

Curt Russell

Topock Project Manager Environmental Remediation Topock Compressor Station 145453 National Trails Hwy Needles, CA 92363

Mailing Address P.O. Box 337 Needles, CA 92363

760.791.5884 Fax: 760.326.5542 Email: gcr4@pge.com

January 10, 2019

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

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

Subject: December 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_December 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 December 2018 as well as activities planned for the next six weeks (January 6 to February 16, 2019), and presents available results from sampling and testing performed in December 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.

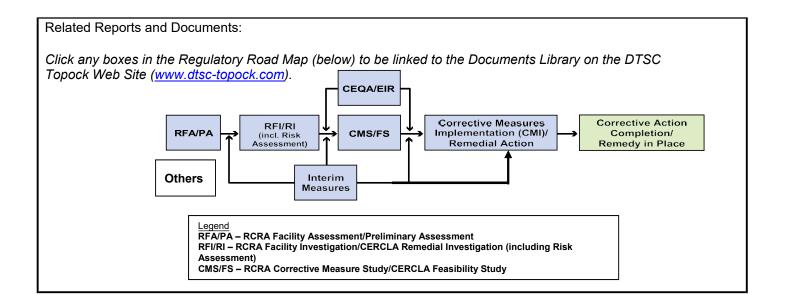
Monthly progress reports will be submitted to DTSC and DOI by the 10th day of the following month during construction and start-up of the groundwater remedy at the Topock Compressor Station which officially began on October 2, 2018. This is the third monthly progress report. Please contact me at (760)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

Sincerely,

Curt Russell

Topock Project Manager

Topock Project	Executive Abstract
Document Title: December 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: 1/10/2019 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	Utility Explain.
☐ 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 	ii no, why is the document needed?
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?	Other Justification/s: □ Permit □ Other / Explain:
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).	
Brief Summary of attached document:	
This monthly report describes activities taken during December 20 February 16, 2019) and presents available results from sampling a material deviations from the approved design documents and/or th that PG&E has proposed to the California Department of Toxic Sut (DOI) or that have been approved by DTSC and DOI. This report a activities performed and activities planned at the Topock Compress Plan and DTSC's 2013 Community Outreach Plan, as well as cont public interest groups, if any.	and testing in December 2018. In addition, this report discusses e Construction/ Remedial Action Work Plan (C/RAWP), if any, ostances Control (DTSC) and the U.S. Department of the Interior also highlights key personnel changes, if any, and summarizes sor Station in support of DOI's 2012 Community Involvement
Written by: Pacific Gas and Electric Company	
Recommendations:	
Provide input to PG&E.	
How is this information related to the Final Remedy or Regulatory F This submittal is required in compliance with the CACA, CD, and pr	·
Other requirements of this information? None.	





December 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_December 2018

January 2019

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

On Behalf of Pacific Gas and Electric Company





Contents

Acron	ıyms an	a Abbre	eviations	
1.	Introd	luction		······································
2.	Month	nlv Upda	ate	
	2.1	•	iption of Activities and Work Completed	
		2.1.1	Work Completed	
		2.1.2	Work Already Underway and During Implementation	
		2.1.3	Freshwater Usage, Waste Generation and Management	
		2.1.4	Worker Training and Education	
		2.1.5	Status of Work Variance Requests	
		2.1.6	Use of Future Activity Allowance	[
		2.1.7	Issues Encountered and Actions Taken to Rectify Issues/Problems	
		2.1.8	Key Personnel Changes	
	2.2	Comm	nunication with the Public	t
	2.3	Planne	ed Activities for Next Six Weeks	
	2.4	Constr	ruction Schedule Review	6
	2.5	Availal	ble Sitewide Groundwater Monitoring Data (DTSC Condition of Approv	′al xi)6
3.	Refer	ences		
Tables	_			
		marı ef	Fruirenmental Balance To Constructions (FRTCs) legued to Contract	oro Tobloo 1
		-	Environmental Release-To-Constructions (ERTCs) Issued to Contract	
Table	2-2 Sum	nmary of	Work Variance Requests (WVRs)	Tables-3
Table	2-3 Sun	nmary of	Percent Completeness of Key Construction Activities	Tables-5
Table	B-1. Gro	oundwate	er Sampling Results through December 2018	B-′
Figure	es			
2-1 2-2			Site Plan and Access Routes line Locations	
Attacl	nments			
A B		graphs ble Borir	ng Logs and Water Sample Results from Well Drilling	

Soil Sampling Locations and Available Soil Analytical Results (Soil Data Presented in Excel File)

Noise Monitoring Data Summary (SEIR NOISE-2 requirement)
Six-Week Look-Ahead Schedule (December 23, 2018 through February 2, 2019)

Validated Sitewide Groundwater Monitoring Data (DTSC Condition of Approval xi)

Perimeter Air Sampling Analytical Results

AX0108192225BAO

ВС

D

E F G



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 require 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 abovementioned 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 by DTSC on April 24, 2018 (DTSC, 2018a).

This is the third of the monthly progress reports that will be submitted to DOI and DTSC for the duration of the remedy construction and startup. This monthly progress report documents activities during December 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 December 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 December 31, 2018, a total of 24 six-week look-ahead schedule emails were sent. Of those, four six-week look-ahead schedule emails were sent in December 2018 (on December 3, 9, 16, and 21, 2018).
- On August 10, 2018, PG&E issued the first Environmental Release to Construct (ERTC) to contractors. As of December 31, 2018, a total of 25 ERTCs were issued for mobilization and construction activities (see Table 2-1). Of those, seven ERTCs were issued in December 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
 December 2018, a total of 19 daily construction activities lists were published and discussed
 at the morning tailboards.
- In December 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**):
 - Poured concrete into the formwork for the access road at the Construction Headquarters (CHQ).
 - Surveyed and staked Pipeline C alignment.
 - On December 19, 2018, transplanted 30 sensitive plant species (29 palo verde and one cactus) from the Soil Processing Yard (SPY) and an area north of the Transwestern Bench. Planted those plants in the approved transplantation area off National Trails Highway (NTH).
 - Completed the spreading and compaction of soil (that was excavated during the construction of the truck containment pad) in TCS ponds area.
 - Completed installation and hydrostatic testing of the temporary construction water system.
 Freshwater from the TCS storage tanks was used for hydrostatic testing. Subsequent to the test, the water used for testing was re-used onsite for dust suppression.
 - 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), and well development on December 15, 2018.
 - b) At the MW-L location, completed installation of monitoring wells in the first borehole on December 2, 2018 (drilled to 315 feet and reamed to 249 feet) and the second borehole on December 19, 2018 (drilled to 184 feet).
 - c) Completed drilling of the pilot boring at IRZ-13 on December 2, 2018 (drilled to 247 feet). Collected water samples at various intervals. Backfilled the borehole with sand.
 - d) Completed drillng of the pilot boring at IRZ-23 on December 3, 2018 (drilled to 147 feet). Collected water samples at various intervals. Backfilled the borehole with sand.



- e) Completed drilling of the pilot boring at IRZ-25 on December 14, 2018 (drilled to 172 feet). Collected water samples at various intervals. Backfilled the borehole with sand.
- f) Completed drilling of the pilot boring at IRZ-21 on December 19, 2018 (drilled to 158 feet). Collected water samples at various intervals. Backfilled the borehole with sand.
- g) Conducted site preparation activities at MW-N site.
- h) See **Attachment B** for available information such as boring logs and water analytical results. Boring logs for IRZ-15, 21, 23, and 25 are 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 at approximately 1 foot below ground surface (bgs) at IRZ-11/IRZ-16/IRZ-17 (sampled on 12/18/18), IRZ-21 (sampled on 12/13/18), IRZ-25 (sampled on 12/4/18), MW-B (sampled on 12/14/18), MW-F (sampled on 12/18/18), and MW-N (sampled on 12/5/18).
- b) 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 December 2018 at the 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 December 2018.
- c) See **Attachment D** for information about previous air sampling locations and air analytical results.

- Noise Monitoring Activities:

- a) Noise monitoring is conducted at pre-approved locations closest to the construction activities. Through December 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 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 31, 2018, PG&E has started and will continue to perform the following activities:

- Backfilling the pilot boring at IRZ-9 with sand.
- Continue to drill MW-F.
- 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 Freshwater Usage, Waste Generation and Management

As of December 31, 2018, since construction of the groundwater remedy officially began on October 2, 2018, the volumes of freshwater used for remedy construction and waste streams generated from remedy construction are:

- Approximately 580,000 gallons of freshwater were used, of which 2 percent was for pilot boring/well
 installation and general construction activities (e.g., CHQ access road work) and 98 percent was for
 fugitive dust suppression.
- Approximately 41 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 were sampled in
 accordance to the approved Soil Management Plan, and the final disposition will be reported in future
 monthly reports.
- Approximately 27,000 gallons of wastewater were generated from drilling operations. 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 66 cubic yards of general construction waste and 18 cubic yards of recyclables were generated and transported to Republic Services in Lake Havasu 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 December 31, 2018, a total of 45 health and safety training sessions were held and 210 employees and contractors received the training. Of those, in December 2018, 6 sessions were conducted and 22 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 December 31, 2018, a total of 42 WEAT sessions were conducted and 243 employees and contractors received the training. Of those, in December 2018, 6 sessions were conducted and 22 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 December 31, 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 December 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 submitted WVR #3 to DTSC and DOI on December 24, 2018. WVR #3 contains proposed changes within the CHQ fence line to avoid/minimize the overall amount of soil disturbance during construction, reduce the number of truck trips to haul wastewater, and allow for additional working space within the yard. There are no proposed changes to the CHQ footprint nor its fence line. DTSC and DOI approved WVR #3 on January 4, 2019.



See Table 2-2 for information regarding activities related to previously proposed WVRs (i.e., material deviations from the design documents, the C/RAWP, or other approved work plans), and agencies' actions on those requests.

2.1.6 Use of Future Activity Allowance

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

2.1.7 Issues Encountered and Actions Taken to Rectify Issues/Problems

- Several well locations were slightly adjusted to accommodate access for both sonic and dual rotary rigs, while minimizing ground disturbance and vegetation removal. Pipeline C alignment was adjusted accordingly in those locations.
- Pipeline C alignment was also adjusted to avoid conflict with the Interim Measure No. 3 extraction pipeline from well PE-1 to the MW-20 Bench.
- Based on recent site walks with the construction team, available space within the current maximum
 construction footprint may not adequate for installation of Pipeline C along segments C1-C3 (north
 end of the alignment) and just south of the BNSF railroad bridge. In addition, the Pipeline C jack-andbore pit location west of NTH is currently located outside of the maximum construction footprint.
 PG&E is evaluating options to resolve these space-related issues and will report on actions to rectify
 them in the next monthly progress report.

2.1.8 Key Personnel Changes

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

2.2 Communication with the Public

Below are the highlights of key communication and interactions with the public that occurred in December 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 (January 6 through February 16, 2019) include the following:

- Well installation activities:
 - Complete installation of wells MW-N, MW-F, MW-B, MW-G, MW-D, IRZ-23, and IRZ-27.
 - Complete site preparation for wells MW-M and IRZ-27.
- Non-well construction activities:
 - Complete access road to the CHQ.
 - Perform clearance and grading at the CHQ.
 - Install perimeter fence at the SPY.
 - Conduct pre-characterization of soil along planned pipeline alignment and in infrastructure location within AOCs.



- Perform grubbing 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 December 31, 2018. PG&E will continue to look for opportunities to optimize the construction workflow and schedule.

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

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

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.

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



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.

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.

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

December 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	TCs	
1	Initial mobilization activities at the Construction Headquarters (CHQ), Soil Processing Yard (SPY), and three staging areas (#9 Parking area off I-40, #18 MW-20 Bench, and #23 Transwestern Bench). Scope included installation of temporary construction trailers, portable generators, SWPPP BMPs, construction signages, and temporary construction fencing, as well as equipment staging and truck inspections.	August 10, 2018
Addendum 1 to ERTC #1	Scope included setup of wastewater and freshwater storage tanks at MW-20 Bench, improvement of the access road at the CHQ, installation of perimeter fence at the SPY, and grading at SPY.	September 21, 2018
Addendum 2 to ERTC #1	Scope included grading for drill rig setup at IRZ-20.	October 4, 2018
Addendum 3 to ERTC #1	Scope included geotechnical investigation in the footprint of the future Carbon Amendment building at the MW-20 Bench.	October 9, 2018
Addendum 4 to ERTC #1	Scope included the installation of a temporary handrail along the walk way from the MW-20 Bench to the floodplain.	December 28, 2018
2	Scope included the installation of the temporary construction water system and construction water tanks at Area #25 Route 66 Welcome Sign.	September 28, 2018
3	Scope included the installation of the Public Information Trailer, a fugitive dust sign, an information kiosk, and a construction delivery sign at the northwest corner of Park Moabi Road and National Trails Highway (NTH).	September 4, 2018
4	Scope included the installation of a truck containment pad at the TCS evaporation ponds and maintenance of the access road to the ponds.	September 24, 2018
6	Scope included the geotechnical investigation along Pipeline F alignment (on the Compressor Station entrance road).	October 3, 2018
7	Scope included the installation of traffic control along the southern end of NTH per the Traffic Control Plan.	September 17, 2018
9	Scope included the transplantation and planting of sensitive plants.	November 9, 2018 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

AX0108192225BAO Tables-1



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

December 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
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
5j	Scope included the site setup, drilling, testing, and demobilization at IRZ-25 on the MW-20 Bench.	December 3, 2018
5k	Scope included the site setup, drilling, testing, and demobilization at IRZ-21 on the MW-20 Bench.	December 9, 2018
51	Scope included the site setup, drilling, testing, and demobilization at MW-B in the floodplain.	December 10, 2018
Addendum to ERTC #5I	Scope included the setup of an additional temporary equipment and material staging area in the floodplain.	December 13, 2018
5m	Scope included the site setup, drilling, testing, and demobilization at MW-F along NTH.	December 17, 2018
5n	Scope included the site setup, drilling, testing, and demobilization at IRZ-11 in the floodplain.	December 17, 2018

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

Tables-2 AX0108192225BAO

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

December 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: • Upgrade the existing lined containment to concrete - The original synthetic liner material has degraded from exposure to UV light, heat, and abrasion and must be replaced. PG&E proposed to replace the synthetic-lined containment (including K-rails) with a concrete containment to support the groundwater remedy. The concrete color will be desert tan, and information on this proposed concrete color will be submitted to the agencies for review. The proposed concrete material will be similar to the material of the truck lane in the final remedy	DOI approved WVR #1 on June 22, 2018 DTSC approved WVR #1 on July 5, 2018
	 design (see Appendix E of the Final Basis of Design Report (CH2M, 2015a),* Section 033 00, Cast-In-Place Concrete). 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/DTSC approved WVR #2 on August 29,
	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.	2018
	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.	
3	PG&E proposed changes within the CHQ fence line to avoid/minimize the overall amount of soil disturbance during construction, reduce the number of truck trips to haul wastewater, and allow for additional working space within the yard. There are no proposed changes to the CHQ footprint nor its fence line. The specifics are described below:	DOI/DTSC approved WVR #3 on January 4,
	Relocate the decontamination pad from the western fence to the northern fence (near the western corner). Based on recent survey data collected during construction, the difference in ground elevation between northern and southern end of the pad is about 4 feet. Moving the pad to the northern fence would eliminate the difference in ground elevation and reduce the amount of soil disturbance by at least 80 cubic yards.	2019
	Bring the remedy-produced wastewater tank from belowground to aboveground, increase the tank volume from 1,000 to 2,500 gallons, and place the aboveground, double-walled tank adjacent to the decontamination pad. The change from belowground to aboveground reduces the amount of soil disturbance by at least 50 cubic yards. The change to a bigger tank will reduce the amount of truck trips needed to haul wastewater. The placement of the tank adjacent to the decontamination pad allows for the pad to function as a secondary containment for the haul truck during off-loading of the wastewater.	
	Defer construction of the underground sewage tanks. Deferral of the underground tanks reduces the overall amount of soil disturbance by at least 800 cubic yards. All sanitary wastes will be managed in aboveground sewage tanks (similar to the ones currently used for the SPY trailers) or portable toilets.	
	Swap the location of the construction trailers and the sunshade and change the configuration of the sunshade from a rectangle to a square. This change will allow for more working space within the CHQ. All functions that would occur in the Workshop/Sampling Processing building will be conducted in the construction trailers.	

Note:

AX0108192225BAO Tables-3

^{*} 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.

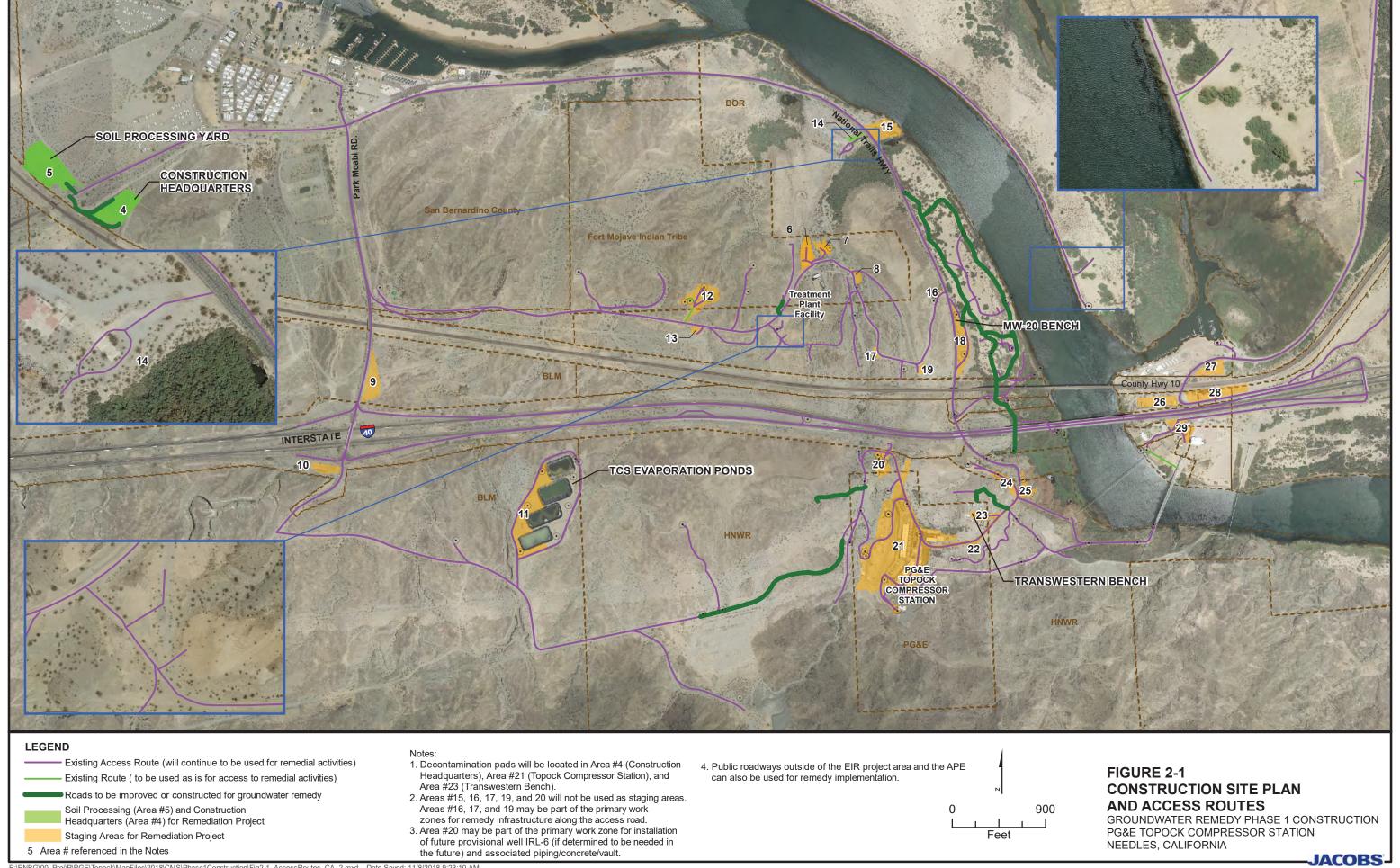
Table 2-3 Summary of Percent Completeness of Key Construction Activities

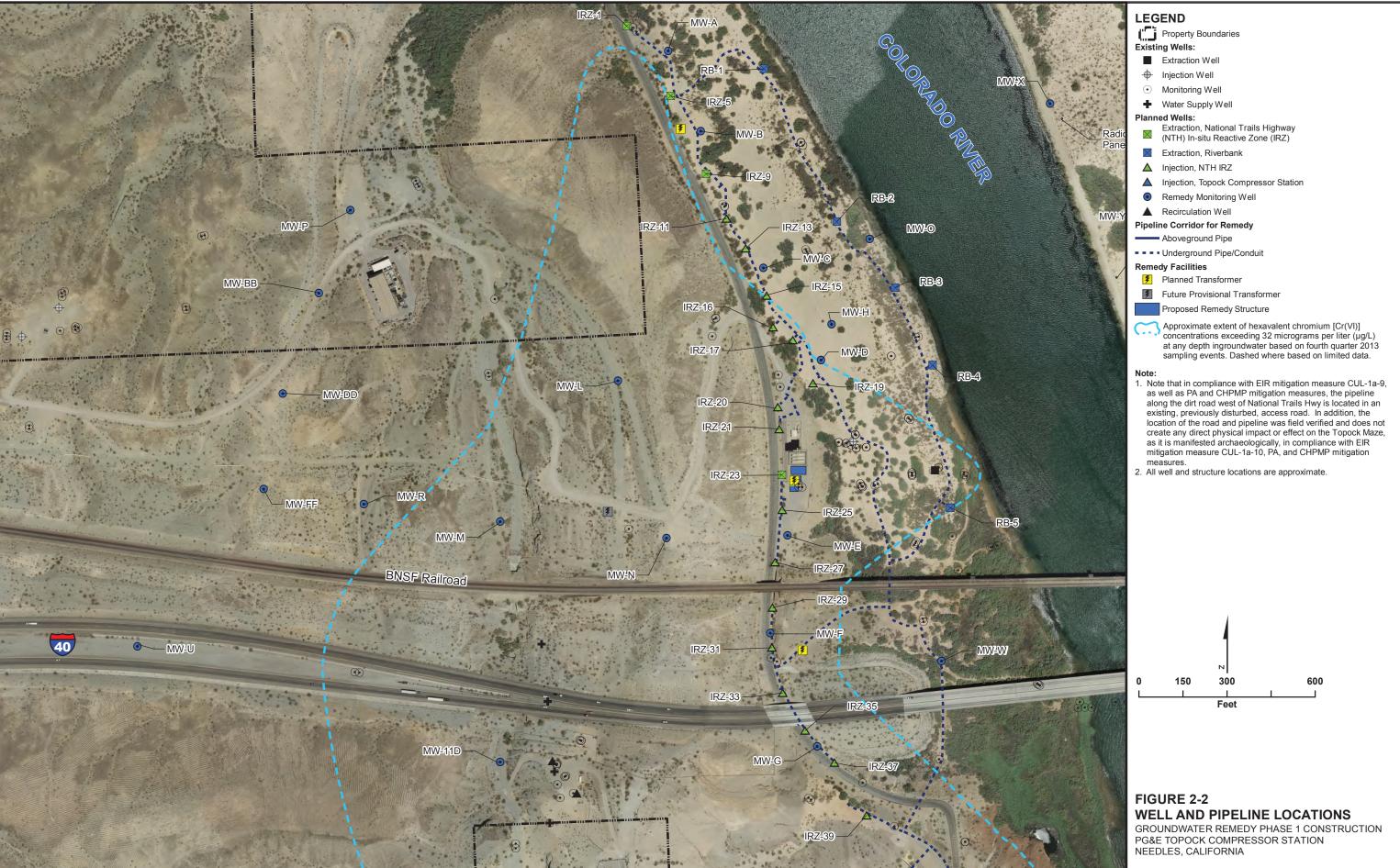
December 2018 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

Activity	% Complete	Current Status of Construction Activities (as of December 31, 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	100%	Complete
TCS Ponds concrete containment pad	100%	Complete
Construction Headquarters access road	95%	Site prep, excavation, conduit installation, subgrade backfill, and concrete placement complete. Available for use in January after concrete cure period.
MW-B	5%	Site prep initiated. Begin drilling in January.
MW-E	100%	Complete
MW-F	5%	Site prep initiated. Begin drilling in January.
MW-L	95%	Well construction complete. Develop in January.
MW-N	5%	Site prep initiated. Begin drilling in January.
IRZ-9 pilot boring	95%	Boring and sampling complete; finish backfill in January.
IRZ-15 pilot boring	100%	Complete
IRZ-13 pilot boring	100%	Complete
IRZ-20 pilot boring	100%	Complete
IRZ-21 pilot boring	100%	Complete
IRZ-23 pilot boring	100%	Complete

AX0108192225BAO Tables-5

Figure	25
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Attachment A Photographs



PL01 Photo Log Photo Sheet



IRZ-25 sonic drilling (photo taken on 12/11/18)



Well development at MW-E (photo taken on 12/13/18)



Snow fence to protect plants at MW-B location (photo taken on 12/13/18)



IRZ-9 sonic drilling (photo taken on 12/11/18)



SWPPP BMPs (silt fence and fiber rolls) at MW-N well location (photo taken on 12/13/18)



Cement pour at CHQ access road (photo taken on 12/18/18)

01/07/2019 Page 1 of 2



Work on CHQ access road (photo collected on 12/18/18)



Temporary equipment staging area in floodplain (photo taken on 12/19/18)



Temporary pipe storage location in floodplain (photo taken on 12/19/18)

01/07/2019 Page 2 of 2

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

Table B-1. Groundwater Sampling Results through December 2018

December 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
MW-E	MW-E-70-121418	12/14/18	70 (WD)	Data not yet available	3000
MW-E	MW-E-142-121418	12/14/18	142 (WD)	4500	4200
IRZ-9	IRZ-9-VAS-27-32	12/03/18	27 □32	120	120
IRZ-9	IRZ-9-VAS-47-52	12/04/18	47 □52	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-62-67	12/04/18	62 □67	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-182-187	12/11/18	182 □187	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-207-212	12/13/18	207 □212	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-232-237	12/13/18	232 □237	0.811 J	< 0.17 U
IRZ-9	IRZ-9-VAS-264-269	12/15/18	264 □269	Data not yet available	< 0.17 U
IRZ-9	IRZ-9-VAS-276-281	12/16/18	276 □281	Data not yet available	< 0.17 U
IRZ-9	IRZ-9-VAS-292-297	12/18/18	292 □297	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-32-37	11/17/18	32 - 37	170	220
IRZ-13	IRZ-13-VAS-57-62	11/18/18	57 - 62	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-102-107	11/19/18	102 - 107	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-142-147	11/19/18	142 - 147	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-180-185	11/27/18	180 - 185	230	190
IRZ-13	IRZ-13-VAS-197-202	11/28/18	197 - 202	< 0.13	< 0.83
IRZ-13	IRZ-13-VAS-224-229	11/28/18	224 - 229	< 0.13	< 0.83
IRZ-13	IRZ-13-VAS-237-242	11/29/18	237 - 242	< 0.13 U	< 0.17 U
IRZ-15	IRZ-15-VAS-32-37	11/01/18	32 - 37	13	13
IRZ-15	IRZ-15-VAS-62-67	11/02/18	62 - 67	< 0.65 U	0.459 J
IRZ-15	IRZ-15-VAS-102-107	11/03/18	102 - 107	< 0.65 U	< 0.17 U
IRZ-15	IRZ-15-VAS-132-137	11/04/18	132 - 137	0.228 J	< 0.17 U

Table B-1. Groundwater Sampling Results through December 2018

December 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)
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-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-21	IRZ-21-VAS-52-57	12/15/18	52 🗆 57	Data not yet available	97
IRZ-21	IRZ-21-VAS-77-82	12/16/18	77 🗆 82	Data not yet available	1.1
IRZ-21	IRZ-21-VAS-112-117	12/16/18	112 🗆 117	Data not yet available	< 0.17 U
IRZ-21	IRZ-21-VAS-132-137	12/17/18	132 🗆 137	Data not yet available	< 0.17 U
IRZ-21	IRZ-21-VAS-147-152	12/18/18	147 🗆 152	4000	3600
IRZ-23	IRZ-23-VAS-67-72	12/01/18	67 🗆 72	86	85
IRZ-23	IRZ-23-VAS-92-97	12/01/18	92 🗆 97	0.453 J	< 0.033 U
IRZ-23	IRZ-23-VAS-122-127	12/02/18	122 🗆 127	2100	2000
IRZ-23	IRZ-23-VAS-139-144	12/02/18	139 🗆 144	3400	3000
IRZ-25	IRZ-25-VAS-52-57	12/05/18	52 🗆 57	4300	3500
IRZ-25	IRZ-25-VAS-67-72	12/05/18	67 🗆 72	750	620
IRZ-25	IRZ-25-VAS-92-97	12/06/18	92 🗆 97	140	130
IRZ-25	IRZ-25-VAS-112-117	12/11/18	112 🗆 117	< 0.13 U	< 0.17 U
IRZ-25	IRZ-25-VAS-147-152	12/11/18	147 🗆 152	3800	3600
IRZ-25	IRZ-25-VAS-162-167	12/13/18	162 🗆 167	3000	3000

μg/L = micrograms per liter
ft bgs = feet below ground surface

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

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

A	RC/	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	DDAEI	Shee	et: 1 of	13
Date Sta	arted:	10/31/2	2018		Surface		· · ·	DRAF 1	Boring No	.: <u>IRZ-15</u>	Pilot
Date Co	-	d: <u>11/15/:</u> <u>Casca</u>	2018 de		Northing Easting		•		Client: PG&E		
Drilling N			Drilling		Total De	•	•	bgs		water Remedy	Phase I
Driller Na		Nick P					neter: <u>6 in</u>		<u>Needles</u>	, California	
Drilling A	Asst:	-	ner/J. Cande		-		Water: N/A	<u> </u>			
Logger: Editor:			cia / G Jeffer //dGrane		Samplir Samplir	-			_ Project Number: <u>T</u>	ороск	
Weather	·:		warm to hot		Convert	-		es 🗵 No	_		
Depth (ft)	(in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Description		Drilling Notes	Drilling Fluid
	ř			0 %			(0.0 - 2.0'): No F	Recovery lost during hand c	learance		
_ 1	0						(0.0 = 0.0 %, 0.0 0.0 %)				
_ 2							yellowish brown angular to round	y graded sand (SP); yellow (10YR 5/4); very fine grains d; little coarse to very coars nules to small pebbles, sub	ed to medium grained,		
_ 4 _	60				SP		dry; no staining				
_ 5 _					OF .						
6							(7.0. 47.0)) D-	the standard (CD), have	(40VD 410)		
ARCADIS 20180927 PL							grained to medi coarse grained	orly graded sand (SP); brow um grained, angular to roun sand, angular to round; trac and; trace silt; trace clay; dro	id; little coarse to very se granules to small		
POR PLOGGED 10 10 10 10 10 10 10 1											0 gal of water used
11											
12 12 1	120				SP						
14											
COMENIA											
17 18				 			4/4); very fine g	ty sand with gravel (SM); drained to very coarse graine to large pebbles, angular to	ed, angular to subangular;	-	
19					SM						
20 Notes:	USCS	S = Unifie	d Soil Classit	ication Sv	l stem. U	= not c	l letected abov	e the laboratory repo	rting limit, ppb = Parts	per Billion.	<u> </u>
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SOILE		-		-							

Siller Once Cascade Ca	atte Completed: 11/15/2018 Northing (NADB3): NA Client: PGSE Cascade Easting (MADB3): NACCAGE Easting (MAD	AR	CADIS	Design & Consultancy for natural and built assets		Bor	ing Lo	g		Sheet	t: 2 of	13
Sample (b)	Accordance and the completed of the control of the								Bor	ing No.	.: IRZ-15	Pilot
Total Depth: 257 ft bgs	Total Depth: 257. hgs Location: Groundwater Remedy Phase I file Name: Mick Petrone Borehoe Diameters 6in	•				_	•					
Illiar Name: Nick Petrone Borehole Diameter: Sin Needles, California	Miles Name Nick Petrone Borehole Diameter 6. in Needles, California							\ <u>-</u>				
The continuence of the continu	Table Continuous Continuo	-		-				· ·			-	Phase I
A. Garcia / G. Jeffers Sampling Method: Sean M.GGrane Sampling Interval Continuous Sampling Interval Co	Sampling Method: 10 ft Core Barrel Project Number: Topock		· ·							<u>iveedies,</u>	, Calliottila	
Search Converted to Well: Vel Solve	Sean McGrane Sunny warm to hot Converted to Well: Sold Description De	-	-						 Project Ni	ımber: To	nnock	
eather: Sunny warm to hot Converted to Welt: Yes S No Serve Serve	Converted to Well: Yes No Description Drilling Notes Drilling	ditor:					-		1 10,000110	umbor. <u>10</u>	роск	
Simple ID Groundwinter Sample ID Sample ID Sample ID Simple ID Sim	See Semple ID Grundwater Sample ID Semple ID Semple ID Semple ID September ID September ID September ID Semple ID Se	/eather:					-					
22 120 SM SM SM (24.5 - 27.0) Well graded gravel with all and sand (GW-GM); very dark grayes brown (10YR 3/2) granules to large pebbles, angular to banden gravel with said sand, angular; little all, mode, no staining state of the very course grained sand, angular; little all, mode, no staining state of the very fine to very course grained sand, angular; little all, mode, no staining state of the period of the very fine to very course grained sand, angular to subangular; little all, mode, no staining state of the period of the very fine to very course grained sand, angular to subangular; little all, well trace clay; wet; no staining state of the period of the very fine to very course grained sand, subangular; and all, tittle very fine to very course grained sand, subangular to round; trace large pebbles, angular to subangular; and sittle very fine to very course grained sand, subangular to round; trace large pebbles, angular to subangular, wet; no staining state of the period of the period of the very course grained sand, subangular to round; trace large pebbles, angular to subangular, wet; no staining state of the period of the very course grained sand, subangular, wet; no staining state of the period of the pe	22	Depth (ft) (Recovery (in)			Geologic Formation	USCS	USCS Class	Description	n		Drilling Notes	Drilling Fluid
30 _ 30 _ 30 _ 30 _ 30 _ 30 _ 30 _ 30 _	30 _ 30 _ 31 _ 32 _ 120	.21				GW-GM	dark g suban silt; m (27.0 - plastic little v	gular; little very fine to very coarse oist; no staining - 29.5') Gravelly silt with sand (ML bity; little granules to very large pelery fine to very coarse grained sar	s to large pebbles, e grained sand, and); brown (10YR 4/3 bbles, angular to su	angular to gular; little); medium ıbangular;	Approximate depth of water	
IRZ-15-SS- 30-35 IRZ-15-VAS- 32-37 (13 ppb) GM O O O O O O O O O O O O O	IRZ-15-SS- 30-35 IRZ-15-VAS- 32-37 (13 ppb) GM O O O O O O O O O O O O O O O O O	3031				0000	to med very c	dium pebbles, angular to subangu oarse grained sand, subangular to	lar; and silt; little ve	ry fine to		0 gal of wate used
37	37	33	IRZ-15-SS- 30-35	32-37		GM						
38		-	IRZ-15-SS-									
otes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.	otes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.	.38	35-40									
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9/	RO	ADIS	Design & Consultancy for natural and built assets		Вс	oring Lo	g			Sheet	3 of	13
Date S	tarted	: <u>10/31/</u>	2018		Surface	e Elevation:	N/A		Bor	ina No.	: <u>IRZ-15</u>	Pilot
Date C	omple	eted: <u>11/15/</u>	2018		Northin	ng (NAD83):	N/A					<u></u>
Drilling	Co.:	<u>Casca</u>	de		Easting	g (NAD83):	N/A		Client:	PG&E		
Drilling			Drilling		Total D	-	257 ft bgs		Location:		<u>ater Remedy</u>	/ Phase I
Driller I	Name		etrone			ole Diameter:				Needles,	California	
Drilling	Asst:	<u>T. Aylı</u>	<u>mer/J. Cande</u>	laria	Depth	to First Wateı						
Logger	:	A. Gar	<u>rcia / G Jeffer</u>	S		ng Method:	10 ft Core Barrel		Project Nu	umber: <u>To</u>	pock	
Editor:		<u>Sean l</u>	<u>McGrane</u>		Sampli	ng Interval:	Continuous					
Weath	er:	Sunny	warm to hot		Conve	rted to Well:	☐ Yes ⊠ No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Description			Drilling Notes	Drilling Fluid
- 41_ - 42_ - 43_ - 44_ - 44_ - 45_	96	IRZ-15-SS- 40-45			GM							
47 48 49 49 50 40 40 40 40 40 40 40 40 40 40 40 40 40		IRZ-15-SS- 45-50				granu very o	- 57.0') Silty gravel with les to medium pebbles, oarse grained sand, sul pebble, angular to subal igular; wet; no staining	angular to suba bangular to rour	ngular; some id; little large t	very fine to to very		0 gal of water used
52_53_	96	IRZ-15-SS- 50-55			GM							used
56 57 58 59		IRZ-15-SS- 55-60			GM	reddis subar round	- 69.5') Silty gravel with th brown (5YR 5/3); grar gular; some very fine to ; little large to very large ace cobbles, subangular	nules to medium o very coarse gra e pebbles, angul	n pebbles, ang ained sand, su ar to subangu	gular to ubangular to		
് 60 ⊥ S Notes:	US	CS = Unifie	d Soil Classif	ication Sv	stem. I	Hall N Yall N Y	ed above the labor	ratory renorti	na limit. pn	b = Parts i	per Billion.	
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AR	CADIS	Design & Consultancy for natural and built assets		Boring I	_og		Sheet:	4 of	13
Date Started	·			Surface Elevation		Bor	ing No.:	IRZ-15	Pilot
Date Comple				Northing (NAD83	•	_			
Drilling Co.:	<u>Casca</u>			Easting (NAD83)		Client:	PG&E		
Drilling Meth		<u>Drilling</u>		Total Depth:	257 ft bgs	_ Location:		ater Remedy	Phase I
Driller Name Drilling Asst		<u>Petrone</u> mer/J. Candel	orio	Borehole Diamet Depth to First Wa		_	Needles,	Calliornia	
Logger:	-	rcia / G Jeffers		Sampling Method		- Project Nu	umber: <u>Top</u>	nock	
Editor:		McGrane	<u> </u>	Sampling Interva		_ i iojectivi	uniber. <u>To</u> p	JOCK	
Weather:		warm to hot		Converted to We		-			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Description			Drilling Notes	Drilling Fluid
61 62 108 63 64 65	IRZ-15-SS- 60-65	IRZ-15-VAS- 62-67 (0.459 J ppb)		CM CM					
EOR PIOG GPJ 19819	IRZ-15-SS- 65-70				9.5 - 74.5') Well graded gravel with silt and .5YR 4/3); granules to large pebbles, angul	lar to subangu	lar: some		0 gal of water
064 BORING FORESITS 31 1811 DOSHING FORESITS 31 1811 BORING FORESITS 31 1811 DOSH DATA PROBLEM FORESITS 31 1811 DOSH DATA PROBLEM FORESITS 31 1811 DOSH DATA PROBLEM FORESITS S1 1811 DOSH DATA	IRZ-15-SS- 70-75			GW-GM	ry fine to very coarse grained sand, angula ice very large pebbles, angular; trace cobb aining	ar to subangula les, subangula	ar; little silt; ar; wet; no		used
BOBING TO CO. CHORERS IS INCORPORCE TO POCK DATABASE TO P	IRZ-15-SS- 75-80				4.5 - 87.0') Well graded sand with silt and of .5YR 4/3); very fine grained to very coarse bround; and granules to very large pebbles le silt; wet; no staining	grained, angu	lar to		
Notes: US	SCS = Unifie	d Soil Classifi	cation Sy	stem, U = not det	ected above the laboratory report	ing limit, pp	b = Parts p	er Billion.	1
ORING					, ,		•		
SOIL B									

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		Sheet	: 5 of	13
Date S		-			_	Elevation:	N/A	Bor	ina No.	: <u>IRZ-15</u>	Pilot
	-	eted: <u>11/15/2</u>			Northing (NAD83): N/A						
1	Drilling Co.: <u>Cascade</u>					(NAD83):	N/A	_ Client:	PG&E		
1	Orilling Method: Sonic Drilling				_ Total D	-	257 ft bgs	_ Location:		ater Remedy	Phase I
Driller						le Diameter:		_	Needles,	California	
Drilling			ner/J. Cande		•	o First Wate		_			
Logge			cia / G Jeffer	<u>S</u>	-	ng Method:	10 ft Core Barrel	_ Project N	umber: <u>To</u>	pock	
Editor			<u>/////////////////////////////////////</u>		-	ng Interval:	Continuous	_			
Weath	ner:	Sunny	warm to hot		Conver	ted to Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description			Drilling Notes	Drilling Fluid
81 82 83 84 85	- 108	IRZ-15-SS- 80-85			SW-SM						
		IRZ-15-SS- 85-90				to lar	- 97.0') Silty gravel with sand (GM); bi ge pebbles, angular to subangular; soi coarse grained sand, angular to subro les, angular; trace clay; metadiorite pe	me silt; little ver und: trace verv	y fine to large		0 gal of water
92	96	IRZ-15-SS- 90-95			GM						used
96_		IRZ-15-SS- 95-100			SM	very grani	- 104.5') Silty sand with gravel (SM); if ine grained to very coarse grained, ar alles to very large pebbles, angular; littlar; wet; no staining	gular to subang	gular; and		
100 Notes	. 119	CS = Unified	Soil Classif	ication S	/stem II	= not detec	ed above the laboratory repor	ting limit on	h = Parte	ner Rillion	1
1000	. 00	,oo - onniec	a Jon Olassiii	ioddioi1 O	, 5.0111, 0	not detec	above the laboratory repor	ang mint, pp	– i aits	por Dillion.	

SOIL

9/-	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	6 of	13
Date S		·			-	Elevation:	N/A	Bor	ing No.:	IRZ-15	Pilot
	-	eted: <u>11/15/</u>				g (NAD83):	N/A				
Drilling Drilling		Casca	<u>ae</u> Drilling		_Easung _Total D	(NAD83):	N/A 257 ft bgs	Client:	PG&E Groundwa	iter Remedy	Phase I
Driller			etrone			le Diameter:	6 in		Needles, 0	•	1 11400 1
Drilling	Asst:	<u>T. Aylı</u>	mer/J. Cand	elaria	Depth t	o First Water:					
Logge			cia / G Jeffe	ers	•	ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>Top</u>	ock	
Editor:			McGrane warm to ho		•	ng Interval: ted to Well:	Continuous ☐ Yes ☒ No				
Weath		Suring	warm to no	_	Conver	ted to vveii.	Yes NO				<u> </u>
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwate Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
101	96	IRZ-15-SS- 100-105	IRZ-15-VAS- 102-107 (< 0.17 U ppb)		SM SM SM	(116.0 brown) subang trace of the contract of	- 106.5') Silty sand with gravel (SM); re 5YR 4/4); very fine grained to very coagular; some granules to very large peblobbles, angular; wet; no staining - 116.0') Sandy silt with gravel (ML); re 5YR 4/4); medium plasticity; some gra, angular to subangular; wet; weak cemeangular to subangular; wet; weak cemeangular to subangular; wet; weak cemeangular; and silt; little very fine to very coarto subangular; wet; weak cementatio - 120.0') Sandy silt with gravel (ML); re 5YR 4/4); medium plasticity; ome grants, and silt; little very fine to very coarto subangular; wet; weak cementatio - 120.0') Sandy silt with gravel (ML); re 5YR 4/4); medium plasticity; some very fine angular to subangular; wet; weak cemerations, some very fine subangular; some very fine angular to subangular; wet; weak cemerations, some very fine an	eddish brown / nules to very le to very coarsentation; no staining eddish brown / nules to very le to very coarsentation; no staining eddish brown / nules to very le to very coarsentation in the le to very le to very le to very coarsentation in the le to very le to very coarsentation in the le to very coarsentation in the le to very le to very coarsentation in the le	moderate arge and, moderate arge and, moderate arge and, moderate arge arge and, moderate arge arge arge arge arge arge arge arg		0 gal of water used
708 T											
120 Notes:	US	CS = Unifie	d Soil Class	ification Sy	/stem, U	= not detecte	ed above the laboratory reporti	ng limit, pp	b = Parts p	er Billion.	1
BORING							•		·		
SOIL1											

Service Completed: 11/15/2018 Northing (NADS3): NA Clerk PG&E	Date Completed: 11/15/2018 Northing (NAD83): N/A Client: PG& Cascade Easting (NAD83): N/A Client: PG& Cascade Spelling Asst. Total Depth: 257 ft bgs Location: Groundwater Remedy! Note Petrone Borehole Diameter: 6 in Needles, California Diamet	ARC	ADIS	for natural and built assets	,	Во	ring	Log		Sheet	: 7 of	13
According Note Acco	Northing (ANDBS): N/A Client: Sassade Esting (NADBS): N/A Client: N/A Client: Sassade Esting (NADBS): N/A Client: Somic Drilling Total Depth: 1257, ft bgs Location: Note Percone Northing (ANDBS): N/A Client: Somic Drilling Total Depth: 1267, ft bgs Location: Note Percone Northing (ANDBS): N/A Client: Somic Drilling Total Depth: 127, sampling Interval Sampling Interval Sampling Interval Sunny warm to hot Converted to Well: Yes No		· ·					·	Bor	ing No.	: IRZ-15	Pilot
Total Depth: 257 ft tgs Location: Groundwater Remedy Phase Right Name (Line) (L	Tilling Method: Sonic Drilling Total Depth: 257 ft bgs Location: Groundwater Remedy. Needles, California Tilling Asst. A. Garcial / G. Jeffers Sampling Interval: Sampling Interval: Sampling Method: 10.ft Core Barrel Project Number: Topock Seam McGrane Sampling Interval: Continuous Converted to Well: Sampling Interval: Sampling Interv	•					• `	•	_ Clianati	DCOF	<u>'</u>	
Miler Name: Nick Petrone Borehole Diameter: 6 in Needles, California	Sile Name: Nick Petrone Borehole Diameter: 6 in Needles, California Needles, Needl	-				_	•				otor Domodu	, Dhasa I
Thing Asts: T. Aylmer\(L. Candeladia\) Depth to First Water\(NA\) Sampling Method: Sean McGrane Sampling Interval: Confinious Sean McGrane Sampling Interval: Confinious Sampling Interval: Confinious Sean McGrane Sampling Interval: Confinious Converted to Welt: Sampling Interval: Confinious Description Description Description Description Description Description Descrip	T. Aylmer/J. Candelaria Depth to First Water: N/A Sampling Method: Sampling Method: Continuous Continuous Sampling Intervent Continuous Sampling Intervent Continuous Sampling Intervent Sampling Intervent Sampling Intervent Continuous Sampling Intervent	-		-			-	_	_		•	/ Filase i
Sampling Method: 10 ft Cere Barrel Project Number: Topock Sean McGrane Sampling Interval: Continuous Continuous Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy summy summy public summy summy feet before the very large pebbles, angular to be before the very large pebbles, angular to subangular some subangul	Sampling Interval: Sean McGrane Sampling Interval: Sunny warm to hot Converted to Well: Yes ② No Groundwater Sample ID Groundwater S							· · · · · · · · · · · · · · · · · · ·	_	<u>ivecuies,</u>	Camorna	
Sample D Sean MG/Grane Sunny warm to hot Converted to Well: Yes IND Description Description Sunny warm to hot Converted to Well: Yes IND Description	Sean McGrane Sunny warm to hot Converted to Well: Yes X No Groundwater Sunny warm to hot Sample ID Groundwater Sunny warm to hot Sample ID Sunny warm to hot Sunny warm to war you warm to war you warm to war you warm to war you warm to warm you warm to warm warm warm to warm warm warm to warm warm warm warm warm warm warm warm	-							- Proiect N	umber: To	pock	
Sumply Robert Sumply warm to hot Converted to Well: Yes No Description Drilling Notes Drilling I Sample D Gambaratar Sumply warm to hot D Gambaratar Sumply Robert Ro	Sunny warm to hot Converted to Well: Yes No Converted to Well: Yes No Description Drilling Notes See Serve Sample ID Groundwater Sample ID See See Serve Sample ID See See Serve Sample ID See Serve Sample ID See See Serve Sample ID Drilling Notes D				510		-		_ 1 10,000110	umbon. <u>10</u>	poor	
Drilling Notes Drilling Description Desc	Sie Sieve Sample ID Groundwater Sumple ID Gr				ot	•	•		_			
Detailed to subangular to subangular to subangular to subangular to subangular to subangular some self, week cementation, no staining; pebbles composed of metadiorite. Composed of metadiorite.	SM SL School Sc		Sieve	Groundwate		USCS	USCS Class				Drilling Notes	Drilling FI
22	22	21_				GM	D 1710	brown(5YR 4/4); granules to very large pebl subangular; some silt; little very fine to very	les, angular to)		
28 17.0	127.0 - 137.0 / Silty gravel with sand (GM); reddish brown / moderate brown(STR 4/4); gravules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very large pebbles, angular to subangular some very fine to very large pebbles, angular to subangular some very fine to very coarse grained sand, angular to subangular some very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large very fine to very	23				ML		brown(5YR 4/4); medium plasticity; some gr pebble, angular to subangular; little very fine	anules to very to very coarse	large e grained		
GM	182 96 182 96 182 96 183 132 137 (< 0.17 U ppb) 185 132 137 (< 0.17 U ppb) 186 137 139 137 (< 0.17 U ppb) 187 139 139 139 139 139 139 139 139 139 139						Palas	brown(5YR 4/4); granules to very large pebl subangular; some very fine to very coarse g subangular; some silt; wet; weak cementation	oles, angular to rained sand, a	ngular to		
33. 34. IRZ-15-VAS- 132-137 (<0.17 U ppb) 36. 37. ML ML (137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; wet; weak cementation; no staining	33. 34. IRZ-15-VAS- 132-137 (< 0.17 U ppb) 36. 37. (137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand	30						composed of metadionie.				0 gal of waused
35. IRZ-15-VAS- 132-137 (< 0.17 U ppb)	35	33				GM						
37. (137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; wet; weak cementation; no staining	(137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand	-		132-137 (< 0.17 U								
38	(137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand	-										
	angular to subangular; wet; weak cementation; no staining	38				ML		brown(5YR 4/4); low plasticity; some granular angular to subangular; some very fine to very	es to very large y coarse grain	e pebbles, ed sand,		
SM [計画] (139.5 - 144.5') Silty sand with gravel (SM); reddish brown (2.5YR	SM (139.5 - 144.5') Silty sand with gravel (SM); reddish brown (2.5YR	4				014		(139.5 - 144.5') Silty sand with gravel (SM):	reddish brown	(2.5YR		

9/-	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring	g Log		Shee	t: 8 of	13
Date S					Surface			Bor	ing No	.: <u>IRZ-15</u>	Pilot
		eted: <u>11/15/</u>			Northing	• •	•				<u> </u>
Drilling Drilling		Casca	ae Drilling		Easting Total D		83): <u>N/A</u> 257 ft bgs	Client:	PG&E Groundy	vater Remedy	, Dhaca I
Driller			etrone		Borehol					, California	/ I IIase I
Drilling			ner/J. Cande	laria			Water: N/A	-		,	
Logge		-	cia / G Jeffer		Samplir			Project No	umber: <u>To</u>	pock	
Editor:		<u>Sean I</u>	McGrane		Samplir	ng Inte		-			
Weath	er:	Sunny	warm to hot		Conver	ted to	Well: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
	96	IRZ-15-SS- 140-145			SM		4/4); very fine grained to very coarse grained some granules to very large pebbles, angular angular; wet; no staining (144.5 - 161.0') Silty sand with gravel (SM); red, very fine grained to very coarse grained some granules to very large pebbles, angular cobbles, angular; wet; no staining	eddish brown , angular to su	e cobbles, (2.5YR		
148 149 150		IRZ-15-SS- 145-150					(147'); increase in granules and very large pe	ebbles, decrea	se in silt.		0 gal of wate used
151 152 153 154 	96	IRZ-15-SS- 150-150			SM		(154.5'); no staining; decrease in silt, trace cl	ay.			
		IRZ-15-SS- 155-160									
_159											
160											
160 Notes:	US	SCS = Unifie	d Soil Classif	ication Sv	stem, U	= not	· detected above the laboratory reporti	ing limit, pp	b = Parts	per Billion.	1
				· - <i>j</i>	, ,		,	J -7 PF			

Date Started: 10/31/2018 Surface Elevation: NA Boring No.: IRZ-15 Pilot Date Completed: 11/15/2018 Northing (NADR3): NA Client. PGSE Date Cascade Easting (NADR3	9/	AR (CADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo	g			Sheet	9 of	13
Date Completed: 111/15/2018 Northing (NAD83). N/A Client PG&E											Bor	ina No.	: IRZ-15	Pilot
Dolling Method: Sonic Defiling Driller Name: Drilling Asst. A. (Social A Cycle Beare) Sean McGrane Sean		•					- '							
Driller Asset: Nick Petrone Borehole Diameter: 6.in. Needles, California Drilling Asset: Logger: Sampling Method: Sampling Method: Sampling Method: Sampling Method: Sampling Method: Sampling Interval: Sampling Interval		-				_	•)83):						
Dolling Asst. T. Aymer/J. Candelaria Cagger: A. Cardia/ G. Jeffers Sampling Method: South McGrane Sampling Method: Converted to Well:		-					·							
Logger: A Garcia / G. Jeffers Sannhing Interval: Continuous Project Number: Topock Sear McGrane Sampling Interval: Continuous Project Number: Topock Sannhing Interval: Sannhi						_						Needles,	California	
Editor: Stant McGrane Sunny warm to hot Converted to Well: Store Sunny warm to hot Converted to Well: Sunny warm to hot Converted to Well: Sunny warm to hot Sample ID Silve Sample ID		-	-								Dunin at Ni			
Meather: Sunny warm to hot Converted to Well: Yes No					S					eı	Projectivi	imber: 10	роск	
Simple ID											•			
SM IRZ-15-SS- 160-165 IRZ-15-SS- 160-170 IRZ-15-SS- 170-175 IR	VVCall		Julily	waiiii to not		Conver	T TO	VVCII.						1
161 162 163 164 165	Depth (ft)	Recovery (in)			Geologic Formation	OSCS Code	USCS			Description			Drilling Notes	Drilling Fluid
162 96 162.15.S.S. 160-165 170 182.15.S.S. 160-165 182.15.S.S. 160-165 182.15.S.S. 160-165 182.15.S.S. 180-165 180 182.15.S.S. 180-165 180 182.15.S.S. 180-165 180 182.15.S.S. 180 182.15.S.S. 180-165 180 182.15.S.S. 180 180 180 180 180 180 180 180 180 180						SM								
163	162							3/3); n suban	o plasticíty; some gra gular; some very fine	anules to very larg to very coarse gra	e pebbles, ang ained sand, an	gular to		
163. 160-165 ML 162-167 162-	102	96	IRZ-15-SS-					Subrou	nd; wet; weak ceme	ntation; no stainin	g			
164 165 162 167 165						ML		4						
RZ-15-VAS- 5 0 0 1 1 1 1 1 1 1 1							, p)						
165. (3200 ppb) 166. (3200 ppb) 167. (3200 ppb) 168. (167. (3200 ppb)) 168. (167. (3200 ppb)) 169. (167. (3200 ppb)) 170. (168. (32. (32. (32. (32. (32. (32. (32. (32	164						ا ا	4						
166. 167. 168. 167. 178. 187.15-SS- 170-170 171. 172. 174. 175. 176. 177. 177. 178. 179. 170. 171. 170. 170. 170. 170. 170. 170. 170. 171. 171. 171. 171. 172. 173. 174. 175. 176. 177. 178. 179. 179. 179. 170. 170. 170. 170. 170. 170. 170. 170. 170. 170. 171. 170.		-					<u> </u>		407.00.00	(011)		(0.5)(0		
166	165	-		(3200 ppb)				4/4); v	ery fine grained to ve	ery coarse grained	, angular to su	bangular;		
168. 169. 170. 171. 172. 174. 175. 176. 177. 177. 177. 178. 179. 180.		-									; some silt; tra	ce		
IRZ-15-SS- 168-170 IRZ-15-SS- 168-170 IRZ-15-SS- 168-170 IRZ-15-SS- 170-175 IRZ-17- IRZ-17- IRZ-17- IRZ-17- IRZ-18- IRZ-18	166	-				SM								
IRZ-15-SS- 168-170 IRZ-15-SS- 168-170 IRZ-15-SS- 168-170 IRZ-15-SS- 170-175 IRZ-17- IRZ-17- IRZ-17- IRZ-17- IRZ-18- IRZ-18		-												
168	167							(167.0	- 172 0') Silty sand v	vith gravel (SM)· ro	eddish brown (2 5YR		
170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 170.	-	-						4/4); v	ery fine grained to ve	ery coarse grained	, angular to su	bangular;		
SM O gal of water used IRZ-15-SS- 170-175 IRZ-15-SS- 170-175 IRZ-15-SS- 170-175 GM O gal of water used (IT2.0 - 174.5') Silty gravel with sand (GM); reddish brown / moderate brown(5/R 4/4); granules to very large pebbles, angular to subangular; some sery fine to very coarse grained sand, angular to subangular; some silt; wet; weak cementation; no staining (I74.5 - 187.0') Silty gravel with sand (GM); reddish brown / moderate brown(5/R 4/4); granules to very large pebbles, angular to subangular; some silt; wet; weak cementation; no staining (I74.5 - 187.0') Silty gravel with sand (GM); reddish brown / moderate brown(5/R 4/4); granules to very large pebbles, angular to subangular; some silt; wet; weak cementation; no staining (I74.5 - 187.0') Silty gravel with sand (GM); reddish brown / moderate brown(5/R 4/4); granules to very large pebbles, angular to subangular; some silt; wet; weak cementation; no staining I74. I75. I76. I77. I78. I79. IRZ-15-SS- 170-175	168	-									, some siit, tra	ce		
SM O gal of water used IRZ-15-SS- 170-175 IRZ-15-SS- 170-175 IRZ-15-SS- 170-175 GM O gal of water used (IT2.0 - 174.5') Silty gravel with sand (GM); reddish brown / moderate brown(5/R 4/4); granules to very large pebbles, angular to subangular; some sery fine to very coarse grained sand, angular to subangular; some silt; wet; weak cementation; no staining (I74.5 - 187.0') Silty gravel with sand (GM); reddish brown / moderate brown(5/R 4/4); granules to very large pebbles, angular to subangular; some silt; wet; weak cementation; no staining (I74.5 - 187.0') Silty gravel with sand (GM); reddish brown / moderate brown(5/R 4/4); granules to very large pebbles, angular to subangular; some silt; wet; weak cementation; no staining (I74.5 - 187.0') Silty gravel with sand (GM); reddish brown / moderate brown(5/R 4/4); granules to very large pebbles, angular to subangular; some silt; wet; weak cementation; no staining I74. I75. I76. I77. I78. I79. IRZ-15-SS- 170-175	-	-												
170 171 172 173 174 175 176 177 178 179 180 180 180 180 180 180 180 180 180 180	169_	-												
172 173 174 175 176 177 178 188 188 188 188 188 188 188 188	470	-				SM								O mal of water
172 114 IRZ-15-SS-170-175 IRZ-	_1/0_	-												
172 114 IRZ-15-SS-170-175 IRZ-	171													
IRZ-15-SS- 170-175 IRZ-170-175 IRZ-15-SS- 170-175 IRZ-15-SS- 17														
IRZ-15-SS- 170-175 IRZ-170-175 IRZ-15-SS- 170-175 IRZ-15-SS- 17	172	444												
subangular; some very fine to very coarse grained sand, angular to subangular; some silt; wet; weak cementation; no staining 174. 175. 176. 177. GM GM (174.5 - 187.0') Silty gravel with sand (GM); reddish brown / moderate brown(5YR 4/4); granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some silt; wet; weak cementation; no staining 178. 179. 180		114					6	(172.0	- 174.5') Silty gravel 5YR 4/4): granules t	with sand (GM); r	eddish brown a	/ moderate		
	173		170-175				Polo	√ subang	gular; some very fine	to very coarse gra	ained sand, an	gular to		
175						GM)	, a.a.,		., o.ug			
brown(5YR 4/4); granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some silt; wet; weak cementation; no staining GM GM GM GM GM GM GM GM GM G	_174_						Polo							
brown(5YR 4/4); granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some silt; wet; weak cementation; no staining GM GM GM GM GM GM GM GM GM G	<u> </u>	-)	407.01) 034	'II 1 (OM)	18.1.1	, , ,		
subangular; some silt; wet; weak cementation; no staining GM GM GM 179 180	_175_	-					60	∠ brown	5YR 4/4); granules t	o very largè pebbl	es, angular to			
							199					igular to		
	176						60							
		-					9 9							
178_ - 179_ - 180	_177_					014								
179_ - 180						GM	Porto							
	178													
		-					Pola							
	179_	1					P.X							
	-	-					PLI							
Total Control Control Control Cycle (Control Cycle (Cycle (Cy	3	·	CS = Unifie	d Soil Classif	ication Sv	/stem II	<u>b₩(</u> = not	detecte	ed above the lab	oratory reporti	na limit na	h = Parts	ner Billion	
	1000		3 - 5111110			, , •					J, PP	. 3, 6		

SOIL

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	: 10 of	13
Date Starte	d: <u>10/31/</u>	2018		Surface	e Elevation:	N/A	Bor	ina No.	: IRZ-15 I	Pilot
· ·	eted: <u>11/15/</u>				g (NAD83):	N/A				
Drilling Co.:				_	(NAD83):	N/A	_ Client:	PG&E		
Drilling Metl		<u>Drilling</u>		Total D	-	257 ft bgs	_ Location:		ater Remedy	Phase I
Driller Name		etrone		='	le Diameter:	6 in	_	<u>Needles,</u>	California	
Drilling Asst Logger:	-	<u>mer/J. Cande</u> ·cia / G Jeffe			o First Water: ng Method:	. IN/A 10 ft Core Barrel	- _ Project Nı	ımber: To	nock	
Editor:		McGrane	15	-	ng Interval:	Continuous	_ FIOJECLINI	лпь с г. <u>то</u>	pock	
Weather:		warm to hot	<u> </u>	-	ted to Well:	☐ Yes ⊠ No	-			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	on	USCS	USCS	Description			Drilling Notes	Drilling Fluid
181	IRZ-15-SS- 180-185 IRZ-15-SS- 185-190 IRZ-15-SS- 190-195	IRZ-15-VAS- 182-187 (140 ppb)		GM ML ML	4/4); ni subang subrou	- 189.5') Gravelly silt with sand (ML); o plasticity; some granules to very largular; some very fine to very coarse grand; wet; weak cementation; no staining the same of the	reddish brown gular to sub g eddish brown gular to sub g eddish brown obbles, angular to sub g	(2.5YR no subangular; round; (2.5YR 4/4); to gular to		0 gal of water used
197	IRZ-15-SS- 195-200			SM	(2.5YR subang	- 200.0') Silty sand with gravel (SM); or 3/4); very fine grained to very coarse gular; some granules to very large pebeobbles, angular; trace clay; wet; no state of the stat	grained, angu bles, angular;	lar to	197' Zone is coarse grained and very saturated.	
Notes: U	SCS = Unifie	d Soil Classi	fication Sy	/stem, U	= not detecte	ed above the laboratory report	ing limit, pp	b = Parts	per Billion.	
N N N N N N N N N N N N N N N N N N N										
SOIL										

9/-	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	: 11 of	13
Date S						e Elevation:	N/A	Bor	ing No.	: <u>IRZ-15</u>	Pilot
	-	eted: <u>11/15/</u>				g (NAD83):	N/A	_			
Drilling		<u>Casca</u>			_	j (NAD83):	N/A	_ Client:	PG&E	vater Remedy	Dhasa I
Drilling Driller			Drilling etrone			epın: le Diameter:	257 ft bgs	_ Location:		<u>California</u>	Phase I
Drilling			ner/J. Cande	elaria		to First Wate		-	ivecuies,	Camorna	
Logge		-	cia / G Jeffe		•	ng Method:	10 ft Core Barrel	- _ Project Nı	umber: To	pock	
Editor:		Sean I	McGrane		-	ng Interval:	Continuous	_ ,		•	
Weath	er:	Sunny	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
	108	IRZ-15-SS- 200-205			SM	4/4); v some	0 - 206.5') Silty sand with gravel (SM); rery fine grained to very coarse grained granules to very large pebbles, angulaes, angular; trace clay; wet; no staining	l, angular to ຣເ r; some silt; tra	ibangular;		
207 207 208 2008 2008 2008 2008 2008 200		IRZ-15-SS- 205-210			ML	low pl	5 - 212.0') Sandy silt with gravel (ML); r asticity; some very fine to very coarse ; und; little granules to very large pebble clay; wet; weak cementation; no stainir	grained sand, a s, angular to s	angular to		0 gal of water used
211	108	IRZ-15-SS- 210-215				plastic subar	0 - 227.0') Sandy silt with gravel (ML); r itly; some silt; little granules to very lar gular; little very fine to very coarse gra und; trace clay; wet; weak cementation	ge pebbles, an ined sand, and	gular to		
- 216		IRZ-15-SS- 215-220			ML	(210.4	5') red (2.5YR 4/6) and gray (2.5Y 6/1);	no staining			
ୁ 220 Notes:	119	CS = Unifie	d Soil Classi	fication S	stem II		ed above the laboratory report		h = Parte	ner Rillion	
TINOLES.	03		u 0011 014551	noadon Sy	Julii, U	- not detect	od above the laboratory report	ing illilit, pp	- i aits	por Dillion.	
SOIL BC											
n											

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	g Log		Sheet:	12 of	13
Date Started	·			Surface			Bori	ina No.:	IRZ-15	Pilot
-	eted: <u>11/15/2</u>			Northin		•	. L			
Drilling Co.:	Cascad			Easting	•		Client:	PG&E	to a Domondu	Dhasal
Drilling Meth Driller Name		-		Total Do	-	257 ft bgs meter: 6 in	Location:	Needles, 0	ater Remedy	Phase I
Drilling Asst		ner/J. Cande				Water: N/A		ineedies, v	Calliottila	
Logger:	•	cia / G Jeffe		Samplin			Project Nu	ımber: Top	ock	
Editor:		/lcGrane		Samplin	-					
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 Class	Description			Drilling Notes	Drilling Fluid
221	IRZ-15-SS- 232-237	IRZ-15-VAS- 222-227 (< 0.17 U ppb)		ML SM		(227.0 - 232.0') Sandy silt with gravel (ML); re plasticity; some very fine to very coarse graine subround; little granules to very large pebbles little clay; wet; weak cementation; no staining (232.0 - 237.0') Silty sand with gravel (SM); re grained to very coarse grained, angular to subvery large pebbles, angular; some silt; trace c no staining (237.0 - 247.0') Silty sand with gravel (SM); re grained to very coarse grained, angular to subvery large pebbles, angular; some silt; trace c clay large pebbles, angular; some silt; trace c clay large pebbles, angular; some silt; trace c clay large pebbles, angular; some silt; trace collections and the subverse process of the subverse person of the subverse	ed (2.5YR 4/6) bround; some cobbles, angular	ilar to ubangular;); very fine granules to ar; moist;		0 gal of water used
238_ 239_ 239_ 240				SM		clay; moist; no staining	esses, angul	,		
	SCS = Unified	d Soil Classi	fication Sys	stem, U	= not	detected above the laboratory reporting	ng limit, pp	b = Parts p	er Billion.	
BORI										
SOIL										

A	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	13 of	13
Date Sta						Elevation:	N/A	Bor	ina No.	: <u>IRZ-15 l</u>	Pilot
	•	ted: <u>11/15/2</u>				g (NAD83):	N/A	_			
Drilling (Cascac				(NAD83):	N/A	Client:	PG&E		
Drilling I			-		Total De	•	257 ft bgs	Location:		ater Remedy	Phase I
Driller N						le Diameter:		-	<u>ineedies,</u>	California	
Drilling A	ASSI:	-	ner/J. Cande		-	o First Water: ng Method:		- Droiget Nu	umber: <u>To</u> r		
Logger: Editor:			cia / G Jeffer //cGrane	<u>s</u>	•	ng Interval:	10 ft Core Barrel Continuous	Projectivi	illiber. <u>To</u> p	JOCK	
Weather	r•		warm to hot		•	ted to Well:	☐ Yes ⊠ No	-			
		<u> </u>			1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
241	108				SM	(247.0 grainer	- 255.0') Silty sand with gravel (SM); r d to medium grained, angular to subro	ed (2.5YR 4/6); very fine		
248 248 248 248 248 248 248 248 248 248	108			Tanash	SM	very la trace c	rge pebbles, angular; some silt; trace of oarse to very coarse sand	clay; moist; no	staining;		0 gal of water used
256				Topock - Competen Bedrock - conglomera			•				
258	110	00 = Hp:£c-	A Soil Class	ingtion C	atom III	- not dat	End of Boring at 257.0		h = Dowle	oor Dillion	
Notes:	US	US = Unified	Soil Classif	ication Sy	stem, U	= not detecte	ed above the laboratory report	ırıg ılmıt, pp	υ = Parts μ	per Billion.	
JU BOA											

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	DD	1 CT	1	Sheet:	1 of	9
Date S					Surface			DRA	171	Borin	ıa No.:	IRZ-21-I	Pilot
	•	ted: <u>12/19/</u> 2			Northin	- '	•		01:				
Drilling Drilling	-	Casca			Easting	•	,	bgs	Clie		G&E	ter Remedy	Phase I
Driller	•		Vasquez		Boreho	•		bys	LOC			California	FIIdSE I
Drilling			ninguez/C. A	lverez	-		Water: <u>N/A</u>			<u></u>	1000100, (Jamorria	
Logge		Conno	•		Samplir			Core Barrel	 Pro	ject Num	nber: Top	ock	
Editor:		Sean N	//cGrane		_ Samplir	-		nuous			·		
Weath	er:	Sunny	cool to warm	1	Conver	ted to \	Nell: 🗌 Y	es 🗵 No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Desc	cription			Drilling Notes	Drilling Fluid
1	84				SP		moderate yellor grained, suban pebbles, suban (4.5 - 11.5') We granules to ver fine to medium	rly graded sand wit wish brown(10YR E gular to subround; gular to subround; glar to subround; large pebbles, su grained sand, anground; trace silt; dry	th sand (GW); br bangular to subroular to subroular to subroular to subround;	o very large overy large	5/3);		0 gal of water used
12	120				SP		very fine graine	porly graded sand (d to fine grained, s pund; trace silt; dry	subangular to rou				
14 15 15 15 15 16					GW		moderate yellow subangular to s	ell graded gravel w wish brown(10YR 5 ubround; some vel ubround; trace silt;	5/4); granules to r ry fine to medium	very large p	ebbles,		
24 16 17					SP		very fine graine angular to subr	porly graded sand (d to fine grained, s bund; trace cobble	subangular to rou s, angular to sub	ınd; trace gı angular; tra	ranules, ice silt;		
18					SP		moderate yellow grained, suban	oorly graded sand v wish brown(10YR 5 gular to subround; gular to subround;	5/4); very fine gra some granules to	ained to me	dium		
1919					GM		6/4); granules t	lty gravel with sand o very large pebble rained sand, angul	es, angular to sub lar to subangular	oround; little ; little silt; tr	e very race		
Notes:	US	CS = Unified	d Soil Classif	ication Sy	ystem, U	= not c	detected abov	e the laborator	ry reporting li	mit, ppb	= Parts p	er Billion.	
S S S S S S S S S S S S S S S S S S S													
SOIL													

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	:: 2 of	9
Date S					Surface		•	Bor	ing No.	: <u>IRZ-21-</u>	Pilot
	•		2018		Northin	• (•				
Drilling 		Casca			_ Easting				PG&E		
Drilling	-		<u>Drilling</u>			-	<u>166 ft bgs</u>			vater Remedy	/ Phase I
Driller			/asquez				eter: 6 in		Needles,	California	
Drilling	-		ninguez/C. Al		•						
Logge		Conno			_ Samplir	-		Project N	umber: <u>Io</u>	pock	
Editor		·	<u>/////////////////////////////////////</u>		_ Samplir	-		_			
Weath	er:	Sunny	cool to warm		Conver	ted to V	Vell: ☐ Yes ⊠ No				1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Description			Drilling Notes	Drilling Fluid
 21 22	120				GM		(21') boulders; 1 foot solid core of basalt.				
23							(23.0 - 25.0') Silty gravel with sand (GM); li yellowish brown(10YR 6/2); granules to ve subangular to subround; some silt; little ve	ry large pebbles ry fine to very co	, arse		
24 25					GM		grained sand, angular to subangular; trace boulder from 23-24.	boulders; dry; p	owderized		
25 26							(25.0 - 34.5') Silty gravel with sand (GM); y yellowish brown(10YR 5/4); granules to lar subangular; some silt; little very fine to very	ge pebbles, ang	ular to		
26						de	angular to subangular; dry				
						18 PJd					
27						BH					
						607					
28						1912					
 29											
						P.P.D					
30					GM	PH1					0 gal of water
						d for					used
31						13 Mid					
						HP					
32	120					600					
	120					1397					
33											
						90					
34											
						19					
 35						PR	(34.5 - 37.0') Silty gravel with sand (GM); I				
55							brown(5YR 6/4); granules to very large pel coarse grained sand, angular to subangular		/ line to		
					GM	P P					
36						13 PId					
						H					
37						P	(37.0 - 42.0') Silty gravel with sand (GM); g	ranules to very	large	-	
-						k Pid	pebbles, angular to subangular; some very sand, angular to subround; little silt; dry	fine to coarse g	rained		
38						[37]	caa, angaiar to subround, nue siit, dry				
-					GM	607					
39						以到					
ļ -	60										
40						PLY					
Notes	US	CS = Unified	Soil Classifi	cation Sy	ystem, U	= not d	etected above the laboratory repo	rtıng limit, pp	b = Parts	per Billion.	

International Competence 12/13/2018 Northing (NAD83) NA	ARC	CADIS	Design & Consultancy for natural and built assets		Во	rin	g Log		Sheet	: 3 of	9
Hilling Co: Cascade Easting (NADSs) N/A Client PGSE Hilling Method: Sonic Drilling Total Depth: 168 ft bgs Location: Groundwater Remedy Phase L Nature Name: Borontocol Diameter 6 in Needles, California Name: Masedes, California Name: Masedes, California Name: N. Dominguez/C. Alverez Borontocol Diameter 10 ft Core Barrel Project Number: Topock Sampling Interval: Continuous Sampling Interval: Co	ate Started						· · · · · · · · · · · · · · · · · · ·	Bor	ing No.	: <u>IRZ-21-</u>	<u>Pilot</u>
Some continued Some	-					- '	•	_		<u> </u>	
Blee Name: Steve Vasquez Borehole Diameter: 6.in Needles, California	-				-	•	•			ater Remedy	Dhace I
Second Miles Seco	-		-				•	_ Location.		•	i ilasc i
Sampling Method: 10 ft Core Barrel Project Number: Topock Sampling Interval Sampling Interval Sampling Interval Sampling Interval Continuous Continuous Description Description Description Drilling Notes Drilling			•					_	,		
Sean McGrane Sampling Interval: Contructed to Well: Vs S No Sample ID Sam	ogger:				•			- _ Project Nı	umber: <u>To</u>	pock	
Since Sample D Consideration Since Sample D	ditor:				-	-		_ ,		•	
41	/eather:	<u>Sunn</u> y	cool to warn	1	Conver	ted to	Well: ☐ Yes ⊠ No				
42 SM SM SM SM SM SM SM S	Depth (ft) (Recovery (in)			Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Flui
SM (42.9-4.3.5) silly sand (Mi); yellowish brown / moderate yellowsh prown / submingular to sills sill; dry (43.5-8.20) silly sand (SM); girl, fine grained to very coarse grained, singular to submound; some sill; little granules to large pebbles, angular to submound; some sill; little granules to large pebbles, angular to submound; some sill; little granules to large pebbles, angular to submound; some sill; little granules to large pebbles, angular to submound; some sill; little granules deapth of water table. SM (62.0-57.0) Silly sand (SM); light yellowish brown (10VR A4.5). Agnoximate deapth of water table. IRZ-21-SS-4B-53 IRZ-21-SS-59. IRZ-21-SS-6P. IRZ-21-SS-79. IRZ-2	- 41 -				GM						
grained to very corporage grained, angular to subround; tittle granules to large pebbles, angular to subround; tittle granules to small pebbles, angular to subangular; some sit; tittle granules to small pebbles, angular to subangular; some sit; tittle granules to small pebbles, angular to subangular; some sit; tittle granules to small pebbles, angular to subangular; some sit; tittle granules to small pebbles, angular to subangular; tittle clay; wet (57.0 - 62.0) Gravelly sit with sand (ML); yellowish brown / moderate yellowish brown (10YR S4); no plasticity, some granules to very large pebbles, angular to subangular; tittle clay; wet (57.0 - 62.0) Gravelly sit with sand (ML); yellowish brown / moderate yellowish brown (10YR S4); no plasticity, some granules to very large pebbles, angular to subangular; tittle clay; wet	-				SM	20 0	brown(10YR 5/4); fine grained to very coars subround; little granules to medium pebbles	e grained, suba	angular to		
IRZ-21-SS- 48-53 IRZ-21-SS- 48-53 IRZ-21-SS- 55- 56- IRZ-21-SS- 57-62 IRZ-21-SS- 57-62 IRZ-21-SS- 57-62 IRZ-21-SS- 57-62	- 60 45						grained to very coarse grained, angular to sugranules to large pebbles, angular to subrou	ubround; some	silt; little	Approximate depth of water	
(52.0 - 57.0') Silty sand with graved (ML); light yellowish brown (10YR 6/4); no plasticity; some very fine to very coarse grained sand grained sand, angular to subangular; little clay; wet IRZ-21-SS- 52-57 (97 ppb) (57.0 - 62.0') Gravelly silt with sand (ML); yellowish brown / moderate yellowish brown(10YR 5/4); no plasticity; some granules to very large pebbles, angular to subangular; little clay; wet	8_ 9_ 0_				SM						0 gal of wate used
[67.0 - 62.0') Gravelly silt with sand (ML); yellowish brown / moderate yellowish brown (10YR 5/4); no plasticity; some granules to very large pebbles, angular to subangular; little very fine to coarse grained sand, angular to subangular; little clay; wet	53_ 54_ 55_ 66_		52-57		ML		6/4); no plasticity; some very fine to very coasand, angular to subangular; some silt; little	arse grained sa	ind grained		
	- 58 - 59				ML		yellowish brown(10YR 5/4); no plasticity; so pebbles, angular to subangular; little very fir	me granules to	very large		
		CS = Unifie	d Soil Classif	ication Sy	stem, U	= not	detected above the laboratory repor	ting limit, pp	b = Parts	per Billion.	1

Date Completed: 12/19/2018	9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	:: 4 of	9
Date Completed: 12/19/2018 Northing (NAD83) NA									Bor	ing No.	: IRZ-21-	Pilot
Deliling Methods Sonic Dilling Sonic Dilli								•	_			
Dolling Asset Dolling Asse		-				_	•	•			ratas Dasa adv	Dhana I
Dollling Assi: N. Dominguez/C. Alverez Capper: Cornor Mills Sampling Malhort I oft Core Barrel Project Number: Topock Sean McGrane Sampling Malhort I oft Core Barrel Project Number: Topock Sampling Interval: Continuous Corverted to Well: Yes [2] No Description Dolling Notes Drilling Notes Drilling Fluid RVZ-21-88- RVZ-21-8		-		-			•	_			-	Phase I
Logger: Scan McGrane Sampling Interval: Continuous Continuous Sampling Interval: Continuous Sunny cool to warm Converted to Well: Ves No Description Drilling Notes Drilling Fluid 6 8 8 Sample ID			·	-		=		· ·	_	ineedies,	Calliottila	
Editor: Seam McGrane Sampling Interval: Continuous Weather: Sunny cool to warm Converted to Well: Yes S No By Sample (D Somple D) Semple (D Somp	1	_		•	<u> </u>	•			- Proiect Nu	ımber: To	pock	
Measurement Sunny cool to warm						-	-		,	<u></u>		
RZ_21-SS S7-62 ML	Weath	ner:	<u>Sunny</u>	cool to warm		-	-					
57-62 108 63	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
G2_0 - 64,5 Silly and till gravel (SM) brown (7 SYR 5.0); very fine grained to very coarse grained, angular to subsrigular observed and set work. (§ 64.5 in set of the set of t						ML						
	_ 63_	108				SM		grained to very coarse grained, angular to so to very large pebbles, angular to subangular	ubangular; som ; some silt; wet	e granules		
Company Comp						SM		coarse grained, subround to round; some sil	5/3); fine graine t; little granules	ed to very to small		
Transport of the state of the s	68 69 70 71					sc		very fine grained to very coarse grained, and clay; little granules to medium pebbles, angu	gular to subang	ular; some		0 gal of water used
	73 74	108						brown(5YR 4/4); fine grained to very coarse subround; some granules to very large pebb	grained, angul les, angular to			
		-		77-82		SM		Sabangular, Some Sill, wel, lidde very länge	OCUDICO.			
	80	1										
,,, , , , , , , , , , , , , , ,		: US	CS = Unified	d Soil Classifi	cation Sy	/stem, U	= not d	etected above the laboratory repor	ting limit, pp	b = Parts	per Billion.	•

ØΑ	R	CADIS	Design & Consultancy for natural and built assets		Во	ri	n	g Lo	g				Sheet	:: 5 of	9
Date St		·			Surface				N/A			Bor	ina No.	.: <u>IRZ-21-</u>	Pilot
		eted: <u>12/19/</u>			Northin				N/A						
Drilling		Casca			Easting	•		083):	N/A			Client:	PG&E		
Drilling			<u>Drilling</u>			-			166 ft bgs			Location:		vater Remedy	Phase I
Driller N Drilling		·	Vasquez minguez/C. Al	lvoroz	Boreho Depth t								<u>ineedies,</u>	California	
Logger:			ninguez/C. Ai or Mills	iverez	. Deptir t . Samplir				10 ft Core	Rarrel		Project N	umber: To	nock	
Editor:			McGrane		Samplir	-			Continuou			i rojectiv	umber. <u>10</u>	роск	
Weathe	r:	·	cool to warm		Conver	_			Yes [
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code		Class				escription			Drilling Notes	Drilling Fluid
81 82		IRZ-21-SS- 77-82	IRZ-21-VAS- 77-82 (1.1 ppb)	0 11	SM										
83	120							plasti subar	- 87.0') Sandy s city; some clay; igular; little very igular; trace bo id.	little granul fine to med	es to large pe dium grained	ebbles, angula sand, angula	ar to r to		
84															
_		IRZ-21-SS-			ML										
85		82-87													
_															
86															
_															
87							Ц	,); trace 4 inch fi - 89.5') Silty sai			lich brown (5	VD 5/4):		
 88 _89_					SM			very f	ine grained to v silt; little mediu lay; wet	ery coarse	grained, suba	angular to sùb	round;		
	120	IRZ-21-SS- 87-92			SM			very f	- 92.0') Silty sai ine grained to v medium to very lay; wet	ery coarse	grained, suba	angular to sub	round;		0 gal of water used
9394 95 96	120	IRZ-21-SS- 92-97			SM			very f	- 97.0') Silty sai ine grained to v les to large peb	ery coarse	grained, angı	ılar to subang	gular; some		
97								(07.0	117 0\\ 0:14	and with -	avol (CMA): =	Idiob beeree '	moderat-		
98		IRZ-21-SS-			SM			browr subro	- 117.0') Silty sa (5YR 4/4); very und; some sma et; composed o	y fine graine all to large p	ed to very coa ebbles, angu	rse grained, a	angular to		
99		97-102						ă -							
_							1								
100															
Notes:	US	CS = Unifie	d Soil Classifi	ication Sy	/stem, U	= r	ot	detect	ed above th	e laborate	ory reporti	ng limit, pp	b = Parts	per Billion.	

Date Completion: 12/19/2018	9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	6 of	9
Drilling Methods Sonic Drilling Total Death:			· · · · · · · · · · · · · · · · · · ·						Bor	ing No.	: <u>IRZ-21-</u> I	Pilot
Drilling Method: Sonic Drilling Total Depth: 168 ft.logs Location: Groundwater Remedy Phase Location: Stowed Vascuez Schole Diameter 6 in Needles, California Needles, California Composition of Composi									_			
Drilling Name Dominguezic Alerez Soehole Diameter Sin Needles California	-	-									ater Remedy	Dhase I
Doiling Asst		-		•			-	_	_ Location.		-	i ilasc i
Description				•					_		<u> </u>	
Sumple Sumy cool to warm Converted to Well: Ves No	1			-		-			_ Project Nu	umber: <u>To</u>	oock	
Second S	Editor		<u>Sean</u>	McGrane					_			
101	Weath	er:	<u>Sunny</u>	cool to warr		Conver	ted to Well:	☐ Yes ⊠ No				
97-102 103 104 105 106 107 108 109 109 109 109 111 111 111 111 111 111	Depth (ft)	Recovery (in)			Geologic Formation	USCS Code	USCS	Description			Drilling Notes	Drilling Fluid
104 IRZ 21.SS 102-107 IRZ 21.SS 107-112 IRZ 21.SS 110 IRZ 21.SS 110 IRZ 21.SS 112-117 IRZ 21.SS 117-122 IRZ 21.S			IRZ-21-SS- 97-102									
104 RZ-21-SS-102-107 105 107-107 106 107 1	_102_	120										
104 RZ-21-SS 102-107 SM SM SM SM SM SM SM S												
105	103											
105	104		IRZ-21-SS-									
108	105											
108	ļ _											
108_	106											
108												
SM SM SM IRZ-21-SS- 107-112 O gal of water used III II	ဗ္ဗိ _107											
SM SM SM IRZ-21-SS- 107-112 O gal of water used III II	~											
110	a108											
110	100 -					SM						
110 107-112 120 1111 120 120 1111 120 120 1111 120 120	95.50		IRZ-21-SS-									
IRZ-21-SS 112-117 (< 0.17 U ppb) IRZ-21-SS 112-117 (< 0.17 U ppb) (117.0 - 121.0') Silty sand with gravel (SM); reddish brown / moderate brown(SYR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadlorite	<u></u>		107-112									
112	ABASE											used
112	\delta \d											
112 120 113 IRZ-21-SS- 112-117 (c) 0.17 U ppb) 116 IRZ-21-SS- 112-117 (c) 0.17 U ppb) 117 IRZ-21-SS- 112-117 (c) 0.17 U ppb) 118 IRZ-21-SS- 117-122 SM 120 IRZ-21-SS- 117-122 SM	PATOPO –						(111.5	'): trace cobbles				
IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-117-122 SM IRZ-21-SS-117-122	112_	120), il doc 3055.00				
IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-117-122 SM IRZ-21-SS-117-122	- HE											
IRZ-21-SS- 112-117 IRZ-21-SS- 117-122 IRZ-21-SS- 117-122 IRZ-21-SS- 117-122 IRZ-21-SS- 117-122 IRZ-21-SS- 117-122 SM IRZ-21-SS- 117-122 IRZ-21-SS- 117-122 SM	S 113_											
IRZ-21-SS- 112-117 IRZ-21-SS- 117- IRZ-21-SS- IRZ-21-SS	9 114											
115 (< 0.17 U ppb) 116 (117.0 - 121.0') Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadiorite SM IRZ-21-SS- 117-122 SM	186		IRZ-21-SS-									
116 117 118 118 1RZ-21-SS- 117-122 110 Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadiorite	월 115		112-117	(< 0.17 U								
(117.0 - 121.0') Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little clay; wet; gravel composed of metadiorite IRZ-21-SS- 117-122 SM	- 18E TOPC			PP~/								
[117.0 - 121.0') Sitty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadiorite SM 118_	_116_											
[117.0 - 121.0') Sitty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little clay; wet; gravel composed of metadiorite SM [RZ-21-SS-117-122] SM	OUMEN -											
brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadiorite SM SM SM SM SM SM SM SM SM S	8117					+	(117.0	- 121.0') Silty sand with gravel (SM); ı	reddish brown	/ moderate		
gravel composed of metadiorite IRZ-21-SS- 117-122 IRZ-21-SS- 117-122	MCGR.						brown to rour	(5YR 4/4); very fine grained to very cond; little small to large pebbles, angula	arse grained, s	subangular		
5 119	SERS!		IR7-21-SS-				gravel	composed of metadiorite				
	등 동 _119		117-122			SM						
	A D											
Notes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.	(1)			10 0	<u> </u>							
	S Notes:	US	SCS = Unifie	d Soil Classi	tication Sy	stem, U	= not detecte	ed above the laboratory report	ıng limit, pp	b = Parts _I	per Billion.	
	OIL BOI											

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	ı Log		Sheet	: 7 of	9
Date S					Surface			Bor	ing No.	: <u>IRZ-21-</u>	Pilot
	•		<u>/2018</u>				•	_			
Drilling	-	Casca			_	•		Client:	PG&E	ratan Danasah	. Dhana I
Drilling Driller	-		<u>Drilling</u> Vasquez			•	<u>166 ft bgs</u> neter: <u>6 in</u>			ater Remedy California	r Priase i
Drilling			minguez/C. A					_	14000100,	<u> Camorria</u>	
Logge			or Mills		- ' _Sampliı			- _ Project Νι	ımber: <u>To</u>	pock	
Editor	:	<u>Sean</u>	McGrane		Samplii	ng Inte		_			
Weath	er:	<u>Sunn</u> y	cool to warn		Conver	ted 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
		IRZ-21-SS-			SM						
		117-122					(121.0 - 127.0') Silt with sand (ML); yellowish plasticity; some clay; little granules to mediur	n pebbles, ang	gular to		
122	120						subangular; little very fine to very coarse gra subround; wet; gravel composed of metadior		ular to		
123											
124					ML						
		IRZ-21-SS- 122-127									
125											
126											
927 PLO							(127.0 - 129.5') Sandy silt (ML); reddish brow plasticity; little granules to large pebbles, and	gular to subang	jular; little		
ଞ୍ଚି <u>_</u> 128							very fine to very coarse grained sand, angula composed of metadiorite	ar to subround;	wet; gravel		
4RCADI					ML						
129		ID7 04 00									
420 -		IRZ-21-SS- 127-132					(129.5 - 132.0') Silty sand (SM); reddish brow	vn (5YR 5/4); v	ery fine		0 gal of water
JO130							grained to very coarse grained, angular to su granules to medium pebbles, angular to suba				0 gal of water used
* DATABASE - 131_					SM		composed of metadiorite				
0000											
គ្គី132	137								(=) (=		
FILES/1;							(132.0 - 136.0') Clayey gravel with sand (GC 5/4); granules to large pebbles, angular to su	bangular; som	e clay; little		
133							very fine to very coarse grained sand, angula wet; gravel composed of metadiorite	ar to subangula	ar; little silt;		
10100											
134		ID7 04 00	IRZ-21-VAS-		GC						
405		IRZ-21-SS- 132-137	132-137 (< 0.17 U								
ਲ <u>ੂ</u> _135			ppb)								
- - - - - - - - - - - - - - - - - - -											
MENTS							(136.0 - 146.0') Sandy silt (ML); reddish brow some clay; little granules to medium pebbles	vn (5YR 5/4); n . angular to su	o plasticity;		
							little very fine to very coarse grained sand, a moist; gravel composed of metadiorite	ngular to suba	ngular;		
GRANE							, 5				
138					ML						
C:\USE		IRZ-21-SS- 137-142									
<u></u> _139											
B											
<u>្នុំ 140</u> Notes:	US	CS = Unifie	d Soil Classit	fication Sy	/stem, U	= not o	letected above the laboratory report	ing limit, pp	b = Parts	per Billion.	
BORIN											
SOIL											

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo	g		Sheet	:: 8 of	9
Date S	Started	l: <u>12/15/</u>	2018		Surface	Elev	vation:	N/A	Bor	ina No.	: <u>IRZ-21-</u> F	Pilot
		eted: <u>12/19/</u>			Northin			N/A	_			
Drilling		Casca			Easting	•	•	N/A	_ Client:	PG&E		
Drilling			Drilling			-		166 ft bgs	_ Location:		<u>rater Remedy</u>	Phase I
Driller			Vasquez				ameter:	<u>6 in</u>	_	Needles,	California	
Drilling			minguez/C. A		•		st Water					
Logge			or Mills		Samplin			10 ft Core Barrel	_ Project N	umber: <u>To</u>	pock	
Editor:			McGrane		Samplin			Continuous	_			
Weath		Sunny	cool to warr		Conver	lea to	o vveii:	☐ Yes ⊠ No			T	ī
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs	Cass	Description			Drilling Notes	Drilling Fluid
141		IRZ-21-SS- 137-142										
142	120											
L -												
143					ML							
144												
-		IRZ-21-SS- 142-147										
145												
146							(146.0	- 153.0') Silty sand with gravel (SM);	reddish brown	/ moderate		
14/1 TO							brown	(5YR 4/4); fine grained to very coarse some silt; little granule to medium pe	grained, subar	ngular to		
⁹ 147								ind; wet; gravel composed of metadic		ai to		
30927 F												
148_												
ARCAD												
149_			IRZ-21-VAS-									0 gal of water used
	54	IRZ-21-SS- 147-152	147-152 (3600 ppb)		SM							
<u>i</u> _130_			(3000 ppb)									
DATABASE 1												
² / ₀ 151_												
1810												
152_												
- 1E2												
153					-	\prod	(153.0	- 158.0') Sandy silt (ML); yellowish re	ed (5YR 4/6); no	plasticity;	1	
9 154_							granul	very fine to very coarse grained sand e to large pebble, subangular to subr	ound; dry to mo	ist; gravel		
F 134							compo	sed of metadiorite, some metadiorite	nas iron oxidat	ion		
155_		IRZ-21-SS-										
0000		152-158										
					ML							
ENTS.	100											
157_	102											
RANE												
USERS]	_			(158.0 (2.5YF	- 166.0') Topock - Competent Bedro	ck - conglomera	ate; red	158' Rough drilling	
ទី ಕ159				Topock - Competent			× (2.511)	· -· - // · ·· J				
TOPA				Bedrock - conglomerat								
160												
Notes:	US	SCS = Unifie	d Soil Classi	fication Sy	stem, U	= no	t detecte	ed above the laboratory repor	ting limit, pp	b = Parts	per Billion.	
BORIL												
Nos												

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g			Sheet	9 of	9
Date S						Elevation:	N/A		Bor	ina No.	: <u>IRZ-21-</u> F	Pilot
		eted: <u>12/19/</u> 2				g (NAD83):	N/A		_			
Drilling		Casca				(NAD83):	N/A		Client:	PG&E		D
Drilling Driller			Drilling Vasquez		Fotal De	eptn: e Diameter:	166 ft bgs		Location:		ater Remedy California	Phase I
Drilling			<u>vasquez</u> ninguez/C. A			e Diameter. o First Water:			-	incedies,	Calliornia	
Logge	-	Conno	-		-	ng Method:	10 ft Core Barrel		- ₋ Project Νι	ımber: Toı	oock	
Editor:			<i>I</i> lcGrane		-	ig Interval:	Continuous					
Weath	er:	<u>Sunny</u>	cool to warm	<u> </u>	Convert	ed to Well:	\square Yes $oxdiv No$					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Description			Drilling Notes	Drilling Fluid
161												
162												
163				Topock - Competent Bedrock -								
164	60			conglomerate	:							
 165												
 166												
1/4/19					1		End of E	Boring at 166.0	bgs.	I		
727 PLOG.GDT												
CADIS 201808												
169												
ABASE FOR B												
171												
172_												
173												
174_												
176												
178												
179												
180		00 - 11 :6	10-1101 11	:4: 0	4 !!	4 -1 1 1	d abassa (f. 17)			- D 1	D:II:	
Notes:	US	US = Unified	d Soil Classif	ication Sys	tem, U	= not detecte	d above the labor	atory report	ing limit, pp	p = Parts ן	oer Billion.	
SOIL BOI												

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ri	ոջ	Log	DDAF		Sheet	1 of	8
Date S	tarted	: <u>11/28/</u> 2	2018		Surface	Ele	eva	tion: N/A	DRAF	Вс	rina No.	: <u>IRZ-23</u>	Pilot
	•	ted: <u>12/03/</u> 2			Northin			•				<u></u>	
Drilling		<u>Casca</u>				•		,	haa		PG&E	otor Domodu	Dhasa I
Drilling Driller			Drilling Vasquez			•			bgs			ater Remedy California	Phase I
Drilling			•					Water: <u>N/A</u>		_	ivecules,	California	
Logge		Conno	•						Core Barrel	– _ Project∃	Number: <u>To</u>	pock	
Editor:		Sean N	<i>d</i> cGrane		Samplir	ng I	nte			_			
Weath	er:	<u>Partly</u>	Cloudy 46 to	74 F	Conver	ted	to ۱	Well: 🗌 Ye	s 🗵 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	SCSI	Class		Description			Drilling Notes	Drilling Fluid
_ 1 _					SP-SM			(7.5YR 5/3); ver subround; little	y graded sand with silt and y fine grained to medium gr granule to very large pebble obbles, subangular to round	ained, angula s, subangula	r to		
2	84				GM			large pebbles, a sand, angular to	gravel with sand (GM); brov ngular to subround; some v subround; some silt; trace a 2 inch streak of orangish	ery fine to me cobbles, ang	edium grained ular to		
_ 5 _					SW-SM				graded sand with silt (SW-S				
								angular to round					
					GM			large pebbles, a	gravel with sand (GM); brov ngular to subangular; some	very fine to r	nedium		
1/4/19					Givi			grained sand, au subangular; dry	ngular to subangular; trace	cobbles, angı	ılar to		
7													
DATABASE FOR PLOG GPJ ARCADIS 20180927 P								grained to media	rly graded sand with silt and um grained, subangular to s es, angular to round; little s	subround; son	ne granule to		0 gal of water used
8 TOPOCK													
12	120				SP-SM								
# 13_								:					
TOGS/G													
_14													
RAFT B													
15													
å – – – – – – – – – – – – – – – – – – –													
16													
DCUME:								1					
Me 17_									ty sand (SM); reddish brown				
									lowish orange(10YR 6/6); v to subround; little silt; trace				
JSERS					SM			(18') very dark g	rayish brown (10YR 3/2); s	solid 1.5 ft cor	e of basalt		
 3 3 19_									uno.				
AOT	60												
20					SM			1	ty sand with gravel (SM); br	•		1	
Notes:	US	CS = Unified	d Soil Class	itication Sy	vstem, U	= n	ot o	detected abov	e the laboratory repor	tıng limit, ı	opb = Parts	per Billion.	
DIL BOF													
S													

9 /-	ARC	ADI	S Designation for natural built as	& Consultancy ural and sets		Во	ri	ng	Log		Sheet	: 2 of	8
	Started		28/2018			_ Surface				Bor	ing No.	: IRZ-23	<u>Pil</u> ot
	•	ted: <u>12/0</u>				_ Northin			•	_			
_	Co.:		cade			_	•		•	_ Client:	PG&E	ratan Danaadi	. Dhana I
_	Metho			•		_ Total D	•		147 ft bgs			ater Remedy	/ Phase I
	Name:			•	Alverez					_	<u>ineedies,</u>	California	
	g Asst:		nor Mill		Aiverez	=			Water: <u>N/A</u> nod: <u>10 ft Core Barrel</u>	— Project N	umber: <u>To</u>	nock	
ogge ditor:							-			_ Project N	ullibel. <u>10</u>	роск	
eath			ly Cloud			_ Sampiii _ Conver	-						
eauı		<u>raii</u>	iy Cloud	uy 40 ii			T	10 1	veii. Tes 🛆 NO				1
(ff)	Recovery (in)	Sieve Sample I		undwater ample ID	Geologic Formation	USCS	SSS	Class	Description			Drilling Notes	Drilling Flu
- 21						SM			grained to coarse grained, angular to subro large pebbles, angular to subround; some s to subangular; dry				
22						Sivi							
23_						ML	1 1		(23.0 - 23.5') Silt with sand (ML); gray (10Yl	R 5/1); no plast	ticity; little	1	
_ 24									very fine to coarse grained sand, angular to medium pebbles, angular to subround; dry;	soft	_		
4									(23.5 - 27.0') Well graded gravel with silt an brown (7.5YR 6/3); granules to very large p				
.5	60								coarse grained sand, angular to subround;	little silt; dry	,		
						GW-GM		1					
)6 							, q						
26								ŊŢ					
							i						
-1-							64	\ <u>\</u>	(27.0 - 30.5') Silty gravel (GM); brown (10Yl	R 5/3); granule	s to very	1	
							5	$\frac{1}{2}$	large pebbles, angular to subround; and silt grained sand, angular to subround; trace co	bbles, angular	; dry; gravel		
28								þ	composed of 1-4 in. metadiorite, cobbles we powder.				
, -						GM	0	7,					
9							100) b					
, -	60						10						0 gal of
30							10	1					0 gal of wa
31 						SM	0000		(30.5 - 31.5') Silty sand with gravel (SM); lig 6/4); very fine grained to coarse grained, su granule to large pebble, subangular to subre	ibangular to sul ound; some silt	bround; and ; dry		
32_					L	ML_	Ц.	<u> </u>	(31.5 - 32.0') Silt with sand (ML); gray (10Yl very fine to coarse grained sand, angular to	subround; trac	e granule to		
33_									medium pebbles, angular to subround; dry; boulder at end of core. (32.0 - 35.0') Sandy silt with gravel (ML); br plasticity; some very fine to coarse grained	soft; 4.5 inch E	Basalt 		
-						ML			little granule to large pebbles, angular to su				
34													
-													
35_							+	+	(35.0 - 37.0') Gravelly silt with sand (ML); but	rown (7.5YR 5/	3): no		
-									plasticity; some granule to very large pebble little very fine to coarse grained sand, angul	es, angular to s	ubangular;		
36						ML			muo very ime to coarse grained sand, angui	iai to subatiguti	ui, uiy		
4													
37	120						+	+	(37.0 - 47.0') Sandy silt with gravel (ML); no	plasticity: som	ne verv fine		
4									to coarse grained sand, angular to subangu				
38									pebbles, angular to subangular; dry; soft				
-						ML							
39_													
4													
0	110	00 - 11 1	fied 0 :	1 01-	:E: 4:)t - :-: 11	Ш		atastad abaye the left	Alman David	- h - D: 1	D::::	
otes:	US	CS = Uni	nea Sol	ıı Class	ilication S	system, U	= n) JOI	etected above the laboratory repor	ung iimit, pp	op = Parts	per Billion.	

Date Surface: 11.282018 Surface Elevation: NA Boring No.: IRZ-23 Pilot Date Completed: 120302918 No. Northing (ANDAS) NA Client PG&E Easting (NADAS) NA Client PG&E Easting (NADAS) NA Client PG&E Easting (NADAS) NA Client PG&E Control Policy Method: Some Delling About Surface Easting (NADAS) NA Client PG&E Location: Groundwater Remedy Phase I Policy Name: A Common Mile Steve Vascusez Borehole Diameter: Gin Name Medias, California Steve Vascusez Borehole Diameter: Gin Name Medias, California Steve Vascusez Sampling Method: 10.ft Core Barrel Policy Name Medias, California Sampling Method: 10.ft Core Barrel Policy Name Medias, California Sampling Method: 10.ft Core Barrel Policy Name Medias, California Sampling Method: 10.ft Core Barrel Policy Name Medias, California Name Medias, California Sampling Method: 10.ft Core Barrel Policy Name Medias, California Name M	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	riı	ng	Log		Sheet	: 3 of	8
Date Completed: 12/03/2018 Northing (NAD83). NA Clear: 12/03/2018 Cascade	Date S	tarted	: <u>11/28/</u> 2	2018		Surface	Ele	evatio	n: <u>N/A</u>	Bor	ina No.	: IRZ-23 I	Pilot
Deliting Method: Deliting Assi: Description Des		•				-			•			<u></u>	
Doller Name: Steve Vasquez Borehole Diameter: 6.in Needles, California Doller Name: Needles, California Sampling Method: 10.ft. Core Barrel Project Number: Topock Sampling Method: 10.ft. Core Barrel Project Number: Topock Sampling Interval: Continuous	_					_	•		•	=			
Deliling Asst: N. Dominguez/C. Alverez Cager: Connor Mills Sampling Method: 1 oft Core Barrel Project Number: Topock Sean McGrane Sampling Method: 1 oft Core Barrel Project Number: Topock Sampling Interval: Continuous Sampling Interval: Continuous Sampling Interval: Continuous Description Description Des	_			-			-		_			-	Phase I
Logger: Connor Mills Sampling Interval: Continuous Partly Cloudy 46 to 74 E. Corrected to Well: Ves S No Each Sample ID Sampl			· · · · · · · · · · · · · · · · · · ·	-		='			· · · · · · · ·		Needles,	California	
Editor: Saan McGrane	_			•	iverez	-				Droigat Nu	ımbor: To	nook	
Meather: Partly Cloudy 46 to 74 F Converted to Well: Yes No						-	_			Projectivi	illiber. <u>10</u>	роск	
Siere Siere Sample D Groundstate Sample D Sample Sample D Sample Sample D Sample Sample D					74 F	-	-			-			
	vvcatin		<u>ı artıy</u>			Johnson	Cu	T	163 🖭 160				
42 43 44 45 46 46 46 46 46 46 46 46 46 46 46 46 46	Depth (ft)	Recovery (in)			Geologic	USCS	nscs	Class	Description			Drilling Notes	Drilling Fluid
44 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	41												
ML	42												
	43												
47						ML							
47—48—48—48—48—48—48—48—48—48—48—48—48—48—	44												
108 IRZ-23-SS-45-50 IRZ-23-SS-45-50 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 108 IRZ-23-SS-45-50 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 108 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 109 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 100 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 101 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 102 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 103 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 104 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 105 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 107 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 108 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 109 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 109 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 109 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-VAS-57-62 (5.3 ppb) 100 IRZ-23-VAS-	45												
108 IRZ-23-SS-45-50 IRZ-23-SS-45-50 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 108 IRZ-23-SS-45-50 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 108 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 109 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-VAS-57-62 (5.3 ppb) 10	16												
RZ-23-SS-45-90 RS-23-SS-45-90 RS-23-SS-55-60 RZ-23-VAS-57-62 (3.3 ppb) RS-23-SS-55-60 RS-23-SS-55-60 RS-23-SS-55-60 RS-23-SS-55-60 RS-23-VAS-57-62 (3.3 ppb) RS-	2 40 -												
LAS. LAS. LAS. LAS. LAS. LAS. LAS. LAS.	_47	108					12.34		47.0 40.5') Silty aged (SM); fine grained to	vorv ocerce ar	rainad	47'	
SM (49.5 - 52.0') Silty sand with gravel (SM); very fine grained to coarse grained, angular to subround; some silt; little granule to very large pebbles, angular to subangular; trace cobbles, angular to subangular; wet SM (52.0 - 59.5') Silt with sand (ML); no plasticity; little fine to coarse grained sand, angular to subround; trace medium to very large pebble, angular to subangular; wet (52.0 - 59.5') Silt with sand (ML); no plasticity; little fine to coarse grained sand, angular to subround; trace medium to very large pebble, angular to subangular; wet [RZ-23-SS-56-65] [RZ-23-SS-56-60] [RZ-23-SS-56-60] [RZ-23-VAS-57-62 (3.3 ppb)] [RZ-23-SS-57-62 (5.3 ppb)] [RZ-23-SS-57-62 (5.3 ppb)]	17600								ubangular to subround; some silt; little grant	ule to large pel	obles,	Approximate depth of water	
	48_					SM						table.	
grained, angular to subround; some sitt, little granule to very large pebbles, angular to subangular; wet SM SM SM SM SM SM SM SM SM S	_49												
	50												0 gal of water
	30_								ebbles, angular to subangular; trace cobbles	granule to very s, angular to si	y iarge ubangular;		
IRZ-23-SS-50-55	51_					SM							
IRZ-23-SS-50-55													
53	_52_		IR7-23-SS-										
	53_									dum to very la	ige pebble,		
								$\ \ $					
	54												
57 120	55												
57 120						MI							
RZ-23-SS-55-60	56					IVIL							
58 59 60 IRZ-23-VAS- 57-62 (5.3 ppb) SM (59.5 - 62.0') Silty sand with gravel (SM); brown (7.5YR 5/3); very fine	_57_	120											
IRZ-23-VAS- 57-62 (5.3 ppb) SM (59.5 - 62.0') Silty sand with gravel (SM); brown (7.5YR 5/3); very fine			IRZ-23-SS- 55-60					$\ \ $					
(5.3 ppb) SM (59.5 - 62.0') Silty sand with gravel (SM); brown (7.5YR 5/3); very fine	_58_												
SM (59.5 - 62.0') Silty sand with gravel (SM); brown (7.5YR 5/3); very fine	[$\ \ $					
	<u> </u>						i i		ED E (2001) (2)(4)1	un /7 EVP E/2), vor : f		
rvotes. USCS – Onlined Soil Classification System, U – not detected above the laboratory reporting limit, ppb = Parts per Billion.		110	CC - Unific	d Soil Classif	ination C:		<u> </u> 					por Pillion	
	inoles:	05	CO – Unille	u ouii Ciassii	ication 5)	rsielli, U	<u> </u>	ot de	естей ароле пів іарогатогу геропі	пу шпц, рр	u – Paris	pei Dillion.	

RZ_23_VAS_	AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	:: 4 of	8
Comparison Com							· · · · · · · · · · · · · · · · · · ·	Bor	ing No	: IRZ-23	Pilot
Total Depth: 147 ft bg. Location: Groundwater Remedy Phase Depthie Name: Streey Vasquez Sereko Dismaters 6 in Needles, California Needle							•	_			
Driller Name Steve Vasquez Sorehole Diameter: 6 in Needles, California	_				_	•	•			ratas Dasa adv	Dhasal
Delining Assist N. Deminguez/C. Alverez Depth to First Water: NA Congert Connor Mills San McGrane San	_		•				•	_ Location:		•	<u>Phase i</u>
Control Sean McCrane Sampling Interval Continuous Project Number: Topock			•					_	<u>ineedies</u>	Calliottila	
Saan McGrane Saan McGrane Sampling Interval: Continuous Continuous	_			VEIGZ	•			- Project Ni	umber: To	nnock	
Meather: Particy Cloudy 46 to 74 F. Converted to Well: Yes No						-		_ 1 10,00011	umbon. <u>10</u>	роск	
Sumple D Groundvater Sample D Groundvater Sample D S				74 F	•	•		_			
RZ_23_NAS_	1	Sieve	Groundwater		1	Τ				Drilling Notes	Drilling Flui
RZ_23_SS_60.65 RZ_23_SS_60.65 RZ_23_VAS_60.65 RZ_23_VAS_60	61		57-62		SM				silt; little		
RZ_23_SS_60.65 RZ_23_SS_60.65 RZ_23_VAS_60.65 RZ_23_VAS_60	62										
SM SM SM SM SM SM SM SM	63 64 						grained to very coarse grained, angular to s very large pebbles, subangular to subround	ubroùnd; some	granule to	were very	5
RZ-23-VS-67-72 (85 ppb) RZ-23-SS-70-75 RZ-23-SS-75-80 RZ-23-SS-75-8	66 67120				SM						
IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 ML IRZ-23-SS-75-80 IRZ-23-SS-75-80	69 70 71		67-72		SM		grained to very coarse grained, angular to s very large pebbles, subangular to subround	ubround; little g	granules to		0 gal of wat used
	72 73 74 75						plasticity; little very fine to medium grained strace granule to small pebbles, angular to si	sand, angular to	o subround;	was tough, cores came out hot and	
	76 77 120 78				ML						
Notes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.	80										
	Notes: US	SCS = Unifie	d Soil Classif	cation Sy	stem, Ū	= not	etected above the laboratory repor	ting limit, pp	b = Parts	per Billion.	

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	g Log		Sheet	:: 5 of	8
Date S		·			_ Surface			Bor	ing No.	: <u>IRZ-23</u>	Pilot
1	-	eted: <u>12/03/</u>			_ Northing	- '	•				
Drilling		Casca			_ 0				PG&E		
Drilling	-		<u>Drilling</u>				<u>147 ft bgs</u>			<u>rater Remedy</u>	/ Phase I
Driller			Vasquez				meter: 6 in		Needles,	California	
Drilling	-		ninguez/C. Al		•						
Logge		Conno			_ Samplir	-		Project N	umber: <u>To</u>	pock	
Editor			<u>McGrane</u>		_ Samplir	-					
Weath	er:	<u>Partly</u>	Cloudy 46 to	74 F	_ 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
 81 					ML						
82		IRZ-23-SS-			-		(82.0 - 84.5') Silty sand (SM); brown (
83		80-85			014		pebbles, angular to subangular; wet	, and siit, ittle grand	ie to large		
 84					SM						
 85							(84.5 - 87.0') Sandy silt (ML); reddish little granule to medium pebbles, angu	ılar to subangular; litt	le very fine		
 86					ML		to coarse grained sand, angular to sul	oangular; moist; med	ium stiff		
87	108	IRZ-23-SS-					(87.0 - 94.5') Silty sand (SM); brown (coarse grained, angular to subangular	7.5YR 4/4); very fine	grained to		
88		85-90					pebbles, angular to subangular; little o	clay; wet	die to large		
 89											
90											0 gal of water
							원 항 소				used
 91					SM						
 92											
92		IRZ-23-SS-									
93		90-95					하 하 당				
94			IRZ-23-VAS-								
			92-97 (<0.033 U				(94.5 - 97.0') Silty sand (SM); reddish	brown (5VR 5/4): fin	a grained to		
95			ppb)				very coarse grained, angular to subround medium pebbles, angular to subround	und; some silt; little g			
					SM		in and an possion, an galar to cast can a	,			
96					J						
97	120	ID7 00 00					(97.0 - 102.0') Silty sand (SM); dark ye	ellowish brown (10YF	R 4/4); fine	-	
 98		IRZ-23-SS- 95-100					grained to very coarse grained, angula granule to large pebbles, angular to su	ar to subround; some ubangular; wet	silt; trace		
<u> </u>					SM						
99											
 100	54										
Notes:	US	CS = Unifie	d Soil Classifi	cation S	ystem, U	= not	detected above the laboratory r	eporting limit, pp	b = Parts	per Billion.	

SM Comparison	9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	: 6 of	8
Date Completed: 12/03/2018 Northing (NADS): NIA						_			Bor	ing No.	: IRZ-23	Pilot
Deliling Methods Sonic Drilling Drilling Methods Sonic Drilling Drilling Asst Drilling		-						•	_			
Daller Name: Needles, California Need		-										
Delining Assit. N. Deminguez/C. Alverezy Depth to First Water: MA Logger Editor Sean McGrane Sampling Method: 10ft Core Barrel Sean McGrane Sampling Method: 10ft Core S	`	•		•			-	_			•	Phase I
Section Seam McGroene Sampling Interval Continuous Partly Cloudy 46 to 74 F Converted to Well: Yes No				-					_	Needles,	California	
Sam McGrane Sample ID Sa	_	-		•					_			
Partly Cloudy 46 to 74 F Converted to Well: Yes No						-	-		_ Project Nu	ımber: <u>To</u>	pock	
Sample ID Samp						-	-		_			
IRZ-23-88- 100-105 IRZ-23-88- 100-105 IRZ-23-88- 100-105 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 1106-110 IRZ-23-88- 1106-1100 IRZ-23-88- 1106-1100 IRZ-23-88- IRZ-2	Weath	er:	Partly (Cloudy 46 to		Conver	ted to V	Vell:				1
102 103	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
103	 _101_ 					SM						
100-105 100-106 100-107 100	_102_						P ((102.0 - 103.0') Silty gravel (GM); brown (7.9	5YR 4/4); granı	iles to very		
104 106 106 107 107 107 107 107 107 107 107 107 107						GM	h MK	large pebbles, angular to subangular; some	silt; little very fi	ne to		
104. 105. 106. 107. IRZ-23-SS- 108-110 IRZ-3-SS- 110-115 IRZ-3-SS- 110-115 IRZ-23-SS- 110-115 IRZ-	103						0 0	subangular; dry		· ·		
subangular; wet 106	104							(10YR 4/4); fine grained to very coarse grain	ned, subangula	r to		
100. 100. 100. 100. 100. 100. 100. 100. 110. 110. 110. 111. 111. 112. 113. 114. 115. 116. 117. 118. 118. 118. 118. 119. 119. 110.	104								ebbles, aligulai	10		
105. 107. 108. 108. 108. 109. 109. 110. 110. 111. 111. 112. 114. 115. 116. 117. 118. 118. 118. 118. 119. 119. 110. 110. 110. 111. 111. 111. 111. 111. 111. 111. 112. 113. 114. 115. 116. 117. 118. 118. 118. 119. 119. 110. 110. 110. 110. 110. 110. 111.	105											
IRZ-23-SS- 108 172 170 170 170 Silty gravel (GM); brown (10YR 4/3); granules to large pebbles, subangular to subround; little fine to very coarse grained and younger alluvium 110 170 170 170 170 Silty gravel (GM); brown (10YR 4/3); granules to large pebbles, subangular to subround; little sit; little clay; dry; potential contact of older and younger alluvium 111 170 170 170 170 170 170 170 170 170	100					SM						
IRZ-23-SS- 108 172 170 170 170 Silty gravel (GM); brown (10YR 4/3); granules to large pebbles, subangular to subround; little fine to very coarse grained and younger alluvium 110 170 170 170 170 Silty gravel (GM); brown (10YR 4/3); granules to large pebbles, subangular to subround; little sit; little clay; dry; potential contact of older and younger alluvium 111 170 170 170 170 170 170 170 170 170	106											
IRZ-23-SS-108-110 IRZ-23-SS-108-110 IRZ-23-SS-108-110 IRZ-23-SS-110-115												
IRZ-23-SS-108-110 IRZ-23-SS-108-110 IRZ-23-SS-108-110 IRZ-23-SS-110-115												
108 109-110 109 10								(107.0 - 117.0') Silty gravel (GM); brown (10 pebbles, subangular to subround; little fine t	YR 4/3); granu to very coarse c	les to large rained		
110	_108_		105-110				PAR	sand, angular to subround; little silt; little cla	y; dry; potentia	contact of		
110								, 0				
110	_109_											
IRZ-23-SS- 1115 116 117 IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 SM IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 SM IRZ-23-SS- 119 IRZ-23-SS-												
1112	_110_						9					0 gal of water
IRZ-23-SS- 110-115 IRZ-23-SS- 116 IRZ-23-SS- 117 IRZ-23-SS- 118 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120												4004
IRZ-23-SS- 110-115 114 115 116 117 IRZ-23-SS- 115-120 IRZ-23	_111_						Para					
IRZ-23-SS-110-115 IRZ-23-SS-110-115 IRZ-23-SS-110-115 IRZ-23-SS-115-120												
114	_112_	120				GM	Para					
							P P					
	113											
	-						PXP					
IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 SM IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- IRZ	114						1					
IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 SM IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- IRZ							P P					
IRZ-23-SS- 115-120 IRZ-23-SS- 119 110 IRZ-23-SS- 110 IRZ-23-SS- 110 IRZ-23-SS- 115-120 IRZ-23-SS- 11	115											
IRZ-23-SS- 115-120 IRZ-23-SS- 119 110 IRZ-23-SS- 110 IRZ-23-SS- 110 IRZ-23-SS- 115-120 IRZ-23-SS- 11							P. P. P					
IRZ-23-SS- 115-120 SM IRZ-23-SS- 115-120 IR	_116_											
IRZ-23-SS- 115-120 SM IRZ-23-SS- 115-120 IR	447						P P					
granule to medium pebbles, angular to subangular; wet; tight formation, potential contact of weathered bedrock. SM SM	11/		ID7 22 CC		<u> </u>			(117.0 - 122.0') Silty sand with gravel (SM);	brown (7.5YR	1/4); very		
			115-120					granule to medium pebbles, angular to suba	angular; wet; tig	t; little ht	aniing, ary	
	118							formation, potential contact of weathered be	edrock.			
						SM						
	119											
	120 Notes:	US	SCS = Unified	d Soil Classifi	cation Sv	vstem. U	= not c	etected above the laboratory repor	tina limit, pp	b = Parts	per Billion	
, , ,						,, 0			J, FF			

	ADIS	Design & Consultancy for natural and built assets		Bo	rın	g Log		Sheet:	7 of	8
ate Started	·	/2018		Surface		· · · · · · · · · · · · · · · · · · ·	Bor	ing No.	IRZ-23	<u>Pilot</u>
	eted: <u>12/03</u>			Northin	- '	•				
illing Co.:	Casca			Easting	•	•	Client:	PG&E		DI I
illing Meth		Drilling				147 ft bgs	Location:		ater Remedy	<u>Phase I</u>
iller Name		Vasquez		Boreho			-	Needles,	California	
illing Asst:		minguez/C. A		•		t Water: N/A	Droiget Ni	umber: <u>To</u> r		
gger: itor:		or Mills McGrane		Sampliı Sampliı	-		. Project Ni	umber: <u>ro</u> p	DOCK	
eather:		Cloudy 46 to		Conver	-		•			
	railly	T Cloudy 40 to		T	T IC	Tes Mino				<u> </u>
(ft) (Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Flu
_ 21_ _				SM						
22 120	IRZ-23-SS- 120-125					(122.0 - 127.0') Sandy silt with gravel (ML); you no plasticity; little granule to medium pebbles little fine to medium grained sand, angular to	, angular to sໍເ	ubangular;		
4 5		IRZ-23-VAS- 122-127 (2000 ppb)		ML						
6										
78	IRZ-23-SS- 125-130					(127.0 - 133.0') Silty sand (SM); (5YR 4/8); fil grained, angular to subround; some silt; little pebbles, angular to subangular; wet; granules of trace pieces of metadiorite 1-4 in. dia.	granule to me	dium		
30	IRZ-23-SS- 130-135			SM						0 gal of wa used
34_ -						(133.0 - 136.5') Sandy silt (ML); reddish brow some very fine to medium grained sand, ang granule to medium pebbles, angular to subro	ular to subrou			
35 - 36				ML						
37				GM		(136.5 - 137.0') Silty gravel (GM); dark gray (
38	IRZ-23-SS- 135-140			GM		very large pebbles, angular to subangular; so medium grained sand, angular to subangular (137.0 - 139.5') Silty gravel with sand (GM); r brown(5YR 4/4); granules to large pebbles, a some silt; little fine to coarse grained sand, at clay; wet; trace pebbles of metadiorite 20-70	; dry eddish brown ngular to suba ngular to subro	/ moderate		
39		IRZ-23-VAS-		1	101	1				
39					[ト]	1		ı		
39 _ 40		139-144 (3000 ppb)		SM		(139.5 - 142.0') Silty sand (SM); yellowish red	(5YR 4/6); ve	ery fine		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring I	Log		Sheet:	8 of	8
Date S	Started	: <u>11/28/</u>	2018	;	Surface	Elevation	n: <u>N/A</u>	Bori	ina No.:	: <u>IRZ-23 I</u>	Pilot
	•	eted: <u>12/03/</u>				g (NAD83	•				
Drilling	-	<u>Casca</u>			-	(NAD83)		Client:	PG&E		
Drilling	•		<u>Drilling</u>		Total D	-	_	Location:		ater Remedy	Phase I
Driller			Vasquez				ter: 6 in		Needles,	California	
Drilling Logge	-	Conno	<u>ninguez/C. A</u> r Mills			ng Method	ater: <u>N/A</u> d: <u>10 ft Core Barrel</u>	Project Nu	ımber: Tor	nock	
Editor:			McGrane			ng Interva		i iojective	11110C1. 10	JOOK	
Weath			Cloudy 46 to		-	ted to We					
	>										
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description			Drilling Notes	Drilling Fluid
141			IRZ-23-VAS-		SM	to	rained to coarse grained, angular to subround medium pebbles, angular to subround; wet; letadiorite 10-40 mm.				
142	120		139-144 (3000 ppb)			(1	42.0 - 147.0') Topock - Competent Bedrock		te: Silt with	142' Drill was	
143			(3000 ppb)			Sa co	and (ML); yellowish red (5YR 4/6); no plastici parse grained sand, subangular to round; trad bund; dry; hard; strong cementation	ty; little very f	ine to	tough with rig chattering.	
144		IRZ-23-SS- 140-147		Topock -							0 gal of water used
				Competent Bedrock - conglomerate	ML						
146											
DT 1/4/19											
ဗ္ဗိ <u>147</u>							End of Boring at 147.0 'b	ogs.			
80927 8							Ç .	J			
^{ଞ୍ଚ} ୍ଚ148											
ARCAI											
149_											
원 8 150											
3ASE											
ĕ 4 _151_											
0.000											
្ត្រ											
LES/12											
트 153											
9019											
<u>154</u>											
DRAFT -											
ਲੋ <u>_155_</u>											
156											
WENTS!											
157_											
SRANE											
158											
SYNSER											
출 159											
08E TO											
្ <u>នី 160</u> Notes:	LIS	CS = Unifie	d Soil Classif	ication Svs	tem. II	= not det	ected above the laboratory reportin	na limit ppl	b = Parts r	er Billion	
ORING NO.		Omilio		.sanon Oyo	, 0		assis abore the laboratory reporting	.g, pp	- 1 4110	. 5. Dilliott.	
SOIL B											

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	g Lo	g	DI) <i>A E</i> 7			Sheet	: 1 of	9
Date Start				Surface			N/A	UK	RAFT		Bori	na No.	: <u>IRZ-25-</u>	Pilot
	oleted: <u>12/12/2</u>			Northin	- '		N/A							
Drilling Co				Easting	•	183):	N/A			_		PG&E	estar Damadu	Dhasa I
Drilling Me Driller Nan		Orilling Vasquez		Boreho	-	meter.		bgs		_ LOCa			ater Remedy California	Pilase i
Drilling As		ninguez/C. Al	lverez	=						_		<u>rectaics,</u>	Odinornia	
Logger:	Conno	•		Samplir				Core Barre		– _ Proje	ect Nu	mber: To	pock	
Editor:	Sean N	//cGrane		Samplir	-		Conti			- , -				
Weather:	<u>Sunny</u>	cool to warm	1	Conver	ted to	Well:		es 🗵 No						
Depth (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS				Description				Drilling Notes	Drilling Fluid
				SP-SM		(4'); 0. (4.5 - 6/3); v	d to fine gebbles, a	grained, subar angular to sub lens of granul orly graded sa rained to fine o very large p	d with silt and gingular to subroisangular; little si	und; littli ilt; dry obles P-SM); pa ar to su	ale brow	es to very /n (10YR little silt:	7' rough drilling.	0 gal of water used
100 100				SW-SM		(17.0 - graine granul angula	(10YR 6) Ind; some gular; little rs, angul ery dark (2) 20.5') Si d to coars es to very r to suba	3); very fine ge granules to ve granules to ve silt; trace co ar to subangular; trace losses and with grayish brown core segment lity sand with ge grained, are large pebble ngular; trace le R 6/1) and whetadiorite, ver	gravel (SM); brongular to subangus, angular to suboulders, and angular to suboulders, angular to suboulders, and angular to su	own (10° gular; so ubround lar to su	YR 5/3); ym silt; trace c bangular	very fine little obbles, r; dry	Dilli-	
Notes: l	JSCS = Unified	d Soil Classifi	ication Sy	vstem, U	= not	detecte	ed abov	e the labor	ratory report	ting lin	nit, ppl	o = Parts	per Billion.	
NOW I														
los los														

A	RC/	IDIS	Design & Consultancy for natural and built assets		Во	riı	nç	g Log		Sheet	t: 2 of	9
Date Sta		12/04/			Surface				Bor	ina No	.: <u>IRZ-25-</u>	Pilot
		d: <u>12/12/</u>			_ Northin	• •		,				
Drilling (<u>Casca</u>			Easting				Client:	PG&E		
Drilling N					Total D			<u>172 ft bgs</u>			vater Remedy	Phase I
Driller N			Vasquez						-	Needles,	, California	
Drilling A	ASSI.		minguez/C. A or Mills	iverez	-				- Droiget Nu	umbor: To	nook	
Logger: Editor:			McGrane		₋ Samplir ₋ Samplir	-			_ Project Ni	ullibel. <u>10</u>	роск	
Weather	r·		cool to warm	1	_ Conver	_			-			
		Carring	COOI to Waini			T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs	Class	Description			Drilling Notes	Drilling Fluid
23	10				ML			(29.5'); to 32' powerdized rock and solid core composed of metadiorite. (32.0 - 40.0') Silty sand with gravel (SM); palfine grained to medium grained, angular to subround; trace boulders, angular composed of metadiorite.	e brown (10YF	o subround; ice cobbles, ; dry ers R 6/3); very		0 gal of wate used
37												
40 Notos:	Hecc	: = I Inifia	d Soil Classif	ication S	ustom 11	<u> </u>		detected above the laboratory reserve	ing limit no	h - Dorto	por Pillion	
Notes:	0808	s = Unitie	u Soil Classif	ication Sy	ysiem, U	= n	OI (detected above the laboratory report	ırıg ilmit, pp	ou = Parts	per Billion.	

			Design & Consultancy for natural and built assets		ВО	rıng	ı Log		Sheet	3 of	9
	arted:		/2018		Surface		· · · · · · · · ·	Bor	ing No.	: <u>IRZ-25-</u>	Pilot
	-	ed: <u>12/12</u>			•		•	_			
rilling		<u>Casca</u>				•	•	_ Client:	PG&E	ater Remedy	Dhasa I
Orilling Oriller N			Drilling Vasquez				<u>172 ft bgs</u> neter: <u>6 in</u>			<u>ater Remedy</u> California	Phase i
rilling			minguez/C. A					_	<u>recuics,</u>	Odillorrila	
ogger:			or Mills		Samplin			- Project Ni	umber: To	oock	
ditor:			McGrane		Samplin	_		- , -			
Veathe	er:	Sunny	cool to warn	<u> </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 Flui
_41					GM		(40.0 - 41.5') Silty gravel with sand (GM); pa granules to very large pebbles, angular to su medium grained sand, angular to subangula angular to subround; dry	ıbround; some	very fine to		
42 43 44 45 46	9				GW-GM		(41.5 - 49.5') Well graded gravel with silt and brown (7.5YR 6/4); granules to very large pe subround; some cobbles, angular to subrour medium grained sand, angular to round; little	bbles, subang nd; little very fir	ular to		
_47 _48 _49		RZ-25-SS- 47-52					(47'); moist; to 49.5 ft bgs (49.5 - 52.0') Silty sand with gravel (SM); bro	110VP 5/2) year fine	49.5'	
_50	9.5	41.02			SM		grained to very coarse grained, subangular t granules to medium pebbles, angular to sub	o subround; so	ome silt; wet	Approximate depth to water table.	
5354		RZ-25-SS- 52-57	IRZ-25-VAS- 52-57 (3500 ppb)		GM		(52.0 - 57.0') Silty gravel with sand (GM); red angular to subangular; some very fine to coa to subangular; some silt; little clay; dry to mo	arse grained sa	YR 5/4); ınd, angular		
_56											
58		RZ-25-SS- 57-62			ML		(57.0 - 59.5') Sandy silt (ML); reddish brown and very fine to very coarse grained sand, a granules to small pebble, angular to subang strong cementation	ngular to subar ular; wet to dry	ngular; little ; stiff;		
					GM	CK}	(59.5 - 68.0') Silty gravel with sand (GM); red	ddish brown (5	YR 5/4);		
60 lotes:							detected above the laboratory report				

	ADIS	Design & Consultancy for natural and built assets		Во	rinç	Log		Sheet:	4 of	9
ate Started				Surface		· · · · · · · · ·	Bor	ing No.	: <u>IRZ-25-</u>	Pilot
ate Comple illing Co.:	ted: <u>12/12/</u> <u>Casca</u>			Northin Easting	• `	•	_	PG&E		
lling Co Iling Meth		<u>Drilling</u>				172 ft bgs			ater Remedy	Phase I
ller Name		Vasquez		Boreho			_ Location.	Needles,	-	i ilase i
lling Asst:		minguez/C. A				Vater: N/A	_	,	<u> </u>	
ger:		or Mills		Samplin			_ _ Project Ni	umber: <u>To</u> r	oock	
itor:		McGrane		Samplir	-		_ ,			
ather:	<u>Sunny</u>	cool to warm	1	Conver	-					
(ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Flu
1	IRZ-25-SS- 57-62					granules to very large pebbles, angular to s to coarse grained sand, angular to subangu dry to moist				
- 3_ - 4_ - 5_ - 6_ - 7_	IRZ-25-SS- 62-67	IRZ-25-VAS- 62-67 (620 ppb)		GM						
- - - - - - -	IRZ-25-SS- 67-72			SM		(68.0 - 72.0') Silty sand with gravel (SM); re very fine grained to very coarse grained, su some silt; little granules to medium pebble,	bangular to sub	round;		0 gal of wat used
10	IRZ-25-SS- 72-77			SM		(72.0 - 77.0') Silty sand with gravel (SM); ye yellowish brown(10YR 5/4); fine grained to subangular to subround; some silt; little grai angular to subround; wet	very coarse gra	ined,		
7 3 9	IRZ-25-SS- 77-82			GM		(77.0 - 79.5') Silty gravel with sand (GM); re granules to large pebbles, angular to suban very coarse grained sand, angular to subro	gular; some vei und; little silt; we	ry fine to et		
n -				SM		(79.5 - 87.0') Silty sand with gravel (SM); re	ddish brown (5`	YR 5/4);		

AR	CADIS	Design & Consultancy for natural and built assets		Во	rin	g L	.og		Sheet	: 5 of	9
Date Starte				Surface				Bor	ina No.	: IRZ-25-	Pilot
	eted: <u>12/12/</u>			Northin	- '						
Drilling Co.:	nde Drillin r		Easting	•	,		Client:	PG&E	ratan Danasah	Dhasal	
Drilling Meth Driller Name		<u>Drilling</u> Vasquez		otal De Borehol	-		<u>172 ft bgs</u> er: <u>6 in</u>			rater Remedy California	Phase I
Drilling Asst		<u>vasquez</u> minguez/C. A					er: <u>6 in</u> ter: <u>N/A</u>	-	incedies,	California	
Logger:		or Mills		Samplir				- ₋ Project Nu	ımber: To	pock	
Editor:		McGrane		Samplir	-			- · · · · , · · · · · · · · · · · · · · · · · · ·		1	
Weather:	<u>Sunny</u>	cool to warm		Convert	-						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs		Description			Drilling Notes	Drilling Fluid
81 825	IRZ-25-SS- 77-82					gra	y fine grained to very coarse grained, sub inules to medium pebbles, angular to suba ibles, angular to subangular; wet; cobbles	angular; little si	lt; trace		
83				SM							
84	IRZ-25-SS-										
85	82-87										
86											
87 14/100 0.60T 14/100											
80927 PLOO						fin	7.0 - 94.5') Silty sand with gravel (SM); red e grained to very coarse grained, subangu e granules to medium pebble, angular to s	lar to round; so	ome silt;		
87							ge pebbles	azangalai, no	.,		
-89_ -89_	ID7 05 00										
[™] _90	IRZ-25-SS- 87-92										0 gal of water
DATABASE				SM							used
<u>91</u>											
등 - 92											
ES/12.3											
93											
00 – – – – – – – – – – – – – – – – – –											
DRAFT BG	IRZ-25-SS- 92-97	IRZ-25-VAS- 92-97 (130 ppb)					5.5 - 95.5') Gravelly silt (ML); reddish brow				
\$5000 		(:00 pp2)		ML		to	e granules to medium pebble, angular to s very coarse grained sand, angular to suba obles composed of metadiorite				
96				SM		(95 bro	5.5 - 97.0') Silty sand with gravel (SM); red own(5YR 4/4); very fine grained to very co pround; some granules to large pebble, an	arse grained, a	ingular to		
97					••••	so	oround; some granules to large peoble, an me silt; trace cobbles; wet; cobble compos '.0 - 102.0') Well graded sand with silt and	ed of metadior	rite		
						red gra to	ldish brown / light brown(5YR 6/4); fine gra lined, angular to round; some small to very subangular; some silt; wet; trace very large	ained to very c y large pebbles	oarse s, angular		
99	IRZ-25-SS- 97-102			SW-SM		me	tadiorite.				
&E TOPAC											
100 Notes: US	SCS - Unific	nd Soil Classifi	ication Sys	tem II		t deta	ected above the laboratory report	ina limit na	h = Parte	ner Rillion	
INOICS. U		u Juli Ciassii	ioalion 3yS	GIII, U	- 110	ı u c ıt	eicu above ille laboratory report	ing illilit, pp	v – raits	אסווווטוו.	
SOIL BC											

9 /-	AR(CADIS	Design & Consultancy for natural and built assets		Во	rir	ng Lo	g			Sheet	6 of	9
	Started				Surface			N/A		Bor	ing No.	: <u>IRZ-25</u> -	Pilot
	comple Co.:	eted: <u>12/12/</u> <u>Casca</u>			Northin Easting			N/A N/A		Client:	PG&E		
_	, co , Meth		Drilling		_	•	•	172 ft bgs				ater Remedy	/ Phase I
_	Name		Vasquez			-	iameter:	6 in		.oodiioiii		California	1 11400 1
rilling	Asst:	N. Do	minguez/C.	Alverez	Depth t	o Fir	st Water	: <u>N/A</u>					
ogge			or Mills		Sampli	-		10 ft Core Barrel	F	roject N	umber: <u>To</u>	pock	
ditor:			<u>McGrane</u>		Sampli	-		Continuous					
eath/		Sunny	/ cool to war		Conver	ted t	o Well:	☐ Yes ⊠ No					
Depth (ff)	Recovery (in)	Sieve Sample ID	Groundwate Sample ID	Geologic Formation	USCS	SOS	Class	Descr	ription			Drilling Notes	Drilling Flui
- 01_		IRZ-25-SS- 97-102			SW-SM								
02_	9.5							- 103.5') Sandy silt with grav (5YR 6/4); little granules to la					
03_					ML		subroi metad		wet; contain	s a 100 mn	n cobble of		
04		IRZ-25-SS-					to larg	- 109.5') Silty gravel (GM); re e pebbles, angular to subrour e grained sand, angular to sub	nd; some silt	; little very	fine to very		
)5		102-107					Pebbi	•					
-						Poli							
06						60							
					GM								
07						60							
- 80													
						50							
)9							þ						
-		IRZ-25-SS- 107-112				100	(100 5	- 117.0') Silty sand with grave	(al (SM): (5V	R 1/): fine (arained to		
10		107-112					very c	oarse grained, subangular to sebbles, angular to subround;	subround; s	ome granul	es to very		0 gal of wat
								very large pebbles to small co					
11_													
- 12_													
14	10												
13_													
					SM								
14_			IRZ-25-VAS-										
-		IRZ-25-SS- 112-117	112-117 (< 0.17 U										
15			ppb)										
16													
17 <u> </u>													
''-				<u> </u>			(117.0 brown	- 119.5') Silty sand with grave (5YR 4/4); very fine grained to	vel (SM); rede	dish brown	/ moderate		
18_							to sub	round; little granules to mediu lt; little clay; wet					
_		IRZ-25-SS-			SM			,,,					
19_		117-122											
-					ML		(119.5	- 124.5') Sandy silt with grave	vel (ML); redo	dish brown	/ moderate		
20 tes:	115	CS = Unifie	ed Soil Class	ification Sv		= nc		ed above the laboratory				ner Billion	
		32 311110			, 0				,	,, PF	.s rano	r 2. 2011.	

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	g Log		Sheet:	7 of	9
Date S		· · · · · · · · · · · · · · · · · · ·			Surface		· · · · · · · · · · · · · · · · · · ·	Bor	ina No.:	IRZ-25-	Pilot
		eted: <u>12/12/</u>			Northing		•				
Drilling	-	<u>Casca</u>			Easting	•	•	Client:	PG&E		DI 1
Drilling Driller			<u>Drilling</u> Vasquez		Total De Borehol		172 ft bgs meter: 6 in	Location:	Needles,	ater Remedy	/ Phase I
Drilling			<u>vasquez</u> minguez/C. <i>P</i>				meter: <u>6 in</u> Water: <u>N/A</u>		ineedles,	Callionnia	
Logge			or Mills		Samplin			Project Nu	umber: <u>Top</u>	nock	
Editor:			McGrane		Samplin			i roject i i	иппост. <u>то</u> р	DOOK	
Weath			cool to warn		Convert						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class				Drilling Notes	Drilling Fluid
	10	IRZ-25-SS- 117-122			ML		brown(5YR 4/4); some very fine to very coarse to subround; little granules to medium pebbles wet				
 _123 _124 		IRZ-25-SS- 122-127			IVIL	in dece	(124.5 - 127.0') Silty sand (SM); reddish brow	n / moderate	brown/5VP		
125 126 127		122-121			SM		4/4); very fine grained to coarse grained, suba some silt; little granules to medium pebbles, a wet	angular to sub ngular to sub	oround; angular;		
	10	IRZ-25-SS- 127-132			GM		(127.0 - 132.0') Silty gravel with sand (GM); regranules to large pebbles, angular to subangular to coarse grained sand, angular to subangmoderate cementation	ılar; and silt; li gular; dry to n	ittle very noist;		0 gal of water used
133 134 135 136	10	IRZ-25-SS- 132-137			ML		(132.0 - 137.0') Sandy silt with gravel (ML); re brown(5YR 4/4); no plasticity; little granules to angular to subangular; little very fine to very cangular to subround; dry to moist	medium peb	bles,		
137 138 139 140		IRZ-25-SS- 137-142			ML		(137.0 - 139.5') Sandy silt (ML); reddish brown 4/4); no plasticity; some very fine to coarse gr subround; little granules to medium pebbles, a little clay; wet; dessicated	ained sand, a angular to sub	ingular to pangular;		
Notes:	US	CS = Unifie	d Soil Classi	fication Sy	stem, U	= not	detected above the laboratory reporting	ng limit, pp	b = Parts p	er Billion.	
									•		
131											
				_				-	_		

9/-	ARC	CADIS	Design & Consultancy for natural and built assets		Во	rir	ng	Log		Sheet	: 8 of	9
Date S					Surface			· · · · · · · · · · · · · · · · · · ·	Bor	ing No.	: <u>IRZ-25-</u>	Pilot
	-	eted: <u>12/12/</u>			٠,			•	_			
Drilling Drilling		Casca	ae Drilling		_	•		3): <u>N/A</u> <u>172 ft bgs</u>	_	PG&E Groundw	ater Remedy	Dhasa I
Driller			Vasquez			-		-			California	1 11030 1
Drilling			ninguez/C. A						_			
Logge	r:		or Mills		Samplin	-			_ Project Nu	umber: <u>To</u>	pock	
Editor:			<u>McGrane</u>		Samplin	_			-			
Weath	er:	Sunny	cool to warn		Convert	ed 1	to V	/ell: ☐ Yes ⊠ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs	Class	Description			Drilling Notes	Drilling Fluid
141		IRZ-25-SS- 137-142						brown(5YR 4/4); no plasticity; little granules angular to subangular; little very fine to coars to subangular; little clay; hard	to medium peb se grained san	bles, d, angular		
142	10											
143												
144		IRZ-25-SS-			ML							
145		142-147										
_146												
147_						10. No.	গুজ	(147.0 - 157.0') Silty sand with gravel (SM); r	reddish hrown	(5VR 4/3)·	147' very	
								fine grained to very coarse grained, subangu granules to large pebbles, angular to subrou	ılar to round; se nd; little silt; tra	ome ace	loose saturated	
CADIS 20								cobbles, angular to subangular; wet; trace sr metadiorite	nall cobbles co	omposed of	material with potential to poduce a lot of	•
[¥] _149			ID7 05 1/40								water.	
B PLOG		IRZ-25-SS- 147-152	IRZ-25-VAS- 147-152 (3600 ppb)									
150_ 150_			(0000 pps)									0 gal of water used
K DATABASE 151_												
10000												
152	9				SM							
FILESY												
153												
01												
R - 134		IRZ-25-SS-										
원 155		152-157										
38E TOP												
156												
157_					<u> </u>							
CGRANE	9							(157.0 - 162.0') Gravelly silt (ML); reddish br plasticity; little granules to large pebbles, and very fine to medium grained sand, angular to	gular to subang	gular; little		
158								very fine to medium grained sand, angular to	o subangular; 0	ıı y		
รู					ML							
E TOPAC												
160	110	100 = U=:£	4 Coil Cl	fination C	voto::::	<u> </u>		otootod about the leber-town	ing limit -	b = Da	nor Dillian	
Notes:	US	oco = Unitle	u Suii Classi	ncation S)	/siem, U	<u> </u>	υι d	etected above the laboratory report	iriy iiriit, pp	ıb – Parts	per billion.	
SOIL B(

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	rinç	g Log		Sheet:	9 of	9
Date S					Surface			Bori	ing No.	: <u>IRZ-25-</u>	Pilot
Date 0	-	eted: <u>12/12/</u> <u>Casca</u>	2018	! [Northing		· ·	Client:	PG&E		<u></u>
Drilling	-		<u>ue</u> Drilling				, —			ater Remedy	Phase I
Driller	-		Vasquez					Location.		<u>California</u>	1 11400 1
Drilling	g Asst:	N. Dor	ninguez/C. A	lverez [Depth to	First					
Logge			or Mills		Samplin	-		Project Nu	ımber: <u>To</u> p	pock	
Editor			McGrane		Samplin	-					
Weath	1	Sunny	cool to warn		Convert	ea to	Well: ☐ Yes ⊠ No				1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
161					ML						
162											
163							(162.0 - 166.0') Gravelly silt (ML); reddish brown (5YR 4/4); low plasticity; some granules angular to subround; little very fine to coarse gubround; wet; stiff	to medium pe	ebbles,	162' Drill rods chattering	
164		IRZ-25-SS- 162-166	IRZ-25-VAS- 162-167 (3000 ppb)		ML						
165 166			(3000 ррв)								0 gal of water
167167	5						(166.0 - 172.0') Topock - Competent Bedrock silt (ML); reddish brown (5YR 5/4); no plasticity pebbles, angular to subangular; little very fine sand, angular to subangular; dry; moderate ce	y; little granule to medium gr	es to large		used
RCADIS 20180927 168				Topock -							
169 170 170				Competent Bedrock - conglomerate	ML						
- 171_											
01/817 172											
ES/12.				-	•		End of Boring at 172.0 'b	ogs.	I		I.
173_ 173_											
174											
#804176											
3RANE) OCU											
178											
д179 — 179											
្ន <mark>ី 180</mark> Notes:	. 110	CS = Unific	d Soil Classit	fication Svo	tem II:	= not	detected above the laboratory reportir	na limit na	h = Parte +	ner Billion	
J NOICS	. 03	Jos – Offille	u Ooli Olassii	noauon oys	CIII, U	- not	actoriou above the laboratory reporting	ig mint, pp	. − i αiι >	JOI DIIIOII.	
SOIL B											

Attachment C Soil Sampling Locations and Available Soil Analytical Results

(Soil Data Presented in Excel File)



LEGEND

Soil Sample Location



Baseline and Opportunistic Soil Sampling Locations

December 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 × 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):

AX0108192225BAO D-1



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

Where:

AL = action level for airborne particulates (µg/m³)

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 December 2018, over 20 real time dust monitoring events were conducted at the perimeter of the work areas (outside of the exclusion zone). On December 3 and 4, 2018, during site preparation activities at the MW-N well location, temporary exceedance of the action level for fugitive dust monitoring (100 μ g/m³) was observed and additional water was applied to minimize/control fugitive dust.

No perimeter air sampling for hexavalent chromium was conducted in December 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.

D-2 AX0108192225BAO



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.

AX0108192225BAO D-3

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

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



Attachment E. Noise Monitoring Results

In conformance with the SEIR Mitigation Measure NOISE-2, noise monitoring has been conducted with ANSI S1.4 Type 1, precision sound level meters when construction activities are within the specified distance (e.g., 1,850 feet from sensitive receptors in California) at approved monitoring locations previously determined in coordination with the Tribes and land owners/managers (refer to Figures 1, 2 and 3). The goal of the noise monitoring is to identify if noise levels from project construction activities exceed applicable standards of the San Bernardino and Mohave County codes. Exceedance of standards would require coordination with the Tribes and land owners/managers to evaluate the potential constraints and locations for temporary engineered acoustical barriers. Consistent with the request of the Tribes, monitoring equipment is not left at the approved monitoring locations, rather it is mounted on a tripod for attended representative measurements and removed when the monitoring event is complete.

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

In December 2018, over 20 monitoring events were conducted at the Park Moabi monitoring location (Figure 1). These measurements were occasionally contaminated by rain, which results in elevated levels of pseudo-noise on the microphone. Outside of these events, the sound level typically varied between 37 to 57 dBA.

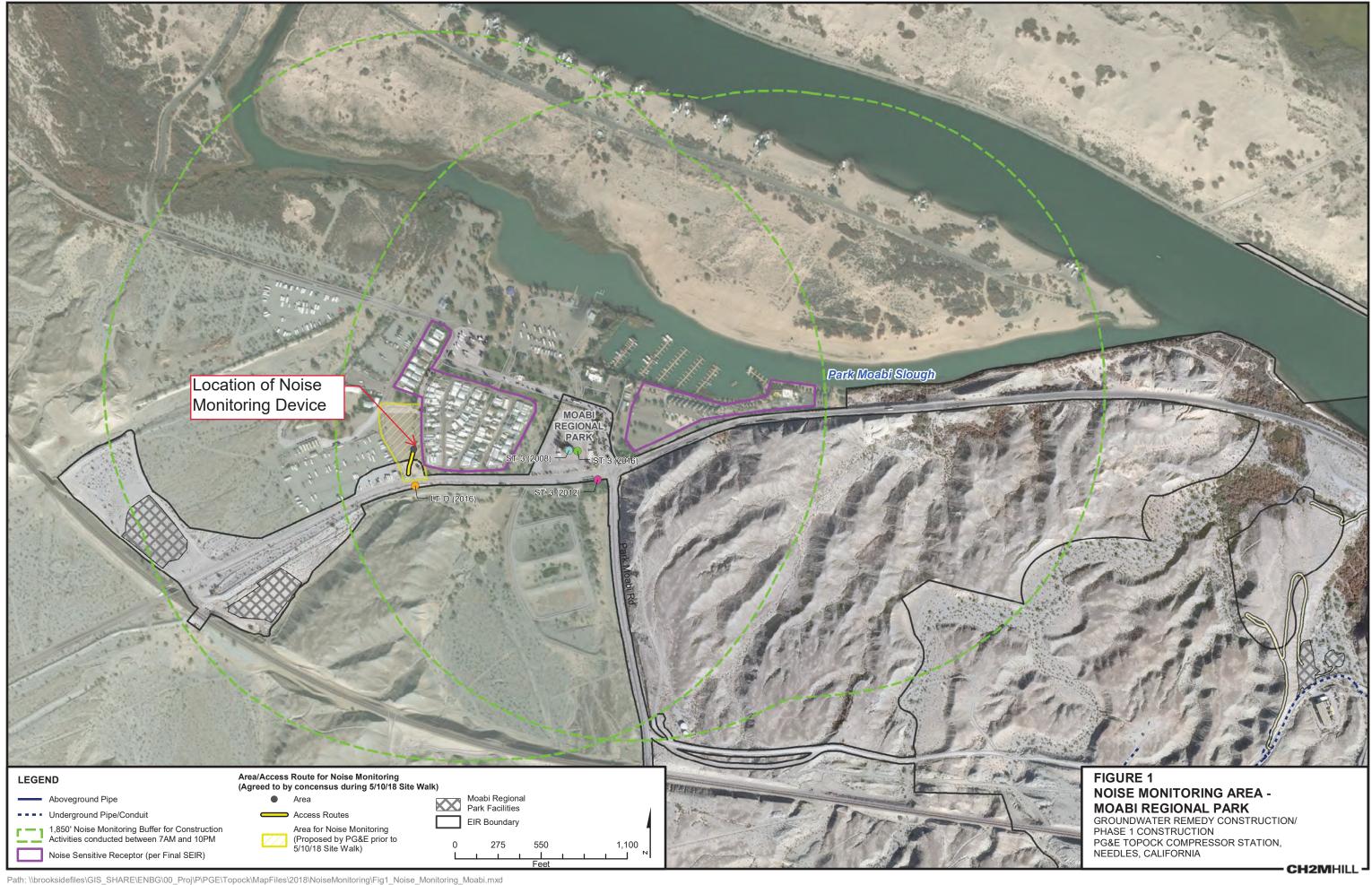
In December 2018, over 30 monitoring events were conducted at Maze B-Combined Area 1/2 (Figure 2) and the associated alternate location for MW-L drilling activities. Other activities monitored at this location include site preparation activities at MW-N and drilling at IRZ-9 and IRZ-21. While some of these measurements are contaminated by periodic train pass-by's, clean samples of drilling noise have not identified exceedances of 65 dBA. One monitoring event resulted in 66 dBA which included train and aircraft overflight noise while the remainder were generally less than 61 dBA.

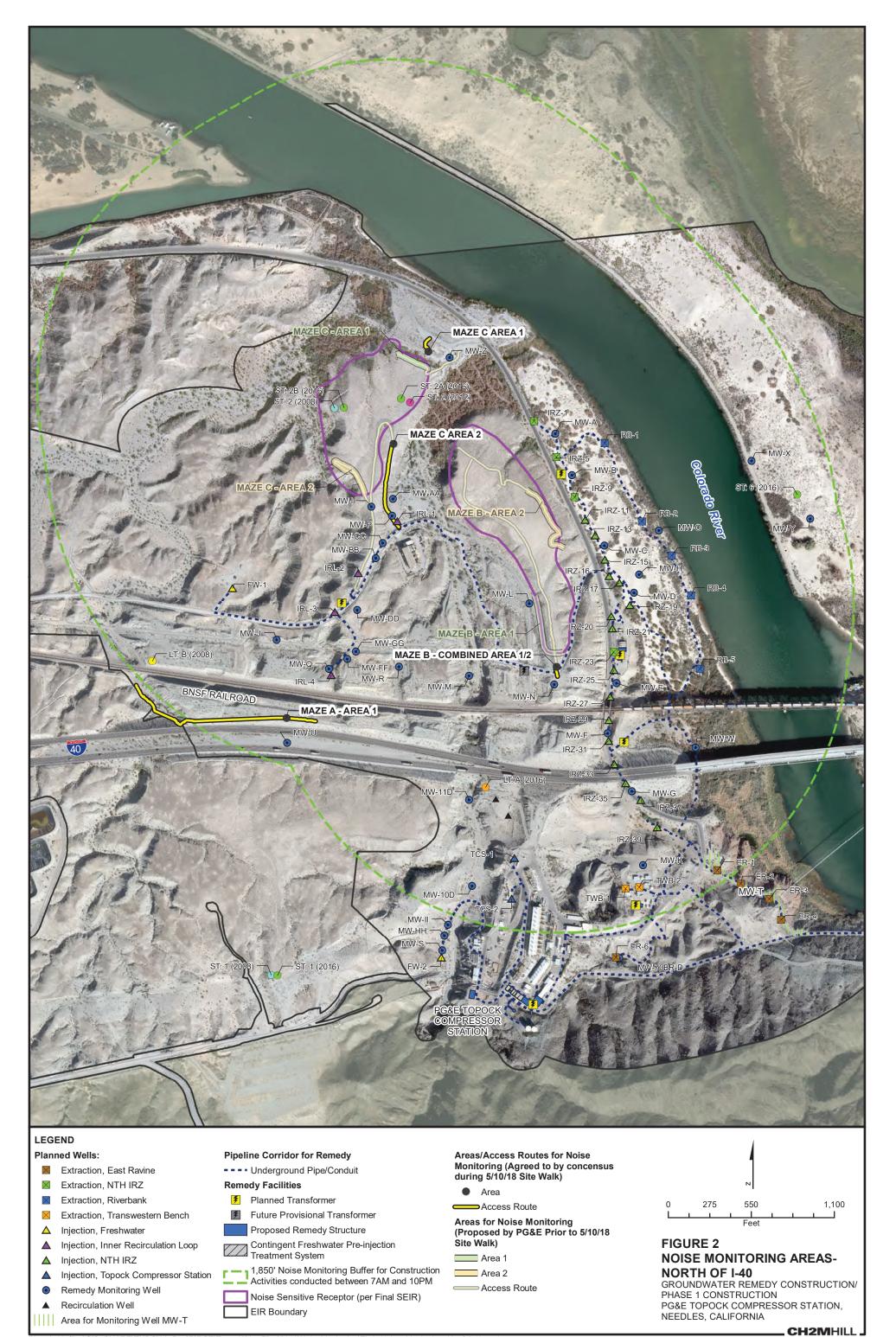
In December 2018, 8 monitoring events were conducted at Maze C-Area 1 (Figure 2). One measurement resulted in 51 dBA while the remainder were lower.

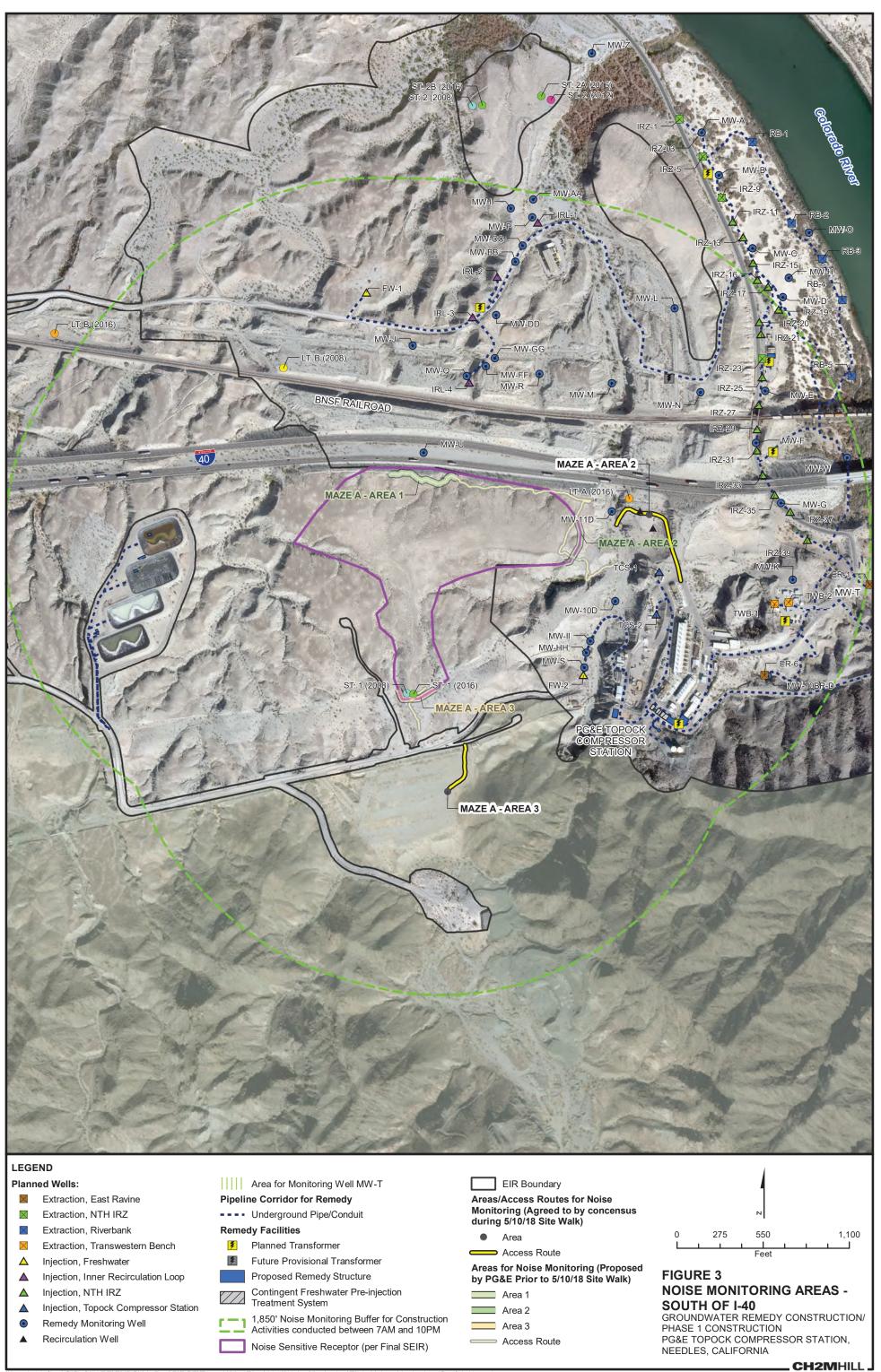
In December 2018, one monitoring event was conducted at Maze A-Area 2 (Figure 3) and a level of 45 dBA was reported during this event.

Noise monitoring conducted through December 2018 did not identify that construction activities exceed the applicable standards. In addition, there have been 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.

AX0108192225BAO E-1







Attachment F Six-Week Look-Ahead Schedule (January 6 through February 16, 2019)

PG&E Topock Final Groundwater Remedy	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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)	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	1/12/2019
Construction Headquarters		Install concduit north of CHQ acces	Install concduit north of CHQ acces				
E1		road improvements	road improvements				
Pipeline Alignment grubbing and clearing E5, F5		Pipeline C1, C2, C3, C4, C5, C7, C8	Pipeline C1, C2, C3, C4, C5, C7, C8	Pipeline C1, C2, C3, C4, C5, C7, C8	Pipeline C1, C2, C3, C4, C5, C7, C8	Pipeline C1, C2, C3, C4, C5, C7, C8	
North Floodplain Temp Well Water Management Surface Pipeline E5		Surface/on-grade temporary pipeline placement	Surface/on-grade temporary pipeline placement	Surface/on-grade temporary pipeline placement	Surface/on-grade temporary pipeline placement		No Work
Well Installation	MW-N (F5), MW-F (F5), MW-B (E5)	MW-N (F5), MW-F (F5), MW-B (E5), MW-G site prep (F5)	MW-N (F5), MW-F (F5), MW-B (E5), MW-G site prep (F5), MW-D site prep (E5)	MW-N (F5), MW-F (F5), MW-B (E5), MW-D site prep (E5)	MW-N (F5), MW-F (F5), MW-B (E5), MW-D site prep (E5)		
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)		7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM
Soil Processing Yard (D1)		Perimeter Fence Install	Perimeter Fence Install	Perimeter Fence Install	Perimeter Fence Install	Perimeter Fence Install	
Pipeline Alignment grubbing and clearing E5, F5	No Work	Pipeline C1, C2, C3, C4, C5, C7, C8	Pipeline C1, C2, C3, C4, C5, C7, C8	Pipeline C1, C2, C3, C4, C5, C7, C8	Pipeline C1, C2, C3, C4, C5, C7, C8	Pipeline C1, C2, C3, C4, C5, C7, C8	
Well Installation		-	MW-N (F5), MW-B (E5), MW-L (E5)	MW-N (F5), MW-B (E5), MW-G (F5), MW-L (E5), MW-F (F5), IRZ-27 site prep (F5)	MW-N (F5), MW-B (E5), MW-G (F5), MW-L (E5), MW-F (F5), IRZ-27 site prep (F5)	MW-N (F5), MW-B (E5), MW-G (F5), MW-L (E5), MW-F (F5), IRZ-27 site prep (F5)	MW-N (F5), MW-B (E5), MW-G (F5), MW-L (E5), MW-F (F5), IRZ-27 site prep (F5)
Primary Planned Activities	1/20/2019	1/21/2019	1/22/2019	1/23/2019	1/24/2019	1/25/2019	1/26/2019
Start Time (PST)	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 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 Rip Rap installation	Site-wide clearing & grading	
Pipeline Alignment grubbing and clearing E5, F5, C5, F6	Pending ERTC 'Pipeline C9, C10, C17, F1		Pending ERTC 'Pipeline C9, C10, C14, C17, F1	Pending ERTC 'Pipeline C9, C10, C14, C17, F1	Pending ERTC 'Pipeline C9, C10, C14, C17, F1	Pending ERTC 'Pipeline C9, C10, C14, C17, F1	No Work
Pre-Trenching/Excavation Potholling and Characterization (F5), (G5)		Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	
Well Installation	MW-N (F5), MW-B (E5), MW-G (F5), MW-L (E5), MW-F (F5), MW-M site prep (F5), IRZ-27 site prep (F5)	MW-N (F5), MW-B (E5), MW-G (F5), MW-L (E5), MW-F (F5), MW-M site prep (F5)	MW-N (F5), MW-B (E5), MW-G (F5), MW-L (E5), MW-F (F5), MW-M site prep (F5)	MW-N (F5), MW-B (E5), MW-G (F5), MW-L (E5), MW-F (F5), MW-M site prep (F5)	MW-N (F5), MW-B (E5), MW-G (F5), MW-L (E5), MW-F (F5), MW-M site prep (F5)		
Primary Planned Activities	1/27/2019	1/28/2019	1/29/2019	1/30/2019	1/31/2019	2/1/2019	2/2/2019
Start Time (PST)		7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM
Construction Headquarters E1		Site-wide clearing & grading	Site-wide clearing & grading, electrical conduit install	Site-wide clearing & grading, electrical conduit install	Site-wide clearing & grading, electrical conduit install	Site-wide clearing & grading, electrical conduit install	
Potholing E5, F5	No Work	Pipeline C1 - C6	Pipeline C1 - C6	Pipeline C1 - C6	Pipeline C1 - C6	Pipeline C1 - C6	
Pre-Trenching/Excavation Potholling and Characterization (F5), (G5)		Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	
Well Installation			MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)	MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)	MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)	MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)	MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)
Primary Planned Activities	2/3/2019	2/4/2019	2/5/2019	2/6/2019	2/7/2019	2/8/2019	2/9/2019
Start Time (PST)	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	
Construction Headquarters				Site-wide clearing & grading, electrical			
E1		conduit install	conduit install	conduit install	conduit install	conduit install	
Pre-Trenching/Excavation Potholling and Characterization (F5), (G5)		Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	No Work
Pipeline C Installation E5, F5		Pipeline C1 - C6	Pipeline C1 - C6	Pipeline C1 - C6	Pipeline C1 - C6	Pipeline C1 - C6	
Well Installation	MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)	MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)	MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)	MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)	MW-N (F5), MW-B (E5), IRZ-27 (F5), IRZ-20 (F5)		
Primary Planned Activities	2/10/2019	2/11/2019	2/12/2019	2/13/2019	2/14/2019	2/15/2019	2/16/2019
Start Time (PST)		7:00 AM Electrical conduit install,	7:00 AM Electrical conduit install,	7:00 AM Electrical conduit install,	7:00 AM Electrical conduit install, Decontamination pad formwork &	7:00 AM Electrical conduit install, Decontamination pad formwork &	7:00 AM
Construction Headquarters E1		Decontamination pad excavation	Decontamination pad excavation	Decontamination pad excavation			
	No Work		Decontamination pad excavation Pending ERTC Potholing, Air-vac	Pending ERTC Potholing, Air-vac	rebar install Pending ERTC Potholing, Air-vac	rebar install Pending ERTC Potholing, Air-vac	
E1 Pre-Trenching/Excavation Potholling	No Work	Decontamination pad excavation Pending ERTC Potholing,	Pending ERTC Potholing, Air-vac Pipeline C1 - C6	Pending ERTC Potholing,	rebar install Pending ERTC Potholing, Air-vac Pipeline C1 - C6	rebar install Pending ERTC Potholing, Air-vac Pipeline C1 - C6	MMAN (EEL MANA D/EEL 107 32 (FPL

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
Validated Sitewide Groundwater
Monitoring Data
(DTSC Condition of Approval xi)



Attachment G. Validated Sitewide 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 submitted validated data to DTSC via monthly emails. For ease of recordkeeping and minimize the number of ad-hoc compliance reports/emails, PG&E has included validated data in each monthly progress report starting with the November 2018 report (see attached table).

	Pesign & Consultancy for natural and high sectors.		Filtered:	F	N	N	N	N	N	N	N	F	F	F	F	F	F	
			Lab:	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	
I			Description:	Hexavalent	Alkalinity, Total			Specific		Total Dissolved	Nitrate/Nitrite	Calcium,	Total Dissolved	Iron,	Magnesium,	Manganese,	Sodium,	
built assets			Description.	Chromium	as CaCO3	Chloride	pН	Conductance	Sulfate	Solids	as Nitrogen	Dissolved	Chromium	Dissolved	Dissolved	Dissolved	Dissolved	
PMP 2018-11	PMP 2018-11 Sampling			Units:	μg/L	mg/L	mg/L	PHUNITS	μS/cm	mg/L	mg/L	mg/L	mg/L	μg/L	μg/L	mg/L	μg/L	mg/L
111111 2020 221				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	Туре	Sample ID	Matrix	Collected														
PE-01	N	PE-01-1118	GW	11/7/2018	ND (0.2)	220	450	7.4	2,100	260	1,400	ND (0.05)	180	ND (1)	ND (20)	39	590	520
TW-03D	N	TW-03D-1118	GW	11/7/2018	490	150	2,100	7.3	7,100	510	4,300	2.7	230	510	ND (20)	26	15	1,400

A	ARCADIS Design & Consultancy for natural and built assets Paccerin					N ASSET Alkalinity, Total	N ASSET	N ASSET	N ASSET Specific	N ASSET	N ASSET Dissolved	N ASSET	N ASSET Ammonia as	N ASSET Nitrate/Nitrite	N ASSET Total Organic
				Description:	Hexavalent Chromium	as CaCO3	Chloride	Fluoride	Conductance	Sulfate	Solids	Turbidity	nitrogen	as Nitrogen	Carbon
CMP 2018-	CMP 2018-10 Sampling			Units:	μg/L	mg/L	mg/L	mg/L	uS/cm	mg/L	mg/L	NTU	mg/L	mg/L	mg/L
				Method:	EPA 218.6	SM 2320 B	EPA 300.0	EPA 300.0	EPA 120.1	EPA 300.0	SM 2540 C	SM 2130B	SM4500-NH3D	SM 4500-NO3 F	SM5310B
	Sample								-						
Location ID	Туре	Sample ID	Matrix	Collected											
CW-01D	N	CW-01D-3V-Q418	GW	12/3/2018	0.29	76	2,100	2.2	8,000	480	3,900	0.16	ND (0.2)	2.5	
CW-01D	N	CW-01D-LF-Q418	GW	12/3/2018	0.29	74	2,100	2.2	8,000	480	4,000	1.4	ND (0.2)	2.8	
CW-01M	N	CW-01M-3V-Q418	GW	12/3/2018	1.4	89	2,100	2	7,900	480	4,000	0.14	ND (0.2)	2.8	
CW-01M	N	CW-01M-LF-Q418	GW	12/3/2018	1.2	88	2,100	2.1	7,800	460	4,000	11	ND (0.2)	2.9	
CW-01M	FD	MW-900-Q418	GW	12/3/2018	1.3	91	2,100	2.1	7,900	480	4,100	0.15	ND (0.2)	2.9	
CW-02D	N	CW-02D-3V-Q418	GW	12/3/2018	ND (0.2)	61	2,100	1.8	7,900	480	3,900	0.47	ND (0.2)	2.9	
CW-02D	N	CW-02D-LF-Q418	GW	12/3/2018	ND (0.2)	63	2,100	1.8	7,800	480	3,900	0.37	ND (0.2)	2.9	
CW-02M	N	CW-02M-3V-Q418	GW	12/3/2018	0.96	60	2,100	2.8	7,800	480	3,900	0.41	ND (0.2)	2.8	
CW-02M	N	CW-02M-LF-Q418	GW	12/3/2018	1.1	59	2,100	3	7,800	480	3,800	1.2	ND (0.2)	2.9	
CW-03D	N	CW-03D-3V-Q418	GW	12/3/2018	ND (0.2)	62	2,100	2.3	8,000	480	4,000	0.79	ND (0.2)	2.7	ND (10 J)
CW-03D	N	CW-03D-LF-Q418	GW	12/3/2018	0.22	65	2,100	2.3	8,000	480	4,000	1.1	ND (0.2)	2.6	ND (10 J)
CW-03M	N	CW-03M-3V-Q418	GW	12/3/2018	3.9	52	2,300	3.5	8,600	510	4,100	19	ND (0.2)	2.3	ND (10 J)
CW-03M	N	CW-03M-LF-Q418	GW	12/3/2018	3.3	32	2,300	3.4	8,600	530	4,500	7.3	ND (0.2)	2.4	ND (10 J)
CW-04D	N	CW-04D-3V-Q418	GW	12/4/2018	0.31	59	2,100	2.8	7,400	480	4,200	0.6	ND (0.2)	2.8	
CW-04D	N	CW-04D-LF-Q418	GW	12/4/2018	0.28	61	2,100	2.6	7,300	480	4,000	8.4	ND (0.2)	3	
CW-04M	N	CW-04M-3V-Q418	GW	12/4/2018	1.3	55	2,000	2	7,200	490	4,200	0.66 J	ND (0.2)	2.7	
CW-04M	N	CW-04M-LF-Q418	GW	12/4/2018	1.3	53	2,000	1.9	7,200	490	4,000	3.1	ND (0.2)	2.6	
CW-04M	FD	MW-901-Q418	GW	12/4/2018	1.3	55	2,000	2	7,200	490	4,100	0.86 J	ND (0.2)	2.8	
OW-01D	N	OW-01D-Q418	GW	12/4/2018	0.54	76	2,100	2.2	7,400	490	4,100	11	ND (0.2)	2.5	
OW-01M	N	OW-01M-Q418	GW	12/3/2018	0.78	83	2,100	2.3	7,900	480	3,800	3.3	ND (0.2)	2.8	
OW-01S	N	OW-01S-Q418	GW	12/3/2018	4.1		1,900	0.94	7,100	430	3,900	3.7		2.8	
OW-02D	N	OW-02D-Q418	GW	12/4/2018	ND (0.2)		2,100	2.2	7,400	490	4,200	2.9		2.6	
OW-02M	N	OW-02M-Q418	GW	12/3/2018	0.96		2,100	2.1	7,900	490	3,900	11		2.6	
OW-02S	N	OW-02S-Q418	GW	12/4/2018	15		910	3.1	3,300	140	1,900	6.4		3	
OW-05D	N	OW-05D-Q418	GW	12/4/2018	ND (0.2)		2,100	2.3	7,400	500	4,200	0.36		2.4	
OW-05M	N	OW-05M-3V-Q418	GW	12/4/2018	0.22	77	2,100	2.2	7,400	500	4,200	3.8	ND (0.2)	2.8	
OW-05M	N	OW-05M-LF-Q418	GW	12/4/2018	0.21	76	2,200	2.2	7,300	490	4,200	28 J	ND (0.2)	2.6	
OW-05M	FD	MW-902-Q418	GW	12/4/2018	0.22	74	2,100	2.2	7,400	490	4,100	19 J	ND (0.2)	2.1	
OW-05S	N	OW-05S-3V-Q418	GW	12/4/2018	12		1,500	1.4	5,000	300	3,100	2.3		3	
OW-05S	N	OW-05S-LF-Q418	GW	12/4/2018	12		1,600	1.5	5,200	320	3,200	6.8		2.9	

A		Design & Cor for natural a	nsultancy	Filtered:	F	F	F	F	F	F	F	F	F	F	F
	KI A	built assets	na	Lab:	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
7 7		built assets		Description:	Silver,	Aluminum,	Arsenic,	Barium,	Boron,	Beryllium,	Calcium,	Cadmium,	Cobalt,	Dissolved	Copper,
CNAD 2010	CNAD 2040 40 Co !!			,	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Chromium	Dissolved
CIVIP 2018-	CMP 2018-10 Sampling			Units:	μg/L	μg/L	μg/L	μg/L	mg/L	μg/L	mg/L	μg/L	μg/L	μg/L	μg/L
					EPA 200.8	EPA 200.7	EPA 200.8	EPA 200.8	EPA 200.7	EPA 200.8	EPA 200.7	EPA 200.8	EPA 200.8	EPA 200.8	EPA 200.8
	Sample			Date											
Location ID	Туре	Sample ID	Matrix	Collected											
CW-01D	N	CW-01D-3V-Q418	GW	12/3/2018	ND (0.5)	ND (50)	1.2	24	1.1	ND (0.5)	150	ND (0.5)	ND (0.5)	ND (1)	ND (1)
CW-01D	N	CW-01D-LF-Q418	GW	12/3/2018	ND (0.5)	ND (50)	1.1	24	1	ND (0.5)	150	ND (0.5)	ND (0.5)	ND (1)	ND (1)
CW-01M	N	CW-01M-3V-Q418	GW	12/3/2018	ND (0.5)	ND (50)	1.2	87	1.2 J	ND (2.5)	160	ND (0.5)	ND (0.5)	1.5	ND (1)
CW-01M	N	CW-01M-LF-Q418	GW	12/3/2018	ND (0.5)	ND (50)	1.1	81	1.2	ND (2.5)	170	ND (0.5)	ND (0.5)	2.7	ND (1 J)
CW-01M	FD	MW-900-Q418	GW	12/3/2018	ND (0.5)	ND (50)	1.2	84	1.2	ND (2.5)	150	ND (0.5)	ND (0.5)	1.3	ND (1)
CW-02D	N	CW-02D-3V-Q418	GW	12/3/2018	ND (0.5)	ND (50)	2.8	16	1.1 J	ND (0.5)	110	ND (0.5)	ND (0.5)	ND (1)	ND (1 J)
CW-02D	N	CW-02D-LF-Q418	GW	12/3/2018	ND (0.5)	ND (50)	2.6	17	1.1	ND (0.5)	110	ND (0.5)	ND (0.5)	ND (1)	ND (1)
CW-02M	N	CW-02M-3V-Q418	GW	12/3/2018	ND (0.5)	ND (50)	2	67	1.1	ND (0.5)	130	ND (0.5)	ND (0.5)	1.3	ND (1)
CW-02M	N	CW-02M-LF-Q418	GW	12/3/2018	ND (0.5)	ND (50)	1.9	58	1.2	ND (0.5)	130	ND (0.5)	ND (0.5)	2.1	ND (1)
CW-03D	N	CW-03D-3V-Q418	GW	12/3/2018	ND (0.5)	ND (50)	1.5	15	1	ND (2.5)	67	ND (0.5)	ND (0.5)	1.1	ND (1)
CW-03D	N	CW-03D-LF-Q418	GW	12/3/2018	ND (0.5)	ND (50)	1.5	16	0.88	ND (2.5)	70	ND (0.5)	ND (0.5)	1.1	ND (1)
CW-03M	N	CW-03M-3V-Q418	GW	12/3/2018	ND (0.5)	ND (50)	1.3	41	1	ND (2.5)	170	ND (0.5)	ND (0.5)	4.8	ND (1)
CW-03M	N	CW-03M-LF-Q418	GW	12/3/2018	ND (0.5)	85	1.4	41	1	ND (2.5)	170	ND (0.5)	ND (0.5)	10	ND (1)
CW-04D	N	CW-04D-3V-Q418	GW	12/4/2018	ND (0.5)	ND (50)	3	19	1.2 J	ND (0.5)	150	ND (0.5)	ND (0.5)	ND (1)	ND (1 J)
CW-04D	N	CW-04D-LF-Q418	GW	12/4/2018	ND (0.5)	ND (50)	3	18	1.1	ND (0.5)	140	ND (0.5)	ND (0.5)	ND (1)	ND (1)
CW-04M	N	CW-04M-3V-Q418	GW	12/4/2018	ND (0.5)	ND (50)	2.1	110	0.98	ND (0.5)	190	ND (0.5)	ND (0.5)	2	ND (1)
CW-04M	N	CW-04M-LF-Q418	GW	12/4/2018	ND (0.5)	ND (50)	2	99	1.1	ND (0.5)	210	ND (0.5)	ND (0.5)	2.1	ND (1)
CW-04M	FD	MW-901-Q418	GW	12/4/2018	ND (0.5)	ND (50)	2	100	1	ND (0.5)	200	ND (0.5)	ND (0.5)	1.9	ND (1)
OW-01D	N	OW-01D-Q418	GW	12/4/2018	ND (0.5)	ND (50)	1.2	30	1.1	ND (0.5)	160	ND (0.5)	ND (0.5)	ND (1)	ND (1)
OW-01M	N	OW-01M-Q418	GW	12/3/2018	ND (0.5)	ND (50)	2.3	70	1	ND (0.5)	140	ND (0.5)	ND (0.5)	1.2	ND (1)
OW-01S	N	OW-01S-Q418	GW	12/3/2018										4.6	
OW-02D	N	OW-02D-Q418	GW	12/4/2018										1.1	
OW-02M	N	OW-02M-Q418	GW	12/3/2018										2.1	
OW-02S	N	OW-02S-Q418	GW	12/4/2018										17	
OW-05D	N	OW-05D-Q418	GW	12/4/2018										ND (1)	
OW-05M	N	OW-05M-3V-Q418	GW	12/4/2018	ND (0.5)	ND (50)	0.74	40	1.1 J	ND (0.5)	160	ND (0.5)	ND (0.5)	ND (1)	ND (1 J)
OW-05M	N	OW-05M-LF-Q418	GW	12/4/2018	ND (0.5)	ND (50 J)	0.82 J	38	1.1	ND (0.5)	150	ND (0.5)	ND (0.5 J)	4.9 J	ND (1)
OW-05M	FD	MW-902-Q418	GW	12/4/2018	ND (0.5)	390 J	1.5 J	42	1	ND (0.5)	150	ND (0.5)	1.1 J	87 J	ND (1)
OW-05S	N	OW-05S-3V-Q418	GW	12/4/2018										12	
OW-05S	N	OW-05S-LF-Q418	GW	12/4/2018										12	

A	ARCADIS Design & Consultancy for natural and built assets			Filtered: Lab:	F ASSET Iron,	F ASSET Mercury,	F ASSET Potassium,	F ASSET Magnesium,	F ASSET Manganese,	F ASSET Molybdenum,	F ASSET Sodium,	F ASSET Nickel,	F ASSET Lead,	F ASSET Antimony,	F ASSET Selenium,
				Description:	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved	Dissolved
CMP 2018-	·10 Samplir	ng		Units:	μg/L	μg/L	mg/L	mg/L	μg/L	μg/L	mg/L	μg/L	μg/L	μg/L	μg/L
				Method:	EPA 200.7	EPA 245.1	EPA 200.7	EPA 200.7	EPA 200.8	EPA 200.8	EPA 200.7	EPA 200.8	EPA 200.8	EPA 200.8	EPA 200.8
	Sample			Date				•		•				•	
Location ID	Type	Sample ID	Matrix	Collected											
CW-01D	N	CW-01D-3V-Q418	GW	12/3/2018	ND (20)	ND (0.2)	14	18	ND (0.5)	20	1,500	ND (1)	ND (1)	ND (0.5)	4
CW-01D	N	CW-01D-LF-Q418	GW	12/3/2018	ND (20)	ND (0.2)	13	17	0.78	20	1,500	ND (1)	ND (1)	ND (0.5)	4
CW-01M	N	CW-01M-3V-Q418	GW	12/3/2018	ND (20)	ND (0.2)	14	14	1 J	17	1,600	ND (1)	ND (1)	ND (0.5)	3.8
CW-01M	N	CW-01M-LF-Q418	GW	12/3/2018	ND (20)	ND (0.2)	14	15	1.7	17	1,600	2.9	ND (1)	ND (0.5)	4
CW-01M	FD	MW-900-Q418	GW	12/3/2018	ND (20)	ND (0.2)	13	16	2.3 J	16	1,500	ND (1)	ND (1)	ND (0.5)	3.9
CW-02D	N	CW-02D-3V-Q418	GW	12/3/2018	ND (20)	ND (0.2)	13	6	2.1	12	2,300	ND (1)	ND (1)	ND (0.5)	3.8
CW-02D	N	CW-02D-LF-Q418	GW	12/3/2018	ND (20)	ND (0.2)	13	6.5	2.2	13	1,700	ND (1)	ND (1)	ND (0.5)	3.4
CW-02M	N	CW-02M-3V-Q418	GW	12/3/2018	ND (20)	ND (0.2)	12	9.7	1.6	15	1,500	ND (1)	ND (1)	ND (0.5)	3.7
CW-02M	N	CW-02M-LF-Q418	GW	12/3/2018	ND (20)	ND (0.2)	13	9.6	1.8	18	1,600	1.5	ND (1)	ND (0.5)	3.7
CW-03D	N	CW-03D-3V-Q418	GW	12/3/2018	ND (20)	ND (0.2)	11	4.9	2.6	14	1,600	ND (1)	ND (1)	ND (0.5)	3.9
CW-03D	N	CW-03D-LF-Q418	GW	12/3/2018	ND (20)	ND (0.2)	12	4.1	2.4	15	1,600	ND (1)	ND (1)	ND (0.5)	4.2
CW-03M	N	CW-03M-3V-Q418	GW	12/3/2018	ND (20)	ND (0.2)	18	11	2.2	30	1,600	1.2	ND (1)	ND (0.5)	2.7
CW-03M	N	CW-03M-LF-Q418	GW	12/3/2018	140	ND (0.2)	19	11	8.1	30	1,600	1.9	ND (1)	ND (0.5)	2.7
CW-04D	N	CW-04D-3V-Q418	GW	12/4/2018	ND (20)	ND (0.2)	14	9.1	1.7	20	1,600	ND (1)	ND (1)	ND (0.5)	4
CW-04D	N	CW-04D-LF-Q418	GW	12/4/2018	28	ND (0.2)	13	8.4	2.4	20	1,400	ND (1)	ND (1)	ND (0.5)	4
CW-04M	N	CW-04M-3V-Q418	GW	12/4/2018	ND (20)	ND (0.2)	14	15	0.84	11	1,400	ND (1)	ND (1)	ND (0.5)	3.9
CW-04M	N	CW-04M-LF-Q418	GW	12/4/2018	ND (20)	ND (0.2)	15	16	0.89	11	1,500	ND (1)	ND (1)	ND (0.5)	3
CW-04M	FD	MW-901-Q418	GW	12/4/2018	ND (20)	ND (0.2)	14	15	0.86	10	1,400	ND (1)	ND (1)	ND (0.5)	3.7
OW-01D	N	OW-01D-Q418	GW	12/4/2018	ND (20)	ND (0.2)	16	24	1	21	1,500	1.4	ND (1)	ND (0.5)	3.8
OW-01M	N	OW-01M-Q418	GW	12/3/2018	ND (20)	ND (0.2)	15	26	ND (0.5)	23	1,500	ND (1)	ND (1)	ND (0.5)	4.1
OW-01S	N	OW-01S-Q418	GW	12/3/2018	, ,	, ,				4	980			, ,	
OW-02D	N	OW-02D-Q418	GW	12/4/2018						21	1,500				
OW-02M	N	OW-02M-Q418	GW	12/3/2018						22	1,500				
OW-02S	N	OW-02S-Q418	GW	12/4/2018						27	590				
OW-05D	N	OW-05D-Q418	GW	12/4/2018						22	1,500			İ	
OW-05M	N	OW-05M-3V-Q418	GW	12/4/2018	ND (20)	ND (0.2)	17	26	ND (0.5)	22	1,500	ND (1)	ND (1)	ND (0.5)	3.9
OW-05M	N	OW-05M-LF-Q418	GW	12/4/2018	49 J	ND (0.2)	16	26	6.3 J	22	1,500	1.5 J	ND (1)	0.84	4
OW-05M	FD	MW-902-Q418	GW	12/4/2018	1,200 J	ND (0.2)	16	25	83 J	22	1,500	6.7 J	ND (1)	0.84	3.6
OW-05S	N	OW-05S-3V-Q418	GW	12/4/2018	•	`				9.8	620) /		
OW-05S	N	OW-05S-LF-Q418	GW	12/4/2018						9.3	630				

AA	RCA	DIS Design & Confor natural a built assets		Filtered: Lab: Description:	F ASSET Thallium,	F ASSET Vanadium,	F ASSET Zinc,	N ASSET
CMP 2018-	10 Samplin	g		Units:	Dissolved µg/L	Dissolved µg/L	Dissolved µg/L	Total Iron µg/L
				Method:	EPA 200.8	EPA 200.8	EPA 200.8	SW 6010B
	Sample			Date	LFA 200.0	LFA 200.0	LFA 200.0	300 00100
Location ID	Туре	Sample ID	Matrix	Collected				
CW-01D	N	CW-01D-3V-Q418	GW	12/3/2018	ND (0.5)	2.3	ND (10)	ND (20)
CW-01D	N N	CW-01D-LF-Q418	GW	12/3/2018	ND (0.5)	2.2	ND (10)	29
CW-01M	N N	CW-01M-3V-Q418	GW	12/3/2018	ND (0.5)	2.5	ND (10)	ND (20)
CW-01M	N N	CW-01M-LF-Q418	GW	12/3/2018	ND (0.5)	2.4	ND (10 J)	370
CW-01M	FD	MW-900-Q418	GW	12/3/2018	ND (0.5)	2.3	ND (10)	ND (20)
CW-02D	N N	CW-02D-3V-Q418	GW	12/3/2018	ND (0.5)	3.9	ND (10 J)	ND (20)
CW-02D	N	CW-02D-LF-Q418	GW	12/3/2018	ND (0.5)	3.8	ND (10)	ND (20)
CW-02M	N	CW-02M-3V-Q418	GW	12/3/2018	ND (0.5)	3.6	ND (10)	ND (20)
CW-02M	N	CW-02M-LF-Q418	GW	12/3/2018	ND (0.5)	3.5	ND (10)	120
CW-03D	N	CW-03D-3V-Q418	GW	12/3/2018	ND (0.5)	2.4	ND (10)	ND (20)
CW-03D	N	CW-03D-LF-Q418	GW	12/3/2018	ND (0.5)	2.6	ND (10)	ND (20)
CW-03M	N	CW-03M-3V-Q418	GW	12/3/2018	ND (0.5)	2.7	ND (10)	740
CW-03M	N	CW-03M-LF-Q418	GW	12/3/2018	ND (0.5)	3	ND (10)	74
CW-04D	N	CW-04D-3V-Q418	GW	12/4/2018	ND (0.5)	2.7	ND (10 J)	32
CW-04D	N	CW-04D-LF-Q418	GW	12/4/2018	ND (0.5)	2.6	ND (10)	280
CW-04M	N	CW-04M-3V-Q418	GW	12/4/2018	ND (0.5)	3	ND (10)	32
CW-04M	N	CW-04M-LF-Q418	GW	12/4/2018	ND (0.5)	2.7	ND (10)	180
CW-04M	FD	MW-901-Q418	GW	12/4/2018	ND (0.5)	2.7	ND (10)	33
OW-01D	N	OW-01D-Q418	GW	12/4/2018	ND (0.5)	2.2	ND (10)	460
OW-01M	N	OW-01M-Q418	GW	12/3/2018	ND (0.5)	3.1	ND (10)	85
OW-01S	N	OW-01S-Q418	GW	12/3/2018			,	
OW-02D	N	OW-02D-Q418	GW	12/4/2018				
OW-02M	N	OW-02M-Q418	GW	12/3/2018				
OW-02S	N	OW-02S-Q418	GW	12/4/2018				
OW-05D	N	OW-05D-Q418	GW	12/4/2018				
OW-05M	N	OW-05M-3V-Q418	GW	12/4/2018	ND (0.5)	ND (1)	ND (10 J)	180
OW-05M	N	OW-05M-LF-Q418	GW	12/4/2018	ND (0.5)	ND (1 J)	ND (10)	1,900 J
OW-05M	FD	MW-902-Q418	GW	12/4/2018	ND (0.5)	3.4 J	ND (10)	54 J
OW-05S	N	OW-05S-3V-Q418	GW	12/4/2018				
OW-05S	N	OW-05S-LF-Q418	GW	12/4/2018				