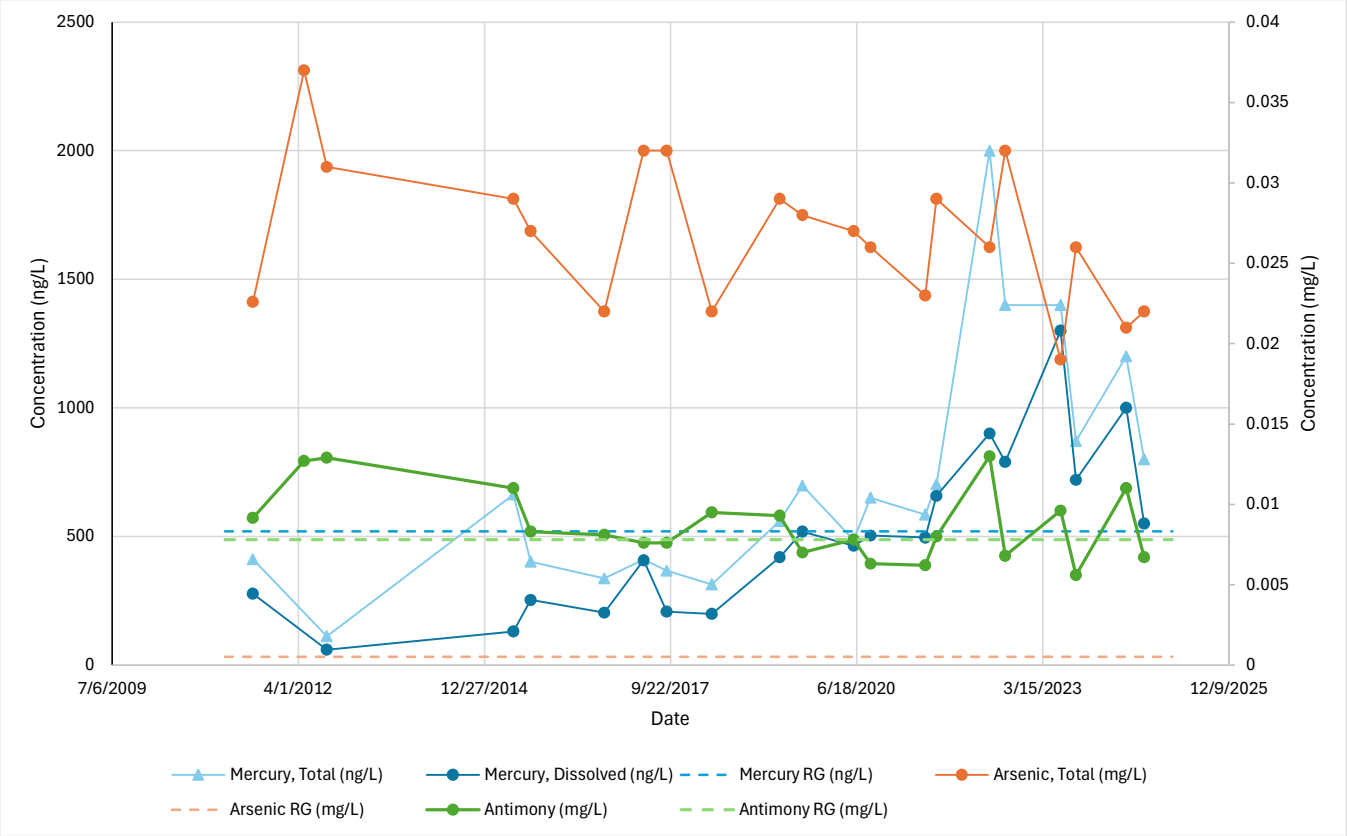
MW26
Groundwater Concentrations and Elevations

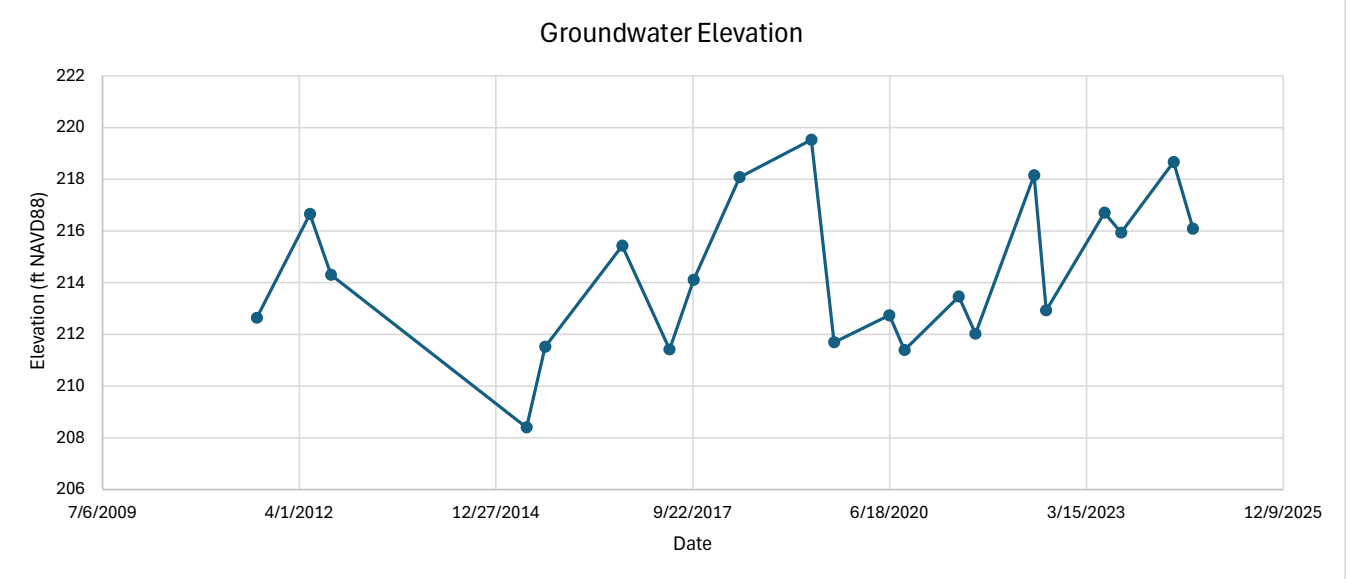




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

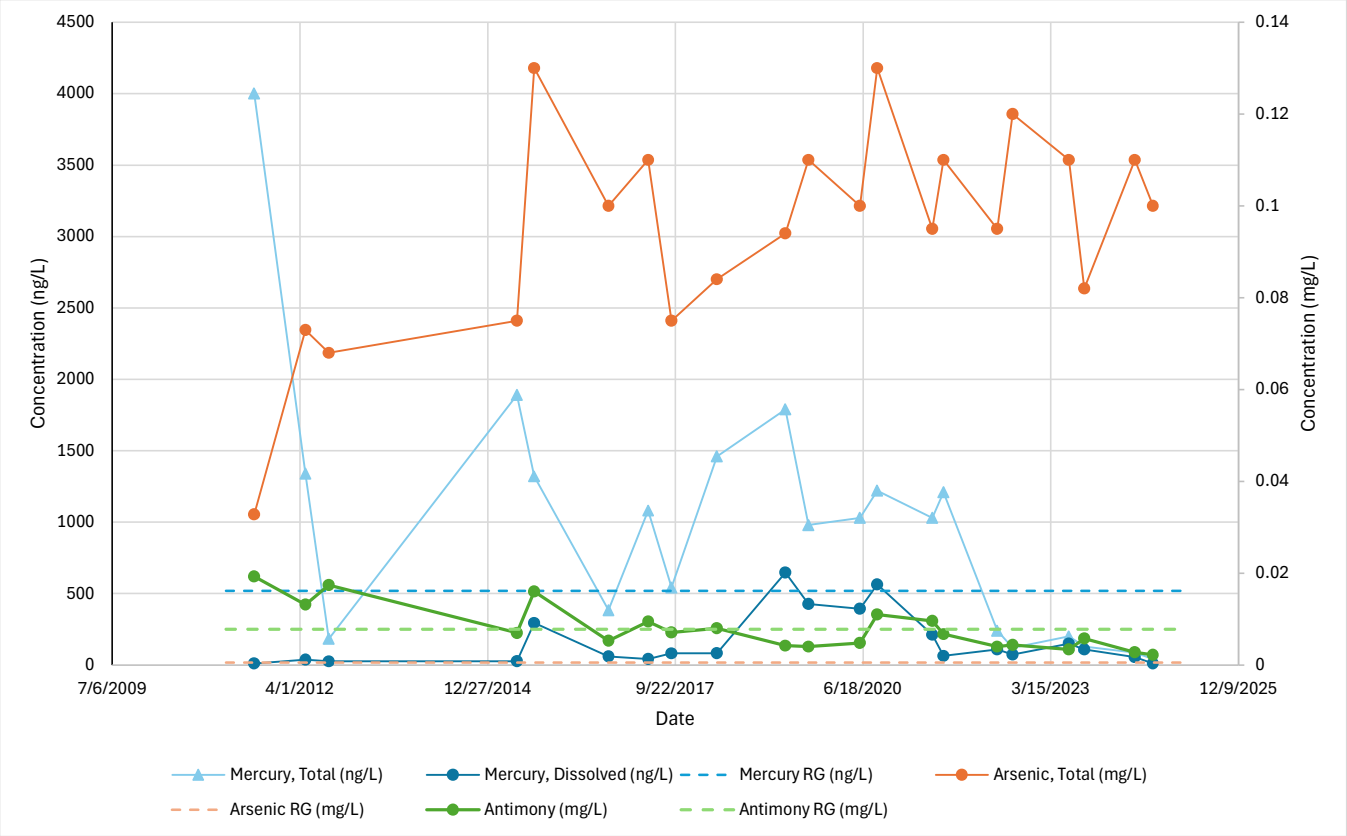
MW27
Groundwater Concentrations and Elevations

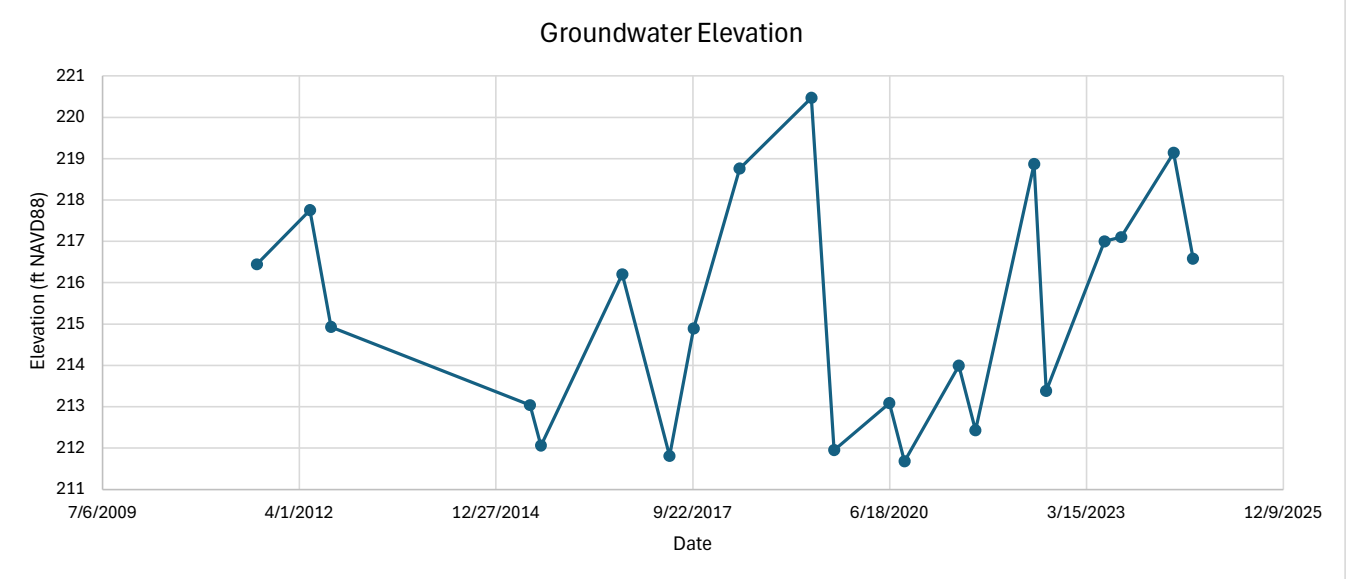




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

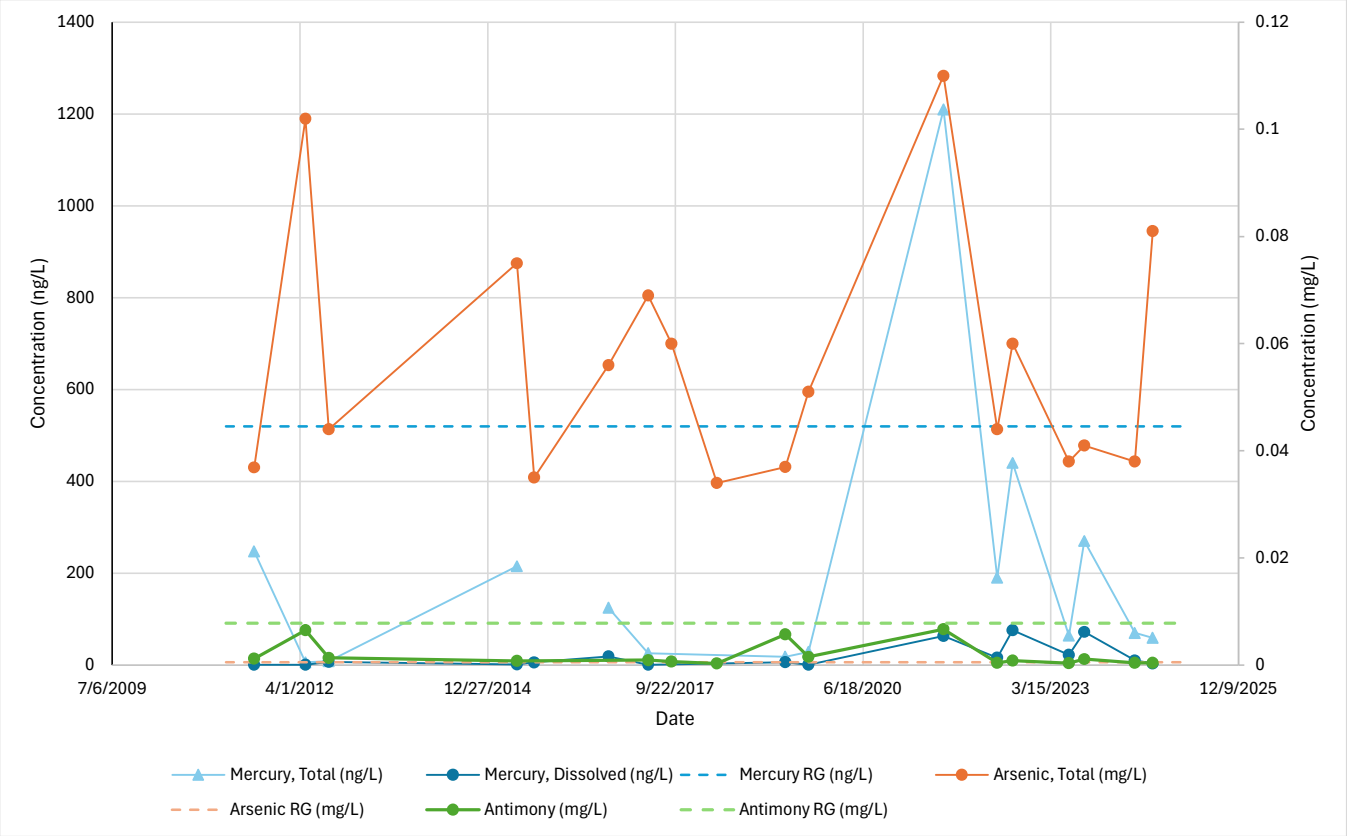
MW28
Groundwater Concentrations and Elevations

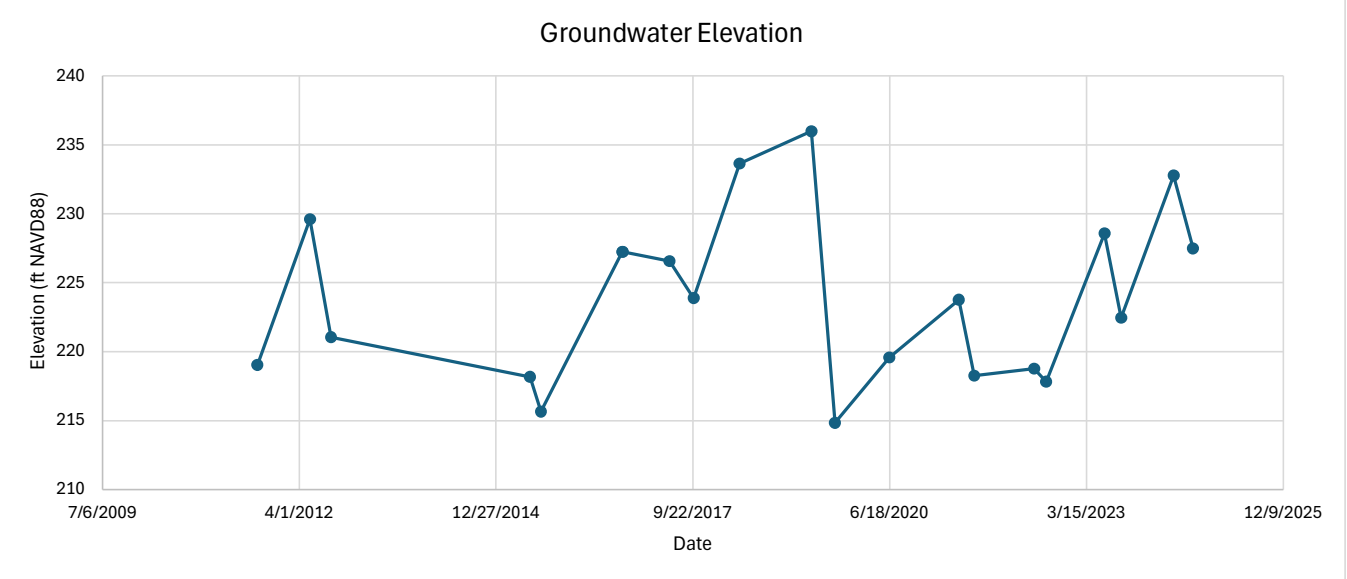




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

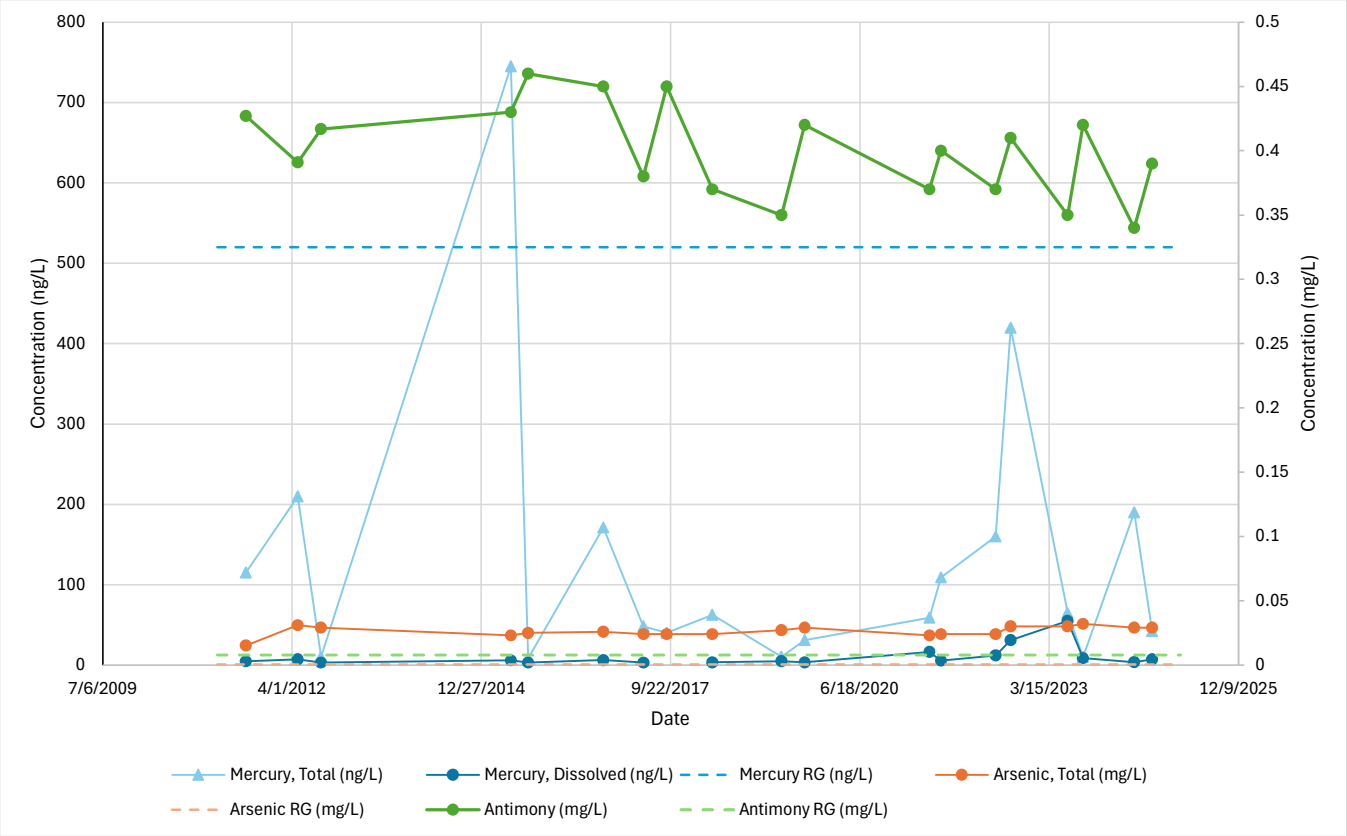
MW29
Groundwater Concentrations and Elevations

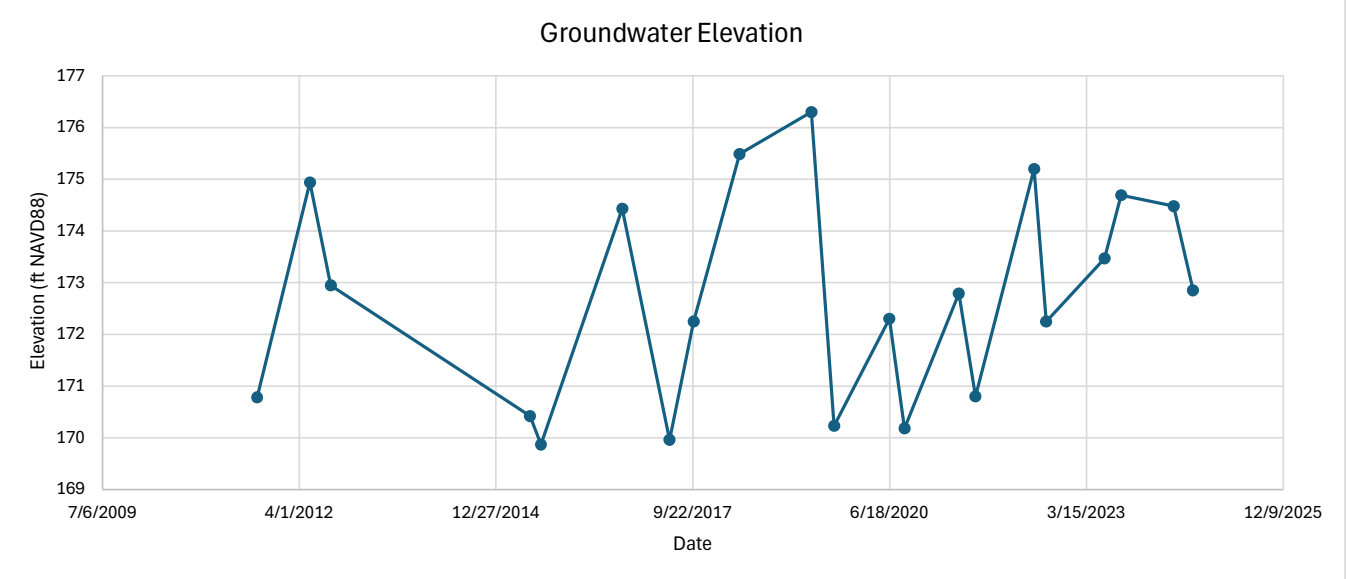




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

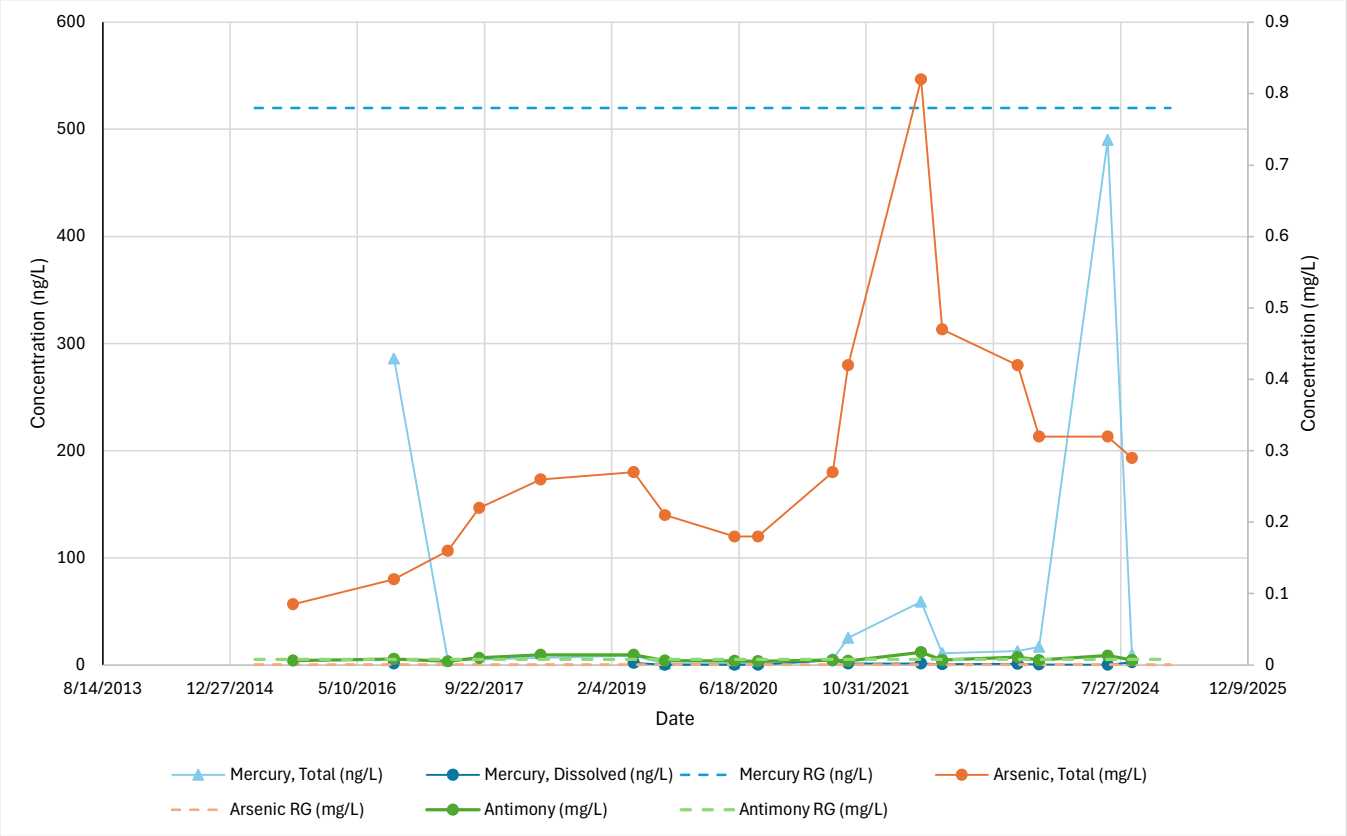
MW33
Groundwater Concentrations and Elevations

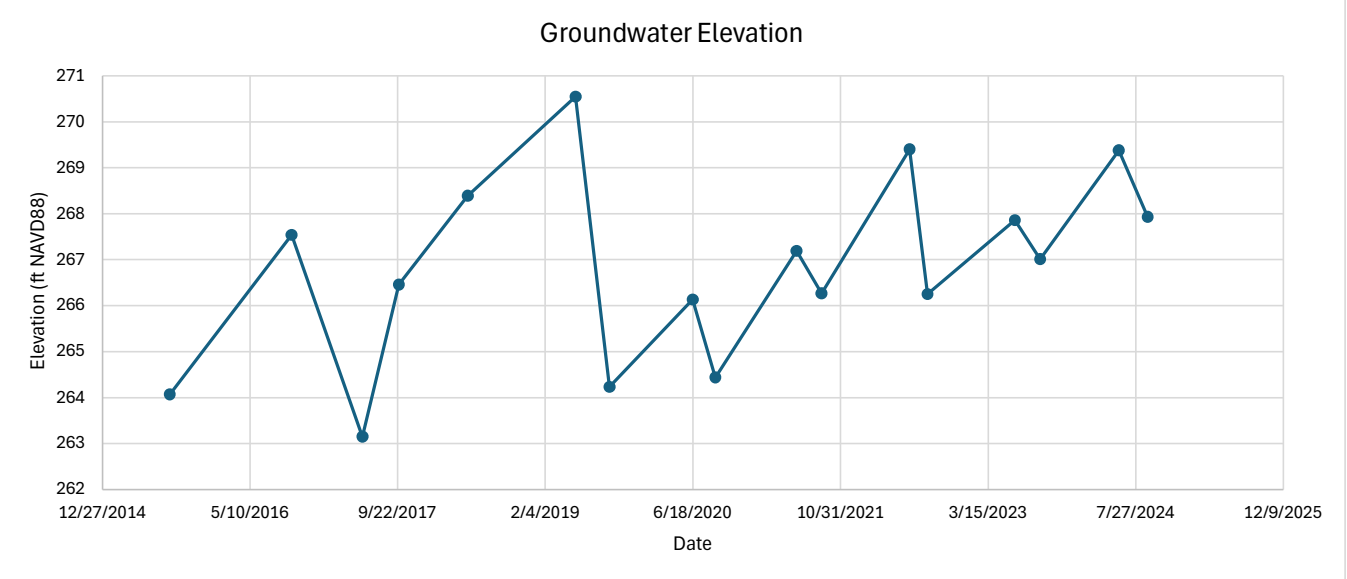




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

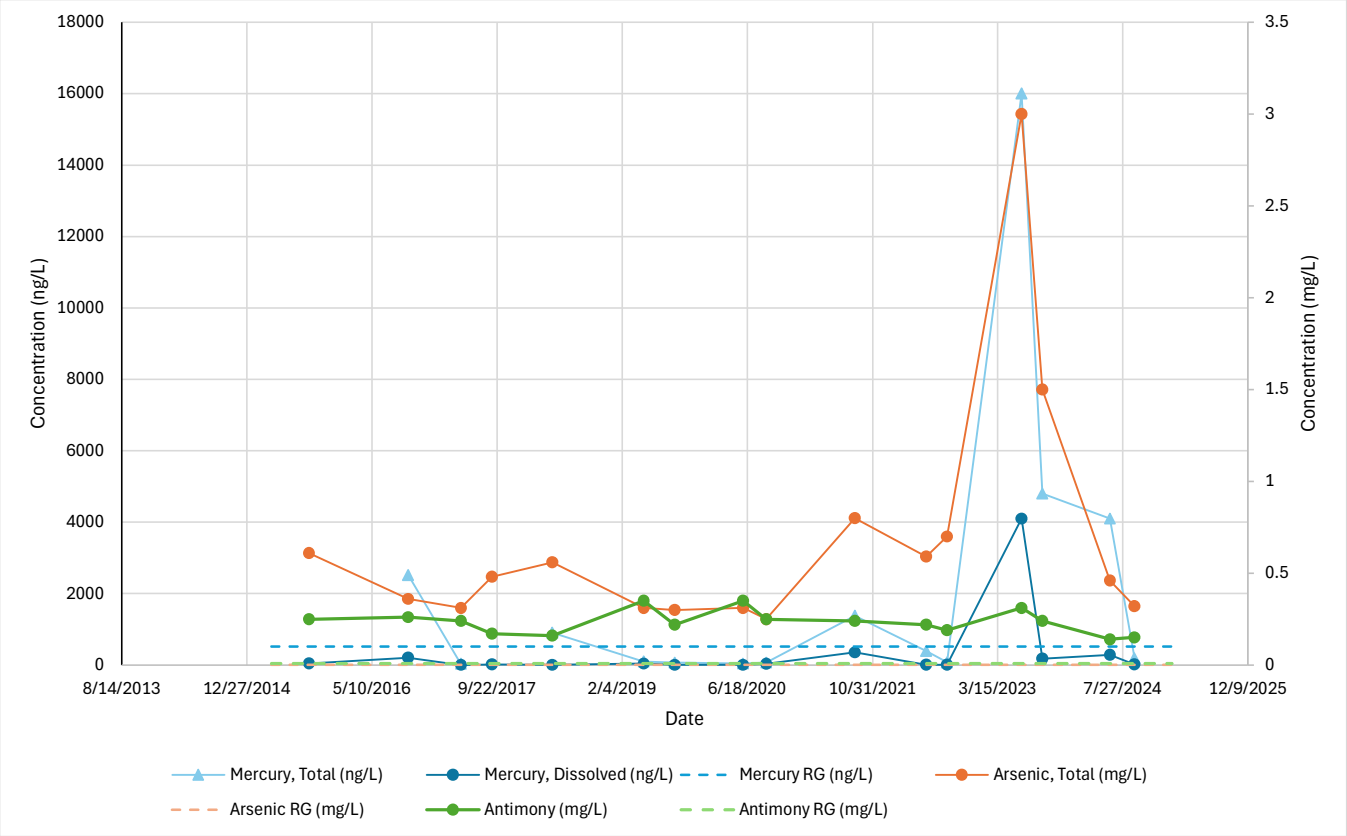
MW40
Groundwater Concentrations and Elevations

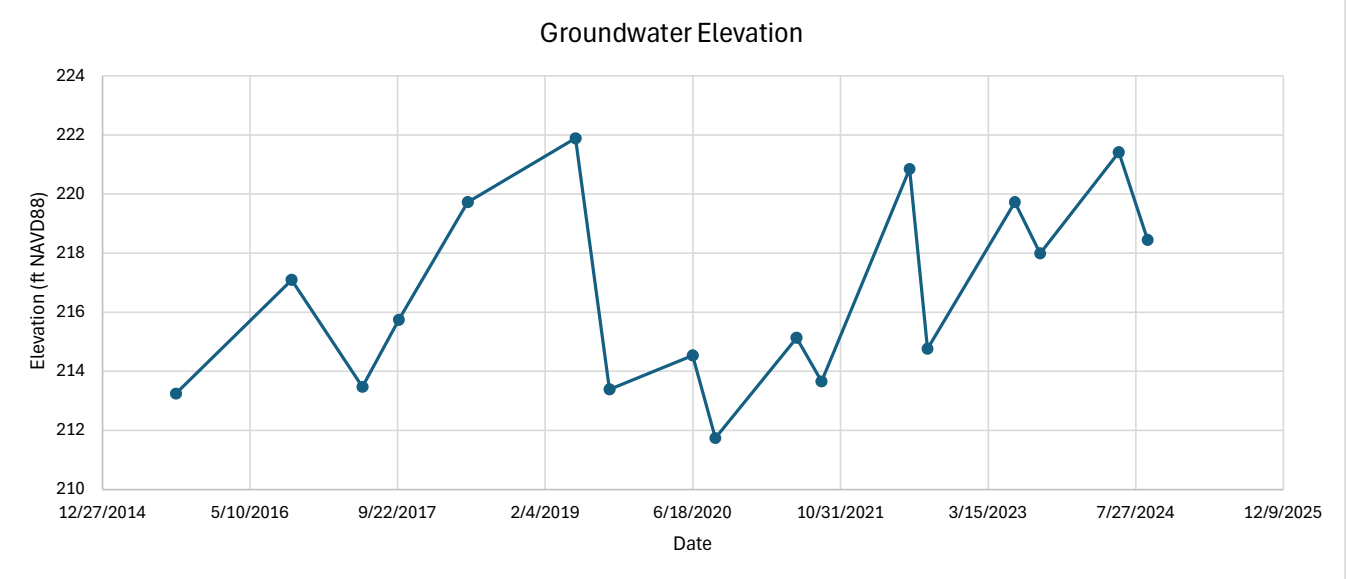




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

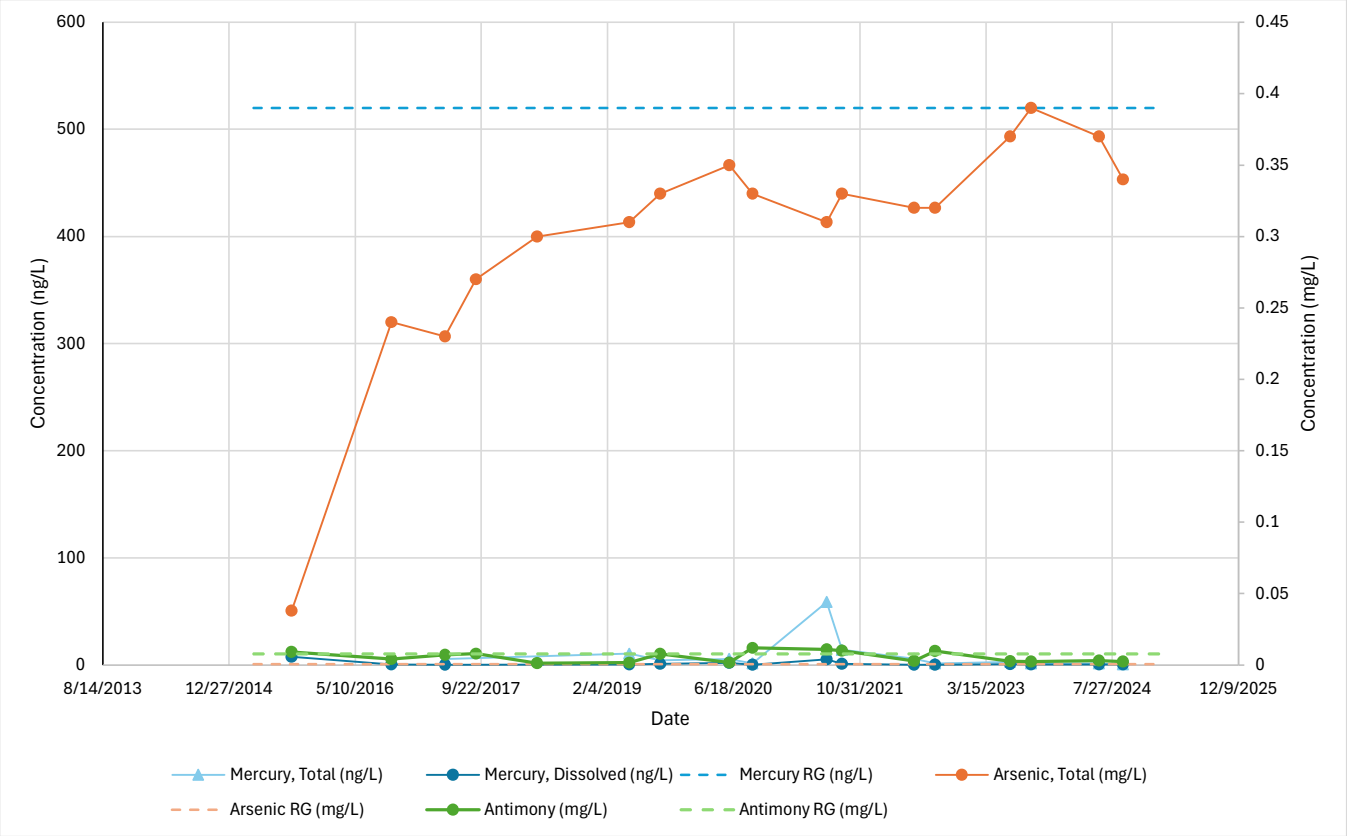
MW42
Groundwater Concentrations and Elevations

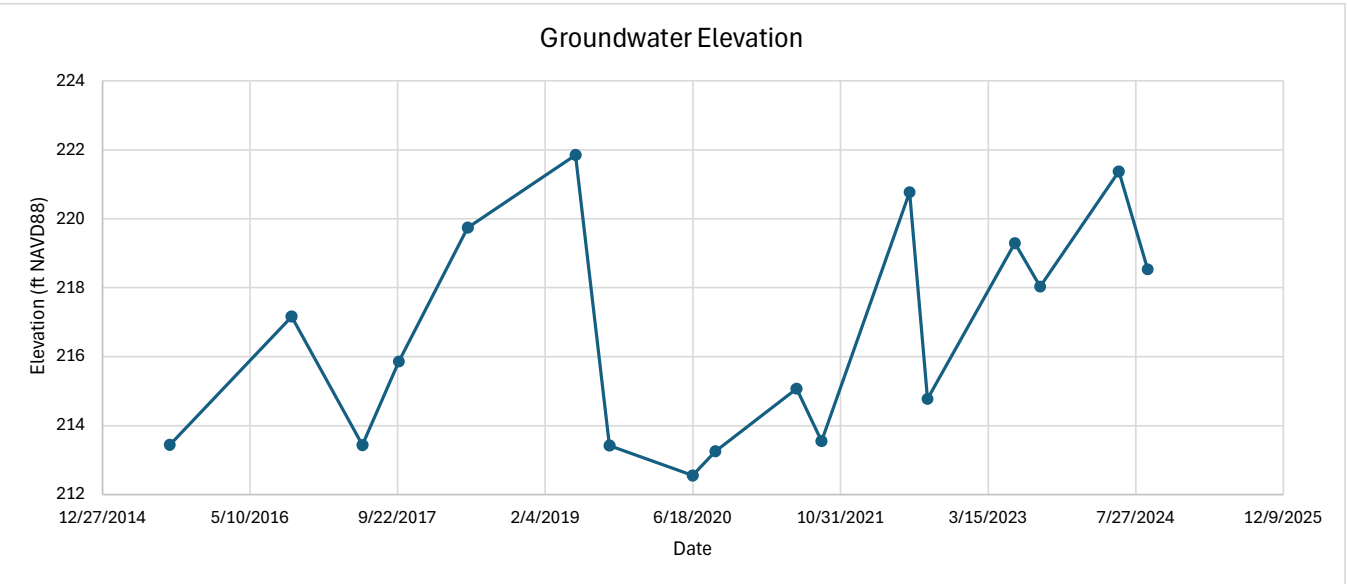




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

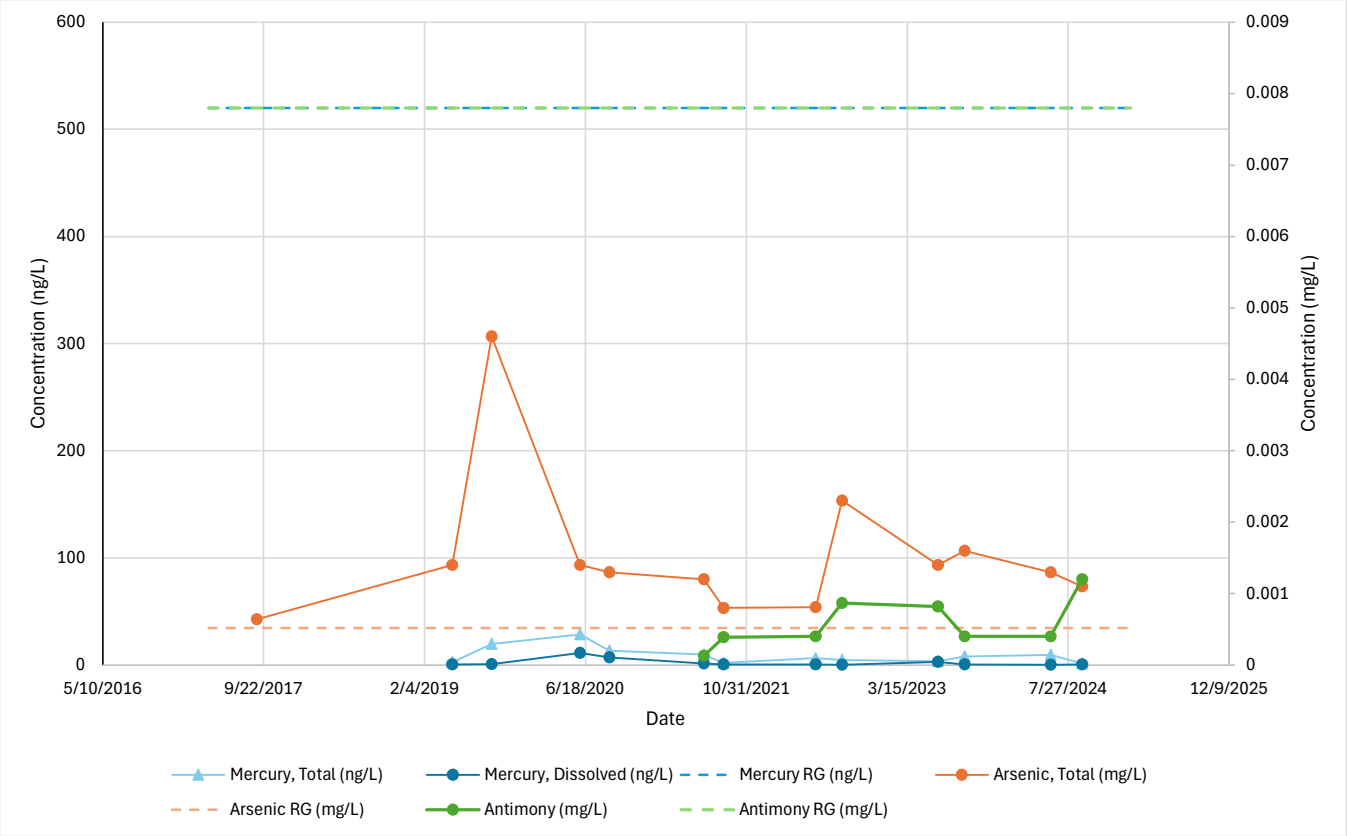
MW43
Groundwater Concentrations and Elevations

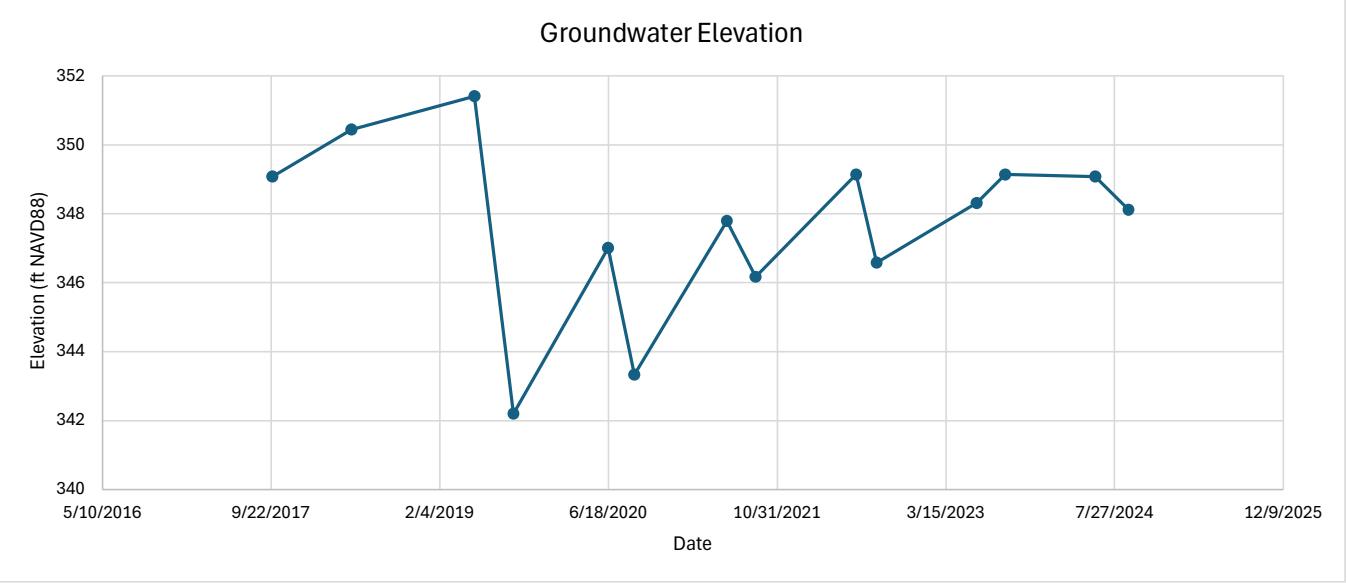




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

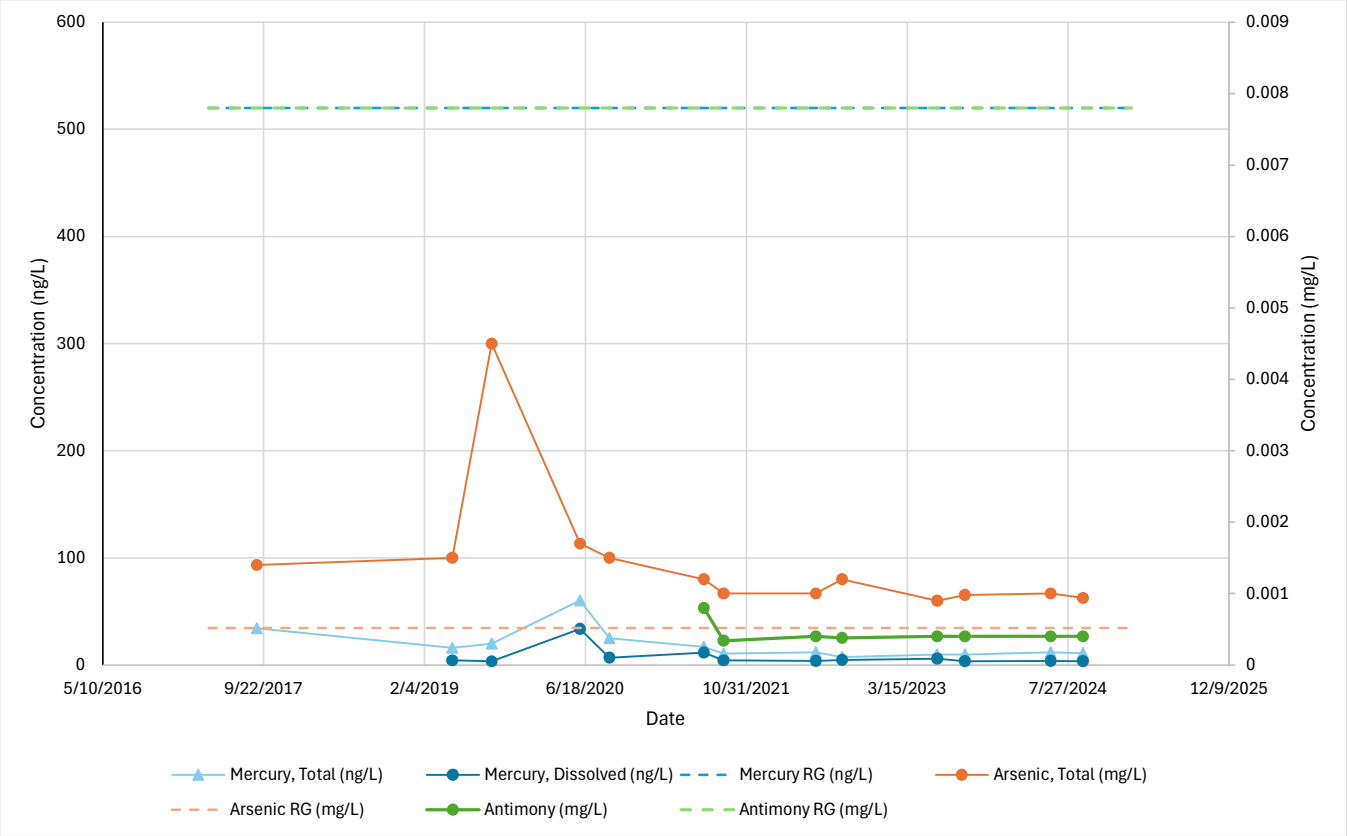
MW44
Groundwater Concentrations and Elevations

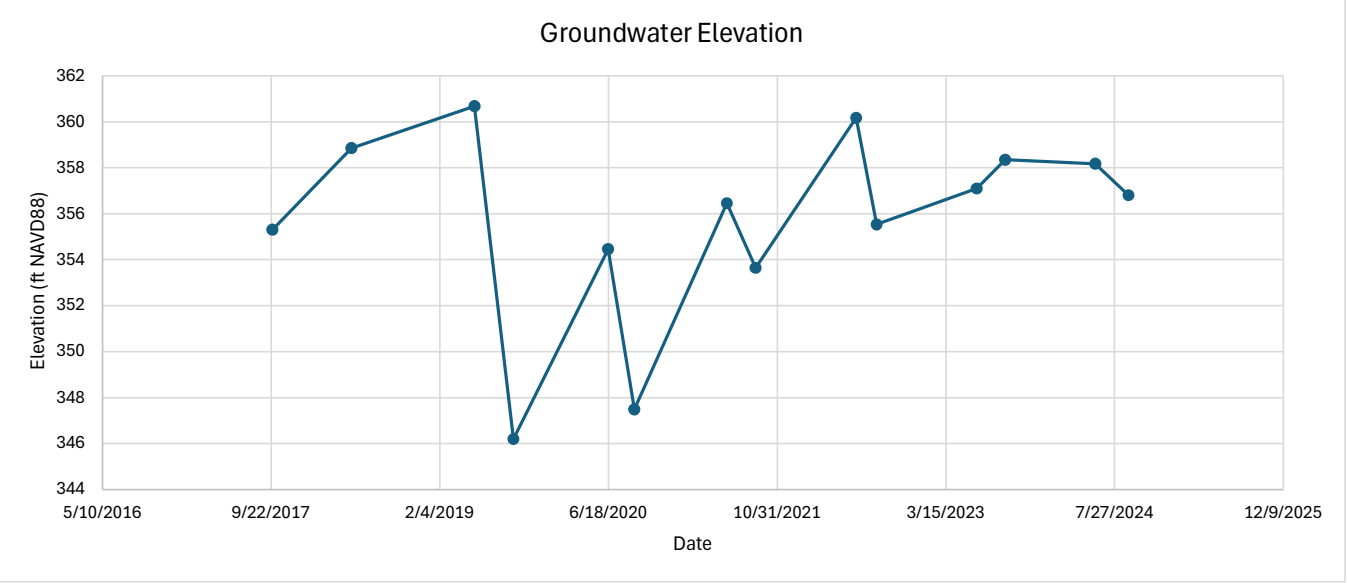




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

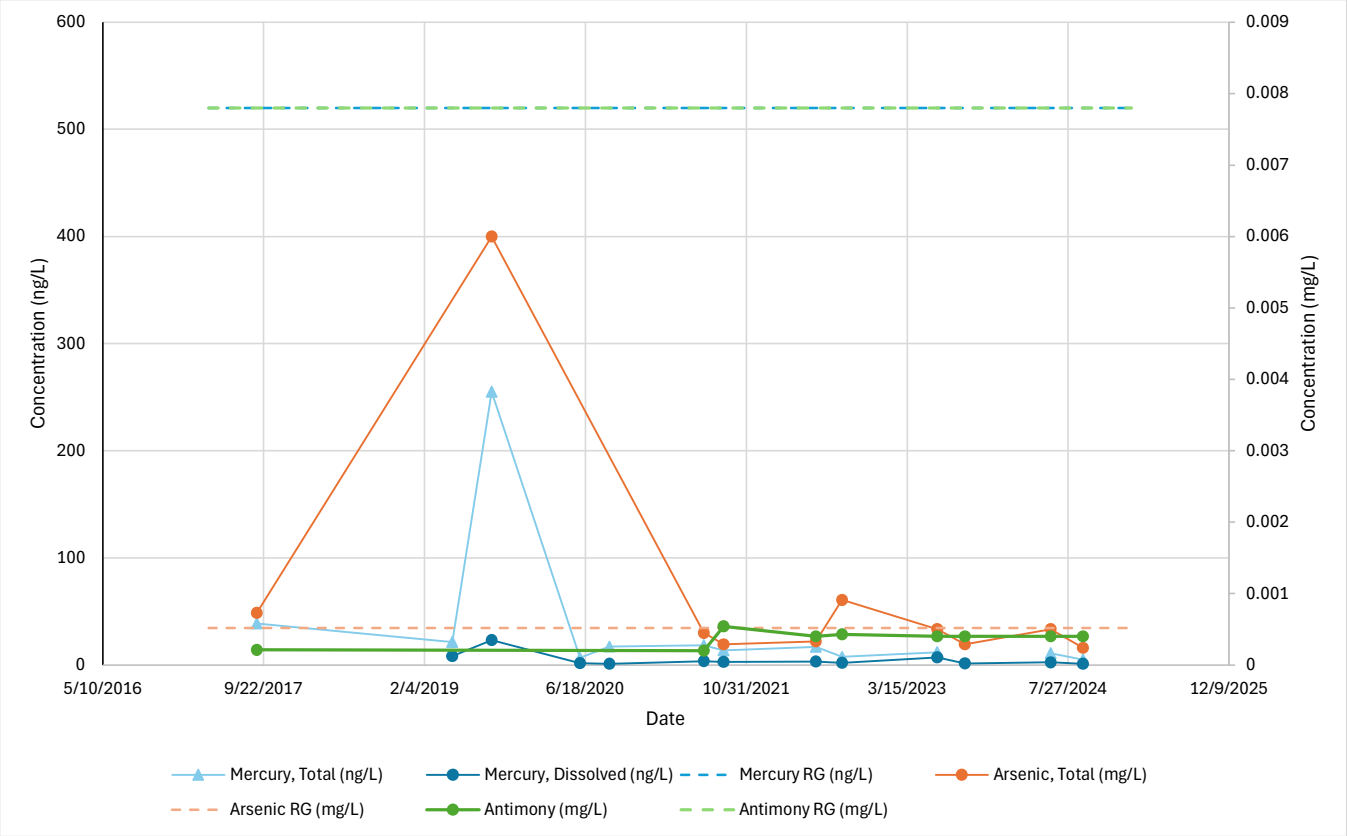
MW45
Groundwater Concentrations and Elevations

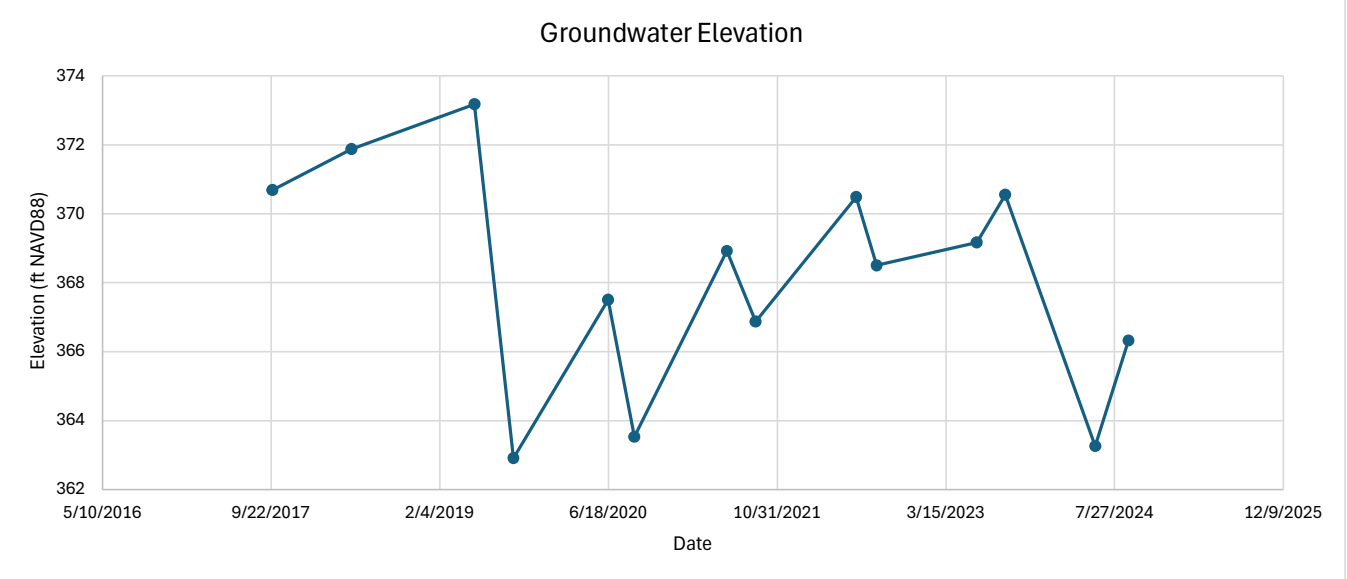




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

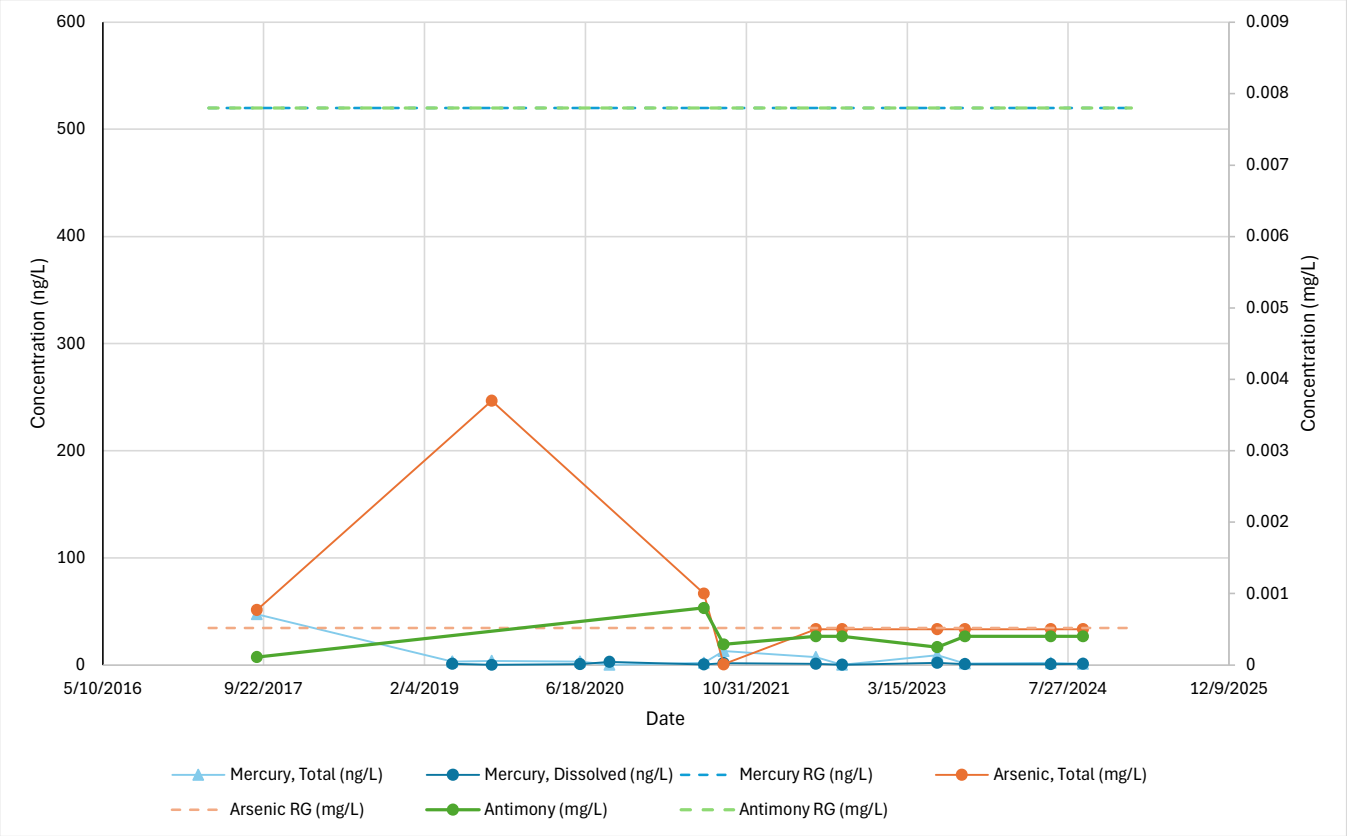
MW46
Groundwater Concentrations and Elevations

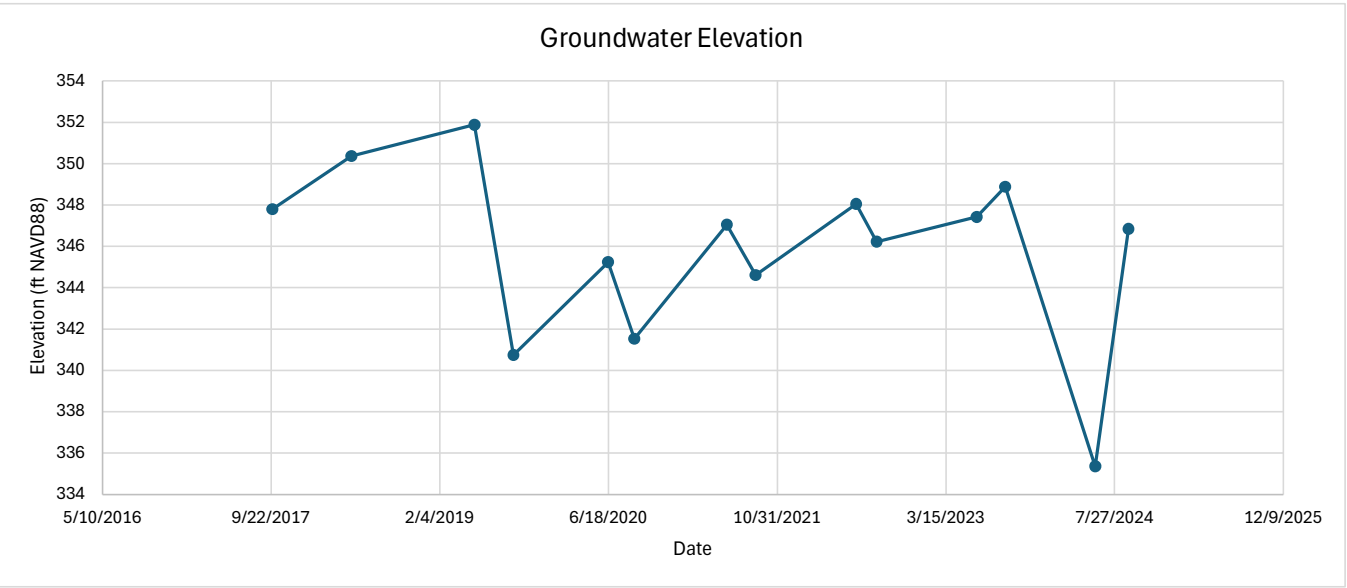




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

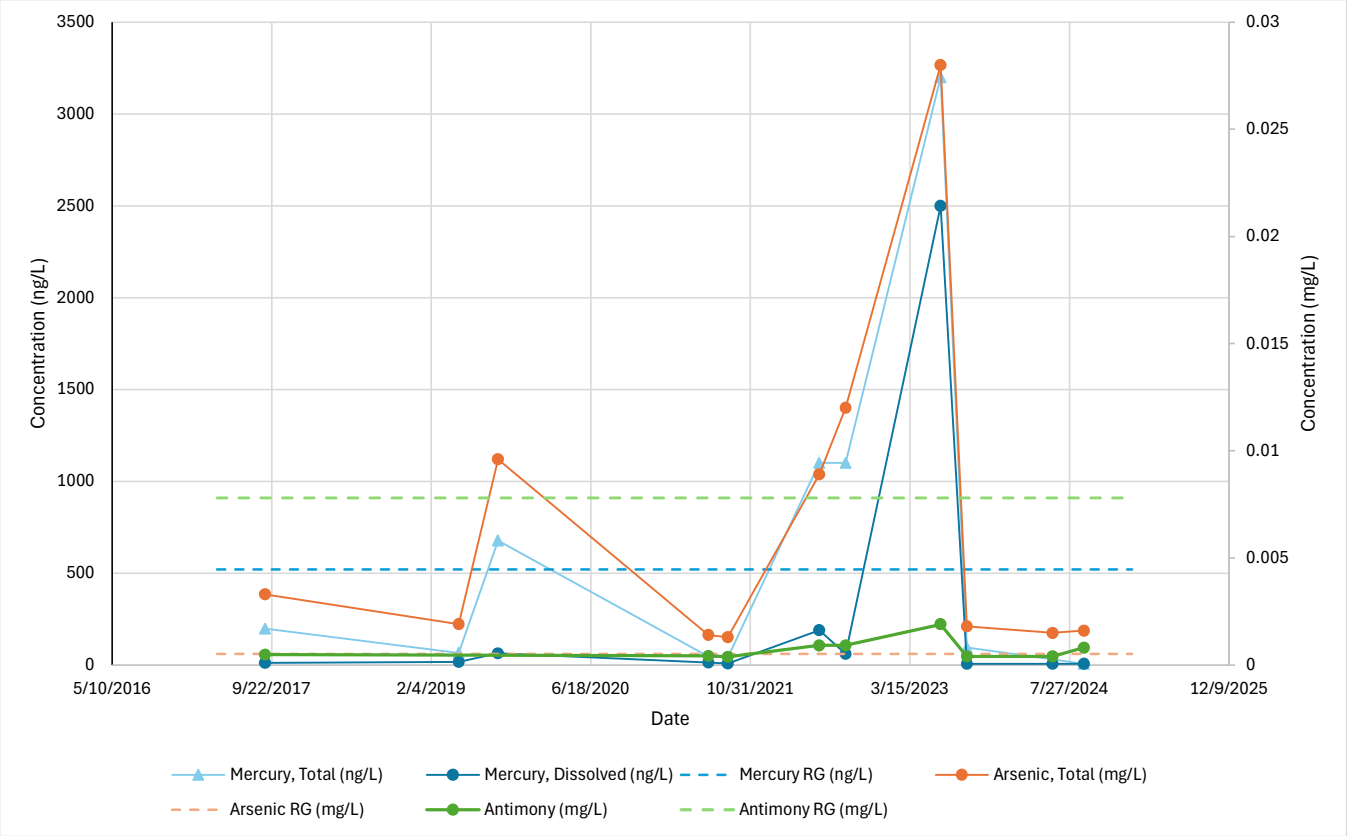
MW47
Groundwater Concentrations and Elevations

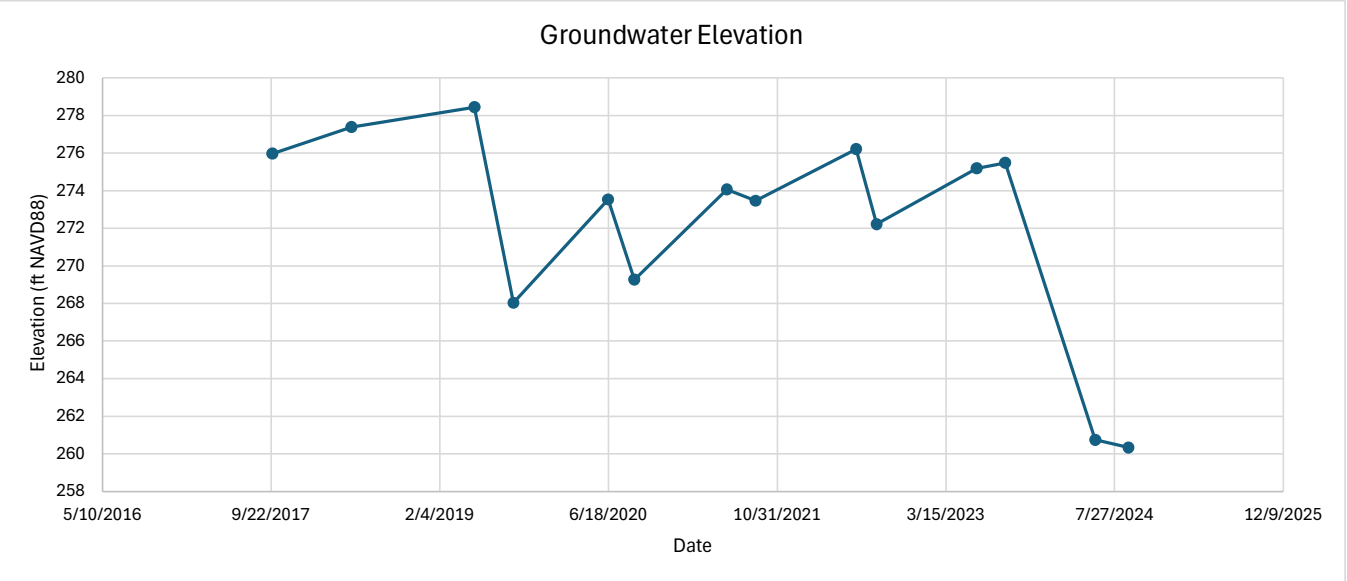




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

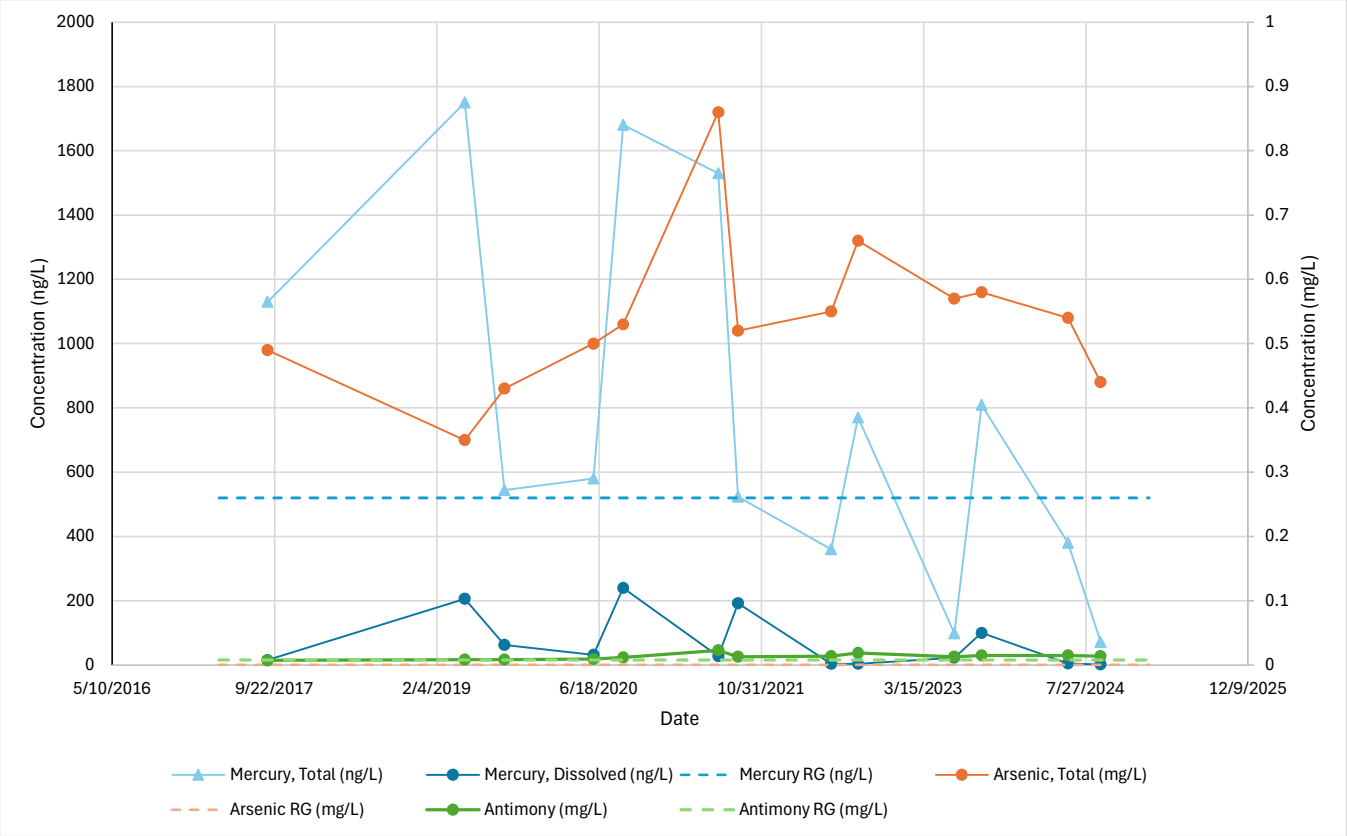
MW49
Groundwater Concentrations and Elevations

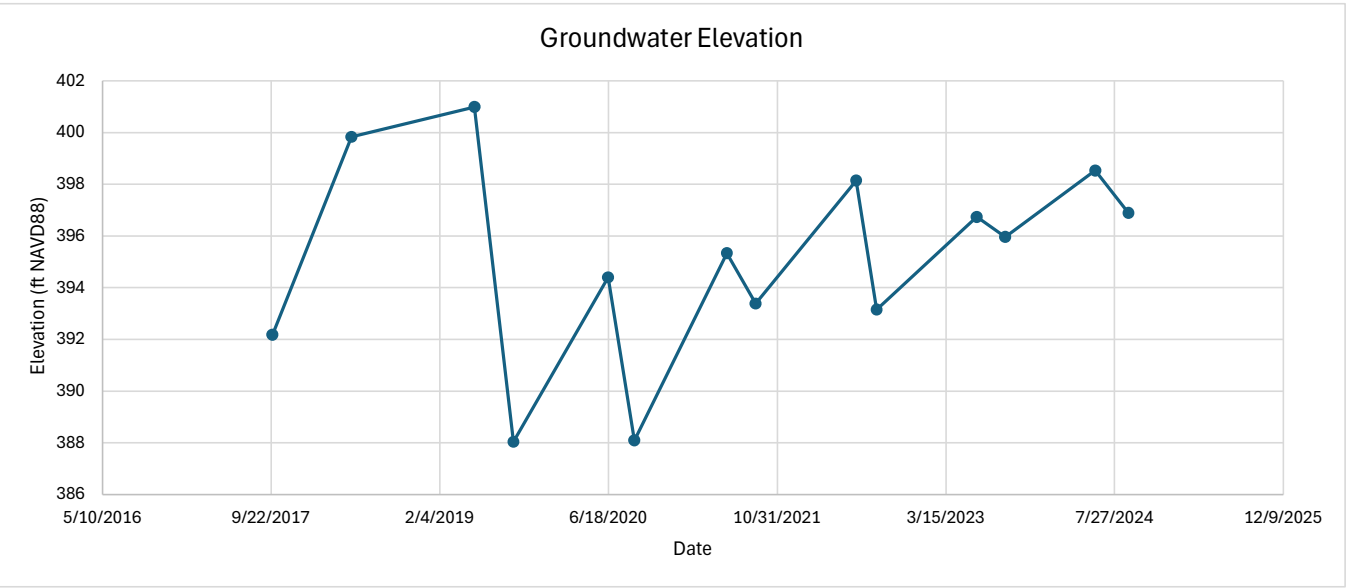




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

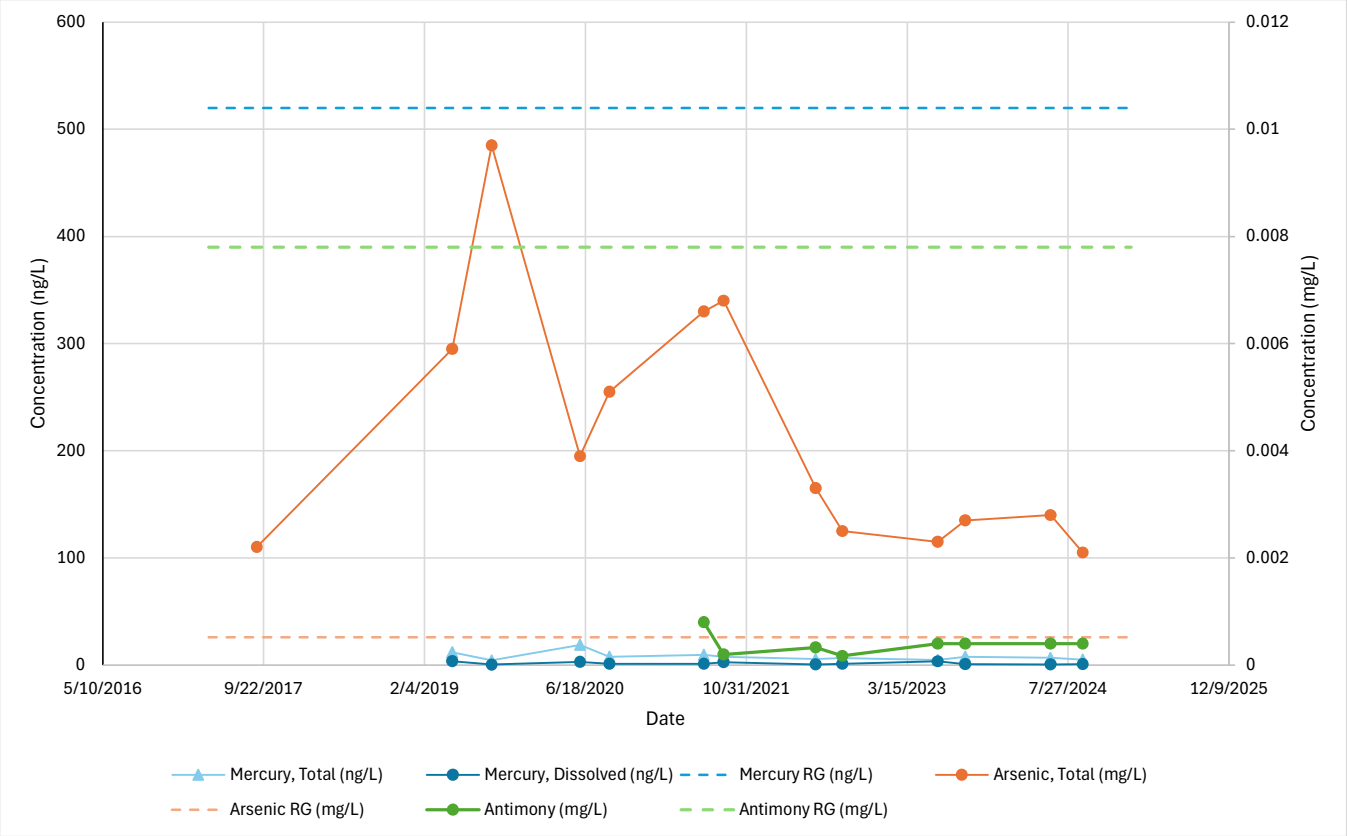
MW50
Groundwater Concentrations and Elevations

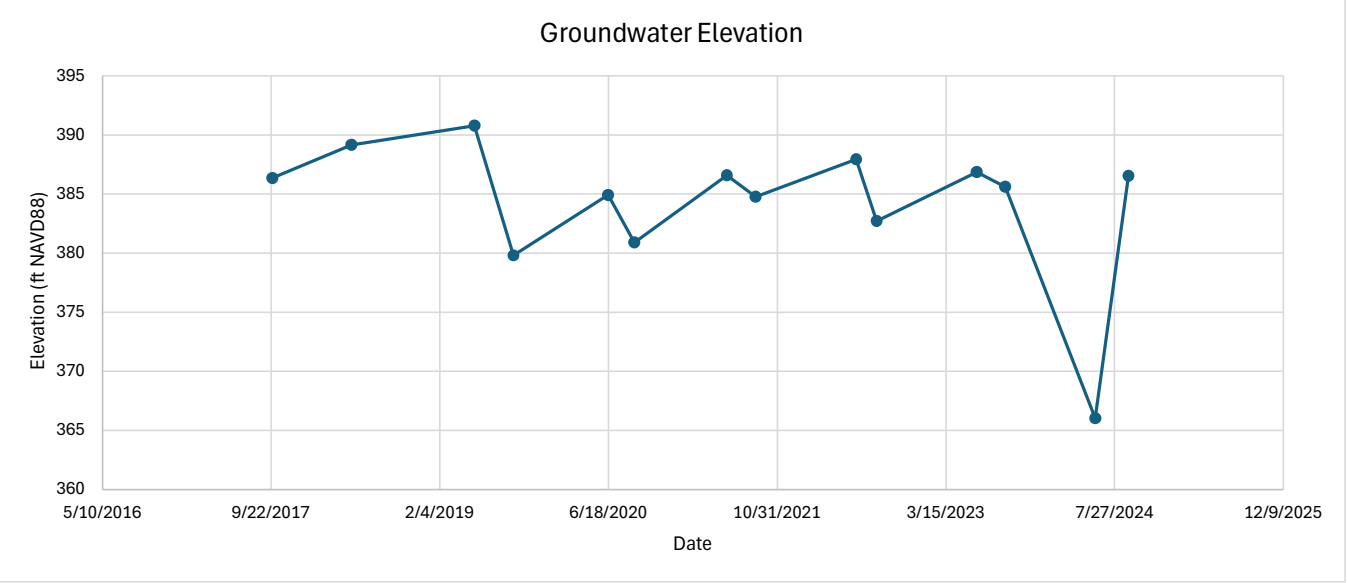




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

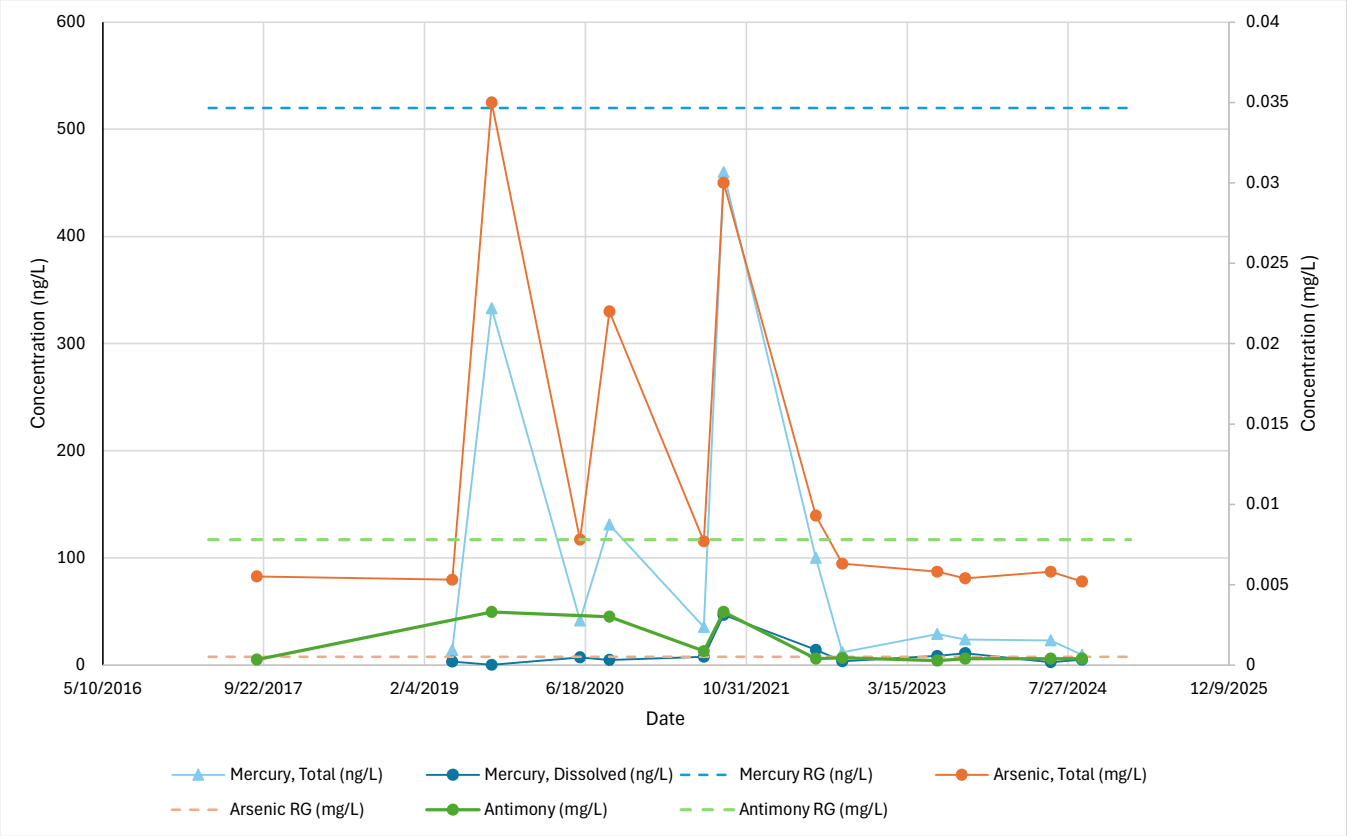
MW51
Groundwater Concentrations and Elevations

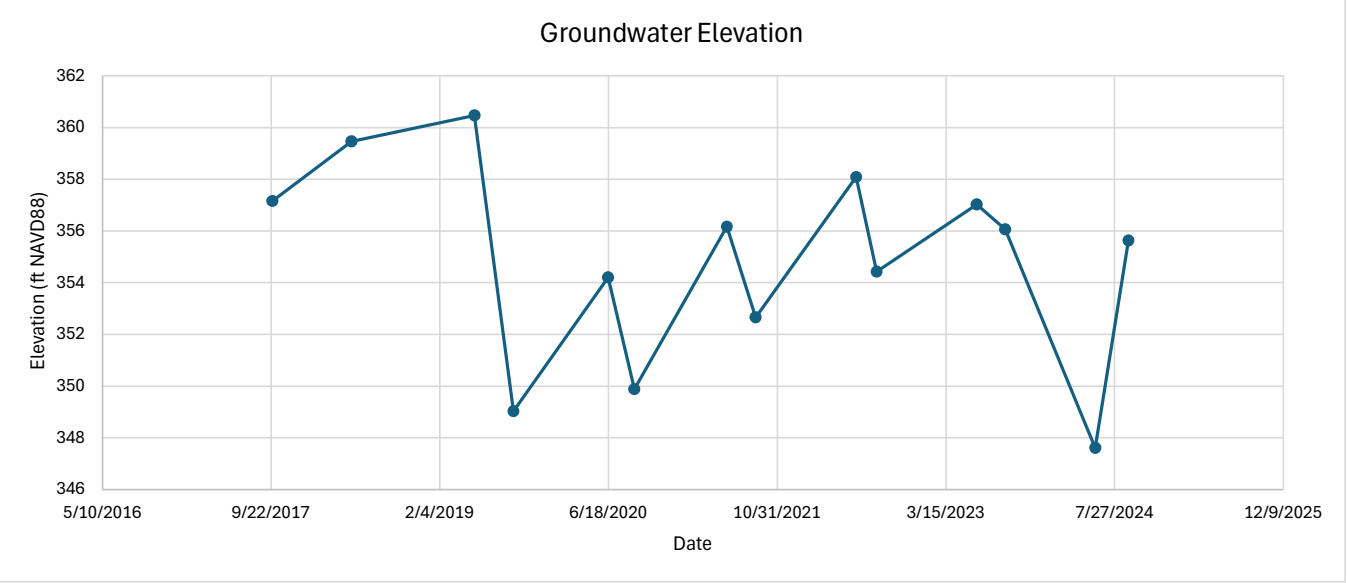




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

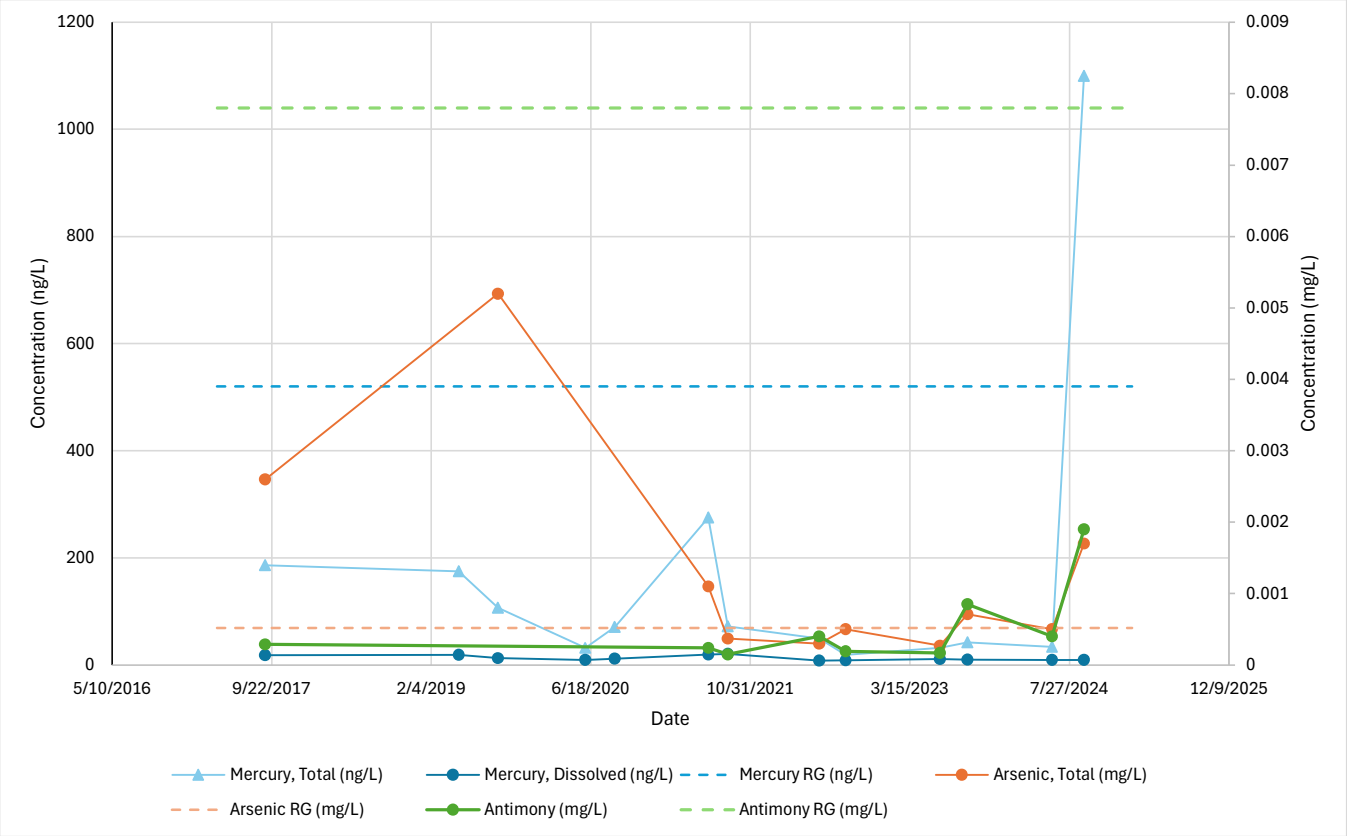
MW52
Groundwater Concentrations and Elevations

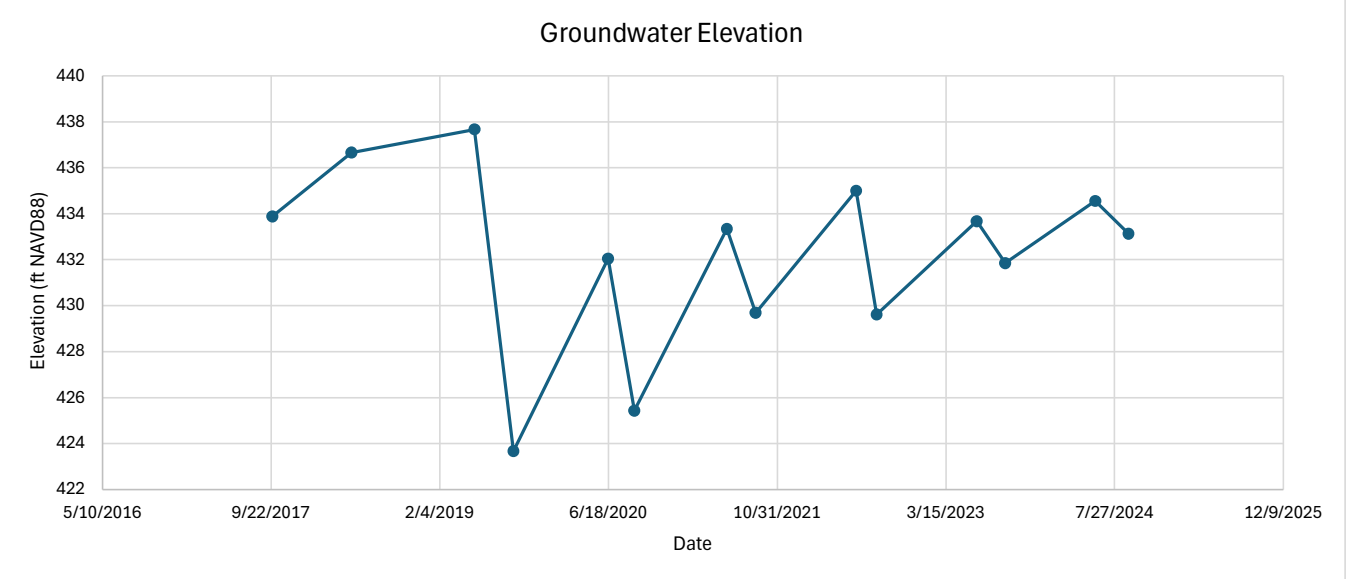




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

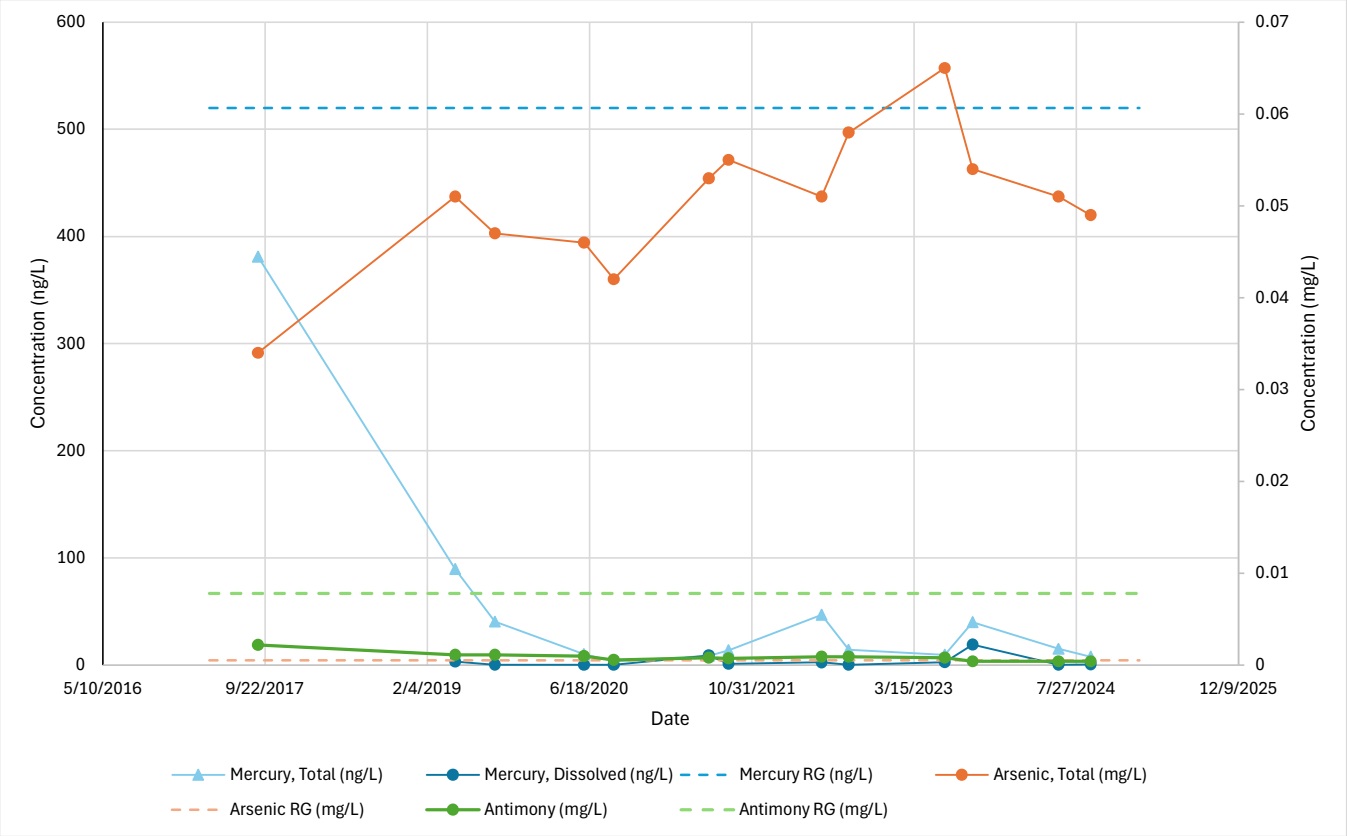
MW53
Groundwater Concentrations and Elevations

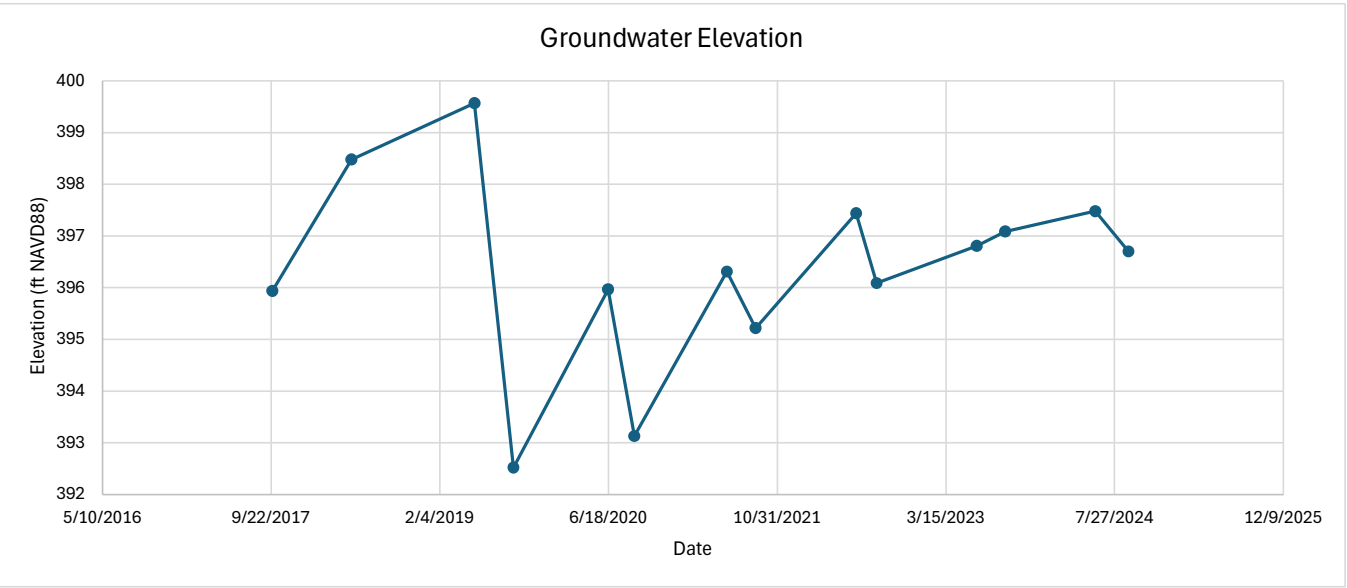




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

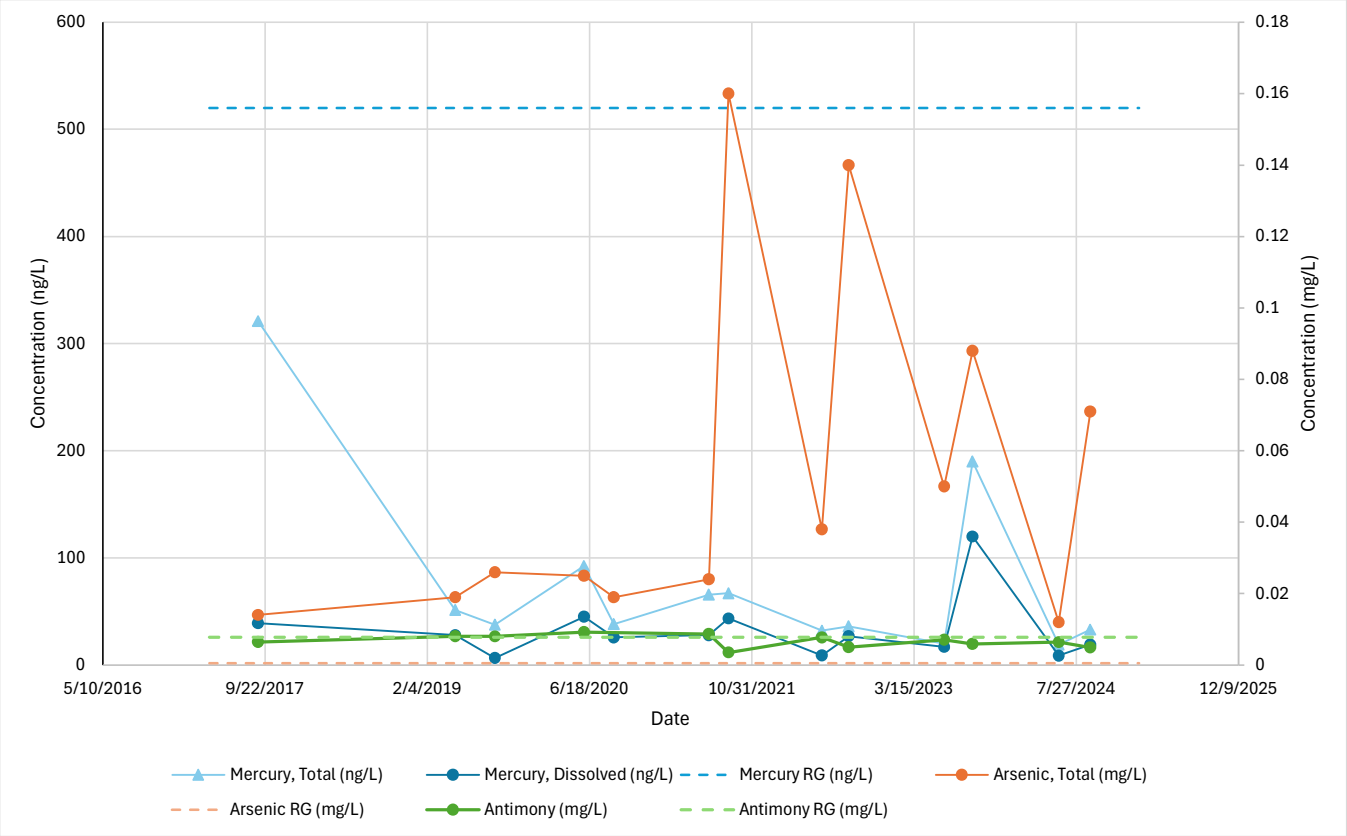
MW54
Groundwater Concentrations and Elevations

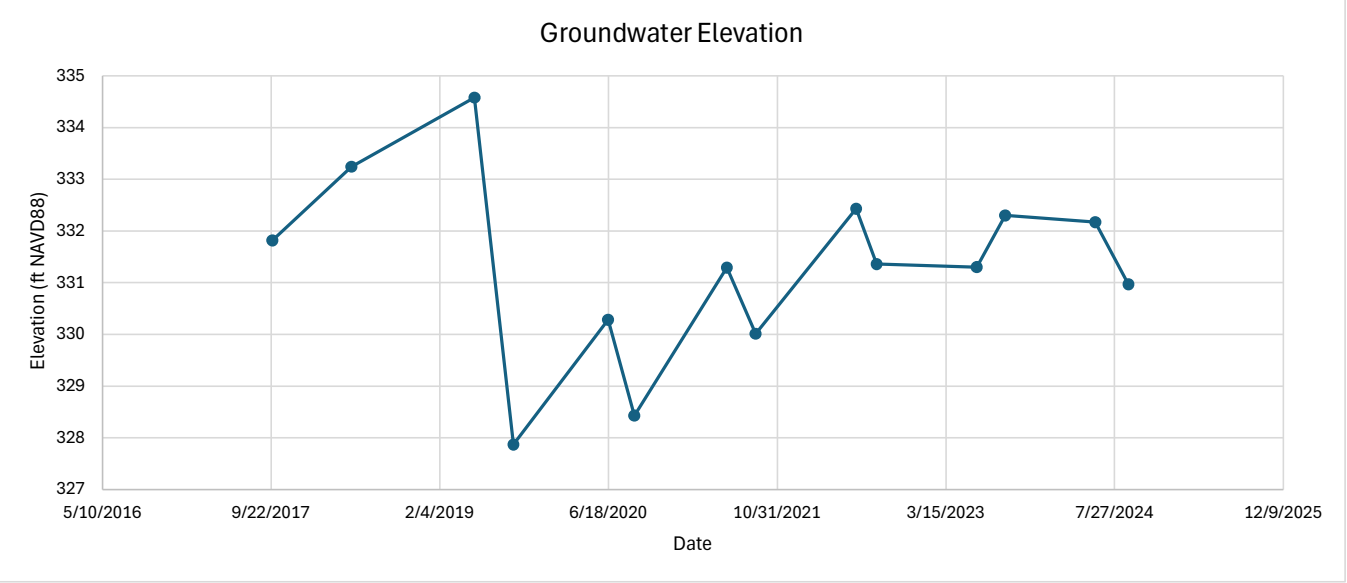




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

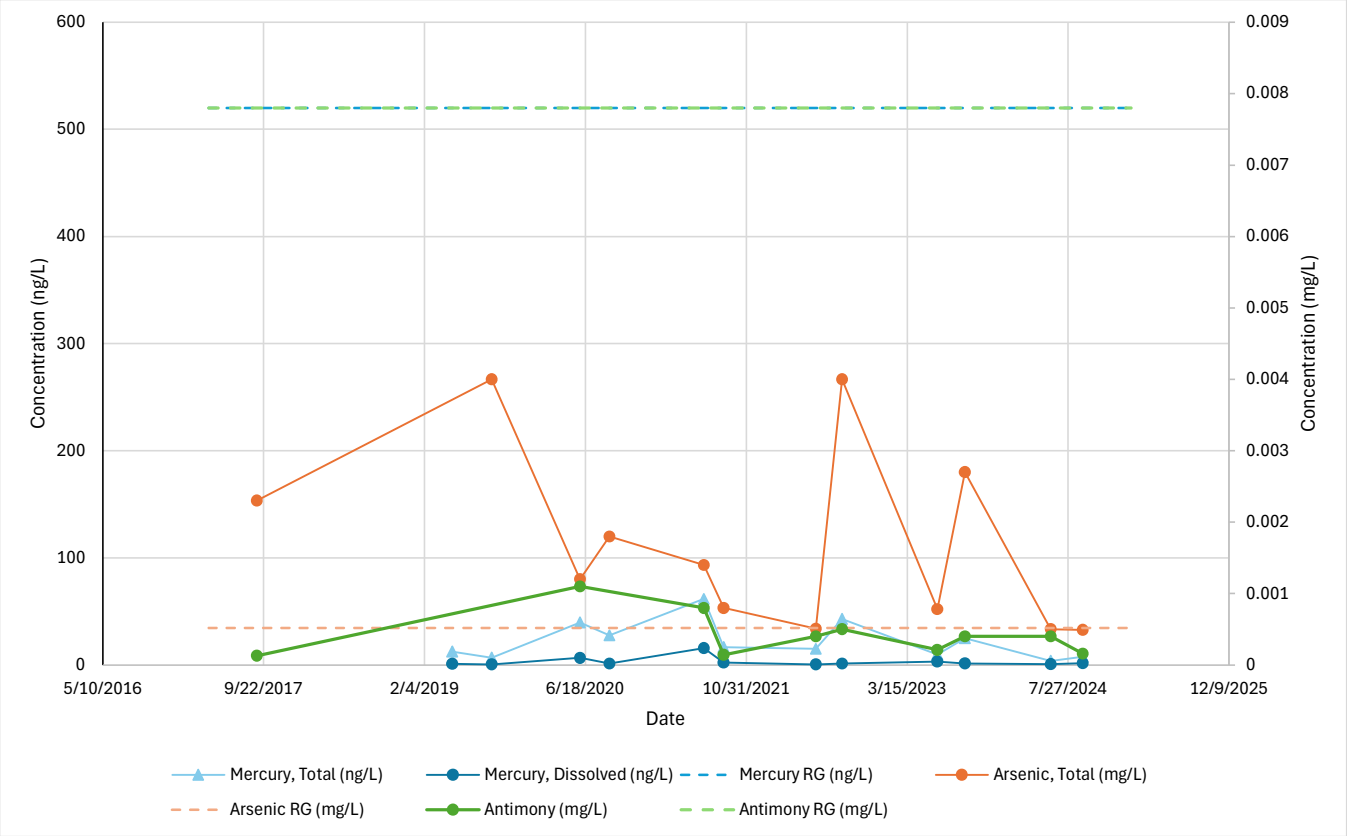
MW55
Groundwater Concentrations and Elevations

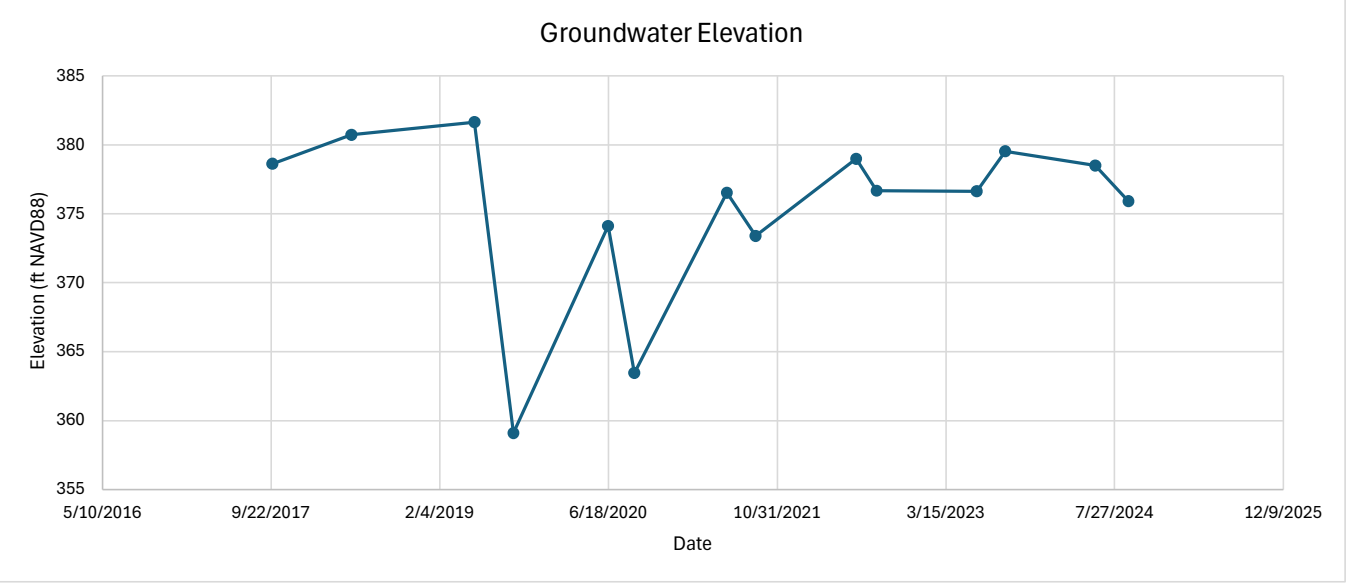




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

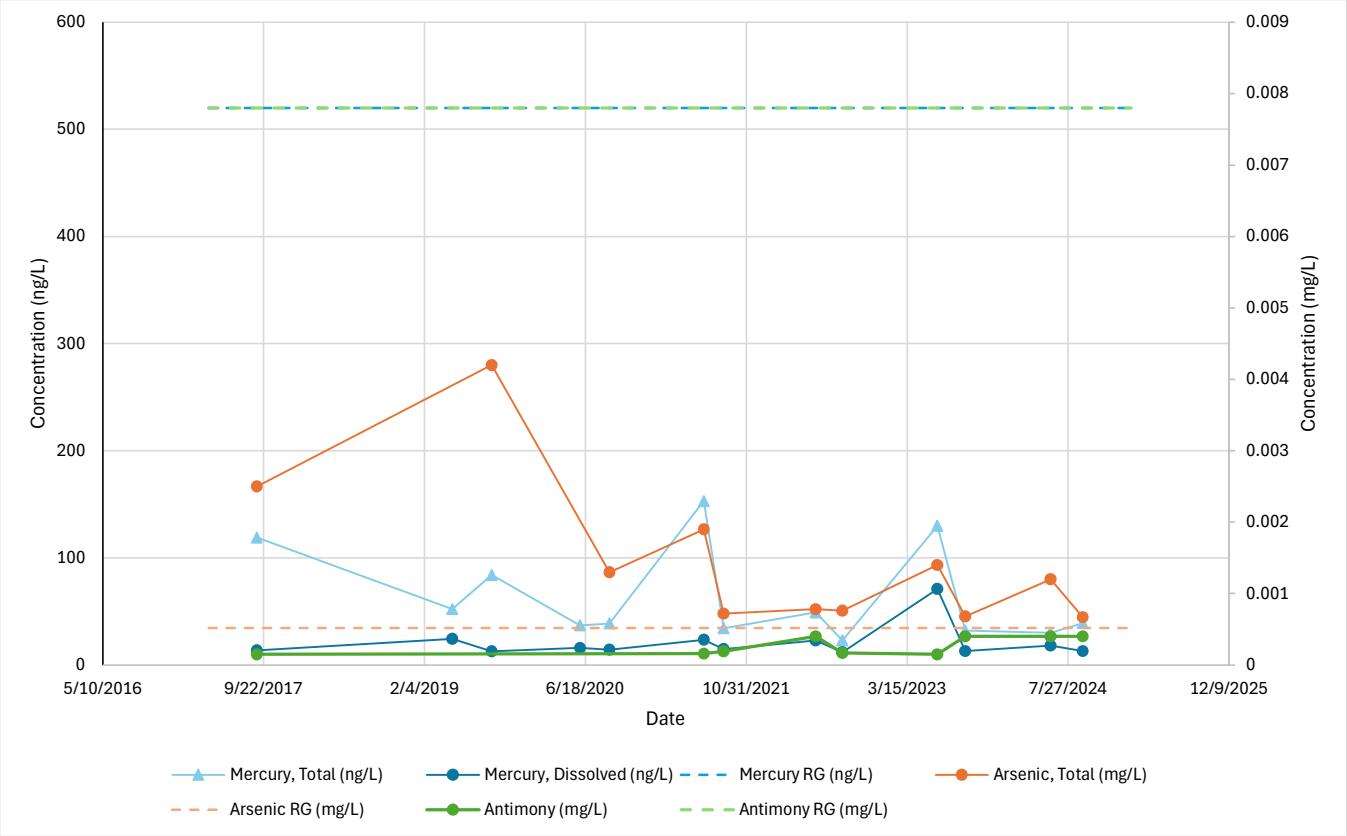
MW56
Groundwater Concentrations and Elevations

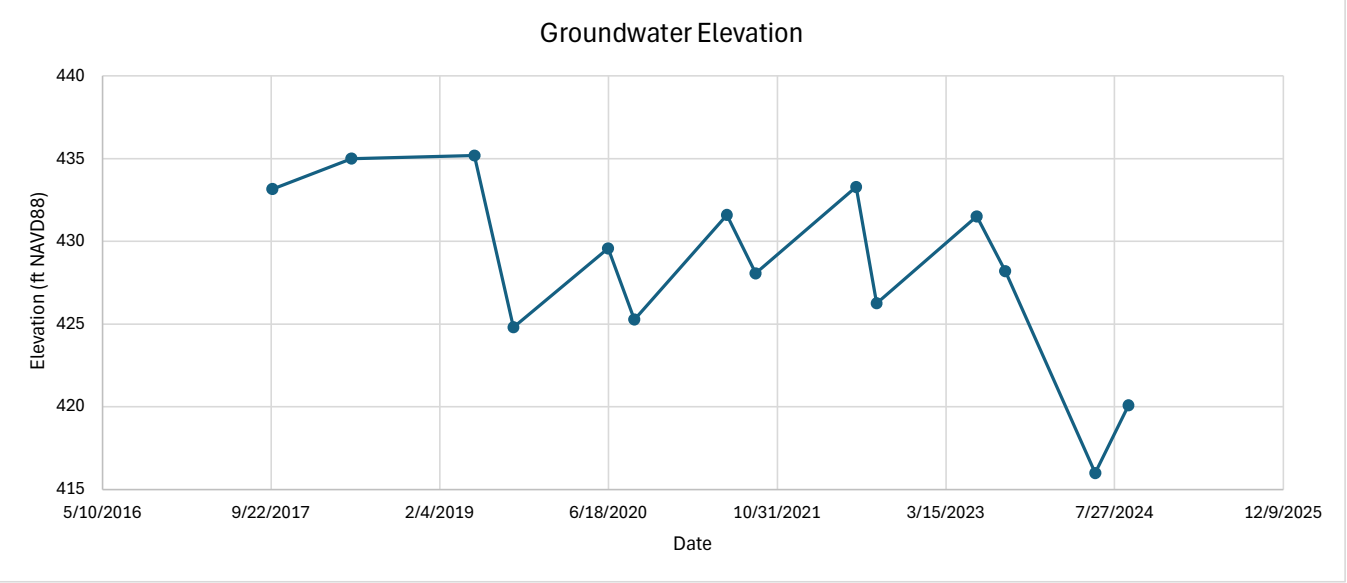




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

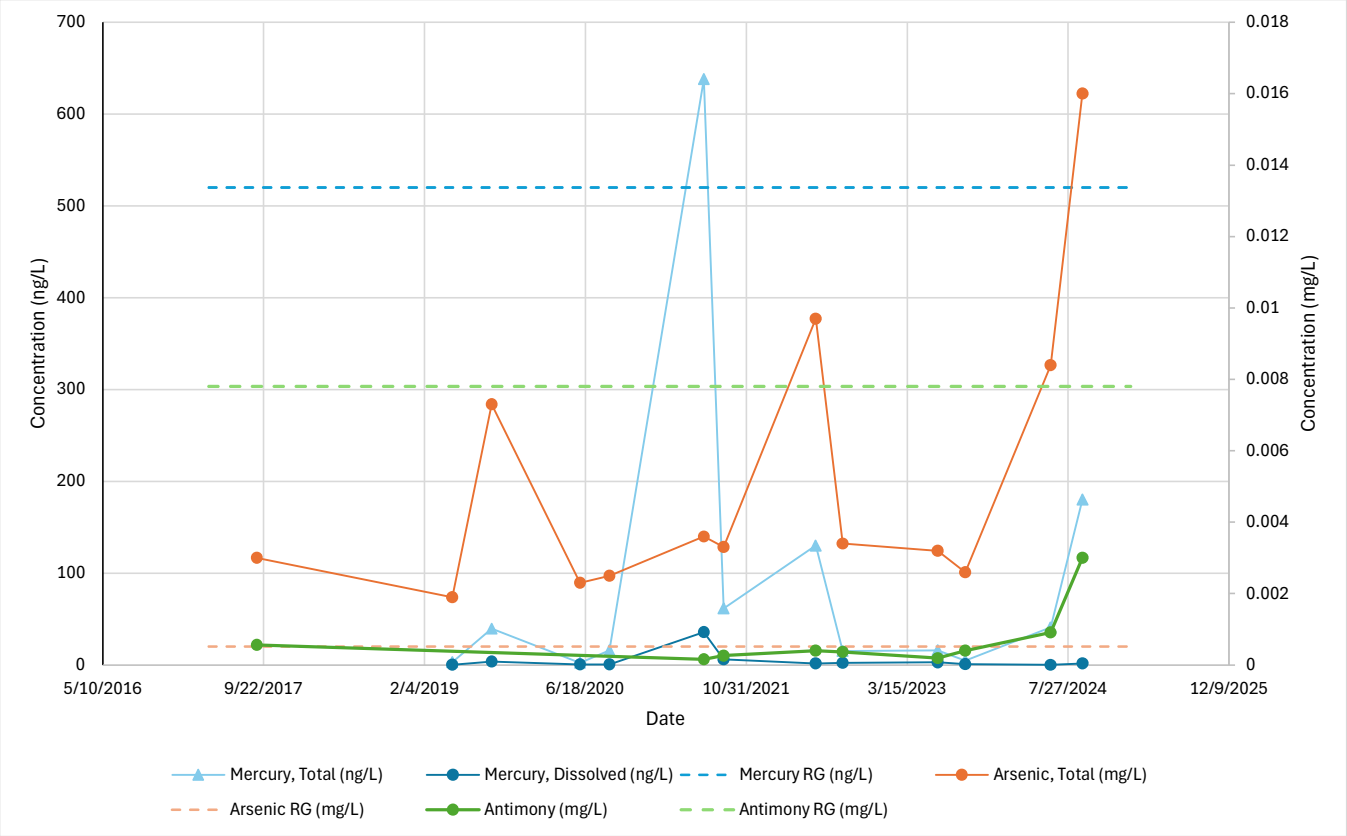
MW57
Groundwater Concentrations and Elevations

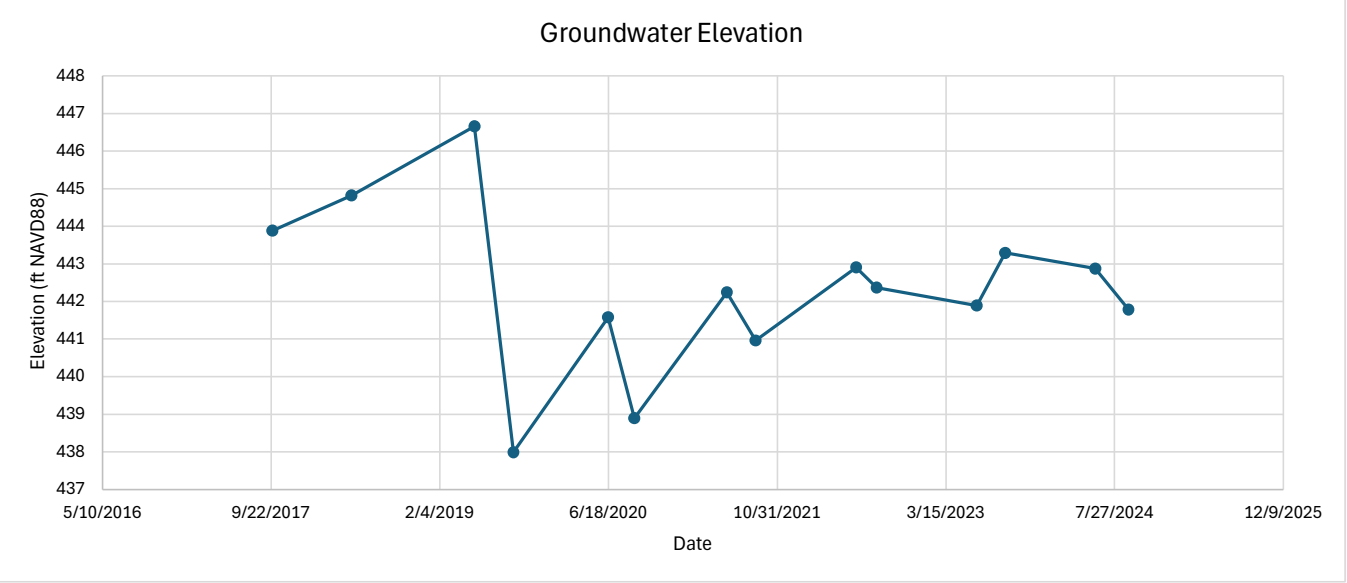




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

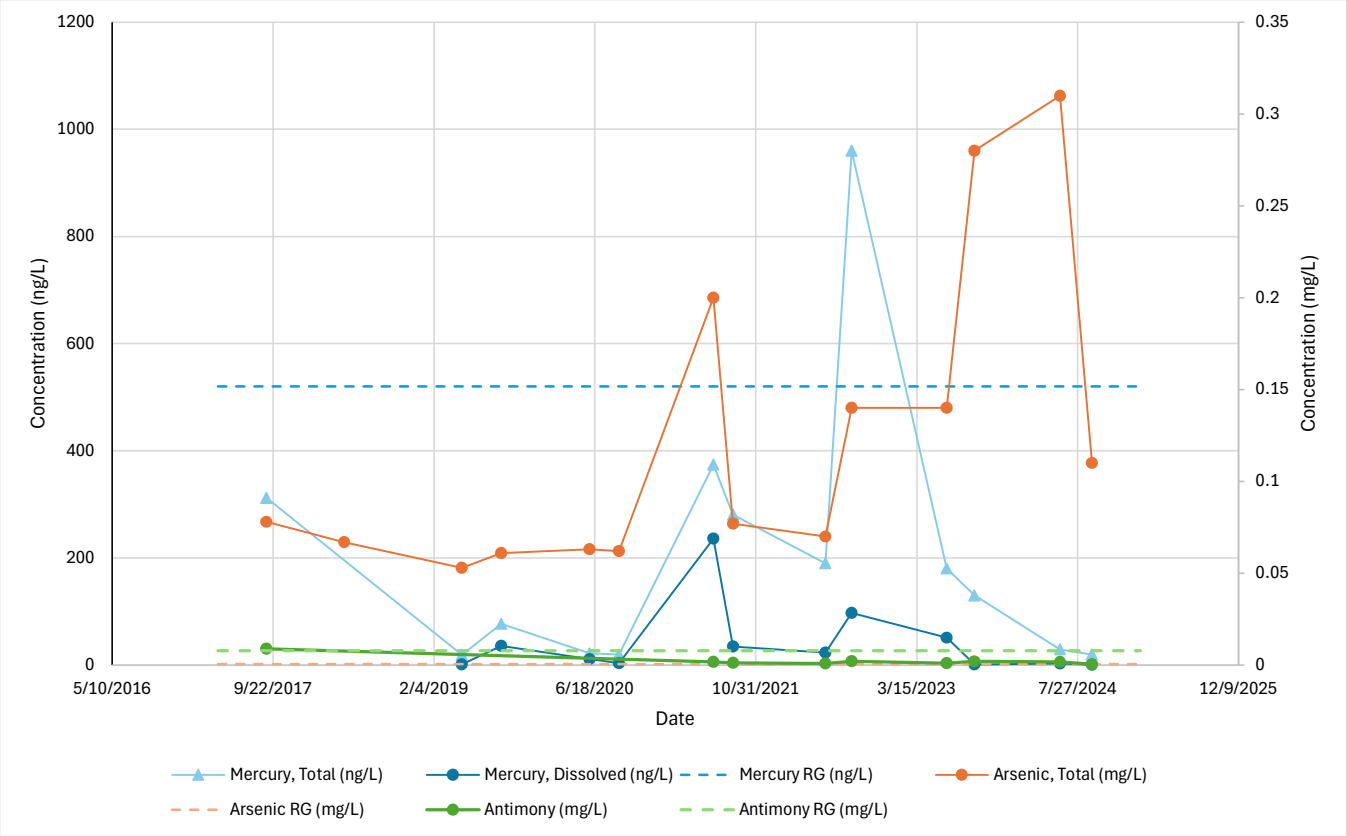
MW58
Groundwater Concentrations and Elevations

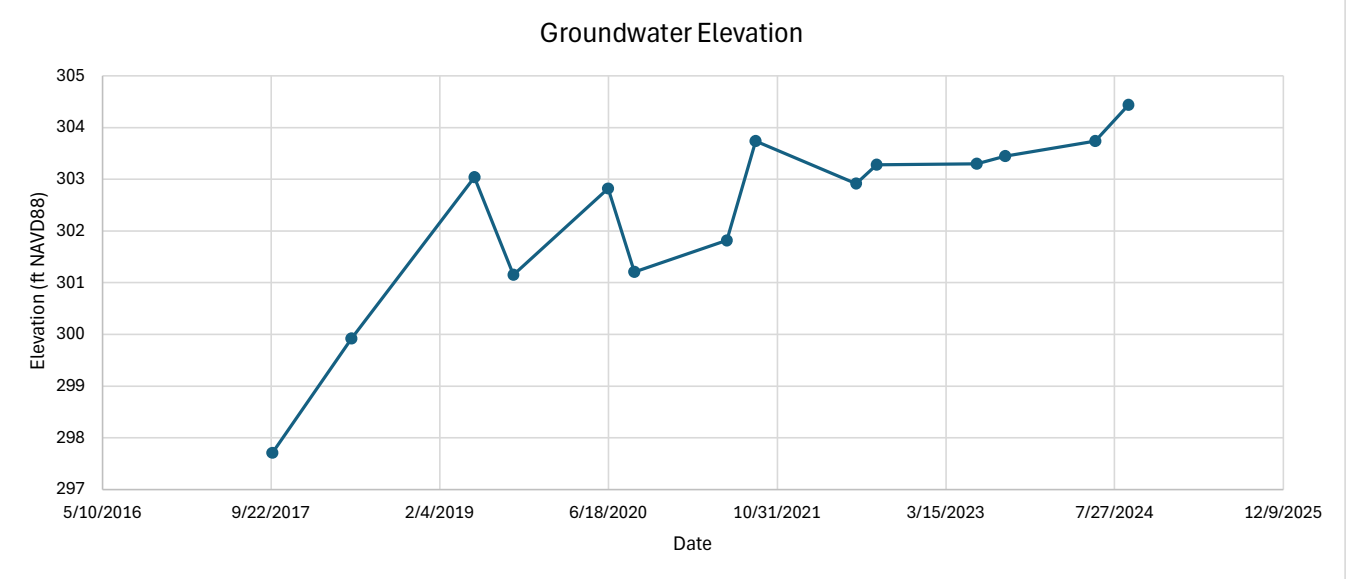




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

MW59
Groundwater Concentrations and Elevations





Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter

F.2 SUFACE WATER TREND GRAPHS

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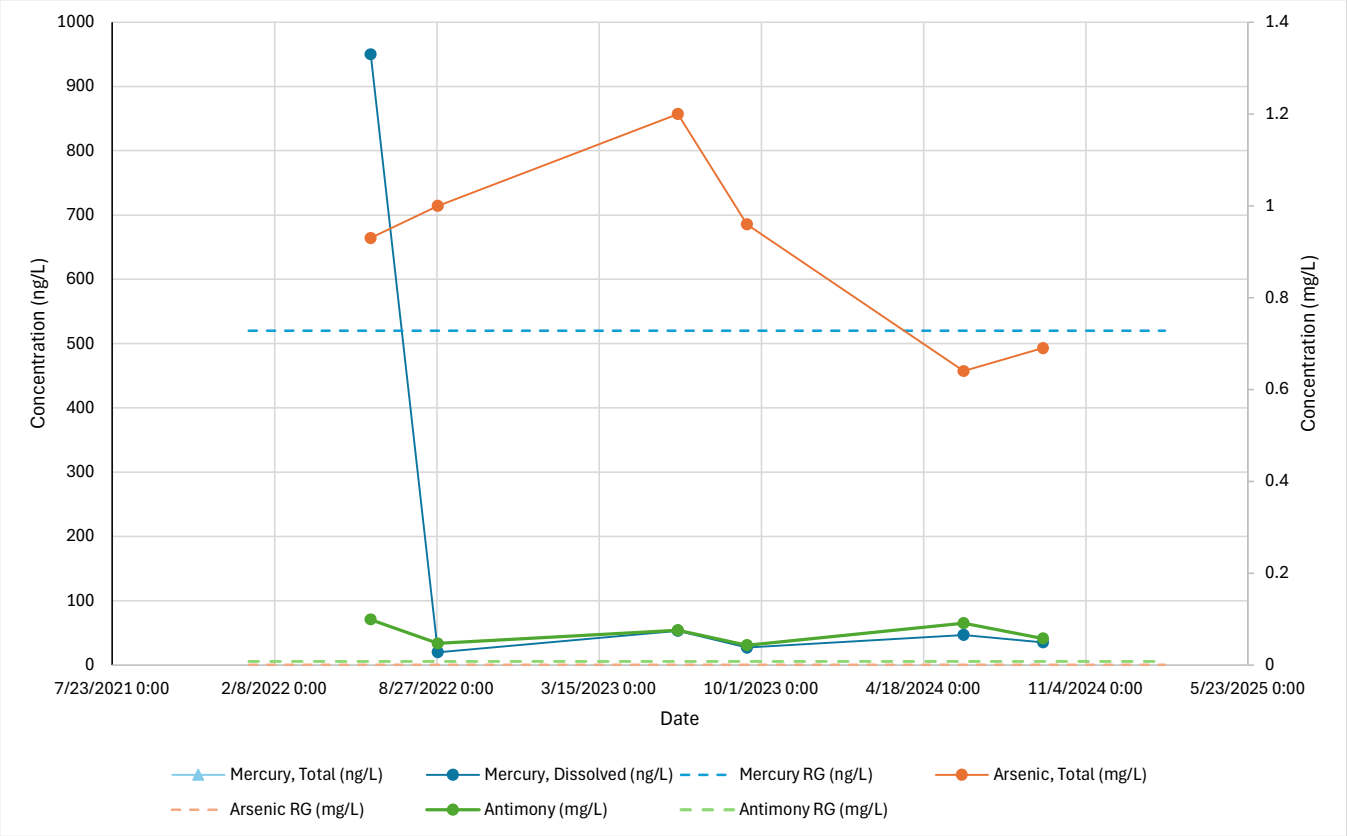
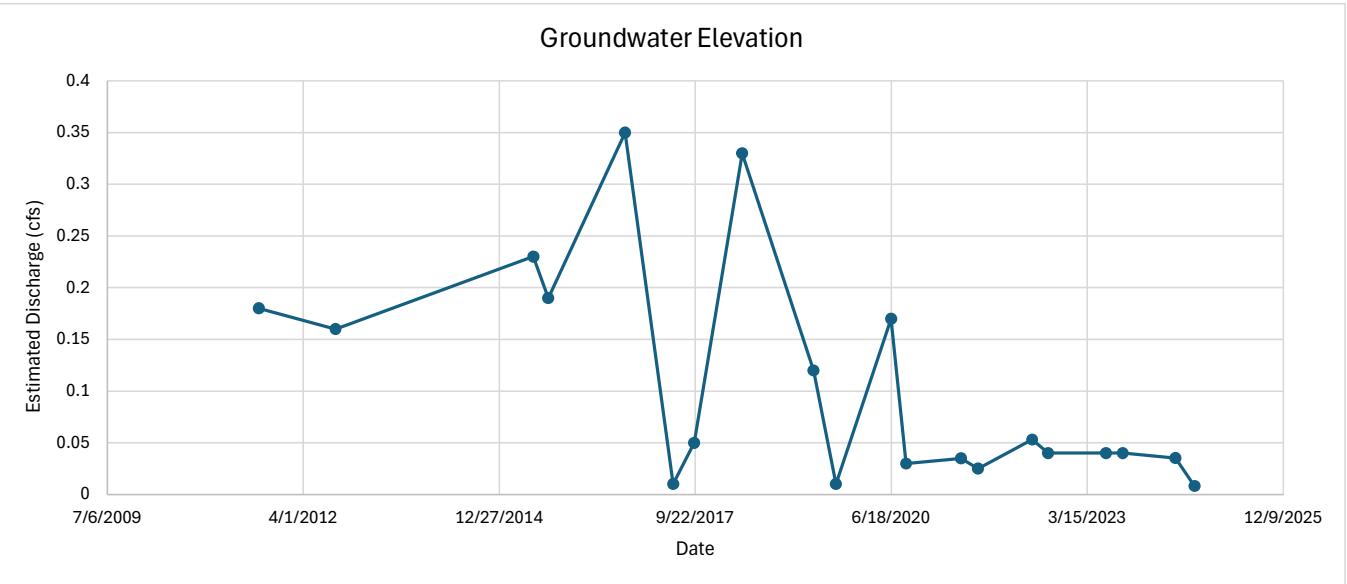
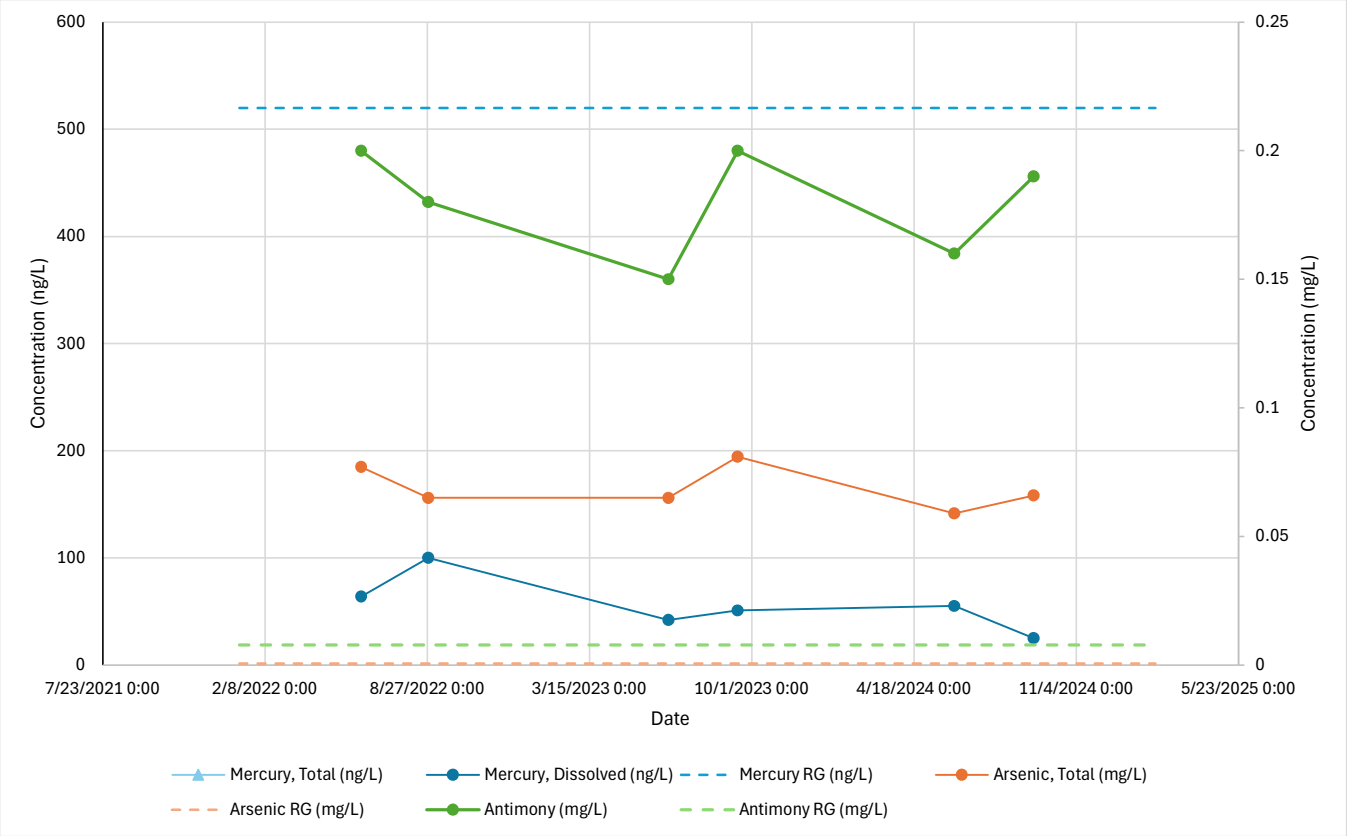
RD05
Groundwater Concentrations and Elevations

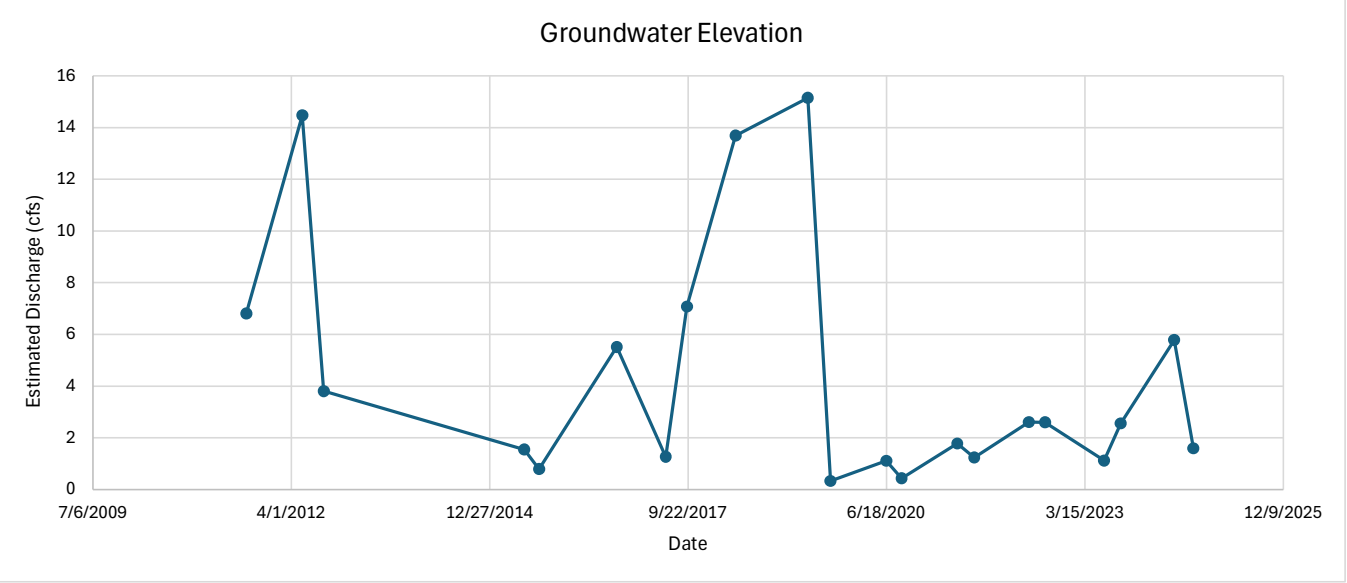




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter
CFS - cubic feet per second

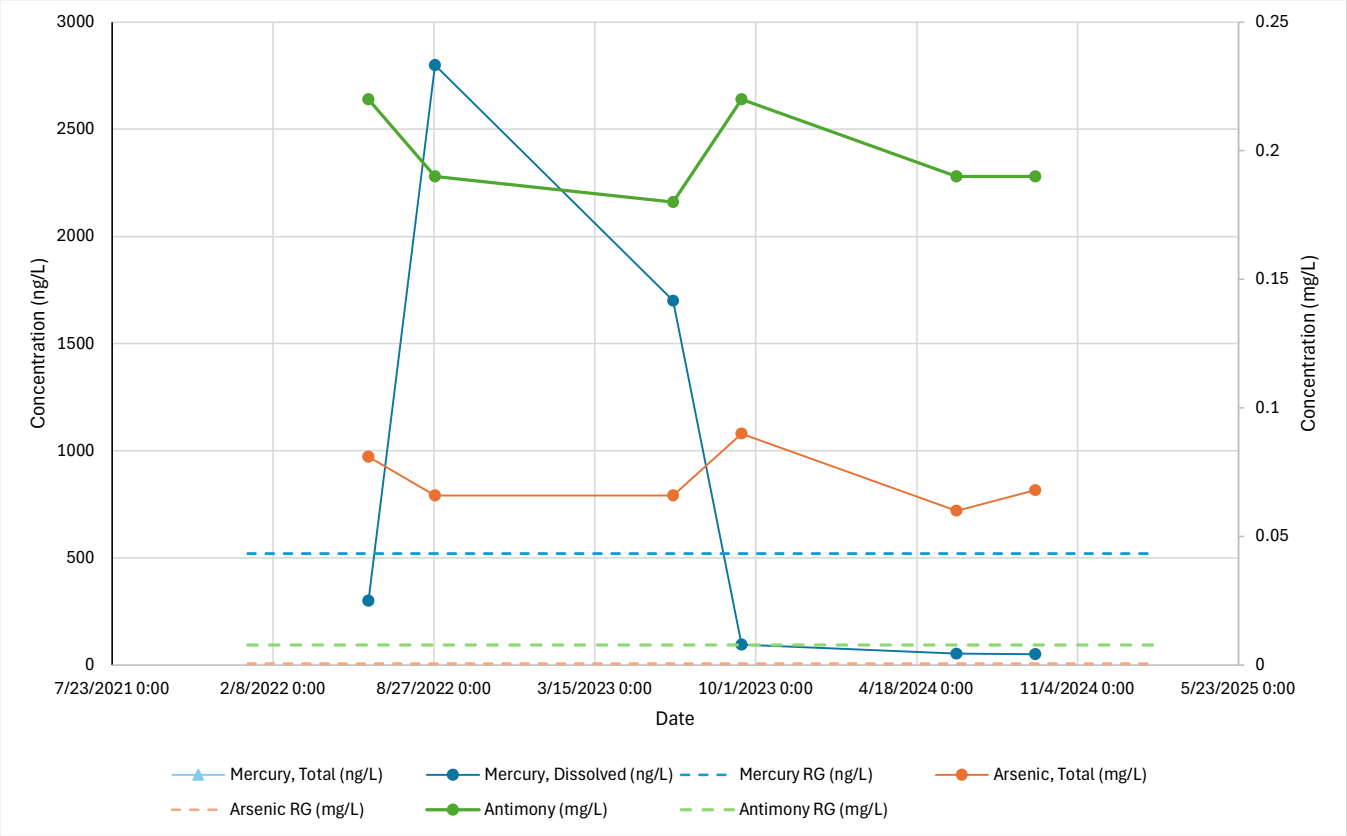
RD06
Groundwater Concentrations and Elevations

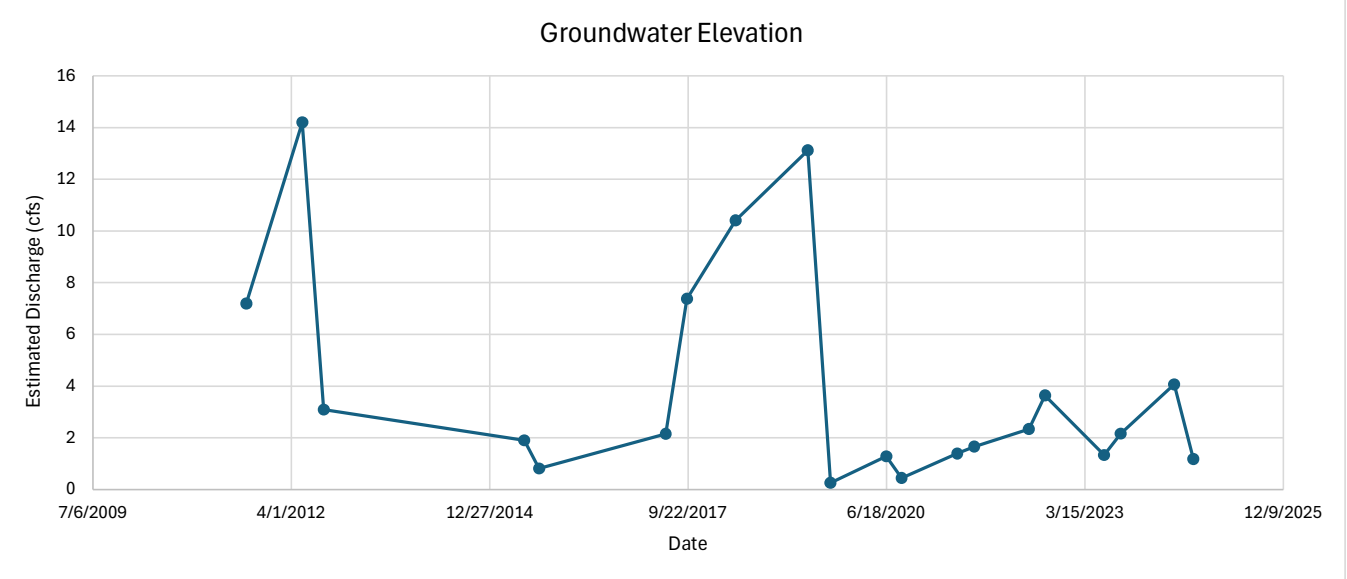




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter
CFS - cubic feet per second

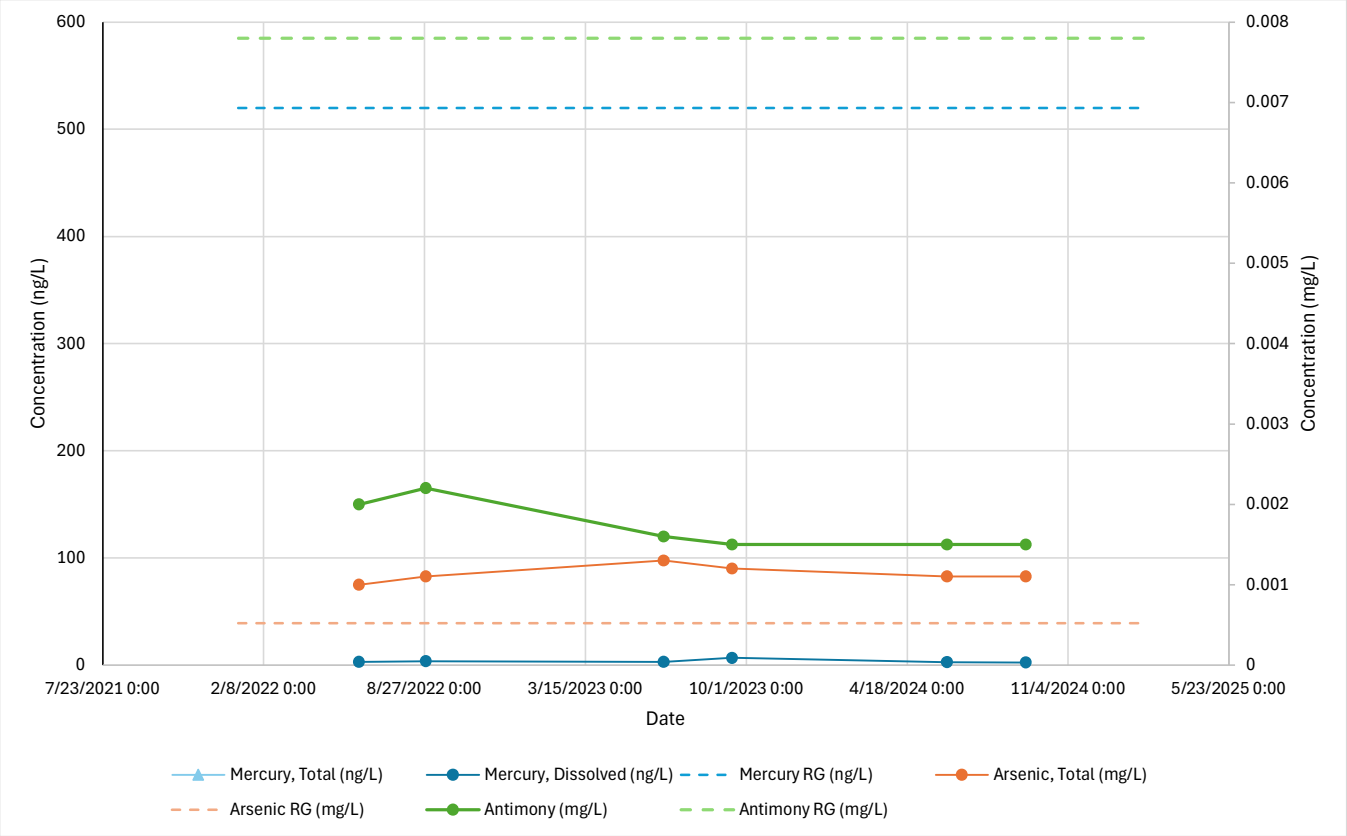
RD08
Groundwater Concentrations and Elevations

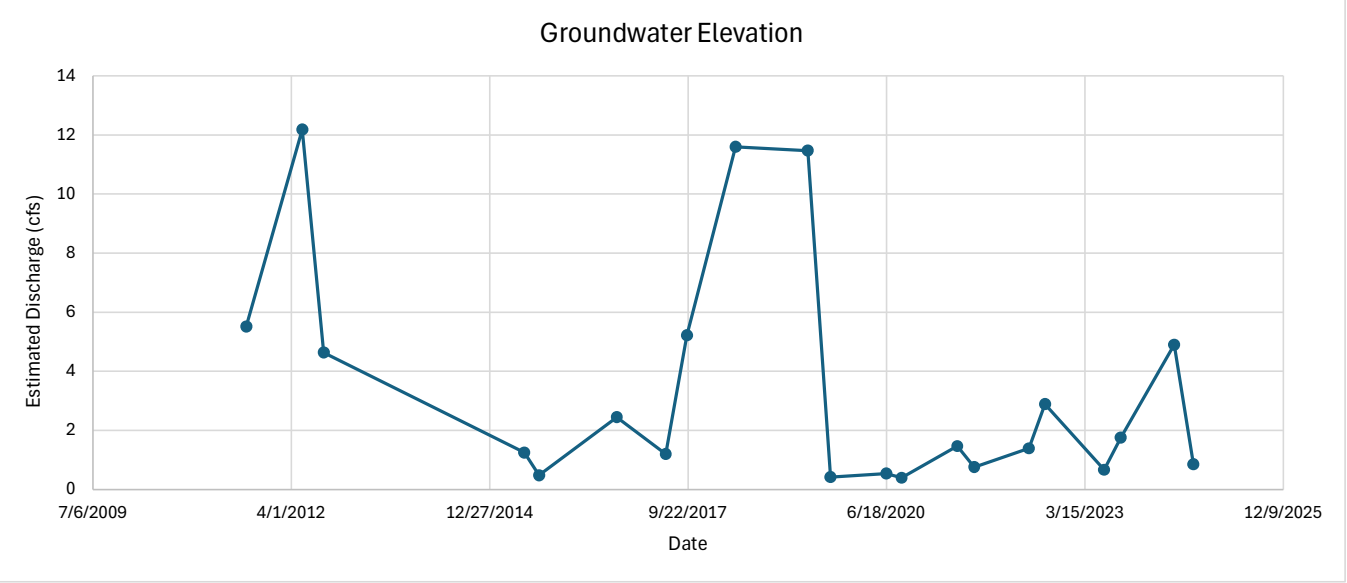




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter
CFS - cubic feet per second

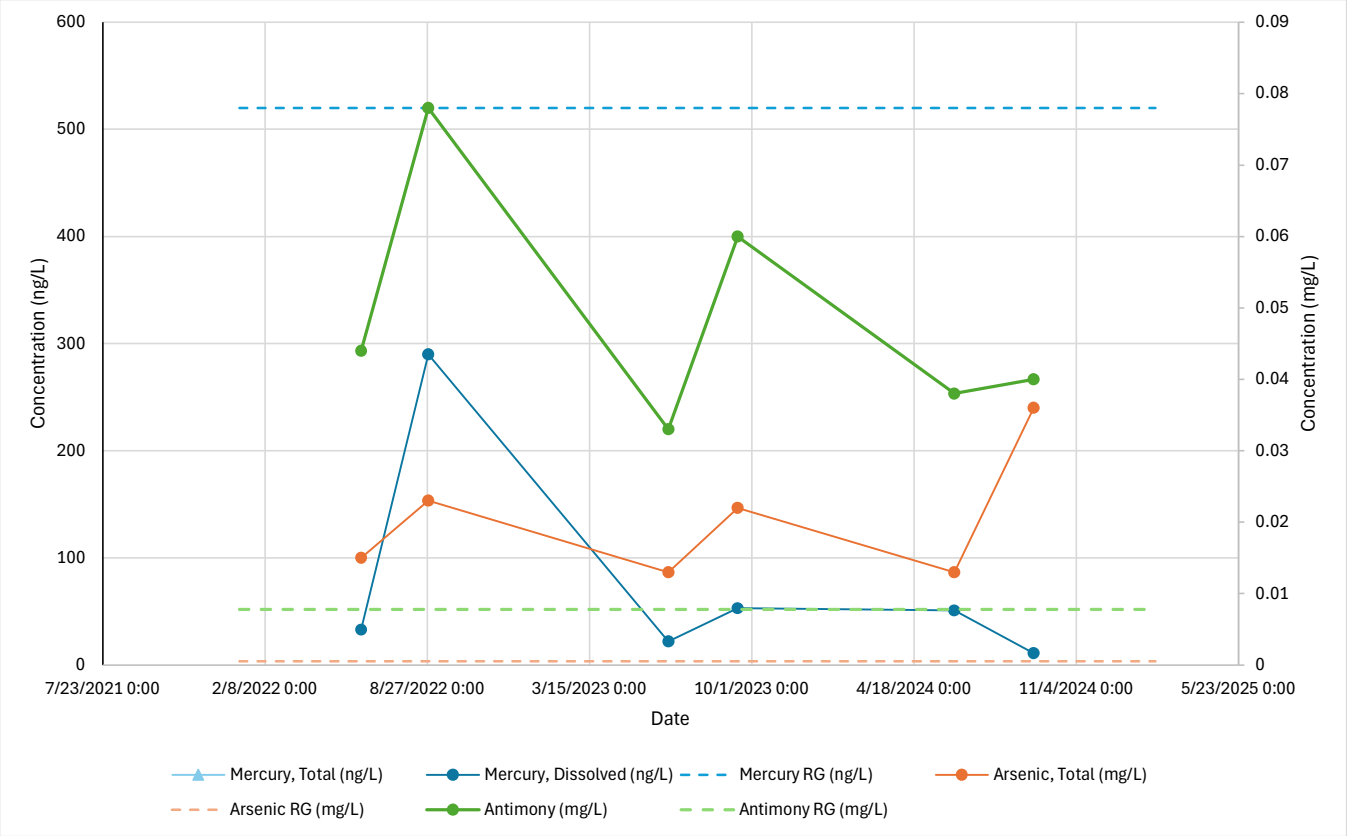
RD10
Groundwater Concentrations and Elevations

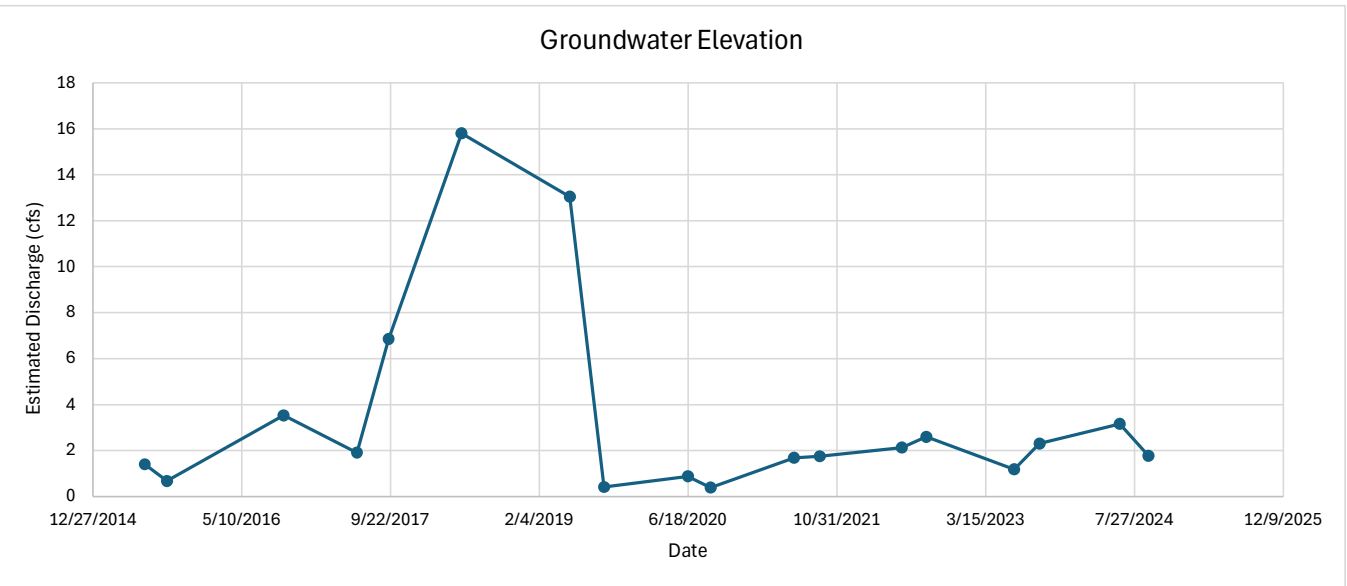




Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter
CFS - cubic feet per second

RD15
Groundwater Concentrations and Elevations





Notes:
Non-detect values are graphed at 1/2 of the reporting limit.
RG - remedial goal
mg/L - milligrams per liter
ng/L - nanograms per liter
CFS - cubic feet per second