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July 10, 2019

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: June 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California (Document ID: TPK Monthly Progress Rpt June 2019 20190710 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) (¶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 April 2019 as well as activities planned for the next six weeks (July 7 through August 17, 2019), and presents available results from sampling and testing performed in June 2019.

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.

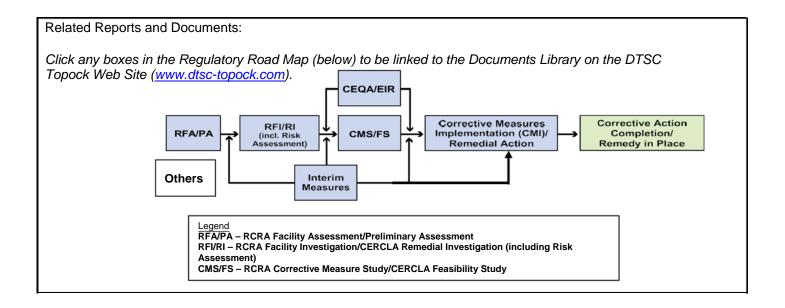
Please note that since activities conducted to comply with the project's Applicable or Relevant and Appropriate Requirement (ARARs) and the Subsequent Environmental Impact Report (SEIR) mitigation measures are currently reported in separate compliance reports, this information is not repeated in the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

Monthly progress reports will be submitted to DTSC and DOI by the 10<sup>th</sup> 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 eighth 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: June 2019 Monthly Progress Report for the Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California Submitting Agency: DOI, DTSC Final Document?  Ves   No	Date of Document: 7/10/2019 Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E
Priority Status:	Action Required:
Is this time critical? □ Yes ⊠ No	☐ Information Only ☐ Review & Input
Type of Document: □ Draft ⊠ Report □ Letter □ Memo □ Other / Explain:	☐ Other / Explain:
<ul> <li>What does this information pertain to?</li> <li>Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)</li> <li>RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)</li> <li>Corrective Measures Study (CMS)/Feasibility</li> </ul>	Is this a Regulatory Requirement? ☑ Yes □ No If no, why is the document needed?
<ul> <li>Corrective Measures Study (CMS)/Feasibility Study (FS)</li> <li>Corrective Measures Implementation (CMI)/ Remedial Action(RA)</li> <li>California Environmental Quality Act (CEQA)/ Environmental Impact Report (EIR)</li> <li>Interim Measures</li> <li>Other / Explain:</li> </ul>	
What is the consequence of NOT doing this item? What is the consequence of DOING this item? 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:
Brief Summary of attached document:	
This monthly report describes activities taken during June 2019 and 17, 2019) and presents available results from sampling and testing deviations from the approved design documents and/or the <i>Constru</i> has proposed to the California Department of Toxic Substances Co that have been approved by DTSC and DOI. This report also highlin performed and activities planned at the Topock Compressor Station DTSC's 2019 Community Outreach Plan, as well as contacts with the interest groups, if any.	in June 2019. In addition, this report discusses material <i>action/ Remedial Action Work Plan</i> (C/RAWP), if any, that PG&E ontrol (DTSC) and the U.S. Department of the Interior (DOI) or ghts key personnel changes, if any, and summarizes activities in support of DOI's 2012 Community Involvement Plan and
Written by: Pacific Gas and Electric Company	
Recommendations: Provide input to PG&E.	
How is this information related to the Final Remedy or Regulatory F This submittal is required in compliance with the CACA, CD, and pu	-
Other requirements of this information? None.	





# June 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup

PG&E Topock Compressor Station Needles, California

Document ID: TPK\_Monthly\_Progress\_Rpt\_June\_20190710\_Final

July 2019

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

On Behalf of Pacific Gas and Electric Company





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# **Acronyms and Abbreviations**

µg/m³	micrograms per cubic meter
AOC	Area of Concern
APE	Area of Potential Effect
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
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
DOI	United States Department of the Interior
DTSC	California Department of Toxic Substances Control
ERTC	Environmental Release to Construct
FCR	field contact representative
LOC	level of concern
NTH	National Trails Highway
PBA	Programmatic Biological Agreement
PG&E	Pacific Gas and Electric Company
RCRA	Resource Conservation and Recovery Act
SEIR	Subsequent Environmental Impact Report
SPY	Soil Processing Yard
SWPPP	Stormwater Pollution Prevention Plan
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 electronic progress reports during construction of the remedial action and 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 above 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 ninth of the monthly progress reports that will be submitted to DOI and DOI for the duration of the remedy construction and startup. This monthly progress report documents activities during June 2019, and follows the content and format described in Exhibit 2.6-2 of the approved C/RAWP. The report is organized as follows:

- Section 2.1 describes 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.
- Section 2.2 summarizes 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 2.3 describes the planned activities for the next six weeks (construction activities, sampling and monitoring events, etc.).
- Section 2.4 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 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 Description of Activities and Work Completed

## 2.1.1 Work Completed

Highlights of key activities related to the construction of the groundwater remedy completed during June 2019 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), Tribes, and the Technical Review Committee (TRC). PG&E continues to send these weekly emails to date. As of June 30, 2019, a total of 51 six-week look-ahead schedule emails have been sent. Of those, five six-week look-ahead schedule emails have been sent. Of those, five six-week look-ahead schedule emails were sent in June 2019 (on June 1, 9, 16, 23, and 30, 2019).
- On August 10, 2018, PG&E issued the first Environmental Release to Construct (ERTC) to contractors. As of June 30, 2019, a total of 46 ERTCs were issued for mobilization and construction activities (see Table 2-1). **Of those, one ERTC was issued in June 2019.**
- 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
  June 2019, a total of 25 daily construction activities lists were published and discussed at the
  morning tailboards.
- In June 2019, PG&E completed the following construction activities (see Figures 2-1 and 2-2 for locations of key areas and wells, as well as select photos in **Attachment A**):
  - Non-Well Construction Activities:
    - a) Completed hydrostatic testing of Pipeline C Segments C3, C4, C5 in the floodplain. Repaired a leak in the dual containment pipe in Segment C5 and re-tested.
    - b) Installed concrete skirts along Pipeline C Segments C3-C5 cleanouts, valve boxes, and leak detection.
    - c) Placed surface material (crushed rocks) and installed fence posts/fence fabric/barbed wire at the Construction Headquarters (CHQ).
    - d) Installed V-ditch at the CHQ. Placed K-rail at one location along the southern fence line of the CHQ to prevent potential damage if large rocks/boulders from adjacent hillside were to run onto the CHQ.
    - e) Potholed along remedy pipeline alignments B, C Segment C6 (on the MW-20 Bench), and F in preparation for pipeline installation.
  - Pilot Boring/Well Installation Activities (Rotosonic drilling):
    - a) Complete site preparation for MW-X and MW-Y' in Arizona, including installation of exclusionary fencing at MW-Y'.
    - b) Completed well installation at MW-M, MW-O, and MW-R.
    - c) Completed development at MW-M.
  - Remedy Well Installation Activities (Dual Rotary drilling):
    - a) Completed vegetation clearance to facilitate access for dual rotary rig to RB-5.
    - b) Complete improvement of access road to RB-2.



- c) Completed remedy well installation at IRZ-23.
- d) Completed development at IRZ-20.
- e) See Attachment B for available information such as boring logs and water analytical results.
- Baseline/Opportunistic Soil Sampling Activities:
  - Pursuant to the Baseline Soil Sampling and Analysis Plan (Appendix A of the Soil Management Plan [which is Appendix L of the C/RAWP]), one soil sample was collected at approximately 1 foot below ground surface (bgs) at MW-X (sampled on June 11, 2019), MW-Y' (sampled on June 12, 2019), and MW-C and MW-H (both sampled on June 15, 2019).
  - See Attachment C for information about soil sampling locations and soil analytical results that are available at this time.
- Perimeter Air Sampling Activities:
  - a) Dust monitoring/observation was conducted through June 30, 2019 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 Areas of Concern (AOCs) within the construction footprint where hexavalent chromium concentrations in soil have been historically reported. In June 2019, two air sampling events occurred during the installation of IRZ-23 (on MW-20 Bench) by dual rotary drilling on June 17 and 18, 2019.
  - c) See **Attachment D** for information about previous air sampling locations and air analytical results.
- Noise Monitoring Activities:
  - Noise monitoring is conducted at pre-approved locations closest to the construction activities. Through June 30, 2019, noise monitoring was conducted at the following pre-approved locations:
    - Location west of the mobile home park at Moabi Regional Park,
    - Location Maze B Combined Area 1/2,
    - Location Maze C Area 1, and
    - Location mobile home park at Topock Marina.
  - b) See **Attachment E** for information about pre-approved noise monitoring locations and a summary of noise monitoring data available to date.

### 2.1.2 Work Already Underway and During Implementation

As of June 30, 2019, PG&E has started and will continue to perform the following activities:

- Continue to install electrical pull boxes along Pipeline C Segments C3-C5.
- Continue to install the aggregate base access road in the floodplain.
- Continue to drill and install well at MW-C, MW-X, and RB-5.
- Complete site preparation for drilling at MW-H in the floodplain.
- Complete sonic drilling of pilot hole at RB-2.
- Continue to develop MW-B and MW-R.
- Continue to test at IRZ-20.
- Continue to install temporary service water and wastewater pipelines for dual rotary drilling at RB well locations.



- 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 Soil Management Plan (Appendix L of the C/RAWP).

### 2.1.3 Freshwater Usage, Waste Generation and Management

As of June 30, 2019, the volumes of freshwater used for remedy construction and waste streams generated from remedy construction (starting on October 2, 2018) are as follows:

### Freshwater Usage and Wastewater Management

- An approximate total of 2,235,550 gallons (6.86 acre-feet) of freshwater was used, of which an approximate 3.6 percent was for pilot boring/well installation and general construction, 1.4 percent for hydrostatic testing of pipeline, and 95 percent was for fugitive dust suppression. Of this amount, 690,350 gallons of freshwater was used in June 2019.
- An approximate total of 45,600 gallons of hydrostatic testing water was discharged to land. Of this amount, 1,100 gallons were discharged in June 2019. The discharge complies with the substantive requirements of State Water Resources Control Board (SWRCB) Water Quality Order 2003-0003-DWQ. See Attachment F for approximate volume at each approved discharge location and date of each discharge.
- An approximate total of 124,946 gallons of wastewater generated from drilling operations were discharged to Compressor Station evaporation pond #4. In June 2019, a total of 19 truck loads of wastewater was discharged to pond #4. The discharge complies with the Waste Discharge Requirements (WDRs) of the California Regional Water Quality Control Board (CRWQCB), Colorado River Basin Region, 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 is characterized and managed in accordance with the approved Waste Management Plan (Appendix R of the C/RAWP).

### **Displaced Materials/Soils/Clay**

- Approximately 248.3 cubic yards of drill cuttings were generated from well drilling and geotechnical investigation. Of those, approximately 1.3 cubic yards are clay from Pipeline F geotechnical investigation (using hollow stem auger). Drill cuttings are typically stored in roll-off bins with closed tops. Samples are collected from the bins for characterization and analyzed in accordance with the Soil Management Plan.
  - The clay collected from the Pipeline F geotechnical investigation is stockpiled at the SPY, separate from the other clean soil, in accordance with the revised clay handling protocol in Addendum to the Soil Management Plan (dated May 28, 2019).
- During sonic drilling of MW-O, fat clay with sand (CH) was encountered at 26.8 to 27.8 feet below ground. The clay material retrieved from drill cores was put in a zip lock bag and stored in a sample cooler at the SPY. The clay will be characterized in accordance with the Soil Management Plan.
- Approximately 20 cubic yards of displaced soil was generated from the potholing activities along remedy pipeline alignments to pre-characterize soil in preparation for pipeline installation. Samples were collected for characterization in accordance with the Soil Management Plan. These soils are currently stored in bins at the SPY. A decision on the final disposition of these soils is forthcoming
- 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 Soil Management Plan. This soil is currently stockpiled on a plastic liner at the SPY. A decision on the final disposition of this soil is forthcoming.

 Approximately 20 cubic yards of displaced soil was generated from potholing activities to a) daylight the Frontier telecom line along Pipeline C on NTH and b) pre-characterize soil in preparation for construction activities at the MW-20 Bench. Samples were collected for characterization and analyzed in accordance with the Soil Management Plan. This soil is currently stored in bins at the SPY. A decision on the final disposition of this soil is forthcoming.

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

- In June 2019, approximately 72 cubic yards of general construction waste and 5.8 tons of green waste/construction debris (e.g., concrete from wash outs) were generated and transported to Republic Services in Lake Havasu City for disposal and management.
- Sanitary waste from construction trailers/portable toilets is hauled offsite as needed.

### 2.1.4 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 June 30, 2019, a total of 86 health and safety training sessions were held and 317 employees and contractors received the training. Of those, in June 2019, five sessions were conducted and 13 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 June 30, 2019, a total of 91 WEAT sessions were conducted and 363 employees and contractors received the training. Of those, in June 2019, 8 sessions were conducted (on 6/3, 6/5, 6/6, 6/18, 6/20, 6/25 (twice), 6/27) and 15 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 a 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 June 30, 2019, a total of 10 FCR training sessions were conducted and 54 employees and contractors received the training. No FCR training was conducted in June 2019.
- Training records are kept electronically and at the temporary construction trailers at the SPY. The records are available upon request.

### 2.1.5 Status of Work Variance Requests (WVRs)

PG&E did not propose any new work variance in June 2019. See Table 2-2 for 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.

### 2.1.6 Use of Future Activity Allowance

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

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

• On June 26, 2019, a passerine bird nest with one egg was identified in the floodplain near the aggregate-based access road along Pipeline C Segment C5, south of the steps from the MW-20 bench to the floodplain. The birds were identified as black-tailed gnatcatchers. A buffer between the nest and the access road was immediately established and agencies were informed. The buffer was maintained until June 28, 2019, when a biologist determined that the bird nest was abandoned.



- On June 14, 2019, the sonic rig at MW-M was taken off-site for repairs. The rig returned onsite on June 24, 2019.
- On May 31, 2019, PG&E conducted a video log of the well casings in the deep well cluster at MW-B (MW-B-267 and MW-B-337). Results for the video log indicate that solid materials were encountered in both casings, with approximately 70 to 78 feet of materials. There were no direct observations of a crack in either of the casings. On June 25-26, 2019, PG&E developed the deep well MW-B-337 and bailed out the solids. A video log was performed of the cleaned out well to assess if there is damage to the screen or casing and if solid material is re-entering the well. PG&E will discuss and propose potential next steps with the agencies.
- A portion of a tremie pipe was lost in the casing during installation of MW-R. PG&E is evaluating the field information and will provide further details in the July Monthly Progress Report.
- While filling the dual containment pipeline for hydrostatic testing on May 24, 2019, a leak was observed within the inner carrier pipe which prohibited filing and testing of the line. The leak was located on May 31, 2019 and the associated HDPE weld was removed. The affected pipeline segment was replaced and re-tested on June 5, 2019. The dual containment pipeline passed the hydrostatic test on June 5, 2019.
- PG&E continues to work with Frontier to resolve the conflict between their telecom line and Pipeline C segments C13, C15, and C16, in the shoulder of NTH.
- PG&E continues to work with Kinder Morgan to resolve the conflict between their gas pipeline and Pipeline C segment C17, north of the Transwestern Bench.
- PG&E is working with potential subcontractors on the details of an installation plan for the jack-andbore under NTH.
- PG&E is evaluating options to dewater during installation of Pipeline C8 in the floodplain, south of BNSF bridge.

### 2.1.8 Key Personnel Changes

There was no change to key PG&E project personnel in June 2019.

# 2.2 Communication with the Public

PG&E did not have any key communications with the public in June 2019:

# 2.3 Planned Activities for Next Six Weeks

The planned activities for next six weeks (July 7 through August 17, 2019) include the following:

- Well installation activities:
  - Complete installation of wells MW-C, MW-D, MW-H, MW-X, IRZ-21, RB-4, and RB-5.
  - Start well installation at RB-3.
  - Complete drilling of pilot borings at RB-2 and IRZ-19.
  - Start drilling well MW-Y' and MW-S.
  - Conduct well testing at IRZ-20, IRZ-21, and IRZ-25.
  - Complete well development at MW-O and MW-C.
  - Drilling of pilot boring at IRZ-37 did not occur as forecasted in the May 2019 Monthly Progress Report due to the availability of spider rig. This activity will be added to a six-week look ahead schedule when rig availability is known.



- Non-well construction activities:
  - Complete CHQ fence installation.
  - Complete surface installation of pull boxes at Pipeline C Segments C3, C4, and C5.
  - Complete installation of access road in the floodplain.
  - Start installation of Pipeline C Segment C6 (from floodplain to MW-20 Bench).
  - Start site preparation and pipeline B installation.
  - Conduct conduit testing in floodplain.
  - Conduct dewatering test at C8-Alt in the floodplain (tentative).
  - 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 Soil Management Plan.

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).

# 2.4 Construction Schedule Review

Phase 1 of the groundwater remedy construction started on October 2, 2018. Table 2-3 presents a summary of the percent completeness for key construction activities as of June 30, 2019. PG&E continues to evaluate and optimize the construction schedule.

# 2.5 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 adhoc compliance reports/emails, PG&E has included validated data in each monthly progress report starting with the November 2018 report (see **Attachment H**).

# 3. References

California Department of Toxic Substances Control (DTSC). 1996. Corrective Action Consent Agreement (Revised), Pacific Gas and Electric Company's Topock Compressor Station, Needles, California. EPA ID No. CAT080011729. February 2.

California Department of Toxic Substances Control (DTSC). 2019. Community Outreach Plan, Pacific Gas and Electric Company's Topock Compressor Station, Needles, California. <u>http://dtsc-</u>topock.com/documents/public-involvement/public-involvement-plans. May.

California Department of Toxic Substances Control (DTSC). 2018a. Acceptance and Conditional Approval of Groundwater Remedy Design and Corrective Measures Implementation Workplan at Pacific Gas and Electric Company, Topock Compressor Station, Needles, California. April 24.

California Department of Toxic Substances Control (DTSC). 2018b. *Final Subsequent Environmental Impact Report for the Pacific Gas and Electric Company Topock Compressor Station Final Groundwater Remediation Project.* April 24.



CH2M HILL, Inc. (CH2M). 2014. Final Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Final Groundwater Remedy. April 28.

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.

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

United States Department of the Interior (DOI). 2012. *Community Involvement Plan, Pacific Gas and Electric Topock Compressor Station, Needles, California*. <u>http://dtsc-</u>topock.com/sites/default/files/FINAL\_DOI\_CIP\_10-12.pdf. September.

United States Department of the Interior (DOI). 2013. *Remedial Action/Remedial Design Consent Decree (CD) between the United States of America and Pacific Gas & Electric Company.* Case 5:13-cv-00074-BRO-OP, Document 23. Entered November 21.

United States Department of the Interior (DOI). 2018. Approval of PG&E Topock Compressor Station Remediation Site – Basis of Design Report/Final (100%) Design Submittal and Construction/Remedial Action Work Plan for the Final Groundwater Remedy and the Supplemental and Errata Information for the Final (100%) Design for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California. Letter from Pamela Innis/DOI to Curt Russell/PG&E. April 3.

# **Tables**

# Table 2-1 Summary of Environmental Release-To-Constructions (ERTCs) Issued to Contractors

ERTC No.	Brief Description of Covered Areas and Scope of Authorized Activities	Issue Date
Non-Well ER1	TCs	
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 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
11b	Scope included installation of Pipelines B, F, and J.	May 31, 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, see Table 2-2). A forthcoming addendum to this ERTC will be issued to include the actual upgrade activities.	January 10, 2019
12a	Scope included the actual brine tanks containment upgrade activities which include intrusive work on the MW-20 Bench (per Work Variance Request #1, see Table 2-2).	February 6, 2019
Well ERTCs		·
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
		1



## Table 2-1 Summary of Environmental Release-To-Constructions (ERTCs) Issued to Contractors

June 2019 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
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
51	Scope included the site setup, drilling, testing, and demobilization at MW-B in the floodplain.	December 10, 2018
Addendum to ERTC #5I	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
50	Scope included the site setup, drilling, testing, and demobilization at MW-X and MW-Y' in Arizona.	April 23, 2019
5р	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
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
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
5у	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

Note:

ERTC 8 (Wastewater Management) is under development.

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

WVR No.	Brief Description of Work Variance Request	Approval Dates
1	<ul> <li>This WVR addressed PG&amp;E's proposed modification to the brine tanks containment for use by the remedy, specifically:</li> <li>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&amp;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 (see Appendix E of the Final Basis of Design Report (CH2M, 2015a),* Section 033 00, Cast-In-Place Concrete).</li> <li>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.</li> </ul>	DOI approved WVR #1 on June 22, 2018 DTSC approved WVR #1 on July 5, 2018
2	<ul> <li>PG&amp;E proposed to relocate the tie-in point for remedy construction water to an aboveground location inside 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&amp;E Gas Operations control of the Station's water supply. The WVR addressed this relocation, specifically:</li> <li>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&amp;E proposed to move the tie-in point to an aboveground valve manifold, located below the TCS Water Storage Tanks in the boneyard area.</li> <li>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.</li> </ul>	DOI/DTSC approved WVR #2 on August 29, 2018
3	<ul> <li>PG&amp;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:</li> <li>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.</li> <li>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 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 suid disturbance by at least 50 cubic yards. The change to a bigger tank will reduce the amount of suid disturbance by at least 800 cubic yards. 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.</li> <li>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.</li> <li>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 wou</li></ul>	DOI/DTSC approved WVR #3 on January 4, 2019
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	DOI/DTSC approved



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

June 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

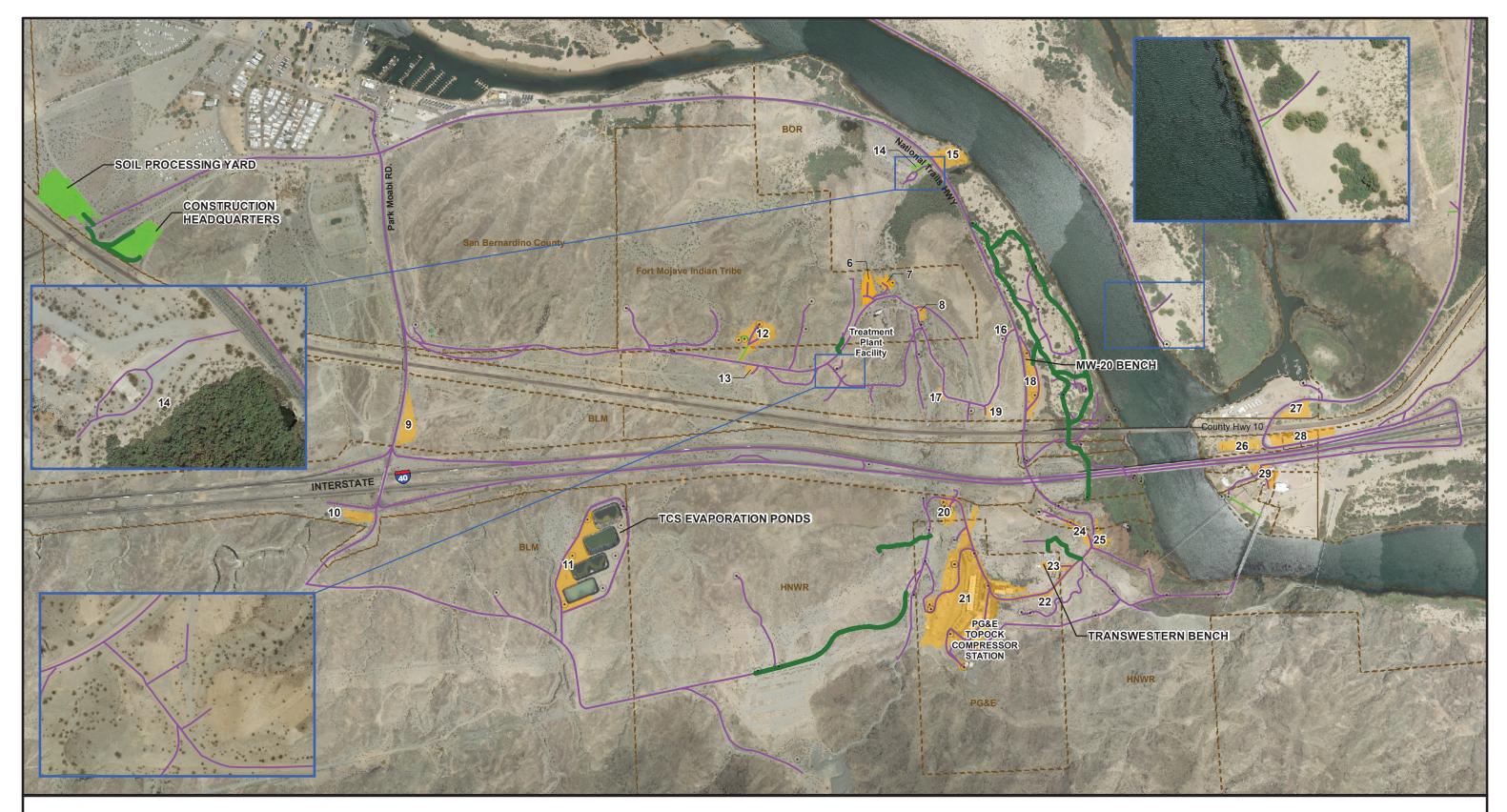
WVR No.	Brief Description of Work Variance Request	Approval Dates
	relocating a small segment of Pipeline C to within National Trails Highway to meet a minimum distance of 10 feet from current and future I-40 bridge footings. The treatment measure specified for Segment X of National Trails Highway in the Cultural and Historic Property Management Plan will be implemented during installation of this pipeline segment.	WVR #4 on May 14, 2019
5	PG&E proposed to phase the remedy produced water conditioning system within the approved footprint inside TCS.	Pending
6	In early October 2018, PG&E conducted a geotechnical investigation along the Pipeline F alignment on the entrance road to the Topock Compressor Station (TCS) and the adjacent hill side. Based on the geotechnical results, the construction contractor (PIVOX) indicated that soldier piles and lagging would be requried 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). 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.	DOI and DTSC approved WVR #6 on May 21 and May 22, 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 2-3 Summary of Percent Completeness of Key Construction Activities

Activity	% Complete	Current Status of Construction Activities (as of May 31, 2019)
Project signage & Public Information Office	100%	Complete.
Staging Area 9 setup	100%	Complete.
Staging Area 23 setup	100%	Complete.
Staging Area 18 setup	100%	Complete.
Temporary construction offices at Soil Processing Yard	100%	Complete.
Soil Processing Yard setup for construction staging	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	100%	Complete.
Aggregate-based access road in floodplain	Not Available	Underway.
CHQ security fence	Not Available	Surface material (crushed rocks) in place. Fence posts/fence fabric/barbed wire complete. Fence gates in July.
MW-L	100%	Complete.
MW-N	100%	Complete.
MW-E	100%	Complete.
MW-W	100%	Complete.
MW-M, MW-O, MW-R, MW-F, MW-G, MW-10D	Not Available	Well construction complete. Surface completion will be scheduled when rig is available.
MW-B	Not Available	Video survey complete in May. Bailed out fill material in deep well MW-B-367 in June. Re-video survey.
RB-5, RB-4, RB-3, IRZ-9, 13, 15, 16, 17, 21, 23, 25, 27, and 39 pilot borings	100%	Complete.
IRZ-20 remedy well	Not Available	Well construction and development complete. Well testing in July.
IRZ-21, IRZ-23, and IRZ-25 remedy wells	Not Available	Well construction complete. Well testing in July.
Pipeline C Segments C3, C4, C5	Not Available	Pipeline and conduit installation complete. Hydrostatic testing complete. Installation of cleanouts, valve boxes, and leak detection complete. Installation of pull boxes underway.
Brine Tanks containment upgrade	100%	Complete.

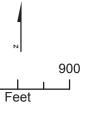
**Figures** 



### 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
- 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 accessing accessing access to the primary work zone for installation of future provisional well IRL-6 (if determined to be needed in the future). 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.



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**FIGURE 2.1-1 CONSTRUCTION SITE PLAN** AND ACCESS ROUTES

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



Path: R:\ENBG\00\_Proj\P\PGE\Topock\MapFiles\2018\CMS\Phase1Construction\Fig2-2\_Well\_Pipeline\_Loc.mxd

# LEGEND

Property Boundaries

- Existing Wells: Extraction Well
- Injection Well
- Monitoring Well
- ➡ Water Supply Well

### Planned Wells:

- Extraction, National Trails Highway (NTH) In-situ Reactive Zone (IRZ)  $\boxtimes$
- Extraction, Riverbank
- ▲ Injection, NTH IRZ
- ▲ Injection, Topock Compressor Station
- Remedy Monitoring Well
- A Recirculation Well

### Pipeline Corridor for Remedy

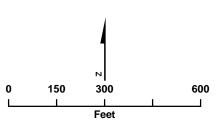
- Aboveground Pipe

### **Remedy Facilities**

- Planned Transformer
- Future Provisional Transformer
- Proposed Remedy Structure

#### Note:

- 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 measures CUL-1a-10, PA, and CHPMP mitigation measures.
- 2. All well and structure locations are approximate.



# FIGURE 2-2 WELL AND PIPELINE LOCATIONS GROUNDWATER REMEDY PHASE 1 CONSTRUCTION

PG&E TOPOCK COMPRESSOR STATION NEEDLES, CALIFORNIA

JACOBS

Attachment A Photographs



MW-O Location Next to the Colorado River



MW-R Location in the Upland





Grading and Installation of Exclusionary Fence at MW-Y' (Arizona)

Mats Placement at MW-Y' (Arizona)

MW-X Location (Arizona)







Installed handhold pull boxes and 12 KV pull boxes in the floodplain

Check dams and rip raps installation in V-ditch at the Construction Headquarters

Fence posts installation at the Construction Headquarters







Hydrostatic testing fill point at the beginning of Pipeline C Segment C3

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

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-10D	MW-10D-041119	04/11/19	108 - 123	160	160
MW-10D	MW-10D-VAS-107-112	04/01/19	107 - 112	95	96
MW-10D	MW-10D-VAS-118-123	04/02/19	118 - 123	200	190
MW-B	MW-B-VAS-27-32	01/06/19	27 - 32	5.9 J	7.7J
MW-B	MW-B-VAS-47-52	01/09/19	47 - 52	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-67-72	01/09/19	67 - 72	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-102-107	01/10/19	102 - 107	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-142-147	01/15/19	142 - 147	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-182-187	02/13/19	182 - 187	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-207-212	02/14/19	207 - 212	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-247-252	02/17/19	247 - 252	11 J	< 0.83 U
MW-B	MW-B-VAS-264-269	02/18/19	264 - 269	< 0.13 U	< 0.33 U
MW-B	MW-B-VAS-287-292	02/20/19	287 - 292	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-317-322	02/21/19	317 - 322	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-339-344	02/27/19	339 - 344	< 0.13 U	< 0.33 U
MW-B	MW-B-VAS-352-357	02/28/19	352 - 357	0.603 J	< 0.33 U
MW-B	MW-B-117-033019	03/30/19	WD, 117	< 0.13 U	< 0.17 U
MW-B	MW-B-33-033119	03/31/19	WD, 33	3.7	2.3
MW-E	MW-E-VAS-52-57	11/05/18	52 - 57	7800	7000
MW-E	MW-E-VAS-82-87	11/06/18	82 - 87	190	200
MW-E	MW-E-VAS-112-117	11/06/18	112 - 117	3000	3100
MW-E	MW-E-VAS-137-142	11/07/18	137 - 142	7900	7300
MW-E	MW-E-70-121418	12/14/18	WD, 70	-	3000
MW-E	MW-E-142-121418	12/14/18	WD, 142	4500	4200
MW-F	MW-F-VAS-52-57	01/06/19	52 - 57	2700	2500
MW-F	MW-F-VAS-82-87	01/07/19	82 - 87	120	110
MW-F	MW-F-VAS-97-102	01/07/19	97 - 102	1900	1800
MW-F	MW-F-VAS-112-117	01/08/19	112 - 117	790	740
MW-F	MW-F-104-022719	02/27/19	WD, 104	1800	1700
MW-F	MW-F-60-022819	02/28/19	WD, 60	2300	2200
MW-G	MW-G-VAS-52-57	02/13/19	52 - 57	790	680
MW-G	MW-G-VAS-67-72	02/14/19	67 - 72	1000	920
MW-G	MW-G-VAS-77-82	02/15/19	77 - 82	710	600
MW-G	MW-G-82-030219	03/02/19	WD, 82	1500	1500
MW-G	MW-G-57-030219	03/02/19	WD, 57	510	560
MW-L	MW-L-VAS-76-81	10/06/18	76 - 81	34	31
MW-L	MW-L-VAS-106-111	10/09/18	106 - 111	0.697 J	0.84

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-L	MW-L-VAS-141-146	10/10/18	141 - 146	< 0.13 U	< 0.033 U
MW-L	MW-L-VAS-181-186	10/20/18	181 - 186	3.8	3.3
MW-L	MW-L-VAS-218-223	10/21/18	218 - 223	68	66
MW-L	MW-L-VAS-261-266	10/22/18	261 - 266	0.284 J	< 0.17 U
MW-L	MW-L-180-032819	03/28/19	WD, 180	< 0.13 U	< 0.17 U
MW-L	MW-L-245-030319	03/03/19	WD, 245	14	15
MW-L	MW-L-90-032919	03/29/19	WD, 90	19	18
MW-L	MW-L-225-032919	03/29/19	WD, 225	410	380
MW-M	MW-M-VAS-52-57	03/28/19	52 - 57	29	28
MW-M	MW-M-VAS-72-77	03/29/19	72 - 77	< 0.13 U	< 0.033 U
MW-M	MW-M-VAS-107-112	03/30/19	107 - 112	< 0.13 U	< 0.033 U
MW-M	MW-M-VAS-147-152	03/31/19	147 - 152	Data not yet available	< 0.17 U
MW-M	MW-M-VAS-172-177	04/02/19	172 - 177	< 0.13 U	< 0.033 U
MW-M	MW-M-VAS-190-195	04/10/19	190 - 195	< 0.13 U	< 0.17 U
MW-N	MW-N-VAS-121-126	02/14/19	121 - 126	0.699 J	0.51
MW-N	MW-N-VAS-142-147	02/16/19	142 - 147	< 0.13 U	< 0.033 U
MW-N	MW-N-VAS-173-178	02/18/19	173 - 178	< 0.13 U	< 0.033 U
MW-N	MW-N-VAS-210-215	02/21/19	210 - 215	320	290
MW-N	MW-N-VAS-228-233	02/26/19	228 - 233	< 0.13 U	< 0.17 U
MW-N	MW-N-217-040219	04/02/19	WD, 217	110	110
MW-N	MW-N-237-040119	04/01/19	WD, 237	1600	1500
MW-N	MW-N-129-040319	04/03/19	WD, 129	45	46
MW-O	MW-O-VAS-101-106	05/10/19	101 - 106	< 0.13 U	< 0.033 U
MW-O	MW-O-VAS-106-111	05/11/19	106 - 111	< 0.13 U	< 0.17 U
MW-O	MW-O-VAS-12.5-17.5	05/08/19	12 - 18	< 0.13 U	0.163 J
MW-O	MW-O-VAS-136-141	05/11/19	136 - 141	< 0.13 U	< 0.17 U
MW-O	MW-O-VAS-51-56	05/09/19	51 - 56	< 0.13 U	< 0.033 U
MW-O	MW-O-VAS-66-71	05/09/19	66 - 71	< 0.13 U	0.178 J
MW-R	MW-R-VAS-92-97	05/13/19	92 - 97	42	45
MW-R	MW-R-VAS-117-122	05/14/19	117 - 122	4.6	5.8
MW-R	MW-R-VAS-151-156	05/15/19	151 - 156	<0.13 U	< 0.033 U
MW-R	MW-R-VAS-192-197	05/16/19	192 - 197	<0.13 U	< 0.033 U
MW-R	MW-R-VAS-227-232	05/17/19	227 - 232	<0.13 U	< 0.033 U
MW-R	MW-R-VAS-255-260	05/29/19	255 - 260	<0.13 U	< 0.17 U
MW-R	MW-R-VAS-269-274	05/30/19	269 - 274	<0.13 U	< 0.17 U
MW-W	MW-W-VAS-7-12	03/27/19	7 - 12	0.266 J	< 0.17 U
MW-W	MW-W-VAS-22-27	03/28/19	22 - 27	< 0.13 U	< 0.33 U

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-W	MW-W-31-040419	04/04/19	WD, 31	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-12-17	06/25/19	12-17	Data not yet available	< 0.033 U
MW-X	MW-X-VAS-32-37	06/26/19	32-37	Data not yet available	< 0.033 U
MW-U	MW-U-VAS-137-142	04/12/19	137 - 142	0.818 J	1.4
MW-U	MW-U-VAS-181-186	04/13/19	181 - 186	< 0.13 U	0.112 J
MW-U	MW-U-VAS-222-227	04/14/19	222 - 227	< 0.13 U	< 0.033 U
MW-U	MW-U-VAS-257-262	04/16/19	257 - 262	< 0.13 U	0.0896 J
MW-U	MW-U-VAS-287-292	04/17/19	287 - 292	< 0.13 U	< 0.033 U
MW-U	MW-U-VAS-317-322	04/24/19	317 - 322	< 0.13 U	< 0.17 U
MW-U	MW-U-183-050819	05/08/19	WD, 183	< 0.13 U	< 0.033 U
MW-U	MW-U-273-051019	05/10/19	WD, 273	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-27-32	12/03/18	27 -32	120	120
IRZ-9	IRZ-9-VAS-47-52	12/04/18	47 -52	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-62-67	12/04/18	62 -67	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-182-187	12/11/18	182 -187	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-207-212	12/13/18	207 -212	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-232-237	12/13/18	232 -237	0.811 J	< 0.17 U
IRZ-9	IRZ-9-VAS-264-269	12/15/18	264 -269	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-276-281	12/16/18	276 -281	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-292-297	12/18/18	292 -297	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-32-37	11/17/18	32 - 37	170	220
IRZ-13	IRZ-13-VAS-57-62	11/18/18	57 - 62	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-102-107	11/19/18	102 - 107	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-142-147	11/19/18	142 - 147	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-180-185	11/27/18	180 - 185	230	190
IRZ-13	IRZ-13-VAS-197-202	11/28/18	197 - 202	< 0.13	< 0.83
IRZ-13	IRZ-13-VAS-224-229	11/28/18	224 - 229	< 0.13	< 0.83
IRZ-13	IRZ-13-VAS-237-242	11/29/18	237 - 242	< 0.13 U	< 0.17 U
IRZ-15	IRZ-15-VAS-32-37	11/01/18	32 - 37	13	13
IRZ-15	IRZ-15-VAS-62-67	11/02/18	62 - 67	< 0.65 U	0.459 J
IRZ-15	IRZ-15-VAS-102-107	11/03/18	102 - 107	< 0.65 U	< 0.17 U
IRZ-15	IRZ-15-VAS-132-137	11/04/18	132 - 137	0.228 J	< 0.17 U
IRZ-15	IRZ-15-VAS-162-167	11/05/18	162 - 167	3400	3200
IRZ-15	IRZ-15-VAS-182-187	11/06/18	182 - 187	130	140
IRZ-15	IRZ-15-VAS-222-227	11/07/18	222 - 227	< 0.13 U	< 0.17 U
IRZ-16	IRZ-16-VAS-27-32	02/20/19	27 - 32	480	480
IRZ-16	IRZ-16-VAS-57-62	02/20/19	57 - 62	< 0.33 U	< 0.33 U

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
IRZ-16	IRZ-16-VAS-102-107	02/21/19	102 - 107	< 0.33 U	< 0.33 U
IRZ-16	IRZ-16-VAS-132-137	02/26/19	132 - 137	< 0.17 U	< 0.17 U
IRZ-16	IRZ-16-VAS-147-152	02/27/19	147 - 152	< 0.17 U	< 0.17 U
IRZ-16	IRZ-16-VAS-172-177	02/27/19	172 - 177	110	110
IRZ-16	IRZ-16-VAS-192-197	02/28/19	192 - 197	< 0.17 U	< 0.17 U
IRZ-17	IRZ-17-VAS-32-37	03/02/19	32 - 37	78	67
IRZ-17	IRZ-17-VAS-62-67	03/02/19	62 - 67	0.750 J	0.604 J
IRZ-17	IRZ-17-VAS-102-107	03/03/19	102 - 107	< 0.13 U	< 0.17 U
IRZ-17	IRZ-17-VAS-132-137	03/13/19	132 - 137	< 0.13 U	< 0.17 U
IRZ-17	IRZ-17-VAS-137-142	03/12/19	137 - 142	< 0.13 U	< 0.13 U
IRZ-17	IRZ-17-VAS-142-147	03/04/19	142 - 147	68	84
IRZ-17	IRZ-17-VAS-147-152	03/12/19	147 - 152	< 0.13 U	< 0.33 U
IRZ-17	IRZ-17-VAS-152-157	03/04/19	152 - 157	16	7.0
IRZ-17	IRZ-17-VAS-162-167	03/04/19	162 - 167	< 0.13 U	< 0.17 U
IRZ-17	IRZ-17-VAS-172-177	03/05/19	172 - 177	< 0.13 U	< 0.17 U
IRZ-20	IRZ-17-VAS-197-202	03/06/19	197 - 202	< 0.13 U	< 0.17 U
IRZ-20	IRZ-17-VAS-217-222	03/06/19	217 - 222	< 0.13 U	< 0.17 U
IRZ-20	IRZ-20-VAS-112-117	10/22/18	112 - 117	< 0.13 U	< 0.17 U
IRZ-20	IRZ-20-VAS-131-136	10/23/18	131 - 136	< 0.13 U	< 0.17 U
IRZ-20	IRZ-20-VAS-173-178	10/24/18	173 - 178	< 0.13 U	< 0.83 U
IRZ-21	IRZ-21-VAS-52-57	12/15/18	52 - 57	100	97
IRZ-21	IRZ-21-VAS-77-82	12/16/18	77 - 82	1.3	1.1
IRZ-21	IRZ-21-VAS-112-117	12/16/18	112 - 117	< 0.13 U	< 0.17 U
IRZ-21	IRZ-21-VAS-132-137	12/17/18	132 - 137	< 0.13 U	< 0.17 U
IRZ-21	IRZ-21-VAS-147-152	12/18/18	147 - 152	4000	3600
IRZ-23	IRZ-23-VAS-67-72	12/01/18	67 - 72	86	85
IRZ-23	IRZ-23-VAS-92-97	12/01/18	92 - 97	0.453 J	< 0.033 U
IRZ-23	IRZ-23-VAS-122-127	12/02/18	122 - 127	2100	2000
IRZ-23	IRZ-23-VAS-139-144	12/02/18	139 - 144	3400	3000
IRZ-25	IRZ-25-VAS-52-57	12/05/18	52 - 57	4300	3500
IRZ-25	IRZ-25-VAS-67-72	12/05/18	67 - 72	750	620
IRZ-25	IRZ-25-VAS-92-97	12/06/18	92 - 97	140	130
IRZ-25	IRZ-25-VAS-112-117	12/11/18	112 - 117	< 0.13 U	< 0.17 U
IRZ-25	IRZ-25-VAS-147-152	12/11/18	147 - 152	3800	3600
IRZ-25	IRZ-25-VAS-162-167	12/13/18	162 - 167	3000	3000
IRZ-27	IRZ-27-VAS-52-57	03/15/19	52 - 57	4500	4400
IRZ-27	IRZ-27-VAS-72-77	03/17/19	72 - 77	0.338 J	< 0.033 U

June 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
IRZ-27	IRZ-27-VAS-102-107	03/18/19	102 - 107	< 0.13 U	< 0.17 U
IRZ-27	IRZ-27-VAS-132-137	03/20/19	132 - 137	1200	1300
IRZ-39	IRZ-39-VAS-27-32	03/30/19	27 - 32	31	29
RB-3	RB-3-VAS-15-20	04/26/19	15 - 20	< 0.13 U	< 0.033 U
RB-3	RB-3-VAS-50-55	04/27/19	50 - 55	< 0.13 U	0.100 J
RB-3	RB-3-VAS-80-85	04/27/19	80 - 85	< 0.13 U	0.132 J
RB-3	RB-3-VAS-120-125	04/28/19	120 - 125	< 0.13 U	< 0.17 U
RB-3	RB-3-VAS-150-155	04/29/19	150 - 155	0.257 J	< 0.17 U
RB-3	RB-3-VAS-180-185	04/29/19	180 - 185	< 0.13 U	< 0.033 U
RB-3	RB-3-VAS-205-210	04/30/19	205 - 210	< 0.13 U	< 0.17 U
RB-4	RB-4-VAS-15-20	04/12/19	15 - 20	< 0.13 U	0.0556 J
RB-4	RB-4-VAS-41-46	04/12/19	41 - 46	< 0.13 U	< 0.033 U
RB-4	RB-4-VAS-81-86	04/12/19	81 - 86	< 0.13 U	< 0.033 U
RB-4	RB-4-VAS-121-126	04/13/19	121 - 126	< 0.13 U	< 0.033 U
RB-4	RB-4-VAS-136-141	04/13/19	136 - 141	< 0.13 U	< 0.17 U
RB-4	RB-4-VAS-155-160	04/17/19	155 - 160	< 0.13 U	< 0.17 U
RB-5	RB-5-VAS-12-17	04/04/19	12 - 17	0.235 J	0.125 J
RB-5	RB-5-VAS-42-47	04/09/19	42 - 47	< 0.13 U	< 0.033 U
RB-5	RB-5-VAS-82-87	04/09/19	82 - 87	0.769 J	0.127 J

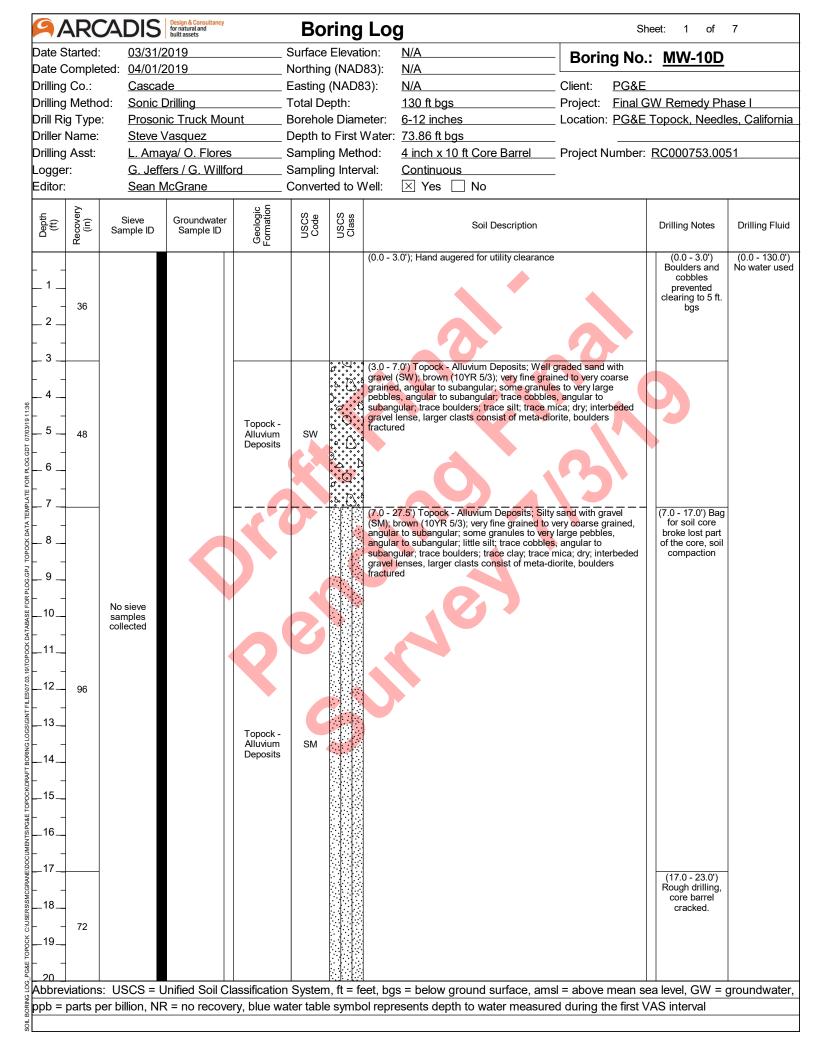
Notes:

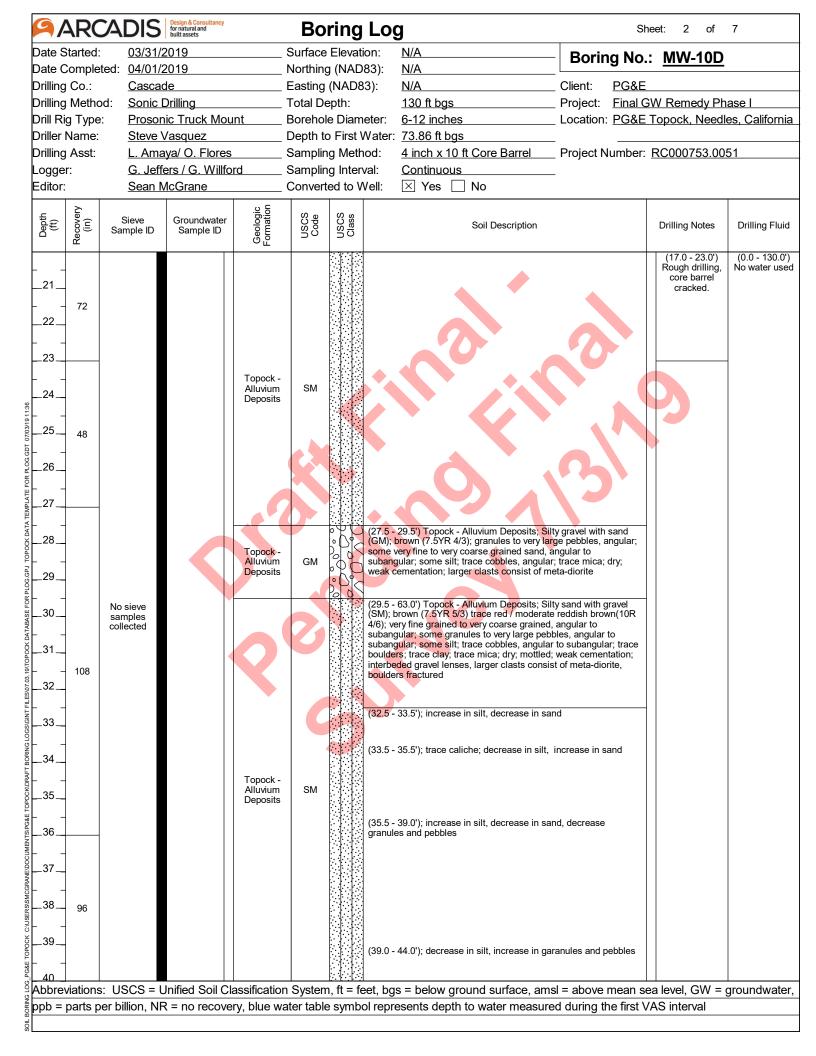
 $\mu$ g/L = micrograms per liter

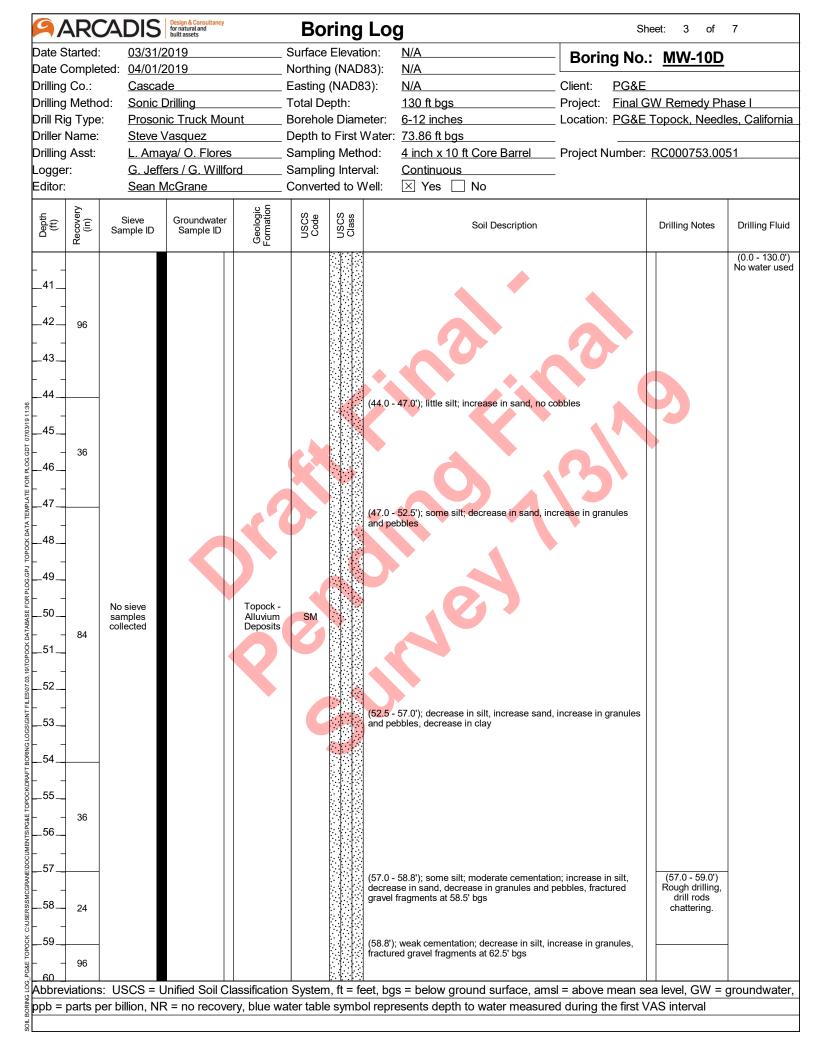
ft bgs = feet below ground surface

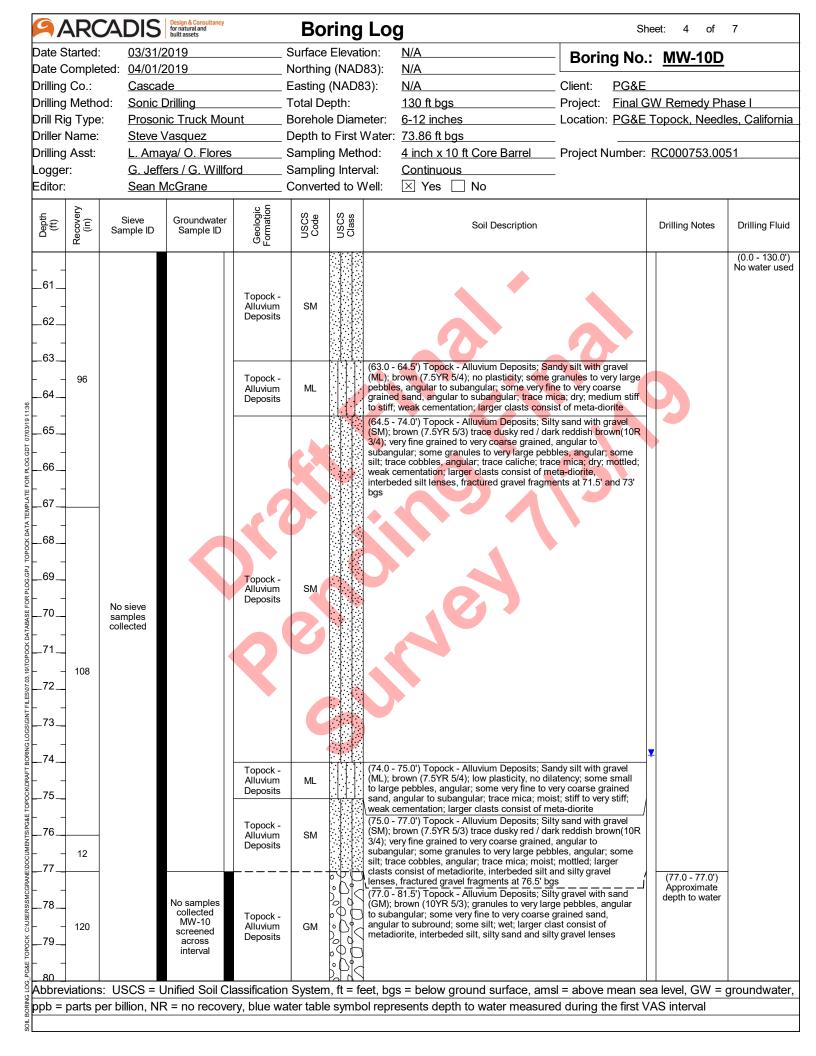
J = The analyte was positively identified; however, the associated numerical value is an estimated concentration only U = The analyte was analyzed for but not detected at the analyte method detection limit indicated

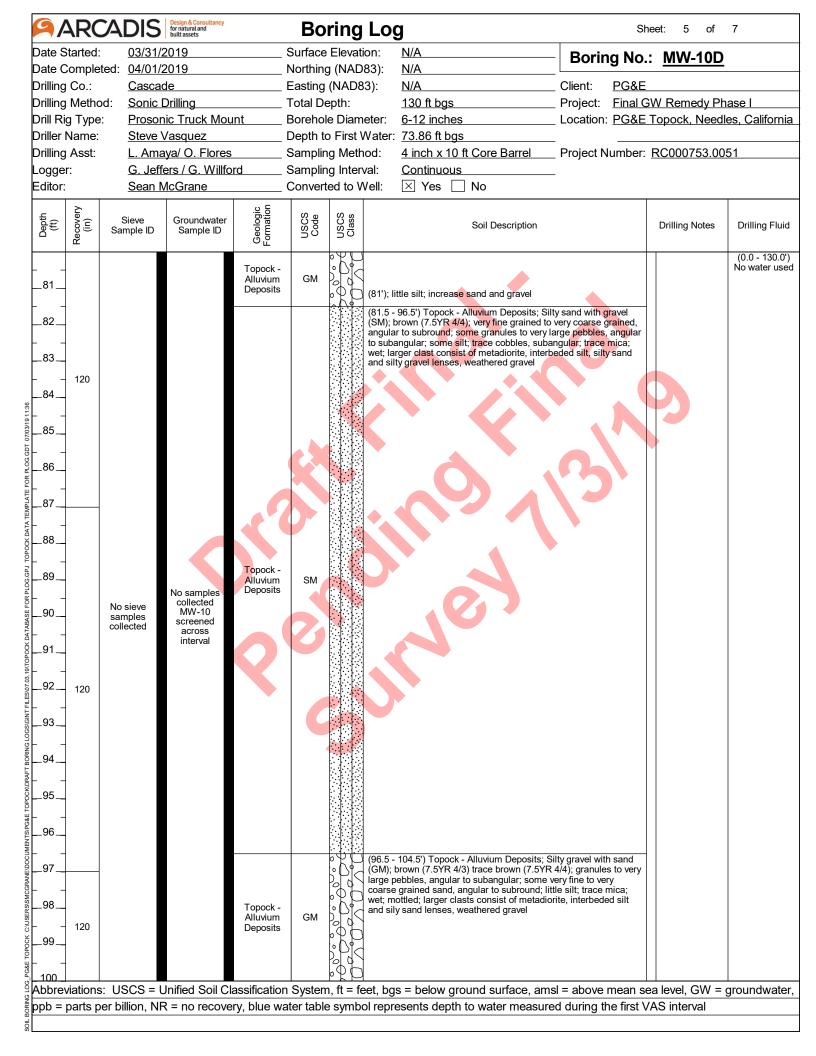
VAS = vertical aquifer sampling WD = sample from well development, depth noted is from bottom of screen

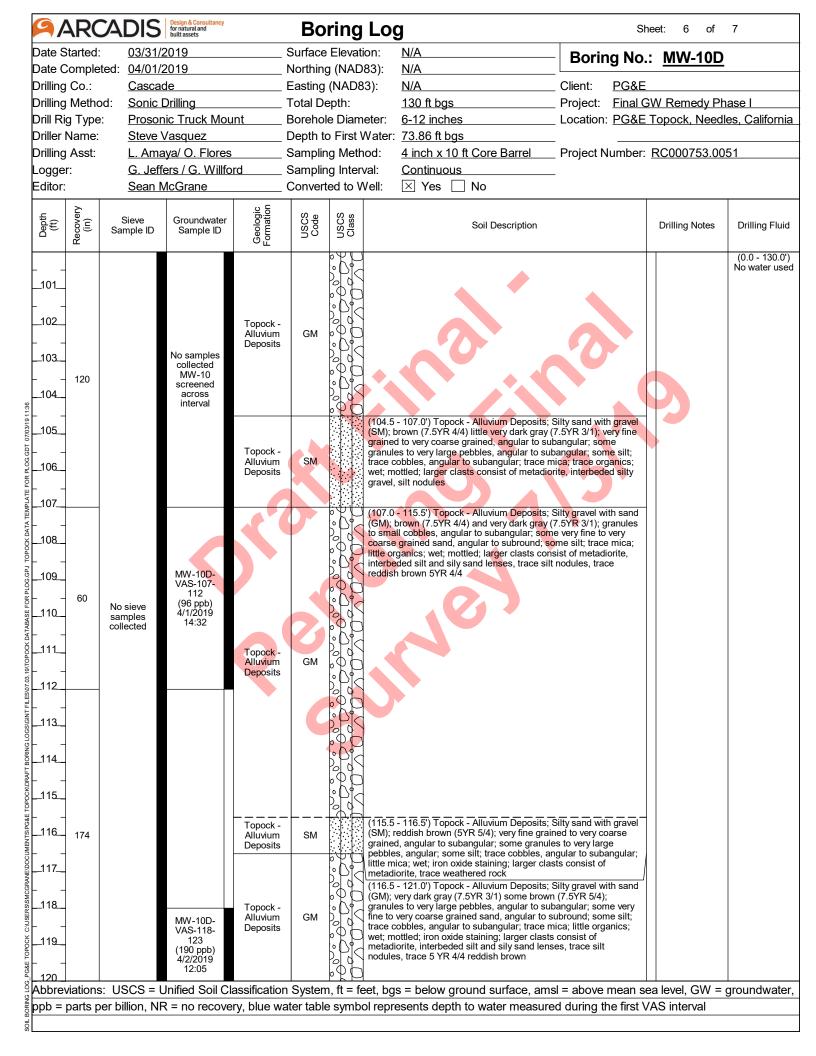


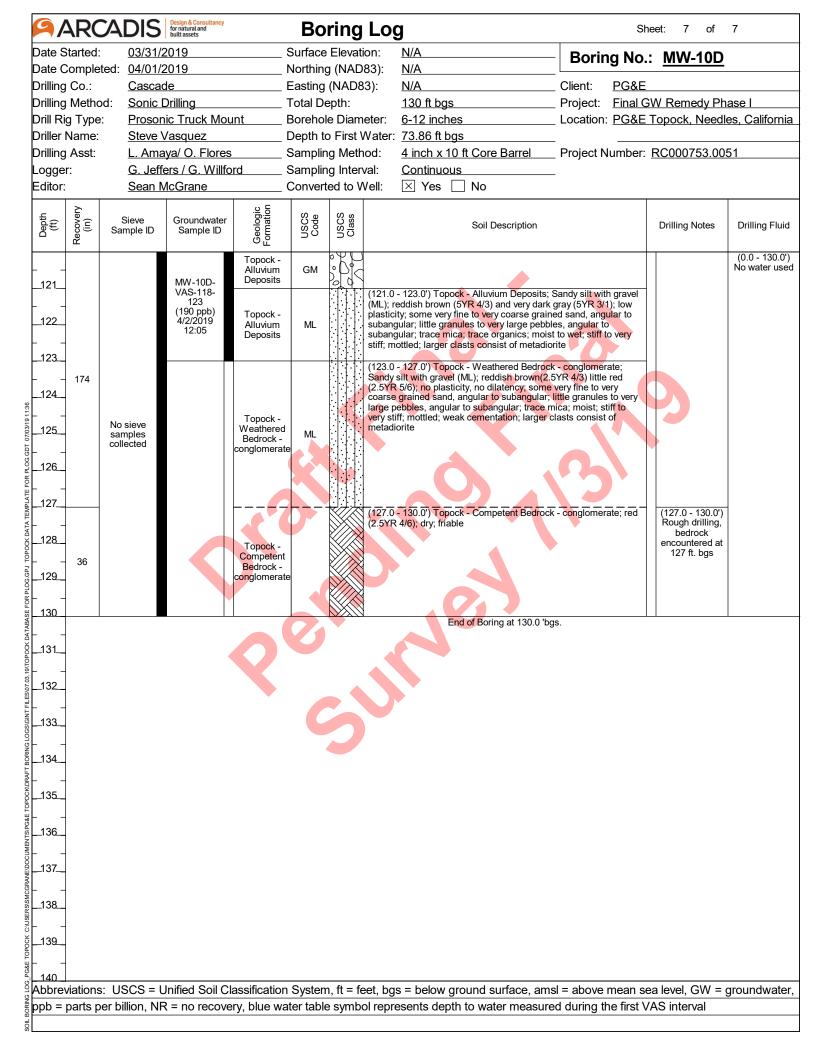


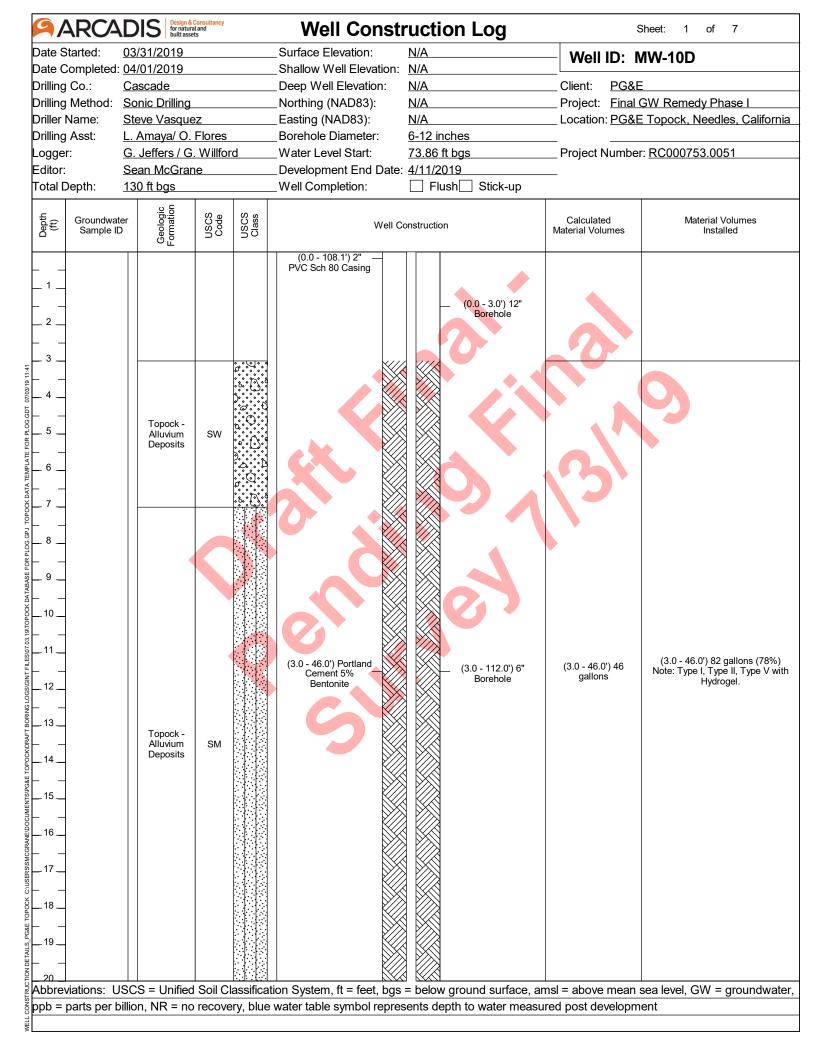


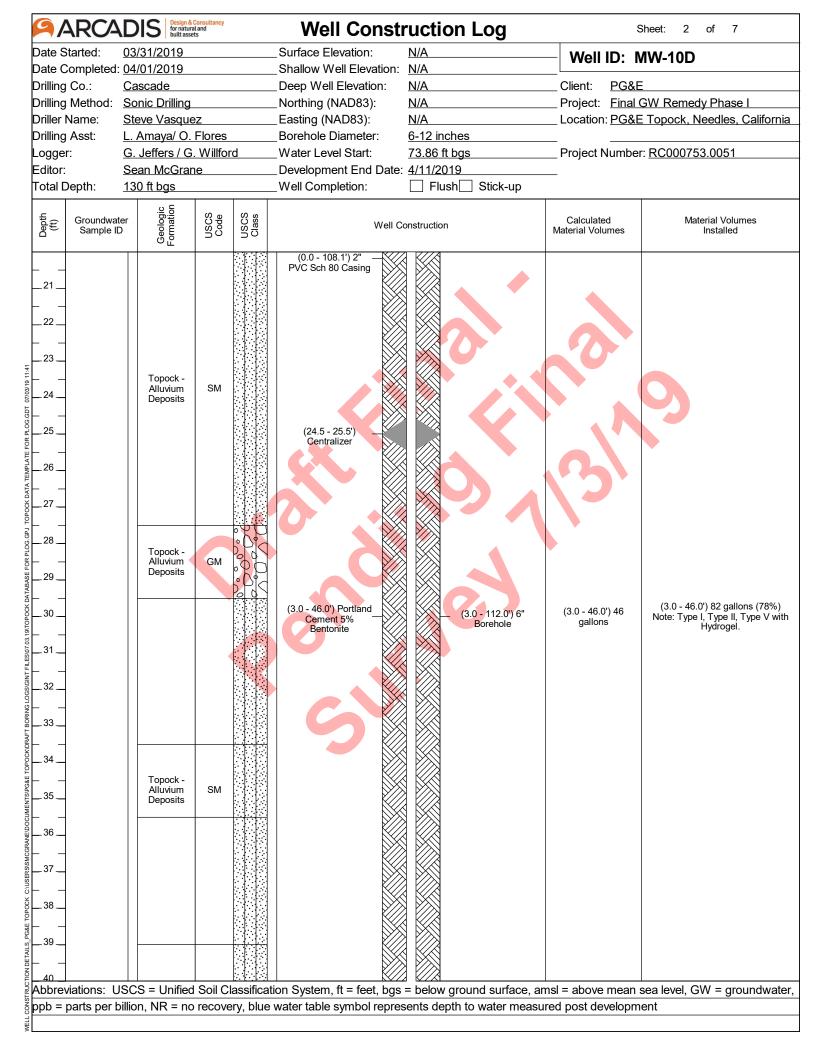


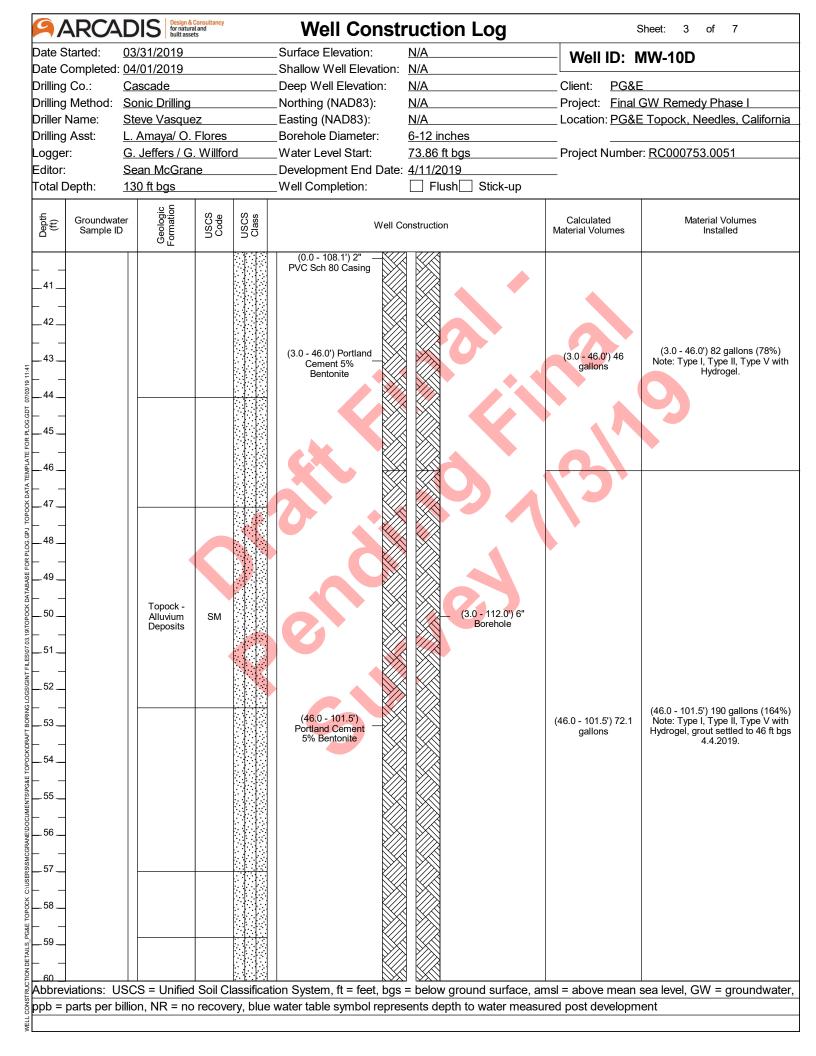


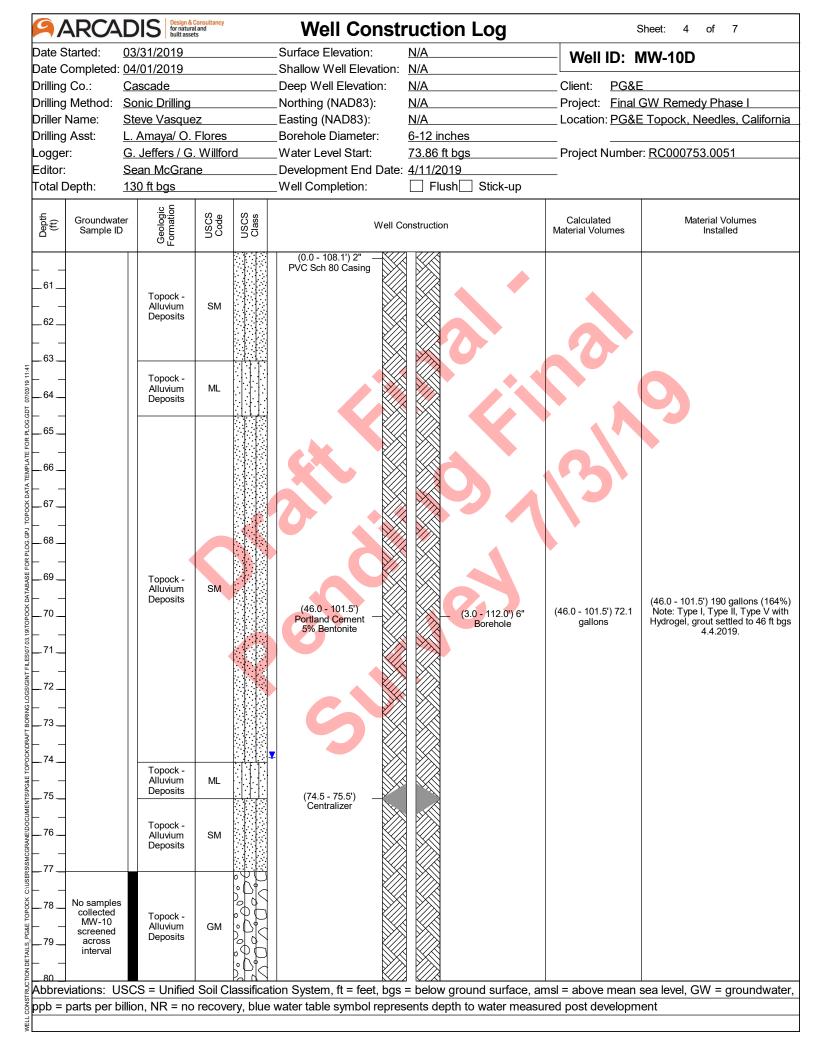


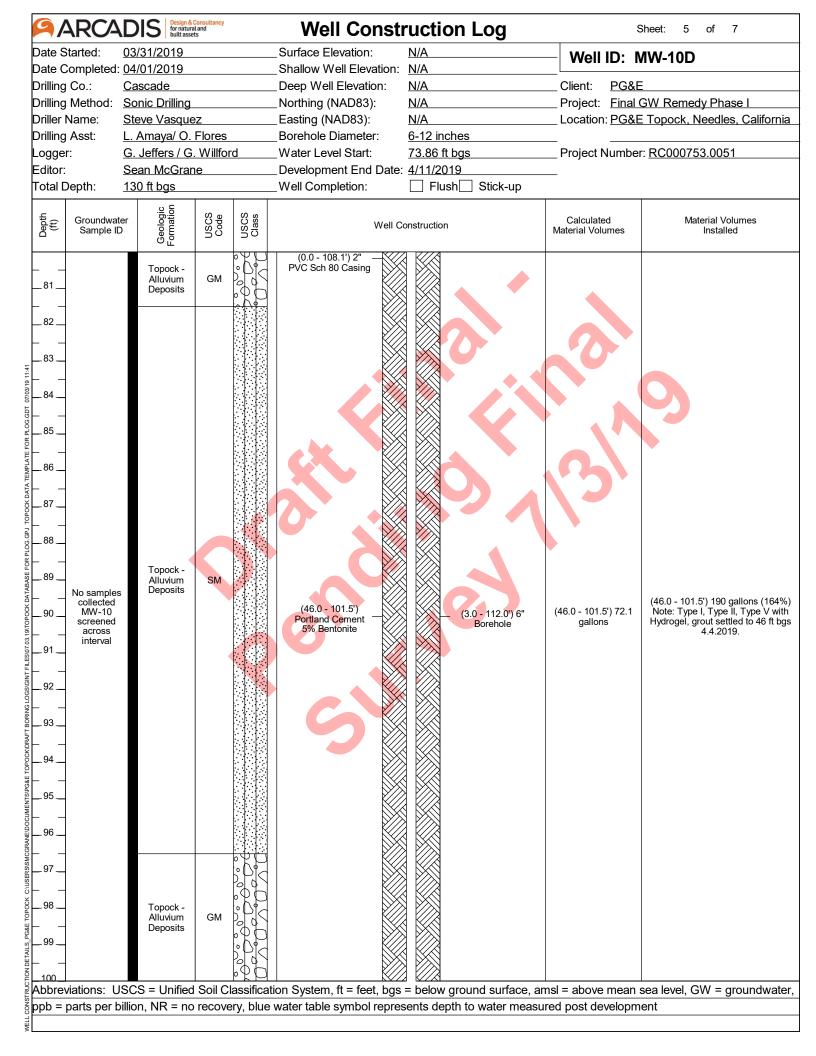


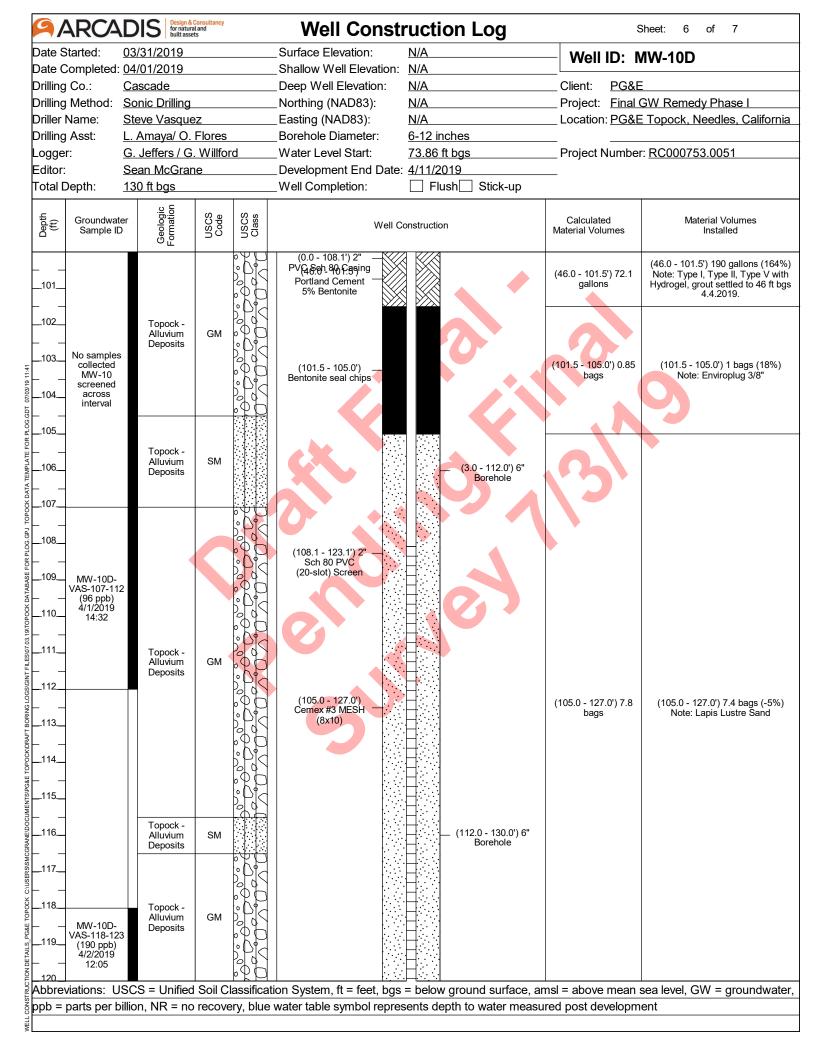


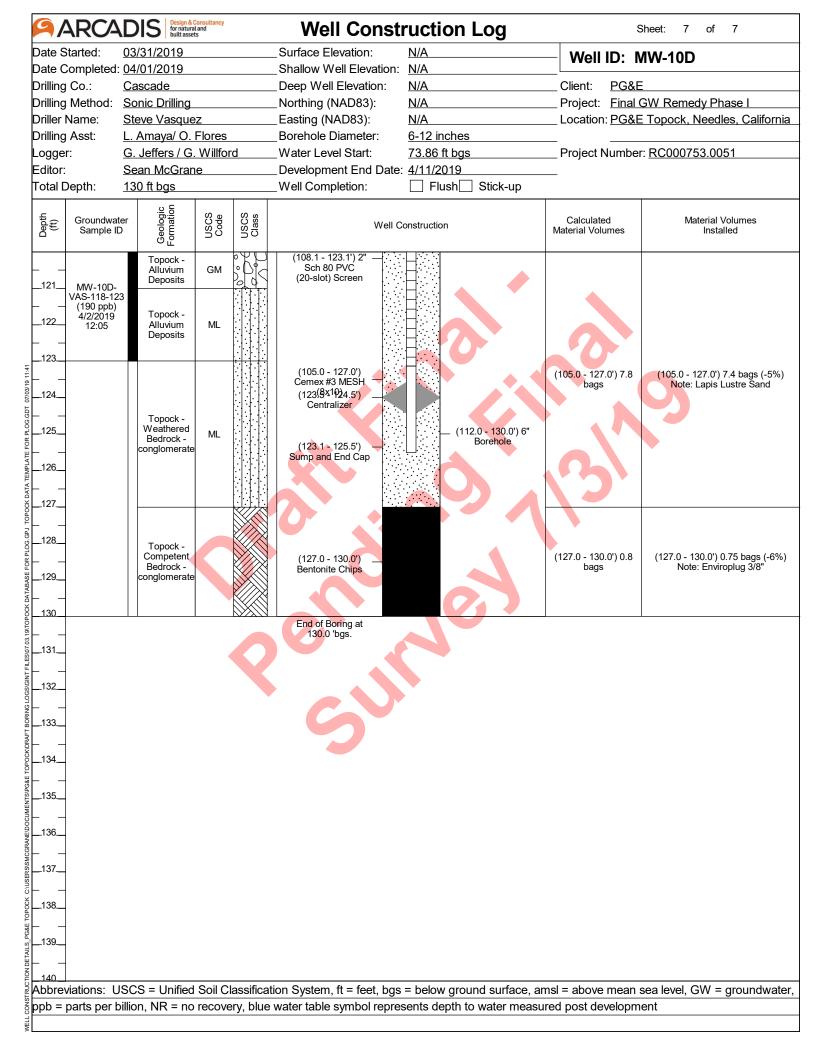


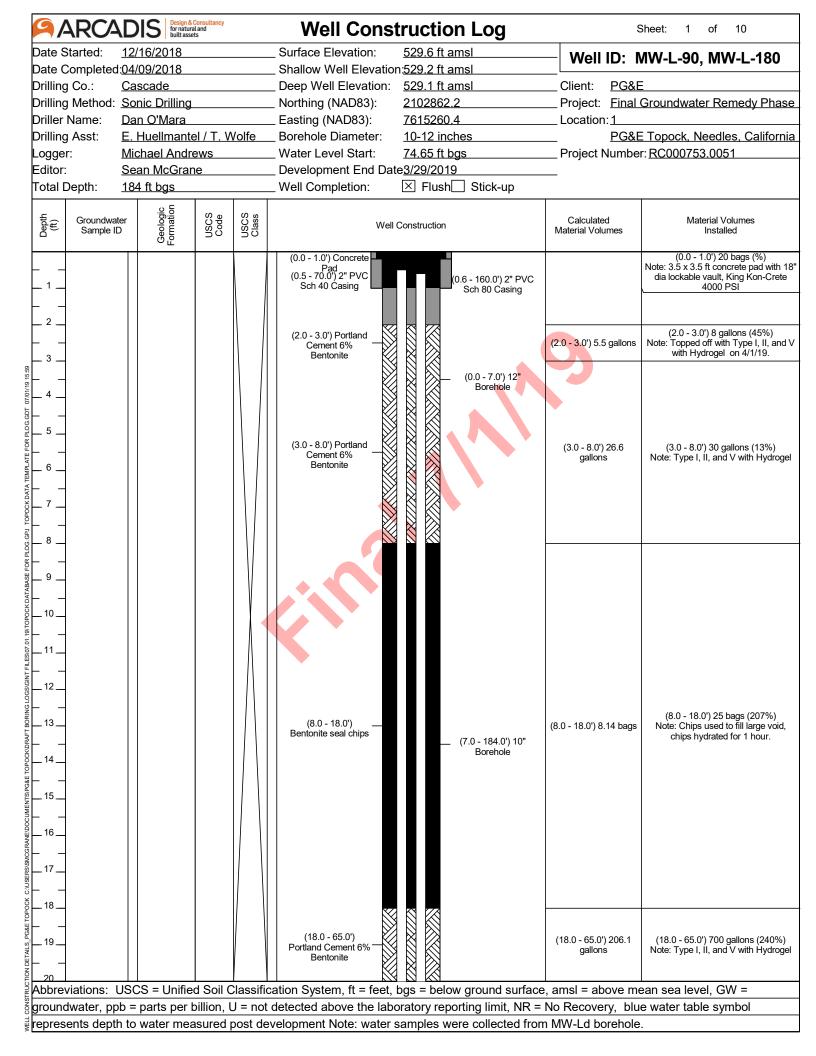






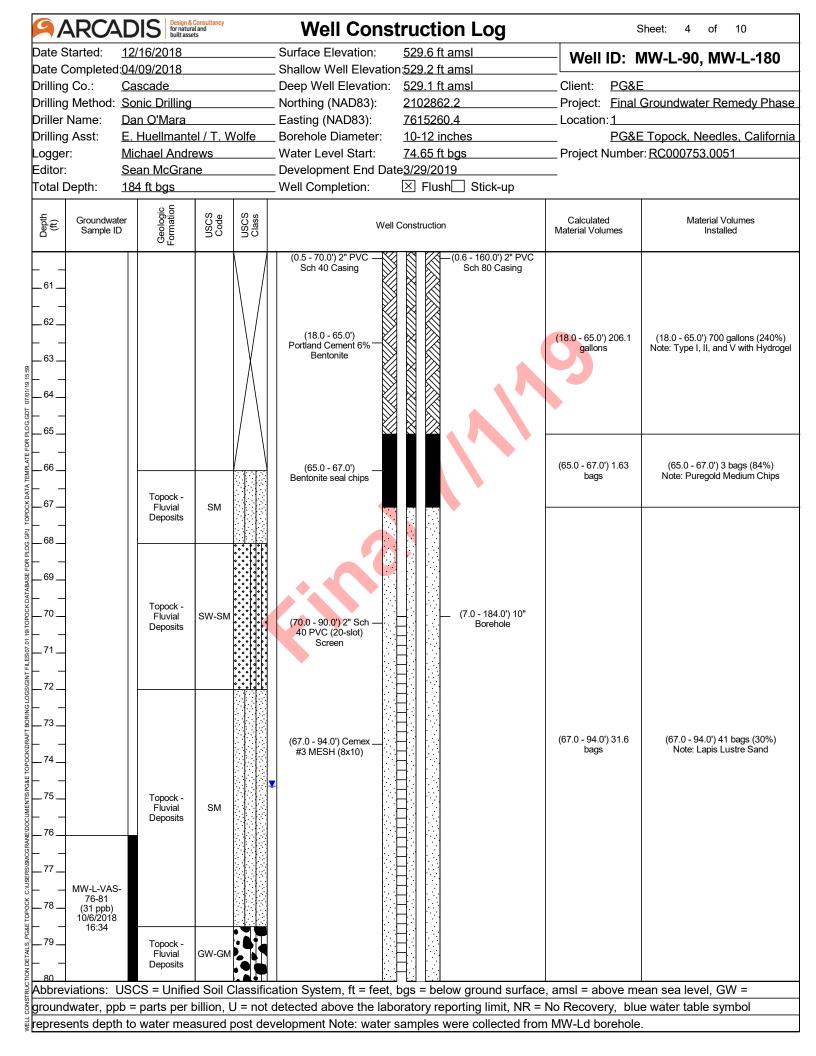


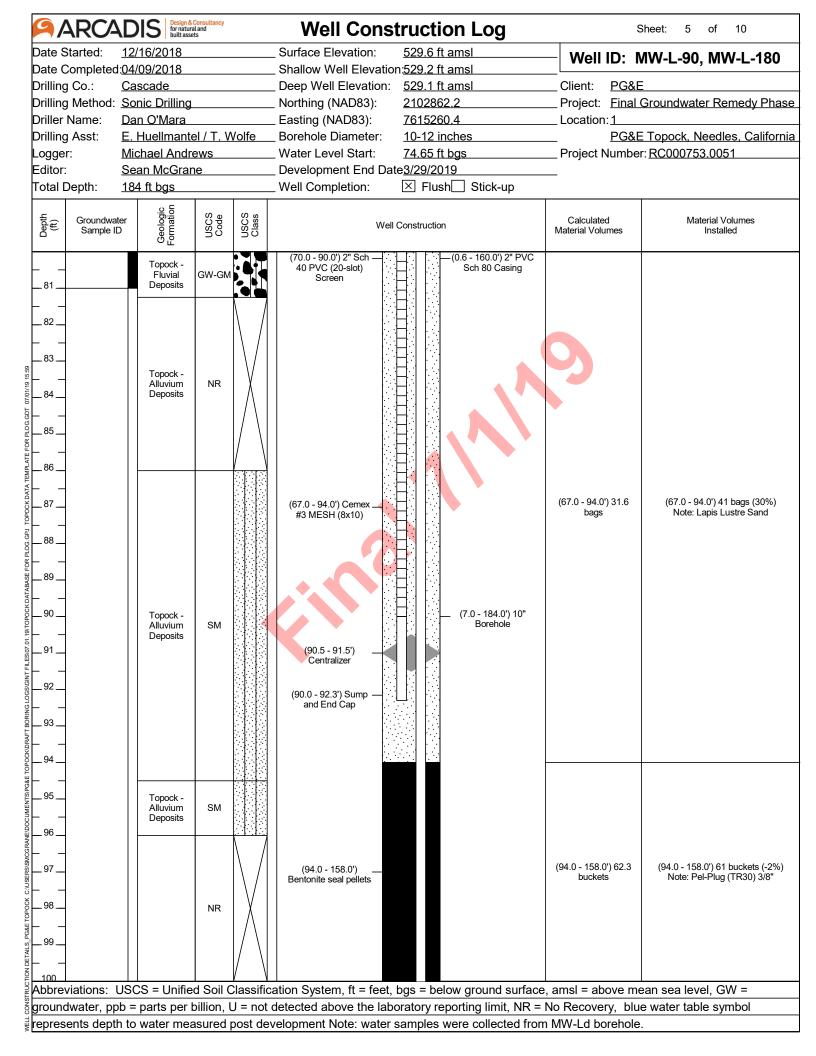




ARC	ADIS Design & Consult for natural and built assets	ultancy	Well Const	truction Log	5	Sheet: 2 of 10
Date Started: Date Complete Drilling Co.: Drilling Method Driller Name: Drilling Asst: Logger: Editor: Total Depth:	12/16/2018 d:04/09/2018 Cascade : Sonic Drilling Dan O'Mara E. Huellmantel / Michael Andrew Sean McGrane 184 ft bgs		Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Dat Well Completion:	529.1 ft amsl 2102862.2 7615260.4 10-12 inches 74.65 ft bgs	Client: PG&E Project: Final Location: 1 PG&E	MW-L-90, MW-L-180 Groundwater Remedy Phase Topock, Needles, California r: RC000753.0051
Groundw	Tormation CI	USCS Code USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
222	USCS = Unified S		(0.5 - 70.0') 2" PVC – Sch 40 Casing (18.0 - 65.0') Portland Cement 6% Bentonite (31.5 - 32.5') Centralizer	below ground surface	(18.0 - 65.0') 206.1 gallons	(18.0 - 65.0') 700 gallons (240%) Note: Type I, II, and V with Hydrogel
				pratory reporting limit, NR = samples were collected from		

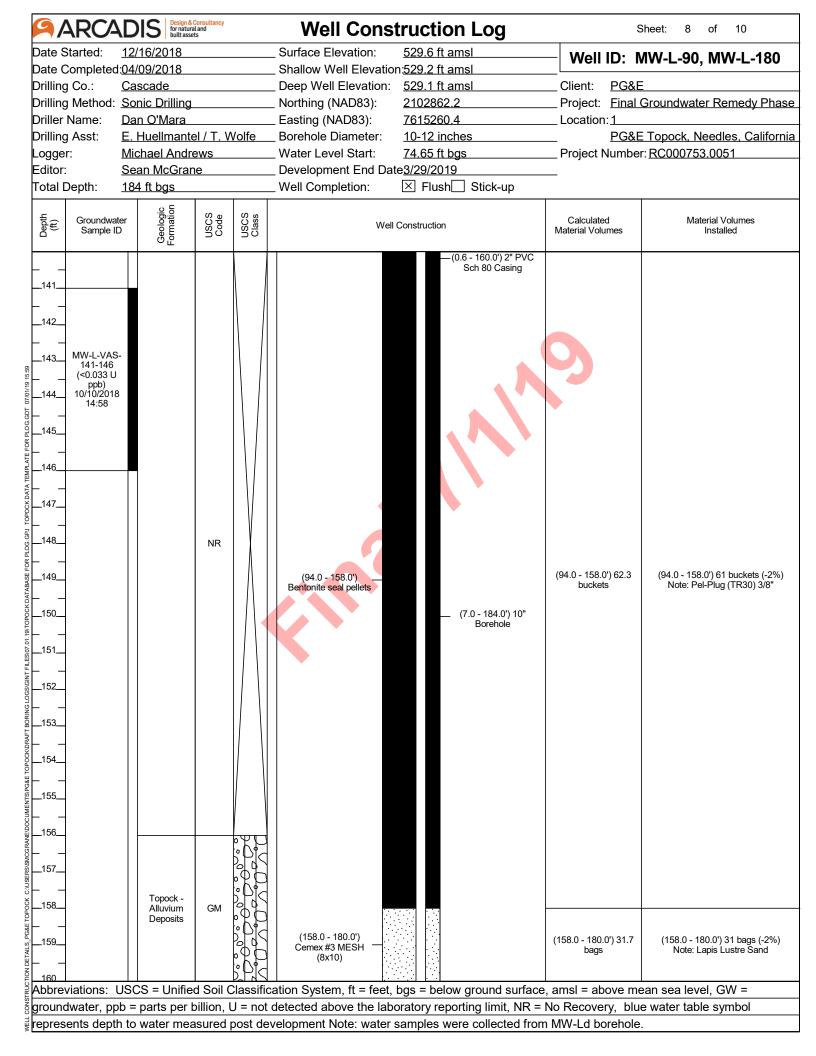
Logger:       Michael Andrews       Water Level Start:       74.65 ft bgs       Project Number: RC000753.0051         Editor:       Sean McGrane       Development End Date/3/29/2019       Development End Date/3/29/2019       Development End Date/3/29/2019       Development End Date/3/29/2019         Total Depth:       184 ft bgs       Well Completion:       X Flush       Stick-up <u> </u>	ARCA	ADIS Design & Co for natural a built assets	onsultancy and		Well Construction Log	5	Sheet: 3 of 10
Delling Co.: Cascade Delling Mohols Sonic Dilling Mohols 20120802 2 Project Final Croundwater Remoty Dilling Mohols 2 Didee 12 Inches PG&E						- Well ID: M	MW-L-90, MW-L-180
Diffing Method:         Some Diffing         Northing (MAD83)         2102862.2         Project:         End ScruduketEr.Bernedy           Durling Name:         E. Huelmantel/T. Wolfs         Borchole Diameter:         10:12 Galacia         Control to Table           Dorphin:         Michael Andrews         Water Level Start:         74.65.ft. bgs.         Project:         End ScruduketEr.Bernedy           Editor:         Sam McGrane         Davie proteit         Davie proteit         TA 65.ft. bgs.         Project:         Project:         Project:         End ScruduketEr.Bernedy         Water Level Start:         TA 65.ft. bgs.         Project:         End ScruduketEr.Bernedy         Water Level Start:         TA 65.ft. bgs.         Project:         End ScruduketEr.Bernedy         Water Level Start:         Total Day:         Project:         End ScruduketEr.Bernedy         Water Level Start:         Total Day:         Project:         End ScruduketEr.Bernedy         Water Level Start:         Total Day:         Project:         End ScruduketEr.Bernedy         Water Level Start:         Project:         End ScruduketEr.Bernedy         Water Level Start:         ScruduketEr.Bernedy         Water Level Start:         ScruduketEr.Bernedy         Project:         End ScruduketEr.Bernedy         Water Level Start:         ScruduketEr.Bernedy         ScruduketEr.Bernedy         ScruduketEr.Bernedy         ScruduketEr.Bern						Client: PG&F	=
Driller Name:         Dan OMara         Easting (NADS):         Z615280.4         Location:           Uniting Asst:         E Huellmandtr.1:         TWOITE         Dotter 1 work         Project Number: BC000753.0051           Editor:         Sean McGaal Addraws         Water Level Start:         Z4.85.11 bgs         Project Number: BC000753.0051           Editor:         Sean McGaal Addraws         Well Completion:         Image: Start:         Z4.85.11 bgs         Project Number: BC000753.0051           Editor:         Sean McGaal Addraws         Well Completion:         Image: Start:         Z4.85.11 bgs         Project Number: BC000753.0051           Editor:         Sean McGaal         Well Completion:         Image: Start:         Z4.85.11 bgs         Project Number: BC000753.0051           Editor:         Sean McGaal         Well Completion:         Image: Start:         Z4.85.11 bgs         Project Number: BC000753.0051           Editor:         Sean McGaal Addraws         Well Completion:         Image: Start:         Carcinet         Material Volume           Editor:         Start: Editor:         Start: Editor:         Image: Start:         Carcinet         Material Volume           Editor:         Image: Start:         Image: Start:         Image: Start:         Image: Start:           Editor:         Image:					-		
Logger:         Michael Andrews         Water Level Start:         Z4.65 ft bgs         Project Number: BC000753.0051           Total Dept:         184.ft bga         Well Completion:         Stick-up         Project Number: BC000753.0051	-	-					- -
Editor:       Sean.McGrane       Development End Dates/25/2019         Intervention:       184.ft.bgs.       Well Completion:       Image: True Provide Stark-up         Image: Sean.McGrane       Image: Sean.McGrane       Vell Completion:       Image: Stark-up         Image: Sean.McGrane       Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up         Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up         Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up         Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up         Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up         Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up         Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up         Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up         Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up       Image: Stark-up         Image: Stark-up	-						<u>E Topock, Needles, California</u>
Total Dept:       184 Huge       Well Completion:       Y Fluch       Stick-up                §              Completion:              §              §					0	Project Numbe	r: <u>RC000753.0051</u>
B         Coundedar         B			3				
Sen 40 Casing 41_ 42_ 44_ 44_ 44_ 44_ 44_ 44_ 44			USCS Code		· · ·		
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			ssifica	Sch 40 Časing	gallons	(18.0 - 65.0') 700 gallons (240%) Note: Type I, II, and V with Hydrogel
represents depth to water measured post development Note: water samples were collected from MW-Ld borehole.	-						



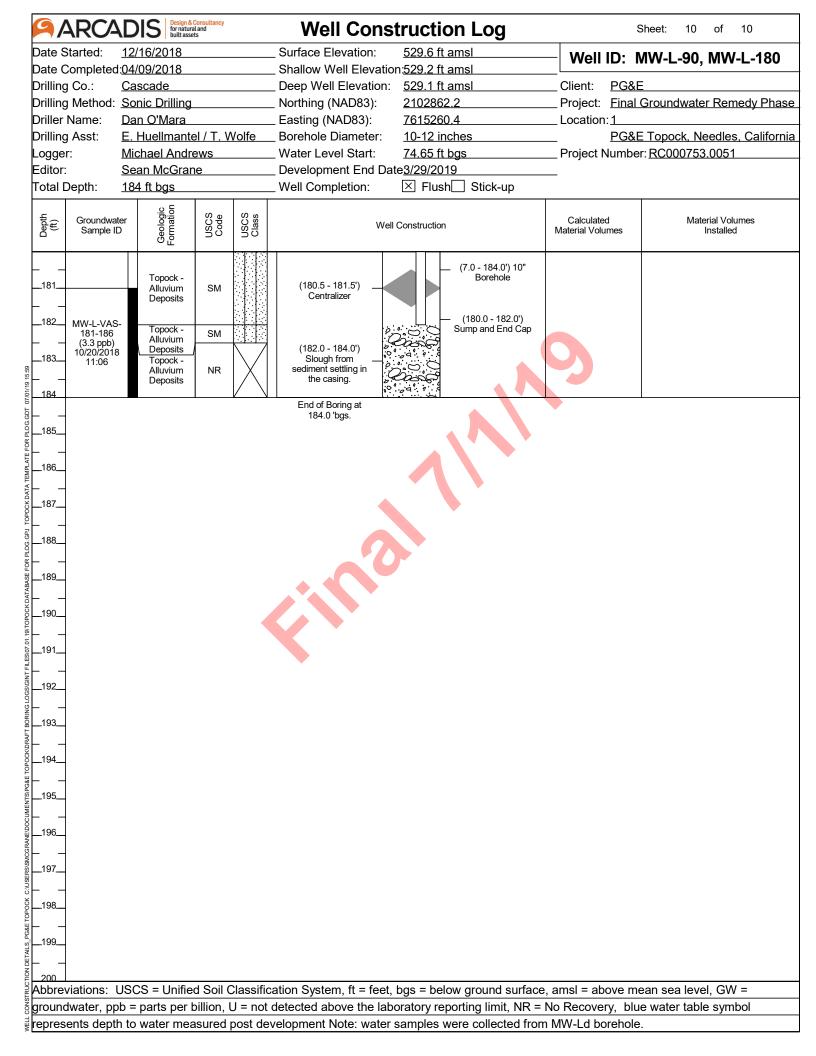


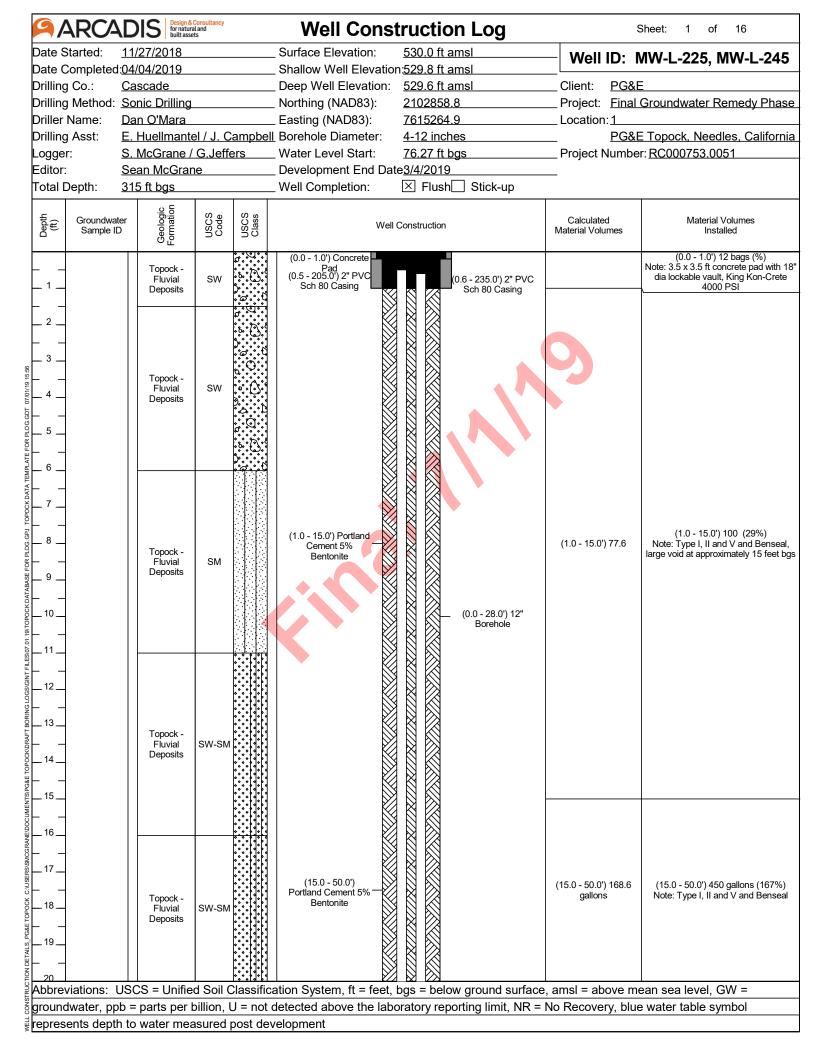
Date Started:     12/16/2018     Surface Elevation:     529.6 ft amsi     Well ID:     WW-L-90, MW-L-180       Date Completed QU09/2018     Shallow Well Elevation:     529.1 ft amsi     Client:     PG&E       Drilling Co:     Sanic Dulling     Northing (NAD83):     2102862.2     Project: Enal Groundwater Remedy Phase.       Drilling Asst:     E. Huellmantel / T. Wolfe     Borehole Diameter:     10.12 inches     Project: Enal Groundwater Remedy Phase.       Deprive Table View     Extention (NAD83):     2102862.2     Project: Number: Rc000753.0051     Ector:       Saan McGrane     Development End Date/2792019     Project: Number: Rc000753.0051     Ector:       Total Depth:     184.ft ftgs     Well Completion:     Image: Stick-up       %     %     %     %     %       104	ARC/	ADIS Design & C for natural built asset	<mark>Consultancy</mark> Land S		Well Const	ruction Log	\$	Sheet: 6 of 10
	Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:	d:04/09/2018 Cascade Sonic Drilling Dan O'Mara E. Huellmante Michael Andre Sean McGran	ews	fe	Shallow Well Elevation Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date	2529.2 ft amsl 529.1 ft amsl 2102862.2 7615260.4 10-12 inches 74.65 ft bgs 2/29/2019	Client: <u>PG&amp;I</u> Project: <u>Final</u> Location: <u>1</u> <u>PG&amp;I</u>	E Groundwater Remedy Phase E Topock, Needles, California
Sch 80 Casing Sch 80 Casing (94.0 - 158.07) 623 (94.0 - 158.07) 623 (94.0 - 158.07) 623 (94.0 - 158.07) 623 Sch 80 Casing Sch 80 Casin	Groundwa	Geologic Formation	USCS Code USCS	Class	Well (			
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =				ssifica	Bentonite seal pellets	Sch 80 Casing	buckets	Note: Pel-Plug (TR30) 3/8"
groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	[0							
represents depth to water measured post development Note: water samples were collected from MW-Ld borehole.	represents dep	h to water mea	sured pos	t deve	elopment Note: water s	amples were collected from	n MW-Ld borehole	·

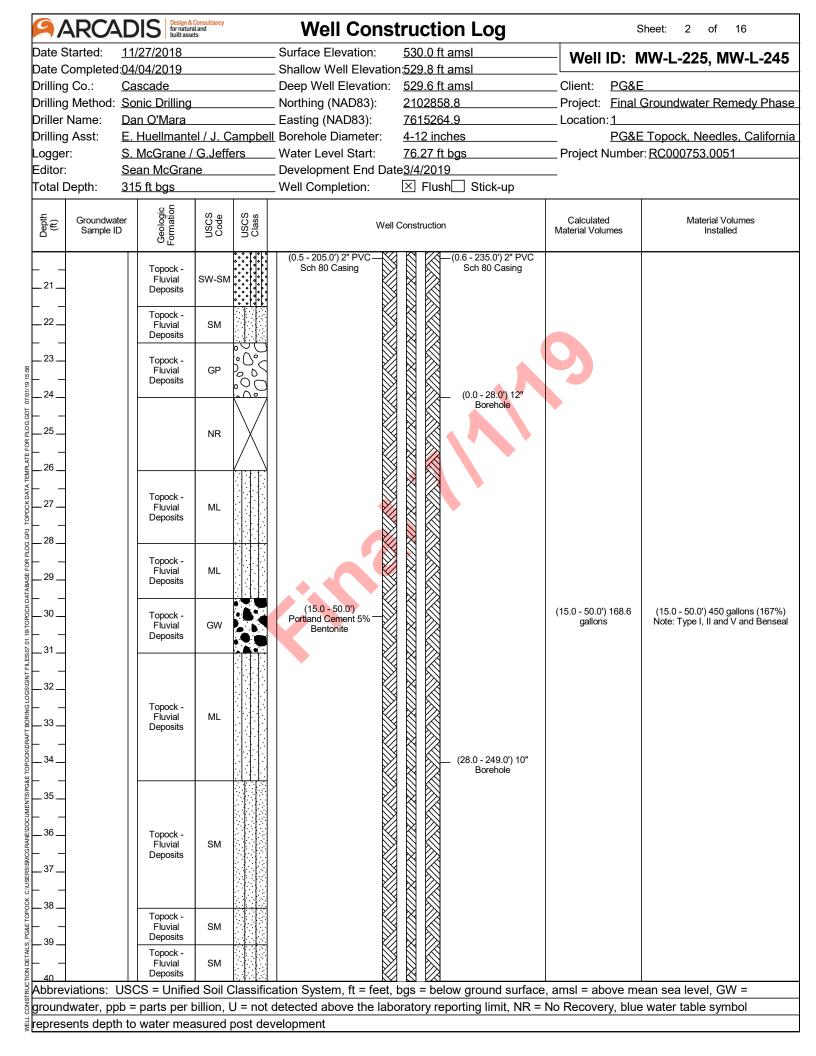
	ADIS Design & I for natura built asse	<mark>Consultancy</mark> Land ts		Well Const	ruction Log	S	heet: 7 of 10
Date Started:	12/16/2018			_Surface Elevation:	529.6 ft amsl	Well ID: N	1W-L-90, MW-L-180
Date Completed				Shallow Well Elevation			
Drilling Co.: Drilling Method:	Cascade			Deep Well Elevation:	2102862.2	Client: <u>PG&amp;E</u>	Groundwater Remedy Phase
Driller Name:	<u>Sonic Drilling</u> Dan O'Mara			_ Northing (NAD83): _ Easting (NAD83):	7615260.4	Project. <u>Final C</u> Location: <u>1</u>	<u>Sioundwaler Remedy Phase</u>
Drilling Asst:	E. Huellmante		olfo	_ Borehole Diameter:	<u>10-12 inches</u>		Topock, Needles, California
Logger:	Michael Andre			_ Water Level Start:	74.65 ft bgs		: <u>RC000753.0051</u>
Editor:	Sean McGran			_ Development End Dat	-		
Total Depth:	184 ft bgs	-		_ Well Completion:	∑ Flush Stick-up		
fa (f) Sample I	ter odici	USCS Code	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
		NR		(94.0 - 158.0) Bentonite seal pellets (131.5 - 132.5') Centralizer	— (7.0 - 184.0') 10" Borehole	(94.0 - 158.0') 62.3 buckets	(94.0 - 158.0') 61 buckets (-2%) Note: Pel-Plug (TR30) 3/8"
unbroviatione.	USCS = Unifie				bgs = below ground surfa		
			I —	بطمل مطغ مندمطم لممغم مغمام	ratory reporting limit NE	- No Recovery blue	watar tabla symbol
roundwater, p					amples were collected f		

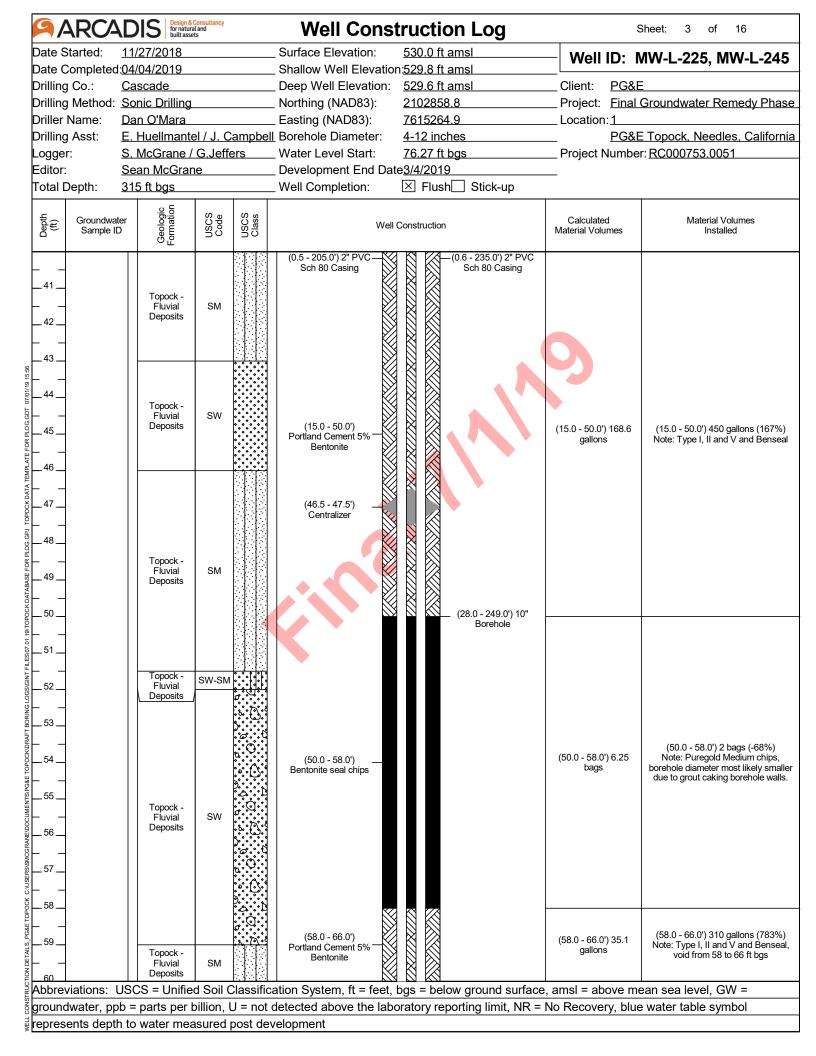


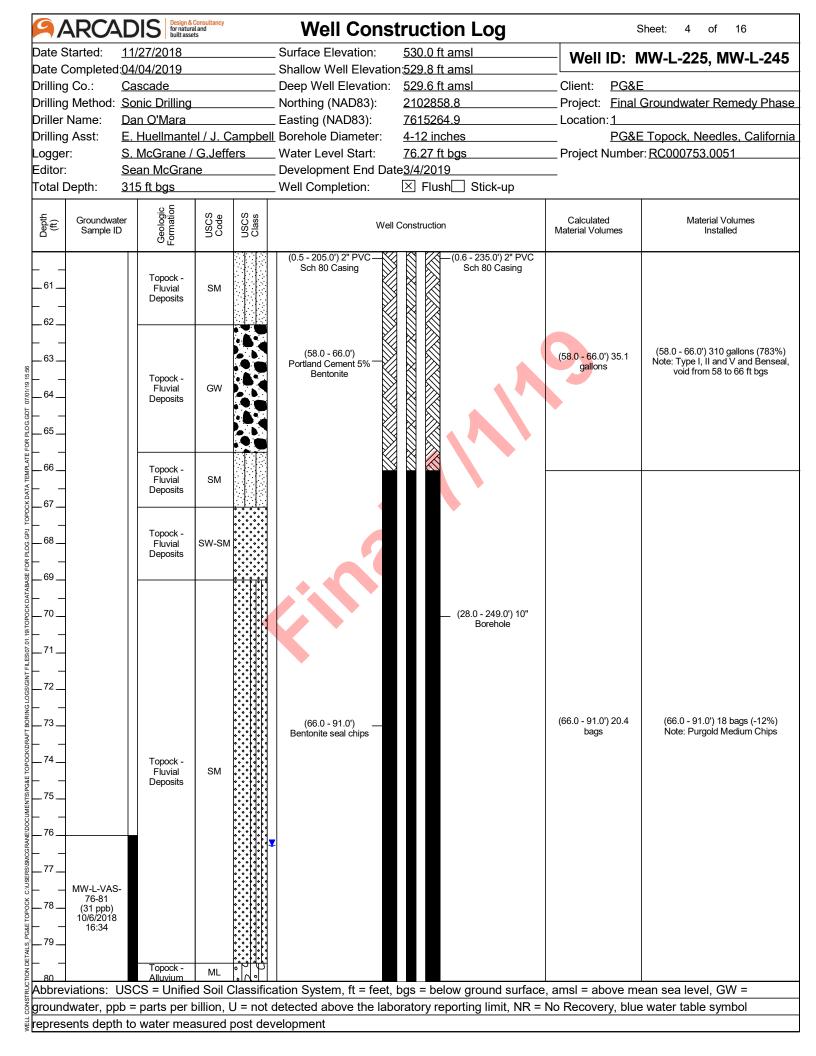
ARCAD	Design & C for natura built asset	<mark>Consultancy</mark> Land ts		Well Construction Log	SI	heet: 9 of 10
	/16/2018			Surface Elevation: <u>529.6 ft amsl</u>	- Well ID: M	IW-L-90, MW-L-180
ate Completed:04				Shallow Well Elevation:529.2 ft amsl		
•	ascade			Deep Well Elevation: <u>529.1 ft amsl</u>	Client: PG&E	
rilling Method: <u>Sc</u>	•			Northing (NAD83): <u>2102862.2</u>	-	Broundwater Remedy Phase
	an O'Mara Huellmante		Volfo	_ Easting (NAD83): <u>7615260.4</u> _ Borehole Diameter: <u>10-12 inches</u>	Location: <u>1</u>	Topock, Needles, Californi
-	chael Andre		vone	_ Borenole Diameter: <u>10-12 inches</u> _ Water Level Start: <u>74.65 ft bgs</u>		RC000753.0051
	enaci Andre			Development End Date <u>3/29/2019</u>		.10000733.0031
	4 ft bgs			Well Completion: X Flush Stick-up		
Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
	Ge For	50		[		installed
- 161 .162 .163 _	Topock - Alluvium Deposits	SM		Sch 80 PVC (20-slot) Screen	9	
164 165 166 166 167	Topock - Alluvium Deposits	GM				
	Topock - Alluvium Deposits	SM		(158.0 - 180.0") Cemex #3 MESH (7.0 - 184.0") 10"	(158.0 - 180.0') 31.7	(158.0 - 180.0') 31 bags (-2%)
	Topock - Alluvium Deposits	GM		(8x10) Borehole	bags	Note: Lapis Lustre Sand
.178  .179	Topock - Alluvium Deposits	SM				
				ation Overlage fight for the second second		
bbreviations: US				ation System, ft = feet, bgs = below ground surface detected above the laboratory reporting limit, NR =		

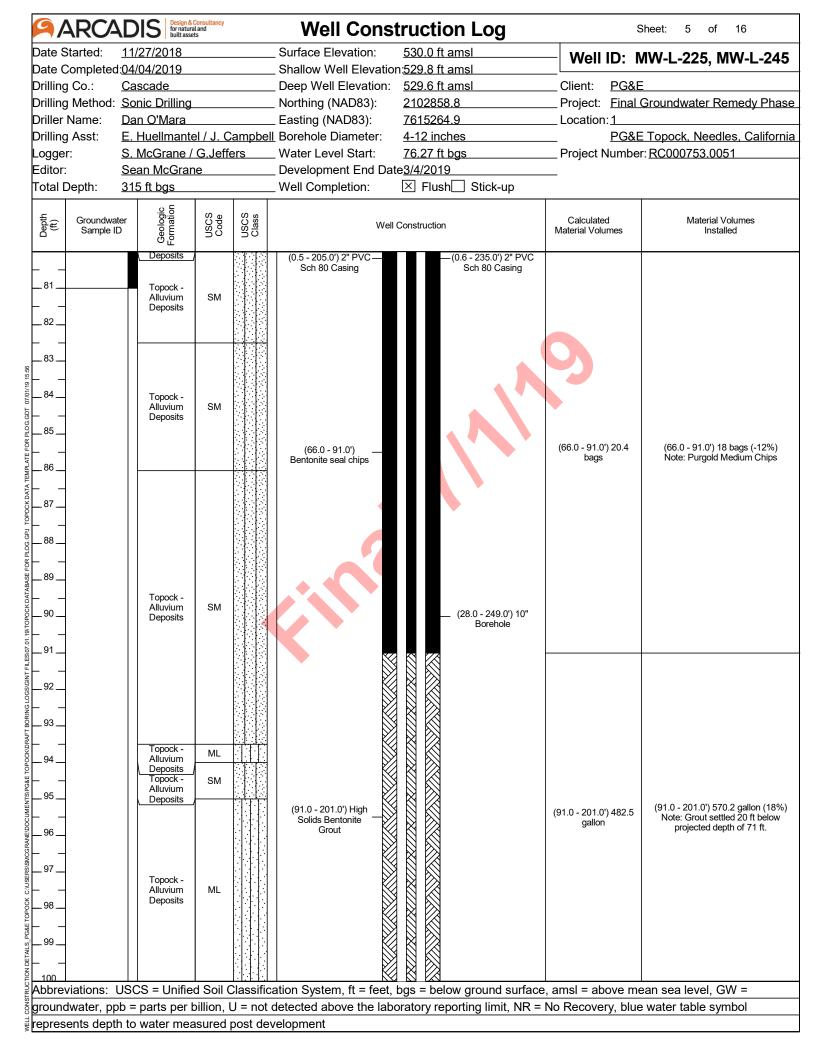












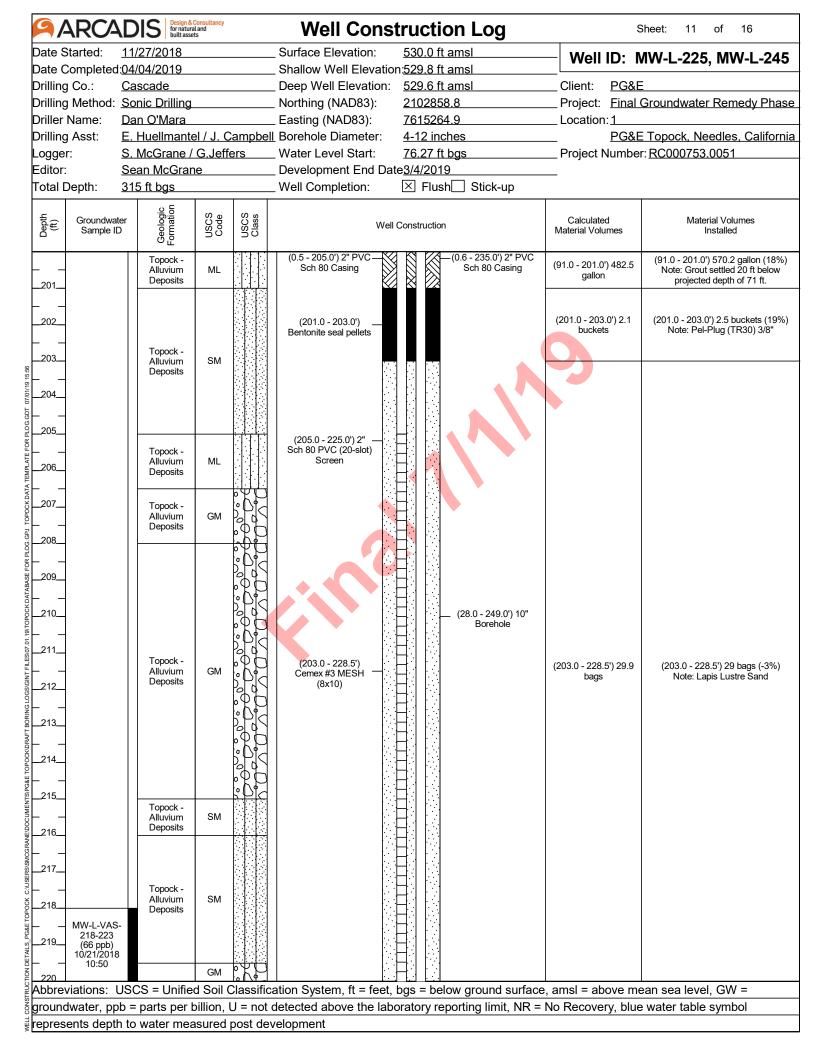
	built asset	Consultancy Land Is		ruction Log	S	heet: 6 of 16
_	1/27/2018			530.0 ft amsl	- Well ID: N	IW-L-225, MW-L-245
ate Completed:			Shallow Well Elevation:			•
•	Cascade		Deep Well Elevation:		Client: PG&E	
rilling Method: S	-		• ( )	2102858.8	•	Groundwater Remedy Phase
	Dan O'Mara		e (	7615264.9	Location:1	
•				4-12 inches		Topock, Needles, California
00	<u> 6. McGrane /</u>			76.27 ft bgs	Project Number	: <u>RC000753.0051</u>
	Sean McGran	е	Development End Date			
otal Depth: 3	315 ft bgs		Well Completion:	⊠ Flush Stick-up		
Groundwater Generation Generatio	Geologic Formation	USCS Code USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	ML	(106.5 - 107.5') (106.5 - 107.5') Centralizer (91.0 - 201.0') High Solids Bentonite Grout	Sch 80 Casing	(91.0 - 201.0') 482.5 gallon	(91.0 - 201.0') 570.2 gallon (18%) Note: Grout settled 20 ft below projected depth of 71 ft.
 113 114	Topock - Alluvium Deposits	ML				
114  115 1116 1117 1118 1119	Topock - Alluvium Deposits	ML				
120	 SCS – Unific		ification System ft - fact h	K KA		an sea level CW -
nnreviations. U	SUS = Unifie		ification System, ft = feet, b	÷ ÷		
				atony roporting limit ND -	No Pocovory blue	water table symbol
			ot detected above the labor		No Necovery, Dide	

130	ARCAD	DIS Design & C for natural built asset	<mark>Consultancy</mark> Land S		Well Const	ruction Log	S	heet: 7 of 16
priling Coi: Cascade Deep Well Elvestor: 529.6.f. anal Client: PCAE Final Coundwater Remedy Phar Project Final Coundwater Remedy Phar Project Final Coundwater Remedy Phar Project Number / Ecological Coundwater Remedy Phar							Well ID: N	IW-L-225, MW-L-245
Priming Method:         Sonic Defining         Northing (NAD83)         2102858.8         Project:         Final Construction:           reliner Name:         Data O'Mara         Easting (NAD83)         2102858.8         Project:         Final Construction:         Image: SubScrapped Construction:         Image: SubScrapped Construction:         Image: SubScrapped Construction:         Project:         Final Construction:         Image: SubScrapped Construction:         Image: SubScrapped Construction:         Project:         Final Construction:         Image: SubScrapped Construction:         Image: SubScrapped Construction:         Image: SubScrapped Construction:         Project:         Final Construction:         Image: SubScrapped Constructin:         Image: SubScrapped ConsubScrapped Constructi	•						L Client: PG&E	:
Initian Sector         Dan. O'Man         Easting (MAD83)         7615264.9.         Location: 1           orgger:         S. McGrane         Comptell Rovoldo Diameter         7627.10 pcs.         PRAE Topock. Nuedes. Caliform           othor         Stan McGrane         Development End Data/4/2019         Project Number: RC000753.0051         Project Number: RC000753.0051           get         Countroller         Bit Stan MacGrane         Development End Data/4/2019         Project Number: RC000753.0051           get         Countroller         Bit Stan MacGrane         Development End Data/4/2019         Caliform           get         Countroller         Bit Stan MacGrane         State Countroller         Material Volume           get         Countroller         Bit State Countroller         Bit State Countroller         Material Volume           122         Image: State Countroller         Material Volume         Material Volume         Material Volume           123         Image: State Countroller         Material Volume         Material Volume         Material Volume           124         Image: State Countroller         Image: State Countroller         Image: State Countroller         Material Volume           125         Image: State Countroller         Image: State Countroller         Imagerint State Countroller         Imagerial State C	-							
Hilling Ass.         E. Huelmante/ J. Campell Borenole Diameter         4-12 mches         PG&E Topock Needles. Caliform sources           didor:         Seam McGrane (	•	•			• • • •		-	Stoundwater Hemedy Fildot
Opport         S. McGrane / G. Jeffers         Water Level Start:         72.7. Tops:         Project Number: BC000753.0051           cital Deptit:         315.1 bgs         Well Completion:         Image: Start:         Control of the start:         Project Number: BC000753.0051           fig:         Oranjoetto         Big:			el / J. Cam		,			Topock, Needles, California
Other Depth         315 flags         Well Completion:         Item _ Stack-up           Bee         Oranneer         Bee         Oranneer         Advantation         Material Volume         Material	-			-				•
B         Ourodestr         B	ditor: <u>Se</u>	an McGran	е	D	evelopment End Date	3/4/2019		
121         Attourn         ML         1         0.5 - 26.0 () 2 PVC         Sch 80 Casing           122         Attourn         ML         1         0.5 - 26.0 () 2 PVC         Sch 80 Casing           122         Topost- Attourn         ML         1         0.5 - 26.0 () 2 PVC         Sch 80 Casing           123         Topost- Attourn         ML         1         0.5 - 26.0 () 2 PVC         Sch 80 Casing           124         Topost- Attourn         ML         1         0.5 - 26.0 () 2 PVC         Sch 80 Casing           124         Topost- Attourn         ML         1         0.5 - 26.0 () 2 PVC         Sch 80 Casing           125         Topost- Attourn         ML         1         0.5 - 26.0 () PVFp         Sch 80 Casing           126         Topost- Attourn         ML         1         0.5 - 20.0 () PVFp         Sch 80 Casing           136         Topost- Attourn         ML         1         0.5 - 20.0 () PVFp         Sch 80 Casing           137         Topost- Attourn         ML         1         0.5 - 20.0 () PVFp         Sch 80 Casing           138         Topost- Attourn         ML         1         0.5 - 20.0 () PVFp         Sch 80 Casing           139         ML         1         0.5	otal Depth: <u>31</u>	5 ft bgs		V	Vell Completion:	⊠ Flush⊡ Stick-up		
Autuum         Mul         I         I         Sol 80 Caarg         Sol 80 Caarg           122         Autuum         Mul         I	Groundwater Geo Sample ID	Geologic Formation	USCS Code USCS	Class	Well C			
1/22       1/24       1/20		Alluvium	ML					
128       Topock - Altrivium Deposits       ML       Image: Construction of the construc		Alluvium	ML				9	
	 	Alluvium	ML		Solids Bentonite	(28.0 - 249.0') 10" Borehole	(91.0 - 201.0') 482.5 gallon	
		Alluvium	ML					
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =								
		20 - 11	101				amal – aharra i	a = a = a = a = a
roundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol						• •		

Bit Completed 40(4/2019	<b>ARCAI</b>	DIS Design & C for natural built asset:	c <mark>onsultancy</mark> and s		Well Construction Log	S	Sheet: 8 of 16
Hile Yate: Dan CMara Easting (MAD83): 2515226.0 Location: Location	Date Completed: <u>0</u> Drilling Co.: <u>C</u>	4/04/2019 Cascade			Shallow Well Elevation <u>529.8 ft amsl</u> Deep Well Elevation: <u>529.6 ft amsl</u>	Client: <u>PG&amp;E</u>	
Opper:         St. McGrane / G. Jeffers         Water Level Start         75.27 rt. bg         Project Number: RC020733.051           otal Depti:         315 ft. bg         Well Completion:         Image: Project Number: RC020733.051         Image: Project Number: RC020733.051           ge         concenteer         ge         Start Big         Image: Project Number: RC020733.051         Image: Project Number: RC020733.051           ge         concenteer         ge         Start Big         Vell Completion:         Image: Project Number: RC020733.051           de         concenteer         ge         Start Big         Vell Completion:         Image: Project Number: RC02073.051           de         concenteer         ge         Start Big         Vell Completion:         Image: Project Number: RC02073.051         Material Volume           de         concenteer         start Big         Image: Project Number: RC0207107	Driller Name: D	Dan O'Mara	l / J. Ca	mpbell	Easting (NAD83): 7615264.9	Location:1	
144         145         10         1	Logger: <u>S</u> Editor: <u>S</u>	<u> 6. McGrane /</u> Sean McGran	<u>G.Jeffer</u>	-	Water Level Start: <u>76.27 ft bgs</u> Development End Date <u>3/4/2019</u>		
141       142       143       144       1		Geologic Formation	USCS Code	USCS Class			
149 149 149 149 150 151 152 154 155 155 155 155 155 155 155	    	Alluvium	o o o o ML D o o o o o o o o o o o o o o o o o o	<u>ݥݸݥݥݸݥݥݸݥݥݸݥݥݸݥ</u> ݥ ݥݥݥݥݥݥݥݥݥݥݥݥݥݥݥݥ			
1152_1       Topock - Aluvium Deposits       SM         1153_1       Topock - Aluvium Deposits       GM         1154_1       Topock - Aluvium SM         1155_1       Topock - Aluvium SM         1156_1       Topock - Aluvium BM         1158_1       Topock - Aluvium BM         1159_1       Topock - Aluvium BM         1150_1       Topock - Aluvium BM		Alluvium	SM		Solids Bentonite	(91.0 - 201.0') 482.5 gallon	Note: Grout settled 20 ft below
	 152 	Alluvium	SM				
155       Image: Constraint of the second seco	_153  _154	Alluvium Deposits	GM				
156       Image: Construction of the symbol         157       Image: Construction of the symbol         158       Image: Construction of the symbol         158       Image: Construction of the symbol         159       Image: Construction of the symbol         160       Image: Construction of the symbol         Ibbreviations:       USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = roundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	 155	Alluvium Deposits Topock -					
158       Topock -         158       Alluvium         159       SM         160       SM         bbreviations:       USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =         roundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	 _156 	Deposits Topock - Alluvium	0				
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = roundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol		Topock - Alluvium					
	Abbreviations: US				· · · ·		
					· · · · ·	No Recovery, blue	water table symbol

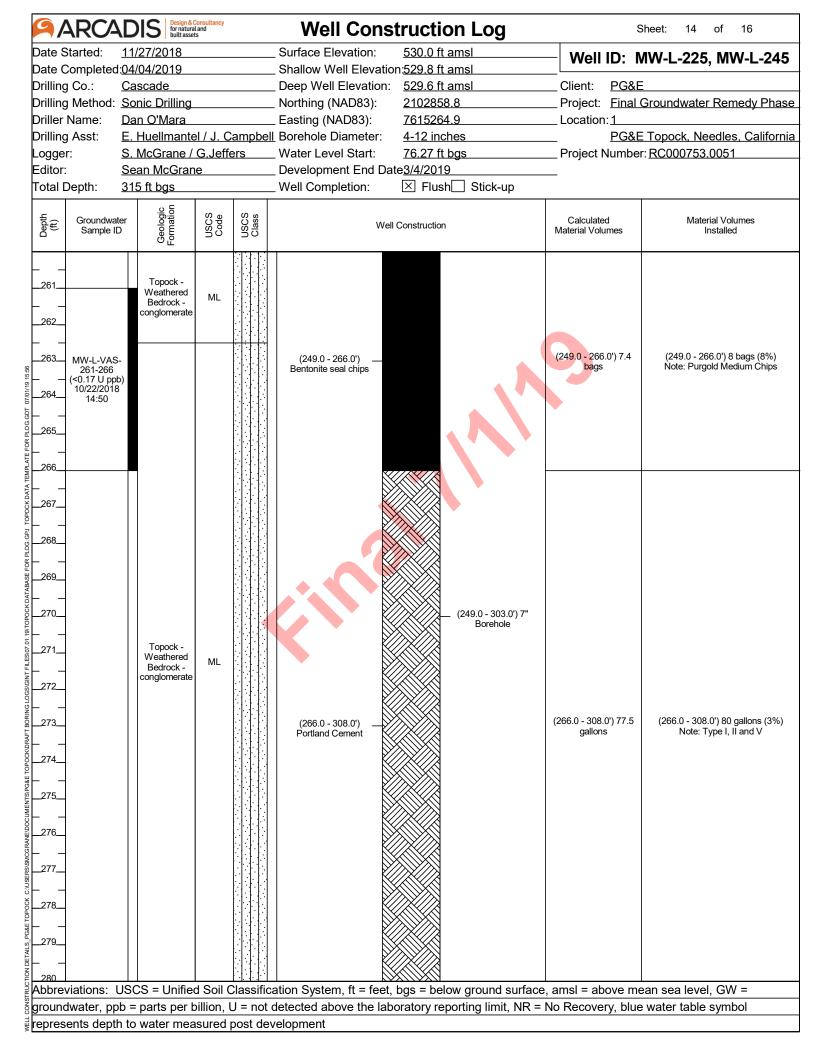
te Completed 40:42019 Shallow Well Elevation 520.6 ft amail Illing Asterna Seada Deep Well Elevation 520.6 ft amail Elling Asterna Seada Deep Well Elevation 520.6 ft amail Illing Asterna Seada Deep Well Elevation 520.6 ft amail Illing Asterna Seada Deep Well Elevation 520.6 ft amail Illing Asterna Seada Diagonal Borehole Diameter S.McGrane Deep Well Completion 25.2 ft amail Illing Asterna Seada Diagonal Borehole Diameter S.McGrane Deep Well Completion 25.2 ft amail Illing Asterna Seada Diagonal Borehole Diameter S.McGrane Deep Well Completion 25.2 ft amail Development End DataMi2019 Illing Asterna Seada Diagonal Borehole Diameter S.McGrane Development End DataMi2019 Illing Asterna Seada Diagonal Diagonal Borehole Diameter S.McGrane Development End DataMi2019 Illing Asterna Seada Diagonal Diagona	Date Completed:04/04/2019       Shallow Well Elevation:529.8 ft amsl         Drilling Co.:       Cascade       Deep Well Elevation: 529.6 ft amsl         Drilling Method:       Sonic Drilling       Northing (NAD83):       2102858.8         Driller Name:       Dan O'Mara       Easting (NAD83):       7615264.9	
le Compteteid y20,42,019	Date Completed:04/04/2019       Shallow Well Elevation:529.8 ft amsl         Drilling Co.:       Cascade       Deep Well Elevation: 529.6 ft amsl       Client: PG&E         Drilling Method:       Sonic Drilling       Northing (NAD83):       2102858.8       Project: Final Groundwater Remedy         Driller Name:       Dan O'Mara       Easting (NAD83):       7615264.9       Location: 1	
ling Mehod: Sonic Dilling. MoR39: 2102858.8. Project: Find Conductor: Remedy Pha ling Asst: E. Hudlmant J.J. Campbell Borehole Diameter: 4-12 inches ger: S. AufGrand / C. Leffers Saan McGrand / C. Leffers Vell Completion: E Plus Hold Sitck-up Vell Completion: E Plus Hold Sitck-up Mel Complet	Drilling Method:       Sonic Drilling       Northing (NAD83):       2102858.8       Project:       Final Groundwater Remedy         Driller Name:       Dan O'Mara       Easting (NAD83):       7615264.9       Location: 1	Phase
Her Name:     Dan CMara     Easting (NAD63):     7512264.9.     Location: 1.       Iming Ast:     Linchas     PGSE Topock. Needles: Caliform       ger:     S.McGrane/G.J.effors     Water Level Start:     X52.21 Linchas       Project Number:     Development End Dates 34/2019     Project Number:     Project Number:       ial Dept:     315.ft.bga.     Well Completion:     Einer     Project Number:       ial Dept:     356     93.8     93.8     Well Completion:     Einer       ial Dept:     356     95.8     93.8     93.8     93.8 <t< td=""><td>Driller Name: Dan O'Mara Easting (NAD83): <u>7615264.9</u> Location: <u>1</u></td><td>riiasu</td></t<>	Driller Name: Dan O'Mara Easting (NAD83): <u>7615264.9</u> Location: <u>1</u>	riiasu
ling Assi E. Huellmartel (J. Campbell Borehole Diameter: 4-12 inches PG&E Topock. Needles; Calfor ger: S. AufGrane / Lefter: Work Level Start: 722 / 11 bps al Dept: 315 ft.bgs well Completion: E Fush Stick-up e <u>Condettr</u> <u>See 100 Caster</u> <u>Undettr</u> <u>See 100 Caster</u> <u>Undettr</u> <u>See 100 Caster</u> <u>Undettr</u> <u>See 100 Caster</u> <u>Undettr</u> <u>See 100 Caster</u> <u>Undettr</u> <u>See 100 Caster</u> <u>Undettr</u> <u>See 100 Caster</u> <u>See 100 Caster</u> <u>See</u>		
gen: S. McGrane / G.Jeffers Water Level Start 76.27 ft.bg. Project Number: RC000753.0051 berein 2015 ft.bg. Veter Level Start 76.27 ft.bg. Project Number: RC000753.0051 Development End Dates34/0219 2 Conductor 2 Fush Stick-up 2 Fush Stick-up 2 Conductor 2 Fush Stick-up 2 Fush Stick-up 2 Conductor 2 Fush Stick-up 2 Conductor 2 Fush Stick-up 2 Fush Stick-up 2 Conductor 2 Fush Stick-up 2 Conductor 2 Fush Stick-up 2 Fush Stick-up 2 Fush Stick-up 2 Fush Stick-up 2 Fush Stick-up 2 Fush Stick-u		iforni
Bann, MicSinane     Development End Data34/2019       ial Depth:     315 it bgs       ©     Oracle in the second sec		
Lia Depth:       215.ft bgs       Well Completion:       Image: Completion:       Image: Completion:       Calculated         Construction       Organization       Organization       Organization       Organization       Calculated       Material Volume       Material Volume         Image: Completion:       Organization       Organization       Organization       Calculated       Material Volume       Material Volume         Image: Completion:       Organization       Organization       Organization       Organization       Organization       Organization       Material Volume       Material Volume         Image: Completion:       Organization       Office: -2000 // 2 FWC         Image: Completion:       Deposite       DM       Organization       DM       Office: -2000 // 2 FWC       Office: -2000 // 2 FWC </td <td><b>o</b> ,</td> <td></td>	<b>o</b> ,	
1         Topock- Aluxim Deposite         SM         Image: SM <td< td=""><td></td><td></td></td<>		
-         -	End     Groundwater     So     So<	
$ \begin{bmatrix} 1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 $	Sch 80 Casing _161TopockAlluvium SM	
ar     Topock- Ba     Topock- Alluvium Deposits     GM     SM       ra     Topock- Alluvium Deposits     SM     (196.5 - 167.5) Centralizor     - (28.0 - 20.0) 10° Boretole     (91.0 - 201.0) 570.2 galon (19% Note: Grout settled 20 it below projected depth of 71 ft.       ra     Topock- Alluvium Deposits     GM     Contralizor     - (28.0 - 20.0) 10° Boretole     (91.0 - 201.0) 570.2 galon (19% Note: Grout settled 20 it below projected depth of 71 ft.       ra     Topock- Alluvium Deposits     GM     Contralizor     - (28.0 - 20.0) 10° Boretole     (91.0 - 201.0) 570.2 galon (19% Note: Grout settled 20 it below projected depth of 71 ft.       ra     Topock- Alluvium Deposits     GM     Contralizor     - (28.0 - 20.0) 10° Boretole     (91.0 - 201.0) 570.2 galon (19% Note: Grout settled 20 it below projected depth of 71 ft.	· -     Alfuvium   SM [注注[注]	
BB     Topock- Aluvium     SM     Image: SM <td></td> <td></td>		
71       Topock - Alluvium       GM       SOC       SOC       SOC         72       Alluvium       GM       SOC       SOC       SOC         73       SOC       SOC       SOC       SOC       SOC         74       SOC       SOC       SOC       SOC       SOC         75       SOC       SOC       SOC       SOC       SOC         76       SOC       SOC       SOC       SOC       SOC         76       Topock - Alluvium       SM       SOC       SOC         77       Topock - Alluvium       SM       SOC       SOC         78       Topock - Alluvium       SM       SM       SM         79       Soci       SM       SM       SM       SM         80       SOC       SM       SM       SM       SM       SM         90       Soci       SM       SM       SM       SM       SM       SM         90       Soci       SM       SM       SM       SM       SM       SM       SM         91       Topock - Alluvium       SM       SM       SM       SM       SM       SM       SM       SM       SM	169 Alluvium Deposits SM	
75       Topock - Alluvium Deposits       GM	171 172 Topock - Alluvium GM	
77       Alluvium Deposits       SM         78       Topock - Alluvium Deposits       SM         79       SM         60       SM         breviations:       USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = pundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol		
79_       Alluvium       SM       SM       SM       Image: Construction of the symbol         80       breviations:       USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = pundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	- Topock - Alluvium SM	
breviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = pundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	179_ Alluvium Deposits SM	
bundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	tao	
	· · ·	
	presents depth to water measured post development	

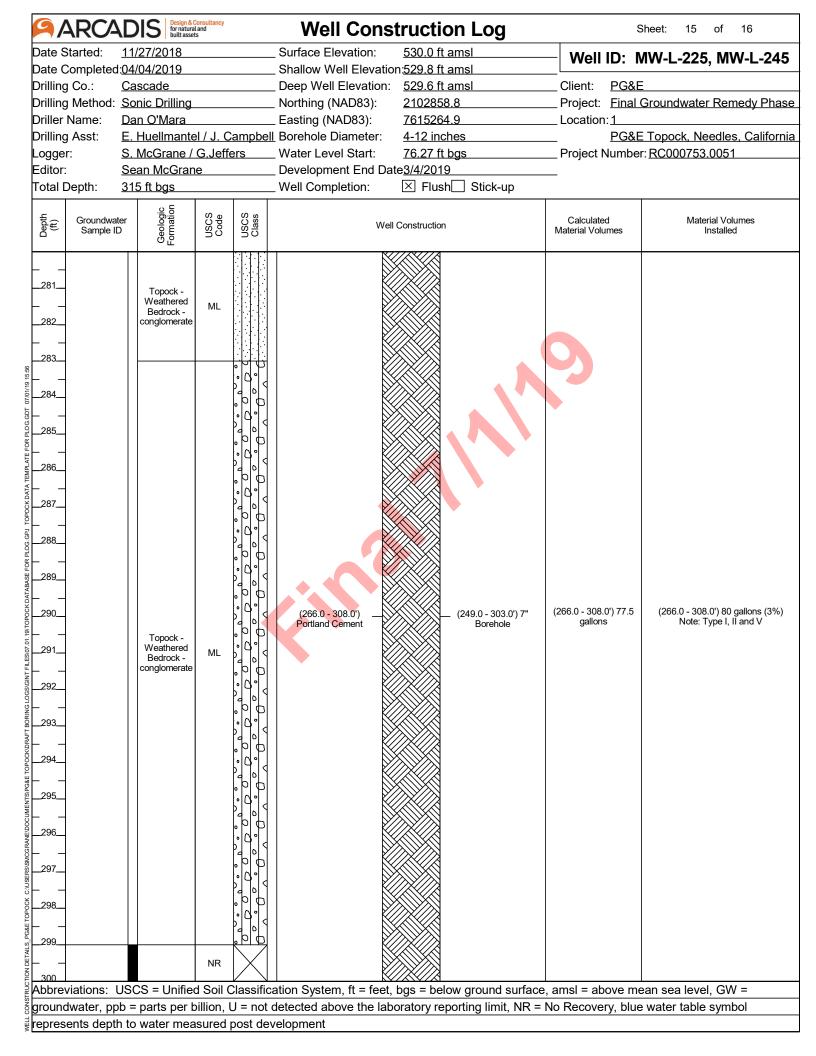
ale Campeland 2010/2019. Shallow Weil Elevation: 520.8.1 amsl. Urent D. 1007-12-220, 900-12-200, 900-12-220, 900-12-200, 900-12-200, 900-12-200, 900-1	ARCAE	DIS Design & C for natural built assets	<mark>onsultancy</mark> and s	Well Construction Log	S	Sheet: 10 of 16
tifor: <u>Sean McCrane</u> <u>Development End Date-34/2019</u> tela Depth: <u>315 togs</u> <u>Well Completion</u> : <u>○ Flush</u> <u>Stick-up</u> <u>de <u>Sean McCrane</u> <u>Bage</u> <u>Bage</u> <u>Bage</u> <u>Bage</u> <u>Bage</u> <u>Bage</u> <u>Well Completion</u>: <u>○ Flush</u> <u>Stick-up</u> <u>de <u>Sean McCrane</u> <u>Bage</u> </u></u>	Date Completed: Drilling Co.: <u>C</u> Drilling Method: <u>S</u> Driller Name: <u>D</u> Drilling Asst: <u>E</u>	4/04/2019 ascade onic Drilling an O'Mara . Huellmante	I / J. Campbo	Shallow Well Elevation: 529.8 ft amsl Deep Well Elevation: 529.6 ft amsl Northing (NAD83): 2102858.8 Easting (NAD83): 7615264.9 ell Borehole Diameter: 4-12 inches	Client: <u>PG&amp;E</u> Project: <u>Final</u> Location: <u>1</u> <u>PG&amp;E</u>	Groundwater Remedy Phase
$ \frac{1}{2} = \begin{bmatrix} \frac{1}{2} & \frac$	Editor: <u>S</u>	ean McGran		Development End Date <u>3/4/2019</u>		
19-       Topok: Makum Depositions       SM	fa Groundwater		USCS Code USCS Class	Well Construction		
183 - MV - LVAS - 100000 10 - 2010 0000 00 - 2010 0000 - 201000 - 20100 - 2010 0000 - 2010 - 2010 - 2010 0000 - 2010 - 20100	 _181	Alluvium	SM			
186       Topock- Alucium Deposits       SM       Image: SM <td> (3.3 ppb) 10/20/2018</td> <td>Alluvium</td> <td>ML</td> <td></td> <td>9</td> <td></td>	(3.3 ppb) 10/20/2018	Alluvium	ML		9	
188       Allowing       ML       Image: Constraint of the con	_185  _186	Alluvium	SM			
190       191.0201.07) High Socials Benchronie       (91.0201.07) High Borehole       (91.0201.07) High gallon       (91.0201.07) High Note: Grout settled 20 hielow projected depth of 71 ft.         191       192       Alluvium Deposits       SM       SM       (91.0201.07) High Socials Benchronie       (91.0201.07) High Borehole       (91.0201.07) High Borehole       (91.0201.07) High Socials Benchronie       (91.0201.07) High Social Social Soc	_187  _188	Alluvium	ML			
197       Image: Construction of the symbol       ML       Image: Construction of the symbol         198       199       Image: Construction of the symbol       Image: Construction of the symbol         199       199       Image: Construction of the symbol       Image: Construction of the symbol         199       Image: Construction of the symbol       Image: Construction of the symbol       Image: Construction of the symbol         199       Image: Construction of the symbol       Image: Construction of the symbol       Image: Construction of the symbol         199       Image: Construction of the symbol         199       Image: Construction of the symbol       Image: Construction of the symbol       Image: Construction of the symbol         199       Image: Construction of the symbol       Image: Construction of the symbol       Image: Construction of the symbol         199       Image: Construction of the symbol       Image: Construction of the symbol       Image: Construction of the symbol         199       Image: Construction of the symbol       Image: Construction of the symbol       Image: Construction of the symbol         199       Image: Construction of the symbol       Image: Construction of the symbol       Image: Construction of the symbol         199       Ima		Alluvium	SM	Solids Bentonite		
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = roundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	     	Alluvium	ML			
	Abbreviations: US			· · · · ·		
				· · · ·	No Recovery, blue	e water table symbol

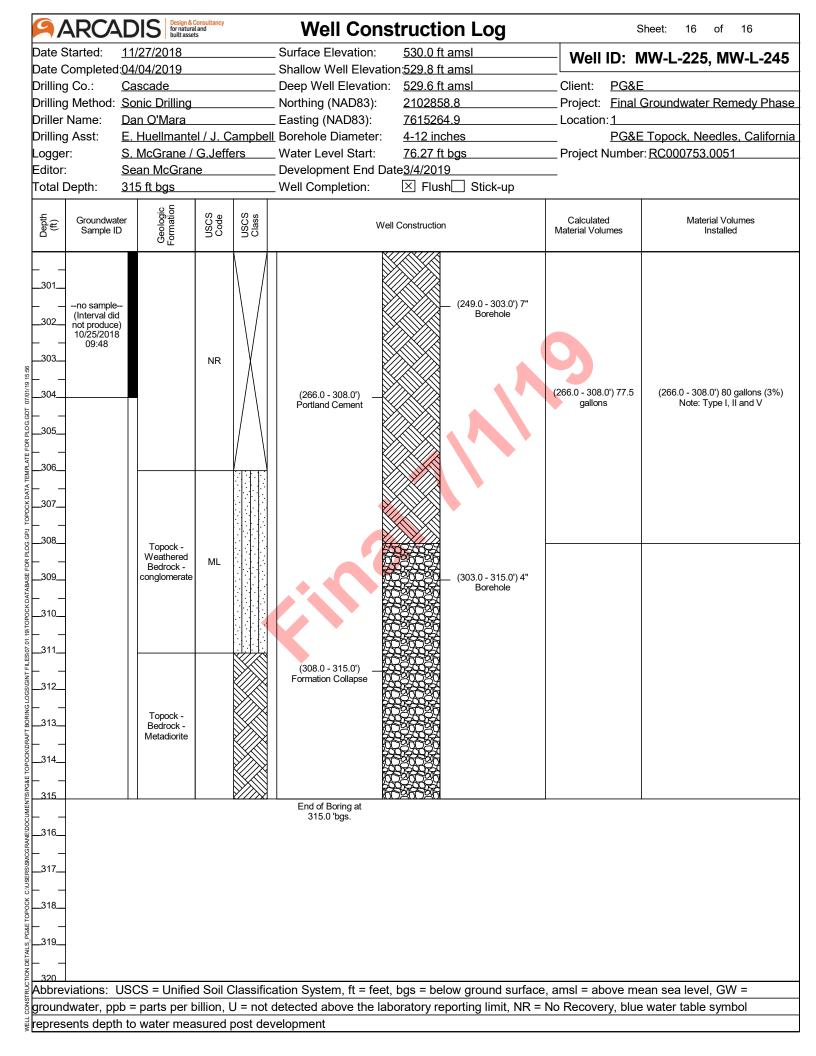


ARCAL	Design & Co for natural built assets	and		Well Construction Log	SI	neet: 12 of 16
Date Started: <u>11</u> Date Completed: <u>04</u>	/27/2018			Surface Elevation: <u>530.0 ft amsl</u> Shallow Well Elevation: <u>529.8 ft amsl</u>	Well ID: M	W-L-225, MW-L-245
•	ascade			Deep Well Elevation: <u>529.6 ft amsl</u>	Client: <u>PG&amp;E</u>	
Drilling Method: So				Northing (NAD83): 2102858.8		Groundwater Remedy Phase
-	an O'Mara			Easting (NAD83): 7615264.9	_ Location: <u>1</u>	siounawator Homody Fildoo
		I / J. C	ampbell	Borehole Diameter: <u>4-12 inches</u>		Topock, Needles, California
-	McGrane /			Water Level Start: 76.27 ft bgs		RC000753.0051
	ean McGrane	e		Development End Date <u>3/4/2019</u>	_	
Total Depth: <u>31</u>	l5 ft bgs			Well Completion: X Flush Stick-up		
Groundwater Generation Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
221 MW-L-VAS- 218-223 (66 ppb) 222 10/21/2018 10:50 	Topock - Alluvium Deposits	GM		(205.0 - 225.0') 2" — (0.6 - 235.0') 2" PVC Sch 80 PVC (20-slot) Screen		
_223	Topock - Weathered Bedrock - conglomerate	ML		(203.0 - 228.5') Cemex #3 MESH (8x10) (225.5 - 226.5') Centralizer (225.0 - 227.4') Sump and End Cap	(203.0 - 228.5') 29.9 bags	(203.0 - 228.5') 29 bags (-3%) Note: Lapis Lustre Sand
_228	Topock - Weathered Bedrock - conglomerate	ML		(28.0 - 249.0') 10" Borehole Bentonite seal pellets	(228.5 - 233.0') 4.4 buckets	(228.5 - 233.0') 4 buckets (-9%) Note: Pel-Plug (TR30) 3/8"
234 	Topock - Weathered Bedrock -	ML		(233.0 - 249.0') Cemex #3 MESH (8x10)	(233.0 - 249.0') 19.5 bags	(233.0 - 249.0') 25 bags (28%) Note: Lapis Lustre Sand
	CS = Unified	illion, L	J = not c	ation System, ft = feet, bgs = below ground surface, letected above the laboratory reporting limit, NR = N relopment		

ARC/	ADIS for natural built asset	c <mark>onsultancy</mark> and s		Well Construction Log	SI	neet: 13 of 16
Date Started:	11/27/2018			Surface Elevation: <u>530.0 ft amsl</u>	- Well ID: M	W-L-225, MW-L-245
ate Completed	1:04/04/2019			Shallow Well Elevation:529.8 ft amsl		
Drilling Co.:	<u>Cascade</u>			Deep Well Elevation: <u>529.6 ft amsl</u>	Client: PG&E	
Drilling Method:	Sonic Drilling			Northing (NAD83): 2102858.8	Project: Final G	Groundwater Remedy Phase
Driller Name:	<u>Dan O'Mara</u>			Easting (NAD83): 7615264.9	Location: <u>1</u>	
Drilling Asst:	E. Huellmante	l / J. Car	<u>npbell</u>	Borehole Diameter: <u>4-12 inches</u>	PG&E	Topock, Needles, California
.ogger:	<u>S. McGrane /</u>	G.Jeffers	S	Water Level Start: 76.27 ft bgs	Project Number:	RC000753.0051
Editor:	<u>Sean McGran</u>	е		Development End Date <u>3/4/2019</u>		
otal Depth:	<u>315 ft bgs</u>			Well Completion: X Flush Stick-up		
Groundwa (tt) Sample I		USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
 	Topock - Weathered Bedrock - conglomerate	SM		(233.0 - 249.0') (233.0 - 249.0') Cemex #3 MESH (8x10) (245.5 - 246.5') Centralizer (245.0 - 247.3') Sump and End Cap	(233.0 - 249.0') 19.5 bags	(233.0 - 249.0') 25 bags (28%) Note: Lapis Lustre Sand
250    	Bedrock - conglomerate				(240.0266.01) 7.4	(240.0 - 266.0%) 9 bogo (9%)
255 256 257 257 258	Topock - Weathered Bedrock - conglomerate	ML		(249.0 - 266.0') (249.0 - 303.0') 7" Bentonite seal chips Borehole	(249.0 - 266.0') 7.4 bags	(249.0 - 266.0') 8 bags (8%) Note: Purgold Medium Chips
259 260	Topock - Weathered Bedrock - conglomerate	ML				
				ation System, ft = feet, bgs = below ground surfac		
				letected above the laboratory reporting limit, NR =	No Recovery, blue	water table symbol
presents dept		sured DO	νsι uev			







ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	S	heet: 1 of	16
Date Started:	<u>10/03/</u>			Surface			Boring No	.: <u>MW-Ld</u>	
Date Complet Drilling Co.:	ed: <u>11/2//</u> <u>Casca</u>			Northin			 Client: <u>PG&amp;E</u>	:	
Drilling Metho		Drilling		-	•	<u>315 ft bgs</u>	_ Project: <u>Final (</u>		medy Pha
Drill Rig Type		•			-	eter: 4-12 inches	Location: <u>1</u>		
Driller Name:	<u>Dan O</u>			-		Vater: <u>76.27 ft bgs</u>		Topock, Needle	
Drilling Asst:		ellmantel / J. (	-	-	-		_ Project Number	: <u>RC000753.005</u>	51
.ogger: Editor:		<u> Grane / G.Jef</u> McGrane		Samplii Conver	-		-		
	000111								
Depth (ft) (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluic
_ 1			Topock - Fluvial Deposits	sw		(0.0 - 1.5') Topock - Fluvial Deposits; Well grac (SW); brown (10YR 4/3); very fine grained to v angular to subround; some granule to large pet very coarse grained sand, subangular to subro trace boulders, angular to subangular; trace silt	ery coarse grained, bles; some coarse to und; trace cobbles;	(0.0 - 5.0') Hand cleared for utility clearance	
- 2 - 2 - 372 - 4 - 5 - 6			Topock - Fluvial Deposits	SW		(1.5 - 6.0') Topock - Fluvial Deposits; Well grac (SW); brown (7.5YR 4/3); very fine grained to v subangular to round; some granule to medium subangular; trace silt; dry	ed sand with gravel ery coarse grained,		
_ 7 _ 8 _ 9 _ 10 _ 11 120	No sieve samples collected		Topock - Fluvial Deposits	SM		(6.0 - 11.0') Topock - Fluvial Deposits; Sand Si (7.5YR 4/3); very fine grained to very coarse gr subrounded; some granule to very large pebble subangular; some silt, trace cobbles, angular; tr to subangular; dry	ained, angular to s, angular to ace boulders, angular		
			Topock - Fluvial Deposits	SW-SM		(11.0 - 16.0) Topock - Fidvai Deposits, Weing gravel (SW-SM); dark grayish brown / dark yell 4/2); very fine grained to very coarse grained, a some granule to large pebbles; little silt; trace of subangular; dry	owish brown(10YR ngular to subangular:		
.16  _17      			Topock - Fluvial Deposits	SW-SM		(16.0 - 21.5') Topock - Fluvial Deposits; Well g gravel (SW-SM); very dark gray (10YR 3/1); ve coarse grained, angular to subangular; some g pebbles; little silt; trace cobbles, angular to suba	ry fine grained to very anule to very large	(16.0') Lost core barrel down hole	
_20_	: USCS =	Unified Soil C	lassificati	 on Svst	<u>r.•./////</u> em. ft =	feet, bgs = below ground surface,	amsl = above me	⊥ I an sea level. G\	N =
				÷		e laboratory reporting limit, NR = N			

$cc$ $O_{sc}^{c}$ 21       1       Topocal       SW-5M       Topocal       Topocal <td< th=""><th>٩A</th><th>RC</th><th>ADIS</th><th>Design &amp; Consultancy for natural and built assets</th><th></th><th>Во</th><th>ring</th><th>Log</th><th>St</th><th>neet: 2 of</th><th>16</th></td<>	٩A	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	St	neet: 2 of	16
ate Completer       T1/2/2/2018       Northing (NUN28): 2102858.8									Boring No.	: MW-Ld	
Milling Mithod:     Sond: Dolling     Total Dept:     315.11 bgs     Project:     End End Weith       Milling Type:     Terazonic Linck mount.     Depth to First Water:     78.27 (f) bgs     Project:     Incommy Advancement of the second memory and the second memory advancement of the second memory	Date C	omple	ted: <u>11/27/</u>	2018		Northing	g (NAE	083): <u>2102858.8</u>	Doring rio		
III No     Errassonic track.mount.     Borehole Diameter: 4-12 inches     Location: 1       IIII No     Deaptite Diamothel JL Campabell     Borehole Diameter: 4-12 inches     Dock       Sager:     S. McGrane J G.Jeffers     Sampling Method:     A inch x 10 fL Core Bara     Project Number: BC000753.0051       Sager:     Sampling Method:     Converted U Well:     [2] Yes     No       Inc.     Sampling Method:     Sol Description     Deling Noise     Drins PL       Inc.     Converted U Well:     [2] Yes     No     Deling Noise     Drins PL       Inc.     Converted U Well:     [2] Yes     No     Deling Noise     Drins PL       Inc.     Converted U Well:     [2] Yes     No     Deling Noise     Drins PL       Inc.     Tocod:     Sol Description     Deling Noise     Drins PL       Inc.     Tocod:     Sol     [2] Sol Sol Proces: Float Departer: Sol Description     Deling Noise     Drins PL       Inc.     Tocod:     Sol     [2] Sol Sol Proces: Float Departer: Sol Proces: Float D	Drilling	Co.:	<u>Casca</u>	de	I	Easting	(NAD	33): <u>7615264.9</u>	Client: PG&E		
III No     Errassonic track.mount.     Borehole Diameter: 4-12 inches     Location: 1       IIII No     Deaptite Diamothel JL Campabell     Borehole Diameter: 4-12 inches     Dock       Sager:     S. McGrane J G.Jeffers     Sampling Method:     A inch x 10 fL Core Bara     Project Number: BC000753.0051       Sager:     Sampling Method:     Converted U Well:     [2] Yes     No       Inc.     Sampling Method:     Sol Description     Deling Noise     Drins PL       Inc.     Converted U Well:     [2] Yes     No     Deling Noise     Drins PL       Inc.     Converted U Well:     [2] Yes     No     Deling Noise     Drins PL       Inc.     Converted U Well:     [2] Yes     No     Deling Noise     Drins PL       Inc.     Tocod:     Sol Description     Deling Noise     Drins PL       Inc.     Tocod:     Sol     [2] Sol Sol Proces: Float Departer: Sol Description     Deling Noise     Drins PL       Inc.     Tocod:     Sol     [2] Sol Sol Proces: Float Departer: Sol Proces: Float D	Drilling	Methe	od: <u>Sonic</u>	Drilling		Total D	epth:	315 ft bgs	Project: Final C	Groundwater Re	emedy Phase
Iteler Name:     Dan O Mara:     Depth to First Water: 78.27 https:///instance.insta	-			-			•	-	•		
Hilling Ass:       E. Hualinantal J.J. Campbala Sampling Interval:       4. Inch. 1.0.fl. Core BarralProject Number: RC000753.0051	-									Topock Needle	es Californi
Structure       Sampling Interval:       Continueus         Itto:       Sean MuGrane       Converted to Well:       Yes       No         Itto:       Serve 0       Gaudater 1       Serve 0       Gaudater 1       Serve 0         Itto:       Serve 0       Gaudater 1       Serve 0       Sorve 1       Dolling Noise       Dolling Noise         21       Serve 0       Gaudater 1       Serve 0       Sorve 1       Sorve 0       Dolling Noise       Dollin						-		÷			
Start         Sam MGGrane         Converted to Well:         Yes         No <u> <u> </u></u>	•				-	-	-		r roject Number.	110000733.001	
Bit Construction         Service of Service o		•				-	-				
21     Topock - Fluxial Depends for the subtroad     SW-SM       22     Floxidi     SW-SM       23     66       24     Floxidi       25     Construction       26     Construction       27     Construction       28     Construction       29     Construction       28     Construction       29     Construction       20     Construction       20     Construction       21     Construction       22     Construction       24     Construction       25     Construction       26     Construction       27     Construction       28     Construction       29     Construction       20     Construction       20     Construction       21     Construction       22     Construction       23     Construction       24     Construction       25     Construction       26     Construction       26     Construction       27     Construction       28     Construction       29     Construction       30     Construction       31     Construction											
21       Fixed       SW-SM       SW-SM         22       Product       SW-SM       SW-SM       SW-SM         22       Product       SW-SM       SW-SM       SW-SM         23       96       Product       SW       SW-SM       SW-SM         24       Product       SW       SW-SM       SW-SM       SW-SM         24       Product       SW       Call or subcord, some granuel to very large patches, angular to subcord, some granuel	Depth (ft)	Recovery (in)			Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
22	 21				Fluvial	SW-SM					
23       96         24       1         24       1         25       1         26       1         27       1         28       1         28       1         27       1         28       1         28       1         28       1         29       1         60       1         28       1         29       1         60       1         20       1         20       1         21       1         22       1         23       1         24       1         25       1         26       1         27       1         28       1         29       60         30       1         31       1         32       1         33       1         34       1         35       1         36       1         36       1         37       1         36       <	22				Fluvial	SM		dark gray (10YR 4/1); very fine grained to very c angular to subround; some granule to very large	oarse grained,		
24       -	23	96			Fluvial	GP		(22.5 - 24.0') Topock - Fluvial Deposits; Poo <mark>rly</mark> g black (10YR 2/1); small cobbles to large cobbles	raded gravel (GP); , angular to subround;		
26     Topock - Fluvial     C6.0 - 28.01 Topock - Fluvia Deposite; Samdy silt with gravel (ML); brown (10YR 353) no plasticity; some way fine to vary coarse grained angular to subangular; file graule to vsubangular; file graule to vsubangular; file graule to vsubangular; file graule to vsubangular; file graule to subangular; file graule to subangular; file graule to subangular; file graule to vsubangular; file graule to subangular; file g	_24					+		(24.0 - 26.0') (NR); No Recovery sample bags b	oke		
27       -       125.0 - 28.01 Tracks - Fluvial Depositis: Sandy silt with gravel (ML);       (26.01) Rough drilling         27       -	_25					NR					
24       -	_26							brown (10YR 5/3); no plasticity; some very fine to	o very coarse grained		
60       229       60         29       60       70pock - Fluvial Deposits; Sandy silt with gravel (ML); brown (10Y S3); no plasticity; and very fine to very coarse grained, angular to subangular; trace cobles, angu	_27				Fluvial	ML		angular to subangular; trace cobbles, angular to			
30_       isamples collected       isamples collected       (GW); dark jellowsh brown (10YR 4/4); granules to small cobbles, angular to subround; lift every fine to coarse grained sand, subangular to subround; lift every fine to coarse grained subangular to subround; lift every fine to very large pebbles, angular to subangular; trace cobbles, angular to subangular; trace mica; dy       (31.0 · 1.0	 29	60			Fluvial	ML		brown (10YR 5/3); no plasticity; and very fine to sand, angular to subangular; little granule to very angular to subangular; trace cobbles, angular to	very coarse grained / large pebbles,		
32			samples		Fluvial	GW		(GW); dark yellowish brown (10YR 4/4); granule angular to subround; little very fine to coarse grai	s to small cobbles,		
3535     36     Topock - Fluvial Deposits     Topock - Fluvial Deposits     SM     SM     (36.0 - 38.0') SM     (36.0 - 38.0') Drilled to extra two feet to collect lost core 31 to 36 ft. bgs       38     - Topock - Fluvial Deposits     SM     (38.0 - 39.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); grayish brown (2.5Y 5/2); very fine grained to very coarse grained, angular to subround; some silt; little granule to large pebbles, angular to subangular; moist     -       3996     Topock - Fluvial Deposits     SM     (38.0 - 39.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); grayish brown (2.5Y 5/2); very fine grained to very coarse grained, angular to subround; some silt; little granule to large pebbles, angular to subangular; moist       Topock - Fluvial Deposits     SM     (39.0 - 43.0') Topock - Fluvial Deposits; Silty sand (SM); very dark grayish brown (2.5Y 3/2); very fine grained to coarse grained, angular	 _32  _33 				Fluvial	ML		brown (10YR 5/3); no plasticity; some very fine to sand, angular to subangular; little granule to very angular to subangular; trace cobbles, angular to	o very coarse grained large pebbles,		
37	35 36	84			Fluvial	SM		5/3); very fine grained to fine grained, subangula			
39_96       96         Fluvial Deposits       SM         Topock - Fluvial       SM         Fluvial       SM         SM       Grayish brown (2.5Y 5/2); very fine grained to very coarse grained, angular to subround; some silt; little granule to large pebbles, angular to subangular; moist         Topock - Fluvial       SM         SM       Grayish brown (2.5Y 3/2); very fine grained to very coarse grained, angular; moist	_37									two feet to collect lost core	
Fluvial SM (39.0 - 43.0) ropock - ridvial Deposits, Silty saild (Silt), very dark	 39	96			Fluvial Deposits	SM		angular to subround; some silt; little granule to la to subangular; moist	rge pebbles, angular		
	$\frac{40}{40}$	iation		Unified Sail (	Fluvial Deposits			grayish brown (2.5Y 3/2); very fine grained to co to subangular: and silt: trace granule to medium	arse grained, angular pebbles, angular to		Λ/ —
obreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =											
oundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	round	water	ppb = part	s per billion, l	J = not det	ected a	pove t	ne laboratory reporting limit, NR = No	o Recovery, blue	water table sym	loar

AR	CAD	S Design & Consultancy for natural and built assets		Во	ring Log	g		She	et: 3 of	16
Date Starte		/03/2018			e Elevation:	530.0 ft amsl	Borir	na No.:	MW-Ld	
Date Compl					g (NAD83):	2102858.8	_ L	-		
Drilling Co.:		scade		-	(NAD83):	<u>7615264.9</u>	_ Client:	PG&E		
Drilling Meth		nic Drilling		Total Do		<u>315 ft bgs</u>	_ Project:	Final Gr	oundwater Re	emedy Phase
Drill Rig Typ		rrasonic track mo				4-12 inches	Location			
Driller Name		n O'Mara		-		: <u>76.27 ft bgs</u>	_		opock, Needl	
Drilling Asst		Huellmantel / J.		-	-	4 inch x 10 ft Core Barrel	_ Project N	lumber: [	RC000753.00	51
_ogger:		McGrane / G.Jet		-	ng Interval:	Continuous	-			
Editor:	<u>Se</u>	an McGrane	(	Convert	ted to Well:	🔀 Yes 🗌 No				
Depth (ft) Recovery (in)	Sieve Sample		Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 _41_  _42_  _43_ 96			Topock - Fluvial Deposits	SM	subang	gular; trace clay; moist				
4396 44 45 46			Topock - Fluvial Deposits	sw	••••••• brown	46.0') Topock - Fluvial Deposits; Well g (7.5YR 5/3); very fine grained to very oc jular to subround; trace grainule to very ound; trace cobbles, subround; trace sil	arse grained, arge pebbles, a			
47 48 48 49 50 51120	No sieve samples collected	;	Topock - Fluvial Deposits	SM	brown subanc subanc	51.5') Topock - Fluvial Deposits; Silty s (10YR 4/3); very fine grained to very co- gular to subround; little granule to very la gular to subround; little silt; trace cobbles nd; trace clay; trace mica; dry; gravel cc on.	arse grained, rge pebbles, , subangular to			
52 53 54 55 55 56 56 57 58 120	-		Topock - Fluvial Deposits Topock - Fluvial Deposits	SW-SM	(SW-S angula (S2.0 - (SW); coarse pebble	52.0') Topock - Fluvial Deposits; Well g M); brown (10YR 5/3); very fine grainec r to subround; trace silt; little mica; dry 59.0') Topock - Fluvial Deposits; Well g very dark grayish brown (10YR 3/2); ver grained, angular to subangular; and gra s, subangular to round; trace cobbles, s nica; dry	to medium gra raded sand wit y fine grained nule to very la	h gravel to very ge		
 59  _60	ns: USC				em, ft = feet,	62.0') Topock - Fluvial Deposits; Silty s ary fine grained to very coarse grained, i t; little clay; trace granule to large pebble bgs = below ground surface, oratory reporting limit, NR = N	angular to subr s, angular to si amsl = abo	ound; ubround; ove mear		

		A	212	Design & Consultancy for natural and built assets		Bo	ring	Log	<u> </u>	She	et: 4 of	16
Date St			10/03/2			Surface			Borin	a No.:	MW-Ld	
Date Co	omple	ted:	<u>11/27/2</u>	2018		Northin	g (NAE	83): <u>2102858.8</u>		gnon		
Drilling	Co.:		Casca	de		Easting	(NAD	33): <u>7615264.9</u>	Client:	PG&E		
Drilling	Metho			•		Total D	epth:	<u>315 ft bgs</u>	Project:	Final Gr	oundwater Re	emedy Phas
Drill Rig	ј Туре	:	<u>Terras</u>	onic track mo	ount	Boreho	le Diar	neter: <u>4-12 inches</u>	Location:			
Driller N	lame:		<u>Dan O</u>			-		Water: <u>76.27 ft bgs</u>			opock, Need	
rilling	Asst:			ellmantel / J. (	-	Sampli	ng Met	nod: <u>4 inch x 10 ft Core Barrel</u>	Project N	umber: <u>F</u>	RC000753.00	51
ogger:				<u> Grane / G.Jef</u>		Sampli	-					
ditor:			Sean N	<u>AcGrane</u>		Conver	ted to	Vell: 🗵 Yes 🗌 No				
Depth (ft)	Recovery (in)		lieve nple ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
_61 _62					Topock - Fluvial Deposits	SM		dry				
_62 _63 _64 _65	120				Topock - Fluvial Deposits	GW		(62.0 - 65.5') Topock - Fluvial Deposits; Well gra (GW); light brownish gray / pale yellowish brown to small cobbles, angular to subround; little very grained sand, angular to subround; trace boulde subangular; dry	(10YŘ 6/2); g fine to very co	ranules		
_66					Topock - Fluvial Deposits	SM		(65.5 - 67.0') Topock - Fluvial Deposits; Silty sar dark grayish brown / dark yellowish brown(10YR grained to very coarse grained, angular to subrou large pebbles, angular to subangular; little silt; litt angular; dry	4/2); very fine und; little gran le clay; trace o	e ule to cobbles,		
-68 -68					Topock - Fluvial Deposits	SW-SM		(67.0 - 69.0') Topock - Fluvial Deposits; Well gra (SW-SM); light brownish gray / pale yellowish br fine grained to very coarse grained, angular to su trace granule to medium pebbles, subangular to	own(10YR 6/2 ubangular; littl	2); very		
	120	sam	sieve nples ected					(69.0 - 79.5') Topock - Fluvial Deposits; Silty sar brown (7.5YR 5/3); fine grained to very coarse g subround; little granule to very large pebbles, sul little silt; trace cobbles, angular to subangular; tra subangular to well-round; little mica; dry	rained, suban bangular to ro	gular to		
_72								(72.5') olive / moderate olive brown(5Y 4/4); som large pebbles	e granule to v	ery		
.74					Topock - Fluvial Deposits	SM		(74') dark grayish brown / dark yellowish brown(*	10YR 4/2)	¥		
								(75') dark brown (7.5YR 3/4); moist				
.77				MW-L-VAS-				(76') brown (7.5YR 4/3); and granule to very larg subangular to round; little silt; trace cobbles, sub water table	le pebbles, angular to rou	nd; wet;	(76.0') Approximate depth of water table	(76.0 - 86.0') gal of wate used
_78  _79	120			76-81 (31 ppb) 10/6/2018 16:34								
80 1					Topock - Alluvium	ML		(79.5 - 80.0') Topock - Alluvium Deposits; Sandy	/ silt with grav	el (ML);		
bbrevi	iations	s: US	SCS =	Unified Soil (	/ dia fiam	on Svst	em. ft	feet, bgs = below ground surface, a	amsl = abo	ve mean	sea level. G	W =
				s per billion, l er measured o				ne laboratory reporting limit, NR = No nterval	Recover	y, blue w	ater table syr	nbol

	DIS	Design & Consultancy for natural and built assets		Bo	ring	Log	Sh	eet: 5 of	16
ate Started:	10/03/2			Surface			Boring No.	: <u>M</u> W-Ld	
ate Completed				Northing		,			
illing Co.:	<u>Casca</u>			Easting	•	,	Client: PG&E		
illing Method:		•			•	-	•	iroundwater Re	emedy Phas
ill Rig Type:							Location: 1		
iller Name:	<u>Dan O</u>					Water: 76.27 ft bgs		Topock, Need	
illing Asst:		ellmantel / J. (	-	-	-		Project Number:	<u>RC000753.00</u>	51
ogger:		<u>Grane / G.Jef</u>		Samplin	-				
ditor:	<u>Sean N</u>	<u>AcGrane</u>		Convert	ed to V	Vell: 🗵 Yes 🗌 No			
(ft) (ft) (in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
81 82			Deposits Topock - Alluvium Deposits	SM		reddish brown(2.5YR 4/3) with reddish brown (5) some very fine to very coarse grained sand, suba little granule to very large pebbles, subround to ro (80.0 - 82.5') Topock - Alluvium Deposits; Silty si dark grayish brown / dark yellowish brown(10YR grained to very coarse grained, angular to subany to large pebbles, angular to subround; some silt;	angular to subround; bund; wet and with gravel (SM); 4/2); very fine gular; some granule		(76.0 - 86.0') 6 gal of water used
83120 84 85			Topock - Alluvium Deposits	SM		(82.5 - 86.0') Topock - Alluvium Deposits; Silty s brown (10YR 5/2); very fine grained to very coars subangular; and silt; trace granule to very large p subangular; trace cobbles, angular; trace clay; so strong cementation	se grained, angular to ebbles, angular to		
90s	o sieve amples illected		Topock - Alluvium Deposits	SM		(86.0 - 93.5') Topock - Alluvium Deposits; Silty sidark grayish brown / dark yellowish brown(10YR grained to very coarse grained, angular to subang granule to very large pebbles, angular to subang moderate cementation (89.5'); decrease in ganules to large pebbles, inc	4/2); very fine gular; some silt; little ular; little clay; moist;		(86.0 - 96.0') gal of water used
9394 9495 96 97 98234 99			Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	ML		(93.5 - 94.0') Topock - Alluvium Deposits; Sandy grayish brown (2.5Y 5/2); no plasticity; some ven grained sand, angular to subround; little granule t angular to subround; little silt, little clay; wet; weal (94.0 - 95.0') Topock - Alluvium Deposits; Silty si dark grayish brown / dark yellowish brown(10YR grained to very coarse grained, angular to subang- granule to large pebbles, angular to subangular; lcobbles, angular to subangular; moist; moderate (95.0 - 112.0') Topock - Alluvium Deposits; Sanc (ML); grayish brown (2.5Y 5/2); no plasticity; som coarse grained sand, angular to subangular; little pebbles, angular to subangular; trace clay; trace cementation (96'); moist to dry; iron oxide staining; increase in large pebbles, decrease in sand, increase in silt,	y fine to very coarse to large pebbles, k cementation and with gravel (SM); 4/2); very fine gular; some silt; little little clay; trace cementation ty silt with gravel to very fine to very granule to very large mica; wet; strong		(96.0 - 106.0 50 gal of wate used
						= feet, bgs = below ground surface, a ne laboratory reporting limit, NR = Nc			

te Comptete: 11/27/2018 Northing (NADB3): 21/258/8. Untry NADB3): 21/258/9. Client Casada Easting (NADB3): 21/258/9. Client Casada Easting (NADB3): 21/258/9. Client Casada Project EnailGoundates Remedy Pass Project EnailGoundates Remedy Pass Project EnailGoundates Remedy Pass Don (Maranel J.J. Campbell Sampling Method: E. Huelland J.J. Campbell Sampling Method: E. Hu	ARC/	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sł	neet: 6 of	16
Iter Name:       Dan O'Mara       Depth to First Water: 76.22 ft tps	Drilling Co.: Drilling Methoo	ed: <u>11/27/</u> <u>Casca</u> I: <u>Sonic</u>	2018 Ide Drilling		Northing Easting Total De	g (NAE (NADa epth:	83): <u>2102858.8</u> 33): <u>7615264.9</u> <u>315 ft bgs</u>	_ Client: <u>PG&amp;E</u> _ Project: <u>Final C</u>		emedy Phase
01_       02_       03_       060_ <t< td=""><td>Drill Rig Type: Driller Name: Drilling Asst: Logger: Editor:</td><td><u>Dan O</u> <u>E. Hue</u> <u>S. Mc</u>(</td><td>'Mara ellmantel / J. Grane / G.Je</td><td>Campbell</td><td>Depth to Samplir Samplir</td><td>o First ng Met ng Inte</td><td>Water: <u>76.27 ft bgs</u> nod: <u>4 inch x 10 ft Core Barrel</u> val: <u>Continuous</u></td><td>P<u>G&amp;E</u></td><td>•</td><td></td></t<>	Drill Rig Type: Driller Name: Drilling Asst: Logger: Editor:	<u>Dan O</u> <u>E. Hue</u> <u>S. Mc</u> (	'Mara ellmantel / J. Grane / G.Je	Campbell	Depth to Samplir Samplir	o First ng Met ng Inte	Water: <u>76.27 ft bgs</u> nod: <u>4 inch x 10 ft Core Barrel</u> val: <u>Continuous</u>	P <u>G&amp;E</u>	•	
1       1	Depth (ft) Recovery (in)			Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
13		samples	106-111 (0.84 ppb) 10/9/2018	Topock - Alluvium	ML		granules to large pebbles, increase in sand (107'); moist to dry; strong cementation; iron oxi			(106.0 - 116.0' 100 gal of wate
15       -				Alluvium	ML		(ML); brown (10YR 5/3) little dark reddish brown plasticity; some granule to very large pebbles, an some very fine to very coarse grained sand, ang trace clay; trace mica; little caliche; moist to dry; iron oxide staining (114.0 - 121.0') Topock - Alluvium Deposits; Sa (ML); grayish brown (2.5Y 5/2); no plasticity; so	n (2.5YR 3/4); no ngular to subangular; gular to subangular; strong cementation; indy silt with gravel me very fine to very		
breviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = bundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	_119_			Alluvium	ML		pebbles, angular to subangular; trace clay; trace moist; moderate cementation; iron oxide staining	e mica; with caliche;		(116.0 - 126.0' 130 gal of wate used
					-					
presents depth to water measured during the second VAS interval								o Recovery, blue	water table syr	nbol

AR	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring Lo	g	Sh	eet: 7 of	16
Date Starteo				Surface	Elevation:	530.0 ft amsl	Boring No.	: MW-Ld	
Date Comple				-	g (NAD83):	2102858.8			
Drilling Co.:	<u>Casca</u>			-	(NAD83):	7615264.9	Client: <u>PG&amp;E</u>		
Drilling Meth		Drilling				<u>315 ft bgs</u>	•	roundwater R	emedy Phase
Drill Rig Typ						4-12 inches	Location: <u>1</u>		
Driller Name		D'Mara		-		: <u>76.27 ft bgs</u>		Topock, Need	,
Drilling Asst		ellmantel / J. C	-	-	-	4 inch x 10 ft Core Barrel	Project Number:	RC000753.00	51
Logger:		Grane / G.Jeffe		-	g Interval:	Continuous	-		
Editor:	<u>Sean</u>	McGrane		Convert	ed to Well:	🗙 Yes 🗌 No			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
			Topock - Alluvium Deposits	ML					(116.0 - 126.0') 130 gal of wate used
_121_						- 126.0') Topock - Alluvium Deposits; Sa	ndy silt with gravel		
					·    4/4); i	prown (10YR 4/3) and reddish brown / mo o plasticity; some granule to very large pe	bbles, angular to		
_122_					subar	gular; some very fine to very coarse grain gular; trace mica; trace caliche; moist; stra	ed sand, angular to		
						staining			
_123108			Topock -						
			Alluvium	ML					
_124			Deposits						
							•		
_125_									
_126				_	(126)	- 131.0') Topock - Alluvium Deposits; Sa	ndy silt with gravel		(126.0 - 136.0'
					(ML);	dark grayish brown / dark yellowish brown	(10YR 4/2); no		140 gal of wate
_127					:         some	ity; some granule to very large pebbles, a very fine to very coarse grained sand, and	gular to subangular;		used
					trace	lay; little mica; moist; weak cementation;	iron oxide staining		
_128									
			Topock - Alluvium	ML					
_129_			Deposits						
_130_	No sieve samples								
	collected								
_131_									
						<ul> <li>- 139.5') Topock - Alluvium Deposits; Sa dark yellowish brown (10YR 4/4); no plast</li> </ul>			
132						barse grained sand, angular to subangula s, angular to subangular; little clay; little n			
					.       stainii	g			
_133 <sub>182.4</sub>						some granule to large pebbles, angular to on oxide staining; decrease sand, increase			
_133182.4						<b>-</b> . ,			
_10*									
125									
_135			Topock - Alluvium	ML					
-			Deposits						
_136					:   ·   ·   ·   (136')	iron oxide staining; increase gravel, decr	ease silt		(136.0 - 146.0
						· -			60 gal of wate used
_137									
_138_									
_139_									
						- 146.0') Topock - Alluvium Deposits; Gr	avelly silt with cond		
140	11000		101		0 N 0 1	, .	-	<u> </u>	
						bgs = below ground surface,			
·		•				oratory reporting limit, NR = N	o Recovery, blue v	water table syr	IDOI
	epin to wat	er measured d	uring the	second	VAS Interva	I			

9/		<b>[</b> ]	DIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 8 of	16
Date S			10/03/2			Surface			Boring No.:	MW-Ld	
			11/27/2			Northin	•	,			
Drilling	Co.:		Casca	de		Easting	(NAD	33): <u>7615264.9</u>	Client: PG&E		
Drilling	Metho	od:	<u>Sonic I</u>	Drilling		Total D	epth:	<u>315 ft bgs</u>	Project: Final G	roundwater Re	emedy Phase
Drill Rig	д Туре	:	Terras	onic track m	ount	Boreho	le Diar	neter: <u>4-12 inches</u>	Location: 1		
Driller I	Name:		<u>Dan O'</u>	'Mara		Depth t	o First	Water: <u>76.27 ft bgs</u>	P <u>G&amp;E</u>	Topock, Needl	<u>es, Californi</u>
Drilling	Asst:		<u>E. Hue</u>	llmantel / J.	<u>Campbell</u>	Sampli	ng Met	nod: <u>4 inch x 10 ft Core Barrel</u>	Project Number:	RC000753.00	51
Logger	:		S. McC	Grane / G.Jet	ffers	Sampli	ng Inte	rval: <u>Continuous</u>			
Editor:			Sean N	<i>AcGrane</i>		Conver	ted to	Nell: 🗵 Yes 🗌 No			
Depth (ft)	Recovery (in)		ieve 1ple ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	Rec	Gan		Gample ID	Ge	50	• ₽ 1 9	(ML); brown (10YR 4/3); no plasticity; some grar	ule to verv large		(136.0 - 146.0
							600	pebbles, angular to subangular; some very fine to sand, angular to subangular; trace mica; wet; irou	o very coarse grained		60 gal of water used
_141_								sand, angular to subangular, trace mica, wet, irol	n oxide staining		useu
							.0.				
_142_							Palo				
143	182.4			MW-L-VAS-	Topock -	ML					
	102.4			141-146 (<0.033 U	Alluvium Deposits		p ¢				
144				(10.000 0 ppb) 10/10/2018			69.				
				14:58			pp				
·							00				
_145							Pa lo l'				
_146								(146.0., 151.0) Topock, Alluvium Doposito: Sar	adv ailt with graval	(146.0')	(146.0 - 156.0
								(146.0 - 15 <mark>1.0) Top</mark> ock - Alluvium Deposits; Sar (SM); dark grayish brown / dark yellowish brown	(10YR 4/2); very fine	(146.0') Seepage from	40 gal of wate
_147								grained to very coarse grained, angular to suban to very large pebbles, angular to subangular; sor		outside conductor	used
								coarse grained sand, angular to subangular; little		casing, pull 6"	
_148_								angular, trace mica; dry; weak cementation		casing and 7" conductor	
_140_					Topock -					casing and install 12"	
·					Alluvium Deposits	SM				conductor	
_149					Doposito					casing	
• -		No	iovo								
_150		No s sam	ples								
		colle	cted								
_151_	120										
								(151.0 - 153.0') Topock - Alluvium Deposits; Silt (SM); brown (10YR 4/3); very fine grained to ver	y sand with gravel		
152					Topock -	SM		angular to subround; some granule to very large subangular; some silt; little clay; trace cobbles, a	pebbles, angular to		
					Alluvium Deposits	5101		wet; weak cementation; iron oxide staining	ngular, trace mica,		
152											
_153					Topock -		ÞÝĽ	(153.0 - 154.0') Topock - Alluvium Deposits; Silt			
·					Alluvium Deposits	GM	5 PIC	(GM); brown (10YR 4/3); granules to very large p subangular; some very fine to very coarse graine			
_154_					Topock -	-	60	subangular; some silt; trace mica; moist; weak ce			
					Alluvium	SM		staining (154.0 - 155.0') Topock - Alluvium Deposits; Silt	y sand with gravel		
_155_					Deposits			(SM); brown (10YR 4/3); very fine grained to ver	y coarse grained,		
					Topock - Alluvium	ML		angular to subround; some granule to very large subangular; some silt; little clay; trace cobbles, a			
_156					Deposits			wet; moderate cementation; iron oxide staining	adv silt with grovel		
T					Topock -	GM	ext.	(155.0 - 156.0') Topock - Alluvium Deposits; Sar (ML); brown (10YR 4/3); low plasticity; some gra	nule to very large	(156.0') Refill casing (110	(156.0 - 166.0 50 gal of wate
					Alluvium Deposits	GIVI		pebbles, angular to subangular; some very fine to sand, angular to subangular; little clay; trace mic		gallons) after	used
_101_								cementation; iron oxide staining		sampling from 261-266ft bgs	
								(156.0 - 157.0') Topock - Alluvium Deposits; Silt (GM); brown (10YR 4/3); granules to very large p		ĺ	
_158	120				Topock -			subangular; some very fine to very coarse graine	ed sand, angular to		
					Alluvium	SM		subangular; little silt; little clay; trace mica; wet; w oxide staining	еак cementation; iron		
_159_					Deposits			(157.0 - 163.0') Topock - Alluvium Deposits: Silt	y sand with gravel		
								(SM); brown (10YR 4/3); very fine grained to ver angular to subround; some granule to very large	pebbles, angular to		
160								subangular; some silt; little clay; trace mica; mois	t; strong cementation;		
								= feet, bgs = below ground surface, a			
round	water	ppb	= parts	s per billion,	U = not det	tected a	bove t	he laboratory reporting limit, NR = No	Recovery, blue v	vater table syn	nbol
rouna	mator,										

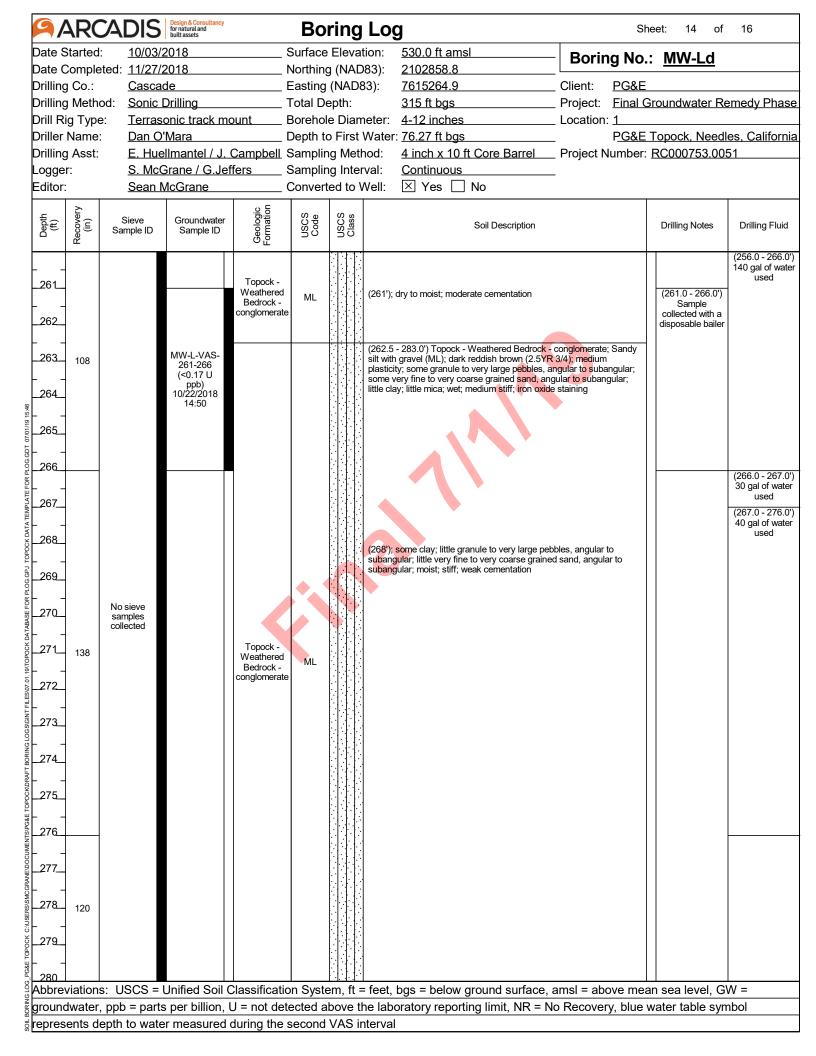
9/	ARC	AD	S	Design & Consultancy for natural and built assets		Во	ring	l Log	She	eet: 9 of	16
Date S	tarted	<u>10</u>	/03/2	018		Surface	Eleva	tion: <u>530.0 ft amsl</u>	Boring No.:	h I-WM	
Date C	comple	ted: <u>11</u>	27/2	018		Northin	g (NA	D83): <u>2102858.8</u>	Bornig No.		
Drilling	Co.:	<u>Ca</u>	scad	le		Easting	(NAE	83): <u>7615264.9</u>	Client: <u>PG&amp;E</u>		
Drilling	Metho	od: <u>So</u>	nic D	Drilling		Total D	epth:	<u>315 ft bgs</u>	Project: Final G	roundwater Re	emedy Phas
Drill Ri	д Туре	e: <u>Te</u>	rraso	onic track mo	ount	Boreho	le Dia	neter: <u>4-12 inches</u>	Location: <u>1</u>		
Driller	Name:	<u>Da</u>	n O'l	Mara		Depth t	o Firs	Water: 76.27 ft bgs	PG&E	Fopock, Need	les, Californ
Drilling	Asst:	<u>E.</u>	Huel	Imantel / J.	Campbell	Sampliı	ng Me	hod: <u>4 inch x 10 ft Core Barrel</u>	Project Number:	RC000753.00	51
.ogge	r:	<u>S.</u>	McG	irane / G.Jef	fers	Sampliı	ng Inte	rval: <u>Continuous</u>			
ditor:		<u>Se</u>	an M	lcGrane		Conver	ted to	Well: 🛛 Yes 🗌 No			
_	2				. <u>ല</u> Б						
Depth (ft)	Recovery (in)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_161					Topock -			iron oxide staining			(156.0 - 166.0 50 gal of wate used
					Alluvium Deposits	SM					
_163	120							(163.0 - 166.0') Topock - Alluvium Deposits; Sil (SM); reddish brown (5YR 5/4); very fi <mark>ne gr</mark> aine			
_164_								grained, angular to subangular; some granule to angular to subangular; some silt, little clay; little	very large pebbles,		
					Topock - Alluvium	SM		cementation; iron oxide staining			
_165_					Deposits						
_166											
					Topock -			(166.0 - 167.5') Topock - Alluvium Deposits; Sil (GM); brown (10YR 4/3); granules to boulders, a			(166.0 - 176.0 45 gal of wate
167_					Alluvium	GM		some very fine to very coarse grained sand, and little silt; little clay; some mica; wet; strong ceme	jular to subangular;		used
					Deposits			staining	itation, ifon oxide		
_168_								(167.5 - 170.0') Topock - Alluvium Deposits; Sil (SM); brown (10YR 4/3); very fine grained to ve			
_100_								angular to subround; some granule to very large	pebbles, angular to		
_169_					Topock - Alluvium	SM		: subangular; some silt; little clay; trace mica; wet; iron oxide staining	strong cementation;		
_109_					Deposits						
470		No sieve									
_170_		samples collected	;				<b>b</b> Ÿť	(170.0 - 174.0') Topock - Alluvium Deposits; Sil	ty gravel with sand		
		001100101				K	5 PJ	(GM); brown (10YR 5/3); granules to boulders, a some very fine to very coarse grained sand, and			
_171	120							little silt; trace clay; some mica; wet; strong ceme			
					Topock -		606	staining			
_172_					Alluvium	GM	607				
					Deposits						
_173_							Polo				
							b X S				
_174_											
							66	(174.0 - 176.0') Topock - Alluvium Deposits; Sil (GM); dark grayish brown / dark yellowish browr	(10YR 4/2): granules		
175_					Topock - Alluvium	GM	Polo	to very large pebbles, angular to subangular; so coarse grained sand, angular to subangular; so	me very fine to very		
					Deposits		o Y C	mica; wet; strong cementation	no one, naio oray, como		
_176_							Pol V	7			
,					Tenest			(176.0 - 177.5') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/3); very fine grained to ve			(176.0 - 186.0 20 gal of wate
_177_					Topock - Alluvium	SM		angular to subangular; some small to very large	pebbles, angular to		used
_'' /					Deposits			<ul> <li>subangular; some silt; little clay; little mica; wet;</li> <li>iron oxide staining</li> </ul>	strong cementation;		
_178_	134.4							(177.5 - 181.5') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/3); very fine grained to ve	ery coarse grained,		
					Topock -			angular to subangular; some silt; little small to ve angular to subangular; trace clay; little mica; we	; moderate		
_179_					Alluvium Deposits	SM		cementation; iron oxide staining			
					2 000010						
180											
	/iations	s: USC	S = L	Inified Soil (	Classificatio	on Syst	em, ft	= feet, bgs = below ground surface, a	amsl = above mea	n sea level, G	W =
round	lwater,	ppb = p	parts	per billion, l	J = not det	ected a	bove	he laboratory reporting limit, NR = N	o Recovery, blue w	vater table syr	nbol
		anth to y	vator	r measured	during the	socond	VAS	ntonyal			

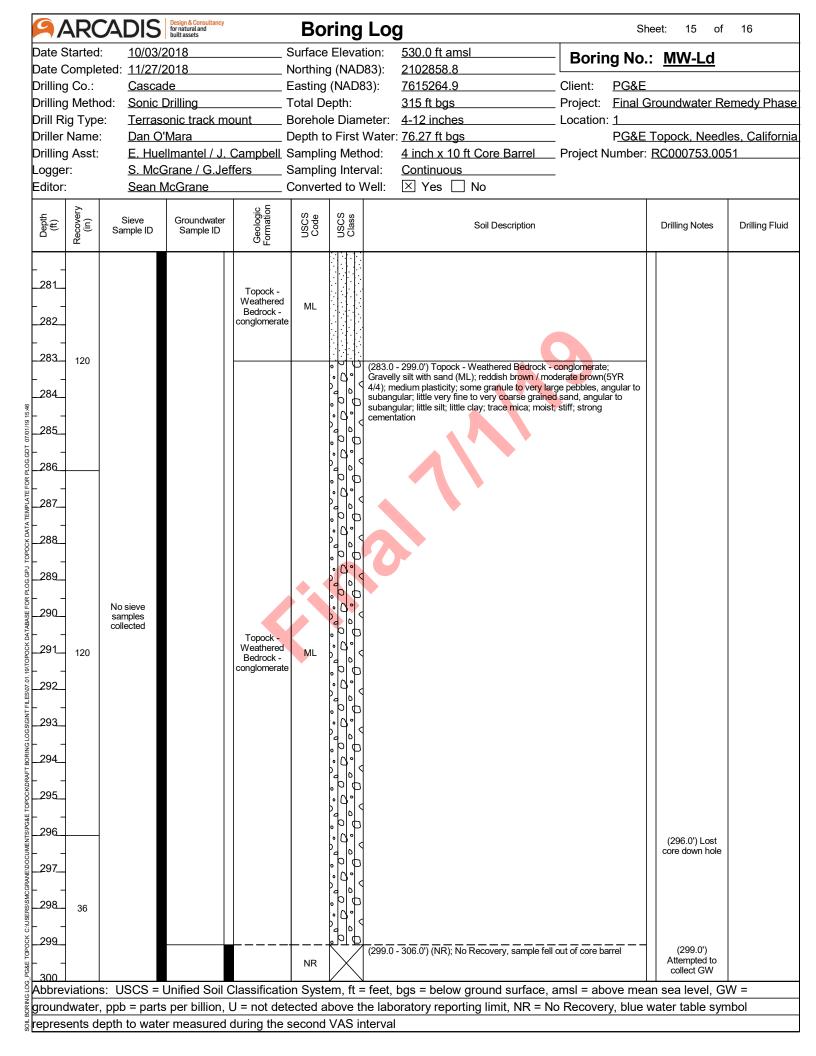
rilling Co.: rilling Co.: rilling Method rill Rig Type: riller Name: rilling Asst: ogger: ditor: 181 182 183 134.4 184 184 185 186	Casca d: <u>Sonic</u> : <u>Terras</u> <u>Dan C</u> <u>E. Hue</u> <u>S. Mc</u>	/2018 ade Drilling	ount Campbell	Boreho Depth t	g (NAE epth: le Dian o First ng Met ng Inte	083):       2102858.8         83):       7615264.9         315 ft bgs         neter:       4-12 inches         Water:       76.27 ft bgs         hod:       4 inch x 10 ft Core Barrel         rval:       Continuous	Location: <u>1</u> P <u>G&amp;E</u>	roundwater Re	les, California
rilling Co.: rilling Method rill Rig Type: riller Name: rilling Asst: ogger: ditor: 181 182 183 134.4 185 185 -	Casca d: Sonic : Terras Dan C E. Hue S. Mc Sean	ade Drilling sonic track me D'Mara ellmantel / J. Grane / G.Je McGrane Groundwater	Campbell ffers	Easting Total D Boreho Depth t Samplir Samplir Conver	(NAD) epth: le Dian o First ng Met ng Inte ted to V	7615264.9           315 ft bgs           neter:         4-12 inches           Water:         76.27 ft bgs           hod:         4 inch x 10 ft Core Barrel           rval:         Continuous	Client: <u>PG&amp;E</u> Project: <u>Final G</u> Location: <u>1</u> <u>PG&amp;E</u>	roundwater Re	les, California
rilling Method rill Rig Type: riller Name: rilling Asst: ogger: ditor: $\frac{1}{100} (1000) (10$	d: <u>Sonic</u> : <u>Terras</u> <u>Dan C</u> <u>E. Hue</u> <u>S. Mc</u> <u>Sean</u>	Drilling sonic track me D'Mara ellmantel / J. Grane / G.Je McGrane	Campbell ffers	Total D Boreho Depth t Samplir Samplir Conver	epth: le Dian o First ng Met ng Inte ted to V	315 ft bgs         neter:       4-12 inches         Water:       76.27 ft bgs         hod:       4 inch x 10 ft Core Barrel         rval:       Continuous	Project: Final G Location: <u>1</u> PG&E	Topock, Need	les, California
rill Rig Type: riller Name: rilling Asst: ogger: ditor: 181 182 183 134.4 185 - 185 -	: Terras Dan C E. Hue S. Mo Sean	sonic track m D'Mara ellmantel / J. Grane / G.Je McGrane Groundwater	Campbell ffers	Boreho Depth t Samplir Samplir Conver	le Dian o First ng Met ng Inte ted to <sup>v</sup>	neter: <u>4-12 inches</u> Water: <u>76.27 ft bgs</u> hod: <u>4 inch x 10 ft Core Barrel</u> rval: <u>Continuous</u>	Location: <u>1</u> P <u>G&amp;E</u>	Topock, Need	les, California
riller Name: rilling Asst: ogger: ditor:	Dan C E. Hue S. Mc Sean Sieve	D'Mara ellmantel / J. Grane / G.Je McGrane Groundwater	Campbell ffers	Depth t Samplir Samplir Conver	o First ng Met ng Inte ted to <sup>v</sup>	Water: <u>76.27 ft bgs</u> hod: <u>4 inch x 10 ft Core Barrel</u> rval: <u>Continuous</u>	P <u>G&amp;E</u>		
rilling Asst: ogger: ditor: 181_ 182_ 183_ 184_ 185_ -	<u>E. Hue</u> <u>S. Mc</u> <u>Sean</u> <sub>Sieve</sub>	ellmantel / J. Grane / G.Je McGrane Groundwater	Campbell ffers	Samplir Samplir Conver	ng Met ng Inte ted to <sup>v</sup>	hod: <u>4 inch x 10 ft Core Barrel</u> rval: <u>Continuous</u>			
ogger: ditor:	<u>S. Mc</u> <u>Sean</u> <sub>Sieve</sub>	Grane / G.Jei	ffers Geologic Formation	Samplir Conver	ng Inte	rval: <u>Continuous</u>	Project Number:	<u>RC000753.00</u>	51
ditor:	<u>Sean</u> Sieve	Groundwater	Geologic Formation	Conver	ted to				
List List List List List List List List	Sieve	Groundwater	Geologic Formation		1				
- 181_ 182_ 183_ 183_ 134.4 184_ 185_ -				USCS Code	SCS ass				<u> </u>
182_ 183_ 183_ 134.4 184_ 185_ -			Topock -		30	Soil Description		Drilling Notes	Drilling Fluid
  184 185			Alluvium Deposits	SM					(176.0 - 186.0') 20 gal of water used
-		MW-L-VAS- 181-186 (3.3 ppb) 10/20/2018 11:06	Topock - Alluvium Deposits	ML		(181.5 - 184.5') Topock - Alluvium Deposits; Sa (ML); brown (10YR 5/3); medium plasticity; som pebbles, angular to subangular; some very fine f sand, angular to subround; wet; iron oxide staini	e granule to very large o very coarse grained		
			Topock - Alluvium Deposits	SM		(184.5 - 186.5') Topock - Alluvium Deposits; Silt (SM); brown (10YR 5/3); very fine grained to ver angular to subround; some small to very large po subangular; some silt; trace clay; some mica; we iron oxide staining	y coarse grained, bbles, angular to		(186.0 - 196.0')
_ _187 _ _188			Topock - Alluvium Deposits	ML		(186.5 - 188.5') Topock - Alluvium Deposits; Sa (ML); brown (7.5YR 4/3); no plasticity; some gra pebbles, angular to subangular; some very fine t sand, angular to subangular; little clay; moist; str oxide staining	nule to very large o very coarse grained		35 gal of water used
	No sieve samples collected		Topock -			(188.5 - 195.0') Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 5/4); very fine grained to ver angular to subangular; some granule to very larg subangular; some silt; little clay; some mica; dry cementation; iron oxide staining	ry coarse grained, le pebbles, angular to		
192 193 194			Alluvium Deposits	SM					
195 196 197 198 198 199			Topock - Alluvium Deposits	ML		(195.0 - 201.0') Topock - Alluvium Deposits; Sa (ML); reddish brown / moderate brown(5YR 4/4) 4/3); low plasticity; some granule to very large pe subangular; some very fine to very coarse grain subangular; trace clay; some mica; wet; stiff; mo cementation; iron oxide staining	and brown (10YR ebbles, angular to ed sand, angular to		(196.0 - 206.0') 20 gal of water used
	: USCS =	Unified Soil ( ts per billion,		-	em, ft :	= feet, bgs = below ground surface, a	amsl = above mea	n sea level, G	

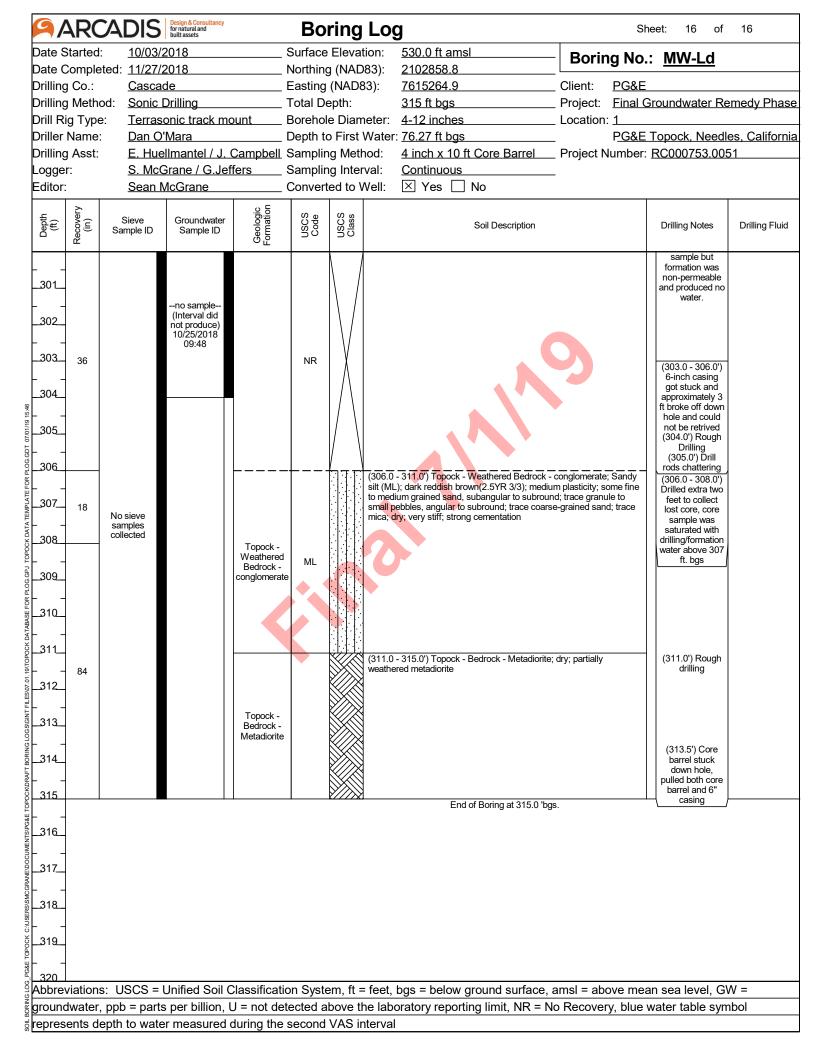
End         End         Sime         Oranzitation         Big         <	9/	ARC	A	DIS	Design & Consultancy for natural and built assets		Bo	ring Lo	og	She	eet: 11 of	16
Date Completer:       11/2/2/2018       Northing (NADB3):       21/22/88.8			-							Borina No.:	MW-Ld	
Initing Method:       Sonic Dolling       Total Dept:       315.ft bgs       Project:       Find Construction         Initing Network:       Entrasolut Lake Montan       Open to First Water: 78.27.ft bgs       Location: 1         Open to First Water:       Sampling Method:       4 Inch x 10 ft Core Barrel       Project: Number: BC000753.0051         Open to First Water:       Sampling Interval:       Control (1)       Control (1)       Project: Number: BC000753.0051         Georgen:       Sampling Interval:       Control (1)       Control (1)       Project: Number: BC000753.0051         georgen:       Sampling Interval:       Control (1)       Control (1)       Project: Number: BC000753.0051         georgen:       Sampling Interval:       Control (1)       Control (1)       Control (1)       Project: Number: BC000753.0051         georgen:       Sampling Interval:       Control (1)       Control (1)       Control (1)       Project: Number: BC000753.0051         georgen:       Sampling Interval:       Control (1)       Control (1)       Control (1)       Project: Number: BC000753.0051         georgen:       Sampling Interval:       Control (1)       Con								,				
INIT Ry Tope:       Tartascolic licak.mount.       Borehole Diameter: 4-12 incbas       Location: 1         Initian Ano:       Dan CMara       Doptor First Water: 52.71 bgs       Poster Number: BC200753.0051         orgger:       S. McGrane / G. Leffers       Sampling Method:       A inch x 10 ft. Core Baral       Project Number: BC200753.0051         gg       Sean McGrane       Converted to Well:       D'res       No         gg       Sean McGrane       Converted to Well:       Sean McGrane       Dring Nose       Dring Nose         gg       Sean McGrane       Converted to Well:       Sean McGrane       Sean McGrane       Dring Nose       Dring Nose         gg       Sean McGrane       Converted to Well:       Sean McGrane       Sean McGrane       Sean McGrane         gg       Sean McGrane       TacocA-       Note Nose       Se	-						•	` '				
Initial Partie:         Dan C.Mana         Dopth to First Water: 76.27.1 bg.         POSE Topock. Needles. Califor           orgger:         S.McGrane./G.Jofførs         Sampling Mathid:         Annak 10.01.00.00000000000000000000000000000	Drilling	Metho			-			-	-	-	roundwater Re	emedy Phas
Number       E. Huellmantel/J.J. Campubel       Sampling Interval       4 Inch. 10.1. Core Barrel       Project Number: BC000753.0051         ditor:       Sean McGrane       Converted to Weil:       Yes< No				Terraso	onic track me							
St. McGrane / G. Jeffers       Sampling Interval:       Converted to Weil:       Yes       No         get	Driller	Name:	-									
Cathor:         Sean McGrane         Converted to Well:         Yes         No <u>g</u> = <u>b</u> = <u>b</u> = <u>sense</u> <u>converted</u> <u>converted</u> to Well:         Yes         No <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u> <u>converted</u>	Drilling	Asst:				•	-	•	4 inch x 10 ft Core Barrel	Project Number:	RC000753.00	51
End         End         Sime         Oranzitation         Big         <	_ogger	:				fers	Samplin	ng Interval:				
201         202         203         120         204         205 <td>Editor:</td> <td></td> <td>5</td> <td>Sean N</td> <td><u>lcGrane</u></td> <td></td> <td>Conver</td> <td>ted to Well:</td> <td>🗙 Yes 🗌 No</td> <td></td> <td></td> <td></td>	Editor:		5	Sean N	<u>lcGrane</u>		Conver	ted to Well:	🗙 Yes 🗌 No			
201       Advant       ML       Ide       Ide <td< td=""><td>Depth (ft)</td><td>Recovery (in)</td><td></td><td></td><td></td><td>Geologic Formation</td><td>USCS Code</td><td>USCS Class</td><td>Soil Description</td><td></td><td>Drilling Notes</td><td>Drilling Fluid</td></td<>	Depth (ft)	Recovery (in)				Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
202       120       1						Alluvium	ML					(196.0 - 206.0 20 gal of wate used
206       Topock - Allwium Mut       All by the construction of the subangular trace day, life gravity som day in the order site to well some well file gravity some day in the construction of the subangular trace day. If the gravity some day is the subangular trace maxies, model so subangular, some sit. If the gravity some day is the subangular trace maxies and and it is subangular. Some sit, finde maxies and some day is the subangular trace maxies	_201_ _202_ _203_ _203_ _204_ _204_ _205_	120				Topock - Alluvium	SM	(SM ang subr cem	; brown (10YR 5/3); very fine grained to ver lar to subround; some granule to very large pound; some silt; trace clay; some mica; dry t entation; iron oxide staining	y coarse grained, pebbles, angular to to moist; moderate		useu
207_       Composition       <	_206					Alluvium	ML	(ML 4/4) to ve mica	; brown (10YR 5/3) and reddish brown / mo no plasticity; some granule to very large pe ry coarse grained sand, angular to subangu ; wet; medium stiff; mottled; weak cementat	derate brown(5YR bbles; some very fine llar; trace clay; little ion; iron oxide staining		(206.0 - 216.0 40 gal of wate
209       Image: State of the	207					Alluvium	GM	GM C C C C C C C C C C C C C C C C C C C	); dark grayish brown / dark yellowish brown ry large pebbles, angular to subangular; so ry coarse grained sand, angular to subangu ; moist; moderate cementation; iron oxide si	(10YR 4/2); granules me silt; little very fine ular; little clay; trace taining		used
216       Topock - Alluvium Deposits       SM       (215.0 - 216.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 4/4) and reddish brown (5YR 5/4); very fine grained to very carse grained, angular to subangular; some grainule to very large pebbles, angular to subangular; some silt; trace mica; moist; mottled; weak cementation; iron oxide staining (216.0 - 219.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (ToYR 4/4); very fine grained to very carse grained, angular to subangular; some granule to very large pebbles, angular to subangular; some granule to very large pebbles, angular to subangular; some silt; little mica; wet; iron oxide staining       (216.0') Driller's observed some heaving when tagging depths during reaming with 10-inch casing         219       111.6       MW-L-VAS- 218-223 (66 ppb) 10/21/2018 10:50       SM       SM       (219.5 - 222.0') Topock - Alluvium Deposits; Silty gravel with sand       (216.0') Driller's observed some heaving when tagging depths during reaming with 10-inch casing       (216.0') Driller's observed some heaving when tagging depths during reaming       (216.0') Driller's observed some heaving when tagging depths during reaming         219       0       GM       0       0       (219.5 - 222.0') Topock - Alluvium Deposits; Silty gravel with sand       (216.0') Driller's observed some heaving when tagging depths during reaming         220       MW-L-VAS- 218-223 (66 ppb) 10/21/2018       GM       (219.5 - 222.0') Topock - Alluvium Deposits; Silty gravel with sand       With sand         220       GM       0       0       0       0       0 <td>209</td> <td>133.2</td> <td>sam</td> <td>oles</td> <td></td> <td>Alluvium</td> <td>GM</td> <td></td> <td>); <mark>dark</mark> grayish brown / dark yellowish browr r<mark>y l</mark>arge pebbles, angular to subangular; no o very coarse grained sand, angular to sub</td> <td>(10YR 4/2); granules plasticity; some very angular; some silt;</td> <td></td> <td></td>	209	133.2	sam	oles		Alluvium	GM		); <mark>dark</mark> grayish brown / dark yellowish browr r <mark>y l</mark> arge pebbles, angular to subangular; no o very coarse grained sand, angular to sub	(10YR 4/2); granules plasticity; some very angular; some silt;		
219       218-223 (66 ppb) 10/21/2018 10:50       Image: Constraint of the stand st	210 216 217 218	111.6			MW-L-MAS-	Alluvium Deposits Topock - Alluvium		(SM grain to ve mois (216 (SM very large	; brown (7.5YR 4/4) and reddish brown (5Y ed to very coarse grained, angular to subar ry large pebbles, angular to subangular; so it; mottled; weak cementation; iron oxide sta 0 - 219.5') Topock - Alluvium Deposits; Silf ; reddish brown / moderate brown(5YR 4/4); coarse grained, angular to subangular; som pebbles, angular to subangular; some silt;	R 5/4); very fine gular; some granule me silt; trace mica; ining ys and with gravel y; very fine grained to the granule to very	observed some heaving when tagging depths during reaming with 10-inch	(216.0 - 226.0 125 gal of wate used
	_ 220 \bbre\				218-223 (66 ppb) 10/21/2018 10:50		on Syst	em, ft = fee	t, bgs = below ground surface, a	amsl = above mea		
roundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	round	lwater,	ppb	= parts	per billion, l	J = not de	tected a	bove the la	boratory reporting limit, NR = N	o Recovery, blue v	vater table syn	nbol

	RU	<b>ADIS</b>	Design & Consultancy for natural and built assets		Bo	ring	l Log	50	eet: 12 of	16
Date Sta		<u>10/03/</u>			Surface			Boring No.	: MW-Ld	
	-		2018		Northin					
Drilling C		<u>Casca</u>			Easting	•		Client: PG&E		
Drilling N			Drilling			•	<u>315 ft bgs</u>	-	iroundwater R	emedy Phas
Drill Rig Driller Na	•••	<u>Dan O</u>							Topock, Need	loo Coliforn
Drilling A			ellmantel / J.		-		Water: <u>76.27 ft bgs</u> hod: <u>4 inch x 10 ft Core Barrel</u>			
.ogger:	1331.		Grane / G.Jef	-	Sampli	-			11000733.00	51
Editor:			<u>McGrane</u>		Conver	-				
				-	1					
Depth (ft)	Kecovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
			MW-L-VAS- 218-223 (66 ppb) 10/21/2018	Topock - Alluvium Deposits	GM		GM); reddish brown / moderate brown(5YR 4/4) large pebbles, angular to subangular; some very grained sand, angular to subround; some silt; littl oxide staining	fine to very coarse		(216.0 - 226.0 125 gal of wate used (220.0 - 250.0 1100 gal of water used
222_			10:50				(222.0 - 227.5') Topock - Weathered Bedrock - ( silt with gravel (ML); reddish brown (5YR 5/4) wi gray(5Y 6/1); no plasticity; some granule to very	th gray / light olive large pebbles,		
_	11.6						angular to subangular; some very fine to very co angular to subangular; trace clay; little mica; moi mottled; moderate cementation; iron oxide stainir	arse grained sand, st; stiff to very stiff;		
224				Topock - Weathered	ML					
225				Bedrock - conglomerate						
226										(226.0 - 236. 40 gal of wat
227										used
_228							<ul> <li>(227.5 - 236.0') Topock - Weathered Bedrock - silt with gravel (ML); reddish brown (5YR 5/4); n granules to very large pebbles, angular to suban to very coarse grained sand, angular to subangu</li> </ul>	o plasticity; some gular; some very fine ılar; little clay; little		
229							mica: moist; stiff to very stiff; moderate cementat staining	tion; iron oxide		
_230		No sieve samples collected					(230') yellowish red (5YR 4/6); dry; very stiff; stro oxide staining	ong cementation; iron		
231	120			Topock -			· · ·			
_232				Weathered Bedrock - conglomerate	e ML					
_233										
234							(233.5'); trace clay; iron oxide staining; increase	in sand and silt		
235										
236							(236.0 - 240.0') Topock - Weathered Bedrock -			
_ 237_							<ul> <li>silt with gravel (ML); reddish brown (5YR 5/4); no granule to very large pebbles, angular to subangu</li> <li>to very coarse grained sand, angular to subangu</li> <li>subangular; trace clay; little mica; moist to wet; w</li> </ul>	jular; some very fine ilar; trace cobbles,		
_ 238	120			Topock - Weathered Bedrock -	ML		oxide staining	,		
_ 239_				conglomerate	e					
240		11808 -	Unified Seil (				:   = feet, bgs = below ground surface, a	mal - abova mar		\ <u>\</u>
					-		he laboratory reporting limit, NR = No			
	, p		er measured				· · · ·			

	<b>CADIS</b>	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 13 of	16
ate Started				Surface			Borina N	o.: <u>MW-Ld</u>	
•	eted: <u>11/27/</u>			Northing					
rilling Co.:	<u>Casca</u>			Easting	•		Client: PG8		
orilling Meth		Drilling		Total De	•	<u>315 ft bgs</u>	•	ll Groundwater R	emedy Phas
rill Rig Typ		sonic track me				eter: <u>4-12 inches</u>	Location: <u>1</u>		
riller Name				-		Water: <u>76.27 ft bgs</u>		E Topock, Need	
villing Asst:		ellmantel / J.	-	-	-		Project Numb	er: <u>RC000753.00</u>	51
ogger:		<u>Grane / G.Jet</u>		Samplir	-		-		
ditor:	<u>Sean</u>	McGrane	(	Convert	ted to \	Vell: 🗵 Yes 🗌 No			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
241_ 242_ 243_ 120			Topock - Weathered Bedrock - conglomerate	SM		(240.0 - 244.0') Topock - Weathered Bedrock - sand with gravel (SM); reddish brown / moderat very fine grained to very coarse grained, angula granule to very large pebbles, angular to subrou cobbles, subangular; little mica; wet; iron oxide s	e brown(5YR 4/4); ir to subangular; som ind; some silt; trace	8	(220.0 - 250.0 1100 gal of water used (226.1 - 246.0 1100 gal of water used (226.1 - 246.0 1100 gal of water used
244  245 246 247  248						(244.0 - 254.0') Topock - Weathered Bedrock - silt with gravel (ML); reddish brown / moderate b plasticity; some granule to very large pebbles, a some very fine to very coarse grained sand, and little mica; moist to wet; medium stiff to stiff; iron	prown(5YR 4/4); no ngular to subangular; gular to subangular;		(246.0 - 256.0 40 gal of wate used
249 250 251 114 252 253	No sieve samples collected		Topock - Weathered Bedrock - conglomerate	ML					(250.0 - 256. 40 gal of wat used
254_ 255_ 256_ 257_ 257_ 257_ 257_			Topock - Weathered Bedrock - conglomerate	ML		(254.0 - 258.0') Topock - Weathered Bedrock - silt with gravel (ML); reddish brown / moderate b plasticity; some granule to very large pebbles, a some very fine to very coarse grained sand, and trace cobbles, angular; trace clay; little mica; mo stiff; weak cementation; iron oxide staining	prown(5YR 4/4); no ngular to subangular; gular to subangular;		(256.0 - 266.0 140 gal of wat used
258 <sub>108</sub>  259			Topock - Weathered Bedrock - conglomerate			(258.0 - 262.5') Topock - Weathered Bedrock - silt with gravel (ML); reddish brown / moderate b medium plasticity; some granule to very large pe subangular; some very fine to very coarse grain subangular; little clay; little mica; moist; medium cementation; iron oxide staining	orown(5YR 4/4); ebbles, angular to ed sand, angular to stiff to stiff; weak		
260		I Inified Sail		n Sveta	om ft-	feet, bgs = below ground surface,	amel = ahove n	level sea level G	·\//
260 bbreviation	s: USCS =	onnieu Soll (		JII Oysia	<u></u>	ieel, bys – below ground surface,			<u> </u>
						ne laboratory reporting limit, NR = N			



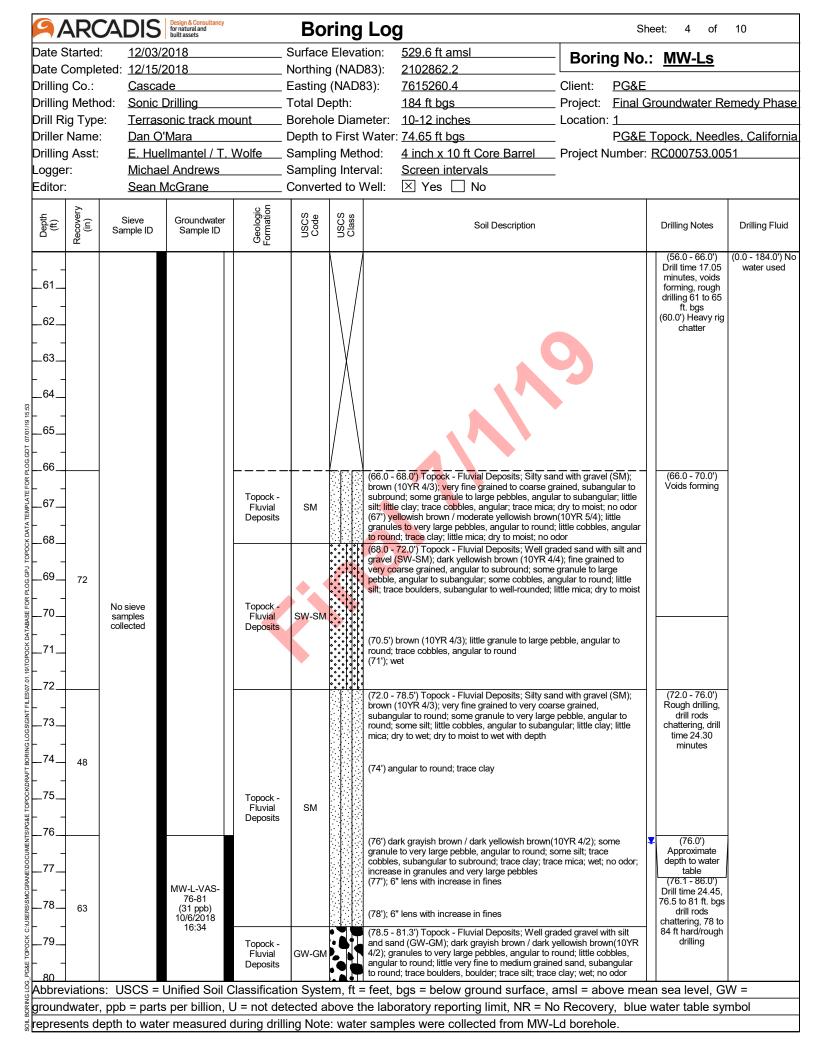




AR	RC <sup>4</sup>	DIS	Design & Consultancy for natural and built assets		Во	ring Lo	og	S	neet: 1 of	10
Date Sta		<u>12/03/</u>				Elevation		- Boring No	: <u>MW-</u> Ls	
	mpleted					g (NAD83):				
Drilling (	Jo.: Method:	<u>Casca</u> Sonic	iae Drilling		Easting Total D	(NAD83):	<u>7615260.4</u> <u>184 ft bgs</u>	Client: <u>PG&amp;E</u> Project: <u>Final (</u>	Groundwater Re	amody Phas
Drill Rig			sonic track mo			epui. le Diamete	-	Project. <u>Pinary</u> Location: <u>1</u>	Siounuwaler No	enneuy Frida
Driller Na	•••	Dan O					er: <u>74.65 ft bgs</u>		Topock, Need	es, Californ
Drilling A			ellmantel / T.	Wolfe	-	ng Method:	4 inch x 10 ft Core Barrel			
.ogger:		<u>Micha</u>	el Andrews		Samplir	ng Interval:	Screen intervals			
ditor:		<u>Sean</u>	McGrane		Conver	ted to Well	🛛 Yes 🗌 No			
Depth (ff)	Kecovery (in) S	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	N	o sieve amples illected					- 66.0'); No recovery cores not collecte	d, see Boring Log MW-Ld	(0.0 - 18.0') Drilling rate 51.34 minutes, drill rods chattering 1 to 12 ft. bgs, rough drilling 12 to 18 ft. bgs (6.0') Rough drilling due to 20-inch boulder (8.0') Drilled slow due to 20-inch boulder (8.0') Drilled slow due to 20-inch boulder	(0.0 - 184.0') 1 water used
20		10.000							(19.0')	
					-		t, bgs = below ground surfac			
เงนเนพ	vater, pp	-	-				boratory reporting limit, NR = nples were collected from M		water table sy	וטעווו

Method:       Sonic Drilling       Total Depth:       184 ft bgs         g Type:       Terrasonic track mount       Borehole Diameter:       10-12 inches         Name:       Dan O'Mara       Depth to First Water:       74.65 ft bgs         Asst:       E. Huellmantel / T. Wolfe       Sampling Method:       4 inch x 10 ft Core Barrel       I         Michael Andrews       Sampling Interval:       Screen intervals         Sean McGrane       Converted to Well:       Yes       No	Location: <u>1</u> P <u>G&amp;E T</u>	oundwater Re	es, California
Soli Description			
Sample ID Sample ID Semple ID Set Soli Description		Drilling Notes	Drilling Fluid
x		Formation collapsing (18.0 - 26.0') Drill time 21.11 minutes, voids forming, rough drilling, 6-inch to 20-inch boulder (24.0') Heavy rig chatter (26.0 - 36.0') Drill time 10.35 minutes, rough drilling 31 to 36 ft bgs (28.0') Voids forming (36.0 - 56.0') Drill time 73.45 minutes, rough drilling, voids forming 38 to 40 ft. bgs (37.0') Rough drilling	(0.0 - 184.0') No water used
water, $ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No$			
ents depth to water measured during drilling Note: water samples were collected from MW-Lo		y.	

Date Started: <u>12/03/2018</u> Surface Elevation: <u>529.6 ft amsl</u> Boring No.:			
Date Completed:       12/15/2018       Northing (NAD83):       2102862.2         Drilling Co.:       Cascade       Easting (NAD83):       7615260.4       Client:       PG&E         Drilling Method:       Sonic Drilling       Total Depth:       184 ft bgs       Project:       Final G         Drill Rig Type:       Terrasonic track mount       Borehole Diameter:       10-12 inches       Location: 1	Project: <u>Final Groundwater Remedy P</u> Location: <u>1</u> <u>PG&amp;E Topock, Needles, Calif</u>		
Image: space	Drilling Notes	Drilling Fluid	
41         42         43         44         45         46         47         48         49         50         51         52         53         54         55         56         57         58         -59         60         Abbreviations:         USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above measurements	(36.0 - 56.0') Drill time 73.45 minutes, rough drilling, voids forming 38 to 40 ft. bgs and 46 to 56 ft. bgs (43.0') Rough drilling (43.0') Rough drilling (43.0') Drill time 17.05 minutes, voids forming, rough drilling 61 to 65 ft. bgs		
groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue			
represents depth to water measured during drilling Note: water samples were collected from MW-Ld borehole.			



9/-	ARC	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring Lo	og	Sh	eet: 5 of	10
	tarted					Elevation:		Boring No.:	: MW-Ls	
		eted: <u>12/15/</u>				g (NAD83):		_		
)rilling		<u>Casca</u>			-	(NAD83):	7615260.4	_ Client: <u>PG&amp;E</u>		
-	Metho		•	·		•	<u>184 ft bgs</u>	•	roundwater Re	emedy Phas
	g Туре		sonic track me			e Diameter		_ Location: <u>1</u>	Topock, Needl	aa Califarr
	Name: Asst:		ellmantel / T.		-	ng Method:	er: <u>74.65 ft bgs</u> <u>4 inch x 10 ft Core Barrel</u>			
oggei			el Andrews		-	ng Interval:	Screen intervals		<u>KC000755.00</u>	51
ditor:	•				-	ted to Well:		-		
		00011		1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_				Topock - Fluvial	GW-GM				(76.1 - 86.0') Drill time 24.45,	(0.0 - 184.0') water used
.81				Deposits					76.5 to 81 ft. bgs drill rods	
_					·+ ·	(81.	- 86.0') Topock - Alluvium Deposits; (NR)	; No recoverey,	chattering, 78 to 84 ft hard/rough	
.82						boul	der at 81.25 jammed up core barrel		drilling	
4						\ /				
83_	63					$  \rangle /  $				
_	-			Topock -		V				
84				Alluvium Deposits	NR					
						$  / \rangle  $		-		
85_						/ \				
						/ \				
86_				L						
				<b>_</b>	_ <b>_</b>		- 94.5') Topock - Alluvium Deposits; San R 4/3); very fine grained to very coarse gra		(86.0 - 96.0') Soft drilling, drill	
87_						roun	d; some silt; little granule to very large pebl	ble, angular to	time 21.30	
~							ngular; trace clay; wet		minutes, core very wet	
_ 88_										
00_						9				
.89										
-		No sieve								
90		samples collected		Topock - Alluvium	SM					
-		conected		Deposits	Civi					
91	108									
-										
92_										
_										
93_										
_										
94										
_								and (SM): hear-		
95_				Topock -		(7.5)	5 - 96.0') Topock - Alluvium Deposits; Silty (R 4/3); very fine grained to coarse grained	d, angular to subround;		
_				Alluvium Deposits	SM		silt; little clay; trace granules to large pebble d; trace cobbles, angular to subangular; litt			
96				L	. <u> </u>				(00.0.400.0)	
						(96.0 colle	) - 156.0') (NR); iron oxide staining; No rec cted see Boring Log MW-Ld for lithology	overy core not	(96.0 - 106.0') Drill time 15.01	
97_						\ /	_ 0 00		minutes, drill rods chattering	
						$  \rangle /  $			96 to 101 ft. bgs,	
						V			102 to 106 soft driling	
					NR					
99_						/				
						/ \				
-						$\vee$				
	/iation	s: USCS =	Unified Soil (	lassificatio	on Syste		t, bgs = below ground surface,	amsl = above mea	n sea level, G	W =
					•		boratory reporting limit, NR = N			
ounc	ivvaluer.									

arted:       12/03/2018       Surface Elevation:       529.6 ft amsl         ompleted:       12/15/2018       Northing (NAD83):       2102862.2         Co.:       Cascade       Easting (NAD83):       7615260.4         Method:       Sonic Drilling       Total Depth:       184 ft bgs         Type:       Terrasonic track mount       Borehole Diameter:       10-12 inches         Jame:       Dan O'Mara       Depth to First Water:       74.65 ft bgs         Asst:       E. Huellmantel / T. Wolfe       Sampling Interval:       Screen intervals         Sean McGrane       Converted to Well:       X Yes       No             Sieve Sample ID           Groundwater Sample ID           Soil Description             MW-L-VAS- 106-111           Soil Description           Soil Description             MW-L-VAS- 106-111           MW-L-VAS- 106-111           Soil Description             MW-L-VAS- 106-111           MW-L-VAS- 106-111               MW-L-VAS- 106-111           MU              MW-L-VAS- 106/9/2018           MU	Location: <u>1</u> PG&E	Broundwater Re Topock, Need RC000753.00 Drilling Notes	les, California
MW-L-VAS- 106-111 (0.84 ppb) 10/9/2018		(96.0 - 106.0')	Drilling Fluid
MW-L-VAS- 106-111 (0.84 ppb) 10/9/2018			1
No sieve samples collected		Drill time 15.01 minutes, drill rods chattering 96 to 101 ft. bgs, 102 to 106 soft driling	(0.0 - 184.0') No water used
ations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, vater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = N			
nts depth to water measured during drilling Note: water samples were collected from MW		TUDI 1000 31	11001

ARCA	DIS	Design & Consultancy for natural and built assets		Во	ring Log	9	S	heet: 7 of	10
Date Started: Date Completed Drilling Co.: Drilling Method: Drill Rig Type: Driller Name: Driller Name: Drilling Asst: Logger: Editor:	Casca Sonic Terras Dan O E. Hue Michae	2018 de Drilling onic track mo	unt	Northing Easting Total D Borehol Depth t Samplin Samplin	le Diameter:	529.6 ft amsl         2102862.2         7615260.4         184 ft bgs         10-12 inches         : 74.65 ft bgs         4 inch x 10 ft Core Barrel         Screen intervals         ⊠ Yes       No	Boring No.:       MW-Ls         Client:       PG&E         Project:       Final Groundwater Remedy F         Location:       1         PG&E Topock, Needles, Cali         Project Number:       RC000753.0051		
	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_130	o sieve imples llected			NR				(106.0 - 126.0') Drill time 20.15 minutes, soft drilling (126.0 - 146.0') Drill time 26.30, soft drilling	(0.0 - 184.0') N water used
 _139 									
 						bgs = below ground surfac pratory reporting limit, NR =			

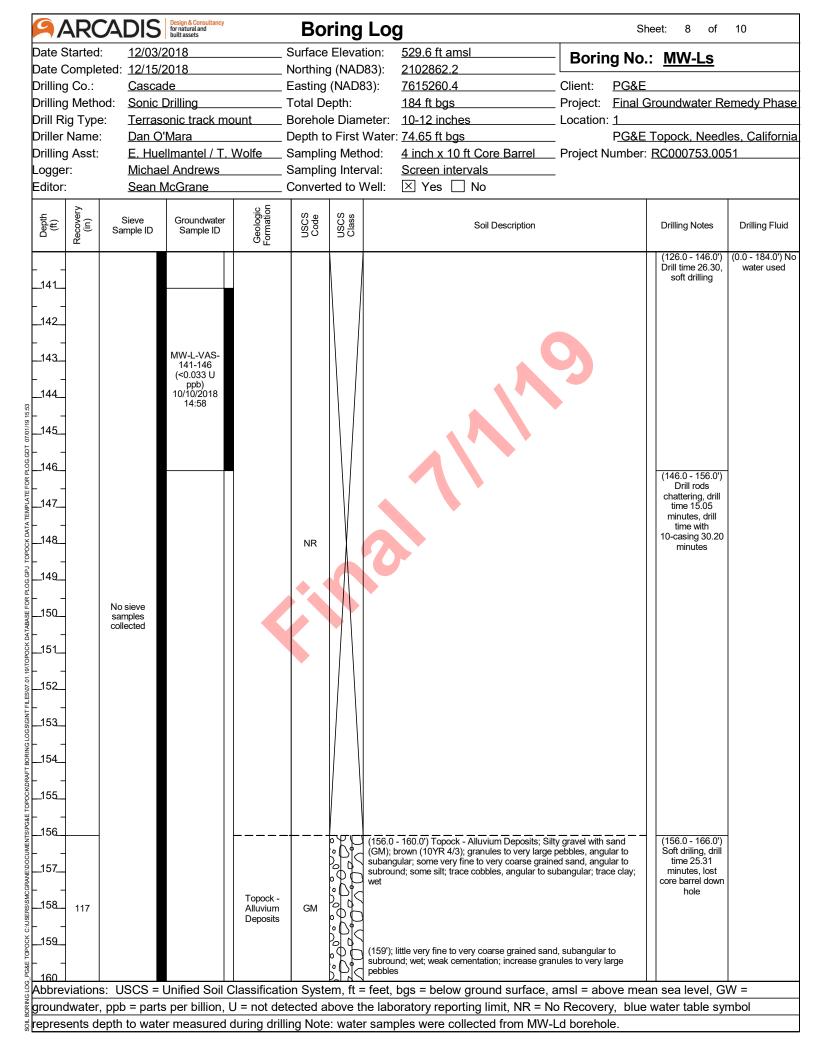
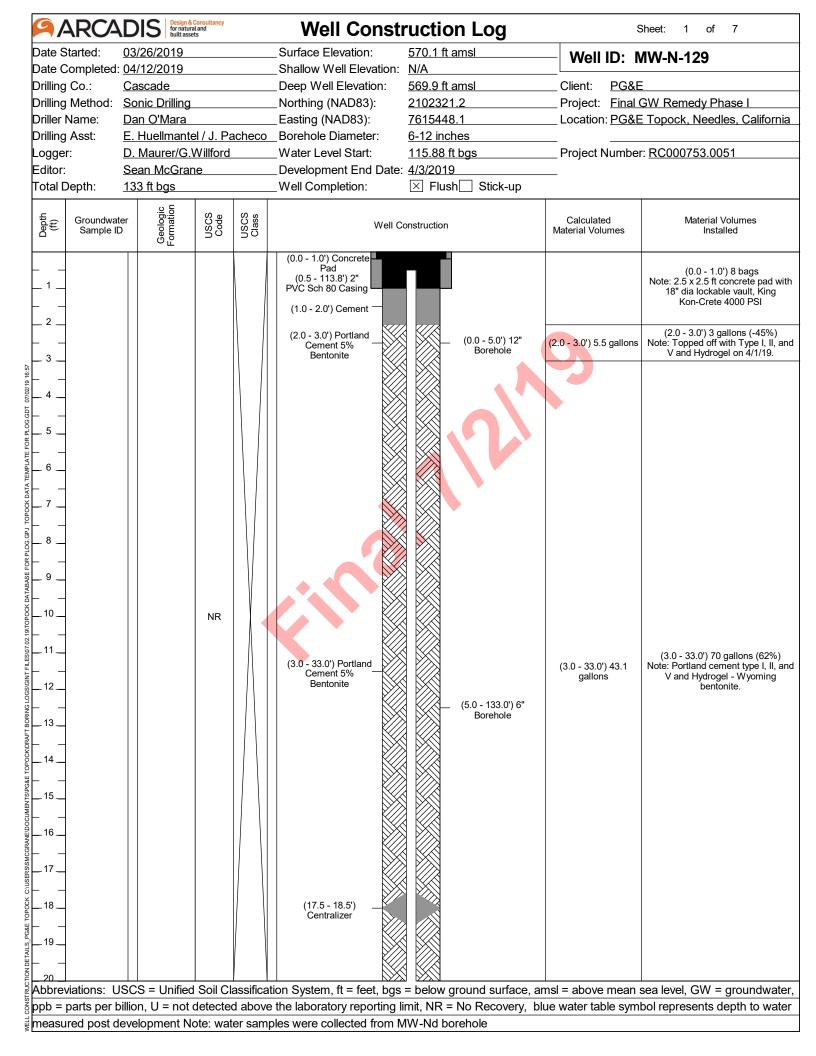
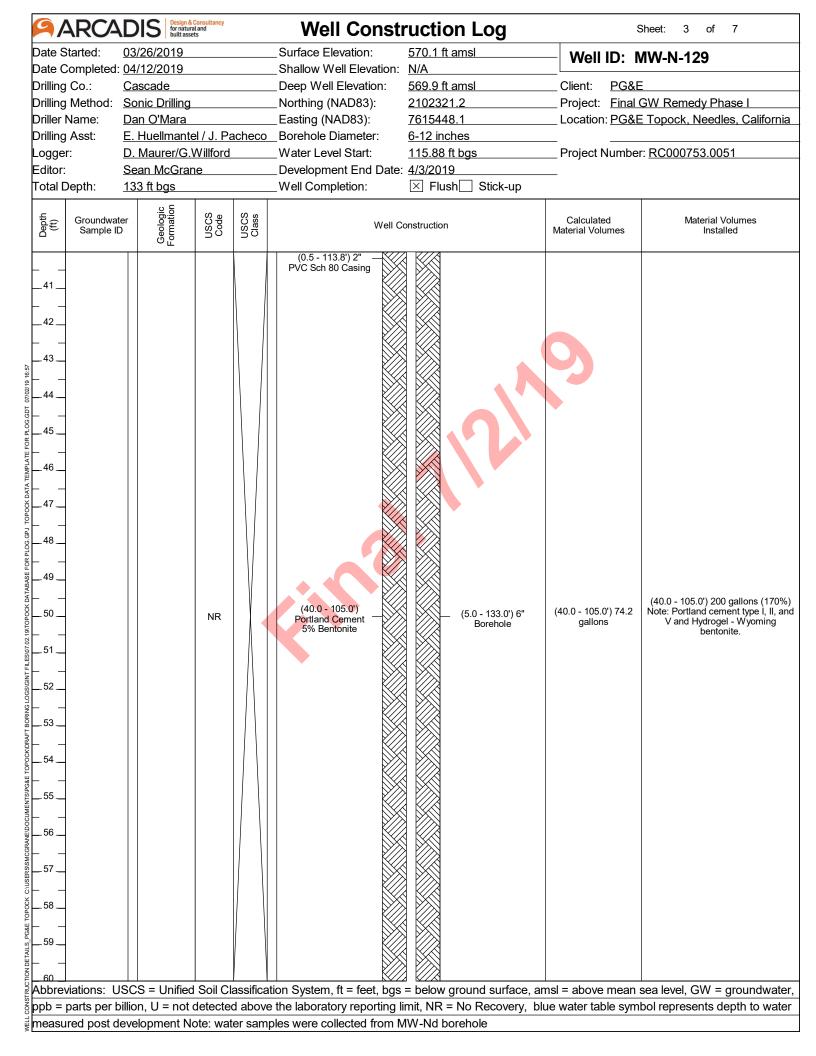


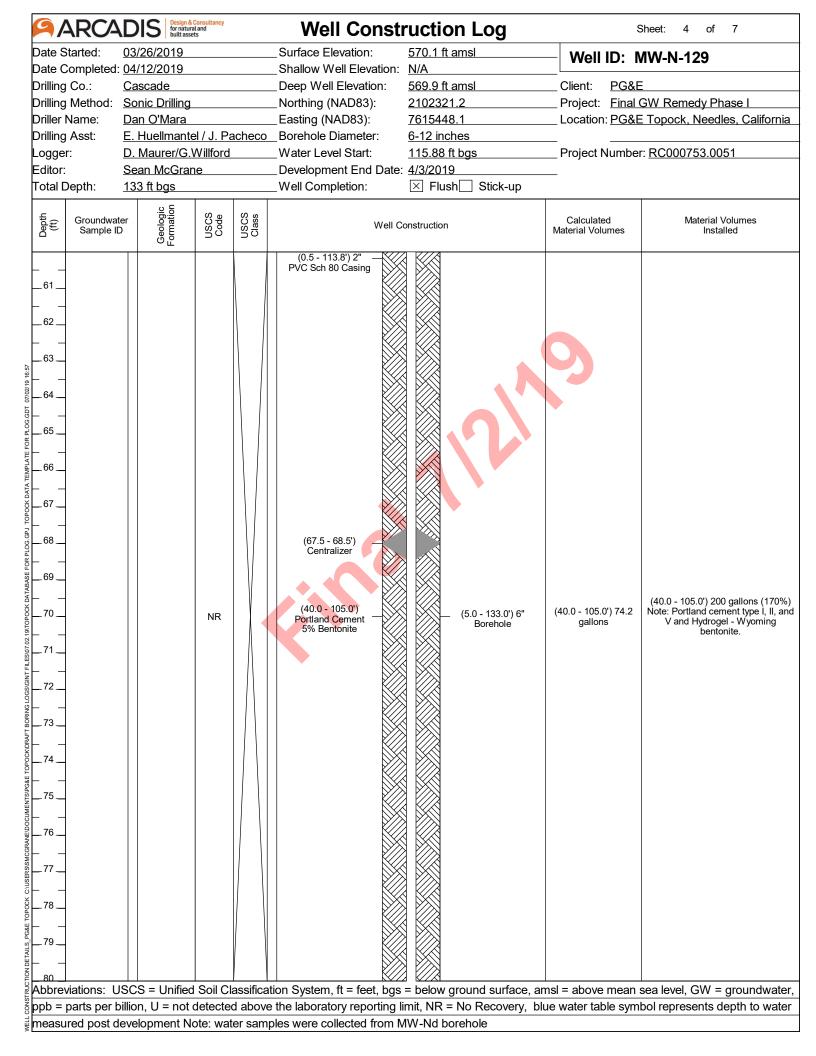
Image: Control     Contro			<b>Design &amp; Consultancy</b> for natural and built assets		Во	ring	Log	She	eet: 9 of	10
He Complete: 12/12/2182. Northing (NUD83) 21/22/82/2 Clear Book Clear Clear Book Clear Cl								Boring No.:	MW-Ls	
tiling Method: Sonic Drilling Torotal Cogets: 144 fb.0s. Project: Final Concurvator. ForeActional Cogets Single Actions: Location: Locatio: Location: Location: Location: Locat	-									
III Pig Type: Terrasonic track mount. Borehole Diameter: 10-12 indines. Location: 1. Hill Pig Type: Terrasonic track mount. Borehole Diameter: 10-12 indines. Location: 1. Boah McGrane. Converted to the First Water 74 dis 1b gs. Polject Number: BC000753.0051 Sampling Method: A Indin X 10 LCare Barral. Project Number: BC000753.0051 Sampling Method: Screen Intervals Sampling Method: Screen Inter	-				-	•				
Iter Name         Dan O'Mara         Depth to First Valer: 74.65 ft bgs         POSE Topock. Needles. Califor into: 100.000 ft biolstand           gger:         Ethodinand/L.V.V.Volta         Sampling Interval:         Screen intervals         Project Number: BC000/753.0051           gger:         Sampling Interval:         Screen intervals         Screen intervals         Screen intervals           ger         Sampling Interval:         Screen intervals         Screen intervals         Screen intervals           ger         Streen intervals         Screen intervals         Screen intervals         Screen intervals           ger         Streen intervals         Screen intervals         Screen intervals         Screen intervals           ger         Streen intervals         Screen intervals         Screen intervals         Screen intervals           ger         Screen intervals         Screen intervals         Screen intervals         Screen intervals           ger         Screen intervals         Screen intervals         Screen intervals         Screen intervals           ger         Screen intervals         Screen intervals         Screen intervals         Screen intervals           ger         Screen intervals         Screen intervals         Screen intervals         Screen intervals           ger         Screen intev	0	с с						•	<u>roundwater Re</u>	emedy Phas
Hilling Asset:       E. Huellmantel / T. Wolfe.       Sampling Method:       A Inch.x 10 L Core. Barrel.       Project Number: BC000753.0051         gger:       Michael Androws       Sampling Method:       X Inch.x 10 L Core. Barrel.       Project Number: BC000753.0051         gger:       Sampling Method:       Sampling Method:       X Inch.x 10 L Core. Barrel.       Project Number: BC000753.0051         ger:       Sampling Method:       X Inch.x 10 L Core. Barrel.       Project Number: BC000753.0051         ger:       Sampling Method:       X Inch.x 10 L Core. Barrel.       Project Number: BC000753.0051         ger:       Sampling Method:       X Inch.x 10 L Core. Barrel.       Project Number: BC000753.0051         ger:       Sampling Method:       X Inch.x 10 L Core. Barrel.       Project Number: BC000753.0051         ger:       Sampling Method:       X Inch.x 10 Method:       X Inch.x 10 Method:       X Inch.x 10 Method:         ger:       Sampling Method:       X Inch.x 10 Method:       X Inch.x 10 Method:       X Inch.x 10 Method:       X Inch.x 10 Method:         ger:       Sampling Method:       X Inch.x 10 Method:         ger:       Sampling Method:       X Inch.x 10 Method:       X Inch.x 10 Method:       X Inch.x 10 Method:										
Open       Michael Andrews       Samplen       Samplen       Converted to Well:       Yes       No					-		-			
Sean McGrane         Converted to Well:         Yes         No <u>ge</u>	•					•		Project Number: I	RC000753.00	51
Product       Server (International Product)       Product       Product       Sol Description       Dating Nose       Dating Nose       Dating Nose         0-1					-	-				
Image: State in the second state in	ditor:	<u>Sea</u>	n McGrane		Conver	ted to V	Vell: Xes No			
61	Depth (ft) Recovery (in)			Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
64       Image: Construction of the second sec	- 161_ 162_ 163_ 117			Alluvium	SM		(SM); reddish brown (5YR 4/3); very fine grained grained, angular to round; little granule to large p subround; little silt; little clay; little mica; wet; no d	d to very coarse bebble, angular to	Soft driling, drill time 25.31 minutes, lost core barrel down	(0.0 - 184.0') f water used
188       Topock - Alluvium Deposite: Silty sand with gravel and gravel and gravel to subangular, some sait, little clay, trace mica, wet; no odor       181 to 32.5 ft. bgs rough drilling, drilling, drilling, drilling         170       No sieve samples collected       SM       107 topock - Alluvium Deposite: Silty gravel with sand to subangular, some sait, little clay, trace mica, wet; no odor       181 to 32.5 ft. bgs rough drilling, drilling, drilling         171       198       Topock - Alluvium Deposite: Silty gravel with sand subangular, some sait, little clay, trace mica, wet; no odor       181 toposite: Silty gravel with sand subangular to subangular to subangular some sait, little clay, trace clay, some silt, little clay, wet, strong cementation, decrease in gravulas to very large publies, angular to subangular, some way large publies, angular to subangular to subangular, some way large publies, angular to subangular, some way large publies, angular to subangular to subangular, some way large publies, angular to subangular, some wa	- 164_ 165_ 166_ 166_ 167_			Alluvium	GM		(GM); dark grayish brown / dark yellowish brown to large pebbles, angular to subangular; some ve	(10YR 4/2); granules	Drill time 45.40 minutes, 175 to	
collected       collected       (CM): brow(10YR 53): granues to very large pebbles, angular to subangular; some very coarse grained sand, angular to subangular; some very coarse grained, angular to subangular; some very coarse grained, angular to subangular; some very large pebbles, angular to subangular; some very large pebbles, angular to subangular; some very coarse grained, angular; some very large pebbles, angular to subangular; some	- 168_ 169_ 170_			Alluvium	SM		(SM); brown (10YR 4/3); very fine grained to ver angular to subrounded; some granules to very la to subangular; some silt; little clay; trace mica; w	ý coarse grained, arge pebbles, angular ret; no odor	181 to 182.5 ft. bgs rough	
1.50       Topock - Alluvium Deposits       GM       GM       GM       (174') dark grayish brown / dark yellowish brown(10YR 4/2); some silt; little clay; wet; strong cementation; decrease in granules to very large pebbles and sand         176       177       176       176       176       176       176       176       176       176       176       176       176       176       176       176       176       176	- 171_ 172_ -						(GM); brown (10YR 5/3); granules to very large subangular; some very fine to very coarse grain subangular; little silt; trace cobbles; trace boulde	pebbles, angular to ed sand, angular to		
177	- 174_ 175_ -			Alluvium	GM		little clay; wet; strong cementation; decrease in g			
178       -       -       SM); brown (7.5YR 5/3); very fine grained to very coarse grained, angular; some small to very large pebbles, angular to subangular; some small to very large pebbles, angular to subangular; some silt; little clay; little mica; wet; moderate cementation         179       -       SM       SM         180       -       -       -         190       -       -       -         190       -       -	76 _  77 _									
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = oundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	178			Alluvium	SM		(SM); brown (7.5YR 5/3); very fine grained to ve angular; some small to very large pebbles, angu	ery coarse grained, lar to subangular;		
oundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol	180   bbreviation	s: USCS	= Unified Soil	Classification	on Svste	<u>il</u> em. ft =	feet, bgs = below ground surface.	amsl = above mear	n sea level. G	W =
presents depth to water measured during drilling Note: water samples were collected from MW-Ld borehole.			•						Tator lable syl	

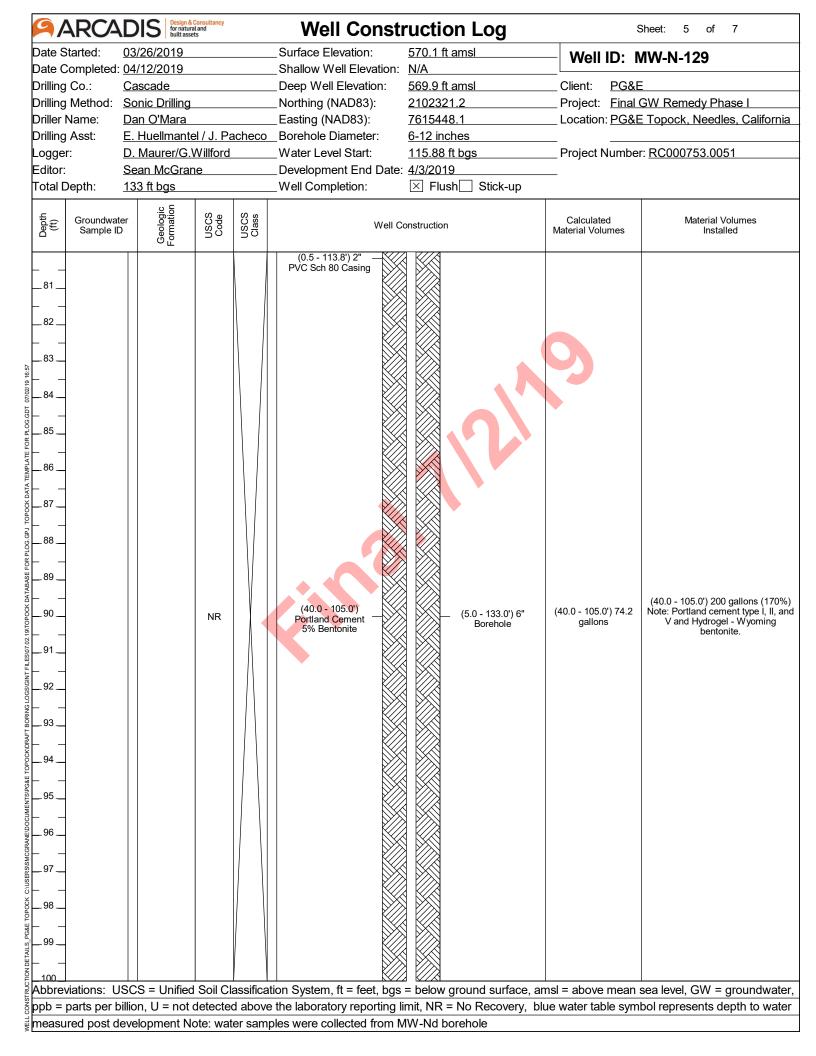
9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log	3		Sh	eet: 10 of	10
	Started:				-	e Elevation:	<u>529.6 ft ar</u>		Boring No.	: MW-Ls	
	•	ted: <u>12/15/</u>				g (NAD83):	2102862.2		_	<u></u>	
Drilling	-	<u>Casca</u>			_ Easting	(NAD83):	<u>7615260.4</u> <u>184 ft bgs</u>		_ Client: <u>PG&amp;E</u> _ Project: <u>Final G</u>	Froundwater Re	amady Dhasa
-	Iling Method: <u>Sonic Drilling</u> Il Rig Type: <u>Terrasonic track mount</u>				le Diameter:	<u>10-12 inch</u>	es	_ Floject. <u>Final C</u> _ Location: <u>1</u>	nounuwaler R	enieuy Filase	
	ler Name: <u>Dan O'Mara</u>			June		o First Water				Topock, Need	les, California
Drilling	illing Asst: <u>E. Huellmantel / T. Wolfe</u>			-	ng Method:		) ft Core Barrel				
Logge			el Andrews		-	ng Interval:	Screen int		_		
Editor		<u>Sean I</u>	McGrane		Conver	ted to Well:	🛛 Yes [	_ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class		Soil Description		Drilling Notes	Drilling Fluid
 181 	198	No sieve		Topock - Alluvium Deposits	SM					(166.0 - 182.5') Drill time 45.40 minutes, 175 to 179 ft. bgs rough drilling, 181 to 182.5 ft. bgs rough	(0.0 - 184.0') No water used
182		samples collected	MW-L-VAS- 181-186 (3.3 ppb) 10/20/2018	Topock - Alluvium Deposits		↓ └ └ ↓ 4/3); ve	ry fine grained	<ul> <li>Alluvium Deposits; S</li> <li>very coarse grained,</li> </ul>	subangular to	drilling (182.4') Large	
183			10/20/2018 11:06	Topock - Alluvium		Subang	ular; little mica;		i	boulder (182.5 - 184.0')	
				Deposits		(182.5	- 184.0') [opocl	< - Alluvium Deposits; (I	NK); NO Recovery	Rough drilling	
_ <u>184</u>						V N	E	nd of Boring at 184.0 'b	gs.		
20											
187 <u>1</u>											
188											
						AU					
JO T											
<sup>Ě</sup> 190											
190_190_190_190_190_190_190_190_190_190_											
5 <b>191_</b>											
193_ 193_ 194_ 194_											
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197											
5199_											
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200	viotica		Unified Call (		ion Stat	om ft - ft		around autors	amal = abava ma		\ <u>\</u>
2					•		-	-	amsl = above mea No Recovery, blue		
n —								pliected from MW			
				5	J	1					

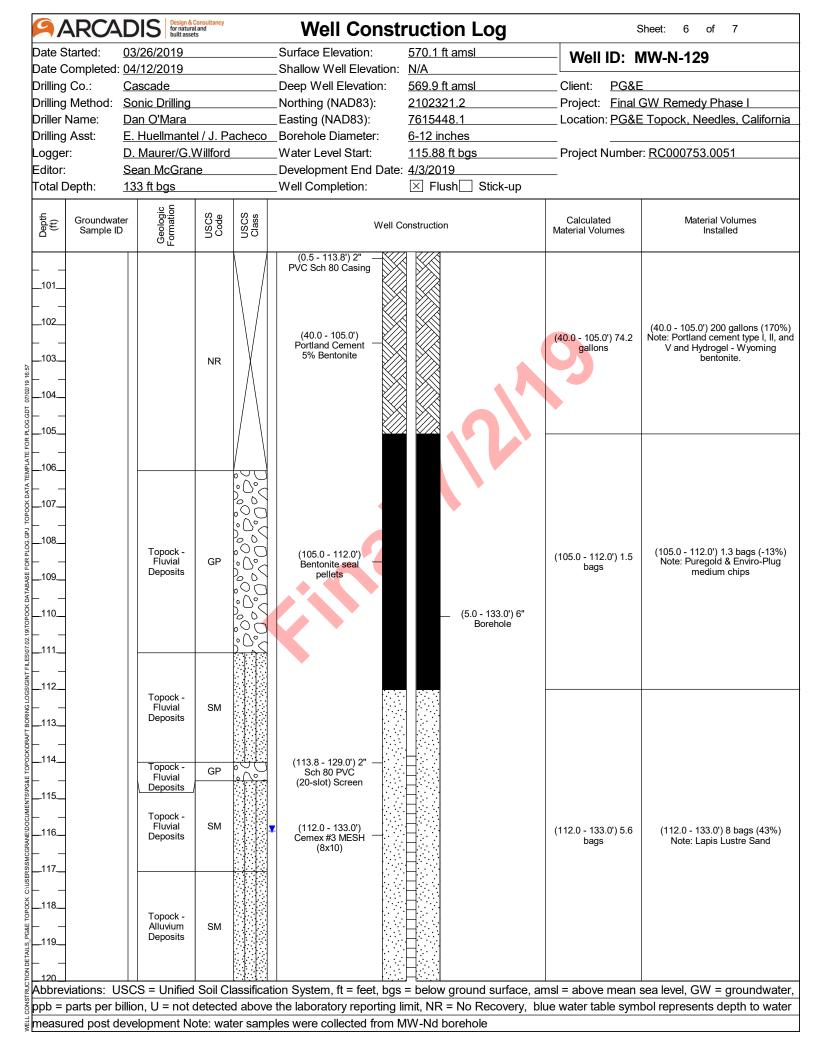


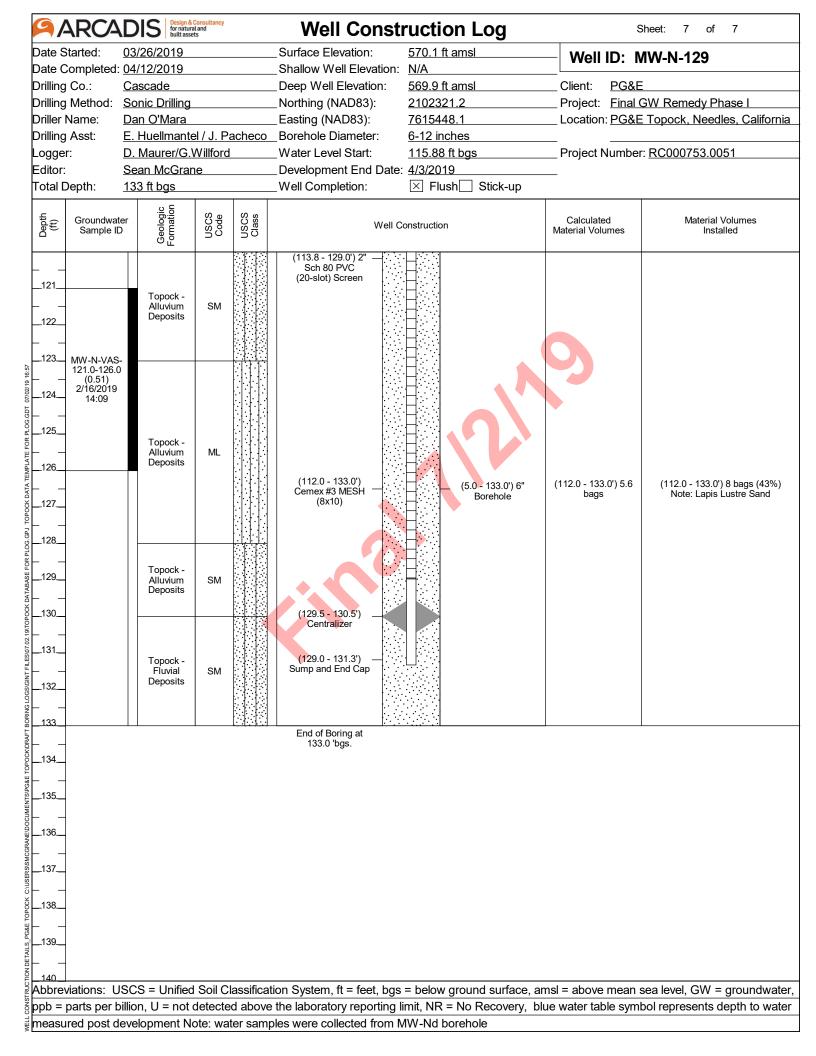
ARCA	Design & Consulta for natural and built assets	ancy	Well Constr	ruction Log	Sheet: 2 of 7			
Date Started:	03/26/2019		Surface Elevation:	570.1 ft amsl	Well ID: N	/IW-N-129		
Date Completed				<u>N/A</u>				
Drilling Co.:	Cascade		Deep Well Elevation:	569.9 ft amsl	Client: <u>PG&amp;E</u>			
Drilling Method:	-		Northing (NAD83):	2102321.2	•	GW Remedy Phase I		
Driller Name:	Dan O'Mara		Easting (NAD83):	7615448.1	Location: <u>PG&amp;E</u>	Topock, Needles, California		
Drilling Asst:			Borehole Diameter:	6-12 inches				
Logger:	D. Maurer/G.Willfo	ord	Water Level Start:	<u>115.88 ft bgs</u>	Project Number	r: <u>RC000753.0051</u>		
Editor:	Sean McGrane		Development End Date:					
Total Depth:	<u>133 ft bgs</u>		Well Completion:	imes Flush Stick-up				
Groundwa		Code USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed		
			(0.5 - 113.8') 2" PVC Sch 80 Casing					
22								
23					9			
24								
25								
da26 			(3.0 - 33.0') Portland Cement 5%		(3.0 - 33.0') 43.1 gallons	(3.0 - 33.0') 70 gallons (62%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming		
27			Bentonite		gaions	bentonite.		
2929								
20 30	N	R		(5.0 - 133.0') 6" Borehole				
2631								
32								
20 34								
35 35								
36								
955 			(33.0 - 40.0') Bentonite seal chips		(33.0 - 40.0') 1.5 bags	(33.0 - 40.0') 1 bags (-33%) Note: Puregold & Enviro-Plug medium chips		
5 38								
3894 STHE 39								
Abbreviations:	ISCS = Unified Soi	I Classificati	on System ft = feet bas	= below around surface ar	nsl = ahove mean	sea level, GW = groundwater,		
0						bol represents depth to water		
			les were collected from N	· · · · ·	- Hator table bym			
		nator sampi						

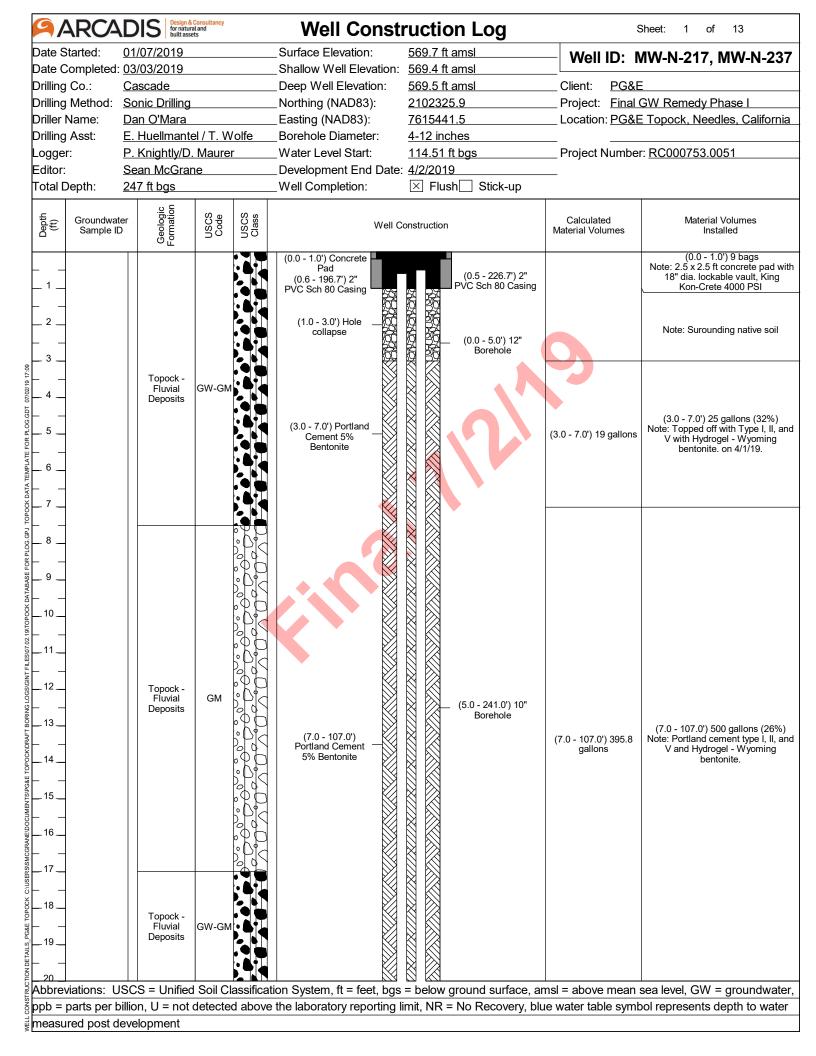


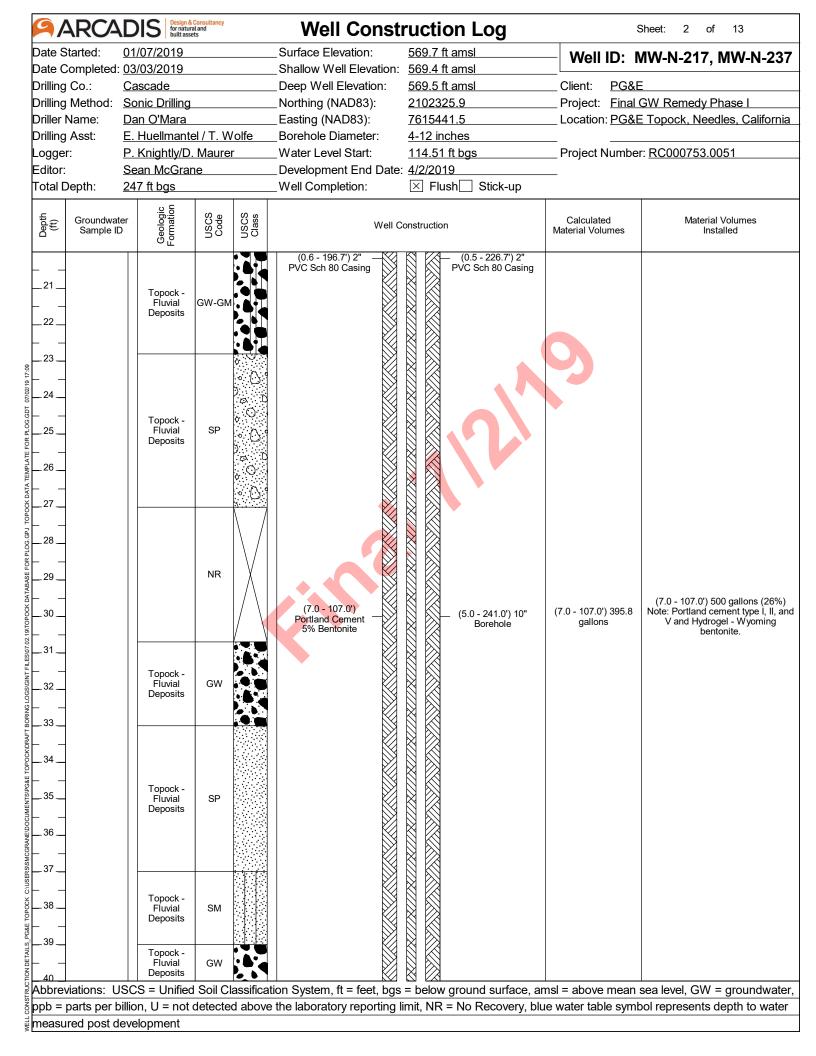




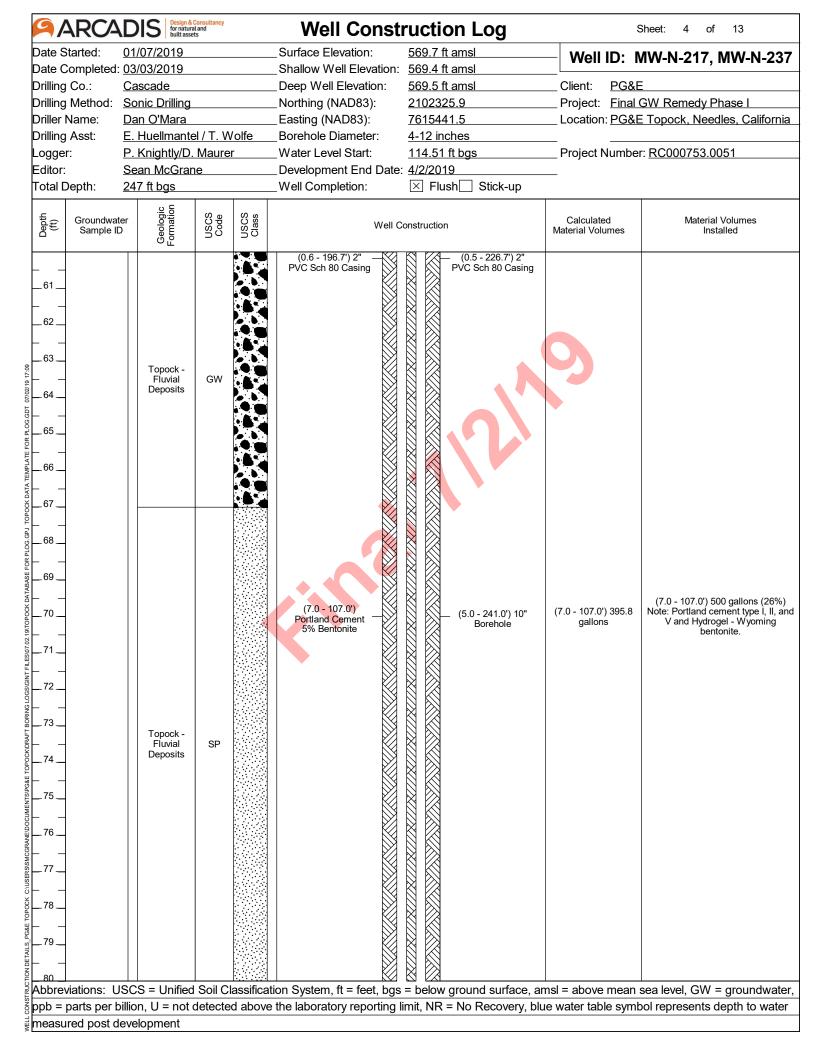




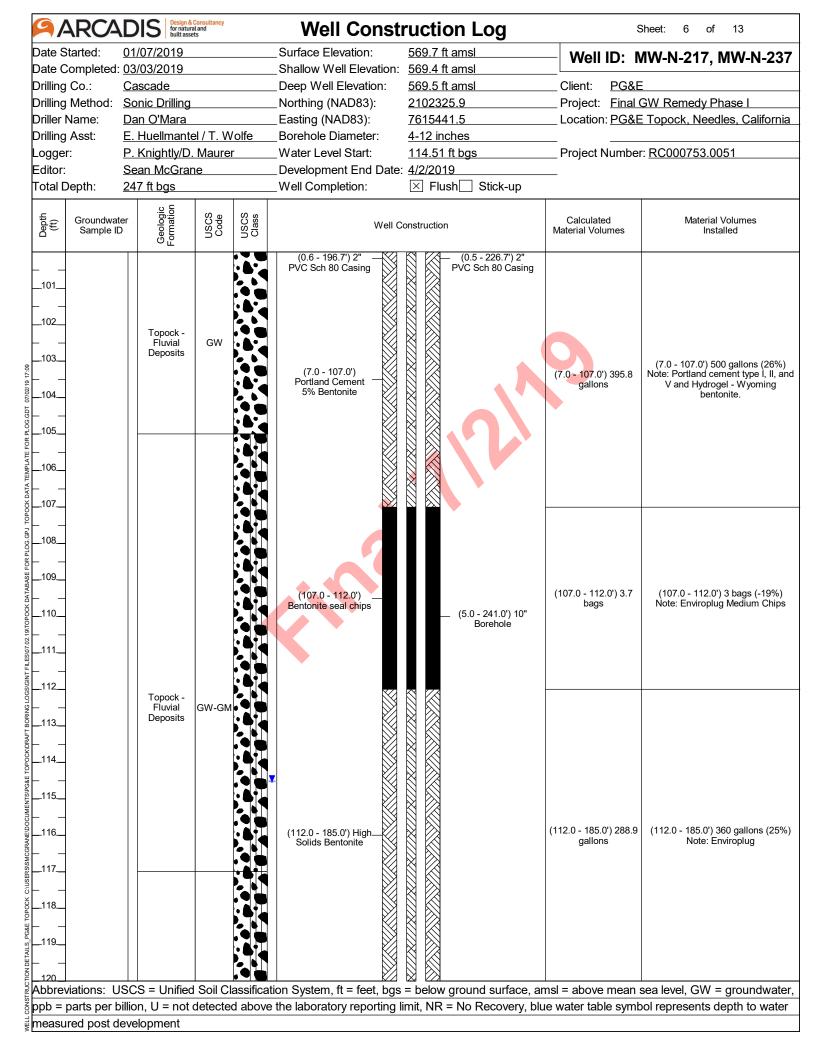




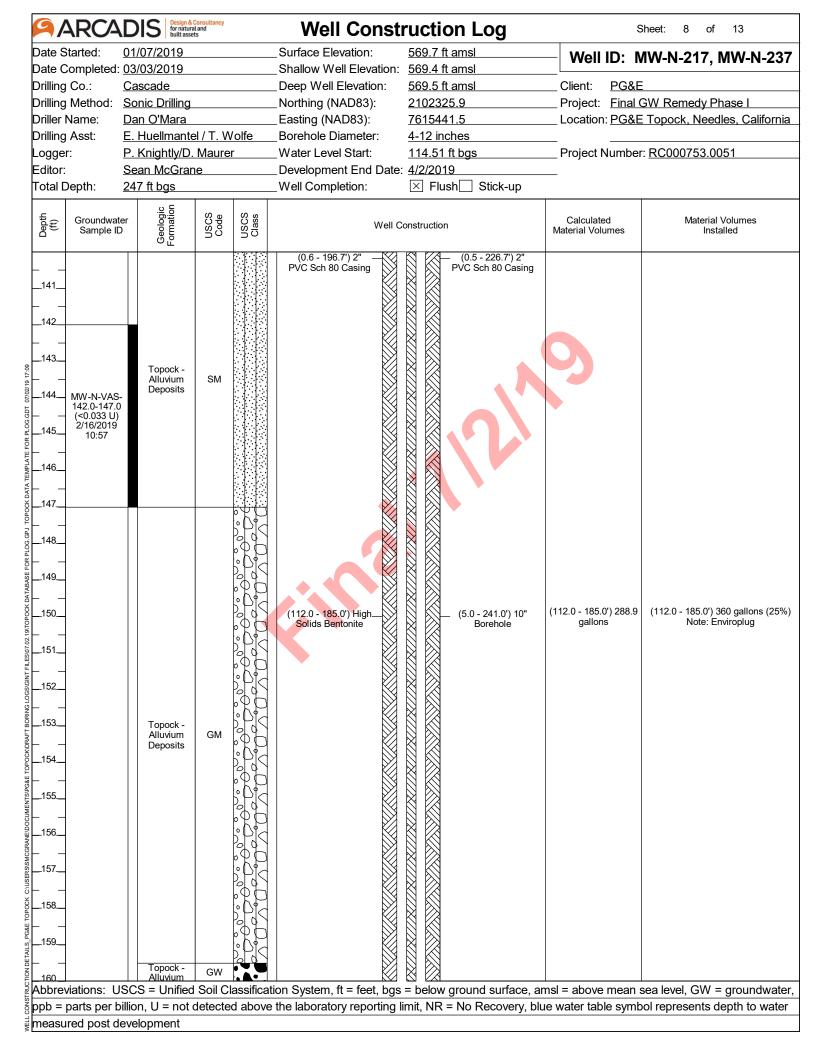
ARCA	DIS Design & for natura built asse	<mark>Consultancy</mark> al and ts		Well Const	truction Log		Sheet: 3 of 13		
Date Started:	01/07/2019			ace Elevation:	569.7 ft amsl	Well ID:	MW-N-217, MW-N-237		
Date Completed: Drilling Co.:	: <u>03/03/2019</u> <u>Cascade</u>			llow Well Elevation p Well Elevation:	569.4 ft amsl 569.5 ft amsl	Client: <u>PG8</u>	F		
Drilling Method:	Sonic Drilling			hing (NAD83):	<u>2102325.9</u>		Client: <u>PG&amp;E</u> Project: <u>Final GW Remedy Phase I</u>		
Driller Name:	Dan O'Mara			ting (NAD83):	7615441.5	-	E Topock, Needles, California		
Drilling Asst:	E. Huellmante	el / T. Wolfe		ehole Diameter:	4-12 inches				
Logger:	P. Knightly/D.			er Level Start:	<u>114.51 ft bgs</u>	Project Numb	er: <u>RC000753.0051</u>		
Editor:	Sean McGrar	ne		elopment End Date					
Total Depth:	247 ft bgs	1 1	Wel	I Completion:	⊠ Flush Stick-up	)			
Groundwa		USCS USCS USCS			Construction	Calculated Material Volumes	Material Volumes Installed		
41	Topock - Fluvial Deposits	GW	PV	0.6 - 196.7') 2" C Sch 80 Casing	(0.5 - 226.7') 2 PVC Sch 80 Cas	z" sing			
	Topock - Fluvial Deposits	GW							
	Topock - Fluvial Deposits	GW		(7.0 - 107.0') ortland Cement 5% Bentonite	(5.0 - 241.0') 11 Borehole	0" (7.0 - 107.0') 395.8 gallons	(7.0 - 107.0') 500 gallons (26%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.		
чери станарание по станарание по С по станарание по стан	Topock - Fluvial Deposits	SW							
							sea level, GW = groundwater,		
0		detected al	ove the la	aboratory reporting	limit, NR = No Recover	y, blue water table sym	bol represents depth to water		
measured post d	ieveiopment								



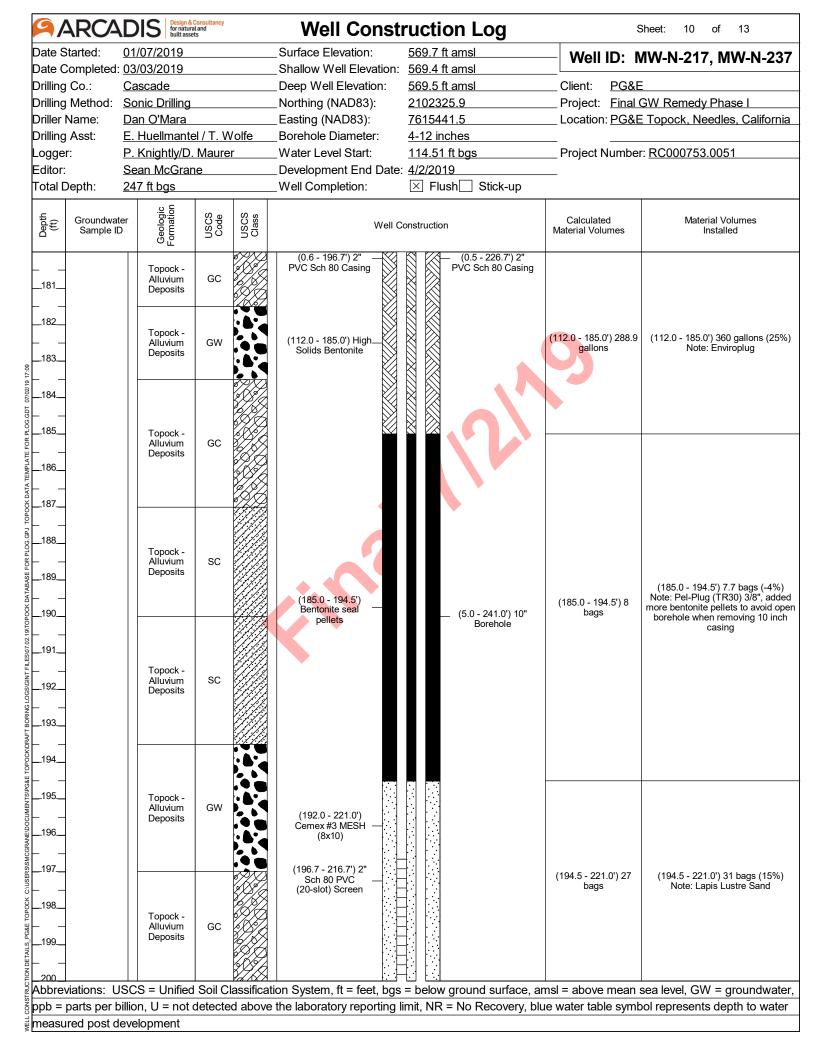
ate Completed: 03/03/2019       Shallow Well Elevation:       569.4 ft amsl       Client: PG&E         rilling Co::       Cascade       Deep Well Elevation:       569.5 ft amsl       Client: PG&E         rilling Method:       Sonic Drilling       Northing (NAD83):       2102325.9       Project: Einal GW Remedy Phase I         riller Name:       Dan O'Mara       Easting (NAD83):       7615441.5       Location: PG&E Topock, Needles, Californi         ogger:       P.Knightly/D. Maurer       Water Level Start:       114.51 ft bgs       Project Number: RC000753.0051         otor:       Sean McGrane       Development End Date: 4/2/2019       412.51 ft bgs       Project Number: RC000753.0051         otor:       Sample D       Øg g       G.g.g.g.g.g.g.g.g.g.g.g.g.g.g.g.g.g.g.g	ARC/	ADIS Design 8 for nature built ass	Consultancy al and ets	Well Const	ruction Log	S	Sheet: 5 of 13	
alle Completed D2002/2019 Shallow Weit Develors B28-11 and C Diant PGAE Development End (NAD83): 2103252.0 Project Final GW Randy Phase L Diant PGAE Final GW Randy Phase L Location PGAE Topock Mendoy Phase L Project Number RC000753:0051 Development End Date: 4/22019 Development Find Date: 4/22019 PFC Sch 90 Celling PFC Sc	Date Started:					Well ID: N	MW-N-217, MW-N-237	
ning Mehot: Soniz Dalling NA083; 2102325.9 Project: Find CW Renedy Phase I. Infire Name: Dan OMara Easing NA083; 7102325.9 Project: Find CW Renedy Phase I. Description Part E. Huelmantel JT. Wolfe. Borehole Danneer: 4-12 Inches. Description E. McGrane Description End Date: 4-12 Inches. Description I. McGrane Description I. SiteL-up I. Easing McGrane Description I. SiteL-up I. Easing McGrane Description								
nier Name: Dan CMara Essting (NAD83): 7615411.5 Location: PG&E Topock. Needes. Californi ning Asst: E. Huehmaniel T. Mole: Borehole Diameter: 4/2 nubes: pager: P. KnjohlyD. Maurer: Water Level Start 114.51 ft bas pager: Development End Date: 4/2019 tabopti: 220 Lbgs. Well Completion: E. Fisah Stick-up	-			-				
nling Assi generative data in the second se	-	-		,		-	-	
orgen:       P. KnightNpC Maurer       Water Level Start:       114.51 ft bgs       Project Number: RC000753.0051         obal Depth:       247.ft bgs			al/T.W/olfe	,		Location. <u>FGac</u>	<u>- Topock, Neeules, California</u>	
Statute         Development End Date:         22/21 ft bgs	-					Project Numbe	r: RC000753 0051	
Dial Depth:       247 ft bgs       Well Completion:       I       Flush       Stick-up         ges       Converting       ges       Gardened       ges       Gardened       Material Volumes       Material Volumes         all       all       ges       Gardened       ges       Gardened       Gardened       Material Volumes       Material Volumes       Material Volumes         all       all<					-		1.1.0000700.0001	
SP         SP         Color	otal Depth:			-				
SP         SP         Color		Geologic Formation	USCS Code USCS Class	Well C	onstruction			
94		Fluvial		PVC Sch 80 Casing	PVC Sch 80 Casing	(7.0 - 107.0') 395.8 gallons	(7.0 - 107.0') 500 gallons (26%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.	
.97       .98       .98       .98       .98       .98       .98       .98       .98       .99       .	_ 94 _ 94 _ 95 _ 95	Fluvial	SW					
.97       .98       .98       .98       .98       .98       .98       .98       .98       .99       .								
.98	_97							
.99								
.99	_ 98	Topock -						
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate		Fluvial	GW GW					
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate	_ 99	Deposits						
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate								
· · · · · ·								
ob = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol represents depth to wate								
leasured post development			detected abov	e the laboratory reporting I	imit, NR = No Recovery, bl	ue water table symb	ool represents depth to water	

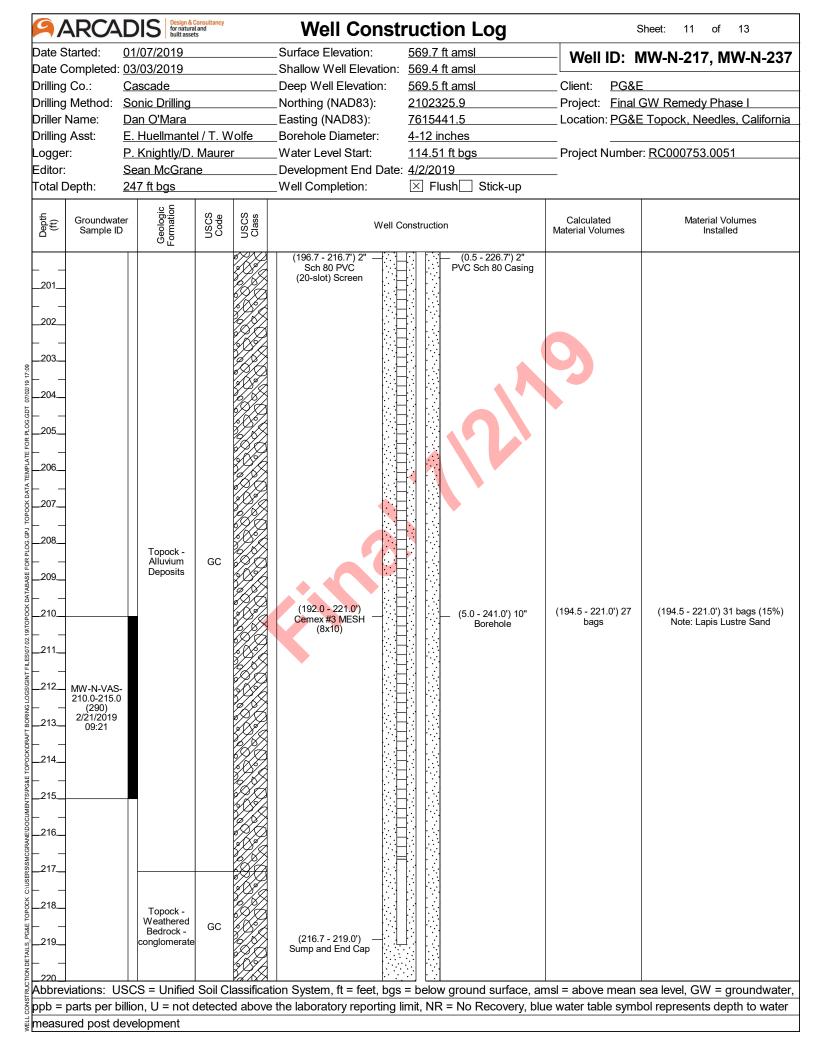


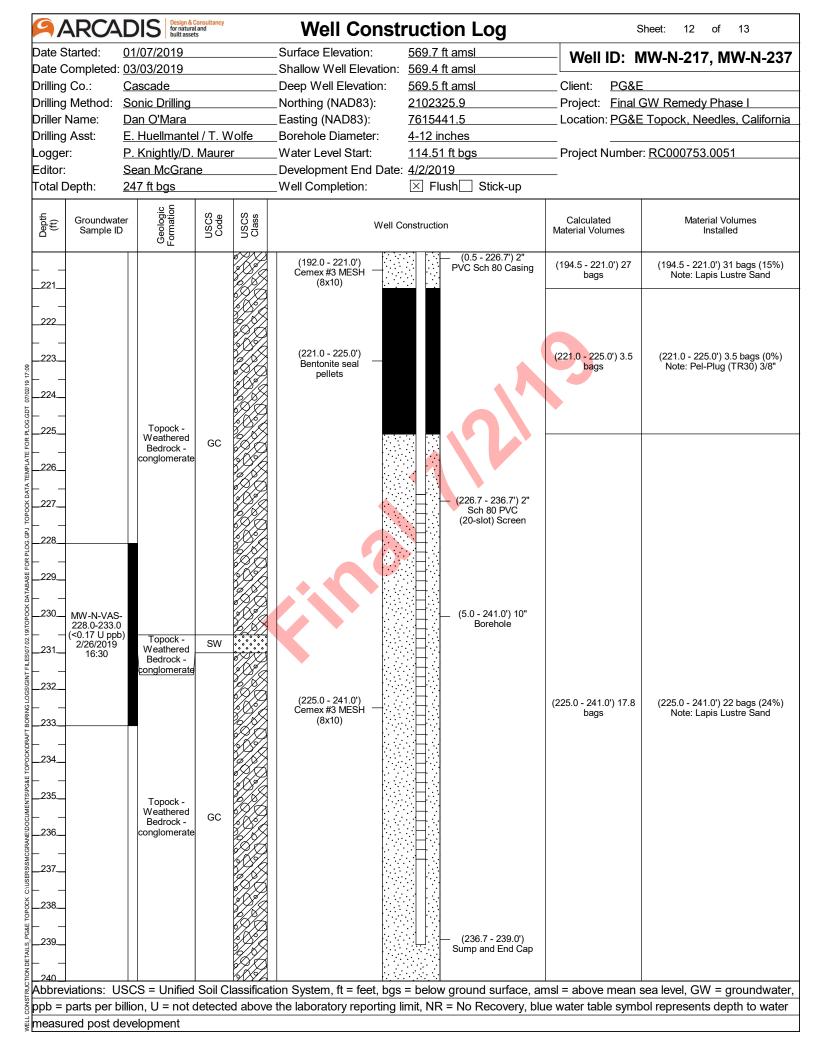
ARC A	DIS Design & for nature built asso	Consultancy al and ets	Well Const	ruction Log	S	Sheet: 7 of 13	
Date Started:	01/07/2019		Surface Elevation:	569.7 ft amsl	- Well ID: N	/W-N-217, MW-N-237	
Date Completed			Shallow Well Elevation:				
Drilling Co.:	Cascade		Deep Well Elevation:	569.5 ft amsl	Client: PG&E		
Drilling Method:	Sonic Drilling		Northing (NAD83):	2102325.9	-	GW Remedy Phase I	
)riller Name: )rilling Asst:	Dan O'Mara E. Huellmante		Easting (NAD83): Borehole Diameter:	7615441.5 4-12 inches	Location: PG&E	Topock, Needles, California	
Logger:	P. Knightly/D		Water Level Start:	<u>4-12 incres</u> 114.51 ft bgs	 Project Number	: <u>RC000753.0051</u>	
Editor:	Sean McGrai		Development End Date	-		. 110000733.0031	
otal Depth:	247 ft bgs		Well Completion:	∑ Flush Stick-up			
Groundwa Groundwa Sample II		USCS Code USCS Code Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
	Topock - Alluvium Deposits	$\mathbb{R}$	PVC Sch 80 Casing	PVC Sch 80 Casing	9		
	Topock - Alluvium Deposits	GW-GM	(112.0 - 185.0') High Solids Bentonite	(5.0 - 241.0') 10" Borehole	(112.0 - 185.0') 288.9 gallons	(112.0 - 185.0') 360 gallons (25% Note: Enviroplug	
_137 138 139	Topock - Alluvium Deposits	SM					
140	ISCS = Unified	Soil Classifi	ation System ft - feet has	= helow around surface a	imsl = ahove mean d	sea level GW = aroundwata	
			cation System, ft = feet, bgs			sea level, GW = groundwate ool represents depth to wate	

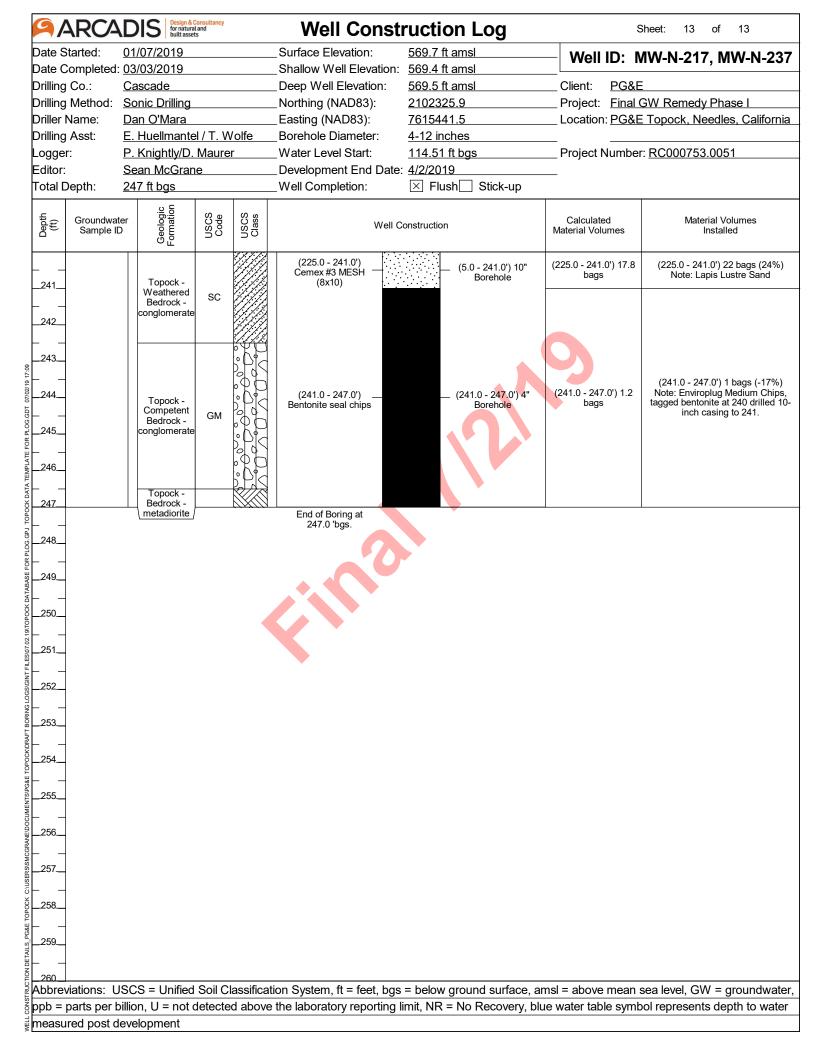


Date Stander         0.107/2010         Surface Evolution:         582.7.1.amal         Well ID:         MW-N-217, MW-N-237           Drilling Correction:         Case:ade         Deep Well Evolution:         580.4.1.msl.         Clint:         POSE:         Pose:add:         Deep Well Evolution:         580.4.1.msl.         Clint:         POSE:         Encoded:         Deep Well Evolution:         580.4.1.msl.         Clint:         POSE:         Encode:         Deep Well Evolution:         580.4.1.msl.         Clint:         POSE:         Encode:         Deep Well Evolution:         580.4.1.msl.         Clint:         POSE:         Encode:         Deep Well Evolution:         143.5.1.ft.hps.         Project:         Encode:         Deep Well Completion:         Image: Statk-1.5.         Clint:         POSE:         POSE:         Dep Well:         Statk-1.5.         Dep Well:         Statk-1.5.         Dep Well:         Statk-1.5.         Dep Well:         Statk-1.	ARCA	DIS Design & for natura built asse	<mark>Consultancy</mark> I and ts		Well Const	ruction Log	S	heet: 9 of 13			
Jane Complete: <u>2013</u> 2/019							Well ID: N	IW-N-217. MW-N-237			
Diming Method:         Song Diming         Northing (MADB3)         2102325.9         Project:         Enal GW Rendy Phase I           Diming Maxes         E. Hughtmanle/T. Wolfe         Borohole Diamates         4.12 Inchas         Project:         Final GW Rendy Phase I           Diming Aux         E. Hughtmanle/T. Wolfe         Borohole Diamates         4.12 Inchas         Project:         FIGE Topock. Modice. California.           California         Sean McGrane         Development End Date:         4.12 Inchas         Project:         FIGE Topock. Modice.           Editor         Sean McGrane         Development End Date:         Valid Completion:         Site.Lag Site.Lag         Material Volumee           Image: Sean McGrane         Image: Sean McGrane         Vel Completion:         Site.Lag Si	•										
Differ Name: Dan ("Mara" Easting ("MAD83: 761:841.5. Location: PGAE Topock, Neodies, California, Asset: Listenaniation, 17. Wolfer, Noroholo Barneter - 421: Inches. Loggen: P. Knightifful, Maurer Waler Level Start 114.5.11 Bogs. Project Number: RC000753.0051 Sea. MACGrane. Development End Date: 442019 Total Depth: 247: Itbgs. Well Completion: [2] Flush Stick-up	-				•						
Dolling Ast Deprint         E. Hughtmanuel / T. Wolfe         Baronalo Diamete Baronalo Diamete Series         4-12 inches           Construction         Serie McGrane         Development End Date:         4-12 inches         Project Number: RC000753.0051           Editor         Serie McGrane         Development End Date:         422019             Integration         Sign McGrane         Development End Date:         422019             Serie McGrane         Sign McGrane         Velocity McGrane         Velocity McGrane         Velocity McGrane             Serie McGrane         Sign McGrane         Velocity McGrane         Velocity McGrane         Velocity McGrane          Merrini Visures         Merrini Visures           Sign McGrane         Velocity McGrane         Velocity McGrane         Velocity McGrane         Velocity McGrane         Velocity McGrane          Merrini Visures         Merrini Visures           161         Velocity McGrane         Velocity McGrane         Velocity McGrane         Velocity McGrane         Velocity McGrane           Merrini Visures         Merrini Visures           162         Velocity McGrane         Velocity McGrane         Velocity McGrane <t< td=""><td>-</td><td>-</td><td></td><td></td><td> ,</td><td></td><td>•</td><td>-</td></t<>	-	-			,		•	-			
Longen:         P. Knight/D. Marrer         Water Level Start:         114.511 bgs         Project Number: EC000753.0051           Total Dept:         247 fb bgs         Well Completion:         Image: Record Project Number: Record			. ( <b>T</b> ) ) )	10			Location: <u>PG&amp;E</u>	I opock, Needles, California			
Editor:         Sear McGance         Development End Date: 42/2019	-							D0000750 0054			
Total Depti:       227.0 bps       Well Completion       I       I       Multical Values       Multical Values       Multical Values         §6       Countered and the state       9       9       9       9       9       0						•	Project Number	: <u>RC000753.0051</u>			
Bit         Countered Sample D         Bit Bit         Bit Sig         Bit Sig         Bit Sig         Bit Sig         Matrial Volumes         Matrial Volumes           191         Imposite			le								
181     192 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>											
PVC Set 80 Canng PVC Set 80 Canng (1120 - 185.07 380 galons (28%) 166. 166. 166. 166. 166. 170	Groundwa Gebtł Sample I		USCS Code	USCS Class							
ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol represents depth to water		Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	SW		PVC Sch 80 Casing	PVC Sch 80 Casing	(112.0 - 185.0') 288.9 gallons	(112.0 - 185.0') 360 gallons (25%) Note: Enviroplug			
ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol represents depth to water	_180_I Abbreviations: I	JSCS = Unified	Soil Cla	assificat	ion System, ft = feet_bas	= below around surface a	msl = above mean s	sea level, GW = aroundwater			
					· ·						
							as mater table symb				









ARCA		& Consultancy ural and sets			ring		Sh	eet: 1 of	13
ate Started:	01/07/2019			Surface			- Boring No.	: MW-Nd	
ate Completed:				Northing			_		
rilling Co.:	Cascade			Easting			_ Client: <u>PG&amp;E</u>		
rilling Method:		ng			•	247 ft bgs	_ Project: <u>Final G</u>	iroundwater Re	medy Phas
rill Rig Type:						eter: <u>4-12 inches</u>			
riller Name:	Dan O'Mara			-		Water: <u>114.51 ft bgs</u>		Topock, Needle	
rilling Asst:		<u>ntel / T. Wol</u>		Samplin	•		_ Project Number:	RC000753.005	51
ogger:	P. Knightly/			Samplin	•		_		
ditor:	Sean McGr			Convert	ed to V	Vell: 🛛 Yes 🗌 No			
		oundwater ample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluic
1 2 3 4 5 6 7		F	opock - Fluvial eposits	GW-GM		(0.0 - 7.5') Topock - Fluvial Deposits; Well gra sand (GW-GM); yellowish brown / moderate ye 5/4) some light brown (7.5YR 6/4); granules to subangular to subround; some fine to very coa angular to subangular; little silt; trace cobbles, subround; some coarser clasts composed of n	ellowish brown(10YR very large pebbles, rse grained sand, subangular to	(0.0') Paul Knightly geologist on-site 0 to 107 ft bgs	
9		F	opock - -luvial eposits	GM		(7.5 - 17.0') Topock - Fluvial Deposits; Silty gr dark gravish brown (2.5Y 4/2); granules to ver to subround; some silt; little fine to very coarse cobbles, angular to subround; some coarser cl metadiorote; dry	/ large pebbles, angular grained sand; trace		
- 17 18 19 20		F D	opock - Fluvial eposits	GW-GM		(17.0 - 22.8') Topock - Fluvial Deposits; Well g and sand (GW-GM); dark grayish brown / dark 4/2); granules to very coarse grained, subangular fine to very coarse grained sand, subangular to trace cobbles, subangular to subround; some composed of metadiorote; dry	yellowish brown(10YR lar to subround; some subround; little silt;		

	DIS	Design & Consultancy for natural and built assets		BO	ring Lo	og	Sn	eet: 2 of	13
ate Started:	<u>01/07/20</u>				Elevation:	<u>569.7 ft amsl</u>	Boring No.	: MW-Nd	
ate Completed				-	g (NAD83):	2102325.9			
rilling Co.:	Cascade			-	(NAD83):	<u>7615441.5</u>	Client: <u>PG&amp;E</u>		
rilling Method:	<u>Sonic D</u>			Total De	•	247 ft bgs	Project: Final G	roundwater Re	medy Phas
rill Rig Type:		nic track mo				4-12 inches	Location: <u>1</u>		
riller Name:	<u>Dan O'N</u>			-		er: <u>114.51 ft bgs</u>		Topock, Needle	
rilling Asst:		mantel / T.		-	ng Method:	4 inch x 10 ft Core Barrel	Project Number:	RC000753.005	51
ogger:	-	<u>ntly/D. Maur</u>		-	ig Interval:	Continuous	-		
ditor:	Sean Mo	cGrane		Convert	ed to Well:	🛛 Yes 🗌 No			
	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
			Topock - Fluvial	GW-GM					
22			Deposits						
~									
23					0 (22.6 grav	- 27.0') Topock - Fluvial Deposits; Poorly el (SP); reddish yellow (7.5YR 6/6); fine gra	graded sand with		
- 90					grair	ed; little granules to very large pebbles, and coarser clasts composed of metadiorote; dr	gular to subangular;		
24						coarser clasts composed of metadiorote; dr	y		
-			Topock -		• O				
25			Fluvial	SP	• () •				
			Deposits						
26					(25.0 coar	'); and granules to large pebbles, angular to ser clasts composed of metadiorote; dry; de	o subround; little		
					(26)	'); little granules to very large pebbles, ang			
27						ase in sand	<b>3</b> ,		
					(27.0	- 30.7') (NR); No recovery			
-									
28									
-									
29				NR					
_									
30									
31					(30.	- 33.0') Topock - Fluvial Deposits; Well gr	aded gravel with sand		
						); dark grayish brown / dark yellowish brow ry large pebbles; little fine to very coarse gr			
			Topock - Fluvial	GW	suba	ngular; trace cobbles; trace silt; little coarse	er clasts composed of		
3287.6			Deposits		meta	diorote; dry			
33					(33.0	- 37.0') Topock - Fluvial Deposits; Poorly	graded sand with		
-					grav	el (SP); reddish yellow (7.5YR 6/6); fine gra ed; little granules to very large pebbles, and	ined to medium		
34						coarser clasts composed of metadiorote; dr			
-									
35			Topock - Fluvial	SP					
			Deposits						
36									
						brown (7.5YR 4/2); trace silt; trace clay; de	crease in sand		
37									
~' <del>   </del>					(37.0	- 39.0') Topock - Fluvial Deposits; Well gr	aded gravel (SM); light	(37.0 - 47.0')	(37.0') gal
			Topock -		i∷ i coar	nish gray / pale yellowish brown(10YR 6/2) se grained, angular to subangular; little grai	ules to large pebbles,	Rough drilling, fromation	water use
38			Fluvial	SM	suba	ngular to subround; little silt; trace clay; sor posed of metadiorote; moist; weak cementa	ne coarser clasts	collapse, drilling water was used	
- 96			Deposits			g fluid		could not	
39			Tenest		····	- 41.0') Topock - Fluvial Deposits; Well gr	aded gravel with sand	determine quantity	
4			Topock - Fluvial	GW	(GW	); grayish brown (2.5Y 5/2); granules to ver	y large pebbles,		
40			Deposits			lar to subround; little fine to very coarse gra			
breviations: l	JSCS = U					, bgs = below ground surface,			
					I	boratory reporting limit, NR = N	<b>D</b> 11		امط

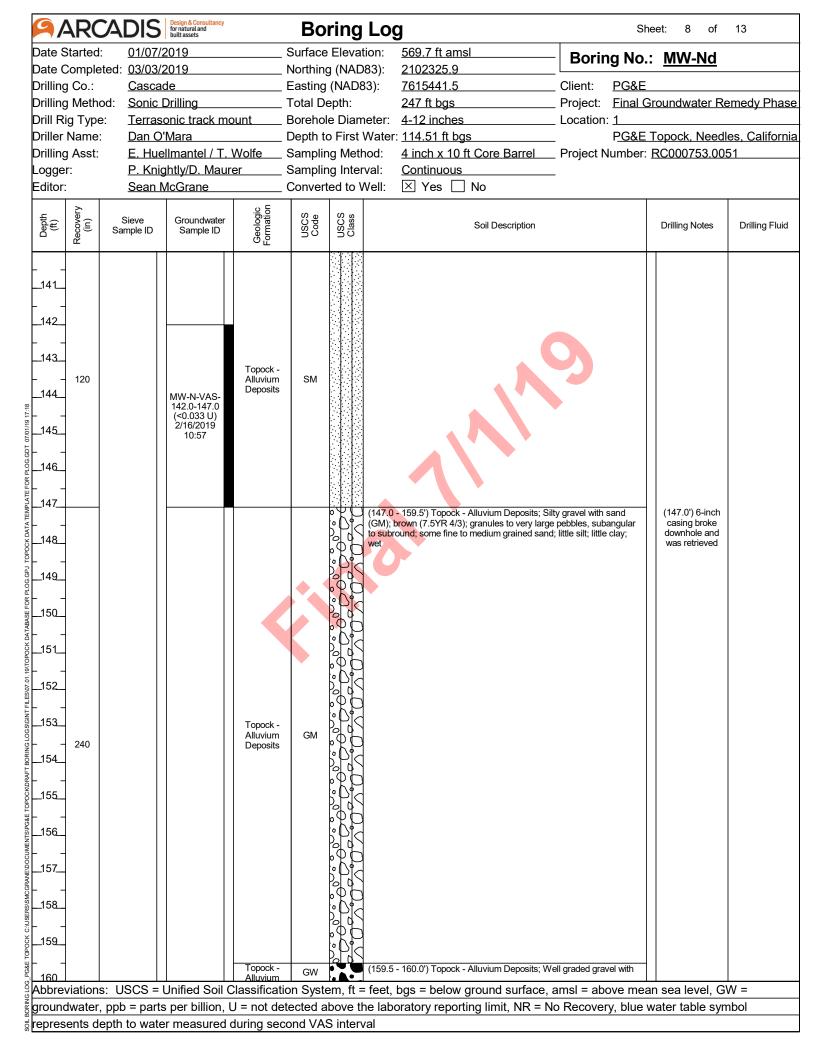
9/		ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 3 of	13
	tarted				Surface			Boring No.:	MW-Nd	
		ted: <u>03/03</u>			Northin					
rilling		Casca			Easting	•		Client: PG&E		
	Metho		Drilling		Total D	-	247 ft bgs	Project: Final G	<u>roundwater Re</u>	medy Phas
	g Туре		sonic track me				eter: <u>4-12 inches</u>	Location: 1		0.116
	Name		D'Mara		-		Water: <u>114.51 ft bgs</u>		Topock, Needle	
-	Asst:		ellmantel / T.		Sampli	-		Project Number:	RC000753.005	51
oggei			ightly/D. Maur		Samplin	-				
ditor:		<u>Sean</u>	McGrane	1	Conver		Vell: 🛛 Yes 🗌 No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
-				Topock - Fluvial	GW		subangular; trace cobbles, angular to subround; clasts composed of metadiorite; dry	trace silt; and coarser	(37.0 - 47.0') Rough drilling, fromation	
.41				Deposits			(41.0 - 47.0') Topock - Fluvial Deposits; Well gra	aded gravel with sand	collapse, drilling	
_							(GW); dark gray (2.5Y 4/1); granules to very larg	e pebbles, angular to	water was used could not	
.42							subround; little fine to very coarse grained sand, trace cobbles, angular to subround; trace silt; tra		determine quantity	
_									-1.000.101.9	
.43										
_	96									
44				Topock - Fluvial	GW					
_				Deposits						
45_										
_										
46_										
_										
47						. Š.				
							(47.0 - 52.0') Topock - Fluvial Deposits; Well gra (GW); dark gravish brown / dark yellowish browr		(47.0 - 67.0') Drilling water	
48_							to very large pebbles, subangular to round; little grained sand, subangular to subround; trace cob	verv fine to coarse	was used could not determine	
							round; trace silt; moist; moisture from drilling fluid		quantity	
49_										
				Topock -						
_50_				Fluvial Deposits	GW					
					K	•				
.51										
.52	120				-		(52.0 - 60.0') Topock - Fluvial Deposits; Well gra			
-						8. 0.	(SW); brown (7.5YR 5/3); fine grained to coarse to subround; little granules to large pebbles, sub-			
_53							silt; little coarser clast composed of conglomerate composed of basalt; dry	e; trace coarser clast		
-							composed of basait, dry			
.54										
-										
.55_										
-				Toncali						
.56				Topock - Fluvial	sw					
_				Deposits						
.57										
_										
.58						Part				
	120									
_59						[				
60										
bbre	viation	s: USCS =	Unified Soil (	Classificati	ion Syst	em, ft =	feet, bgs = below ground surface, a	amsl = above mea	n sea level, G\	N =
	wator	ppb = par	ts per billion,	U = not de	etected a	bove t	ne laboratory reporting limit, NR = No	o Recovery, blue v	vater table sym	lbol
ounc	water	PP- P								

ARC/	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og	She	eet: 4 of	13
Date Started: Date Completer Drilling Co.: Drilling Method: Drill Rig Type:	<u>Casca</u> : <u>Sonic</u>	2019	ount	Northing Easting Total Do Borehol	e Diame	): 2102325.9 7615441.5 247 ft bgs er: 4-12 inches		roundwater Re	•
Driller Name: Drilling Asst: ogger: Editor:	<u>P. Knig</u>	'Mara ellmantel / T. ' ghtly/D. Maur VicGrane	Wolfe er	Samplir Samplir	o First W ng Metho ng Interva ted to We	: <u>Continuous</u>		Topock, Needl RC000753.005	
Depth (ft) (ft) (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
61 62 63 63 64 64 65 66			Topock - Fluvial Deposits	GW	(C	0.0 - 67.0') Topock - Fluvial Deposits; Well g W); brown (7.5YR 5/3); granules to very larg and; some fine to medium grained sand; trac and; trace silt; and coarser clast composed o	e pebbles, angular to e cobbles, angular to	(47.0 - 67.0') Drilling water was used could not determine quantity	
_67 _68 _69 _70 _71 _72120					bi ta ta	7.0 - 80.3') Topock - Fluvial Deposits; Poorly wm (10YR 5/3); very fine grained to medium very large pebbles, subangular to round; trace subround; trace silt; trace clay; trace coarser nglomerate; dry to moist; moisture due to dril obles weakly cemented	grained; little granules cobbles, subangular clast composed of	(67.0 - 77.0') Slow drilling, core sample very hot	
.73 .74 .75 .76 .77 .78			Topock - Fluvial Deposits	SP					
	pb = parts	s per billion, l	J = not de	etected a	bove the	et, bgs = below ground surface, laboratory reporting limit, NR = N			

		DIS	Design & Consultancy for natural and built assets		Bo	ring Lo	og		She	et: 5 of	13
ate Starteo		01/07/2				e Elevation:	<u>569.7 ft amsl</u>	Borin	g No.:	MW-Nd	
ate Comple						g (NAD83):	2102325.9	_	-		
rilling Co.:		Casca			-	(NAD83):	7615441.5	_ Client:	PG&E		
rilling Meth			Drilling		Total D	-	247 ft bgs	-		oundwater Re	emedy Phas
rill Rig Typ			onic track mo				: <u>4-12 inches</u>	_ Location:			
riller Name		Dan O			-		er: <u>114.51 ft bgs</u>	_		opock, Need	
rilling Asst			ellmantel / T.		-	ng Method:	4 inch x 10 ft Core Barrel	Project N	lumber: [	RC000753.00	51
ogger:		-	ghtly/D. Maur		-	ng Interval:	Continuous	_			
ditor:		Sean N	McGrane		Conver	ted to Well:	🛛 Yes 🗌 No				
Depth (ft) (ft) Recovery (in)		ieve nple ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81				Topock - Fluvial Deposits	GW	(GW to rou	i - 92.2') Topock - Fluvial Deposits; Well g j: brown (7.5YR 5/3); granules to very larg und; little fine to medium grained sand; trac- und; trace silt; dry	e pebbles, sub	angular		
.92_ 120 _93 .94 .95 .96 .97 .98 .99 120				Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SW GP GW	G G G G G G G G G G G G G G G G G G G	<ul> <li>- 96.5') Topock - Fluvial Deposits; Well g b; brown (10YR 5/3); fine grained to coarse pund; some granules to very large pebbles coarser clast composed of conglomerate;</li> <li>- 97.0') Topock - Fluvial Deposits; Poorly (GP); reddish brown (2.5YR 4/4) little bro les, subangular to round; little fine to coars lar to subround; dry; cobbles of conglomer I to subround; dry; cobbles of conglomerate;</li> <li>- 105.0') Topock - Fluvial Deposits; Well (GW); brown (10YR 5/3); granules to ver pund to round; little fine to coarse grained bound; trace cobbles, angular to round; trace</li> </ul>	graded gravel graded gravel wn (10YR 5/3); e grained sand ate sandstone graded gravel v / large pebbles; sand, subangul	with small small		
00		I	1						1		
	  s <sup>.</sup>    '	SCS = 1	Unified Soil C	lassificati	on Svet	r = 1 em ft = feet	bas = below around surface	amsl = abo		i sea level C	W =
							t, bgs = below ground surface, boratory reporting limit, NR = N				

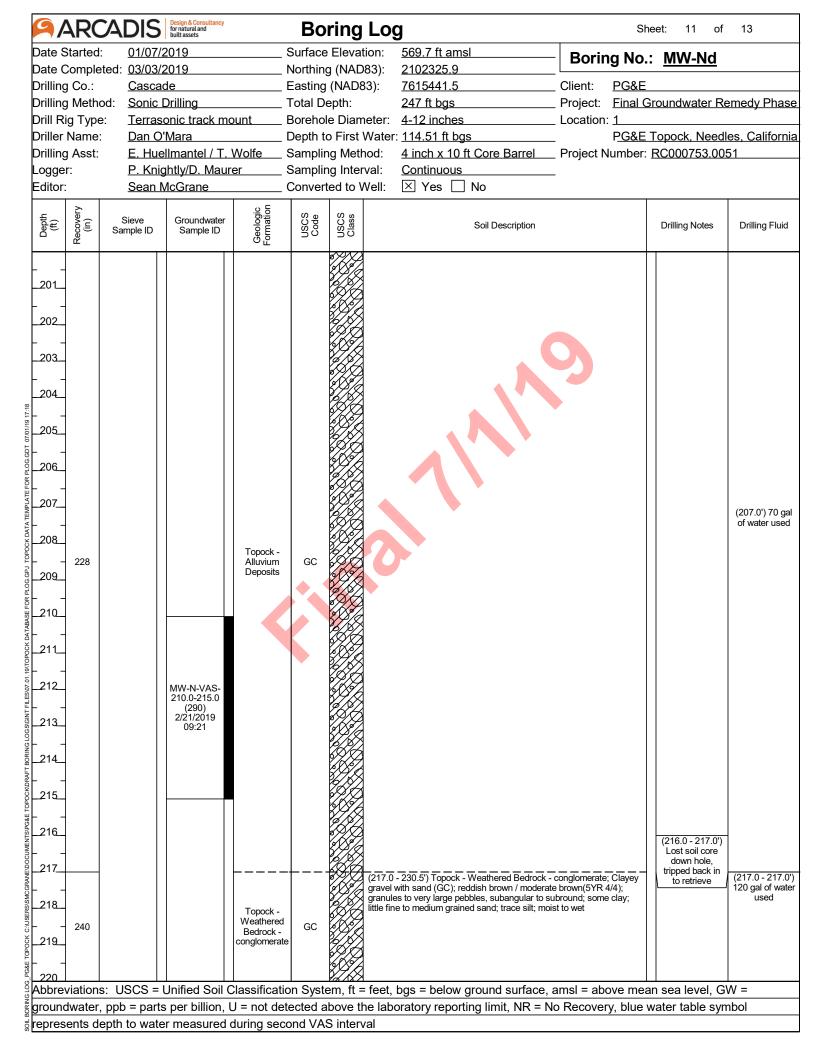
ARCA	<b>DIS</b>	esign & Consultancy or natural and uilt assets		Во	ring Log	9	She	et: 6 of	13
Date Started: Date Completed Drilling Co.: Drilling Method:	<u>Cascade</u>	19		Northing	Elevation: g (NAD83): (NAD83): epth:	569.7 ft amsl 2102325.9 7615441.5 247 ft bgs	Boring No.:           Client:         PG&E           Project:         Final Gr	<u>MW-Nd</u>	emedy Phase
Drill Rig Type: Driller Name:	<u>Dan O'M</u>			Depth to	o First Water	<u>4-12 inches</u> : <u>114.51 ft bgs</u>		opock, Needl	
Drilling Asst: Logger: Editor:		nantel / T. V tly/D. Maure :Grane	er	Samplir	ng Method: ng Interval: ted to Well:	<u>4 inch x 10 ft Core Barrel</u> <u>Continuous</u> ⊠ Yes □ No	Project Number: <u>F</u>	RC000753.00	51
Depth (ft) (ft) (in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
			Topock - Fluvial Deposits	GW			3		
_105_ _ 106_ _ 107_ _ 107_ _ 108_ _ 108_ _ 109_					and sauvery lausand; li	- 120.0') Topock - Fluvial Deposits; Well nd (GW-GM); dark grayish brown (2.5Y 4 ge pebbles, angular to round; little fine to ttle silt; dry - 117.0') reddish brown(2.5YR 5/3); grant s, subround to round; moist	72); small pebbles to medium grained	(107.0') Derrick Maurer geologist on-site 107 to 247 ft bgs	
110 			Topock - Fluvial Deposits	GW-GM		- 117.0'); trace cobbles; increase in grave	el, decrease in sand	(112.0 - 117.0') Rough drilling, drill rod broke and was retrived	
_115_  _116_  _117 118_ 120 _119					(117.0	- 120.0') reddish brown (2.5YR 4/4); wet		(117.0') Approximate depth to water table	(117.0') 150 ga of water used
				•		bgs = below ground surface, a			
roundwator pr	b = parts p	per billion, U		tected a	bove the lab	pratory reporting limit, NR = No	o Recovery, blue w	ater table syn	lod

hie Competence 1000/2019_No.1000/2014 initing Co: casanda Energing (NADB3): 2102/2015_ Clear: Ecasanda Dependence 247. bas. Project Enal Groundwater Romody Pha 1010 Total Opoth: 247. bas. Project Enal Groundwater Romody Pha 1010 Total Opoth: 247. bas. Project Number: RC000753.0051 Project Number: RC00753.0051 Project Number: RC00	Date Completed: 03/03/2019 Northing (NAD83): 2102325.9	Desire No.		
hete Competender Database Titling Method: Sonic Dolling. Total Depth: 21/2/2/2/3 Total Depth: 21/2/2/2/3 Differ Decktoner Depth to First Water 134.51.0 bga Depth to First Water 134.51.0 bga Dopth to First Water 134.51.0 bga Dopth to First Water 134.51.0 bga Dopth to First Water 134.51.0 bga Project Kinal Groundwater, Bennedy Pha Dopth to First Water 134.51.0 bga Project Kinal Groundwater, Bennedy Pha Dopth to First Water 134.51.0 bga Project Kinal Groundwater, Bennedy Pha Dopth to First Water 134.51.0 bga Project Kinal Groundwater, Bennedy Pha Dopth to First Water 134.51.0 bga Project Kinal Groundwater, Bennedy Pha Dopth to First Water 134.51.0 bga Project Kinal Groundwater, Bennedy Pha Differ Steener Converted to Well: Si Ves   No Differ Nowe Project Kinal Groundwater, Bennedy Pha Differ Steener Converted to Well: Si Ves   No Differ Nowe Project Kinal Groundwater, Bennedy Pha Differ Nowe Project Kinal Groundwater, Bennedy Project Kinal Groundwater, Bennedy Pr		- Boring No	.: MW-Nd	
niling Metho: Sonie Dniling Teasonie task methods water fable preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit water fable specifies way large preview for the transmit way f		_		
III Rig Type:       Tartasonic track mount.       Borchole Diameter: 4-12 index.       Location: 1         IIII Rig Type:       Tartasonic track mount.       Borchole Diameter: 4-12 index.       Location: 1         IIII Rig Type:       E. Huellmante/.II. Wolfe.       Sampling Method:       Aladax.101.Core.Barrel.       Project Number: RC000753.0051         Stant.       Sampling Method:       Aladax.101.Core.Barrel.       Project Number: RC000753.0051       Other Stant.         Stant.       Sampling Intervel:       Converted to Wall:       IV res.       No         Stant.       Sampling Intervel:       Converted to Wall:       IV res.       No         124       Sampling Method:       Sampling Method:       Sampling Method:       No         124       Sampling Method:       Sampling Method:       No       No         124       Sampling Method:       Sampling Method:       No       No         124       Sampling Method:       Sampling Method:       Sampling Method:       No         124       Sampling Method:       Sampling Method:       Sampling Method:       Sampling Method:       No         124       Sampling Method:       Sampling Method:       Sampling Method:       Sampling Method:       Sampling Method:       Sampling Method:         124				
Initer Name       Dan O'Mara       Depth to First Water: 114.51 ft Bus       PG&E Topock. Naedles, Califor         grager:       P. Knight/DD. Maurer       Sampling Intervet       Continuous       Project Number: RC000753.0.051         grager:       P. Knight/DD. Maurer       Sampling Intervet       Continuous       Project Number: RC000753.0.051         grager:       Sampling Intervet       Continuous       Continuous       Dotting Fux         grager:       Sampling Intervet       Continuous       Continuous       Dotting Fux         grager:       Intervet       Sampling Intervet       Continuous       Dotting Fux         grager:       Intervet       Sampling Intervet       Continuous       Dotting Fux         grager:       Intervet       Sampling Intervet       Continuous       Intervet         grager:       Inte		•	<u>Groundwater R</u>	emedy Phase
Hundmannel/T. Wolfe       Sampling Method       Anchx 10 ft. Core Barrel       Project Number: RC000753.0051         Sean McGrane       Converted to Well:       Image: Sean McGrane       Converted to Well:       Image: Sean McGrane       Description         Sean McGrane       Converted to Well:       Image: Sean McGrane       Description       Description       Description         Sean McGrane       Sege       Sege       Sege       Sege       Sele Segree       Description       Description         124       Image: Sean McGrane       Sege       Sege       Sege       Sele Segree       Description       Description         124       Image: Sean McGrane       Sege       Sege       Sege       Sele Segree       Description       Description         124       Image: Sele Segree       Grantwater       Sege       Sege       Sele Segree       Description       Description         124       Image: Sele Segree       Grantwater       Toocot-       Toocot-       Toocot-       Toocot-       Sele Sele Segree       Description       Sele Sele Sele Segree       Description         124       Image: Sele Segree       Toocot-       Toocot-       Toocot-       Sele Sele Sele Sele Sele Sele Sele Sele				
Opgen:       P. KnightyD. Maure:       Sampling Interval:       Continuous         Sean McGrane       Converted to Well:       Vis.       No         Sean McGrane       Converted to Well:       Vis.       No         Sean McGrane       Sample D       Sample D       Sample D       Deling Note:       Deling Fux         Sean McGrane       Sample D       Sample D       Sample D       Sample D       Deling Note:       Deling Fux         124       Image: Sample D       Sample D       Sample D       Sample D       Deling Note:       Deling Fux         124       Image: Sample D       Sample D       Sample D       Sample D       Deling Note:       Deling Fux         124       Image: Sample D       Image: Sample D       Image: Sample D       Deling Note:				
Statutor:       Seam MuSGrame       Converted to Well:       Yes       No         ge       ge <td< td=""><td></td><td>Project Number</td><td>: <u>RC000753.00</u></td><td>51</td></td<>		Project Number	: <u>RC000753.00</u>	51
Bit Person       Sample ID       Genuncteder Sample ID       Bit Person       Sample ID       Drilling Notes       Drilling Flux         124				
121     121 <td>Editor: <u>Sean McGrane</u> Converted to Well: X Yes No</td> <td></td> <td></td> <td></td>	Editor: <u>Sean McGrane</u> Converted to Well: X Yes No			
121       120       1			Drilling Notes	Drilling Fluid
129       130       131       131       132.0) reddish brown(2.5YR 4/3)         131       132       133.0       134.0       132.0.137.0) granules to very large pebbles         133       84       135.0       132.0.137.0) granules to very large pebbles         134       135.0       137.0.137.0) granules to very large pebbles         135       136.0       137.0.137.0) granules to very large pebbles         136       137.0.137.0) granules to very large pebbles       132.0.137.0) granules to very large pebbles         136       137.0.137.0) granules to very large pebbles       132.0.147.0) Topock - Alluvium Deposits: Sily sand (SM); brown (7.37R 4/3); the grained to medium graned; little sil; trace granules to very large pebbles, subangular to subround; trace clay, wet         139       120       120       SM       117.0.147.0) Topock - Alluvium Deposits: Sily sand (SM); brown (7.37R 4/3); the grained to medium graned; little sil; trace granules to very large pebbles, subangular to subround; trace clay, wet         139       120       SM       118.0.11       119.0.11         140       SM       110       110.0.11       110.0.11         140       SM       110.0.11       110.0.11       110.0.11         140       SM       110.0.11       110.0.11       110.0.11         141       110.0.11       110.0.11       110.0	MW-N-VAS- 122 123 124 125 126 126 127 127 128 MW-N-VAS- 121.0-126.0 (0.51) 121.0-126.0 (0.51) 121.0-126.0 (0.51) 121.0-126.0 (0.51) 14:09 Topock - Alluvium Deposits GM GM GM GM C C C C C C C C C C C C C	Well graded gravel with (R 4/4); granules to	¥	
137       -	_129	25		
		little silt; trace granules d; trace clay; wet e, amsl = above me		
presents depth to water measured during second $V/S$ into val	epresents depth to water measured during second VAS interval	, biue	mater tuble Syl	



		JAL	DIS	Design & Consultancy for natural and built assets		BO	ring	_og		Sheet: 9 of	13
	tarted	_	01/07/2			Surface			Boring N	o.: <u>MW-Nd</u>	
ate C	omple	ted: (	)3/03/2	2019		Northin			20		
Drilling	Co.:	<u>(</u>	Casca	de		Easting	(NAD	): <u>7615441.5</u>	Client: PG8	λE	
rilling	Metho	od: <u>S</u>	Sonic I	Drilling		Total D	epth:	<u>247 ft bgs</u>	Project: Fina	al Groundwater Re	emedy Phas
rill Rig	д Туре	e: _	Terras	onic track mo	ount	Boreho	le Dian	ter: <u>4-12 inches</u>	Location: <u>1</u>		
riller <b>i</b>	Name:	]	Dan O'	'Mara		Depth t	o First	/ater: <u>114.51 ft bgs</u>	. P <u>G</u> 8	<u>&amp;E Topock, Need</u>	<u>les, Californ</u>
rilling	Asst:	E	<u>E. Hue</u>	llmantel / T.	Wolfe	Sampli	ng Metl	d: <u>4 inch x 10 ft Core Barrel</u>	Project Numb	er: <u>RC000753.00</u>	51
ogger	:	Ē	<u> P. Kniç</u>	<u>ghtly/D. Maur</u>	er	Sampli	ng Intei	al: <u>Continuous</u>			
ditor:		2	Sean N	<u>AcGrane</u>		Conver	ted to \	ell: 🗵 Yes 🗌 No			
Depth (ft)	Recovery (in)		eve ple ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
					Deposits		exp	and (GW); brown (7.5YR 4/3); granules to very ubangular to subround; and fine to medium gra			
_161_							P. P.K	vet			
							69P	160.0 - 167.5') Topock - Alluvium Deposits; Sil GM); brown (7.5YR 4/3); granules to very large		r	
162							5 PIC	subround; some fine to medium grained sand			
162							64C				
1							5P.C				
163_							[8]				
+	240				Topock - Alluvium	GM	[b]				
164					Deposits		[A]				
65_							Polo				
-							PXC				
66											
_							0 PC				
167							5PI<			(107.0	4
								· ·		(167.0 - 175.0') Rough drilling	
168_								167.5 - 170.0') Topock - Alluvium Deposits; We ravel (SW); brown (7.5YR 4/3); fine grained to			
					Tanaak			ubangular to subround; some granules to very	large pebbles,		
169_					Topock - Alluvium	sw		ubangular to subround; trace silt; wet			
109_					Deposits	•.*					
170_							6YÚ	170.0 - 173.5') Topock - Alluvium Deposits; Sil	ty gravel with sand		
-							b Plc	GM); brown (7.5YR 4/3); granules to very large subround: some fine to medium grained sand		r	
171	96						[0]	subjound, some fine to mediam grained sand	, inde Sin, wet		
-					Topock -		606				
72					Alluvium Deposits	GM	Pol p				
_							0XF				
73_							PLAS			(470.0	4
							<u>P</u>			(173.0 - 178.0') Sample	
74					Topock -			173.5 - 175.0') Topock - Alluvium Deposits; We ravel (SW); brown (7.5YR 4/4); fine grained to		collected with bailer	
					Alluvium	SW		ubangular to subround; some granules to very ubangular to subround; trace silt; wet			
75				MW-N-VAS-	Deposits		••••••••	abangular to subjourid, trace Sill, Wel			
-				173.0-178.0				175.0 - 181.5') Topock - Alluvium Deposits; Cla GC); brown (10YR 5/3); granules to very large	ayey gravel with sand	to	]
176_				(<0.033 U) 2/18/2019				ubround; little fine to medium grained sand; littl			
, <u> </u>				09:20			Ø A	o wet			
							8AL				
77					Topock -		CH A				(177.0') 250
-	144				Alluvium	GC	XX /				of water use
78_				<b> </b>	Deposits		E A A				4
4											
179_											
							Ø D				
180							8AL				
								eet, bgs = below ground surface, a			
		nnh ·	= narts	s per billion. L	J = not det	ected a	above t	laboratory reporting limit, NR = N	o Recovery, blu	ue water table syr	nbol

<b>A</b>	RC	ADI	S	Design & Consultancy for natural and built assets		Bo	oring	Log		She	et: 10 of	13
Date St			07/2				e Eleva		Borin	αΝο.	<u>MW-Nd</u>	
)ate Co	omple	ted: <u>03/</u>	03/2	019		Northin	g (NAC	83): <u>2102325.9</u>	Bonn	9		
rilling	Co.:	<u>Ca</u>	scad	le		Easting	(NAD	33): <u>7615441.5</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sor</u>	nic D	Drilling		Total D	epth:	247 ft bgs	Project:	Final Gr	oundwater Re	emedy Phas
Drill Rig	I Type	: <u>Ter</u>	rasc	onic track mo	ount	Boreho	le Dian	neter: <u>4-12 inches</u>	Location:	1		-
) Driller N			n O'l	Mara		Depth t	o First	Water: <u>114.51 ft bgs</u>		PG&E T	opock, Needl	es, Californ
Drilling				lmantel / T.		-	ng Metl	-	Proiect N			
.ogger:				htly/D. Maur		-	ng Inter		,			
Editor:			-	lcGrane			ted to \					
_	r,				<u>i</u> E		(0					
Depth (ft)	Recovery (in)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
					Topock - Alluvium	GC						
					Deposits							
182_								(181.5 - 183.5') Topock - Alluvium Deposits; We sand (GW); light gray (10YR 7/2); granules to ve				
					Topock -			angular to subround; little fine to medium grained				
102					Alluvium Deposits	GW		to moist				
183_												
	144							(183.5 - 187.0') Topock - Alluvium Deposits; Cla	yey gravel wit	h sand		
184								(GC); brown (10YR 5/3); granules to very large p subround; little fine to medium grained sand; little	ebbles, suba clav: trace si	ngular to It: moist		
-							CH H	,	, <b>,</b> ,	.,		
185_					Topock -							
_					Alluvium Deposits	GC	HZ -					
186												
187					L	L						
								(187.0 - 190.0') Topock - Alluvium Deposits; Cla (SC); reddish brown / moderate brown(5YR 4/4);				
_188_								medium grained; little granules to large pebbles,		•		
_100					Topock -			subangular; little clay; trace silt; moist				
100					Alluvium Deposits	SC						
_189												
_								·				
_190								(190.0 - 193.5') Topock - Alluvium Deposits; Cla	vev sand (SC	). prown		
_								(7.5YR 4/3); fine grained to medium grained; dry				
_191								increase in sand, decrease in gravel				
_					Topock -							
192	120				Alluvium Deposits	SC						
					Depusita							
193_												
_194_								(193.5 - 197.0') Topock - Alluvium Deposits; We		el		
_134								(GW); (7.5R 5/3); granules to very large pebbles subround; trace fine to medium grained sand; tra				
405												
_195					Topock - Alluvium	GW						
-					Deposits							
_196												
-												
197							- AN	(197.0 - 217.0') Topock - Alluvium Deposits; Cla	Vev araval wit	hsand		
_							18/0	(GC); brown (7.5YR 4/3); granules to very large	pebbles, suba	ngular		
198_								to subround; little fine to medium grained sand; li moist to wet	τιe clay; trace	silt;		
	228				Topock - Alluvium	GC						
199_					Deposits		XX					
							(MA)					
200												
bbrevi	iations	: USCS	S = L	Jnified Soil C	lassificatio	on Syst	em, ft =	feet, bgs = below ground surface, a	amsl = abo	ve mear	sea level, G	W =
								ne laboratory reporting limit, NR = No				
roundv	water.	a = aqq	aits	per billion.								



ARCA	DIS	Design & Consultancy for natural and built assets		Bo	ring Log	9		She	et: 12 of	13
Date Started:	01/07/				Elevation:	<u>569.7 ft amsl</u>	Borin	g No.:	MW-Nd	
Date Completed:				-	g (NAD83):	2102325.9	_ L	-		
Drilling Co.:	<u>Casca</u>				(NAD83):	7615441.5	Client:	PG&E		
Drilling Method:		Drilling		Total De	-	247 ft bgs	-		oundwater Re	emedy Phas
Drill Rig Type:		onic track mo				4-12 inches	Location:			
Driller Name:	<u>Dan O</u>			-		114.51 ft bgs			opock, Needl	
Drilling Asst:		ellmantel / T.		-	g Method:	4 inch x 10 ft Core Barrel	Project N	umber: <u>F</u>	RC000753.00	51
_ogger:		g <u>htly/D. Maur</u>	er	-	g Interval:	Continuous	-			
Editor:	<u>Sean I</u>	McGrane		Convert	ed to Well:	🛛 Yes 🗌 No				
	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	JSCS =	MW-N-VAS- 228.0-233.0 (<0.17 U ppb) 2/26/2019 16:30	Topock - Weathered Bedrock - conglomerat Weathered Bedrock - conglomerat	e GC e GC	graded grained grained granule coarser (231.0 gravel v granule ittle fine gravel granule ittle fine gravel	- 231.0') Topock - Weathered Bedrock - sand with gravel (SW); reddish brown ( to very coarse grained, subangular to sub clasts composed of metadiorote; wet - 240.0') Topock - Weathered Bedrock - with sand (GC); reddish brown / moderat is to wery large pebbles, subangular to si e to medium grained sand; trace silt; moi	YR 4/3); mediu ubround; some round; trace sil conglomerate; e brown(5YR 4 ubround; some st to wet	t; trace Clayey /4); clay;	n sea level, G	<i>N</i> =
				-						
	n = narte	s per billion, l	∪ = not de	tected a	bove the labo	pratory reporting limit, NR = N	o Recover	y, blue w	ater table syn	Iodr
roundwater, ppl epresents depth	-	-		1	<u></u>			-		

94	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 13 of	13
Date S					Surface			Boring	g No.:	MW-Nd	
		ted: <u>03/03</u>			Northing				PG&E		
Drilling Drilling		<u>Casca</u> od: Sonic	Drilling		Easting Total D	•				oundwater Re	medy Phas
Drill Rig			sonic track m				-	Location:			medy i nas
Driller I			D'Mara				Water: <u>114.51 ft bgs</u>			opock, Needle	es, Californi
Drilling	Asst:	<u>E. Hu</u>	<u>ellmantel / T.</u>	Wolfe	Samplin	ng Metl	nod: <u>4 inch x 10 ft Core Barrel</u>	Project Nu	umber: <u>F</u>	RC000753.005	51
_ogger	:		ightly/D. Mau	rer	Samplir	-					
Editor:		<u>Sean</u>	McGrane		Conver	ted to \	Vell: 🛛 Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 _241_  _242_				Topock - Weathered Bedrock - conglomerat	SC		(240.0 - 242.5') Topock - Weathered Bedrock - c sand with gravel (SC); reddish brown (5YR 4/3); i medium grained; some clay; little granules to med subangular to subround; trace silt; moist to wet	fine grained to			
243 	120			Topock - Competent			(242.5 - 246.5') Topock - Competent Bedrock - c gravel with sand (GM); reddish brown (5YR 4/3); large pebbles, subangular to subround; little fine f sand; little silt; trace clay; dry	granules to ve	ery		
_245_ 246				Bedrock - conglomerat	GIVI						
247				Topock - Bedrock -			(246.5 - 247.0') Topock - Bedrock - metadiorite; (	,		(246.5 - 247.0') Drill bit	
				metadiorite			End of Boring at 247.0 'bgs.			broke/melted and had a 0.5 of	
248										bedrock in the core	
_249											
· _							•				
_250						<b>V</b>					
					K						
252											
_253											
_254											
·											
_255											
256											
_256											
258_											
_259											
-											
260 bbrev	iations	USCS =	Unified Soil	Classificati	ion Svet	em ft :	feet, bgs = below ground surface, a	msl = abo	ve mear	sea level GV	V =
					-		ne laboratory reporting limit, NR = No				
			er measured					,		,	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	neet: 1 of	7
Date S		03/06/				Elevation:	570.1 ft amsl	Borin	g No.	: <u>MW-Ns</u>	
	-	ed: <u>03/26/</u>				g (NAD83):	2102321.2	_	-		
Drilling		<u>Casca</u>				(NAD83):	7615448.1	_ Client:	PG&E		
-	Method		-		Total De	-	<u>133 ft bgs</u>	-		W Remedy Ph	
Drill Rig Driller I	g Type:	<u>Terras</u> Dan O	<u>onic track mc</u> 'Mara	ount		e Diameter:	<u>6-12 inches</u> : <u>115.88 ft bgs</u>	_ Location:	PG&E	Topock, Needl	es, California
Drilling			ellmantel / J. F	Pacheco	-		4 inch x 10 ft Core Barrel	- Proiect N	umber <sup>.</sup>	RC000753.00	51
Logger			urer/G.Willford			ig Interval:	Screen Inteval			110000700.00	01
Editor:			McGrane	-	-	ed to Well:	⊠ Yes □ No	-			
_	≥			. <u>ಲ</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
							106.0') (NR); No recovery cores not co W-Nd for lithology	llected, see Bo	oring		
_ 1 _											
_ 3 _	72										
<u> </u>											
5 5 6											
_ 5 _											
6											
_ 7 _											
8											
99											
					NR						
511	120										
12											
13											
- 14 <u>-</u>											
16											
17											
18	120										
5 – – 5 <u>– 19 –</u>											
20											
							s = below ground surface, am				
							g limit, NR = No Recovery, blue vere collected from MW-Nd bor		e symp	or represents de	eptin to water
incusu	. Sa aun							01010			

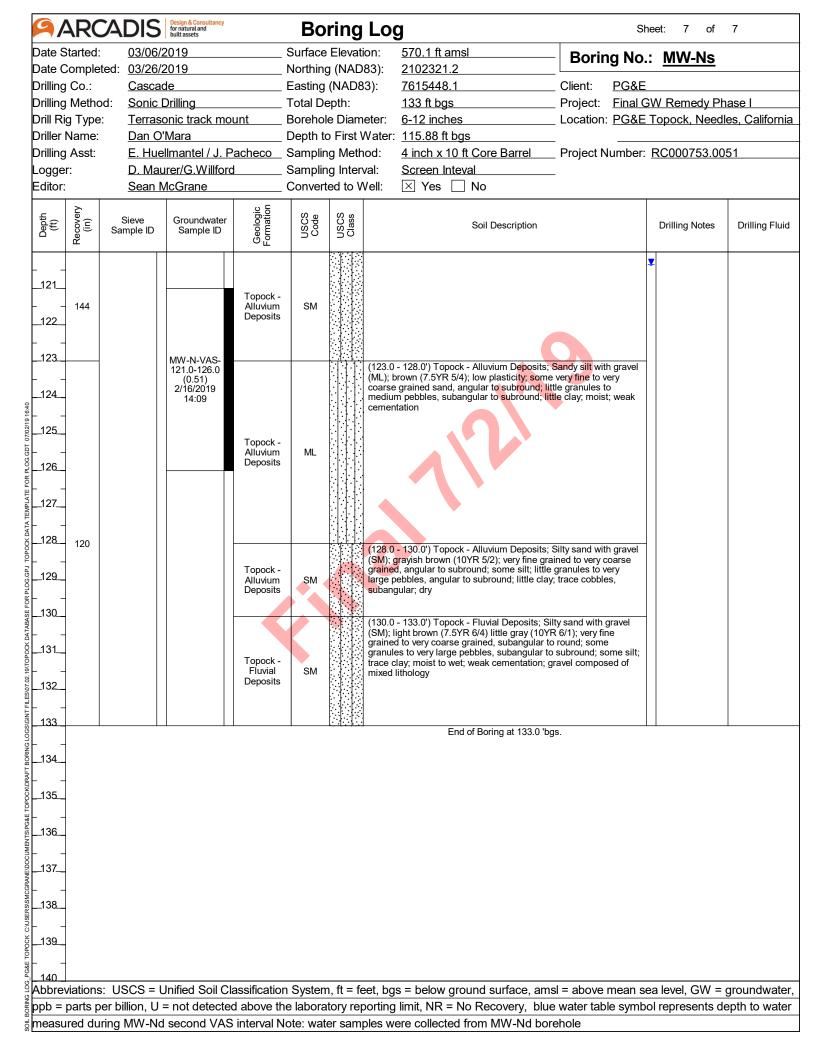
9/.	٩RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	Sheet: 2 of 7			
	started:	03/06/				Elevation:	570.1 ft amsl	- Borin	g No.:	MW-Ns	
	-	ed: <u>03/26/</u>				g (NAD83):	2102321.2		-		
Drilling		<u>Casca</u>			-	(NAD83):	<u>7615448.1</u>	_ Client:	PG&E		
-	Metho g Type:		onic track me		Total De	e Diameter:	<u>133 ft bgs</u> <u>6-12 inches</u>	Project:		<u>W Remedy Ph</u> Topock, Needl	
Driller I		<u>Dan O</u>					: <u>115.88 ft bgs</u>		IGAL	TOPOCK, Needi	
Drilling			ellmantel / J. I	Pacheco		g Method:	4 inch x 10 ft Core Barrel	Project N	lumber:	RC000753.00	51
Loggei			urer/G.Willfor			ig Interval:	Screen Inteval	_ `			
Editor:		<u>Sean I</u>	McGrane		Convert	ed to Well:	🖂 Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 21											
 22											
 23	120							0			
 24											
 25							<b>.............</b>	•			
 27											
28											
29  30					NR						
31	120										
32											
33											
34											
35											
36											
 38	120										
 40											
Abbrev							gs = below ground surface, am				
				d above th	o lohora	ton (roporting	g limit, NR = No Recovery, blu	o watar tab	lo ovmbo	I ronrogento di	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Log	g		She	eet: 3 of	7
Date S						Elevation:	570.1 ft amsl	Bori	ng No.:	<u>MW-Ns</u>	
		ted: <u>03/26/2</u>				g (NAD83):	2102321.2	_ [			
Drilling		Cascad				(NAD83):	7615448.1	_ Client:	PG&E		
Drilling			-		Total De	•	<u>133 ft bgs</u>	_ Project:		W Remedy Ph	
Drill Riq			onic track mo	unt		e Diameter:	6-12 inches	_ Location	: <u>PG&amp;E</u>	Topock, Needle	es, California
Driller N		<u>Dan O'</u>			-		<u>115.88 ft bgs</u>	- Ducie et N			- 4
Drilling			Ilmantel / J. F		-	g Method:	4 inch x 10 ft Core Barrel	_ Project i	Numper:	RC000753.00	51
Logger Editor:			irer/G.Willford IcGrane	1	-	g Interval: ed to Well:	Screen Inteval ⊠ Yes □ No	_			
		Searrin									
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 41  _42										Rough drilling	
43 44	120							9			
 45 								•			
46										(46.0 - 56.0') Rough drilling	
47											
48  _49											
					NR						
51	120										
 52											
 53											
54 54											
55											
56											
57											
58  _59	120										
							s = below ground surface, am				
							limit, NR = No Recovery, blue		ole symbo	l represents de	epth to water
measu	red du	ring MW-Nd	second VAS	Interval N	ote: wate	er samples w	ere collected from MW-Nd bo	rehole			

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		Sh	neet: 4 of	7
	Started:	03/06/2				Elevation:	<u>570.1 ft amsl</u>	Bori	ng No.	: <u>MW-Ns</u>	
	-	ed: <u>03/26/2</u>				(NAD83):	2102321.2	_	-	-	
Drilling		Cascad				(NAD83):	7615448.1	_ Client:	PG&E		
-	Metho		-		Total De	-	<u>133 ft bgs</u>	_ Project:		W Remedy Ph	
	ід Туре		onic track mo			e Diameter:	6-12 inches	_ Locatior	n: <u>PG&amp;E</u>	Topock, Needle	es, California
	Name:	<u>Dan O'</u> E Uwa					: <u>115.88 ft bgs</u>	– Ducianti		D0000752.000	<b>F</b> 4
Drilling			llmantel / J. P rer/G.Willford			g Method: g Interval:	4 inch x 10 ft Core Barrel	_ Project I	Number:	RC000753.00	01
Logge Editor:			IcGrane		•	ed to Well:	<u>Screen Inteval</u> ⊠ Yes	_			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
61											
62											
63	120										
64							~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
65											
66 										(66.0 - 76.0') Rough drilling	
67											
69											
70					NR						
						-					
71	120										
 72											
73											
74											
75											
76											
78	120										
79											
80											
Abbrev							gs = below ground surface, am				
							g limit, NR = No Recovery, blue		ble symb	ol represents de	epth to water
measu	ired du	nng MW-Nd	second VAS	interval No	ote: wate	er samples v	vere collected from MW-Nd bor	rehole			

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	S	heet: 5 of	7
	Started:					Elevation:	<u>570.1 ft amsl</u>	Boring No	.: MW-Ns	
	-	ted: <u>03/26/2</u>				g (NAD83):	2102321.2	_	· · · ·	
Drilling		Casca				(NAD83):	<u>7615448.1</u>	_ Client: <u>PG&amp;E</u>		
-	Metho		-		Total De		<u>133 ft bgs</u>	•	<u>GW Remedy Ph</u>	
	g Type Name:	<u>. Terraso</u> Dan O'	onic track mo Mara			e Diameter:	6-12 inches : 115.88 ft bgs	_ Location: <u>PG&amp;E</u>	<u>I Opock, Needi</u>	es, Calloma
Drilling			Ilmantel / J. P				4 inch x 10 ft Core Barrel	_ Project Number:	RC000753.00	51
Logge			irer/G.Willford		-	ig Interval:	Screen Inteval		110000100.00	
Editor:			/IcGrane			ed to Well:	🛛 Yes 🗌 No	_		
	Z			<u>ں ج</u>						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 81										
 82										
 83	120							0		
 84										
 85							.0)	•		
									(86.0 - 92.0') Drill rods chattering	
87										
88										
89					•.					
90					NR					
91	120									
92										-
 94										
96										
97 										
98	120									
99										
 100										
Abbrev							gs = below ground surface, am			
							g limit, NR = No Recovery, blu		ol represents de	epth to water
measu	ired du	ring MW-Nd	second VAS	interval N	ote: wat	er samples v	vere collected from MW-Nd bo	rehole		

ARCA	DIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	Sh	eet: 6 of	7	
Date Started: Date Completed: Drilling Co.: Drilling Method:	03/06/2 03/26/2 Cascad Sonic I	2019 de		Northing	Elevation: g (NAD83): (NAD83): enth:	570.1 ft amsl 2102321.2 7615448.1 133 ft bgs	Boring No.			
Drill Rig Type: Driller Name:		onic track mo	unt	Borehol	e Diameter:	6-12 inches     Location:     PG&E Topock, Need       115.88 ft bgs				
Drilling Asst: Logger: Editor:	<u>E. Hue</u> D. Mau	llmantel / J. F Irer/G.Willford /IcGrane	acheco	Samplir Samplir	ng Method: ng Interval: red to Well:	4 inch x 10 ft Core Barrel Screen Inteval ⊠ Yes □ No	Project Number: 	: <u>RC000753.0051</u>		
	Sieve nple ID	Groundwater Sample ID	Geologic Formation	USCS Code	U SCS Class	Soil Description		Drilling Notes	Drilling Fluid	
				NR			9			
_106 _107 _108 _108 _109 _110			Topock - Fluvial Deposits	GP	• (GP); b to fine possit	9 - 111.0') Topock - Fluvial Deposits; F gravish brown (2.5Y 5/2); boulders, ar grained sand, angular; little clay; dry; bly composed of basalt, pulverized into coarse grained sand	ngular; some very fine homogeneous;	(106.0 - 111.0') Rough drilling, core very hot		
111   113			Topock - Fluvial Deposits	SM	(SM); very cr to very subroi litholo	) - 114.0') Topock - Fluvial Deposits; S pale yellow (2.5Y 7/3) trace (5R 7/1); oarse grained, subangular to round; s y large pebbles, subangular to round; und to round; trace clay; dry; gravel co gy ) - 114.0') dark brown (10YR 3/3); moi	very fine grained to ome silt, little granules trace cobbles, mposed of mixed			
_114 _ _115			Topock - Fluvial Deposits	GP	(GP);	) - 114.5') Topock - Fluvial Deposits; F dark red (10R 3/6); boulders; compos 5 - 117.0') Topock - Fluvial Deposits; S	ed of rhyolite			
- 144 _116 _			Topock - Fluvial Deposits	SM	fine gr	dark brown (10YR 3/3) little light brow ained to very coarse grained, subang tle granules to very large pebbles, sub cobbles, subround to round; trace clay ntation; gravel composed of mixed lith	ular to round; some angular to round; r; moist; weak			
_117 _ _118 _ _ _ _ _ _ _			Topock - Alluvium Deposits	SM	(SM); Graine Constant (SM); Graine	1-123.0") Topock - Alluvium Deposits brown (10YR 5/3) little reddish yellow d to very coarse grained, angular to s les to large pebbles, angular to subro noist; weak cementation	(7.5YR 6/6); very fine ubround; some			
						gs = below ground surface, an				
						g limit, NR = No Recovery, blu vere collected from MW-Nd bc		ol represents de	pth to wate	



Attachment C Soil Sampling Locations and Available Soil Analytical Results

(Soil Data Presented in Excel File)



## 0 200 400 Feet N

## Baseline and Opportunistic Soil Sampling Locations

June 2019 Monthly Progress Report Groundwater Remedy Phase 1 Construction PG&E Topock Compressor Station, Needles, California

•

Soil Sample Location



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 (LOC) 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 × 10<sup>-6</sup>). 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 (µg/m<sup>3</sup>) 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 ( $\mu$ g/m<sup>3</sup>)

LOC = Project specific risk-based level of concern ( $\mu$ g/m<sup>3</sup>)

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<sup>3</sup> 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<sup>3</sup>.
- Therefore, keeping fugitive dust below the action level 100 µg/m<sup>3</sup> 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 June 2019, 212 real time dust observation/monitoring events were conducted at the perimeter of the work areas (outside of the exclusion zone). There were several temporary exceedances of the action level for fugitive dust monitoring (100  $\mu$ g/m3), see details below:

- On June 17, 2019, there was one temporary exceedance due to construction vehicle movement in the floodplain. Contractor applied water to reduce fugitive dust.
- On June 27, 2019, there were two temporary exceedances due to construction vehicle movement on the aggregate base access road in the floodplain. Contractor slowed down but dust is still evident.
- On June 28, 2019, there were two temporary exceedances due to vehicle movement on the access dirt road to MW-X location. Contractor called for water to be applied to the portion of the access road next to the MW-X drilling location.

In addition, two perimeter air sampling events for hexavalent chromium were conducted from June 17 to 18 during installation of IRZ-23 at the MW-20 Bench. Air samples for hexavalent chromium were collected at one upwind and two downwind locations during each sampling event, and sent to Chester LabNet, a laboratory accredited by the National Environmental Laboratory Accreditation Program, for analysis. Table 1 presents the validated analytical results available to date. The results are below the LOC for hexavalent chromium which is 0.00094  $\mu$ g/m<sup>3</sup>.



#### **References Cited:**

California Department of Toxic Substances Control (DTSC). 2011. LeadSpread 8. https://www.dtsc.ca.gov/AssessingRisk/LeadSpread8.cfm.

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 1. Perimeter Air Sampling Results

June 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

Location ID	Location	Date	Sample Type	Hexavalent Chromium (ug/m <sup>3</sup> )
AOC13-D1	AOC13 Downwind 1	10/09/18	N	0.000732 J
AOC13-D2	AOC13 Downwind 2	10/09/18	N	0.000709 J
AOC13-U	AOC13 Upwind	10/09/18	N	ND (0.000172)
AOC30-IRZ-23-D1	AOC30-IRZ-23 Downwind 1	2/20/2019	N	ND (0.0000859)
AOC30-IRZ-23-D2	AOC30-IRZ-23 Downwind 2	2/20/2019	N	ND (0.0000862)
AOC30-IRZ-23-U1	AOC30-IRZ-23 Upwind	2/20/2019	N	0.000104 J
AOC4-D1	AOC4 Downwind 1	5/14/2019	N	ND (0.000148)
AOC4-D2	AOC4 Downwind 2	5/14/2019	N	ND (0.000155)
AOC4-U	AOC4 Upwind	5/14/2019	N	ND (0.000148)
AOC11-D1	AOC11 Downwind 1	5/15/2019	N	ND (0.0000392)
AOC11-D2	AOC11 Downwind 2	5/15/2019	N	0.0001262 J
AOC11-U	AOC11 Upwind	5/15/2019	N	ND (0.0000386)
AOC4-D1	AOC4 Downwind 1	5/16/2019	N	0.0000423 J
AOC4-D2	AOC4 Downwind 2	5/16/2019	N	ND (0.0000385)
AOC4-U	AOC4 Upwind	5/16/2019	N	ND (0.0000378)
AOC30-D1	AOC30 Downwind 1	6/17/2019	N	ND (0.0000633)
AOC30-D2	AOC30 Downwind 2	6/17/2019	N	ND (0.0000636)
AOC30-U1	AOC30 Upwind	6/17/2019	N	ND (0.0000589)
AOC30-D1	AOC30 Downwind 1	6/18/2019	N	0.0000407 J
AOC30-D2	AOC30 Downwind 2	6/18/2019	N	ND (0.0000313)
AOC30-U1	AOC30 Upwind	6/18/2019	N	ND (0.000031)

Notes:

ug/m<sup>3</sup> micrograms per cubic meter

J concentration or reporting limit estimated by laboratory or data validation

N primary sample

ND not detected at the listed reporting limit

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



## **Attachment E. Noise Monitoring Results**

In conformance with the 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 (refer to Figures 1, 2 and 3). 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  $L_{eq}$  sound level 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 this interval data is 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 in terms of the 24-hour average  $L_{dn}$  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.).

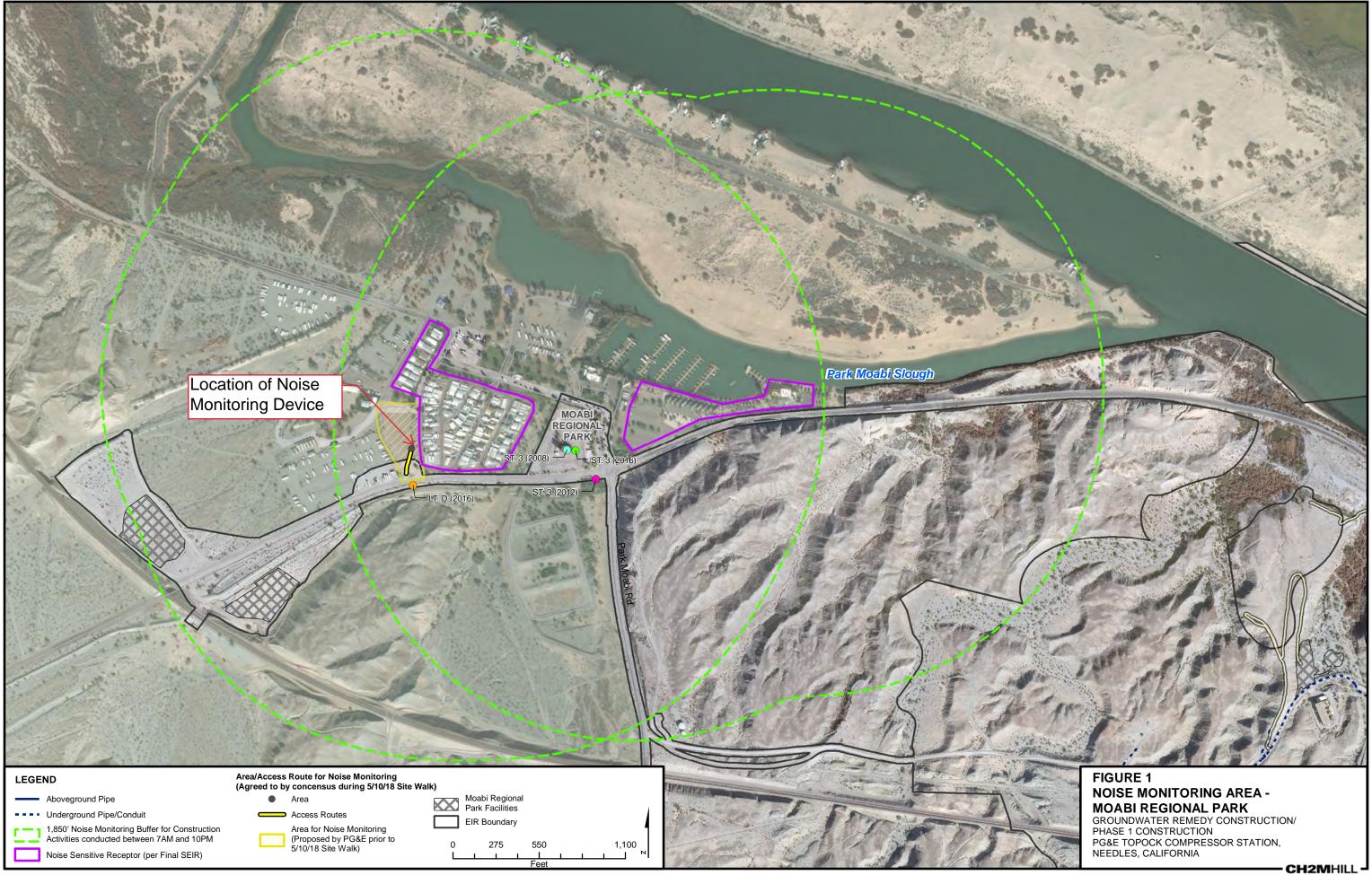
In June 2019, 32 monitoring events have been conducted at the Park Moabi monitoring location (Figure 1). Construction activities closest to this monitoring location include activities at the SPY and CHQ, as well as construction traffic on NTH. The sound level typically varied between 39 and 52 dBA, with an average and median of 47 dBA.

In June 2019, 31 monitoring events have been conducted at Maze B-Combined Area 1/2 (Figure 2). Construction activities closest to this monitoring location include activities at MW-R and MW-20 Bench, as well as construction traffic on the access road. The sound levels varied between 45 and 63 dBA, with an average and median of 54 dBA.

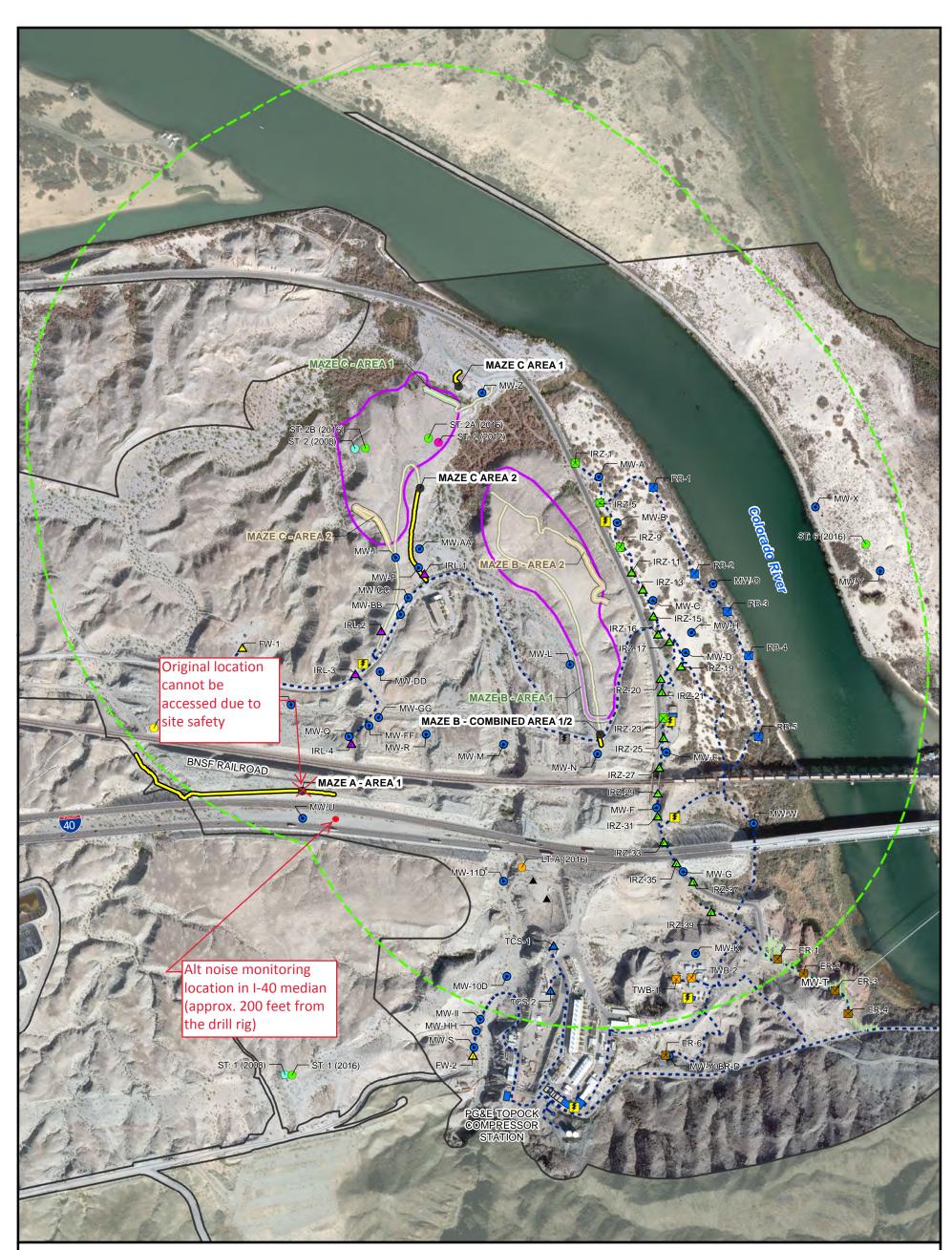
In June 2019, 32 monitoring events have been conducted at Maze C-Area 1 (Figure 2). Construction activities closest to this monitoring location include construction traffic on NTH, pipeline and access road construction activities in the northern end of the floodplain. The sound level typically varied between 44 and 60 dBA, with an average and median of 51-52 dBA.

In June 2019, 12 monitoring events have been conducted at the mobile home park in Topock Marina (Figure 4). Construction activities closest to this monitoring location include site preparation for drilling at MW-X and MW-Y', and associated drilling activities. The sound level typically varied between 50 and 67 dBA, with an average of 59 dBA and median of 61 dBA. Sound levels spiked when there are boat traffic, train traffic, and bird activities around the mobile homes.

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



Path: \\brooksidefiles\GIS\_SHARE\ENBG\00\_Proj\P\PGE\Topock\MapFiles\2018\NoiseMonitoring\Fig1\_Noise\_Monitoring\_Moabi.mxd



#### LEGEND

#### Planned Wells:

- Extraction, East Ravine
- Extraction, NTH IRZ
- Extraction, Riverbank
- Extraction, Transwestern Bench
- ▲ Injection, Freshwater
- ▲ Injection, Inner Recirculation Loop
- ▲ Injection, NTH IRZ
- ▲ Injection, Topock Compressor Station
- Remedy Monitoring Well
- ▲ Recirculation Well
- Area for Monitoring Well MW-T

#### Pipeline Corridor for Remedy

--- Underground Pipe/Conduit

#### Remedy Facilities

- Planned Transformer
- Future Provisional Transformer
  - Proposed Remedy Structure
- Contingent Freshwater Pre-injection Treatment System
- 1,850' Noise Monitoring Buffer for Construction Activities conducted between 7AM and 10PM
  - Noise Sensitive Receptor (per Final SEIR)

Areas/Access Routes for Noise Monitoring (Agreed to by concensus during 5/10/18 Site Walk)

Area

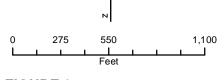
Access Route

Areas for Noise Monitoring (Proposed by PG&E Prior to 5/10/18 Site Walk)





Access Route

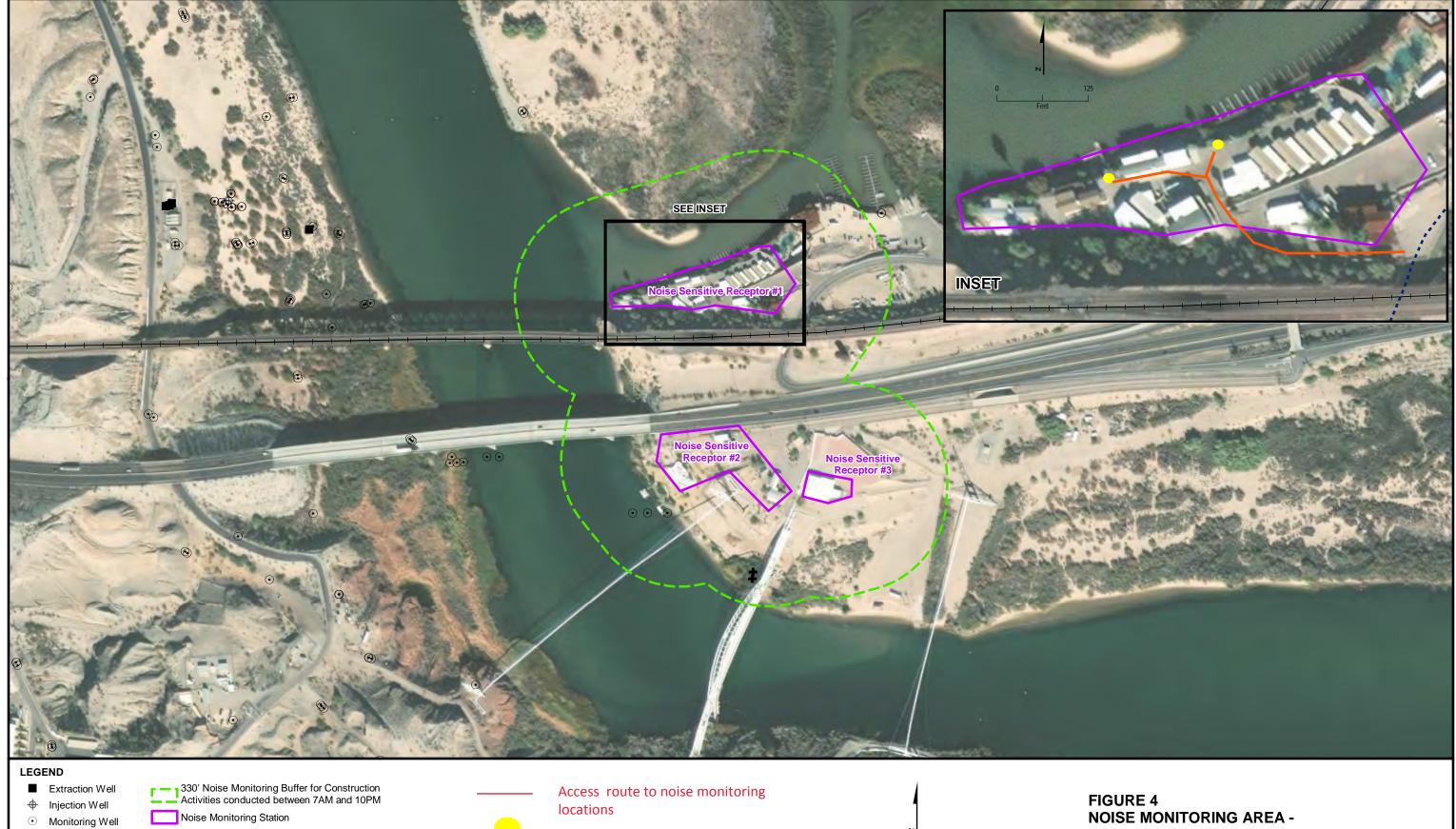


#### FIGURE 2 NOISE MONITORING AREAS-NORTH OF I-40

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

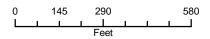
CH2MHILL

\brooksidefiles\GIS\_SHARE\ENBG\00\_Proj\P\PGE\Topock\MapFiles\2018\NoiseMonitoring\Fig2\_Noise\_Monitoring\_N\_of\_I+40.mxd



- Water Supply Well
- ----- RailRoad

Noise monitoring locations



**TOPOCK 66 SPA & RESORT** AND ADJACENT RESIDENCES

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

JACOBS



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

Dishcarge Monitoring Record	
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	Property Name: Topock Final R ffected System: Pipeline C5 ST/	1	imber: ARC-18-T46
Discharge Date	C6 Discharge Location - Approximate QTY (gal)	C5 Discharge Location - Approximate QTY (gal)	Discharge Monitor Initials*
5/17/2019	6,300		ST
5/20/2019	1,800	5400	ST
5/21/2019	2,700		ST
5/22/2019	3,100	3,000	ST
5/23/2019		4,500	ST
5/24/2019		4,500	ST
5/28/2019		300	ST
6/4/2019		300	DZ
6/5/2019		800	DZ
observed and mo a.No ponding o b.No attracting c.No channelizi	ecord form, I acknowledge than nitored for the following com f discharge water wildlife ng of discharge water and run charged to washes or jurisdicti	pliance requirements: off outside of work area	en

Attachment G Six-Week Look-Ahead Schedule (July 7 through August 17, 2019)

Groundwater Remedy	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Primary Planned Activities	7/7/2019	7/8/2019	7/9/2019	7/10/2019	7/11/2019	7/12/2019	7/13/2019
Start Time (PST)			6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM
Pipeline C Installation E5, F5			Pull box installation C3/C4/C5	Pull box installation C3/C4/C5			
TCS Approach Pipeline Installation F5, G5, G6					Potholing of existing utilities along Pipeline F1		
Well Installation	No Work	No Work	MW-C (E5), MW-X (E6), RB-2 pilot (E5), MW-D site setup (E5), RB-5 (E5)	MW-C (E5), MW-X (E6), MW-D (E5), RB- 5 (E5)	MW-C (E5), MW-X (E6), MW-D (E5), RB- 5 (E5)	MW-C (E5), MW-X (E6), MW-D (E5), RB- 5 (E5)	MW-C (E5), MW-H site setup (E5), MV X (E6), MW-D (E5), RB-5 (E5)
Well Development			 IRZ-20 (E5)	 IRZ-20 (E5)	IRZ-21 (E5)	IRZ-21 (E5)	MW-O (E5)
Well Testing Primary Planned Activities	7/14/2019	7/15/2019	7/16/2019	7/17/2019	7/18/2019	7/19/2019	7/20/2019
							//20/2019
Start Time (PST)	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	
Pipeline C Installation E5, F5	-	Floodplain soil transfer & Stockpiling	Floodplain soil transfer & Stockpiling	Floodplain soil transfer & Stockpiling	Floodplain soil transfer & Stockpiling	Floodplain soil transfer & Stockpiling	
TCS Approach Pipeline Installation F5, G5, G6	-	Excacation and clearance of knoll along Pipeline B alignment	Excacation and clearance of knoll along Pipeline B alignment	Excacation and clearance of knoll along Pipeline B alignment	Excacation and clearance of knoll along Pipeline B alignment	Excacation and clearance of knoll along Pipeline B alignment	
Well Installation	MW-C (E5), MW-H site setup (E5), MW- X (E6), MW-D (E5), RB-5 (E5)	MW-C (E5), MW-H site setup (E5), MW- X (E6), MW-D (E5), RB-5 (E5)	MW-C (E5), MW-H site setup (E5), MW- X (E6), MW-D (E5), RB-5 (E5)	MW-H (E5), MW-X (E6), MW-D (E5), RB- 5 (E5)	MW-H (E5), MW-X (E6), MW-D (E5), RB- 4 (E5)	-	No Work
Well Development	MW-0 (E5)	MW-0 (E5)	MW-0 (E5)	MW-0 (E5)			
Well Testing					IRZ-21 (E5)		
Primary Planned Activities	7/21/2019	7/22/2019	7/23/2019	7/24/2019	7/25/2019	7/26/2019	7/27/2019
Start Time (PST)			6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM
Pipeline C Installation E5, F5			Floodplain conduit testing, Tentative: Dewatering test excavation @ C8, Pipeline installation @ C6	Floodplain conduit testing, Tentative: Dewatering test excavation @ C8, Pipeline installation @ C6	Floodplain conduit testing, Tentative: Dewatering test excavation @ C8, Pipeline installation @ C6	Floodplain conduit testing, Tentative: Dewatering test excavation @ C8, Pipeline installation @ C6	Floodplain conduit testing, Tentative: Dewatering test excavatio @ C8, Pipeline installation @ C6
Well Installation	No Work	No Work	MW-H (ES), MW-X (E6), MW-D (E5), RB- 4 (E5)				
Well Development					MW-C (E25)	MW-C (E25)	MW-C (E25)
Well Testing			IRZ-21 (E5)	IRZ-21 (E5)	IRZ-21 (E5)		
Primary Planned Activities	7/28/2019	7/29/2019	7/30/2019	7/31/2019	8/1/2019	8/2/2019	8/3/2019
Start Time (PST)	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	0/5/2015
	0.50 AM						
Pipeline C Installation E5, F5		Floodplain conduit testing, Pipeline installation @ C6	Floodplain conduit testing, Pipeline installation @ C6	Floodplain conduit testing, Pipeline installation @ C6	Floodplain conduit testing, Pipeline installation @ C6	Floodplain conduit testing, Pipeline installation @ C6	
Well Installation	4 (E5)	4 (E5)	MW-H (E5), MW-Y' (E6), MW-D (E5), IRZ- 19 site setup (F5), RB-4 (E5)	MW-H (E5), MW-Y' (E6), MW-D (E5), IRZ-19 site setup (F5), RB-4 (E5)	MW-H (E5), MW-Y' (E6), MW-D (E5), IRZ-19 site setup (F5), RB-4 (E5)	-	No Work
Well Development	MW-C (E25)	MW-C (E25)	MW-C (E25)				
Well Testing				IRZ-25 (E5)	IRZ-25 (E5)		
Primary Planned Activities	8/4/2019	8/5/2019	8/6/2019	8/7/2019	8/8/2019	8/9/2019	8/10/2019
Start Time (PST)			6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM
Pipeline C Installation E5, F5			Pipeline installation @ C6	Pipeline installation @ C6			
	No Work	No Work	MW-H (E5), MW-Y' (E6), MW-D (E5), IRZ- 19 site setup (F5), RB-4 (E5)	MW-H (E5), MW-Y' (E6), IRZ-19 site setup (F5), RB-4 (E5)	MW-H (E5), MW-Y' (E6), IRZ-19 pilot boring (F5), RB-3 (E5)	MW-H (E5), MW-Y' (E6), IRZ-19 pilot boring (F5), RB-3 (E5)	MW-H (E5), MW-Y' (E6), IRZ-19 pilo boring (F5), RB-3 (E5)
Well Installation							
Well Installation Well Development Well Testing	8/11/2019	8/12/2019					
Well Installation Well Development Well Testing Primary Planned Activities	8/11/2019 6:30 AM	8/12/2019 6:30 AM		 8/14/2019	 8/15/2019	8/16/2019	
Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) TCS Approach Pipeline Installation	<b>8/11/2019</b> 6:30 AM	8/12/2019 6:30 AM Tentative: Pipeline installation @ B					
Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST)	6:30 AM	6:30 AM		 <b>8/14/2019</b> 6:30 AM	<b>8/15/2019</b> 6:30 AM		

Tasks shown tentative are pending contracting or ERTC and may be rescheduled, PG&E to notify of changes as soon as additional information is available.

The timing of field activities are 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. "G5" - Intrusive work location as described on the project grid map. See Project Grid Map tab for location of grid positions provided on the lookahead

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



## Attachment H. Available 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 adhoc compliance reports/emails, PG&E has since included validated data in each monthly progress report starting with the November 2018 report.

			Design & Consultancy		Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
	RCAD		Design & Consultancy for natural and built assets			Arsenic,	Chromium,	Chromium,	Manganese,	Molybdenum,	Nitrate/Nitrite	Selenium,	Specific
			built assets		Method	Dissolved	Hexavalent	Total Dissolved	Dissolved	Dissolved	as Nitrogen	Dissolved	Conductance
GMP 2019-04 Sar	mpling				Description	SW 6020	EPA 218.6	SW 6020	SW 6020	SW 6020	SM 4500-NO3 F	SW 6020	EPA 120.1
					Units	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	uS/cm
		Sample	Sample Date										
Location ID	Sample ID	Туре	Method Sampled	Matrix	Status*								
MW-09	MW-09-Q219	Ν	05/17/19	GW	Preliminary	1.8	150	150	ND (0.5)	4.4	12	5.7	3,200
MW-10	MW-10-Q219	Ν	05/17/19	GW	Preliminary		180	180		20	12	6.4	3,100
MW-10	MW-901-Q219	FD	05/17/19	GW	Preliminary		180	180		19	12	6.7	3,100
MW-11	MW-11-Q219	N	05/17/19	GW	Preliminary	1.4	51	49	1.5	4.8	5.1	4.7	2,300
MW-12	MW-12-Q219	N	05/22/19	GW	Preliminary		1600	1600		6.3	16	32	6,900
MW-14	MW-14-Q219	N	05/15/19	GW	Preliminary	0.7	14	13	ND (0.5)	11	3.1	2	2,800
MW-19	MW-19-Q219	N	05/15/19	GW	Preliminary		250	250					2,000
MW-20-070	MW-20-070-Q219	N	05/24/19	GW	Preliminary		1700	1800		35	8.7	7.1	1,800
MW-20-100	MW-20-100-Q219	N	05/24/19	GW	Preliminary		1300	1500		3.7	7.9	6	2,200
MW-20-130	MW-20-130-Q219	N	05/24/19	GW	Preliminary	4.6	5900	6800	1.7	42	11	34	10,000
MW-20-130	MW-902-Q219	FD	05/24/19	GW	Preliminary	4.5	6000	6800	2.2	40	11	36	10,000
MW-21	MW-21-Q219	N	05/23/19	GW	Preliminary		6.5	6.7		59	0.69	13	12,000
MW-23-060	MW-23-060-Q219	N	05/21/19	GW	Preliminary	5.7	40	35	ND (0.5)				16,000
MW-23-080	MW-23-080-Q219	N	05/21/19	GW	Preliminary	5.6	ND (1)	1.1	ND (0.5)				17,000
MW-24A	MW-24A-Q219	N	05/17/19	GW	Preliminary	ND (0.1)	ND (0.2)	ND (1)	16	110	0.051	ND (0.5)	1,600
MW-24B	MW-24B-Q219	N	05/17/19	GW	Preliminary	3.1	86	73	100	56	0.71	ND (2.5)	20,000
MW-24B	MW-903-Q219	FD	05/17/19	GW	Preliminary	3	84	73	100	55	0.71	ND (2.5)	20,000
MW-25	MW-25-Q219	N	05/15/19	GW	Preliminary	1.3	68	66	ND (0.5)	4.2	12	8.4	2,000
MW-26	MW-26-Q219	N	05/22/19	GW	Preliminary	1.9	2300	2500	ND (0.5)	30	21	39	3,700
MW-28-025	MW-28-025-Q219	N	05/21/19	GW	Preliminary	0.81	ND (0.2)	ND (1)	ND (0.5)	4.4	ND (0.05)	ND (0.5)	1,000
MW-28-090	MW-28-090-Q219	N	05/21/19	GW	Preliminary	2.2	ND (0.2)	ND (1)	280	23	ND (0.05)	ND (0.5)	4,600
MW-29	MW-29-Q219	N	05/21/19	GW	Preliminary	15	ND (0.2)	ND (1)	300 0.7	30	ND (0.05)	ND (0.5)	2,500
MW-31-060	MW-31-060-Q219	N	05/20/19	GW	Preliminary	1	250	240	•				3,800
MW-31-060 MW-33-150	MW-904-Q219 MW-33-150-Q219	FD N	05/20/19	GW GW	Preliminary	1.7	250	240	ND (0.5) 74	48	1.5	0.02	3,900 14,000
MW-35-060	MW-35-060-Q219	N	05/21/19	GW	Preliminary Preliminary	1.7	5.5 24	21 22	ND (0.5)	11	2	0.93 1.5	4,600
MW-35-135	MW-35-135-Q219	N	05/24/19	GW	Preliminary	0.82	24	22	1.3	11	2.4	1.3	9,200
MW-35-135 MW-37D	MW-37D-Q219	N	05/20/19	GW	Preliminary	0.02	6.2	6	1.5	60	0.55	ND (0.5)	14,000
MW-37D MW-38D	MW-38D-Q219	N	05/17/19	GW	Preliminary	7.2	21	17	21	80	ND (0.05)	ND (0.5)	22,000
MW-385	MW-38S-Q219	N	05/17/19	GW	Preliminary	5.8	6	5.7	46	22	5.2	3.7	1,700
MW-303 MW-40D	MW-40D-Q219	N	05/22/19	GW	Preliminary	4.5	120	120	ND (0.5)	54	2.5	2	15,000
MW-40D	MW-906-Q219	FD	05/22/19	GW	Preliminary	4.5	120	120	ND (0.5)	54	2.6	1.9	15,000
MW-40S	MW-40S-Q219	N	05/22/19	GW	Preliminary	2.7	120	15	1.8	18	5.6	5.6	2,100
MW-41D	MW-41D-Q219	N	05/15/19	GW	Preliminary	2.4	ND (1)	ND (1)	180	73	ND (0.05)	ND (0.5)	18,000
MW-46-175	MW-46-175-Q219	N	05/21/19	GW	Preliminary		7.6	9.1		190	1.1	0.78	17,000
MW-46-205	MW-46-205-Q219	N	05/21/19	GW	Preliminary		2.4	2.7					21,000
MW-47-055	MW-47-055-Q219	N	05/16/19	GW	Preliminary	1.1	17	15	ND (0.5)				4,800
MW-47-055	MW-907-Q219	FD	05/16/19	GW	Preliminary	1.1	17	15	ND (0.5)				4,700
MW-47-115	MW-47-115-Q219	N	05/16/19	GW	Preliminary		27	23	()				12,000
MW-48	MW-48-Q219	N	05/23/19	GW	Preliminary		ND (1)	ND (1)					17,000
MW-50-095	MW-50-095-Q219	N	05/20/19	GW	Preliminary		13	12					5,600
MW-50-200	MW-50-200-Q219	N	05/20/19	GW	Preliminary		5800	6200					21,000

			Design & Co for natural a	onsultancy		Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
A	RCAD	D	for natural a built assets	and			Arsenic,	Chromium,	Chromium,	Manganese,	Molybdenum,	Nitrate/Nitrite	Selenium,	Specific
			built abbeto			Method	Dissolved	Hexavalent	Total Dissolved	Dissolved	Dissolved	as Nitrogen	Dissolved	Conductance
GMP 2019-04 Sar	npling					Description	SW 6020	EPA 218.6	SW 6020	SW 6020	SW 6020	SM 4500-NO3 F	SW 6020	EPA 120.1
	1		Comula	Data		Units	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	uS/cm
Leasting ID	Converte ID	Sample	Sample	Date	Matula	Charles and								
Location ID	Sample ID	Туре	Method	Sampled	Matrix	Status*		2222	2000		40		4.5	12.000
MW-51	MW-51-Q219	N		05/22/19	GW	Preliminary	4.1	3300	3800	ND (0.5)	48	8.3	15	13,000
MW-57-070	MW-57-070-Q219	N		05/20/19	GW	Preliminary	1.3	380	400	1.2	4	9.6	3.2	2,600
MW-57-185	MW-57-185-LF_S-Q2	Ν		05/20/19	GW	Preliminary	3.4	4.6	5.2	6.2	81	0.11	ND (2.5)	18,000
MW-57-185	MW-909-Q219	FD		05/20/19	GW	Preliminary	3.4	4.7	5.1	4.8	83	0.1	ND (2.5)	18,000
MW-58BR	MW-58BR-Q219	Ν		05/21/19	GW	Preliminary	1.9	12	14	270	26	0.68	1.9	8,200
MW-59-100	MW-59-100-Q219	Ν		05/20/19	GW	Preliminary	2.3	2000	2200	ND (0.5)	9.4	1.7	1.8	14,000
MW-59-100	MW-910-Q219	FD		05/20/19	GW	Preliminary	2.2	2200	2300	2.9	9	1.7	1.9	14,000
MW-60-125	MW-60-125-Q219	Ν		05/22/19	GW	Preliminary	1.6	880	890	4.3	17	3.7	6.2	8,700
MW-60BR-245	MW-60BR-245-3V-Q	Ν		05/22/19	GW	Preliminary	8.8	130	120	7.9	60	0.3	2.7	16,000
MW-60BR-245_D	MW-60BR-245-LF_D	Ν		05/23/19	GW	Preliminary	9.2	68	61	6.7	63	0.22	3.2	17,000
MW-60BR-245_S	MW-60BR-245-LF_S-	Ν		05/23/19	GW	Preliminary	8.7	85	74	6.7	59	0.22	2.7	17,000
MW-61-110	MW-61-110-Q219	Ν		05/23/19	GW	Preliminary	3.7	280	280	210	23	0.54	0.87	16,000
MW-62-065	MW-62-065-Q219	Ν		05/21/19	GW	Preliminary	1.6	570	560	0.89	13	4.8	4.3	6,200
MW-62-110	MW-62-110-Q219	Ν		05/22/19	GW	Preliminary	3	ND (1)	ND (1)	150	68	ND (0.05)	ND (0.5)	12,000
MW-62-190	MW-62-190-Q219	Ν		05/22/19	GW	Preliminary	1.3	ND (1)	ND (1)	780	46	ND (0.05)	ND (0.5)	18,000
MW-63-065	MW-63-065-Q219	Ν		05/21/19	GW	Preliminary	1.5	1.3	2.8	2.5	19	0.93	1	6,700
MW-64BR	MW-64BR-Q219	Ν		05/21/19	GW	Preliminary	4	ND (1)	ND (1)	960	65	ND (0.05)	ND (0.5)	13,000
MW-65-160	MW-65-160-Q219	N		05/16/19	GW	Preliminary	0.69	160	190	76	110	14	9.4	4,000
MW-65-225	MW-65-225-Q219	N		05/16/19	GW	Preliminary	2.5	180	160	40	44	2.6	2.3	15,000
MW-66-165	MW-66-165-Q219	N		05/16/19	GW	Preliminary	1.2	550	570	ND (0.5)	5.5	25	28	3,900
MW-66-230	MW-66-230-Q219	N		05/16/19	GW	Preliminary	9.8	6400	7000	3.6	71	11	9	19,000
MW-66BR-270	MW-66BR-270-Q219	N		05/22/19	GW	Preliminary	ND (0.1)	ND (1)	ND (1)	66	10	1.7	ND (0.5)	2,300
MW-67-185	MW-67-185-Q219	N		05/16/19	GW	Preliminary	1	2100	2200	ND (0.5)	5.7	79	400	7,700
MW-67-225	MW-67-225-Q219	N		05/16/19	GW	Preliminary	3.4	3100	3300	2.9	48	26	93	7,000
MW-67-260	MW-67-260-Q219	N		05/16/19	GW	Preliminary	8.9	800	850	130	69	0.55	ND (2.5)	18,000
MW-68-180	MW-68-180-Q219	N		05/22/19	GW	Preliminary	3.1	5400	6200	ND (0.5)	36	9.4	11	3,500
MW-68-240	MW-68-240-Q219	N N		05/22/19	GW	Preliminary	1.6	2000	2000	29	30	4.3	4.8	16,000
MW-68-240	MW-912-Q219	FD		05/23/19	GW	Preliminary	1.0	1900	2100	29	31	4.3	4.7	16,000
MW-68BR-280	MW-68BR-280-Q219	<u>г</u> N		05/23/19	GW	Preliminary	1.7	ND (1)	ND (1)	150	40	4.3 ND (0.05)	4.7 ND (2.5)	20,000
MW-69-195	MW-69-195-Q219	N N		05/22/19	GW	,	2.2	120	120	0.54	58			2,600
						Preliminary						10	8	
MW-70-105	MW-70-105-Q219	<u>N</u>		05/21/19	GW	Preliminary	3.7	170	170	6	66	4.9	4.6	3,500
MW-70BR-225	MW-70BR-225-LF-Q2	N		05/21/19	GW	Preliminary	2	1600	1700	1.1	20	3.5	2.8	13,000
MW-71-035	MW-71-035-Q219	<u>N</u>		05/23/19	GW	Preliminary	1.2	ND (1)	ND (1)	18	13	0.085	0.52	14,000
MW-72-080	MW-72-080-Q219	<u>N</u>		05/24/19	GW	Preliminary	10	55	51	77	85	0.37	ND (2.5)	13,000
MW-72BR-200_S	MW-72BR-200-LF_S-	N		05/23/19	GW	Preliminary	13	ND (1)	ND (1)	210	76	ND (0.05)	ND (0.5)	15,000
MW-73-080	MW-73-080-Q219	N		05/23/19	GW	Preliminary	1.8	34	35	5.7	30	3.3	4.3	12,000
MW-74-240	MW-74-240-Q219	N		05/22/19	GW	Preliminary	8.3	0.55	ND (1)	4.5	19	2.1	2.4	800
TW-01	TW-01-Q219	Ν		05/24/19	GW	Preliminary		2300	2400		15	15	14	7,000

GMP 2019-04 Sam	GMP 2019-04 Sampling							ASSET Chromium, Hexavalent EPA 218.6	ASSET Chromium, Total Dissolved SW 6020	ASSET Manganese, Dissolved SW 6020	ASSET Molybdenum, Dissolved SW 6020	ASSET Nitrate/Nitrite as Nitrogen SM 4500-NO3 F	ASSET Selenium, Dissolved SW 6020	ASSET Specific Conductance EPA 120.1
						Units	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	uS/cm
		Sample	Sample	Date										
Location ID	Sample ID	Туре	Method	Sampled	Matrix	Status*								
TW-04	TW-04-LF-Q219	Ν		05/16/19	GW	Preliminary		5.1	4.5	16	42		ND (2.5)	20,000
TW-05	TW-05-LF-Q219	Ν		05/20/19	GW	Preliminary		11	9.9	3.1	31		0.59	12,000
TW-05	05 MW-913-Q219 FD 05/20/19 GW Prelimina							11	9.6	3	30		0.52	12,000

A	RCAD	SIS	Design & Co for natural built assets	onsultancy and S	Lab Method	ASSET Alkalinity, total as CaCO3	ASSET Calcium, dissolved	ASSET Chloride	ASSET Chromium, Hexavalent	ASSET Chromium, total dissolved	ASSET Iron, dissolved	ASSET Magnesium, dissolved	ASSET Manganese, dissolved	ASSET Nitrate/Nitrite as Nitrogen	ASSET pH	ASSET Sodium, dissolved	ASSET Specific conductance	ASSET Sulfate	ASSET Total dissolved solids
PMP 2019-05 Sar	mpling				Description Units	SM 2320 B mg/L	EPA 200.7 mg/L	EPA 300.0 mg/L	EPA 218.6 ug/L	EPA 200.8 ug/L	EPA 200.7 ug/L	EPA 200.7 mg/L	EPA 200.8 ug/L	SM 4500-NO3 F mg/L	SM 4500-H+ B PHUNITS	EPA 200.7 mg/L	EPA 120.1 uS/cm	EPA 300.0 mg/L	SM 2540 C mg/L
Location ID	Sample ID	Sample Type	Sample Method	Matrix	Date Sampled	5:	<u> </u>											•	<u> </u>
PE-01	PE-01-0519	Ν	Тар	GW	5/9/2019	220	110	550	ND (0.2)	ND (1.0)	1,200	25	360	ND (0.05)	7.5	190	2,400	270	1,500
TW-03D	TW-03D-0519	Ν	Тар	GW	5/9/2019	160	230	2,100	460	440	ND (20)	25	21	2.7	7.2	1,600	7,100	490	4,200

	RCAD		esign & Consulta or natural and	ncy	Lab	ASSET	ASSET	ASSET Alkalinity,	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
	TUAD		uilt assets			Chromium,	Chromium, Total	total as		Aluminum,		Antimony,		Arsenic,
TMP 2019-05 Bas	eline Sampling				Method	Hexavalent	Dissolved	CaCO3	Aluminum	dissolved	Antimony	dissolved	Arsenic	dissolved
	enne sampling				Description	EPA 218.6	SW 6010	SM 2320	SW 6010B	SW 6010B	SW 6020	SW 6020	SW 6020	SW 6020
					Units	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample		Date		5,	5,	<i></i>	<u> </u>		5,	<u> </u>	<u> </u>	,
Location ID	Sample ID	Туре	Matrix	Sampled	Status*									
MW-10D	MW-10D-0519	Ν	GW	05/17/19	Preliminary									
MW-B-117	MW-B-117-0519	Ν	GW	05/15/19	Preliminary	78	190	ND (50)	ND (0.5)	ND (0.5)	1.3	1.3	110	110
MW-B-33	MW-B-33-0519	Ν	GW	05/15/19	Preliminary	110	520	270	ND (0.5)	ND (0.5)	3.6	3.4	85	88
MW-E-142	MW-E-142-0519	Ν	GW	05/15/19	Preliminary	97	320	ND (50)	ND (0.5)	ND (0.5)	4	3.9	38	33
MW-E-72	MW-E-72-0519	Ν	GW	05/15/19	Preliminary	110	1,100	ND (50)	ND (0.5)	ND (0.5)	1.6	1.3	53	34
MW-F-104	MW-F-104-0519	Ν	GW	05/15/19	Preliminary	130	1,500	480	ND (0.5)	ND (0.5)	5.4	4.9	110	97
MW-F-60	MW-F-60-3V-0519	Ν	GW	05/15/19	Preliminary	91	260	ND (50)	ND (0.5)	ND (0.5)	1.9	2	110	110
MW-F-60	MW-F-60-LF-0519	Ν	GW	05/15/19	Preliminary	91	930	ND (50)	ND (0.5)	ND (0.5)	2.2	1.9	130	110
MW-G-57	MW-G-57-0519	Ν	GW	05/13/19	Preliminary	97	270	ND (50)	ND (0.5)	ND (0.5)	3.4	3.5	46	47
MW-G-57	MW-919-Q219	FD	GW	05/13/19	Preliminary	97	73	ND (50)	ND (0.5)	ND (0.5)	3.3	3.4	44	45
MW-G-82	MW-G-82-0519	Ν	GW	05/15/19	Preliminary	93	140	ND (50)	ND (0.5)	ND (0.5)	3.6	3.2	61	45
MW-L-180	MW-L-180-0519	Ν	GW	05/14/19	Preliminary	41			ND (0.5)	ND (0.5)	3.2	2.7	58	55
MW-L-225	MW-L-225-0519	Ν	GW	05/14/19	Preliminary	36			ND (0.5)	ND (0.5)	5.7	4.5	65	49
MW-L-245	MW-L-245-0519	Ν	GW	05/14/19	Preliminary	34			ND (0.5)	ND (0.5)	5.2	5	160	160
MW-L-90	MW-L-90-0519	N	GW	05/14/19	Preliminary	95			ND (0.5)	ND (0.5)	0.73	0.66	73	76
MW-N-129	MW-N-129-0519	N	GW	05/13/19	Preliminary	120	150	200	ND (0.5)	ND (0.5)	1.1	1	63	60
MW-N-217	MW-N-217-0519	Ν	GW	05/13/19	Preliminary	29	400	230	ND (0.5)	ND (0.5)	4.3	3.8	56	54
MW-N-237	MW-N-237-0519	Ν	GW	05/13/19	Preliminary	44	1,500	240	ND (0.5)	ND (0.5)	5	4.4	150	130
MW-N-237	MW-920-Q219	FD	GW	05/13/19	Preliminary	45	880	240	ND (0.5)	ND (0.5)	4.6	4.5	130	130
MW-U-183	MW-U-183-0519	Ν	GW	05/22/19		58			ND (0.5)	ND (0.5)	1.3	1.2	190	170
MW-U-273	MW-U-273-0519	Ν	GW	05/22/19		64			ND (0.5)	ND (0.5)	4.4	4.4	72	57
MW-W-31	MW-W-31-0519	Ν	GW	05/23/19		790			ND (2.5)	ND (2.5)	9.1	5.1	220	130

	RCAD		lesign & Consulta or natural and	ncy	Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
		b	uilt assets				Barium,		Beryllium,		Boron,			Cadmium,	
TMP 2019-05 Bas	eline Sampling				Method	Barium	dissolved	Beryllium	dissolved	Boron	dissolved	Bromidemg/L	Cadmium	dissolved	Calcium
					Description	SW 6020	SW 6020	SW 6020	SW 6020	SW 6010B	SW 6010B	EPA 300.0	SW 6020	SW 6020	SW 6010B
					Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L
		Sample		Date			-	-	-	-	-			-	-
Location ID	Sample ID	Туре	Matrix	Sampled	Status*		-	-	-	-					
MW-10D	MW-10D-0519	Ν	GW	05/17/19	Preliminary										
MW-B-117	MW-B-117-0519	Ν	GW	05/15/19	Preliminary	ND (5)	ND (5)	930	890	ND (2.5)	ND (0.5)	ND (0.5)	240000	230000	3200
MW-B-33	MW-B-33-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (5)	720	690	ND (1)	ND (0.5)	ND (0.5)	140000	150000	1300
MW-E-142	MW-E-142-0519	Ν	GW	05/15/19	Preliminary	ND (25)	ND (25)	2400	2400	ND (2.5)	ND (0.5)	ND (0.5)	350000	350000	3600
MW-E-72	MW-E-72-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (0.5)	780	730	ND (1)	ND (0.5)	ND (0.5)	140000	120000	490
MW-F-104	MW-F-104-0519	Ν	GW	05/15/19	Preliminary	ND (2.5)	ND (2.5)	1800	1800	1.4	ND (0.5)	ND (0.5)	170000	170000	2000
MW-F-60	MW-F-60-3V-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (0.5)	690	670	ND (2.5)	ND (0.5)	ND (0.5)	180000	170000	690
MW-F-60	MW-F-60-LF-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (0.5)	700	690	ND (2.5)	ND (0.5)	ND (0.5)	180000	170000	690
MW-G-57	MW-G-57-0519	Ν	GW	05/13/19	Preliminary	ND (12)	ND (12)	1100	1100	ND (2.5)	ND (0.5)	ND (0.5)	280000	270000	2600
MW-G-57	MW-919-Q219	FD	GW	05/13/19	Preliminary	ND (12)	ND (12)	1200	1200	ND (2.5)	ND (0.5)	ND (0.5)	290000	280000	2600
MW-G-82	MW-G-82-0519	N	GW	05/15/19	Preliminary	ND (12)	ND (12)	1200	1200	ND (2.5)	ND (0.5)	ND (0.5)	300000	290000	2700
MW-L-180	MW-L-180-0519	N	GW	05/14/19	Preliminary	ND (2.5)	ND (2.5)			ND (2.5)	ND (0.5)	ND (0.5)			3700
MW-L-225	MW-L-225-0519	N	GW	05/14/19	Preliminary	ND (2.5)	ND (2.5)			ND (2.5)	ND (0.5)	ND (0.5)			5600
MW-L-245	MW-L-245-0519	N	GW	05/14/19	Preliminary	ND (2.5)	ND (2.5)			ND (2.5)	ND (0.5)	ND (0.5)			6800
MW-L-90	MW-L-90-0519	N	GW	05/14/19	Preliminary	ND (0.5)	ND (0.5)			ND (2.5)	ND (0.5)	ND (0.5)			560
MW-N-129	MW-N-129-0519	N	GW	05/13/19	Preliminary	ND (0.5)	ND (0.5)	520	510	ND (1)	ND (0.5)	ND (0.5)	120000	120000	370
MW-N-217	MW-N-217-0519	N	GW	05/13/19	Preliminary	ND (2.5)	ND (2.5)	2100	2100	ND (2.5)	ND (0.5)	ND (0.5)	270000	260000	3700
MW-N-237	MW-N-237-0519	N	GW	05/13/19	Preliminary	ND (2.5)	ND (12)	2400	2400	ND (2.5)	ND (0.5)	ND (0.5)	550000	580000	6500
MW-N-237	MW-920-Q219	FD	GW	05/13/19	, Preliminary	ND (2.5)	ND (12)	2500	2300	ND (2.5)	ND (0.5)	ND (0.5)	560000	530000	6400
MW-U-183	MW-U-183-0519	N	GW	05/22/19	· ·	ND (0.5)	ND (0.5)			ND (2.5)	ND (0.5)	ND (0.5)			2100
MW-U-273	MW-U-273-0519	N	GW	05/22/19		ND (2.5)	ND (2.5)			ND (1)	ND (0.5)	ND (0.5)			2100
MW-W-31	MW-W-31-0519	N	GW	05/23/19		ND (2.5)	ND (2.5)			ND (2.5)	ND (2.5)	ND (2.5)			4100

Δ	RCAD		Design & Consulta for natural and	ncy	Lab	ASSET	ASSET	ASSET	ASSET Chromium,	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
	TUAD	J	built assets			Calcium,		Chromium,	total	Chromium,		Cobalt,		Copper,	
TMP 2019-05 Bas	olino Sompling				Method	,	Chloridemg/L	Hexavalent	dissolved	total	Cobalt	dissolved	Copper	dissolved	Fluoridemg/L
TIMP 2019-03 Bas					Description	SW 6010B	EPA 300.0	EPA 218.6	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	EPA 300.0
					Units	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L
		Sample		Date		- <u> </u>	5,		- <u>J</u> ,	5	- 57	- <u></u>	- J,	- 3,	<u> </u>
Location ID	Sample ID	Туре	Matrix	Sampled	Status*										
MW-10D	MW-10D-0519	N	GW	05/17/19	Preliminary	130									
MW-B-117	MW-B-117-0519	N	GW	05/15/19	Preliminary	0.4	ND (1)	4.4	ND (0.5)	ND (0.5)	ND (1)	ND (1)	3.1	200	99
MW-B-33	MW-B-33-0519	N	GW	05/15/19	Preliminary	5.7	6.9	9.5	ND (0.5)	ND (0.5)	ND (1)	ND (1)	2.4	570	150
MW-E-142	MW-E-142-0519	N	GW	05/15/19	Preliminary	6900	7700	7300	ND (0.5)	ND (0.5)	ND (1)	ND (1)	2.7	330	ND (20)
MW-E-72	MW-E-72-0519	N	GW	05/15/19	Preliminary	3600	4100	4000	ND (0.5)	ND (0.5)	ND (1)	ND (1)	1.4	850	ND (20)
MW-F-104	MW-F-104-0519	N	GW	05/15/19	Preliminary	2600	3000	3400	ND (0.5)	ND (0.5)	ND (1)	ND (1)	1.9	1200	97
MW-F-60	MW-F-60-3V-0519	N	GW	05/15/19	Preliminary	1600	1600	1700	ND (0.5)	ND (0.5)	ND (1)	ND (1)	0.97	200	26
MW-F-60	MW-F-60-LF-0519	N	GW	05/15/19	Preliminary	1300	1400	1400	ND (0.5)	ND (0.5)	ND (1)	ND (1)	1	950	ND (20)
MW-G-57	MW-G-57-0519	N	GW	05/13/19	Preliminary	2000	2100	2100	ND (0.5)	ND (0.5)	ND (1)	ND (1)	2.2	ND (20)	ND (20)
MW-G-57	MW-919-Q219	FD	GW	05/13/19	Preliminary	2000	2000	2200	ND (0.5)	ND (0.5)	ND (1)	ND (1)	2.1	ND (20)	ND (20)
MW-G-82	MW-G-82-0519	N	GW	05/15/19	Preliminary	2000	2000	2700	ND (0.5)	ND (0.5)	ND (1)	ND (1)	2.1	120	ND (20)
MW-L-180	MW-L-180-0519	N	GW	05/14/19	Preliminary	ND (1.0)	ND (1)	3.8	ND (0.5)	ND (0.5)	ND (1)	ND (1)	4.4		
MW-L-225	MW-L-225-0519	N	GW	05/14/19	Preliminary	530	580	580	0.89	ND (0.5)	1.1	ND (1)	4.3		
MW-L-245	MW-L-245-0519	N	GW	05/14/19	Preliminary	ND (1.0)	ND (1)	3.7	ND (0.5)	ND (0.5)	ND (1)	ND (1)	4.3		
MW-L-90	MW-L-90-0519	N	GW	05/14/19	Preliminary	28	28	29	ND (0.5)	ND (0.5)	ND (1)	ND (1)	1.4		
MW-N-129	MW-N-129-0519	N	GW	05/13/19	Preliminary	130	140	140	ND (0.5)	ND (0.5)	ND (1)	1.2	0.58	130	ND (20)
MW-N-217	MW-N-217-0519	N	GW	05/13/19	Preliminary	150	150	200	ND (0.5)	ND (0.5)	ND (1)	ND (1)	4.6	630	67
MW-N-237	MW-N-237-0519	N	GW	05/13/19	Preliminary	1600	1500	1600	0.52	ND (0.5)	ND (1)	ND (1)	4.5	1500	55
MW-N-237	MW-920-Q219	FD	GW	05/13/19	Preliminary	1600	1600	1600	ND (0.5)	ND (0.5)	ND (1)	ND (1)	4.5	840	ND (20)
MW-U-183	MW-U-183-0519	N	GW	05/22/19		ND (0.2)	ND (1)	4.1	0.64	ND (0.5)	ND (1)	ND (1)	3		
MW-U-273	MW-U-273-0519	N	GW	05/22/19		0.25	ND (1)	4.3	0.6	ND (0.5)	ND (1)	ND (1)	4.6		
MW-W-31	MW-W-31-0519	N	GW	05/23/19		ND (1.0)	ND (5)	61	3.5	ND (2.5)	ND (5)	ND (5)	1.7		

	RCAD		Design & Consulta or natural and	ncy	Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
			ouilt assets				Iron,		Lead,		Magnesium,		Manganese,		Mercury,
TMP 2019-05 Bas	eline Sampling				Method	Iron	dissolved	Lead	dissolved	Magnesium	dissolved	Manganese	dissolved	Mercury	dissolved
					Description	SW 6010B	SW 6010B	SW 6020	SW 6020	SW 6010B	SW 6010B	SW 6020	SW 6020	EPA 7470A	EPA 7470A
					Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample		Date						-	-	-	-	-	-
Location ID	Sample ID	Туре	Matrix	Sampled	Status*						-	-			
MW-10D	MW-10D-0519	Ν	GW	05/17/19	Preliminary										
MW-B-117	MW-B-117-0519	Ν	GW	05/15/19	Preliminary	ND (1)	ND (10)	31,000	35,000	1100	1100	ND (0.2)	ND (0.2)	47	46
MW-B-33	MW-B-33-0519	Ν	GW	05/15/19	Preliminary	ND (1)	ND (1)	26,000	30,000	860	960	ND (0.2)	ND (0.2)	18	18
MW-E-142	MW-E-142-0519	Ν	GW	05/15/19	Preliminary	ND (50)	ND (50)	14,000	15,000	44	40	ND (0.2)	ND (0.2)	21	21
MW-E-72	MW-E-72-0519	Ν	GW	05/15/19	Preliminary	1.7	ND (1)	21,000	21,000	42	ND (0.5)	ND (0.2)	ND (0.2)	6	6.1
MW-F-104	MW-F-104-0519	Ν	GW	05/15/19	Preliminary	3.1	ND (1)	15,000	15,000	280	280	ND (0.2)	ND (0.2)	32	31
MW-F-60	MW-F-60-3V-0519	Ν	GW	05/15/19	Preliminary	ND (1)	ND (1)	31,000	32,000	340	350	ND (0.2)	ND (0.2)	18	19
MW-F-60	MW-F-60-LF-0519	Ν	GW	05/15/19	Preliminary	ND (1)	ND (1)	31,000	32,000	390	360	ND (0.2)	ND (0.2)	20	19
MW-G-57	MW-G-57-0519	Ν	GW	05/13/19	Preliminary	ND (1)	ND (1)	20,000	19,000	22	21	ND (0.2)	ND (0.2)	17	17
MW-G-57	MW-919-Q219	FD	GW	05/13/19	Preliminary	ND (1)	ND (1)	20,000	20,000	21	21	ND (0.2)	ND (0.2)	17	17
MW-G-82	MW-G-82-0519	Ν	GW	05/15/19	Preliminary	ND (1)	ND (1)	20,000	21,000	57	24	ND (0.2)	ND (0.2)	17	17
MW-L-180	MW-L-180-0519	Ν	GW	05/14/19	Preliminary	ND (5)	ND (5)			40	33	ND (0.2)	ND (0.2)	35	34
MW-L-225	MW-L-225-0519	N	GW	05/14/19	Preliminary	ND (5)	ND (5)			57	7	ND (0.2)	ND (0.2)	49	45
MW-L-245	MW-L-245-0519	N	GW	05/14/19	Preliminary	ND (5)	ND (5)			30	23	ND (0.2)	ND (0.2)	63	64
MW-L-90	MW-L-90-0519	N	GW	05/14/19	Preliminary	ND (1)	ND (1)			21	4.6	ND (0.2)	ND (0.2)	3.8	4
MW-N-129	MW-N-129-0519	N	GW	05/13/19	Preliminary	ND (1)	ND (1)	22,000	24,000	8.8	7.5	ND (0.2)	ND (0.2)	3.3	3.3
MW-N-217	MW-N-217-0519	N	GW	05/13/19	Preliminary	ND (5)	ND (5)	9,300	9,300	210	190	ND (0.2)	ND (0.2)	100	100
MW-N-237	MW-N-237-0519	Ν	GW	05/13/19	Preliminary	ND (5)	ND (5)	14,000	14,000	470	440	ND (0.2)	ND (0.2)	69	72
MW-N-237	MW-920-Q219	FD	GW	05/13/19	Preliminary	ND (5)	ND (5)	14,000	13,000	460	440	ND (0.2)	ND (0.2)	71	73
MW-U-183	MW-U-183-0519	N	GW	05/22/19	·	ND (5)	ND (1)		-	720	710	ND (0.2)	ND (0.2)	16	16
MW-U-273	MW-U-273-0519	N	GW	05/22/19		ND (5)	ND (5)			79	62	ND (0.2)	ND (0.2)	44	46
MW-W-31	MW-W-31-0519	N	GW	05/23/19		8.6	ND (5)			880	420	ND (0.2)	ND (0.2)	24	14

AP	RCAD	S	Design & Consulta for natural and built assets	ncy	Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
					Mathad	Molybdenum	Molybdenum, dissolved	Nickel	Nickel, dissolved	Nitrate/Nitrite as Nitrogen	Potassium, dissolved	Selenium	Selenium, dissolved	Silver	Silver, dissolved
TMP 2019-05 Bas	eline Sampling					SW 6020	SW 6020	SW 6020	SW 6020	SM 4500-NO3 F	SW 6010B	SW 6020	SW 6020	SW 6020	SW 6020
					Description Units	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample		Date	Units	ug/L	ug/L	ug/L	ug/L	iiig/∟	ug/L	ug/L	ug/L	ug/L	ug/L
Location ID	Sample ID	Туре	Matrix	Sampled	Status*										
MW-10D	MW-10D-0519	N	GW	05/17/19	Preliminary										
MW-B-117	MW-B-117-0519	N	GW	05/15/19	Preliminary	1	ND (1)	0.88	ND (500)	0.98	0.8	ND (0.5)	ND (0.5)	ND (500)	540
MW-B-33	MW-B-33-0519	N	GW	05/15/19	Preliminary	ND (1)	ND (1)	0.86	ND (500)	0.92	0.73	ND (0.5)	ND (0.5)	ND (500)	220
MW-E-142	MW-E-142-0519	N	GW	05/15/19	Preliminary	ND (1)	ND (1)	9.1	ND (500)	27	28	ND (0.5)	ND (0.5)	ND (500)	900
MW-E-72	MW-E-72-0519	N	GW	05/15/19	Preliminary	1.1	ND (1)	12	ND (500)	9.4	10	ND (0.5)	ND (0.5)	ND (500)	310
MW-F-104	MW-F-104-0519	N	GW	05/15/19	Preliminary	3.2	ND (1)	14	ND (500)	79	78	ND (0.5)	ND (0.5)	ND (500)	830
MW-F-60	MW-F-60-3V-0519	N	GW	05/15/19	Preliminary	ND (1)	ND (1)	7.9	ND (500)	9.6	9.1	ND (0.5)	ND (0.5)	ND (500)	360
MW-F-60	MW-F-60-LF-0519	N	GW	05/15/19	Preliminary	ND (1)	ND (1)	7.1	ND (500)	8.8	8.6	ND (0.5)	ND (0.5)	ND (500)	360
MW-G-57	MW-G-57-0519	Ν	GW	05/13/19	Preliminary	ND (1)	ND (1)	9.3	ND (500)	9.7	11	ND (0.5)	ND (0.5)	ND (500)	520
MW-G-57	MW-919-Q219	FD	GW	05/13/19	Preliminary	ND (1)	ND (1)	9.1	ND (500)	9.9	9.5	ND (0.5)	ND (0.5)	ND (500)	520
MW-G-82	MW-G-82-0519	Ν	GW	05/15/19	Preliminary	2.4	ND (1)	9.1	ND (500)	9.5	9.6	ND (0.5)	ND (0.5)	ND (500)	520
MW-L-180	MW-L-180-0519	Ν	GW	05/14/19	Preliminary	1.3	ND (1)	0.34		ND (2.5)	0.64	ND (0.5)	ND (0.5)		490
MW-L-225	MW-L-225-0519	Ν	GW	05/14/19	Preliminary	3.3	ND (1)	0.69		ND (2.5)	0.59	ND (0.5)	ND (0.5)		710
MW-L-245	MW-L-245-0519	Ν	GW	05/14/19	Preliminary	1.9	ND (1)	0.053		ND (0.5)	ND (2.5)	ND (0.5)	ND (2.5)		650
MW-L-90	MW-L-90-0519	Ν	GW	05/14/19	Preliminary	ND (1)	ND (1)	4.2		3	3.1	ND (0.5)	ND (0.5)		160
MW-N-129	MW-N-129-0519	Ν	GW	05/13/19	Preliminary	2.2	2.6	18	ND (500)	9.3	9.7	ND (0.5)	ND (0.5)	ND (500)	230
MW-N-217	MW-N-217-0519	Ν	GW	05/13/19	Preliminary	1.6	1	6.3	ND (500)	5.9	5.8	ND (0.5)	ND (0.5)	ND (500)	1000
MW-N-237	MW-N-237-0519	Ν	GW	05/13/19	Preliminary	2.9	ND (1)	2.9	ND (500)	2.8	3.3	ND (2.5)	ND (2.5)	ND (500)	900
MW-N-237	MW-920-Q219	FD	GW	05/13/19	Preliminary	1.9	ND (1)	3.1	ND (500)	2.7	2.6	ND (2.5)	ND (2.5)	ND (500)	920
MW-U-183	MW-U-183-0519	Ν	GW	05/22/19		3.3	1.3	1.2		1.6	1.7	ND (0.5)	ND (0.5)		450
MW-U-273	MW-U-273-0519	Ν	GW	05/22/19		2.5	ND (1)	2.4		3.4	3.6	ND (0.5)	ND (0.5)		470
MW-W-31	MW-W-31-0519	Ν	GW	05/23/19		39	ND (5)	ND (0.05)		ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)		1400

Δ	RCAD		Design & Consulta or natural and	ncy	Lab	ASSET	ASSET	ASSET	ASSET	ASSET Total	ASSET	ASSET	ASSET	ASSET	ASSET
	TUAD		ouilt assets			Sodium,			Thallium,	dissolved	Total organic		Vanadium,		Zinc,
TMP 2019-05 Bag	TMP 2019-05 Baseline Sampling Method						Sulfate	Thallium	dissolved	solids	carbon	Vanadium	dissolved	Zinc	dissolved
	Senne Sampling				Description	dissolved SW 6010B	EPA 300.0	SW 6020	SW 6020	SM 2540 C	SM 5310	SW 6020	SW 6020	SW 6020	SW 6020
					Units	ug/L	mg/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L
		Sample		Date			<u> </u>	<u> </u>	5,	,		5,	,	5,	<u> </u>
Location ID	Sample ID	Туре	Matrix	Sampled	Status*										
MW-10D	MW-10D-0519	Ν	GW	05/17/19	Preliminary										
MW-B-117	MW-B-117-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (5)	5700	ND (1)	ND (1)	ND (1)	ND (10)	ND (10)		
MW-B-33	MW-B-33-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (0.5)	2400	ND (1)	2.1	1	ND (10)	ND (10)		
MW-E-142	MW-E-142-0519	Ν	GW	05/15/19	Preliminary	ND (25)	ND (25)	6300	ND (1)	2.3	1.8	ND (10)	ND (10)		
MW-E-72	MW-E-72-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (0.5)	1400	ND (1)	7.2	5.7	ND (10)	ND (10)		
MW-F-104	MW-F-104-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (0.5)	4500	ND (1)	5.4	3	ND (10)	ND (10)		
MW-F-60	MW-F-60-3V-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (0.5)	1800	ND (1)	2.1	1.8	ND (10)	ND (10)		
MW-F-60	MW-F-60-LF-0519	Ν	GW	05/15/19	Preliminary	ND (0.5)	ND (0.5)	1700	ND (1)	2.9	1.5	ND (10)	ND (10)		
MW-G-57	MW-G-57-0519	Ν	GW	05/13/19	Preliminary	ND (0.5)	ND (0.5)	5400	ND (1)	1.1	1.1	ND (10)	ND (10)		
MW-G-57	MW-919-Q219	FD	GW	05/13/19	Preliminary	ND (0.5)	ND (0.5)	5200	ND (1)	1	1.1	ND (10)	ND (10)		
MW-G-82	MW-G-82-0519	N	GW	05/15/19	Preliminary	ND (0.5)	ND (0.5)	4900	ND (1)	3.2	1.2	ND (10)	ND (10)		
MW-L-180	MW-L-180-0519	N	GW	05/14/19	Preliminary	ND (2.5)	ND (2.5)	6400	ND (1)	8.1	6.2	ND (10)	ND (10)	930	ND (250)
MW-L-225	MW-L-225-0519	Ν	GW	05/14/19	Preliminary	ND (2.5)	ND (2.5)	9800	ND (1)	13	7	28	ND (10)	2000	ND (250)
MW-L-245	MW-L-245-0519	Ν	GW	05/14/19	Preliminary	ND (2.5)	ND (2.5)	11000	ND (1)	2.6	1.5	39	ND (10)	500	ND (1,000)
MW-L-90	MW-L-90-0519	Ν	GW	05/14/19	Preliminary	ND (0.5)	ND (0.5)	1500	ND (10)	2.5	2.2	ND (10)	37	260	ND (50)
MW-N-129	MW-N-129-0519	Ν	GW	05/13/19	Preliminary	ND (0.5)	ND (0.5)	1200	ND (1)	6.7	6.5	ND (10)	ND (10)		
MW-N-217	MW-N-217-0519	Ν	GW	05/13/19	Preliminary	ND (2.5)	ND (2.5)	7300	ND (1)	3.1	2.2	ND (10)	ND (10)		
MW-N-237	MW-N-237-0519	N	GW	05/13/19	Preliminary	ND (2.5)	ND (2.5)	11000	ND (1)	3.8	1.4	ND (10)	ND (10)		
MW-N-237	MW-920-Q219	FD	GW	05/13/19	Preliminary	ND (2.5)	ND (2.5)	11000	ND (1)	2.7	1.4	ND (10)	ND (10)		
MW-U-183	MW-U-183-0519	N	GW	05/22/19		ND (2.5)	ND (0.5)	4600	ND (10)	2.8	1.3	ND (10)	ND (10)		
MW-U-273	MW-U-273-0519	N	GW	05/22/19		ND (2.5)	ND (2.5)	4000	ND (1)	13	10	13	ND (10)		
MW-W-31	MW-W-31-0519	N	GW	05/23/19		ND (2.5)	ND (2.5)	7600	1.1	15	ND (5)	ND (50)	ND (50)		

Δ	RCAD	S	Design & Consultan or natural and built assets	ncy	Lab	BCLabs	BCLabs	BCLabs	BCLabs	BCLabs	BCLabs	BCLabs	BCLabs	BCLabs	BCLabs
			ouilt assets				Aluminum,	Ammonia as		Boron,		Calcium,		Iron,	
TMP 2019-05 Bas	eline Sampling				Method	Aluminum	dissolved	nitrogen	Boron	dissolved	Calcium	dissolved	Iron	dissolved	Magnesium
					Description	SW 6010B	SW 6010B	M 4500-NO3 I	SW 6010B	SW 6010B	SW 6010B	SW 6010B	SW 6010B	SW 6010B	SW 6010B
					Units	ug/L	ug/L	mg/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	mg/L
		Sample		Date			-	-				-			
Location ID	Sample ID	Туре	Matrix	Sampled	Status*										
MW-10D	MW-10D-0519	N	GW	05/17/19	Preliminary										
MW-B-117	MW-B-117-0519	Ν	GW	05/15/19	Preliminary										
MW-B-33	MW-B-33-0519	Ν	GW	05/15/19	Preliminary										
MW-E-142	MW-E-142-0519	Ν	GW	05/15/19	Preliminary										
MW-E-72	MW-E-72-0519	Ν	GW	05/15/19	Preliminary										
MW-F-104	MW-F-104-0519	Ν	GW	05/15/19	Preliminary										
MW-F-60	MW-F-60-3V-0519	Ν	GW	05/15/19	Preliminary										
MW-F-60	MW-F-60-LF-0519	Ν	GW	05/15/19	Preliminary										
MW-G-57	MW-G-57-0519	Ν	GW	05/13/19	Preliminary										
MW-G-57	MW-919-Q219	FD	GW	05/13/19	Preliminary										
MW-G-82	MW-G-82-0519	Ν	GW	05/15/19	Preliminary										
MW-L-180	MW-L-180-0519	Ν	GW	05/14/19	Preliminary	ND (0.2)	1600	1300	310	270	1300	ND (250)	23	20	18
MW-L-225	MW-L-225-0519	N	GW	05/14/19	Preliminary	ND (0.2)	2200	1800	430	390	4300	ND (250)	25	21	25
MW-L-245	MW-L-245-0519	Ν	GW	05/14/19	Preliminary	ND (0.2)	2600	2800	440	400	ND (500)	ND (1,000)	11	9.9	41
MW-L-90	MW-L-90-0519	Ν	GW	05/14/19	Preliminary	ND (0.2)	430	300	180	150	410	ND (50)	28	25	9.8
MW-N-129	MW-N-129-0519	Ν	GW	05/13/19	Preliminary										
MW-N-217	MW-N-217-0519	N	GW	05/13/19	Preliminary										
MW-N-237	MW-N-237-0519	N	GW	05/13/19	Preliminary										
MW-N-237	MW-920-Q219	FD	GW	05/13/19	Preliminary										
MW-U-183	MW-U-183-0519	N	GW	05/22/19											
MW-U-273	MW-U-273-0519	N	GW	05/22/19											
MW-W-31	MW-W-31-0519	N	GW	05/23/19											

A	RCAD	IS F	Design & Consultan or natural and ouilt assets	ncy	Lab	BCLabs Magnesium,	BCLabs Potassium,	BCLabs Sodium,
TMP 2019-05 Bas	seline Sampling				Method	5,	dissolved	dissolved
	senne Sampling				Description		SW 6010B	SW 6010B
					Units		mg/L	mg/L
		Sample		Date		<u> </u>	<u> </u>	,
Location ID	Sample ID	Туре	Matrix	Sampled	Status*			
MW-10D	MW-10D-0519	Ν	GW	05/17/19	Preliminary			
MW-B-117	MW-B-117-0519	Ν	GW	05/15/19	Preliminary			
MW-B-33	MW-B-33-0519	Ν	GW	05/15/19	Preliminary			
MW-E-142	MW-E-142-0519	Ν	GW	05/15/19	Preliminary			
MW-E-72	MW-E-72-0519	Ν	GW	05/15/19	Preliminary			
MW-F-104	MW-F-104-0519	Ν	GW	05/15/19	Preliminary			
MW-F-60	MW-F-60-3V-0519	Ν	GW	05/15/19	Preliminary			
MW-F-60	MW-F-60-LF-0519	Ν	GW	05/15/19	Preliminary			
MW-G-57	MW-G-57-0519	Ν	GW	05/13/19	Preliminary			
MW-G-57	MW-919-Q219	FD	GW	05/13/19	Preliminary			
MW-G-82	MW-G-82-0519	Ν	GW	05/15/19	Preliminary			
MW-L-180	MW-L-180-0519	Ν	GW	05/14/19	Preliminary	2100		
MW-L-225	MW-L-225-0519	Ν	GW	05/14/19	Preliminary	3000		
MW-L-245	MW-L-245-0519	Ν	GW	05/14/19	Preliminary	4200		
MW-L-90	MW-L-90-0519	Ν	GW	05/14/19	Preliminary	240		
MW-N-129	MW-N-129-0519	Ν	GW	05/13/19	Preliminary			
MW-N-217	MW-N-217-0519	N	GW	05/13/19	Preliminary			
MW-N-237	MW-N-237-0519	N	GW	05/13/19	Preliminary			
MW-N-237	MW-920-Q219	FD	GW	05/13/19	Preliminary			
MW-U-183	MW-U-183-0519	Ν	GW	05/22/19				
MW-U-273	MW-U-273-0519	Ν	GW	05/22/19				
MW-W-31	MW-W-31-0519	N	GW	05/23/19				

A	RCAD	S	Design & Consultan or natural and built assets	су	Lab		ASSET Chromium, Total
			and abbeto		Method Description		Dissolved SW 6010
TMP 2019-05 Po	st Development				Units	ug/L	ug/L
		Sample		Date			
Location ID	Sample ID	Туре	Matrix	Sampled	Status*		
MW-U-183	MW-U-183-050819	Ν	GW	05/08/19	Preliminary	ND (0.2)	ND (1)
MW-U-273	MW-U-273-051019	Ν	GW	05/10/19	Preliminary	ND (0.2)	ND (1)