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December 10, 2018

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: November 2018 Monthly Progress Report for the Final Groundwater Remedy

Construction and Startup, PG&E Topock Compressor Station, Needles, California

(Document ID: TPK_Monthly Progress Report_November 2018)

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 November 2018 as well as activities planned for the next six weeks (December 11, 2018 to January 19, 2019), and presents available results from sampling and testing performed in November 2018.

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 2013 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.

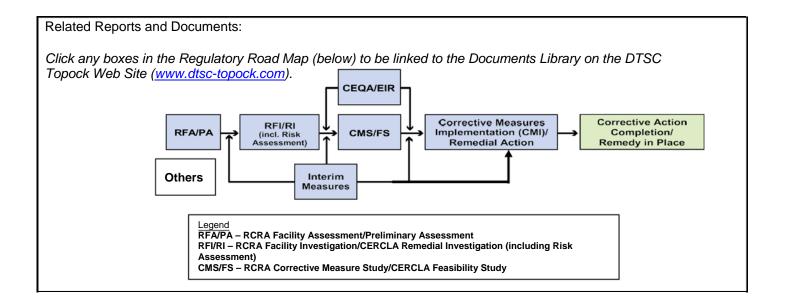
Monthly progress reports will be submitted to DTSC and DOI by the 10th day of the following month during construction and start-up of the groundwater remedy at the Topock Compressor Station which officially began on October 2, 2018. This is the second monthly progress report. Please contact me at (760)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

Sincerely,

Curt Russell

Topock Project Manager

Topock Project	Executive Abstract						
Document Title: November 2018 Monthly Progress Report for the Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California Submitting Agency: DOI, DTSC Final Document?	Date of Document: 12/10/2018 Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E						
Priority Status: ☐ HIGH ☐ MED ☐ LOW	Action Required:						
Is this time critical? ☐ Yes ☒ No	☐ Information Only ☐ Review & Input						
Type of Document:	□ Other / Explain:						
□ Draft☑ Report□ Letter□ Memo□ Other / Explain:							
What does this information pertain to?	Is this a Regulatory Requirement?						
□ Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)	✓ Yes☐ NoIf no, why is the document needed?						
 □ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment) □ Corrective Measures Study (CMS)/Feasibility Study (FS) 							
 ☑ Corrective Measures Implementation (CMI)/ Remedial Action(RA) 							
☐ California Environmental Quality Act (CEQA)/ Environmental Impact Report (EIR)							
☐ Interim Measures							
□ Other / Explain:							
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: ☐ Permit ☐ Other / Explain:						
Brief Summary of attached document:							
Brief Summary of attached document: This monthly report describes activities taken during November 2018 and activities planned for the next six weeks (December 11, 2018 to January 19, 2019) and presents available results from sampling and testing in November 2018. In addition, this report discusses material deviations from the approved design documents and/or the Construction/ Remedial Action Work Plan (C/RAWP), if any, that PG&E has proposed to the California Department of Toxic Substances Control (DTSC) and the U.S. Department of the Interior (DOI) or that have been approved by DTSC and DOI. This report also highlights key personnel changes, if any, and summarizes activities performed and activities planned at the Topock Compressor Station in support of DOI's 2012 Community Involvement Plan and DTSC's 2013 Community Outreach Plan, as well as contacts with local community, representatives of the press, and/or public interest groups, if any.							
Written by: Pacific Gas and Electric Company							
Recommendations: Provide input to PG&E.							
How is this information related to the Final Remedy or Regulatory Final This submittal is required in compliance with the CACA, CD, and processing the compliance with the CACA, CD, and processing the compliance with the CACA, CD, and processing the complex complex control of the control of the complex control of the complex control of the control of the complex control of the complex control of the complex control of the complex control of the control of the complex control of the con	-						
Other requirements of this information? None.							





November 2018 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup

PG&E Topock Compressor Station Needles, California

Document ID: TPK_Monthly Progress Report_November 2018

December 2018

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

On Behalf of Pacific Gas and Electric Company



Perimeter Air Sampling Analytical Results

Noise Monitoring Data Summary (SEIR NOISE-2 requirement)

Six-Week Look-Ahead Schedule (December 11, 2018 through January 19, 2019)

Validated groundwater monitoring data (DTSC Condition of Approval xi)

D E

F G



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AX1109181012BAO vii



Acronyms and Abbreviations

μg/m³ micrograms per cubic meter

AOC Area of Concern

ARAR applicable or relevant and appropriate requirement

bgs below ground surface

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

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 second 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 November 2018, 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, 2013) 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 November 2018 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 November 30, 2018, a total of 20 six-week look-ahead schedule emails were sent. Of those, four six-week look-ahead schedule emails were sent in November 2018 (on November 4, 11, 18, and 25, 2018).
- On August 10, 2018, PG&E issued the first Environmental Release to Construct (ERTC) to contractors. As of November 30, 2018, a total of 18 ERTCs were issued for mobilization and construction activities (see Table 2-1). Of those, five ERTCs were issued in November 2018.
- 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
 November 2018, a total of 26 daily construction activities lists were published and discussed
 at the morning tailboards.
- In November 2018, 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**):
 - Delineated the extent of the maximum construction footprint in the jurisdictional water at the Construction Headquarters (CHQ) with snow fence, prior to the start of work on the access road.
 - Installed construction storm water pollution prevention measures (also called Stormwater Pollution Prevention Plan [SWPPP] Best Management Practices [BMPs]) as required in the ERTCs for IRZ-9. IRZ-13. and the access road at the CHQ.
 - Poured concrete into the formwork for the truck containment pad at TCS evaporation ponds.
 - Transplanted 163 sensitive plant species (palo verde and mesquite) from the CHQ, Soil Processing Yard (SPY), and MW-20 Bench. Did not transplant 4 plants because they are either too big or are above underground utilities, and one plant because it was growing through the fence at MW-20 Bench.
 - Pilot Boring/Well Installation Activities (Rotosonic drilling):
 - a) Completed installation of MW-E on November 27, 2018 (drilled to 150 feet and reamed to 144 feet).
 - b) Completed installation of a monitoring well in the first borehole at MW-L on November 27, 2108 (drilled to 315 feet and reamed to 249 feet). Collected water samples at various intervals.
 - c) Completed drilling of the pilot boring at IRZ-13 on November 8, 2018 (drilled to 247 feet).
 Collected water samples at various intervals. Backfilled the borehole with sand.
 - d) Completed drilling of the pilot boring at IRZ-15 on November 8, 2018 (drilled to 257 feet). Collected water samples at various intervals. Backfilled the borehole with sand.



- e) Completed drilling of the pilot boring at IRZ-20 on November 1, 2018 (drilled to 187 feet). Collected water samples at various intervals. Backfilled the borehole with sand.
- f) See **Attachment B** for available information such as boring logs and water analytical results. Boring logs for IRZ-20, MW-E, the first monitoring well at MW-L, and geotechnical boreholes along Pipeline F are available and included in Attachment B.

Baseline/Opportunistic Soil Sampling Activities:

- a) Pursuant to the Baseline Soil Sampling and Analysis Plan (Appendix A of the Soil Management Plan [which is Appendix L of the C/RAWP]), one soil sample was collected on November 30, 2018, at approximately 1 foot below ground surface (bgs) at IRZ-9.
- b) At the request of DTSC, PG&E collected five opportunistic samples of stained soil encountered on November 14, 2018 during excavation associated with the Compressor Station's Fire Supression project. Three soil samples were collected at approximately 0.5 foot bgs on the east side of the Firepump Auxiliary Building (AOC 23), one sample was collected on the southeast side of the Operator Building and in the vicinity of AOC 15, and one sample was collected in AOC 4 near the water line that comes down from the TCS water storage tanks.
- 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 continues in November 2018 at perimeter of the 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. No perimeter air sampling was conducted in November 2018.
- 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 November 2018, noise monitoring was conducted at the following pre-approved locations:
 - Location west of the mobile home park at Moabi Regional Park,
 - Location Maze A Area 2,
 - Location Maze A Area 3,
 - Location Maze B Combined Area 1/2 and alternate location (the alternate location was only monitored when drilling at MW-L occurred), and
 - Location Maze C Area 1.
- 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 December 1, 2018, PG&E has started and will continue to perform the following activities:
 - Continue to drill the second boring at MW-L. Continue to collect water samples.
 - Continue to drill pilot borings at IRZ-9 and IRZ-25. Continue to collect water samples.
 - Continue hydrostatic pressure testing of the temporary construction water pipeline.
 - Continue to improve the access road to the CHQ.



- Continue to water the transplanted plants, at the approved location off NTH, weekly for eight weeks.
- Continue to conduct noise and dust monitoring and inspection of SWPPP BMPs.
- Continue to track and manage waste generated.
- Continue to manage displaced soil per the approved Soil Management Plan.

2.1.3 Waste Generation and Management

As of November 30, 2018, the following waste streams were generated from remedy construction:

- Approximately 30 cubic yards of drill cuttings were generated from well drilling and geotechnical
 investigation. Of those, approximately 1.3 cubic yards are clay, and PG&E is currently awaiting
 direction from DOI on the management of clay. The remaining drill cuttings are sampled in
 accordance to the approved Soil Management Plan, and the final disposition will be reported in future
 monthly reports.
- Approximately 12,500 gallons of wastewater were generated from drilling operations at well MW-L (about 8,500 gallons), IRZ-13 (about 1500 gallons), IRZ-15 (about 2000 gallons), and MW-E (about 500 gallons). At each drilling location, the wastewater is initially stored in a 3,000-gallon holding tank in the primary work zone, and is transferred from the primary work zone, as needed, to a common 20,000-gallon frac tank located at the MW-20 Bench. Each transfer load is tracked. Once the frac tank is full, its contents will be characterized and managed in accordance with the approved Waste Management Plan (Appendix R of the C/RAWP) and the final disposition will be reported in future monthly reports.
- Approximately 750 gallons of wastewater was generated from decontamination of drilling equipment.
- Approximately 30 cubic yards of general construction waste and 6 cubic yards of recyclables were generated and transported to Republic Services in Lake Hayasu City for disposal and management.
- Sanitary waste in portable toilets that 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 November 30, 2018, a total of 38 health and safety training sessions were held and 188 employees and contractors received the training. Of those, in November 2018, 10 sessions were conducted and 32 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 November 30, 2018, a total of 36 WEAT sessions were conducted and 221 employees and contractors received the training. Of those, in November 2018, 8 sessions were conducted and 28 employees/ contractors were trained. Educational brochures are made available to attendees of the training; they are designed to reinforce the key topics and highlight the take-aways discussed during the classroom training. After the training, the attendees signed the training roster.
- 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 November 30, 2018, a total
 of 7 FCR training sessions were conducted and 33 employees and contractors received the training.
 No FCR training sessions were conducted in November 2018.
- 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

PG&E did not submit any new WVRs in November 2018. 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

Access road at the CHQ

- Survey conducted prior to construction showed that ground elevation was 6 inches higher than the 100% design. This did not result in a design change, but the road will be 6 inches higher than the 100% design.
- After conducting compaction test, the old road base was determined to not be suitable for reuse as a base for the new road. Therefore, import fill was used. The old road base is stored at the CHQ for future reuse.

Unanticipated mechanical issues with the drill rig at MW-L

- Several unanticipated mechanical issues were encountered with the drill rig at MW-L, including the malfunction of the drill head which required a replacement and the slipping and entanglement of the cable line which resulted in drill rods in borehole which required downhole retrieval.
 Corrective actions were taken in a timely manner by Cascade.
- A representative of Hargis and Associates, consultant to the Fort Mojave Indian Tribe, noted that certain sections of the temporary construction water pipeline were laid on top of rocks with sharp edges and one section was without support. Subsequent to this observation, the contractor placed sand bags on top of the rocks and under the pipeline for additional protection. In addition, the contractor secured the section that was noted as without support with sand bags. The contractor will monitor the pipeline over time and make adjustments as necessary.

2.1.8 Key Personnel Changes

There was no change to key PG&E project personnel in November 2018.

2.2 Communication with the Public

Below are the highlights of key communication and interactions with the public that occurred in November 2018:

- PG&E met with the Pirate Cove General Manager on a regular basis to provide project updates and check-in.
- PG&E met with the General Manager of Topock 66 Resort, the Editor of the Topock Topics, and the
 owner/operator of Golden Shores Water Company on a monthly basis to provide updates on the
 project and check-in.

2.3 Planned Activities for Next Six Weeks

The planned activities for next six weeks (December 11, 2018 through January 19, 2019) include the following:

- Well installation activities:
 - Complete installation of well at MW-L.



- Complete the pilot boring at IRZ-9, IRZ-21, IRZ-25, and IRZ-27.
- Start drilling and installation of well MW-B, MW-N, MW-M, MW-O, MW-F, and MW-G.
- Non-well construction activities:
 - Complete access road to the CHQ.
 - Install perimeter fence at the SPY.
 - Conduct pre-characterization of soil along planned pipeline alignment and in infrastructure location within AOCs.
 - Perform grubbling and clearing along Pipeline C alignment (C1, C2, C3, C4, C5, C7, C8, C9, C10, C14, C17, F1)
 - 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 F 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 November 30, 2018. PG&E will continue to look for opportunities to optimize the construction workflow and schedule.

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). 2013. *Community Outreach Plan, Pacific Gas and Electric Company's Topock Compressor Station, Needles, California*. http://dtsc-topock.com/sites/default/files/2013-01-11_FinalCOP_Web.pdf. January.

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). 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. http://dtsc-topock.com/sites/default/files/FINAL DOI CIP 10-12.pdf. September.

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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.

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

November 2018 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
Non-Well ER1	rCs	
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
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 Note that an ERTC walk with Tribes/agencies occurred on October 24, 2018
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
5c	Scope included the site setup, drilling, testing, and demobilization at IRZ-20 on the MW-20 Bench.	October 15, 2018
5d	Scope included the site setup, drilling, testing, and demobilization at MW-E on the MW-20 Bench.	October 29, 2018
5e	Scope included the site setup, drilling, testing, and demobilization at MW-N in the upland.	November 15, 2018 Note that an ERTC walk with Tribes/agencies occurred on November 1, 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
5i	Scope included the site setup, drilling, testing, and demobilization at IRZ-9 in the floodplain.	November 28, 2018

Note: ERTC 5h (MW-M) and ERTC 8 (Wastewater Management) are under development.

AX1109181012BAO Tables-1

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

November 2018 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

WVR No.	Brief Description of Work Variance Request	Approval Dates
1	This WVR addressed PG&E's proposed modification to the brine tanks containment for use by the remedy, specifically:	DOI approved WVR #1 on June
	Upgrade the existing lined containment to concrete - The original synthetic liner material has degraded from exposure to UV light, heat, and abrasion and must be replaced. PG&E proposed to replace the synthetic-lined containment (including Krails) 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).	22, 2018 DTSC approved WVR #1 on July 5, 2018
	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.	
2	PG&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&E Gas Operations control of the Station's water supply. The WVR addressed this relocation, specifically:	DOI and DTSC approved WVR #2 on August 29, 2018
	Relocate the construction water tie-in point to an aboveground location below the TCS Water Storage Tanks, inside TCS – The final design calls for the temporary construction water line to hot-tap into the existing 6-inch steel water line just as the line turns southwest to continue to TCS. PG&E proposed to move the tie-in point to an aboveground valve manifold, located below the TCS Water Storage Tanks in the boneyard area.	
	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.	

AX1109181012BAO Tables-3

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.

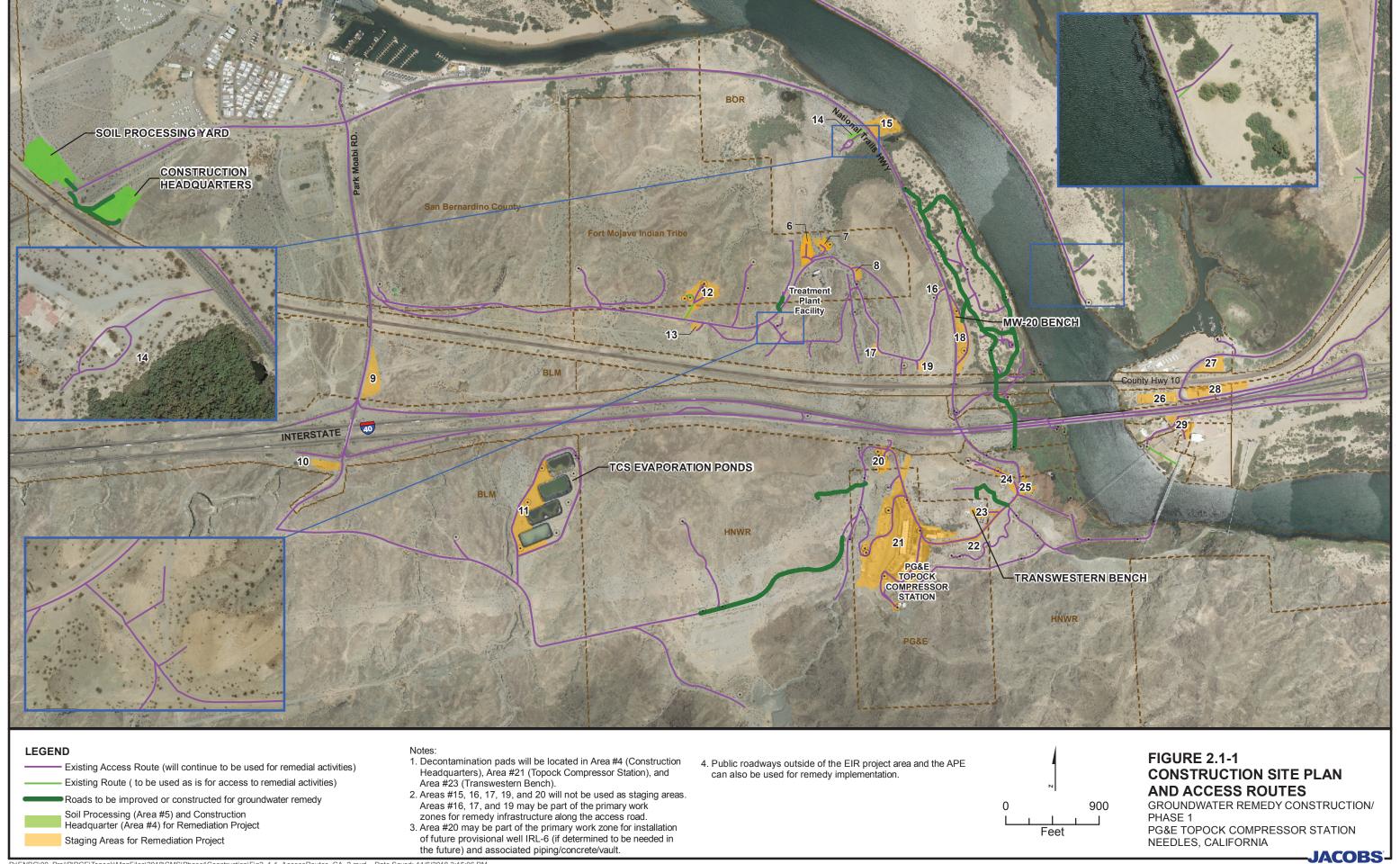
Table 2-3 Summary of Percent Completeness of Key Construction Activities

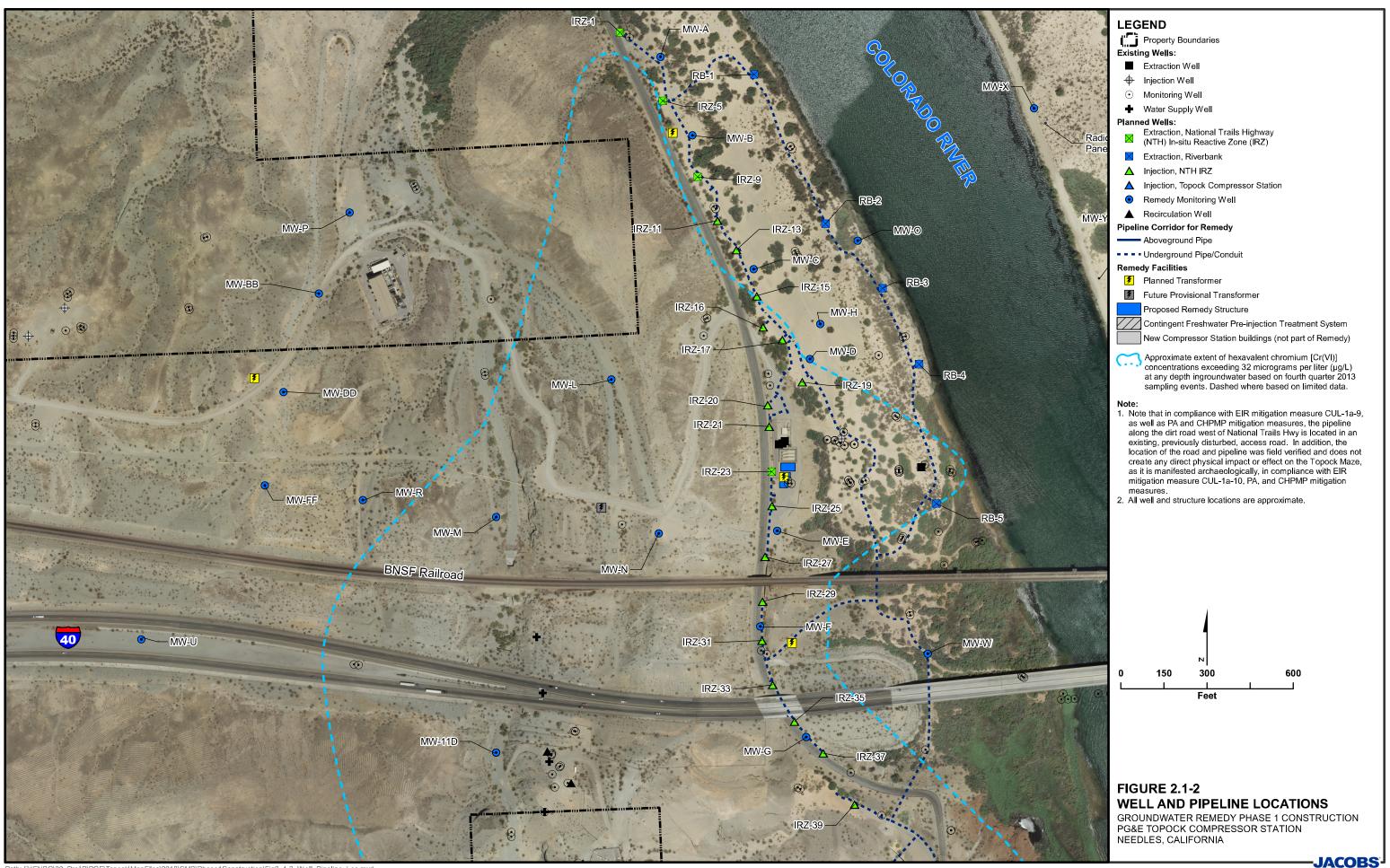
November 2018 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

Activity	% Complete	Current Status of Construction Activities (as of November 30, 2018)
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	95%	Pipeline and manifolds installed. Elevated tanks installed. HDPE testing and acceptance complete. TCS manifold sanitization complete. Final acceptance and startup in early December.
TCS Ponds concrete containment pad	95%	Concrete pour complete. BMP removal and available for use in early December.
Construction Headquarters access road	50%	Site prep, excavation, and conduit installation complete. Access road subgrade backfill, concrete reinforcement, and formwork in early December. Concrete pour in mid-December. Available for use in early January.
MW-L	75%	Borehole 1 complete, borehole 2 complete in December. Well development in December.
MW-E	100%	Complete. Well development in December.
IRZ-9 pilot boring	5%	Site prep initiated, complete pilot boring in December.
IRZ-15 pilot boring	100%	Complete.
IRZ-13 pilot boring	95%	Backfill boring and demobilize location in early December.
IRZ-20 pilot boring	100%	Complete.
IRZ-23 pilot boring	95%	Backfill boring and demobilize location in early December.

AX1109181012BAO Tables-5

Figures





Attachment A Photographs



PL01 Photo Log Photo Sheet



Improvement of access road to the future Construction Headquarters (CHQ)



Installation of snow fence to delineate the maximum construction footprint in the jurisdictional water (wash) at the CHQ



Preparation of holes to receive plants at approved transplantation location off NTH



Approved plant transplantation area off NTH

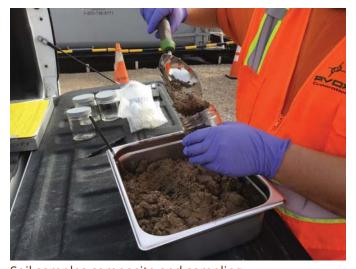
12/09/2018 Page 1 of 2



Transplanted Palo verde plant with deep irrigation plastic pipes



MW L drill cuttings stored in soil bin



Soil samples composite and sampling

12/09/2018 Page 2 of 2

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

Table B-1. Groundwater Sampling Results for November 2018

November 2018 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)
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
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-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
IRZ-20	IRZ-20-VAS-51-56	10/20/18	51 - 56	130	150
IRZ-20	IRZ-20-VAS-82-87	10/21/18	82 - 87	< 0.13 U	< 0.033 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-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-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

 μ 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

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	1 of	16
Date Starte	·			Surface			Bori	na No.:	MW-Ld	
	leted: <u>12/02/</u>			Northin						
Drilling Co.				Easting	•	•	Client:	PG&E	ton Domondu	Dhasa I
Drilling Met Driller Nam		Drilling 'Mara		Boreho	-	315 ft bgs neter: 10 in		Needles, 0	ter Remedy	Phase I
Drilling Ass		ellmantel / J.						ineedies, C	Janiomia	
Logger:		McGrane	•	•			Project Nu	mber: Top	ock	
Editor:		McGrane		•	•					
Weather:	78 to 8	84° Partly Clo	oudy (Conver	ted to V	Vell: ⊠ Yes □ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
_ 1 _			Topock - Alluvium Deposits	SW		(0.0 - 1.5') Topock - Alluvium Deposits; Well g (SW); brown (10YR 4/3); very fine grained to angular to subround; some granule to large p very coarse grained sand, subangular to subr trace boulders, angular to subangular; trace s	very coarse gr ebbles; some ound; trace co silt; dry	ained, coarse to bbles;		
2 3 72 4 5 6	0		Topock - Alluvium Deposits	SW		(1.5 - 6.0') Topock - Alluvium Deposits; Well g (SW); brown (7.5YR 4/3); very fine grained to subangular to round; some granule to mediun subangular; trace silt; dry	very coarse g	rained,		
7 — 7 — 7 — 7 — 8 — 7 — 8 — 9 — 9 — 100 —			Topock - Alluvium Deposits	SM		(6.0 - 11.0') Topock - Alluvium Deposits; Silty brown (7.5YR 4/3); very fine grained to very c subround; some granule to very large pebbles some silt; trace cobbles, angular; trace boulde subangular; dry	coarse grained, s, angular to si ers, angular to	, angular to ubangular;		
IRINE 1 134-2018 SWINDOOK DATABASE FOR PLOG GBP A MEGA			Topock - Alluvium Deposits	SW-SM		(11.0 - 16.0') Topock - Alluvium Deposits; We and gravel (SW-SM); dark grayish brown / da 4/2); very fine grained to very coarse grained, some granule to large pebbles; little silt; trace subangular; dry	rk yellowish br , angular to sul	own(10YR bangular;		
17 17 17 17 17 17 17 17			Topock - Alluvium Deposits	SW-SM		(16.0 - 21.5') Topock - Alluvium Deposits; We and gravel (SW-SM); very dark gray (10YR 3/ very coarse grained, angular to subangular; s large pebbles; little silt; trace cobbles, angular	/1); very fine grome granule to	rained to o very	Lost core barrel down hole	
Notes: N	R = No Reco	very, USCS	= Unified So	oil Clas	sificatio	on System				
BORI										
SO										

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	2 of	16
Date S	Started	10/03/2	2018		Surface	Elevati	on: <u>N/A</u>	Bori	ina No	: MW-Ld	
Date C	Comple	ted: <u>12/02/</u>	2018		Northin	g (NAD8	3): <u>N/A</u>		g	IVIVY EQ	
Drilling	Co.:	Casca	de		Easting	(NAD8	B): <u>N/A</u>	Client:	PG&E		
Drilling	Meth	od: <u>Sonic l</u>	Drilling		Total D	epth:	315 ft bgs	Location:	Groundw	ater Remedy	Phase I
Driller	Name	Dan O	'Mara		Borehol	e Diame	eter: <u>10 in</u>	_	Needles,	California	
Drilling	y Asst:	E. Hue	ellmantel / J.	Campbell	Depth to	o First V		-			
Logge	r:		<u> </u>					Project Nu	ımber: <u>To</u>	pock	
Editor:			<u> </u>		-	_		-			
Weath	er:	78 to 8	4° Partly Clo	oudy	Conver	ted to W	ell: 🗵 Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
21	96			Topock - Alluvium Deposits	SW-SM						
22				Topock - Alluvium Deposits	SM		(21.5 - 22.5') Topock - Alluvium Deposits; Silt dark gray (10YR 4/1); very fine grained to ver io subround; some granule to very large pebb subangular; some silt; dry	ry coarse grain	ed, angular		
23				Topock - Alluvium Deposits	GP	600	(22.5 - 24.0') Topock - Alluvium Deposits; Poblack (10YR 2/1); small cobbles to large cobbdry	orly graded gra oles, angular to	avel (GP); subround;		
25					NR		(24.0 - 26.0') (NR); No Recovery sample bag	s broke			
26							(26.0 - 28.0') Topock - Alluvium Deposits; Sa			Rough drilling	
27				Topock - Alluvium Deposits	ML		prown (10YR 5/3); no plasticity; some very fir sand, angular to subangular; little granule to angular to subangular; trace cobbles, angular mica; dry	very large pebl	oles,		
28	60			Topock - Alluvium Deposits	ML		(28.0 - 29.5') Topock - Alluvium Deposits; Sa brown (10YR 5/3); no plasticity; and very fine sand, angular to subangular; little granule to angular to subangular; trace cobbles, angular mica; dry	to very coarse very large peb	grained oles,		
ARCADIS 20180927 PLOG.GI				Topock - Alluvium Deposits	GW		(29.5 - 31.0') Topock - Alluvium Deposits; We sand (GW); dark yellowish brown (10YR 4/4); cobbles, angular to subround; little very fine t subangular to subround; dry	; granules to si	mall		
OOCK DATABASE FOR PLOG. GPJ ARCADI				Topock - Alluvium Deposits	ML		(31.0 - 34.5') Topock - Alluvium Deposits; Sa brown (10YR 5/3); no plasticity; some very fir sand, angular to subangular; little granule to angular to subangular; trace cobbles, angular mica; dry	ne to very coar very large pebl	se grained bles,	Lost core barrel down hole	
35	84						(34.5 - 38.0') Topock - Alluvium Deposits; Silt (10YR 5/3); very fine grained to fine grained, and silt; dry				
MOODS/DESKTOP/ONEDRING				Topock - Alluvium Deposits	SM						
1. TOPACK C.NUSERSNLW				Topock - Alluvium Deposits Topock - Alluvium	SM		(38.0 - 39.0') Topock - Alluvium Deposits; Silt grayish brown (2.5Y 5/2); very fine grained to angular to subround; some silt; little granule t to subangular; moist (39.0 - 43.0') Topock - Alluvium Deposits; Silt grayish brown (2.5Y 3/2); very fine grained to	very coarse g to large pebble tv sand (SM): v	rained, s, angular verv dark		
g 40				Deposits			o subangular; and silt; trace granule to medi	um pebbles, a	u, angulai ngular to		
Notes:	NR	= No Reco	very, USCS =	= Unified So	oil Clas	sification	ı System				
BORII											
SOIL											

A	RCAI	DIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	3 of	16
Date Sta		10/03/2			Surface			Bor	ing No.:	: MW-Ld	
	mpleted:				Northin						
Drilling C		Casca			Easting	-	-	Client:	PG&E		
Drilling M			<u>Drilling</u>			-	•			ater Remedy	Phase I
Driller Na			Mara						Needles,	California	
Drilling A			llmantel / J. (//cGrane	•	•			Drainat Nu	ımbarı Ta	n o olí	
Logger: Editor:			AcGrane AcGrane		Samplir Samplir	-		Project Nu	imber: 10	DOCK	
⊏uitor. Weather:			4° Partly Clo		Conver	•					
		10 10 0			T		veii. A res I no				<u> </u>
Depth (ft)		ieve nple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
4142	96			Topock - Alluvium Deposits	SM		subangular; trace clay; moist				
44 45				Topock - Alluvium Deposits	SW		(43.0 - 46.0') Topock - Alluvium Deposits; Welbrown (7.5YR 5/3); very fine grained to very creations to subround; trace granule to very to subround; trace cobbles, subround; trace si	oarse grained large pebbles	l,		
46 47 48 48				Topock - Alluvium	SM		(46.0 - 51.5') Topock - Alluvium Deposits; Silty brown (10YR 4/3); very fine grained to very cosubangular to subround; little granule to very I subangular to subround; little silt; trace cobble subround; trace clay; trace mica; dry; gravel c formation.	parse grained, arge pebbles es, subangula	r to		
49 50 51 ₁	120			Deposits		0 0 0 0 0					
525354				Topock - Alluvium Deposits	SW-SM		(51.5 - 52.0') Topock - Alluvium Deposits; Wel (SW-SM); brown (10YR 5/3); very fine grained angular to subround; trace silt; little mica; dry (52.0 - 59.0') Topock - Alluvium Deposits; Wel gravel (SW); very dark grayish brown (10YR 3 very coarse grained, angular to subangular; at pebbles, subangular to round; trace cobbles, some mica; dry	I to medium g II graded sand I/2); very fine and granule to	d with grained to very large		
55 56				Topock - Alluvium Deposits	sw						
57 58 59											
60				Topock - Alluvium Deposits	SM		(59.0 - 62.0') Topock - Alluvium Deposits; Silty (10YR 5/3); very fine grained to very coarse g subround; little silt; little clay; trace granule to	rained, angula	ar to		
Notes:	NR = No	Recov	ery, USCS =	Unified So	oil Clas	sificatio	n System				

AR	CADIS Design & Consultre for natural and built assets	ncy B	oring	Log	Sheets	4 of	16		
Date Starte			ce Elevati	ion: N/A	Boring No.:	: MW-Ld			
1	eted: <u>12/02/2018</u>		ing (NAD			<u> </u>			
Drilling Co.:			ng (NAD8	·	Client: PG&E	atar Damadı	Dhasa I		
Drilling Meth Driller Name	•		Total Depth: 315 ft bgs Location: Groundwater Remedy Pt Borehole Diameter: 10 in Needles, California						
Drilling Asst		J. Campbell Depth			ivecuics,	Camorna			
Logger:		Samp			Project Number: Top	pock			
Editor:		Samp	ling Interv						
Weather:	78 to 84° Partly		erted to W	Vell: ⊠ Yes □ No					
Depth (ft) Recovery (in)	Sieve Groundwa Sample ID Sample I		USCS	Description		Drilling Notes	Drilling Fluid		
61120		Topock - Alluvium SM Deposits		subround; dry					
62				(62.0 - 65.5') Topock - Alluvium Deposits; We					
63		Topock - Alluvium GW		sand (GW); light brownish gray / pale yellowis granules to small cobbles, angular to subroun coarse grained sand, angular to subround; tra subangular; dry	d; little very fine to very				
64 65		Deposits							
				(65.5 - 67.0') Topock - Alluvium Deposits; Siltv	y sand with gravel (SM);				
66	-	Topock - Alluvium SM		dark grayish brown / dark yellowish brown(10 grained to very coarse grained, angular to sub					
67		Deposits		large pebbles, angular to subangular; little silt cobbles, angular; dry (67.0 - 69.0') Topock - Alluvium Deposits; We (SW-SM); light brownish gray / pale yellowish	; little clay; trace				
68		Topock - Alluvium Deposits	SM	(SW-5M), light brownish gray / pale yellowish fine grained to very coarse grained, angular to trace granule to medium pebbles, subangular	subangular; little silt;				
720 - 124/18				(69.0 - 79.5') Topock - Alluvium Deposits; Silty brown (7.5YR 5/3); fine grained to very coarse subround; little granule to very large pebbles, little silt; trace cobbles, angular to subangular subangular to well-round; little mica; dry	e grained, subangular to subangular to round;				
75 — 74 ARCADIS 2010 001 120 120 120 120 120 120 120 12				outer guid. to won round, made mice, any					
DATABASE FOR F				(72.5') olive / moderate olive brown(5Y 4/4); s large pebbles	ome granule to very				
74		Topock - Alluvium SM Deposits		(74') dark grayish brown / dark yellowish brow	rn(10YR 4/2)				
75				(75') dark brown (7.5YR 3/4); moist					
SDESKTOPIONEDRY				(76') brown (7.5YR 4/3); and granule to very la to round; little silt; trace cobbles, subangular t	arge pebbles, subangular o round; wet; water table	Approximate depth of water table			
PACK C: UNSERSITION DDS	MW-L-VAS 76-81 (31 ppb)	3-					60 gal of water used		
08E TC		Topock - ML		(79.5 - 80.0') Topock - Alluvium Deposits; Sar	ndy silt with gravel (ML):				
୍ଧି 80 Notes: Ni	R = No Recovery, USC	Alluvium	1º1Vº1	·		1	<u> </u>		
NING.		5 51.1110G 0011 01E	.55,1104110	5,5.0					
SOILB									

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	5 of	16
Date S	Started	10/03/2	2018		Surface	Eleva	tion: N/A	Bor	ina No.:	MW-Ld	
	•	ted: <u>12/02/2</u>	2018		Northing		•				
Drilling	g Co.:	Casca	de		Easting	(NAD			PG&E		
Drilling	g Meth	od: <u>Sonic I</u>	<u> Drilling</u>		Total De	epth:	315 ft bgs	Location:	Groundwa	ater Remedy	Phase I
Driller	Name		Mara		Borehol				Needles,	California	
Drilling	g Asst:		llmantel / J. (=	-						
Logge			/IcGrane					Project Nu	ımber: <u>To</u> p	ock	
Editor			/IcGrane		-	-					
Weath	ner:	<u>78 to 8</u>	4° Partly Clo	<u>udy</u>	Convert	ed to \	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
			MW-L-VAS- 76-81 (31 ppb)	Deposits			reddish brown(2.5YR 4/3) with reddish brown no dilatency; some very fine to very coarse gr to subround; little granule to very large pebble	rained sand, s	ubangular		
81_	120		(31 ppb)	Topock - Alluvium	SM		wet		•		
				Deposits	SIVI		(80.0 - 82.5') Topock - Alluvium Deposits; Silt dark grayish brown / dark yellowish brown(10				
82							grained to very coarse grained, angular to sult to large pebbles, angular to subround; some	bangular; som			
							(82.5 - 86.0') Topock - Alluvium Deposits; Silt	•	rovioh		
83							brown (10YR 5/2); very fine grained to very co	oarse grained,	angular to		60 gal of water
							subangular; and silt; trace granule to very larg subangular; trace cobbles, angular; trace clay				used
84				Topock -			strong cementation				
L -				Alluvium Deposits	SM						
85				Doposito							
86											
L							(86.0 - 93.5') Topock - Alluvium Deposits; Silt dark grayish brown / dark yellowish brown(10				
87							grained to very coarse grained, angular to subgranule to very large pebbles, angular to subgranule	bangulár; som	e silt; little		
							moderate cementation	angular, illile c	iay, moist,		
88											
00											
^β											
89											
- 1.00 - 1.00				Topock - Alluvium	SM		(89.5'); decrease in ganules to large pebbles,	increase in si	lt		
일 90				Deposits							
- 180											
<u>91_</u>	120										20 gal of water used
- AR											
୍ଟ୍ର92_											
I											
93											
DATA -				Topock -			(02.5. 04.0') Topode Allunium Dopodito: So	ndy oilt with an	ovol (ML):		
ğ94_				Alluvium	ML		(93.5 - 94.0') Topock - Alluvium Deposits; Sar grayish brown (2.5Y 5/2); no plasticity, no dila	atency; some v	ery fine to		
SMMT				Deposits Topock -	SM		very coarse grained sand, angular to subroun pebbles, angular to subround; little silt; little c				
95				Alluvium Deposits			cementation				
127					1		(94.0 - 95.0') Topock - Alluvium Deposits; Silt dark grayish brown / dark yellowish brown(10	YR 4/2); very	fine		
<u></u> 96							grained to very coarse grained, angular to sul granule to large pebbles, angular to subangul	lar; little clay; t	race		
ONE							cobbles, angular to subangular; moist; moder	ate cementation	on		
[97_							(95.0 - 112.0') Topock - Alluvium Deposits; Sa grayish brown (2.5Y 5/2); no plasticity, no dila	atency; some v	ery fine to		
DOSADE				Topock -	N 41		very coarse grained sand, angular to subangularge pebbles, angular to subangular; trace cl				
- 98_ - 98_				Alluvium Deposits	ML		strong cementation (96'); moist to dry; increase in granules to ver	•			50 gal of water
SERS							decrease in sand, increase in granules to ver		J.,		used
ਲੋ 99	1										
PAG											
- 108 -											
្ន ី 100 Solution	. NR	= No Recov	/ery, USCS =	Unified S	oil Class	sification	n System			1	1
N TOTOS			. 5. 5, 5500 -	5G	J., Olub						
SOIL BC											

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	6 of	16
Date S	Started	: <u>10/03/</u>	2018		Surface	Elevation:	N/A	Bor	ina No	MW-Ld	
Date (Comple	eted: 12/02/2	2018		Northing	g (NAD83):	N/A			inivi Ea	
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD83):	N/A	-	PG&E		
Drilling	g Meth	od: <u>Sonic l</u>	Drilling		Total D	epth:	315 ft bgs	Location:	Groundwa	ater Remedy	Phase I
Driller	Name					le Diameter:	<u>10 in</u>	-	Needles,	California	
Drilling	g Asst:	E. Hue	ellmantel / J.	Campbell	Depth to	o First Water		-			
Logge	r:		<u> McGrane</u>		-	ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>To</u> p	oock	
Editor	:		<u> </u>		-	-	Continuous	-			
Weath	ner:	78 to 8	34° Partly Clo	oudy	Conver	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
 101											
102											50 gal of water used
104											
105											
106	120			Topock - Alluvium Deposits	ML		wet; moderate cementation; decrease is, increase in sand	in granules to	large		
107	-					(107'); pebble	moist to dry; strong cementation; incress, decrease in sand	ease in granule	es to large		
108			MW-L-VAS- 106-111								
109	-		(<0.84 ppb)								
-1 110											
ARCADIS 20180927 P											100 gal of water used
112_						(112.0	- 114.0') Topock - Alluvium Deposits;	Sandy silt with	gravel		
DATABASE FOR .				Topock - Alluvium Deposits	ML	plastic suban	prown (10YR 5/3) little dark reddish brown, no dilatency; some granule to very gular; some very fine to very coarse gragular; trace clay; trace mica; little caliclatation.	large pebbles, ained sand, ar	angular to gular to		
114						(114.0	- 121.0') Topock - Alluvium Deposits; grayish brown (2.5Y 5/2); no plasticity,				
115_						fine to to very	very coarse grained sand, angular to so large pebbles, angular to subangular; large pebbles, angular to subangular; moist; moderate cementation; in	subangular; litt trace clay; tra	le granule ce mica;		
116						(116')	brown (10YR 4/3); no caliche; iron oxic	de staining			
				Topock - Alluvium Deposits	ML						
118											130 gal of water used
%	-										
SETC -	-										
120 Notes	. ND	- No Boos	yory HSCS	- Unified C	oil Class	oification Suc	tom				
Notes	. NK	- IND KECO	very, USCS	- Orillea S	UII Class	sification Sys	lCIII				
OIL BOI											

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log		Sheet:	7 of	16
Date S					Surface			Bori	ing No.:	MW-Ld	
	-		2018					. 🗠			
Drilling	-	Cascad			_	-		Client:	PG&E	D I	Di I
Drilling			Drilling Mare			-	315 ft bgs neter: 10 in			-	Phase I
Driller									Needles, (Jaillomia	
Logge	Drilling Asst: <u>E. Huellmantel / J. Campbell</u> Logger: <u>Sean McGrane</u>						hod: 10 ft Core Barrel	Project Nu	ımher: Ton	nck	
Editor:			AcGrane		Samplir	-		i rojective	лпост. <u>тор</u>	OCK	
Weath			4° Partly Clo		Conver	•		•			
Depth (ft)	Recovery (in)	Sieve	Groundwater	Geologic Formation	USCS	USCS Class				Drilling Notes	Drilling Fluid
De (f	Reco	Sample ID	Sample ID		Sh S	SS	Description			Drilling Notes	Drilling Fluid
	108			Topock - Alluvium Deposits	ML						
	.00						. (121.0 - 126.0') Topock - Alluvium Deposits; § (ML); brown (10YR 4/3) and reddish brown / r 4/4); no plasticity, no dilatency; some granule	moderate brow to very large	vn(5YR pebbles,		
-122							angular to subangular; some very fine to very angular to subangular; trace mica; trace calic				
_123							cementation; iron oxide staining				130 gal of
				Topock - Alluvium	ML						water used
124				Deposits							
125											
126											
							. (126.0 - 131.0') Topock - Alluvium Deposits; S (ML); dark grayish brown / dark yellowish brown plasticity, no dilatency; some granule to very leading to the control of t	wn(10YR 4/2);	no		
127							subangular; some very fine to very coarse grasubangular; trace clay; little mica; moist; weal staining	ained sand, an	gular to		
128				Topock -			:				
129				Alluvium Deposits	ML						
GDT 12							- -				
_130											
1							· ·				
131							. (131.0 - 139.5') Topock - Alluvium Deposits; S	Sandy cilt with	gravel		140 gal of water used
ARC							(ML); dark yellowish brown (10YR 4/4); no pla some very fine to very coarse grained sand, a	asticity, slow d	ilatency;		Water deed
132							little granule to large pebbles, angular to subamica; wet; iron oxide staining				
FOR P							(132'); no dilatency; some granule to large pe subangular; trace clay; iron oxide staining; de	bbles, angular	r to		
133							subangular, trace clay, from oxide staining, de	crease sand,	increase		
る 炎 134											
MTOP I							:				
ଞ୍ଚ୍ଚ135				Topock -							
1 12-4				Alluvium Deposits	ML						
136	182.4			Deposits							
DP/ONE							. (136'); iron oxide staining; increase gravel, de	crease silt			
137											
SGOODS							:				
138											60 gal of water used
C:/\nsi							:				
첫 139											
드 - 140					ML	647	(139.5 - 146.0') Topock - Alluvium Deposits; C	Gravelly silt wit	th sand		
Notes:	NR	= No Recov	ery, USCS =	Unified S	oil Clas	sificati	on System_				
BORING											
SOIL											

AR	CADIS Design & Conformatural a built assets	nsultancy nd	Bor	ing	Log	Sheet	: 8 of	16
Date Starte	ed: <u>10/03/2018</u>	8	Surface E	Elevat	ion: N/A	Boring No.	: MW-Ld	
	oleted: <u>12/02/2018</u>		Northing	-	· · · · · · · · · · · · · · · · · · ·			
Drilling Co.			asting (Client: PG&E		
Drilling Met		T			315 ft bgs	Location: Groundw	-	Phase I
Driller Nam Drilling Ass		el / J. Campbell [Borehole			<u>ineedies,</u>	California	
Logger:		<u>ie</u> S	•			Project Number: To	nock	
Editor:	Sean McGran		Sampling			i roject rumber. <u>10</u>	poor	
Weather:	78 to 84° Part		Converte					
		2 5						
Depth (ft) Recovery (in)	Sieve Ground Sample ID Samp		USCS	USCS Class	Description		Drilling Notes	Drilling Fluid
 141 _142_					(ML); brown (10YR 4/3); no plasticity, no dilat very large pebbles, angular to subangular; so coarse grained sand, angular to subangular; to oxide staining	me very fine to very		
143		Topock - Alluvium	ML ,					60 gal of water
	MW-L-V 141-1 (<0.33)	46) 					useu
145			, ,					
			0					
_146				' (\)"	(146.0 - 151.0') Topock - Alluvium Deposits; S (SM); dark grayish brown / dark yellowish bro		seepage from outside	
147					grained to very coarse grained, angular to sul to very large pebbles, angular to subangular; coarse grained sand, angular to subangular; angular; trace mica; dry; weak cementation; ir	some very fine to very little silt; trace cobbles,	conductor casing. pull 6" casing and 7" conductor	
148		Topock - Alluvium	SM	(0,70,30,0)		casing and install 12" conductor casing. while		
149		Deposits					reinstalling 6" casing to 146`	
5.50 150							bgs, 100 gallons of	
20180927							water added from 116` to	
[151 1 ₂₀							126` bgs, 100 gallons added	40 gal of water
ARCAD					(151.0 - 153.0') Topock - Alluvium Deposits; S (SM); brown (10YR 4/3); very fine grained to		from 126` to 136` bgs and	used
ਲੂ152		Topock - Alluvium	SM :		angular to subround; some granule to very lar subangular; some silt; little clay; trace cobble		60 gall	
OR PLC		Deposits			wet; weak cementation; iron oxide staining; (2			
<u>ช</u> ู้153					(153.0 - 154.0') Topock - Alluvium Deposits; §	Cilty gravel with cond		
A DATA		Topock - Alluvium	GM S		(GM); brown (10YR 4/3); granules to very larg subangular; some very fine to very coarse gra	ge pebbles, angular to		
<u>0</u> _154_		Deposits Topock -) 	0	subangular; some silt; trace mica; moist; wea			
18 SM.		Alluvium Deposits	SM		(154.0 - 155.0') Topock - Alluvium Deposits; S			
[2]155		Topock -			(SM); brown (10YR 4/3); very fine grained to angular to subround; some granule to very lar	rge pebbles, angular to		
- g156		Alluvium Deposits	ML		subangular; some silt; little clay; trace cobble: wet; moderate cementation	s, angular; trace mica;		
ONE ON THE PROPERTY OF THE PRO		Topock -	0	TP	(155.0 - 156.0') Topock - Alluvium Deposits; § (ML); brown (10YR 4/3); low plasticity, no dila	Sandy silt with gravel itency; some granule to	refill casing (110 gallons)	
b		Alluvium Deposits	GM S	705	very large pebbles, angular to subangular; so coarse grained sand, angular to subangular; l	me very fine to very	after sampling from 261-266ft	
		Tour			moist; strong cementation (156.0 - 157.0') Topock - Alluvium Deposits; \$ (GM); brown (10YR 4/3); granules to very larg subangular; some very fine to very coarse gra	ge pebbles, angular to	bgs	50 gal of water
G://USE		Topock - Alluvium Deposits	SM		subangular; little silt; little clay; trace mica; we iron oxide staining			
# 159 A		Debosits			(157.0 - 163.0') Topock - Alluvium Deposits; § (SM); brown (10YR 4/3); very fine grained to angular to subround; some granule to very lan	very coarse grained, rge pebbles, angular to		
୍ <u>ର 160</u> Notes: N		SCS = Unified Sc	il Classi	ficatio	subangular; some silt; little clay; trace mica; n Nestem	noist, strong		
Name of the state	Ho Hoodvery, O	COO OTHICG OO	010331		0,000			
SOIL B								

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ing Log Sheet:	9 of 16
Date S	started	10/03/2	2018	;	Surface	Elevation: N/A Boring No.:	MW-I d
Date C	omple	ted: <u>12/02/</u> 2	2018	1	Northin	(NAD83): N/A	IVIV-LU
Drilling	Co.:	Casca	de	[Easting	NAD83): <u>N/A</u> Client: <u>PG&E</u>	
Drilling	Meth	od: Sonic I	Drilling		Total D	oth: 315 ft bgs Location: Groundwate	er Remedy Phase I
Driller	Name:	Dan O	'Mara	[Boreho	Diameter: 10 in Needles, C	alifornia
Drilling	Asst:	E. Hue	llmantel / J.	Campbell [Depth t	First Water: N/A	
Logge	r:	Sean N	/IcGrane	;	Samplir	Method: 10 ft Core Barrel Project Number: Topo	ck
Editor:		Sean N	<u>//IcGrane</u>	(Samplir	Interval: Continuous	
Weath	er:	<u>78 to 8</u>	4° Partly Clo	oudy (Conver	d to Well: 🗵 Yes 🗌 No	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Description [Orilling Notes Drilling Fluid
	120			Topock - Alluvium Deposits	SM	cementation; iron oxide staining	
 163							50 gal of water
				Topock - Alluvium Deposits	SM	(163.0 - 166.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4); very fine grained to very coarse grained, angular to subangular; some granule to very large pebbles, angular to subangular; some silt; little clay; little mica; wet; weak cementation; iron oxide staining	used
 166							
167				Topock - Alluvium Deposits	GM	(166.0 - 167.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); brown (10YR 4/3); granules to boulders, angular to subangular; some very fine to very coarse grained sand, angular to subangular; little silt; little clay; some mica; wet; strong cementation; iron oxide	
168				Topock - Alluvium Deposits	SM	staining (167.5 - 170.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10YR 4/3); very fine grained to very coarse grained, angular to subround; some granule to very large pebbles, angular to subangular; some silt; little clay; trace mica; wet; strong cementation; iron oxide staining	
K DATABASE FOR PLOG GPJ ARCADIS 20180827 P	120			Topock - Alluvium Deposits	GM	(170.0 - 174.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); brown (10YR 5/3); granules to boulders, angular to subangular; some very fine to very coarse grained sand, angular to subangular; little silt; trace clay; some mica; wet; strong cementation; iron oxide staining	45 gal of water used
NE_1_124_2018_SWITOPOC				Topock - Alluvium Deposits	GM	(174.0 - 176.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); dark grayish brown / dark yellowish brown(10YR 4/2); granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some silt; little clay; some mica; wet; strong cementation; iron oxide staining	
ODS/DESKTOP/ONEDRIN				Topock - Alluvium Deposits	SM	(176.0 - 177.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3); very fine grained to very coarse grained, angular to subangular; some small to very large pebbles, angular to subangular; some silt; little clay; little mica; wet; strong cementation; iron oxide staining	
				Topock - Alluvium Deposits	SM	(177.5 - 181.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3); very fine grained to very coarse grained, angular to subangular; one silt; little small to very large pebbles, angular to subangular; trace clay; little mica; wet; moderate cementation; iron oxide staining	20 gal of water used
SNotes:	NR	= No Recov	very, USCS =	= Unified So	oil Clas	fication System	
NON NO							
SOILE							

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sheet	:: 10 of	16
Date S				;	Surface	Elevati	on: N/A	Boring No.	: MW-Ld	
	•		2018			g (NAD	•			
Drilling		<u>Casca</u>			_	(NAD8	•	Client: PG&E		
Drilling			Drilling				315 ft bgs		-	Phase I
Driller						le Diam		Needles,	California	
Drilling			ellmantel / J.	•	•					
Logger			<u>//cGrane</u>		-	-		_ Project Number: <u>To</u>	pock	
Editor:		· ·			-	ng Interv		-		
Weath	er:	78 to 8	34° Partly Clo		Conver	ted to W	/ell: X Yes No			1
Depth (ff)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Description		Drilling Notes	Drilling Fluid
	134.4			Topock - Alluvium Deposits	SM					
182 _183_				Topock - Alluvium	MI	11444	(181.5 - 184.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (10YR 5/3); medium plasticity, slow dilatency; some granule to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subround; wet; iron oxide staining		20 gal of wate	
_ 184_			MW-L-VAS- 181-186 (3.3 ppb)	Deposits						used
185 186				Topock - Alluvium Deposits	SM		(184.5 - 186.5') Topock - Alluvium Deposits; (SM); brown (10YR 5/3); very fine grained to angular to subround; some small to very larg subangular; some silt; trace clay; some mica	very coarse grained, e pebbles, angular to		
100										
187 				Topock - Alluvium Deposits	ML		(186.5 - 188.5') Topock - Alluvium Deposits; (ML); brown (7.5YR 4/3); no plasticity, no dila very large pebbles, angular to subangular; so coarse grained sand, angular to subangular; cementation; iron oxide staining	atency; some granule to ome very fine to very		
							(188.5 - 195.0') Topock - Alluvium Deposits; (SM); brown (7.5YR 5/4); very fine grained to	very coarse grained,		
190							angular to subangular; some granule to very subangular; some silt; little clay; some mica; cementation; iron oxide staining			
	120			Topock -						35 gal of wate used
192 - 193 - 193				Alluvium Deposits	SM					
WARE										
							(195.0 - 201.0') Topock - Alluvium Deposits;	Sandy silt with gravel		
							(ML); reddish brown / moderate brown(5YR 44/3); low plasticity, no dilatency; some granul angular to subangular; some very fine to very angular to subangular; trace clay; some mica	4/4) and brown (10YR le to very large pebbles, / coarse grained sand,		
				Topock -			cementation; iron oxide staining	. ,		
				Alluvium Deposits	ML					20 gal of wate used
55										
200	V 10	- No Deed	(on/ 11000	- Heifie - C	il Cl-	ification	a Suntam			
Notes:	NK	- NO Keco	very, USCS =	- onlinea So	Ulas:	silicatioi	ı əystem			
DIL BOF										
<u>ω</u>										

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	11 of	16
Date S	Started	: <u>10/03/</u> 2	2018		Surface	Elevati	on: <u>N/A</u>	Borine	a No .	MW-Ld	
Date 0	Date Completed: 12/02/2018					g (NAD	33): <u>N/A</u>		9 110	<u> La</u>	
Drilling	g Co.:	Casca	de		Easting	(NAD8			G&E		
Drilling	y Meth	od: <u>Sonic I</u>	Drilling		Total D	epth:	315 ft bgs	Location: G	roundwat	er Remedy	Phase I
Driller			'Mara			le Diam		<u>Ne</u>	eedles, C	alifornia	
Drilling	g Asst:		ellmantel / J.		•						
Logge			<u> </u>		-	-		Project Numb	ber: <u>Topo</u>	ock	
Editor:			McGrane		•	•		-			
Weath	er:	<u>78 to 8</u>	4° Partly Clo		Conver	ted to W	/ell: X Yes No				
Depth (ff)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Description			Drilling Notes	Drilling Fluid
	100			Topock - Alluvium Deposits	ML						
	120						(201.0 - 205.0') Topock - Alluvium Deposits; (SM); brown (10YR 5/3); very fine grained to angular to subround; some granule to very la	very coarse graine rge pebbles, angu	ed, ular to		
							subround; some silt; trace clay; some mica; d cementation; iron oxide staining	lry to moist; mode	rate		
203				Topock - Alluvium	SM						20 gal of water
				Deposits	0						used
204											
205							(205.0 - 206.5') Topock - Alluvium Deposits;	Sandy silt with gra	avel		
-				Topock - Alluvium	ML		(ML); brown (10YR 5/3) and reddish brown / (4/4); no plasticity, no dilatency; some granule	moderate brown(5	5YR		
206				Deposits	IVIL		some very fine to very coarse grained sand, a trace clay; little mica; wet; medium stiff; mottle	angular to subang	ıular;		
							iron oxide staining				
_207				Topock - Alluvium	GM		(206.5 - 208.0') Topock - Alluvium Deposits; (GM); dark grayish brown / dark yellowish brown	own(10YR 4/2); gra	ranules		
208				Deposits		69 D	to very large pebbles, angular to subangular; to very coarse grained sand, angular to subar	ngular; little clay; t	ry fine trace		
200						d'X'i	mica; moist; moderate cementation; iron oxid (208.0 - 215.0') Topock - Alluvium Deposits;		and		
209							(GM); dark grayish brown / dark yellowish broto very large pebbles, angular to subangular;	own(10YR 4/2); gra	anules		
12 TO						12 P	dilatency; some very fine to very coarse grain subangular; some silt; little clay; trace mica; r	ed sand, angular	to		
210							cementation; iron oxide staining	noist, moderate			
80927 F						6 P D					
Se 211	133.2										40 gal of water
ARCAL	133.2			Topock - Alluvium	GM	6 p					used
212				Deposits	Givi	BHI					
R PLO						P P					
일 월_213_						5 Pid					
DATAB/						de					
ğ 214_						19 Pid					
SMATO						H					
ຊຶ່_215_				Tanaak		l° Did	(0.45.0.00) T				
- 12				Topock - Older	SM		(215.0 - 216.0') Topock - Older Alluvium Dep gravel (SM); brown (7.5YR 4/4) and reddish b	prown (5YR 5/4); v	very fine		
216_				Alluvium Deposits			grained to very coarse grained, angular to su to very large pebbles, angular to subangular;	some silt; trace m			
NO/90							moist; mottled; weak cementation; iron oxide (216.0 - 219.5') Topock - Older Alluvium Dep		vith		
됩_217							gravel (SM); reddish brown / moderate brown grained to very coarse grained, angular to su	n(5YR 4/4); very fir	ne		
S000				Topock - Older	014		to very large pebbles, angular to subangular;				
218				Alluvium Deposits	SM		iron oxide staining				20 gal of water used
C:VUSE			MW-L-VAS-	2000000							
ž 219_			218-223								
G&E TC			(66 ppb)		GM	ly ll	(219.5 - 222.0') Topock - Older Alluvium Dep	osits; Silty gravel v	with		
220 Notes:	NR	= No Recov	very, USCS =	Unified S		sificatio					
ORING NO.			. 5. ,, 5555	254 0	J CIGO		, , , , , , , , , , , , , , , , , ,				
SOILE											

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log		Sheet:	12 of	16
Date S	Started	10/03/2	2018		Surface	Eleva	ation: <u>N/A</u>	Bor	ina No.:	MW-Ld	
Date 0	Comple	ted: <u>12/02/</u> 2	2018		Northing					<u></u>	
Drilling		Casca	de		Easting	•	,	Client:	PG&E		
Drilling			Drilling		Total De	-	_	Location:		ter Remedy	Phase I
Driller					Borehol				Needles, C	California	
Drilling	•		<u>llmantel / J. (</u>	-	-						
Logge			<u>//cGrane</u>			-		Project Nu	ımber: <u>Top</u>	ock	
Editor:			<u>//cGrane</u>		Samplin	-					
Weath	er:	<u>78 to 8</u>	4° Partly Clo		Convert	ed to	Well:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
 221 	111.6		MW-L-VAS- 218-223 (66 ppb)	Topock - Older Alluvium Deposits	GM		sand (GM); reddish brown / moderate brown(s very large pebbles, angular to subangular; sor coarse grained sand, angular to subround; sor iron oxide staining	me very fine to	o very		
							(222.0 - 227.5') Topock - Older Alluvium Depo gravel (ML); reddish brown (5YR 5/4) with gra	osits; Sandy si	ilt with		
223							6/1); no plasticity, no dilatency; some granule angular to subangular; some very fine to very	to very large	pebbles,		20 gal of water
							angular to subangular; trace clay; little mica; n mottled; moderate cementation; iron oxide sta	moist; stiff to v	ery stiff;		used
224				Topock -							
 _225				Older	ML						
				Deposits							
226											
227											
228							(227.5 - 236.0') Topock - Older Alluvium Depo gravel (ML); reddish brown (5YR 5/4); no plas granules to very large pebbles, angular to sub	sticity, no dilate pangular; som	ency; some e very fine		
229							to very coarse grained sand, angular to suban mica; moist; stiff to very stiff; moderate cemen staining	ngular; little cla ntation; iron ox	ay; little kide		
230_							(230') yellowish red (5YR 4/6); dry; very stiff; s	strong cement	tation; iron		
= - = _231_							oxide staining				
23 [120			Topock -							
232				Ölder Alluvium	ML						
				Deposits							
233											1125 gal used
											1125 gai useu
234							(233.5'); trace clay; iron oxide staining; increas	ise in sand an	d silt		
235											
236_							(236.0 - 240.0') Topock - Older Alluvium Depo	osits; Sandy si	ilt with		
							gravel (ML); reddish brown (5YR 5/4); no plas granule to very large pebbles, angular to suba to very coarse grained sand, angular to suban	angular; some	very fine		
				Topock -			subangular; trace clay; little mica; moist to well iron oxide staining				
238				Older	ML		l l l l l l l l l l l l l l l l l l l				
				Deposits							
239_											
240 Notes:	NR	= No Recov	/ery, USCS =	Unified S	oil Class	⊥	on System				
							,				
<u> </u>											

9/	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	: 13 of	16
Date S	tarted	10/03/2	2018		Surface	Eleva	tion: N/A	Boi	ring No	: MW-Ld	
Date C	omple	ted: 12/02/2	2018		Northing	JAN) g	083): <u>N/A</u>		ing ito.	. <u>IVIVV-Lu</u>	
Drilling	Co.:	Cascac	de		Easting	(NAD	33): <u>N/A</u>	Client:	PG&E		
Drilling	Meth	od: Sonic [Drilling		Total De	epth:	315 ft bgs	Location:	Groundw	ater Remedy	Phase I
Driller I	Name:	Dan O'	Mara		Borehol	e Diar	neter: 10 in		Needles,	California	
Drilling	Asst:	E. Hue	Ilmantel / J. (<u>Campbell</u>	Depth to	First	Water: N/A				
Logger	:	Sean N	/IcGrane		Samplin	ig Met	nod: <u>10 ft Core Barrel</u>	Project N	lumber: <u>To</u>	pock	
Editor:		Sean N	/IcGrane		Samplin	g Inte	val: <u>Continuous</u>				
Weath	er:	78 to 8	4° Partly Clo	udy	Convert	ed to	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Descript	ion		Drilling Notes	Drilling Fluid
241 242 243 244	120			Topock - Older Alluvium Deposits	SM		(240.0 - 244.0') Topock - Older Alluviu gravel (SM); reddish brown / moderate grained to very coarse grained, angula to very large pebbles, angular to subre subangular; little mica; wet; iron oxide	e brown(5YR 4/4); ve ar to subangular; sor ound; some silt; trac	ery fine ne granule		
245							(244.0 - 254.0') Topock - Older Alluviu gravel (ML); reddish brown / moderate no dilatency; some granule to very lar subangular; some very fine to very co subangular; little mica; moist to wet; n staining	e brown(5YR 4/4); no ge pebbles, angular arse grained sand, a	plasticity, to ingular to		1125 gal used 1100 gal of water used 1100 gal of water used
											water useu
247											
248 				Topock - Older	ML						
GDT 12				Alluvium Deposits	IVIL						
^{වී} _250_											
180927											
g251	114										
ARCAL	114										
252											
- OR PLOC											
253253											40 gal of water used
5											
Jack Strategies							(254.0 - 258.0') Topock - Older Alluviu			1	
255				Topock -			gravel (ML); reddish brown / moderate no dilatency; some granule to very lar subangular; some very fine to very co subangular; trace cobbles, angular; tr medium stiff to stiff; weak cementation	ge pebbles, angular arse grained sand, a ace clay; little mica;	to ingular to moist;		
256_				Older Alluvium	ML			J			
NO MODE				Deposits							
257											
00MI ₈ 258											140 gal of
259				Topock - Older Alluvium Deposits	ML		(258.0 - 262.5') Topock - Older Alluviu gravel (ML); reddish brown / moderate plasticity, no dilatency; some granule subangular; some very fine to very co subangular; little clay; little mica; mois cementation; iron oxide staining	e brown(5YR 4/4); m to very large pebbles arse grained sand, a	edium s, angular to angular to		water used
Notes:	NR	= No Recov	ery, USCS =	Unified S	oil Class	sificati	on System			1 1	
SI S			,,	2154 0	5.400		- J				
SOIL B											

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log	Shee	et: 14 of	16
Date S	Started	10/03/2	2018		Surface			Boring No	.: MW-Ld	
	-		2018		Northing			-	<u> </u>	
Drilling		Casca			Easting	•	•	Client: PG&E		Di I
Drilling Driller			Drilling 'Mara		Total De Borehol	-	315 ft bgs neter: 10 in	Location: Ground	water Remedy s, California	Phase I
Drilling			ellmantel / J.					Needles	<u>,, CalliOffila</u>	
Logge			McGrane	-	-			Project Number: T	opock	
Editor:			<u> McGrane</u>		-	-		-		
Weath	er:	78 to 8	84° Partly Clo	oudy	Convert	ed to	Well: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Description		Drilling Notes	Drilling Fluid
	108			Topock - Older Alluvium Deposits	ML		(261'); dry to moist; moderate cementation; in	on oxide staining		
262				Deposits						
					1	HH	(262.5 - 283.0') Topock - Older Alluvium Dep	osits; Sandy silt with	-	140
263			MW-L-VAS-				gravel (ML); dark reddish brown (2.5YR 3/4); dilatency; some granule to very large pebbles	s, angular to subangular;		140 gal of water used
			261-266 (<0.17 ppb)				some very fine to very coarse grained sand, a little clay; little mica; wet; medium stiff; iron or	angular to subangular; xide staining		
265										
266										30 gal of water
_267										3333
268 							(268'); some clay; little granule to very large p subangular; little very fine to very coarse grai subangular; moist; stiff; weak cementation; in	ned sand, angular to		
20180927 PI										
271_	138			Topock - Older						
J ARC				Alluvium Deposits	ML					40 gal of water used
<u>9</u> 272				2 opcosts						
FOR -										
273										
5 274										
SIMITOF										
275_										
/E_1_1/2										
276_										
277 277 277										
277										
278_										
NUSER										
ğ 279_										
98E TOF										
280 Notes:	NR	= No Recov	very, USCS :	 = Unified S	oil Class	ificati	n System			
ORING NING	1411	11011000	. 5. , , 5555	5.moa 0	O.u.s.		5 5 ₃ 5.6			
SOILB										

9/	۱RC	CADIS	Design & Consultancy for natural and built assets		Во	rir	ng	Log		Sheet	: 15 of	16
Date S	Started	: <u>10/03/</u>	2018	;	Surface	Ele	vat	ion: <u>N/A</u>	Bor	ina No	: <u>MW-Ld</u>	
Date C	Comple	eted: <u>12/02/</u>	2018	!	Northing	g (N	AD	83): <u>N/A</u>			. <u>iiii La</u>	
Drilling		<u>Casca</u>			Easting				_ Client:	PG&E		
Drilling			Drilling					315 ft bgs	_ Location:		ater Remedy	Phase I
Driller			'Mara		Borehol				_	Needles,	California	
Drilling			ellmantel / J.						-			
Logge			<u>McGrane</u>		•	_			Project N	umber: <u>To</u>	pock	
Editor:			McGrane		-	_			-			
Weath	er:	<u>/8 to 8</u>	34° Partly Clo		Convert	ea t	:O V	Vell: ⊠ Yes □ No			Γ	Г
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	SOS	Class	Description			Drilling Notes	Drilling Fluid
	120			Topock - Older Alluvium	ML							
282				Deposits								
283						\mathbb{H}	+	(283.0 - 299.0') Topock - Older Alluvium Dep	osits; Gravelly	silt with		
								sand (ML); reddish brown / moderate brown(plasticity, no dilatency; some granule to very subangular; little very fine to very coarse gra subangular; little silt; little clay; trace mica; m cementation; iron oxide staining	5YR 4/4); med large pebbles ined sand, and	lium , angular to gular to		
285								cementation, non oxide staining				
286												
_287												
288												
289												
3.GDT												
_290												
4RCADIS 2018095	120			Topock - Older Alluvium Deposits	ML							
292 292				2 opcone								
DATABASE FC												
294												
295												
296											lost core down	
TIOPIC											hole.	
_297												
298												
299_ 299			MW-L-VAS- 299-304	<u> </u>		K	\perp	(299.0 - 306.0') (NR); No Recovery, sample 1	fell out of core	barrel.	Attempted to collect GW	
300			(Did not		NR	\bigvee					sample but formation was	
Solution Notes:	NR	R = No Reco	very, USCS	= Unified So	oil Class	sifica	atio	n System				
BORIN												
SOIL												

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	16 of	16
Date S	Started	10/03/2	2018		Surface	Elevation:	N/A	Bor	ina No :	MW-Ld	
Date 0	Comple	ted: <u>12/02/</u> 2	2018		Northing	g (NAD83):	N/A		g 110	IVIV EU	
Drilling	g Co.:	Casca	de		Easting	(NAD83):	N/A	Client:	PG&E		
Drilling	Meth	od: <u>Sonic I</u>	Drilling		Total De	epth:	315 ft bgs	Location:	Groundwa	ter Remedy	Phase I
Driller						e Diameter:			Needles, 0	California	
Drilling			ellmantel / J. (-	-						
Logge			<u> McGrane</u>		-	ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>Top</u>	ock	
Editor:					-	ng Interval:	Continuous				
Weath	er:	<u>78 to 8</u>	4° Partly Clo		Conver	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
			produce)							non-permeable and produced	
301	36					\ /				no water.	
	30					\ /					
302			MW-L-VAS- 299-304			\					
L _			(Did not produce)			\					
303					NR	Y					
L _					1417						
304						/ \					
						/ \					
305						/ \				Drill rods	
L -						/ \				chattering	
306					-	H					
						silt (M	I - 311.0') Topock - Weathered Bedrock L); dark reddish brown(2.5YR 3/3); med	dium plasticity,	no		
_307	18						ncy; some fine to medium grained sand, granule to small pebbles, angular to sub		subround;		
L -						coarse	e-grained sand; trace mica; dry; very sti kide staining		entation;		
308				Topock -			ado otali ili g				
				Weathered	ML						
309_				Bedrock - conglomerat	e						
<u> </u>											
310_											
§311					_	(211.0	- 315.0') Topock - Bedrock - metadiori	to: dr.: Dortiol	h/	Rough drilling	
	84					Weath	nered Metadiorite	ie, ury, Farilai	y		
g 312											
유 -				.							
313_				Topock - Bedrock -							
<u> </u>				metadiorite						Core barrel	
314_										stuck down hole. Pulled	
										both core barrel and 6"	
315						<u> </u>	End of Boring at 315.0 '	bas.		casing.	
							1 3g at 5 70.0	J -			
_316											
317											
_318											
<u>_</u> 319_											
<u>-</u>											
320 Notes:	ND	= No Reco	very, USCS =	Unified 9	oil Class	sification Sve	:tem				
TINOICS.	INIX	- 140 1/600	voi y, 0000 -	Jillieu 3	UII UIAS	sinoalion Sys	nom				
<u></u>											

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	1 of	10
Date Starte	d: <u>10/18/</u>	2018		Surface			Bori	ina No.:	IRZ-20 I	Pilot
-		2018				· · · · · · · · · · · · · · · · · · ·	_			
Drilling Co.:				_		-	Client:	PG&E		
Drilling Met		Drilling			-	187 ft bgs			ater Remedy	Phase I
Driller Name		nos/S. Vasque					-	Needles,	California	
Drilling Assi	-	mer/C.Alverez or Mills		Samplir			- Project Nu	ımbor: Toı	nock	
Logger: Editor:		McGrane		Samplir			_ Project Nu	illibel. <u>To</u> l	JUCK	
Weather:		Warm to hot		Conver			-			
				1						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
1			Topock - Fluvial Deposits	GW-GM		(0.0 - 4.0') Topock - Fluvial Deposits; Well gr sand (GW-GM); very pale brown (10YR 8/3); pebbles, angular to subround; and very fine t sand, angular to round; little silt; trace cobble dry (4.0 - 5.5') Topock - Fluvial Deposits; Poorly; (SP-SM); very pale brown (10YR 8/3); very file	granules to ve o very coarse (ss, angular to s	iry large grained ubangular; ith silt		
5			Fluvial Deposits	SP-SM		grained, angular to subround; little silt; dry; h	omogeneous			
6 7			Topock - Fluvial Deposits	SM		(5.5 - 7.0') Topock - Fluvial Deposits; Silty sa (10YR 8/3); very fine grained to very coarse (and silt; trace granule to small pebbles, angu	grained, angula	ar to round;		
1.78			Topock - Fluvial Deposits	SM		(7.0 - 13.0') Topock - Fluvial Deposits; Silty s brown (10YR 8/3); fine grained to fine grained silt; dry (13.0 - 15.0') Topock - Fluvial Deposits; Silty	sand (SM); ve	ry pale		
1414			Topock - Fluvial Deposits	SM		brown (10YR 8/3); very fine grained to very c subround; little silt; trace granules to very lar subround; trace cobbles, angular to subround	oarse grained, ge pebbles, and d; dry	angular to gular to		
28KTOP/ONEDRIVE_1.124			Topock - Fluvial Deposits	SM		(15.0 - 17.0') Topock - Fluvial Deposits; Silty brown (10YR 8/3); very fine grained to fine grabbround; little silt; dry	sand (SM); ver rained, angular	ry pale · to		
			Topock - Fluvial Deposits	GM		(17.0 - 33.0') Topock - Fluvial Deposits; Silty grayish brown (10YR 5/2); very fine grained to round; some fine to very coarse grained so little silt; little clay; trace cobbles, angular to s	o coarse grain	ed, angular round;		
Notes: U	SCS = Unifie	d Soil Classific	ation Sys	stem						
BORIN										
Nos										

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	2 of	10
Date Started	·				Elevation:	N/A	Bor	ing No.:	IRZ-20 F	Pilot
	eted: <u>11/30/</u>				g (NAD83):	N/A	. ———			
Drilling Co.:	Casca			_	j (NAD83):	N/A	Client:	PG&E		
Drilling Meth		•		Total D	-	187 ft bgs	Location:		ater Remedy	Phase I
Driller Name		<u>nos/S. Vasqւ</u>			le Diameter:		-	Needles,	California	
Drilling Asst	-	mer/C.Alverez		-	o First Water					
Logger:	Conno				ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>To</u> r	oock	
Editor:		<u> McGrane</u>		-	ng Interval:	Continuous	-			
Weather:	<u>Sunny</u>	Warm to hot		Conver	ted to Well:	☐ Yes ⊠ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
<u> </u>										
25										
_26			Topock -							
			Fluvial Deposits	GM						
29										
30										
ARCADIS 20180927										
32_										
O L										
33 33 33 33 33 33 33 33 34						36.0') Topock - Fluvial Deposits; Silty				
34_					round;	(10YR 5/3); very fine grained to coarse some silt; little clay; trace granules to				
SMTOP			Topock - Fluvial	SM	subrou	ınd; dry				
_35			Deposits	SIVI						
-172										
36					(36.0 -	39.0') Topock - Fluvial Deposits; Silty	sand with grav	vel (SM);		
0dol					suban	(10YR 4/3); very fine grained to very congular; little granule to very large pebble lt; dry; strong cementation	oarse grained, s, angular to s	angular to subround;		
30008/00			Topock - Fluvial	SM	inue Si	is, ary, surong contentation				
38			Deposits							
S C C C C C C C C C C C C C C C C C C C										
39			Topock -			47.0') Topock - Alluvium Deposits; Silt				
40 d			Alluvium Deposits	SM	grayisi	n brown (10YR 5/2); very fine grained to rr to subangular; and granule to very la	o very coarse rge pebbles, a	granieu, ingular to		
	SCS = Unified	d Soil Classif		stem	1 • r · h' 'I			L		
ORING										
SOILE										

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	: 3 of	10
Date S	started	: <u>10/18/</u>	2018		Surface	e Elevation:	N/A	Bor	ina No.	: <u>IRZ-20 F</u>	Pilot
	•	eted: <u>11/30/</u>				g (NAD83):	N/A	_			
Drilling		<u>Casca</u>			Easting	j (NAD83):	N/A	Client:	PG&E		
Drilling			Drilling		Total D	-	187 ft bgs	_ Location:		ater Remedy	Phase I
Driller			<u>nos/S. Vasqւ</u>			le Diameter:	<u>6 in</u>	_	Needles,	California	
Drilling		-	mer/C.Alvere			o First Water:		-			
Logge		Conno			-	ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>To</u>	pock	
Editor:			<u>McGrane</u>		-	ng Interval:	Continuous	-			
Weath	er:	Sunny	Warm to hot		Conver	ted to Well:	☐ Yes ⊠ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
						subrou	ind; little silt; trace clay; dry				
41											
	96										
42											
43				Topock -							
-				Alluvium	SM						
44				Deposits							
45											
46											
47						0 (47.0 -	56.0') Topock - Alluvium Deposits; Sili	ty gravel with s	and (GM):		
		IRZ-20-SS- 45-50				brown	(10YR 4/3); granules to large pebbles, very fine to coarse grained sand, angu	angular to sul	pangular;		
48						moist	very lifte to coarse grained saild, aligu	iai to Subiouiit	i, iittie Siit,	Soil starts	
										getting moist	
.06.GDT 12/4/18											
3.GDT											
⊒ I											
ARCADIS 20180927 F											
51				T		PJ 67					
				Topock - Alluvium	GM						
52	114			Deposits		2119					
ORPL		IRZ-20-SS- 50-55				2					
53		00 00	ID7 00) (4 0								
53			1RZ-20-VAS- 51-56			6 P P					
54			(150 ppb)			(54'); v	vet			Approximate	
SMIT						PD (37, "				depth of water table	
55						SPIC					
1						d for					
56				Tongols		0 \ \ (56.0 -	57.0') Topock - Alluvium Deposits; Sil	ty sand with or	avel (SM)·		
NO/QO				Topock - Alluvium	SM	dark gr	rayish brown / dark yellowish brown(10	YR 4/2); very	fine		
57				Deposits		pebble	d to coarse grained, angular to subrou s, angular to subangular; some silt; we	et			
SGOODS		IRZ-20-SS- 55-60				(57.0 - brown	65.0') Topock - Alluvium Deposits; Sil' / moderate yellowish brown(10YR 5/4)	ty sand (SM); y); very fine grai	ellowish ned to fine		
58		-2 00		Tonosti		grained	d, angular to subround; and silt; trace on singular to subround; moist				
O:NUSE				Topock - Alluvium	SM	pennie	o, angular to subround, Moist				
¥59				Deposits							
8E TOI											
60 Notes	110	00 11:15	d Call Olere (ination O	1						
Notes:	US	CS = Unitie	d Soil Classif	ication Sys	siem						
OIL BOI											
<u>ა</u>											

9/	AR (CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	: 4 of	10
Date S					Surface			Bor	ina No.	: <u>IRZ-20 l</u>	Pilot
	•	eted: <u>11/30/2</u>			Northing	•	•	_			
Drilling	-	Cascad			Easting			_	PG&E		
Drilling	-		-		Total De	-	187 ft bgs			ater Remedy	Phase I
Driller Drilling			nos/S. Vasqu ner/C.Alverez				eter: <u>6 in </u>	_	<u>ineedies,</u>	California	
Logge	-	<u>1. Alyli</u> Connoi		<u> </u>	Samplin			- _ Project Nı	ımber: To	nock	
Editor			1cGrane		Samplin	-		_ 1 10,000114		poor	
Weath			Warm to hot		Convert	-		_			
	>	-		υ <u>Ε</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
61 62 63 64	96	IRZ-20-SS- 60-65		Topock - Alluvium Deposits	SM						
65							(65.0 - 69.0') Topock - Alluvium Deposits; Sa (10YR 5/3); no plasticity; some very fine to c angular to subround; little small pebbles, and	oarse grained	sand,		
66 67				Topock - Alluvium	ML			,	,		
68		IRZ-20-SS- 65-70		Deposits							
69_							(69.0 - 71.0') Topock - Alluvium Deposits; Sa (7.5YR 4/4); no plasticity; some fine to coars	e grained sand	l, angular		
70				Topock - Alluvium Deposits	ML		to subround; little granule to small pebbles, a moist	angular to suba	ingular;		
71 							(71.0 - 77.0') Topock - Alluvium Deposits; Sa (7.5YR 4/4); no plasticity; and silt; little very f sand, angular to subround; trace granule to to subangular; moist	fine to coarse of	rained		
		IRZ-20-SS- 70-75					to coolingular, model				
74				Topock - Alluvium Deposits	CL						
75											
76											
77		•					(77.0 - 83.0') Topock - Alluvium Deposits; Sa	andv silt (ML): I	orown		
 78		IRZ-20-SS- 75-80					(7.5YR 4/4); no plasticity; some very fine to rangular to subround; trace granule, angular to	medium graine	d sand,		
79				Topock - Alluvium Deposits	ML						
80											
Notes	: US	CS = Unified	Soil Classifi	cation Sy	stem						

SOIL

9/	ARCADIS Design & Consultancy for natural and built assets Started: 10/18/2018				Boring Log					Sheet:	5 of	10
Date S	Started	: <u>10/18/</u>		Surface	Ele	/ation:	N/A	Bor	ina No.:	IRZ-20 F	Pilot	
	-	eted: 11/30/2			Northing			N/A	. 🗠			
Drilling	-	Casca			Easting			N/A	Client:	PG&E	. (Diameter 1
Drilling Driller	-		Drilling		Total De Borehol	-		187 ft bgs 6 in	Location:		ater Remedy	Phase I
Drilling			nos/S. Vasqu ner/C.Alverez		Depth to					<u>ineedies,</u>	California	
Logge	-	Conno			Samplin			10 ft Core Barrel	Project Nu	umber: To	oock	
Editor			McGrane		Samplin	_		Continuous				
Weath	er:	<u>Sunny</u>	Warm to hot		Convert	ed to	Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs	500	Description			Drilling Notes	Drilling Fluid
81 82	114			Topock - Alluvium Deposits	ML							
		IRZ-20-SS-										
83		80-85			. 		(02.0	107.0') Topock - Older Alluvium Depos	site. Cilty again	(CM).		
							:: brown	(10YR 4/3); very fine grained to coarse and; and silt; little granule to small pebb	grained, ang	ular to		
84			IRZ-20-VAS-					gular; wet	iles, aligulai ti			
			82-87 (<0.33 ppb)									
85			(
86												
87												
ļ -		IRZ-20-SS- 85-90										
88		65-90										
89												
90												
ARCAL				Topock - Older	SM							
92	132			Alluvium Deposits	0							
		IRZ-20-SS- 90-95										
93												
94 <u>_</u>												
5 – – 5 <u>–</u> 95_												
124												
<u></u> 96												
97												
0000		IRZ-20-SS- 95-100										
98												
- - 												
PA-0-1												
100												
Notes:	US	CS = Unified	d Soil Classifi	cation Sys	stem							
E E E E												

9/	ARCADIS Design & Consultancy for natural and built assets atte Started: 10/18/2018				Во	ring	Log	Shee	t: 6 of	10	
		·			Surface			Boring No.	: IRZ-20 I	Pilot	
Date C Drilling		eted: <u>11/30/</u> <u>Casca</u>			Northing Easting		· · · · · · · · · · · · · · · · · · ·	Client: PG&E			
Drilling					Total D	•	187 ft bgs	Location: Groundy	vater Remedy	Phase I	
Driller			nos/S. Vasqı		Boreho	•	-		, California		
Drilling		-	mer/C.Alvere		-		Water: N/A	<u> </u>			
Logge Editor:		Conno	o <u>r Mills</u> McGrane		Samplir Samplir	-		Project Number: To	pock		
Weath		<u></u>	Warm to ho		Conver	-		-			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description		Drilling Notes	Drilling Fluid	
101											
102	120	IRZ-20-SS-									
103		100-105		Topock - Older	SM						
104				Alluvium Deposits	Olvi						
105											
106											
108		IRZ-20-SS- 105-110		Topock - Older Alluvium	SM	(107.0 - 109.0') Topock - Older Alluvium Deposits; Sandy silt with gravel (SM); brown (7.5YR 4/3); fine grained to coarse grained, angular to subround; and silt; little granule to small pebbles, angular to subangular; wet					
109 124/18				Deposits			(109.0 - 117.0') Topock - Older Alluvium Dep brown (10YR 4/3); no plasticity; some fine to		_		
ARCADIS 20180927 PLOG.							angular to subround; trace granule, angular to wet				
S PLO	103.2	IRZ-20-SS- 110-115		Topock - Older	ML						
SMTOPOCK DATABASE FOF			ID7 00 V40	Alluvium Deposits	IVIL						
115			IRZ-20-VAS- 112-117 (<0.17 ppb)								
116											
117_		IRZ-20-SS- 115-120					(117.0 - 123.0') Topock - Older Alluvium Dep strong brown (7.5YR 4/6); no plasticity; little (granule to medium	_		
_118		113-120		Topock - Older	N 41		pebbles, angular to subangular; little fine to c angular to subround; wet	oarse grained sand,			
T119				Alluvium Deposits	ML						
120 Notes:	H	CS = Unific	d Soil Classit	fication Sva	tem						
SHOIRS.	08	oo – omine	u ooli Olassii	iicauoii SyS	CIII						
SOIL B.											

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo	g		Sheet:	7 of	10
Date S	Started	: <u>10/18/</u>	2018	{	Surface	Elev	ation:	N/A	Bori	ina No.:	IRZ-20 F	Pilot
Date C	Comple	eted: <u>11/30/</u>	2018	1	Northin	g (NA	D83):	N/A		9	1112 201	<u> </u>
Drilling		<u>Casca</u>			Easting		083):	N/A		PG&E		
Drilling			Drilling			-		187 ft bgs			ater Remedy	Phase I
Driller			nos/S. Vasqu					<u>6 in</u>	-	Needles,	California	
Drilling		-	ner/C.Alverez		•		t Water		-			
Logge		<u>Conno</u>			Samplir	•		10 ft Core Barrel	Project Nu	ımber: <u>To</u> ı	pock	
Editor:			<u>McGrane</u>		-	-		Continuous	-			
Weath	er:	Sunny	Warm to hot		Convert	ea to	vveii:	☐ Yes ⊠ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Description			Drilling Notes	Drilling Fluid
 121 _122_ 	132	IRZ-20-SS- 120-125		Topock - Older Alluvium Deposits	ML							
123				Topock - Older Alluvium	GM		sand (- 124.5') Topock - Older Alluvium Dep GM); yellowish brown / moderate yellow es to very large pebbles, angular to sul	wish brown(10 bangular; som	YR 5/4); e silt; little		
124				Deposits			very fir	ne to coarse grained sand, angular to s				
125							brown	- 127.0') Topock - Older Alluvium Dep (7.5YR 4/3); no plasticity; little granule	to medium pe	bbles,		
126				Topock - Older Alluvium Deposits	ML			r to subangular; little fine to coarse gra nd; moist	ined sand, an	gular to		
_127		IRZ-20-SS-						- 131.0') Topock - Older Alluvium Dep n brown / moderate brown(5YR 4/4); n				
128		125-130		Topock - Older Alluvium Deposits	ML		graine	d sand, angular to subround; trace grain to subangular; wet				
J ARCADIS 20180927							brown	- 136.5') Topock - Older Alluvium Dep (7.5YR 5/3); fine grained to coarse gra	ined, angular i	to		
132_	132	IRZ-20-SS- 130-135					round;	nd; some silt; little granule to medium wet	peddies, suba	ngular to		
133			IRZ-20-SS-	Topock -			선 성					
134_			131-136 (<0.17 ppb)	Older Alluvium Deposits	SM							
135_												
136							성 집					
2 137 137							(136.5	- 157.0') Topock - Older Alluvium Dep n brown (5YR 5/4); very fine grained to	osits; Silty san	d (SM);		
DS/DE		IRZ-20-SS-					∴ to sub	angular; and silt; little granule to very la	arge pebbles, a	angular to		
138_		135-140		Topock -				gular; wet; Granules and pebbles throu sed of metadiorite 50-60 mm)	ignout the core	e are		
JSERS				Older Alluvium	SM							
ੋਂ 5139				Deposits								
TOPA												
140												
Notes:	US	CS = Unified	d Soil Classif	cation Sys	tem							
BOR												
SOI												

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	8 of	10
Date S						Elevation:	N/A	Bor	ing No.:	IRZ-20 I	Pilot
	-	eted: <u>11/30/</u>				g (NAD83):	N/A	_			
Drilling Drilling		Casca	ae Drilling		∟asτing Total D	(NAD83):	N/A 187 ft bgs	Client:	PG&E	ater Remedy	Phasa I
Driller			nos/S. Vasqı			le Diameter:	6 in	Location.	Needles,	-	i ilase i
Drilling			ner/C.Alvere			o First Water:		-			
Logge		Conno				ng Method:	10 ft Core Barrel	Project Nu	umber: <u>To</u> p	ock	
Editor:		·	<u>McGrane</u>		•	ng Interval:	Continuous	-			
Weath	er:	Sunny	Warm to hot		Conver	ted to Well:	☐ Yes ⊠ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
141	132	IRZ-20-SS- 140-145		Topock - Older Alluvium Deposits	SM						
157 157		IRZ-20-SS- 155-160		Topock - Weathered Bedrock - conglomerate	ML	(157.0 silt (ML sand, a clay; m	- 160.0') Topock - Weathered Bedrock .); brown (7.5YR 5/4); no plasticity; an angular to subround; trace granule, an noist	c - conglomera d fine to coars gular to suban	ate; Sandy e grained gular; trace		
Notes:	US	CS = Unified	d Soil Classif	fication Sys	tem						
BORIN											
SOIL											

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sheet	: 9 of	10
Date S	Started	: <u>10/18/</u>	2018		Surface	Eleva	tion: N/A	Boring No.	: IRZ-20 F	Pilot
	•		2018		Northin					
Drilling	-	Casca			Easting		,	Client: PG&E		
1	g Meth		<u>Drilling</u>			-	_	Location: Groundw	-	Phase I
	Name		nos/S. Vasqı					Needles,	California	
	g Asst:	-	ner/C.Alvere		•		Water: N/A	Duningt Niverbow, To	n a a l	
Logge Editor		Conno	McGrane		Samplir Samplir	-		Project Number: 10	роск	
Weath			Warm to ho		Convert	-				
vvcati		Ourning					Tes E No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description		Drilling Notes	Drilling Fluid
161	-						(160.0 - 166.0') Topock - Weathered Bedrock clay with sand (CL); brown (10YR 4/3); low pla medium pebbles, angular to subangular; some sand, angular to subround; little silt; trace cob	asticity; some small to e fine to coarse grained		
162	132						subangular; dry			
163	_	IRZ-20-SS- 160-165		Topock - Weathered Bedrock -	CL					
164	-			conglomerate	Э				Rough drilling, had to go back	
165									down again with core	
									barell to get remaining 2 ft.	
166							(166.0 - 179.5') Topock - Weathered Bedrock silt with gravel (ML); dark yellowish brown (10'		of core	
167		IRZ-20-SS- 165-170					plasticity, some fine to coarse grained sand, a granule to small pebbles, angular to subangul			
168		165-170								
169_ 169_										
	-									
ARCADIS 20180927 P										
ARCAD										
172_	87.6									
	0.10	IRZ-20-SS-		Topock -						
<u>173</u>		170-175		Weathered Bedrock -	ML					
DATA	1			conglomerate	3					
SWITOPOCK DATABASE FOR										
ω'	-									
175_	-		IRZ-20-VAS-							
F 176_	-		173-178 (<0.83 ppb)							
176										
40 L 177_										
DDS/DE		IRZ-20-SS- 175-180								
178		175-180								
NUSER										
ğ179										
8E TOF	79.2				1		(179.5 - 182.0') Topock - Competent Bedrock	- conglomerate: dark		
180 Notes	. 110	CS = Unific	d Soil Classit	fication Syn	tem		(congioniorate, dank		
NOCES	. 03		u ouii Ciassii	iicauon Sys	CIII					
SOIL B										

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	10 of	10
	Started				Surface			Bori	na No.:	IRZ-20 F	Pilot
	•	eted: <u>11/30/2</u>			Northing						
Drilling	•	Casca			Easting		•		PG&E	tor Domondu	Dhasa I
1	g Meth Name		nos/S. Vasqu		Total De	-	<u>187 ft bgs</u> Loneter: <u>6 in</u>		Needles,	ater Remedy California	Pilase i
	g Asst:		ner/C.Alverez				Water: N/A		recuics,	Odillomia	
Logge	-	Conno			Samplin			Project Nu	mber: Top	ock	
Editor		Sean N	/IcGrane		Samplin	ig Inter	val: <u>Continuous</u>	-			
Weath	ner:	Sunny	Warm to hot		Convert	ed to V	Vell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Description			Drilling Notes	Drilling Fluid
181				Topock - Competent Bedrock - conglomerat			yellowish brown (10YR 4/4); granules to very larg subangular; some fine to coarse grained sand, a some silt; dry; moderate cementation (182.0 - 187.0') Topock - Competent Bedrock - c	angular to su	ıbangular;	very rough	
		IRZ-20-SS- 180-187		Touri			yellowish red (5YR 4/6); and silt; some granule to angular to subangular; little fine to coarse graine round; trace cobbles, angular to subangular; moi	to small pebl ed sand, ang	bles, jular to	drilling, couldnt advance past 182'. Had to pull it out and make another	
185 186	58.8			Topock - Competent Bedrock - conglomerat						run for 182-187'.	
180											
							End of Boring at 187.0 'bgs	S.			
188 											
- 1	-										
191	-										
¥ - 192_											
# 193	-										
₹ \$ 194											
[5]195 	-										
196											
197_											
	-										
5 199											
- 10PA											
200 Notes	: US	CS = Unified	d Soil Classifi	cation Svs	stem						
3 10100	. 50										
310											

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sheet	: 1 of	8
Date S					Surface		-	Boring No.	: MW-E	
	-		2018		Northin				· <u> =</u>	
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E	rata u Danaadı r	Dhasal
Drilling Driller I			Drilling Vasques			-	<u>150 ft bgs</u> neter: <u>10 in</u>	Location: <u>Groundw</u>	California	Phase I
Drilling							Water: N/A	<u>11000100</u> ,	Odinomia	
Logger		Conno	-					Project Number: <u>To</u>	pock	
Editor:			<u> McGrane</u>		-	-				
Weath	er:	63 to 8	88° Sunny		Conver	ted to \	Vell: ⊠ Yes ☐ No			
Depth (ff)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description		Drilling Notes	Drilling Fluid
1	72			Topock - Fluvial Deposits	SW-SM		(0.0 - 4.5') Topock - Fluvial Deposits; Well grayers (SW-SM); brown (7.5YR 4/3); fine grain angular to subround; some small to very large subround; little silt; trace cobbles, angular to subround; little silt;	ned to coarse grained, e pebbles, angular to subrounded; dry; no odor		
5 20 1809277 PLOG.GOT 1244/18				Topock - Fluvial Deposits	SP-SM		(4.5 - 8.0') Topock - Fluvial Deposits; Poorly gravel (SP-SM); brown (7.5YR 4/3); fine grain subangular to round; some small to very large subround; little silt; trace cobbles, angular to grained grained sand, subangular to round; d	ned to medium grained, e pebbles, angular to subangular; trace coarse		
SSI12 04.2018/10POOK DATABASE FGR PLOS GPJ ARCADIS	85.2			Topock - Fluvial Deposits	GM		(8.0 - 12.5') Topock - Fluvial Deposits; Silty gyellowish brown / moderate yellowish brown('very large pebbles, angular to subround; som sand, subangular to round; some silt; trace coround; dry	10YR 5/4); granules to be fine to coarse grained		
(10RAFT BORING LOGS)GINT FILL				Topock - Fluvial Deposits	SM		(12.5 - 15.0') Topock - Fluvial Deposits; Silty brown / moderate yellowish brown(10YR 5/4) medium grained, angular to subround; little grangular to round; little silt; trace cobbles, subadry	; very fine grained to ranule to large pebbles,		
2 PGRE TOPACK CIUSERSISMICGRANEIDOCUMENTSIPGRE TOPOCKI				Topock - Fluvial Deposits	GP-GM		(15.0 - 32.0') Topock - Fluvial Deposits; Poorl (GP-GM); light brownish gray / pale yellowish granules to very large pebbles, angular to subangular; little silt; trace boulder trace fine to medium grained sand, angular to boulders 10 inch cores of metadiorite rock.	brown(10YR 6/2); cangular; some cobbles, s, angular to subround;	Rough drilling. Drilled through a boulder, rock was pulverized into a fine powder.	
Notes:	US	CS = Unified	d Soil Classi	fication Sys	tem					
BOR III										
Sc										

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	2 of	8
Date S						e Elevation:	N/A	Bor	ing No.:	MW-E	
	-	eted: <u>11/27/</u> 2				g (NAD83):	N/A	_			
Drilling		<u>Casca</u>			_	(NAD83):	N/A	Client:	PG&E	.t	Dhasal
Drilling Driller			Vasques		Total D	epւn: le Diameter:	150 ft bgs 10 in	_ Location:	Needles, 0	<u>ater Remedy</u> California	Phase I
Drilling			ninguez/C. <i>I</i>			o First Water		-	11000100,	<u>Janioi ina</u>	
Logge		Conno	-		-	ng Method:	10 ft Core Barrel	- . Project Νι	ımber: <u>Top</u>	ock	
Editor:			<u> McGrane</u>		•	ng Interval:	Continuous	-			
Weath	er:	63 to 8	88° Sunny	-	Conver	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
21 	93.6										
23 											
25				Tanada							
26				Topock - Fluvial Deposits	GP-GM						
28											
GPJ ARCADIS											
FOR PLOG.G	54										
DATABASE 1											
32						(32.0 -	34.5') Topock - Fluvial Deposits; Silty	sand with grav	vel (SM);	Rough drilling	150 gal of water used
1 33 33				Topock - Fluvial Deposits	SM	to subi	rown (10YR 6/3); very fine grained to n round; and granule to very large pebble It; trace cobbles, angular to subangular	es, angular to s	d, angular subround;		
34	54.0			Березна							
APG&E TOPOCKUDRA	51.6			Topock - Fluvial	SM	light ye angula	37.0') Topock - Fluvial Deposits; Silty ellowish brown (10YR 6/4); fine grained ir to round; and granules to small pebb gular; little cobbles, angular to subroun	d to coarse gra les, angular to	ined,		
				Deposits							
PORE TOPACK C:\USERS\RMCGRANE\RT \\ 38	48			Topock - Fluvial Deposits	GM	light ye angula well-ro boulde	42.5') Topock - Fluvial Deposits; Silty ellowish brown (10YR 6/4); granules to ir to round; some fine to coarse grainer unded; some silt; trace cobbles, angulars, subround; dry; one boulder is a 10 sh green olivine crystals and a frothy te	very large pet d sand, angula ar to subangul inch core of ba	obles, r to ar; trace		
Notes:	US	CS = Unified	d Soil Classi	fication Sys	stem				1		
BORIN											
SOIL											

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	: 3 of	8
Date S	Started	: <u>11/02/</u>	2018		Surface	Elevation:	N/A	Bor	ina No.	: <u>MW-E</u>	
	•	eted: <u>11/27/</u>	2018		Northin	g (NAD83):	N/A	_		· <u></u>	
Drilling	-	<u>Casca</u>			_	(NAD83):	N/A	Client:	PG&E		
Drilling	-		Drilling				150 ft bgs	Location:		ater Remedy	Phase I
Driller			•			le Diameter:		-	Needles,	California	
Drilling			•			o First Water		<u>. </u>			
Logge		Conno				ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>To</u>	pock	
Editor:			McGrane		-	-	Continuous	-			
Weath	er:	63 to 8	88° Sunny		Conver	ted to Well:					T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
41 42				Topock - Fluvial Deposits	GM						
42						d for					
43						light ye	47.0') Topock - Alluvium Deposits; Silt ellowish brown (10YR 6/4); fine grained r to subround; some granules to very l	to coarse gra	ined,		
44						suban	gular; little silt; trace clay; dry				
 45				Topock - Alluvium Deposits	SM						
46											
47_											
47						brown	54.5') Topock - Alluvium Deposits; Silt (7.5YR 6/4); low plasticity; little fine to	coarse graine	d sand,	Approximate depth of water	
48							r to subangular; little clay; trace granul r to subround; moist	le to medium p	ebbles,	table.	
FOR PLOG.GPJ AF											
FOR P.											
ABASE 20_											
51				Topock - Alluvium	ML						
0401				Deposits							
52_	400										
ES/12.0	120										
=											
BORING LOGS/GINT FILES/12.04.20/18/170POCK DATABAS 2.04.20/18/170POCK DATAB											
54											
RAFTB			MW-E-VAS- 52-57			0 V V (54.5 -	64.0') Topock - Alluvium Deposits; Silf	hy graval with -	and (CM):		
55			(7.0 ppb)			pale bi	own (10YR 6/3); granules to large peb gular; some fine to medium grained sai	bles, angular t	60 (GIVI),		
PG&E TOP						subang	gular; some silt; trace clay; dry	na, anyulal 10			
OMENTS!											
57				Topock - Alluvium	GM					Core came out	
SMCGRA				Deposits	GIVI	The state of the s				hot and dry	
58						6 PJ					
5959											
TOPAC						5 PJ					
60						[46]					
Notes:	US	CS = Unifie	d Soil Classit	ication Sy	stem						
L BORI.											
SO											

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	: 4 of	8
Date S		· ·				Elevation:	N/A	Bor	ing No.	: <u>MW-E</u>	
		eted: 11/27/2				g (NAD83):	N/A				
Drilling	-	Casca				(NAD83):	N/A	Client:	PG&E		
Drilling	-		<u>Orilling</u>				150 ft bgs			vater Remedy	Phase I
Driller			-			le Diameter:			<u>ineedies,</u>	California	
Drilling Logge		Conno				o First Water ng Method:	10 ft Core Barrel	Project Nu	ımber: To	nock	
Editor			//cGrane		-	ng Interval:	Continuous	, i iojectivi	iiiibei. <u>10</u>	роск	
Weath			8° Sunny		-	ted to Well:		•			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Oode	USCS	Description			Drilling Notes	Drilling Fluid
-											
61											
				Topock -		600					
62	120			Alluvium Deposits	GM						
				Бороско		600					
63						[H4]					
64						600					
04						(64.0 -	67.0') Topock - Older Alluvium Deposi n brown (5YR 5/4); no plasticity; some	its; Sandy silt (ML);		
65							subangular to subround; little granule to r to subangular; trace clay; moist; no s	o medium peb	bles,		
				Topock - Older	ML	angula	i to subangular, trace clay, moist, no s	tairiirig			
⁴ –66 –				Alluvium Deposits	IVIL						
12) TO				Deposits							
g 67						(07.0	07.01\ T	Cile 1	CM).		
180927						reddis	87.0') Topock - Older Alluvium Deposi n brown (5YR 5/4); very fine grained to	coarse graine	d, angular		
68							round; some silt; little granule to large p gular; wet	oebbles, angul	ar to		
ARCA											
-08 F.06.6P											
~ -											
#_70_											
OCK DATABAS											
P P											
72_	100										
LES/12.	108										
분 73											
				Topock - Older	SM						
74				Alluvium Deposits							
				'							
8 _75_											
0 T T T T T T T T T T T T T T T T T T T											
76											
OCCUME											
C:USERSISWOCGRAVIEDOCOMMENTS:DEGRE TOPOCKIDBAI											
SERS/											
× 70											
10PAG											
80											
Notes:	US	CS = Unified	d Soil Classif	ication Sy	stem						
BOR BOR											
SC											

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		Sheet	: 5 of	8
Date Starte				Surface	e Elevation:	N/A	Bor	ina No.	: <u>MW-E</u>	
	leted: <u>11/27/</u>				g (NAD83):	N/A	_		<u> </u>	
Drilling Co.				_	(NAD83):	N/A	_ Client:	PG&E		
Drilling Met		Drilling			-	150 ft bgs	_ Location:		ater Remedy	Phase I
Driller Nam		<u>Vasques</u>			le Diameter:		-	Needles,	California	
Drilling Ass		ninguez/C. A		-	o First Wate		- Designet No			
Logger: Editor:	Conno	or Mills McGrane			ng Method: ng Interval:	10 ft Core Barrel Continuous	Project Nu	ımber: <u>10</u>	роск	
Weather:		88° Sunny		-	ted to Well:	× Yes	-			
		Curing			TCG to VVCII.					
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Class	Description			Drilling Notes	Drilling Fluid
		MW-E-VAS-82-87.0 (200 ppb)	Topock - Older Alluvium Deposits Topock - Older Alluvium Deposits Topock - Older Alluvium Deposits	SM SM	reddi sand pebb	- 94.5') Topock - Older Alluvium Depos sh brown (5YR 5/4); low plasticity; some angular to subangular; some clay; little es, angular to subangular; wet - 97.0') Topock - Older Alluvium Depos sh brown (5YR 5/4); medium grained to bround; some silt; little granule to mediungular; wet	e fine to coarse granule to me its; Silty sand of coarse graine im pebbles, an	(SM); d, angular gular to		
904E TOPACK CIUSERSISMOS			Topock - Older Alluvium Deposits	ML		ar to subangular; little fine to coarse gra und; wet; no odor	ained sand, an	gular to		
	SCS = Unifie	d Soil Classi	fication Sy	stem		-			·	
BORIN			·							
SOIL										

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo	g		Sheet	: 6 of	8
Date S		· · · · · · · · · · · · · · · · · · ·			Surface	Elev	ation:	N/A	Bor	ina No.	: <u>MW-E</u>	
		eted: <u>11/27/</u>			Northing			N/A	_		<u> </u>	
Drilling		Casca			Easting	•	•	N/A	_ Client:	PG&E		
Drilling			Drilling		Total De			150 ft bgs	_ Location:		ater Remedy	Phase I
Driller			<u>Vasques</u>		Borehol			<u>10 in</u>	_	Needles,	California	
Drilling		N. Dor Conno	ninguez/C. A		Depth to				- Duningt Ni			
Logge Editor:			McGrane		Samplir Samplir			10 ft Core Barrel Continuous	_ Project Nu	ımber: <u>10</u>	роск	
Weath			88° Sunny		Convert				-			
-				0.5	1		1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS		Description			Drilling Notes	Drilling Fluid
101_												
102	104.4											
103												
104				Topock - Older	ML							
105				Alluvium Deposits								
106				,								
G.GDT												
007107												
ARCADIS 2018												
109												
m1 110 1							gravel	- 118.0') Topock - Older Alluvium Dep (SM); reddish brown (5YR 5/4); fine gr	rained to coars	e grained.		
ESI12.04.2018)TOPOCK DATABASIS							angula to suba	r to subangular; and silt; little granule angular; wet; some green staining in s	to large pebble pots within the	es, angular core.		
<u>¥</u> _111_												
7 2018\T							(1) '참					
112	102											
IID\SDC				Tanaak								
114_				Topock - Older Alluvium	SM							
ZAFT BC			MW-E-VAS- 112.0-117.0	Deposits								
_115			(3100 ppb)									
116) 기					
MENTS												
117_												
MCGRAN							서					
118							(118.0	- 122.0') Topock - Older Alluvium Dep	oosits; Sandy s	ilt (ML);		
ลัก ช 119				Topock -	N.61		sand, a	n brown (5YR 5/3); no plasticity; some angular to subround; little granule to la				
TOPAC				Older Alluvium	ML		supang	gular; moist; very weathered.				
120				Deposits								
Notes:	US	CS = Unifie	d Soil Classi	fication Sy	stem							
DIL BOR												
σ												

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	rir	ng	Log		Sheet:	7 of	8
Date S					Surface			· · · · · · · · ·	Bor	ing No.:	MW-E	
	-	ted: <u>11/27/</u>			Northin			•	. ———		<u></u>	
Drilling		<u>Casca</u>			Easting	•		•	Client:	PG&E	ton Donos du	Dhasal
Drilling Driller			Drilling Vasques		Borehol	•		150 ft bgs eter: 10 in	Location:	Needles, (ter Remedy	Phase I
Drilling			ninguez/C. <i>F</i>					·	-	rtccaics, v	Jamorria	
Logge		Conno	-		Samplir				· . Project Νι	ımber: <u>Top</u>	ock	
Editor:		· · · · · · · · · · · · · · · · · · ·	<u> McGrane</u>		Samplir	-			-			
Weath	er:	<u>63 to 8</u>	88° Sunny		Conver	ed	to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs	Class	Description			Drilling Notes	Drilling Fluid
121				Topock - Older Alluvium Deposits	ML							
122	108							(122.0 - 127.0') Topock - Older Alluvium Depo	osits: Silty san	d with		
123								gravel (SM); light reddish brown / light brown grained to coarse grained, angular to subrour to large pebbles, angular to subangular; wet; metadiorite.	(5YR 6/4); ven nd; and silt; litt	y fine le granule		
124				Topock -				metadionie.				
125				Older Alluvium Deposits	SM							
126_												
								(127.0 - 137.0') Topock - Weathered Bedrock	c - conglomera	te; Silty		
								sand (SM); reddish brown (5YR 5/4); very fine grained, angular to subround; some silt; little angular to subangular; wet	e grained to co granule to larg	parse le pebbles,		
- 129_ 129_												
ABASE FOR L												
131												
132_ 132	120			Topock - Weathered Bedrock - conglomerat	SIVI							
133_				g.:s.uk								
AFT BORING L												
135_												
136												
137								/127 0 120 El) Tamade Ma-4 1 D. 1	c congle	to: Silt:	Pough deillin -	
SERS'SMCGRANE			MW-E-VAS-	Topock - Weathered Bedrock - conglomerat	SIM			(137.0 - 138.5') Topock - Weathered Bedrock sand (SM); reddish brown / moderate brown(coarse grained, angular to subround; some simedium pebbles, angular to subangular; wet	5YR 4/̈4); fine ilt; little granule	grained to	Rough drilling	
139			137-142 (7300 ppb)	Topock - Weathered Bedrock - conglomerat	IVIL			(138.5 - 139.5') Topock - Weathered Bedrock (ML); reddish brown / moderate brown(5YR 4 granule to medium pebbles, angular to subar	l/4); no plastici ngular; trace fir	ty; trace ne grained		
140				Ü	SM			sand, angular to subround; dry; very weather (139.5 - 142.0') Topock - Weathered Bedrock				
Notes:	US	CS = Unifie	d Soil Classi	fication Sy	stem			sand				
H BORI												
SC												

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log		Sheet	8 of	8
Date S		·			Surface			Bor	ina No.	: <u>MW-E</u>	
	•	ted: 11/27/2			Northing		•			· <u></u>	
Drilling		Casca			Easting			Client:	PG&E		
Drilling	-		<u>Drilling</u>		Total De	•	150 ft bgs			ater Remedy	Phase I
Driller			Vasques		Borehol			-	<u>Needles,</u>	California	
Drilling		N. Don Conno	ninguez/C. A		Samplin		Water: <u>N/A</u> hod: <u>10 ft Core Barrel</u>	Project Nu	ımbar: Tai		
Logge Editor:			// ///////////////////////////////////		Samplin	•		Flojectivi	1111ber. <u>10</u> 1	JUCK	
Weath		·	8° Sunny		Convert	•		•			
	l				1		T				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description			Drilling Notes	Drilling Fluid
141			MW-E-VAS- 137-142 (7300 ppb)	Topock - Weathered Bedrock - conglomerat	SIVI		(SM); reddish brown (5YR 5/4); fine grained t to subangular; some silt; little granule to med subangular; wet	o coarse grain ium pebbles, a	ed, angular ingular to		
142	114						(142.0 - 150.0') Topock - Competent Bedrock	- conglomera	te; brown	Rough drilling	
143							(7.5YR 5/4); very fine grained to medium peb subangular; and silt; trace granule to medium	pebbles, and	ular to		
143							subangular; trace fine grained sand, angular cementation; hard.	to subround; d	ry; strong		
144											
145											
-				Topock -							
146				Competent Bedrock -							
				conglomerat	е						
147											
148											
	36										
149_											
150						V///	End of Boring at 150.0 '	bgs.			
454											
151_											
152											
154											
] 											
155											
156											
157											
157											
158											
5 159											
-											
160		00:	10 " 0"								
Notes	: US	CS = Unified	d Soil Classif	ication Sys	stem						



BORING NUMBER:

AOC13-GRBS-B-01 SHEET 1 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall LOCATION : 34° 42' 50.64", - 114° 29' 31.92"

ELEVATION: 608.0 DRILLING CONTRACTOR: Cascade Drilling

			ncountere		START: 10/8/2018 END: 10/8	•
EPTH E	BELOW GI	ROUND SI	JRFACE (ft)	SIANDARD	SOIL DESCRIPTION	COMMENTS
	INTERV.	AL (ft)		PENETRATION TEST RESULTS		
		RECOV	ERY (ft)		SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND
			#TYPE	6"-6"-6" (N)	CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION
	1.0				4" Asphalt Concrete Poorly-graded SAND with GRAVEL (SP) light brown;	
_		4.0	1		dry; fine to coarse grained, ~10% GRAVEL to 2" diameter. [FILL]	CR, M=4% (Bulk), Hand Auger to 5'
_	4.0	4.0			- -	
5	5.0				-	
	6.5	1.2	2	3-5-7 (12)	Loose.	M=2%, PA (Ring)
-						
- -					- - -	
10	10.0	1.0	3	2-4-8	~20% GRAVEL to 1" diameter	M=4% (SPT)
-	11.5	1.0	3	(12)	- - -	(001)
-	-				Poorly-graded SAND (SP) light brown; moist; medium dense; fine grained; micaceous; homogenous. [NATIVE]	
15	15.0				- -	PA
-	16.5		4	8-10-14 (24)		(SPT)
- -					Fat CLAY with SAND (CH) brown: moist: very stiff: ~	
20	20.0				Fat CLAY with SAND (CH) brown; moist; very stiff; ~ 25% fine to medium SAND. horizontal laminations.	
-	21.5	1.5	5	6-10-10 (20)	Poorly-graded SAND (SP) light brown; moist;	(SPT), PP = 4.0 tsf
-					medium dense; fine grained; micaceous; homogenous - -	
- -					- -	
25 -	25.0	0.1	6	6-7-10		(SPT)
- -	26.5	0.1	0	(17)	- - -	
-	1				Fat CLAY (CH) reddish brown; moist; hard; horizontal laminations.	
-	1				<u>-</u>	



BORING NUMBER:

AOC13-GRBS-B-01 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall

LOCATION : (34° 42' 50.64", - 114° 29' 31.92")

ELEVATION : 608.0

DRILLING CONTRACTOR : Cascade Drilling

WATER	LEVELS	S : Not Er	ncountere	d	START: 10/8/2018 END: 10/	8/2018 LOGGER : D. Jankly	
			JRFACE (ft)		SOIL DESCRIPTION	COMMENTS	
	INTERV			PENETRATION TEST RESULTS			
			EDV (#)	TEST RESULTS	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE,	
	RECOVERY (ft) #TYPE 6"-6"-6"		6" 6" 6"	MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION		
			#11171	(N)			
-			7	5-7-9 (16)	-	(SPT), PP > 4.5 tsf	
35 40 45 50	30.0 31.5		7	5-7-9	Total Depth: 31.5', No Groundwater Encountered, Backfilled with Portland Cement Grout, Concrete Patch at Surface.	(SPT), PP > 4.5 tsf	
55 - -					- - - -		
- - - -							
60 -				1	-	1	



BORING NUMBER: AOC13-GRBS-B-02

SHEET 1 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall

LOCATION : (34° 42' 50.68", -114° 29' 30.59")

ELEVATION : 597.0

DRILLING CONTRACTOR : Cascade Drilling

START: 108/2018 END: 108/2	WATER	I EVELS	: Not Er	countere	d	START: 10/8/2018 END: 10/8	8/2018 LOGGER : D. Jankly	
NITERYAL (N)							•	
No.			TERVAL (ft) PENETRATION		PENETRATION		COMMENTO	
1.0		INTERV			TEST RESULTS	SOIL NAME. USCS GROUP SYMBOL. COLOR.	DEPTH OF CASING DRILLING RATE	
1.0 4.0 1 4.					MOISTURE CONTENT, RELATIVE DENSITY OR	DRILLING FLUID LOSS, TESTS, AND		
1.0				#TYPE		CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION	
SS-SM) brown; dny; fine sand, ~37% GRAVEL; ~ GRAVEL; ~ GBulk); Hand Auger to 5	_	1.0						
10	+	1.0				(SP-SM) brown dry fine sand ~37% GRAVEL ~	CR. PA	
Many COBBLES at 3 to 5 feet. Medium Dense. (Ring)						10% COBBLES to 12" diameter. [FILL]		
Many COBBLES at 3 to 5 feet. Medium Dense. (Ring)	-					-		
Sandy Silty Clay (Cl-ML) brown; medium dense; moist, [NATIVE] Ds, Pl, M=17%, UW=100 pcf	-		4.0	1		-	1	
Medium Dense. (Ring) (Ri]					Many COBBLES at 3 to 5 feet.		
Medium Dense. (Ring) (Ri		5.0				-		
SANDY SILTY CLAY (CL-ML) brown; medium dense; moist. [NATIVE]	3-	5.0				Medium Dense.	(Ring)	
10			1.0	2				
Fat CLAY (CH) brown; moist; very stiff; homogenous. The continue of the con	_	6.5			(23)		DS, PI, M=17%, UW=100 pcf	
10 10.0	-					IIIOISI. [IVATIVE]	1	
1.5 3 3-6-11 (17)	_					Fat CLAY (CH) brown; moist; very stiff; homogenous.]	
1.5 3 3-6-11 (17)]						1	
1.5 3 3-6-11 (17)	-					-	1	
11.5	10	10.0				-		
11.5					3-6-11			
Poorly-graded Sand (SP) Light brown; moist; fine grained; homogenous.	-	11.5	1.5	3		-	(SPT); PP=3.5 tsf.	
Fat CLAY (CH) brown; moist; very stiff; homogenous; few fine SAND; laminations <1/8" thick. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. SILTY CLAY (CL-ML) brown; wet; soft; saturated; homogenous; few fine SAND; laminations <1/8" thick. PI (SPT); PP=4.0 tsf.	+	11.5						
few fine SAND; laminations <1/8" thick. 15						grained; homogenous.		
few fine SAND; laminations <1/8" thick. 15	-					Eat CLAY (CH) brown: majet: yany etiff: hamaganaye:	-	
20 20.0 DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=24% (SPT) DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=24% (SPT) DS, M=24%	-					few fine SAND; laminations <1/8" thick.	1	
20 20.0 DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=24% (SPT) DS, M=23%, UW=102 pcf (Ring); PP=3.5 tsf. DS, M=24% (SPT) DS, M=24%								
20 20.0	15	15.0					DS M-23% LIM-102 pof	
20 20.0 1.5 5 5-6-7 21.5 1.5 5 5-6-7 (13) SILTY CLAY (CL-ML) brown; wet; soft; saturated; homogenous. Fat CLAY (CH) brown; moist; very stiff; homogenous; few fine SAND; laminations <1/8" thick. PI (SPT); PP=4.0 tsf.	=		1.3	4		-	(Ring); PP=3.5 tsf.	
21.5	1	16.5			(16)	-		
21.5	-					-	-	
21.5	-					-		
21.5]]	
21.5	-					-	1	
21.5	20	20.0				-	1	
21.5 1.3 5 (13) SILTY CLAY (CL-ML) brown; wet; soft; saturated; homogenous. Fat CLAY (CH) brown; moist; very stiff; homogenous; few fine SAND; laminations <1/8" thick. 25 25.0					5-6-7			
Fat CLAY (CH) brown; moist; very stiff; homogenous; few fine SAND; laminations <1/8" thick. 1.5 6 4-6-12 (18) Hard. [SPT); PP=4.0 tsf.	_	21.5	1.5	5			(SPT)	
few fine SAND; laminations <1/8" thick. 25 25.0 Hard. PI (SPT); PP=4.0 tsf.	+	21.5					1	
25 25.0	1					few fine SAND; laminations <1/8" thick.]	
Hard. PI (SPT); PP=4.0 tsf.	4					-	1	
Hard. PI (SPT); PP=4.0 tsf.	-					-	1	
Hard. PI (SPT); PP=4.0 tsf.	_]	
] 1.5 6 \frac{4-0-12}{(18)} \frac{1}{(18)}	25	25.0		-		Hard		
	-		1.5	6		i iai u		
<u> </u>	1	26.5			(18)	_	1	
						-	1	
	-					-	1	
]]]						- -]	
4 1						-		
30 -	₃₀					-	1	



BORING NUMBER:

AOC13-GRBS-B-02

SHEET 2 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall

LOCATION : (34° 42′ 50.68″, -114° 29′ 30.59″)

ELEVATION : 597.0

DRILLING CONTRACTOR : Cascade Drilling

WATER	R LEVELS	S: Not Er	countered	d	START: 10/8/2018 END: 10/8	3/2018 LOGGER : D. Jankly
DEPTH	BELOW GI	ROUND SU	JRFACE (ft)		SOIL DESCRIPTION	COMMENTS
	INTERVAL (ft)		PENETRATION TEST RESULTS			
		RECOV	ERY (ft)	[SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND
			#TYPE	6"-6"-6" (N)	CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION
-	30.0		7	7-10-20	-	(SPT); PP=4.5 tsf.
-	31.5			(30)	Total Doothy 21 5! No Oroundurator Engagnitured	
-	-				Total Depth: 31.5', No Groundwater Encountered, Backfilled with Portland Cement Grout, Concrete Patch	
-					at Surface.	
-					_	
35						_
-					-	
					-	
-					- -	
-					_	
40_						_
-					-	
-					-	
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45					- -	
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50_						-
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] :					_	
] -	-				-	1
45					-	
						_
] -	1				-	
-	1				- -	
-					_	
-					-	
60			1		-	



BORING NUMBER:

AOC13-GRBS-B-03 SHEET 1 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall LOCATION : (34° 42' 50.82", -114° 29' 29.34")

ELEVATION: 587.0 DRILLING CONTRACTOR: Cascade Drilling

DRILLING METHOD AND EQUIPMENT : CME95 HSA with 140# autohammer, 30-inch drop							
WATER LEVELS : Not Encountered DEPTH BELOW GROUND SURFACE (ft)					START: 10/9/2018 END: 10/9	·	
DEPTH			JRFACE (ft)	STANDARD	SOIL DESCRIPTION	COMMENTS	
	INTERV.	AL (ft)		PENETRATION TEST RESULTS	COLL NAME LICCS OFFICE SYMPOL COLOR	DEDTH OF CACING DOULING DATE	
	RECOVERY (ft)			SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND		
			#TYPE 6"-6"-6"		CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION	
				(N)	4" Asphalt Concrete		
	1.0				Poorly-graded SAND with GRAVEL (SP) brown:		
,					moist; medium dense; mostly fine to medium sand, GRAVEL to 3" diameter. [FILL]	(Bulk), Hand Auger to 5'	
	-		١.		GRAVEL to 3 diameter. [FILL]		
]	3.0	1				
,	4.0				-		
	4.0				-		
5_	5.0						
	-	1.3	2	6-7-15	<u>SILTY SAND (SM)</u> light brown; moist; medium dense; fine grained; homogeneous. [NATIVE]	Ring) PA, M=9%, UW=99 pcf	
	6.5	1.5	_	(22)	Fat CLAY (CH) brown; moist; hard; massive;	DS, M=14%, UW=111 psf, PP=4.0 tsf	
]					homogeneous –	·	
	-				-	1	
·	_				-		
	4				-		
10	10.0				-		
'~	10.0			3-5-6		CR, M=23%, PI	
	- 44.5	1.5	3	(11)	CANDY CILTY OLAY (OLAN)	(SPT); PP=4.0 tsf	
,	11.5			. ,	SANDY SILTY CLAY (CL-ML) brown; wet; very soft; some fine SAND.	PI	
]				Fat CLAY (CH) brown; moist; hard; massive;		
	4				homogeneous _		
	1				-		
]				_		
15_	15.0					(SPT); PP=4.25 tsf.	
	_	1.5	4	3-5-6 (11)	SANDY SILTY CLAY (CL-ML) brown; wet; very soft; /-some fine sand.	(0) 1),11 = 4.20 tdt.	
	16.5			(11)	Fat CLAY (CH) brown; moist; hard; massive;		
,	-				homogeneous		
]				_		
	-				-		
·	1				-		
20_	20.0					(ODT) DD 4546	
	-	1.5	5	4-5-10	-	(SPT); PP=4.5 tsf.	
	21.5			(15)	_		
	_				-		
	1				-		
	1				_		
	-				-		
25	25.0				-		
15_ 20_ 25_				4-10-20	Interbedded with SILTY SAND (SM); moist; medium	(SPT)	
l ·	26.5	1.5	6	(30)	dense; fine grained; homogeneous. Beds are 2 to 4 inches thick.	1	
	-				-		
					-		
]				_		
30	-				-		
30	1	<u> </u>				ļ.	



BORING NUMBER:

AOC13-GRBS-B-03

SHEET 2 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall

LOCATION : (34° 42′ 50.82″, -114° 29′ 29.34″)

ELEVATION : 587.0

DRILLING CONTRACTOR : Cascade Drilling

WATER I	LEVELS	: Not Er	countered		START: 10/9/2018 END:	10/9/2018 LOGGER : D. Jankly
DEPTH BE				STANDARD	SOIL DESCRIPTION	COMMENTS
	INTERVA	TERVAL (ft) PENETRATION TEST RESULTS		PENETRATION		
	RECOVERY (ft)		TEST RESULTS	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND	
			#TYPE	6"-6"-6" (N)	MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION
	30.0	1.0	7	8-16-32		_ (SPT)
	31.5	1.0	,	(48)	Poorly-graded GRAVEL with SAND and COBBLES	<u>-</u> 2 /
					(GP) gray; moist; dense; fine to coarse GRAVEL; medium to coarse SAND.	
					Total Depth: 31.5', No Groundwater Encountered, Backfilled with Portland Cement Grout, Concrete Patch at Surface.	·]
35						4 -
]
						1
						1
40						3
						1
8 –						1
r; 11/9/						3
GO.HO 45						1
SEOTE -						3
CHZM -						1
S.GPJ;						1
ORING						3
50						-
19; TO]
86.6						=
						1
55						-
Soll BorinG Log; JACOBS-GEOTECH_SG.GLB; TOPOCK BORINGS.GPJ; CH2M GEOTECH.GDT; 11/9/18 0 9 1 1 1 1 1 1						1
deloge]
BORIN]
d 60 −						-



TEST PIT NUMBER: AOC13-GRBS-TP-1

SHEET 1 OF 1

TEST PIT LOG

PROJECT: PG&E Topock; Pipeline F Retaining Wall	LOCATION: (34° 42' 50.82", -114° 29' 30.58")	
ELEVATION: 601.0 ft	CONTRACTOR: Phillips Excavating Inc.	
EXCAVATION EQUIPMENT: Backhoe with 24-inch bucket	DATE EXCAVATED: 10/8/2018	LOGGER: D. Jankly

WATER	_EVELS: N	ot Encountered	LENGTH:	V	WIDTH	
			SOIL DESCRIPTION			COMMENTS
DEPTH BELOW SURFACE	#TYPE	MOISTURE	E, USCS GROUP SYMBOL, COLOR, CONTENT, RELATIVE DENSITY OR CY, SOIL STRUCTURE, MINERALOGY		APHIC .OG	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
1 -		Poorly-graded SANI	D with GRAVEL (SP) light brown; dry; ve 0% to 3" diameter; COBBLES to 12" diameter.	ery loose;		CP, DS, PA
2_	1	20%. Local areas of po	U% to 3" diameter; COBBLES to 12" diameter; CO	DBBLES;		(Bulk)
3_						
4_		Total Depth=3 feet. No Groundwater Enco Backfilled with soil cut	untered			-
5_		Backilled with soil cut	ungs			<u>-</u>
6_						-
7_						-
8_						-
9_						-
10						<u>-</u>
11						
12						=
13						-
14						
15						_
16						
17						-
18						-
19						-
20 21						
22						-
23_						-
24						-
25_						-
26						
27_						
28						
29						
30						-



EXCAVATION EQUIPMENT: Backhoe with 24-inch bucket

PROJECT NUMBER: 707614CH.01.01 TEST PIT NUMBER:

AOC13-GRBS-TP-2 SHEET 1 OF 1

TEST PIT LOG

PROJECT: PG&E Topock; Pipeline F Retaining Wall	LOCATION: (34° 42' 50.96", -114° 29' 29.39")	
ELEVATION: 589.0 ft	CONTRACTOR: Phillips Excavating Inc.	
EXCAVATION EQUIPMENT: Backhoe with 24-inch bucket	DATE EXCAVATED: 10/8/2018	LOGGER: D. Jankly

WATER LEVELS: Not Encountered WIDTH: LENGTH: DEPTH: COMMENTS SOIL DESCRIPTION DEPTH SOIL NAME, USCS GROUP SYMBOL, COLOR, DEPTH OF CASING, DRILLING RATE, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY GRAPHIC DRILLING FLUID LOSS, TESTS, AND BELOW INSTRUMENTATION LOG #TYPE SURFACE At 0 to 0.3 feet: Poorly-graded GRAVEL with SAND and COBBLES (GP) brown; dry; very loose. Predominantly coarse gravel and cobbles to 8-inch diameter. [FILL]

At 0.3 to 3.5 feet: Poorly-graded SAND (SP) light brown; dry; loose; fine grained with 1-2" thick poorly-graded, fine GRAVEL with SAND CP, DS, PA 2 (Bulk) 1 3 (GP) interbeds; horizontally dipping. [NATIVE] 4 Total Depth=3.5 feet. No Groundwater Encountered 5 Backfilled with soil cuttings 6 8 9 10_ 11_ 12 13 14_ 15 16_ 17 18 19 20_ 21 22 23 24 25 26 27 28_ 29 30



PROJECT NUMBER: BORING NUMBER:

SHEET 1 OF 1

BORING LOG EXPLANATION

		,		etaining Wall	LOCATION:	
ELEVATI					DRILLING CONTRACTOR:	
			EQUIPME	NI:		
WATER LEVELS : DEPTH BELOW GROUND SURFACE (ft)		1	START : END : SOIL DESCRIPTION	LOGGER : COMMENTS		
	INTERVAL (ft) STANDARD PENETRATION TERT DESIGN		PENETRATION	SOLE DESCRIPTION	COMPLINIS	
	IIII EIII	RECOVE	RY (ft)	TEST RESULTS	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND
			#TYPE	6"-6"-6" (N)	CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION
-	1.0				Sample Interval: Top/Bottom (ft. bgs)	- Comments
-		1.5			Amount of Sample Recovered (ft)	1
-	2.5				bgs = below ground surface	Comments and observations regarding drilling or sampling made by the driller or field personnel.
_	3.5		1		Sample Type - Sample Number	PP=Pocket Penetrometer in tons/sqft
5	5.0		1		(SPT) Standard split-spoon drive sampler, —	Laboratory tests include the following:
-					2.0-inch (51-mm) outside diameter, 1.4-inch (35-mm) inside diameter,	– M Moisture Content (ASTM D-2216)
<u>-</u>					(without liners)	UW Dry Unit Weight (ASTM D-2937) in pounds per cubic foot (pcf)
-					(Ring) Modified California split-spoon drive sampler, 3.0-inch (76-mm) outside diameter, 2.4-inch (64-mm) inside	PA Grain Size analysis (ASTM D-422) with or without hydrometer analysis
10 -					diameter (with ring liners) (B) Bulk sample collected from drill cuttings	PI Atterberg Limits (ASTM D-4318)
10					(b) Bulk sample collected from unit cuttings	DS Direct Shear (ASTM D-3080)
- - -					Standard Penetration Test Results	CR Corrosion Suite (California Test Methods 532, 643, 417, 422)
- - - 15	15.0				Number of blows required to advance driven sampler over three 6-inch (152-mm) increments. Number in parenthesis is the total number of blows required to advance the sampler 12-inch (305 mm) beyond the first 6-inch (152-mm) interval. Drive samplers advanced using a 140 lb (63.5 kg) Hammer with the	CP Max Density/Opt Moisture (ASTM D-1557)
- - -	16.5			3-5-6 (11)	30-inch (762-mm) drop. The blow counts given have not been modified to account for field and/or depth conditions.	- - -
_					General Notes	1
- - -					Soil classifications are based on the Unified Soil Classification System. Classifications and descriptions made in the field have been modified based on the	
20 - -					results of laboratory testing. The relative density / consistency presented on the logs are based on blow counts corrected for the Cal Modified sampler, and for N60	- - -
- - -					Boring logs depict subsurface conditions only at the specific locations and times the boring was made. Logs do not necessarily reflect strata variations that	
-					may exist between boring locations.	-
25					-	
_						1
=						-
_]

Attachment C Soil Sampling Locations and Available Soil Analytical Results

(Soil Data Presented in Excel File)







Baseline and Opportunistic Soil Sampling Locations

November 2018 Monthly Progress Report Groundwater Remedy Phase 1 Construction PG&E Topock Compressor Station, Needles, California



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 x 10-6). The LOCs for noncancer effects are based on a target hazard quotient of 1. The LOCs were developed using these assumptions:
 - Receptors are present outside the perimeter of the work areas
 - Exposure via inhalation is 10 hours per day for a 10 days on /4 days off schedule
 - Duration of Phase 1 of the final groundwater remedy construction is 20 months
- The action level for fugitive dust monitoring is 100 micrograms per cubic meter (μg/m³) 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):

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

Where:

AL = action level for airborne particulates ($\mu g/m^3$)

LOC = Project specific risk-based level of concern (μg/m³)

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/m³ 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/m³.
- Therefore, keeping fugitive dust below the action level 100 μg/m³ 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 November 2018, real time dust monitoring was conducted at the perimeter of the work areas (outside of the exclusion zone). On November 12, 2018, during the excavation associated with the CHQ access road, temporary exceedance of the action level for fugitive dust monitoring ($100 \mu g/m^3$) was observed and additional water was applied to control fugitive dust.

No perimeter air sampling for hexavalent chromium was conducted in November 2018.

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.

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

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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.

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Table 1Perimeter Air Sampling Results
Groundwater Remediation Phase 1 Construction
PG&E Topock Compressor Station, Needles, California

Location ID	Location	Date	Sample Type	Hexavalent Chromium (ug/m³)
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)

Notes:

ug/m³ field duplicate

J concentration or reporting limit estimated by laboratory or data validation

N primary sample

ND not detected at the listed reporting limit

1 of 1 Print Date: 11/6/2018

P



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

D-4 AX1109181012BAO



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 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.).

Over 40 monitoring events have been conducted at the Park Moabi monitoring location (Figure 1). These measurements were occasionally contaminated by high winds, which results in elevated levels of pseudonoise on the microphone. Outside of these events, the sound level typically varied between 45 to 55 dBA, with 60 dBA being marginally exceed less than 5 times from vehicular or train traffic rather than construction activities.

Over 60 monitoring events have been conducted at Maze B-Combined Area 1/2 (Figure 2) and the associated alternate location for MW-L drilling activities. While some of these measurements are contaminated by high winds, others are influenced by periodic train pass-by's, clean samples of drilling noise have not identified exceedances of 65 dBA. One monitoring event resulted in 65 dBA which included train and aircraft overflight noise while the remainder were generally less than 62 dBA.

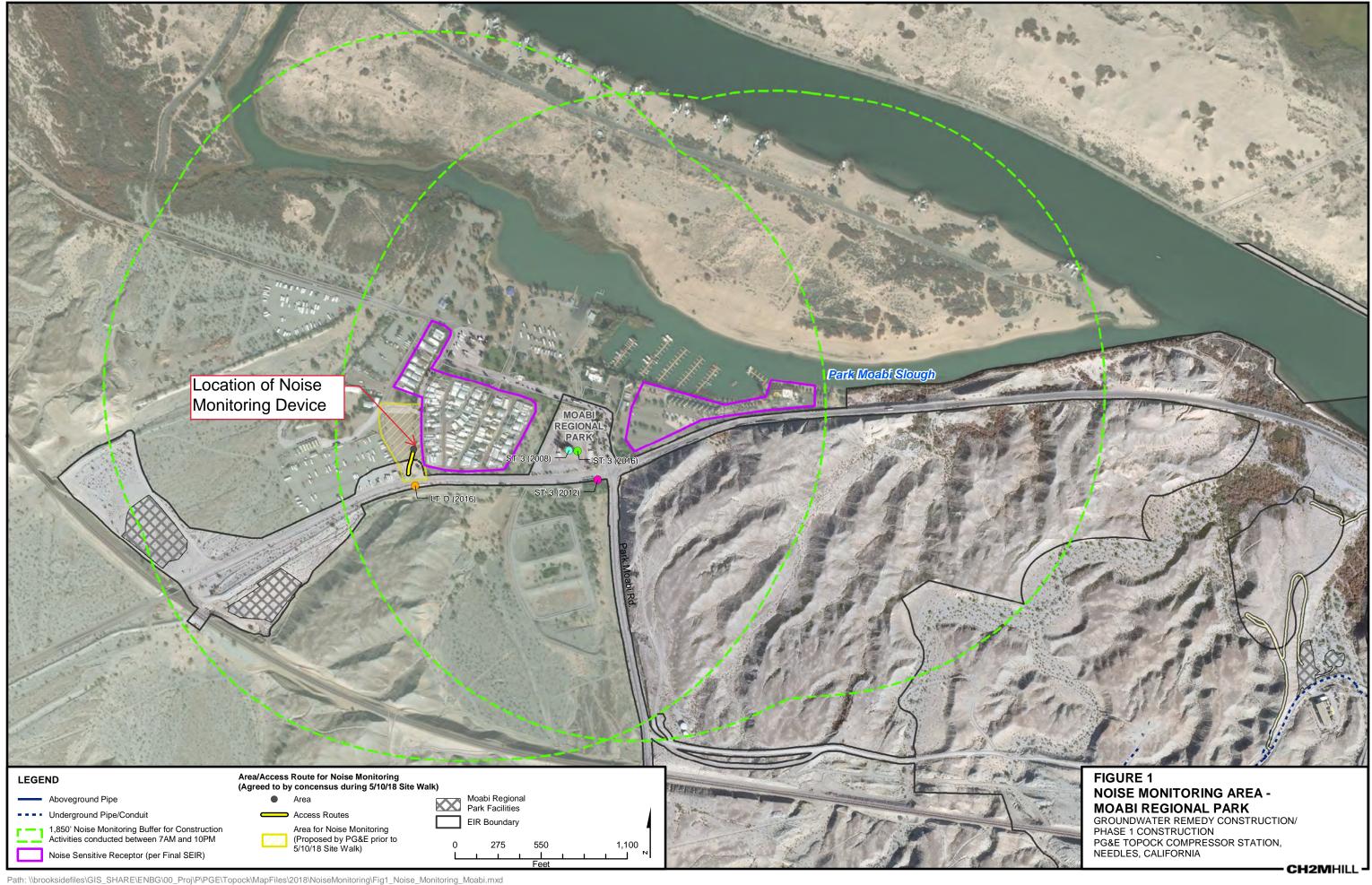
Over 15 monitoring events have been conducted at Maze C-Area 1 (Figure 2). One measurement resulted in 60 dBA while the remainder were generally less than 55 dBA.

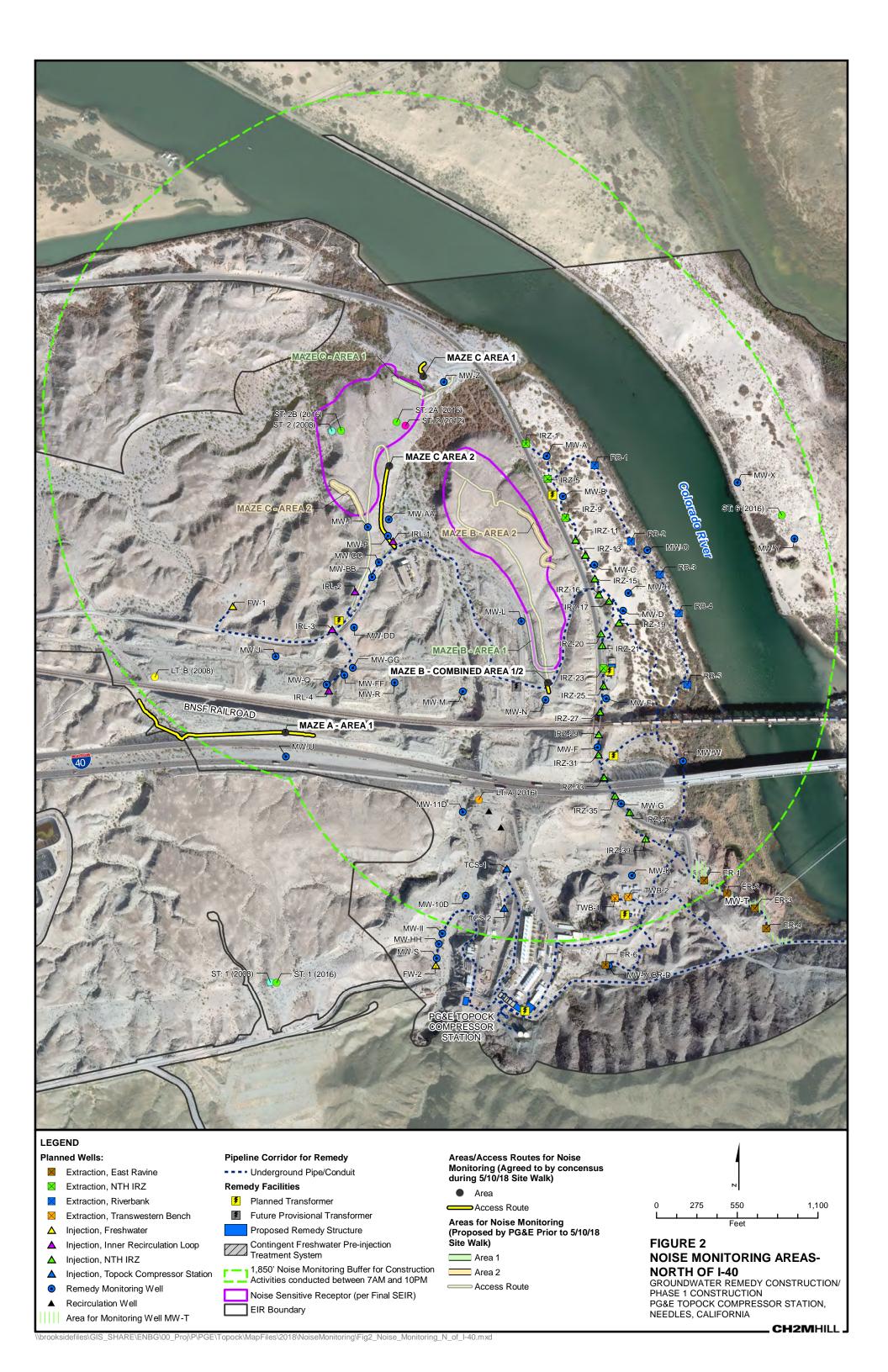
Less than 10 monitoring events have been conducted at Maze A-Area 2 (Figure 3). Four measurements were 61 dBA and the remainder were typically less than 54 dBA.

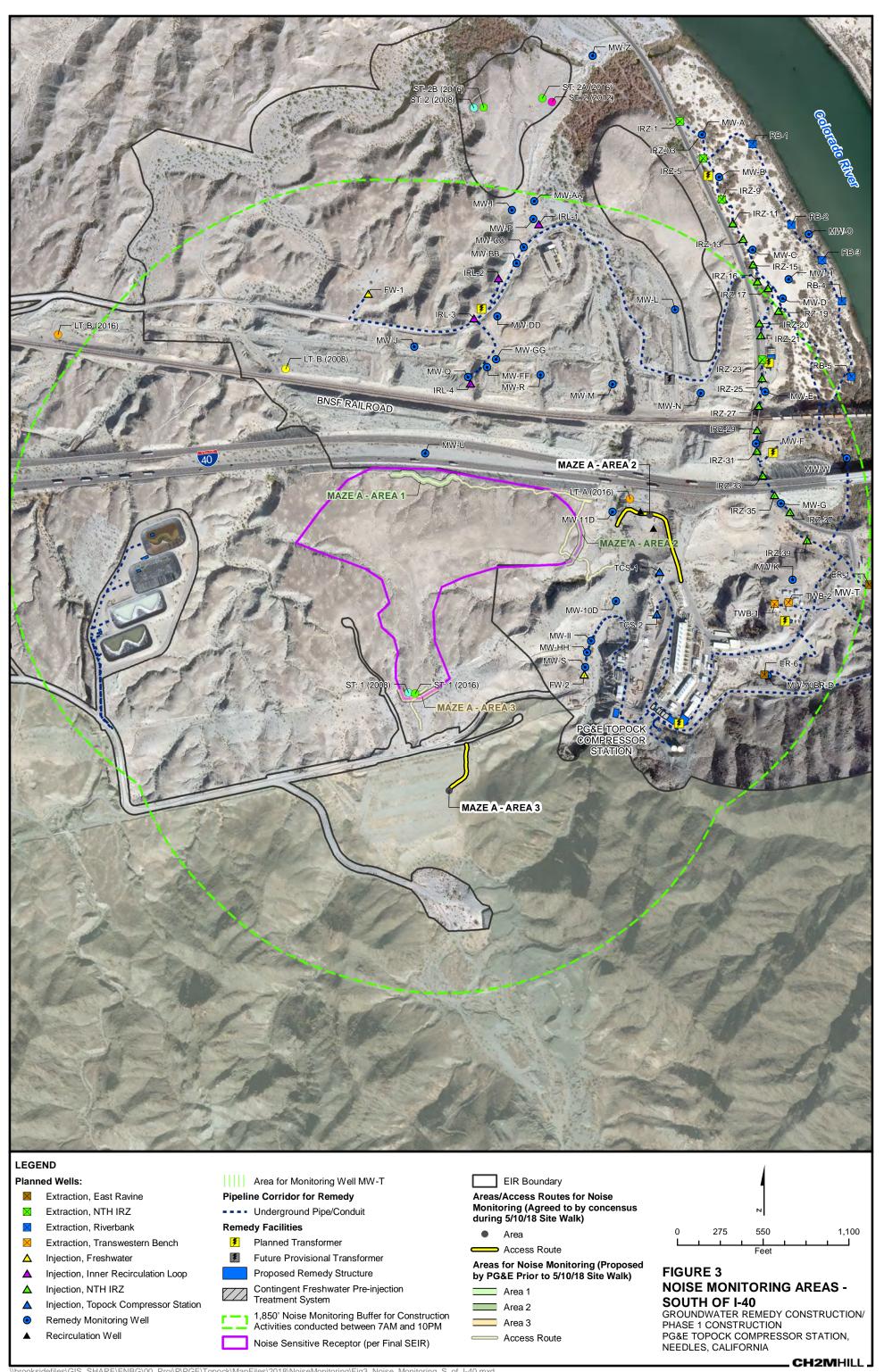
Less than 10 monitoring events have been conducted at Maze A-Area 3 (Figure 3). Five measurements were between 59 and 62 dBA and noted not to be associated with construction activities while the remainder were typically less than 52 dBA.

Noise monitoring conducted through November 2018 had not identified that construction activities exceed the applicable standards. In addition, there has no complaints resulting from project construction-related noise. Therefore, the temporary acoustical barriers have not been necessary. Monitoring will continue as work progresses and moves into new areas to identify when an acoustical barrier needs to be considered.

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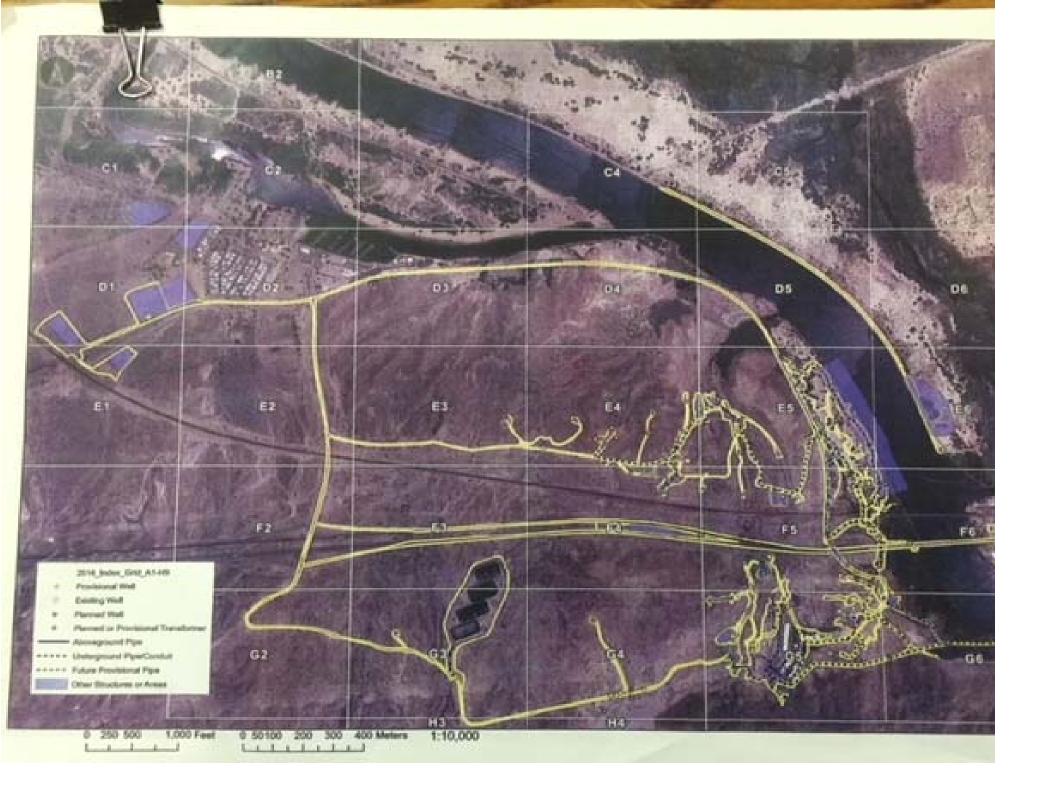


Attachment F
Six-Week Look-Ahead Schedule
(December 11, 2018 through January 19,
2019)

PG&E Topock Final Groundwater Remedy	Sunday	Sunday Tuesday		Wednesday	Thursday	Friday	Saturday	
Primary Planned Activities	12/9/2018	12/10/2018	12/11/2018	12/12/2018	12/13/2018	12/14/2018	12/15/2018	
Start Time (PST)		6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	
Construction Headquarters Access Road E1	No Work	Excavation for footings	Form installation	Forms & rebar installation	Forms & rebar installation	Forms & rebar installation	Forms & rebar installation (tentative)	
Well Installation			MW-L (E5), IRZ-09 (E5), IRZ-25 (F5), IRZ-21 (F5) site prep, MW-B site prep (E5)	MW-L (ES), IRZ-25 (FS), MW-B site prep (ES), IRZ-21 (FS) site prep	IRZ-25 (F5), MW-B (E5), MW-L (E5), IRZ-21 (F5) site prep	MW-L (F5), IRZ-21 (F5), MW-B (E5), IRZ-27 site prep (F5)	MW-L (F5), IRZ-21 (F5), M' B (E5), IRZ-27 site prep (F	
Other site activities			Goundwater sampling at MW-15 (G4)					
Primary Planned Activities	12/16/2018 12/17/2018 12/18/2018		12/18/2018	12/19/2018	12/20/2018	12/21/2018	12/22/2018	
Start Time (PST)	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM		
Construction Headquarters Access Road E1	Forms & rebar installation (tentative)	Forms & rebar installation	Concrete placement	Water stop installation	Concrete placement	Strip forms	No Worl	
Well Installation	MW-N (F5), IRZ-21 (F5), MW-B (E5), IRZ-27 site prep (F5)	MW-N (F5), IRZ-21 (F5), MW-B (E5), IRZ-27 site prep (F5)	MW-N (F5), IRZ-21 (F5), MW-B (E5), IRZ-27 site prep (F5)	MW-N (F5), IRZ-21 (F5), MW-B (E5), IRZ-27 site prep (F5)	MW-N (F5), IRZ-21 (F5), MW-B (E5), IRZ-27 site prep (F5)		No Work	
Well Development & Testing		MW-L (E5)	MW-L (E5)	MW-L (E5)				
Primary Planned Activities	12/23/2018	12/24/2018	12/25/2018	12/26/2018	12/27/2018	12/28/2018	12/29/2018	
Start Time (PST)	, , , ,		, ,				, , , , ,	
Construction Headquarters E1	No Work No Work		No Work	No Work	No Work	No Work	No Work	
Well Installation								
Primary Planned Activities	12/30/2018 12/31/2018		1/1/2019	1/2/2019	1/3/2019	1/4/2019	1/5/2019	
Start Time (PST)					6:30 AM	6:30 AM	6:30 AM	
Soil Processing Yard (D1)					Perimeter Fence Install	Perimeter Fence Install		
Pre-Trenching/Excavation Potholling and Characterization (F5), (G5)	No Work	No Work	No Work	No planned intrusive work - remobilization to the site from the	Potholing, Air-vac (tentative)	Potholing, Air-vac (tentative)		
Well Installation				holiday break.	MW-N (F5), IRZ-27 (F5), MW-B (E5), MW-O site prep (E5), MW-F site prep (F5)	MW-N (F5), IRZ-27 (F5), MW-B (E5), MW-O site prep (E5), MW-F site prep (F5)	MW-N (F5), IRZ-27 (F5), MW-B (E5), MW-O site prep (E5)	
Other site activities					Site walk at MW-X and MW-Y'			
Primary Planned Activities	1/6/2019	1/7/2019	1/8/2019	1/9/2019	1/10/2019	1/11/2019	1/12/2019	
Start Time (PST)	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM		
Soil Processing Yard (D1)		Perimeter Fence Install	Perimeter Fence Install	Perimeter Fence Install	Perimeter Fence Install	Perimeter Fence Install		
Pre-Trenching/Excavation Potholling and Characterization (F5), (G5)		Potholing, Air-vac (tentative)	Potholing, Air-vac (tentative)	Potholing, Air-vac (tentative)	Potholing, Air-vac (tentative)	Potholing, Air-vac (tentative)	No Work	
Well Installation	MW-N (F5), IRZ-27 (F5), IRZ- 09 (E5), MW-O (E5)	MW-N (F5), IRZ-27 (F5), MW-O (E5)	MW-N (F5), IRZ-27 (F5), MW-O (E5),	MW-N (F5), IRZ-27 (F5), MW-O (E5),	MW-F (F5), MW-N (F5), MW-O (E5),		No Work	
Primary Planned Activities	1/13/2019	1/14/2019	1/15/2019	1/16/2019	1/17/2019	1/18/2019	1/19/2019	
Start Time (PST)		6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	
Soil Processing Yard (D1)		Perimeter Fence Install	Perimeter Fence Install	Perimeter Fence Install	Perimeter Fence Install	Perimeter Fence Install		
Construction Headquarters E1		Site-wide clearing & grading Rip Rap installation	Site-wide clearing & grading Rip Rap installation	Site-wide clearing & grading Rip Rap installation	Site-wide clearing & grading	Site-wide clearing & grading		
Pipeline Alignment grubbing and clearing E5, F5, C5, F6	No Work	Pending ERTC 'Pipeline C1, C2, C3, C4, C5, C7, C8, C9, C10, C14, C17, F1	Pending ERTC 'Pipeline C1, C2, C3, C4, C5, C7, C8, C9, C10, C14, C17, F1	Pending ERTC 'Pipeline C1, C2, C3, C4, C5, C7, C8, C9, C10, C14, C17, F1	Pending ERTC 'Pipeline C1, C2, C3, C4, C5, C7, C8, C9, C10, C14, C17, F1	Pending ERTC 'Pipeline C1, C2, C3, C4, C5, C7, C8, C9, C10, C14, C17, F1		
Pre-Trenching/Excavation Potholling and Characterization (F5), (G5)		Potholing, Air-vac (tentative)	Potholing, Air-vac (tentative)	Potholing, Air-vac (tentative)	Potholing, Air-vac (tentative)	Potholing, Air-vac (tentative)		
Well Installation			MW-N (F5), MW-O (E5), MW-F (F5), MW-M site prep (F5)	MW-N (F5), MW-O (E5), MW-F (F5), MW-M site prep (F5)	MW-N (F5), MW-O (E5), MW-F (F5), MW-M site prep (F5)	MW-N (F5), MW-O (E5), MW-F (F5), MW-M site prep (F5)	MW-N (F5), MW-O (E5), MW-F (F5), MW-M site prep (F5)	

Note - 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.





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

D-2 AX1109181012BAO



Attachment G. 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 has submitted validated data to DTSC via monthly emails. For ease of recordkeeping and to minimize the number of adhoc compliance reports/emails, PG&E will include validated data in each monthly progress report starting with this November 2018 report.



GMP 2018-10 GMP Sampling

Filtered: N N N ASSET ASSET ASSET ASSET ASSET ASSET ASSET Lab: ASSET ASSET ASSET ASSET ASSET ASSET ASSET Hexavalent Alkalinity, Total Specific Total Dissolved Nitrate/Nitrite Calcium, Total Dissolved Iron, Magnesium, Manganese, Sodium, Sulfate Description: Chloride pН Chromium as CaCO3 Dissolved Dissolved Conductance Solids as Nitrogen Dissolved Chromium Dissolved Dissolved SU Units: μg/L mg/L mg/L uS/cm mg/L mg/L mg/L mg/L μg/L μg/L mg/L μg/L mg/L Method: EPA 218.6 | SM 2320 B | EPA 300.0 | SM4500-HB | EPA 120.1 | EPA 300.0 | SM 2540 C | SM 4500-NO3 F | EPA 200.7 | EPA 200.8 EPA 200.7 EPA 200.7 EPA 200.8 EPA 200.7

	Sample			Date			-				-			•				
Location ID	Type	Sample ID	Matrix	Collected														
				10/0/0010			1 100						400	F.6				
PE-01	N	PE-01-1018	GW	10/2/2018	7.6	260	1,100	7.4	4,400	360	2,600	0.33	180	5.6	ND (20)	41	30	670
	l			10/0/0010			2 400		====						(0.0)			
TW-03D	l N	TW-03D-1018	GW	10/2/2018	480	150	2,100	/.3	7,500	500	4,300	2.6	210	500	ND (20)	25	12	1,3

PARCADIS Design & Consultancy for natural and built assets				Filtered: Lab: Description:	F ASSET Hexavalent Chromium	N ASSET Specific Conductance	N ASSET Nitrate/Nitrite as Nitrogen	F ASSET Arsenic, Dissolved	F ASSET Total Dissolved Chromium	F ASSET Manganese, Dissolved	F ASSET Molybdenum, Dissolved	F ASSET Selenium, Dissolved
RMP 2018-09 GMP Sampling				Units: Method:	μg/L EPA 218.6	uS/cm EPA 120.1	mg/L SM 4500-NO3 F	μg/L SW 6020	μg/L SW 6020	μg/L SW 6020	μg/L SW 6020	μg/L SW 6020
Sample Location ID Type Sample ID Matrix				Date			1				,,	
MW-34-100	N	MW-34-100-Q318	GW	10/1/2018	ND (1)	10,000	3.6	1.6	ND (1)	200	49	ND (0.5)
MW-44-115	N	MW-44-115-Q318	GW	10/1/2018	6.4	11,000	ND (0.05)	5.4	7	17	75	ND (0.5)
MW-46-175	N	MW-46-175-Q318	GW	10/2/2018	6.5	18,000	1		7		190	ND (2.5)
MW-46-175	FD	MW-900-Q318	GW	10/2/2018	6.5	18,000	1		7		180	ND (2.5)