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March 10, 2020

Ms. Pamela Innis
U.S. Department of the Interior
CHF Remedial Project Manager
One North Central Avenue, Suite 800
Phoenix, AZ 85004-4427

Mr. Aaron Yue
California Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630

**Subject:** **February 2020 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California**
(Document ID: TPK_Monthly_Progress_Rpt_February_2020_20200310_Final)

Dear Ms. Innis and Mr. Yue:

In compliance with the *1996 Corrective Action Consent Agreement* (CACA) (Attachment 6, Part E, Section 9a and Attachment 7) and the *2013 Remedial Design/Remedial Action Consent Decree* (CD) (Paragraph 32 and Appendix C, Section 5), and pursuant to the *Construction/ Remedial Action Work Plan* (C/RAWP) (Section 2.6.3.1), this monthly report describes activities taken at Pacific Gas and Electric Company's (PG&E's) Topock Compressor Station during February 2020 as well as activities planned for the next six weeks (March 8 through April 18, 2020), and presents available results from sampling and testing performed in February 2020.

In addition, this report discusses material deviations from the approved design documents and/or the C/RAWP, if any, that PG&E has proposed to the California Department of Toxic Substances Control (DTSC) and the U.S. Department of the Interior (DOI), or that have been approved by DTSC and DOI. This report also highlights key personnel changes, if any, and summarizes activities performed and activities planned in support of DOI's 2012 Community Involvement Plan and DTSC's 2019 Community Outreach Plan, as well as contacts with the local community, representatives of the press, and/or public interest groups, if any. This report also includes data from samples collected as part of the sitewide groundwater monitoring program within 60 days of sample collection, as required by the Condition of Approval # xi in DTSC's approval letter dated August 24, 2018.

Please note that since activities conducted to comply with the project's Applicable or Relevant and Appropriate Requirement (ARARs) and the Subsequent Environmental Impact Report (SEIR) mitigation measures are currently reported in separate compliance reports, this information is not repeated in the monthly reports.

Monthly progress reports will be submitted to DTSC and DOI by the 10$^{th}$ day of the following month during construction and start-up of the groundwater remedy at the Topock Compressor Station which officially began on October 2, 2018. This is the seventeenth monthly progress report. Please contact me at (760) 791-5884 if you have any questions or comments regarding this submittal.

Sincerely,

Curt Russell
Topock Project Manager

# Topock Project Executive Abstract

| | |
|---|---|
| Document Title: *February 2020 Monthly Progress Report for the Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California*<br>Submitting Agency: DOI, DTSC<br>Final Document? X Yes __ No | Date of Document: 03/10/2020<br>Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E |
| Priority Status: __ HIGH __ MED X LOW | Is this time critical? __ Yes X No |
| Type of Document:<br>__ Draft X Report __ Letter __ Memo<br>__ Other / Explain: | Action Required:<br>X Information Only __ Review and Input<br>__ Other / Explain: |
| What does this information pertain to?<br>__ Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)<br>__ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)<br>__ Corrective Measures Study (CMS)/Feasibility Study (FS)<br>X Corrective Measures Implementation (CMI)/ Remedial Action (RA)<br>__ California Environmental Quality Act (CEQA)/ Environmental Impact Report (EIR)<br>__ Interim Measures<br>__ Other / Explain: | Is this a Regulatory Requirement?<br>X Yes<br>__ No<br>If no, why is the document needed? |
| What is the consequence of NOT doing this item? What is the consequence of DOING this item?<br>The consequence for not doing this item is PG&E will be out of compliance with the 1996 Corrective Action Consent Agreement (CACA) and the 2013 Remedial Design/ Remedial Action Consent Decree (CD), as well as the Construction/Remedial Action Work Plan (C/RAWP). | Other Justification/s:<br>__ Permit __ Other / Explain: |

Brief Summary of attached document:

This monthly report describes activities taken during February 2020 and activities planned for the next six weeks (March 8 through April 18, 2020) and presents available results from sampling and testing in February 2020. In addition, this report discusses material deviations from the approved design documents and/or the *Construction/ Remedial Action Work Plan* (C/RAWP), if any, that PG&E has proposed to the California Department of Toxic Substances Control (DTSC) and the U.S. Department of the Interior (DOI) or that have been approved by DTSC and DOI. This report also highlights key personnel changes, if any, and summarizes activities performed and activities planned at the Topock Compressor Station in support of DOI's 2012 Community Involvement Plan and DTSC's 2019 Community Outreach Plan, as well as contacts with local community, representatives of the press, and/or public interest groups, if any.

Written by: Pacific Gas and Electric Company

Recommendations:
Provide input to PG&E.

How is this information related to the Final Remedy or Regulatory Requirements:
This submittal is required in compliance with the CACA, CD, and pursuant to the C/RAWP.

Other requirements of this information?
None.

JACOBS

# February 2020
# Monthly Progress Report for the Final Groundwater Remedy Construction and Startup

PG&E Topock Compressor Station
Needles, California

Document ID: TPK_Monthly_Progress_Rpt_February_20200310_Final

March 2020

*Prepared for*
U.S. Department of the Interior and California Department of Toxic Substances Control

*On Behalf of*
Pacific Gas and Electric Company

# Contents



### Tables



### Figures



### Attachments

# Acronyms and Abbreviations

| | |
|---|---|
| µg/m$^3$ | micrograms per cubic meter |
| AOC | Area of Concern |
| ARAR | applicable or relevant and appropriate requirement |
| BLM | U.S. Bureau of Land Management |
| BMP | best management practice |
| CACA | Corrective Action Consent Agreement |
| C/RAWP | Construction/Remedial Action Work Plan |
| CD | Consent Decree |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CH2M | CH2M HILL, Inc. |
| CHQ | Construction Headquarters |
| CRWQCB | California Regional Water Quality Control Board, Colorado River Basin Region |
| DOI | United States Department of the Interior |
| DTSC | California Department of Toxic Substances Control |
| ERTC | Environmental Release to Construct |
| FCR | field contact representative |
| IM-3 | Interim Measure No. 3 |
| IRZ | in-situ reactive zone |
| LOC | level of concern |
| NTH | National Trails Highway |
| PG&E | Pacific Gas and Electric Company |
| RCRA | Resource Conservation and Recovery Act |
| SEIR | Subsequent Environmental Impact Report |
| SMP | Soil Management Plan |
| SPY | Soil Processing Yard |
| SWPPP | Stormwater Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TCS | Topock Compressor Station |
| TRC | Technical Review Committee |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| WEAT | Worker Environmental Awareness Training |
| WVR | Work Variance Request |

# 1. Introduction

Pacific Gas and Electric Company (PG&E) is implementing the final groundwater remedy to address chromium in groundwater near the PG&E Topock Compressor Station (TCS), located in eastern San Bernardino County 15 miles southeast of the city of Needles, California.

The U.S. Department of the Interior (DOI) is the lead federal agency overseeing remedial actions at the TCS. PG&E and the United States executed a Remedial Design/Remedial Action Consent Decree (CD), on behalf of the DOI, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 2012, which was approved by the U.S. District Court for the Central District of California in November 2013 (DOI, 2013). Paragraph 32 and Appendix C (Section 5) of the CD requires PG&E to submit to DOI monthly electronic progress reports during construction of the remedial action, and to submit progress reports on a quarterly basis after the selected remedy has been implemented and demonstrated to be operating as intended.

The California Department of Toxic Substances Control (DTSC) is the lead state agency overseeing corrective actions at the TCS. Remedial activities are being performed in conformance with the requirements of the Resource Conservation and Recovery Act (RCRA) Corrective Action pursuant to a Corrective Action Consent Agreement (CACA) entered into by PG&E and the DTSC in February 1996 (DTSC, 1996). Attachment 6, Part E, Section 9a and Attachment 7 of the CACA require PG&E to provide certain information in monthly progress reports during construction of the corrective action.

In compliance with the CACA and CD requirements, PG&E proposed a template for the monthly progress reports in Exhibit 2.6-2 of the Construction/Remedial Action Work Plan (C/RAWP) (CH2M HILL, Inc. [CH2M], 2015b). The C/RAWP was approved by DOI on April 3, 2018 (DOI, 2018) and DTSC on April 24, 2018 (DTSC, 2018a).

This is the seventeenth of the monthly progress reports that will be submitted to DOI and DTSC for the duration of the remedy construction and startup. This monthly progress report documents activities during February 2020, and follows the content and format described in Exhibit 2.6-2 of the approved C/RAWP. The report is organized as follows:

- Sections 2.1 through 2.7 describe completed construction activities; data collected, generated or received; nature and volume of waste generated; waste handling/disposal; issues encountered; actions taken to rectify problems/issues; personnel changes; and Work Variance Requests (WVRs; i.e., material deviations from the design documents, the C/RAWP, or other approved work plans), if any, as well as agencies' actions on those requests, and potential schedule impacts.
- Sections 2.8 through 2.10 summarize key project personnel changes, if any, contacts with representatives of the press, local community, or public interest groups during the reporting period, other activities provided to assist DTSC and/or DOI in support of the Community Outreach Plan (DTSC, 2019) and/or Community Involvement Plan (DOI, 2012), respectively, and anticipated near-term (approximately next six weeks) activities in support of the Community Outreach and Community Involvement Plans.
- Section 2.11 provides information relating to the construction schedule progress, sequencing of activities, information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule, and a description of efforts made to mitigate those delays or anticipated delays, if any.
- Section 2.12 presents validated data from samples collected as part of the sitewide groundwater monitoring program within 60 days of sample collection, as required by the Condition of Approval # xi in DTSC's approval letter dated August 24, 2018 (DTSC, 2018a).
- Section 3 lists the references cited in this report.

Please note that since activities conducted to comply with the project's Applicable or Relevant and Appropriate Requirement (ARARs) and the Subsequent Environmental Impact Report (SEIR) (DTSC,

2018b) mitigation measures are currently reported in separate compliance reports, the same information is not repeated in the monthly reports.

# 2. Monthly Update

## 2.1 Work Completed

Highlights of key activities related to the construction of the groundwater remedy completed during the reporting period include the following (in chronological order):

- On July 13, 2018, PG&E sent via email the first weekly six-week look-ahead schedule for the remedy construction field work. The weekly emails provide highlights of field activities in the previous week, field activities scheduled for the next week, and planned activities for the next six weeks. Recipients of the weekly emails are DOI, DTSC, the U.S. Fish and Wildlife Service (USFWS), the California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB), the Metropolitan Water District of Southern California, Tribes, and the Technical Review Committee (TRC). PG&E continues to send these weekly emails to date. As of February 29, 2020, a total of 85 six-week look-ahead schedule emails have been sent. Of those, four six-week look-ahead schedule emails were sent in February 2020 (on February 2, 9, 16, and 24).
- On August 10, 2018, PG&E issued the first Environmental Release to Construct (ERTC) to contractors. As of February 29, 2020, a total of 61 ERTCs were issued for mobilization and construction activities. Three new ERTCs were issued in the month of February including site preparation of Phase 1 Remedy-produced Water Conditioning System and associated piping, installation of monitoring well MW-V, and vegetation clearance at wells PGE-9S/N and HNWR-1A in Arizona. The ERTCs are listed in Tables 2-1a and 2-1b.
- Starting on October 4, 2018, PG&E has published a daily construction activities list and discussed the list at the morning tailboards with Tribes and agency representatives. This daily list is intended to inform and facilitate observation by Tribes and agency representatives on site on that day. PG&E continues to publish these daily lists and discuss the list at the daily morning tailboards to date. In February 2020, a total of 25 daily construction activities lists were published and discussed at the morning tailboards.
- In February 2020, PG&E completed the following construction activities (note that Figures 2-1 and 2-2 show the locations of key areas and wells, and Table 2-2 presents the changes in well nomenclature):
  - Performed pilot boring/well installation activities (by Rotosonic drilling):
    a) Completed installation of monitoring well MW-Z.
  - Performed remedy well installation (by dual rotary drilling) and well testing activities:
    a) Completed remedy well installation at IRZ-16 and IRZ-29.
    b) Completed well development at IRZ-16 and IRZ-37.
    c) Completed well testing at RB-2.
  - Attachment A includes select photos of activities during this reporting period.
  - Attachment B presents water analytical results from well drilling that are available to date. Two separate PDFs containing available boring and well construction logs, and information about well testing activities are also included in Attachment B.
  - Baseline/opportunistic soil sampling activities:
    a) Pursuant to the Baseline Soil Sampling and Analysis Plan (Appendix A of the Soil Management Plan [SMP] [which is Appendix L of the C/RAWP]), the following soil sample was collected in February 2020:
       - On February 20, 2020, one soil sample was collected at 1 foot below ground surface at the southern jack and bore location (remedy pipeline C9).

b) Attachment C includes a figure showing soil sampling locations and an excel spreadsheet presenting soil analytical results that are available to date.

– Perimeter Air Sampling Activities:

a) Dust monitoring/observation was conducted through February 29, 2020 at the perimeter of select work areas.

b) Perimeter air sampling for hexavalent chromium is performed at the perimeter of the work areas (outside of the exclusion zone) that are inside or within 20 feet of Areas of Concern (AOCs) and within the construction footprint where hexavalent chromium concentrations in soil have been historically reported. No perimeter air sampling event occurred in February 2020.

c) Attachment D presents a summary of the perimeter air sampling methodology and a table showing air analytical results available to date.

– Noise monitoring activities:

a) Noise monitoring is conducted at pre-approved locations closest to the construction activities. Through February 29, 2020, noise monitoring was conducted at the following pre-approved locations:

- Location west of the mobile home park at Moabi Regional Park
- Maze A Area 2
- Maze A Area 3
- Maze B Combined Area 1/2
- Maze C Area 1

b) Attachment E presents a summary of the noise monitoring methodology and a summary of noise monitoring data collected during February 2020.

## 2.2 Work Already Underway and During Implementation

As of February 29, 2020, PG&E has started and will continue to perform the following activities:

- Pipeline construction activities within Topock Compressor Station for pipeline M.
- Pipeline construction activities at pipelines C7 and C8.
- Commence construction for pipeline C6.
- Pipeline construction activities at pipelines B, J, and F.
- Facility foundation construction and frac tank piping at MW-20 Bench.
- Commence site preparation for Phase 1 Remedy-produced Water Conditioning System within Topock Compressor Station.
- Complete well installation at IRZ-31.
- Continue reaming at IRZ-9 to abandon bottom portion of pilot boring.
- Commence drilling at MW-V.
- Well development at IRZ-27, MW-70BR, and RB-3.
- Video surveys at MW-70BR and RB-3.
- Continue to collect baseline and opportunistic soil samples.
- Continue to conduct noise and dust monitoring and inspection of Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).

- Continue to track and manage waste generated.
- Continue to manage displaced soil per the approved SMP (Appendix L of the C/RAWP).

## 2.3 Freshwater Usage, Waste Generation and Management

As of February 29, 2020, the volumes of freshwater used for remedy construction and waste streams generated from remedy construction (starting on October 2, 2018) are as follows:

### 2.3.1 Freshwater and Wastewater

- As of February 31, 2020, an approximate total of 4,903,372 (14.31 acre-feet) of freshwater have been used, of which approximately 22.5 percent was for pilot boring/well installation and general construction, 1.7 percent was for hydrostatic testing of pipeline, and 75.8 percent was for fugitive dust suppression. Of this amount, approximately 240,300 gallons of freshwater was used in February 2020.
- As of February 29, 2020, an approximate total of 70,570 gallons of hydrostatic testing water has been discharged to land. Of which 24,750 gallons was discharged in February 2020 from testing of Pipeline B/J and MW-20 bench remedy pipes. All discharges to land comply with the substantive requirements of State Water Resources Control Board (SWRCB) Water Quality Order 2003-0003-DWQ. Attachment F presents the approximate volume at each approved discharge location and date of each discharge.
- As of January 31, 2020, approximately 73,151 gallons of injectivity testing water has been discharged to land. Of which 18,122 gallons of freshwater were injected in January at IRZ-17. Information related to this discharge is included in Attachment B**,** as required by the substantive requirements of SWRCB Water Quality Order 2003-0003-DWQ. Injectivity tests were conducted in February 2020 at IRZ-16. Injectivity data including volume of water injected will be reported in the next monthly report.
- As of February 29, 2020, IM-3 has treated an approximate total of 87,540 gallons of remedy wastewater (generated from drilling operations). The discharge complies with the IM-3 ARARs. No remedy wastewater was treated at IM3 in February 2020.
- As of February 29, 2020, an approximate total of 870,129 gallons of wastewater generated from drilling operations were discharged to Compressor Station evaporation pond #4. In February 2020, 81,147 gallons of wastewater was discharged to pond #4. The discharge complies with the Waste Discharge Requirements (WDRs) of the CRWQCB Order No. R7-2018-0022.

  At each sonic drilling location, the wastewater is initially stored in a holding tank in the primary work zone, and is transferred from the primary work zone, as needed, to 20,000-gallon frac tanks located at the MW-20 Bench. Each transfer load is tracked. At each dual rotary drilling location, freshwater and wastewater are conveyed between the frac tanks and the drilling location via pipes. Once a frac tank is full, its contents are characterized and managed in accordance with the approved Waste Management Plan (Appendix R of the C/RAWP).

### 2.3.2 Displaced Materials/Soils/Clay

- Approximately 567 cubic yards of displaced materials (drill cuttings from well drilling and geotechnical investigation, and excess soil from potholing activities) were generated. Drill cuttings are typically stored in roll-off bins with closed tops. Samples are collected for characterization and analyzed in accordance with the SMP.
- As of February 29, 2020, clay material that are subject to the special clay handling protocol (specified in the Addendum to the SMP dated May 28, 2019) was encountered during the geotechnical investigation of Pipeline F along TCS entrance road (October 2018), drilling of monitoring wells MW-D and MW-O, and repair of Bat Cave Wash access road. Clay recovered along TCS entrance road and MW-D is stored at the SPY. Clay from MW-O and Bat Cave Wash access road was given to the Tribes.

- In December 2019, a soil bin containing approximately 10 cubic yards of displaced soil from the installation of well RB-3 and MW-B was characterized in accordance with the SMP. Analytical results indicated that the soil contain cadmium at concentrations slightly above the interim screening level. A decision on the final disposition of the bin is forthcoming.
- Approximately 20 cubic yards of drill cuttings generated in June 2019 and excess material from potholing activities conducted in May 2019 contain hexavalent chromium at concentrations slightly above the interim screening level (i.e., background concentration for hexavalent chromium) as well as the lowest ecological risk-based concentrations (RBCs) presented in the draft Soil Human Health and Ecological Risk Assessment (HHERA) report. This material was shipped offsite on October 1, 2019 for disposal at the US Ecology landfill in Beatty, Nevada. No offsite shipment of soil occurred in November/December 2019.
- **Pipeline Installation Outside of the MW-20 Bench and TCS Fenceline**:
  - In February 2019, approximately 100 cubic yards of displaced soil was generated from excavation for the brine tanks containment upgrade at the MW-20 Bench. Samples were collected for characterization and analyzed in accordance with the SMP. This soil is currently stockpiled on a plastic liner at the SPY. A decision on the final disposition of this soil is forthcoming.
  - In March 2019, approximately 40 cubic yards of displaced soil was generated from potholing activities at the MW-20 Bench and along a remedy pipeline alignment in the shoulder of NTH to pre-characterize soil in preparation for pipeline installation. Samples were collected for characterization in accordance with the SMP. These soils are currently stored in bins at the SPY. A decision on the final disposition of these soils is forthcoming.
  - With one exception, displaced material from trenching along the Pipeline B/J alignment (rocks, soils) was used to repair/build a 2-foot berm to control erosion and fill in existing eroded channels along the alignment. The exception is displaced soil from two segments of Pipeline B, Station 8+55 to 9+25 and Station 6+40 to 6+60, where stained soil was observed in November 2019. The soil from these two segments were stockpiled on plastic (along Pipeline B, close to where they were excavated. The estimated volume of the stockpile from Station 8+55 to 9+25 is 57 cubic yards. The estimated volume for the stockpile from Station 6+40 to 6+60 is 17 cubic yards. Both stockpiles were sampled on November 21, 2019 in accordance with the SMP. Based on analytical results, these soils exceeded both the interim soil management screening levels for zinc, TEQ-mammals, and TEQ-avian, and the RBCs; therefore, will be disposed offsite at US Ecology landfill in Beatty, Nevada (in March 2020).
  - Since early October 2019, displaced sands from pipeline construction in the floodplain were consumed, and therefore sands from the CEMEX quarry in Bullhead, AZ have been imported for use in construction.
  - Displaced material from trenching along Segment C8, C8-Alt, and C14 (as well as from the MW-20 Bench excavation) were processed at the SPY, to remove rocks/boulders and plastic. After processing, the material was reused. As of February 29, 2020, soil processing activities yielded 3,081 cubic yards of materials that are deemed suitable for reuse in remedy pipe trenches and 951 cubic yards of rocks/boulders and plastics. Reusable materials are being reused, and the rocks/boulders are stored in the SPY for future reuse. Plastics are disposed offsite as general construction waste.
- **Pipeline Installation Inside TCS Fenceline:**
  - Excess soils were initially stored in bins which were sampled in accordance with the SMP. Analytical results showed one bin to exceed the interim screening level for chromium but below the RBC (result is 41 mg/kg, screening level is 39.8 mg/kg, lowest RBC is 57 mg/kg). However, for both bins, analytical results showed exceedance of both the interim level for nickel and its lowest RBC (results are 29 mg/kg and 35 mg/kg, screening level is 27.3 mg/kg, lowest RBC is 16 mg/kg). Since the lowest RBC for nickel is lower than the background level for nickel, background level was used for soil management decision. Therefore, soils from both bins (approximately 33.1

tons) were transported offsite on February 26, 2020 and disposed of at US Ecology in Beatty, Nevada.

- In addition, an approximate total of 1,024 cubic yards of excess soil has been transported to and stockpiled at the SPY. The pile was divided into four 250-cubic yard segments and one sample was collected for each 250-cubic yard segment. For three segments, analytical results showed exceedances of the interim screening levels for chromium, copper, and nickel (but below the lowest RBCs for chromium and copper, and above the lowest RBC for nickel). For the fourth segment, analytical results showed exceedance of the interim screening level for copper but below its lowest RBC. Since the lowest RBC for nickel is lower than the background level for nickel, background level was used for soil management decision. Therefore, soils from three segments will be disposed offsite and reported in future monthly report.
- Concrete and asphalt debris were also generated from removal of the south retaining wall and trenching through the asphalt road for pipeline installation. On February 4, 2020, the concrete waste (4.82 tons) was transported to Mohave Valley landfill in Fort Mohave, Arizona for disposal.

- **MW-20 Bench:** Excavation activities for the installation of remedy facilities at the MW-20 Bench were completed in December 2019. An approximate 1,680 cubic yards of excavated soil was generated from remedy construction activities at the MW-20 Bench. Due to space constraints at the MW-20 Bench, all excess soil has been transported to and stored at the SPY. The excavated soil was classified using recent potholing data (collected specifically for soil management purposes). As a result, 1,370 cubic yards of soil was classified as suitable for onsite reuse. In February, these soils were processed to remove rocks/boulders, and are available for reuse onsite. A decision on the disposition of the remaining 320 cubic yards of soil is forthcoming.

### 2.3.3 General Construction Waste, Sanitary Waste, and Recyclables

- As of February 29, 2020, approximately 1,220 cubic yards of general construction waste, 45.8 tons of construction debris (primarily concrete waste), 504 tons of green waste, and 276 cubic yards of recyclables were generated from remedy construction activities. Of those, approximately 72 cubic yards of trash and 4.6 tons of construction debris were generated in February 2020. They were transported to Mojave Valley landfill in Fort Mohave, Arizona for disposal and management.
- A total of nine tires were recovered during construction along Pipeline B/J and disposed of at Mohave Valley landfill in Fort Mohave, Arizona for disposal. No tires were encountered in February 2020.
- Sanitary waste from construction trailers/portable toilets is hauled offsite as needed.
- Starting in September 2019, recycling at the site was ceased due to the high costs of local recycling.

## 2.4 Worker Training and Education

- PG&E continues to provide the mandatory Site Health and Safety Training for its employees and contractors on a daily basis. As of February 29, 2020, a total of 134 health and safety training sessions were held and 439 employees and contractors received the training. Of those, in February 2020, three sessions were conducted and 20 employees/contractors were trained. After the training, the attendees signed the training roster.
- PG&E continues to provide the mandatory Worker Environmental Awareness Training (WEAT) to its employees and contractors that will be involved in the remedy construction project. The training is offered regularly on Mondays and Thursdays, and more frequently as needed. As of February 29, 2020, a total of 140 WEAT sessions were conducted and 508 employees and contractors received the training. Of those, in February 2020, six sessions were conducted and 30 employees/ contractors were trained. Educational brochures are made available to attendees of the training; they are designed to reinforce the key topics and highlight the take-aways discussed during the classroom training. After the training, the attendees signed the WEAT Completion Form.
- PG&E's onsite biologist also trained Field Contact Representatives (FCRs), who will be responsible for compliance with biological avoidance and mitigation measures. As of February 29, 2020, a total of

13 FCR training sessions were conducted. No FCR training sessions were conducted in February 2020.

- Training records are kept electronically and at the temporary construction trailers at the SPY. The records are available upon request.

## 2.5 Status of Work Variance Requests (WVRs)

There were no proposed WVRs in February 2020. Table 2-3 includes information regarding activities related to previously proposed WVRs (i.e., material deviations from the design documents, the C/RAWP, or other approved work plans), and agencies' actions on those requests.

## 2.6 Use of Future Activity Allowance

There has been no proposed use of Future Activity Allowance (FAA) to date.

## 2.7 Issues Encountered and Actions Taken to Rectify Issues/Problems

- On February 19, 2020, an archaeological monitor observed potential cultural resources in an area being excavated on the MW-20 Bench. Excavation was halted and the potential resources were examined. BLM was notified and examined the potential cultural resources on Thursday February 20, 2020. BLM invited representatives of the tribes to a site visit on February 25, 2020 to examine the location and potential resources. After the site visit, BLM issued a letter on Thursday February 25, 2020 indicating their assessment that the materials found do not qualify as a discovery of a cultural or historical resource. Work resumed shortly thereafter.
- During well development activities at MW-70BR in February, it was determined that bentonite grout had entered the well casing. Additional development activities were performed, and a video survey was attempted with inconclusive results. Investigation is continuing in March, in order to determine the nature of the issue and identify corrective actions.
- On February 27, 2020, during the last look for Pipeline C6, a FMIT tribal monitor expressed concerns about the potential for removal of the mesquite trees during pipeline construction. No construction occurred on February 28 through March 2, 2020. On March 3, trenching at Pipeline C6 commenced with guidance from FMIT monitors. FMIT also requested a field meeting to discuss the tribal monitors' concern. A field meeting was scheduled for March 5, 2020.
- On February 6, 2020, approximately 5 gallons of freshwater was released onto ground at the MW-20 Bench when fresh water was transferred from a holding tank into a water truck tank. The water truck tank overflowed due to a) a miscalculation of the volume of water going into the 2,000-gallon water truck tank, and b) the overflow valve was not open which would have indicated to the operator that the tank was full. A detailed report was submitted to DTSC, DOI, BOR, and BLM on February 14, 2020. To prevent a reoccurrence, a discussion took place with the crew about the need to open the overflow valve and monitor the spill bucket from the overflow valve on the water truck tank as a visual indicator that the tank is full.
- On February 18, 2020, a hydraulic oil leak occurred from the engine bay of a pickup truck along Pipeline B access road. The pickup truck was immediately place on visqueen, and the impacted soil was containerized and labeled. The pickup truck was placed out of service until it could be taken off site to be repaired. The impacted soil was containerized and transported to IM3 for pick up in the next milk run. A detailed report was submitted to DTSC and DOI on February 24, 2020. To prevent a reoccurrence, a discussion took place with the crew about proper inspection of site pickup trucks.
- On February 20, 2020, a release of antifreeze/water occurred from a personal vehicle temporarily parked at SPY just behind the SPY trailers. The individual overfilled tank with anti-freeze and water which was spilled onto the ground. Impacted soil was collected and containerized. The subject vehicle was removed from the project site. PG&E also ordered all vehicles to stop immediately for physical inspection after being notified of the release.

- On February 21, 2020, several blobs/drops of hydraulic oil were found on the recently repaired access road to Bat Cave Wash. The truck was removed from the site, and the impacted soil was containerized and transported to the IM-3 treatment plant for pick up by the next milk run. PG&E brought on board a 3rd party inspector the following week to perform thorough inspections of each heavy duty vehicle on site.

## 2.8 Key Personnel Changes

There was no change to key PG&E project personnel in February 2020.

## 2.9 Communication with the Public

In compliance with SEIR mitigation measure HYDRO-6a, PG&E continues to seek permission from private owners to access non-project private water supply wells for sampling and installation of a well south of I-40.

## 2.10 Planned Activities for Next Six Weeks

The planned activities for next six weeks (March 9 through April 18, 2020) include the following:

- Start MW-V site preparation and well installation.
- Conduct well testing at RB-3 and IRZ-27.
- Continue to install remedy facilities at the MW-20 Bench.
- Complete installation of Pipeline B/J.
- Commence installation of Pipeline F.
- Continue installation of Pipeline M Segments M2-M6 and Pipeline X inside TCS.
- Continue installation of Pipeline C in the floodplain and along the southern access road to the floodplain.
- Start Pipeline C Segment 9 (Jack and Bore) under NTH.
- Continue to conduct noise and dust monitoring and inspection of SWPPP BMPs.
- Continue to log and manage waste generated.
- Continue to manage displaced soil per the approved SMP.

Attachment G contains the six-week look-ahead schedule available at this time. Any adjustments to the schedule will occur as needed via the weekly emails (sent at the end of each week) and/or the daily list of construction activities (published daily and discussed with agency and Tribal representatives on site on that day).

## 2.11 Construction Schedule Review

Phase 1 of the groundwater remedy construction started on October 2, 2018. Table 2-4 presents a summary of the percent completeness for key construction activities as of February 29, 2020.

In addition, the latest project schedule including Phase 1 construction can be downloaded from the project website.

## 2.12 Available Sitewide Groundwater Monitoring Data (DTSC Condition of Approval xi)

Pursuant to Condition of Approval # xi in DTSC's approval letter dated August 24, 2018 (DTSC, 2018a), PG&E is required to report data from samples collected as part of the sitewide groundwater monitoring program within 60 days of sample collection. In compliance with this requirement, PG&E submitted validated data to DTSC via monthly emails. For ease of recordkeeping and to minimize the number of ad-hoc compliance reports/emails, PG&E has included validated data in each monthly progress report starting with the November 2018 monthly report. The validated data are included in Attachment H of this report.

# 3. References

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# Tables

**Table 2-1a. Summary of Non-Well Environmental Release-To-Constructions (ERTCs)**

*February 2020 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup*
*PG&E Topock Compressor Station, Needles, California*

| ERTC No. | Brief Description of Covered Areas and Scope of Authorized Activities | Issue Date |
|---|---|---|
| 1 | Initial mobilization activities at the Construction Headquarters (CHQ), Soil Processing Yard (SPY), and three staging areas (#9 Parking area off I-40, #18 MW-20 Bench, and #23 Transwestern Bench). Scope included installation of temporary construction trailers, portable generators, SWPPP BMPs, construction signages, and temporary construction fencing, as well as equipment staging and truck inspections. | August 10, 2018 |
| Addendum 1 to ERTC #1 | Scope included setup of wastewater and freshwater storage tanks at MW-20 Bench, improvement of the access road at the CHQ, installation of perimeter fence at the SPY, and grading at SPY. | September 21, 2018 |
| Addendum 2 to ERTC #1 | Scope included grading for drill rig setup at IRZ-20. | October 4, 2018 |
| Addendum 3 to ERTC #1 | Scope included geotechnical investigation in the footprint of the future Carbon Amendment building at the MW-20 Bench. | October 9, 2018 |
| Addendum 4 to ERTC #1 | Scope included the installation of a temporary handrail along the walkway from the MW-20 Bench to the floodplain. | December 28, 2018 |
| 2 | Scope included the installation of the temporary construction water system and construction water tanks at Area #25 Route 66 Welcome Sign. | September 28, 2018 |
| 3 | Scope included the installation of the Public Information Trailer, a fugitive dust sign, an information kiosk, and a construction delivery sign at the northwest corner of Park Moabi Road and National Trails Highway (NTH). | September 4, 2018 |
| 4 | Scope included the installation of a truck containment pad at the Topock Compressor Station (TCS) evaporation ponds and maintenance of the access road to the ponds. | September 24, 2018 |
| 6 | Scope included the geotechnical investigation along Pipeline F alignment (on the Compressor Station entrance road). | October 3, 2018 |
| 7 | Scope included the installation of traffic control along the southern end of NTH per the Traffic Control Plan. | September 17, 2018 |
| 9 | Scope included the transplantation and planting of sensitive plants. | November 9, 2018 |
| 10 | Scope included potholing activities along approved pipeline alignments and in building footprints, that are also in AOCs/SMWUs. The purpose is to pre-characterize soil in preparation for construction. | March 29, 2019 |
| 11 | Scope included preparation of temporary staging areas, vegetation clearance, placement of stabilization mats, potholing in select locations, and installation of Pipeline C segments C1 through C6 in the floodplain. | January 3, 2019 |
| 11a | Scope included preparation of temporary staging areas, vegetation clearance, placement of stabilization mats, potholing in select locations, and installation of Pipeline C segments C7-C10, and C17 in the floodplain. | February 11, 2019 |
| Addendum 1 to ERTC #11a | Scope included installation of Pipeline C Segment C14 along the southern access road to the floodplain (between BNSF railroad and I-40 bridges. | October 3, 2019 |
| 11b | Scope included installation of Pipelines B, F, and J. | May 31, 2019 |
| Addendum 1 to ERTC #11b | Scope included details for installation of Pipeline B/F/J inside TCS. | July 25, 2019 |
| 12 | Scope included non-intrusive site preparation work for the brine tanks containment upgrade on the MW-20 Bench (per Work Variance Request #1, refer to Table 2-3). A forthcoming addendum to this ERTC will be issued to include the actual upgrade activities. | January 10, 2019 |

| ERTC No. | Brief Description of Covered Areas and Scope of Authorized Activities | Issue Date |
|---|---|---|
| 12a | Scope included the actual brine tanks containment upgrade activities which include intrusive work on the MW-20 Bench (per Work Variance Request #1, refer to Table 2-3). | February 6, 2019 |
| 13 | Scope included the installation of remedy facilities on MW-20 Bench. | November 21, 2019 |
| 14 | Scope included site preparation for the installation of Pipeline M inside TCS. | December 11, 2019 |
| Addendum 1 to ERTC #14 | Scope included site preparation for the Phase 1 Remedy-produced Water Conditioning System and associated piping. | February 27, 2020 |
| 15 | Scope included the installation of Pipeline M2-M6 and X Installation Inside TCS | December 13, 2019 |
| 16 | Scope included soil resistivity survey and the installation of pipeline C9 (Jack and Bore) and pipeline C8b. | December 29, 2019 |

**Table 2-1b. Summary of Well Environmental Release-To-Constructions (ERTCs)**

*February 2020 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup*
*PG&E Topock Compressor Station, Needles, California*

| ERTC No. | Brief Description of Covered Areas and Scope of Authorized Activities | Issue Date |
|---|---|---|
| 5a | Scope included the site setup, drilling, testing, and demobilization at MW-L. | September 27, 2018 |
| 5b | Scope included the placement of soil stabilization mats in the floodplain, setup of a temporary staging area near the north end of the access route in the floodplain, rig setup, installation of snow fence to protect plants, drilling, testing, and demobilization at IRZ-15. | October 12, 2018 |
| 5c | Scope included the site setup, drilling, testing, and demobilization at IRZ-20 on the MW-20 Bench. | October 15, 2018 |
| 5d | Scope included the site setup, drilling, testing, and demobilization at MW-E on the MW-20 Bench. | October 29, 2018 |
| 5e | Scope included the site setup, drilling, testing, and demobilization at MW-N in the upland. | November 15, 2018 |
| 5f | Scope included the site setup, drilling, testing, and demobilization at IRZ-13 in the floodplain. | November 7, 2018 |
| 5g | Scope included the site setup, drilling, testing, and demobilization at IRZ-23 on the MW-20 Bench. | November 8, 2018 |
| 5h | Scope included the site setup, drilling, testing, and demobilization at MW-M in the upland. | January 15, 2019 |
| 5i | Scope included the site setup, drilling, testing, and demobilization at IRZ-9 in the floodplain. | November 28, 2018 |
| 5j | Scope included the site setup, drilling, testing, and demobilization at IRZ-25 on the MW-20 Bench. | December 3, 2018 |
| 5k | Scope included the site setup, drilling, testing, and demobilization at IRZ-21 on the MW-20 Bench. | December 9, 2018 |
| 5l | Scope included the site setup, drilling, testing, and demobilization at MW-B in the floodplain. | December 10, 2018 |
| Addendum to ERTC #5l | Scope included the setup of an additional temporary equipment and material staging area in the floodplain. | December 13, 2018 |
| 5m | Scope included the site setup, drilling, testing, and demobilization at MW-F along NTH. | December 17, 2018 |
| 5n | Scope included the site setup, drilling, testing, and demobilization at IRZ-11 in the floodplain. | December 17, 2018 |
| 5o | Scope included the site setup, drilling, testing, and demobilization at MW-X and MW-Y' in Arizona. | April 23, 2019 |
| 5p | Scope included the site setup, drilling, testing, and demobilization at MW-G along NTH. | January 14, 2019 |
| 5q | Scope included the site setup, drilling, testing, and demobilization at IRZ-16 and IRZ-17 in the floodplain. | February 14, 2019 |
| 5r | Scope included the site setup, drilling, testing, and demobilization at IRZ-27 and IRZ-29 along NTH. Also included in the scope are potholing activities along Pipeline C Segments C13, C15, and C16 and on the MW-20 Bench. | March 9, 2019 |
| Addendum #1 to ERTC #5r | Scope included the potholing to locate Transwestern Gas Pipeline within NTH (in support of Pipeline C installation). | April 24, 2019 |
| Addendum #2 to ERTC #5r | Scope included the installation of NTH IRZ-27/29/31/33/35 and the temporary Frontier bypass. | November 19, 2019 |
| 5s | Scope included the site setup, drilling, testing, and demobilization at IRZ-39 in the low area, north of the Transwestern Bench. | March 12, 2019 |

| ERTC No. | Brief Description of Covered Areas and Scope of Authorized Activities | Issue Date |
|---|---|---|
| 5t | Scope included the site setup, drilling, testing, and demobilization at IRZ-27 along NTH. | March 19, 2019 |
| 5u | Scope included the site setup, drilling, testing, and demobilization at MW-U in I-40 median. | March 22, 2019 |
| 5v | Scope included the site setup, drilling, testing, and demobilization at MW-10D in Bat Cave Wash. | March 27, 2019 |
| 5w | Scope included the site setup, drilling, testing, and demobilization at MW-W in the floodplain. | March 22, 2019 |
| 5x | Scope included the site setup, drilling, testing, and demobilization at RB-1 through 5 wells and MW-O in the floodplain. | March 30, 2019 |
| 5y | Scope included the site setup, drilling, testing, and demobilization at MW-S on the access road to Bat Cave Wash. | April 12, 2019 |
| 5z | Scope included the site setup, drilling, testing, and demobilization at MW-R in the Upland. | May 8, 2019 |
| 5aa | Scope included the site setup, drilling, testing, and demobilization at MW-C, MW-D, and MW-H in the floodplain | June 6, 2019 |
| 5ab | Scope included the site setup, drilling, testing, and demobilization at IRZ-19 (sonic drilling) in the floodplain | July 22, 2019 |
| 5ac | Scope included the site setup, drilling, testing, and demobilization at MW-11D (sonic drilling) in Bat Cave Wash | September 25, 2019 |
| 5ad | Scope included the site setup, drilling, testing, and demobilization at Hydro-6a monitoring well in Arizona | October 16, 2019 |
| 5ae | Scope included the site setup, drilling, testing, and demobilization at MW-70BRd in East Ravine | October 4, 2019 |
| 5af | Scope included the site setup, drilling, testing, and demobilization at MW-Z | January 22, 2020 |
| 5ag | Scope included the site setup, drilling, testing, and demobilization at IRZ-18 on MW-20 Bench | November 15, 2019 |
| 5ah | Scope included the site setup, drilling, testing, and demobilization at MW-V | February 10, 2020 |
| 5ai | Scope included vegetation removal at PGE-9S, 9N, and HNWR-1A | February 14, 2020 |

**Table 2-2. Monitoring Wells Nomenclature Changes**

*February 2020 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup*
*PG&E Topock Compressor Station, Needles, California*

| Previous Well Name | New Monitoring Well Name |
|---|---|
| MW-70BR-D | MW-70BR-289 |
| MW-B-033 | MW-75-033 |
| MW-B-117 | MW-75-117 |
| MW-B-202 | MW-75-202 |
| MW-B-267R | MW-75-267 |
| MW-B-337 | MW-75-337 |
| MW-C-039 | MW-76-039 |
| MW-C-156 | MW-76-156 |
| MW-C-181 | MW-76-181 |
| MW-C-218 | MW-76-218 |
| MW-D-046R | MW-77-046 |
| MW-D-102 | MW-77-102 |
| MW-D-158 | MW-77-158 |
| MW-D-187 | MW-77-187 |
| MW-E-072 | MW-78-072 |
| MW-E-142 | MW-78-142 |
| MW-F-060 | MW-79-060 |
| MW-F-104 | MW-79-104 |
| MW-G-057 | MW-80-057 |
| MW-G-082 | MW-80-082 |
| Former IRZ-19 | MW-81-43 |
| Former IRZ-19 | MW-81-98 |
| MW-H-046 | MW-82-046 |
| MW-H-112 | MW-82-112 |
| MW-H-168 | MW-82-168 |
| MW-H-198 | MW-82-198 |
| MW-L-090 | MW-83-090 |
| MW-L-180 | MW-83-180 |
| MW-L-225 | MW-83-225 |
| MW-L-245 | MW-83-245 |
| MW-M-057 | MW-84-057 |
| MW-M-095 | MW-84-095 |
| MW-M-132 | MW-84-132 |
| MW-M-193 | MW-84-193 |

| Previous Well Name | New Monitoring Well Name |
|---|---|
| MW-N-129 | MW-85-129 |
| MW-N-217 | MW-85-217 |
| MW-N-237 | MW-85-237 |
| MW-O-030 | MW-86-030 |
| MW-O-066 | MW-86-066 |
| MW-O-120 | MW-86-120 |
| MW-O-140 | MW-86-140 |
| MW-R-109 | MW-87-109 |
| MW-R-139 | MW-87-139 |
| MW-R-192 | MW-87-192 |
| MW-R-275 | MW-87-275 |
| MW-S-109 | MW-88-109 |
| MW-U-183 | MW-89-183 |
| MW-U-273 | MW-89-273 |
| MW-W-031 | MW-90-031 |
| MW-X-045 | MW-91-045 |
| MW-X-120 | MW-91-120 |
| MW-X-170 | MW-91-170 |
| MW-X-320 | MW-91-320 |
| MW-Y-037 | MW-92-037 |
| MW-Y-072 | MW-92-072 |
| MW-Y-102 | MW-92-102 |
| MW-Y-122 | MW-92-122 |
| MW-Z | MW-93 |
| HYDRO-6 (deep) | MW-94-30 |
| HYDRO-6 (mid) | MW-94-100 |
| HYDRO-6 (shallow) | MW-94-175 |

## Table 2-3. Summary of Work Variance Requests (WVRs)

*February 2020 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup*
*PG&E Topock Compressor Station, Needles, California*

| WVR No. | Brief Description of Work Variance Request | Approval Dates |
|---|---|---|
| 1 | This WVR addressed PG&E's proposed modification to the brine tanks containment for use by the remedy, specifically:<br>• **Upgrade the existing lined containment to concrete** - The original synthetic liner material has degraded from exposure to UV light, heat, and abrasion and must be replaced. PG&E proposed to replace the synthetic-lined containment (including K-rails) with a concrete containment to support the groundwater remedy. The concrete color will be desert tan, and information on this proposed concrete color will be submitted to the agencies for review. The proposed concrete material will be similar to the material of the truck lane in the final remedy design (refer to Appendix E of the Final Basis of Design Report (CH2M, 2015a),* Section 033 00, Cast-In-Place Concrete).<br>• **Shorten the length of the containment** - This containment will have the same height as the existing containment, but with a slightly smaller footprint (the length is 5 feet shorter). This smaller footprint still meets the required volume for a secondary containment and allows for more space for remedy construction at the tight MW-20 bench. | DOI approved WVR #1 on June 22, 2018<br>DTSC approved WVR #1 on July 5, 2018 |
| 2 | PG&E proposed to relocate the tie-in point for remedy construction water to an aboveground location inside Topock Compressor Station (TCS) and below the TCS Water Storage Tanks. This is to eliminate the risk of damaging the existing pressurized 6-inch water line and to avoid any interference with PG&E Gas Operations control of the Station's water supply. The WVR addressed this relocation, specifically:<br>• Relocate the construction water tie-in point to an aboveground location below the TCS Water Storage Tanks, inside TCS – The final design calls for the temporary construction water line to hot-tap into the existing 6-inch steel water line just as the line turns southwest to continue to TCS. PG&E proposed to move the tie-in point to an aboveground valve manifold, located below the TCS Water Storage Tanks in the boneyard area.<br>• Extend the temporary construction water line to the new tie-in point, along Pipeline 300A access road – The planned 4-inch high-density polyethylene (HDPE) temporary construction water line will be extended, following the route of the Pipeline 300A access road, to the new tie-in point inside TCS. This pipeline extension is approximately 1,950 feet and is also made of 4-inch HDPE. The pipe will be laid on ground surface and to the south of the 6-inch water line where possible. At the crossing with the SoCal Gas pipeline access road, the pipeline will be at grade with fill to allow for vehicle crossing. | DOI/DTSC approved WVR #2 on August 29, 2018 |
| 3 | PG&E proposed changes within the CHQ fence line to avoid/minimize the overall amount of soil disturbance during construction, reduce the number of truck trips to haul wastewater, and allow for additional working space within the yard. There are no proposed changes to the CHQ footprint nor its fence line. The specifics are described below:<br>• Relocate the decontamination pad from the western fence to the northern fence (near the western corner). Based on recent survey data collected during construction, the difference in ground elevation between northern and southern end of the pad is about 4 feet. Moving the pad to the northern fence would eliminate the difference in ground elevation and reduce the amount of soil disturbance by at least 80 cubic yards.<br>• Bring the remedy-produced wastewater tank from belowground to aboveground, increase the tank volume from 1,000 to 2,500 gallons, and place the aboveground, double-walled tank adjacent to the decontamination pad. The change from belowground to aboveground reduces the amount of soil disturbance by at least 50 cubic yards. The change to a bigger tank will reduce the amount of truck trips needed to haul wastewater. The placement of the tank adjacent to the decontamination pad allows for the pad to function as a secondary containment for the haul truck during off-loading of the wastewater.<br>• Defer construction of the underground sewage tanks. Deferral of the underground tanks reduces the overall amount of soil disturbance by at least 800 cubic yards. All sanitary wastes will be managed in aboveground sewage tanks (similar to the ones currently used for the SPY trailers) or portable toilets.<br>• Swap the location of the construction trailers and the sunshade and change the configuration of the sunshade from a rectangle to a square. This change will allow for more working space within the CHQ. All functions that would occur in the Workshop/Sampling Processing building will be conducted in the construction trailers. | DOI/DTSC approved WVR #3 on January 4, 2019 |

| WVR No. | Brief Description of Work Variance Request | Approval Dates |
|---|---|---|
| 4 | PG&E proposed to revise a segment of Pipeline C near the I-40 bridge, to meet the permit requirement in Caltrans Encroachment Permit No. 08-18-6-MW-0533. The revision involves relocating a small segment of Pipeline C to within National Trails Highway to meet a minimum distance of 10 feet from current and future I-40 bridge footings. The treatment measure specified for Segment X of National Trails Highway in the Cultural and Historic Property Management Plan will be implemented during installation of this pipeline segment. | DOI/DTSC approved WVR #4 on May 14, 2019 |
| 5 | PG&E proposed to phase the remedy produced water conditioning system within the approved footprint inside TCS. | DOI and DTSC approved WVR #5 on July 19 and July 22, 2019, respectively. |
| 6 | In early October 2018, PG&E conducted a geotechnical investigation along the Pipeline F alignment on the entrance road to the TCS and the adjacent hill side. Based on the geotechnical results, the construction contractor (PIVOX) indicated that soldier piles and lagging would be required for temporary shoring. Over 40 soldier piles would be installed by drilling using a 330-sized excavator or larger. A 330-sized excavator has a general width of 11 feet, and counter weight clearance of approximately 4 feet. During operation, this rig would occupy a minimum 15 to 16 feet width of the TCS entrance road for about 12 days. The paved width of the road is between 22 to 24 feet in the area of shoring (per review of the location via Google Earth).<br>Assuming a minimum clearance of 1 foot (which is still less than the recommended clearance) from any operating equipment, there will be approximately 5 to 8 feet of available lane width for access by TCS traffic. Large vehicles (tractor-trailers, delivery trucks, construction equipment) will likely not be able to pass by the active operation, and passenger vehicles may also not be able to pass the active operation in locations where the road narrows. Also, the excavator cannot be repositioned while soldier piles are being drilled. In sum, access to TCS will be severely restricted for about 12 days. This is not acceptable for Compressor Station operations.<br>Therefore, PG&E proposed to realign Pipeline F (starting from segment F3) along the approved alignment of Pipelines B and J. Construction of Pipelines F, B, and J would occur in the same alignment and at the same time. | DOI and DTSC approved WVR #6 on May 21 and May 22, 2019, respectively. |
| 7 | This WVR proposed the following changes to remedy infrastructure at the CHQ and SPY.<br>a) Locate all temporary office and break trailers at the SPY. PG&E proposed to keep the three existing office trailers at their current locations in the SPY and add two additional office trailers and one break trailer for workers. The additional trailers will be equipped with aboveground sewage tanks, similar to the existing trailers. They will also be powered by Needles Electric. This will require the original SPY fence line to be extended south/southwest to encompass these trailers and the original truck entrance from National Trails Highway to the access road east of SPY. Neither changes reduce the overall area available for soil storage.<br>b) Eliminate the workshop/sample processing building at the CHQ. The function planned for this building will be moved to the Carbon Amendment building at the MW-20 Bench. Removal of this building reduces the amount of soil disturbance by approximately 334 cubic yards.<br>c) Eliminate the sunshade at the CHQ. The function for the sunshade will be replaced by the break trailer for the workers. Removal of the sunshade reduces the amount of soil distance (i.e., installation of the footings) by approximately 14 cubic yards.<br>d) Convert the utility pad at the CHQ to a smaller transformer/electrical panel pad. With the relocation of the six trailers to SPY and elimination of the workshop/sample processing building, PG&E proposed to convert the utility pad to smaller pad for a smaller transformer/electrical panel to serve the remaining trailers at the CHQ. This reduces the amount of soil disturbance by approximately 61 cubic yards. | DOI and DTSC approved WVR #7 on June 14, 2019. |
| 8 | On September 12, 2019, PG&E proposed a WVR to change the alignment of pipeline segment C6 on the eastern slope of the MW-20 Bench. The purpose of the WVR is to reduce the amount of soil disturbance, reduce the number of plants to be removed, reduce the safety risks associated with construction atop the MW-20 bench, and reduce the hazards associated with operation at the MW-20 bench during construction. | DTSC and DOI approved WVR #8 on October 4 and 8, 2019, respectively. |

Note:
* CH2M HILL, Inc. (CH2M). 2015a. *Basis of Design Report/Final (100%) Design Submittal for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California*. November 18.

## Table 2-4. Summary of Percent Completeness of Key Construction Activities

*February 2020 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup*

*PG&E Topock Compressor Station, Needles, California*

| Activity | % Complete | Current Status of Construction Activities (as of January 31, 2020) |
|---|---|---|
| Project signage & Public Information Office | 100% | Complete. |
| Staging Areas 9, 18, and 23 set-up | 100% | Complete. |
| Temporary construction offices at Soil Processing Yard | 100% | Complete. |
| Soil Processing Yard including security fence | 100% | Complete. |
| National Trails Highway lane closure and traffic control installation | 100% | Complete. |
| Temporary construction water line | 100% | Complete. |
| TCS Ponds concrete containment pad | 100% | Complete. |
| Construction Headquarters (CHQ) access road and security fence | 100% | Complete. |
| Brine Tanks containment upgrade | 100% | Complete. |
| Aggregate-based access road in floodplain | Not Available | Portion north of BNSF bridge is substantially complete. |
| MW-L, N, E, W, O, R, M, U, 10D, 11D, B, C, D, H, S, Hydro-6, X, and Y' | 100% | Complete. |
| MW-F, MW-G, MW-70BR, MW-81, IRZ-27, IRZ-37, IRZ-39, RB-2, RB-3, and MW-Z | Not Available | Well construction complete. Surface completion will be scheduled when rig is available. |
| MW-B-267 (damaged) | 100% | Completed well abandonment. Installation of replacement well complete. |
| MW-C (shallow, sand entered well casing) | 100% | Video log complete. A plug was installed below well screen. Subsequent development was successful. |
| MW-S (damaged) | 100% | Over drill effort unsuccessful. Installation of replacement well complete. |
| RB-5, RB-4, RB-3, RB-2, IRZ-9, 13, 15, 16, 17, 18, 21, 23, 25, 27, 29, 31, 35, 37, and 39 pilot borings | 100% | Complete. |
| RB-2, RB-3, RB-4, IRZ-16, IRZ-17, IRZ-20, IRZ-21, IRZ-23, IRZ-25, and IRZ-39 remedy wells | Not Available | Well construction complete. Well testing ongoing. |
| Evaluation of RB-3 performance (sand production observed during development) | Not Available | Video log complete. Options for path forward were discussed with agencies on 12/19/19. A path forward was selected and is being implemented. Bottom portion of screen backfilled with pea gravel. Continue with development and testing. |
| IRZ-9 | Not Available | Abandon bottom portion of pilot boring. |
| Pipeline C Segments C3, C4, C5, C7 | Not Available | Substantially complete. |
| Pipeline C Segments C8, C8-Alt, and C14 | Not Available | Currently underway. |
| Pipeline B and J | Not Available | Started on August 12, 2019. Currently underway. |
| Pipeline M2-M6 (inside TCS0 | Not Available | Started on December 18, 2019. Currently underway. |
| Pipeline X (inside TCS) | Not Available | Started on December 18, 2019. Currently underway. |
| Remedy pipeline/infrastructure on MW-20 Bench | Not Available | Started on December 16, 2019. Currently underway. |

# Figures

SOIL PROCESSING YARD

CONSTRUCTION HEADQUARTERS

Park Moabi RD.

San Bernardino County

BOR

Fort Mojave Indian Tribe

National Trails HWY

Treatment Plant Facility

MW-20 BENCH

BLM

INTERSTATE 40

County Hwy 10

TCS EVAPORATION PONDS

HNWR

PG&E TOPOCK COMPRESSOR STATION

TRANSWESTERN BENCH

PG&E

6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

**LEGEND**

- Existing Access Route (will continue to be used for remedial activities)
- Existing Route ( to be used as is for access to remedial activities)
- Roads to be improved or constructed for groundwater remedy
- Soil Processing (Area #5) and Construction Headquarter (Area #4) for Remediation Project
- Staging Areas for Remediation Project

Notes:

1. Decontamination pads will be located in Area #4 (Construction Headquarters), Area #21 (Topock Compressor Station), and Area #23 (Transwestern Bench).
2. Areas #15, 16, 17, 19, and 20 will not be used as staging areas. Areas #16, 17, and 19 may be part of the primary work zones for remedy infrastructure along the access road.
3. Area #20 may be part of the primary work zone for installation of future provisional well IRL-6 (if determined to be needed in the future) and associated piping/concrete/vault.
4. Public roadways outside of the EIR project area and the APE can also be used for remedy implementation.

N

0 900

Feet

# FIGURE 2-1
## CONSTRUCTION SITE PLAN AND ACCESS ROUTES

GROUNDWATER REMEDY CONSTRUCTION/ PHASE 1
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

JACOBS

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## LEGEND

- Property Boundaries

**Existing Wells:**

- Extraction Well
- Injection Well
- Monitoring Well
- Water Supply Well

**Planned Wells:**

- Extractio
- (NTH) In-situ Reactive Zone (IRZ)
- Extraction, Riverbank
- Injection, NTH IRZ
- Injection, Topock Compressor Station
- Remedy Monitoring Well
- Recirculation Well

**Pipeline Corridor for Remedy**

- Aboveground Pipe
- Underground Pipe/Conduit

**Remedy Facilities**

- Planned Transformer
- Future Provisional Transformer
- Proposed Remedy Structure

**Note:**

1. Note that in compliance with EIR mitigation measure CUL-1a-9, as well as PA and CHPMP mitigation measures, the pipeline along the dirt road west of National Trails Hwy is located in an existing, previously disturbed, access road. In addition, the location of the road and pipeline was field verified and does not create any direct physical impact or effect on the Topock Maze, as it is manifested archaeologically, in compliance with EIR mitigation measure CUL-1a-10, PA, and CHPMP mitigation measures.
2. All well and structure locations are approximate.

This figure will be updated with the new monitoring well nomenclatures as presented in Table 2-2. The updated figure will be included in the March 2020 Monthly Progress Report

N

0 150 300 600

Feet

**FIGURE 2-2**
**WELL AND PIPELINE LOCATIONS**
GROUNDWATER REMEDY PHASE 1 CONSTRUCTION
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

JACOBS

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# Attachment A
# Photographs

**Photo showing earth fill compaction at the junction of Pipeline B and J.**

**Photo showing well installation at IRZ-29.**

**Photo showing injection testing at IRZ-16.**

**Photo showing well development at IRZ-37**


**Photo showing backfilling at Pipeline C.**

**Photo showing installation of downhole camera at RB-2.**

# Attachment B
# Available Boring and Well Construction Logs, Groundwater Sample Results from Well Drilling, and Well Testing Activities

**(Logs and Well Testing Plans/Results are Presented in Separate PDFs)**

**Table B-1. Groundwater Sampling Results**

*February 2020 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup*
*PG&E Topock Compressor Station, Needles, California*

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-10D | MW-10D-041119 | 04/11/19 | Vertical aquifer sample collected at 108 – 123 feet | 160 | 160 |
| MW-10D | MW-10D-VAS-107-112 | 04/01/19 | Vertical aquifer sample collected at 107 – 112 feet | 95 | 96 |
| MW-10D | MW-10D-VAS-118-123 | 04/02/19 | Vertical aquifer sample collected at 118 - 123 feet | 200 | 190 |
| MW-11D | MW-11D-VAS-122-127 | 10/07/19 | Vertical aquifer sample collected at 122 - 127 feet | 120 | 92 |
| MW-11D | MW-11D-VAS-152-157 | 10/07/19 | Vertical aquifer sample collected at 152 - 157 feet | 1.1 | 10 |
| MW-11D | MW-11D-VAS-177-182 | 10/08/19 | Vertical aquifer sample collected at 177 - 182 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-11D | MW-11D-VAS-67-72 | 10/06/19 | Vertical aquifer sample collected at 67 - 72 feet | 370 | 370 |
| MW-11D | MW-11D-VAS-92-97 | 10/06/19 | Vertical aquifer sample collected at 92 - 97 feet | 99 | 72 |
| MW-11D | MW-11D-110219 | 11/02/19 | Sample collected from well development | 26 | 17 |
| MW-94 (formerly Hydro-6) | MW-94-175-120419 | 12/04/19 | Sample collected from well development | 5.2 | 5.7 |
| MW-B | MW-B-VAS-27-32 | 01/06/19 | Vertical aquifer sample collected at 27 - 32 feet | Estimated concentration of 5.9 micrograms per liter | Estimated concentration of 7.7 micrograms per liter |
| MW-B | MW-B-VAS-47-52 | 01/09/19 | Vertical aquifer sample collected at 47 - 52 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-VAS-67-72 | 01/09/19 | Vertical aquifer sample collected at 67 – 72 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-VAS-102-107 | 01/10/19 | Vertical aquifer sample collected at 102 – 107 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-VAS-142-147 | 01/15/19 | Vertical aquifer sample collected at 142 – 147 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-B | MW-B-VAS-182-187 | 02/13/19 | Vertical aquifer sample collected at 182 - 187 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-VAS-207-212 | 02/14/19 | Vertical aquifer sample collected at 207 - 212 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-VAS-247-252 | 02/17/19 | Vertical aquifer sample collected at 247 - 252 feet | Estimated concentration of 11 micrograms per liter | Not detected below reporting limit of 0.83 microgram per liter |
| MW-B | MW-B-VAS-264-269 | 02/18/19 | Vertical aquifer sample collected at 264 - 269 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.33 microgram per liter |
| MW-B | MW-B-VAS-287-292 | 02/20/19 | Vertical aquifer sample collected at 287 - 292 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-VAS-317-322 | 02/21/19 | Vertical aquifer sample collected at 317 - 322 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-VAS-339-344 | 02/27/19 | Vertical aquifer sample collected at 339 - 344 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.33 microgram per liter |
| MW-B | MW-B-VAS-352-357 | 02/28/19 | Vertical aquifer sample collected at 352 - 357 feet | Estimated concentration of 0.603 micrograms per liter | Not detected below reporting limit of 0.33 microgram per liter |
| MW-B | MW-B-117-033019 | 03/30/19 | Sample collected from well development at 117 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-33-033119 | 03/31/19 | Sample collected from well development at 33 feet | 3.7 | 2.3 |
| MW-B | MW-B-337-062619-INTERIM | 6/26/19 | Sample collected from well development | Estimated concentration of 0.255 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-337-090719 | 9/7/2019 | Sample collected from well development | Estimated concentration of 0.251 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-267R-101619 | 10/16/19 | Sample collected from well development | Estimated concentration of 0.147 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-B | MW-B-202-101819 | 10/18/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-C | MW-C-VAS-26-31 | 6/19/19 | Vertical aquifer sample collected at 26-31 feet | 360 | 380 |
| MW-C | MW-C-VAS-51-56 | 6/25/19 | Vertical aquifer sample collected at 51-56 feet | Estimated concentration of 0.13 micrograms per liter | Estimated concentration of 0.146 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-C | DUP-01-062519 | 6/25/19 | Vertical aquifer sample collected at 51-56 feet | Not detected below reporting limit of 0.13 microgram per liter | Estimated concentration of 0.0931 microgram per liter |
| MW-C | MW-C-VAS-66-71 | 6/26/19 | Vertical aquifer sample collected at 66-71 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-C | MW-C-VAS-81-86 | 6/27/19 | Vertical aquifer sample collected at 81-86 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-C | MW-C-VAS-117-122 | 6/28/19 | Vertical aquifer sample collected at 117-122 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-C | MW-C-VAS-147-152 | 6/29/19 | Vertical aquifer sample collected at 147-152 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-C | MW-C-VAS-165-170 | 6/30/19 | Vertical aquifer sample collected at 165-170 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-C | MW-C-VAS-176-181 | 7/1/19 | Vertical aquifer sample collected at 176-181 feet | 380 | 410 |
| MW-C | MW-C-VAS-186-191 | 7/1/19 | Vertical aquifer sample collected at 186-191 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-C | MW-C-VAS-200-205 | 7/2/19 | Vertical aquifer sample collected at 200-205 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-C | MW-C-VAS-216-221 | 7/3/19 | Vertical aquifer sample collected at 216-221 feet | Estimated concentration of 0.448 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-C | MW-C-156-081519 | 8/15/2019 | Sample collected from well development | Data not available | Not detected below reporting limit of 0.17 microgram per liter |
| MW-C | MW-C-181-082019 | 8/20/2019 | Sample collected from well development | 280 | 280 |
| MW-C | MW-C-218-082219 | 8/22/2019 | Sample collected from well development | 39 | 40 |
| MW-C | MW-C-39-090519 | 9/5/2019 | Sample collected from well development | 14 | 16 |
| MW-D | MW-D-VAS-30-35 | 08/10/19 | Vertical aquifer sample collected at 30-35 | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-D | MW-D-VAS-46-51 | 08/11/19 | Vertical aquifer sample collected at 46-51 feet | Estimated concentration of 0.558 micrograms per liter | 0.47 |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-D | MW-D-VAS-91-96 | 08/12/19 | Vertical aquifer sample collected at 91-96 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-D | MW-D-VAS-131-136 | 08/21/19 | Vertical aquifer sample collected at 131-136 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.066 microgram per liter |
| MW-D | MW-D-VAS-141-146 | 08/22/19 | Vertical aquifer sample collected at 141-146 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-D | MW-D-VAS-151-156 | 08/22/19 | Vertical aquifer sample collected at 151 - 156 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-D | MW-D-VAS-161-166 | 08/23/19 | Vertical aquifer sample collected at 161 - 166 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-D | MW-D-VAS-171-176 | 08/23/19 | Vertical aquifer sample collected at 171 - 176 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-D | MW-D-VAS-181-186 | 08/24/19 | Vertical aquifer sample collected at 181 - 186 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-D | MW-D-VAS-191-196 | 08/25/19 | Vertical aquifer sample collected at 191 - 196 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-D | MW-D-158-092419 | 09/24/19 | Sample collected from well development | Estimated concentration of 0.203 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-D | MW-D-187-092519 | 09/25/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-D | MW-D-102-100219 | 10/02/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-D | MW-D-46R-103119 | 10/31/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-E | MW-E-VAS-52-57 | 11/05/18 | Vertical aquifer sample collected at 52 - 57 feet | 7800 | 7000 |
| MW-E | MW-E-VAS-82-87 | 11/06/18 | Vertical aquifer sample collected at 82 - 87 feet | 190 | 200 |
| MW-E | MW-E-VAS-112-117 | 11/06/18 | Vertical aquifer sample collected at 112 - 117 feet | 3000 | 3100 |
| MW-E | MW-E-VAS-137-142 | 11/07/18 | Vertical aquifer sample collected at 137 - 142 feet | 7900 | 7300 |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-E | MW-E-70-121418 | 12/14/18 | Sample collected from well development at a depth of 70 feet | Data not available | 3000 |
| MW-E | MW-E-142-121418 | 12/14/18 | Sample collected from well development at a depth of 142 feet | 4500 | 4200 |
| MW-F | MW-F-VAS-52-57 | 01/06/19 | Vertical aquifer sample collected at 52 - 57 feet | 2700 | 2500 |
| MW-F | MW-F-VAS-82-87 | 01/07/19 | Vertical aquifer sample collected at 82 - 87 feet | 120 | 110 |
| MW-F | MW-F-VAS-97-102 | 01/07/19 | Vertical aquifer sample collected at 97 - 102 feet | 1900 | 1800 |
| MW-F | MW-F-VAS-112-117 | 01/08/19 | Vertical aquifer sample collected at 112 - 117 feet | 790 | 740 |
| MW-F | MW-F-104-022719 | 02/27/19 | Sample collected from well development at a depth of 104 feet | 1800 | 1700 |
| MW-F | MW-F-60-022819 | 02/28/19 | Sample collected from well development at a depth of 60 feet | 2300 | 2200 |
| MW-G | MW-G-VAS-52-57 | 02/13/19 | Vertical aquifer sample collected at 52 - 57 feet | 790 | 680 |
| MW-G | MW-G-VAS-67-72 | 02/14/19 | Vertical aquifer sample collected at 67 - 72 feet | 1000 | 920 |
| MW-G | MW-G-VAS-77-82 | 02/15/19 | Vertical aquifer sample collected at 77 - 82 feet | 710 | 600 |
| MW-G | MW-G-82-030219 | 03/02/19 | Sample collected from well development at a depth of 82 feet | 1500 | 1500 |
| MW-G | MW-G-57-030219 | 03/02/19 | Sample collected from well development at a depth of 57 feet | 510 | 560 |
| MW-H | MW-H-VAS-32-37 | 8/7/2019 | Vertical aquifer sample collected at 32 - 37 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-VAS-47-52 | 8/7/2019 | Vertical aquifer sample collected at 47-52 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-H | MW-H-VAS-82-87 | 08/08/19 | Vertical aquifer sample collected at 82-87 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-H | MW-H-VAS-112-117 | 08/09/19 | Vertical aquifer sample collected at 112-117 feet | 8.1 | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-VAS-142-147 | 08/10/19 | Vertical aquifer sample collected at 142-147 feet | Estimated concentration of 18 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-VAS-152-157 | 08/10/19 | Vertical aquifer sample collected at 152-157 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-VAS-162-167 | 08/11/19 | Vertical aquifer sample collected at 162-167 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-VAS-172-177 | 08/12/19 | Vertical aquifer sample collected at 172-177 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-VAS-182-187 | 08/13/19 | Vertical aquifer sample collected at 182-187 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-VAS-192-197 | 08/14/19 | Vertical aquifer sample collected at 192-197 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-112-092019 | 09/20/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-168-092119 | 09/21/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-198-092219 | 09/22/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-H | MW-H-46-091919 | 09/19/19 | Sample collected from well development | 19 | 1.4 |
| MW-L | MW-L-VAS-76-81 | 10/06/18 | Vertical aquifer sample collected at 76 - 81 feet | 8.1 | 31 |
| MW-L | MW-L-VAS-106-111 | 10/09/18 | Vertical aquifer sample collected at 106 - 111 feet | Estimated concentration of 0.697 micrograms per liter | 0.84 |
| MW-L | MW-L-VAS-141-146 | 10/10/18 | Vertical aquifer sample collected at 141 - 146 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-L | MW-L-VAS-181-186 | 10/20/18 | Vertical aquifer sample collected at 181 - 186 feet | 3.8 | 3.3 |
| MW-L | MW-L-VAS-218-223 | 10/21/18 | Vertical aquifer sample collected at 218 - 223 feet | 68 | 66 |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-L | MW-L-VAS-261-266 | 10/22/18 | Vertical aquifer sample collected at 261 - 266 feet | 0.284 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-L | MW-L-180-032819 | 03/28/19 | Sample collected from well development at a depth of 180 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-L | MW-L-245-030319 | 03/03/19 | Sample collected from well development at a depth of 245 feet | 14 | 15 |
| MW-L | MW-L-90-032919 | 03/29/19 | Sample collected from well development at a depth of 90 feet | 19 | 18 |
| MW-L | MW-L-225-032919 | 03/29/19 | Sample collected from well development at a depth of 225 feet | 410 | 380 |
| MW-M | MW-M-VAS-52-57 | 03/28/19 | Vertical aquifer sample collected at 52 - 57 feet | 29 | 28 |
| MW-M | MW-M-VAS-72-77 | 03/29/19 | Vertical aquifer sample collected at 72 - 77 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-M | MW-M-VAS-107-112 | 03/30/19 | Vertical aquifer sample collected at 107 - 112 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-M | MW-M-VAS-147-152 | 03/31/19 | Vertical aquifer sample collected at 147 - 152 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-M | MW-M-VAS-172-177 | 04/02/19 | Vertical aquifer sample collected at 172 - 177 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-M | MW-M-VAS-190-195 | 04/10/19 | Vertical aquifer sample collected at 190 - 195 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-M | MW-M-132-061519 | 6/16/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-M | MW-M-193-061419 | 6/14/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-M | MW-M-57-061719 | 6/17/19 | Sample collected from well development | Estimated concentration of 0.715 micrograms per liter | 0.72 |
| MW-M | MW-M-95-061619 | 6/16/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-N | MW-N-VAS-121-126 | 02/14/19 | Vertical aquifer sample collected at 121 - 126 feet | Estimated concentration of 0.699 micrograms per liter | 0.51 |
| MW-N | MW-N-VAS-142-147 | 02/16/19 | Vertical aquifer sample collected at 142 - 147 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-N | MW-N-VAS-173-178 | 02/18/19 | Vertical aquifer sample collected at 173 - 178 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-N | MW-N-VAS-210-215 | 02/21/19 | Vertical aquifer sample collected at 210 - 215 feet | 320 | 290 |
| MW-N | MW-N-VAS-228-233 | 02/26/19 | Vertical aquifer sample collected at 228 – 233 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-N | MW-N-217-040219 | 04/02/19 | Sample collected from well development at a depth of 217 feet | 110 | 110 |
| MW-N | MW-N-237-040119 | 04/01/19 | Sample collected from well development at a depth of 237 feet | 1600 | 1500 |
| MW-N | MW-N-129-040319 | 04/03/19 | Sample collected from well development at a depth of 129 feet | 45 | 46 |
| MW-O | MW-O-VAS-101-106 | 05/10/19 | Vertical aquifer sample collected at 101 - 106 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-O | MW-O-VAS-106-111 | 05/11/19 | Vertical aquifer sample collected at 106 - 111 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-O | MW-O-VAS-12.5-17.5 | 05/08/19 | Vertical aquifer sample collected at 12 - 18 feet | Not detected below reporting limit of 0.13 microgram per liter | Estimated concentration of 0.163 J |
| MW-O | MW-O-VAS-136-141 | 05/11/19 | Vertical aquifer sample collected at 136 - 141 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-O | MW-O-VAS-51-56 | 05/09/19 | Vertical aquifer sample collected at 51 - 56 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-O | MW-O-VAS-66-71 | 05/09/19 | Vertical aquifer sample collected at 66 - 71 feet | Not detected below reporting limit of 0.13 microgram per liter | Estimated concentration of 0.178 J |
| MW-O | MW-O-140-071819 | 7/18/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-O | MW-O-30-071719 | 7/17/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-O | MW-O-66-071519 | 7/15/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-R | MW-R-VAS-92-97 | 05/13/19 | Vertical aquifer sample collected at 92 - 97 feet | 42 | 45 |
| MW-R | MW-R-VAS-117-122 | 05/14/19 | Vertical aquifer sample collected at 117 - 122 feet | 4.6 | 5.8 |
| MW-R | MW-R-VAS-151-156 | 05/15/19 | Vertical aquifer sample collected at 151 - 156 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-R | MW-R-VAS-192-197 | 05/16/19 | Vertical aquifer sample collected at 192 - 197 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-R | MW-R-VAS-227-232 | 05/17/19 | Vertical aquifer sample collected at 227 - 232 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-R | MW-R-VAS-255-260 | 05/29/19 | Vertical aquifer sample collected at 255 - 260 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-R | MW-R-VAS-269-274 | 05/30/19 | Vertical aquifer sample collected at 269 - 274 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-R | MW-R-109-062819 | 6/28/19 | Sample collected from well development | 2.6 | 2.5 |
| MW-R | MW-R-139-071319 | 7/13/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-R | MW-R-192-070219 | 7/2/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-R | MW-R-275-070919 | 7/9/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-S | MW-S-VAS-107-112 | 09/24/19 | Vertical aquifer sample collected at 107 - 112 feet | 20 | 15 |
| MW-S | MW-S-VAS-92-97 | 09/22/19 | Vertical aquifer sample collected at 92 - 97 feet | 25 | 26 |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-W | MW-W-VAS-7-12 | 03/27/19 | Vertical aquifer sample collected at 7 - 12 feet | Estimated concentration of 0.266 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-W | MW-W-VAS-22-27 | 03/28/19 | Vertical aquifer sample collected at 22 - 27 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-W | MW-W-31-040419 | 04/04/19 | Sample collected from well development at a depth of 31 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-X | MW-X-VAS-12-17 | 06/25/19 | Vertical aquifer sample collected at 12-17 feet | 1.2 | Not detected below reporting limit of 0.033 microgram per liter |
| MW-X | MW-X-VAS-32-37 | 06/26/19 | Vertical aquifer sample collected at 32-37 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-X | MW-X-VAS-71-76 | 6/27/19 | Vertical aquifer sample collected at 71 - 76 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-X | MW-X-VAS-107-112 | 6/27/19 | Vertical aquifer sample collected at 107-112 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-X | MW-X-VAS-112-117 | 6/28/19 | Vertical aquifer sample collected at 112-117 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-X | MW-X-VAS-152-157 | 6/29/19 | Vertical aquifer sample collected at 152-157 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-X | MW-X-VAS-182-187 | 6/29/19 | Vertical aquifer sample collected at 182-187 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-X | MW-X-VAS-207-212 | 6/30/19 | Vertical aquifer sample collected at 207-212 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-X | MW-X-VAS-245-250 | 7/1/19 | Vertical aquifer sample collected at 245-250 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-X | MW-X-VAS-292-297 | 7/2/19 | Vertical aquifer sample collected at 292-297 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-X | MW-X-VAS-337-342 | 7/11/19 | Vertical aquifer sample collected at 337-342 feet | Estimated concentration of 0.564 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-X | MW-X-VAS-382-387 | 7/13/19 | Vertical aquifer sample collected at 382-387 feet | Estimated concentration of 0.582 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-X | MW-X-VAS-412-417 | 7/15/19 | Vertical aquifer sample collected at 412-417 feet | 38 | Not detected below reporting limit of 0.17 microgram per liter |
| MW-X | MW-X-120-112019 | 11/20/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-X | MW-X-170-112319 | 11/23/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-X | MW-X-320-112219 | 11/22/19 | Sample collected from well development | Estimated concentration of 0.912 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-X | MW-X-45-111819 | 11/18/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-Y' | MW-Y-122-103119 | 10/31/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-Y' | MW-Y-102-102319 | 10/23/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-Y' | MW-Y-72-102219 | 10/22/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-Y' | MW-Y-37-102019 | 10/20/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-Y' | MW-Y-VAS-92-97 | 08/22/19 | Vertical aquifer sample collected at 92 - 97 feet | Estimated concentration of 0.620 micrograms per liter | 0.31 |
| MW-Y' | MW-Y-VAS-98-103 | 08/23/19 | Vertical aquifer sample collected at 98 - 103 feet | Estimated concentration of 0.521 micrograms per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-Y' | MW-Y-VAS-112-117 | 08/23/19 | Vertical aquifer sample collected at 112 - 117 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-Y' | MW-Y-VAS-52-57 | 08/21/19 | Vertical aquifer sample collected at 52-57 feet | Estimated concentration of 0.378 micrograms per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-Y' | MW-Y-VAS-12-17 | 08/20/19 | Vertical aquifer sample collected at 12-17 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-81 (former IRZ-19) | MW-81-98-121919 | 12/19/19 | Sample collected from well development | Estimated concentration of 0.145 micrograms per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-81 (former IRZ-19) | MW-81-43-010820 | 01/08/20 | Sample collected from well development | Estimated concentration of 0.202 micrograms per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-93 (former MW-Z) | MW-93-VAS-112-117 | 2/8/2020 | 112 - 117 | Data not yet available | Not detected below reporting limit of 0.033 microgram per liter |
| MW-93 (former MW-Z) | MW-93-VAS-142-147 | 2/8/2020 | 142 - 147 | Data not yet available | Not detected below reporting limit of 0.17 microgram per liter |
| MW-93 (former MW-Z) | MW-93-VAS-152-157 | 2/9/2020 | 152 - 157 | Data not yet available | Not detected below reporting limit of 0.17 microgram per liter |
| MW-93 (former MW-Z) | MW-93-VAS-172-177 | 2/10/2020 | 172 - 177 | Data not yet available | Not detected below reporting limit of 0.17 microgram per liter |
| MW-93 (former MW-Z) | MW-93-VAS-192-197 | 2/10/2020 | 192 - 197 | Data not yet available | Not detected below reporting limit of 0.033 microgram per liter |
| MW-93 (former MW-Z) | MW-93-VAS-212-217 | 2/11/2020 | 212 - 217 | Data not yet available | Not detected below reporting limit of 0.17 microgram per liter |
| MW-93 (former MW-Z) | MW-93-VAS-72-77 | 2/7/2020 | 72 - 77 | Data not yet available | Not detected below reporting limit of 0.033 microgram per liter |
| MW-94 (former HYDRO-6) | MW-94-175-120419 | 12/4/19 | Sample collected from well development | 5.2 | 5.7 |
| MW-U | MW-U-VAS-137-142 | 04/12/19 | Vertical aquifer sample collected at 137 - 142 feet | Estimated concentration of 0.818 micrograms per liter | 1.4 |
| MW-U | MW-U-VAS-181-186 | 04/13/19 | Vertical aquifer sample collected at 181 - 186 feet | Not detected below reporting limit of 0.13 microgram per liter | Estimated concentration of 0.112 J |
| MW-U | MW-U-VAS-222-227 | 04/14/19 | Vertical aquifer sample collected at 222 - 227 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-U | MW-U-VAS-257-262 | 04/16/19 | Vertical aquifer sample collected at 257 - 262 feet | Not detected below reporting limit of 0.13 microgram per liter | Estimated concentration of 0.0896 J |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| MW-U | MW-U-VAS-287-292 | 04/17/19 | Vertical aquifer sample collected at 287 - 292 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-U | MW-U-VAS-317-322 | 04/24/19 | Vertical aquifer sample collected at 317 - 322 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| MW-U | MW-U-183-050819 | 05/08/19 | Sample collected from well development at a depth of 183 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| MW-U | MW-U-273-051019 | 05/10/19 | Sample collected from well development at a depth of 273 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-9 | IRZ-9-VAS-27-32 | 12/03/18 | Vertical aquifer sample collected at 27 -32 feet | 120 | 120 |
| IRZ-9 | IRZ-9-VAS-47-52 | 12/04/18 | Vertical aquifer sample collected at 47 -52 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-9 | IRZ-9-VAS-62-67 | 12/04/18 | Vertical aquifer sample collected at 62 -67 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-9 | IRZ-9-VAS-182-187 | 12/11/18 | Vertical aquifer sample collected at 182 -187 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-9 | IRZ-9-VAS-207-212 | 12/13/18 | Vertical aquifer sample collected at 207 -212 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-9 | IRZ-9-VAS-232-237 | 12/13/18 | Vertical aquifer sample collected at 232 -237 feet | Estimated concentration of 0.811 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-9 | IRZ-9-VAS-264-269 | 12/15/18 | Vertical aquifer sample collected at 264 -269 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-9 | IRZ-9-VAS-276-281 | 12/16/18 | Vertical aquifer sample collected at 276 -281 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-9 | IRZ-9-VAS-292-297 | 12/18/18 | Vertical aquifer sample collected at 292 -297 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-13 | IRZ-13-VAS-32-37 | 11/17/18 | Vertical aquifer sample collected at 32 - 37 feet | 170 | 220 |
| IRZ-13 | IRZ-13-VAS-57-62 | 11/18/18 | Vertical aquifer sample collected at 57 - 62 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-13 | IRZ-13-VAS-102-107 | 11/19/18 | Vertical aquifer sample collected at 102 - 107 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| IRZ-13 | IRZ-13-VAS-142-147 | 11/19/18 | Vertical aquifer sample collected at 142 - 147 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-13 | IRZ-13-VAS-180-185 | 11/27/18 | Vertical aquifer sample collected at 180 - 185 feet | 230 | 190 |
| IRZ-13 | IRZ-13-VAS-197-202 | 11/28/18 | Vertical aquifer sample collected at 197 - 202 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.83 microgram per liter |
| IRZ-13 | IRZ-13-VAS-224-229 | 11/28/18 | Vertical aquifer sample collected at 224 - 229 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.83 microgram per liter |
| IRZ-13 | IRZ-13-VAS-237-242 | 11/29/18 | Vertical aquifer sample collected at 237 - 242 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-15 | IRZ-15-VAS-32-37 | 11/01/18 | Vertical aquifer sample collected at 32 - 37 feet | 13 | 13 |
| IRZ-15 | IRZ-15-VAS-62-67 | 11/02/18 | Vertical aquifer sample collected at 62 - 67 feet | Not detected below reporting limit of 0.65 microgram per liter | Estimated concentration of 0.459 J |
| IRZ-15 | IRZ-15-VAS-102-107 | 11/03/18 | Vertical aquifer sample collected at 102 - 107 feet | Not detected below reporting limit of 0.65 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-15 | IRZ-15-VAS-132-137 | 11/04/18 | Vertical aquifer sample collected at 132 - 137 feet | Estimated concentration of 0.228 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-15 | IRZ-15-VAS-162-167 | 11/05/18 | Vertical aquifer sample collected at 162 - 167 feet | 3400 | 3200 |
| IRZ-15 | IRZ-15-VAS-182-187 | 11/06/18 | Vertical aquifer sample collected at 182 - 187 feet | 130 | 140 |
| IRZ-15 | IRZ-15-VAS-222-227 | 11/07/18 | Vertical aquifer sample collected at 222 - 227 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-16 | IRZ-16-VAS-27-32 | 02/20/19 | Vertical aquifer sample collected at 27 - 32 feet | 480 | 480 |
| IRZ-16 | IRZ-16-VAS-57-62 | 02/20/19 | Vertical aquifer sample collected at 57 - 62 feet | Not detected below reporting limit of 0.033 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-16 | IRZ-16-VAS-102-107 | 02/21/19 | Vertical aquifer sample collected at 102 - 107 feet | Not detected below reporting limit of 0.033 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-16 | IRZ-16-VAS-132-137 | 02/26/19 | Vertical aquifer sample collected at 132 - 137 feet | Not detected below reporting limit of 0.17 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| IRZ-16 | IRZ-16-VAS-147-152 | 02/27/19 | Vertical aquifer sample collected at 147 - 152 feet | Not detected below reporting limit of 0.17 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-16 | IRZ-16-VAS-172-177 | 02/27/19 | Vertical aquifer sample collected at 172 - 177 feet | 110 | 110 |
| IRZ-16 | IRZ-16-VAS-192-197 | 02/28/19 | Vertical aquifer sample collected at 192 - 197 feet | Not detected below reporting limit of 0.17 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-17 | IRZ-17-165-012420 | 1/24/2020 | Sample collected from well development | 120 | 130 |
| IRZ-17 | IRZ-17-52-011620 | 1/16/2020 | Sample collected from well development | 20 | 20 |
| IRZ-17 | IRZ-17-VAS-32-37 | 03/02/19 | Vertical aquifer sample collected at 32 - 37 feet | 78 | 67 |
| IRZ-17 | IRZ-17-VAS-62-67 | 03/02/19 | Vertical aquifer sample collected at 62 - 67 feet | Estimated concentration of 0.750 micrograms per liter | Estimated concentration of 0.604 micrograms per liter |
| IRZ-17 | IRZ-17-VAS-102-107 | 03/03/19 | Vertical aquifer sample collected at 102 - 107 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-17 | IRZ-17-VAS-132-137 | 03/13/19 | Vertical aquifer sample collected at 132 - 137 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-17 | IRZ-17-VAS-137-142 | 03/12/19 | Vertical aquifer sample collected at 137 - 142 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.13 microgram per liter |
| IRZ-17 | IRZ-17-VAS-142-147 | 03/04/19 | Vertical aquifer sample collected at 142 - 147 feet | 68 | 84 |
| IRZ-17 | IRZ-17-VAS-147-152 | 03/12/19 | Vertical aquifer sample collected at 147 - 152 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-17 | IRZ-17-VAS-152-157 | 03/04/19 | Vertical aquifer sample collected at 152 - 157 feet | 16 | 7.0 |
| IRZ-17 | IRZ-17-VAS-162-167 | 03/04/19 | Vertical aquifer sample collected at 162 - 167 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-17 | IRZ-17-VAS-172-177 | 03/05/19 | Vertical aquifer sample collected at 172 - 177 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-18 | IRZ-18-VAS-42-47 | 11/19/19 | Vertical aquifer sample collected at 42 - 47 feet | 520 | 580 |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| IRZ-18 | IRZ-18-VAS-62-67 | 11/19/19 | Vertical aquifer sample collected at 62 - 67 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-18 | IRZ-18-VAS-67-72 | 11/19/19 | Vertical aquifer sample collected at 67 - 72 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-18 | IRZ-18-VAS-102-107 | 11/20/19 | Vertical aquifer sample collected at 102 – 107 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-18 | IRZ-18-VAS-112-117 | 11/20/19 | Vertical aquifer sample collected at 112 – 117 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-18 | IRZ-18-VAS-137-142 | 11/21/19 | Vertical aquifer sample collected at 137 - 142 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-18 | IRZ-18-VAS-147-152 | 11/21/19 | Vertical aquifer sample collected at 147 - 152 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-18 | IRZ-18-VAS-152-157 | 11/22/19 | Vertical aquifer sample collected at 152 - 157 feet | Estimated concentration of 0.267 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-18 | IRZ-18-VAS-157-162 | 11/22/19 | Vertical aquifer sample collected at 157 - 162 feet | 1100 | 870 |
| IRZ-18 | IRZ-18-VAS-162-167 | 11/22/19 | Vertical aquifer sample collected at 162 - 167 feet | 3400 | 3300 |
| IRZ-18 | IRZ-18-VAS-167-172 | 11/23/19 | Vertical aquifer sample collected at 167 - 172 feet | 4800 | 4700 |
| IRZ-18 | IRZ-18-VAS-172-177 | 12/03/19 | Vertical aquifer sample collected at 172 – 177 feet | 740 | 660 |
| IRZ-18 | IRZ-18-VAS-177-182 | 12/03/19 | Vertical aquifer sample collected at 177 – 182 feet | 360 | 390 |
| IRZ-18 | IRZ-18-VAS-182-187 | 12/04/19 | Vertical aquifer sample collected at 182 – 187 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-18 | IRZ-18-VAS-187-192 | 12/04/19 | Vertical aquifer sample collected at 187 – 192 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-18 | IRZ-18-VAS-202-207 | 12/05/19 | Vertical aquifer sample collected at 202 – 207 feet | Estimated concentration of 0.204 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-19 | IRZ-19-VAS-122-127 | 9/8/2019 | Vertical aquifer sample collected at 122 - 127 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-19 | IRZ-19-131-136 | 9/9/2019 | Vertical aquifer sample collected at 131-136 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| IRZ-19 | IRZ-19-142-147 | 9/9/2019 | Vertical aquifer sample collected at 142-147 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-19 | IRZ-19-VAS-152-157 | 9/10/2019 | Vertical aquifer sample collected at 152 - 157 feet | Estimated concentration of 0.187 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-19 | IRZ-19-VAS-162-167 | 9/11/2019 | Vertical aquifer sample collected at 162 - 167 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-19 | IRZ-19-VAS-177-182 | 9/12/2019 | Vertical aquifer sample collected at 177 - 182 feet | Estimated concentration of 0.275 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-19 | IRZ-19-VAS-27-32 | 9/6/2019 | Vertical aquifer sample collected at 27 - 32 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-19 | IRZ-19-VAS-37-42 | 9/6/2019 | Vertical aquifer sample collected at 37 - 42 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-19 | IRZ-19-VAS-82-87 | 9/7/2019 | Vertical aquifer sample collected at 82 - 87 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-20 | IRZ-17-VAS-197-202 | 03/06/19 | Vertical aquifer sample collected at 197 - 202 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-20 | IRZ-17-VAS-217-222 | 03/06/19 | Vertical aquifer sample collected at 217 - 222 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-20 | IRZ-20-VAS-112-117 | 10/22/18 | Vertical aquifer sample collected at 112 - 117 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-20 | IRZ-20-VAS-131-136 | 10/23/18 | Vertical aquifer sample collected at 131 - 136 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-20 | IRZ-20-VAS-173-178 | 10/24/18 | Vertical aquifer sample collected at 173 - 178 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.83 microgram per liter |
| IRZ-21 | IRZ-21-VAS-52-57 | 12/15/18 | Vertical aquifer sample collected at 52 - 57 feet | 100 | 97 |
| IRZ-21 | IRZ-21-VAS-77-82 | 12/16/18 | Vertical aquifer sample collected at 77 - 82 feet | 1.3 | 1.1 |
| IRZ-21 | IRZ-21-VAS-112-117 | 12/16/18 | Vertical aquifer sample collected at 112 - 117 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-21 | IRZ-21-VAS-132-137 | 12/17/18 | Vertical aquifer sample collected at 132 - 137 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| IRZ-21 | IRZ-21-VAS-147-152 | 12/18/18 | Vertical aquifer sample collected at 147 - 152 v | 4000 | 3600 |
| IRZ-23 | IRZ-23-VAS-67-72 | 12/01/18 | Vertical aquifer sample collected at 67 - 72 feet | 86 | 85 |
| IRZ-23 | IRZ-23-VAS-92-97 | 12/01/18 | Vertical aquifer sample collected at 92 - 97 feet | Estimated concentration of 0.453 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-23 | IRZ-23-VAS-122-127 | 12/02/18 | Vertical aquifer sample collected at 122 - 127 feet | 2100 | 2000 |
| IRZ-23 | IRZ-23-VAS-139-144 | 12/02/18 | Vertical aquifer sample collected at 139 - 144 feet | 3400 | 3000 |
| IRZ-25 | IRZ-25-VAS-52-57 | 12/05/18 | Vertical aquifer sample collected at 52 - 57 feet | 4300 | 3500 |
| IRZ-25 | IRZ-25-VAS-67-72 | 12/05/18 | Vertical aquifer sample collected at 67 - 72 feet | 750 | 620 |
| IRZ-25 | IRZ-25-VAS-92-97 | 12/06/18 | Vertical aquifer sample collected at 92 - 97 feet | 140 | 130 |
| IRZ-25 | IRZ-25-VAS-112-117 | 12/11/18 | Vertical aquifer sample collected at 112 - 117 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-25 | IRZ-25-VAS-147-152 | 12/11/18 | Vertical aquifer sample collected at 147 - 152 feet | 3800 | 3600 |
| IRZ-25 | IRZ-25-VAS-162-167 | 12/13/18 | Vertical aquifer sample collected at 162 - 167 feet | 3000 | 3000 |
| IRZ-27 | IRZ-27-VAS-52-57 | 03/15/19 | Vertical aquifer sample collected at 52 - 57 feet | 4500 | 4400 |
| IRZ-27 | IRZ-27-VAS-72-77 | 03/17/19 | Vertical aquifer sample collected at 72 - 77 feet | Estimated concentration of 0.338 micrograms per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-27 | IRZ-27-VAS-102-107 | 03/18/19 | Vertical aquifer sample collected at 102 - 107 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| IRZ-27 | IRZ-27-VAS-132-137 | 03/20/19 | Vertical aquifer sample collected at 132 - 137 feet | 1200 | 1300 |
| IRZ-29 | IRZ-29-VAS-47-52 | 12/16/19 | Vertical aquifer sample collected at 47 – 52 feet | 4400 | 4500 |
| IRZ-29 | IRZ-29-VAS-62-67 | 12/17/19 | Vertical aquifer sample collected at 62 – 67 feet | 2500 | 2400 |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| IRZ-29 | IRZ-29-VAS-87-92 | 12/17/19 | Vertical aquifer sample collected at 87 – 92 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| IRZ-29 | IRZ-29-VAS-112-117 | 12/18/19 | Vertical aquifer sample collected at 112 – 117 feet | 730 | 760 |
| IRZ-29 | IRZ-29-VAS-116-120.5 | 12/19/19 | Vertical aquifer sample collected at 116 - 120 feet | 18 | 23 |
| IRZ-31 | IRZ-31-VAS-48-53 | 01/08/20 | Vertical aquifer sample collected at 48-53 feet | 2000 | 2000 |
| IRZ-31 | IRZ-31-VAS-72-77 | 01/09/20 | Vertical aquifer sample collected at 72-77 feet | 570 | 480 |
| IRZ-31 | IRZ-31-VAS-102-107 | 01/10/20 | Vertical aquifer sample collected at 102-107 feet | 2300 | 2300 |
| IRZ-31 | IRZ-31-VAS-115-120 | 01/11/20 | Vertical aquifer sample collected at 115-120 feet | 2500 | 2500 |
| IRZ-33 | IRZ-33-VAS-49-54 | 01/21/20 | Vertical aquifer sample collected at 49-54 feet | 1900 | 2100 |
| IRZ-33 | IRZ-33-VAS-72-77 | 01/22/20 | Vertical aquifer sample collected at 72-77 feet | 1600 | 1600 |
| IRZ-33 | IRZ-33-VAS-105-110 | 01/23/20 | Vertical aquifer sample collected at 105-110 feet | 1400 | 1300 |
| IRZ-35 | IRZ-35-VAS-52-57 | 01/13/20 | Vertical aquifer sample collected at 52-57 feet | 850 | 810 |
| IRZ-35 | IRZ-35-VAS-67-72 | 01/13/20 | Vertical aquifer sample collected at 67-72 feet | 990 | 920 |
| IRZ-35 | IRZ-35-VAS-82-87 | 01/14/20 | Vertical aquifer sample collected at 82-87 feet | 2300 | 2500 |
| IRZ-37 | IRZ-37-VAS-52-57 | 10/06/19 | Vertical aquifer sample collected at 52 – 57 feet | 1100 | 1000 |
| IRZ-37 | IRZ-37-VAS-57-62 | 10/07/19 | Vertical aquifer sample collected at 57 – 62 feet | 1200 | 1100 |
| IRZ-39 | IRZ-39-VAS-27-32 | 03/30/19 | Vertical aquifer sample collected at 27 - 32 feet | 31 | 29 |
| IRZ-39 | IRZ-39-110419 | 11/04/19 | Sample collected from well development | 38 | 36 |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| RB-2 | RB-2-VAS-102-107 | 7/1/19 | Vertical aquifer sample collected at 102-107 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-2 | RB-2-VAS-142-147 | 7/9/19 | Vertical aquifer sample collected at 142-147 feet | Estimated concentration of 0.270 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-2 | RB-2-VAS-172-177 | 7/12/19 | Vertical aquifer sample collected at 172-177 feet | Estimated concentration of 0.233 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-2 | RB-2-VAS-202-207 | 7/14/19 | Vertical aquifer sample collected at 202-207 feet | Estimated concentration of 0.218 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-2 | RB-2-VAS-237-242 | 7/15/19 | Vertical aquifer sample collected at 237-242 feet | Estimated concentration of 0.233 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-2 | RB-2-VAS-274-279 | 7/18/19 | Vertical aquifer sample collected at 274-279 feet | Estimated concentration of 0.514 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-2 | RB-2-VAS-287-292 | 7/26/19 | Vertical aquifer sample collected at 287-292 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-2 | RB-2-VAS-36.5-41.5 | 6/29/19 | Vertical aquifer sample collected at 36 – 42 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-2 | RB-2-VAS-72-77 | 6/30/19 | Vertical aquifer sample collected at 72 – 77 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-3 | RB-3-VAS-15-20 | 04/26/19 | Vertical aquifer sample collected at 15 - 20 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-3 | RB-3-VAS-50-55 | 04/27/19 | Vertical aquifer sample collected at 50 - 55 feet | Not detected below reporting limit of 0.13 microgram per liter | Estimated concentration of 0.100 micrograms per liter |
| RB-3 | RB-3-VAS-80-85 | 04/27/19 | Vertical aquifer sample collected at 80 - 85 feet | Not detected below reporting limit of 0.13 microgram per liter | Estimated concentration of 0.132 micrograms per liter |
| RB-3 | RB-3-VAS-120-125 | 04/28/19 | Vertical aquifer sample collected at 120 - 125 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-3 | RB-3-VAS-150-155 | 04/29/19 | Vertical aquifer sample collected at 150 - 155 feet | Estimated concentration of 0.257 micrograms per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-3 | RB-3-VAS-180-185 | 04/29/19 | Vertical aquifer sample collected at 180 - 185 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |

| Location | Sample ID | Sample Date | Sample Depth Interval in feet below ground surface | Total Dissolved Chromium Concentration in microgram per liter | Hexavalent Chromium Concentration in microgram per liter |
|---|---|---|---|---|---|
| RB-3 | RB-3-VAS-205-210 | 04/30/19 | Vertical aquifer sample collected at 205 - 210 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-4 | RB-4-VAS-15-20 | 04/12/19 | Vertical aquifer sample collected at 15 - 20 feet | Not detected below reporting limit of 0.13 microgram per liter | Estimated concentration of 0.0556 microgram per liter |
| RB-4 | RB-4-VAS-41-46 | 04/12/19 | Vertical aquifer sample collected at 41 - 46 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-4 | RB-4-VAS-81-86 | 04/12/19 | Vertical aquifer sample collected at 81 - 86 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-4 | RB-4-VAS-121-126 | 04/13/19 | Vertical aquifer sample collected at 121 - 126 | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-4 | RB-4-VAS-136-141 | 04/13/19 | Vertical aquifer sample collected at 136 - 141 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-4 | RB-4-VAS-155-160 | 04/17/19 | Vertical aquifer sample collected at 155 - 160 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.17 microgram per liter |
| RB-4 | RB-4-138-102019 | 10/20/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Estimated concentration of 0.135 microgram per liter |
| RB-4 | RB-4-58-102119 | 10/21/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-5 | RB-5-VAS-12-17 | 04/04/19 | Vertical aquifer sample collected at 12 - 17 feet | Estimated concentration of 0.235 microgram per liter | Estimated concentration of 0.125 microgram per liter |
| RB-5 | RB-5-VAS-42-47 | 04/09/19 | Vertical aquifer sample collected at 42 - 47 feet | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-5 | RB-5-VAS-82-87 | 04/09/19 | Vertical aquifer sample collected at 82 - 87 feet | Estimated concentration of 0.769 microgram per liter | Estimated concentration of 0.127 microgram per liter |
| RB-5 | RB-5-44-102419 | 10/24/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |
| RB-5 | RB-5-89-102319 | 10/23/19 | Sample collected from well development | Not detected below reporting limit of 0.13 microgram per liter | Not detected below reporting limit of 0.033 microgram per liter |

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ENVIRONMENT

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March 3, 2020

Contact:
Fred Stanin

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925-296-7842

Email:
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Our ref:
30019125

Subject:
Well Decommissioning Report for Monitoring Well MW-B-267 Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Dear Mr. Yue and Ms. Innis:

Pacific Gas and Electric Company (PG&E) is implementing a groundwater remedy at the Topock Compressor Station (TCS or Site) in Needles, California. Many of the monitoring wells installed for the remedy at the Site are nested to reduce the number of boreholes at the Site. The nested pair of wells installed at location MW-B included MW-B-267 (screened from 247 to 267 below ground surface [bgs]) and MW-B-337 (currently named MW-75-337 and screened from 317 to 337 bgs). High solids grout was observed on April 15, 2019 during development of monitoring well MW-B-267. Development was stopped to develop an approach to assess the well condition by additional development and video logging. The assessment concluded that MW-B-267 should be abandoned, and MW-B-337 should be used as a monitoring well following development. The purpose of this memo is to document the field observations and regulatory discussions, and to summarize the agency-approved abandonment procedures for MW-B-267.

## FIELD OBSERVATIONS

On March 31, 2019, the well development crew set up on monitoring well MW-B-267 with the plan to develop the well using typical site-specific procedures. The initial development started with cycles of bailing followed by surging methods (using a surge block) in 5-foot increments. Site access issues resulted in the

development crew needing to move to another well by the end of the day before completing well development at well MW-B-267. Well development is typically complete when solids have been removed from the well and purge water exhibits concentrations below 10 nephelometric turbidity units (NTUs).

Development activities using bail and swabbing methods were continued on April 12 and 13. Purge water was observed to be very silty and turbid. Following an additional round of surging on the morning of April 13, a pump was placed in the well to remove solids per the development plan. Over the course of the day, the pump was slowly lowered in the screen interval while pumping. Approximately 235 gallons were removed from the well, but the turbidity remained high, ranging from 20 to >1,000 NTU. After discussion with the quality control (QC) geologist, a fourth round of swabbing the screen was initiated and continued on April 14. The pump was lowered into the well again, and the well was purged for 4 hours. The turbidity fluctuated between 30 and 60 NTU.

Another round of swabbing was completed on April 15, 2019. The surge block was removed from the well, and high solids grout was observed on the surge block. A bailer was sent down the well to verify the field observation. Approximately 1,000 milliliters of high solids grout was observed in the bailer. Well development activities at MW-B-267 were immediately stopped once the high solids grout was observed, and the QC geologist was called to report the observations. PG&E and the agencies were notified of the observations during well development. A video log of the well was scheduled to verify the presence of the high solids grout and to assess potential damage to the well.

## VIDEO LOG RESULTS

A video log survey was completed on May 31, 2019 by Pacific Surveys to evaluate the condition of both well casings. The video log results for MW-B-267 and MW-B-337 (name changed to MW-75-337 in December 2019) are attached (Attachment 1).

The following is a summary of the results for the video log for MW-B-267 (noted as “MW-BS” on the attached video survey report).

- Groundwater was encountered at 6.2 feet bgs.
- Sediment/material was observed on one side of the well at 77.3 feet bgs.
- Sediment/material was observed on all sides of the well below 130 feet bgs.
- Fill was encountered (possibly hard) at 189 feet bgs.
- Damage to the casing was not observed from top of casing to 189 feet bgs.

The following is a summary of the results for the video log for MW-B-337 (noted as “MW-BD on the attached video survey report).

- Groundwater was encountered at 18.8 feet bgs.
- Sediment/material was observed on one side of the well at 184 feet bgs.
- Sediment/material was observed on all sides of the well below 204 feet bgs.
- Fill was encountered (possibly hard) at 267.4 feet bgs.
- Damage to the casing was not observed from top of casing to 267.4 feet bgs.

MW-B-337 was tagged again on June 18, 2019, and only formation silt was observed. Another camera survey (included in Attachment 1) was completed on June 28, 2019 in well MW-B-337 to confirm that there was no damage to the well.

## AGENCY DISCUSSIONS AND APPROVAL

Based on observations during well development and the video log surveys, Arcadis proposed to abandon well MW-B-267. PG&E and the agencies approved abandonment procedures in subsequent discussions. Key discussions with PG&E and the agencies (Department of Toxic Substances Control, California State Water Board, U.S. Department of the Interior, U.S. Bureau of Reclamation, and others) are summarized below.

- June 18, 2019 – Arcadis, on behalf of PG&E, provided an update on findings from drilling, well development, and potential abandonment options form MW-B-267. Initial options included abandoning in place or over-drilling the nested cluster, eliminating the future use of MW-B-337 as a monitoring well.
- July 11, 2019 – Arcadis, on behalf of PG&E, suggested abandonment in place using perforation and pressure grouting only for well MW-B-267. This would allow the project to use the deeper MW-B-337 well as a monitoring well.
- July 25, 2019 – Arcadis, on behalf of PG&E, proposed decommissioning MW-B-267 during the Final Project Decommissioning of Monitoring Wells to avoid potential damage to the deeper well, MW-B-337. Agencies did not concur with delaying well decommissioning.
- Follow-up discussion resulted in agency approval in August 2019 for the approach to abandoning only the shallow well, MW-B-267, in place by perforating the casing and pressure grouting.

## WELL DECOMMISSIONING PROPOSED PROCEDURES

Following agency approval, a well decommissioning plan for MW-B-267 was completed. The procedures allowed the other nested well in the borehole (MW-B-337) to be used for groundwater monitoring in the future. The planned well decommissioning procedures are included as Attachment 2 and the decommissioning steps are summarized below.

- Partially filling the well screen and casing with pea gravel to prevent the 100% Portland cement used for abandonment from potentially migrating and impacting MW-B-337.
- Perforating the well casing to allow Portland cement to migrate into the high solids grout seal. This step was taken due to concerns that the high solids grout seal had been compromised.
- Emplacing grout within the well casing by using a tremie pipe.
- Once the cement had hardened and settled to the top of the casing, a PVC cap will be glued to the top of the well casing.
- Cut the well casing below grade in the future according to state regulations during final site decommissioning in conjunction with the abandonment of MW-B-337 (currently named MW-75-337).

## WELL DECOMMISSIONING

The decommissioning of well MW-B-267 began on August 28, 2019. A weighted tagline was dropped in the well, and the total depth was measured to determine if any material was in the well casing. When constructed, the total depth of the well was 269 feet bgs. However, a soft bottom was measured at 235 feet bgs with the weighted tagline, indicating that the bottom 34 feet of the well casing was likely filled with material (interpreted to be high-solids grout). Therefore, fresh water was pumped through a tremie pipe

installed to approximately 5 to 10 feet from the bottom of the well to remove as much of the material as feasible.

Pea gravel was then emplaced inside the well casing from the bottom of the well up to 235 ft bgs, approximately 15 feet above the top of well screen. Then, a perforation tool was used to create perforations in the well casing of 1 to 2 feet in vertical thickness at a frequency of every 5 feet within the blank polyvinyl chloride (PVC) well casing from 235 to 175 ft bgs.

The perforation tool was then removed, and approximately 45 gallons of 100 percent Portland cement mixed to manufacturers guidelines were emplaced into the well casing via tremie pipe. A second lift of cement was emplaced with a tremie pipe into the well on September 4, 2019, and the top of the additional cement was measured at 16.5 ft bgs on September 7, 2019. Then, additional cement was installed on September 9, 2019 with the final depth to cement measured at 0.5 ft bgs. A j-plug was then glued in place at the top of the well casing (riser pipe). The final decommissioning log is presented in Attachment 3.

Monitoring well MW-B-337 (later renamed to MW-75-337) was bailed and pumped to confirm that grout from abandonment activities of MW-B-267 did not migrate into the screened interval of MW-B-337. No obstructions were observed, and the pH of the water did not change, indicating that the decommissioning of MW-B-267 did not impact MW-75-337. Following the successful decommissioning of MW-B-267, MW-75-337 was sampled several times over a period of months as part of the site-wide groundwater monitoring program.

Sincerely,

Arcadis U.S., Inc.


Frederick T. Stanin, P.G., C. Hg
Principal Hydrogeologist

Copies:
Curt Russell/PG&E
Kevin Sullivan/PG&E
Iain Baker/PG&E
Dan Bush/Arcadis
Richard Orens/Arcadis
Frank Lenzo/Arcadis
Greg Foote/Arcadis

Enclosures:

**Attachments**

1 Video Survey Reports of MW-B-267 and MW-B-337
2 Field Procedure for Abandonment of MW-B-267 in Place with Perforation
3 Well Construction/Decommissioning Log: MW-B-267d, MW-B-337

# Pacific Surveys

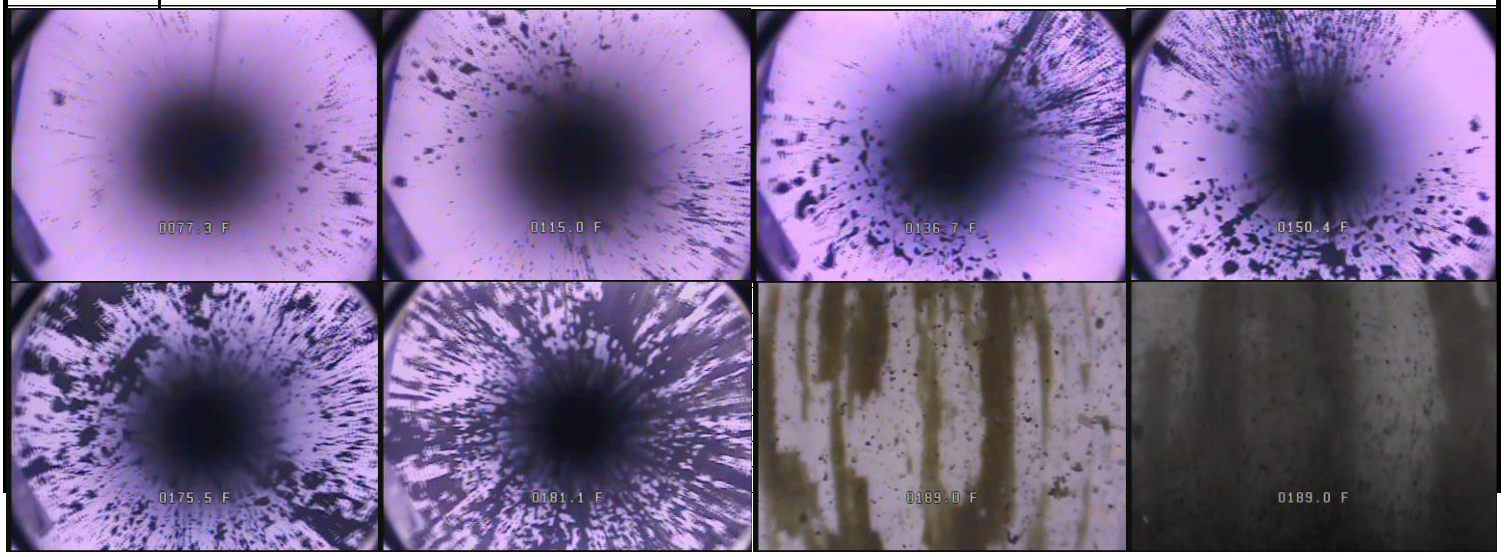
*a full service geophysical well logging company*

## Video Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Cascade Drilling | **Date:** | 31-May-19 |
| **Well:** | MW-BS | **Run No.** | One **Truck** PS-9 |
| **Field:** | Topock | **Job Ticket:** | 25661 |
| **State:** | California | **Total Depth:** | 189.0 ft |
| **Location:** | 145453 National Trails Hwy | **Water Level:** | 6.2 ft SWL |
| | | **Oil on Water:** | No **Amount:** N/A |
| **GPS:** | 34.7225 -114.4919 | **Operator:** | Afoh |
| **Zero Datum:** | Top of CSG **Tool Zero:** Side-Scan | | **Dead Space** 0" |
| **Reason for Survey:** | General Inspection | **Guides Set @** | Slick |

| Depth | Observations |
|---|---|
| 0.0 ft | Begin survey from top of casing to check for casing damage. |
| 6.2 ft | SWL: water is clear with some suspended material in water column. |
| 77.3 ft | Begin to observe some bio-material on one side of the casing wall. |
| 130.0 ft | Bio-material observed surrounding the casing wall. |
| 189.0 ft | Hard fill encountered, end survey. |

| Well Details | | |
|---|---|---|
| **Perforation:** | | **As-Built** |
| Horizontal Mill Slot | | 247.0 ft to 267.0 ft |
| **Casing Size (in):** | | **As-Built** |
| **O.D.** | **I.D.** | |
| 2.50 | 2.00 | 0 ft to 269.0 ft |
| **Casing Material** | | PVC |
| **Screen Material** | | PVC |





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# Pacific Surveys

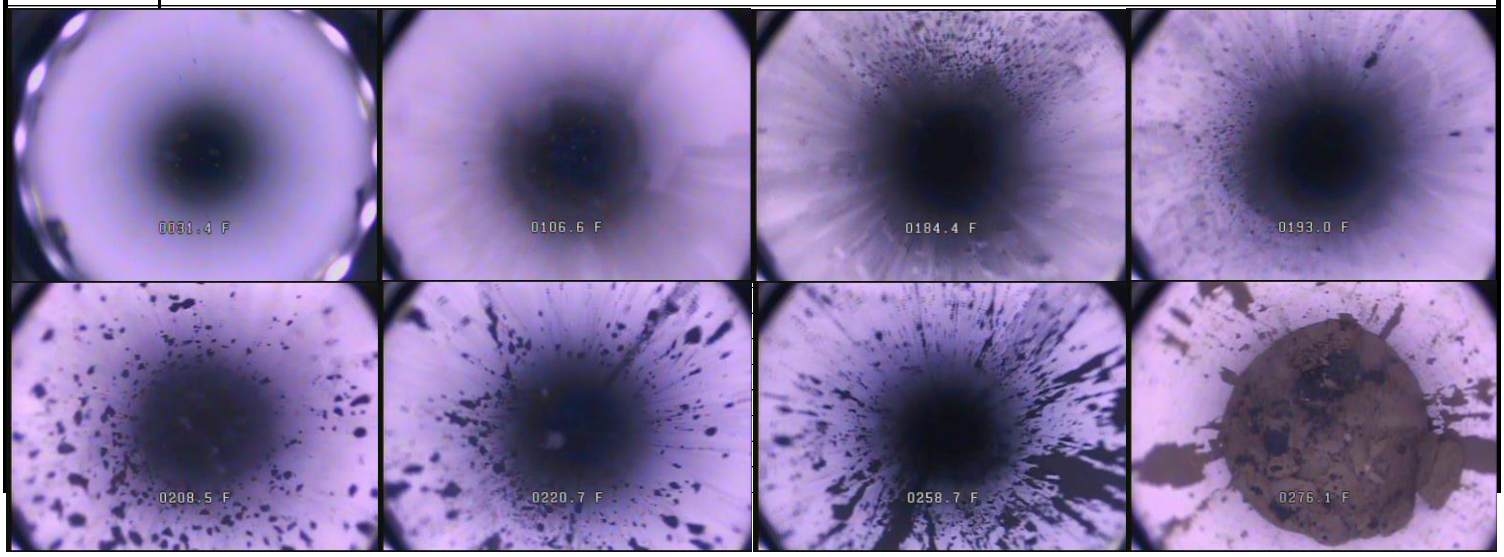
*a full service geophysical well logging company*

## Video Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Cascade Drilling | **Date:** | 31-May-19 |
| **Well:** | MW-BD | **Run No.** | One **Truck** PS-9 |
| **Field:** | Topock | **Job Ticket:** | 25661 |
| **State:** | California | **Total Depth:** | 267.4 ft |
| **Location:** | 145453 National Trails Hwy | **Water Level:** | 18.8 ft SWL |
| | | **Oil on Water:** | No **Amount:** N/A |
| **GPS:** | 34.7225 -114.4919 | **Operator:** | Afoh |
| **Zero Datum:** | Top of CSG **Tool Zero:** Side-Scan | | **Dead Space** 0" |
| **Reason for Survey:** | General Inspection | **Guides Set @** | Slick |

| Depth | Observations |
|---|---|
| 0.0 ft | Begin survey from top of casing to check for casing damage. |
| 18.8 ft | SWL: water is clear with some suspended material in water column. |
| 184.0 ft | Begin to observe some bio-material on one side of the casing wall. |
| 204.0 ft | Bio-material observed surrounding the casing wall. |
| 267.4 ft | Hard fill encountered, end survey. |

| Well Details | | |
|---|---|---|
| **Perforation:** | | **As-Built** |
| Horizontal Mill Slot | | 317.0 ft to 337.0 ft |
| **Casing Size (in):** | | **As-Built** |
| **O.D.** | **I.D.** | |
| 2.50 | 2.00 | 0 ft to 339.0 ft |
| **Casing Material** | | PVC |
| **Screen Material** | | PVC |





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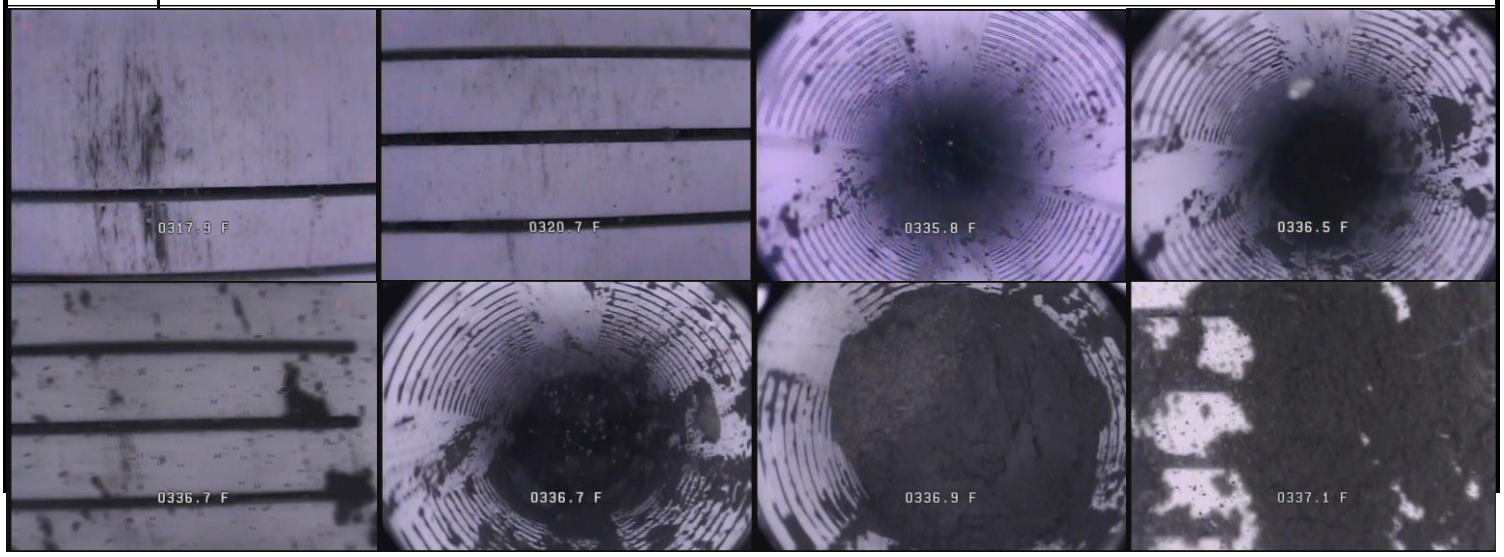
## Video Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Cascade Drilling | **Date:** | 28-Jun-19 |
| **Well:** | MW-B-337 | **Run No.** | Two **Truck** PS-9 |
| **Field:** | Topock | **Job Ticket:** | 25740 |
| **State:** | California | **Total Depth:** | 337.1 ft |
| **Location:** | 145453 National Trails Hwy | **Water Level:** | 17.5 ft SWL |
| | | **Oil on Water:** | No **Amount:** N/A |
| **GPS:** | 34.7225 -114.4919 | **Operator:** | Afoh |
| **Zero Datum:** | Top of CSG **Tool Zero:** Side-Scan | | **Dead Space** 0" |
| **Reason for Survey:** | General Inspection | **Guides Set @** | Slick |

| Depth | Observations |
|---|---|
| 0.0 ft | Begin survey from top of casing. |
| 17.5 ft | SWL: water is slightly cloudy with some suspended material in water column. |
| 123.0 ft | Water column becomes clear. |
| 267.4 ft | Casing is normal and in good condition. |
| 317.9 ft | Top of screen: open. |
| 324.1 ft | All the screens are open. |
| 336.0 ft | Screens are open with some bio-material inside the screen. |
| 337.0 ft | Accumulation of bio-material inside screen on one side of the casing wall. |
| 337.1 ft | Top of fill. End survey. |
| | |
| | NB: Run One Video of this well was tittled MW-BD. |

| Well Details | | |
|---|---|---|
| **Perforation:** | | **As-Built** |
| Horizontal Mill Slot | | 317.0 ft to 337.0 ft |
| **Casing Size (in):** | | **As-Built** |
| **O.D.** | **I.D.** | |
| 2.50 | 2.00 | 0 ft to 339.0 ft |
| **Casing Material** | | PVC |
| **Screen Material** | | PVC |

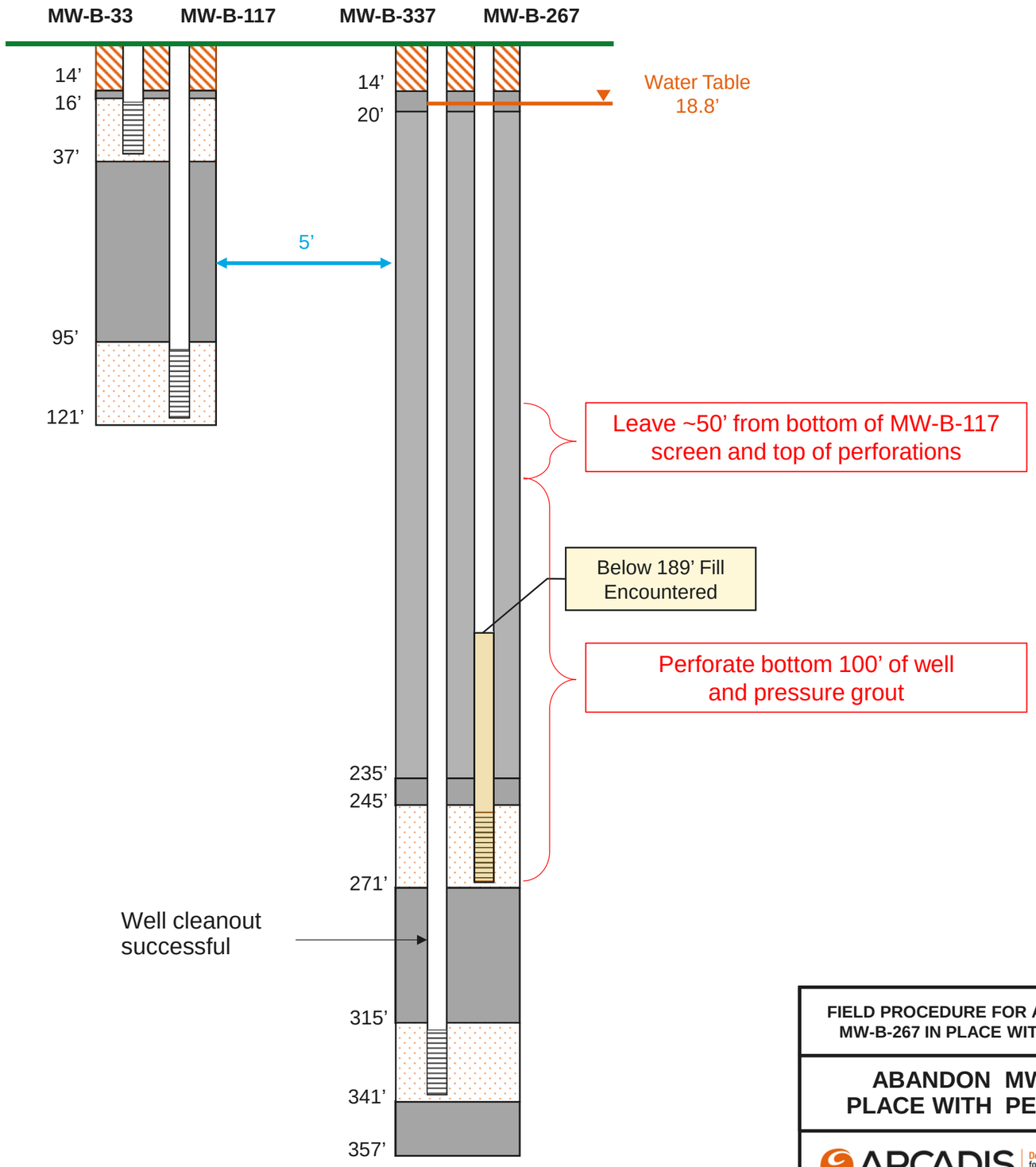




*800.919.7555*
*909.625.6262*

*1785 w. arrow rte., bdlg. d, ste. 3,4*
*upland, ca 91786*
*www.pacificsurveys.com*

*fax: 909.399.3180*




**LEGEND**

- Neat Cement Grout
- Filter Pack
- Bentonite Seal Chips/Pellets
- PVC Casing
- Well Screen
- High Solids Grout (Bentonite)

**FIELD PROCEDURE FOR ABANDONMENT OF MW-B-267 IN PLACE WITH PERFORATION**

**ABANDON MW-B-267 IN PLACE WITH PERFORATION**

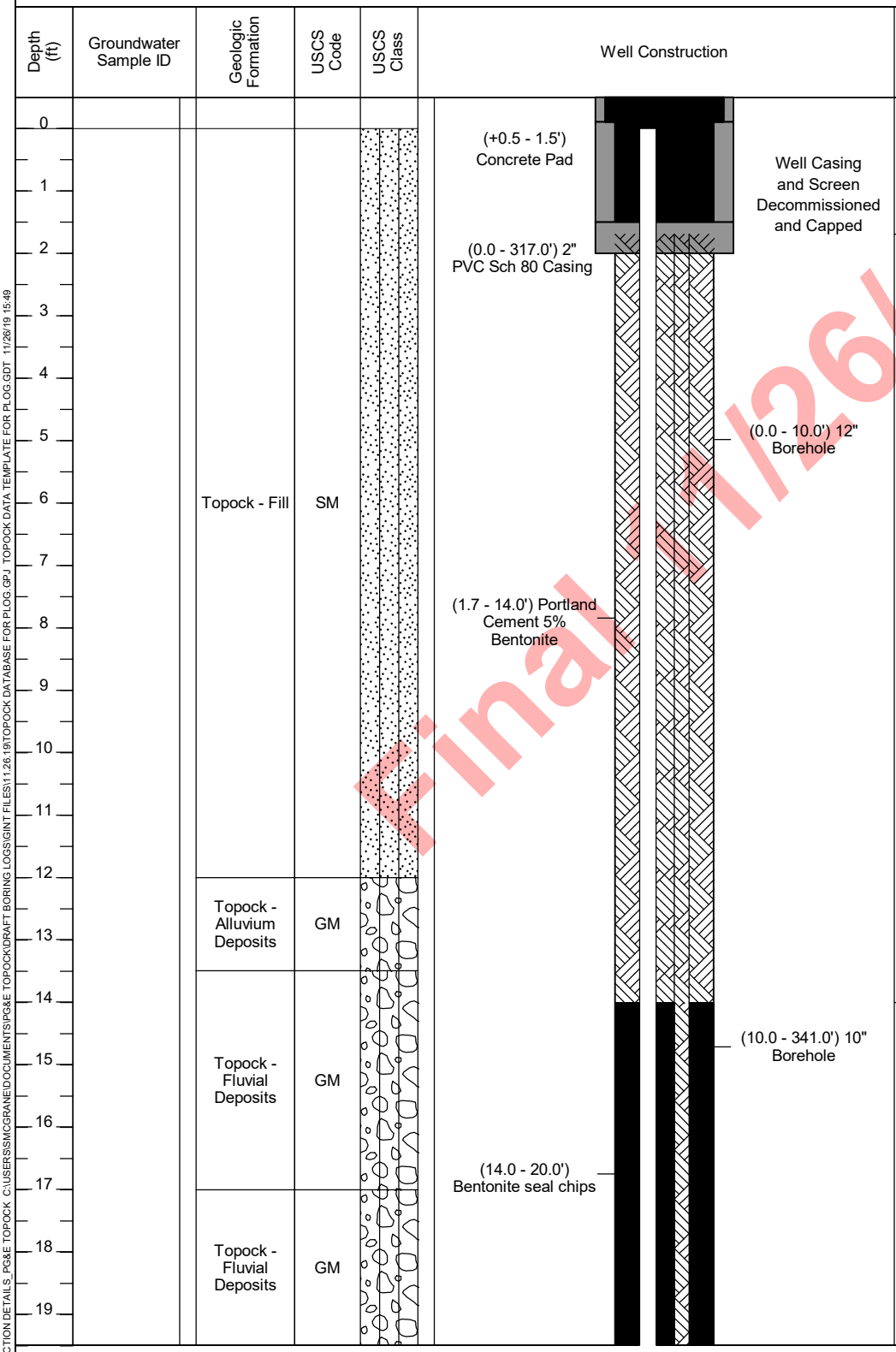
ARCADIS Design & Consultancy for natural and built assets

FIGURE
**1**

# Well Construction / Decommissioning Log

Sheet: 1 of 18

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |




| Calculated Material Volumes | Material Volumes Installed |
|---|---|
| | (+0.5 - 1.5') 17 bags<br>Note: 30" Diameter Concrete Pad with 18" Diameter Lockable Vault, Quickcrete Concrete Mix with buff colored concrete dye. |
| (1.7 - 14.0') 68.5 gallons | (1.7 - 14.0') 135 gallons (97%)<br>Note: Type I, II and V with Benseal. Used 18 bags Portland with 1 bag bentonite. |
| (0.5 - 16.5') 2.69 gallons | (0.5 - 16.5') 2.5 gallons (-7%)<br>Note: Casing decommissioned with 100% Type I, II, and V portland cement on 9/9/19. |
| (14.0 - 20.0') 4.18 bags | (14.0 - 20.0') 17 bags (307%)<br>Note: Enviroplug Medium Chips. |
| (16.5 - 135.0') 19.33 Gallons | (16.5 - 135.0') 25 Gallons (29%)<br>Note: Casing decommissioned with 100% Type I, II, and V portland cement on 9/4/19, used >20% of calculated volume due to cement settling. |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 20–27 | | Topock - Fluvial Deposits / Topock - Alluvium Deposits | GM / SC / CH / SM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | | |
| 27–32 | MW-B-VAS-27-32 (7.7 J ppb) 1/6/2019 12:50 | Topock - Alluvium Deposits | SM | | (20.0 - 235.1') High Solids Grout; (10.0 - 341.0') 10" Borehole | (16.5 - 135.0') 19.33 Gallons | (16.5 - 135.0') 25 Gallons (29%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 9/4/19, used >20% of calculated volume due to cement settling. |
| 32–33 | | Topock - Alluvium Deposits | SC | | | (20.0 - 235.1') 806.6 gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix. |
| 33–39 | | Topock - Alluvium Deposits | SM | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log

Sheet: 3 of 18

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 40–59 | MW-B-VAS-47-52 (<0.17 U ppb) 1/9/2019 10:15 | Topock - Alluvium Deposits | SM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped; (47.5 - 48.5') Centralizer; (20.0 - 235.1') High Solids Grout; (10.0 - 341.0') 10" Borehole | (16.5 - 135.0') 19.33 Gallons; (20.0 - 235.1') 806.6 gallons | (16.5 - 135.0') 25 Gallons (29%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 9/4/19, used >20% of calculated volume due to cement settling.; (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix. |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID:** | **MW-B-267d, MW-B-337** |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 60 | | Topock - Alluvium Deposits | SM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | | |
| 61 | | | | | | | |
| 62 | | | | | | | |
| 63 | | Topock - Alluvium Deposits | ML | | | | |
| 64 | | | | | | | |
| 65 | | Topock - Alluvium Deposits | GM | | | | |
| 66 | | | | | | | |
| 67 | | | | | | | |
| 68 | | Topock - Alluvium Deposits | SM | | | | |
| 69 | MW-B-VAS-67-72 (<0.17 U ppb) 1/9/2019 14:55 | | | | | | |
| 70 | | | | | (20.0 - 235.1') High Solids Grout; (10.0 - 341.0') 10" Borehole | | |
| 71 | | | | | | (16.5 - 135.0') 19.33 Gallons | (16.5 - 135.0') 25 Gallons (29%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 9/4/19, used >20% of calculated volume due to cement settling. |
| 72 | | | | | | | |
| 73 | | Topock - Alluvium Deposits | GM | | | (20.0 - 235.1') 806.6 gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix. |
| 74 | | | | | | | |
| 75 | | | | | | | |
| 76 | | | | | | | |
| 77 | | | | | | | |
| 78 | | Topock - Alluvium Deposits | SM | | | | |
| 79 | | | | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



**Well ID: MW-B-267d, MW-B-337**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | Client: | PG&E |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Project: | Final GW Remedy Phase 1 |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Location: | PG&E Topock, Topock, California |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | | |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 80–99 | | Topock - Alluvium Deposits | SM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | | |
| 88–91 | | Topock - Alluvium Deposits | GM | | (20.0 - 235.1') High Solids Grout; (10.0 - 341.0') 10" Borehole | (16.5 - 135.0') 19.33 Gallons | (16.5 - 135.0') 25 Gallons (29%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 9/4/19, used >20% of calculated volume due to cement settling. |
| 91–97 | | Topock - Alluvium Deposits | SM | | | (20.0 - 235.1') 806.6 gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix. |
| 97–99 | | Topock - Alluvium Deposits | ML | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 100–102 | | Topock - Alluvium Deposits | ML | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | | |
| 103–107 | MW-B-VAS-102-107 (<0.17 U ppb) 1/10/2019 13:00 | Topock - Alluvium Deposits | SM | | | (16.5 - 135.0') 19.33 Gallons | (16.5 - 135.0') 25 Gallons (29%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 9/4/19, used >20% of calculated volume due to cement settling. |
| 108 | | | | | (107.5 - 108.5') Centralizer | | |
| 109–119 | | Topock - Alluvium Deposits | SM | | (20.0 - 235.1') High Solids Grout; (10.0 - 341.0') 10" Borehole | (20.0 - 235.1') 806.6 gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix. |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 120–139 | | Topock - Alluvium Deposits | SM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | | |
| 120–139 | | Topock - Alluvium Deposits | GM | | (20.0 - 235.1') High Solids Grout; (10.0 - 341.0') 10" Borehole | (16.5 - 135.0') 19.33 Gallons | (16.5 - 135.0') 25 Gallons (29%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 9/4/19, used >20% of calculated volume due to cement settling. |
| 120–139 | | Topock - Alluvium Deposits | SM | | | (20.0 - 235.1') 806.6 gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix. |
| 120–139 | | Topock - Alluvium Deposits | GM | | | | |
| 120–139 | | Topock - Alluvium Deposits | SM | | | (135.0 - 235.1') 10.58 Gallons | (135.0 - 235.1') 45 Gallons (325%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 8/29/19, used >20% of calculated volume due to grout migrating into pea gravel and through peforated sections of the well casing. |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



**Well ID: MW-B-267d, MW-B-337**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 140–159 | MW-B-VAS-142-147 (<0.17 U ppb) 1/15/2019 14:25 | Topock - Alluvium Deposits | SM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | | |
| 142–144 | | Topock - Alluvium Deposits | SM | | | | |
| 144–147 | | Topock - Alluvium Deposits | SM | | | | |
| 147–153 | | Topock - Alluvium Deposits | SM | | (20.0 - 235.1') High Solids Grout; (10.0 - 341.0') 10" Borehole | (20.0 - 235.1') 806.6 gallons<br>(135.0 - 235.1') 10.58 Gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix.<br>(135.0 - 235.1') 45 Gallons (325%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 8/29/19, used >20% of calculated volume due to grout migrating into pea gravel and through peforated sections of the well casing. |
| 153–154 | | Topock - Alluvium Deposits | GM | | | | |
| 154–157 | | Topock - Alluvium Deposits | SM | | | | |
| 157–159 | | Topock - Alluvium Deposits | GM | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 160 | | | GM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | | |
| 161 | | | | | | | |
| 162 | | | | | | | |
| 163 | | Topock - Alluvium Deposits | SM | | | | |
| 164 | | | | | | | |
| 165 | | | | | | | |
| 166 | | | | | | | |
| 167 | | | | | | | |
| 168 | | Topock - Alluvium Deposits | GP | | (167.5 - 168.5') Centralizer | | |
| 169 | | | | | | | |
| 170 | | | | | (20.0 - 235.1') High Solids Grout; (10.0 - 341.0') 10" Borehole | (20.0 - 235.1') 806.6 gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix. |
| 171 | | Topock - Alluvium Deposits | ML | | | (135.0 - 235.1') 10.58 Gallons | (135.0 - 235.1') 45 Gallons (325%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 8/29/19, used >20% of calculated volume due to grout migrating into pea gravel and through peforated sections of the well casing. |
| 172 | | | | | | | |
| 173 | | | | | | | |
| 174 | | | | | | | |
| 175 | | | | | | | |
| 176 | | Topock - Alluvium Deposits | SM | | | | |
| 177 | | | | | | | |
| 178 | | | | | | | |
| 179 | | | | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 180–199 | MW-B-VAS-182-187 (<0.17 U ppb) 2/13/2019 10:30 | Topock - Alluvium Deposits | SM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; (20.0 - 235.1') High Solids Grout; Well Casing and Screen Decommissioned and Capped; (10.0 - 341.0') 10" Borehole | (20.0 - 235.1') 806.6 gallons<br>(135.0 - 235.1') 10.58 Gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix.<br>(135.0 - 235.1') 45 Gallons (325%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 8/29/19, used >20% of calculated volume due to grout migrating into pea gravel and through peforated sections of the well casing. |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 200–207 | | Topock - Alluvium Deposits | SM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | | |
| 207–209 | | | NR | | | | |
| 209–212 | MW-B-VAS-207-212 (<0.17 U ppb) 2/14/2019 10:55 | Topock - Alluvium Deposits | SM | | (20.0 - 235.1') High Solids Grout; (10.0 - 341.0') 10" Borehole | (20.0 - 235.1') 806.6 gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix. |
| 212–215 | | | | | | (135.0 - 235.1') 10.58 Gallons | (135.0 - 235.1') 45 Gallons (325%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 8/29/19, used >20% of calculated volume due to grout migrating into pea gravel and through peforated sections of the well casing. |
| 215–219 | | Topock - Alluvium Deposits | SM | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 220 | | | SM | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | | |
| 221 | | | | | | | |
| 222 | | | | | | | |
| 223 | | Topock - Alluvium Deposits | SM | | | | |
| 224 | | | | | | | |
| 225 | | | | | | | |
| 226 | | | | | | | |
| 227 | | | | | (20.0 - 235.1') High Solids Grout | (20.0 - 235.1') 806.6 Gallons | (20.0 - 235.1') 950 gallons (18%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix. |
| 228 | | | NR | | | | |
| 229 | | | | | | (135.0 - 235.1') 10.58 Gallons | (135.0 - 235.1') 45 Gallons (325%) Note: Casing decommissioned with 100% Type I, II, and V portland cement on 8/29/19, used >20% of calculated volume due to grout migrating into pea gravel and through peforated sections of the well casing. |
| 230 | | | | | | | |
| 231 | | | | | | | |
| 232 | | | | | (10.0 - 341.0') 10" Borehole | | |
| 233 | | Topock - Alluvium Deposits | SM | | | | |
| 234 | | | | | | | |
| 235 | | | | | | | |
| 236 | | | | | | | |
| 237 | | | | | (235.0 - 245.0') Bentonite seal pellets | (235.0 - 245.0') 8.02 buckets | |
| 238 | | Topock - Alluvium Deposits | ML | | (237.5 - 238.5') Centralizer | | |
| 239 | | | | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 240–241 | | Topock - Alluvium Deposits | ML | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped | (235.0 - 245.0') 8.02 buckets<br>(235.1 - 269.0') 0.7 bags | Note: (175.0 - 235.1) Casing perforated by making 1 to 2 foot cuts on both sided of the casing every 5 feet.<br>(235.0 - 245.0') 10 buckets (25%)<br>Note: Pel-Plug (TR30) 3/8", used >20% of calculated volume due to potential void forming during drilling doubled seal from 5 to 10 feet due to casing joints to eliminate an open borehole. |
| 242–247 | | Topock - Alluvium Deposits | ML | | 247-Slot Well Casing Abandoned and Capped Screen; (10.0 - 341.0') 10" Borehole | | |
| 247–252 | MW-B-VAS-247-252 (<0.83 U ppb) 2/17/2019 11:25 | Topock - Alluvium Deposits | ML | | | (235.1 - 269.0') 0.7 bags | (235.1 - 269.0') 0.5 bags (-29%)<br>Note: Screen decommissioned with Cal-Silica 3/8"x1/4", Auga Gaurd high solids grout, and 100% Type I, II and V portland cement on 8/29/19, used <20% of Cal-Silica 3/8"x1/4" pea gravel due to high solids grout in well screen. |
| 253–254 | | | | | (245.1 - 271.0') Cemex #3 MESH (8x10) | (245.1 - 271.0') 25.5 bags | (245.1 - 271.0') 34 bags (33%)<br>Note: Lapis Lustre Sand. |
| 254–259 | | Topock - Alluvium Deposits | MH | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 260–269 | MW-B-VAS-264-269 (<0.33 U ppb) 2/18/2019 14:00 | Topock - Alluvium Deposits | MH | | (0.0 - 317.0') 2" PVC Sch 80 Casing; Well Casing and Screen Decommissioned and Capped; (245.1 - 271.0') Cemex #3 MESH (8x10); (267.5 - 268.5') Centralizer | (235.1 - 269.0') 0.7 bags; (245.1 - 271.0') 25.5 bags | (235.1 - 269.0') 0.5 bags (-29%) Note: Screen decommissioned with Cal-Silica 3/8"x1/4", Auga Gaurd high solids grout, and 100% Type I, II and V portland cement on 8/29/19, used <20% of Cal-Silica 3/8"x1/4" pea gravel due to high solids grout in well screen.; (245.1 - 271.0') 34 bags (33%) Note: Lapis Lustre Sand. |
| 269–272 | | Topock - Alluvium Deposits | ML | | | | |
| 272–279 | | Topock - Alluvium Deposits | ML | | (271.0 - 314.9') Bentonite seal pellets | (271.0 - 314.9') 36.8 buckets | (271.0 - 314.9') 42 buckets (14%) Note: Pel-Plug (TR30) 3/8" 3/5/19 seal installation not complete, approximatly 25 more ft added on 3/6/19. |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 280 | | Topock - Alluvium Deposits | ML | | (0.0 - 317.0') 2" PVC Sch 80 Casing | | |
| 281 | | | | | | | |
| 282 | | | | | | | |
| 283 | | Topock - Alluvium Deposits | ML | | | | |
| 284 | | | | | | | |
| 285 | | | | | | | |
| 286 | | | | | | | |
| 287 | | | | | | | |
| 288 | | Topock - Alluvium Deposits | ML | | | | |
| 289 | MW-B-VAS-287-292 (<0.17 U ppb) 2/20/2019 12:15 | | | | (271.0 - 314.9') Bentonite seal pellets | (271.0 - 314.9') 36.8 buckets | (271.0 - 314.9') 42 buckets (14%) Note: Pel-Plug (TR30) 3/8" 3/5/19 seal installation not complete, approximatly 25 more ft added on 3/6/19. |
| 290 | | | | | | | |
| 291 | | | | | (10.0 - 341.0') 10" Borehole | | |
| 292 | | | | | | | |
| 293 | | Topock - Alluvium Deposits | GM | | | | |
| 294 | | | | | | | |
| 295 | | Topock - Alluvium Deposits | ML | | | | |
| 296 | | | | | | | |
| 297 | | | | | | | |
| 298 | | Topock - Alluvium Deposits | SM | | | | |
| 299 | | | | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID: MW-B-267d, MW-B-337** | |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 300–319 | | Topock - Alluvium Deposits | GM | | (0.0 - 317.0') 2" PVC Sch 80 Casing | | |
| 307–314 | | Topock - Alluvium Deposits | MH | | (271.0 - 314.9') Bentonite seal pellets | (271.0 - 314.9') 36.8 buckets | (271.0 - 314.9') 42 buckets (14%) Note: Pel-Plug (TR30) 3/8" 3/5/19 seal installation not complete, approximatly 25 more ft added on 3/6/19. |
| 309–341 | | | | | (10.0 - 341.0') 10" Borehole | | |
| 314–319 | | Topock - Alluvium Deposits | SM | | (314.9 - 341.0') Cemex #3 MESH (8x10) | (314.9 - 341.0') 27.3 bags | (314.9 - 341.0') 31.5 bags (15%) Note: Lapis Lustre Sand. |
| 317–319 | MW-B-VAS-317-322 (<0.17 U ppb) 2/21/2019 11:00 | | | | (317.0 - 337.0') 2" Sch 80 PVC (20-slot) Screen | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | **Well ID:** | **MW-B-267d, MW-B-337** |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Project: | Final GW Remedy Phase 1 |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | Location: | PG&E Topock, Topock, California |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 320 | | | SM | | (317.0 - 337.0') 2" Sch 80 PVC (20-slot) Screen | | |
| 321 | MW-B-VAS-317-322 (<0.17 U ppb) 2/21/2019 11:00 | Topock - Alluvium Deposits | ML | | | | |
| 322 | | | | | | | |
| 323 | | | | | | | |
| 324 | | | | | | | |
| 325 | | | | | | | |
| 326 | | | | | | | |
| 327 | | | | | | | |
| 328 | | | | | | | |
| 329 | | Topock - Alluvium Deposits | ML | | (10.0 - 341.0') 10" Borehole | (314.9 - 341.0') 27.3 bags | (314.9 - 341.0') 31.5 bags (15%) Note: Lapis Lustre Sand. |
| 330 | | | | | | | |
| 331 | | | | | | | |
| 332 | | | | | | | |
| 333 | | | | | | | |
| 334 | | | | | | | |
| 335 | | | | | | | |
| 336 | | | | | | | |
| 337 | | | | | | | |
| 338 | | Topock - Weathered Bedrock - conglomerate | SC | | (337.5 - 338.5') Centralizer | | |
| 339 | | | | | (337.0 - 339.3') Sump and End Cap | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# ARCADIS Design & Consultancy for natural and built assets — Well Construction / Decommissioning Log



**Well ID: MW-B-267d, MW-B-337**

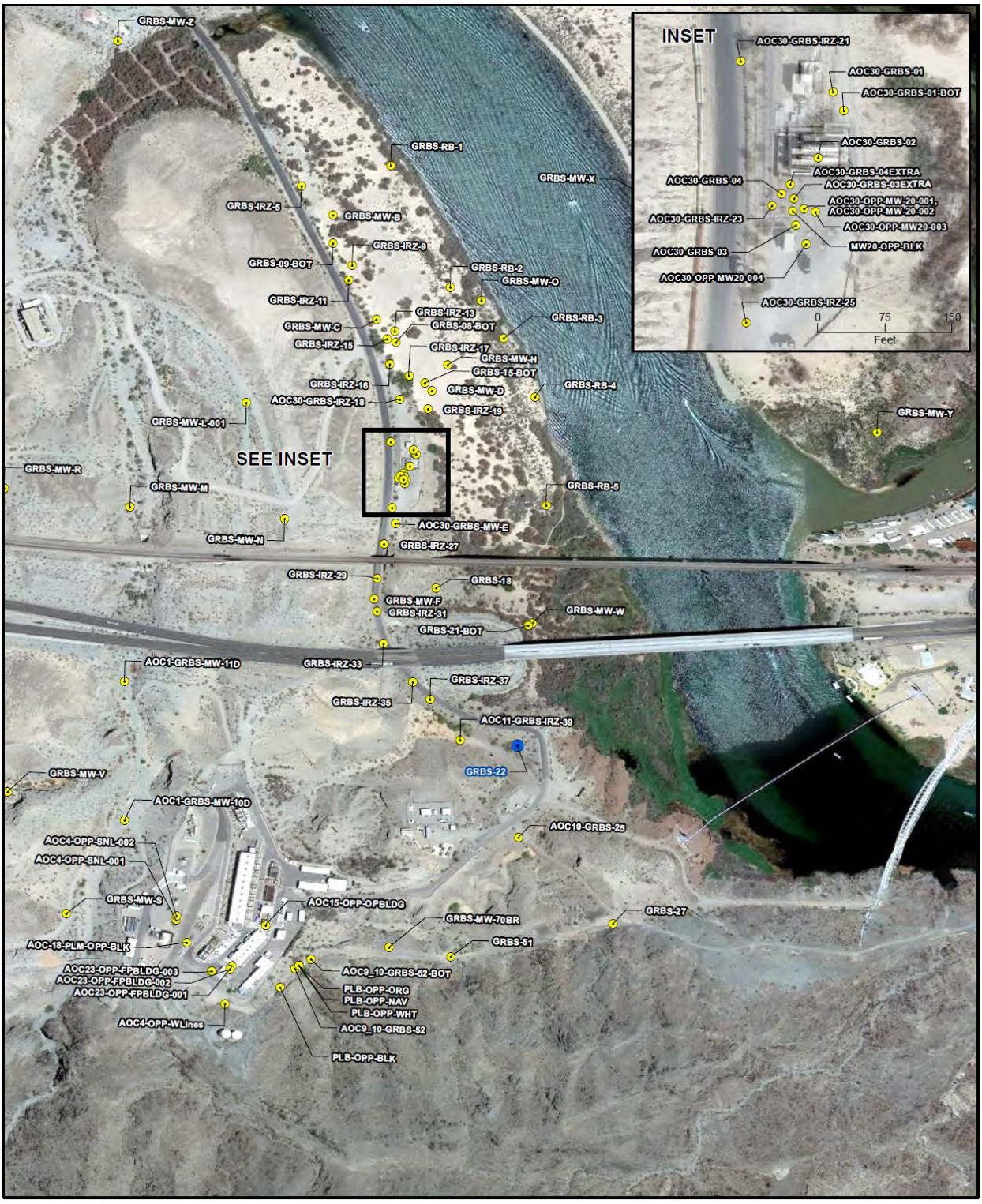
| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/05/2019 | Surface Elevation: | 473.3 ft amsl | Client: | PG&E |
| Date Completed: | 10/16/2019 | Shallow Well Elevation: | 473.0 ft amsl | | |
| Drilling Co.: | Cascade | Deep Well Elevation: | 473.8 ft amsl | Project: | Final GW Remedy Phase 1 |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2103701.5 | Location: | PG&E Topock, Topock, California |
| Driller Name: | Nick Petrone | Easting (NAD83): | 7615559.3 | | |
| Drilling Asst: | T. Alymer/ J. Candelaria | Borehole Diameter: | 6-12 inches | | |
| Logger: | G. Willford / C. Bonessi | Water Level Start: | 20.11 ft bgs | Project Number: | RC000753.0051 |
| Editor: | Sean McGrane | Development End Date: | 4/15/2019 | | |
| Total Depth: | 357 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction | Calculated Material Volumes | Material Volumes Installed |
|---|---|---|---|---|---|---|---|
| 340 | | | | | (10.0 - 341.0') 10" Borehole | (314.9 - 341.0') 27.3 bags | (314.9 - 341.0') 31.5 bags (15%) Note: Lapis Lustre Sand. |
| 341 | MW-B-VAS-339-344 (<0.33 U ppb) 2/27/2019 12:28 | Topock - Weathered Bedrock - conglomerate | SC | | | | |
| 342 | | | | | | | |
| 343 | | | | | | | |
| 344 | | | | | | | |
| 345 | | Topock - Weathered Bedrock - conglomerate | SC | | | | |
| 346 | | | | | | | |
| 347 | | | | | | | |
| 348 | | | | | | | |
| 349 | | | | | (341.0 - 357.0') Bentonite seal chips; (341.0 - 357.0') 6" Borehole | (341.0 - 357.0') 4.4 bags | (341.0 - 357.0') 4.5 bags (2%) Note: Enviroplug Medium Chips. |
| 350 | | | | | | | |
| 351 | | Topock - Weathered Bedrock - conglomerate | SC | | | | |
| 352 | | | | | | | |
| 353 | | | | | | | |
| 354 | MW-B-VAS-352-357 (<0.33 U ppb) 2/28/2019 15:05 | | | | | | |
| 355 | | | | | | | |
| 356 | | Topock - Weathered Bedrock - conglomerate | SC | | | | |
| 357 | | | | | End of Boring at 357.0 'bgs. | | |
| 358 | | | | | | | |
| 359 | | | | | | | |



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, the well MW-B-267d was decomissioned due to high solids grout migrating in to the well screen.

# Attachment C
# Soil Sampling Locations and Available Soil Analytical Results
**(Soil Data Presented in Excel File)**




LEGEND

- Soil Sample Location
- Soil Sample Collected from this Location in February 2020

0 300 600
Feet

N

## Baseline and Opportunistic Soil Sampling Locations

Monthly Progress Report
Groundwater Remedy Phase 1 Construction
*PG&E Topock Compressor Station, Needles, California*

\\BROOKSIDEFILES\GIS_SHARE\ENBG\00_PROJ\P\PGE\TOPOCK\MAPFILES\2020\CMS\SOILSAMPLELOCATIONS_ALL_02_FEBRUARY2020.MXD SSCOPES 3/4/2020 12:37:03 PM

JACOBS

# Attachment D
# Perimeter Air Sampling Analytical Results

# Attachment D. Perimeter Air Sampling Analytical Results

In conformance with the approved *Construction/Remedial Action Work Plan for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California* (CH2M, 2015), air monitoring has been conducted during construction to evaluate the ongoing effectiveness of the dust control program, to guide modifications to field activities and engineering control measures, if necessary, and to document that construction activities do not result in the migration of soil contaminants beyond the work area boundaries.

Perimeter air monitoring has been performed if construction activities have the potential to generate visible dust. The air monitoring program consists of both real-time fugitive dust monitoring and perimeter air sampling for select soil contaminants. Locations to be monitored and sampled are as follows:

- Real-time fugitive dust monitoring is performed at the perimeter of the work areas (outside of the exclusion zone) that have the potential to generate visible dust, including the Construction Headquarters (CHQ) and the Soil Processing Yard (SPY).
- Perimeter air sampling for hexavalent chromium is performed at the perimeter of the work areas (outside of the exclusion zone) that are inside Areas of Concern (AOCs) within the construction footprint where hexavalent chromium concentrations in soil have been historically reported. Air sampling for hexavalent chromium in the SPY will be performed when soil from AOCs with reported concentrations of hexavalent chromium is actively being processed. Air sampling may also be performed at other work areas at the site based on hexavalent chromium concentrations reported from new soil data or based on field observations during construction activities.
- Air sampling for asbestos will be limited to work areas where asbestos-containing material (ACM) has been observed in prior field investigations, including two areas in AOC 12 and one area in AOC 4. Perimeter air monitoring may also be performed at other work areas at the site if ACM is discovered during construction activities.

Project-specific levels of concern (LOCs) and action levels were developed as an indicator to determine whether additional dust control measures, as presented in the project's Dust Control Plan required by the Mojave Desert Air Quality Management District (MDAQMD), are necessary.

- The LOCs, which represent conservative concentrations of compounds that receptors outside the work area could be safely exposed to during construction, have been evaluated for all compounds that have been detected in soil samples collected at the site in the prior investigations. The LOCs were developed using standard U.S. Environmental Protection Agency (USEPA) and California Environmental Protection Agency risk assessment methodology, toxicology data, and exposure assumptions (USEPA, 2009, 2017; California Department of Toxic Substances Control [DTSC], 2018). Both cancer and noncancer health effects were considered. For each type of health effect, the LOC was back-calculated from an established target or from acceptable cancer risk or noncancer hazard where USEPA or DTSC toxicity values are available. The LOCs for cancer effects are based on a target excess cancer risk of one in a million ($1 \times 10^{-6}$). The LOCs for noncancer effects are based on a target hazard quotient of 1. The LOCs were developed using these assumptions:
  - Receptors are present outside the perimeter of the work areas
  - Exposure via inhalation is 10 hours per day for a 10 days on/4 days off schedule
  - Duration of Phase 1 of the final groundwater remedy construction is 20 months
- The action level for fugitive dust monitoring is 100 micrograms per cubic meter ($\mu g/m^3$) for a net (downwind minus upwind) dust concentration. This action level is based on MDAQMD Rule 403, Part C. A 10-hour time-weighted average of readings collected throughout the work day will be used to document compliance with MDAQMD Rule 403.
- For analytes detected in soil, the following equation was used to calculate maximum allowable airborne particulate concentrations for receptor exposure outside the work area (based on the approach presented by Marlowe (1999):

$$AL = \frac{LOC\ x\ 1{,}000{,}000\ mg/kg}{CS}$$

Where:

AL = action level for airborne particulates (µg/m$^3$)

LOC = Project specific risk-based level of concern (µg/m$^3$)

CS = maximum detected concentration of compound in site soil (milligrams per kilogram [mg/kg])

Action levels were determined as follows:

- Soil data from prior investigations were gathered for the entire site.
- Sample locations within the maximum construction footprint were evaluated. Some sample locations were removed from evaluation as they were within the compressor station in locations where no construction activities will actually occur.
- The maximum reported soil concentration for each compound was determined and then used to calculate an airborne particulate action level.
- All compounds had allowable airborne particulate action levels greater than 100 µg/m$^3$ except for hexavalent chromium at a few locations.
- Lead does not have USEPA or DTSC toxicity values; however, an action level was calculated using the DTSC (2011) LeadSpread 8 model. This is based on the maximum reported soil concentration for lead of 1,400 mg/kg from samples collected within the construction footprint and a blood level of concern through inhalation of 1 microgram per deciliter. The resulting action level for lead is 548 µg/m$^3$.
- Therefore, keeping fugitive dust below the action level 100 µg/m$^3$ will result in airborne particulate concentrations of contaminants (other than hexavalent chromium) remaining below their respective LOCs.
- Fugitive dust monitoring will be used to evaluate airborne contaminants in dust for all compounds except for hexavalent chromium.

In February 2020, 138 real time dust observation/monitoring events were conducted at the perimeter of the work areas (outside of the exclusion zone). On February 19, 2020, a temporary exceedance of the action level for fugitive dust monitoring (100 µg/m$^3$) occurred during the excavation of soil during site preparation for drilling of MW-V (the upgradient dust value was 7 µg/m$^3$ and the average downgradient dust value was 195 µg/m$^3$, resulting a delta of 188 µg/m$^3$). The CM was notified by compliance personnel of the exceedance, and water was applied to reduce dust level.

No perimeter air sampling was conducted in February 2020. Table D-1 presents analytical results from air sampling events that are available at this time. All results are below the LOC for hexavalent chromium which is 0.00094 µg/m3.

**References Cited:**

California Department of Toxic Substances Control (DTSC). 2011. LeadSpread8.

California Department of Toxic Substances Control (DTSC). 2018. Human Health Risk Assessment Note 3 – DTSC-Modified Screening Levels (DTSC-SLs), California Department of Toxic Substances Control, Human and Ecological Risk Office (HERO). January.

CH2M HILL, Inc. (CH2M). 2015. *Construction/Remedial Action Work Plan for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California.* November 18.

Marlowe, C. 1999. *Safety Now! Controlling Chemical Exposures at Hazardous Waste Sites with Real-Time Measurements*. Fairfax, Va.: American Industrial Hygiene Association Press.

U.S. Environmental Protection Agency (USEPA). 2009. *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment)*. Final. OSWER 9285.7-82. January.

U.S. Environmental Protection Agency (USEPA). 2017. Regional Screening Levels (RSLs)—Generic Tables. November.

**Table D-1. Perimeter Air Sampling Results**

*February 2020 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup*
*PG&E Topock Compressor Station, Needles, California*

| Location ID | Location | Sampling Date | Hexavalent Chromium Concentration in micrograms per cubic meter |
|---|---|---|---|
| AOC30-D1 | AOC30 Downwind 1 | 12/16/2019 | 0.0000871 - concentration estimated by laboratory or data validation |
| AOC30-D2 | AOC30 Downwind 2 | 12/16/2019 | Not detected at a reporting limit of 0.0000271 micrograms per cubic meter |
| AOC30-U1 | AOC30 Upwind 1 | 12/16/2019 | 0.0000782 - concentration estimated by laboratory or data validation |
| AOC08-D1 | AOC08 Downwind 1 | 12/17/2019 | 0.000106 - concentration estimated by laboratory or data validation |
| AOC08-D2 | AOC08 Downwind 2 | 12/17/2019 | 0.000151 – concentration reported by laboratory |
| AOC08-U1 | AOC08 Upwind 1 | 12/17/2019 | 0.000063 - concentration estimated by laboratory or data validation |
| AOC30-D1 | AOC30 Downwind 1 | 12/17/2019 | 0.0000584 - concentration estimated by laboratory or data validation |
| AOC30-D2 | AOC30 Downwind 2 | 12/17/2019 | 0.0000537 - concentration estimated by laboratory or data validation |
| AOC30-U1 | AOC30 Upwind 1 | 12/17/2019 | 0.0000644 - concentration estimated by laboratory or data validation |
| AOC30-D1 | AOC30 Downwind 1 | 12/18/2019 | 0.0000601 - concentration estimated by laboratory or data validation |
| AOC30-D2 | AOC30 Downwind 2 | 12/18/2019 | 0.0000806 - concentration estimated by laboratory or data validation |
| AOC30-U1 | AOC30 Upwind 1 | 12/18/2019 | Not detected at a reporting limit of 0.000031 micrograms per cubic meter |
| AOC08-D1 | AOC08 Downwind 1 | 12/18/2019 | 0.000233 – concentration reported by laboratory |
| AOC08-D2 | AOC08 Downwind 2 | 12/18/2019 | 0.000123 - concentration estimated by laboratory or data validation |
| AOC08-U1 | AOC08 Upwind 1 | 12/18/2019 | Not detected at a reporting limit of 0.000027 micrograms per cubic meter |
| AOC30-D1 | AOC30 Downwind 1 | 12/19/2019 | 0.0000648 - concentration estimated by laboratory or data validation |
| AOC30-D2 | AOC30 Downwind 2 | 12/19/2019 | 0.0000584 - concentration estimated by laboratory or data validation |
| AOC30-U1 | AOC30 Upwind 1 | 12/19/2019 | 0.0000749 - concentration estimated by laboratory or data validation |
| AOC08-D1 | AOC08 Downwind 1 | 12/19/2019 | 0.0000806 - concentration estimated by laboratory or data validation |
| AOC08-D2 | AOC08 Downwind 2 | 12/19/2019 | 0.0000837 - concentration estimated by laboratory or data validation |
| AOC08-U1 | AOC08 Upwind 1 | 12/19/2019 | Not detected at a reporting limit of 0.00003 micrograms per cubic meter |
| AOC10-D1 | AOC10 Downwind 1 | 11/04/2019 | 0.0000696 - concentration estimated by laboratory or data validation |

| Location ID | Location | Sampling Date | Hexavalent Chromium Concentration in micrograms per cubic meter |
|---|---|---|---|
| AOC10-D2 | AOC10 Downwind 2 | 11/04/2019 | 0.0000781 - concentration estimated by laboratory or data validation |
| AOC10-U1 | AOC10 Upwind | 11/04/2019 | 0.0000609 - concentration estimated by laboratory or data validation |
| AOC10-D1 | AOC10 Downwind 1 | 11/06/2019 | 0.0000602 - concentration estimated by laboratory or data validation |
| AOC10-D2 | AOC10 Downwind 2 | 11/06/2019 | 0.0000582 - concentration estimated by laboratory or data validation |
| AOC10-U1 | AOC10 Upwind | 11/06/2019 | 0.0000401 - concentration estimated by laboratory or data validation |
| AOC10-D1 | AOC10 Downwind 1 | 10/18/2019 | Not detected at a reporting limit of 0.0000347 micrograms per cubic meter |
| AOC10-D2 | AOC10 Downwind 2 | 10/18/2019 | Not detected at a reporting limit of 0.0000375 micrograms per cubic meter |
| AOC10-U1 | AOC10 Upwind | 10/18/2019 | Not detected at a reporting limit of 0.0000386 micrograms per cubic meter |
| AOC10-D1 | AOC10 Downwind 1 | 10/17/2019 | 0.0000321 - concentration estimated by laboratory or data validation |
| AOC10-D2 | AOC10 Downwind 2 | 10/17/2019 | Not detected at a reporting limit of 0.0000321 micrograms per cubic meter |
| AOC10-U1 | AOC10 Upwind | 10/17/2019 | Not detected at a reporting limit of 0.0000322 micrograms per cubic meter |
| AOC10-D1 | AOC10 Downwind 1 | 10/15/2019 | Not detected at a reporting limit of 0.0000324 micrograms per cubic meter |
| AOC10-D2 | AOC10 Downwind 2 | 10/15/2019 | Not detected at a reporting limit of 0.0000331 micrograms per cubic meter |
| AOC10-U1 | AOC10 Upwind | 10/15/2019 | Not detected at a reporting limit of 0.0000316 micrograms per cubic meter |
| PIPE B-D1 | PIPE B Downwind 1 | 8/13/2019 | Not detected at a reporting limit of 0.0000276 micrograms per cubic meter |
| PIPE B-D2 | PIPE B Downwind 2 | 8/13/2019 | Not detected at a reporting limit of 0.0000276 micrograms per cubic meter |
| PIPE B-U1 | PIPE B Upwind | 8/13/2019 | Not detected at a reporting limit of 0.0000276 micrograms per cubic meter |
| PIPE B-D1 | PIPE B Downwind 1 | 8/12/2019 | Not detected at a reporting limit of 0.0000278 micrograms per cubic meter |
| PIPE B-D2 | PIPE B Downwind 2 | 8/12/2019 | 0.000035 - concentration estimated by laboratory or data validation |
| PIPE B-U1 | PIPE B Upwind | 8/12/2019 | Not detected at a reporting limit of 0.0000279 micrograms per cubic meter |
| AOC30-D1 | AOC30 Downwind 1 | 6/18/2019 | 0.0000407 - concentration estimated by laboratory or data validation |
| AOC30-D2 | AOC30 Downwind 2 | 6/18/2019 | Not detected at a reporting limit of 0.0000313 micrograms per cubic meter |
| AOC30-U1 | AOC30 Upwind | 6/18/2019 | Not detected at a reporting limit of 0.000031 micrograms per cubic meter |

| Location ID | Location | Sampling Date | Hexavalent Chromium Concentration in micrograms per cubic meter |
|---|---|---|---|
| AOC30-D1 | AOC30 Downwind 1 | 6/17/2019 | Not detected at a reporting limit of 0.0000633 micrograms per cubic meter |
| AOC30-D2 | AOC30 Downwind 2 | 6/17/2019 | Not detected at a reporting limit of 0.0000636 micrograms per cubic meter |
| AOC30-U1 | AOC30 Upwind | 6/17/2019 | Not detected at a reporting limit of 0.0000589 micrograms per cubic meter |
| AOC4-D1 | AOC4 Downwind 1 | 5/16/2019 | 0.0000423 - concentration estimated by laboratory or data validation |
| AOC4-D2 | AOC4 Downwind 2 | 5/16/2019 | Not detected at a reporting limit of 0.0000385 micrograms per cubic meter |
| AOC4-U | AOC4 Upwind | 5/16/2019 | Not detected at a reporting limit of 0.0000378 micrograms per cubic meter |
| AOC11-D1 | AOC11 Downwind 1 | 5/15/2019 | Not detected at a reporting limit of 0.0000392 micrograms per cubic meter |
| AOC11-D2 | AOC11 Downwind 2 | 5/15/2019 | 0.0001262 - concentration estimated by laboratory or data validation |
| AOC11-U | AOC11 Upwind | 5/15/2019 | Not detected at a reporting limit of 0.0000386 micrograms per cubic meter |
| AOC4-D1 | AOC4 Downwind 1 | 5/14/2019 | Not detected at a reporting limit of 0.000148 micrograms per cubic meter |
| AOC4-D2 | AOC4 Downwind 2 | 5/14/2019 | Not detected at a reporting limit of 0.000155 micrograms per cubic meter |
| AOC4-U | AOC4 Upwind | 5/14/2019 | Not detected at a reporting limit of 0.000148 micrograms per cubic meter |
| AOC30-IRZ-23-D1 | AOC30-IRZ-23 Downwind 1 | 2/20/2019 | Not detected at a reporting limit of 0.0000859 micrograms per cubic meter |
| AOC30-IRZ-23-D2 | AOC30-IRZ-23 Downwind 2 | 2/20/2019 | Not detected at a reporting limit of 0.0000862 micrograms per cubic meter |
| AOC30-IRZ-23-U1 | AOC30-IRZ-23 Upwind | 2/20/2019 | 0.000104 - concentration estimated by laboratory or data validation |
| AOC13-D1 | AOC13 Downwind 1 | 10/09/18 | 0.000732 - concentration estimated by laboratory or data validation |
| AOC13-D2 | AOC13 Downwind 2 | 10/09/18 | 0.000709 - concentration estimated by laboratory or data validation |
| AOC13-U | AOC13 Upwind | 10/09/18 | Not detected at a reporting limit of 0.000172 micrograms per cubic meter |

# Attachment E
# Noise Monitoring Results
# (SEIR NOISE-2 Requirement)

# Attachment E. Noise Monitoring Results

In conformance with the Supplemental Environmental Impact Report (SEIR) Mitigation Measure NOISE-2, noise monitoring has been conducted with ANSI S1.4 Type 1, precision sound level meters when construction activities are within the specified distance (e.g., 1,850 feet from sensitive receptors in California) at approved monitoring locations previously determined in coordination with the Tribes and land owners/managers. The goal of the noise monitoring is to identify if noise levels from project construction activities exceed applicable standards of the San Bernardino and Mohave County codes. Exceedance of standards would require coordination with the Tribes and land owners/managers to evaluate the potential constraints and locations for temporary engineered acoustical barriers. Consistent with the request of the Tribes, monitoring equipment is not left at the approved monitoring locations; rather, it is mounted on a tripod for attended representative measurements and removed when the monitoring event is complete.

When a new construction activity is conducted or a previously monitored construction activity is conducted closer to a noise-sensitive area, monitoring is conducted at more frequent intervals to evaluate the potential need for an acoustical barrier. As the activities continue in the same location and multiple attended measurements indicate that the applicable standard has not been exceeded by the construction activity, periodic attending monitoring events are conducted to confirm continued compliance.

The attended monitoring events document the A-weighted equivalent continuous sound level ($L_{eq}$) at periodic intervals (e.g., 5, 10, 15, 20, 30, 40, 50 and 60 minutes). The trend of the data at these intervals is evaluated in the field to assess the stability in the sound level to determine the duration of the monitoring event. When the interval data are relatively stable or clearly below the standard, the attended monitoring event will typically be 15 to 30 minutes in duration. As the applicable standards are expressed in terms of the 24-hour average day-night sound level ($L_{dn}$) which is based on the $L_{eq}$ metric, the measured $L_{eq}$ is compared to the applicable $L_{dn}$ standard for mobile noise sources (i.e., 60 A-weighted decibels [dBA] for Park Moabi, 65 dBA at all other locations). This results in a reasonable and conservative assessment given construction activities are not emitting noise continuously over a 24-hour period, nor are they occurring during the nighttime hours (10 p.m. to 7 a.m.).

In February 2020, the following monitoring events were conducted:

- Fifteen events at a location west of the mobile home park at Moabi Regional Park. Construction activities closest to this monitoring location include activities at the SPY and CHQ, as well as construction traffic on NTH. The sound level typically varied between 41 and 55 dBA, with an average and median of 47-48 dBA.

- Nineteen events at a location in the Upland just off the IM-3 access road, and near the top of the hill closest to the NTH and MW-20 Bench. Construction activities closest to this monitoring location include activities at the MW-20 Bench and construction traffic on the access road. The sound level varied between 46 and 57 dBA, with an average and median of 49-50 dBA.

- Six events at the old restaurant location west of NTH. Per direction from DTSC on January 14, 2020, noise monitoring was suspended during active drilling at MW-Z from February 7 through 22, 2020. On February 6, 2020, one sound level was recorded at the approved noise monitoring location to document the maximum noise output of the drill rig, and the result was 64 dBA. Five sound levels were recorded outside of the active drilling period of MW-Z. The sound level varied between 45 and 49 dBA.

- Nineteen events at a location on a bluff below TCS, just south of I-40 and east of the Topock Maze. Construction activities closest to this monitoring location are associated with work at Pipeline J and Pipeline M inside TCS, as well as MW-V site preparation. The sound level typically varied between 49 and 61 dBA, with an average and median of 55 dBA.

- Four events at a location west of the access road to Bat Cave Wash and south of the Topock Maze. Construction activities closest to this monitoring location include construction traffic to Bat Cave Wash

and repair of the access road to Bat Cave Wash used by PG&E Gas Operations. The sound level typically varied between 46 and 53 dBA, with an average and median of 50-51 dBA.

Sound monitoring will continue as work progresses and moves into new areas to identify when an acoustical barrier needs to be considered.

# Attachment F
# Discharge Monitoring Record in Compliance with Monitoring and Reporting Program for Order No. 2003-0003-DWQ (Table 2)

## Dishcarge Monitoring Record

PIVOX Corporation

**PGE Project / Property Name:** Topock Final Remedy **Project Number:** ARC-18-T46 **Project Number:** ARC-18-T46

**Affected System:** Week of 1/21/19 - Pipeline B (STA 6+00 to STA 20+70) Thru Pipeline J (STA 16+20 to 11+50)

| Discharge Date | J Discharge location - Approximate QTY (gal) | B&J Intersection Discharge Location - Approximate QTY (gal) | B Cleanout Discharge Location - Approximate QTY (gal) | B Discharge Location - Approximate QTY (gal) | Discharge Monitor Initials* |
|---|---|---|---|---|---|
| 1/21/2020 | 0 (Note: 1000 gallons captured and used for dust suppression) | | | | NFR |
| 1/22/2020 | 0 (Note: 2700 gallons captured and used for dust suppression) | | 0 (Note: 10 gallons captured and used for dust suppression) | | NFR |
| 1/23/2020 | | 0 (Note: 3300 gallons captured and used for dust suppression) | 0 (Note: 15 gallons captured and used for dust suppression) | | NFR |
| 1/27/2020 | | 0 (Note 6300 gallons captured and used for dust suppression) | | | NFR |
| 1/28/2020 | 0 (Note: 500 gallons captured and used for dust suppression) | | | | NFR |
| 1/29/2020 | 0 (Note: 5400 gallons captured and used for dust suppression) | | | | NFR |
| 2/13/2020 | | | | 0 (Note: 1800 gallons captured and used for dust suppression) | NFR |
| 2/18/2020 | 0 (Note: 7200 gallons captured and used for dust suppression) | | | | NFR |
| 2/19/2020 | 0 (Note: 3600 gallons captured and used for dust suppression) | | | | NFR |
| 2/20/2020 | 0 (Note: 5400 gallons captured and used for dust suppression) | | | | NFR |
| 2/24/2020 | 0 (Note: 900 gallons captured and used for | | | | NFR |
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* By signing this record form, I acknowledge that all ground discharge has been observed and monitored for the following compliance requirements:

a. No ponding of discharge water
b. No attracting wildlife
c.No channelizing of discharge water and runoff outside of work area
d.No water discharged to washes or jurisdictional waters

## Dishcarge Monitoring Record

**PGE Project / Property Name:** MW-20 BENCH C.A.B. **Project Number:** ARC-18-T46 **Project Number:** ARC-18-T46

**Affected System:** Week of 2/03/20 - MW-20 BENCH UNDERGROUND PIPING - Grid lines: D.7/5

| Discharge Date | Discharge Location: Trench North end@Gridlines:D.7/5.1 Approx. QTY (gal) | Discharge Location - Approximate QTY (gal) | Discharge Location - Approximate QTY (gal) | Discharge Location - Approximate QTY (gal) | Discharge Monitor Initials* |
|---|---|---|---|---|---|
| 2/4/2020 | 0 gallons (Note: 750 gallons captured and used for dust suppression) | | | | TD |
| 2/5/2020 | 0 gallons (Note: 2500 gallons captured and used for dust suppression) | | | | TD |
| 2/6/2020 | 5 gallons (Note: 2600 gallons captured and used for dust suppression) | | | | TD |
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* By signing this record form, I acknowledge that all ground discharge has been observed and monitored for the following compliance requirements:

a. No ponding of discharge water
b. No attracting wildlife
c. No channelizing of discharge water and runoff outside of work area
d. No water discharged to washes or jurisdictional waters

# Attachment G
# Six-Week Look-Ahead Schedule

**Six-Week Look-Ahead Schedule**

*PG&E Topock Compressor Station Final Groundwater Remedy*

| Activity | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| **Primary Planned Activities** | **3/8/2020** | **3/9/2020** | **3/10/2020** | **3/11/2020** | **3/12/2020** | **3/13/2020** | **3/14/2020** |
| Start Time (PST) | No Work | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45:00 AM | 7:45:00 AM |
| Pipeline C Installation **F5*** | No Work | Pipeline Install @ C6<br>Misc. final tasks @ C7,C8,C14 | Pipeline Install @ C6<br>Misc. final tasks @ C7,C8,C15 | Pipeline Install @ C6<br>Misc. final tasks @ C7,C8,C16 | Pipeline Install @ C6<br>Misc. final tasks @ C7,C8,C17 | Pipeline Install @ C6<br>Misc. final tasks @ C7,C8,C18 | No Work |
| Pipeline C Jack and Bore **F5*** | | | Construction staking by Land Surveyor | | | | |
| TCS Approach Pipeline Installation **F5*, G5*, G6*** | No Work | Misc. final task @ B&J<br>Pipeline installation @ J and F | Pipeline installation @ J and F<br>Construction staking by Land Surveyor | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | No Work |
| TCS Pipeline Construction **G5*** | No Work | Pipeline Install @ M | Pipeline Install @ M | Pipeline Install @ M | Pipeline Install @ M | Pipeline Install @ M | Pipeline Install @ M |
| TCS Facilities Construction **G5*** | No Work | Tank farm grading | Tank farm grading | Tank farm grading | Tank farm grading | Tank farm grading | No Work |
| MW-20 Bench Facility Construction **E5*, F5*** | No Work | Facility foundation construction | Facility foundation construction | Facility foundation construction | Facility foundation construction | No Work | No Work |
| Well Installation | IRZ-33 **(F5*)**, MW-V **(D5*)** | IRZ-33 **(F5*)**, MW-V **(D5*)** | IRZ-33 **(F5*)**, MW-V **(D5*)** | IRZ-33 **(F5*)**, MW-V **(D5*)** | IRZ-33 **(F5*)**, MW-V **(D5*)** | No Work | No Work |
| Well Development | MW-70BR **(G5*)** | RB-3 **(E5*)** | RB-3 **(E5*)** | RB-3 **(E5*)** | RB-3 **(E5*)** | No Work | No Work |
| Well Testing | No Work | IRZ-27 **(F5*)** | IRZ-27 **(F5*)** | IRZ-27 **(F5*)** | IRZ-27 **(F5*)** | No Work | No Work |
| **Primary Planned Activities** | **3/15/2020** | **3/16/2020** | **3/17/2020** | **3/18/2020** | **3/19/2020** | **3/20/2020** | **3/21/2020** |
| Start Time (PST) | No Work | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM |
| Pipeline C Installation **F5*** | No Work | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | No Work |
| Pipeline C Jack and Bore **F5*** | No Work | HDPE pipe delivery, staging, fusing | HDPE pipe delivery, staging, fusing | HDPE pipe delivery, staging, fusing | HDPE pipe delivery, staging, fusing | HDPE pipe delivery, staging, fusing | |
| TCS Approach Pipeline Installation **F5*, G5*, G6*** | No Work | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | No Work |
| TCS Pipeline Construction **G5*** | No Work | Backfill & compaction @ Pipeline M | Backfill & compaction @ Pipeline M | Backfill & compaction @ Pipeline M | Backfill & compaction @ Pipeline M | Backfill & compaction @ Pipeline M | Backfill & compaction @ Pipeline M |
| TCS Facilities Construction **G5*** | No Work | Tank farm grading | Tank farm grading | Tank farm grading | Tank farm grading | Tank farm grading | No Work |
| MW-20 Bench Facility Construction **E5*, F5*** | No Work | Facility foundation construction | Facility foundation construction | Facility foundation construction | Facility foundation construction | No Work | No Work |
| Well Installation | No Work | No Work | IRZ-33 **(F5*)**, MW-V **(D5*)**, IRZ-13D **(E5*)** | IRZ-33 **(F5*)**, MW-V **(D5*)**, IRZ-13D **(E5*)** | IRZ-33 **(F5*)**, MW-V **(D5*)**, IRZ-13D **(E5*)** | IRZ-33 **(F5*)**, MW-V **(D5*)**, IRZ-13D **(E5*)** | IRZ-35 **(F5*)**, MW-V **(D5*)**, IRZ-13D **(E5*)** |
| Well Development | No Work | No Work | RB-3 **(E5*)**, IRZ-29 **(F5*)** | RB-3 **(E5*)**, IRZ-29 **(F5*)** | IRZ-29 **(F5*)** | IRZ-29 **(F5*)** | IRZ-29 **(F5*)**, IRZ-15 **(E5*)** |
| Well Testing | No Work | No Work | No Work | No Work | RB-3 **(E5*)** | RB-3 **(E5*)** | No Work |
| **Primary Planned Activities** | **3/22/2020** | **3/23/2020** | **3/24/2020** | **3/25/2020** | **3/26/2020** | **3/27/2020** | **3/28/2020** |
| Start Time (PST) | No Work | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45:00 AM | No Work |
| Pipeline C Installation **F5*** | No Work | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | No Work |
| Pipeline C Jack and Bore **F5*** | No Work | HDPE pipe delivery, staging, fusing | HDPE pipe delivery, staging, fusing | HDPE pipe delivery, staging, fusing | HDPE pipe delivery, staging, fusing | HDPE pipe delivery, staging, fusing | No Work |
| TCS Approach Pipeline Installation **F5*, G5*, G6*** | No Work | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | No Work |
| TCS Pipeline Construction **G5*** | No Work | Prep for asphalt installation @ Pipeline M | Asphalt installation @ Pipeline M | Site cleanup & demob @ Pipeline M | Site cleanup & demob @ Pipeline M | No Work | No Work |
| TCS Facilities Construction **G5*** | No Work | Tank farm grading | Tank farm grading | Tank farm grading | Tank farm grading | Tank farm grading | No Work |
| MW-20 Bench Facility Construction **E5*, F5*** | No Work | Facility foundation construction | Facility foundation construction | Facility foundation construction | Facility foundation construction | No Work | No Work |

**Six-Week Look-Ahead Schedule**

*PG&E Topock Compressor Station Final Groundwater Remedy*

| Activity | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| Well Installation | IRZ-35 **(F5*)**, MW-V **(D5*)**, IRZ-13D **(E5*)**, IRZ-11 site prep **(E5*)** | IRZ-35 **(F5*)**, IRZ-13D **(E5*)**, IRZ-11 **(E5*)** | IRZ-35 **(F5*)**, IRZ-13D **(E5*)**, IRZ-11 **(E5*)** | IRZ-35 **(F5*)**, IRZ-13D **(E5*)**, IRZ-11 **(E5*)** | No Work | No Work | No Work |
| Well Development | IRZ-29 **(F5*)**, IRZ-15 **(E5*)** | IRZ-29 **(F5*)**, IRZ-15 **(E5*)** | IRZ-29 **(F5*)**, IRZ-15 **(E5*)** | IRZ-29 **(F5*)**, IRZ-15 **(E5*)** | No Work | No Work | No Work |
| Well Testing | No Work | No Work | No Work | No Work | No Work | No Work | No Work |
| **Primary Planned Activities** | **3/29/2020** | **3/30/2020** | **3/31/2020** | **4/1/2020** | **4/2/2020** | **4/3/2020** | **4/4/2020** |
| Start Time (PST) | No Work | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM |
| Pipeline C Installation **F5*** | No Work | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | No Work |
| Pipeline C Jack and Bore **F5*** | No Work | Mobilization | Mobilization | Mobilization, Pit Excavation | Pit Excavation | Pit Excavation | No Work |
| TCS Approach Pipeline Installation **F5*, G5*, G6*** | No Work | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | No Work |
| TCS Facilities Construction **G5*** | No Work | No Work | No Work | No Work | No Work | No Work | No Work |
| MW-20 Bench Facility Construction **E5*, F5*** | No Work | Facility foundation construction | Facility foundation construction | Facility foundation construction | Facility foundation construction | No Work | No Work |
| Well Installation | No Work | No Work | IRZ-35 **(F5*)**, IRZ-13D **(E5*)**, IRZ-11 **(E5*)** | IRZ-35 **(F5*)**, IRZ-13D **(E5*)**, IRZ-11 **(E5*)** | IRZ-35 **(F5*)**, IRZ-13D **(E5*)** | IRZ-35 **(F5*)**, IRZ-13D **(E5*)** | IRZ-18 **(E5*)**, IRZ-13D **(E5*)** |
| Well Development | No Work | No Work | IRZ-15 **(E5*)** | IRZ-15 **(E5*)** | IRZ-15 **(E5*)** | IRZ-15 **(E5*)** | IRZ-31 **(F5*)**, IRZ-15 **(E5*)** |
| Well Testing | No Work | No Work | IRZ-29 **(F5*)** | IRZ-29 **(F5*)** | IRZ-29 **(F5*)** | IRZ-29 **(F5*)** | No Work |
| **Primary Planned Activities** | **4/5/2020** | **4/6/2020** | **4/7/2020** | **4/8/2020** | **4/9/2020** | **4/10/2020** | **4/11/2020** |
| Start Time (PST) | No Work | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM |
| Pipeline C Installation **F5*** | No Work | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | No Work |
| Pipeline C Jack and Bore **F5*** | No Work | Pit Excavation | Pit Excavation | Pit Excavation | Pit Excavation | Pit Excavation | No Work |
| TCS Approach Pipeline Installation **F5*, G5*, G6*** | No Work | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | No Work |
| TCS Facilities Construction **G5*** | No Work | No Work | No Work | No Work | No Work | No Work | No Work |
| MW-20 Bench Facility Construction **E5*, F5*** | No Work | Facility foundation and truck loading pad construction | Facility foundation and truck loading pad construction | Facility foundation and truck loading pad construction | Facility foundation and truck loading pad construction | No Work | No Work |
| Well Installation | IRZ-18 **(E5*)**, IRZ-13S **(E5*)** | IRZ-18 **(E5*)**, IRZ-13S **(E5*)** | IRZ-18 **(E5*)**, IRZ-13S **(E5*)** | IRZ-18 **(E5*)**, IRZ-13S **(E5*)** | IRZ-18 **(E5*)**, IRZ-13S **(E5*)** | No Work | No Work |
| Well Development | IRZ-31 **(F5*)**, IRZ-15 **(E5*)** | IRZ-31 **(F5*)**, IRZ-15 **(E5*)** | IRZ-31 **(F5*)**, IRZ-15 **(E5*)** | IRZ-31 **(F5*)** | IRZ-31 **(F5*)** | No Work | No Work |
| Well Testing | No Work | No Work | No Work | IRZ-15 **(E5*)** | IRZ-15 **(E5*)** | No Work | No Work |
| **Primary Planned Activities** | **4/12/2020** | **4/13/2020** | **4/14/2020** | **4/15/2020** | **4/16/2020** | **4/17/2020** | **4/18/2020** |
| Start Time (PST) | No Work | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM | 7:45 AM |
| Pipeline C Installation **F5*** | No Work | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | Pipeline Install @ C6 | No Work |
| Pipeline C Jack and Bore **F5*** | No Work | Pit Excavation | Pit Excavation | Pit Excavation, Setup Rig | Pit Excavation, Setup Rig | Complete rig setup, start jack and bore drilling | No Work |
| TCS Approach Pipeline Installation **F5*, G5*, G6*** | No Work | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | Pipeline installation @ J and F | No Work |
| TCS Facilities Construction **G5*** | No Work | No Work | No Work | No Work | No Work | No Work | No Work |
| MW-20 Bench Facility Construction **E5*, F5*** | No Work | Facility foundation and carbon amendment storage tank piping construction | Facility foundation and carbon amendment storage tank piping construction | Facility foundation and carbon amendment storage tank piping construction | Facility foundation and carbon amendment storage tank piping construction | No Work | No Work |
| Well Installation | No Work | No Work | No Work | IRZ-18 **(E5*)**, IRZ-13S **(E5*)** | IRZ-18 **(E5*)**, IRZ-13S **(E5*)** | IRZ-18 **(E5*)**, IRZ-9 **(E5*)** | IRZ-18 **(E5*)**, IRZ-9 **(E5*)** |
| Well Development | No Work | No Work | No Work | IRZ-31 **(F5*)** | IRZ-31 **(F5*)** | IRZ-31 **(F5*)**, MW-Z **(D5*)** | MW-Z (**D5***) |
| Well Testing | No Work | No Work | No Work | IRZ-15 **(E5*)** | IRZ-15 **(E5*)** | No Work | No Work |

**Six-Week Look-Ahead Schedule**

*PG&E Topock Compressor Station Final Groundwater Remedy*

| Activity | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|

**Notes:**

The timing of field activities is estimated and may change day-to-day based on site conditions, field progress, or other factors.

When planning to visit the site to observe a specific activity or area, please contact Curt Russell (760.791.5884) for the latest schedule information.

*** Bold font =** Intrusive work location as described on the Project Grid Map. See Project Grid Map tab for location of grid positions provided on the Look-Ahead.


B2
C1
C2
C4
C5
D1
D2
D3
D4
D5
D6
E1
E2
E3
E4
E5
E6
F2
F3
F4
F5
F6
G2
G3
G4
G5
G6
H3
H4
2014_Index_Grid_A1-H9
Provisional Well
Existing Well
Planned Well
Planned or Provisional Transformer
Aboveground Pipe
Underground Pipe/Conduit
Future Provisional Pipe
Other Structures or Areas
0 250 500 1,000 Feet
0 50100 200 300 400 Meters
1:10,000

# Attachment H
# Validated Groundwater Monitoring Data
# (DTSC Condition of Approval xi)

# Attachment H. Validated Groundwater Monitoring Data

Pursuant to Condition of Approval # xi in DTSC's approval letter dated August 24, 2018 (DTSC, 2018a), PG&E is required to report data from samples collected as part of the sitewide groundwater monitoring program within 60 days of sample collection. In compliance with this requirement, PG&E initially submitted validated data to DTSC via monthly emails. For ease of recordkeeping and to minimize the number of ad-hoc compliance reports/emails, PG&E has since included validated data in each monthly progress report starting with the November 2018 report.

Performance Monitoring Program 2020-01 Sampling

| Location ID | Sample ID | Sample Type | Matrix | Sample Date | Alkalinity, total as CaCO3 Results by method SM 2320 B (mg/L) | Calcium, dissolved Results by method EPA 200.7 (mg/L) | Chloride Results by method EPA 300.0 (mg/L) | Chromium, Hexavalent Results by method EPA 218.6 (µg/L) | Chromium, total dissolved Results by method EPA 200.8 (µg/L) | Iron, dissolved Results by method EPA 200.7 (µg/L) | Magnesium, dissolved Results by method EPA 200.7 (mg/L) | Manganese, dissolved Results by method EPA 200.8 (µg/L) | Nitrate/Nitrite as Nitrogen Results by method SM 4500-NO3 F (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TW-03D | TW-03D-0120 | N | GW | 01/08/2020 | 160 | 190 | 2,100 | 470 | 460 | < 20 | 36 | 20 | 2.6 |

**Notes:**
Analyses were performed by Asset Laboratory.
< = analyte not detected at the reporting limit shown

**Acronyms and Abbreviations:**
µg/L = micrograms per liter
GW = groundwater
mg/L = milligrams per liter
N = Normal
SM = standard method

Performance Monitoring Program 2020-01 Sampling

| Location ID | Sample ID | Sample Type | Matrix | Sample Date | pH Results by method SM 4500-H+ B (PHUNITS) | Sodium, dissolved Results by method EPA 200.7 (mg/L) | Specific conductance Results by method EPA 120.1 (uS/cm) | Sulfate Results by method EPA 300.0 (mg/L) | Total dissolved solids Results by method SM 2540 C (mg/L) |
|---|---|---|---|---|---|---|---|---|---|
| TW-03D | TW-03D-0120 | N | GW | 01/08/2020 | 7.3 | 1,800 | 6,900 | 510 | 4,500 |

**Notes:**
Analyses were performed by Asset Laboratory.
< = analyte not detected at the reporting limit shown

**Acronyms and Abbreviations:**
µg/L = micrograms per liter
GW = groundwater
mg/L = milligrams per liter
N = Normal
SM = standard method

Preliminary RMP 2020-01 Surfacewater Sampling

| Location ID | Sample ID | Sample Type | Sample Method | Parent | Matrix | Sample Date | Arsenic, dissolved Results by method SW 6020 (µg/L) | Barium, dissolved Results by method SW 6020 (µg/L) | Chromium, Hexavalent Results by method EPA 218.6 (µg/L) | Chromium, total dissolved Results by method SW 6020 (µg/L) | Iron Results by method SW 6010B (µg/L) | Iron, dissolved Results by method SW 6010B (µg/L) | Manganese, dissolved Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-BNS | C-BNS-0120 | N | R | | GW | 1/29/2020 | 2.2 | 120 | < 0.20 | < 1.0 | 93 | < 20 | 1.6 |
| C-CON-D | C-CON-D-0120 | N | R | | GW | 1/30/2020 | 2.2 | 120 | < 0.20 | < 1.0 | 84 | 27 | 2 |
| C-CON-S | C-CON-S-0120 | N | R | | GW | 1/30/2020 | 2.2 | 110 | < 0.20 | < 1.0 | 53 | 32 | 2.2 |
| C-I-3-D | C-I-3-D-0120 | N | R | | GW | 1/29/2020 | 2.1 | 110 | < 0.20 | < 1.0 | 75 | < 20 | 1.2 |
| C-I-3-S | C-I-3-S-0120 | N | R | | GW | 1/29/2020 | 2.2 | 110 | < 0.20 | < 1.0 | 120 | < 20 | 1.1 |
| C-MAR-D | C-MAR-D-0120 | N | R | | GW | 1/30/2020 | 2.6 | 130 | < 0.20 | < 1.0 | 1,100 | 380 | 92 |
| C-MAR-S | C-MAR-S-0120 | N | R | | GW | 1/30/2020 | 2.7 | 130 | < 0.20 | < 1.0 | 1,400 | 880 | 110 |
| C-NR1-D | C-NR1-D-0120 | N | R | | GW | 1/30/2020 | 2.2 | 110 | < 0.20 | < 1.0 | 57 | < 20 | 2 |
| C-NR1-S | C-NR1-S-0120 | N | R | | GW | 1/30/2020 | 2.1 | 110 | < 0.20 | < 1.0 | 26 | 28 | 2.6 |
| C-NR3-D | C-NR3-D-0120 | N | R | | GW | 1/30/2020 | 2.1 | 110 | < 0.20 | < 1.0 | 54 | 44 | 2.3 |
| C-NR3-D | MW-903-Q120 | FD | | C-NR3-D-0120 | GW | 1/30/2020 | 2.1 | 110 | < 0.20 | < 1.0 | 37 | 31 | 2.1 |
| C-NR3-S | C-NR3-S-0120 | N | R | | GW | 1/30/2020 | 2 | 110 | < 0.20 | < 1.0 | 97 | 51 | 1.7 |
| C-NR4-D | C-NR4-D-0120 | N | R | | GW | 1/30/2020 | 2.1 | 110 | < 0.20 | < 1.0 | 65 | < 20 | 1.5 |
| C-NR4-S | C-NR4-S-0120 | N | R | | GW | 1/30/2020 | 2.1 | 110 | < 0.20 | < 1.0 | 38 | 22 | 1.5 |
| C-R22A-D | C-R22A-D-0120 | N | R | | GW | 1/29/2020 | 2.2 | 120 | < 0.20 | < 1.0 | 130 | < 20 | 2.6 |
| C-R22A-S | C-R22A-S-0120 | N | R | | GW | 1/29/2020 | 2.3 | 120 | < 0.20 | < 1.0 | 120 | < 20 | 2.7 |
| C-R22A-S | MW-904-Q120 | FD | | C-R22A-S-0120 | GW | 1/29/2020 | 2.3 | 130 | < 0.20 | < 1.0 | 160 | 27 | 2.9 |
| C-R27-D | C-R27-D-0120 | N | R | | GW | 1/29/2020 | 2.1 | 120 | < 0.20 | < 1.0 | 180 | 110 | 4 |
| C-R27-S | C-R27-S-0120 | N | R | | GW | 1/29/2020 | 2.2 | 120 | < 0.20 | < 1.0 | 170 | < 20 | 2 |
| C-TAZ-D | C-TAZ-D-0120 | N | R | | GW | 1/29/2020 | 2.2 | 110 | < 0.20 | < 1.0 | 150 | 26 | 2.2 |
| C-TAZ-S | C-TAZ-S-0120 | N | R | | GW | 1/29/2020 | 2.2 | 110 | < 0.20 | < 1.0 | 100 | < 20 | 1.6 |
| R-19 | R-19-0120 | N | R | | GW | 1/30/2020 | 2.1 | 110 | < 0.20 | < 1.0 | 47 | 38 | 2.5 |
| R-28 | R-28-0120 | N | R | | GW | 1/29/2020 | 2.2 | 120 | < 0.20 | < 1.0 | 180 | < 20 | 2.6 |
| R63 | R63-0120 | N | R | | GW | 1/29/2020 | 2.1 | 110 | < 0.20 | < 1.0 | 110 | < 20 | 3.6 |
| RRB | RRB-0120 | N | G | | GW | 1/30/2020 | 2.4 | 80 | < 0.20 | < 1.0 | 1,100 | < 100 | 21 |
| SW1 | SW1-0120 | N | G | | GW | 1/29/2020 | -- | -- | < 0.20 | < 1.0 | -- | -- | -- |
| SW2 | SW2-0120 | N | G | | GW | 1/29/2020 | -- | -- | < 0.20 | < 1.0 | -- | -- | -- |

Preliminary RMP 2020-01 Surfacewater Sampling

| Location ID | Sample ID | Sample Type | Sample Method | Parent | Matrix | Sample Date | Molybdenum, dissolved Results by method SW 6020 (µg/L) | Nitrate/Nitrite as Nitrogen Results by method SM 4500-NO3 F (mg/L) | pH Results by method SM 4500-H+ B (PHUNITS) | Selenium, dissolved Results by method SW 6020 (µg/L) | Specific conductance Results by method EPA 120.1 (µS/cm) | Total Suspended Solids (TSS) Results by method SM 2540 D (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-BNS | C-BNS-0120 | N | R | | GW | 1/29/2020 | 4.7 | 0.35 | 8.3 | 1.6 | 930 | < 5.0 |
| C-CON-D | C-CON-D-0120 | N | R | | GW | 1/30/2020 | 4.6 | 0.3 | 8.3 | 1.6 | 890 | < 5.0 |
| C-CON-S | C-CON-S-0120 | N | R | | GW | 1/30/2020 | 4.6 | 0.36 | 8.3 | 1.6 | 890 | < 5.0 |
| C-I-3-D | C-I-3-D-0120 | N | R | | GW | 1/29/2020 | 4.4 | 0.35 | 8.3 | 1.6 | 920 | 10 |
| C-I-3-S | C-I-3-S-0120 | N | R | | GW | 1/29/2020 | 4.4 | 0.29 | 8.1 | 1.5 | 920 | < 5.0 |
| C-MAR-D | C-MAR-D-0120 | N | R | | GW | 1/30/2020 | 5.1 | 0.31 | 8.2 | 1.6 | 1,000 | 28 |
| C-MAR-S | C-MAR-S-0120 | N | R | | GW | 1/30/2020 | 5 | 0.27 | 8.1 | 1.4 | 1,100 | 36 |
| C-NR1-D | C-NR1-D-0120 | N | R | | GW | 1/30/2020 | 4.5 | 0.27 | 8.3 | 1.7 | 900 | < 5.0 |
| C-NR1-S | C-NR1-S-0120 | N | R | | GW | 1/30/2020 | 4.4 | 0.27 | 8.3 | 1.6 | 900 | < 5.0 |
| C-NR3-D | C-NR3-D-0120 | N | R | | GW | 1/30/2020 | 4.5 | 0.33 | 8.3 | 1.5 | 910 | < 5.0 |
| C-NR3-D | MW-903-Q120 | FD | | C-NR3-D-0120 | GW | 1/30/2020 | 4.4 | 0.39 | 8.3 | 1.6 | 900 | < 5.0 |
| C-NR3-S | C-NR3-S-0120 | N | R | | GW | 1/30/2020 | 4.3 | 0.33 | 8.3 | 1.6 | 910 | < 5.0 |
| C-NR4-D | C-NR4-D-0120 | N | R | | GW | 1/30/2020 | 4.3 | 0.36 | 8.3 | 1.5 | 890 | < 5.0 |
| C-NR4-S | C-NR4-S-0120 | N | R | | GW | 1/30/2020 | 4.4 | 0.36 | 8.3 | 1.5 | 890 | < 5.0 |
| C-R22A-D | C-R22A-D-0120 | N | R | | GW | 1/29/2020 | 4.8 | 0.36 | 8.3 | 1.6 | 940 | 7 |
| C-R22A-S | C-R22A-S-0120 | N | R | | GW | 1/29/2020 | 4.6 | 0.35 | 8.3 | 1.6 | 950 | 7 |
| C-R22A-S | MW-904-Q120 | FD | | C-R22A-S-0120 | GW | 1/29/2020 | 4.9 | 0.36 | 8.3 | 1.6 | 930 | 6.5 |
| C-R27-D | C-R27-D-0120 | N | R | | GW | 1/29/2020 | 4.6 | 0.25 | 8.3 | 1.6 | 940 | 14 |
| C-R27-S | C-R27-S-0120 | N | R | | GW | 1/29/2020 | 4.6 | 0.31 | 8.3 | 1.5 | 960 | 10 |
| C-TAZ-D | C-TAZ-D-0120 | N | R | | GW | 1/29/2020 | 4.5 | 0.29 | 8.3 | 1.6 | 920 | 6.5 |
| C-TAZ-S | C-TAZ-S-0120 | N | R | | GW | 1/29/2020 | 4.6 | 0.35 | 8.3 | 1.7 | 920 | 5.5 |
| R-19 | R-19-0120 | N | R | | GW | 1/30/2020 | 4.7 | 0.37 | 8.2 | 1.6 | 890 | < 5.0 |
| R-28 | R-28-0120 | N | R | | GW | 1/29/2020 | 4.7 | 0.32 | 8.3 | 1.6 | 980 | 8.5 |
| R63 | R63-0120 | N | R | | GW | 1/29/2020 | 4.4 | 0.3 | 8.3 | 1.6 | 920 | < 5.0 |
| RRB | RRB-0120 | N | G | | GW | 1/30/2020 | 7 | 1.1 | 7.8 | 2.3 | 2,800 | 15 |
| SW1 | SW1-0120 | N | G | | GW | 1/29/2020 | -- | -- | 7.8 | -- | 1,100 | -- |
| SW2 | SW2-0120 | N | G | | GW | 1/29/2020 | -- | -- | 7.3 | -- | 1,500 | -- |

**Notes:**
Analyses were performed by Asset Laboratory.
< = analyte not detected at the reporting limit shown
-- = data not analyzed or data not received

**Acronyms and Abbreviations:**
µg/L = micrograms per liter
µS/cm = microsiemens per centimeter
FD = field duplicate
G = grab sample
GW = groundwater
mg/L = milligrams per liter
N = Normal
R = river sample
SM = standard method
SW = solid waste

| Location ID | Sample ID | Sample Type | Sample Method | Parent Sample Code | Matrix | Sample Date | Alkalinity, total as CaCO3 Results by method SM 2320 B (mg/L) | Aluminum Results by method SW 6010B (µg/L) | Aluminum, dissolved Results by method SW 6010B (µg/L) | Ammonia as nitrogen Results by method A4500NH (mg/L)* | Antimony Results by method SW 6020 (µg/L) | Antimony, dissolved Results by method SW 6020 (µg/L) | Arsenic Results by method SW 6020 (µg/L) | Arsenic, dissolved Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRZ-17 | IRZ-17-SC-137-167 | N | G | | GW | 1/25/2020 | 46 | < 50 | 67 | 0.13 | < 2.5 | < 2.5 | < 0.50 | < 0.50 |
| IRZ-17 | IRZ-17-SC-36-57 | N | G | | GW | 1/26/2020 | 73 | < 50 | < 50 | 0.12 | < 0.50 | < 0.50 | < 0.10 | < 0.10 |
| IRZ-17 | DUP-1-012620 | FD | | IRZ-17-SC-36-57 | GW | 1/26/2020 | 72 | < 50 | < 50 | 0.22 | < 0.50 | < 0.50 | < 0.10 | < 0.10 |
| MW-11D | MW-11D-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-033 | MW-75-033-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-117 | MW-75-117-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-202 | MW-75-202-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-75-267-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-910-0120 | FD | | MW-75-267-0120 | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-337 | MW-75-337-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-76-039-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-911-0120 | FD | | MW-76-039-0120 | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-156 | MW-76-156-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-181 | MW-76-181-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-218 | MW-76-218-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-77-046 | MW-77-046-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-043 | MW-81-43-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | 0.08 | -- | -- | -- | -- |
| MW-81-098 | MW-81-98-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | 0.06 | -- | -- | -- | -- |
| MW-83-180 | MW-83-180-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-84-057 | MW-84-057-0120 | N | LF | | GW | 1/27/2020 | 86 | 560 | < 50 | -- | < 0.50 | < 0.50 | 1.5 | 1.2 |
| MW-84-095 | MW-84-095-0120 | N | LF | | GW | 1/27/2020 | 54 | 150 | < 50 | -- | < 0.50 | < 0.50 | < 0.10 | < 0.10 |
| MW-84-132 | MW-84-132-0120 | N | LF | | GW | 1/27/2020 | 53 | < 50 | < 50 | -- | < 0.50 | < 0.50 | < 0.50 | < 0.10 |
| MW-84-193 | MW-84-193-0120 | N | LF | | GW | 1/27/2020 | 46 | 120 | < 50 | -- | < 2.5 | < 0.50 | 1.6 | 4.9 |
| MW-87-109 | MW-87-109-0120 | N | LF | | GW | 1/27/2020 | 77 | 840 | 430 | -- | < 0.50 | < 0.50 | 0.95 | 0.74 |
| MW-87-139 | MW-87-139-0120 | N | LF | | GW | 1/27/2020 | 49 | < 50 | < 50 | -- | < 0.50 | < 0.50 | < 0.10 | < 0.10 |
| MW-87-192 | MW-87-192-0120 | N | LF | | GW | 1/27/2020 | 50 | 190 | < 50 | -- | < 0.50 | < 0.50 | < 0.50 | < 0.10 |
| MW-87-275 | MW-87-275-0120 | N | LF | | GW | 1/27/2020 | 44 | < 50 | < 50 | -- | < 0.50 | < 0.50 | 0.42 | 3.8 |
| MW-88-109 | MW-88-109-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-045 | MW-91-045-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | 0.16 | -- | -- | -- | -- |
| MW-91-120 | MW-91-120-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | 0.11 | -- | -- | -- | -- |
| MW-91-170 | MW-91-170-0120 | N | G | | GW | 1/28/2020 | -- | -- | -- | 0.08 | -- | -- | -- | -- |
| MW-91-320 | MW-91-320-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | 0.2 | -- | -- | -- | -- |
| MW-92-037 | MW-92-037-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | 0.07 | -- | -- | -- | -- |
| MW-92-072 | MW-912-0120 | FD | | MW-92-072-0120 | GW | 1/28/2020 | -- | -- | -- | 0.05 | -- | -- | -- | -- |
| MW-92-072 | MW-92-072-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | 0.06 | -- | -- | -- | -- |
| MW-92-102 | MW-92-102-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | 0.05 | -- | -- | -- | -- |
| MW-92-122 | MW-92-122-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | 0.05 | -- | -- | -- | -- |
| RB-4-SC | RB-4-SC-28-58 | N | G | | GW | 1/9/2020 | 180 | < 50 | < 50 | 0.8 | < 0.50 | < 0.50 | 4 | 4 |
| RB-4-SC | RB-4-SC-83-138 | N | G | | GW | 1/8/2020 | 140 | < 50 | < 50 | 0.08 | < 0.50 | < 0.50 | 0.312.1 | < 0.10 |

Preliminary Transition Monitoring Program 2019-12 Baseline Sampling

| Location ID | Sample ID | Sample Type | Sample Method | Parent Sample Code | Matrix | Sample Date | Barium Results by method SW 6020 (µg/L) | Barium, dissolved Results by method SW 6020 (µg/L) | Beryllium Results by method SW 6020 (µg/L) | Beryllium, dissolved Results by method SW 6020 (µg/L) | Boron Results by method SW 6010B (µg/L) | Boron, dissolved Results by method SW 6010B (mg/L) | Bromide Results by method EPA 300.0 (mg/L) | Cadmium Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRZ-17 | IRZ-17-SC-137-167 | N | G | | GW | 1/25/2020 | 54 | 60 | < 2.5 | < 0.50 | 1,400 | 1.3 | < 5.0 | < 2.5 |
| IRZ-17 | IRZ-17-SC-36-57 | N | G | | GW | 1/26/2020 | 52 | 55 | < 0.50 | < 0.50 | 1,000 | 1.1 | < 5.0 | < 2.5 |
| IRZ-17 | DUP-1-012620 | FD | | IRZ-17-SC-36-57 | GW | 1/26/2020 | 53 | 56 | < 0.50 | < 0.50 | 1,000 | 1 | < 5.0 | < 0.50 |
| MW-11D | MW-11D-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-033 | MW-75-033-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-117 | MW-75-117-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-202 | MW-75-202-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-75-267-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-910-0120 | FD | | MW-75-267-0120 | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-337 | MW-75-337-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-76-039-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-911-0120 | FD | | MW-76-039-0120 | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-156 | MW-76-156-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-181 | MW-76-181-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-218 | MW-76-218-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-77-046 | MW-77-046-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-043 | MW-81-43-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-098 | MW-81-98-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-83-180 | MW-83-180-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-84-057 | MW-84-057-0120 | N | LF | | GW | 1/27/2020 | 45 | 44 | < 0.50 | < 0.50 | 500 | 0.53 | < 1.0 | < 0.50 |
| MW-84-095 | MW-84-095-0120 | N | LF | | GW | 1/27/2020 | 200 | 220 | < 0.50 | < 0.50 | 540 | 0.55 | < 5.0 | < 0.50 |
| MW-84-132 | MW-84-132-0120 | N | LF | | GW | 1/27/2020 | 100 | 100 | < 12 | < 2.5 | 1,400 | 1.3 | < 5.0 | < 2.5 |
| MW-84-193 | MW-84-193-0120 | N | LF | | GW | 1/27/2020 | 53 | 58 | < 2.5 | < 2.5 | 1,800 | 1.8 | < 5.0 | < 2.5 |
| MW-87-109 | MW-87-109-0120 | N | LF | | GW | 1/27/2020 | 97 | 98 | < 0.50 | < 0.50 | 430 | 0.44 | < 1.0 | < 0.50 |
| MW-87-139 | MW-87-139-0120 | N | LF | | GW | 1/27/2020 | 250 | 270 | < 0.50 | < 0.50 | 600 | 0.68 | < 5.0 | < 0.50 |
| MW-87-192 | MW-87-192-0120 | N | LF | | GW | 1/27/2020 | 85 | 91 | < 2.5 | < 0.50 | 1,200 | 1.3 | < 5.0 | < 2.5 |
| MW-87-275 | MW-87-275-0120 | N | LF | | GW | 1/27/2020 | 69 | 76 | < 2.5 | < 0.50 | 1,500 | 1.5 | < 5.0 | < 2.5 |
| MW-88-109 | MW-88-109-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-045 | MW-91-045-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-120 | MW-91-120-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-170 | MW-91-170-0120 | N | G | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-320 | MW-91-320-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-037 | MW-92-037-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-912-0120 | FD | | MW-92-072-0120 | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-92-072-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-102 | MW-92-102-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-122 | MW-92-122-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| RB-4-SC | RB-4-SC-28-58 | N | G | | GW | 1/9/2020 | 51 | 49 | < 0.50 | < 0.50 | 190 | 0.17 | < 2.5 | < 0.50 |
| RB-4-SC | RB-4-SC-83-138 | N | G | | GW | 1/8/2020 | 38 | 37 | < 2.5 | < 2.5 | 1,300 | 1.1 | < 5.0 | < 0.50 |

| Location ID | Sample ID | Sample Type | Sample Method | Parent Sample Code | Matrix | Sample Date | Cadmium, dissolved Results by method SW 6020 (µg/L) | Calcium Results by method SW 6010B (µg/L) | Calcium, dissolved Results by method SW 6010B (mg/L) | Chloride Results by method EPA 300.0 (mg/L) | Chromium, Hexavalent Results by method EPA 218.6 (µg/L) | Chromium, total Results by method SW 6020 (µg/L) | Chromium, total dissolved Results by method SW 6020 (µg/L) | Cobalt Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRZ-17 | IRZ-17-SC-137-167 | N | G | | GW | 1/25/2020 | < 2.5 | 420,000 | 420 | 6400 | 170 | 160 | 160 | < 2.5 |
| IRZ-17 | IRZ-17-SC-36-57 | N | G | | GW | 1/26/2020 | < 0.50 | 220,000 | 210 | 2200 | 21 | 20 | 19 | < 0.50 |
| IRZ-17 | DUP-1-012620 | FD | | IRZ-17-SC-36-57 | GW | 1/26/2020 | < 0.50 | 220,000 | 210 | 2300 | 21 | 20 | 20 | < 0.50 |
| MW-11D | MW-11D-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | 390 | -- | -- | -- |
| MW-75-033 | MW-75-033-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | 27 | -- | -- | -- |
| MW-75-117 | MW-75-117-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | 5.1 | -- | -- | -- |
| MW-75-202 | MW-75-202-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | < 1.0 | -- | -- | -- |
| MW-75-267 | MW-75-267-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | < 1.0 | -- | -- | -- |
| MW-75-267 | MW-910-0120 | FD | | MW-75-267-0120 | GW | 1/30/2020 | -- | -- | -- | -- | < 1.0 | -- | -- | -- |
| MW-75-337 | MW-75-337-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | < 1.0 | -- | -- | -- |
| MW-76-039 | MW-76-039-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | 44 | -- | -- | -- |
| MW-76-039 | MW-911-0120 | FD | | MW-76-039-0120 | GW | 1/29/2020 | -- | -- | -- | -- | 44 | -- | -- | -- |
| MW-76-156 | MW-76-156-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | 1.8 | -- | -- | -- |
| MW-76-181 | MW-76-181-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | 890 | -- | -- | -- |
| MW-76-218 | MW-76-218-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | 8.4 | -- | -- | -- |
| MW-77-046 | MW-77-046-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | 1.1 | -- | -- | -- |
| MW-81-043 | MW-81-43-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | 1.8 | -- | -- | -- |
| MW-81-098 | MW-81-98-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | < 0.20 | -- | -- | -- |
| MW-83-180 | MW-83-180-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | 7.7 | -- | -- | -- |
| MW-84-057 | MW-84-057-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | 70,000 | 68 | 360 | 31 | 35 | 29 | < 0.50 |
| MW-84-095 | MW-84-095-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | 260,000 | 250 | 1,700 | 1.2 | 2.1 | 1.3 | < 0.50 |
| MW-84-132 | MW-84-132-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | 240,000 | 240 | 3,000 | < 0.20 | 2.6 | < 1.0 | < 0.50 |
| MW-84-193 | MW-84-193-0120 | N | LF | | GW | 1/27/2020 | < 2.5 | 180,000 | 180 | 4,100 | 43 | 45 | 39 | < 2.5 |
| MW-87-109 | MW-87-109-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | 97,000 | 90 | 530 | 28 | 30 | 27 | < 0.50 |
| MW-87-139 | MW-87-139-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | 360,000 | 370 | 2,200 | 9.5 | 8.6 | 8.3 | < 0.50 |
| MW-87-192 | MW-87-192-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | 220,000 | 220 | 2,800 | 0.44 | 2.9 | < 1.0 | < 0.50 |
| MW-87-275 | MW-87-275-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | 230,000 | 230 | 3,500 | < 1.0 | 1.3 | < 1.0 | < 0.50 |
| MW-88-109 | MW-88-109-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | 49 | -- | -- | -- |
| MW-91-045 | MW-91-045-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | < 0.20 | -- | -- | -- |
| MW-91-120 | MW-91-120-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | 4.4 | -- | -- | -- |
| MW-91-170 | MW-91-170-0120 | N | G | | GW | 1/28/2020 | -- | -- | -- | -- | 1.3 | -- | -- | -- |
| MW-91-320 | MW-91-320-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | < 1.0 | -- | -- | -- |
| MW-92-037 | MW-92-037-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | < 0.20 | -- | -- | -- |
| MW-92-072 | MW-912-0120 | FD | | MW-92-072-0120 | GW | 1/28/2020 | -- | -- | -- | -- | < 0.20 | -- | -- | -- |
| MW-92-072 | MW-92-072-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | < 0.20 | -- | -- | -- |
| MW-92-102 | MW-92-102-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | < 0.20 | -- | -- | -- |
| MW-92-122 | MW-92-122-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | < 1.0 | -- | -- | -- |
| RB-4-SC | RB-4-SC-28-58 | N | G | | GW | 1/9/2020 | < 0.50 | 80,000 | 75 | 170 | < 0.20 | < 1.0 | < 1.0 | < 0.50 |
| RB-4-SC | RB-4-SC-83-138 | N | G | | GW | 1/8/2020 | < 0.50 | 150,000 | 130 | 2,700 | 0.91 | 1.5 | 1.1 | < 0.50 |

| Location ID | Sample ID | Sample Type | Sample Method | Parent Sample Code | Matrix | Sample Date | Cobalt, dissolved Results by method SW 6020 (µg/L) | Copper Results by method SW 6020 (µg/L) | Copper, dissolved Results by method SW 6020 (µg/L) | Fluoride Results by method EPA 300.0 (mg/L) | Iron Results by method SW 6010B (µg/L) | Iron, dissolved Results by method SW 6010B (µg/L) | Lead Results by method SW 6020 (µg/L) | Lead, dissolved Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRZ-17 | IRZ-17-SC-137-167 | N | G | | GW | 1/25/2020 | < 0.50 | < 5.0 | < 5.0 | 3.2 | 65 | 72 | < 5.0 | < 5.0 |
| IRZ-17 | IRZ-17-SC-36-57 | N | G | | GW | 1/26/2020 | < 0.50 | < 1.0 | < 1.0 | 3.3 | < 20 | < 20 | < 1.0 | < 1.0 |
| IRZ-17 | DUP-1-012620 | FD | | IRZ-17-SC-36-57 | GW | 1/26/2020 | < 0.50 | < 1.0 | 5.2 | 3.4 | < 20 | < 20 | < 1.0 | < 1.0 |
| MW-11D | MW-11D-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-033 | MW-75-033-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-117 | MW-75-117-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-202 | MW-75-202-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-75-267-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-910-0120 | FD | | MW-75-267-0120 | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-337 | MW-75-337-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-76-039-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-911-0120 | FD | | MW-76-039-0120 | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-156 | MW-76-156-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-181 | MW-76-181-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-218 | MW-76-218-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-77-046 | MW-77-046-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-043 | MW-81-43-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-098 | MW-81-98-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-83-180 | MW-83-180-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-84-057 | MW-84-057-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | < 1.0 | < 1.0 | 1.9 | 870 | 50 | < 1.0 | < 1.0 |
| MW-84-095 | MW-84-095-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | 2.1 | < 1.0 | 3.1 | 250 | 55 | < 1.0 | < 1.0 |
| MW-84-132 | MW-84-132-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | < 5.0 | < 1.0 | 4.2 | 160 | 120 | < 5.0 | < 5.0 |
| MW-84-193 | MW-84-193-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | < 5.0 | < 1.0 | 4.7 | 160 | 37 | < 5.0 | < 5.0 |
| MW-87-109 | MW-87-109-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | < 1.0 | < 1.0 | 2.4 | 1300 | 1000 | < 1.0 | < 1.0 |
| MW-87-139 | MW-87-139-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | < 1.0 | < 1.0 | 2.6 | 38 | < 20 | < 1.0 | < 1.0 |
| MW-87-192 | MW-87-192-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | < 5.0 | < 1.0 | 3.9 | 590 | 350 | < 1.0 | < 1.0 |
| MW-87-275 | MW-87-275-0120 | N | LF | | GW | 1/27/2020 | < 0.50 | < 5.0 | < 1.0 | 4.5 | < 20 | < 20 | < 5.0 | < 5.0 |
| MW-88-109 | MW-88-109-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-045 | MW-91-045-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-120 | MW-91-120-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-170 | MW-91-170-0120 | N | G | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-320 | MW-91-320-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-037 | MW-92-037-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-912-0120 | FD | | MW-92-072-0120 | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-92-072-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-102 | MW-92-102-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-122 | MW-92-122-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| RB-4-SC | RB-4-SC-28-58 | N | G | | GW | 1/9/2020 | < 0.50 | < 1.0 | < 1.0 | 0.62 | 340 | 360 | < 1.0 | < 1.0 |
| RB-4-SC | RB-4-SC-83-138 | N | G | | GW | 1/8/2020 | < 0.50 | 3.6 | < 1.0 | 2.6 | 180 | 230 | < 5.0 | < 5.0 |

| Location ID | Sample ID | Sample Type | Sample Method | Parent Sample Code | Matrix | Sample Date | Magnesium Results by method SW 6010B (µg/L) | Magnesium, dissolved Results by method SW 6010B (mg/L) | Manganese Results by method SW 6020 (µg/L) | Manganese, dissolved Results by method SW 6020 (µg/L) | Mercury Results by method EPA 7470A (µg/L) | Mercury, dissolved Results by method EPA 7470A (µg/L) | Molybdenum Results by method SW 6020 (µg/L) | Molybdenum, dissolved Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRZ-17 | IRZ-17-SC-137-167 | N | G | | GW | 1/25/2020 | 39,000 | 40 | 120 | 120 | < 0.20 | < 0.20 | 29 | 28 |
| IRZ-17 | IRZ-17-SC-36-57 | N | G | | GW | 1/26/2020 | 34,000 | 33 | 11 | 11 | < 0.20 | < 0.20 | 13 | 13 |
| IRZ-17 | DUP-1-012620 | FD | | IRZ-17-SC-36-57 | GW | 1/26/2020 | 34,000 | 32 | 10 | 12 | < 0.20 | < 0.20 | 13 | 13 |
| MW-11D | MW-11D-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-033 | MW-75-033-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-117 | MW-75-117-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-202 | MW-75-202-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-75-267-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-910-0120 | FD | | MW-75-267-0120 | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-337 | MW-75-337-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-76-039-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-911-0120 | FD | | MW-76-039-0120 | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-156 | MW-76-156-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-181 | MW-76-181-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-218 | MW-76-218-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-77-046 | MW-77-046-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-043 | MW-81-43-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-098 | MW-81-98-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-83-180 | MW-83-180-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-84-057 | MW-84-057-0120 | N | LF | | GW | 1/27/2020 | 13,000 | 12 | 20 | 2.2 | < 0.20 | < 0.20 | 20 | 19 |
| MW-84-095 | MW-84-095-0120 | N | LF | | GW | 1/27/2020 | 49,000 | 48 | 66 | 60 | < 0.20 | < 0.20 | 6.1 | 6.3 |
| MW-84-132 | MW-84-132-0120 | N | LF | | GW | 1/27/2020 | 24,000 | 24 | 120 | 120 | < 0.20 | < 0.20 | 29 | 29 |
| MW-84-193 | MW-84-193-0120 | N | LF | | GW | 1/27/2020 | 11,000 | 11 | 44 | 37 | < 0.20 | < 0.20 | 45 | 46 |
| MW-87-109 | MW-87-109-0120 | N | LF | | GW | 1/27/2020 | 14,000 | 13 | 86 | 32 | < 0.20 | < 0.20 | 10 | 10 |
| MW-87-139 | MW-87-139-0120 | N | LF | | GW | 1/27/2020 | 66,000 | 66 | 9.3 | 7.2 | < 0.20 | < 0.20 | 4.5 | 4.4 |
| MW-87-192 | MW-87-192-0120 | N | LF | | GW | 1/27/2020 | 23,000 | 24 | 51 | 46 | < 0.20 | < 0.20 | 26 | 27 |
| MW-87-275 | MW-87-275-0120 | N | LF | | GW | 1/27/2020 | 19,000 | 19 | 23 | 20 | < 0.20 | < 0.20 | 41 | 42 |
| MW-88-109 | MW-88-109-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-045 | MW-91-045-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-120 | MW-91-120-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-170 | MW-91-170-0120 | N | G | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-320 | MW-91-320-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-037 | MW-92-037-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-912-0120 | FD | | MW-92-072-0120 | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-92-072-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-102 | MW-92-102-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-122 | MW-92-122-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| RB-4-SC | RB-4-SC-28-58 | N | G | | GW | 1/9/2020 | 22,000 | 22 | 120 | 120 | < 0.20 | < 0.20 | 6.1 | 6 |
| RB-4-SC | RB-4-SC-83-138 | N | G | | GW | 1/8/2020 | 23,000 | 19 | 170 | 170 | < 0.20 | < 0.20 | 53 | 53 |

| Location ID | Sample ID | Sample Type | Sample Method | Parent Sample Code | Matrix | Sample Date | Nickel Results by method SW 6020 (µg/L) | Nickel, dissolved Results by method SW 6020 (µg/L) | Nitrate/Nitrite as Nitrogen Results by method SM 4500-NO3 F (mg/L) | Potassium, dissolved Results by method SW 6010B (mg/L) | Selenium Results by method SW 6020 (µg/L) | Selenium, dissolved Results by method SW 6020 (µg/L) | Silver Results by method SW 6020 (µg/L) | Silver, dissolved Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRZ-17 | IRZ-17-SC-137-167 | N | G | | GW | 1/25/2020 | < 5.0 | < 5.0 | 1.7 | 46 | < 2.5 | < 2.5 | < 2.5 | < 2.5 |
| IRZ-17 | IRZ-17-SC-36-57 | N | G | | GW | 1/26/2020 | < 1.0 | < 1.0 | 1.6 | 13 | < 2.5 | 1.1 | < 2.5 | < 0.50 |
| IRZ-17 | DUP-1-012620 | FD | | IRZ-17-SC-36-57 | GW | 1/26/2020 | < 1.0 | < 1.0 | 1.7 | 12 | 1.2 | 1.2 | < 0.50 | < 0.50 |
| MW-11D | MW-11D-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-033 | MW-75-033-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-117 | MW-75-117-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-202 | MW-75-202-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-75-267-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-910-0120 | FD | | MW-75-267-0120 | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-337 | MW-75-337-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-76-039-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-911-0120 | FD | | MW-76-039-0120 | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-156 | MW-76-156-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-181 | MW-76-181-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-218 | MW-76-218-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-77-046 | MW-77-046-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-043 | MW-81-43-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-098 | MW-81-98-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-83-180 | MW-83-180-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-84-057 | MW-84-057-0120 | N | LF | | GW | 1/27/2020 | < 1.0 | < 1.0 | 9.9 | 6.4 | 5.4 | 5.2 | < 0.50 | < 0.50 |
| MW-84-095 | MW-84-095-0120 | N | LF | | GW | 1/27/2020 | < 1.0 | < 1.0 | 1.1 | 12 | 0.84 | 0.88 | < 0.50 | < 0.50 |
| MW-84-132 | MW-84-132-0120 | N | LF | | GW | 1/27/2020 | < 5.0 | < 1.0 | 0.39 | 21 | < 2.5 | 0.76 | < 2.5 | < 0.50 |
| MW-84-193 | MW-84-193-0120 | N | LF | | GW | 1/27/2020 | < 5.0 | 1.5 | 1 | 32 | < 2.5 | < 2.5 | < 2.5 | < 2.5 |
| MW-87-109 | MW-87-109-0120 | N | LF | | GW | 1/27/2020 | < 1.0 | < 1.0 | 7.7 | 7.8 | 6.8 | 6.8 | < 0.50 | < 0.50 |
| MW-87-139 | MW-87-139-0120 | N | LF | | GW | 1/27/2020 | < 1.0 | < 1.0 | 1.2 | 16 | 0.83 | 0.89 | < 0.50 | < 0.50 |
| MW-87-192 | MW-87-192-0120 | N | LF | | GW | 1/27/2020 | < 5.0 | < 1.0 | 0.66 | 18 | < 2.5 | 0.96 | < 2.5 | < 0.50 |
| MW-87-275 | MW-87-275-0120 | N | LF | | GW | 1/27/2020 | < 5.0 | < 1.0 | 0.77 | 24 | < 2.5 | 1 | < 2.5 | < 0.50 |
| MW-88-109 | MW-88-109-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-045 | MW-91-045-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-120 | MW-91-120-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-170 | MW-91-170-0120 | N | G | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-320 | MW-91-320-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-037 | MW-92-037-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-912-0120 | FD | | MW-92-072-0120 | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-92-072-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-102 | MW-92-102-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-122 | MW-92-122-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- |
| RB-4-SC | RB-4-SC-28-58 | N | G | | GW | 1/9/2020 | < 1.0 | < 1.0 | < 0.050 | 4.6 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| RB-4-SC | RB-4-SC-83-138 | N | G | | GW | 1/8/2020 | < 1.0 | < 1.0 | 0.085 | 15 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |

| Location ID | Sample ID | Sample Type | Sample Method | Parent Sample Code | Matrix | Sample Date | Sodium, dissolved Results by method SW 6010B (mg/L) | Sulfate Results by method EPA 300.0 (mg/L) | Thallium Results by method SW 6020 (µg/L) | Thallium, dissolved Results by method SW 6020 (µg/L) | Total dissolved solids Results by method SM 2540 C (mg/L) | Total organic carbon Results by method SM 5310 C (mg/L) | TPH as diesel Results by method SW 8015B (µg/L) | TPH as motor oil Results by method SW 8015B (µg/L) | Vanadium Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRZ-17 | IRZ-17-SC-137-167 | N | G | | GW | 1/25/2020 | 6,300 | 990 | < 2.5 | < 2.5 | 13,000 | < 1.0 | < 52 | < 52 | < 5.0 |
| IRZ-17 | IRZ-17-SC-36-57 | N | G | | GW | 1/26/2020 | 1,200 | 390 | < 0.50 | < 0.50 | 4,400 | < 1.0 | < 52 | < 52 | 5.6 |
| IRZ-17 | DUP-1-012620 | FD | | IRZ-17-SC-36-57 | GW | 1/26/2020 | 1,200 | 400 | < 0.50 | < 0.50 | 4,300 | < 1.0 | < 52 | < 52 | 5.6 |
| MW-11D | MW-11D-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-033 | MW-75-033-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-117 | MW-75-117-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-202 | MW-75-202-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-75-267-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-267 | MW-910-0120 | FD | | MW-75-267-0120 | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-75-337 | MW-75-337-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-76-039-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-039 | MW-911-0120 | FD | | MW-76-039-0120 | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-156 | MW-76-156-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-181 | MW-76-181-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-76-218 | MW-76-218-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-77-046 | MW-77-046-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-043 | MW-81-43-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-81-098 | MW-81-98-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-83-180 | MW-83-180-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-84-057 | MW-84-057-0120 | N | LF | | GW | 1/27/2020 | 240 | 210 | < 0.50 | < 0.50 | 1,100 | < 1.0 | -- | -- | 8 |
| MW-84-095 | MW-84-095-0120 | N | LF | | GW | 1/27/2020 | 640 | 230 | 1 | 1 | 3,800 | < 1.0 | -- | -- | 4 |
| MW-84-132 | MW-84-132-0120 | N | LF | | GW | 1/27/2020 | 1,800 | 370 | < 2.5 | < 2.5 | 6,000 | < 10 | -- | -- | 4.4 |
| MW-84-193 | MW-84-193-0120 | N | LF | | GW | 1/27/2020 | 3,200 | 530 | < 2.5 | < 2.5 | 8,000 | < 1.0 | -- | -- | 7.1 |
| MW-87-109 | MW-87-109-0120 | N | LF | | GW | 1/27/2020 | 290 | 180 | < 0.50 | < 0.50 | 1,300 | < 1.0 | -- | -- | 4.5 |
| MW-87-139 | MW-87-139-0120 | N | LF | | GW | 1/27/2020 | 800 | 330 | < 0.50 | < 0.50 | 5,000 | < 1.0 | -- | -- | 3.2 |
| MW-87-192 | MW-87-192-0120 | N | LF | | GW | 1/27/2020 | 2,000 | 340 | < 0.50 | < 0.50 | 5,500 | < 1.0 | -- | -- | 6.1 |
| MW-87-275 | MW-87-275-0120 | N | LF | | GW | 1/27/2020 | 2,700 | 430 | < 2.5 | < 2.5 | 7,100 | < 1.0 | -- | -- | 4.1 |
| MW-88-109 | MW-88-109-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-045 | MW-91-045-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-120 | MW-91-120-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-170 | MW-91-170-0120 | N | G | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-91-320 | MW-91-320-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-037 | MW-92-037-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-912-0120 | FD | | MW-92-072-0120 | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-072 | MW-92-072-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-102 | MW-92-102-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-92-122 | MW-92-122-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| RB-4-SC | RB-4-SC-28-58 | N | G | | GW | 1/9/2020 | 140 | 220 | < 0.50 | < 0.50 | 770 | < 1.0 | < 51 | < 51 | < 1.0 |
| RB-4-SC | RB-4-SC-83-138 | N | G | | GW | 1/8/2020 | 1,600 | 810 | < 2.5 | < 2.5 | 6,000 | < 1.0 | < 52 | < 52 | < 1.0 |

| Location ID | Sample ID | Sample Type | Sample Method | Parent Sample Code | Matrix | Sample Date | Vanadium, dissolved Results by method SW 6020 (µg/L) | Zinc Results by method SW 6020 (µg/L) | Zinc, dissolved Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|---|---|---|
| IRZ-17 | IRZ-17-SC-137-167 | N | G | | GW | 1/25/2020 | 3 | 53 | 71 |
| IRZ-17 | IRZ-17-SC-36-57 | N | G | | GW | 1/26/2020 | 5.5 | 21 | 23 |
| IRZ-17 | DUP-1-012620 | FD | | IRZ-17-SC-36-57 | GW | 1/26/2020 | 5.6 | 22 | 28 |
| MW-11D | MW-11D-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- |
| MW-75-033 | MW-75-033-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- |
| MW-75-117 | MW-75-117-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- |
| MW-75-202 | MW-75-202-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- |
| MW-75-267 | MW-75-267-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- |
| MW-75-267 | MW-910-0120 | FD | | MW-75-267-0120 | GW | 1/30/2020 | -- | -- | -- |
| MW-75-337 | MW-75-337-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- |
| MW-76-039 | MW-76-039-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- |
| MW-76-039 | MW-911-0120 | FD | | MW-76-039-0120 | GW | 1/29/2020 | -- | -- | -- |
| MW-76-156 | MW-76-156-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- |
| MW-76-181 | MW-76-181-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- |
| MW-76-218 | MW-76-218-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- |
| MW-77-046 | MW-77-046-0120 | N | LF | | GW | 1/30/2020 | -- | -- | -- |
| MW-81-043 | MW-81-43-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- |
| MW-81-098 | MW-81-98-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- |
| MW-83-180 | MW-83-180-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- |
| MW-84-057 | MW-84-057-0120 | N | LF | | GW | 1/27/2020 | 6.7 | < 10 | < 10 |
| MW-84-095 | MW-84-095-0120 | N | LF | | GW | 1/27/2020 | 3.7 | < 10 | < 10 |
| MW-84-132 | MW-84-132-0120 | N | LF | | GW | 1/27/2020 | 4.2 | < 50 | < 10 |
| MW-84-193 | MW-84-193-0120 | N | LF | | GW | 1/27/2020 | 6.7 | < 50 | < 10 |
| MW-87-109 | MW-87-109-0120 | N | LF | | GW | 1/27/2020 | 3.2 | 28 | 22 |
| MW-87-139 | MW-87-139-0120 | N | LF | | GW | 1/27/2020 | 3.2 | < 10 | < 10 |
| MW-87-192 | MW-87-192-0120 | N | LF | | GW | 1/27/2020 | 5.7 | < 50 | < 10 |
| MW-87-275 | MW-87-275-0120 | N | LF | | GW | 1/27/2020 | 4 | < 50 | < 10 |
| MW-88-109 | MW-88-109-0120 | N | LF | | GW | 1/29/2020 | -- | -- | -- |
| MW-91-045 | MW-91-045-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- |
| MW-91-120 | MW-91-120-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- |
| MW-91-170 | MW-91-170-0120 | N | G | | GW | 1/28/2020 | -- | -- | -- |
| MW-91-320 | MW-91-320-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- |
| MW-92-037 | MW-92-037-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- |
| MW-92-072 | MW-912-0120 | FD | | MW-92-072-0120 | GW | 1/28/2020 | -- | -- | -- |
| MW-92-072 | MW-92-072-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- |
| MW-92-102 | MW-92-102-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- |
| MW-92-122 | MW-92-122-0120 | N | LF | | GW | 1/28/2020 | -- | -- | -- |
| RB-4-SC | RB-4-SC-28-58 | N | G | | GW | 1/9/2020 | < 1.0 | 54 | 43 |
| RB-4-SC | RB-4-SC-83-138 | N | G | | GW | 1/8/2020 | 1.6 | 68 | 75 |

**Notes:**
*Analyses were performed by Pace Analytical. All other samples were analyzed by Asset Laboratory.
< = analyte not detected at the reporting limit shown
-- = data not anlayzed or data not received from lab

**Acronyms and Abbreviations:**
µg/L = micrograms per liter
FD = field duplicate
G = grab sample
GW = groundwater
LF = low flow
mg/L = milligrams per liter
N = Normal
SW = solid waste
SM = standard method

Preliminary Transition Monitoring Program 2020-01 Post Development Sampling

| Location ID | Sample ID | Sample Type | Matrix | Sample Date | Chromium, Hexavalent Results by method EPA 218.6 (µg/L) | Chromium, total dissolved Results by method SW 6020 (µg/L) |
|---|---|---|---|---|---|---|
| IRZ-17-165 | IRZ-17-165-012420 | N | GW | 1/24/2020 | 130 | 120 |
| IRZ-17-52 | IRZ-17-52-011620 | N | GW | 1/16/2020 | 20 | 20 |
| MW-81-043 | MW-81-43-010820 | N | GW | 1/8/2020 | < 0.20 | < 1.0 |
| RB-2 | RB-2-103-013020 | N | GW | 1/30/2020 | < 0.20 | < 1.0 |
| RB-2 | RB-2-238-013020 | N | GW | 1/30/2020 | < 1.0 | 1 |

**Notes:**
Analyses were performed by Asset Laboratory.
< = analyte not detected at the reporting limit shown

**Acronyms and Abbreviations:**
µg/L = micrograms per liter
EPA = Environmental Protection Agency
GW = groundwater
N = Normal
SW = solid waste