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September 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: August 2019 Monthly Progress Report for the Final Groundwater Remedy Construction

and Startup, PG&E Topock Compressor Station, Needles, California (Document ID: TPK\_Monthly\_Progress\_Rpt\_August\_2019\_20190910\_Final)

Dear Ms. Innis and Mr. Yue:

In compliance with the 1996 Corrective Action Consent Agreement (CACA) (Attachment 6, Part E, Section 9a and Attachment 7) and the 2013 Remedial Design/Remedial Action Consent Decree (CD) (¶32 and Appendix C, Section 5), and pursuant to the Construction/ Remedial Action Work Plan (C/RAWP) (Section 2.6.3.1), this monthly report describes activities taken at Pacific Gas and Electric Company's (PG&E's) Topock Compressor Station during August 2019 as well as activities planned for the next six weeks (September 1 through October 12, 2019), and presents available results from sampling and testing performed in August 2019.

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

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

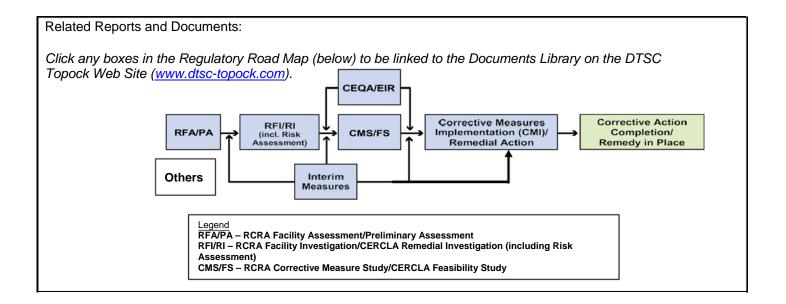
Monthly progress reports will be submitted to DTSC and DOI by the 10<sup>th</sup> day of the following month during construction and start-up of the groundwater remedy at the Topock Compressor Station which officially began on October 2, 2018. This is the eleventh monthly progress report. Please contact 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: August 2019 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: 9/10/2019 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 □ 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)	<ul><li>☑ Yes</li><li>☐ No</li><li>If no, why is the document needed?</li></ul>
☐ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)	in he, why is the assument hesass.
☐ Corrective Measures Study (CMS)/Feasibility Study (FS)	
<ul> <li>☑ Corrective Measures Implementation (CMI)/ Remedial Action(RA)</li> </ul>	
☐ 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 August 2019 at through October 12, 2019) and presents available results from san discusses material deviations from the approved design document (C/RAWP), if any, that PG&E has proposed to the California Department of the Interior (DOI) or that have been approved by DT if any, and summarizes activities performed and activities planned Community Involvement Plan and DTSC's 2019 Community Outre representatives of the press, and/or public interest groups, if any.	npling and testing in August 2019. In addition, this report is and/or the <i>Construction/ Remedial Action Work Plan</i> rtment of Toxic Substances Control (DTSC) and the U.S. FSC and DOI. This report also highlights key personnel changes, at the Topock Compressor Station in support of DOI's 2012
Written by: Pacific Gas and Electric Company	
Recommendations:	
Provide input to PG&E.	
How is this information related to the Final Remedy or Regulatory Final This submittal is required in compliance with the CACA, CD, and proceed the compliance with the cache, compliance with	•
Other requirements of this information? None.	





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

PG&E Topock Compressor Station Needles, California

Document ID: TPK\_Monthly\_Progress\_Rpt\_August\_20190910\_Final

September 2019

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

On Behalf of Pacific Gas and Electric Company





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# **Acronyms and Abbreviations**

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

AOC Area of Concern

APE Area of Potential Effect

ARAR applicable or relevant and appropriate requirement

bgs below ground surface

BLM U.S. Bureau of Land Management

BMP best management practice

CACA Corrective Action Consent Agreement

C/RAWP Construction/Remedial Action Work Plan

CD Consent Decree

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CH2M CH2M HILL, Inc.

CHQ Construction Headquarters

DOI United States Department of the Interior

DTSC California Department of Toxic Substances Control

ERTC Environmental Release to Construct

FCR field contact representative

LOC level of concern

NTH National Trails Highway

PBA Programmatic Biological Agreement
PG&E Pacific Gas and Electric Company

RCRA Resource Conservation and Recovery Act
SEIR Subsequent Environmental Impact Report

SPY Soil Processing Yard

SWPPP Stormwater Pollution Prevention Plan

TCS Topock Compressor Station
TRC Technical Review Committee

USEPA U.S. Environmental Protection Agency

USFWS U.S. Fish and Wildlife Service

WEAT Worker Environmental Awareness Training

WVR Work Variance Request



# 1. Introduction

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

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

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

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

This is the eleventh of the monthly progress reports that will be submitted to DOI and DOI for the duration of the remedy construction and startup. This monthly progress report documents activities during August 2019, and follows the content and format described in Exhibit 2.6-2 of the approved C/RAWP. The report is organized as follows:

- Section 2.1 describes completed construction activities; data collected, generated or received; nature
  and volume of waste generated; waste handling/disposal; issues encountered; actions taken to rectify
  problems/issues; personnel changes; and Work Variance Requests (WVRs; i.e., material deviations
  from the design documents, the C/RAWP, or other approved work plans), if any, as well as agencies'
  actions on those requests, and potential schedule impacts.
- Section 2.2 summarizes contacts with representatives of the press, local community, or public interest groups during the reporting period, other activities provided to assist DTSC and/or DOI in support of the Community Outreach Plan (DTSC, 2019) and/or Community Involvement Plan (DOI, 2012), respectively, and anticipated near-term (approximately next six weeks) activities in support of the Community Outreach and Community Involvement Plans.
- Section 2.3 describes the planned activities for the next six weeks (construction activities, sampling and monitoring events, etc.).
- Section 2.4 provides information relating to the construction schedule progress, sequencing of activities, information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule, and a description of efforts made to mitigate those delays or anticipated delays, if any.
- Section 3 lists the references cited in this report.

Please note that since activities conducted to comply with the project's Applicable or Relevant and Appropriate Requirement (ARARs) and the Subsequent Environmental Impact Report (SEIR; DTSC, 2018b) mitigation measures are currently reported in separate compliance reports, the same information is not repeated in the monthly reports.



# 2. Monthly Update

# 2.1 Description of Activities and Work Completed

## 2.1.1 Work Completed

Highlights of key activities related to the construction of the groundwater remedy completed during August 2019 include the following (in chronological order):

- On July 13, 2018, PG&E sent via email the first weekly six-week look-ahead schedule for the remedy construction field work. The weekly emails provide highlights of field activities in the previous week, field activities scheduled for the next week, and planned activities for the next six weeks. Recipients of the weekly emails are DOI, DTSC, the U.S. Fish and Wildlife Service (USFWS), Tribes, and the Technical Review Committee (TRC). PG&E continues to send these weekly emails to date. As of August 31, 2019, a total of 59 six-week look-ahead schedule emails have been sent. Of those, four six-week look-ahead schedule emails were sent in August 2019 (on August 4, 11, 18, and 25).
- On August 10, 2018, PG&E issued the first Environmental Release to Construct (ERTC) to contractors. As of August 31, 2019, a total of 47 ERTCs were issued for mobilization and construction activities (see Table 2-1). Although several ERTCs were renewed in August 2019, no new ERTC was issued during the month of August.
- 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 August 2019, a total of 25 daily construction activities lists were published and discussed at the morning tailboards.
- In August 2019, PG&E completed the following construction activities (see Figures 2-1 and 2-2 for locations of key areas and wells, as well as select photos in **Attachment A**):
  - Non-Well Construction Activities:
    - a) Repaired a portion of the access matting under the BNSF bridge.
    - b) Maintain/repair spill control Best Management Practices (BMPs) at work sites along the river bank and at the MW-20 Bench. For example, to replace straw wattles/fiber rolls that were destroyed by wildlife in the area and to reposition the sand bags that are used to anchor the straw wattles/fiber rolls.
  - Pilot Boring/Well Installation Activities (Rotosonic drilling):
    - a) Complete well installation at MW-C, MW-H, and MW-X.
  - Remedy Well Installation Activities (Dual Rotary drilling):
    - a) Completed remedy well installation at RB-4.
    - Completed the temporary service water and wastewater pipelines for dual rotary drilling at RB well locations.
    - c) Completed specific capacity test at IRZ-21 (MW-20 Bench).
    - d) See **Attachment B** for available information such as boring logs, water analytical results, and well testing activities.
  - Baseline/Opportunistic Soil Sampling Activities:
    - Pursuant to the Baseline Soil Sampling and Analysis Plan (Appendix A of the Soil Management Plan [which is Appendix L of the C/RAWP]), two soil samples were collected at approximately 1 foot below ground surface (bgs) at AOC-9 and AOC-10, near Pipeline B/J alignment (sampled on August 12, 2019).



 See Attachment C for information about soil sampling locations and soil analytical results that are available at this time.

#### - Perimeter Air Sampling Activities:

- a) Dust monitoring/observation was conducted through August 31, 2019 at the perimeter of select work areas.
- b) Perimeter air sampling for hexavalent chromium is performed at the perimeter of the work areas (outside of the exclusion zone) that are inside or within 20 feet of Areas of Concern (AOCs) and within the construction footprint where hexavalent chromium concentrations in soil have been historically reported. Two air sampling events occurred on August 12 and 13, 2019, along Pipeline B/J alignment and in the vicinity of AOCs 9 and 10.
- 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 August 31, 2019, 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.
  - Location Maze C Area 1,
  - Location mobile home park at Topock Marina.
- b) See **Attachment E** for information about pre-approved noise monitoring locations and a summary of noise monitoring data available to date.

#### 2.1.2 Work Already Underway and During Implementation

As of August 31, 2019, PG&E has started and will continue to perform the following activities:

- Complete installation of well at MW-Y' and MW-D.
- Continue to install remedy well RB-3 (dual rotary rig).
- Complete the abandonment of the shallower and damaged well MW-B-267 and drilling of a replacement well.
- Continue to install Pipeline B.
- Start planning for the installation of Pipeline C6 on the MW-20 Bench or C5/C7 in the floodplain.
- Continue to conduct noise and dust monitoring and inspection of Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).
- Continue to track and manage waste generated.
- Continue to manage displaced soil per the approved Soil Management Plan (Appendix L of the C/RAWP).

#### 2.1.3 Freshwater Usage, Waste Generation and Management

As of August 31, 2019, the volumes of freshwater used for remedy construction and waste streams generated from remedy construction (starting on October 2, 2018) are as follows:

## Freshwater Usage and Wastewater Management



- An approximate total of 3,278,550 gallons (10.1 acre-feet) of freshwater was used, of which an approximate 12.4 percent was for pilot boring/well installation and general construction, 0.9 percent for hydrostatic testing of pipeline, and 86.7 percent was for fugitive dust suppression. Of this amount, 474,500 gallons of freshwater was used in August 2019.
- An approximate total of 45,600 gallons of hydrostatic testing water was discharged to land. Of this
  amount, 44,500 gallons were discharged in May 2019 and 1,100 gallons were discharged in June
  2019. No hydrostatic testing activities occurred in July and August 2019. All discharges to land
  comply with the substantive requirements of State Water Resources Control Board (SWRCB) Water
  Quality Order 2003-0003-DWQ. See Attachment F for approximate volume at each approved
  discharge location and date of each discharge.
- In August 2019, an approximate 39,000 gallons of wastewater generated from drilling operations were sent to IM3 for treatment and reinjection. The discharge complies with the IM3 Applicable, Relevant, and Appropriate Requirements (ARARs).
- An approximate total of 312,795 gallons of wastewater generated from drilling operations were discharged to Compressor Station evaporation pond #4. In August 2019, 138,568 gallons of wastewater was discharged to pond #4. The discharge complies with the Waste Discharge Requirements (WDRs) of the California Regional Water Quality Control Board (CRWQCB), Colorado River Basin Region, Order No. R7-2018-0022.

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

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

- Approximately 359.3 cubic yards of drill cuttings were generated from well drilling and geotechnical investigation. Of those, approximately 1.3 cubic yards are clay from Pipeline F geotechnical investigation (using hollow stem auger). Drill cuttings are typically stored in roll-off bins with closed tops. Samples are collected from the bins for characterization and analyzed in accordance with the Soil Management Plan.
  - The clay collected from the Pipeline F geotechnical investigation is stockpiled at the SPY, separate from the other clean soil, in accordance with the revised clay handling protocol in Addendum to the Soil Management Plan (dated May 28, 2019).
- During sonic drilling of MW-O, fat clay with sand (CH) was encountered at 26.8 to 27.8 feet below ground. The clay material retrieved from drill cores was put in a zip lock bag and characterized in accordance with the Soil Management Plan. The clay material was provided to the Tribes at their request on August 7, 2019.
- Approximately 40 cubic yards of displaced soil was generated from the potholing activities along remedy pipeline alignments to pre-characterize soil in preparation for pipeline installation. Samples were collected for characterization in accordance with the Soil Management Plan. These soils are currently stored in bins at the SPY. A decision on the final disposition of these soils is forthcoming
- Approximately 100 cubic yards of displaced soil was generated from excavation for the brine tanks
  containment upgrade at the MW-20 Bench. Samples were collected for characterization and analyzed
  in accordance with the Soil Management Plan. This soil is currently stockpiled on a plastic liner at the
  SPY. A decision on the final disposition of this soil is forthcoming.
- Displaced sands from construction of Pipeline C3-C5 in the floodplain has been and will continue to be used as pipe bedding material for Pipeline B/J.
- Displaced material from trenching along Pipeline B/J alignment (rocks, soils) has been and will
  continue to be used to repair/build a 2-foot berm to control erosion and fill in existing eroded channels
  along the alignment.



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

- In August 2019, approximately 72 cubic yards of general construction waste and 8.81 tons of construction debris (e.g., concrete from wash outs) were generated and transported to Republic Services in Lake Havasu City for disposal and management.
- Sanitary waste from construction trailers/portable toilets is hauled offsite as needed.

#### 2.1.4 Worker Training and Education

- PG&E continues to provide the mandatory Site Health and Safety Training for its employees and
  contractors on a daily basis. As of August 31, 2019, a total of 102 health and safety training sessions
  were held and 347 employees and contractors received the training. Of those, in August 2019, five
  sessions were conducted and 10 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 August 31, 2019, a total of 105 WEAT sessions were conducted and 395 employees and contractors received the training. Of those, in August 2019, 6 sessions were conducted (on 8/6, 8/8, 8/12, 8/22, 8/26, and 8/29) and 13 employees/contractors were trained. Educational brochures are made available to attendees of the training; they are designed to reinforce the key topics and highlight the take-aways discussed during the classroom training. After the training, the attendees signed the WEAT completion form.
- PG&E's onsite biologist also trained Field Contact Representatives (FCRs), who will be responsible
  for compliance with biological avoidance and mitigation measures. As of August 31, 2019, a total of
  11 FCR training sessions were conducted and 55 employees and contractors received the training.
   Of those, in August 2019, 1 session was conducted and 1 employee/contractor was trained.
- Training records are kept electronically and at the temporary construction trailers at the SPY. The records are available upon request.

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

PG&E did not propose any new work variance in August 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

- During the week of August 23, 2019, it was observed that the matted area under the drill rig and support trucks at MW-Y' has settled excessively. Steel plates were brought out to stabilize the area under the rig and support equipment.
- During potholing to locate utilities at the MW-20 Bench, twelve existing pipes/conduits (associated with IM3) were found at various depths that range from approximately 29 to 47 inches below ground surface. This would require excavation to about 7.5 feet bgs for the entire C6 extent (over 100 feet in length) atop the MW-20 Bench to allow for undercrossing and installation alongside the existing IM3 utilities. PG&E is discussing with the agencies about options to install C6 safely while minimizing impacts to mature plants at the toe of the MW-20 Bench slope.
- On August 6, 2019, two DTSC representatives noted a diesel leak in the containment area for a fuel tank near a RB well location. The diesel was immediately cleaned up with absorbent pads and spill kits. The absorbent pads and Dri-zit were collected and stored in a sealed bucket where it was



transported to the IM-3 station for proper disposal. Inspections were conducted on the pump's fuel cap and the area surrounding the pump's containment. No diesel breached the containment and all diesel was absorbed.

- **Root cause** The diesel stored in the fuel tank of a 4" trash pump had expanded and breached through the cap on the top of the tank. The pump was staged on a slope and the diesel slid across the tank and landed in the containment that the pump was sitting on.
- **Corrective action to prevent reoccurrence** BMPs will continue to be inspected. Fuel tanks should not be filled to their maximum capacity in high temperature environments.
- On August 7, 2019, at the RB-4 well location, the discharge hose connected to a discharge line on the wastewater service pipeline was observed to be leaking. Less than 0.5 gallons of wastewater (mixture of freshwater and groundwater) spilled from the banded portion of the hose and landed in the underlying sand. CrT and Cr6 concentrations were non-detect and 56 ug/L, respectively in groundwater samples from RB-4. Due to the low level of Cr in the groundwater samples, the wet sand was not removed.
  - Root cause At a closer examination, Clean Harbors personnel determined that a small leak had formed at the metal band that secured the King Nipple fitting inside the hose.
  - Corrective action to prevent reoccurrence Installed catch/spill containment that will encompass all hose-connections and fittings at their connection points at this work area. Installed a tee to allow for the discharge hose to connect at a 90-degree angle (instead of 180-degree) to the discharge line.
- On August 27, 2019, at the RB-3 well location, a spill of about five gallons of wastewater (mixture of freshwater and groundwater) occurred while an operator was trying to vacuum a transfer hose after a pin hole leak in the mid-section of the hose was discovered.
  - Root cause The operator unclamped one locking ear on the hose cam to introduce air into the
    line. At this time, wastewater escaped from the hose, spilling into the pump containment area.
    The wastewater then traveled down grade in the containment and eventually breached the
    containment (consists of fiber rolls and plastic). The breach was due to a separation between two
    fiber rolls in the containment wall.
  - Corrective action to prevent reoccurrence Reinstalled the fiber rolls to ensure that they
    overlap. A stand down for the drill crew/well support crew occurred on August 28, 2019 to reemphasize on spill prevention/control and BMPs. In addition, the drill/well support crew was
    required to attend a SWPPP refresher on September 4, 2019 to review and re-emphasize the
    proper technique to install, maintain, and inspect spill prevention/control BMPs at all drill sites.
- PG&E continues to work with Transwestern to resolve the conflict between their gas pipeline and the portion of Pipeline F, just outside of the Transwestern Bench.
- PG&E continues to work with Frontier to resolve the conflict between their telecom line and Pipeline C segments C13, C15, and C16, in the shoulder of NTH.
- PG&E continues to work with Kinder Morgan to resolve the conflict between their gas pipeline and Pipeline C segment C17, north of the Transwestern Bench.
- PG&E is working with potential subcontractors on the details of an installation plan for the jack-andbore under NTH.

#### 2.1.8 Key Personnel Changes

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

#### 2.2 Communication with the Public

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



#### 2.3 Planned Activities for Next Six Weeks

The planned activities for next six weeks (September 1 through October 12, 2019) include the following:

- Complete installation of well at MW-Y' and MW-D.
- Start drilling and install well at MW-S and MW-11D.
- Continue to install remedy well at RB-2 and RB-3 (dual rotary rig).
- Complete installation of pilot boreholes at IRZ-19, IRZ-29, and IRZ-31
- Complete well installation at IRZ-39.
- Complete the abandonment of well MW-B-267 and drilling of a replacement well.
- Continue to conduct well testing at IRZ-20, IRZ-21, IRZ-25, RB-4, and RB-5.
- Complete well development at MW-C, MW-D, MW-H, MW-Y', RB-4, and RB-5.
- Continue to install Pipeline B.
- Start installation of Pipeline C6 on the MW-20 Bench or C5/C7 in the floodplain.
- Drilling of pilot boring at IRZ-37 did not occur as previously forecasted due to the availability of spider rig. This activity will be added to a six-week look ahead schedule when rig availability is known.
- Non-well construction activities:
  - Continue to install Pipeline B and J.
  - Start installation of Pipeline C Segment C6 or C5/C7.
  - Continue to conduct noise and dust monitoring and inspection of SWPPP BMPs.
  - Continue to log and manage waste generated.
  - Continue to manage displaced soil per the approved Soil Management Plan.

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

#### 2.4 Construction Schedule Review

Phase 1 of the groundwater remedy construction started on October 2, 2018. Table 2-3 presents a summary of the percent completeness for key construction activities as of August 31, 2019. An update to Phase 1 construction schedule will be presented in the next monthly progress report.

In addition, an update of Phase 1 construction schedule was presented at the August 7, 2019 CWG meeting in Lake Havasu City. The update shows a forecast completion date for Phase 1 construction at the end of June 2021, an approximate nine-month delay. The update also shows a forecast completion of a) heavy construction outside TCS in July 2020, b) heavy construction inside TCS in December 2020, and c) system integration and functional testing in June 2021. The updated summary schedule is attached and can also be downloaded from the project website at <a href="https://dtsc-topock.com/documents/project-schedule/current-project-schedule/curr

The schedule delay reflects the temporary shutdown of project in Jan 2019 due to PG&E Chapter 11 bankruptcy filing, all approved work variance requests to date, and implementation challenges as documented in the monthly progress reports. PG&E has been communicating with the agencies about schedule delays since the temporary project shutdown and has made every effort to mitigate further delays. An example is the approved Work Variance Request #5 where the construction of the remedy



wastewater conditioning system will be phased to allow for the necessary infrastructure for Phase 1 to be constructed expeditiously and in a shorter amount of time.

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

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

# 3. References

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

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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.

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

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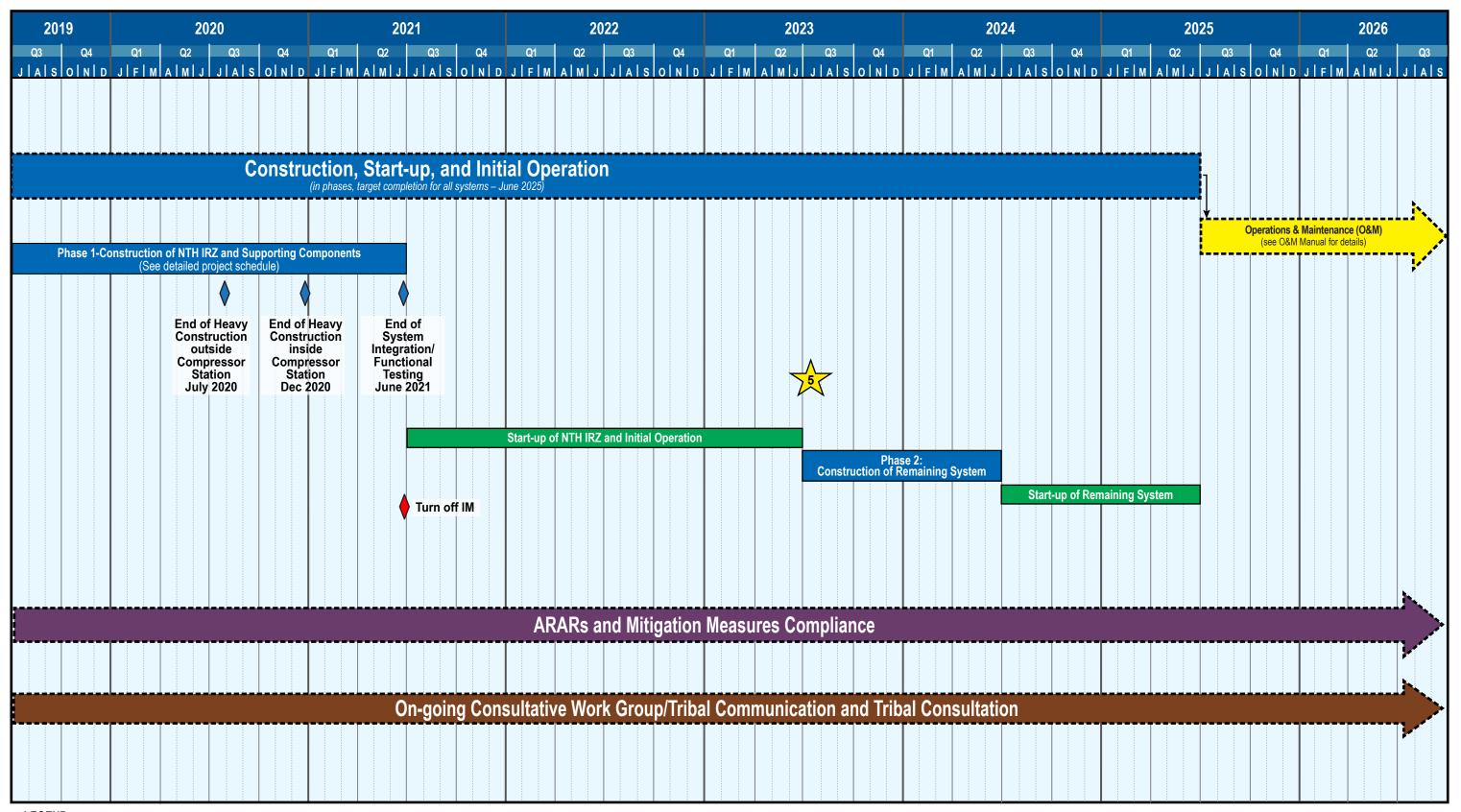
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United States Department of the Interior (DOI). 2018. Approval of PG&E Topock Compressor Station Remediation Site – Basis of Design Report/Final (100%) Design Submittal and Construction/Remedial Action Work Plan for the Final Groundwater Remedy and 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.

# Groundwater Remedy Construction, Start-up, and Initial O&M Schedule



**LEGEND** 



Tables

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

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

ERTC No.	Brief Description of Covered Areas and Scope of Authorized Activities	Issue Date
Non-Well ERT	'Cs	
1	Initial mobilization activities at the Construction Headquarters (CHQ), Soil Processing Yard (SPY), and three staging areas (#9 Parking area off I-40, #18 MW-20 Bench, and #23 Transwestern Bench). Scope included installation of temporary construction trailers, portable generators, SWPPP BMPs, construction signages, and temporary construction fencing, as well as equipment staging and truck inspections.	August 10, 2018
Addendum 1 to ERTC #1	Scope included setup of wastewater and freshwater storage tanks at MW-20 Bench, improvement of the access road at the CHQ, installation of perimeter fence at the SPY, and grading at SPY.	September 21, 2018
Addendum 2 to ERTC #1	Scope included grading for drill rig setup at IRZ-20.	October 4, 2018
Addendum 3 to ERTC #1	Scope included geotechnical investigation in the footprint of the future Carbon Amendment building at the MW-20 Bench.	October 9, 2018
Addendum 4 to ERTC #1	Scope included the installation of a temporary handrail along the walkway from the MW-20 Bench to the floodplain.	December 28, 2018
2	Scope included the installation of the temporary construction water system and construction water tanks at Area #25 Route 66 Welcome Sign.	September 28, 2018
3	Scope included the installation of the Public Information Trailer, a fugitive dust sign, an information kiosk, and a construction delivery sign at the northwest corner of Park Moabi Road and National Trails Highway (NTH).	September 4, 2018
4	Scope included the installation of a truck containment pad at the TCS evaporation ponds and maintenance of the access road to the ponds.	September 24, 2018
6	Scope included the geotechnical investigation along Pipeline F alignment (on the Compressor Station entrance road).	October 3, 2018
7	Scope included the installation of traffic control along the southern end of NTH per the Traffic Control Plan.	September 17, 2018
9	Scope included the transplantation and planting of sensitive plants.	November 9, 2018
10	Scope included potholing activities along approved pipeline alignments and in building footprints, that are also in AOCs/SMWUs. The purpose is to pre-characterize soil in preparation for construction.	March 29, 2019
11	Scope included preparation of temporary staging areas, vegetation clearance, placement of stabilization mats, potholing in select locations, and installation of Pipeline C segments C1 through C6 in the floodplain.	January 3, 2019
11a	Scope included preparation of temporary staging areas, vegetation clearance, placement of stabilization mats, potholing in select locations, and installation of Pipeline C segments C7-C10, and C17 in the floodplain.	February 11, 2019
11b	Scope included installation of Pipelines B, F, and J.	May 31, 2019
Addendum 1 to ERTC #11b	Scope included details for installation of Pipeline B/F/J inside TCS.	July 25, 2019
12	Scope included non-intrusive site preparation work for the brine tanks containment upgrade on the MW-20 Bench (per Work Variance Request #1, see Table 2-2). A forthcoming addendum to this ERTC will be issued to include the actual upgrade activities.	January 10, 2019
12a	Scope included the actual brine tanks containment upgrade activities which include intrusive work on the MW-20 Bench (per Work Variance Request #1, see Table 2-2).	February 6, 2019
Well ERTCs		
5a	Scope included the site setup, drilling, testing, and demobilization at MW-L.	September 27, 2018

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

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

ERTC No.	Brief Description of Covered Areas and Scope of Authorized Activities	Issue Date
5b	Scope included the placement of soil stabilization mats in the floodplain, setup of a temporary staging area near the north end of the access route in the floodplain, rig setup, installation of snow fence to protect plants, drilling, testing, and demobilization at IRZ-15.	October 12, 2018
5c	Scope included the site setup, drilling, testing, and demobilization at IRZ-20 on the MW-20 Bench.	October 15, 2018
5d	Scope included the site setup, drilling, testing, and demobilization at MW-E on the MW-20 Bench.	October 29, 2018
5e	Scope included the site setup, drilling, testing, and demobilization at MW-N in the upland.	November 15, 2018
5f	Scope included the site setup, drilling, testing, and demobilization at IRZ-13 in the floodplain.	November 7, 2018
5g	Scope included the site setup, drilling, testing, and demobilization at IRZ-23 on the MW-20 Bench.	November 8, 2018
5h	Scope included the site setup, drilling, testing, and demobilization at MW-M in the upland.	January 15, 2019
5i	Scope included the site setup, drilling, testing, and demobilization at IRZ-9 in the floodplain.	November 28, 2018
5j	Scope included the site setup, drilling, testing, and demobilization at IRZ-25 on the MW-20 Bench.	December 3, 2018
5k	Scope included the site setup, drilling, testing, and demobilization at IRZ-21 on the MW-20 Bench.	December 9, 2018
51	Scope included the site setup, drilling, testing, and demobilization at MW-B in the floodplain.	December 10, 2018
Addendum to ERTC #5I	Scope included the setup of an additional temporary equipment and material staging area in the floodplain.	December 13, 2018
5m	Scope included the site setup, drilling, testing, and demobilization at MW-F along NTH.	December 17, 2018
5n	Scope included the site setup, drilling, testing, and demobilization at IRZ-11 in the floodplain.	December 17, 2018
50	Scope included the site setup, drilling, testing, and demobilization at MW-X and MW-Y' in Arizona.	April 23, 2019
5p	Scope included the site setup, drilling, testing, and demobilization at MW-G along NTH.	January 14, 2019
5q	Scope included the site setup, drilling, testing, and demobilization at IRZ-16 and IRZ-17 in the floodplain.	February 14, 2019
5r	Scope included the site setup, drilling, testing, and demobilization at IRZ-27 and IRZ-29 along NTH. Also included in the scope are potholing activities along Pipeline C Segments C13, C15, and C16 and on the MW-20 Bench.	March 9, 2019
Addendum #1 to ERTC #5r	Scope included the potholing to locate Transwestern Gas Pipeline within NTH (in support of Pipeline C installation).	April 24, 2019
5s	Scope included the site setup, drilling, testing, and demobilization at IRZ-39 in the low area, north of the Transwestern Bench.	March 12, 2019
5t	Scope included the site setup, drilling, testing, and demobilization at IRZ-27 along NTH.	March 19, 2019
5u	Scope included the site setup, drilling, testing, and demobilization at MW-U in I-40 median.	March 22, 2019
5v	Scope included the site setup, drilling, testing, and demobilization at MW-10D in Bat Cave Wash.	March 27, 2019
5w	Scope included the site setup, drilling, testing, and demobilization at MW-W in the floodplain.	March 22, 2019
5x	Scope included the site setup, drilling, testing, and demobilization at RB-1 through 5 wells and MW-O in the floodplain.	March 30, 2019
5у	Scope included the site setup, drilling, testing, and demobilization at MW-S on the access road to Bat Cave Wash.	April 12, 2019
5z	Scope included the site setup, drilling, testing, and demobilization at MW-R in the Upland.	May 8, 2019

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

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

ı	ERTC No.	Brief Description of Covered Areas and Scope of Authorized Activities	Issue Date
	5aa	June 6, 2019	
	5ab	Scope included the site setup, drilling, testing, and demobilization at IRZ-19 (sonic drilling) in the floodplain	July 22, 2019

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

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

WVR No.	Brief Description of Work Variance Request	Approval Dates			
1	<ul> <li>This WVR addressed PG&amp;E's proposed modification to the brine tanks containment for use by the remedy, specifically:</li> <li>Upgrade the existing lined containment to concrete - The original synthetic liner material has degraded from exposure to UV light, heat, and abrasion and must be replaced. PG&amp;E proposed to replace the synthetic-lined containment (including K-rails) with a concrete containment to support the groundwater remedy. The concrete color will be desert tan, and information on this proposed concrete color will be submitted to the agencies for review. The proposed concrete material will be similar to the material of the truck lane in the final remedy design (see Appendix E of the Final Basis of Design Report (CH2M, 2015a),* Section 033 00, Cast-In-Place Concrete).</li> <li>Shorten the length of the containment - This containment will have the same height as the existing containment, but with a slightly smaller footprint (the length is 5 feet shorter). This smaller footprint still meets the required volume for a secondary containment and allows for more space for remedy construction at the tight MW-20 bench.</li> </ul>				
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:  • Relocate the construction water tie-in point to an aboveground location below the TCS Water Storage Tanks, inside TCS – The final design calls for the temporary construction water line to hot-tap into the existing 6-inch steel water line just as the line turns southwest to continue to TCS. PG&E proposed to move the tie-in point to an aboveground valve manifold, located below the TCS Water Storage Tanks in the boneyard area.  • Extend the temporary construction water line to the new tie-in point, along Pipeline 300A access road – The planned 4-inch high-density polyethylene (HDPE) temporary construction water line will be extended, following the route of the Pipeline 300A access road, to the new tie-in point inside TCS. This pipeline extension is approximately 1,950 feet and is also made of 4-inch HDPE. The pipe will be laid on ground surface and to the south of the 6-inch water line where possible. At the crossing with the SoCal Gas pipeline access road, the pipeline will be at grade with fill to allow for vehicle crossing.	DOI/DTSC approved WVR #2 on August 29, 2018			
3	<ul> <li>PG&amp;E proposed changes within the CHQ fence line to avoid/minimize the overall amount of soil disturbance during construction, reduce the number of truck trips to haul wastewater, and allow for additional working space within the yard. There are no proposed changes to the CHQ footprint nor its fence line. The specifics are described below:</li> <li>Relocate the decontamination pad from the western fence to the northern fence (near the western corner). Based on recent survey data collected during construction, the difference in ground elevation between northern and southern end of the pad is about 4 feet. Moving the pad to the northern fence would eliminate the difference in ground elevation and reduce the amount of soil disturbance by at least 80 cubic yards.</li> <li>Bring the remedy-produced wastewater tank from belowground to aboveground, increase the tank volume from 1,000 to 2,500 gallons, and place the aboveground, double-walled tank adjacent to the decontamination pad. The change from belowground to aboveground 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.</li> <li>Defer construction of the underground sewage tanks. Deferral of the underground tanks reduces the overall amount of soil disturbance by at least 800 cubic yards. All sanitary wastes will be managed in aboveground sewage tanks (similar to the ones currently used for the SPY trailers) or portable toilets.</li> <li>Swap the location of the construction trailers and the sunshade and change the configuration of the sunshade from a rectangle to a square. This change will allow for more working space within the CHQ. All functions that would occur in the Workshop/Sampling Processing building will be conducted in the construction trailers.</li> </ul>	DOI/DTSC approved WVR #3 on January 4, 2019			
4	PG&E proposed to revise a segment of Pipeline C near the I-40 bridge, to meet the permit requirement in Caltrans Encroachment Permit No. 08-18-6-MW-0533. The revision involves	DOI/DTSC approved			

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

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

WVR No.	Brief Description of Work Variance Request	Approval Dates
	relocating a small segment of Pipeline C to within National Trails Highway to meet a minimum distance of 10 feet from current and future I-40 bridge footings. The treatment measure specified for Segment X of National Trails Highway in the Cultural and Historic Property Management Plan will be implemented during installation of this pipeline segment.	WVR #4 on May 14, 2019
5	PG&E proposed to phase the remedy produced water conditioning system within the approved footprint inside TCS.	DOI and DTSC approved WVR #5 on July 19 and July 22, 2019, respectively.
6	In early October 2018, PG&E conducted a geotechnical investigation along the Pipeline F alignment on the entrance road to the Topock Compressor Station (TCS) and the adjacent hill side. Based on the geotechnical results, the construction contractor (PIVOX) indicated that soldier piles and lagging would be requried for temporary shoring. Over 40 soldier piles would be installed by drilling using a 330-sized excavator or larger. A 330-sized excavator has a general width of 11 feet, and counter weight clearance of approximately 4 feet. During operation, this rig would occupy a minimum 15 to 16 feet width of the TCS entrance road for about 12 days. The paved width of the road is between 22 to 24 feet in the area of shoring (per review of the location via Google Earth).  Assuming a minimum clearance of 1 foot (which is still less than the recommended clearance) from any operating equipment, there will be approximately 5 to 8 feet of available lane width for access by TCS traffic. Large vehicles (tractor-trailers, delivery trucks, construction equipment) will likely not be able to pass by the active operation, and passenger vehicles may also not be able to pass the active operation in locations where the road narrows. Also, the excavator cannot be repositioned while soldier piles are being drilled. In sum, access to TCS will be severely restricted for about 12 days. This is not acceptable for Compressor Station operations.  Therefore, PG&E proposed to realign Pipeline F (starting from segment F3) along the approved alignment of Pipelines B and J. Construction of Pipelines F, B, and J would occur in the same alignment and at the same time.	DOI and DTSC approved WVR #6 on May 21 and May 22, 2019, respectively.

#### Note:

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<sup>\*</sup> 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.

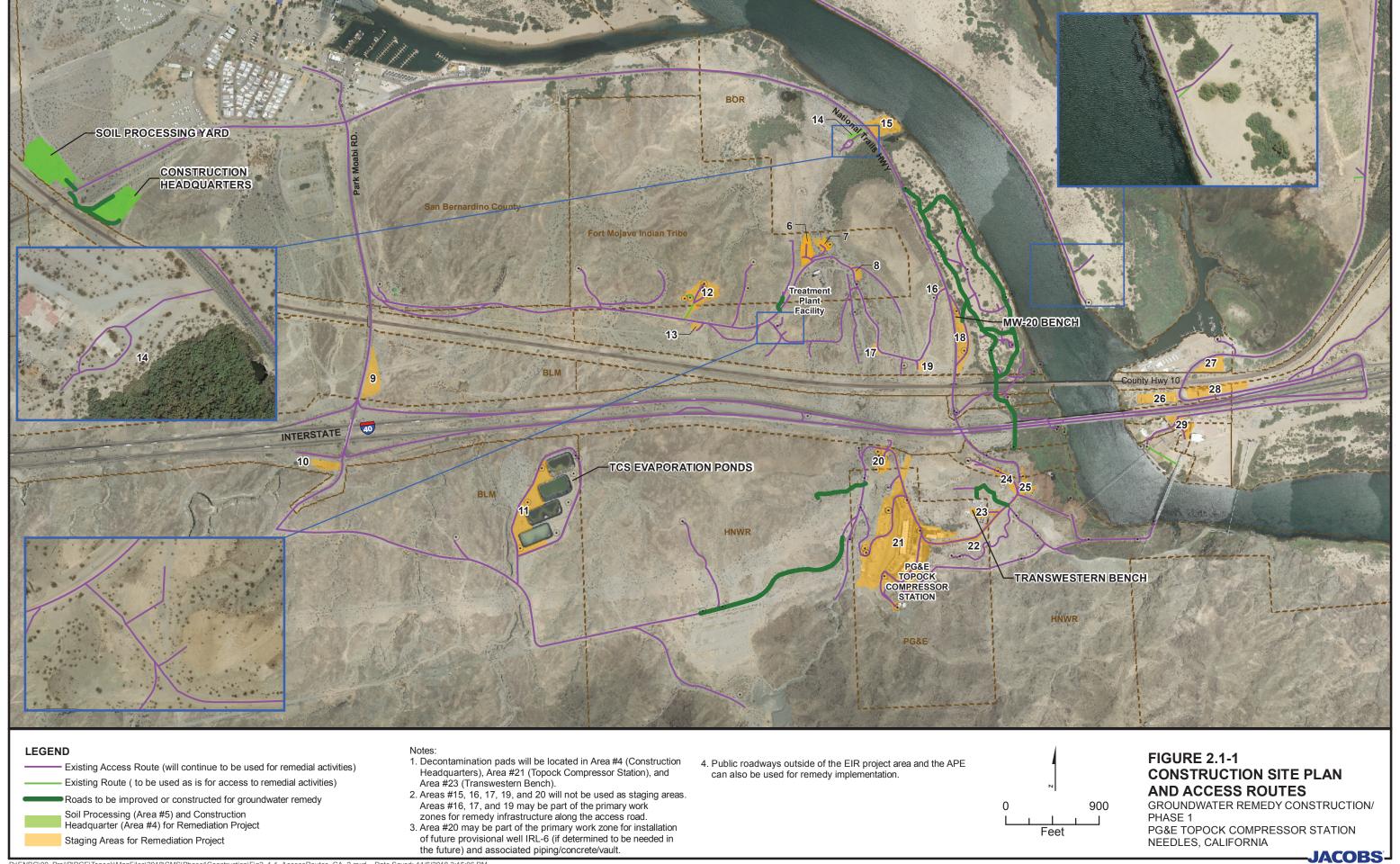
# Table 2-3 Summary of Percent Completeness of Key Construction Activities

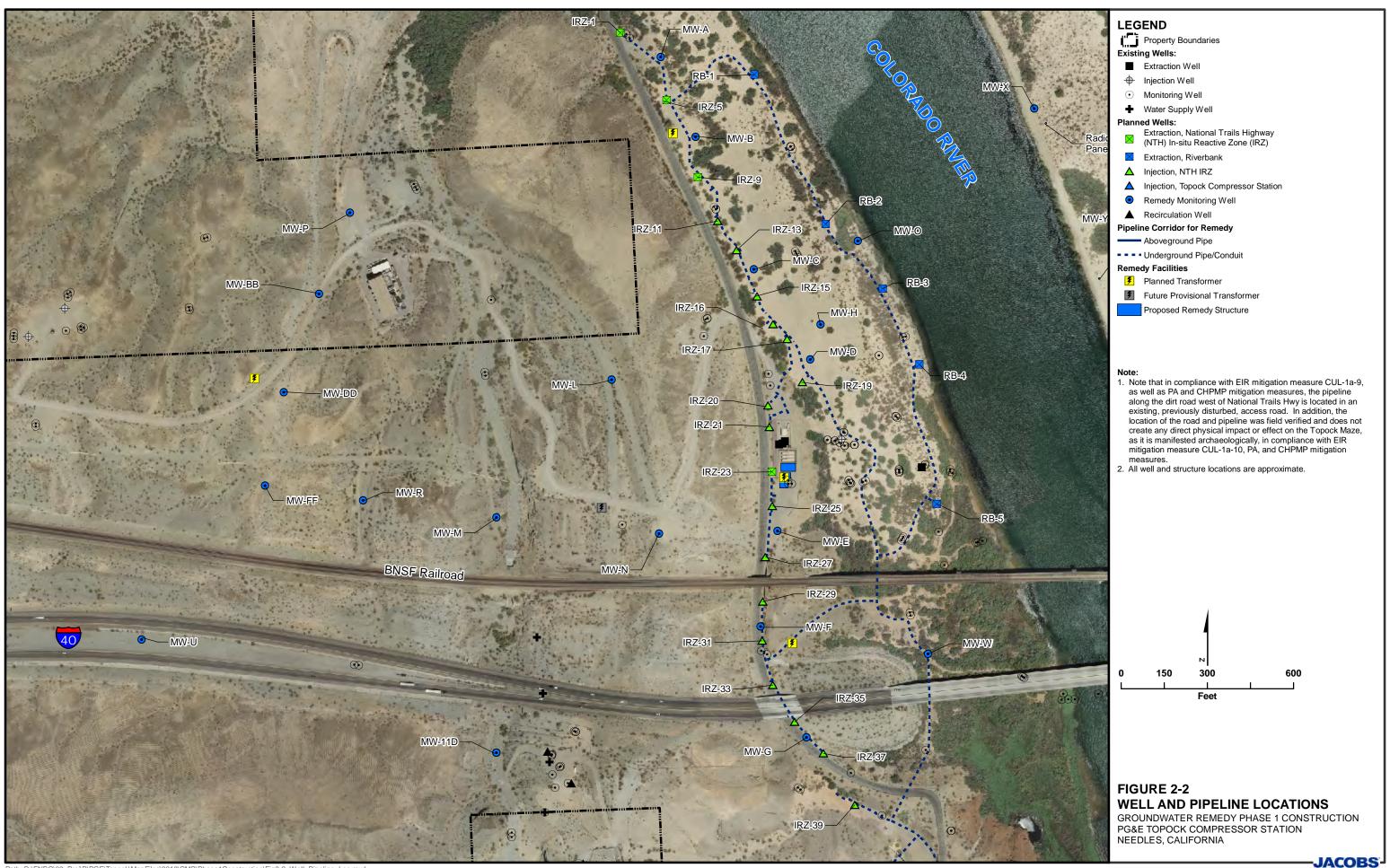
August 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

Activity	% Complete	Current Status of Construction Activities (as of August 31, 2019)
Project signage & Public Information Office	100%	Complete.
Staging Area 9 setup	100%	Complete.
Staging Area 23 setup	100%	Complete.
Staging Area 18 setup	100%	Complete.
Temporary construction offices at Soil Processing Yard	100%	Complete.
Soil Processing Yard setup for construction staging	100%	Complete.
National Trails Highway lane closure and traffic control installation	100%	Complete.
Temporary construction water line	100%	Complete.
TCS Ponds concrete containment pad	100%	Complete.
Construction Headquarters (CHQ) access road	100%	Complete.
Aggregate-based access road in floodplain	Not Available	Portion north of BNSF bridge is substantially complete.
CHQ security fence	100%	Complete
MW-L, N, E, W, O, R, 10D, M, R	100%	Complete.
MW-F, MW-G, MW-X, MW-H	Not Available	Well construction complete. Surface completion will be scheduled when rig is available.
MW-B-33, MW-B-117, and MW-B-337	Not Available	Well construction complete.
MW-B-267 (damaged)	Not Available	Started well abandonment.
MW-D, MW-Y'	Not Available	Underway
RB-5, RB-4, RB-3, RB-2, IRZ-9, 13, 15, 16, 17, 21, 23, 25, 27, and 39 pilot borings	100%	Complete.
RB-4, RB-5	Not Available	Well construction complete. Well development in September.
IRZ-20 remedy well	Not Available	Well construction and development complete. Specific capacity testing conducted in July. Injection testing in September.
IRZ-21 and IRZ-23 remedy wells	Not Available	Well construction complete. Well testing in August/ September.
Pipeline C Segments C3, C4, C5	Not Available	Substantially complete. Testing of electrical conduits in September.
Brine Tanks containment upgrade	100%	Complete.
Pipeline B and J	Not Available	Started on August 12, 2019. Currently underway.

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Figures





Attachment A Photographs



Trenching at Pipeline B (Station 9+75)



**HDPE Pipe Fusing at Pipeline B Work Area** 



Breaking Dense Rock at Pipeline B



Installed HDPE piping within Pipeline B Trench



Remedy Well Installation at RB-4



MW-Y' Well Installation



**MW-D Well Installation** 



**MW-H Well Installation** 

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

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

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-10D	MW-10D-041119	04/11/19	108 - 123	160	160
MW-10D	MW-10D-VAS-107-112	04/01/19	107 - 112	95	96
MW-10D	MW-10D-VAS-118-123	04/02/19	118 - 123	200	190
MW-B	MW-B-VAS-27-32	01/06/19	27 - 32	5.9 J	7.7J
MW-B	MW-B-VAS-47-52	01/09/19	47 - 52	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-67-72	01/09/19	67 - 72	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-102-107	01/10/19	102 - 107	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-142-147	01/15/19	142 - 147	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-182-187	02/13/19	182 - 187	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-207-212	02/14/19	207 - 212	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-247-252	02/17/19	247 - 252	11 J	< 0.83 U
MW-B	MW-B-VAS-264-269	02/18/19	264 - 269	< 0.13 U	< 0.33 U
MW-B	MW-B-VAS-287-292	02/20/19	287 - 292	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-317-322	02/21/19	317 - 322	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-339-344	02/27/19	339 - 344	< 0.13 U	< 0.33 U
MW-B	MW-B-VAS-352-357	02/28/19	352 - 357	0.603 J	< 0.33 U
MW-B	MW-B-117-033019	03/30/19	WD, 117	< 0.13 U	< 0.17 U
MW-B	MW-B-33-033119	03/31/19	WD, 33	3.7	2.3
MW-B	MW-B-337-062619- INTERIM	6/26/19	WD	0.255 J	< 0.17 U
MW-C	MW-C-VAS-26-31	6/19/19	26-31	360	380
MW-C	MW-C-VAS-51-56	6/25/19	51-56	0.13 U	0.146 J
MW-C	DUP-01-062519	6/25/19	51-56	< 0.13 U	0.0931 J
MW-C	MW-C-VAS-66-71	6/26/19	66-71	< 0.13 U	< 0.033 U
MW-C	MW-C-VAS-81-86	6/27/19	81-86	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-117-122	6/28/19	117-122	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-147-152	6/29/19	147-152	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-165-170	6/30/19	165-170	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-176-181	7/1/19	176-181	380	410
MW-C	MW-C-VAS-186-191	7/1/19	186-191	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-200-205	7/2/19	200-205	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-216-221	7/3/19	216-221	0.448 J	< 0.17 U
MW-D	MW-D-VAS-30-35	08/10/19	30-35	<0.13 U	<0.17 U
MW-D	MW-D-VAS-46-51	08/11/19	46-51	0.558 J	0.47
MW-D	MW-D-VAS-91-96	08/12/19	91-96	<0.13 U	<0.033 U
MW-D	MW-D-VAS-131-136	08/21/19	131-136	Data not yet available	<0.66 U
MW-D	MW-D-VAS-141-146	08/22/19	141-146	Data not yet available	<0.17 U

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

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-D	MW-D-VAS-151-156	08/22/19	151 - 156	Data not yet available	< 0.17 U
MW-D	MW-D-VAS-161-166	08/23/19	161 - 166	Data not yet available	< 0.17 U
MW-D	MW-D-VAS-171-176	08/23/19	171 - 176	Data not yet available	< 0.17 U
MW-D	MW-D-VAS-181-186	08/24/19	181 - 186	Data not yet available	< 0.17 U
MW-D	MW-D-VAS-191-196	08/25/19	191 - 196	Data not yet available	< 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	WD, 70	-	3000
MW-E	MW-E-142-121418	12/14/18	WD, 142	4500	4200
MW-F	MW-F-VAS-52-57	01/06/19	52 - 57	2700	2500
MW-F	MW-F-VAS-82-87	01/07/19	82 - 87	120	110
MW-F	MW-F-VAS-97-102	01/07/19	97 - 102	1900	1800
MW-F	MW-F-VAS-112-117	01/08/19	112 - 117	790	740
MW-F	MW-F-104-022719	02/27/19	WD, 104	1800	1700
MW-F	MW-F-60-022819	02/28/19	WD, 60	2300	2200
MW-G	MW-G-VAS-52-57	02/13/19	52 - 57	790	680
MW-G	MW-G-VAS-67-72	02/14/19	67 - 72	1000	920
MW-G	MW-G-VAS-77-82	02/15/19	77 - 82	710	600
MW-G	MW-G-82-030219	03/02/19	WD, 82	1500	1500
MW-G	MW-G-57-030219	03/02/19	WD, 57	510	560
MW-H	MW-H-VAS-32-37	8/7/2019	32 - 37	<0.13 U	< 0.17 U
MW-H	MW-H-VAS-47-52	8/7/2019	47-52	<0.13 U	< 0.17 U
MW-H	MW-H-VAS-82-87	08/08/19	82-87	<0.13 U	<.033 U
MW-H	MW-H-VAS-112-117	08/09/19	112-117	8.1	<0.17 U
MW-H	MW-H-VAS-142-147	08/10/19	142-147	Data not yet available	<0.17 U
MW-H	MW-H-VAS-152-157	08/10/19	152-157	Data not yet available	<0.17 U
MW-H	MW-H-VAS-162-167	08/11/19	162-167	<0.13 U	<0.17 U
MW-H	MW-H-VAS-172-177	08/12/19	172-177	<0.13 U	<0.17 U
MW-H	MW-H-VAS-182-187	08/13/19	182-187	<0.13 U	<0.17 U
MW-H	MW-H-VAS-192-197	08/14/19	192-197	<0.13 U	<0.17 U
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

B-2 AX0206192356BAO

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

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-L	MW-L-VAS-261-266	10/22/18	261 - 266	0.284 J	< 0.17 U
MW-L	MW-L-180-032819	03/28/19	WD, 180	< 0.13 U	< 0.17 U
MW-L	MW-L-245-030319	03/03/19	WD, 245	14	15
MW-L	MW-L-90-032919	03/29/19	WD, 90	19	18
MW-L	MW-L-225-032919	03/29/19	WD, 225	410	380
MW-M	MW-M-VAS-52-57	03/28/19	52 - 57	29	28
MW-M	MW-M-VAS-72-77	03/29/19	72 - 77	< 0.13 U	< 0.033 U
MW-M	MW-M-VAS-107-112	03/30/19	107 - 112	< 0.13 U	< 0.033 U
MW-M	MW-M-VAS-147-152	03/31/19	147 - 152	< 0.13 U	< 0.17 U
MW-M	MW-M-VAS-172-177	04/02/19	172 - 177	< 0.13 U	< 0.033 U
MW-M	MW-M-VAS-190-195	04/10/19	190 - 195	< 0.13 U	< 0.17 U
MW-M	MW-M-132-061519	6/16/19	WD	< 0.13 U	< 0.033 U
MW-M	MW-M-193-061419	6/14/19	WD	< 0.13 U	< 0.17 U
MW-M	MW-M-57-061719	6/17/19	WD	0.715 J	0.72
MW-M	MW-M-95-061619	6/16/19	WD	< 0.13 U	< 0.033 U
MW-N	MW-N-VAS-121-126	02/14/19	121 - 126	0.699 J	0.51
MW-N	MW-N-VAS-142-147	02/16/19	142 - 147	< 0.13 U	< 0.033 U
MW-N	MW-N-VAS-173-178	02/18/19	173 - 178	< 0.13 U	< 0.033 U
MW-N	MW-N-VAS-210-215	02/21/19	210 - 215	320	290
MW-N	MW-N-VAS-228-233	02/26/19	228 - 233	< 0.13 U	< 0.17 U
MW-N	MW-N-217-040219	04/02/19	WD, 217	110	110
MW-N	MW-N-237-040119	04/01/19	WD, 237	1600	1500
MW-N	MW-N-129-040319	04/03/19	WD, 129	45	46
MW-O	MW-O-VAS-101-106	05/10/19	101 - 106	< 0.13 U	< 0.033 U
MW-O	MW-O-VAS-106-111	05/11/19	106 - 111	< 0.13 U	< 0.17 U
MW-O	MW-O-VAS-12.5-17.5	05/08/19	12 - 18	< 0.13 U	0.163 J
MW-O	MW-O-VAS-136-141	05/11/19	136 - 141	< 0.13 U	< 0.17 U
MW-O	MW-O-VAS-51-56	05/09/19	51 - 56	< 0.13 U	< 0.033 U
MW-O	MW-O-VAS-66-71	05/09/19	66 - 71	< 0.13 U	0.178 J
MW-O	MW-O-140-071819	7/18/19	WD	< 0.13 U	< 0.17 U
MW-O	MW-O-30-071719	7/17/19	WD	< 0.13 U	< 0.033 U
MW-O	MW-O-66-071519	7/15/19	WD	< 0.13 U	< 0.033 U
MW-R	MW-R-VAS-92-97	05/13/19	92 - 97	42	45
MW-R	MW-R-VAS-117-122	05/14/19	117 - 122	4.6	5.8
MW-R	MW-R-VAS-151-156	05/15/19	151 - 156	<0.13 U	< 0.033 U
MW-R	MW-R-VAS-192-197	05/16/19	192 - 197	<0.13 U	< 0.033 U
MW-R	MW-R-VAS-227-232	05/17/19	227 - 232	<0.13 U	< 0.033 U

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

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (µg/L)	Hexavalent Chromium (μg/L)
MW-R	MW-R-VAS-255-260	05/29/19	255 - 260	<0.13 U	< 0.17 U
MW-R	MW-R-VAS-269-274	05/30/19	269 - 274	<0.13 U	< 0.17 U
MW-R	MW-R-109-062819	6/28/19	WD	2.6	2.5
MW-R	MW-R-139-071319	7/13/19	WD	< 0.13 U	< 0.033 U
MW-R	MW-R-192-070219	7/2/19	WD	< 0.13 U	< 0.033 U
MW-R	MW-R-275-070919	7/9/19	WD	< 0.13 U	< 0.17 U
MW-W	MW-W-VAS-7-12	03/27/19	7 - 12	0.266 J	< 0.17 U
MW-W	MW-W-VAS-22-27	03/28/19	22 - 27	< 0.13 U	< 0.33 U
MW-W	MW-W-31-040419	04/04/19	WD, 31	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-12-17	06/25/19	12-17	1.2	< 0.033 U
MW-X	MW-X-VAS-32-37	06/26/19	32-37	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-71-76	6/27/19	71 - 76	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-107-112	6/27/19	107-112	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-112-117	6/28/19	112-117	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-152-157	6/29/19	152-157	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-182-187	6/29/19	182-187	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-207-212	6/30/19	207-212	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-245-250	7/1/19	245-250	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-292-297	7/2/19	292-297	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-337-342	7/11/19	337-342	0.564 J	< 0.17 U
MW-X	MW-X-VAS-382-387	7/13/19	382-387	0.582 J	< 0.17 U
MW-X	MW-X-VAS-412-417	7/15/19	412-417	38*	< 0.17 U*
MW-Y'	MW-Y-VAS-12-17	08/20/19	12-17	Data not yet available	<0.033 U
MW-Y'	MW-Y-VAS-52-57	08/21/19	52-57	Data not yet available	<0.033 U
MW-Y'	MW-Y-VAS-92-97	08/22/19	92 - 97	Data not yet available	0.31
MW-Y'	MW-Y-VAS-98-103	08/23/19	98 - 103	Data not yet available	< 0.033 U
MW-Y'	MW-Y-VAS-112-117	08/23/19	112 - 117	Data not yet available	< 0.033 U
MW-U	MW-U-VAS-137-142	04/12/19	137 - 142	0.818 J	1.4
MW-U	MW-U-VAS-181-186	04/13/19	181 - 186	< 0.13 U	0.112 J
MW-U	MW-U-VAS-222-227	04/14/19	222 - 227	< 0.13 U	< 0.033 U
MW-U	MW-U-VAS-257-262	04/16/19	257 - 262	< 0.13 U	0.0896 J
MW-U	MW-U-VAS-287-292	04/17/19	287 - 292	< 0.13 U	< 0.033 U
MW-U	MW-U-VAS-317-322	04/24/19	317 - 322	< 0.13 U	< 0.17 U
MW-U	MW-U-183-050819	05/08/19	WD, 183	< 0.13 U	< 0.033 U
MW-U	MW-U-273-051019	05/10/19	WD, 273	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-27-32	12/03/18	27 -32	120	120
IRZ-9	IRZ-9-VAS-47-52	12/04/18	47 -52	< 0.13 U	< 0.033 U

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

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
IRZ-9	IRZ-9-VAS-62-67	12/04/18	62 -67	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-182-187	12/11/18	182 -187	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-207-212	12/13/18	207 -212	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-232-237	12/13/18	232 -237	0.811 J	< 0.17 U
IRZ-9	IRZ-9-VAS-264-269	12/15/18	264 -269	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-276-281	12/16/18	276 -281	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-292-297	12/18/18	292 -297	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-32-37	11/17/18	32 - 37	170	220
IRZ-13	IRZ-13-VAS-57-62	11/18/18	57 - 62	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-102-107	11/19/18	102 - 107	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-142-147	11/19/18	142 - 147	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-180-185	11/27/18	180 - 185	230	190
IRZ-13	IRZ-13-VAS-197-202	11/28/18	197 - 202	< 0.13	< 0.83
IRZ-13	IRZ-13-VAS-224-229	11/28/18	224 - 229	< 0.13	< 0.83
IRZ-13	IRZ-13-VAS-237-242	11/29/18	237 - 242	< 0.13 U	< 0.17 U
IRZ-15	IRZ-15-VAS-32-37	11/01/18	32 - 37	13	13
IRZ-15	IRZ-15-VAS-62-67	11/02/18	62 - 67	< 0.65 U	0.459 J
IRZ-15	IRZ-15-VAS-102-107	11/03/18	102 - 107	< 0.65 U	< 0.17 U
IRZ-15	IRZ-15-VAS-132-137	11/04/18	132 - 137	0.228 J	< 0.17 U
IRZ-15	IRZ-15-VAS-162-167	11/05/18	162 - 167	3400	3200
IRZ-15	IRZ-15-VAS-182-187	11/06/18	182 - 187	130	140
IRZ-15	IRZ-15-VAS-222-227	11/07/18	222 - 227	< 0.13 U	< 0.17 U
IRZ-16	IRZ-16-VAS-27-32	02/20/19	27 - 32	480	480
IRZ-16	IRZ-16-VAS-57-62	02/20/19	57 - 62	< 0.33 U	< 0.33 U
IRZ-16	IRZ-16-VAS-102-107	02/21/19	102 - 107	< 0.33 U	< 0.33 U
IRZ-16	IRZ-16-VAS-132-137	02/26/19	132 - 137	< 0.17 U	< 0.17 U
IRZ-16	IRZ-16-VAS-147-152	02/27/19	147 - 152	< 0.17 U	< 0.17 U
IRZ-16	IRZ-16-VAS-172-177	02/27/19	172 - 177	110	110
IRZ-16	IRZ-16-VAS-192-197	02/28/19	192 - 197	< 0.17 U	< 0.17 U
IRZ-17	IRZ-17-VAS-32-37	03/02/19	32 - 37	78	67
IRZ-17	IRZ-17-VAS-62-67	03/02/19	62 - 67	0.750 J	0.604 J
IRZ-17	IRZ-17-VAS-102-107	03/03/19	102 - 107	< 0.13 U	< 0.17 U
IRZ-17	IRZ-17-VAS-132-137	03/13/19	132 - 137	< 0.13 U	< 0.17 U
IRZ-17	IRZ-17-VAS-137-142	03/12/19	137 - 142	< 0.13 U	< 0.13 U
IRZ-17	IRZ-17-VAS-142-147	03/04/19	142 - 147	68	84
IRZ-17	IRZ-17-VAS-147-152	03/12/19	147 - 152	< 0.13 U	< 0.33 U
IRZ-17	IRZ-17-VAS-152-157	03/04/19	152 - 157	16	7.0
IRZ-17	IRZ-17-VAS-162-167	03/04/19	162 - 167	< 0.13 U	< 0.17 U

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

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

Location	Sample ID	Date	Depth Interval (ft bgs)	Chromium (μg/L)	Chromium (μg/L)
IRZ-17	IRZ-17-VAS-172-177	03/05/19	172 - 177	< 0.13 U	< 0.17 U
	IRZ-17-VAS-197-202	03/06/19	197 - 202	< 0.13 U	< 0.17 U
	IRZ-17-VAS-217-222	03/06/19	217 - 222	< 0.13 U	< 0.17 U
	IRZ-20-VAS-112-117	10/22/18	112 - 117	< 0.13 U	< 0.17 U
	IRZ-20-VAS-131-136	10/23/18	131 - 136	< 0.13 U	< 0.17 U
	IRZ-20-VAS-173-178	10/24/18	173 - 178	< 0.13 U	< 0.83 U
IRZ-21	IRZ-21-VAS-52-57	12/15/18	52 - 57	100	97
IRZ-21	IRZ-21-VAS-77-82	12/16/18	77 - 82	1.3	1.1
	IRZ-21-VAS-112-117	12/16/18	112 - 117	< 0.13 U	< 0.17 U
	IRZ-21-VAS-132-137	12/17/18	132 - 137	< 0.13 U	< 0.17 U
	IRZ-21-VAS-147-152	12/18/18	147 - 152	4000	3600
IRZ-23	IRZ-23-VAS-67-72	12/01/18	67 - 72	86	85
IRZ-23	IRZ-23-VAS-92-97	12/01/18	92 - 97	0.453 J	< 0.033 U
IRZ-23	IRZ-23-VAS-122-127	12/02/18	122 - 127	2100	2000
IRZ-23	IRZ-23-VAS-139-144	12/02/18	139 - 144	3400	3000
IRZ-25	IRZ-25-VAS-52-57	12/05/18	52 - 57	4300	3500
IRZ-25	IRZ-25-VAS-67-72	12/05/18	67 - 72	750	620
IRZ-25	IRZ-25-VAS-92-97	12/06/18	92 - 97	140	130
IRZ-25	IRZ-25-VAS-112-117	12/11/18	112 - 117	< 0.13 U	< 0.17 U
IRZ-25	IRZ-25-VAS-147-152	12/11/18	147 - 152	3800	3600
IRZ-25	IRZ-25-VAS-162-167	12/13/18	162 - 167	3000	3000
IRZ-27	IRZ-27-VAS-52-57	03/15/19	52 - 57	4500	4400
IRZ-27	IRZ-27-VAS-72-77	03/17/19	72 - 77	0.338 J	< 0.033 U
IRZ-27	IRZ-27-VAS-102-107	03/18/19	102 - 107	< 0.13 U	< 0.17 U
IRZ-27	IRZ-27-VAS-132-137	03/20/19	132 - 137	1200	1300
IRZ-39	IRZ-39-VAS-27-32	03/30/19	27 - 32	31	29
RB-2	RB-2-VAS-102-107	7/1/19	102-107	< 0.13 U	< 0.033 U
RB-2	RB-2-VAS-142-147	7/9/19	142-147	0.270 J	< 0.17 U
RB-2	RB-2-VAS-172-177	7/12/19	172-177	0.233 J	< 0.17 U
RB-2	RB-2-VAS-202-207	7/14/19	202-207	0.218 J	< 0.17 U
RB-2	RB-2-VAS-237-242	7/15/19	237-242	0.233J	< 0.17 U
RB-2	RB-2-VAS-274-279	7/18/19	274-279	0.514 J	< 0.17 U
RB-2	RB-2-VAS-287-292	7/26/19	287-292	<0.13 U	< 0.17 U
RB-2	RB-2-VAS-36.5-41.5	6/29/19	36 - 42	< 0.13 U	< 0.033 U
RB-2	RB-2-VAS-72-77	6/30/19	72 - 77	< 0.13 U	< 0.033 U
RB-3	RB-3-VAS-15-20	04/26/19	15 - 20	< 0.13 U	< 0.033 U
RB-3	RB-3-VAS-50-55	04/27/19	50 - 55	< 0.13 U	0.100 J

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

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

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

#### Notes:

 $\mu$ g/L = micrograms per liter

ft bgs = feet below ground surface

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



	specific capacity resting				
Location/Well ID-	IRZ-20				
Date -	6/30/2019				
Screened Interval					
Tested -	Lower Screen (137-155 ft)				
Packer Set Depth -	124.3-128.3 ft BTOC				
Packer Seal Test -	Packer tested for leaks at top of well casing - no leaks				
Tests Conducted -	4 step Specific Capacity Test (6.5, 13, 19.5, 33.5 GPM)				
Purpose -	Well Performance Test				
Summary -	Specific Capacity: 2.01-2.07 GPM/FT				
Notes -	The IM3 system was turned off before starting spacific capacity test causing water levels to rise at the start of the test Final step was interupted due to breaker box failure and pump was shut off Final step continuted ~30 minutes after breaker failure and pump shut off				



Location/Well ID-	IRZ-20		
Date -	6/30/2019		
Screened Interval -	137-155		
Initial Water Level Within			
71 (Specify Screen Interval) - Initial Water Level Within	42.63		
<u>137-155</u> (Specify Screen	43.83		
Initial Totalizer Reading -	0		
Final Totalizer Reading -	4788.36		
Approx. Pumped Volume (gal) -	4788.36		
Number of Specific Capacity Steps -	3		

Pumping Rates (List In Order) -6.5,13,19.5

Time (HR:MN:SEC)	Change in Time between measurements	Elapsed Time (Min)	Pumping Rate (GPM)	Total Volume pumped	Depth to Water (Ft.)	Drawdown (Ft.)
	(Min)	Tillic (IVIIII)	(OI IVI)	(Gallons)	water (i c.)	(1 c.)
			Step 1			
8:10:00	0.0	0.0	0	0.00	43.83	
8:10:20	0.3	0.3	6.42	2.14	47.73	3
8:10:40	0.3	0.7	6.42	4.28	47.15	3.3
8:11:00	0.3	1.0	6.36	6.40	46.72	2.8
8:12:00	1.0	2.0	6.15	12.55	46.75	2.9
8:13:00	1.0	3.0		12.55		
8:14:00	1.0	4.0	6.45	19.00	46.93	3
8:15:00	1.0	5.0	6.44	25.44	46.84	3.0
8:16:00	1.0	6.0		25.44	46.8	2.9
8:17:00	1.0	7.0		25.44	46.71	2.8
8:18:00	1.0	8.0	6.85	32.29	47.02	3.
8:19:00	1.0	9.0	6.77	39.06	47	3.
8:20:00	1.0	10.0	6.7	45.76	46.9	3.0
8:22:00	2.0	12.0	6.69	59.14	46.97	3.
8:24:00	2.0	14.0	6.7	72.54	46.98	3.
8:26:00	2.0	16.0	6.62	85.78	46.96	3.
8:28:00	2.0	18.0	6.57	98.92	46.94	3.
8:30:00	2.0	20.0	6.5	111.92	46.91	3.
8:32:00	2.0	22.0	6.44	124.80	46.91	3.
8:34:00	2.0	24.0	6.32	137.44	46.8	2.
8:36:00	2.0	26.0	7	151.44	47.12	3.
8:38:00	2.0	28.0	6.94	165.32	47.1	3.
8:40:00	2.0	30.0	6.9	179.12	47.08	3.
8:42:00	2.0	32.0	6.87	192.86	47.05	3.
8:44:00	2.0	34.0	6.85	206.56	47.06	3.
8:46:00	2.0	36.0	6.78	220.12	47.03	3
8:48:00	2.0	38.0	6.78	233.68	47.03	3
8:50:00	2.0	40.0	6.74	247.16	47.01	3.
8:55:00	5.0	45.0	6.71	280.71	47.02	3.
9:00:00	5.0	50.0	6.69	314.16	47.02	3.
9:05:00	5.0	55.0	6.64	347.36	47.02	3.
9:10:00	5.0	60.0	6.64	380.56	47.02	3.
9:15:00	5.0	65.0	6.6	413.56	47.02	3.
9:20:00	5.0	70.0	6.58	446.46	47.02	3.
9:30:00	10.0	80.0	6.62	512.66	47.02	3.
9:40:00	10.0	90.0	6.57	578.36	47.02	3.
9:50:00	10.0	100.0	6.89	647.26	47.09	3.
10:00:00	10.0	110.0	6.75	714.76	47.08	3.
10:10:00	10.0	120.0	6.75	782.26	47.09	3.
otal Volume Pumpe	782.26					
verage Pumping Ra		6.65				
pecific Capacity (GP	M/FT):	2.04				



Location/Well ID-	IRZ-20	
Date -	6/30/2019	
Screened Interval -	137-155	
Initial Water Level Within		
71_ (Specify Screen Interval) - Initial Water Level Within	42.63	
<u>137-155</u> (Specify Screen	43.83	
Initial Totalizer Reading -	0	
Final Totalizer Reading -	4788.36	
Approx. Pumped Volume (gal) -	4788.36	
Number of Specific Capacity Steps -	3	
Pumping Rates (List In Order) -	6.5,13,19.5	

			Step 2				
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft.)	Drawdown (Ft.)	Elapsed Time from Step 2 Start (Min)
10:10:20	0.3	120.3	12.02	786.27	48.5	4.67	0.3
10:10:40	0.3	120.7	12.92	790.57	49.79	5.96	0.7
10:11:00	0.3	121.0	12.61	794.78	49.72	5.89	1.0
10:12:00	1.0	122.0	12.77	807.55	49.94	6.11	2.0
10:13:00	1.0	123.0	13.01	820.56	50.03	6.2	3.0
10:14:00	1.0	124.0	13.12	833.68	50.14	6.31	4.0
10:15:00	1.0	125.0	13.06	846.74	50.11	6.28	5.0
10:16:00	1.0	126.0	13.32	860.06	50.31	6.48	6.0
10:17:00	1.0	127.0	13.66	873.72	50.42	6.59	7.0
10:18:00	1.0	128.0	13.7	887.42	50.44	6.61	8.0
10:19:00	1.0	129.0	13.68	901.10	50.44	6.61	9.0
10:20:00	1.0	130.0	13.66	914.76	50.3	6.47	10.0
10:22:00	2.0	132.0	13.42	941.60	50.35	6.52	12.0
10:24:00	2.0	134.0	13.41	968.42	50.33	6.5	14.0
10:26:00	2.0	136.0	13.4	995.22	50.33	6.5	16.0
10:28:00	2.0	138.0	13.4	1022.02	50.33	6.5	18.0
10:30:00	2.0	140.0	13.4	1048.82	50.33	6.5	20.0
10:32:00	2.0	142.0	13.34	1075.50	50.32	6.49	22.0
10:34:00	2.0	144.0	13.28	1102.06	50.27	6.44	24.0
10:36:00	2.0	146.0	13.26	1128.58	50.27	6.44	26.0
10:38:00	2.0	148.0	13.25	1155.08	50.28	6.45	28.0
10:40:00	2.0	150.0	13.26	1181.60	50.28	6.45	30.0
10:45:00	5.0	155.0	13.31	1248.15	50.32	6.49	35.0
10:50:00	5.0	160.0	13.28	1314.55	50.3	6.47	40.0
10:55:00	5.0	165.0	13.3	1381.05	50.31	6.48	45.0
11:00:00	5.0	170.0	13.28	1447.45	50.35	6.52	50.0
11:10:00	10.0	180.0	13.26	1580.05	50.32	6.49	60.0
11:20:00	10.0	190.0	12.96	1709.65	50.19	6.36	70.0
11:30:00	10.0	200.0	13.07	1840.35	50.37	6.54	80.0
11:40:00	10.0	210.0	13.1	1971.35	50.26	6.43	90.0
11:50:00	10.0	220.0	13.19	2103.25	50.3	6.47	100.0
12:00:00	10.0	230.0	13.1	2234.25	50.24	6.41	110.0
12:10:00	10.0	240.0	13.1	2365.25	50.28	6.45	120.0
otal Volume Pumpe	d (GAL):	1582.74					1
verage Pumping Rat		13.21					
pecific Capacity (GPI		2.05					



Location/Well ID-	IRZ-20	
Date -	6/30/2019	
Screened Interval -	137-155	
Initial Water Level Within49-		
71 (Specify Screen Interval) - Initial Water Level Within	42.63	_
(Specify Screen	43.83	
Initial Totalizer Reading -	0	
Final Totalizer Reading -	4788.36	
Approx. Pumped Volume (gal) -	4788.36	_
Number of Specific Capacity Steps -	3	
Pumping Rates (List In Order) -	6.5,13,19.5	

			Step 3				
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft.)	Drawdown (Ft.)	Elapsed Time from Step 3 Start (Min)
12:10:20	0.3	240.3	19.57	2371.77	52.5	8.67	0.3
12:10:40	0.3	240.7	19.57	2378.29	53.08	9.25	0.7
12:11:00	0.3	241.0	19.57	2384.82	53.18	9.35	1.0
12:12:00	1.0	242.0	19.57	2404.39	53.32	9.49	2.0
12:13:00	1.0	243.0	19.66	2424.05	53.38	9.55	3.0
12:14:00	1.0	244.0	19.52	2443.57	53.39	9.56	4.0
12:15:00	1.0	245.0	19.42	2462.99	53.39	9.56	5.0
12:16:00	1.0	246.0	19.59	2482.58	53.43	9.6	6.0
12:17:00	1.0	247.0	19.46	2502.04	53.3	9.47	7.0
12:18:00	1.0	248.0	19.4	2521.44	53.39	9.56	8.0
12:19:00	1.0	249.0	19.67	2541.11	53.47	9.64	9.0
12:20:00	1.0	250.0	19.69	2560.80	53.49	9.66	10.0
12:22:00	2.0	252.0	19.66	2600.12	53.5	9.67	12.0
12:24:00	2.0	254.0	19.52	2639.16	53.37	9.54	14.0
12:26:00	2.0	256.0	19.77	2678.70	53.52	9.69	16.0
12:28:00	2.0	258.0	19.62	2717.94	53.54	9.71	18.0
12:30:00	2.0	260.0	19.66	2757.26	53.55	9.72	20.0
12:32:00	2.0	262.0	19.72	2796.70	53.56	9.73	22.0
12:34:00	2.0	264.0	19.75	2836.20	53.56	9.73	24.0
12:36:00	2.0	266.0	19.74	2875.68	53.56	9.73	26.0
12:38:00	2.0	268.0	19.72	2915.12	53.57	9.74	28.0
12:40:00	2.0	270.0	19.71	2954.54	53.57	9.74	30.0
12:45:00	5.0	275.0	19.76	3053.34	53.57	9.74	35.0
12:50:00	5.0	280.0	19.72	3151.94	53.58	9.75	40.0
12:55:00	5.0	285.0	19.72	3250.54	53.58	9.75	45.0
13:00:00	5.0	290.0	19.71	3349.09	53.58	9.75	50.0
13:05:00	5.0	295.0	19.66	3447.39	53.58	9.75	55.0
13:10:00	5.0	300.0	19.59	3545.34	53.55	9.72	60.0
13:20:00	10.0	310.0	19.69	3742.24	53.55	9.72	70.0
13:30:00	10.0	320.0	19.62	3938.44	53.55	9.72	80.0
13:40:00	10.0	330.0	19.63	4134.74	53.55	9.72	90.0
13:50:00	10.0	340.0	19.62	4330.94	53.55	9.72	100.0
14:00:00	10.0	350.0	19.67	4527.64	53.55	9.72	110.0
14:10:00	10.0	360.0	19.69	4724.54	53.6	9.77	120.0
otal Volume Pumped	l (GAL):	2359.29					
Average Pumping Rate		19.64					
pecific Capacity (GPN	•	2.01					

Step 4									
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft. )	Drawdown (Ft.)	Elapsed Time from Step 3 Start (Min)		
14:10:20	0.3	360.3	24.35	4732.65	55.78	11.95	0.3		
14:10:40	0.3	360.7	25.63	4741.20	56.29	12.46	0.7		
14:11:00	0.3	361.0	26.14	4749.91	56.7	12.87	1.0		
14:11:30		Pump off due to breaker failure							

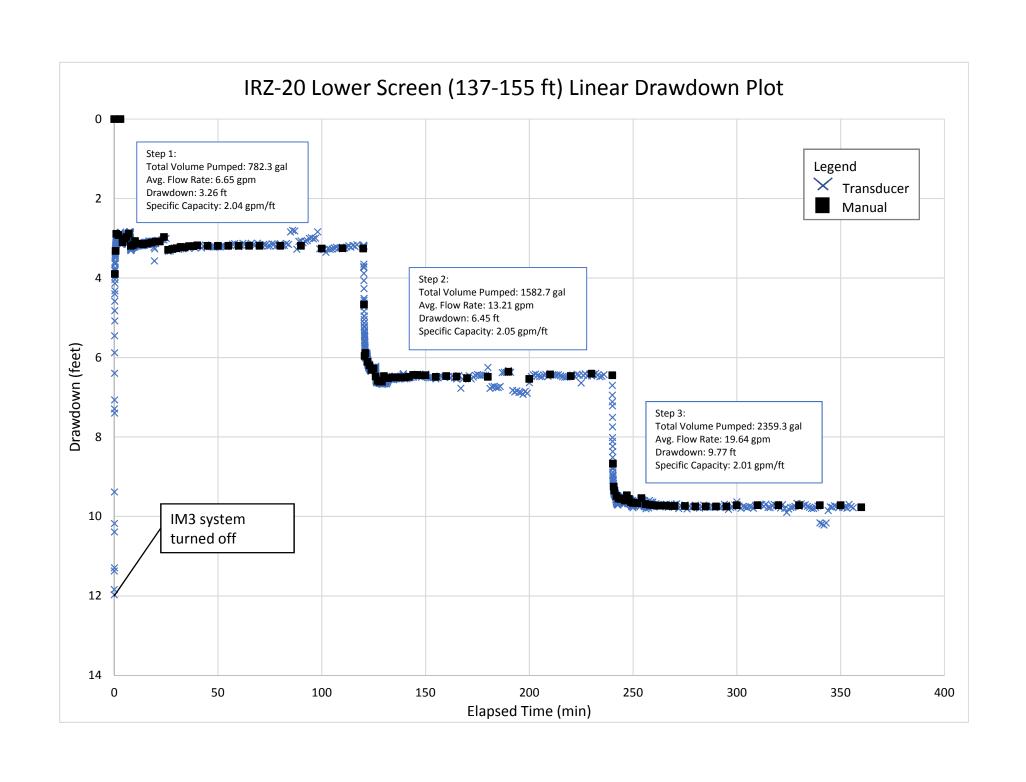
Total Volume Pumped (GAL): 25.37 Average Pumping Rate (GPM): Specific Capacity (GPM/FT): 25.37 1.97



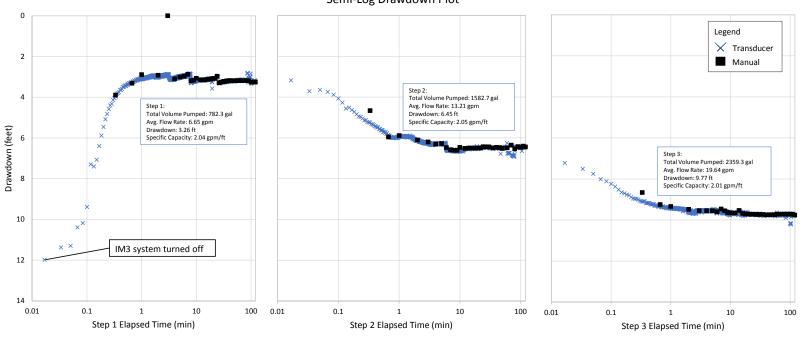
Location/Well ID-	IRZ-20	
Date -	6/30/2019	
Screened Interval -	137-155	
Initial Water Level Within		
71 (Specify Screen Interval) - Initial Water Level Within	42.64	
	44.00	
<u>137-155</u> (Specify Screen	44.06	
Initial Totalizer Reading -	0	
Final Totalizer Reading -	4104.04	
Approx. Pumped Volume (gal) -	4104.04	
Number of Specific Capacity Steps -	1	

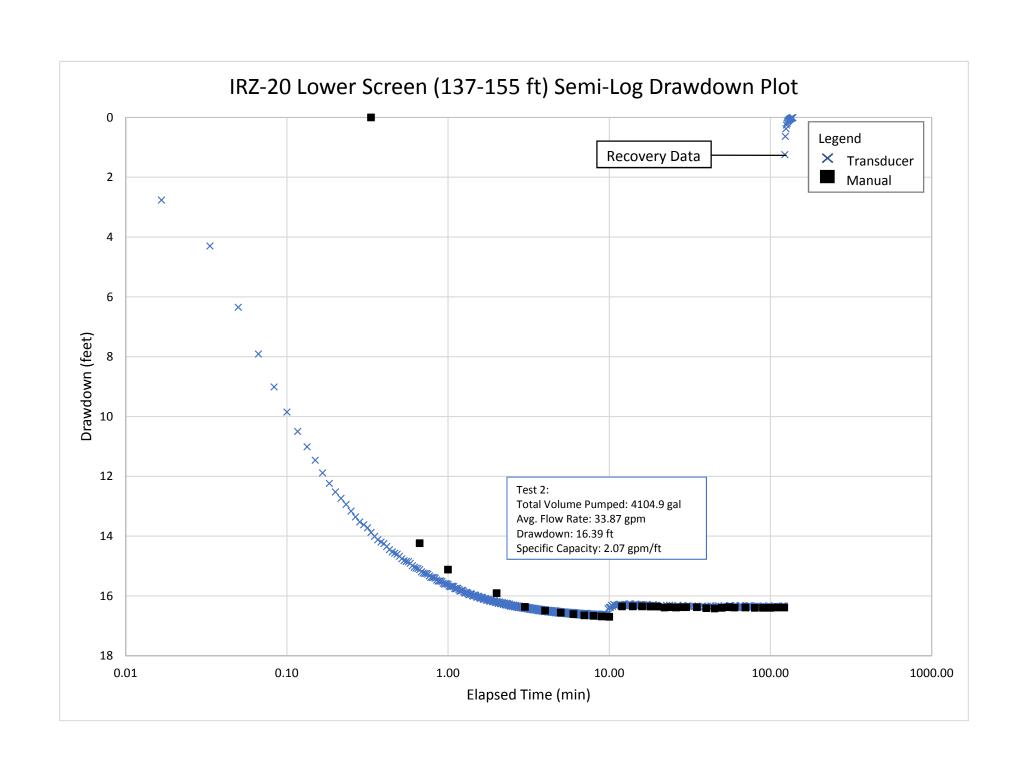
Number of Specific	Capacity Steps -	1						
Pumping Rates (List In Order) -			~33.5					
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft.)	Drawdown (Ft.)		

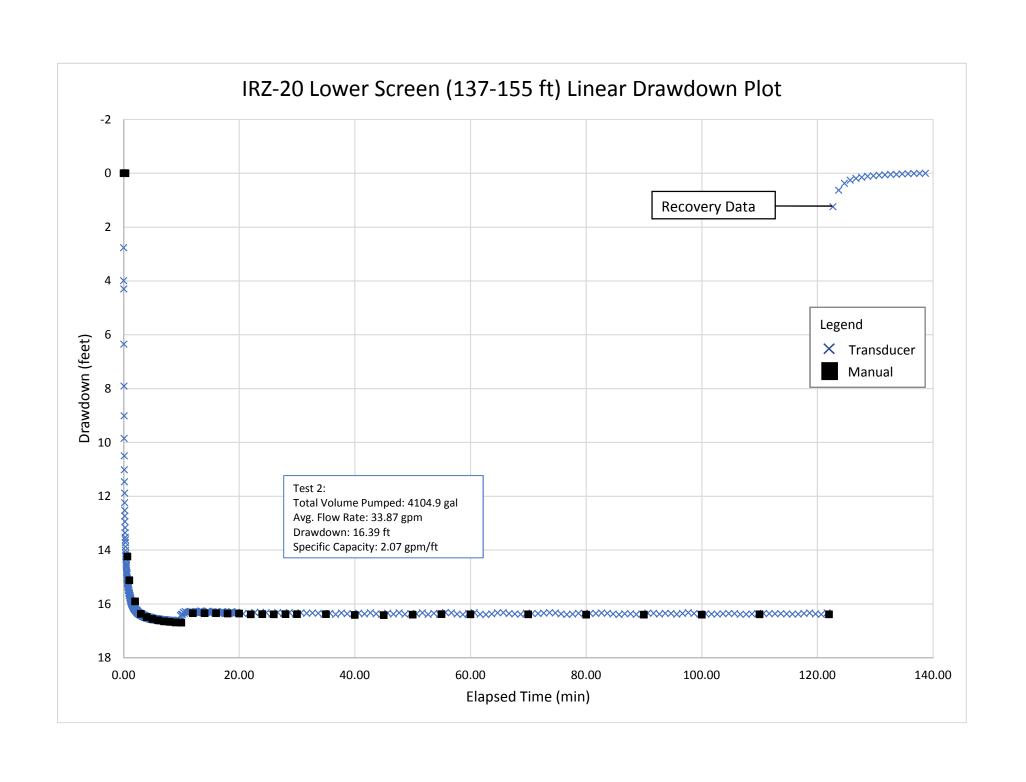
	Change in Time								
Time (HR:MN:SEC)	between	Elapsed	Pumping Rate	Total Volume	Depth to	Drawdown			
(	measurements	Time (Min)	(GPM)	pumped (Gallons)	Water (Ft.)	(Ft.)			
	(Min)	Cha	n 4 (Cantinual)						
14.40.00	0.0	0.0	p 4 (Continued)	0.00	44.06	0			
14:40:00 14:40:20		0.0	34.43	11.48					
14:40:40	0.3	0.3	34.43	22.95	58.3	14.24			
14:40:40	0.3	1.0	34.43	34.42	59.18	15.12			
		2.0							
14:42:00 14:43:00	1.0 1.0	3.0	34.4 34.38	68.82 103.20	59.97 60.43	15.91 16.37			
				137.58	60.55				
14:44:00	1.0	4.0	34.38			16.49			
14:45:00	1.0	5.0	34.36	171.94	60.62	16.56			
14:46:00	1.0	6.0	34.36	206.30	60.67	16.61			
14:47:00	1.0	7.0	34.36	240.66	60.71	16.65			
14:48:00		8.0	34.36	275.02	60.73	16.67			
14:49:00	1.0	9.0	34.36	309.38	60.75	16.69			
14:50:00	1.0	10.0	34.36	343.74	60.76	16.7			
14:52:00	2.0	12.0	33.62	410.98	60.41	16.35			
14:54:00	2.0	14.0	33.6	478.18	60.41	16.35			
14:56:00	2.0	16.0	33.6	545.38	60.41	16.35			
14:58:00	2.0	18.0	33.58	612.54	60.42	16.36			
15:00:00	2.0	20.0	33.58	679.70	60.42	16.36			
15:02:00	2.0	22.0	33.58	746.86	60.45	16.39			
15:04:00	2.0	24.0	33.6	814.06	60.44	16.38			
15:06:00	2.0	26.0	33.58	881.22	60.45	16.39			
15:08:00	2.0	28.0	33.58	948.38	60.44	16.38			
15:10:00	2.0	30.0	33.58	1015.54	60.44	16.38			
15:15:00	5.0	35.0	33.58	1183.44	60.44	16.38			
15:20:00	5.0	40.0	33.58	1351.34	60.47	16.41			
15:25:00	5.0	45.0	33.58	1519.24	60.48	16.42			
15:30:00	5.0	50.0	33.58	1687.14	60.46	16.4			
15:35:00	5.0	55.0	33.58	1855.04	60.44	16.38			
15:40:00	5.0	60.0	33.58	2022.94	60.45	16.39			
15:50:00	10.0	70.0	33.58	2358.74	60.45	16.39			
16:00:00	10.0	80.0	33.58	2694.54	60.46	16.4			
16:10:00	10.0	90.0	33.58	3030.34	60.46	16.4			
16:20:00	10.0	100.0	33.58	3366.14	60.46	16.4			
16:30:00	10.0	110.0	33.58	3701.94	60.45	16.39			
16:42:00	12.0	122.0	33.58	4104.90	60.45	16.39			
16:43:00		Stop pump - Test Complete							



IRZ-20 Lower Screen (137-155 ft) Semi-Log Drawdown Plot









	Specific Capacity Testing
Location/Well ID-	IRZ-20
Date -	7/11/2019-7/12/2019
Screened Interval	
Tested -	Upper Screen (49-71 ft)
Packer Set Depth -	76.7-80.7
Packer Seal Test -	Confirmed packer to be watertight before test
Tests Conducted -	4 step Specific Capacity Test (6.5, 13, 19.5, 33 GPM)
Purpose -	Well Performance Test
Summary -	Specific Capacity: 9.59-9.88 GPM/FT
Notes -	Step 1 had an inconsistent pumping rate at the
	beginning of the test
	Final step performed the next day



IRZ-20 Upper Screen Location/Well ID-7/11/2019 49-71 Date -Screened Interval Initial Water Level Within 49-71 (Specify Screen Interval) Initial Water Level Within 42.36 \_137-155\_\_\_\_ (Specify Screen 41.8 Initial Totalizer Reading -Final Totalizer Reading -4871.02 Approx. Pumped Volume (gal) -4871.02 Number of Specific Capacity Steps -

Pumping Rates (List In Order) - 6.5, 13, 19.5

	Change in Time					
	between	Elapsed Time	Pumping Rate	Total Volume	Depth to Water	Drawdown
Time (HR:MN:SEC)	measurements	(Min)	(GPM)	pumped	(Ft. )	(Ft.)
	(Min)	(,	(=:,	(Gallons)	()	(,
			Step 1			
10:50:00	0.0	0.0	0	0.00	42.36	0
10:50:20	0.3	0.3	4.5	1.50	42.93	0.57
10:50:40	0.3	0.7	5.5	3.33	42.7	0.34
10:51:00	0.3	1.0	6.6	5.53	42.81	0.45
10:52:00	1.0	2.0	5.88	11.41	42.83	0.47
10:53:00	1.0	3.0	6.84	18.25	42.89	0.53
10:54:00	1.0	4.0	6.58	24.83	42.91	0.55
10:55:00	1.0	5.0	6.46	31.29	42.91	0.55
10:56:00	1.0	6.0	6.42	37.71	42.91	0.55
10:57:00	1.0	7.0	6.32	44.03	42.91	0.55
10:58:00	1.0	8.0	6.3	50.33	42.91	0.55
10:59:00	1.0	9.0	6.24	56.57	42.91	0.55
11:00:00	1.0	10.0	6.24	62.81	42.91	0.55
11:02:00	2.0	12.0	6.26	75.33	42.91	0.55
11:04:00	2.0	14.0	6.12	87.57	42.91	0.55
11:06:00	2.0	16.0	6.07	99.71	42.91	0.55
11:08:00	2.0	18.0	7.43	114.57	43.01	0.65
11:10:00	2.0	20.0	7.28	129.13	43.01	0.65
11:12:00	2.0	22.0	7.25	143.63	43.01	0.65
11:14:00	2.0	24.0	7.04	157.71	43.01	0.65
11:16:00	2.0	26.0	7.04	171.79	43.01	0.65
11:18:00	2.0	28.0	7.04	185.87	43.01	0.65
11:20:00	2.0	30.0	6.78	199.43	43.01	0.65
11:25:00	5.0	35.0	6.75	233.18	43.01	0.65
11:30:00	5.0	40.0	6.69	266.63	43.01	0.65
11:35:00	5.0	45.0	6.6	299.63	43.01	0.65
11:40:00	5.0	50.0	6.78	333.53	43.01	0.65
11:45:00	5.0	55.0	6.67	366.88	43.01	0.65
11:50:00	5.0	60.0	6.5	399.38	43.01	0.65
12:00:00	10.0	70.0	6.42	463.58	43.01	0.65
12:10:00	10.0	80.0	6.42	527.78	43	0.64
12:20:00	10.0	90.0	6.37	591.48	43	0.64
12:30:00	10.0	100.0	6.92	660.68	43.01	0.65
12:40:00	10.0	110.0	6.87	729.38	43.04	0.68

| Total Volume Pumped (GAL): 729.38 | Average Pumping Rate (GPM): 6.52 | Specific Capacity (GPM/FT): 9.59 |

	Step 2								
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft. )	Drawdown (Ft.)	Elapsed Time from Step 2 Start (Min)		
12:50:00	10.0	120.0	12.03	849.68	43.09	0.73	0.0		
12:50:20	0.3	120.3	12.87	853.97	43.3	0.94	0.3		
12:50:40	0.3	120.7	12.98	858.30	43.36	1	0.7		
12:51:00	0.3	121.0	12.92	862.61	43.41	1.05	1.0		
12:52:00	1.0	122.0	12.9	875.51	43.42	1.06	2.0		
12:53:00	1.0	123.0	12.93	888.44	43.47	1.11	3.0		
12:54:00	1.0	124.0	12.93	901.37	43.49	1.13	4.0		
12:55:00	1.0	125.0	12.93	914.30	43.51	1.15	5.0		
12:56:00	1.0	126.0	12.92	927.22	43.53	1.17	6.0		
12:57:00	1.0	127.0	12.93	940.15	43.54	1.18	7.0		
12:58:00	1.0	128.0	12.92	953.07	43.54	1.18	8.0		
12:59:00	1.0	129.0	12.92	965.99	43.55	1.19	9.0		
13:00:00	1.0	130.0	12.9	978.89	43.55	1.19	10.0		
13:02:00	2.0	132.0	13.3	1005.49	43.58	1.22	12.0		
13:04:00	2.0	134.0	13.34	1032.17	43.6	1.24	14.0		
13:06:00	2.0	136.0	13.34	1058.85	43.61	1.25	16.0		
13:08:00	2.0	138.0	13.32	1085.49	43.61	1.25	18.0		
13:10:00	2.0	140.0	13.31	1112.11	43.61	1.25	20.0		
13:12:00	2.0	142.0	13.32	1138.75	43.61	1.25	22.0		
13:14:00	2.0	144.0	13.32	1165.39	43.61	1.25	24.0		
13:16:00	2.0	146.0	13.34	1192.07	43.61	1.25	26.0		
13:18:00	2.0	148.0	13.32	1218.71	43.61	1.25	28.0		
13:20:00	2.0	150.0	13.31	1245.33	43.61	1.25	30.0		
13:25:00	5.0	155.0	13.34	1312.03	43.62	1.26	35.0		
13:30:00	5.0	160.0	13.32	1378.63	43.62	1.26	40.0		
13:35:00	5.0	165.0	13.32	1445.23	43.64	1.28	45.0		
13:40:00	5.0	170.0	13.34	1511.93	43.65	1.29	50.0		
13:45:00	5.0	175.0	13.32	1578.53	43.65	1.29	55.0		
13:50:00	5.0	180.0	13.32	1645.13	43.65	1.29	60.0		
14:00:00	10.0	190.0	13.32	1778.33	43.66	1.3	70.0		
14:10:00	10.0	200.0	13.32	1911.53	43.66	1.3	80.0		
14:20:00	10.0	210.0	13.34	2044.93	43.67	1.31	90.0		
14:30:00	10.0	220.0	13.32	2178.13	43.67	1.31	100.0		
14:40:00	10.0	230.0	13.32	2311.33	43.69	1.33	110.0		

			Step 3				
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft. )	Drawdown (Ft.)	Elapsed Time from Step 3 Start (Min)
14:50:00	10.0	240.0	20.24	2513.73	43.69	1.33	0.0
14:50:20	0.3	240.3	20.24	2520.47	43.96	1.6	0.3
14:50:40	0.3	240.7	20.18	2527.20	44.06	1.7	0.7
14:51:00	0.3	241.0	20.18	2533.93	44.11	1.75	1.0
14:52:00	1.0	242.0	20.17	2554.10	44.15	1.79	2.0
14:53:00	1.0	243.0	19.72	2573.82	44.2	1.84	3.0
14:54:00	1.0	244.0	19.7	2593.52	44.2	1.84	4.0
14:55:00	1.0	245.0	19.69	2613.21	44.21	1.85	5.0
14:56:00	1.0	246.0	19.69	2632.90	44.21	1.85	6.0
14:57:00	1.0	247.0	19.67	2652.57	44.22	1.86	7.0
14:58:00	1.0	248.0	19.69	2672.26	44.23	1.87	8.0
14:59:00	1.0	249.0	19.7	2691.96	44.24	1.88	9.0
15:00:00	1.0	250.0	19.7	2711.66	44.25	1.89	10.0
15:02:00	2.0	252.0	19.69	2751.04	44.26	1.9	12.0
15:04:00	2.0	254.0	19.7	2790.44	44.27	1.91	14.0
15:06:00	2.0	256.0	19.7	2829.84	44.27	1.91	16.0
15:08:00	2.0	258.0	19.7	2869.24	44.28	1.92	18.0
15:10:00	2.0	260.0	19.7	2908.64	44.29	1.93	20.0
15:12:00	2.0	262.0	19.67	2947.98	44.29	1.93	22.0
15:14:00	2.0	264.0	19.69	2987.36	44.29	1.93	24.0
15:16:00	2.0	266.0	19.69	3026.74	44.3	1.94	26.0
15:18:00	2.0	268.0	19.6	3065.94	44.3	1.94	28.0
15:20:00	2.0	270.0	19.66	3105.26	44.3	1.94	30.0
15:25:00	5.0	275.0	19.69	3203.71	44.31	1.95	35.0
15:30:00	5.0	280.0	19.66	3302.01	44.31	1.95	40.0
15:35:00	5.0	285.0	19.69	3400.46	44.31	1.95	45.0
15:40:00	5.0	290.0	19.64	3498.66	44.31	1.95	50.0
15:45:00	5.0	295.0	19.67	3597.01	44.32	1.96	55.0
15:50:00	5.0	300.0	19.67	3695.36	44.33	1.97	60.0
16:00:00	10.0	310.0	19.66	3891.96	44.35	1.99	70.0
16:10:00	10.0	320.0	19.66	4088.56	44.36	2	80.0
16:20:00	10.0	330.0	19.67	4285.26	44.36	2	90.0
16:30:00	10.0	340.0	19.69	4482.16	44.36	2	100.0
16:40:00	10.0	350.0	19.54	4677.56	44.4	2.04	110.0
16:50:00	10.0	360.0	19.64	4873.96	44.4	2.04	120.0
0.00	20.0	22010		.2.3130		=.0 :	

| Total Volume Pumped (GAL): 2562.63 | Average Pumping Rate (GPM): 19.75 | Specific Capacity (GPM/FT): 9.68

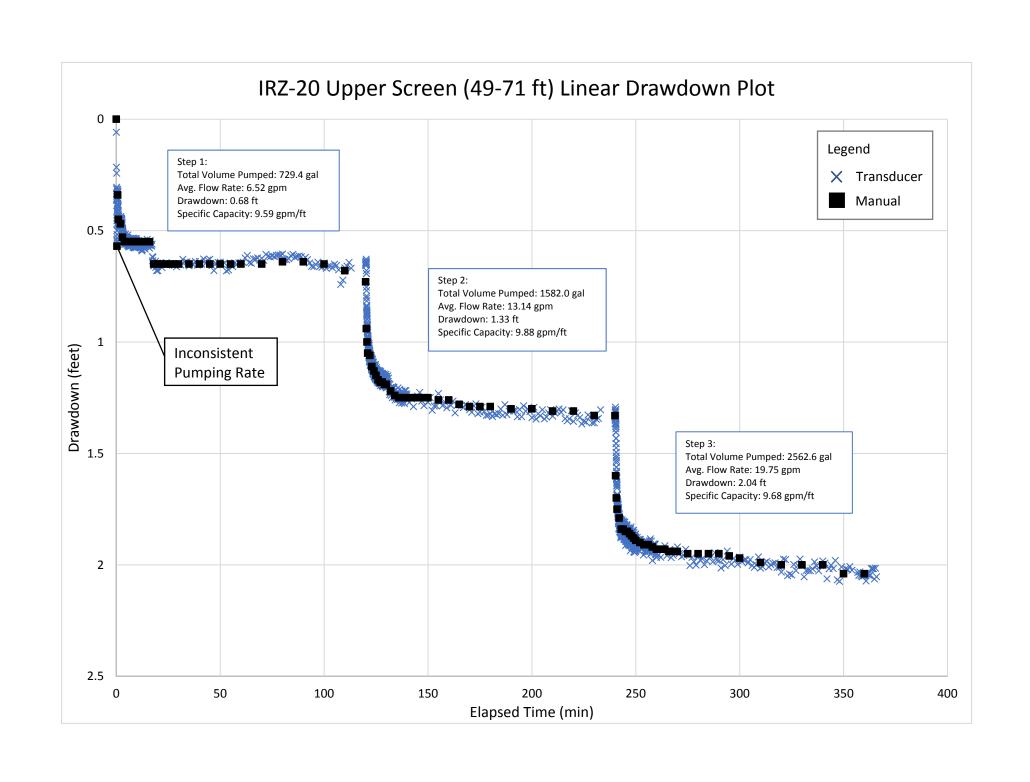


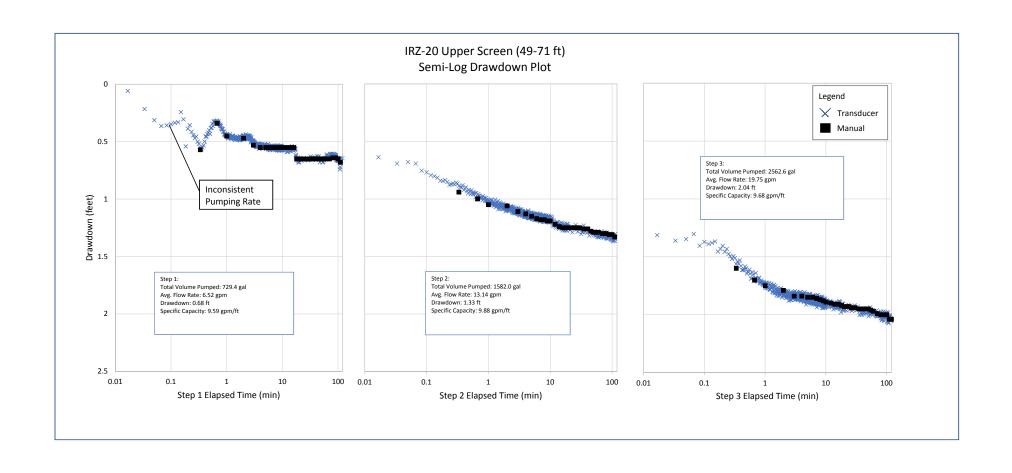
Location/Well ID-	IRZ-20 Upper Screen
Date -	7/12/2019
Screened Interval - Initial Water Level Within	49-71
<u>49-71</u> (Specify Screen Interval) Initial Water Level Within	42.12
<u>137-155</u> (Specify Screen	41.55
Initial Totalizer Reading -	0
Final Totalizer Reading -	4198.63 gallons
Approx. Pumped Volume (gal) -	4198.63 gallons
Number of Specific Capacity Steps -	1
December Dates (List In Onder)	FII D (#22 CD84)

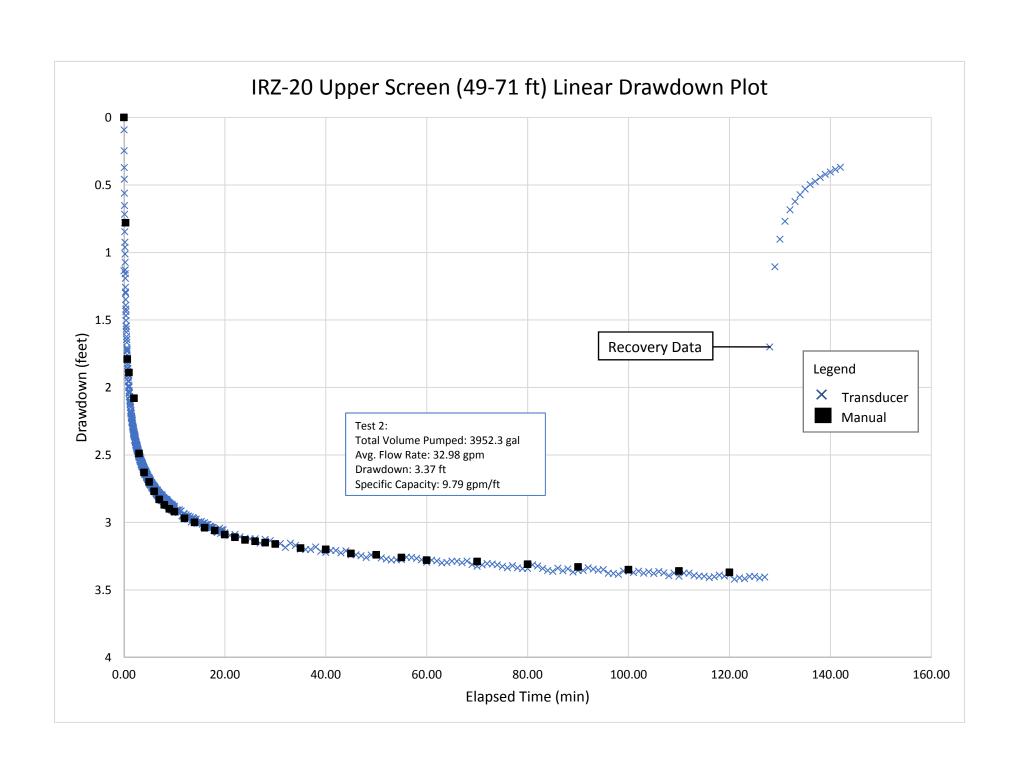
Pumping Rates (List In Order) -Full Pump (~33 GPM)

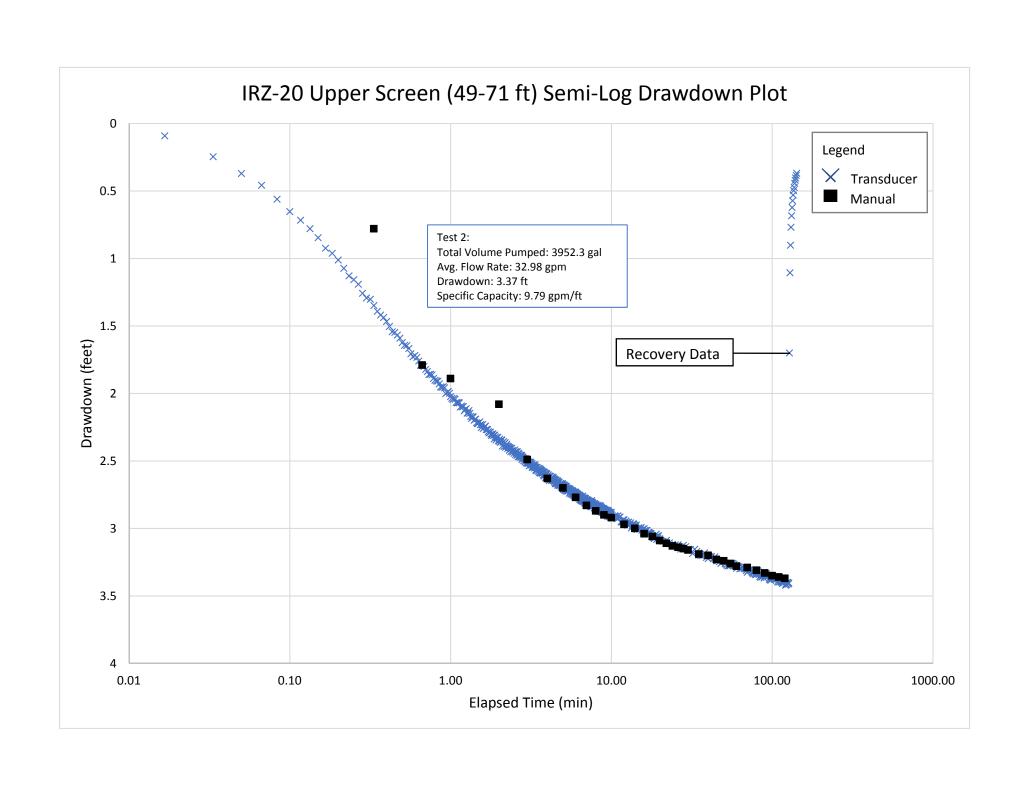
	Chango in Timo					
	Change in Time between	Elapsed Time	Pumping Rate	Total Volume	Depth to	Drawdown
Time (HR:MN:SEC)	measurements	(Min)	(GPM)	pumped	Water (Ft. )	(Ft.)
	(Min)	()	(0)	(Gallons)	water (i.e.)	(. c.,
	,,		Step 4			
8:25:00	0.0	0.0	0	0.00	42.15	0
8:25:20	0.3	0.3	33.15	11.05	42.9	0.78
8:25:40	0.3	0.7	33.2	22.12	43.91	1.79
8:26:00	0.3	1.0	33.25	33.20	44.01	1.89
8:27:00	1.0	2.0	33.25	66.45	44.2	2.08
8:28:00	1.0	3.0	33	99.45	44.61	2.49
8:29:00	1.0	4.0	33.08	132.53	44.75	2.63
8:30:00	1.0	5.0	33.02	165.55	44.82	2.7
8:31:00	1.0	6.0	33	198.55	44.89	2.77
8:32:00	1.0	7.0	32.9	231.45	44.95	2.83
8:33:00	1.0	8.0	32.94	264.39	44.99	2.87
8:34:00	1.0	9.0	32.95	297.34	45.02	2.9
8:35:00	1.0	10.0	32.95	330.29	45.04	2.92
8:37:00	2.0	12.0	32.94	396.17	45.09	2.97
8:39:00	2.0	14.0	32.88	461.93	45.12	3
8:41:00	2.0	16.0	32.95	527.83	45.16	3.04
8:43:00	2.0	18.0	32.92	593.67	45.18	3.06
8:45:00	2.0	20.0	32.94	659.55	45.21	3.09
8:47:00	2.0	22.0	33.02	725.59	45.23	3.11
8:49:00	2.0	24.0	32.97	791.53	45.25	3.13
8:51:00	2.0	26.0	32.95	857.43	45.26	3.14
8:53:00	2.0	28.0	32.95	923.33	45.27	3.15
8:55:00	2.0	30.0	32.92	989.17	45.28	3.16
9:00:00	5.0	35.0	32.94	1153.87	45.31	3.19
9:05:00	5.0	40.0	32.94	1318.57	45.32	3.2
9:10:00	5.0	45.0	32.88	1482.97	45.35	3.23
9:15:00	5.0	50.0	32.88	1647.37	45.36	3.24
9:20:00	5.0	55.0	32.97	1812.22	45.38	3.26
9:25:00	5.0	60.0	32.94	1976.92	45.4	3.28
9:35:00	10.0	70.0	32.98	2306.72	45.41	3.29
9:45:00	10.0	80.0	32.92	2635.92	45.43	3.31
9:55:00	10.0	90.0	32.87	2964.62	45.45	3.33
10:05:00	10.0	100.0	32.92	3293.82	45.47	3.35
10:15:00	10.0	110.0	32.9	3622.82	45.48	3.36
10:25:00	10.0	120.0	32.95	3952.32	45.49	3.37

Total Volume Pumped (GAL): Average Pumping Rate (GPM): Specific Capacity (GPM/FT): 3952.32 32.98 9.79











	Specific capacity resting
Location/Well ID-	IRZ-21
Date -	8/24/2019
Screened Interval	
Tested -	Lower Screen (141-158 ft)
Packer Set Depth -	~80 ft BGS (not documented)
Packer Seal Test -	Confirmed packer to be watertight before test
Tests Conducted -	4 step Specific Capacity Test (6.5, 15, 22.5, 30 GPM)
Purpose -	Well Performance Test
Summary -	Specific Capacity: 0.56-0.61 GPM/FT
,	Specific Suppose, 10:00 Size 2:111,11
Notes -	
	Inconsistent pumping rate at beginning of Step 1
	Temporary pump shutdown during Step 3
	remporary pump shataown daring step s



Location/Well ID-	IRZ-21 Upper		
Date -	8/26/2019		
Screened Interval -	val - 48' - 66'		
Initial Water Level Within 48' - 66' bgs -	44.43		
Initial Water Level Within 141-158 bgs -	47.82		
Initial Totalizer Reading -	0		
Final Totalizer Reading -	9538.24		
Approx. Pumped Volume (gal) -	9538.24		
Number of Specific Capacity Steps -	4		
Pumping Rates (List In Order) -	7.5,15, 22.5, Open Pump		

Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft. )	Drawdown (Ft.)
		;	Step 1			
14:00:00	0.0	0.0	24.98	0.00	44.43	
14:00:20	0.3	0.3	17.35	5.78	45.33	0.9
14:00:40	0.3	0.7	8.03	8.46	45.17	0.7
14:01:00	0.3	1.0	7.53	10.97	45.45	1.0
14:02:00	1.0	2.0	7.55	18.52	45.22	0.7
14:03:00	1.0	3.0	7.53	26.05	45.27	0.8
14:04:00	1.0	4.0	7.52	33.57	45.30	0.8
14:05:00	1.0	5.0	7.52	41.09	45.34	0.9
14:06:00	1.0	6.0	7.48	48.57	45.35	0.9
14:07:00	1.0	7.0	7.44	56.01	45.38	0.9
14:08:00	1.0	8.0	7.44	63.45	45.38	0.9
14:09:00	1.0	9.0	7.44	70.89	45.39	0.9
14:10:00	1.0	10.0	7.43	78.32	45.39	0.9
14:12:00	2.0	12.0	7.42	93.16	45.42	0.9
14:14:00	2.0	14.0	7.42	108.00	45.43	1.0
14:16:00	2.0	16.0	7.42	122.84	45.44	1.0
14:18:00	2.0	18.0	7.40	137.64	45.44	1.0
14:20:00	2.0	20.0	7.38	152.40	45.45	1.0
14:22:00	2.0	22.0	7.30	167.00	45.45	1.0
14:24:00	2.0	24.0	7.68	182.36	45.49	1.0
14:26:00	2.0	26.0	7.66	197.68	45.50	1.
14:28:00	2.0	28.0	7.68	213.04	45.50	1.
14:30:00	2.0	30.0	7.68	228.40	45.51	1.
14:35:00	5.0	35.0	7.73	267.05	45.53	1.
14:40:00	5.0	40.0	7.73	305.70	45.55	1.:
14:45:00	5.0	45.0	7.73	344.35	45.56	1.
14:50:00	5.0	50.0	7.72	382.95	45.57	1.:
14:55:00	5.0	55.0	7.73	421.60	45.57	1.:
15:00:00	5.0	60.0	7.73	460.25	45.58	1.:
15:10:00	10.0	70.0	7.73	537.55	45.59	1.:
15:20:00	10.0	80.0	7.72	614.75	45.60	1.
15:30:00	10.0	90.0	7.70	691.75	45.61	1.:
15:40:00	10.0	100.0	7.72	768.95	45.61	1.
15:50:00	10.0	110.0	7.73	846.25	45.62	1.
16:00:00	10.0	120.0	7.72	923.45	45.63	1.2
otal Volume Pumped	for Step 1 (GAL):		923.45			
verage Pumping Rate	(GPM):		7.88			
manific Compaint (CDM/FT).			C 57			

6.57

Specific Capacity (GPM/FT):



Location/Well ID-	IRZ-21 Upper			
Date -	8/27/2019			
Screened Interval -	48' - 66'			
Initial Water Level Within 48' - 66' bgs -	44.43			
Initial Water Level Within 141-158 bgs -	47.82			
Initial Totalizer Reading -	0			
Final Totalizer Reading -	9538.24			
Approx. Pumped Volume (gal) -	9538.24			
Number of Specific Capacity Steps -	4			
Pumping Rates (List In Order) -	7.5,15, 22.5, Open Pump			

	Change in Time between	Elapsed Time	Pumping Rate	Total Volume	Depth to	Drawdown
Time (HR:MN:SEC)	measurements	(Min)	(GPM)	pumped (Gallons)	Water (Ft. )	(Ft.)
	(Min)			(Gallotis)		
		T	ep 2			
8:00:00	0.0	0.0		0.00	44.39	0
8:00:20	0.3	0.3	14.30	4.77	45.47	1.04
8:00:40	0.3	0.7	14.80	9.70	45.62	1.19
8:01:00	0.3	1.0	14.89	14.66	45.77	1.34
8:02:00	1.0	2.0	15.14	29.80	45.97	1.54
8:03:00	1.0	3.0	15.12	44.92	46.07	1.64
8:04:00	1.0	4.0	15.14	60.06	46.20	1.77
8:05:00	1.0	5.0	15.14	75.20	46.26	1.83
8:06:00	1.0	6.0	15.14	90.34	46.31	1.88
8:07:00	1.0	7.0 8.0	15.14	105.48	46.35	1.92
8:08:00	1.0		15.16	120.64	46.38	1.95
8:09:00	1.0 1.0	9.0 10.0	15.14	135.78	46.42	1.99
8:10:00	2.0	10.0	15.12 15.12	150.90	46.44	2.01
8:12:00	2.0			181.14	46.46	2.03
8:14:00	2.0	14.0 16.0	15.11 15.11	211.36 241.58	46.50 46.52	2.07
8:16:00 8:18:00	2.0	18.0	15.11	271.80	46.55	2.03
8:20:00	2.0	20.0	15.11	301.98	46.55	2.12
8:22:00	2.0	22.0	15.09	332.16	46.56	2.12
8:24:00	2.0	24.0	15.09	362.34	46.58	2.15
8:26:00	2.0	26.0	15.09	392.52	46.59	2.16
8:28:00	2.0	28.0	15.09	422.70	46.60	2.17
8:30:00	2.0	30.0	15.08	452.86	46.61	2.18
8:35:00	5.0	35.0	15.08	528.26	46.63	2.20
8:40:00	5.0	40.0	15.09	603.71	46.65	2.22
8:45:00	5.0	45.0	15.08	679.11	46.67	2.24
8:50:00	5.0	50.0	15.08	754.51	46.68	2.25
8:55:00	5.0	55.0	15.04	829.71	46.70	2.27
9:00:00	5.0	60.0	15.02	904.81	46.71	2.28
9:10:00	10.0	70.0	15.06	1055.41	46.72	2.29
9:20:00	10.0	80.0	15.08	1206.21	46.75	2.32
9:30:00	10.0	90.0	15.04	1356.61	46.76	2.33
9:40:00	10.0	100.0	15.04	1507.01	46.76	2.33
9:50:00	10.0	110.0	15.08	1657.81	46.77	2.34
10:00:00	10.0	120.0	15.08	1808.61	46.80	2.37
otal Volume Pumped f	or Step 1 (GAL):	•	1808.61			
Average Pumping Rate			15.06			
Enocific Conscitu (CDM)	6.25					

6.35

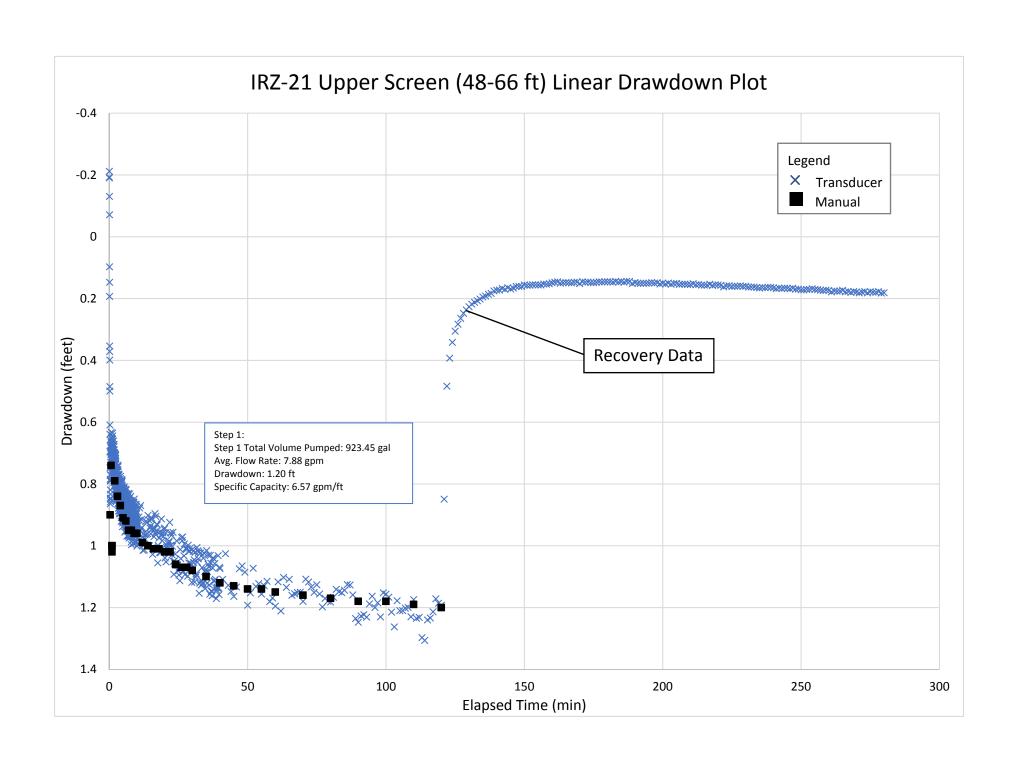
Specific Capacity (GPM/FT):

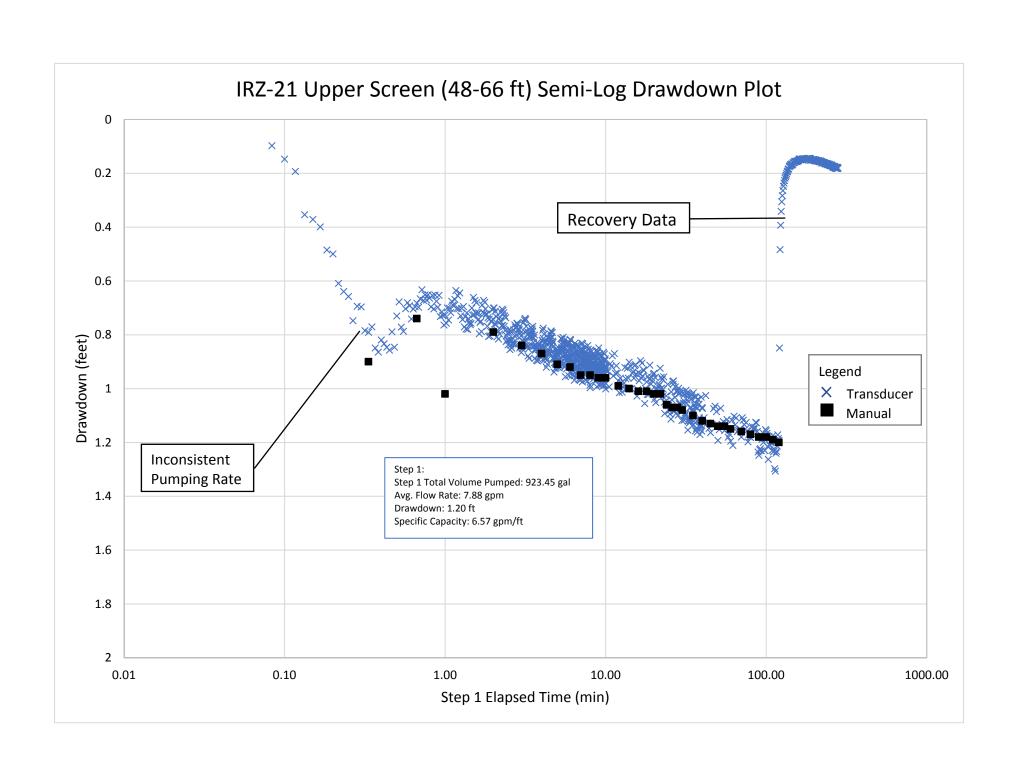
Step 3										
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft. )	Drawdown (Ft.)	Elapsed Time from Step 2 Start (Min)			
10:00:20	0.3	120.3	22.20	1816.01	47.19	2.76	0.3			
10:00:40	0.3	120.7	22.25	1823.43	47.33	2.90	0.7			
10:01:00	0.3	121.0	22.52	1830.94	47.45	3.02	1.0			
10:02:00	1.0	122.0	22.74	1853.68	47.56	3.13	2.0			
10:03:00	1.0	123.0	22.78	1876.46	47.76	3.33	3.0			
10:04:00	1.0	124.0	22.72	1899.18	47.83	3.40	4.0			
10:05:00	1.0	125.0	22.74	1921.92	47.87	3.44	5.0			
10:06:00	1.0	126.0	22.71	1944.63	47.91	3.48	6.0			
10:07:00	1.0	127.0	22.72	1967.35	47.93	3.50	7.0			
10:08:00	1.0	128.0	22.74	1990.09	47.95	3.52	8.0			
10:09:00	1.0	129.0	22.71	2012.80	47.96	3.53	9.0			
10:10:00	1.0	130.0	22.74	2035.54	47.97	3.54	10.0			
10:12:00	2.0	132.0	22.74	2081.02	48.01	3.58	12.0			
10:14:00	2.0	134.0	22.76	2126.54	48.03	3.60	14.0			
10:16:00	2.0	136.0	22.74	2172.02	48.04	3.61	16.0			
10:18:00	2.0	138.0	22.72	2217.46	48.05	3.62	18.0			
10:20:00	2.0	140.0	22.74	2262.94	48.07	3.64	20.0			
10:22:00	2.0	142.0	22.71	2308.36	48.07	3.64	22.0			
10:24:00	2.0	144.0	22.72	2353.80	48.08	3.65	24.0			
10:26:00	2.0	146.0	22.72	2399.24	48.10	3.67	26.0			
10:28:00	2.0	148.0	22.76	2444.76	48.12	3.69	28.0			
10:30:00	2.0	150.0	22.76	2490.28	48.12	3.69	30.0			
10:35:00	5.0	155.0	22.76	2604.08	48.13	3.70	35.0			
10:40:00	5.0	160.0	22.74	2717.78	48.14	3.71	40.0			
10:45:00	5.0	165.0	22.74	2831.48	48.16	3.73	45.0			
10:50:00	5.0	170.0	22.78	2945.38	48.19	3.76	50.0			
10:55:00	5.0	175.0	22.79	3059.33	48.20	3.77	55.0			
11:00:00	5.0	180.0	22.79	3173.28	48.20	3.77	60.0			
11:10:00	10.0	190.0	22.82	3401.48	48.22	3.79	70.0			
11:20:00	10.0	200.0	22.86	3630.08	48.25	3.82	80.0			
11:30:00	10.0	210.0	22.84	3858.48	48.26	3.83	90.0			
11:40:00	10.0	220.0	22.82	4086.68	48.28	3.85	100.0			
11:50:00	10.0	230.0	22.86	4315.28	48.30	3.87	110.0			
12:00:00	10.0	240.0	22.89	4544.18	48.30	3.87	120.0			
	on Cham 2 (CAI).		2725 56							

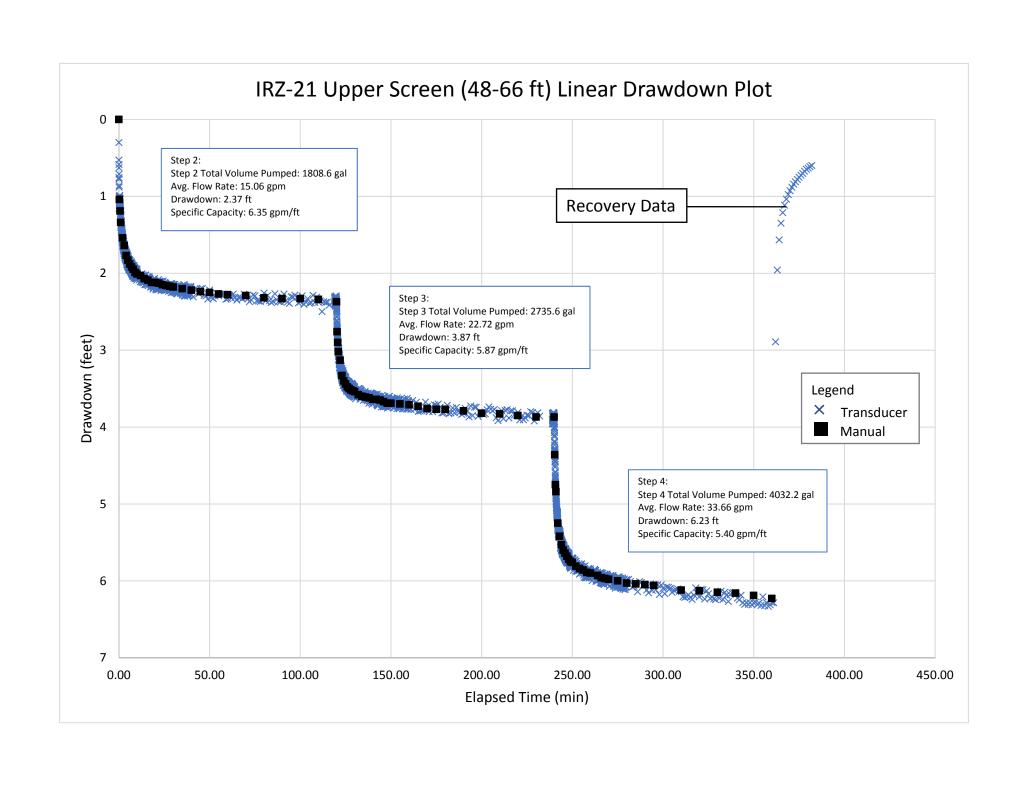
Total Volume Pumped for Step 2 (GAL):2735.56Average Pumping Rate (GPM):22.72Specific Capacity (GPM/FT):5.87

	Step 4								
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft. )	Drawdown (Ft.)	Elapsed Time from Step 3 Start (Min)		
12:00:20	0.3	240.3	33.70	4555.41	48.79	4.36	0.3		
12:00:40	0.3	240.7	33.68	4566.64	49.18	4.75	0.7		
12:01:00	0.3	241.0	33.68	4577.86	49.27	4.84	1.0		
12:02:00	1.0	242.0	33.66	4611.52	49.68	5.25	2.0		
12:03:00	1.0	243.0	33.68	4645.20	49.85	5.42	3.0		
12:04:00	1.0	244.0	33.66	4678.86	49.96	5.53	4.0		
12:05:00	1.0	245.0	33.65	4712.51	50.03	5.60	5.0		
12:06:00	1.0	246.0	33.68	4746.19	50.07	5.64	6.0		
12:07:00	1.0	247.0	33.72	4779.91	50.11	5.68	7.0		
12:08:00	1.0	248.0	33.70	4813.61	50.15	5.72	8.0		
12:09:00	1.0	249.0	33.70	4847.31	50.18	5.75	9.0		
12:10:00	1.0	250.0	33.68	4880.99	50.19	5.76	10.0		
12:12:00	2.0	252.0	33.72	4948.43	50.24	5.81	12.0		
12:14:00	2.0	254.0	33.70	5015.83	50.27	5.84	14.0		
12:16:00	2.0	256.0	33.72	5083.27	50.29	5.86	16.0		
12:18:00	2.0	258.0	33.75	5150.77	50.32	5.89	18.0		
12:20:00	2.0	260.0	33.66	5218.09	50.33	5.90	20.0		
12:24:00	4.0	264.0	33.75	5353.09	50.36	5.93	24.0		
12:26:00	2.0	266.0	33.73	5420.55	50.39	5.96	26.0		
12:28:00	2.0	268.0	33.73	5488.01	50.40	5.97	28.0		
12:30:00	2.0	270.0	33.73	5555.47	50.41	5.98	30.0		
12:35:00	5.0	275.0	33.73	5724.12	50.43	6.00	35.0		
12:40:00	5.0	280.0	33.73	5892.77	50.46	6.03	40.0		
12:45:00	5.0	285.0	33.72	6061.37	50.47	6.04	45.0		
12:50:00	5.0	290.0	33.70	6229.87	50.48	6.05	50.0		
12:55:00	5.0	295.0	33.66	6398.17	50.49	6.06	55.0		
13:10:00	15.0	310.0	33.72	6903.97	50.55	6.12	70.0		
13:20:00	10.0	320.0	33.56	7239.57	50.56	6.13	80.0		
13:30:00	10.0	330.0	33.56	7575.17	50.58	6.15	90.0		
13:40:00	10.0	340.0	33.54	7910.57	50.59	6.16	100.0		
13:50:00	10.0	350.0	33.00	8240.57	50.62	6.19	110.0		
14:00:00	10.0	360.0	33.58	8576.37	50.66	6.23	120.0		
Total Volume Pumped f	or Step 3 (GAL):		4032.2						

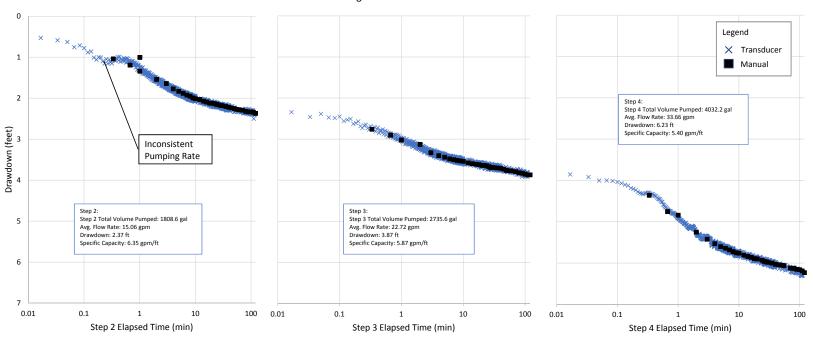
Total Volume Pumped for Step 3 (GAL):4032.2Average Pumping Rate (GPM):33.66Specific Capacity (GPM/FT):5.40







IRZ-21 Upper Screen (48-66 ft) Semi-Log Drawdown Plot





Location/Well ID-	IRZ-21
Date -	8/24/2019
Screened Interval	

Tested -Lower Screen (141-158 ft)

Packer Set Depth -~80 ft BGS (not documented)

Packer Seal Test -Confirmed packer to be watertight before test

Tests Conducted -

4 step Specific Capacity Test (6.5, 15, 22.5, 30 GPM)

Purpose -**Well Performance Test** 

Summary -Specific Capacity: 0.56-0.61 GPM/FT

Notes -

Inconsistent pumping rate at beginning of Step 1 Temporary pump shutdown during Step 3 due to

generator issues



Location/Well ID-	IRZ-21 Lower			
Date -	8/24/2019			
Screened Interval -	141' - 158' bgs			
Initial Water Level Within 141' - 158' -	47.52			
Initial Water Level Within 48' - 66' -	44.34			
Initial Totalizer Reading -	0			
Final Totalizer Reading -	9216.78			
Approx. Pumped Volume -	9216.78			
Number of Specific Capacity Steps -	4			
Pumping Rates (List In Order) -	7.5, 15, 22.5, open pump (~31)			

	Change in Time			T-4-13/-1		
Time (HD:MNI:CEC)	between	Elapsed	Pumping Rate	Total Volume	Depth to Water	Drawdown
Time (HR:MN:SEC)	measurements	Time (Min)	(GPM)	pumped	(Ft.)	(Ft.)
	(Min)			(Gallons)		
			Step 1		1	
9:27:00	0.0	0.0	0	0.00	47.56	0
9:30:00	3.0	0.0	0	0.00	47.53	0.01
9:30:20	0.3	0.3	3.44	1.15	54.81	7.29
9:30:40	0.3	0.7	6.94	3.46	54.33	6.81
9:31:00	0.3	1.0	7.16	5.85	57.5	9.98
9:32:00	1.0	2.0	7.56	13.41	59.09	11.57
9:33:00	1.0	3.0	7.52	20.93	59.24	11.72
9:34:00	1.0	4.0	7.5	28.43	59.33	11.81
9:35:00	1.0	5.0	7.48	35.91	59.42	11.9
9:36:00	1.0	6.0	7.48	43.39	59.38	11.86
9:37:00	1.0	7.0	7.8	51.19	59.72	12.2
9:38:00	1.0	8.0	7.8	58.99	59.8	12.28
9:39:00	1.0	9.0	7.76	66.75	59.86	12.34
9:40:00	1.0	10.0	7.76	74.51	59.9	12.38
9:42:00	2.0	12.0	7.74	89.99	59.82	12.3
9:44:00	2.0	14.0	7.74	105.47	59.84	12.32
9:46:00	2.0	16.0	7.74	120.95	59.82	12.3
9:48:00	2.0	18.0	7.74	136.43	59.83	12.31
9:50:00	2.0	20.0	7.73	151.89	59.82	12.3
9:52:00	2.0	22.0	7.72	167.33	59.82	12.3
9:54:00	2.0	24.0	7.68	182.69	59.82	12.3
9:56:00	2.0	26.0	7.68	198.05	59.81	12.29
9:58:00	2.0	28.0	7.7	213.45	59.81	12.29
10:00:00	2.0	30.0	7.68	228.81	59.81	12.29
10:05:00	5.0	35.0	7.68	267.21	59.83	12.31
10:10:00	5.0	40.0	7.68	305.61	59.82	12.3
10:15:00	5.0	45.0	7.63	343.76	59.8	12.28
10:20:00	5.0	50.0	7.63	381.91	59.78	12.26
10:25:00	5.0	55.0	7.62	420.01	59.84	12.32
10:30:00	5.0	60.0	7.62	458.11	59.82	12.3
10:40:00	10.0	70.0	7.62	534.31	59.8	12.28
10:50:00	10.0	80.0	7.62	610.51	59.83	12.31
11:00:00	10.0	90.0	7.62	686.71	59.85	12.33
11:10:00	10.0	100.0	7.62	762.91	59.84	12.32
11:20:00	10.0	110.0	7.6	838.91	59.85	12.33
11:30:00	10.0	120.0	7.62	915.11	59.86	12.34
Total Volume Pumped		120.0	915.11	313.11	33.00	12.54

Total Volume Pumped for Step 1 (GAL): 915.11
Average Pumping Rate (GPM): 7.50
Specific Capacity (GPM/FT): 0.61



Location/Well ID-	IRZ-21 Lower				
Date -	8/24/2019				
Screened Interval -	141' - 158' bgs				
Initial Water Level Within 141' - 158' -	47.52				
Initial Water Level Within 48' - 66' -	44.34				
Initial Totalizer Reading -	0				
Final Totalizer Reading -	9216.78				
Approx. Pumped Volume -	9216.78				
Number of Specific Capacity Steps -	4				
Pumping Rates (List In Order) -	7.5, 15, 22.5, open pump (~31)				

	Change in Time	Elapsed		T-+-11/-1			Flores d Theore
Time (HR:MN:SEC)	between	Time from	Pumping Rate	Total Volume pumped	Depth to Water	Drawdown	Elapsed Time from Step 2
Titile (HK.IVIN.SEC)	measurements	Test Start	(GPM)	(Gallons)	(Ft.)	(Ft.)	Start (Min)
	(Min)	(Min)		(Gallotts)			Start (Willi)
			Step 2		ı		
11:30:20	0.3	120.3	16.08	920.47	70.47	22.95	0.3
11:30:40	0.3	120.7	15.44	925.61	73.18	25.66	0.7
11:31:00	0.3	121.0	15.18	930.67	73.28	25.76	1.0
11:32:00	1.0	122.0	15.29	945.96	73.77	26.25	2.0
11:33:00	1.0	123.0	15.24	961.20	73.95	26.43	3.0
11:34:00	1.0	124.0	15.28	976.48	73.97	26.45	4.0
11:35:00	1.0	125.0	15.28	991.76	73.99	26.47	5.0
11:36:00	1.0	126.0	15.29	1007.05	74.03	26.51	6.0
11:37:00	1.0	127.0	15.26	1022.31	74.08	26.56	7.0
11:38:00	1.0	128.0	15.26	1037.57	74.07	26.55	8.0
11:39:00	1.0	129.0	15.24	1052.81	74.08	26.56	9.0
11:40:00	1.0	130.0	15.24	1068.05	74.04	26.52	10.0
11:42:00	2.0	132.0	15.24	1098.53	74.08	26.56	12.0
11:44:00	2.0	134.0	15.24	1129.01	74.07	26.55	14.0
11:46:00	2.0	136.0	15.24	1159.49	74.08	26.56	16.0
11:48:00	2.0	138.0	15.22	1189.93	74.08	26.56	18.0
11:50:00	2.0	140.0	15.24	1220.41	74.1	26.58	20.0
11:52:00	2.0	142.0	15.24	1250.89	74.11	26.59	22.0
11:54:00	2.0	144.0	15.24	1281.37	74.18	26.66	24.0
11:56:00	2.0	146.0	15.24	1311.85	74.18	26.66	26.0
11:58:00	2.0	148.0	15.26	1342.37	74.18	26.66	28.0
12:00:00	2.0	150.0	15.24	1372.85	74.16	26.64	30.0
12:05:00	5.0	155.0	15.24	1449.05	74.2	26.68	35.0
12:10:00	5.0	160.0	15.24	1525.25	74.2	26.68	40.0
12:15:00	5.0	165.0	15.22	1601.35	74.2	26.68	45.0
12:20:00	5.0	170.0	15.22	1677.45	74.18	26.66	50.0
12:25:00	5.0	175.0	15.24	1753.65	74.22	26.7	55.0
12:30:00	5.0	180.0	15.26	1829.95	74.26	26.74	60.0
12:40:00	10.0	190.0	15.24	1982.35	74.24	26.72	70.0
12:50:00	10.0	200.0	15.22	2134.55	74.23	26.71	80.0
13:00:00	10.0	210.0	15.21	2286.65	74.24	26.72	90.0
13:10:00	10.0	220.0	15.26	2439.25	74.28	26.76	100.0
13:20:00	10.0	230.0	15.26	2591.85	74.99	27.47	110.0
13:30:00	10.0	240.0	15.24	2744.25	74.34	26.82	120.0
Total Volume Pumped	for Sten 2 (GAL):		1829.15		ı		

Total Volume Pumped for Step 2 (GAL): 1829.15
Average Pumping Rate (GPM): 15.27
Specific Capacity (GPM/FT): 0.57



Location/Well ID-	IRZ-21 Lower			
Date -	8/24/2019			
Screened Interval -	141' - 158' bgs			
Initial Water Level Within 141' - 158' -	47.52			
Initial Water Level Within 48' - 66' -	44.34			
Initial Totalizer Reading -	0			
Final Totalizer Reading -	9216.78			
Approx. Pumped Volume -	9216.78			
Number of Specific Capacity Steps -	4			
Pumping Rates (List In Order) -	7.5, 15, 22.5, open pump (~31)			

	Change in Time	Elapsed		IV. I			51 LT:
Time (UD AAN CEC)	between	Time from	Pumping Rate	Total Volume	Depth to Water	Drawdown	Elapsed Time
Time (HR:MN:SEC)	measurements	Test Start	(GPM)	pumped	(Ft.)	(Ft.)	from Step 3
	(Min)	(Min)		(Gallons)			Start (Min)
			Step 3				
13:30:20	0.3	240.3	22.1	2751.62	75.4	27.88	0.3
13:30:40	0.3	240.7	22.1	2758.99	76.16	28.64	0.7
13:31:00	0.3	241.0	22.5	2766.49	76.58	29.06	1.0
13:32:00	1.0	242.0	22.59	2789.08	78.49	30.97	2.0
13:33:00	1.0	243.0	22.58	2811.66	80.08	32.56	3.0
13:34:00	1.0	244.0	22.61	2834.27	81.11	33.59	4.0
13:35:00	1.0	245.0	22.58	2856.85	82.11	34.59	5.0
13:36:00	1.0	246.0	22.56	2879.41	83.03	35.51	6.0
13:37:00	1.0	247.0	22.54	2901.95	83.72	36.2	7.0
13:38:00	1.0	248.0	22.54	2924.49	84.2	36.68	8.0
13:39:00	1.0	249.0	22.56	2947.05	84.73	37.21	9.0
13:40:00	1.0	250.0	22.52	2969.57	85.22	37.7	10.0
13:42:00	2.0	252.0	22.54	3014.65	85.91	38.39	12.0
13:44:00	2.0	254.0	22.56	3059.77	86.45	38.93	14.0
13:46:00	2.0	256.0	22.66	3105.09	86.91	39.39	16.0
13:48:00	2.0	258.0	22.69	3150.47	87.15	39.63	18.0
13:50:00	2.0	260.0	22.56	3195.59	87.32	39.8	20.0
13:52:00	2.0	262.0	22.64	3240.87	87.39	39.87	22.0
13:54:00	2.0	264.0	22.62	3286.11	87.48	39.96	24.0
13:56:00	2.0	266.0	22.69	3331.49	87.53	40.01	26.0
13:58:00	2.0	268.0	22.66	3376.81	87.55	40.03	28.0
14:00:00	2.0	270.0	22.66	3422.13	87.61	40.09	30.0
14:05:00	5.0	275.0	22.89	3536.58	87.65	40.13	35.0
14:10:00	5.0	280.0	22.84	3650.78	87.74	40.22	40.0
14:15:00	5.0	285.0	22.92	3765.38	87.78	40.26	45.0
14:20:00	5.0	290.0	22.92	3879.98	87.83	40.31	50.0
14:25:00	5.0	295.0	22.92	3994.58	87.88	40.36	55.0
14:30:00	5.0	300.0	22.94	4109.28	87.91	40.39	60.0
14:40:00	10.0	310.0	22.98	4339.08	87.94	40.42	70.0
14:50:00	10.0	320.0	22:33	4568.48	88.02	40.5	80.0
15:00:00	10.0	330.0	22.89	4797.38	88	40.48	90.0
15:10:00	10.0	340.0	23	5027.38	88.02	40.5	100.0
15:20:00	10.0	350.0	22.5	5252.38	88.15	40.63	110.0
15:30:00	10.0	360.0	22.96	5481.98	88.12	40.6	120.0
Total Volume Pumped	for Step 3 (GAL):		2737.72		<u> </u>		•
	total volume i umpeu foi step s (GAL).						

22.67

Average Pumping Rate (GPM): Specific Capacity (GPM/FT):



Location/Well ID-	IRZ-21 Lower				
Date -	8/24/2019				
Screened Interval -	141' - 158' bgs				
Initial Water Level Within 141' - 158' -	47.52				
Initial Water Level Within 48' - 66' -	44.34				
Initial Totalizer Reading -	0				
Final Totalizer Reading -	9216.78				
Approx. Pumped Volume -	9216.78				
Number of Specific Capacity Steps -	4				
Pumping Rates (List In Order) -	7.5, 15, 22.5, open pump (~31)				

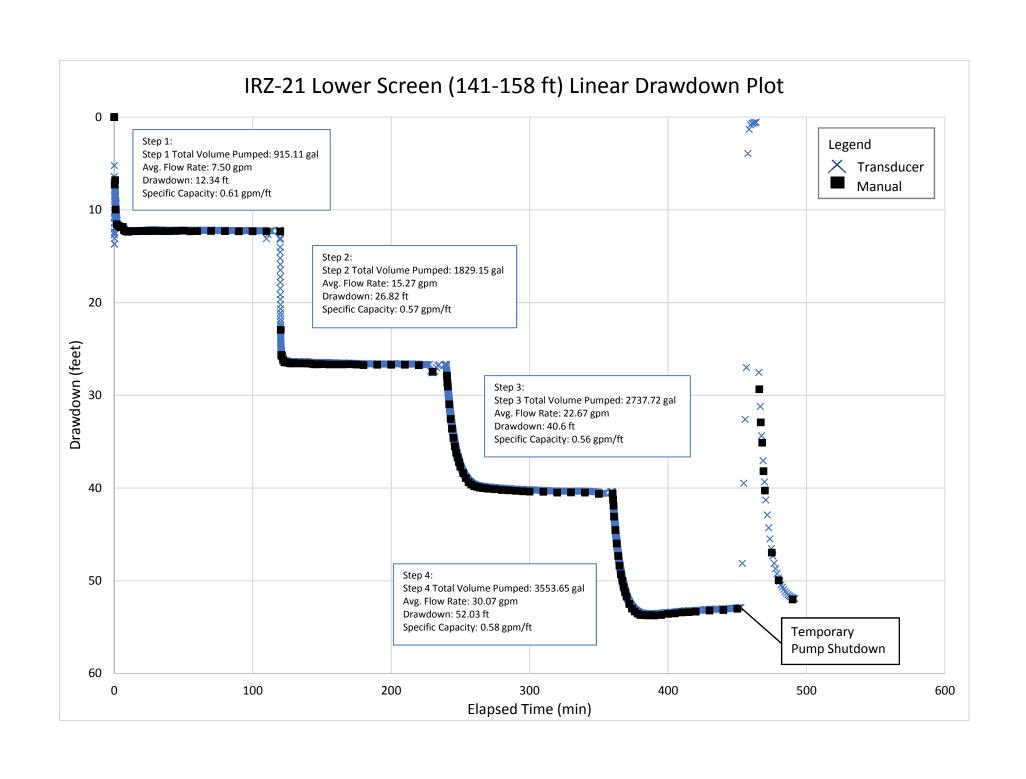
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft.)	Drawdown (Ft.)	Elapsed Time from Step 4 Start (Min)
	(IVIIII)	(IVIIII)	Step 4		l.		
15:30:20	0.3	360.3	30.62	5492.18	88.76	41.24	0.
15:30:40	0.3	360.7	30.54	5502.36	89.44	41.92	0.
15:31:00	0.3	361.0	30.53	5512.54	90.61	43.09	1.
15:32:00	1.0	362.0	30.54	5543.08	92.05	44.53	2.
15:33:00	1.0	363.0	30.64	5573.72	93.51	45.99	3.
15:34:00	1.0	364.0	30.61	5604.33	94.85	47.33	4.
15:35:00	1.0	365.0	30.61	5634.94	95.91	48.39	5.
15:36:00	1.0	366.0	30.56	5665.50	96.81	49.29	6.
15:37:00	1.0	367.0	30.54	5696.04	97.52	50	7.
15:38:00	1.0	368.0	30.54	5726.58	98.2	50.68	8.
15:39:00	1.0	369.0	30.43	5757.01	98.75	51.23	9.
15:40:00	1.0	370.0	30.46	5787.47	99.24	51.72	10.
15:42:00	2.0	372.0	30.48	5848.43	100.03	52.51	12.
15:44:00	2.0	374.0	30.46	5909.35	100.52	53	14.
15:46:00	2.0	376.0	30.44	5970.23	100.84	53.32	16.
15:48:00	2.0	378.0	30.44	6031.11	101.06	53.54	18.
15:50:00	2.0	380.0	30.48	6092.07	101.22	53.7	20.
15:52:00	2.0	382.0	30.44	6152.95	101.22	53.7	22.
15:54:00	2.0	384.0	30.41	6213.77	101.26	53.74	24.
15:56:00	2.0	386.0	30.44	6274.65	101.26	53.74	26.
15:58:00	2.0	388.0	30.4	6335.45	101.23	53.71	28.
16:00:00	2.0	390.0	30.43	6396.31	101.27	53.75	30.
16:05:00	5.0	395.0	30.48	6548.71	101.22	53.7	35.
16:10:00	5.0	400.0	30.62	6701.81	101.1	53.58	40.
16:15:00	5.0	405.0	30.76	6855.61	101.04	53.52	45.
16:20:00	5.0	410.0	30.81	7009.66	100.95	53.43	50.
16:25:00	5.0	415.0	30.88	7164.06	100.91	53.39	55.
16:30:00	5.0	420.0	30.8	7318.06	100.86	53.34	60.
16:40:00	10.0	430.0	30.82	7626.26	100.73	53.21	70.
16:50:00	10.0	440.0	30.84	7934.66	100.68	53.16	80.
17:00:00	10.0	450.0	30.96	8244.26	100.55	53.03	90.
17:15:00	15.0	465.0	0	8244.26	46.64	-0.88	105.
17:16:00	1.0	466.0	32.16	8276.42	76.87	29.35	106.
17:17:00	1.0	467.0	32.1	8308.52	80.44	32.92	107.
17:18:00	1.0	468.0	32.06	8340.58	82.63	35.11	108.
17:19:00	1.0	469.0	31.9	8372.48	85.7	38.18	109.
17:20:00	1.0	470.0	31.9	8404.38	87.8	40.28	110.
17:25:00	5.0	475.0	31.69	8562.83	94.49	46.97	115.
17:30:00	5.0	480.0	31.58	8720.73	97.47	49.95	120.
17:40:00	10.0	490.0	31.49	9035.63	99.55	52.03	130.
otal Volume Pumped			3553.65				

30.07

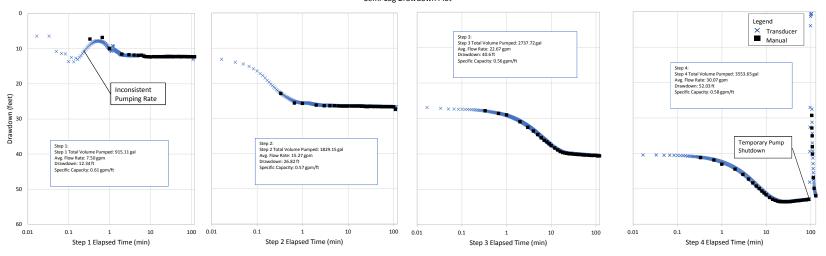
0.58

Average Pumping Rate (GPM):

Specific Capacity (GPM/FT):



IRZ-21 Lower Screen (141-158 ft) Semi-Log Drawdown Plot





	observe sabasis, resumb
Location/Well ID-	IRZ-23
Date -	8/12/2019
Screened Interval	
Tested -	93-143 ft
Packer Set Depth -	N/A
Packer Seal Test -	N/A
Tests Conducted -	3 step Specific Capacity Test (32.5, 65, 97.5 GPM)
Purpose -	Well Performance Test
Summary -	Specific Capacity: 9.02-9.58 GPM/FT
Notes -	
	Inconsistent pumping rate during start of Step 1
	Transducer inadvertently adjusted during Step 2



Location/Well ID-	IRZ-23
Date -	8/12/2019
Screened Interval -	93-143
Initial Water Level Within 93-143 -	45.18
Initial Totalizer Reading -	0
Final Totalizer Reading -	23361.8
Approx. Pumped Volume (gal) -	23361.8
Number of Specific Capacity Steps -	3
Pumping Rates (List In Order) -	32.5, 65, and 97.5 Respectfully

	Change in Time			Total Volume		
Time (HR:MN:SEC)	between	Elapsed Time	Pumping Rate	pumped	Depth to Water	Drawdown
Time (Titaliviivi.520)	measurements	(Min)	(GPM)	(Gallons)	(Ft. )	(Ft.)
	(Min)		Chair 1	(Gallotto)		
0.00.00	0.0	0.0	Step 1	0.00	45.40	
9:00:00	0.0	0.0	0.00	0.00	45.18	0
9:00:20	0.3	0.3	36.48	12.16	47.80	2.62
9:00:40	0.3	0.7	27.25	21.24	48.19	3.01
9:01:00	0.3	1.0	31.89	31.87	48.05	2.87
9:02:00	1.0	2.0	32.82	64.69	48.40	3.22
9:03:00	1.0	3.0	32.82	97.51	48.48	3.3
9:04:00	1.0	4.0	32.70	130.21	48.50	3.32
9:05:00	1.0	5.0	32.70	162.91	48.50	3.32
9:06:00	1.0	6.0	32.58	195.49	48.50	3.32
9:07:00	1.0	7.0	32.46	227.95	48.50	3.32
9:08:00	1.0	8.0	32.58	260.53	48.50	3.32
9:09:00	1.0	9.0	32.34	292.87	48.50	3.32
9:10:00	1.0	10.0	32.34	325.21	48.50	3.32
9:12:00	2.0	12.0	32.34	389.89	48.51	3.33
9:14:00	2.0	14.0	32.34	454.57	48.51	3.33
9:16:00	2.0	16.0	32.46	519.49	48.51	3.33
9:18:00	2.0	18.0	32.34	584.17	48.51	3.33
9:20:00	2.0	20.0	32.34	648.85	48.51	3.33
9:22:00	2.0	22.0	32.34	713.53	48.51	3.33
9:24:00	2.0	24.0	32.46	778.45	48.52	3.34
9:26:00	2.0	26.0	32.34	843.13	48.52	3.34
9:28:00	2.0	28.0	32.34	907.81	48.52	3.34
9:30:00	2.0	30.0	32.34	972.49	48.52	3.34
9:35:00	5.0	35.0	32.34	1134.19	48.52	3.34
9:40:00	5.0	40.0	32.46	1296.49	48.53	3.35
9:45:00	5.0	45.0	32.34	1458.19	48.53	3.35
9:50:00	5.0	50.0	32.34	1619.89	48.54	3.36
9:55:00	5.0	55.0	32.34	1781.59	48.54	3.36
10:00:00	5.0	60.0	32.34	1943.29	48.54	3.36
10:10:00	10.0	70.0	32.34	2266.69	48.53	3.35
10:20:00	10.0	80.0	32.34	2590.09	48.54	3.36
10:30:00	10.0	90.0	32.34	2913.49	48.55	3.37
10:40:00	10.0	100.0	32.34	3236.89	48.55	3.37
10:50:00	10.0	110.0	32.34	3560.29	48.55	3.37
11:00:00	10.0	120.0	32.34	3883.69	48.56	3.38
Total Volume Pumped	for Step 1 (GA	L):	3883.69			

Total Volume Pumped for Step 1 (GAL):3883.69Average Pumping Rate (GPM):32.38Specific Capacity (GPM/FT):9.58



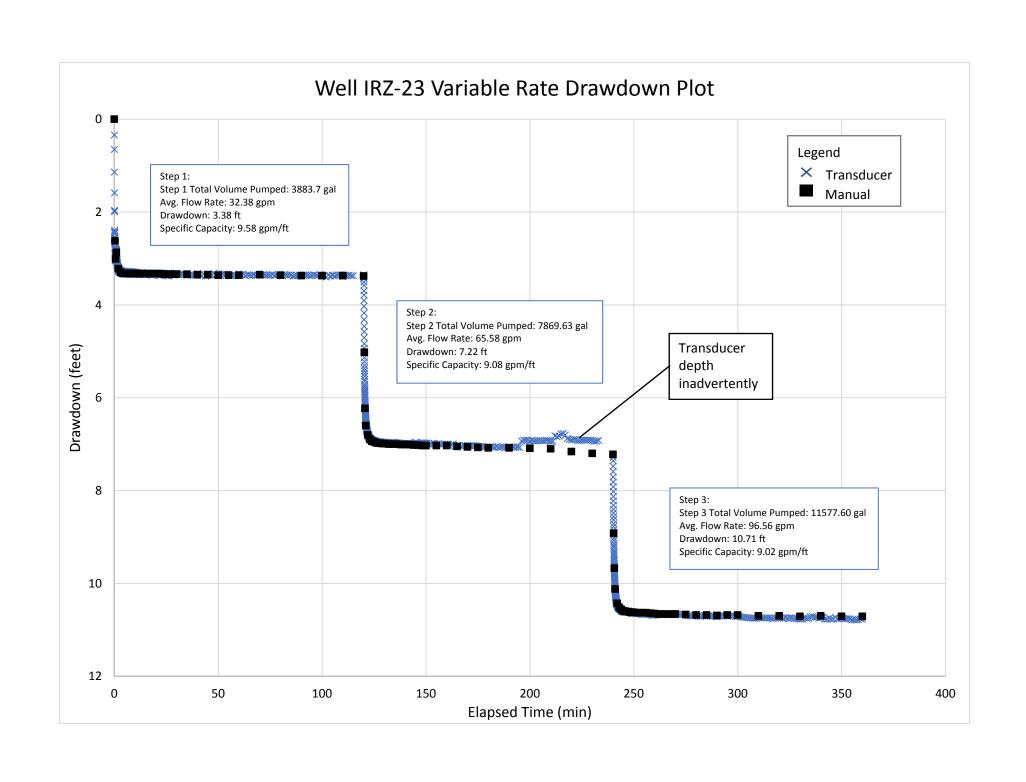
Location/Well ID-	IRZ-23	
Date -	8/12/2019	
Screened Interval -	93-143	
Initial Water Level Within 93-143 -	45.18	
Initial Totalizer Reading -	0	
Final Totalizer Reading -	23361.8	_
Approx. Pumped Volume (gal) -	23361.8	
Number of Specific Capacity Steps -	3	
Pumping Rates (List In Order) -	32.5, 65, and 97.5 Respectfully	

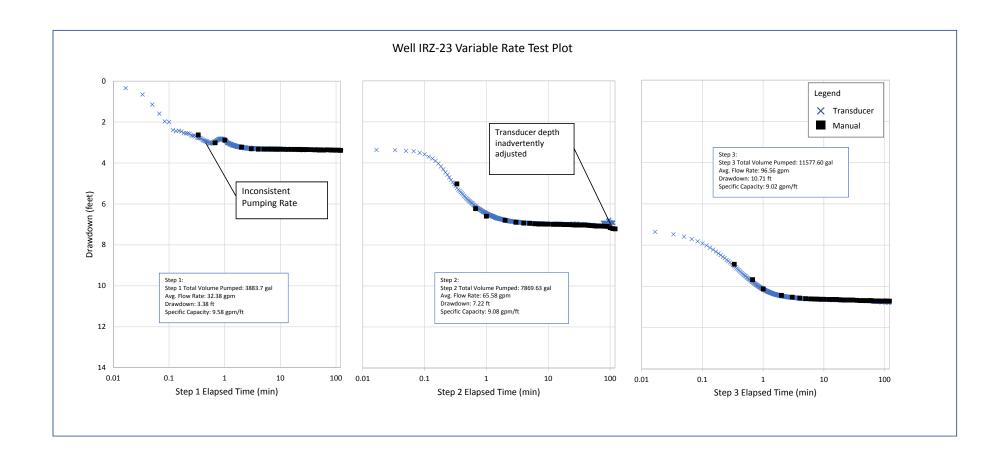
Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft. )	Drawdown (Ft.)	Elapsed Time from Step 2 Start (Min)
			Step 2				
11:00:20	0.3	120.3	71.53	3907.54	50.20	5.02	0.3
11:00:40	0.3	120.7	65.50	3929.37	51.41	6.23	0.7
11:01:00	0.3	121.0	65.27	3951.13	51.78	6.6	1.0
11:02:00	1.0	122.0	65.27	4016.40	51.98	6.8	2.0
11:03:00	1.0	123.0	65.27	4081.67	52.08	6.9	3.0
11:04:00	1.0	124.0	65.39	4147.06	52.12	6.94	4.0
11:05:00	1.0	125.0	65.50	4212.56	52.13	6.95	5.0
11:06:00	1.0	126.0	65.39	4277.95	52.15	6.97	6.0
11:07:00	1.0	127.0	65.39	4343.34	52.16	6.98	7.0
11:08:00	1.0	128.0	65.39	4408.73	52.16	6.98	8.0
11:09:00	1.0	129.0	65.39	4474.12	52.17	6.99	9.0
11:10:00	1.0	130.0	65.27	4539.39	52.17	6.99	10.0
11:12:00	2.0	132.0	65.15	4669.69	52.18	7	12.0
11:14:00	2.0	134.0	65.15	4799.99	52.18	7	14.0
11:16:00	2.0	136.0	65.27	4930.53	52.18	7	16.0
11:18:00	2.0	138.0	65.15	5060.83	52.19	7.01	18.0
11:20:00	2.0	140.0	65.27	5191.37	52.19	7.01	20.0
11:22:00	2.0	142.0	65.27	5321.91	52.19	7.01	22.0
11:24:00	2.0	144.0	65.27	5452.45	52.20	7.02	24.0
11:26:00	2.0	146.0	65.27	5582.99	52.20	7.02	26.0
11:28:00	2.0	148.0	65.15	5713.29	52.21	7.03	28.0
11:30:00	2.0	150.0	65.27	5843.83	52.21	7.03	30.0
11:35:00	5.0	155.0	65.15	6169.58	52.21	7.03	35.0
11:40:00	5.0	160.0	65.15	6495.33	52.21	7.03	40.0
11:45:00	5.0	165.0	65.50	6822.83	52.23	7.05	45.0
11:50:00	5.0	170.0	65.50	7150.33	52.24	7.06	50.0
11:55:00	5.0	175.0	65.50	7477.83	52.25	7.07	55.0
12:00:00	5.0	180.0	65.50	7805.33	52.26	7.08	60.0
12:10:00	10.0	190.0	65.50	8460.33	52.26	7.08	70.0
12:20:00	10.0	200.0	65.50	9115.33	52.27	7.09	80.0
12:30:00	10.0	210.0	65.50	9770.33	52.28	7.1	90.0
12:40:00	10.0	220.0	65.98	10430.13	52.34	7.16	100.0
12:50:00				11091.13	52.38	7.2	110.0
13:00:00	10.0	240.0	66.22	11753.33	52.40	7.22	120.0
Total Volume Pumped	l for Step 2 (GA	L):	7869.63				
<b>Average Pumping Rat</b>			65.58				
Specific Capacity (GPN	И/FT):		9.08				



Location/Well ID-	IRZ-23
Date -	8/12/2019
Screened Interval -	93-143
Initial Water Level Within 93-143 -	45.18
Initial Totalizer Reading -	0
Final Totalizer Reading -	23361.8
Approx. Pumped Volume (gal) -	23361.8
Number of Specific Capacity Steps -	3
Pumping Rates (List In Order) -	32.5, 65, and 97.5 Respectfully

Time (HR:MN:SEC)	Change in Time between measurements (Min)	Elapsed Time from Test Start (Min)	Pumping Rate (GPM)	Total Volume pumped (Gallons)	Depth to Water (Ft. )	Drawdown (Ft.)	Elapsed Time from Step 3 Start (Min)
			Step 3				
13:00:20	0.3	240.3	96.79	11785.59	54.10	8.92	0.3
13:00:40	0.3	240.7	96.56	11817.78	54.85	9.67	0.7
13:01:00	0.3	241.0	96.56	11849.96	55.30	10.12	1.0
13:02:00	1.0	242.0	96.56	11946.52	55.61	10.43	2.0
13:03:00	1.0	243.0	96.56	12043.08	55.70	10.52	3.0
13:04:00	1.0	244.0	96.90	12139.98	55.74	10.56	4.0
13:05:00	1.0	245.0	96.67	12236.65	55.77	10.59	5.0
13:06:00	1.0	246.0	96.67	12333.32	55.78	10.6	6.0
13:07:00	1.0	247.0	96.56	12429.88	55.79	10.61	7.0
13:08:00	1.0	248.0	96.56	12526.44	55.80	10.62	8.0
13:09:00	1.0	249.0	96.67	12623.11	55.80	10.62	9.0
13:10:00	1.0	250.0	96.79	12719.90	55.80	10.62	10.0
13:12:00	2.0	252.0	96.67	12913.24	55.81	10.63	12.0
13:14:00	2.0	254.0	96.67	13106.58	55.81	10.63	14.0
13:16:00	2.0	256.0	96.67	13299.92	55.81	10.63	16.0
13:18:00	2.0	258.0	96.67	13493.26	55.82	10.64	18.0
13:20:00	2.0	260.0	96.56	13686.38	55.83	10.65	20.0
13:22:00	2.0	262.0	96.56	13879.50	55.84	10.66	22.0
13:24:00	2.0	264.0	96.44	14072.38	55.84	10.66	24.0
13:26:00	2.0	266.0	96.44	14265.26	55.84	10.66	26.0
13:28:00	2.0	268.0	96.44	14458.14	55.84	10.66	28.0
13:30:00	2.0	270.0	96.44	14651.02	55.84	10.66	30.0
13:35:00	5.0	275.0	96.56	15133.82	55.85	10.67	35.0
13:40:00	5.0	280.0	96.67	15617.17	55.86	10.68	40.0
13:45:00	5.0	285.0	96.44	16099.37	55.86	10.68	45.0
13:50:00	5.0	290.0	96.67	16582.72	55.87	10.69	50.0
13:55:00	5.0	295.0	96.32	17064.32	55.86	10.68	55.0
14:00:00	5.0	300.0	96.32	17545.92	55.86	10.68	60.0
14:10:00	10.0	310.0	96.67	18512.62	55.88	10.7	70.0
14:20:00	10.0	320.0	96.44	19477.02	55.88	10.7	80.0
14:30:00	10.0	330.0	96.67	20443.72	55.89	10.71	90.0
14:40:00	10.0	340.0	96.08	21404.52	55.88	10.7	100.0
14:50:00	10.0	350.0	96.32	22367.72	55.89	10.71	110.0
15:00:00	10.0	360.0	96.32	23330.92	55.89	10.71	120.0
Total Volume Pumped	l for Step 3 (GA	L):	11577.60				
Average Pumping Rate	e (GPM):		96.56				
Specific Capacity (GPN	//FT):		9.02				





9/	ARC	ADIS	for natural and built assets		Boı	ring	Log	J			Sh	eet: 1 of	7
	Started:					Elevation		N/A		Borin	a No.:	: MW-Xs	
	-	ted: <u>08/12/2</u>				(NAD		N/A			_		
Drilling		Cascac				(NAD8:	3):	N/A		Client:	PG&E	W D   D	4
Drilling Drill R	Metho		Orilling ic Truck Mou		otal De	:pth: e Diame	otor:	127 ft bgs 10-12 inches		Project:		W Remedy Pha Topock, Needle	
	Name:		/asquez					9.6 ft bgs		LUCALION.	FGAL	тороск, пееце	55, Calliottia
Drilling			es / L. Amaya			g Meth			Core Barrel	Proiect N	umber:	RC000753.005	51
Logge			y Mack			g Interv		Screen Interva		,			
Editor		Grant V		Co	onverte	ed to W	/ell:	Yes □ I	No				
_	چ			in P		<b>10</b>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
-							(0.0 - 1 MW-Xd	7.0') No recovery ( for lithology	NR); did not collect o	or log core, s	ee	(0.0 - 17.0') Soft drilling	
_ 1 _													
-													
_ 2 _													
_ 3 _													
5 _													
									0				
_ 6 _													
									<b>V</b>				
- ' -													
_ 8 _													
-	0				NR								
_ 9 _													
10	-	No Sieve									3	<u>.</u>	
10		Samples Collected											
_11_													
12													
13													
14			MW-X-VAS- 12-17										
15			(<0.033 U ppb) 6/25/2019										
			15:10										
16													
17	-												
						<u> </u>	(17.0 -	27.0') No recovery	(NR)			(17.0 - 27.0') Loose fine	
18						$ \setminus/ $						grained sands did not stay in	
	0				NR							core barrel.	
19						$ \ /\  $							
-						$/ \mid$							
20_		. 11000 - 1	:f:  O-:  O		·	<u> </u>	-4 1		nd surface ama	l		1 1 0 1 1	

9/	<b>ARC</b>	ADIS	for natural and built assets		Во	ring Lo	og		Sh	eet: 2 of	7
Date S						Elevation:	N/A	Borir	na No.	: MW-Xs	
	-	ted: <u>08/12/2</u>				y (NAD83):			_		
Drilling		Cascac				(NAD83):	N/A	_ Client:	PG&E	W D   D	4
Drilling Drill Ri			Drilling ic Truck Mou		Total De	eptn: e Diameter:	127 ft bgs 10-12 inches	_ Project:		W Remedy Pha Topock, Needle	
Driller	• • •		/asquez				er: 9.6 ft bgs	_ Location	. FGaE	Topock, Needle	es, Calliottia
Drilling			es / L. Amaya			g Method:	4 inch x 10 ft. Core Barrel	- Proiect N	Jumber:	RC000753.005	<u> </u>
Logge			y Mack		-	g Interval:	Screen Intervals	- , -			
Editor:		Grant V	Vilford	(	Convert	ed to Well:					
_	Ę.			. <u>5</u> P		(0					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
 21  22										(17.0 - 27.0') Loose fine grained sands did not stay in core barrel.	
23						\/					
	0				NR						
24						/\					
25						/ \					
							190				
26						/ \					
						/ \					
27					L	<u> </u>					
						yello	0 - 36.0') Topock - Fill; Poorly graded sar wish brown (10YR 4/4); very fine grained	nd (SP); dark I to medium (	grained,	(27.0 - 40.0') Soft drilling	
28						suba	angular to round; trace silt; wet; no odor				
29											
<u> </u>		No Sieve									
30		Samples Collected									
		Collected									
31											
				Topock - Fill	SP						
32	1440										
33											
34			MW-X-VAS-								
			32-37 (<0.033 U								
35			ppb) 6/26/2019								
<u> </u>			11:45								
36				L	L		0 46 5') Topock Elizio Deposito Mai	aradad sas	with -		
5 – –						orav	0 - 46.5') Topock - Fluvial Deposits; Well (SW); grayish brown (10YR 5/2); fine good, subspanular to subspand; little graphic	grained to ver	v coarse		
37							ned, subangular to subround; little granul angular to subround; trace silt; wet; no oc		ennies,		
				Topock -		[O] 					
38				Fluvial Deposits	SW						
5	1440			Deposits							
39											
40											
40	.i+i	. 11000 - 1	I:EI O-:I OI	:c:u:	0	<u> </u>	age = below ground ourfood am	-11		1 1 0 1 1	

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 3 of	7
	Started					Elevation:	N/A	Borir	ng No.:	MW-Xs	
	-	ted: <u>08/12/2</u>			-	g (NAD83):	N/A	_			
Drilling	-	Cascad			-	(NAD83):	N/A	_ Client:	PG&E	W Domody Db	
_	g Metho ig Type		ic Truck Mou		Total De	epın: e Diameter:	127 ft bgs 10-12 inches	_ Project:		W Remedy Ph Topock, Needle	
	Name:		/asquez	<u>,111.</u>		o First Water		_ Location	. <u>1 Gal</u>	тороск, песак	55, California
	g Asst:		es / L. Amaya	 a	-	g Method:	4 inch x 10 ft. Core Barrel	- Project N	 lumber:	RC000753.00	 51
Logge			y Mack		-	ig Interval:	Screen Intervals	_ ,			
Editor	:	Grant V	Vilford		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46 47 48 48 49	1440	No Sieve Samples Collected		Topock - Fluvial Deposits  Topock - Fluvial Deposits	SW	(44.5') (46.5 sand (angula suban (47.0)	; little granules to large pebbles; increa 47.0') Topock - Fluvial Deposits; Well GW); dark grayish brown / dark yellowing to subangular; some fine to coarse gradient to subround; trace silt; no odor 97.0') No recovery (NR); did not collect d for lithology	graded grav ish brown(10 rained sand,	el with YR 4/2); , /	(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to assist reaming 10" borehole	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
515253545556575859	0				NR		no = holow ground ourfood am				

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		She	eet: 4 of	7
Date S						Elevation:	N/A	Borir	ng No.:	MW-Xs	
l l	•	ted: <u>08/12/2</u>				g (NAD83):	N/A	_			
Drilling		Cascac				(NAD83):	N/A	_ Client:	PG&E		
Drilling			•		Total De	-	127 ft bgs	_ Project:		W Remedy Ph	
Drill Ri			ic Truck Mou	int		e Diameter:		_ Location	: PG&E	Topock, Needle	es, California
Driller Drilling			/asquez es / L. Amaya		-	ว คแรเ งงลเย ıg Method:	er: 9.6 ft bgs 4 inch x 10 ft. Core Barrel	- Droiget N	lumbor:	RC000753.00	<del>-</del> 1
Logge			y Mack	1		ig Interval:	Screen Intervals	_ Flojecti	vuilibei.	<u>KC000733.00</u>	<i>)</i>
Editor		Grant V	-			ed to Well:		_			
		<u> </u>	T III O I G		1	1 1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	O O	No Sieve Samples Collected	MW-X-VAS- 71-76 (<0.033 U ppb) 6/27/2019 08:52	og A	NR					(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to assist reaming 10" borehole	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
-											
80_	<u></u>	11000		·			age - below ground surface, ame			1 1 014	

9	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring l	Log		She	eet: 5 of	7
Date	Started:	08/10/2	2019		Surface	Elevation	n: <u>N/A</u>	Borin	a No.:	MW-Xs	
	-	ted: <u>08/12/2</u>				g (NAD83				1111710	
	g Co.:	Cascad				(NAD83)		Client:	PG&E		
Drillin	g Metho	od: <u>Sonic E</u>	Drilling		Total De	•	127 ft bgs	Project:		N Remedy Ph	
	Rig Type		<u>ic Truck Mou</u>	nt		e Diamet		Location:	PG&E T	opock, Needle	es, California
	Name:		/asquez		-		ater: <u>9.6 ft bgs</u>				
	g Asst:		es / L. Amaya			g Metho		Project N	lumber: <u>I</u>	RC000753.00	51
Logg			y Mack		-	ig Interva		-			
Edito	r:	Grant V	Vilford		Conver	ed to We	ell: X Yes No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81	0 1440	No Sieve Samples Collected		Topock - Fluvial Deposits	NR SW	• b	97.0 - 107.0") Topock - Fluvial Deposits; Wel rown (10YR 4/3); fine grained to very coarse o subround; trace granules, subangular to su	grained, sub	angular	(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to assist reaming 10" borehole	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost

9/	\R(	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 6 of	7
Date S	tarted:	<u>08/10</u>	/2019		Surface	Elevat	on: <u>N/A</u>	Boring No.	· MW-Xs	
Date C	omple	ted: <u>08/12</u>	/2019		Northing	g (NAD	83): <u>N/A</u>	Borning ito.	. <u>IIII 7.5</u>	
Drilling	Co.:	Casca	ade		Easting	(NAD8	3): <u>N/A</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	127 ft bgs	Project: Final G	W Remedy Ph	ase 1
Drill Ri	g Type	: Proso	nic Truck Mou	int	Borehol	e Diam	eter: 10-12 inches	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	<u>Steve</u>	Vasquez		Depth to	First \	Vater: <u>9.6 ft bgs</u>			
Drilling	Asst:	<u>O. Flo</u>	ores / L. Amaya	1	Samplin	g Meth	od: 4 inch x 10 ft. Core Barrel	Project Number:	RC000753.00	51
Loggei	r:	<u>Antho</u>	ny Mack		Samplin	g Inter	al: <u>Screen Intervals</u>			
Editor:		<u>Grant</u>	Wilford		Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
101 102 103 104 105 106 107	1440			Topock - Fluvial Deposits	SW				(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to assist reaming 10" borehole	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
				Topock - Fluvial Deposits	GW		(107.0 - 108.0') Topock - Fluvial Deposits; We sand (GW); brown (10YR 4/3); granules to ver angular to subround; some very fine to medium	rv large pebbles.		
	1440	No Sieve Samples Collected	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	SM		subangular to subround; trace silt; no odor (108.0 - 112.0') Topock - Fluvial Deposits; Silt; (SM); dark grayish brown / dark yellowish brow fine grained to medium grained, subangular to granules to large pebbles, angular to subround angular to subround; wet; no odor	vn(10YR 4/2); very o subround; some d; some silt; trace		
 _113_  _114_  _115_  _116_			MW-X-VAS- 112-117 (<0.033 U ppb) 6/28/2019 09:56	Topock - Fluvial Deposits	GW		(112.0 - 116.0') Topock - Fluvial Deposits; We sand (GW); dark grayish brown / dark yellowis granules to large cobbles, subangular to roung coarse grained sand, subangular to subround; cobbles; wet; no odor	sh brown(10YR 4/2); d; some fine to very ; trace small		
117				Topock - Alluvium Deposits	GW-GM		(116.0 - 117.0') Topock - Alluvium Deposits; W with silt and sand (GW-GM); brown (7.5YR 4/4 pale reddish brown(10R 5/4); granules to sma to round; some very fine to medium grained sa	4) trace weak red / lll cobbles, angular		
118119120	1008			Topock - Alluvium Deposits	SM		round; little silt; wet; no odor (117.0 - 124.0') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 4/3) trace red (10R grained to medium grained, subangular to sub granules to large pebbles, angular to subround angular to subround; wet; no odor (118'); increase in granules and pebbles	5/6); very fine oround; some d; some silt; trace		

9/	٩RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	neet: 7 of	7
	Started:					Elevation:	N/A	Borir	ng No.	: MW-Xs	
		ted: <u>08/12/2</u>				g (NAD83):	N/A				
Drilling		Cascad				(NAD83):	N/A	_ Client:	PG&E	SW Remedy Ph	
Drilling Drill Ri			nic Truck Mou		Total De	eptri. le Diameter:	127 ft bgs 10-12 inches	_ Project:		Topock, Needle	
Driller			/asquez			o First Water		_ Location	. <u>1 Oal</u>	TOPOOK, TYCCOK	os, odinorna
Drilling			es / L. Amaya		-	ng Method:	4 inch x 10 ft. Core Barrel	- _ Project N	Number:	RC000753.005	51
Logge	r:	<u>Anthon</u>	ny Mack		Samplin	ng Interval:	Screen Intervals	_			
Editor:		Grant V	<u> Wilford</u>		Convert	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	1008			Topock - Alluvium Deposits	SM					(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
123								9)		assist reaming 10" borehole	
 125							0 - 127.0') No recovery (NR); Did not co Kd for lithology	llect or log co	ore, see		
	0				NR						
127							End of Boring at 127.0 'bo	as.			
128								<b>,</b>			
129						0					
130											
131											
132											
133											
134											
135											
136											
137											
138											
139											
	viations	s: USCS = I	Inified Soil Cl	assification	n Systen	n ft = feet bo	as = below ground surface, am:	sl = above	mean se	ea level GW = 0	groundwater

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	eet: 1 of	21
Date S			)/2019		Surface			Borii	ng No.:	: MW-Xd	
	•	ted: <u>07/31</u>			Northin		•				
Drilling		<u>Casc</u>			Easting		•	Client:	PG&E	W D le - Dl-	1
Drilling Drill Ri			Drilling Onic Truck Mo		Total De Borehol	-	417 ft bgs neter: 6-12 inches	Project:		W Remedy Ph Topock, Needl	
Driller			mos / S. Vasc				Water: 9.6 ft bgs	Location	. I GaL	тороск, песа	es, California
Drilling			ores / L. Amay		Samplin		_	 I Project N	Number:	RC000753.00	51
Logge	r:		SM/CS		Samplir	ng Interv					
Editor:		<u>Gran</u>	t Willford		Convert	ted to W	Vell: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description	on		Drilling Notes	Drilling Fluid
1	96	No Siavo		Topock - Fil	I SP		(0.0 - 12.0') Topock - Fill; Poorly graded 5/3); fine grained to medium grained, at mica; trace wood; dry; no odor  (8'); trace clay; trace organics; no wood clay @ 8.0' bgs (5Y 4/1)	ngular to subrounc	l; trace	(8.0 - 17.0') Soft drilling. No recovery 12 to 17 ft bgs due to compaction of dredge sands	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
10111213141516171819	24	No Sieve Samples Collected	MW-X-VAS- 12-17 (<0.033 U ppb) 6/25/2019 15:10	Topock - Fil	NR NR		brown / moderate yellowish brown(10YI	R 5/4); fine grained	d to	(11.0') Approximate Depth to Water  (17.0 - 19.0') Casing pushed through dredge sand from weight of core barrel and casing. No recovery. (19.0 - 27.0')	
20			Haifing Carl				brown / moderate yellowish brown(10Yl coarse grained, subangular to subround	l; little mica; trace		`Soft drilling	

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g			Sh	eet: 2 of	21
Date S				;	Surface	Elevation:	N/A		Borin	a No.	: MW-Xd	
	-	ted: <u>07/31/</u>				g (NAD83):	N/A		_			
Drilling		Casca			_	(NAD83):	<u>N/A</u>		_ Client:	PG&E		
Drilling			•		Total De	-	417 ft bgs		-		W Remedy Ph	
Drill Ri Driller	• • •		nic Truck Moi nos / S. Vasq			e Diameter: o First Water	6-12 inche	<u>S</u>	_ Location:	PG&E	Topock, Needl	es, California
Drilling			res / L. Amay			ig Method:	-	0 ft Core Barrel	- Project N	umher	RC000753.00	 51
Logge			SM / CS		-	ig Interval:	Continuou		_ 1 10,00011	umber.	110000700.00	01
Editor:			Willford		-	ed to Well:		No	_			
	>			υ 5								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
21 22 23 24 25 26 27	96					organ	ics; wet; no odo	r; increase organics at	36.2-36.5' bgs		(19.0 - 27.0') Soft drilling	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
28 29 30 31 31 32 33 34 35 36	120	No Sieve Samples Collected	MW-X-VAS- 32-37 (<0.033 U ppb) 6/26/2019 11:45	Topock - Fill	SW	(36.5	- 40.0') Topock	- Fluvial Deposits; Wel	graded sand	(SW);	(32.0 - 37.0') Heaving sands	
37 38 39 40	36	w HOOG -	history Co. ii	Topock - Fluvial Deposits	SW	grayis subar trace (37'); (38.5'	sh brown (10YR gular to round; round; little mica organic odor no granules and ); trace granules	5/2); fine grained to ver ittle granules to very la a; coarser clast consist	y coarse grain rge pebbles, ro s of quartz and subround to ro	ed, pund; I basalt; pund		

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 3 of	21
Date S	tarted:	06/20	/2019		Surface	Elevat	on: <u>N/A</u>	Borin	a No .	MW-Xd	
Date C	omple	ted: <u>07/31</u>	/2019		Northing	g (NAD	33): <u>N/A</u>		g 110	IIII XG	
Drilling	Co.:	Casca	ade		Easting	(NAD8	3): <u>N/A</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	417 ft bgs	Project:	Final G\	N Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Proso</u>	nic Truck Mou	ınt	Borehol	le Diam	eter: 6-12 inches	Location:	<u>PG&amp;E 1</u>	opock, Needl	es, California
Driller I	Name:	E. Ra	mos / S. Vasq	uez	Depth to	o First \	Vater: 9.6 ft bgs	•			
Drilling	Asst:	<u>O. Flo</u>	res / L. Amaya	<u>a</u>	Samplin	ng Meth	od: 4 Inch X 10 ft Core Barrel	Project N	umber: <u>l</u>	RC000753.00	51
Logge	r:	<u>GJ / S</u>	SM / CS		Samplin	ng Inter	al: <u>Continuous</u>				
Editor:		<u>Grant</u>	Willford		Convert	ted to V	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46 47	36				NR		(40.0 - 47.0') No recovery (NR)				(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
48				Topock - Fluvial Deposits	SW		(47.0 - 48.2') Topock - Fluvial Deposits; Well grayish brown (10YR 5/2); fine grained to very subangular to round; trace granules to large pmica; coarser clast composed of quartz; wet	coarse grair ebbles, round	ned, d; trace		
 _49_  _50_		No Sieve Samples Collected		Topock - Fluvial Deposits	GW		(48.2 - 50.5') Topock - Fluvial Deposits; Well sand (GW); grayish brown (10YR 5/2); granul subangular to round; some fine to coarse grai subangular to round; trace mica; coarser clas granite and basalt; wet	es to small coned sand,	obbles,		
51 52 53	120			Topock - Fluvial Deposits	sw		(50.5 - 53.8') Topock - Fluvial Deposits; Well gravel (SW); grayish brown (10YR 5/2); fine grained, subangular to subround; little granul pebbles, subangular to subround; trace round clasts composed of granite and basalt; wet	rained to very es to very larg	/ coarse		
545556				Topock - Fluvial Deposits	SP		(53.8 - 57.0') Topock - Fluvial Deposits; Poorl brown (10YR 5/3); very fine grained to fine gra round; trace granules to very large pebbles, so wet	ained, subrou	nd to		
57 58 59 60	120			Topock - Fluvial Deposits	SW		(57.0 - 62.2') Topock - Fluvial Deposits; Well brown (10YR 5/3); very fine grained to coarse trace mica; wet				

9/	ARCADIS Design & Consultancy for natural and built assets						ring	Log	9				Sh	eet: 4 of	21
Date S				2019		Surface	Elevati	on:	N/A			Borir	na No.	: MW-Xd	
	-	ted: <u>07/</u>				Northin			N/A						
Drilling		Cas				Easting	•	3):	<u>N/A</u>			Client:	PG&E		
Drilling				<u> Drilling</u>		Total D	•		417 ft bgs			roject:		W Remedy Ph	
Drill Ri				ic Truck Mou		Boreho			6-12 inche	es	L	ocation	: <u>PG&amp;E</u>	Topock, Needl	es, California
Driller I				ios / S. Vasqı		-			9.6 ft bgs	0,00 0 1				D0000750 00	F.4
Drilling				es / L. Amaya	1	Samplin	•			0 ft Core Barrel	<u>                                      </u>	roject N	Number:	RC000753.00	51
Logge Editor:				M / CS		Samplir Conver	-		Continuou  X Yes [	IS No					
Editor.		Gla	IIIL V	Villford		Conver	led to v	veii.	res [	NO					ı
Depth (ft)	Recovery (in)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS	USCS Class			Soil Description	n			Drilling Notes	Drilling Fluid
61 62					Topock - Fluvial Deposits	SW									(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
 63	120				Topock - Fluvial Deposits	SP		brown mica; v	(10YŔ 5/3); ve vet	- Fluvial Deposits; lery fine grained to fir	ne graine	ed, round	; tràce ″		
6465666667687071727374	120	No Sieve Samples Collected		MW-X-VAS- 71-76 (<0.033 U ppb) 6/27/2019 08:52	Topock - Fluvial Deposits	SW		gravel grained subang	(SW); brown ( d, subangular i gular to round;	- Fluvial Deposits; 10VR 5/3); very fine to round; little granu trace subangular to sed of basalt, granit	e grained ules to ve o subrou	d to very c ery large p nd; trace	oarse bebbles, mica;		
75  76  77					Topock - Fluvial Deposits	SP		brown round;	(7.5YR 5/3); w trace mica; w		îne grain	ied, subai	ngular to	(76.0 - 77.0') Heaving sands	
78 79 	120				Topock - Fluvial Deposits	SW		brown	(10YŔ 5/3); ve	- Fluvial Deposits; ry fine grained to ve ind; trace mica; wet	ery coars				

9/-	ARCADIS   Design & Consultancy for natural and built assets					ring	Log		She	eet: 5 of	21
Date S			0/2019		Surface	Elevati	ion: <u>N/A</u>	Borir	na No.:	MW-Xd	
		ted: <u>07/3</u>			Northing		•				
Drilling		Casc			Easting	•	•	_ Client:	PG&E		
Drilling							417 ft bgs	_ Project:		W Remedy Ph	
Drill Ri			onic Truck Mou		Borehol			_ Location:	PG&E	Topock, Needl	es, California
Driller I			amos / S. Vasq		•		Water: 9.6 ft bgs				
Drilling			ores / L. Amay	a	Samplin	-		_ Project N	lumber:	RC000753.00	51
Logge			SM / CS		Samplin	-		_			
Editor:		Gran	t Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81 82 83 83	120			Topock - Fluvial Deposits	SW		(83.5 - 87.0') Topock - Fluvial Deposits; We gravel (SW); brown (10YR 5/3); very fine gra				(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
85 86 87				Topock - Fluvial Deposits	SW		grained, little granules to very large pebbles trace subround to round; trace mica; coarse granite, basalt, and quartz; wet; granules an with depth  (87.0 - 93.0') Topock - Fluvial Deposits; We	, <b>su</b> bangular to e clasts compo id pebbles incr	o round; sed of ease		
88 89 90 91 92	108	No Sieve Samples Collected		Topock - Fluvial Deposits	SW-SM		(87-93.0) Topock - Fluvial Deposits; very fine grain grained, subangular to round; little granules subround to round; little silt; trace mica; coa of metadiorite; wet	ed to very coar to large pebbl	es,		
93 _				Topock - Fluvial	GW-GM		(93.0 - 94.0') Topock - Fluvial Deposits; We silt and sand (GW-GM); brown (10YR 5/3);	granules to sm	nall		
94				Deposits			cobbles, subangular to round; and very fine sand, subangular to subround; little silt; trac				
L _				Topock - Fluvial	SP		composed of metadiorite; wet				
95				Deposits			(94.0 - 95.0') Topock - Fluvial Deposits; Poc strong brown (7.5YR 4/6); very fine grained		iu (3P);		
				Topock - Fluvial	sw		subround to round; trace silt; trace mica; we (95.0 - 96.0') Topock - Fluvial Deposits; We		with		
96				Deposits		\$	gravel (SW); brown (10YR 5/3); very fine gra	ained to mediu	m		
					ND.		grained, subangular to round; some granule pebbles, subround to round; trace subround	l to round; trac	e silt;		
97					NR		trace mica; coarser clasts composed of me cobble/boulder fragments within formation				
98 99 99	96			Topock - Fluvial Deposits	SW		(96.0 - 97.0') No recovery (NR) (97.0 - 104.0') Topock - Fluvial Deposits; W brown (10YR 5/3); very fine grained to very a subangular to subround; trace granules to s subround to round; trace mica; wet	coarse grained			
100	datia:	. 11000	Limitian Cail O	   <b>:f</b> :+:	- C	<u> </u>	est has - below ground surface am			a laval CM/ =	

9/	<b>ARC</b>	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring	Log	3		She	eet: 6 of	21
Date S	started:	06/20	)/2019		Surface	Elevati	on:	N/A	Borin	na No.:	MW-Xd	
Date C	Comple	ted: <u>07/3</u>	1/2019		Northing	g (NAD	83):	N/A	<b>D</b> 0111	.g .to	10111710	
Drilling		Casc			Easting	•	3):	N/A	Client:	PG&E		
Drilling			Drilling		Total De	•		417 ft bgs	Project:		W Remedy Ph	
Drill Ri			onic Truck Mou		Borehol				Location	: <u>PG&amp;E</u>	Topock, Needle	es, California
Driller I			mos / S. Vasq		•			9.6 ft bgs				
Drilling			ores / L. Amaya	<u>a</u>	Samplin	-		4 Inch X 10 ft Core Barrel	Project N	lumber:	RC000753.00	51
Logge			SM / CS		Samplin	-		Continuous				
Editor:		<u>Gran</u>	t Willford		Convert	ed to W	/ell:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
	96			Topock - Fluvial Deposits	SW		gravel	- 105.0') Topock - Fluvial Deposits; We (SW); dark grayish brown / dark yellowi	sh brown(1	DYR	(102.0 - 105.0') Tight formation	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
105				Deposits		00.60.0	and gra	ery fine grained to very coarse grained, anules to very large pebbles, subangula	r to round; t	race		
106 107				Topock - Fluvial Deposits	SW		of meta formati (105.0 (SW); I subang	- 10 <mark>7.0') Topock - Fluvial Deposits; We</mark> brown (10YR 5/3); very fine grained to v gular to subround; little granules to sma	fragments ell graded sa very coarse	within and grained,		
107 108				Topock - Fluvial Deposits	GW		(107.0 sand (0	d; trace silt; trace mica; wet  - 108.0') Topock - Fluvial Deposits; We  GW); brown (10YR 4/3); granules to ver  nd to round; some very fine to very coal	ry large peb	oles,		
	84	No Sieve Samples Collected	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	SM		subang compo (108.0 (SM); of fine gra granule subrou coarse cobble (109') k	ular to round; trace silt; trace mica; coased of metadiorite, granite, basalt, quar - 112.0') Topock - Fluvial Deposits; Silt lark grayish brown / dark yellowish brow ained to coarse grained, subangular to les to very large pebbles, subround to rond to round; trace mica; trace organics r clasts composed of metadiorite and g //boulder fragments observed brown (10YR 5/3); little silt; no organics very coarse grained sand	arse clasts rtz; wet y sand with vn(10YR 4/2 round; some und; some ; wet; organ ranite, pulve	gravel 2); very 3 5 6 6 6 6 7 7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		
 _113_ 			MW-X-VAS-	Topock - Fluvial Deposits	GW		sand (0 cobbles sand, s	<ul> <li>- 114.0') Topock - Fluvial Deposits; We GW); dark gray (10YR 4/1); very fine grass, subangular to round; little very fine to subangular to round; trace silt; trace clar r clasts composed of metadiorite; wet;</li> </ul>	ained to smale very coarse y; trace organic	all e grained anics;	(112.0 - 117.0') Rough drilling	
114 115 	60		112-117 (<0.033 U ppb) 6/28/2019 09:56	Topock - Fluvial Deposits	SM		(SM); b subang subang mica; t	- 116.0') Topock - Fluvial Deposits; Silt brown (10YR 4/3); very fine grained to v gular to round; some granules to very la gular to round; little silt; trace subround race organics; wet; organic odor; coars adiorite	ery coarse of rge pebbles to round; tra	irained, , ace		
116 117 118 119 120_	120			Topock - Alluvium Deposits	SM		(SM); but 4/6); very some of silt; trainmetadir (117') in moderato very (118');	- 157.0') Topock - Alluvium Deposits; S brown (7.5YR 4/4) trace red / moderate ery fine grained to very coarse grained, granules to very large pebbles, angular ce subangular; trace mica; coarser classorite; wet; mottled eddish brown / moderate brown(5YR 4 ate reddish brown(10R 4/6); some silt; of large pebbles, no cobbles little silt; increase in very fine to very corred granules to very large pebbles	reddish bro angular to s to subangul sts compose (4) little red decrease in	wn(10R ubround; ar; little ed of		

Date Started: 08/20/2019 Surface Elevation: NIA Boring No.: MW-Xd  Deling Co.: Cascade Cascade Cascade Testing (NAD83): NIA Client: PG&E Cascade Total Depth: Tot	9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	21
Diffice Continues (17/31/219)  Northing (NORS): N/A	l l								Borii	ng No.:	MW-Xd	
Delling Method:   Delling   Project: Final GW Remody Phase   Pr		•							_			
Deli Ri Type:   Prosonic Truck Mount   Borehole Diameter   6-12 inches   Location: PG&E Topock. Needles. California   Deliling Assi:   C. Ramos (S. V. Sanguez   C. Ramos (	_							•				
Deller Marine: Delling Assist: Objects Li Amanya Serior: Sellor: Sell				-					-		-	
Delling Assist O_ Flores / L Amaya Sampling Interval Confine (Confine Confine									Location	i. PG&E	<u>гороск, ічееаі</u>	es, Calliornia
Logger: GJ/SM // CS Sample (In Graph Willford Converted to Well: 2 Vs No  Solid Description Deliting Notes Deliting Fluid  121 122 123 120				=		=		_	- Proiect l	Number:	RC000753.00	51
Editor: Grant-Willford Converted to Well: Yes No  Sieve Sample D Grant-Note on Sumple D Gra	_								- ,	•		
122 123 120 120 120 120 120 120 120 120 120 120			Grant V	Villford		Convert	ed to V	/ell: ⊠ Yes □ No				
122 120 120 120 120 120 120 120 120 120	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
128		- 120							3			5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of
128 129 130 No Sine Samples Collected Deposits SM Depo	125	_						1951				
128 129 130 No Sine Samples Collected Deposits SM Depo	126											
128	120_											
128	127											
130. No Sieve Samples Collected  Topock-Alluvium Deposits  131												
130. No Sieve Samples Collected Deposits SM Deposits S	128							(120)				
										ular to		
	_129_											
			No Sieve		Topock							
	130		Samples		Alluvium	SM						
		-	Concoled		Берозна							
	131_											
	132	120										
134		] 120										
135	_133_											
135												
granules to very large pebbles  136  137  138  120  139  140	134							(1241): little cilt: increase in very fine to very e	ooroo inoro	ano in		
								granules to very large pebbles	oarse, increa	ase in		
	135											
		_										
	136											
	-											
- 120 (138'); some granules to very large pebbles, angular to subangular; slight decrease in silt	<u>13/</u>											
- 120 (138'); some granules to very large pebbles, angular to subangular; slight decrease in silt	130	1										
_139	130							(138'); some granules to very large pebbles, a	angular to			
140	5 5 <u>- 139</u>	120						supangular, siigiil ueurease III SIII				

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Bo	ring L	og	S	heet: 8 of	21
Date S	Started:	06/20/2	2019			Elevation		Boring No	.: MW-Xd	
	-	ted: <u>07/31/2</u>				g (NAD83		_		
Drilling		Cascad			_	(NAD83)		_ Client: PG&E		
_	Metho		•	4	Total De	-	417 ft bgs	•	GW Remedy Ph	
	ig Type Name:		<u>ic Truck Mou</u> ios / S. Vasqi			e Diamete	r: <u>6-12 inches</u> ter: <u>9.6 ft bgs</u>	_ Location: <u>PG&amp;E</u>	: тороск, мееаі	es, Calliornia
Drilling			es / L. Amaya		-	g Method	_	 _ Project Number	RC000753 00	 51
Logge		<u>GJ / SI</u>		•	-	ig Interval			110000700.00	01
Editor		Grant V			-	ed to We		_		
	>			υ <u>Ε</u>						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
								0		(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
	120									
144										
145							1991			
146										
147										
148										
5				Topock - Alluvium	SM		8'); and silt; moist to wet; decrease in ver	y fine to very coarse		
149				Deposits	SIVI					
<u> </u>										
150		No Sieve Samples								
		Samples Collected								
151										
152	120									
	_									
153										
154	-		MW-X-VAS-							
134_			152-157 (<0.17 U							
155	]		ppb) 6/29/2019							
			09:19			(1	55'); some granules to very large pebbles, pangular; little silt; wet; increase in very fir	angular to ne to very coarse sand		
156							g.sion, made only from morodoc in very in	o .o.y ooaloo balla		
157				L					4550	
						\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	7.0 - 161.0') No recovery (NR)		(157.0 - 167.0') Loose sands	
158						$  \setminus /  $			fell out of core barrel into	
	72				NR	\			hopper when bagging core,	
_159_						/ \			165 to 167 drlling got hard	
						/ \				
160 Abbre	viations	: USCS = U	Inified Soil Cl	  assification	n Sveten	<u>/</u> 1 ft = feet	bgs = below ground surface, am	sl = ahove mean s	ealevel GW -	aroundwater

Date Started: 08.202.2019	9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	3			Sh	eet: 9 of	21
Conting Color   Conting (No. 1975)   No.   Color   C	Date S	started:	06/20/2	2019		Surface	Elevati	on:	N/A		Bori	na No.	: MW-Xd	
Solid Deling   Soli	Date C	Comple	ted: <u>07/31/2</u>	2019		Northin	g (NAD	83):	N/A				. <u>11111 / Cu</u>	
Online Name:  Online Name:  Online Name:  Character (A. Sassauez)  Online Name:  Online Name:  Character (A. Sassauez)  Online Name:  Online	_					_	•	3):						
Delier Name   E. Ramos I. S. Vasquez   Depth to First Water   9.0.ft bgs	_			•			•		•		•		•	
Comparison   Com										S	Location	n: <u>PG&amp;E</u>	Topock, Needl	es, California
Continues   Con				· -		•								
Editor: Grant Willford Converted to Well: Yes No Since Sample D Coverninator Sample D Sample	_			-	<u>a</u>	-	-				Project	Number:	RC000753.00	51
Solid Description   Chilling Notes   Chilling Florid Sample ID   Chilling Notes   Chilling Florid Sample ID   Child Sample ID						-	-							
NR  1610 - 174.5) Topock - Allianum Deposits. Sandy lean clay with proved CLD treadment of the control of the c	Editor:		<u>Grant v</u>	/VIIIIOra		Conven	ea to v	veii:	ĭ res [	NO				I
161   161   161   162   163	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
162   162   163   174   175   176   164   174   175   164   175   164   175   165	161					NR	X						Loose sands fell out of core	5100 gallons of water used;
162   163   167   3600 gallons of very large petities, angular to subangular, little granules of dilling got hard water lost.  163   167   3600 gallons of dilling got hard water lost.  165   166   167   3600 gallons of dilling got hard water lost.  166   167   3600 gallons of dilling got hard water lost.  167   168   167   3600 gallons of dilling got hard water lost.  168   167   3600 gallons of dilling got hard water lost.  169   160   167   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  160   160   160   3600 gallons of dilling got hard water lost.  161   160   160   3600 gallons of dilling got hard water lost.  162   163   165   3600 gallons of dilling got hard water lost.  165   165	_101_							(161.0	- 174.5') Topod	ck - Alluvium Deposi	its; Sandy lean	clay with	hopper when	water
CL CL Glasta are weathered    163	_162_							to very	coarse grained large pebbles,	d sand, angular to su angular to subangul	ubangular; little lar; little silt; co	granules arser	165 to 167	3500 gallons of
166.  167.  168.  169.  169.  170.  188.  170.  189.  180.  170.  180.  170.  180.  170.											ard; blocky; son	ne		
166.  167.  168.  169.  170.  180.  170.	163													
166. 167. 168. 168. 169. 170. 170. 170. 171. 171. 172. 170. 177. 170. 177. 177. 178. 178. 179. 178. 179. 178. 179. 178. 179. 178. 178. 178. 178. 178. 178. 178. 178	164	72												
166	-104-													
168. 169. 170. 170. 170. 170. 170. 170. 170. 170	165													
168. 169. 170. 170. 170. 170. 170. 170. 170. 170														
Topock-Alluvium Deposits Salty sand (SM):  170	166													
Topock-Alluvium Deposits Salty sand (SM):  170														
Topock-Alluvium Deposits  170  171  172  175  176  177  177  180  177  180  180  180  180	167							(167.0	- 174.5') Topo	ck - Alluvium Deposi	its: Sandv lean	clav with	(167.0 - 177.0')	
Deposits  Deposi						CI		gravel	CL); reddish b	rown / moderate bro	own(5YR 4/4); r	nedium	Smooth drilling	
170. No Sieve Samples Collected Samples Collected 170	168					0		subang	ular; little gran	ules to very large pe	ebbles, angular	to		
No Sieve Samples Collected  Topock-Alluvium Deposits  173.  174.  175.  176.  177.  177.  177.  177.  178.  178.  178.  178.  178.  178.  179.  84  179.  84  179.  84  179.  84  179.  84  179.  84  179.  84  179.  84  179.  84  179.  170.												onto,		
Samples Collected  170	169													
Topock- Alluvium Deposits  173  174  175  176  176  177  177  170  170  170  170	170													
Alluvium Deposits  173  174  175  176  177  177  178  180  180  Alluvium Deposits  (173.5'); moist to wet  (173.5'); moist to wet  (173.5'); moist to wet  (173.5'); moist to wet  (174.5 - 177.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown / moderate brown(5'YR 4/4); very fine grained to very coarse grained, angular to subround; some still; title granules to medium pebbles, angular to subangular; little clay; trace large to very large pebbles, angular to subangular; wet  (177.0 - 177.5') Topock - Alluvium Deposits; Poorly graded gravel (GP); boulders; wet  178  189  180  180  180  180  180  180  18			Samples Collected		Topock									
172 120  173 174 175 175 175 175 175 175 175 175 175 175					Alluvium	CL								
173. 174. 175. 175. 175. 175. 175. 175. 175. 175					Deposits									
175_ 176_ 177_ 177_ 178_ 179_ 178_ 179_ 180_ 180_ 180_ 180_ 180_ 180_ 180_ 180	_172_	120												
175_ 176_ 177_ 177_ 178_ 179_ 178_ 179_ 180_ 180_ 180_ 180_ 180_ 180_ 180_ 180														
175_ 176_ 177_ 178_ 179_ 180_ 180_ 180_ 180_ 180_ 180_ 180_ 180	173													
Topock - Alluvium Deposits  Topock - Alluvium Deposits  Topock - Alluvium Deposits  SM  Topock - Alluvium Deposits  SM  Topock - Alluvium Deposits  SM  Topock - Alluvium Deposits  Topock - Alluvium								(173.5'	); moist to wet					
Topock - Alluvium Deposits  Topock - Alluvium Deposits Poorly graded gravel (177.0 - 187.0') Normal drilling Normal drilling Water used; 4465 gallons of water used; 4465 gallons of water used; 4465 gallons of water lost	174													
very coarse grained, angular to subround; some silt; little granules to medium pebbles, angular to subangular; little clay; trace large to very large pebbles, angular to subangular; wet  Topock - Alluvium Deposits  Topock - Alluvium Deposits  Topock - Alluvium Deposits; Poorly graded gravel (GP); boulders; wet  (177.0 - 187.0') Normal drilling (177.0 - 187.0') Normal drilling (177.0 - 187.0') Normal drilling (177.0 - 187.0') System (177.0 - 187.0') Normal drilling (177.0 - 187.0') System (177.0 - 187.0') Normal drilling (177.0 - 187.0') System (177.0 - 187.0') Normal drilling (177.0 - 18	175							(174.5	- 177.0') Topod	ck - Alluvium Deposi	its; Silty sand (S	SM);		
Alluvium Deposits  SM  Topock - Alluvium Deposits  Topock - Alluvium Deposits  Topock - Alluvium Deposits  Topock - Alluvium Deposits  NR  NR  Topock - Alluvium Deposits; Poorly graded gravel (GP); boulders; wet (GP); boulders; wet (177.5 - 180.5') No recovery (NR)  NR  NR  Topock - Alluvium Deposits; Poorly graded gravel (177.0 - 187.0') Normal drilling sales of water used; 4465 gallons of water recovered; 930 gallons of water lost	_1/3_				Topook			very co	arse grained, a	angular to subround;	some silt; little	granules		
177					Alluvium	SM		to med to very	large pebbles, a	angular to subangular angular to subangul	lr; iittie ciay; tra lar; wet	ce large		
Topock - Alluvium Deposits; Poorly graded gravel (177.0 - 187.0') Normal drilling Sp gallons of water used; 179.  180.  Topock - Alluvium Deposits; Poorly graded gravel (177.0 - 187.0') Normal drilling Sp gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost					Deposits									
Alluvium Deposits (GP); boulders; wet (177.5 - 180.5') No recovery (NR)  Normal drilling (S395 gallons of water used; 4465 gallons of water used; 4465 gallons of water used; 4465 gallons of water used; 930 gallons of water lost	_177				<u> </u>								(477.2	(477.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
178 4465 gallons of water recovered; 930 gallons of water lost					Alluvium	L		(GP); b	oulders; wet	•	its; Poorly grad	ed gravel		5395 gallons of
water recovered; 930 gallons of water lost	_178_				<u>Deposits</u>	-1	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	(177.5	- 180.5') No re	covery (NR)				4465 gallons of
179		84					$  \setminus /  $							water
	_179					NR								gallons of water
							/							
		viations	: IISCS = I	Inified Soil CI	  assification	n Sveten	<u>/</u> 1. ft = f∈	et ha	s = helow a	round surface a	amel = ahove	mean se	a level GW -	aroundwater

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 10 of	21
Date S	tarted:	06/20	/2019		Surface	Elevat	ion:	N/A	Borin	a No.:	: MW-Xd	
	•	ted: <u>07/31</u>	/2019		Northing	g (NAD	83):	N/A			<u> </u>	
Drilling		<u>Casca</u>	ade		Easting	(NAD8	33):	N/A	Client:	PG&E		
Drilling			Drilling		Total De	epth:		<u> </u>	Project:		W Remedy Ph	
Drill Ri			nic Truck Mou		Borehol				Location:	PG&E	Topock, Needle	es, California
Driller I			mos / S. Vasq		•			9.6 ft bgs				
Drilling			ores / L. Amaya	a	Samplin	•			Project N	lumber:	RC000753.005	51
Logge			SM / CS		Samplin	-		Continuous				
Editor:		Grant	Willford		Convert	ea to v	veii:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
				L	NR						(177.0 - 187.0') Normal drilling	(177.0 - 327.0') 5395 gallons of
181	84		MW-X-VAS- 182-187 (<0.17 U ppb) 6/29/2019 15:28	Topock - Alluvium Deposits	SM		(SM); ro to very mediun subang subang (183.5' subang	- 187.0') Topock - Alluvium Deposits; Seddish brown / moderate brown(5YR 4) coarse grained, angular to subround; lith pebbles, subangular to subround; lith jular; trace clay; trace large to very largular; wet  ); little granules to very large pebbles, angular; little clay  ); little granules to large pebbles, angular;	/4); very fine ttle granules e silt; trace e pebbles	grained to		water used; 4465 gallons of water recovered; 930 gallons of water lost
187  188				Topock - Alluvium Deposits	sc		gravel coarse large p	- 188.0') Topock - Alluvium Deposits; C SC); reddish brown (2.5YR 4/4); very fi grained, angular to subround; some cla ebbles, angular to subangular; little silt; sed of metadiorite; iron oxide staining c	ine grained to ay; little gran ; coarser cla	o very ules to sts	(187.0 - 197.0') Normal drilling	
189		No Sieve		Alluvium Deposits	ML		(188.0 (ML); re coarse	s, wet - 189.5') Topock - Alluvium Deposits; Sed (2.5YR 4/6); medium plasticity; some grained sand, angular to subround; little, angular to subround; little, angular to subangular; little clay; coa	e very fine to le granules to	very		
190  191		Samples Collected		Alluvium Deposits Topock - Alluvium Deposits	CL		(189.5 (SM); re 3/4); ve some s	sed of metadiorite; moist to wet; very st - 190.0') Topock - Alluvium Deposits; S eddish brown (2.5YR 4/4) to dark reddi- ry fine grained to very coarse grained, a idit, little granules to very large pebbles, nd; little clay; coarser clasts composed	tiff Silty sand with sh brown (2. angular to su angular to	5ŸR ubround;		
192	120			Topock - Alluvium Deposits	МН		moist to (190.0 gravel (	o wet - 191.5') Topock - Alluvium Deposits; S (CL); reddish brown (2.5YR 4/4); mediu	Sandy lean cl um plasticity;	ay with some		
193 194 195 196 197				Topock - Alluvium Deposits	ML		granule very sti (191.5 gravel ( fine to granule coarse (192.5 (ML); livery co mediur compos	- 192.5') Topock - Alluvium Deposits; S (MH); reddish brown (2.5YR 4/4); high puery coarse grained sand, angular to susto medium pebbles, angular to subror clasts composed of metadiorite; mois - 197.0') Topock - Alluvium Deposits; S ght red(2.5YR 7/6); medium plasticity; arse grained sand, angular to subround n pebbles, angular to subangular; little sed of metadiorite; moist; green stainin	id; little silt; n Sandy elastic plasticity; sor ubround; little bund; little cla t; very stiff sandy silt witl some very fir d; little granu clay; coarser g	silt with me very e ay; h gravel he to les to r clasts		
198 199	120			Topock - Alluvium Deposits	ML	<i>y</i> ,,,,,,,	(ML); re mediun mediun very co	- 199.0') Topock - Alluvium Deposits; S eddish brown (2.5YR 4/4); low plasticity n grained sand, angular to subround; lit n pebbles, angular to subangular; little arse grained sand angular to subangular	y; some very ttle granules clay; trace co ar; moist; ve	fine to to parse to ry stiff		
200	dation-	. 11000	Haifford Call Cl	Topock - Alluvium Deposits	CL		gravel ( very fin	- 202.0') Topock - Alluvium Deposits; S (CL); reddish brown (2.5YR 4/4); mediu e to very coarse grained sand, angular	um plasticity; to subround	some ; little	a laval CVV	

9/-	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	ı Log		She	et: 11 of	21
Date S			)/2019		Surface			Borine	a No.:	MW-Xd	
	•	ted: <u>07/31</u>			Northing			_			
Drilling		Casc			Easting	•	•	_	PG&E		
Drilling			-			-	417 ft bgs	-		N Remedy Ph	
Drill Ri			onic Truck Mou		Borehol			_ Location:	PG&E T	opock, Needle	es, California
Driller I			amos / S. Vasq		•		Water: 9.6 ft bgs				
Drilling			ores / L. Amaya		Samplin	-		_ Project Nu	umber: <u>I</u>	RC000753.00	51
Logge			SM / CS		Samplin	-		_			
Editor:		Gran	t Willford		Convert	ea to v	Well: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
		Topock Alluviu Deposi					granules to large pebbles, angular to subrour clasts composed of metadiorite; moist; very s	stiff			(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of
203 	120						(202.0 - 227.0') Topock - Alluvium Deposits; (SM); red (2.5YR 4/6); very fine grained to ver angular to subround; some silt; little granules angular to subround; little clay; coarser clasts metadiorite; moist  (204'); little silt; trace clay; moist to wet	ry coarse grain to large pebbl	ied, les.		lost
_205_ 206_ 207_							(204.5'); some silt; trace very large pebbles, s subangular; moist to wet  (206.3'); little silt; no cobbles, increase in san	-	ace	(207.0 - 217.0')	
	108	No Sieve Samples Collected	MW-X-VAS- 207-212 (<0.17 U ppb) 6/30/2019 13:28	Topock - Alluvium Deposits	SM		(209'); some silt; no clay, weathered granules pebbles  (210.5'); little clay; moist to wet; decrease in s	, ,	n sand	Normal drilling, approximately 6 inchs of sample fell out of core barrel at ~208.5 during bagging, material was the same as in the core	
215 216 217 218											
219 	114										

9/-	<b>ARC</b>	<b>ADIS</b>	for natural and built assets		Во	ring L	.og		She	et: 12 of	21
Date S						Elevation		Borin	a No.:	MW-Xd	
	-	ted: <u>07/31/</u>			-	) (NAD83	•	_			
Drilling		Casca				(NAD83):		_ Client:	PG&E		
Drilling			Drilling		Total De	-	417 ft bgs	_ Project:		V Remedy Ph	
Drill Ri Driller I			<u>nic Truck Mou</u> nos / S. Vasqı			e Diamete	er: <u>6-12 inches</u> iter: <u>9.6 ft bgs</u>	_ Location:	PG&E I	ороск, мееа	es, California
Drilling			res / L. Amaya		-	g Method	_	<ul> <li>Project N</li> </ul>	lumber F	RC000753.00	 51
Logge			SM / CS		-	ig Interval:					<u> </u>
Editor:			Willford		•	ed to Wel					
	2			is E	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
_											(177.0 - 327.0') 5395 gallons of
_221_											water used; 4465 gallons of
											water recovered; 930
222											gallons of water lost
_223_				Topock -							
 224	114			Alluvium Deposits	SM						
225							. 0-1				
							190'				
226											
L											
_227							07.0 000 00 T - 1 Allusius December	CIE 701	<u></u>	(007.0000.01)	-
						re	27.0 - 230.0') Topock - Alluvium Deposits; ddish brown (2.5YR 4/4); very fine grained	to very coarse	•	(227.0 - 232.0') Normal drilling	
_228_				Topode		pe	ained, angular to subround; some silt; little bbles, angular to subangular; trace clay; c	oarser clasts			
				Topock - Alluvium	SM	co gr	mposed of metadiorite; moist; iron oxide s anules to very large pebbles	taining; weath	ered		
_229_				Deposits							
		No Sieve									
_230		Samples Collected				(2	30'); increase in silt, decrease in very fine t	to very coarse	sand		
 _231_											
_231_											
232	111.6									(232.0 - 237.0') Rough drilling	_
_233_										r toagir anning	
234_											
_235_											
_236											
-											
_237						(2	37'); and silt; little clay; decrease in very fir	ne to very coar	se sand	(237.0 - 245.0')	
-						`	•	-		Normal drilling	
_238_											
 _239_	114										
240											
A la la			1 -: E - 4 C -: 1 C 1	:6:4:	- 0+		has - holow ground ourfood am	-11			

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og	:	Sheet: 13 of	21
Date S					Surface	Elevation	: <u>N</u> /A	Boring No	o.: <u>MW-Xd</u>	
Date C	comple	ted: <u>07/31</u>	/2019		Northing	) (NAD83	): <u>N/A</u>			
Drilling		Casca			_	(NAD83)		_ Client: <u>PG&amp;</u>		
Drilling			Drilling		Total De		417 ft bgs	•	GW Remedy Ph	
Drill Ri	• • •		nic Truck Mou			e Diamete		_ Location: <u>PG&amp;</u>	E Topock, Needl	es, California
Driller I			mos / S. Vasq		•		ter: 9.6 ft bgs		D0000750.00	
Drilling			res / L. Amaya		-	g Method		_ Project Numbe	r: RC000753.00	51
Logge			SM / CS		-	g Interval		_		
Editor:		Grant	Willford		Convert	ed to We	: ⊠ Yes □ No			T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
	114		MW-X-VAS-	Topock - Alluvium Deposits	SM	(S gr lai oc pe	10.0 - 247.0') Topock - Alluvium Deposits; W); reddish brown (2.5YR 4/4); very fine grained, angular to subround; some silt; little ge pebbles, angular to subangular; trace of mposed of metadiorite; moist; weathered obles, dry 243.5'-244' bgs	rained to very coarse e granules to very clay; coarser clasts granules to very large	Normal drilling  (245.0 - 247.0')  Hard drilling	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
248 249 250 251 252 253 254	120	No Sieve Samples Collected	245-255 (<0.033 U ppb) 7/1/2019 13:35	Topock - Alluvium Deposits	SM	re grand and a control of the contro	17.0 - 254.0') Topock - Alluvium Deposits; Idish brown (2.5YR 4/4); very fine grained ained, angular to subround; some silt; little ge pebbles, angular to subangular; little clarser clasts composed of metadiorite; moi anules to very large pebble	to very coarse granules to very ay, trace mica; ist; weathered  Silty sand with gravel 4/6); very fine grained	(247.0 - 257.0') Normal drilling	
	120			Topock - Alluvium Deposits	SM	to gr gr	W); reddish brown (2.5YR 4/4) little (7.5R 4/ery coarse grained, angular to subround; anules to very large pebbles, angular to subject; mottled; iron oxide staining; wet at 256 anules to very large pebbles	some silt; little bangular; trace clay; 6' bgs, weathered	(257.0 - 267.0') Normal drilling	
	viations	· 11808 -	Linified Soil Cl	accification	2 System	ft – foot	has = helow around surface am	sl – ahove mean	sea level GW -	aroundwater

9/-	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3			She	eet: 14 of	21
Date S					Surface			N/A		Bori	ng No.:	: MW-Xd	
		ted: <u>07/31/2</u>			Northing			N/A					
Drilling		Cascad			Easting	•	33):	N/A		Client:	PG&E	W. Domody Db	
Drilling Drill Ri			nic Truck Mou		Total De Borehol	-	eter	417 ft bgs 6-12 inche		Project:		W Remedy Pha Topock, Needle	
Driller I			nos / S. Vasqı					9.6 ft bgs	<u>.</u>	Location	i. <u>i Oul</u>	Topook, Necak	co, California
Drilling			es / L. Amaya		Samplin			_	0 ft Core Barrel	 Project l	Number:	RC000753.005	51
Logge	r:	GJ/S	M/CS		Samplin	ig Inter	val:	Continuou	<u>s</u>				
Editor:		Grant V	<u> Willford</u>		Convert	ed to V	Vell:	× Yes	No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM		very co dilaten to suba	arse grained, a cy; some silt; l angular; little cl	R 4/4) little (7.5R 4/6); angular to subround; ittle granules to very li- ay; coarser clasts co- lered gravel granules	medium plastic large pebbles, mposed of me	city, no angular tadiorite;	(257.0 - 267.0') Normal drilling	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
	120	No Sieve Samples Collected			S		(SM); r grained granule little cla	eddish brown I to very coarse es to very large ay; trace angul	ck - Alluvium Deposit (2.5YR 4/4) some (7.5 e grained, angular to pebbles, angular to ar; coarser clasts cor lered granules to sma	5R 4/6); very fir subround; som subangular; so mposed of met	ne ne me silt;	Normal drilling	
	120			Topock - Alluvium Deposits	SM		trace a	ngular to suba	to very large pebbles, ngular; increase in sil dry from 283-285' bgs	It, increase in	oround; very fine		
_279_													

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 15 of	21
l l	Started:				Surface			Borin	ıq No.:	MW-Xd	
	•	ted: <u>07/31/2</u>			Northing			_	_		
Drilling		Cascad			Easting			_ Client:	PG&E		
Drilling			-		Total De	-	417 ft bgs	Project:		V Remedy Ph	
l l	g Type		ic Truck Mou		Borehol			_ Location:	PG&E I	opock, Needle	es, California
Driller Drilling			nos / S. Vasqı es / L. Amaya		Samplin		Vater: 9.6 ft bgs od: 4 Inch X 10 ft Core Barrel	- Project N	Lumber: F	RC000753.005	51
Logge			M / CS		Samplin	•		_ 1 10,00011	10111DC1. <u>1</u>	10000700.000	<i>)</i>
Editor:		Grant V			Convert	-		_			
	>			υ <u>Ε</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120									(281.0 - 287.0') Rough drilling	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
287 287 288 288 289 289		No Sieve		Topock - Alluvi <mark>um</mark>	CAA		(287') red / moderate reddish brown(10R 4/6) (2.5YR 4/4); trace clay; dry to moist; decrease very fine to very coarse sand			(287.0 - 297.0') Rough drilling	
291_ 292_	120	Collected		Deposits	SM		(291'); decrease in silt, increase in very fine to	o very coarse	sand		
							(293'); moist to wet				
_294			MW-X-VAS- 292-297								
			(<0.17 U ppb) 7/2/2019								
296_			14:45								
										(297.0 - 307.0') Rough drilling	
298 	120						(000 FI)	,			
300_	<u> </u>	11000		.c. (.	0 1		(299.5') reddish brown (2.5YR 4/4) some red			1 1 0 0 1 1	

Date State   Date   D	9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9			Sh	eet: 16 of	21
Nothing Note   Scale and   S											Bori	ng No.:	: MW-Xd	
Martin   M		•												
Dotal Right System   Prospect Truck Mount   Borehole Diameter   6-12 notes   Location: PG&E Topock. Needles. California Drilling Asst.   Cal	_					_	•	3):						
Delign   Assisted   Continue	_			•			-	otor:	•		-		-	
Deling Assist   Output   Out										<u> 5</u>	Location	i. FGaE	TOPOCK, Needle	es, Calliottila
Control   Cont				=		-			_	0 ft Core Barrel	— Proiect	Number:	RC000753.00!	 51
Editor: Grant Willord Converted to Well: Yes No  Sieve Sample ID Goognafee ID Specific Register of Specific Registers of Specif	_			-		-	_				_ , _			
Topock Samples Collected  No Sieve Samples Collected  120  1312  1312  1312  1313  1314  1315  1316  1			Grant V	<u> Willford</u>		Convert	ed to V	Vell:		☐ No				
Topock Samples Collected  No Sieve Samples Collected  120  131  131  131  131  131  131  131	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
310	302				0 12			(303'); little sil	some granules to	to very large pebbles, a to very large pebbles, a to very large pebbles to very coarse	angular to subsequently angular to	pangular;	(307.0 - 317.0')	5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water
320	310 _311 _311 _312 _313 _314 _315 _316 _317 _318		Samples		Alluvium	SM		reddish	n brown(10R 4/	6); some silt; moist to				
	320													

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 17 of	21
Date S		•		_	Surface			Borin	a No.:	MW-Xd	
		ted: <u>07/31/</u>			Northing	• •	•				
Drilling		Casca			Easting	`	•	Client:	PG&E		
Drilling Drill Ri			•	unt .		•	417 ft bgs eter: 6-12 inches	Project:		W Remedy Phi Topock, Needle	
Driller			<u>nic Truck Moi</u> mos / S. Vasq		Borehol		eter: <u>6-12 inches</u> Water: <u>9.6 ft bgs</u>	Location.	PGAE	тороск, пееак	es, Calliornia
Drilling			res / L. Amay		Samplin			Proiect N	umber:	RC000753.005	 51
Logge			SM / CS		Samplin	-			•		
Editor:		<u>Grant</u>	Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
321	120			Topock - Alluvium Deposits	SM		(321'); little silt; dry to moist; iron oxide stainin fine to very coarse sand	ıg; increase il	n very	(317.0 - 323.0') Normal drilling (323.0 - 326.0') Rough drilling	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
325 326 327				Topock - Alluvium	МН		(327.0 - 328.2') Topock - Alluvium Deposits; C with sand (MH); reddish brown (2.5YR 4/4); m	nedium plasti	city;	(326.0 - 327.0') Normal drilling (327.0 - 337.0') Normal Drilling	
_328_				Deposits	IVIII		some granules to very large pebbles, angular very fine to very coarse grained sand, subang little clay, some coarser clasts composed of n medium stiff; moderate cementation	ular to subroเ	und;		
_329_		No Sieve		Topock - Alluvium Deposits	SM		(328.2 - 329.9') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra cobbles, subangular to subround; low plasticit granules to large pebbles, angular to subroun	ined to small tv: some silt:	l little		
_330_  _331_ 		Samples Collected		Topock -	O		weak cementation (329.9 - 334.0') Topock - Alluvium Deposits; C with sand (MH); reddish brown (2.5YR 4/4); m some granules to large pebbles, angular to st fine to very coarse grained sand, subangular to st clay; moist; medium stiff; weak cementation (331'); trace clay; increase in granules and pe	Gravelly elast nedium plasti ubangular; litt to subround;	ic silt city; le very little		
_332_  _333_ 	1200			Alluvium Deposits	MH		silt and clay	issies, deoic			
_334 _335 _336 _337				Topock - Alluvium Deposits	МН		(334.0 - 337.5') Topock - Alluvium Deposits; S gravel (MH); reddish brown (2.5YR 4/4); medi fine to very coarse grained sand, subangular t granules to very large pebbles, angular to sub moist; medium stiff; weak cementation	um plasticity o subround;	; some little		
<u> </u>				Tans-li			(227 F 220 01) T	Santa 11 - 11	341-	(337.0 - 345.0') Normal drilling,	
_338_			MW-X-VAS- 337-342	Topock - Alluvium	ML		(337.5 - 338.0') Topock - Alluvium Deposits; (ML); reddish brown (2.5YR 4/4); low plasticity	y; some gran	ules to	drilled 8 ft due to sluff	
339  	96		(<0.17 U ppb) 7/11/2019 11:30	Topock - Alluvium Deposits	_/ ML		very large pebbles, angular to subangular; littl coarse grained sand, subangular to subround medium stiff; weak cementation (338.0 - 341.0') Topock - Alluvium Deposits; (ML); reddish brown (2.5YR 4/4); medium plar granules to very large pebbles, angular to sub	; trace clay; r Gravelly silt w sticity; some	rith sand		
	viations	: USCS =	Unified Soil C	lassification	n System	ાલાગ 1 ft = fe	eet. bas = below ground surface. ams	l = above i	mean se	a level GW = 0	roundwater

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	ı Log		Sheet: 18 of	21
Date S	tarted:	06/20/	2019		Surface	Elevat	tion: <u>N/A</u>	Boring N	lo.: MW-Xd	
	•	ted: <u>07/31/</u>	2019		Northing		•			
Drilling		<u>Casca</u>			Easting	•		Client: PG		
Drilling			•			•	•	•	al GW Remedy Pha	
Drill Ri			nic Truck Μοι		Borehol			Location: PG	&E Topock, Needle	es, California
Driller I			mos / S. Vasq		•		Water: 9.6 ft bgs	Due in at Novemb	D0000750 005	- 4
Drilling			res / L. Amaya		Samplin	•		Project Numb	per: <u>RC000753.005</u>	) ]
Loggeı Editor:			SM / CS Willford		Samplin Convert	•				
Luitor.		Olani	VIIIIOIG		T	CG to v	Too I No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 _341			MW-X-VAS- 337-342 (<0.17 U	Topock - Alluvium Deposits	ML		If the to very coarse grained sand, subangular to clay; moist; stiff; moderate cementation (339'); wet to moist; weak cementation; decrease in silt		(337.0 - 345.0') Normal drilling, drilled 8 ft due to sluff	
			ppb) 7/11/2019 11:30	Topock - Alluvium Deposits	GM		(341.0 - 342.5') Topock - Alluvium Deposits; S (GM); reddish brown (2.5YR 4/4); granules to angular to subround; some fine to very coarse subangular to subround; little silt; trace clay; n	very large pebbles grained sand,	nd	
 _343_	96						(342.5 - 345.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); medium gra grained, angular to subround; some granules	ined to very coarse to very large		
_344_				Topock - Alluvium Deposits	SM		pebbles, angular to subround; little silt; trace of cementation	clay; moist; weak		
345							(345.0 - 348.0') Topock - Alluvium Deposits; C	Gravelly silt with sa		
346				Topock -			(ML); reddish brown (2.5YR 4/4); low plasticity large pebbles, angular to subround; little fine to sand, subangular to subround; moist to dry; so cementation	to coarse grained	Normal drilling	
_347				Alluvium Deposits	ML		(347'); moist to dry; soft; weak cementation; in and pebbles, increase in sand, decrease in sil		s	
_348_				Topock - Older Alluvium	MH		(348.0 - 348.3') Topock - Older Alluvium Depc silt with sand (MH); light brown (7.5YR 6/4); m	nedium plasticity;	stic	
_349_		N. O'		Deposits			some clay; little granules to medium pebbles, subround; trace very fine to fine grained sand, round; dry; soft; weak cementation (348.3 - 352.0") Topock - Older Alluvium Depo	subangular to		
_350_  _351_	144	No Sieve Samples Collected		Topock - Older Alluvium Deposits	ML		with sand (ML); reddish brown (2.5YR 4/4); los small to large pebbles, angular to subround; li grained sand, subangular to subround; moist is cementation	w plasticity; some ttle fine to coarse		
352							(352.0 - 355.0') Topock - Older Alluvium Depc		(352.0 - 357.0') Rough drilling	
353				Topock - Older	0)4/ 014		very fine grained to medium grained, subangu granules to very large pebbles, angular to sub clay; trace small cobbles, subangular; moist to	lar to subround; lit round; little silt; litt	ttle	
_354_				Alluvium Deposits	SW-SM		cementation			
_355_							(355.0 - 357.0') Topock - Weathered Bedrock			
356 				Topock - Weathered Bedrock - conglomerat	IVIH		Gravelly elastic silt with sand (MH); reddish br medium plasticity; some granules to very large subround; little very fine to fine grained sand, subround; little clay; little coarser clasts comp dry to moist; stiff; moderate cementation	e pebbles, angular subangular to		
358	60			Topock - Weathered Bedrock - conglomerat	IVIL		. (357.0 - 359.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); reddish brown (2.5 plasticity; some very fine to medium grained s subround; little granules to very large pebbles subround; little clay; moist; medium stiff; weak	5YR 4/4); low and, subangular to , angular to	(357.0 - 362.0') Rough drilling and sluff encountered	
360				Topock - Weathered Bedrock -	IVIL		(359.0 - 374.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); reddish brown (2.5 plasticity; some very fine to very coarse graine	5YR 4/4); low ed sand, subangula		

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		She	et: 19	9 of	21
Date S					Surface	Elevati	on: <u>N/A</u>	Boring	:.oN c	MW	-Xd	
		ted: <u>07/31/</u> 2			Northing		•				7.00	
Drilling		<u>Cascac</u>			Easting	•			PG&E			
Drilling					Total De	•	417 ft bgs	•	Final GV		-	
Drill Ri			nic Truck Mou		Borehol			Location:	PG&E T	opock,	Needle	es, California
Driller I			nos / S. Vasq		•		Vater: 9.6 ft bgs	Dunin at Ni			752.00	-1
Drilling			es / L. Amaya		Samplin	-		Project Nu	ımber: <u>r</u>	<u> </u>	753.003	01
Logge Editor:			M / CS Willford		Samplin Convert	-						
Luitoi.		Gianti	/ V IIII OI U		T	Eu io v	Veii. A les I NO					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling	Notes	Drilling Fluid
				conglomerat	е		to subround; little granules to very large pebble subround; little clay; trace coarser clasts comp				- 362.0') drilling	
361	60						metadiorite; dry to moist; soft	00000		and	sluff	
	60						(361'); moist to wet			ericou	ntered	
362							(361.5'); moist to wet; soft; weak cementation; and decrease in silt	increase in s	and			
							and desireds in sin			(362.0 - Soft c	- 372.0') Irillina	
363										00.00	9	
							(363'); dry to moist					
_364_												
_365_							405					
_366_												
_				Topock -								
_367	120			Weathered Bedrock -	ML							
				conglomerat	е							
_368_												
_369_							(369'); dry to moist; soft; weak cementation; in	crease in san	d and			
-		No Sieve					decrease in silt		u u			
_370		Samples Collected										
-		Collected										
_371												
_372_											- 377.0')	
272										Normal	drilling	
_373_												
_3/4_	00						(374.0 - 377.0') Topock - Weathered Bedrock Silty sand with gravel (SM); reddish brown (2.5	- conglomera	te;			
	60						grained to very coarse grained, subangular to	subround; sor	ne			
_0,0_				Topock - Weathered	CM		granules to very large pebbles, angular to submoist; medium dense; moderate cementation	round; trace c	iay;			
_376_				Bedrock - conglomerat	SM e							
				J. J. J. S. Morat								
377												
				Topock - Weathered	GW-GM		(377.0 - 377.5') Topock - Weathered Bedrock Well graded gravel with silt and sand (GW-GN	- conglomera	te; own		- 382.0') I drilling	
_378_				Bedrock - conglomerat			(2.5YR 4/4); granules to boulders, subangular very fine to very coarse grained sand, subangu	to subround;	little		٠٠٠٠٠ع	
	60			Topock -	1	PIR	little silt; dry to moist; weak cementation		- 1			
379	00			Weathered Bedrock -	GIVI		(377.5 - 382.0') Topock - Weathered Bedrock Silty gravel with sand (GM); reddish brown (2.9	5YR 4/4); grai	nules			
				conglomerat	е		to very large pebbles, angular to subround; little	le very fine to	very			
_380_						ry P	trace coarser clasts composed of metadiorite;	dry to moist;		<u></u>		
Ahhrev	viations	$\cdot$ HSCS = I	Inified Soil Cl	lassification	System	ft = fe	et, bas = below ground surface, ams	l = ahove n	nean sea	امريماد	GW = c	roundwater

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	Sh	neet: 20 of	21
Date S				;	Surface	Elevati	· · · · · · · · · · · · · · · · · · ·	Boring No.	: MW-Xd	
	•	ted: <u>07/31/</u>				g (NAD				
Drilling		Casca			_	(NAD8	•	Client: PG&E		
Drilling			Drilling nic Truck Mou		Total D	•	417 ft bgs eter: 6-12 inches		SW Remedy Ph	
Drill Ri Driller			mos / S. Vasq			le Diam o First \	eter: <u>6-12 inches</u> Vater: <u>9.6 ft bgs</u>	Location. PG&E	Topock, Needle	es, Calliornia
Drilling			res / L. Amaya		•	ng Meth		Project Number:	RC000753.005	 51
Logge			SM / CS		•	ng Inter				
Editor:			Willford		-	ted to V				
oth t)	very (r	Sieve	Groundwater	ogic	de CS	CS	Coll Decembring		Daillia - Nata	Daillin a Florid
Depth (ft)	Recovery (in)	Sample ID	Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 _381_				Topock - Weathered			moderate cementation		(377.0 - 382.0') Normal drilling	
	60			Bedrock - conglomerate	GM	000				
_382_							(382.0 - 390.0') Topock - Weathered Bedrock	- conglomerate;	(382.0 - 390.0')	
_ 383_							Gravelly lean clay with sand (CL); reddish bro medium plasticity; some granules to very larg subround; little fine to coarse grained sand, su subround; little silt; moist to wet; soft; weak or	e pebbles, angular to ubangular to	Normal drilling	
384			MW-X-VAS- 382-387							
385			(<0.17 U ppb) 7/13/2019 14:43				40			
386			1110	Topock - Weathered	CL					
	132		1	Bedrock - conglomerate			(386'); moist to wet; soft; weak cementation; c and pebbles and sand, increase in silt and cla			
_388_										
_389_										
390_		No Sieve Samples					(200 0 400 0l) Tl. Wtd Ddd		(200.0202.0!)	
		Collected					(390.0 - 400.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro	wn (2.5YR 4/4);	(390.0 - 393.0') Rough drilling	
_391							medium plasticitý; some silt; littlé granules to angular to subround; little fine to very coarse of subangular to subround; moist; soft; weak cer	grained sand,		
_392_							(392'); moist; soft; weak cementation; increas pebbles, and decrease in clay	e in granules and		
_393_							(392.7'); moist; soft; weak cementation (393'); moist; soft; weak cementation; increas	e in granules and	(393.0 - 403.0')	
_394_							pebbles, decrease in sand and clay		Normal drilling	
_ 395_				Topock - Weathered						
_393_				Bedrock - conglomerate	CL					
_396_				3.25.310						
<u> </u>	162						(206 El): maint: noft: work accessible and	one in granula		
_397							(396.5'); moist; soft; weak cementation; decre pebbles, increase in silt and clay	ase iii granules and		
_398_										
							(398.5'); moist; soft to medium stiff; weak cem	nentation; increase in		
_399_							granules and pebbles, decrease in silt			
400										
	viations	· IISCS = I	Inified Soil C	lassification	Systen	o ft = fc	et has = helow around surface ams	el = ahove mean si	ealevel GW = 0	aroundwater

9/	١RC	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring	Log	3			She	et: 21 of	21
Date S	tarted:	06/20/	2019		Surface	Elevati	on:	N/A		Borin	na No.:	MW-Xd	
	•	ted: <u>07/31/</u>	2019		Northing	g (NAD	83):	N/A				MITT AG	
Drilling		<u>Casca</u>	de		Easting	•	3):	N/A		Client:	PG&E		
Drilling					Total De	•		417 ft bgs		Project:		V Remedy Ph	
Drill Ri			nic Truck Mou		Borehol			6-12 inches		Location	: <u>PG&amp;E T</u>	opock, Needle	es, California
Driller I			nos / S. Vasq		•			9.6 ft bgs			. —	2000250	- 4
Drilling			res / L. Amaya		Samplin	•		4 Inch X 10 ft Core B	<u>Barrel</u>	Project N	Number: <u>I</u>	RC000753.00	01
Logge			SM / CS		Samplin Canvort	•		Continuous No.					
Editor:		Grant	Willford		Convert	ed to v	veii:						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Desc	cription			Drilling Notes	Drilling Fluid
 _401_				Topock - Weathered Bedrock - conglomerate	CL		Gravell mediur	- 401.0') Topock - Weathere y lean clay with sand (CL); in plasticity; some silt; little of to subround; little fine to ve	reddish brov granules to l	wn (2.5YR 4 large pebble	./4); es,	(393.0 - 403.0') Normal drilling	
 _402_				Topock - Weathered Bedrock - conglomerate	GC		soft to (401.0	ular to subround; trace sma nedium stiff; weak cementa · 402.2') Topock - Weathere gravel with sand (GC); redo	ation red Bedrock	- conglome			
 _403_				Topock - Weathered Bedrock - conglomerate	ML		granule very co	s to very large pebbles, and arse grained sand, subangu le coarser clasts composed	gular to subi ular to subro	round; little i ound; little si	ilt; little	(403.0 - 407.0')	
_404_	162			Topock - Weathered Bedrock - conglomerate	GC	Ø // //	Gravell plastici	· 403.6') Topock - Weathere y silt with sand (ML); reddis ty; some granules to very land; little medium to very coand	sh brown (2. arge pebbles	5YR 4/4); lo , angular to	w	Soft drilling	
_405_				Topock - Weathered Bedrock -	SM		to subr (403.6 Clayey	ound; little clay; moist; soft; 404.0') Topock - Weather gravel with sand (GC); redc s to small cobbles, angular	weak ceme ed Bedrock dish brown (	entation - conglome 2.5YR 4/4);	rate;		
_406				Topock - Weathered	CL		very co clay; lit cemen	arse grained sand, subangu le coarser clasts composed ation	ular to subro d of metadio	ound; little si orite; moist;	ilt; little weak		
_407				Bedrock - conglomerate Topock - Weathered Bedrock -	SM		Silty sa grained granule	<ul> <li>406.1') Topock - Weatherend with gravel (SM); reddist to very coarse grained, substovery large pebbles, and</li> </ul>	h brown (2.5 bangular to gular to subi	5YR 4/̈4); fin subround; s round; little :	e ome silt; little	(407.0 - 417.0') Soft drilling	
_408_  _409_		No Sieve Samples Collected		conglomerate Topock -			(406.1 Sandy mediun	407.0') Topock - Weathere ean clay with gravel (CL); re n plasticity; some silt; little ç	ed Bedrock eddish brow granules to l	- conglomer n (2.5YR 4/	rate; (4); es,		
410				Weathered Bedrock - conglomerate	GC		subang (407.0 Silty sa	ular to subround; little fine t ular to subround; moist; sof · 408.0') Topock - Weathere nd with gravel (SM); reddish to very coarse grained, sub	oft; weak cen red Bedrock h brown (2.5	nentation - conglome 5YR 4/4); fin	rate;		
_411_							plastici subrou (408.0	to very coarse grained, sur- y; some granules to very la nd; little silt; little clay; mois · 411.0') Topock - Weathers gravel with sand (GC); redo	arge pebbles st; weak cem ed Bedrock	s, angular to nentation - conglome			
_412_	120			Topock - Weathered			granule coarse moist;	graver with sand (Go), reduces s to small cobbles, angular grained sand, subangular to veak cementation - 414.8') Topock - Weathere	r to subroun to subround;	d; some fine ; little silt; litt	tle clay;	(412.0 - 417.0') Cleared bottom of borehole with	(412.0 - 417.0') 375 gallons of water used; 0
_413_  _414_			MW-X-VAS- 412-417 (<0.17 U	Bedrock - conglomerate	SM e		Silty sa grained plastici subrou (413.3)	nd with gravel (SM); reddish to very coarse grained, sulty; some granules to very land; some silt; little clay; moi ; moist; weak cementation;	h brown (2.5 bangular to arge pebbles sist; weak ce ; increase in	5YR 4/4); fin subround; lo s, angular to mentation	ow .	water	gallons of water recovered; 375 gallons of water lost
_415_			ppb) 7/15/2019 12:43	Topock -			(414.8 Silty grato very	and sand, decrease in silt  417.0') Topock - Weathere  avel with sand (GM); reddislarge pebbles, angular to su	red Bedrock sh brown (2.5 ubround; so	5YR 4/4); gr me fine to v	anules ery		
416  417				Weathered Bedrock - conglomerate	GM			grained sand, subangular to oarser clasts composed of ation					
71/					1	1-111111		End of Boring a	at 417.0 'bgs	S.	I	1	<u> </u>
418													
_419_													
420	intion	· 11000 = 1	Inified Sail C	loccification	System	, ft – f-	ot be	s - holow ground a	face cm-	l = obove	moon oo	a lovol CM = :	aroundwata-
wnnie/	/iatiONS	s. ∪SUS = 1	UTITIEU SOII C	เลรรแบสแบท	System	ι, ιι − ι∈	er, ng	s = below ground surfa	ace, ams	ı – above	mean sea	a 16v6l, GVV = (	jiouriuwaler,

9/	ARCA	DIS Design for na built	gn & Consultancy atural and assets		Well Const	ruction Log	\$	Sheet: 1 of 7
Date S		08/10/2019			Surface Elevation:	N/A	Well ID: N	MW-X-45, MW-X-120
	-	08/12/2019	)		Shallow Well Elevation:	N/A		
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E	
_		Sonic Drillin	-		Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller I		Steve Vasq			Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling		O. Flores /			Borehole Diameter:	<u>10-12 inches</u>		
Logge		Anthony Ma			Water Level Start:	9.6 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Grant Wilfo	rd		Development End Date:			
Total D	Depth:	127 ft bgs			Well Completion:	☐ Flush☐ Stick-up	ı	<u> </u>
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
					(0.0 - 24.2') 2" PVC Sch 40 Casing	(0.0 - 99.8') 2" PVC Sch 40 Casing		
_ 1 _								
_ 2 _								
_ 3 _								
_ 4 _								
_ 5 _								
_ 6 _								
_ 7 _								
_ ′ _								
├ 。 ┤					(3.2 - 17.1') Portland			
_ 8 _					Cement 6%	(0.0 - 17.0') 12.0"		
			NR		Bentonite	Borehole		
_ 9 _								
					(9.5 - 10.5')			
10					Centralizer —		(3.2 - 17.1') 60.7	(3.2 - 17.1') 100 gallons (65%) Note: Type I, II and V and Benseal
							gallons	Note. Type i, ii and v and bensear
_11_								
12								
13								
14	MW-X-VAS- 12-17							
	(<0.033 U							
15	ppb) 6/25/2019							
	15:10							
16								
L J								
17								
L ]				\ /				
18				$  \setminus  $				
			NR	V	(17.1 - 22.0')	(17.0 - 127.0') 10.0"	(17.1 - 22.0') 3.41	(17.1 - 22.0') 4 bags (17%)
19			INIX		Bentonite seal chips	Borehole	bags	Note: Puregold Medium Chips
_ · · ~ _				/ \				
20	/ \		/ \					
	iations: II	SCS = Unifi	ed Soil C	assifica	ation System ft = feet has	= helow ground surface as	msl = ahove mean	sea level GW = groundwater

ARCADIS   Design & Consultancy for natural and local l					Well Construction Log		Sheet: 2 of 7		
		08/10/2019			_Surface Elevation:	N/A	Well ID: N	MW-X-45, MW-X-120	
Date Completed:					_Shallow Well Elevation:				
Drilling Co.:		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E		
Drilling Method: Driller Name:		Steve Vasquez			_Northing (NAD83):	N/A N/A	•	GW Remedy Phase 1  Topock, Needles, California	
		O. Flores / L. Amaya			_Easting (NAD83): _Borehole Diameter:	10-12 inches	Location. <u>PG&amp;E</u>	Topock, Needles, California	
		Anthony Mack			Water Level Start:	9.6 ft bgs	Project Number	r: RC000753.0051	
		Grant Wilford			Development End Date:	•			
Total Depth:		127 ft bgs			Well Completion:	☐ Flush☐ Stick-up			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	construction	Calculated Material Volumes	Material Volumes Installed	
 21  22					(0.0 - 24.2') 2" PVC — Sch 40 Casing (17.1 - 22.0') — Bentonite seal chips	— (0.0 - 99.8') 2" PVC Sch 40 Casing	(17.1 - 22.0') 3.41 bags	(17.1 - 22.0') 4 bags (17%) Note: Puregold Medium Chips	
22	MW-X-VAS- 32-37 (<0.033 U ppb) 6/26/2019 11:45	Topock - Fill  Topock - Fluvial Deposits	NR SP		(24.2 - 44.2') 2" Sch—40 PVC (20-slot) Screen  (22.0 - 48.5') Cemex—#3 MESH (8x10)	(17.0 - 127.0') 10.0" Borehole	(22.0 - 48.5') 26.5 bags	(22.0 - 48.5') 31 bags (17%) Note: Lapis Lustre Sand	

9/-	ARCA	DIS Design & for natura built asset	Consultancy al and ts		Well Consti	ruction Log	S	Sheet: 3 of 7		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:		Cascade Sonic Drilling Steve Vasquez O. Flores / L. Amaya Anthony Mack Grant Wilford 127 ft bgs			Surface Elevation: N/A  Shallow Well Elevation: N/A  Deep Well Elevation: N/A  Northing (NAD83): N/A  Easting (NAD83): N/A  Borehole Diameter: 10-12 inches  Water Level Start: 9.6 ft bgs  Development End Date: N/A  Well Completion: Flush Stick-up		Client: PG&E Project: Final (	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051		
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed		
41		Topock - Fluvial Deposits  Topock - Fluvial Deposits  GW		(22.0 - 48.5') Cemex	8.5') Cemex	(22.0 - 48.5') 26.5 bags	(22.0 - 48.5') 31 bags (17%) Note: Lapis Lustre Sand			
495051525354555657585960			NR		(48.5 - 96.4') — Bentonite seal chips	(17.0 - 127.0') 10.0" Borehole	(48.5 - 96.4') 34.9 bags	(48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips		

9/	ARC4	DIS Design 8 for natur built ass	Consultancy ral and ets		Well Consti	ruction Log	:	Sheet: 4 of 7
Driller Name: Drilling Asst: Logger:		Cascade Sonic Drilling Steve Vasquez O. Flores / L. Amaya Anthony Mack Grant Wilford 127 ft bgs			Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A N/A N/A N/A N/A 10-12 inches 9.6 ft bgs N/A  ☐ Flush ☐ Stick-up	Client: PG&I Project: Final Location: PG&I	MW-X-45, MW-X-120  E GW Remedy Phase 1 E Topock, Needles, California er: RC000753.0051
	Groundwat	Geologic Formation	NR SOSIO	USCS	<u> </u>	onstruction	Calculated Material Volumes  (48.5 - 96.4') 34.9 bags	Material Volumes Installed  (48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips
_ 80 _								

9/	ARCA	DIS Design & C for natura built asset	Consultancy l and ts		Well Const	ruction Log	\$	Sheet: 5 of 7
Date S		08/10/2019			_Surface Elevation:	N/A	Well ID: N	//W-X-45, MW-X-120
	-	08/12/2019			_Shallow Well Elevation:	N/A		
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	-	GW Remedy Phase 1
Driller I	Name:	Steve Vasque	Z		_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling	Asst:	O. Flores / L.			_Borehole Diameter:	<u>10-12 inches</u>		
Loggei		Anthony Macl	<b>(</b>		_Water Level Start:	9.6 ft bgs	Project Number	r: RC000753.0051
Editor:		Grant Wilford			_Development End Date:			
Total D	epth:	127 ft bgs	T		_Well Completion:	☐ Flush☐ Stick-up		
Depth (ft)	Groundwat Sample ID		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
81			NR		(84.5 - 85.5') Centralizer  (48.5 - 96.4') Bentonite seal chips	(17.0 - 127.0') 10.0" Borehole	(48.5 - 96.4') 34.9 bags	(48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips
97 98 99 100		Topock - Fluvial Deposits	sw		(96.4 - 124.0') Cemex #3 MESH — (8x10)		(96.4 - 124.0') 28.4 bags	(96.4 - 124.0') 35 bags (23%) Note: Lapis Lustre Sand

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Consti	ruction Log	S		
Date S	tarted:	08/10/2019			_Surface Elevation:	N/A	Well ID: N	/W-X-45, MW-X-120	
	-	08/12/2019			_Shallow Well Elevation:	N/A			
Drilling		Cascade			_Deep Well Elevation:	N/A			
		Sonic Drilling			_Northing (NAD83):	N/A	Project: <u>Final (</u>	GW Remedy Phase 1	
Driller I	Name:	Steve Vasque	ez		_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California	
Drilling	Asst:	O. Flores / L.	Amaya		_Borehole Diameter:	10-12 inches	_		
Logger	r:	<b>Anthony Mac</b>	k		Water Level Start: 9.6 ft bgs		Project Number	:: RC000753.0051	
Editor:		<b>Grant Wilford</b>			Development End Date: N/A				
Total D	tal Depth: <u>127 ft bgs</u>			_Well Completion:	☐ Flush☐ Stick-up				
Depth (ft)	Groundwate Sample ID		USCS	USCS	Well Co	onstruction	Calculated Material Volumes		
101 102 103 104 105 106 107		Topock - Fluvial Deposits	Topock - Fluvial Deposits			(99.8 - 119.8') 2" PVC Sch 40 Screen	8') 2" Screen		
		Topock - Fluvial	GW						
108 109 110 111 111	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	SM		(96.4 - 124.0') Cemex #3 MESH (8x10)	(17.0 - 127.0') 10.0" Borehole	(96.4 - 124.0') 28.4 bags		
113 114 115 116	MW-X-VAS- 112-117 (<0.033 U ppb) 6/28/2019 09:56	Topock - Fluvial Deposits  Topock -	GW						
 117		Alluvium Deposits	GW-GN						
118		Topock - Alluvium Deposits	SM						

9/	ARC4	DIS Design & for natur built asso	Consultancy ral and ets		Well Constr	uction Log		Sheet: 7 of 7
Date C Drilling	y Co.: y Method: Name: y Asst: er:	08/10/2019 08/12/2019 Cascade Sonic Drilling Steve Vasquez O. Flores / L. Amaya Anthony Mack Grant Wilford 127 ft bgs			_ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter:	N/A N/A N/A N/A N/A N/A 10-12 inches 9.6 ft bgs N/A  ☐ Flush ☐ Stick-up	Client: PG&I Project: Final Location: PG&I	GW Remedy Phase 1 E Topock, Needles, California r: RC000753.0051
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
121 122 123 123		Topock - Alluvium Deposits	SM		(120.5 - 121.5')	(119.8 - 122.1') Sump and End Cap  (17.0 - 127.0') 10.0" Borehole	(96.4 - 124.0') 28.4 bags	(96.4 - 124.0') 35 bags (23%) Note: Lapis Lustre Sand
					(124.0 - 125.0') Bentonite seal chips		(124.0 - 125.0') 0.8 bags	(124.0 - 125.0') 1 bags (25%) Note: Puregold Medium Chips
125			NR		(125.0 - 127.0')			Note: Formation material that settled from the water column in the casing
					End of Boring at 127.0 bgs.			

<b>ARC4</b>	DIS Design & Control for natura built asset	Consultancy Land cs		Well Consti	ruction Log	S	Sheet: 1 of 21		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	Cascade Sonic Drilling E. Ramos / S. Vasquez O. Flores / L. Amaya GJ / SM / CS Grant Willford 417 ft bgs			Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 6-12 inches Water Level Start: 9.6 ft bgs Development End Date: N/A Well Completion: Flush Stick-up		Client: PG&E Project: Final (	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California  Project Number: RC000753.0051		
Groundwat Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed		
	Topock - Fill	SP		(3.0 - 5.0') Bentonite—seal chips  (5.0 - 17.0') Portland Cement 6% Bentonite	(0.0 - 300.8') 2" PVC Sch 80 Casing	(5.0 - 17.0') 66.5 gallons	(3.0 - 5.0') 7 (240%) Note: Puregold Medium Chip installed due to void and heat hydration concerns  (5.0 - 17.0') 100 gallons (50%) Note: Type I, II and V and Bens		
MW-X-VAS 12-17 (<0.033 U ppb) 6/25/2019 15:10		NR							
-18 <u>-</u> - -19 <u>-</u>	Topock - Fill	SW		(17.0 - 118.2') Bentonite seal chips Centralizer		(17.0 - 118.2') 78.82 bags	(17.0 - 118.2') 77 bags (-2% Note: Puregold Medium Chi <sub>l</sub>		
	I opock - FIII	500	[`^`^`^`^`	(19.5 - 20.5')					

ARCADIS Design & Consultancy for natural and built assets						Well Const	ruction Log	Sheet: 2 of 21  Well ID: MW-X-170, MW-X-32  Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Californ  Project Number: RC000753.0051  Calculated Material Volumes Installed  (17.0 - 118.2') 78.82 (17.0 - 118.2') 77 bags (-2% Note: Puregold Medium Chip	
	Started:	06/20/20				_Surface Elevation:	N/A	Well ID:	MW-X-170. MW-X-320
	Completed:					_Shallow Well Elevation:	N/A		
Drilling		Cascade				_Deep Well Elevation:	N/A		
_	Method:					_Northing (NAD83):	N/A		
	Name:	E. Ramo		-		_Easting (NAD83):	N/A	Location: <u>PG</u> &	<u> RE Topock, Needles, California</u>
Drilling		O. Flore				_Borehole Diameter:	6-12 inches		D0000750 0054
Logge Editor:		GJ / SM Grant W				_Water Level Start: 9.6 ft bgs Project Number: RC000753.005 _Development End Date: N/A			
Total [		417 ft bg				Development End Date. Well Completion:	☐ Flush☐ Stick-up	<u> </u>	
Depth (ft)	Groundwat Sample II		-ormation	USCS	USCS Class	Well C	onstruction		
21	MW-X-VAS- 32-37 (<0.033 U ppb) 6/26/2019 11:45	Торос	k - Fill	sw		(19.5 - 20.5') Centralizer  (0.0 - 150.8') 2" PVC Sch 80 Casing  (17.0 - 118.2') Bentonite seal chips	— (0.0 - 300.8') 2" PVC Sch 80 Casing  — (0.0 - 42.0') 12.0" Borehole		2 (17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips

<b>ARCA</b>	DIS Design & C for natural built asset	Consultancy l and s		Well Consti	ruction Log	5	Sheet: 3 of 21
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	06/20/2019 07/31/2019 Cascade Sonic Drilling E. Ramos / S. O. Flores / L. / GJ / SM / CS Grant Willford 417 ft bgs	Amaya	Shallow Well Elevation: Morthing (NAD83): Morthi		N/A N/A N/A N/A N/A N/A 6-12 inches 9.6 ft bgs N/A  Flush Stick-up	Client: PG&E Project: Final (	GW Remedy Phase 1 Topock, Needles, California T: RC000753.0051
Groundwat Sample IE		Code	Well Well		onstruction	Calculated Material Volumes	Material Volumes Installed
41	Topock - Fluvial Deposits  Topock - Fluvial Deposits  Topock - Fluvial Deposits  Topock - Fluvial Deposits	SW SP		(17.0 - 118.2') — Bentonite seal chips	— (0.0 - 300.8') 2" PVC Sch 80 Casing — (0.0 - 42.0') 12.0" Borehole  — (42.0 - 324.0') 10.0" Borehole	(17.0 - 118.2') 78.82 bags	(17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips

9/	ARCA	DIS	esign & Consultancy r natural and uilt assets		Well Const	ruction Log	Well ID: MW-X-170, MW-X-320  Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California  Project Number: RC000753.0051  Calculated Material Volumes Installed  (17.0 - 118.2') 78.82 bags  (17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips	
Date S		06/20/201			_Surface Elevation:	N/A	Well ID: I	MW-X-170. MW-X-320
	Completed:		9		_Shallow Well Elevation:	N/A		
Drilling		Cascade			Deep Well Elevation:	N/A		
_	Method:		-		Northing (NAD83):	N/A	•	
Driller I		E. Ramos			Easting (NAD83):	N/A	Location: <u>PG&amp;I</u>	<u> Li Topock, Needles, California</u>
Drilling		O. Flores		a	Borehole Diameter:	6-12 inches		D0000750 0054
Logge Editor:		GJ / SM / Grant Wil			Water Level Start: Development End Date:	9.6 ft bgs	Project Numbe	r: RC000753.0051
Total D		417 ft bgs			Development End Date. Well Completion:	☐ Flush☐ Stick-up		
ے		. <u>S</u>	(O n)	(O, o)				
Depth (ft)	Groundwat Sample ID		USCS	USCS		onstruction		
 61  62		Topoo Fluvi Depos	al SW		(0.0 - 150.8') 2" — PVC Sch 80 Casing	— (0.0 - 300.8') 2" PVC Sch 80 Casing		
63 _ _ 63 _		Topod Fluvi Depos	al SP	0 0000			9	
646566676870717273747576	MW-X-VAS 71-76 (<0.033 U ppb) 6/27/2019 08:52	Topoc	al SW its		(69.5 - 70.5') Centralizer (17.0 - 118.2') Bentonite seal chips	(42.0 - 324.0') 10.0" Borehole		
 77		Fluvi	al SP	,,,,,,,				
78 79 		Topoc Fluvi Depos	al SW					

9/-	ARCA	DIS for buil	sign & Consultancy natural and It assets		Well Const	ruction Log		Sheet: 5 of 21
	Started:	06/20/201			_Surface Elevation:	N/A	Well ID: I	MW-X-170, MW-X-320
	-	07/31/201	9		_Shallow Well Elevation:	N/A		
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&	
_		Sonic Drilli	-		Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller I		E. Ramos	-		Easting (NAD83):	N/A	Location: <u>PG&amp;</u> l	E Topock, Needles, California
Drilling		O. Flores /		1	_Borehole Diameter:	6-12 inches	——	
Logge		GJ/SM/			_Water Level Start:	9.6 ft bgs	Project Numbe	er: RC000753.0051
Editor:		Grant Willf	ord		Development End Date:		<del></del>	
Total D	Jeptn:	417 ft bgs			Well Completion:	☐ Flush☐ Stick-up	1	
Depth (ft)	Groundwat Sample ID		USCS	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
81 82 83		Topock Fluvia Deposi	ı SW		(0.0 - 150.8') 2" — PVC Sch 80 Casing	— (0.0 - 300.8') 2" PVC Sch 80 Casing	9	
84 85 86 87		Topock Fluvia Deposi	I SW			9/8/		
88		Topock Fluvia Deposi	I SW-SN	1	(17.0 - 118.2') — Bentonite seal chips	(42.0 - 324.0') 10.0" Borehole	(17.0 - 118.2') 78.82 bags	(17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips
93								
├		Topock Fluvia	I GW-GN					
94		Deposi						
├ -		Topock	I SP					
95		Deposi						
		Topock	SW					
96		Deposi	ts	,,,,,,,				
L			NR					
97								
98								
L ]		Topock Fluvia						
99		Deposi						
100								

ARCADIS Design & Consultancy for natural and built assets						Well Const	ruction Log	bags Note: Puregold Medium Chips  (103.0 - 118.2') 10.59 bags (103.0 - 118.2') 12 bags (13% Note: Puregold Medium Chips	
Date S		06/20/				_Surface Elevation:	N/A	Well ID:	MW-X-170, MW-X-320
	ompleted:	07/31/	/2019			_Shallow Well Elevation:	N/A		
Drilling	Co.:	Casca	ıde			_Deep Well Elevation:	N/A	Client: <u>PG</u>	&E
Drilling	Method:	Sonic	Drilling			_Northing (NAD83):	N/A	Project: Fin	al GW Remedy Phase 1
Driller N	Name:	E. Rar	<u>mos / S.</u>	Vasqu	ıez	_Easting (NAD83):	N/A	Location: <u>PG</u>	&E Topock, Needles, California
Drilling	Asst:	O. Flo	res / L. <i>I</i>	4maya		_Borehole Diameter:	6-12 inches		
Logger	•	GJ / S	SM / CS			_Water Level Start: 9.6 ft bgs Project Number: RC000753.0		ber: RC000753.0051	
Editor:	litor: Grant Willford			_Development End Date:	N/A				
Total D	epth:	pth: 417 ft bgs		_Well Completion:	☐ Flush☐ Stick-up				
Depth (ft)	Groundwat Sample ID	er )	Geologic Formation	USCS Code	USCS Class		onstruction		
101 102 103 104		F	opock - Fluvial eposits	SW		(0.0 - 150.8') 2" — PVC Sch 80 Casing	— (0.0 - 300.8') 2" PVC Sch 80 Casing	9)	
			opock - Fluvial eposits	SW			.0		
 106  107		F	opock - Fluvial eposits	SW					
108		F	opock - Fluvial eposits	GW					
109	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04	T (	opock - Fluvial eposits	SM		(17.0 - 118.2') Bentonite seal chips  (103.0 - 118.2') Bentonite seal chips	(42.0 - 324.0') 10.0" Borehole	bags (103.0 - 118.2') 10.	Note: Puregold Medium Chips
 113  114	MW-X-VAS-	D.	opock - Fluvial eposits	GW					
115 115 116	112-117 (<0.033 U ppb) 6/28/2019 09:56	T <sub>0</sub>	opock - Fluvial eposits	SM					
117 118 119 		A	opock - Iluvium eposits	SM		(118.2 - 146.8') Bentonite seal pellets Centralizer (119.5 - 120.5')		(118.2 - 146.8') 22 buckets	.9 (118.2 - 146.8') 25 buckets (9%) Note: Pel-Plug (TR30) 3/8"

9/	ARCA	DIS of built	gn & Consultancy atural and assets		Well Const	ruction Log	;	Sheet: 7 of 21
Date S Date C Drilling	ompleted:	06/20/2019 07/31/2019 Cascade			_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation:	N/A N/A N/A	Well ID: I	MW-X-170, MW-X-320
_		Sonic Drillin	na .		_ Northing (NAD83):	N/A		- GW Remedy Phase 1
Driller N		E. Ramos /		IE7	Easting (NAD83):	N/A		E Topock, Needles, California
Drilling		O. Flores /	-		Borehole Diameter:	6-12 inches	Location. <u>r Gat</u>	- Topock, Necdics, Gainerna
Logger		GJ/SM/			Water Level Start:	9.6 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Grant Willfo			_Development End Date:			
Total D		417 ft bgs			Well Completion:	☐ Flush☐ Stick-up		
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock Alluviun Deposit	n SM		(118.2 - 146.8')	(42.0 - 324.0') 10.0" Borehole	(118.2 - 146.8') 22.9 buckets	(118.2 - 146.8') 25 buckets (9%) Note: Pel-Plug (TR30) 3/8"

ARC	ADIS Design 8 for natur built ass	Consultancy ral and ets		Well Const	ruction Log		Sheet: 8 of 21
Date Started:	06/20/2019			_Surface Elevation:	N/A	Well ID:	MW-X-170, MW-X-320
Date Complete				_Shallow Well Elevation:		_	
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	_ Client: PG&	
Drilling Method	_			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller Name:	E. Ramos / S	-		_Easting (NAD83):	N/A	Location: <u>PG&amp;</u>	E Topock, Needles, California
Drilling Asst:	O. Flores / L.			_Borehole Diameter:	6-12 inches		
Logger:	GJ/SM/CS			_Water Level Start:	9.6 ft bgs	Project Numbe	er: RC000753.0051
Editor:	Grant Willford	<u></u>		_Development End Date:			
Total Depth:	417 ft bgs	1		_Well Completion:	☐ Flush☐ Stick-up		T
Ground Sampl		USCS	USCS	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
141				(0.0 - 150.8') 2" — PVC Sch 80 Casing  (118.2 - 146.8') Bentonite seal pellets	— (0.0 - 300.8') 2" PVC Sch 80 Casing	(118.2 - 146.8') 22.9 buckets	(118.2 - 146.8') 25 buckets (9%) Note: Pel-Plug (TR30) 3/8"
	7 opb) 19	SM		(150.8 - 170.8') 2" ———————————————————————————————————	(42.0 - 324.0') 10.0" Borehole	(146.8 - 174.0') 26.6 bags	(146.8 - 174.0') 34 bags (28%) Note: Lapis Lustre Sand
		NR					

9/-	ARCA	DIS Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	5	Sheet: 9 of 21	
Date S		06/20/2019			_Surface Elevation:	N/A	Well ID: MW-X-170, MW-X-320		
	•	07/31/2019			_Shallow Well Elevation: N/A				
Drilling		Cascade			Deep Well Elevation: <u>N/A</u>		Client: PG&E		
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1	
Driller I		E. Ramos / S	-		Easting (NAD83): N/A		Location: <u>PG&amp;E</u>	Topock, Needles, California	
Drilling		O. Flores / L.	-		_Borehole Diameter:	6-12 inches	<u> </u>		
Logge		GJ/SM/CS			_Water Level Start:	9.6 ft bgs	Project Number	r: RC000753.0051	
Editor:		Grant Willford		_Development End Date:		<u></u>			
Total D	Deptn:	417 ft bgs			_Well Completion:	☐ Flush☐ Stick-up	1	I	
Depth (ft)	Groundwate Sample ID		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
 161			NR		(150.8 - 170.8') 2" —	(0.0 - 300.8') 2"			
_101_									
 162									
102									
162									
163									
164									
165									
166									
167					(146.8 - 174.0')		(146.8 - 174.0') 26.6	(146.8 - 174.0') 34 bags (28%)	
L _		Topock -			Cemex #3 MESH (8x10)		bags	Note: Lapis Lustre Sand	
_168		Alluvium Deposits	CL						
		Boposito							
169									
_									
_170						(42.0 - 324.0') 10.0" Borehole			
<u> </u>		Topock -				Borenoic			
_171_		Alluvium Deposits	CL						
					(170.5 - 172.0')				
_172_					Centralizer				
<u> </u>									
173					(170.8 - 173.2')				
					Sump and End Cap				
174									
<u> </u>									
175									
<u> </u>		Topock - Alluvium	SM						
176		Deposits							
  -  -					(174.0 - 297.4')		(474.0007.41) 400.0	(474.0. 007.41) 440 b. 1.4. (450)	
177		Topock -	GP	<del>                                      </del>	Bentonite seal —		(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"	
H		Alluvium Deposits	<u> </u>	1000	pellets				
178				$  \setminus /  $					
<u>├</u> -			NR	$  \vee  $					
179				$  / \rangle  $					
-  -  -				/ \					
	dational II	CCC - 112;6;4	l Cail C	loogific =:	tion System # - feet bas	- balow ground ourfees		nog lovel CW = groundwater	

Date   Started:   06/20/2019   Surface Elevation: N/A   Well ID: MW-X-170, MW-X-320	<b>ARC</b>	ADIS Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	;	Sheet: 10 of 21
Date Completed: 17/31/2019					_Surface Elevation:		Well ID: N	MW-X-170. MW-X-320
Deling Name   Receive   Project   Final QW Remedy Phase   Project   Project   Final QW Remedy Phase   Proj								
Diller Name:   D. Ramos / S. Vasquez   Easting (NAD83):   N.A.   Location: PG&E Topock. Needles, Californio   Coling Assistance   Color   Co	_				-			
Delling Asst	_	-			- ' '			
Logger   Sun   Control			-				Location: <u>PG&amp;E</u>	Topock, Needles, California
Editor	-			l			— — — — — — — — — — — — — — — — — — —	D0000750 0054
Total Depth:   417 ft bgs							Project Numbe	r: RC000753.0051
Fig.								
- 184					_ vvoii completion.	racri ctick up	I	
181	Groundwa Sample	Geologic Formation	USCS	USCS Class	Well C			
			NR					
Altuvium   SC   Deposits   SC   Deposits   Topock - Altuvium   Deposits   D	182	Alluvium Deposits	SM			PVC SUIT OU CASHING	9	
190	 188 	Alluvium Deposits  Topock - Alluvium Deposits	ML		40			
	190	Alluvium	SM	7////			(174.0 - 297.4') 103.3	(174.0 - 297.4') 119 buckets (15%)
	 _191	Topock - Alluvium	CL		pellets		Buokets	Note: 1 or 1 lag (1100) 0/0
	192	Alluvium	МН					
-   Alluvium CL		Alluvium Deposits  Topock - Alluvium Deposits						
1 200       = T = T = T			CL					

9/	ARCA	DIS Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	5	Sheet: 11 of 21
Drilling	completed: Co.: Method: Name: Asst:	eted: 07/31/2019 Cascade  iod: Sonic Drilling E. Ramos / S. Vasquez O. Flores / L. Amaya GJ / SM / CS Grant Willford 417 ft bgs			_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 9.6 ft bgs N/A  Flush Stick-up	Client: PG&E Project: Final Location: PG&E	MW-X-170, MW-X-320  GW Remedy Phase 1  Topock, Needles, California  T: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	MW-X-VAS- 207-212 (<0.17 U ppb 6/30/2019 13:28	Topock - Alluvium Deposits  Topock - Alluvium Deposits	CL		(174.0 - 297.4') Bentonite seal pellets	— (0.0 - 300.8') 2" PVC Sch 80 Casing  — (42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"

Date Started:   06/20/2019	9/	4RC4	DIS Design & for natu built ass	& Consultancy ral and sets		Well Const	ruction Log		Sheet: 12 of 21
Diffing Co.   Cascade   Deep Well Elevation:   N/A								Well ID: I	MW-X-170. MW-X-320
Driller Name:   Enamos / S. Vasquez   Enasting (NAD83):   Enasting (NAD83):   N/A		-							
Driller Name:   B. Ramos / S. Vasquez   Easting (NADA3):   O. Flores / L. Amagua   Borehole Diameter:   O. Flores / L. Amagua   Borehole Diameter:   O. Flores / L. Amagua   Development End Date:   O. Flores / L. Amagua   Development End Date:   O. Flores / L. Amagua   Development End Date:   N/A   Development End Date:   N/A   Flush   Stick-up   Project Number: RC000753.0051	_	-				•			
Drilling Asst:   O_Flores / L_Amaya	_	-	_						
Logger   GJ   SM / CS							•	Location: <u>PG&amp;</u> l	E Topock, Needles, California
Editor: Grant Willford Development End Date: N/A Total Depth: 417 ft bgs Well Completion: Flush Stick-up  Groundwater Sample ID	_	-						<u> </u>	
Total Depth: 417 ft bgs						<del></del>		Project Numbe	er: RC000753.0051
Calculated Material Volumes   Sample ID   Sample ID				<u>d</u>				<del></del>	
221	lotait	Deptn:		1		vveii Completion:	☐ Flusn☐ Stick-up	T	T
221	Depth (ft)		Geologic Formation	USCS	USCS Class	Well C			
			Topock - Alluvium Deposits			Centralizer  (174.0 - 297.4') Bentonite seal	PVC Sch 80 Casing	, ,	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"

9/	4RC4	DIS	Design & C for natural built assets	Consultancy Land cs		Well Consti	ruction Log		Sheet: 13 of 21
Date O Drilling Drilling Driller Drilling Logge Editor:	litor: <u>Grant Willford</u> tal Depth: <u>417 ft bgs</u>		Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 9.6 ft bgs N/A  Flush Stick-up	Client: PG& Project: Final Location: PG&	MW-X-170, MW-X-320  E GW Remedy Phase 1 E Topock, Needles, California er: RC000753.0051			
Depth (ft)	Groundwat Sample II	ter .	Geologic Formation	USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
241	MW-X-VAS	All	ppock - luvium eposits	SM			— (0.0 - 300.8') 2" PVC Sch 80 Casing	9	
248	245-255 (<0.033 U ppb) 7/1/2019 13:35	All	opock - luvium eposits	SM		(174.0 - 297.4') Bentonite seal pellets	(42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	3 (174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"
255 256 257 258 259		All	opock - luvium eposits	SM					
260				SM					

9/	ARCA	DIS Poesign & for natural built ass	& Consultancy ral and sets		Well Const	ruction Log		Sheet: 14 of 21
l l		06/20/2019			_Surface Elevation:	N/A	Well ID:	MW-X-170, MW-X-320
		07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&	
		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller		E. Ramos / S			_Easting (NAD83):	N/A	Location: <u>PG&amp;</u>	E Topock, Needles, California
Drilling		O. Flores / L.			_Borehole Diameter:	6-12 inches		
Logge		GJ/SM/CS			_Water Level Start: 9.6 ft bgs		Project Numbe	er: RC000753.0051
Editor:		Grant Willford	d		_Development End Date:			
Total E	Jeptn:	417 ft bgs			_Well Completion:	☐ Flush☐ Stick-up	T	1
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits  Topock - Alluvium Deposits	SM		(269.5 - 270.5')	— (0.0 - 300.8') 2" PVC Sch 80 Casing  — (42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"
_280_	<u> </u>	1 1	1	<u>1:1:1:1</u>			<u> </u>	L

,,	ADIS Design & for natura built asset	Consultancy al and ets		Well Consti	ruction Log	S	Sheet: 15 of 21	
Oate Started: 06/20/2019 Oate Completed: 07/31/2019 Orilling Co.: Cascade Orilling Method: Sonic Drilling Oriller Name: E. Ramos / S. Vasquez Orilling Asst: O. Flores / L. Amaya Ogger: GJ / SM / CS Editor: Grant Willford Total Depth: 417 ft bgs		ez	Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 6-12 inches Water Level Start: 9.6 ft bgs Development End Date: N/A Well Completion: Flush Stick-up		Client: PG&E Project: Final (	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051		
Groundw Sample		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
		SM		(174.0 - 297.4') Bentonite seal pellets  (297.4 - 324.0') Cemex #3 MESH (8x10)	— (0.0 - 300.8') 2" PVC Sch 80 Casing  — (42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (1: Note: Pel-Plug (TR30) 3/8" (297.4 - 324.0') 33 bags (189 Note: Lapis Lustre Sand	

9/	ARCA	DIS Design & for natura built asse	Consultancy Land ts		Well Consti	ruction Log	5	Sheet: 16 of 21
Date S		06/20/2019			_Surface Elevation:	N/A	Well ID: N	MW-X-170, MW-X-320
Date C	completed:	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase 1
Driller I	Name:	E. Ramos / S.	Vasqu	ez	_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling	Asst:	O. Flores / L.			_Borehole Diameter:	6-12 inches		
Logger		GJ / SM / CS			_Water Level Start:	9.6 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Grant Willford			_Development End Date:		<u> </u>	
Total D	epth:	417 ft bgs			_Well Completion:	☐ Flush☐ Stick-up	I	T
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	SM		(297.4 - 324.0') Cemex #3 MESH (8x10)	(42.0 - 324.0') 10.0" Borehole	(297.4 - 324.0') 28 bags	(297.4 - 324.0') 33 bags (18%) Note: Lapis Lustre Sand

9/	ARCA	DIS	Design & Const or natural and ouilt assets	ultancy		Well Const	ruction Log	\$	Sheet: 17 of 21
Date S		06/20/20				_Surface Elevation:	N/A	Well ID: N	MW-X-170, MW-X-320
	ompleted:		19			_Shallow Well Elevation:	N/A		
Drilling		Cascade				_ Deep Well Elevation:	N/A	Client: PG&E	
_	Method:		-	/		Northing (NAD83): N/A		•	GW Remedy Phase 1
Driller I Drilling		E. Ramos O. Flores			ez	Easting (NAD83): N/ABorehole Diameter: 6-12 inches		Location: PG&E	E Topock, Needles, California
Logger		GJ / SM		пауа		Borenole Diameter. Water Level Start:	9.6 ft bgs	— Project Number	r: RC000753.0051
Editor:		Grant Wil				Development End Date:	-	TTOJECTIVATIBE	1. 11. 11. 11. 11. 11. 11. 11. 11. 11.
Total D		417 ft bg:				Well Completion:	☐ Flush☐ Stick-up		
Depth (ft)	Groundwat Sample II			Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topos Alluvi Depos	um	SM		(320.5 - 321.5') Centralizer (297.4 - 324.0') Cemex #3 MESH — (8x10)	(300.8 - 320.8') 2" PVC Sch 80 Screen  (42.0 - 324.0') 10.0" Borehole  (320.8 - 323.2') Sump and End Cap	(297.4 - 324.0') 28 bags	(297.4 - 324.0') 33 bags (18%) Note: Lapis Lustre Sand
325 326 327							18		
328		Topod Alluvi Depod	um	MH					
329 		Topod Alluvi Depod	um	SM		40			
331 332 333 334		Topos Alluvi Depos	um	МН		(324.0 - 417.0') — Bentonite seal chips	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips
335 336 		Topos Alluvi Depos	um	МН					
338	MW-X-VAS-	Topod Alluvi	um 📙	ML					
339 	337-342 (<0.17 U ppt 7/11/2019 11:30	Depos	sits ck - um	ML					

9/	ARC4	DIS   Design 8   for nature built ass	Consultancy al and ets		Well Const	ruction Log	5	Sheet: 18 of 21
Date C Drilling Drilling	y Co.: y Method: Name: y Asst: r:	ted: 07/31/2019 Cascade od: Sonic Drilling E. Ramos / S. Vasquez O. Flores / L. Amaya GJ / SM / CS Grant Willford 417 ft bgs			Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A N/A 6-12 inches 9.6 ft bgs	Client: PG&E Project: Final (	GW Remedy Phase 1 Topock, Needles, California T: RC000753.0051
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
341 	MW-X-VAS 337-342 (<0.17 U ppt 7/11/2019 11:30	Denosite	ML GM					
343 		Topock - Alluvium Deposits	SM			.01		
346 347 		Topock - Alluvium Deposits	ML					
349 350 351		Topock - Older Alluvium Deposits  Topock - Older Alluvium Deposits	MH		(324.0 - 417.0') Bentonite seal chips	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips
352 353 354 355		Topock - Older Alluvium Deposits	SW-SM					
356 357		Topock - Weathered Bedrock - conglomerate	MH					
358 		Topock - Weathered Bedrock - conglomerate	ML e					
		Topock - Weathered Bedrock -	ML					

ARC4	Design & C for natura built asset	Consultancy l and ts		Well Const	ruction Log	S	Sheet: 19 of 21	
Date Started:	06/20/2019			Surface Elevation:	N/A	Well ID: N	IW-X-170, MW-X-320	
Date Completed				Shallow Well Elevation:	N/A			
Drilling Co.: Drilling Method:	Cascade Sonic Drilling			Deep Well Elevation: Northing (NAD83):	N/A N/A	Client: PG&E	GW Remedy Phase 1	
Driller Name:	E. Ramos / S.	Vasqu	ıez	Rasting (NAD83):	N/A	•	Topock, Needles, California	
Drilling Asst:	O. Flores / L.	-		Borehole Diameter:	6-12 inches			
Logger:	GJ/SM/CS			Water Level Start:	9.6 ft bgs	Project Number	: RC000753.0051	
Editor:	Grant Willford			Development End Date:				
Total Depth:	417 ft bgs			Well Completion:	☐ Flush☐ Stick-up			
Groundwa Sample	Geol Form	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
	Topock - Weathered Bedrock - conglomerate  Topock - conglomerate  Topock - conglomerate  Topock - conglomerate  Topock - conglomerate	SM GW-GM		(324.0 - 417.0') Bentonite seal chips	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips	

9/-	ARCA	DIS Design 8 for nature built ass	Consultancy al and ets		Well Const	ruction Log	5	Sheet: 20 of 21
Date C Drilling Drilling	Completed:   Co.:   Method: Name:   Asst:  r:	06/20/2019 07/31/2019 Cascade Sonic Drilling E. Ramos / S O. Flores / L. GJ / SM / Cs Grant Willford	Amaya S		_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A 6-12 inches 9.6 ft bgs	Client: PG&E Project: Final (	GW Remedy Phase 1 Topock, Needles, California T: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	MW-X-VAS- 382-387 (<0.17 U ppb 7/13/2019 14:43	Topock - Weathered Bedrock - conglomerate	GM		(324.0 - 417.0') — Bentonite seal chips	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips
		Topock - Weathered Bedrock - conglomerate	CL					

9/	ARCA	DIS Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	5	Sheet: 21 of 21
Date S	tarted:	06/20/2019			_Surface Elevation:	N/A	Well ID: N	MW-X-170, MW-X-320
	-	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&amp;E</u>	
_		Sonic Drilling			_Northing (NAD83):	N/A		GW Remedy Phase 1
Driller N		E. Ramos / S			_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling		O. Flores / L.	-	1	_Borehole Diameter:	6-12 inches		D0000750 0054
Logger		GJ/SM/CS			_Water Level Start:	9.6 ft bgs	Project Number	r: RC000753.0051
Editor: Total D		Grant Willford			_Development End Date:	N/A Stick-up		
Total L	ерит.	417 ft bgs			_Well Completion:	Flush Stick-up		
Depth (ft)	Groundwat Sample ID		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
 401		Weathered Bedrock -	CL					
		Conglomerate Topock - Weathered Bedrock -	GC					
402 		conglomerate Topock -						
403 		Weathered Bedrock - conglomerate	ML				9	
_404		Topock - Weathered Bedrock -	GC					
405		conglomerate Topock -	SM			40		
		Weathered Bedrock -						
_406		conglomerate						
		Topock - Weathered	CL					
_407		Bedrock - conglomerate						
		Topock - Weathered	SM					
_408		Bedrock -						
		conglomerate	į		(324.0 - 417.0')	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips
_409		Topock -			Bentonite se <mark>al chips</mark>	Botonolo	bags	Note: 1 dregord Mediam Omps
		Weathered Bedrock -	GC					
_410		conglomerate						
_411								
_412								
		Topock -						
_413		Weathered Bedrock - conglomerate	SM					
114	NAA 37 37A G							
414	MW-X-VAS- 412-417							
	(<0.17 U ppb 7/15/2019	)						
410	12:43			[.6]				
140		Topock - Weathered	GM	60				
416		Bedrock - conglomerate						
		oongiomorate		P. 787				
_417					End of Boring at			
L 1					417.0 'bgs.			
418								
419								
L 420								
_420	intinua. II	CCC - Unition	0-110	laaaifiaa	tion Contour ft - foot has	- bolow ground gurfage, or		

ARC/	<b>VDIS</b>	Design & Consultancy for natural and built assets		Во	ring L	.og		She	eet: 1 of	8
Date Started:	05/08/2				Elevation		Borir	na No.:	MW-Od	
Date Completed					g (NAD83)					
Drilling Co.:	Casca				(NAD83):		Client:	PG&E		
Drilling Method:		•		Total De	-	_	Project:		W Remedy Ph	
Drill Rig Type: Driller Name:	<u>Dan O'</u>	onic track mo			e Diamete	er: 6-12 inches ter: 12.4 ft bgs	Location	PG&E	Topock, Needle	es, Calliornia
Drilling Asst:		llmantel / J. F		-		_	Project N	lumber	RC000753 004	 51
Logger:		Willford		-	g Interval:		i rojecti	diriber.	1.0000700.000	<i>7</i> 1
Editor:		/IcGrane		-	ed to Wel					
Depth (ft) (Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1			Topock - Fill	NR SP	(4. bro	0 - 4.0') No recovery (NR)  0 - 10.0') Topock - Fill; Poorly graded sand own (10YR 6/4); very fine grained to fine grained to romogeneous; some organics present 4-6 ft. b	ined, suban und; trace s	gular to	(0.0 - 4.0') No recovery due to loose dredge sands.	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water lost
		MW-O-VAS- 12.5-17 (0.163 J ppb) 5/8/2019 14:20		NR		5.0 - 26.8') Topock - Fluvial Deposits; Poorly	v graded san	nd with	(10.0 - 16.0') No recovery due to loose dredge sands.  (12.5') Sampler dropped 0.5 due to lose sands	
17			Topock - Fluvial Deposits	SP-SM	to	5.0 - 26.8') Topock - Fluvial Deposits; Poorly t (SP-SM); very dark grayish brown (10YR 3/ ffine grained, subangular to subround; little s	(2); very fine	e grained	(16.0 - 36.0°) Soft drilling	

9/-	<b>ARC</b>	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 2 of	8
Date S			8/2019			Elevation:	N/A	Borin	ng No.:	MW-Od	
		ted: <u>05/1</u>			-	g (NAD83):	N/A	_			
Drilling		Caso				(NAD83):	N/A	_ Client:	PG&E		
Drilling			c Drilling		Total De	· = '	146 ft bgs	_ Project:		N Remedy Ph	
Drill Ri Driller I		-	asonic track mo O'Mara	ount		e Diameter: o First Water	6-12 inches	_ Location:	PG&E	Fopock, Needl	es, California
Drilling			uellmantel / J. F	Pacheco	-	g Method:	4 inch x 10 ft Core Barrel	- Project N	Lumber: I	RC000753.00	 51
Logge			nt Willford	acricco	-	g Interval:	Continuous	_ 1 10,00011	idilibei. <u>i</u>	10000733.00	01
Editor:					-	ed to Well:		_			
Depth (ft)	Recovery (in)	Sieve Sample IE	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
212223242526272830313132333334353636	Reco (ii)	Sample IE	Sample ID	Topock - Fluvial Deposits  Topock - Fluvial Deposits	SP-SM	(26.8 grayis little s very s (27.8 silttle s silttle s silt (Si fine gr	27.8') Topock - Fluvial Deposits; Fat on brown / dark yellowish brown(10YR 2 lt; trace very fine grained sand, subrout fit to soft; homogeneous 36.0') Topock - Fluvial Deposits; Poor SM); dark grayish brown / dark yellowery fine grained to fine grained, subang	flygraded sand); rlygraded sand to round; rrlygraded sand wish brown(10 gular to subround); rlygraded sand); very fine graded sand); very fine graded sand);	iticity; noist; id with DYR und;	(16.0 - 36.0') Soft drilling  (36.0 - 56.0') Soft drilling	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water lost
37 38 39 40	240			Topock - Fluvial Deposits	SP-SM	moist	amou, suvangulai to suvituliu, iitile Si	is, nace clay, t	wet to		
دمد ما ما ۸			Lineitian Call C	:6:4:-	0	£4	s = bolow ground ourfood am	مردمام حاد		- 11 014/	

Drilling Method:       Sonic Drilling       Total Depth:       146 ft bgs       Project: Final GW Remedy Phase 1         Drill Rig Type:       Terrasonic track mount       Borehole Diameter:       6-12 inches       Location: PG&E Topock, Needles, California         Drilling Asst:       Depth to First Water:       12.4 ft bgs       Project Number: RC000753.0051         Logger:       Grant Willford       Sampling Interval:       Continuous         Editor:       Sieve Sample ID       Groundwater Sample ID       Soli Description       Drilling Notes       Drilling Notes       Drilling Fluid (0.0 - 96.0') (0.0 - 96.0') (1930 gallons water seet; 1500 gallons water recovered; 43	9/	<b>ARC</b>	ADIS	for natural and built assets		Во	ring l	Log		She	et: 3 of	8
Difference   Dif	Date S	Started:	05/08	/2019		Surface	Elevation	n: <u>N/A</u>	Bori	na No.:	MW-Od	
Dalling Method:   Dalling Method:   Dalling Method:   Dalling Name:   Dalli		•				-		,			<u> </u>	
Dail Rig Type:   Dan O'Mara   Darothie Diameter: 6-12 inches   Localion: PG&E Topock, Needles, Californio Diffing Asst:   E. Huelmante/ J. Pacheco   Sampling Interval: 24 ft bos   Sampling Interval: 12 ft bos   Samp	_					_		•				
Deller Name: Dan O'Mara  Logger: Editor: Sean McGrane  Grant Willford  Sean McGrane  Deptiting Note  Drilling N	_			•				_			•	
Dalling Asset: E. Huelimante (J. J. Pachedocognet Grant Willford Saam McGrane Converted to Well:		• • •			<u>unt</u>				Location	n: <u>PG&amp;E T</u>	opock, Needl	es, California
Sear McGrane  Sear McGrane  Converted to Well:   Sear Description  Drilling Notes  Sear Description  Drilling Notes  Drilling Notes  Drilling Notes  Drilling Notes  Sear Description  Drilling Notes  Drilling Notes  Drilling Notes  Drilling Notes  Sear Description  Drilling Notes  Drilling						-		_				
Editor: Sean McGrane  Converted to Well: New No  Converted to Well: New No  Soil Description  Drilling Notes  Drilling Fluid  Seample D  Soil Description  Drilling Notes  Drilling Fluid  Seample D  Soil Description  Drilling Notes  Drilling Notes  Drilling Fluid  Seample D  Soil Description  Drilling Notes	_				acheco_	•	•		Project I	Number: <u>F</u>	RC000753.00	51
Sample D   Groundsolar   Sample D   Groundsolar   Sample D   Sam						-	-		<del></del>			
44 - 45 - 46 - 47 - 48 - 240	Editor:		<u>Sean</u>	McGrane		Convert	ed to We	ell: 🗵 Yes 🔝 No				
Soft drilling story and control of the story a	Depth (ft)	Recovery (in)			Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
Topock Fluvial Deposits  Topock Fluvial Deposits  MW-O-VAS- 51-56  -54  -55  -55  -56  -57  -58  -58  -58  -58  -58  -58  -58	42				Topock - Fluvial Deposits		livinini li	ight yellowish brown <mark>(10YR 6/4); ve</mark> ry fine g grained, sub <mark>angula</mark> r to <mark>su</mark> bround; trace gra	grained to coa	rse		recovered; 430 gallons of water
58 120   Alluvium Deposits   CL	50 51 52 53 54 55 56 57			51-56 (<0.033 U ppb) 5/9/2019	Fiuvial Deposits  Topock - Fluvial Deposits  Topock - Fluvial Deposits	SP-SM	ii gsiii (3 ssii	ight yellowish brown (10YR 6/4); very fine grained, subangular to round; little granule: subangular to round; little granule: subangular to round; trace silt; wet; gravel itholgy  51.0 - 52.0') Topock - Fluvial Deposits; Positi (SP-SM); light yellowish brown (10YR 6 ine grained, subangular to subround; little moist  52.0 - 56.0') Topock - Fluvial Deposits; Sil SM); brown (10YR 4/3); very fine grained to subrangular to subround; little granules to last bangular to round; little silt; wet; gravel control itholgy  56.0 - 60.0') Topock - Alluvium Deposits; Sil subangular to round; little silt; wet; gravel control itholgy	grained to coas to large pebb composed of r worly graded sa (/4); very fine g silt; trace clay; ty sand with gro coarse grain arge pebbles, composed of meaning the coarse grain and grain	rse ples, mixed with rained to give to ravel leed, mixed		
	 59  _60_		11000		Alluvium Deposits							

ARCA	DIS	for natural and built assets		Во	ring L	.og			She	et: 4 of	8
Date Started:	05/08/2				Elevation		N/A	Borin	a No.:	MW-Od	
Date Completed				-	g (NAD83)	,	N/A				
Drilling Co.:	Cascad			_	(NAD83):		N/A	Client:	PG&E		
Drilling Method:	Sonic D	•		Total De	•		146 ft bgs	Project:		V Remedy Ph	
Drill Rig Type: Driller Name:	Dan O'l	nic track mo			e Diamete		6-12 inches 12.4 ft bgs	Location:	PG&E I	opock, Needl	es, Calliornia
Drilling Asst:		lmantel / J. P		-			4 inch x 10 ft Core Barrel	Proiect N	umber F	RC000753.00	 51
Logger:	Grant V			-	ig Interval:		Continuous		4111001. <u>1</u>		
Editor:				•	ed to Wel		Yes □ No				
			ic Ou								
Depth (ft) Recovery (in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
61 62					(So an su	C); bro ngular t	6.0") Topock - Alluvium Deposits; Cla own (7.5YR 5/3); very fine grained to to subround; little granules to medium lar; little silt; little clay; moist; strong of aining	very coarse g n pebbles, an	rained, gular to	(56.0 - 66.0') Rough drilling	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water lost
63 <sub>120</sub> 64 65			Topock - Alluvium Deposits	sc	(6:	3'); dry	8/				
66		MW-O-VAS- 66-71 (0.178 J ppb) 5/9/2019 14:30	Topock - Alluvium Deposits	SC	(Si an to ce	C); brogular five gular five suban menta 99'); to 6.0 - 8 C); brogular five five five five five five five five	2.0') Topock - Alluvium Deposits; Cla own (7.5YR 5/4); very fine grained to	very coarse g im pebbles, a t; moderate	rained, ingular	(66.0 - 76.0') Rough drilling (76.0 - 86.0') Rough drilling	
			Topock - Alluvium Deposits	SC	(Si) an pec ce mo	C); bro ngular t ebbles, ementa oist-dr	own (7.5YR 5/4); very fine grained to to subround; some clay; little granules angular to subangular; little silt; mois tion; gravel composed of mixed lithol	coarse graine s to medium st; strong gy, borderline	ed,	Rough drilling	

	ADIS	for natural and built assets		Во	ring	Log	g		She	et: 5 of	8
Date Started:	05/08/2	2019		Surface	Elevation	n:	N/A	Borin	na No.:	MW-Od	
Date Completed	l: <u>05/12/2</u>	2019		Northing			N/A			<u> </u>	
Drilling Co.:	Cascad			Easting	•	3):	<u>N/A</u>	Client:	PG&E		
Drilling Method:	Sonic [	•		Total De	•		146 ft bgs	Project:		V Remedy Ph	
Drill Rig Type:		onic track mou	unt	Borehol				Location	: <u>PG&amp;E T</u>	opock, Needle	es, California
Driller Name:	Dan O'			-			12.4 ft bgs	D!4 N		20000750 000	F.4
Drilling Asst:		llmantel / J. P.		Samplin	•			Project N	Number: <u>F</u>	RC000753.00	51
Logger: Editor:		<i>N</i> illford ∕/dCGrane		Samplin Convert	-		Continuous				
	Seann	/ICGIAIIE		Conven	eu io vv	CII.	△ TES ☐ INU				I
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 81  82			Topock - Alluvium Deposits	sc						(76.0 - 86.0') Rough drilling	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water
83 120 84 85 86			Topock - Alluvium Deposits	CL		sand (0 granule to very	86.0') Topock - Alluvium Deposits; Gra CL); brown (7.5YR 4/3); medium plastic as to medium pebbles, angular to subar coarse grained sand, angular to subrou cementation	ity; some si ngular; little	lt; little very fine		lost
87 88 89 90			Topock - Alluvium Deposits	sc		(SC); b angular subrou mixed l	90.0') Topock - Alluvium Deposits; Clayrown (7.5YR 4/3); very fine grained to c r to subround; little granules to medium nd; little silt; little clay; moist to wet; graitholgy o 89.5' saturated	oarse grain pebbles, ar	ed, ngular to	(86.0 - 96.0') Rough drilling	
90 91 120 92 93 94 95			Topock - Alluvium Deposits	CL		gravel (6/3); m pebbles grained very sti litholgy	96.0') Topock - Alluvium Deposits; San (CL); brown (7.5YR 4/3) trace light redd edium plasticity; some silt; little granule s, angular to subangular; little very fine dis sand, angular to subround; moist to dr ff; moderate cementation; gravel compost, low to medium plasticity	lish brown(2 es to mediur to very coar y; medium :	2.5YR n se stiff to		
96	1808 - 1	Initiad Soil Cl	Topock - Alluvium Deposits	SC		gravel ( angular subrou	106.0') Topock - Alluvium Deposits; Cla (SC); (7.5YR 4/); very fine grained to ver to subround; little granules to medium nd; little silt; little clay; moist to dry; mod	ry coarse gr pebbles, ar derate ceme	rained, ngular to entation	(96.0 - 106.0') Rough drilling	groundwater

Date Started:   DS.08262019   DS.08262019   Northing (NDAS):   NA	9/	<b>ARC</b>	ADIS	for natural and built assets		Во	ring	Log		Shee	et: 6 of	8
Northing (No.Date)					_				Borii	na No.:	MW-Od	
Dalling Methods   Sonic Diffilling   Total Depth   146.8 hbgs		•						•	_			
Dail Rig Type:   Terrasonic frack mount   Borehole Diameter: 6-12 inChess   Location: PG&E Topock, Needles, California Dielling Asst:   E. Huellmantef, J. Pacheco.   Sampling Method:   Sampling Interval:   Continuous   Sampling Interval:	_											
Daller Namer   Dan O'Mara	1 -			•			-	•	-		•	
Dalling Asset: E. Huellmantel J. J. Pacheco. Sampling Method: Copyright of Logger: Grant Willford Sample (Project Number: RC000753.0051  Editor: Sean McGrane Converted to Well: Yes No  Sean McGrane Converted to Well: Yes No  Dalling Roles Description  Dalling Rol					ount				_ Location	i: PG&E I	ороск, мееак	es, Calliornia
Logger: Sam McGrant Sam McGrant Converted to Welt:  Sam McGrant Converted to Welt:  Sam McGrant Converted to Welt:  Sam McGrant Sample D  Sample					Pacheco	-		<del>-</del>	- Project N	Vumber B	C000753 00!	 51
Editor:   Sean McGrane	_				donoco	-	-		_ 1 10,0001	turibor. <u>I</u>		J 1
101_ 102_ 103_ 120  MW-O-VAS_ 101-107 (-0.000 ) 104_ 105_00						-	-		_			
101_ 102_ 103_ 120  MW-O-VAS_ 101-107 (-0.000 ) 104_ 105_00		2			.º 5							
100	Depth (ft)	Recove (in)			Geolog Formati	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
102												
103 120 MN/-C-VAS- 105-107 (2003) U Deposits 106 107 (2003) U Deposits 107 (2003) U Deposits 108 (2003) U Deposits 109 (2003) U Deposits 109 (2003) U Deposits 109 (2003) U Deposits 100 (2003) U Depo	101	-										
103 120 MN/-C-VAS- 105-107 (2003) U Deposits 106 107 (2003) U Deposits 107 (2003) U Deposits 108 (2003) U Deposits 109 (2003) U Deposits 109 (2003) U Deposits 109 (2003) U Deposits 100 (2003) U Depo	102	-										
106   108	102											
Deposits    104	103	400			Topock -							
105_ 106_ 107_ 108_ 107_ 108_ 109_ 109_ 109_ 110_ 110_ 110_ 111_ 120  111_ 120  111_ 120  115_ 116_ 116_ 117_ 117_ 1200  118_ 118_ 118_ 118_ 118_ 118_ 118_ 1		120		(<0.033 U		SC						
105.  106.  107.  108.  107.  108.  109.	104			` ppb) 5/10/2019								
106. 1.10. 1	_			12:32								
106   (30h) brown (7.5/R 50); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, an	_105_							40-1				
106	-							(105.3'); to 105.8' dry				
Soft drilling, some grained to eye coarse grained, some grained, some grained to eye coarse grained, angular to subround; little grained to very coarse grained, angular to subround; little grained to very coarse grained, angular to subround; little grained to very coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little clay, wet wet were grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little clay, wet wet were grained to eye coarse grained, angular to subround; little clay, wet wet were grained to eye coarse grained, angular to subround; little clay, wet wet were grained to eye coarse grained, angular to subround; little clay, wet wet were grained to eye coarse grained, angular to subround; little clay, wet wet were grained to eye coarse gra	106							(106.0 - 112.0') Topock - Alluvium Denosits:	Silty sand wi	th gravel	(106.0 - 116.0')	
108. MW-O-VAS- 106-111 (<0.17 U) 5/11/2019 (82.26)  110. MW-O-VAS- 106-111 (<0.17 U) 5/11/2019 (82.26)  1110. MW-O-VAS- 108-110 (<0.17 U) 5/11/2019	-							(SM); brown (7.5YR 5/3); very fine grained to	very coarse	grained,	`Soft drilling, '	
MW-O-VAS- 109-111 (-01.71 u) 1109	107							to subround; little silt; trace clay; wet; weak c	ementation;	gravel	106 to 111 was	
110	-	-						composed of mixed litrolgy mostly metadion	ie		low yleiding	
110	108	1										
110	400			(<0.17 U) 5/11/2019	Topock -							
112	109			08:25		SM						
112	110											
112												
112		120										
		120										
	_112_											
subround; little silt; little clay, wet  Topock - Alluvium Deposits  SM  Language of the subround; little silt; little clay, wet  SM  Language of the subround; little silt; little clay, wet  (116.0 - 127.8') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, angular to subround; little granules to large pebbles, angular to subround; little silt; little clay, wet  Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, angular to subround; little granules to large pebbles, angular to subround; little silt; little clay, wet  Topock - Alluvium Deposits; Silty sand with gravel (116.0 - 126.0') (30) (30) (30) (30) (30) (30) (30) (30								brown (7.5YR 5/3); very fine grained to very compared to	coarse graine	ed,		
Alluvium Deposits  SM  Characteristics  Alluvium Deposits  Characteristics  Alluvium Deposits  Characteristics  Characteristics  Alluvium Deposits  Characteristics  Characteristics  Alluvium Deposits  Characteristics  Characteristics  Alluvium Deposits  Characteristics  Charact	_113_								m pebbles, a	ngular to		
Alluvium Deposits  SM  Characteristics  Alluvium Deposits  Characteristics  Alluvium Deposits  Characteristics  Characteristics  Alluvium Deposits  Characteristics  Characteristics  Alluvium Deposits  Characteristics  Characteristics  Alluvium Deposits  Characteristics  Charact					Tanaak							
	114				Alluvium	SM						
116	F	_			Deposits							
117	115											
117	116	-										
to very coarse grained, angular to subround; little granules to large pebbles, angular to subround; little clay; wet; weak cementation; iron oxide staining; gravel composed of mixed litholgy mostly metadiorite, some red staining on pebbles  Topock - Alluvium Deposits  SM  SM  120  Topock - Alluvium Deposits  SM  Topock - Alluvium Deposits  Topock - Alluvium Deposits  SM  Topock - Alluvium Deposits  Topock - Alluvium Deposits  SM  Topock - Alluvium Deposits  SM  Topock - Alluvium Deposits  SM  Topock - Alluvium Deposits	110				<b></b>							
cementation; iron oxide staining; gravel composed of mixed litholgy mostly metadiorite, some red staining on pebbles  120 SM Deposits SM SIM Deposits SIM Deposit	117							to very coarse grained, angular to subround;	little granule	s to large	oon unining	water used; 0
L118 120   Topock - Alluvium Deposits   SM   SM   Iost   I	L _							cementation; iron oxide staining; gravel comp	posed of mix	ed		recovered; 40
	_118_	120				SM		nunorgy mostry metadronte, some red staining	a ou bennies			
	L -											
	_119_											
	-											
		viations	. Hece - I	Initiad Sail C	laccification	n Svoton	) ft = fo	et has = helow around surface are	el = abova	mean and	level CM - a	aroundwater

9/	<b>ARC</b>	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	8
	Started:				Surface	Elevation	-	Borii	na No.:	MW-Od	
	•	ted: <u>05/12/</u>			Northing			_			
Drilling		Casca			Easting	•	*	_ Client:	PG&E		
_	Metho		<u>Drilling</u>		Total De	•	146 ft bgs	_ Project:		W Remedy Ph	
	ig Type Name:		<u>onic track mo</u> 'Mara		Borehol		ter: <u>6-12 inches</u> ater: <u>12.4 ft bgs</u>	_ Location	1: <u>PG&amp;E</u>	Topock, Needle	es, Calitornia
Drilling			ellmantel / J. P				<del>_</del>	- Project N	Mumher:	RC000753 004	 51
Logge			Willford	4011000	Samplin	-		_ 1 10,0001	turnbor.	110000700.00	<i>5</i> 1
Editor			McGrane		Convert	-		_			
	>			ပ မ							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Alluvium	SM			9		(116.0 - 126.0') Soft drilling	(116.0 - 126.0') 40 gallons of water used; 0 gallons of water recovered; 40 gallons of water lost
124				Deposits	Sivi		.0			(125.0')	
 126										Artesian flow occured during the removal of 6	(400 0 440 0)
 127							× 03,			inch casing (126.0 - 132.0') Soft drilling	(126.0 - 143.0') 640 gallons of water used; 290 gallons of water recovered; 350 gallons of water
128  129				Topock - Alluvium Deposits	ML		127.8 - 130.0°) Topock - Alluvium Deposits; ML); reddish brown / moderate brown(5YR and very fine to very coarse grained sand, an ittle granules to medium pebbles, angular to tiff; moderate cementation; iron oxide staini	4/4); low plas igular to subr subangular; ng; gravel co	sticity; round; moist; mposed	(128.0') to 146' cleared borehole with water	lost
130	100						nebbles 130.0 - 136.0') Topock - Alluvium Deposits; SM); reddish brown (5YR 5/4) little red (2.5\ prained to very coarse grained, angular to su	/R 5/8); very bround; som	fine e silt;		
131	120						ittle granules to very large pebbles, angular i clay; moist; moderate cementation; iron oxid	to subround; e staining	little	(132.0 - 136.0')	
133				Topock - Alluvium Deposits	SM					Rough drilling	
134											
135											
136							136.0 - 140.0') Topock - Alluvium Deposits;	Silty sand (S	SM);	(136.0 - 140.0')	
137 138	120		MW-O-VAS- 136-141 (<0.17 U ppb) 5/11/2019 14:26	Topock - Alluvium Deposits	SM		eddish brown / moderate brown(5YR 4/4) so very fine grained to very coarse grained, ang some silt; little granules to large pebbles, an- race clay; wet to moist; weak cementation; in	ome red (2.5) ular to subro gular to subro	YŔ 4/8); und; ound;	Rough drilling,	
139			14.20								
140 Abbre	viations	: LISCS = I	Inified Soil Cl	assification	n System	1: 1:1:1:1 1: ft = fe	t, bgs = below ground surface, am	sl = ahove	mean se	a level GW = 0	roundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 8 of	8
Date S	Started:	05/08/2	2019		Surface	Elevati	on: <u>N/A</u>	Borine	a No.:	MW-Od	
	-	ted: <u>05/12/2</u>	2019		Northing	g (NAD				mirr ou	
Drilling		Cascad			Easting				PG&E		
Drilling			-		Total De	•	146 ft bgs	-		V Remedy Ph	
Drill Ri			onic track mo		Borehol			Location:	PG&E T	opock, Needle	es, California
Driller		Dan O'			-		Vater: 12.4 ft bgs	Dunin at No		2000752.00	- 4
Drilling Logge		<u>⊏. ⊓uei</u> <u>Grant V</u>	<u>llmantel / J. P</u> Willford		Samplin Samplin			Projectivi	illibel. <u>r</u>	RC000753.005	)
Editor			1cGrane		Convert	-					
	_				T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
 141  142  143	. 120			Topock - Competent			(140.0 - 146.0') Topock - Competent Bedrock reddish brown (2.5YR 4/4) little red (2.5YR 4/5) strong cementation; friable, heavily fractured dry through out some slightly moist portions of	6); moist to dr oulverized, mo	<b>/</b> ;	(140.0 - 146.0') Rough drilling, encountered bedrock much shallower than expected, independent QA inspector obsevered core and agreed that core was	(126.0 - 143.0') 640 gallons of water used; 290 gallons of water recovered; 350 gallons of water lost
144				Bedrock - conglomerate	е					bedrock, sample interval from 141 to 146 ft. bgs was low yielding	
_145_							40				
146_							End of Boring at 146.0 'bgs	S.			
147						6					
149											
150											
151											
_155_											
156											
157											
158											
_159_											
160 Abbro	viations	· 116C6 - 11	Inified Soil CI	assification	Systom	. ft – fc	et has = helow around surface ams	l = abovo n	noon cod	alovol GW = 0	roundwater

9/	<b>RCA</b>	DIS Design & C for natural built asset	consultancy and s		Well Construction Log	\$	Sheet: 1 of 8
Date St	tarted:	05/08/2019			Surface Elevation: N/A	Well ID: N	MW-O-120, MW-O-140
	-	05/12/2019			_Shallow Well Elevation: N/A		111 3 120, 1111 3 140
Drilling	Co.:	Cascade			Deep Well Elevation: N/A	Client: PG&E	Ξ
Drilling	Method:	Sonic Drilling			Northing (NAD83): N/A	Project: <u>Final</u>	GW Remedy Phase 1
Driller N	Name:	Dan O'Mara			Easting (NAD83): N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling	Asst:	<u>E. Huellmante</u>	l / J. Pa	<u>acheco</u>	Borehole Diameter: 6-12 inches		
Logger	: !	<u> Grant Willford</u>			Water Level Start: <u>12.4 ft bgs</u>	Project Numbe	r: RC000753.0051
Editor:		<u>Sean McGran</u>	e		Development End Date: 7/23/2019		
Total D	epth:	146 ft bgs			Well Completion:		T
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
0					(+2.0 - 100.0') 2" Casing (+3.0 - 0.0') Casing Monument		Note: 12x12-inch Lockable Steel Monument
				\ /			
_ 1 _				$  \setminus /  $			
2			NR		(0.0 - 4.0') 12.0" Borehole		(0.9 - 5.0') 35 bags (%) Note: 24-inch Diameter Concrete Well Pad, King Kon-Crete 4000 PSI, Grout Removed to install
		Topock - Fill	SP		(5.0 - 14.0') Bentonite seal chips	(5.0 - 14.0') 6.3 bags	(5.0 - 14.0') 9 bags (43%) Note: Puregold Medium Chips
11			NR		(11.5 - 12.5') Centralizer		
15 16 17	MW-O-VAS- 12.5-17 (0.163 J ppb) 5/8/2019 14:20	Topock - Fluvial Deposits	SP-SM		(14.0 - 85.0') High Solids Grout  ation System, ft = feet, bgs = below ground surface, an	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, II and V and Benseal

9/	ARCA	DIS Design & for natur built asset	Consultancy al and ets		Well Const	ruction Log	5	Sheet: 2 of 8
Drilling	Completed: Co.: Method: Name: Asst: r:	Grant Willford Sean McGran 146 ft bgs	el / J. Pa	acheco	_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 12.4 ft bgs 7/23/2019  ☐ Flush ☐ Stick-up	Client: PG&E Project: Final ( Location: PG&E	GW Remedy Phase 1 Topock, Needles, California T: RC000753.0051
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
18		Topock - Fluvial Deposits  Topock - Fluvial Deposits  Topock - Fluvial Deposits	SP-SM SP-SM		(14.0 - 85.0') High — Solids Grout	(4.0 - 143.0') 10" Borehole	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, II and V and Benseal

ARCA	DIS Design & for natura built asse	Consultancy al and ets		Well Const	ruction Log	Sheet: 3 of 8			
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	Cascade Sonic Drilling Dan O'Mara	el / J. Pa I	acheco	Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A N/A N/A N/A 6-12 inches 12.4 ft bgs 7/23/2019  Flush Stick-up	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California  Project Number: RC000753.0051			
Groundwat Sample IE		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
	Topock - Fluvial Deposits  Topock - Fluvial Deposits  Topock - Fluvial Deposits  Topock - Fluvial Deposits	SP-SM SW SP-SM		(14.0 - 85.0') High — Solids Grout	(4.0 - 143.0') 10" Borehole	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, II and V and Benseal		

9/-	ARCA	DIS Design for natural built as	& Consultancy Iral and sets		Well Const	ruction Log	5	Sheet: 4 of 8		
Date C Drilling Drilling	Co.: Method: Name: Asst:	05/08/2019 05/12/2019 Cascade Sonic Drilling Dan O'Mara E. Huellmant Grant Willfor Sean McGra 146 ft bgs	tel / J. P	acheco	Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 12.4 ft bgs 7/23/2019 ☐ Flush Stick-up	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California  Project Number: RC000753.0051			
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
58 59 60		Topock - Alluvium Deposits	CL		(+2.0 - 100.0') 2" ———————————————————————————————————	(+1.8 - 130.0') 2" PVC Sch 40 Casing	0			
61 62 63 64 65 666		Topock - Alluvium Deposits	SC		(61.5 - 62.5') Centralizer					
6768697071727374757677	MW-O-VAS 66-71 (0.178 J ppb 5/9/2019 14:30	Topock - Alluvium Deposits  Topock - Alluvium Deposits	SC SC		(14.0 - 85.0') High — Solids Grout	(4.0 - 143.0') 10" Borehole	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, II and V and Benseal		

9/	ARCA	DIS Design & for natur built asset	Consultancy al and ets		Well Const	ruction Log	S	Sheet: 5 of 8
	Started:	05/08/2019			_Surface Elevation:	N/A	Well ID: N	MW-O-120, MW-O-140
	-	05/12/2019			_Shallow Well Elevation:			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
	Name:	Dan O'Mara	-1/10		_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	E Topock, Needles, California
Drilling				<u>acneco</u>	_Borehole Diameter:	6-12 inches		D0000750 0054
Logge Editor:		Grant Willford Sean McGran			_Water Level Start: _Development End Date:	12.4 ft bgs	Project Numbe	r: RC000753.0051
Total D		146 ft bgs	<u>ie</u>		_Development End Date. _Well Completion:	Flush Stick-up		
Depth (ft)	Groundwat Sample II		Code	USCS Class		construction	Calculated Material Volumes	Material Volumes Installed
78		Topock - Alluvium Deposits	sc		(+2.0 - 100.0') 2" ———————————————————————————————————	(+1.8 - 130.0') 2" PVC Sch 40 Casing	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, Il and V and Benseal
83 84 85 86		Topock - Alluvium Deposits	CL					
87 88 89 90		Topock - Alluvium Deposits	SC			(4.0 - 143.0') 10" Borehole		
91929394959696		Topock - Alluvium Deposits	CL		(85.0 - 98.0') Bentonite seal pellets		(85.0 - 98.0') 11.9 buckets	(85.0 - 98.0') 12 buckets (1%) Note: Pel-Plug (TR30) 3/8"
97		Topock - Alluvium Deposits	SC					

9/	ARCA	DIS Design & for natura built asse	Consultancy al and ts		Well Const	ruction Log	9	Sheet: 6 of 8
Date S		05/08/2019			_Surface Elevation:	N/A	Well ID:	MW-O-120, MW-O-140
	-	05/12/2019			_Shallow Well Elevation:			·
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG</u>	
		Sonic Drilling			_Northing (NAD83):	N/A		al GW Remedy Phase 1
Driller I		Dan O'Mara			_Easting (NAD83):	N/A	Location: <u>PG</u>	&E Topock, Needles, California
Drilling				<u>acheco</u>	_Borehole Diameter:	6-12 inches		D0000750 0054
Loggei		Grant Willford			_Water Level Start:	12.4 ft bgs	Project Numb	per: RC000753.0051
Editor:		Sean McGrar	<u>1e</u>		Development End Date:			
Total D	рерит.	146 ft bgs	<u> </u>		_Well Completion:	☐ Flush☐ Stick	k-up	
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
98	MW-O-VAS 101-107 (<0.033 U ppb) 5/10/2019 12:32	Topock - Alluvium Deposits	SC		(100.0 - 120.0') 2" — Sch 40 PVC (20-slot) Screen	— (+1.8 - 130 PVC Sch 40		(85.0 - 98.0') 12 buckets (1%) Note: Pel-Plug (TR30) 3/8"
106 107 108 109 110 111	MW-O-VAS 106-111 (<0.17 U) 5/11/2019 08:25	Topock - Alluvium Deposits	SM		(98.0 - 124.0') Cemex #3 MESH (8x10)	(4.0 - 143. Boreho		2 (98.0 - 124.0') 36 bags (43%) Note: Lapis Lustre Sand
112		Topock - Alluvium Deposits  Topock - Alluvium Deposits	SM					

91	ARCA	DIS	Design & Cor for natural a built assets	nsultancy ind		Well Const	ruction Log		Sheet: 7 of 8
Date St	tarted:	05/08/20	19			_Surface Elevation:	N/A	Well ID:	MW-O-120, MW-O-140
	ompleted:	05/12/20	19			_Shallow Well Elevation:	N/A		•
Drilling		<u>Cascade</u>				_Deep Well Elevation:	N/A	Client: <u>PG&amp;</u>	
		Sonic Dr				_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller N		Dan O'M		/   D		_Easting (NAD83):	N/A	Location: <u>PG&amp;</u>	E Topock, Needles, California
Drilling Logger		Grant Wi		/ J. Pa	acneco	_Borehole Diameter: _Water Level Start:	6-12 inches 12.4 ft bgs	— — — — — — — — — — — — — — — — — — —	er: RC000753.0051
Editor:		Sean Mc		2		_ water Lever Start. _Development End Date:	•	FTOJECT NUTIBE	1. <u>NC0007 33.003 1</u>
Total D		146 ft bg		,		Well Completion:	Flush Stick-up	_	
Depth (ft)	Groundwate Sample ID		Formatio	Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
118 119 120 121 121 122 123 124		Topo Alluv Depo	ium	SM		(98.0 - 124.0')	— (+1.8 - 130.0') 2" PVC Sch 40 Casing	(98.0 - 124.0') 25.2 bags	(98.0 - 124.0') 36 bags (43%) Note: Lapis Lustre Sand
125 126 127 128						(124.0 - 128.0') Bentonite seal pellets	(4.0 - 143.0') 10" Borehole	(124.0 - 128.0') 3.8 buckets	(124.0 - 128.0') 5 buckets (32%) Note: Pel-Plug (TR30) 3/8"
		Topo	ick -						
129		Alluvi Depo		ML					
H H									
130							(130.0 - 140.0') 2"		
131 132 133 134 135 136		Topo Alluvi Depo	ium	SM		(128.0 - 143.0') Cemex #3 MESH (8x10)	PVC Sch 40 Screen	(128.0 - 143.0') 15.8 bags	(128.0 - 143.0') 19.5 bags (23%) Note: Lapis Lustre Sand
<u> </u>		Topo Alluvi	ium	SM					
_137_		Depo	sits				<u>∷</u> ⊢[ <u>∷</u> 1		

9/	<b>ARCA</b>	DIS Design & C for natural built asset	Consultancy il and ts		Well Construction Log	\$	Sheet: 8 of 8			
	-	05/08/2019 05/12/2019 Cascade			Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A	Well ID: N	MW-O-120, MW-O-140			
Drilling Driller	g Method: Name:	Sonic Drilling Dan O'Mara			_Northing (NAD83): N/A _Easting (NAD83): N/A	Project: <u>Final</u>	GW Remedy Phase 1 Topock, Needles, California			
Logge Editor:		Grant Willford Sean McGran 146 ft bgs		acneco	_ Borehole Diameter: 6-12 inches _ Water Level Start: 12.4 ft bgs _ Development End Date: 7/23/2019 _ Well Completion:	Project Number: RC000753.0051				
Depth (ft)	Groundwat Sample ID	er logic	USCS	USCS	Well Construction	Calculated Material Volumes	Material Volumes Installed			
138 139 140	MW-O-VAS 136-141 (<0.17 U ppt 5/11/2019 14:26	Topock - Alluvium Denosits	SM		(128.0 - 143.0') Cemex #3 MESH (8x10)	(128.0 - 143.0') 15.8 bags	(128.0 - 143.0') 19.5 bags (23%) Note: Lapis Lustre Sand			
141 142 143		Topock - Competent Bedrock -			(140.5 - 141.5') — (140.0 - 142.3') Sump and End Cap					
144 145 146		conglomerate			(143.0 - 146.0')	(143.0 - 146.0') 0.8 bags	(143.0 - 146.0') 1 bags (25%) Note: Enviroplug Medium Chips, installed to 142 ft. bgs, 1.5 ft removed during reaming			
147	_				End of Boring at 146.0 'bgs.					
148  149										
 150 										
151  152	-									
153	-									
154	-									
156 157										
Ahhra	viations: 11	SCS = Unified	Soil C	laccificat	ion System ft = feet has = helow around surface an	nel = ahove mean	sea level GW = aroundwater			

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 1 of	16
	Started			5	Surface	Elevat		Borin	a No.:	RB-2 Pilo	ot .
	•	ted: <u>07/29/2</u>			Northin						<u>-</u>
Drilling	-	Cascad			Easting		•	Client:	PG&E		
Drilling	-		-		Total De	•		Project:		V Remedy Pha	
Drill Ri Driller			ongyear Trad					Location:	PG&E I	opock, Needle	es, Calitornia
Drilling			iymei delaria, G. Ar		Samplin		Water: 23.77 ft bgs and: 4 inch x 10 ft Core Barrel	Project N	umber: F	RC000753.005	 .1
Logge			tham	-	Samplin	-		i iojectiv	umber. <u>r</u>	10000733.000	<i>)</i>
Editor:		<u>N/A</u>	ulaili		Convert	-					
				_							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
_ 1				Topock - Fill	SP		(0.0 - 3.0') Topock - Fill; Poorly graded sand (\$4/3); fine grained to medium grained, subround staining	SP); brown ( d; dry; no od	IOYR or; no	(0.0 - 7.0') Soft drilling	2 gallons used; 0 gallons recovered; 2 gallons lost
3 4	- 36						(3.0 - 7.0') No recovery (NR)	9		(3.0 - 7.0') Lost recovery due to soft dredge sands	
5 5 6 7 7					NR			(Op.)	7-7-7	(7.0. 47.0)	
8				Topock - Fill	SP		(7.0 - 11.0') Topock - Fill; Poorly graded sand (4/3); fine grained to medium grained, subangu no odor; no staining	SP); prown lar to subrou	nd; dry;	(7.0 - 17.0') Heaving sands. No recovery 11 to 17 ft bgs due to loose dredge sands	1 gallons used; 0 gallons recovered; 1 gallons lost
×					, )		(11.0 - 17.0') No recovery (NR)				
12	48					$\setminus /$					
13											
14	-				NR						
15	-					/ \					
- L	-										
16	1					/ \					
	-					/ \					
17	-			Topock - Fill	SP		(17.0 - 18.5') Topock - Fill; Poorly graded sand 4/3); fine grained to medium grained, subangu no odor; no staining	(SP); browr lar to subrou	n (10YR ind; dry;	(17.0 - 27.0') Heaving sands. No recovery 20 to 27 ft bgs due to loose dredge	
19 19 20	36			Topock - Fluvial Deposits	SP		(18.5 - 20.0') Topock - Fluvial Deposits; Poorly light yellowish brown (10YR 6/4); very fine grai round; trace silt; dry; no odor; no staining	graded san ned to fine g	d (SP); rained,	sands	
n'	viations	s: USCS = L	Inified Soil Cl	lassification	Systen	n, ft = fe	eet, bgs = below ground surface, amsl	= above i	nean sea	level, GW = o	roundwater,
2		er billion			-		· ·				·

SOIL

AR	CADIS	Design & Consultancy for natural and built assets		Boı	ring Lo	g		She	eet: 2 of	16
Date Started			;	Surface	Elevation:	N/A	Borin	a No.:	RB-2 Pilo	ot .
Date Compl					(NAD83):	N/A				
Drilling Co.:	<u>Casca</u>			_	(NAD83):	N/A	Client:	PG&E		
Drilling Meth		•		Total De	•	307 ft bgs	Project:		W Remedy Ph	
Drill Rig Typ		<u>_ongyear Track</u>				4-12 inches	Location:	PG&E 1	<u> Fopock, Needle</u>	es, California
Driller Name	_	•		-		23.77 ft bgs			500075000	- 4
Drilling Asst:		<u>delaria, G. Ang</u>			g Method:	4 inch x 10 ft Core Barrel	Project N	umber: <u>l</u>	RC000753.00	51
Logger:	Joe La	<u>itham</u>			g Interval:	Continuous	-			
Editor:	N/A			Converte	ed to Well:	☐ Yes ⊠ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
21				NR	(20.0 -	27.0') No recovery (NR)		Ţ	(17.0 - 27.0') Heaving sands. No recovery 20 to 27 ft bgs due to loose dredge sands	
27					light ye	31.5') Topock - Fluvial Deposits; Poorl ellowish brown (10YR 6/4); very fine gra gular to round; trace silt; moist; no odor	ained to fine q	d (SP); rained,	(27.0 - 37.0') Heaving sands. No recovery	2 gallons used; 0 gallons recovered; 2
28	RB-2-SS-27- 31 7/15/2019 09:31		Topock - Fluvial Deposits	SP					31.5 to 37 ft bgs due to loose dredge sands	gallons lost
5										
3248					(31.5 -	37.0') No recovery (NR)	<b></b>			
33										
ğ 					\					
34					V					
				NR	χl					
_35					/\					
					/ \					
36					/ \					
- OMEN					/ \					
37				L	<u></u>					
N		DD 0.1/40	Topock - Fluvial	SP-SM	∵∷ Silt (SF	38.0') Topock - Fluvial Deposits; Poorl P-SM); brown (10YR 5/3); fine grained,				
38	DD 0 00 07	RB-2-VAS- 36.5-41.5	Deposits	J. J.W	: : little si	It; moist; no odor; no staining				
60	RB-2-SS-37- 42 7/15/2019	(<0.033 U ppb)	Topock - Fluvial	SM	∵ : : : (10YR	39.0') Topock - Fluvial Deposits; Silty 5/3); very fine grained to fine grained, r	sand (SM); br ound; little si	own lt;		
_39	7/15/2019 09:46	6/29/2019 11:43	Deposits	OIVI	∷: moist,	no odor; no staining				
5			Topock - Fluvial	GW-GM	• 📑 💄 silt and	42.0') Topock - Fluvial Deposits; Well d sand (GW-GM); grayish brown (10YR	(5/2); granule	es to		
40			Deposits		very la	rge pebbles, subangular to subround; s	some very fine	•		
2		Jnified Soil Cla	ssification	System	, ft = feet, bg	s = below ground surface, ams	sl = above ı	mean sea	a level, GW = (	groundwater,
ppb = parts	per billion									

S

ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		She	eet: 3 of	16
ate Started				Surface	Elevation:	N/A	Borin	a No.:	RB-2 Pilo	ot
•	eted: <u>07/29/</u> 2			_	g (NAD83):	N/A				
rilling Co.:	Casca			_	(NAD83):	N/A	Client:	PG&E		
rilling Metho		•		Total De	•	307 ft bgs	Project:		W Remedy Ph	
rill Rig Type		<u>ongyear Trac</u>					Location:	PG&E	Topock, Needl	es, California
iller Name:		-		•		r: <u>23.77 ft bgs</u>			D0000750 00	F.4
illing Asst:		<u>delaria, G. An</u> ''	•	•	g Method:	4 inch x 10 ft Core Barrel	_ Project N	umber:	RC000753.00	51
ogger:	Joe La	tham		•	g Interval:	Continuous ☐ Yes ⊠ No				
ditor:	N/A	T		Convert	ed to Well:	☐ Yes 区 No				<u> </u>
Depth (ft) (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
4160	RB-2-SS-37- 42 7/15/2019 09:46		Topock - Fluvial Deposits	GW-GM	trace	ned to very coarse grained sand; little; le coarser clast consists of metidirite an taining				
42 43 - 44 - 45	RB-2-SS-42- 47 7/15/2019 10:06		Topock - Fluvial Deposits	SM	yello trace	0 - 45.0') Topock - Fluvial Deposits; Sil wish brown (10YR 4/4); very fine grain e clay; wet; no odor; no staining	ed, round; little	silt;		
- 46 - 47			Topock - Fluvial Deposits	GW-GM	silt a large sand	0 - 48.0') Topock - Fluvial Deposits; We nd sand (GW-GM); dark gray (10YR 4, pebbles, round; little very fine grained; little silt; trace; trace clay; little calich ists of metidirite and quartz; wet; no or	(1); granules to to very coarse e; little coarser	very grained		
89 - 180	RB-2-SS-47- 50 7/15/2019 10:00				(GM pebl coar	) - 54.0') Topock - Alluvium Deposits; S ); reddish brown (5YR 5/4); small pebb les, angular to subangular; some very se grained sand; little silt; trace clay; s posed of metadiorite; wet; no odor; no	les to very large fine grained to v ome coarser cla	e very		
- 1_ - 2_ - 3_	RB-2-SS-50- 55 7/15/2019 10:10		Topock - Alluvium Deposits	GM						
54			T		SPI (54)	) - 55.0') Topock - Alluvium Deposits; S	Cilty gravel with	sand		
4			Topock - Alluvium	GM	l∘ (\dagger \dagger \	); reddish brown (5YR 5/4); small pebb	les to very large			
55			Deposits		coar	oles, angular to subangular; some very se grained sand; some clay; little silt; s	ome coarser cl			
565758120	RB-2-SS-55- 60 7/15/2019 10:15		Topock - Alluvium Deposits	SM	(55.0 (SM) suba	posed of metadiorite; moist; no odor; no - 59.0') Topock - Alluvium Deposits; S; reddish brown (5YR 5/4); fine grainer, ingular; some granules to medium peblittle coarser clasts composed of metal composed of quartz; moist; no odor; r	Silty sand with g I to medium gra bles; little silt; tr adiorite; little coa	ined, ace		
-59			Topock - Alluvium Deposits	sc System	///// (SC)	) - 60.0') Topock - Alluvium Deposits; ( ; reddish brown (5YR 5/4); fine grained llar to subangular; little granules to larg	I to coarse grainge pebbles, ang	ned, ular to		

Siemple ID Groundwater	A	RO	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 4 of	16
Sample D. Control and Composed Control and Composed Control and Composed Control and Composed Control and Control	ate Sta	arted:	06/28/	2019		Surface	Elevat	on: <u>N/A</u>	Borine	a No .	RB-2 Pild	nt .
Total Pepth:  307. https://dx.com/processes/file	ate Co	mple	ted: <u>07/29/</u>	2019		Northing	g (NAD	83): <u>N/A</u>		9 110	IXD Z I IIX	<u> </u>
Troods  Troods	rilling (	Co.:	<u>Casca</u>	de		Easting	(NAD8	3): <u>N/A</u>	_ Client:	PG&E		
intillor Name:    Jeding Assist   J.Condeleria G. Anglano   Joe Latham   Joe Latham   Joe Latham   Sampling Method:   Alich x 10 ft. Core Barrel   Project Number: RC000753.0051	rilling N	/letho	od: <u>Sonic</u>	Drilling		Total De	epth:	307 ft bgs	Project:	Final G	W Remedy Ph	ase 1
Sampling Method:   Alinch x 10 ft Core Barrel   Project Number:   RC000753.0051	_			_ongyear Trac	ck Mount	Borehol	e Diam	eter: 4-12 inches	Location:	PG&E	<u> Fopock, Needl</u>	es, California
Sample   Do Latham Sampling Interval: Continuous   Contin	riller N	ame:		-		Depth to	First \	_	_			
Siemple ID Groundwater	rilling A	\sst:	<u>J. Con</u>	<u>delaria, G. An</u>	<u>igiano</u>	Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	Project Nu	umber: .	RC000753.00	51
Signer Sample ID Sumple ID	ogger:		Joe La	ıtham		Samplin	ig Inter		_			
subshapidari, fille clay, trace siti, state coarser clasts composed of metadorite, tille granting most, no other packets, anyther some some packets, anyther some some packets, anyther some some packets, anyther some some some some some some some some	ditor:		N/A			Convert	ed to V	/ell: ☐ Yes ⊠ No				
61 - 62 - 63 - 7152019 62 - 7152019 63 - 120 64 - 120 65 - 7152019 66 - 7152019 71 - 7152019 71 - 72 - 120 72 - 120 73 - 74 - 752019 74 - 752019 75 - 75 - 75 - 75 - 75 - 75 - 75 - 75 -	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
RB2-SS-70- 715/2019 10:25  RB2-SS-70- 771- 772	61	120	65 7/15/2019		Alluvium	GM		metadiorite; little granite; moist; no odor; no s (60.0 - 67.0') Topock - Alluvium Deposits; Silt (GM); reddish brown (5YR 5/4); granules to lat o subangular; some very fine grained to very sand; little silt; trace coarser clasts composed	staining ty gravel with s arge pebbles, a coarse graine	and angular d		
Topock-Alluvium Deposits Clayer gravel with sand (GC), dark reddish gray (SYR 4/2), granules to medium pebbles, subangulars, some very fire grade for very coarse grained, angular to subround; some granules to medium pebbles, subangulars, some very fire grade for very coarse grained sand; little clay, trace silt; some coarser clasts composed of metadiorite; moist; no odor; no staining (GC), reddish gravel (SW), some deposits well graded sand with gravel (SW). SW), reddish gravel (SW), reddish gravel grained to subround; some granules to gravel standard to subround; some granules to gravel standard to gravel (SW), reddish gravel (SW), reddish gravel grav	_67		70 7/15/2019					(GW); reddish gray / pale brown(5YR 5/2); gracobbles, angular to subangular; and medium grained sand, angular to subangular; trace; tracoarser clasts composed of metadiorite, quart	anules to sma to very coarse ace silt; some	II .		
RB-2-VAS- 773	.69 .70 .71				Alluvium	GW						
Colora   C	72 - .73 .74	120	75 7/15/2019									
RB-2-SS-75- 80 7/15/2019 12:14  Topock - Alluvium Deposits  SW Sy gravel (SW); reddish brown / moderate brown(5YR 4/4); medium grained to very coarse grained, angular to subround; some granules to medium pebbles, angular; trace silt; and coarser clasts composed of metadiorite; wet; no odor; no staining  (77.0 - 81.5') Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); reddish gray / pale brown(5YR 5/2); medium grained to coarse grained, angular to subround; some granules to large pebbles, angular to subround; some granules to large pebbles, angular to subround; some granules to large pebbles, angular to subround; some odor; no staining  SW-SM  SW-SM  Topock - Alluvium Deposits; little granite; moist; no odor; no staining  SW-SM  SW-SM  Topock - Alluvium perosits; Well graded sand with silt and gravel (SW-SM); reddish brown / moderate brown(5YR 4/4); medium grained to very coarse grained, angular to subround; some granules to large pebbles, angular	.75			(<0.033 U ppb) 6/30/2019	Alluvium	GC		(GC); dark reddish gray (5YR 4/2); granules to subangular; some very fine grained to very co little clay; trace silt; some coarser clasts comp moist; no odor; no staining	o medium peb parse grained s posed of meta	bles, sand; idiorite;		
78— 120 Topock - Alluvium Deposits  SW-SM Superscript Silt and gravel (SW-SM); reddish gray / pale brown(5YR 5/2); medium grained to coarse grained, angular to subround; some granules to large pebbles, angular to subangular; little silt; little coarser clasts composed of metadiorite; little granite; moist; no odor; no staining observations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundward for the granite for the	_76 _77		DD 0 00 75		Alluvium	SW		gravel (SW); reddish brown / moderate brown grained to very coarse grained, angular to sub granules to medium pebbles, angular; trace s clasts composed of metadiorite; wet; no odor;	n(5YR 4/4); me bround; some silt; and coarse ; no staining	edium		
	.78	120	80 7/15/2019		Alluvium	SW-SM		silt and gravel (ŚW-SM); reddish gray / pale b medium grained to coarse grained, angular to granules to large pebbles, angular to subangu coarser clasts composed of metadiorite; little	prown(5YR 5/2 o subround; so ular; little silt; l	ittle		
	bbrevia	ations	s: USCS = I	Jnified Soil Cl	assification	System	1, ft = fe	et, bgs = below ground surface. ams	sl = above n	nean se	a level. GW =	groundwate
ob = parts per billion						, 5 (6)1	., 10	,go Zolow ground bundoo, ame	. above 11			J. 541 14 WAIL

AR	CADIS	for natural and built assets		Во	ring Lo			She	et: 5 of	16
Date Started	: 06/28/	2019	;	Surface	Elevation:	N/A	Borin	a No.:	RB-2 Pilo	ot
•	eted: <u>07/29/</u>				g (NAD83):	N/A			112 21 110	<u> </u>
Orilling Co.:	<u>Casca</u>			_	(NAD83):	N/A	Client:	PG&E		
Orilling Metho		•		Total De	•	307 ft bgs	•		V Remedy Pha	
Orill Rig Type Oriller Name:		<u>Longyear Track</u>				<u>4-12 inches</u> <u>23.77 ft bgs</u>	Location:	PG&E I	opock, Needle	es, Calitornia
Orilling Asst:	-	delaria, G. Ang			g Method:	4 inch x 10 ft Core Barrel	Project N	umher: F	RC000753.005	 51
ogger:		itham			g Interval:	Continuous	, i iojectiv	umber. <u>r</u>	10000733.000	71
Editor:	<u>N/A</u>	and in		•	ed to Well:	☐ Yes ⊠ No	-			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
			Topock - Alluvium Deposits	SW-SM						
	RB-2-SS-80- 85 7/15/2019 12:21		Topock - Alluvium Deposits	ML	little cl	86.5') Topock - Alluvium Deposits; Silt sticity; some granules to large pebbles ular; little very fine grained to very coa ay; little coarser clasts composed of mo o staining	s, angular to ` rse grained sa	and;		
_86	RB-2-SS-85- 90 7/15/2019 14:00		Topock - Alluvium Deposits	GC	yellowi angula grained compo	90.0') Topock - Alluvium Deposits; Clash red / light brown(5YR 5/6); granules to subangular; some clay; little silt; trasand, subangular to subround; some sed of metadiorite; wet; no odor; no state	to large pebb ace fine to coa coarser clast aining	oles, arse s		
_90 91 92 <sub>120</sub> 93	RB-2-SS-90- 95 7/16/2019 08:04		Topock - Alluvium Deposits	GC	90.0 - brown subang grained metadi	93.0') Topock - Alluvium Deposits; Cla (7.5YR 5/4); granules to very large peb ular; some clay; trace very fine grained I sand; trace silt; some coarser clasts orite; trace granite; moist; no odor; no	yey gravel (G bles, angular d to very coars composed of staining	C); to se	(90.0 - 103.0') Rough drilling	
_94 _95 _96			Topock - Alluvium Deposits	GM	93.0-brown subancy no odo	93.0') Topock - Alluvium Deposits; Cla (7.5YR 5/4); granules to very large peb ular; some clay; trace very fine grained sand; trace silt; some coarser clasts or ite; trace granite; moist; no odor; no service; for granules to very large peb ular; little silt; trace very fine grained to race clay; and coarser clasts compose (7.5YR 5/6); granules to very large peb ular; some silt; little clay; trace very fine grained sand; some coarser clasts co prite; moist; no odor; no staining  104.0') Topock - Alluvium Deposits; Cl sh red / light brown(5YR 5/6); granules s, angular to subangular; some clay; little s = below ground surface, ams	y gravel (GM) bles, angular o very coarse d of metadior	; strong to grained ite; dry;		
_97 	RB-2-SS-95- 100 7/16/2019 08:12		Topock - Alluvium Deposits	GM	(96.5 - brown subang coarse metadi	99.0') Topock - Alluvium Deposits; Silt (7.5YR 5/6); granules to very large peb ular; some silt; little clay; trace very fin grained sand; some coarser clasts co orite; moist; no odor; no staining	y gravel (GM) bles, angular e grained to v mposed of	; strong to very		
			Topock - Alluvium Deposits	GC	(99.0 - yellowi pebble	104.0') Topock - Alluvium Deposits; Cl sh red / light brown(5YR 5/6); granules s, angular to subangular; some clay; lit	ayey gravel (o to very large tle silt; trace	GC); very		

Sieve Sample ID  Groundwater Sample ID  Groun	9/-	<b>ARC</b>	<b>ADIS</b>	for natural and built assets		Во	ring	Log		She	eet: 6 of	16
Alluvium Deposits    Northing (NAD83): N/A   Client: PG&E									Borin	a No.:	RB-2 Pilo	ot
Total Depth: 307.ft bgs Project: Einal GW Remedy Phase 1  Total Type: Broat Longyear Track Mount Tyler Alymer  Depth to First Water: 23.77 ft bgs  Sampling Method: J. Condelaria, G. Angiano Joe Latham  Sampling Interval: Continuous  Sampling Interval: Continuous  Converted to Well: Yes No  Sample ID  Topock-Alluvium Deposits  To		•						,				
Tiller Name: Tiller Name: Tiller Name: Tyler Alymer  Depth to First Water: 23.77 ft bgs  Depth to First Water: 23.77 ft bgs  Sampling Method: Sampling Method: Sampling Interval: Continuous  Converted to Well:  Ves  No  Soil Description  Drilling Notes  D	-					-	•	,	_			
Typer Alymer Depth to First Water: 23.77 ft bgs  J. Condelaria, G. Angiano Sampling Method: Joe Latham Sampling Interval: Converted to Well:  Sampling Interval:  N/A Converted to Well:  Sample ID  Sample ID  Groundwater Sample ID  Sample ID  Groundwater Sample ID  Sample ID  RB-2-SS-100-105  Topook-Alluvium Deposits  Topook-Allu	•			•			•	•	•		•	
Alluvium Deposits 100 -				•					_ Location:	PG&E	<u>гороск, ічееаю</u>	es, California
Sampling Interval: Converted to Well: Yes No  Soil Description  Drilling Notes  Drilling Notes  Drilling Fluir  Fine grained to very coarse grained sand; some coarser clasts Composed of metadiorite, moist; no odor; no staining  RB-2-SS-100-105 Topock-Alluvium Deposits  RB-2-VAS-100-105 Topock-Alluvium Deposits  RB-2-VAS-100-107 Topock-Alluvium Deposits  To						•		<u> </u>	- Project N	lumber	RC000753 00!	 51
Converted to Well: Yes No  Groundwater Sample ID Groundwater Sampl	•				•	•	•		_ 1 10,00011	idiliber.	10000100.000	<i>J</i> 1
Sieve Sample ID  Groundwater Sample ID  Groun	Editor:	•					•		-			
fine grained to very coarse grained sand; some coarser clasts composed of metadiorite; moist; no odor; no staining  Topock-Alluvium Deposits  RB-2-SS-100-105 7/16/2019 08:20  RB-2-VAS-102-107 (-0.033 U ppb) 7/102019 15:21  RB-2-SS-105-110 7/105/2019 08:33  RB-2-SS-105-110 RB-2-SS-105-105-10 RB-2-SS-105-105-10 RB-2-SS-105-105-10 RB-2-SS-105-105-10 RB-2-SS-105-105-10 RB-2-SS-105-105-10 RB-2-SS-105-105-10 RB-2-SS-105-10		^			ں ج	Τ		<del>_</del>				
Topock - Alluvium Deposits   GC   RB-2-SS-100-105   Topock - Alluvium Deposits   GC   RB-2-VAS-102-107   (<0.033 U ppb)   7/12/19   15:21   Topock - Alluvium Deposits   GM   Topock - Alluvium Deposits   GC   Topock - Alluvium   GC   Topock	Depth (ft)	Recover (in)			Geologi	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
RB-2-SS-100-105 7/16/2019 08:20  RB-2-VAS-102-107 105 106 107 108 108 108 109 109 109 109 109 109 109 100 100 100										asts		
Alluvium Deposits   GC   Topock - Alluvi	_101								Ü			
Alluvium Deposits   GC   Topock - Alluvi												
103	102_		DD 2 CC			GC						
103_ 120	4		100-105									
RB-2-VAS- 102-107 (<0.033 U ppb) 7/1/2019 15:21  Topock - Alluvium Deposits; Silty gravel (GM); yellowish red / light brown(5YR 5/6); granules to medium pebbles, angular to subangular; some silt; little clay; little coarser clasts composed of metadiorite; wet; no odor, no staining  RB-2-SS- 105-110 7/16/2019 08:33  RB-2-SS- 108- 109-  RB-2-SS- 109- 109-  Topock - Alluvium Deposits; Clayey gravel with sand (GC); yellowish red / light brown(5YR 5/6); granules to medium pebbles, angular to subangular; little very fine grained to very coarse grained sand; little silt; little clay; trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining  (107.0 - 109.0') Topock - Alluvium Deposits; Clayey gravel with sand (GC); yellowish red / light brown(5YR 5/6); granules to very coarse grained sand; little silt; little clay; trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining	103_											
102-107 (<0.033 U ppb) 7/1/2019 15:21  Topock - Alluvium Deposits; Silty gravel (GM); yellowish red / light brown(5YR 5/6); granules to medium pebbles, angular to subangular; some silt; little clay; little coarser clasts composed of metadiorite; wet, no odor; no staining  RB-2-SS- 105-110 7/16/2019 08:33  RB-2-SS- Alluvium Deposits  Topock - Alluvium Deposits; Clayey gravel with sand (GC); yellowish red / light brown(5YR 5/6); granules to medium pebbles, angular to subangular; little very fine grained to very coarse grained sand; little silt; little clay; trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining  (109-0-111.0') Topock - Alluvium Deposits; Silty gravel with sand (CN) (CN) (CN) (CN) (CN) (CN) (CN) (CN)	4	120										
(<0.033 U ppb) 7/1/2019 15:21  Topock - Alluvium Deposits  Topock - Alluvium Deposits; Clayey gravel with sand (GC); yellowish red / light brown(5YR 5/6); granules to medium pebbles, angular to subangular; little very fine grained to very coarse grained sand; little very fine grained to very coarse grained sand; little very fine grained to very coarse grained sand; little very fine grained to very coarse clasts composed of metadiorite; wet: no odor; no staining  (107.0 - 109.0') Topock - Alluvium Deposits; Clayey gravel with medium pebbles, angular to subangular; little very fine grained to very coarse grained sand; little elay; trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining	104							(104.0. 107.0!) Tapack, Allunium Danasita:	Cilty gravel (C	`NA\-		
Topock - Alluvium Deposits  RB-2-SS- 105-110 7/16/2019 08:33  RB-2-SS- 105-110 7/16/2019 08:33  Topock - Alluvium Deposits (107.0 - 109.0') Topock - Alluvium Deposits; Clayey gravel with sand (GC); yellowish red / light brown(5YR 5/6); granules to medium pebbles, angular to subangular; little very fine grained to very coarse grained sand; little silt; little clay; trace mica; little coarser clasts composed of metadiorite; wet, no odor; no staining  (107.0 - 109.0') Topock - Alluvium Deposits; Clayey gravel with sand (GC); yellowish red / light brown(5YR 5/6); granules to medium pebbles, angular to subangular; little very fine grained to very coarse grained sand; little silt; little clay; trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining	4			(<0.033 U				yellowish red / light brown(5YR 5/6); granules	to medium p	ebbles,		
Alluvium Deposits  RB-2-SS- 105-110 7/16/2019 08:33  RB-2-SS- Alluvium Deposits  GM  (107.0 - 109.0') Topock - Alluvium Deposits; Clayey gravel with sand (GC); yellowish red / light brown(5YR 5/6); granules to medium pebbles, angular to subangular; little very fine grained to very coarse grained sand; little silt; little clay; trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining  (109.0 - 111.0') Topock - Alluvium Deposits; Silty gravel with sand	105_			7/1/2019	T		37	angular to subangular; some slit; little clay; lit composed of metad <mark>iorite; wet; no odor;</mark> no sta	tie coarser ci aining	asts		
RB-2-SS- 105-110 7/16/2019 08:33  RB-2-SS- 105-110 Topock - Alluvium Deposits  GC  GC  GC  (107.0 - 109.0') Topock - Alluvium Deposits; Clayey gravel with sand (GC); yellowish red / light brown(5YR 5/6); granules to medium pebbles, angular to subangular; little very fine grained to very coarse grained sand; little silt; little clay; trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining  (109.0 - 111.0') Topock - Alluvium Deposits; Silty gravel with sand	4			10.21	Alluvium	GM						
RB-2-SS- 105-110 7/16/2019 08:33  Topock - Alluvium Debbles, angular to subangular; little very fine grained to very coarse grained sand; little silt; little clay, trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining  (109.0 - 111.0') Topock - Alluvium Deposits; Silty gravel with sand	06				Deposits		199					
RB-2-SS- 105-110 7/16/2019 08:33  Topock - Alluvium Debbles, angular to subangular; little very fine grained to very coarse grained sand; little silt; little clay, trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining  (109.0 - 111.0') Topock - Alluvium Deposits; Silty gravel with sand	-											
105-110 7/16/2019 08:33  Topock - Alluvium Deposits  GC  GC  GC  GC  Topock - Alluvium Deposits  GC  Topock - Alluvium Deposits  GC  GC  Topock - Alluvium Deposits  GC  Topock - Alluvium Deposits; Silty gravel with sand	07							(107.0 - 109.0') Topock - Alluvium Deposits: (	Clavey gravel	with		
08:33  Alluvium Deposits  GC Very coarse grained sand; little clay, trace mica; little coarser clasts composed of metadiorite; moist; no odor; no staining  (109.0 - 111.0') Topock - Alluvium Deposits; Silty gravel with sand	-		105-110		Topook			sand (GC); yellowish red / light brown(5YR 5/	6); granules	to		
o9	08				Alluvium	GC		very coarse grained sand; little silt; little clay;	trace mica; li	ttle		
109,0 - 111.0') Topock - Alluvium Deposits; Silty gravel with sand	-				Deposits				st; no odor; no	9		
Topock- Alluvium Deposits  RB-2-SS- 110-115 7/16/2019 18.  RB-2-SS- 115-120 7/16/2019 19.  RB-2-SS- 115-120 RB-2-SS- 115-120 R	09_						A CO	(109.0 - 111.0') Topock - Alluvium Deposits; \$	Silty gravel wi	th sand		
Alluvium Deposits  Topock - Alluvium Deposits   Topock - Alluvium Deposits	+				Topock -		301	(GM); yellowish brown (10YR 5/6); granules to subangular: some silt: little very fine grained to subangular:	o large pebbl to verv coarse	es,		
Topock-Alluvium Deposits Silty gravel (GM); yellowish brown (10YR 5/6); granules to large pebbles, angular to subangular; little very fine grained to very coarse grained sand; little silt; little clay; little coarser clasts composed of metadiorite; moist; no odor, no staining (114.0 - 119.5); less silt, more clay	10				Alluvium Deposits	GM	90	grained sand; little clay; little coarser clasts or metadiorite: moist: no odor: no staining	omposed of		(110.0 - 125.0')	
Topock - Alluvium Deposits; Silty gravel (GM); yellowish brown (10YR 5/6); granules to large pebbles, angular to suppose the statistic clay; little					_ Spoots		15 PJd				Rough drilling	
Alluvium Deposits  RB-2-SS-110-115 7716/2019 08:40  RB-2-SS-115-120 7716/2019 08:51	11				Topock -		HY	(111.0 - 112.0') Topock - Alluvium Deposits;	Silty gravel (C	SM);		
RB-2-SS- 110-115 7/16/2019 08:40  RB-2-SS- 110-115 7/16/2019 08:40  RB-2-SS- 110-115 7/16/2019 08:40  RB-2-SS- 115-120 7/16/2019 08:51	110				Alluvium Deposits	GM	SHI'd	yellowish brown (10YR 5/6); granules to large subangular; little very fine grained to very coa	e pebbles, an rse grained s	gular to and;		
Topock-Alluvium Deposits; Silty gravel (GM); strong brown (7.5YR 5/6); granules to large pebbles, angular to subangular; some sult; little very fine grained to very coarse grained sand; trace clay, trace caliche; some coarser clasts composed of metadiorite; moist; no odor; no staining  Topock-Alluvium Deposits; Silty gravel (GM); strong brown (7.5YR 5/6); granules to large pebbles, angular to subangular; some coarser clasts composed of metadiorite; moist; no odor; no staining  Topock-Alluvium Deposits; Silty gravel with sand (GM); yellowish brown (10YR 5/6); granules to small pebbles, subangular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  Topock-Alluvium Deposits; Silty gravel with sand (GM); yellowish brown (10YR 5/6); granules to small pebbles, subangular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  Topock-Alluvium Deposits GM  Topock-Alluvium Deposits GM; yellowish brown (10YR 5/6); granules to small pebbles, subangular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  Topock-Alluvium Deposits GM  Topock	14_	120	RB-2-SS-			1	dti	little silt; little clay; little coarser clasts compo moist; no odor; no staining	sed of metad	iorite;		
Alluvium Deposits  Alluvium Deposits  Alluvium Deposits  Alluvium Deposits  Babagular, some slit; little very fine grained to very coarse grained so dor; no staining  composed of metadiorite; moist; no odor; no staining  (GM); yellowish brown (10YR 5/6); granules to small pebbles, subangular; trace clasts composed of metadiorite; moist; no odor; no staining  Topock-Alluvium Deposits  Topock-Alluvium Deposits subangular; trace calcher; moist; no odor; no staining  Topock-Alluvium Deposits  Topock-Alluvium Deposits  Topock-Alluvium Deposits subangular; trace calcher; some coarser clasts composed of metadiorite; moist; no odor; no staining  (I114.0 - 119.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); yellowish brown (10YR 5/6); granules to small pebbles, subangular; trace calcher; moist; no odor; no staining  (I115.0 - I115.0 - I115.0 - I115.0 - I115.0 - II15.0 - II15.0 - II15.0 - II15.0 - III5.0 - II5.0 - III5.0 - II5.0 - II5.0 - III5.0 - II5.0 -	112		7/16/2019		Topock -		1343	(112.0 - 114.0') Topock - Alluvium Deposits; Strong brown (7 5VR 5/6); granulas to large	Silty gravel (G	GM);		
Topock - Alluvium Deposits  Topock - Alluvium Deposits  Topock - Alluvium Deposits  RB-2-SS- 115-120 7/16/2019 08:51  RB-2-SS- 120  Topock - Alluvium Deposits  Topock - Alluvium Deposits  Topock - Alluvium Deposits  GM  Topock - Alluvium Deposits  Topock - Alluvium Deposits valanguar; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  Topock - Alluvium Deposits  Topock - Alluvium Deposits valanguar; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  Topock - Alluvium Deposits  Topock - Alluvium Deposits  Topock - Alluvium Deposits valanguar; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  Topock - Alluvium Deposits valanguar; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  Topock - Alluvium Deposits valanguar; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  Topock - Alluvium Deposits	13_		UO. <del>4</del> U		Alluvium Deposits	GM	P P	subangular; some silt; little very fine grained t	to very coarse	9		
Topock - Alluvium Deposits; Silty gravel with sand (GM); yellowish brown (10YR 5/6); granules to small pebbles, subangular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  RB-2-SS-115-120 7/16/2019 08:51  RB-2-SS-120 119  (119.5'); less silt, more clay	114						SHI	gramed sand, trace cray; trace callone; some composed of metadiorite; moist; no odor; no	coarser clast staining	15		
Topock - Alluvium Deposits  RB-2-SS- 115-120 7/16/2019 08:51  RB-2-SS- 120 (119.5'); less silt, more clay	' <del></del> -						477	(114.0 - 119.5') Topock - Alluvium Deposits;	Silty gravel wi	th sand		
Topock - Alluvium Deposits  RB-2-SS- 115-120 7/16/2019 08:51  120  (119.5'); less silt, more clay	115							subangular; some silt; little granules to small	pebbles, sub	angular;		
116_   Topock - Alluvium Deposits   GM   GM   GM   GM   GM   GM   GM   G							P P	пасе стау, пасе coarser crasts composed of no odor; no staining	metadiorite; r	noist;		
Topock - Alluvium Deposits  118.	116											
RB-2-SS- 115-120 7/16/2019 08:51  GM Deposits  GM Deposits  (119.5'); less silt, more clay					Topock		P P					
RB-2-SS- 115-120 7/16/2019 08:51	117_				Alluvium	GM						
7/16/2019 08:51 119_ 120 (119.5'); less silt, more clay			RB-2-SS- 115-120		Deposits		MA					
119_ 120 (119.5'); less silt, more clay	118_		7/16/2019 08:51				BHI'd					
119_ 120 (119.5'); less silt, more clay		120	-				HP					
120 (119.5'); less silt, more clay	119_	120					BAID					
120 (119.5'); less silt, more clay							194					
	120							(119.5'); less silt, more clay				

9/	<b>ARC</b>	<b>ADIS</b>	for natural and built assets		Во	ring Lo	g		Shee	et: 7 of	16
Date S						Elevation:	N/A	Boring	No.:	RB-2 Pilo	ot
	•	ted: <u>07/29/</u>				g (NAD83):	N/A				_
Drilling		<u>Casca</u>	ae Drilling		⊨asting Total De	(NAD83):	N/A 307 ft bgs		PG&E	V Remedy Ph	200 1
Drilling Drill Ri			Longyear Trad			•	4-12 inches	-		opock, Needle	
Driller							: 23.77 ft bgs		<u> </u>	opoon, recoun	oo, oamorria
Drilling		_	idelaria, G. Ar		-	ng Method:	4 inch x 10 ft Core Barrel	Project Nu	mber: <u>F</u>	RC000753.00	51
Logge	r:	Joe La	atham		•	ng Interval:	Continuous	-			
Editor:		N/A			Convert	ted to Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
										(110.0 - 125.0') Rough drilling	
_121_						ρΨ V (121 (	) - 127.0') Topock - Alluvium Deposits; §	Silty gravel with	sand		
						(GM);	yellowish brown (10YR 5/6); granules to small	o small pebbles	s,		
_122_		RB-2-SS-				trace	clay; trace coarser clasts composed of or; no staining	metadiorite; mo	pist;		
400		120-125 7/16/2019					, otaning				
_123_		09:00				1991					
 _124	120			Topock -		6-010					
1				Alluvium Deposits	GM						
- 125							40-				
						h p h					
_126											
		RB-2-SS-				120					
127		125-129 7/16/2019				6 PT P (127.0	) - 131.5') Topock - Alluvium Deposits; (	Gravelly silt with	n sand		
		09:09				•   (ML);	brown (7.5YR 5/4); low plasticity; some es, angular to subangular; little very fine	granules to sm	all		
128						coars	e grained sand; little clay; little coarser of liorite; wet; no odor; no staining	clasts compose	d of		
 _129_							,,, saming				
_129_				Topock - Alluvium	ML	000					
130				Deposits							
_131_		RB-2-SS-									
		129-134 7/16/2019				000	5 - 137.0') Topock - Alluvium Deposits; 9	Silty gravel with	cand		
_132_	120	09:22				(GM);	yellowish brown (10YR 5/6); granules t gular; some silt; little very fine grained t	o very large pel			
						graine	ed sand; trace clay; trace coarser clasts				
_133						le Diametad	liorite; moist; no odor; no staining				
- 404											
134				Topock - Alluvium	GM	6910					
 _135				Deposits		127					
						5419					
136		DD 0.00				PP					
		RB-2-SS- 134-139 7/16/2019									
_137		10:36				60 1	) - 142.0') Topock - Alluvium Deposits; \$	Silty cand with	ravel		
						∵ ∵ ∵  (SM);	dark yellowish brown (10YR 4/6); very f e grained, angular to subround; some g	ine grained to v	ery		
_138				Topock -		pebble pebble	es, angular; some silt; some coarser cla				
	120			Alluvium	SM	metac	liorite; moist; no odor; no staining				
_139		RB-2-SS-		Deposits							
 140		139-144 7/16/2019									
	viations	s: USCS = l	Jnified Soil Cl	assification	Systen	n, ft = feet, bo	gs = below ground surface, ams	sl = above m	ean sea	level, GW = q	groundwater
ppb =	parts p	er billion									

9/	<b>ARC</b>	ADIS	for natural and built assets		Во	ring Lo	g		She	eet: 8 of	16
Date S	Started	06/28/2	2019		Surface	Elevation:	N/A	Borir	a No.:	RB-2 Pilo	ot
Date 0	Comple	eted: <u>07/29/2</u>	2019		Northing	g (NAD83):	N/A			IND Z I III	<u> </u>
Drilling		Cascac			-	(NAD83):	N/A	_ Client:	PG&E		
_	Metho		•		Total De	•	307 ft bgs	_ Project:		W Remedy Ph	
	ig Type		ongyear Trac	ck Mount			4-12 inches	_ Location:	PG&E	Topock, Needl	es, California
Drilling	Name:	_	iymer delaria, G. An		•	o First vvater ng Method:	: 23.77 ft bgs 4 inch x 10 ft Core Barrel	– Droiget N		RC000753.00	<u> </u>
Logge			tham	•	•	ng Interval:	Continuous	_ = 10]ect iv	iuiiibei.	<u>KC000733.00</u>	J1
Editor		N/A	шип		•	ted to Well:	☐ Yes ⊠ No	_			
				ی د	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
		10:45									
_141_				Topock - Alluvium	SM						
		DD 2 CC		Deposits	0						
_142_		RB-2-SS- 139-144					145 ED T	0:::			
		7/16/2019 10:45				[o [\] (GM);	) - 145.5') Topock - Alluvium Deposits; strong brown (7.5YR 5/6); granules to	very large pel	bles,		
143							ar; little silt; trace; some coarser clasts liorite; moist; no odor; no staining	composed of			
	120			Topock -							
144			RB-2-VAS- 142-147	Alluvium Deposits	GM						
			(<0.17 U ppb)								
145	-		7/9/2019 13:20				1991				
	_					(145.	5 - 147.0') Topock - Alluvium Deposits;	Silty sand wit	h gravel		
146		RB-2-SS-		Topock - Alluvium	SM	graine	strong brown (7.5YR 5/6); very fine gra ed, subangular to subround; some gran	າules to large ן	oarse bebbles,		
		144-149 7/16/2019		Deposits		angul	ar to s <mark>ubangular; li</mark> ttle coarser clasts co liorite; trace granite; moist; no odor; no	omposed of staining			
147		10:56				(147.0	- 149.0') Topock - Alluvium Deposits;	Silty sand wit			
	-			Topock -		to coa	reddish brown / moderate brown(5YR a rse grained, subangular to subround; li	ittle granules			
5140_				Alluvium Deposits	SM		ım p <mark>ebbl</mark> es, angular; little silt; trace coa osed of metadiorite; little granite; wet; r		aining		
149											
						(149.0 (SM):	) - 153.0') Topock - Alluvium Deposits; yellowish brown (10YR 5/6); medium o	Silty sand wit	h gravel coarse		
150						∷ ∷ graine	ed, angular to subround; little granules in gular; little silt; trace coarser clasts co	to very large p			
							liorite; trace granite; wet; no odor; no si				
151		RB-2-SS-		Topock - Alluvium	SM						
		149-154 7/16/2019		Deposits							
152	120	11:06									
153							) - 156.5') Topock - Alluvium Deposits;				
-	-					angul	strong brown (7.5YR 5/6); granules to ar to subangular; some medium to very	y coarse grain	ed sand,		
154						subar	gular to subround; little silt; trace coars tadiorite; wet; no odor; no staining	ser clasts con	posed		
155	-			Topock - Alluvium	GM	1° P1d	, , ,				
155_	•	RB-2-SS- 154-157		Deposits							
156		7/16/2019 11:14				5-Pid					
	1	11.14				d d					
157							5 - 159.5') Topock - Alluvium Deposits; brown (7.5YR 5/6); granules to very la				
						to sub	pangular; some silt; little very fine to very subangular to subround; trace clay; so	ry coarse grain	ned		
158		DD 0 00		Topock - Alluvium	GM		osed of metadiorite; wet; no odor; no st		4010		
	120	RB-2-SS- 157-162 7/16/2019		Deposits	J SIVI						
159		7/16/2019 11:20									
				Topock		1450	5 - 160.0') Topock - Alluvium Deposits;	Clavov crav-	(CC):		
160		. 11000	In: (1 0 1 0 1	Topock - Alluvium		(1X×/) `			` '	a lavel O'A'	
Appre	viations	3: USUS = L	mitiea Soli Cl	assiticatio	n Systen	$\eta$ , $\pi$ = reet, by	gs = below ground surface, am	ısı = above	mean se	a ievei, GVV =	groundwater,

9/	<b>AKC</b>	ADIS	for natural and built assets		Во	ring	g Log	Sh	eet: 9 of	16
	Started				Surface		•	Boring No.	: RB-2 Pilo	ot
	•	ted: <u>07/29/</u>			Northin	- '	•	_		- <u>-</u>
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
_	Metho		<u>Drilling</u>		Total De	•	307 ft bgs	•	W Remedy Ph	
	g Type Name:		Longyear Trad				meter: <u>4-12 inches</u> Water: <u>23.77 ft bgs</u>	Location: PG&E	тороск, мееа	es, Calliornia
	Asst:		idelaria, G. An		Samplir		<del>-</del>	Project Number:	RC000753.00	 51
Logge			atham	•	Samplir			_ 1 10,00011101110011	10000100.00	<u> </u>
Editor:		N/A			Convert	-		-		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
		DD 2 CC		Deposits	1	60	√ yellowish brown (10YR 5/6); granules to very     √ angular to subangular; some clay; little very fi	ine to very coarse		
161		RB-2-SS- 157-162				Poto	grained sand, subangular to subround; little s clasts composed of metadiorite; moist; no od			
		7/16/2019 11:20		Topock - Alluvium	GM		(160.0 - 163.0') Topock - Alluvium Deposits;	Silty gravel (GM);		
_162_				Deposits			strong brown (7.5YR 5/6); granules to very la to subangular; some silt; little very fine to very	coarse grained		
							sand, subangular to subround; trace clay; so composed of metadiorite; wet; no odor; no st	aining; 0.3' lense of		
_163		RB-2-SS-					grayish green color change from 160.5' to 16 (163.0 - 167.0') Topock - Alluvium Deposits;			
	120	162-165 7/16/2019				60	reddish yellow (7.5YR 6/8); granules to very langular to subangular; and silt; little very fine	arge pebbles,		
_164		11:58				100	grained sand, subangular to subround; frace	clay; some coarser		
-				Topock -		60	clasts composed of metadiorite; moist; no od	or; no staining		
_165				Alluvium	GM	139	1901			
				Deposits		60				
_166										
						60				
_167		RB-2-SS-					(167.0 - 171.0') Topock - Alluvium Deposits;		(167.0 - 177.0')	_
		165-170 7/16/2019					reddish brown / moderate brown(5YR 4/4); ve fine grained, subangular to subround; and sil	t; little granules to	Rough drilling	
_168		12:07					medium pebbles, subangular; trace clay; little composed of metadiorite; wet; no odor; no st			
 _169_				Topock -				3		
_109				Alluvium Deposits	SM					
 _170_										
							∷ (170'); moist; 0.2' lense of color change - gra ∷ to 170.2' bgs	yish green from 170		
171		RB-2-SS- 170-172					3			
		7/16/2019 12:18		Topock -			(171.0 - 172.5') Topock - Alluvium Deposits; (SM); reddish brown / moderate brown(5YR 4			
_172_	120			Alluvium Deposits	SM		to coarse grained, angular; little granules to r angular; little silt; little coarser clasts compose	nedium pebbles,		
	0			Берозіїз			wet; no odor; no staining	,		
_173							(172.5 - 177.0') Topock - Alluvium Deposits; reddish brown / moderate brown(5YR 4/4); ve	ery fine grained to		
							∰ fine grained, subangular to subround; and sil ∰ medium pebbles, subangular; trace clay; little	coarser clasts		
_174		RB-2-SS-	RB-2-VAS- 172-177				composed of metadiorite; moist; no odor; no grayish green color change from 175.5 to 175			
		172-177 7/16/2019	(<0.17 U	Topock -				-		
_175_		12:29	ppb) 7/12/2019 14:55	Alluvium Deposits	SM					
			14.00							
_176										
_177				Topock -			· ∴ (177.0 - 178.0') Topock - Alluvium Deposits;	Silty sand with gravel		
				Alluvium Deposits	SM		(SM); reddish brown (5YR 5/4); very fine grain grained, angular; and silt; little granules to me	ned to coarse edium pebbles.		
_178		RB-2-SS-		Topock -			angular to subangular; trace clay; little coarse ∴ metadiorite; wet; no odor; no staining	er clasts composed of		
	120	177-180 7/17/2019		Alluvium Deposits	SM		(178.0 - 179.0') Topock - Alluvium Deposits;	Silty sand with gravel		
_179		07:59		Topock -			∴ (SM); reddish brown / moderate brown(5YR 4  ∴ to coarse grained, angular; little granules to r	nedium pebbles,		
 180				Alluvium Deposits	SM		angular; little silt; little coarser clasts compos wet; no odor; no staining	sed of metadiorite;		
	viations	s: USCS = I	Unified Soil Cl		Systen	1, ft =	feet, bgs = below ground surface, ams	sl = above mean se	ea level, GW =	groundwater
		er billion			-					

Date Startest:    G6282019	9/-	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 10 of	16
Continue	Date S	tarted:	06/28/2	2019		Surface	Elevati	on: <u>N/A</u>	Borin	a No.:	RB-2 Pilo	ot
Total Depth: Sono Drilling  Sonic Drilling  So		•	ted: <u>07/29/</u> 2	2019		•	• `	,			IXD Z I IIQ	<u>^</u>
Direct Number   Continue   Cont	_					_	•					
Delier Name:    Tyler Alymer   Condellaria, G. Angiano   Sampling Method:   Sampling Meth	_						•	•	•		-	
Delling Assis: J. Concleteira, G. Anglano Sampling Method: d. Inch. x 10 ft. Core Barrie Project Number: P. Colory Sample Colory Continuous Sampling Method: d. Inch. x 10 ft. Core Barrie Project Number: P. Colory Sample Colory Sample D. Continuous Sampling Method: d. Inch. x 10 ft. Core Barrie Project Number: P. Colory Sample Colory Sample D. Continuous Sampling Method: d. Inch. x 10 ft. Core Barrie Project Number: P. Colory Sample Colory Sample D. Continuous Sampling Method: d. Inch. x 10 ft. Core Barrie Project Number: P. Colory Sample Colory Sample D. Continuous Sampling Method: d. Inch. x 10 ft. Core Barrie Project Number: P. Colory Sample Sample Inch. Sample									Location:	PG&E T	opock, Needle	es, California
Second   S			-	•		•		· · · · · · · · · · · · · · · · · · ·	Project N	Lumbor: I	2000753 00	 51
Grow-field to Well: Yes No  Converted to Well: Yes No  Soil Description Drilling Notes Drilling Fluid  RR-2-SS- 182   RR-2-SS- 183   RR-2-SS- 184   RR-2-SS- 185   RR-2-SS- 186   RR-2-SS- 187   RR-2-SS- 187   RR-2-SS- 188   RR-2-SS-			-			-	-		i iojeci iv	iuiiibei. <u>i</u>	<u>\C000133.00</u>	<i>J</i> I
Signer Sample ID Corondotator Sample ID Coron				tram		-	-					
RB-2-SS- 18-1-19-1 18-2 18-2 18-2 18-2 18-2 18-2 18-2 18					υ <u>Ε</u>							
RB2-285- 1981	Depth (ft)	Recover (in)			Geologi Formatic	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
181   770-016						SM.						
7/7/2019 7/7	181		180-182			Sivi		fine grained, subangular to subround; and silt;	little granule	es to		
with gravel (SW); strong brown (7.5YR 56); very fine grained to way coarse grained, angular, some granules to array bedbles, wet yourse grained, angular, some granules to array bedbles, wet no odor; no staining  182. SS 192.187 777.219 77								composed of metadiorite; wet; no odor; no sta	ining	/		
angular, trace all; some coarser clasts composed of metadiorite; wet no odor; no staining  180. 180. 180. 180. 180. 180. 180. 180.	_182_							with gravel (SW); strong brown (7.5YR 5/6); ve	ery fine grain	ed to		
182 120   188   188   188   188   188   188   189   18												
188. 182-187   Topock	183							wet; no odor; no staining				
Topock- 188.  198.  198.		120										
182-187 17/17/2019 183. 185-187 17/17/2019 184. 185	184		RB-2-SS-									
186.  187.  188.  188.  188.  189.  189.  189.  190.	_		182-187		Alluvium	SW						
RB-2-SS-136-190 (1900-190-190-190-190-190-190-190-190-190	185				Deposits			4051				
RB-2-SS-18-190 (1980 - 189.0) Topock - Alluvium Deposits; Well graded gravel with sitt and sand (GW-GM); strong brown (7.5YR 5/6); granules to very large pebbles, angular; and very fine to very coarse grained sand, angular; trace load; little coarser clast composed of quartz; wet, no odor; no staining (189.0 - 189.5) Topock - Alluvium Deposits; Sity sand with gravel (189.0 - 189.5) Topock - Alluvium Deposits; Sity sand with gravel (189.0 - 189.5) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (189.5 - 192.0) Topock - Alluvium Deposits; Sity gravel with sand (199.5 - 192.0) Topock - Alluvium Deposits; Sity sand (SM); strong brown (7.5YR 5/6); every fine grained to medium grained, angular; and sit; little granules to small pebbles, angular; trace day into coarser clast composed of quartz; wet; no odor; no staining (199.5 - 199.7) Topock - Alluvium Deposits; Sity sand (SM); strong brown (7.5YR 5/6); every fine grained to medium grained, angular; and sit; little granules to small pebbles, angular; trace day into coarser clast composed of metadiorite; trace coarser clast compos												
RB-2-SS-187-190 1892 1893 1894 1895 1896 1897 1897 1898 1898 1899 1899 1899 1899	186											
RB-2-SS-187-190 1892 1893 1894 1895 1896 1897 1897 1898 1898 1899 1899 1899 1899												
Topock-Alluvium Deposits (90 - 189.0) Topock - Alluvium Deposits (90 granules of metadionite, trace class) time to very coarse grained and, any quist, trace class) time to very coarse grained and, any quist, trace class composed of quartz, wet, no odor, no staining (189.0 - 189.5) Topock - Alluvium Deposits (189.5 - 189.5) Topock - Alluvium Deposits (189.5 - 189.7) Topock - Alluvium Deposits (189.5 - 189.7) Topock - Alluvium Deposits (189.5 - 189.5) Topock - Alluvium Deposits (189.5 - 189.7) T	187											
Topock-Alluvium Deposits (90 - 189.0) Topock - Alluvium Deposits (90 granules of metadionite, trace class) time to very coarse grained and, any quist, trace class) time to very coarse grained and, any quist, trace class composed of quartz, wet, no odor, no staining (189.0 - 189.5) Topock - Alluvium Deposits (189.5 - 189.5) Topock - Alluvium Deposits (189.5 - 189.7) Topock - Alluvium Deposits (189.5 - 189.7) Topock - Alluvium Deposits (189.5 - 189.5) Topock - Alluvium Deposits (189.5 - 189.7) T												
189.   7/17/2019   O8:25   Oscillatorial Composits   Topock Alluvium   Deposits   Oscillatorial Composition   Oscillatorial Compositi	188				Topock -							
Topock-Alluvium Deposits  190  190  190  190  190  190  190  19			7/17/2019			GW-GM		to very large pebbles, angular; and very fine to	very coarse	grained		
191.  192. 193. 194. 196. 197. 198. 199. 199. 199. 199. 199. 120 120 120 120 120 120 120 120 120 120	189		08:25		Topock -	SM						
Topock-Alluvium Deposits  120 132 142 143 144 155 156 157 157 158 158 158 158 158 158 158 158 158 158	100						P P		Silty sand with	n gravel		
Alluvium Deposits  120 120 120 120 120 120 120 130 140 150 150 160 1717/2019 182 193 183 184 185 185 195 195 195 195 195 195 196 197 197 197 198 120 120 120 120 120 120 120 120 120 120	130	-			T		Po 01	(SM); strong brown (7.5YR 5/6); very fine grain	ned to very co	oarse		
192 120 RB-2-SS-193-194 PB-2-SS-195-195 PB-2-SS-195-196 PB-2-SS-195-198 PB-2-SS-196-195 PB-2-SS-196-203 7/17/2019 PB-2-SS-198-203	191				Alluvium	GM	12 P	silt; trace clay; little coarser clasts composed	of metadiorit	e; trace		
192 120 RB-2-SS-190-195 77/17/2019 08:33 RB-2-SS-195-198 77/17/2019 08:40 RB-2-SS-195-203 77/17/2019 08:40 RB-2-SS-195-203 77/17/2019 08:00 RB-2-SS-195-203 77/17/201					Deposits		P14 d	(189.5 - 192.0') Topock - Alluvium Deposits; S	Silty gravel wi	th sand		
193   195   196   195   197   170   196   196   197   197   198   198   199   198   199	192	120					69 P					
193. 7/17/2019 08:33  194. 195. 196. RB-2-SS-195-199. 120 199. RB-2-SS-198-203 7/17/2019 09:03  ML 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		120	190-195									
grained to very coarse grained, angular; some granules to very large pebbles, angular; little coarser clasts composed of nuartz; wet; no odor; green staining  RB-2-SS-195-198 7/17/2019 08:40  RB-2-SS-198 199 180 180 180 180 180 180 180 180 180 180	_193_							(192.0 - 197.0') Topock - Alluvium Deposits; V	Vell graded s	sand		
composed of metadiorite; trace coarser clast composed of quartz; wet; no odor; green staining  RB-2-SS- 195-198 7/17/2019 08:40  RB-2-SS- 198- 198- 198- 199- 190:  RB-2-SS- 190	_							grained to very coarse grained, angular; some	granules to	very		
Alluvium Deposits  SW-SM Deposits  SW-SM Alluvium Deposits  SW-SM Alluvium Deposits  SW-SM Alluvium Deposits  SW-SM  (197.0 - 199.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular, and silt; little granules to small pebbles, angular; trace clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining  ML  (199.5 - 202.0') Topock - Alluvium Deposits; Gravelly silt with sand	194							composed of metadiorite; trace coarser clast of				
196 RB-2-SS- 195-198 7/17/2019 08:40  Topock - Alluvium Deposits  SM Deposits  ML  (197.0 - 199.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular; and silt; little granules to small pebbles, angular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  ML  (197.0 - 199.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular; and silt; little granules to small pebbles, angular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  ML  (199.5 - 202.0') Topock - Alluvium Deposits; Gravelly silt with sand	_					SW-SM		wet; no odor; green staining				
RB-2-SS- 195-198 7/17/2019 08:40  Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular; and silt; little granules to small pebbles, angular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  RB-2-SS- 198-203 7/17/2019 09:03  ML  (197.0 - 199.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  (197.0 - 199.5') Topock - Alluvium Deposits; Gravelly silt with sand	195				Deposits							
RB-2-SS- 195-198 7/17/2019 08:40  Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular; and silt; little granules to small pebbles, angular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  RB-2-SS- 198-203 7/17/2019 09:03  ML  (197.0 - 199.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  (197.0 - 199.5') Topock - Alluvium Deposits; Gravelly silt with sand	_											
195-198 7/17/2019 08:40  Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular; and silt; little granules to small pebbles, angular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  RB-2-SS- 199 198-203 7/17/2019 09:03  ML  (197.0 - 199.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining  (199.5 - 202.0') Topock - Alluvium Deposits; Gravelly silt with sand	196		RB-2-SS-									
197 08:40  - 198 Topock - Alluvium Deposits; Office of the street of the			195-198									
strong brown (7.5YR 5/6); very fine grained to medium grained, angular; and silt; little granules to small pebbles, angular; trace clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining    Number   Part   Par	197							(197.0 - 199.5') Topock - Alluvium Deposits: S	Silty sand (SN	<b>/</b> ):		
Topock - Alluvium Deposits SM Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts composed of metadiorite; moist; no odor; no staining Clay, trace coarser clasts coarser clasts coarser clasts coarser clasts clay, trace coarser clas	-							strong brown (7.5YR 5/6); very fine grained to	medium gra	ined,		
120 RB-2-SS-198-203 7/17/2019 09:03 Deposits Dep	198					CM		clay; trace coarser clasts composed of metadi				
7/17/2019 09:03 ML 0 (199.5 - 202.0') Topock - Alluvium Deposits; Gravelly silt with sand	-	120				SIVI		odor, no stairing				
ML 0 (199.5 - 202.0') Topock - Alluvium Deposits; Gravelly silt with sand	199		7/17/2019									
			09:03			ML		(199.5 - 202.0') Topock - Alluvium Deposits; G	Gravelly silt w	vith sand		
		/iations	: USCS = L	Inified Soil Cla	assification		<u>י∘וי≀°</u> ı, ft = f∈	et, bgs = below ground surface, ams	I = above	mean sea	a level, GW = 0	groundwater,

5/	4K(	ADIS	for natural and built assets		Во	ring l	.og		She	et: 11 of	16
	Started					Elevatio		Borir	a No.:	RB-2 Pilo	ot
	•	ted: <u>07/29/</u>				g (NAD8:					
Orilling		Casca			_	(NAD83		_ Client:	PG&E	M D   D	
_	Metho		<u>Drilling</u> Longyear Tra		Total D	•	307 ft bgs	_ Project:		N Remedy Ph Topock, Needle	
	g Type Name:		Longyear fra Alymer				er: 4-12 inches ter: 23.77 ft bgs	_ Location.	PG&E I	ороск, мееці	es, Calliom
	Asst:		ndelaria, G. Aı		-	ng Metho	_	<ul><li>Project N</li></ul>	lumber: F	RC000753.00	 51
ogge				•	•	ng Interva					<u> </u>
ditor:		N/A			-	ted to We					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flui
201		RB-2-SS- 198-203 7/17/2019		Topock - Alluvium Deposits	ML	o o o s	L); strong brown (7.5YR 5/6); low plasticit nall pebbles, angular; little very fine to mer gular; little clay; little coarser clasts comp tt; no odor; no staining	dium grained s	and,		
202 - 203 -	120	09:03		Topock - Alluvium Deposits	SM	s 	02.0 - 204.0') Topock - Alluvium Deposits; ong brown (7.5YR 5/6); very fine grained gular; and silt; little small to very large pel ay; trace coarser clasts composed of meta staining; green staining at 202.5' bgs	to medium gra obles, angular	ined, trace		
204			RB-2-VAS- 202-207	Topock -	SM		04.0 - 204.5') Topock - Alluvium Deposits;	Silty sand (SI	<b>Л</b> );		
-		RB-2-SS-	(<0.17 U ppb) 7/14/2019	Alluvium Deposits	ML	i i i i s	ong brown (7.5YR 5/6); fine grained to co le granules to small pebbles, angular; little	arse grained,	angular;		
205		203-207 7/17/2019	7/14/2019 09:20	Topock - Alluvium			arser clasts composed of metadiorite; we 04.5 - 205.0') Topock - Alluvium Deposits;	t; no odor; no	staining		
-		09:09		Deposits	_	:  :   <i>(</i>	L): strong brown (7.5YR 5/6); low plasticit	v: some small	to verv		
206				Topock - Alluvium	SM	.   .   a	ge pebbles, angular; little very fine to med gular; little clay; little coarser clasts comp	osed of metad	iorite;		
- 207				Deposits		1:1:1:17	et; no odo <mark>r; no staining</mark> 05.0 - 207.5') Topock - Alluvium Deposits;	Silty sand (SI	<u>и);</u>		
- 208_ - 209_		RB-2-SS- 207-209 7/17/2019 09:15					ong brown (7.5 YR 5/6); very fine grained gular, and silt, little small to very large pel ay, trace coarser clasts composed of meta or; no staining 07.5 - 217.0') Topock - Alluvium Deposits; avel (SC); brown (7.5 YR 4/4); very fine grained, angular to subround; some small to gular; little clay; trace silt; little coarser clastadiorite; moist; no odor; no staining	obles, angular, adiorite; moist; Clayey sand valined to very coovery large pe	trace no with parse obles,	(207.0') Switched driller T. Alymer with D. OMara	
- 210							station, moter, no odor, no staining				
- 11 <u>.</u>		DD 0 00									
_		RB-2-SS- 209-214									
212_	120	7/17/2019 09:22		Topock -							
_				Alluvium Deposits	SC						
213_											
_											
214											
_											
15_		RB-2-SS-									
- 216		214-217 7/17/2019 09:28									
. 10		03.20									
- 17											
	180	RB-2-SS- 217-222 7/17/2019 09:35		Topock - Alluvium Deposits	sc		17.0 - 219.5') Topock - Alluvium Deposits; 5R 4/4); medium grained to very coarse g ay; trace granules, angular; trace silt; trace mposed of metadiorite; wet; no odor; no s	rained, angula e coarser clast	ir; some		
-						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	19.5 - 222.0') Topock - Alluvium Deposits;	Clavev gravel	with		
220_					GC	YNXX/	bgs = below ground surface, am			1 1 0:::	

3/	<b>AK</b> (	ADIS	for natural and built assets		Во	ring	Log		She	eet: 12 of	16
	Started		/2019		Surface			Borin	g No.:	RB-2 Pilo	ot
	•	eted: <u>07/29</u>			Northin		•				_
_	Co.:	<u>Casca</u>			Easting	•	•	Client:	PG&E	A/ Damadı / Dh	1
_	Methog Type		Drilling Longyear Tra		Total D	-	307 ft bgs neter: 4-12 inches	•		W Remedy Ph Γοροςk, Needl	
	y rype Name:		Alymer				Water: 23.77 ft bgs	Location.	1 GaL	гороск, песси	es, Callion
	Asst:	_	ndelaria, G. Ar		Sampli		_	Project N	umber:	RC000753.00	51
gge		Joe L	atham	-	Sampli	-		•			
ditor:		N/A			Conver	ted to \	Vell: ☐ Yes ⊠ No				
(ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Flui
-21_		RB-2-SS- 217-222 7/17/2019		Topock - Alluvium	GC		sand (GC); strong brown (7.5YR 5/6); granule pebbles, angular; some fine to very coarse gra to subround; little clay; some coarser clasts of metadiorite; trace granite; wet; no odor; no sta	ained sand, a omposed of			
-		09:35		Deposits							
22_							(222.0 - 237.0') Topock - Alluvium Deposits; C	Clayey sand w	vith		
_ ၁၁							gravel (SC); brown (7.5YR 5/4); very fine grain grained, angular to subround; some small to v	ery large pet	bles,		
23_							angular; little clay; trace silt; little coarser clas metadiorite; moist; no odor; no staini <mark>ng;</mark> greer	ts composed nish gray stail	of ning at		
- 24							234' bgs				
_		RB-2-SS- 222-227									
25_		7/17/2019 09:40					(C <sub>2</sub> )				
-											
26	180										
- \ <del>-</del>											
27										(227.0 - 244.0')	
- 28_										Rough drilling	
- 29_											
_		RB-2-SS-		Topock - Alluvium	sc						
30		227-233 7/17/2019		Deposits							
_		09:45									
31											
- 32_											
14											
- 33											
_		RB-2-SS-									
34		233-235 7/17/2019									
_	60	09:50									
35_											
36											
- 37											
JI		RB-2-SS- 235-240					(237.0 - 241.0') Topock - Alluvium Deposits; C sand (GC); reddish brown / moderate brown(s	Clayey gravel	with	(237.0') Switched driller	
- 38_		7/17/2019 10:30	RB-2-VAS-				small pebbles, angular; some fine to coarse g subangular to subround; some clay; trace silt;	rained sand,		D. OMara with S. Vasquez	
_	84		237-242 (<0.17 U	Topock - Alluvium	GC		composed of metadiorite; moist; no odor; no s		3,000	J. Vasquez	
39			ppb) 7/15/2019	Deposits							
_			13:38								
40		. 11000	Haiffer H.O. H.O.	laasifi - ''	- 0: 1	V//XX	and have a heless are seen at	. با م		a lavel OW	
		er billion	Offilied Soll C	iassilicatior	ı əyster	11, IL = T	eet, bgs = below ground surface, ams	ı – above i	nean se	a ievel, GVV = (	groundwai
	1-21.10 P										

AF	RCADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 13 of	16
Date Start		8/2019			Elevat	·	Borin	a No.:	RB-2 Pilo	ot
	pleted: <u>07/2</u>				g (NAD	•	_			_
Orilling Co				_	(NAD8	•		PG&E		
Orilling Me		c Drilling		Total De	•	307 ft bgs	•		W Remedy Pha	
orill Rig T Oriller Nar		<u>t Longyear Tra</u> Alymer				eter: <u>4-12 inches</u> Vater: <u>23.77 ft bgs</u>	_ Location:	PG&E	Fopock, Needle	es, Calliornia
rilling As		ondelaria, G. Ar		•	ng Meth		Project Ni	ımher	RC000753.005	 51
.ogger:		_atham		•	ng Inter		_ 1 TOJCOLTA	umber.	110000700.000	71
Editor:	<u>N/A</u>	<u> </u>		•	ted to V		-			
Depth (ft)		Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
		RB-2-VAS- 237-242	Topock - Alluvium Deposits	GC					(227.0 - 244.0') Rough drilling	
241	4 RB-2-SS- 240-245 7/17/2019 10:35	(<0.17 U ppb) 7/15/2019 13:38	Topock - Weathered Bedrock - conglomerate	CL	18.28.7	(241.0 - 244.0') Topock - Weathered Bedrock Sandy lean clay with gravel (CL); reddish brov plasticity; some granules to very large pebble to coarse grained sand, subangular to subrou coarser clasts composed of metadiorite; dry;	wn (5YR 5/4); s, angular; littl ınd; little silt; li	low e fine ttle		
244						(244.0 - 247.0') Topock - Weathered Bedrock	- conglomera	ite;		
245	6		Topock - Weathered	sc		Clayey sand with gravel (SC); yellowish red / very fine grained to medium grained, subangusome granules to large pebbles, angular to su trace silt; little coarser clasts composed of me odor; no staining	light brown(5\ ular to subrour ubangular; littl	/R 5/6); nd; e clay;		
246			Bedrock - conglomerate			odor, no statung				
248	RB-2-SS- 245-250 7/17/2019 10:40		Topock - Weathered Bedrock - conglomerate	CL		(247.0 - 252.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro plasticity; some granules to medium pebbles, subangular; little very fine to fine grained sand subround; trace silt; little coarser clasts comp trace coarser clasts composed of granite; mo staining	own (2.5YR 4/4 angular to d, subangular oosed of metad	4); low to diorite;		
- 84 251_	4								(251.0 - 254.0') Rough drilling	
252	RB-2-SS- 250-255 7/17/2019					(252.0 - 274.0') dark reddish brown (2.5YR 3/moisture content, white mottling	4); decrease i	n	rtough unining	
253_ - 254_	10:45									
						(254') reddish brown (2.5YR 4/4); increase in	moisture con	tent		
255_										
256 257 8.	4 RB-2-SS- 255-260 7/17/2019 10:50					(257') dark reddish brown (2.5YR 3/4); decrea	ase in moistur	e		
bbreviati	ons: USCS =	Unified Soil C	assification	Systen	ft = fe	et, bgs = below ground surface, ams	sl = above r	nean se	a level. GW = c	roundwater

7/-	IRC	ADIS	for natural and built assets		RO	rıng	Log		She	et: 14 of	16
ate St						Elevati		Borin	g No.:	RB-2 Pilo	ot
	•	ted: <u>07/29/</u>				g (NAD	•				_
rilling		<u>Casca</u>			_	(NAD8	•	Client:	PG&E	N Domody Dh	1
rilling Irill Rig			Drilling Longyear Tra		Total De	•	307 ft bgs eter: 4-12 inches			N Remedy Ph	
riller N		Tyler A					Vater: 23.77 ft bgs	_ Location.	I CUL I	ороок, поссы	co, Camorri
rilling		-	idelaria, G. Ai			ig Meth	_	Project N	umber: <u>I</u>	RC000753.00	51
ogger	:	Joe La	atham	8	Samplin	g Inter		-			
ditor:		N/A		(	Convert	ed to V	′ell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flui
261	84										
262		RB-2-SS-									
4		250-265 7/17/2019									
263_		10:55									
\ \ \ \ \ \											
264	72						(264') reddish brown / moderate brown(5YR 4	1/4); decrease	in		
65							moisture content				
03_	Ī						190'			(265.0 - 267.0') Rough drilling	
66_										g	
4											
67		RB-2-SS-									
4		265-270 7/17/2019									
68		11:00									
-											
69_							<b>F</b>			(269.0 - 274.0') Rough drilling	1
70_											
	84										
71_											
4					_						
72		RB-2-SS-									
72		270-275 7/17/2019									
73		11:00									
74											
							(274.0 - 277.0') Topock - Weathered Bedrock Clayey sand with gravel (SC); brown (7.5YR 4	1/4); very fine	grained		
75	-			Topock -			to very coarse grained, subangular to subrour very large pebbles, angular; little clay; trace; to	nd; some med race silt; little	lium to		
4				Weathered Bedrock -	sc		coarser clasts composed of metadiorite; wet;	no odor; no s	taining		
76			RB-2-VAS- 274-279	conglomerate							
			(<0.17 U ppb)								
77	108	RB-2-SS- 275-280	7/18/2019 09:17				(277.0 - 279.0') Topock - Weathered Bedrock				
78		7/17/2019 12:49		Topock - Weathered			Sandy lean clay with gravel (CL); reddish brow brown(5YR 4/4); low plasticity; some very fine	to medium g	rained		
		12.70		Bedrock - conglomerate	CL		sand, subangular to subround; little granules to pebbles, subangular; trace silt; little coarser compated in the maintain and a subrance attaining.		ed of		
79							metadiorite; moist; no odor; no staining				
				Topock - Weathered	CL		(279.0 - 285.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro	wn / moderat	e l		
4	I		_	Bedrock -	I	Y/////	brown(5YR 4/4); low plasticity; some granules	s ເດ very large		1	I

<b>-</b> /-	AKC	ADIS	for natural and built assets		DU	ring	Log			eet: 15 of	16
	tarted:	06/28			Surface			Borin	a No.:	RB-2 Pilo	ot
	•	ed: <u>07/29</u>			Northin	- '		_			
Drilling		Casca			Easting	•	•	Client:	PG&E	4/ D   D	
	Metho		Drilling Longyear Tra		Total De	•	307 ft bgs	Project:		<u> N Remedy Ph</u> Γοροςk, Needle	
	g Type: Name:		Longyear rra Alymer				eter: <u>4-12 inches</u> /ater: <u>23.77 ft bgs</u>	_ Location.	PGaE	гороск, пееав	es, Calliorni
rilling		-	<u>ndelaria, G. Aı</u>		Samplin		<del>-</del>	- Proiect N	umber	RC000753.00	 51
ogger				-	Samplir	_		_ 1 10,00011	umbor.	1.0000700.00.	<i>5</i> i
ditor:		N/A			Convert	•		=			
	2			.i. P							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Conglomerate	USCS	USCS	Soil Description	Pos		Drilling Notes	Drilling Fluid
-				Congiomerate			pebbles, angular to subangular; little very fine sand, subangular to subround; trace; trace si	It; little coarse	er clasts		
281		RB-2-SS-					composed of metadiorite; trace mica; moist; some white and dark brown mottling	no odor; no si	aining;		
4	108	280-283 7/17/2019									
282		12:56		Topock -							
4				Weathered Bedrock -	CL						
283				conglomerate	=					(283.0 - 293.0')	
-										Rough drilling	
284											
								•			
285		RB-2-SS-					(285.0 - 294.0') Topock - Weathered Bedrock				
-		283-288 7/18/2019					Gravelly lean clay with sand (CL); reddish bro brown(5YR 4/4); low plasticity; some granule	own / moderat s to very large	te e		
286		11:15					brown(5YR 4/4); low plasticity; some granule pebbles, angular to subround; some fine to m subangular to subround; trace silt; little coars	nedium graine er clasts com	d sand,		
-							of metadiorite; trace granite; moist; no odor;				
287											
_ 288											
200	120										
_ 289			RB-2-VAS-								
203_			287-292 (<0.17 U	Topock - Weathered							
			`ppb) 7/26/2019	Bedrock - conglomerate	CL						
		RB-2-SS- 288-293	11:56								
291_		7/18/2019 11:20									
292_											
293_										(202.0 207.0")	
4										(293.0 - 307.0') 10' of slough in	
294				<u> </u>	<u> </u>		(294.0 - 303.0') Topock - Competent Bedrock		ate.	core barrel. From 303 to	
4							reddish brown / moderate brown(5YR 4/4); lit	tle granules t	o	307 very rough drilling.	
295_							medium pebbles, angular to subangular; little grained sand; trace silt; little coarser clasts c	omposed of	euiuiii		
4							metadiorite; dry to moist; no odor; no staining conglomerate, highly pulverized and fractured	j; friable d			
296											
4	168			Topock -							
297				Competent Bedrock -							
4				conglomerate	9						
298_											
Ⅎ			1 1	1	1	K\//\\				1	l
299_						DXIII					
299 - 300											

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	et: 16 of	16
	Started					Elevation:	N/A	Borin	a No.:	RB-2 Pilo	t
		ted: <u>07/29/</u> 2				g (NAD83):	N/A				
Drilling		<u>Casca</u>				(NAD83):	N/A	Client:	PG&E	A/ Dl Dl-	1
_	g Metho ig Type		⊇rilling _ongyear Tra		Total De	-	307 ft bgs 4-12 inches	Project:		N Remedy Pha	
	Name:						23.77 ft bgs	Location.	FG&E I	ороск, пееці	55, Calliottia
Drilling			delaria, G. Ar			g Method:	4 inch x 10 ft Core Barrel	Project N	umber: I	RC000753.005	51
Logge		Joe La		-		g Interval:	Continuous	. <b>,</b>	_		
Editor		N/A			Convert	ed to Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
301 302 303				Topock - Competent Bedrock - conglomerate	ė	(202.0	- 307.0'); dry; friable conglomerate, mo	pdorately pully	orized	(293.0 - 307.0') 10' of slough in core barrel. From 303 to 307 very rough drilling.	
-	168					and fra	actured	deratery purv	enzeu		
_304_	-										
								•			
_305_							190)				
306_											
¥											
307											
						No.	End of Boring at 307.0 'bg				
_310_	-										
311_ 	-										
312_	-										
_313_	1										
314_	]										
8											
_315_	_										
_316_	1										
E	-										
_317_	_										
_318_	-										
5319	1										
<u>-</u>	-										
320		. 11000	L-10 "0"	:c ··	0. /	4 ( )	a — balanca — L	1 !		- 11 - 0244	
		s: USCS = L er billion	unified Soil C	assitication	System	n, tt = teet, bg	s = below ground surface, ams	sı = above ı	mean sea	a ievel, GW = g	roundwater,

77-11 10-1	for natural built asset	rs .		Temporary I	Jackiiii Log		heet: 1 of 16
Date Started:	06/28/2019			_ Surface Elevation:	N/A	Well ID: RI	B-2 Pilot
Date Completed:				_ Northing (NAD83):	N/A		
Orilling Co.:	Cascade			_ Easting (NAD83):	N/A	Client: PG&E	
Orilling Method: Oriller Name:	Sonic Drilling Tyler Alymer			Total Depth: Borehole Diameter:	307 ft bgs 4-12 inches	•	GW Remedy Phase 1 Topock, Needles, Califo
Orilling Asst:	J. Condelaria	. G. Aı	ngiano	Depth to First Water:		Location. <u>I G&amp;L</u>	. Topock, Necules, Callo
_ogger:	Joe Latham		-5	_ Editor:	N/A	Project Number:	RC000753.0051
Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
 - 1 _  - 2 _  - 3 _	Topock - Fill	SP		(0.0 - 5.0') Cemex #1/20 MESH (20x40)		(0.0 - 5.0') 7.9 bags	(0.0 - 5.0') 7 bags (-11%) Note: Lapis Lustre Sand
		NR			(0.0 - 8.5') 12.0 Borehole		
- 7	Topock - Fill	SP					
			\ /				
_ 12  _ 13				(5.0 - 243.5') Cemex #3 MESH (8x10)		(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29' Note: Lapis Lustre Sand
14		NR	$  \ \rangle \  $		(8.5 - 297.0') 6.0	y"	
_ 15			/				
_16							
_17			<u> </u>				
_ 18	Topock - Fill	SP					
 _ 19 	Topock - Fluvial Deposits	SP					
_20			1		<u> 2002/01</u>		ea level, GW = groundwa

	or natura built asse	ets		Temporary E	-uo <b>-</b> 09		Sheet: 2 of 16
	06/28/2019			_ Surface Elevation:	N/A	Well ID: R	B-2 Pilot
Date Completed:				_ Northing (NAD83):	N/A		
•	Cascade			_ Easting (NAD83):	N/A	Client: PG&	
-	Sonic Drilling	-		_ Total Depth:	307 ft bgs	<del>-</del>	GW Remedy Phase 1
	Tyler Alymer J. Condelaria		ngiano	_ Borehole Diameter: _ Depth to First Water:	4-12 inches	Location: PG&	E Topock, Needles, Califo
-	Joe Latham	<u>u, O. 711</u>	igiano	_ Editor:	N/A	Project Numbe	r: RC000753.0051
99							
Groundwater Sample ID	Geologic Formation	Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits  Topock - Fluvial Deposits  Topock - Fluvial Deposits  Topock - Fluvial	NR SP-SM SM GW-GM		(5.0 - 243.5') Cemex_ #3 MESH (8x10)	(8.5 - 297.0') Borehole		(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand
40	Deposits			[ · · ·			

ARCA	DIS Design 8 for natur built ass	ral and ets		Temporary E	sackt	III Log		She	eet: 3 of 16
Date Started:	06/28/2019			_ Surface Elevation:	N/A		Well I	D: RB	-2 Pilot
Date Completed:				Northing (NAD83):	N/A				•
Orilling Co.:	<u>Cascade</u>			_ Easting (NAD83):	N/A		Client:	PG&E	
Orilling Method:	Sonic Drilling	-		_ Total Depth:	307 ft b	-			W Remedy Phase 1
Oriller Name: Orilling Asst:	Tyler Alymer  J. Condelari		iano	Borehole Diameter: 4-12 inches Depth to First Water: 23.77 ft bgs Editor: N/A		Location:	<u>rg&amp;E</u>	Fopock, Needles, Califo	
_ogger:	Joe Latham	_	<sub>li</sub> ai IU			. မဗ္ဗဇ	— Proiect N	umber:	RC000753.0051
Groundwat Sample IE		USCS	USCS	Well (	Construction	on	Calculated Material Volur		Material Volumes Installed
	Topock - Fluvial Deposits	GW-GM							
	Topock - Fluvial Deposits	SM				_\^	9		
 _46 _  _47 _  _48 _	Topock - Fluvial Deposits	GW-GM				7/8/			
	Topock - Alluvium Deposits	GM 0000		(5.0 - 243.5') Cemex		(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') bags	97.7	(5.0 - 243.5') 126 bags (29 Note: Lapis Lustre Sand
54 55	Topock - Alluvium Deposits	GM 0							
	Topock - Alluvium Deposits	SM							
	Topock - Alluvium	sc /							
I	Deposits	1 %	11/1	[:::					

9/-	ARCA	for natural built asset	al and ets		Temporary E	Backfill Log		Sheet: 4 of 16
	started:	06/28/2019			_ Surface Elevation:	N/A	- Well ID:	RB-2 Pilot
	-	07/29/2019			_ Northing (NAD83):	N/A	_	
Drilling		Cascade			Easting (NAD83):	N/A		8 <u>&amp;E</u>
_	Method: Name:	Sonic Drilling	-		Total Depth: Borehole Diameter:	307 ft bgs 4-12 inches	-	al GW Remedy Phase 1
Drilling		Tyler Alymer J. Condelaria		ndiano	Depth to First Water:		_ Location. <u>PG</u>	S&E Topock, Needles, California
Loggei		Joe Latham		igiano	_ Editor:	N/A	Project Numb	per: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	·	Ŏ Ē			l	5 - 101 - 11 - 11		
61								
62								
63				1367				
		Topock - Alluvium Deposits	GM					
64		Deposits		D for				
 65								
_ 05 _							•	
66								
67				00				
68								
69								
				X	(5.0 - 243.5') Cemex	(8.5 - 297.0') 6.0"	(5.0 - 243.5') 97.7	
		Topock - Alluvium	GW		#3 MESH (8x10)	∷∴∴∴∴ Borehole	bags	Note: Lapis Lustre Sand
_71_		Deposits		A				
72								
_73_								
 _74_	RB-2-VAS-							
	72-77 (<0.033 U	Topock - Alluvium	GC					
75	ppb) 6/30/2019 14:10	Deposits						
	14.10	T						
76		Topock - Alluvium	SW					
		Deposits						
_77 _								
 70								
78		Topock -	0/4/ 01:					
 79		Alluvium Deposits	SW-SM					
80	:_::_ :::	1		<u> </u>	ion Conta S. S. S.		-11	
						s = below ground surface, am		an sea level, GW = groundwater,

TEMP ABANDONMENT LOG\_PG&E TOPOCK C.;USERSISMCGRANEIDOCUMENTSPG&E TOPOCKDRAFT BORING LOGSIGINT FILES/08/08.19170POCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 90901/9.1808

	or natura built asse	:13		Temporary E	ackiiii Log		Sheet: 5 of 16
	06/28/2019				N/A	Well I	D: RB-2 Pilot
Date Completed:				_ ,	N/A		
•	Cascade Sonio Drillino	•		• ,	N/A	Client:	PG&E Final GW Remedy Phase 1
-	Sonic Drilling Tyler Alymer	-			307 ft bgs 4-12 inches	•	PG&E Topock, Needles, Califo
Orilling Asst:	J. Condelaria		ngiano	_ Depth to First Water:		Location.	FG&E Topock, Needles, Callic
ogger:	Joe Latham	a, O. 7 ti	igiano		N/A	Project N	umber: RC000753.0051
Groundwate Sample ID	Geologic Formation	Code	USCS	Well C	Construction	Calculated Material Volui	
 _81 	Topock - Alluvium Deposits	SW-SM					
_82	Topock - Alluvium Deposits	ML				V (2)	
_87	Topock - Alluvium Deposits	GC		(5.0 - 243.5') Cemex	(8.5 - 297.0')	6.0" (5.0 - 243.5')	
91	Topock - Alluvium Deposits	GC		#3 MESH (8x10)	Borehole	bags	Note: Lapis Lustre Sand
	Topock - Alluvium Deposits	GM					
_97	Topock - Alluvium Deposits	GM					
_ 99  100	Topock - Alluvium Deposits	GC					

	41104	DIS for natura built asse	ets			Backfill Log		Sheet: 6 of 16
	tarted:	06/28/2019			_ Surface Elevation:	N/A	Well I	D: RB-2 Pilot
	-	07/29/2019			_ Northing (NAD83):	N/A		
rilling Irilling	Co.: Method:	Cascade Sonic Drilling	<b>.</b>		_ Easting (NAD83): _ Total Depth:	N/A 307 ft bgs		PG&E Final GW Remedy Phase 1
_	Name:	Tyler Alymer	-		Total Deptil. Borehole Diameter:	4-12 inches	-	PG&E Topock, Needles, Califo
	Asst:	J. Condelaria		ngiano	_ Depth to First Water:			
ogge	r:	Joe Latham			_ Editor:	N/A	Project N	umber: RC000753.0051
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volur	
	RB-2-VAS-	Topock - Alluvium Deposits	GC					
105	102-107 (<0.033 U ppb) 7/1/2019 15:21	Topock - Alluvium Deposits	GM					
_ _108 _ _ _109		Topock - Alluvium Deposits	GC					
110		Topock - Alluvium Deposits	GM		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') Borehole		97.7 (5.0 - 243.5') 126 bags (29 Note: Lapis Lustre Sand
_111  _112		Topock - Alluvium Deposits	GM					
113		Topock - Alluvium Deposits	GM					
_114								
.115				1967				
_				5910				
_116				de				
_ 117		Topock - Alluvium	GM					
-' '' —		Deposits						
_118								
				5910				
_119				d for				
				1011/9-				
\bbre\	/iations: U	SCS = Unified	Soil C	lassificati	on System, ft = feet, bg	s = below ground surf	ace, amsl = above r	mean sea level, GW = groundw
nh =	narts ner hi	llion Note: Gr	anule h	ackfill ma	aterial will be excavated	from the pilot borehole	during drilling for the	ne construction of the well.

A	RU-1	DIS for natura built asse	ets		Temporary E	baokiiii Log		Sheet: 7 of 16
Date Sta		06/28/2019			_ Surface Elevation:	N/A	Well ID: R	B-2 Pilot
	-	07/29/2019			_ Northing (NAD83):	N/A		
rilling C		Cascade			_ Easting (NAD83):	N/A	Client: PG&I	
	/lethod:	Sonic Drilling	-		_ Total Depth:	307 ft bgs	•	GW Remedy Phase 1
Oriller Na Orilling <i>A</i>		Tyler Alymer  J. Condelaria, G. Angiano		ngiano	<ul><li>Borehole Diameter:</li><li>Depth to First Water:</li></ul>	4-12 inches	Location: PG&	E Topock, Needles, Califor
ogger:		Joe Latham	<u>., J. Al</u>	- igiano	_ Editor:	N/A	 Project Number	r: RC000753.0051
- 55								
Depth (ft)	Groundwate Sample ID		Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
				041)				
_123								
_124		Topock - Alluvium Deposits	GM				N 93	
_125								
_126								
					C			
129		Topock - Alluvium	ML					
_130		Deposits			(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') Borehole		(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand
_131								
132								
- – _133								
_134		Topock - Alluvium	GM					
_135		Deposits						
_136								
_137								
138								
139		Topock - Alluvium Deposits	SM					
140								
	ations: US	SCS = Unified	Soil C	lassificati	on System, ft = feet, bg	s = below around surfa	ace. amsl = above mean	sea level, GW = groundwa

,,	or natura built asse	ets		Temporary E	Jackiii	LUg		heet: 8 of 16	
Date Started:	06/28/2019			_ Surface Elevation:	N/A		Well ID: R	B-2 Pilot	
Date Completed:				_ Northing (NAD83):	N/A				
•	Cascade			_ Easting (NAD83):	N/A		Client: PG&E		
Orilling Method: Oriller Name:	Sonic Drilling Tyler Alymer	-		_ Total Depth: _ Borehole Diameter:	307 ft bgs 4-12 inche		•	Final GW Remedy Phase 1 PG&E Topock, Needles, California	
Orilling Asst:	J. Condelaria		ngiano	_ Depth to First Water:			Location. <u>I Gul</u>		
.ogger:	Joe Latham	, -		_ Editor:	N/A	<b>,</b>	Project Number	: RC000753.0051	
Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction		Calculated Material Volumes	Material Volumes Installed	
 _141  _142	Topock - Alluvium Deposits	SM							
	Topock - Alluvium Deposits	GM					9		
	Topock - Alluvium Deposits	SM				10,			
	Topock - Alluvium Deposits	SM		\$					
	Topock - Alluvium Deposits	SM		(5.0 - 243.5') Cemex_#3 MESH (8x10)	_	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand	
.153  .154  .155  .156	Topock - Alluvium Deposits	GM							
	Topock - Alluvium Deposits	GM							
_159	Topock - Alluvium	GC						sea level, GW = groundwa	

	DIS for natura	ets		Temporary E	backiiii Log		Sheet: 9 of 16		
Date Started:	06/28/2019			_ Surface Elevation:	N/A	Well ID: F	RB-2 Pilot		
Date Completed:				_ Northing (NAD83):	N/A				
Orilling Co.:	Cascade			_ Easting (NAD83):	N/A	Client: PG&			
Orilling Method: Oriller Name:	_		_ Total Depth:	307 ft bgs 4-12 inches	•	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Californ			
Orilling Asst:		<u>vler Alymer</u> Borehole Diamete <u>Condelaria, G. Angiano</u> Depth to First Wa		_ Depth to First Water:		Location. FGX	E TOPOCK, Needles, Callic		
.ogger:	Joe Latham	u, O. 7 ti	igiano	_ Editor:	N/A	Project Numbe	r: RC000753.0051		
	۰ <u>۶</u>								
Groundwate Sample ID	Geol	Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
 _161 	Topock -	<i>J</i> GM							
_162	Deposits								
_163 									
_164	Topock -					1			
_165	Alluvium Deposits	GM			.0-				
_166  _167									
	Topock - Alluvium	SM							
	Deposits			(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0 Boreho		(5.0 - 243.5') 126 bags (29 Note: Lapis Lustre Sanc		
- – _171									
	Topock - Alluvium Deposits	SM							
- – _173 - –									
RB-2-VAS- 172-177 - (<0.17 U ppb) 7/12/2019	) Topock -				18.334 23.33				
_175	Alluvium Deposits	SM			9-3-19 8-3-19				
_176									
_177									
- – _178	Topock - Alluvium Deposits	SM							
- – _179	Topock - Alluvium Deposits	SM							
	Topock - Alluvium Deposits	SM							

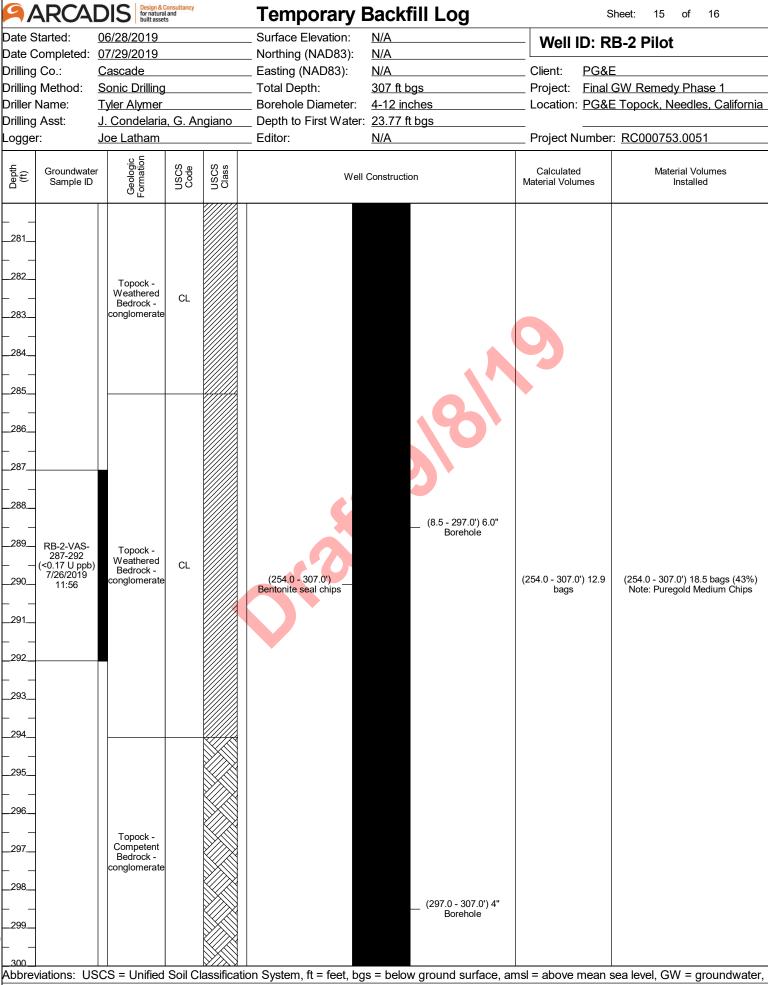
ARCA	DIS for natur built ass	ets		Temporary E	Jaoiti	Log		heet: 10 of 16
Date Started:	06/28/2019			_ Surface Elevation:	N/A		Well ID: R	B-2 Pilot
Date Completed:				_ Northing (NAD83):	N/A			
Orilling Co.:	Cascade			_ Easting (NAD83):	N/A		Client: PG&E	
Orilling Method: Oriller Name:	Sonic Drilling	_		_ Total Depth: _ Borehole Diameter:	307 ft b	-		GW Remedy Phase 1  Topock, Needles, Califor
Orilling Asst:	Tyler Alymer  J. Condelaria		niano	_ Depth to First Water:			Location. <u>PG&amp;E</u>	TOPOCK, Needles, Callion
.ogger:	Joe Latham		giario	_ Editor:	N/A	bgo	Project Number	: RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well	Constructio	n	Calculated Material Volumes	Material Volumes Installed
- – _181	Topock - Alluvium Deposits	SM						
_183								
. 🚽								
_184								
	Topock - Alluvium Deposits	SW						
_185	Deposits							
						1951		
_187								
188								
. 🚽	Topock - Alluvium	GW-GM						
_189	Deposits Topock -							
	Alluvium	SM						
_190	Верозна	]		(5.0 - 243.5') Cemex #3 MESH (8x10)		(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand
	Topock - Alluvium	GM						•
_191	Deposits	GIVI	5910					
400			H Fol					
_192								
102								
_193								
	Topock - Alluvium	SW-SM						
_195	Deposits	OVV-GIVI						
_196								
_197								
. 🚽								
_198	Topock - Alluvium	SM						
	Deposits	SIVI						
_199								
		ML						
200			101/%°	ion Custom ft – foot bar		, around ourfood a	msl = ahove mean s	sea level, GW = groundwa

ARCA	DIS   Design & for natura built asse	al and ets		Temporary E	заскт	ili Log		Sn	eet: 11 of 16
Date Started:	06/28/2019			_ Surface Elevation:	N/A		- Well I	D: RR	3-2 Pilot
Date Completed:				Northing (NAD83):	N/A				
Orilling Co.:	Cascade			_ Easting (NAD83):	N/A			PG&E	
Orilling Method:	Sonic Drilling	-		_ Total Depth:	307 ft b	-			W Remedy Phase 1
Oriller Name: Orilling Asst:	Tyler Alymer  J. Condelaria		ngiana	<ul><li>Borehole Diameter:</li><li>Depth to First Water:</li></ul>	4-12 inc		Location:	PG&E	Topock, Needles, Califo
_ogger:	Joe Latham	a, G. Al	ngiano	_ Deptit to First Water. _ Editor:	23.77 IL	bys	— Project Ni	ımber	RC000753.0051
				Editor:	14// \		1 10J000110	J	110000700.0001
Groundwate Sample ID		USCS	USCS	Well	Construction	on	Calculated Material Volun		Material Volumes Installed
	Topock - Alluvium Deposits	ML							
	Topock - Alluvium Deposits	SM					0		
	Topock - Alluvium	SM							
202-207 (<0.17 U ppb 7/14/2019 09:20	Deposits Topock -	ML							
	Alluvium Deposits								
_206	Topock -	,				140,			
_	Alluvium Deposits	SM							
_207									
			7777						
_208									
_209									
						(0.5007.01) 0.01	(5.0.040.51)		(F. 0. 0.40 FI) 400 L (0.00
_210				(5.0 - 243.5') Cemex #3 MESH (8x10)		(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') bags	97.7	(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand
_211									
	Tanaak								
	Topock - Alluvium	sc							
_213	Deposits								
_									
_214									
_215									
_216									
_217									
_218	Topock - Alluvium	sc							
210	Deposits								
_219									
220		GC							
Abbrovictiona, II	SCS = Unified	l Soil C	lassificat	ion System ft = feet ha	s = helov	v ground surface a	msl = above r	nean se	a level, GW = groundwa

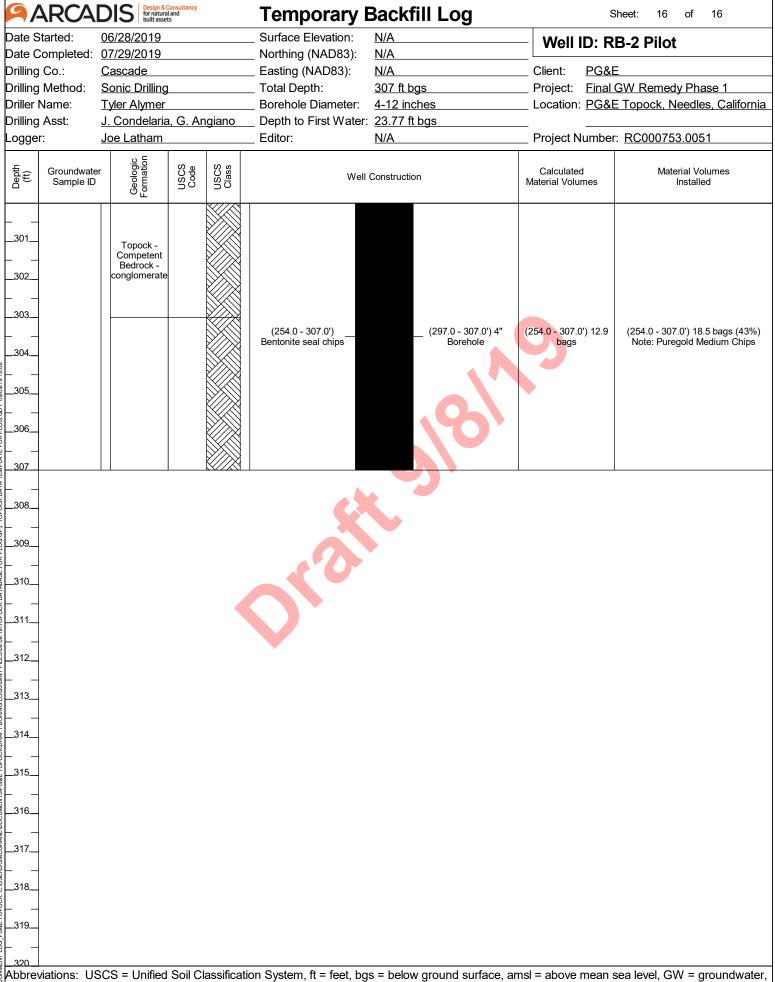
Phase 1 edles, Califo 0051 al Volumes stalled
edles, Califo 0051 al Volumes
edles, Califo 0051 al Volumes
edles, Califo 0051 al Volumes
0051 al Volumes
al Volumes
al Volumes
126 bags (29 is Lustre Sand

		DIS   Design & Office In natural built asset	ts		<b>Temporary</b>	Dackiiii Log		Sheet: 13 of 16
Date St		06/28/2019			_ Surface Elevation:	N/A	Well ID: F	RB-2 Pilot
	•	07/29/2019			_ Northing (NAD83):	N/A		
Orilling (		Cascade			_ Easting (NAD83):	<u>N/A</u>	Client: PG8	
_	Method:	Sonic Drilling			_ Total Depth:	307 ft bgs		GW Remedy Phase 1
Oriller N		Tyler Alymer		ngione	_ Borehole Diameter:	4-12 inches	Location: <u>PG8</u>	E Topock, Needles, Califo
Drilling <i>i</i> Logger:		J. Condelaria Joe Latham	i, G. Al	igial 10	_ Depth to First Water _ Editor:	N/A	Project Number	er: RC000753.0051
-ogger.						14// \	i lojoot ivaliibe	1. 1.0000100.0001
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	RB-2-VAS- 237-242 <0.17 U ppb) 7/15/2019 13:38	Topock - Alluvium Deposits	GC					
242	13.30	Topock - Weathered			(5.0 - 243.5') Cemex #3 MESH (8x10)	45.13 45.25	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
243		Bedrock - conglomerate	CL					
					:: 			
			_		 			
_245		Topock - Weathered Bedrock -	sc		 			
_246		conglomerate			 		•	
_247								
					(243.5 - 254.0') Cemex #1/20 MESH—	<b>૾ૺઌ૽ૼઌ૽</b> ૼઌ૽ૼઌૼ ૾ઌ૽ઌ૽૾ઌ૽૾ઌ૽ઌ ૾ઌ૽ઌ૽ઌ૾ઌ૽ઌ	(243.5 - 254.0') 4.1	(243.5 - 254.0') 8 bags (95'
_249		Topock - Weathered Bedrock -	CL		(20x40)	<mark> </mark>	bags	Note: Lapis Lustre Sand
_250		conglomerate				, (8.5 - 297.0') 6.0 Borehole	)"	
_251						>		
						>		
-					 	0		
_254					•	<u> </u>		
_255								
_256								
					(254.0 - 307.0')		(254.0 - 307.0') 12.9	(254.0 - 307.0') 18.5 bags (4
250					Bentonite seal chips		bags	Note: Puregold Medium Ch
_258								
_259								
260								

ARCA	DIS Design & Office for natural built asset	l and ts		Temporary I	Backtill Log		Sheet: 14 of 16
Date Started:	06/28/2019			_ Surface Elevation:	N/A	Well ID: F	RB-2 Pilot
Date Completed:				_ Northing (NAD83):	N/A		
Orilling Co.:	Cascade			_ Easting (NAD83):	N/A	Client: <u>PG8</u>	
Orilling Method:	Sonic Drilling			_ Total Depth:	307 ft bgs	•	I GW Remedy Phase 1
Oriller Name:	Tyler Alymer			_ Borehole Diameter:	4-12 inches	Location: <u>PG8</u>	E Topock, Needles, Califor
Orilling Asst:	J. Condelaria	a, G. A	<u>ngiano</u>	_ Depth to First Water:		<del></del>	
.ogger:	Joe Latham			_ Editor:	N/A	Project Numbe	er: RC000753.0051
Groundwat Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
Sample ID  Sample ID	Topock - Weathered Bedrock - conglomerate	SC	U.S.	(254,0 - 307.0') Bentonite seal chips	(8.5 - 297.0') 6.0" Borehole		
	Topock - Weathered Bedrock - conglomerate	CL					
279	Topock - Weathered Bedrock - conglomerate						
280	conglomerate		<i>\\\\\\\</i>				sea level, GW = groundw



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundw ppb = parts per billion Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwat ppb = parts per billion Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

AH	<b>SCA</b>	DIS	Design & Consultancy for natural and built assets		Bo	ring	Log		Sh	eet: 1 of	13
Date Star	ted:	04/25/2	2019	;	Surface	Elevati	on: 466.3 ft amsl	Borin	a No.:	: RB-3 Pilo	ot
Date Con	-				Northing	- '	•			. <u>110 01 110</u>	
Drilling Co		Cascad			Easting	•	,		PG&E		
Drilling M		Sonic E	-		Total De	-	-			W Remedy Ph	
Drill Rig T			onic track mo		Borehol			Location:	PG&E	Topock, Topoc	k, California
Driller Na Drilling As		Dan O'l	<u>мага</u> Ilmantel / J. I		-		Vater: <u>11.35 ft bgs</u> od: <u>4 inch x 10 ft Core Barrel</u> F	Droiget N	ımbor:	DC000753 006	
Logger:	331.	Gantt J			Samplin	-		i iojectivi	umber.	110000733.000	, 1
Editor:		Grant V			Convert	•					
<u> </u>	,				1						
Depth (ft) Recovery	(ii) Sa	Sieve ample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1	0						(0.0 - 8.0') Topock - Fill; Poorly graded sand (SP); 6/3); fine grained to medium grained, subangular to dry; roots and wood fragments present			(0.0 - 4.0') No recovery due to loose dredge sands.	
!	2			Topock - Fill	SP			•			
- 5							(5') very fine grained to medium grained; trace silt; size  (6.5'); moist; iron oxide staining; no roots or fragme		grain	(5.0 - 10.0') Poor recovery due to loose dredge sands.	
- 9	66				NR		(8.0 - 15.0°) No recovery (NR)			(11.5') Approximate Depth to Water	
14 15							(15.0 - 18.0') Topock - Fill; Poorly graded sand (SF	P); dark gray			
16 17 3 18	5/2 0	3-SS-15- 18 2/2019 19:19	RB-3-VAS- 15-20 (<0.033 U) 4/26/2019 15:35	Topock - Fill	SP		brown / dark yellowish brown(10YR 4/2); very fine grained, subangular to round; trace silt; trace orgar wet; organic odor	grained to m	edium		
19					NR		(18.0 - 20.0') No recovery (NR)  feet, bgs = below ground surface, an				N

9/	AR(	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log			Shee	et: 2 of	13
Date S	Started	: <u>04/25/2</u>	2019		Surface	Elevat	on: <u>466.3 ft am</u> s	sl	Borin	a No .	RB-3 Pilo	nt .
Date C	Comple	eted: <u>05/07/2</u>	2019		Northin	g (NAD	33): <u>2103172.5</u>			9 110	IXD OT III	<u></u>
Drilling	-	<u>Cascac</u>	de		Easting		3): <u>7616213.0</u>		Client:	PG&E		
Drilling					Total D	-	245 ft bgs		-		V Remedy Ph	
Drill R			onic track mo				eter: <u>6-12 inches</u>		Location:	PG&E T	opock, Topoc	k, California
Driller							Vater: <u>11.35 ft bgs</u>					
Drilling			llmantel / J.		-	-		ft Core Barrel	Project N	umber: <u>F</u>	<u> </u>	01
Logge Editor:		<u>Gantt J</u> <u>Grant V</u>			Samplir Convert	-		l No				
Luitoi.		<u>Gianii v</u>	l		T		veii. 🛆 res 🗀	INO				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
21 22 23 23 24	60	RB-3-SS-20- 25 5/2/2019 09:21					(20.0 - 33.0") Topock - Fi brown / dark yellowish br fine grained to fine graine mica; wet; organic odor	own(10YR 4/2) little bla	ck (5Y 2.5/1);	very		
25 26 27 28 29 30	96	RB-3-SS-25- 30 5/2/2019 09:24		Topock - Fill	SP		(25') brown (7.5YR 4/2); sand grain size, color characteristics (27.5') dark grayish brow grained to fine grained; n change	m / dark yellowish brown o organics; increase in	n(10YR 4/2); v sand grain siz	rery fine e, color		(25.0 - 35.0') 10 gallons of water used; 0 gallons of water recovered; 10 gallons of water lost
31 32 33 34		RB-3-SS-30- 33 5/2/2019 09:26			NR		(33.0 - 35.0') No recover	y (NR)				
 2F						//						
35 36 37 38 39	108	RB-3-SS-35- 40 5/2/2019 09:39		Topock - Fill			(35.0 - 39.5') Topock - Fi brown / dark yellowish br grained, subangular to ro	own(10YR 4/2); very fir und; trace mica; wet	e grained to n	nedium		(35.0 - 45.0') 15 gallons of water used; 0 gallons of water recovered; 15 gallons of water lost
40					SW	[ ° ° ° ° ° ]	(39.5 - 44.0') Topock - FI					
Abbre	viation	s: USCS = l	Jnified Soil (	Classification	on Syste	em, ft =	feet, bgs = below	ground surface, a	amsl = abo	ve mean	ı sea level, G	N =

Drill Rig Type: <u>Terrasonic track mount</u> Borehole Diameter: <u>6-12 inches</u> Location: <u>PG&amp;E Topock, Topock, California</u>	9/	\R(	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring	Log	SI	neet: 3 of	13
Nothing (No. 1997)   Cascade   Cast (No. 1997)   Cascade   Cas									Boring No.	: RB-3 Pile	ot
Dolling Method: Dolling New Horizon Committed Framework Committed For Co								,			<u></u>
Description	_					_	•	•			
Daller Marter Dan O'Marta Dillor Marter Dillor Marter Dan O'Marta Dan O'Marta Deposits Sampling Method: J. J. Pachosco. Sampling Method: J. J. Dan D'Marta Continuous Sampling Method: J. J. Dan D'Marta Sampling Method: J. J. Dan D'Marta Sampling Method: J. J. Dan D'Marta Sampling Interval: Continuous Sampling Method: J. J. Dan D'Marta Sampling Method: J. J. Dan D'Marting Method:	_			_			•			•	
Dalling Assist   E. Huellmanter   J. Pachase   Sampling Interval   Conditionus   Co									Location: <u>PG&amp;E</u>	Topock, Topo	ck, California
Continue						•		<u> </u>	Project Number	PC000752 00	<u> </u>
Editor:	_					-	-		Project Number.	RC000753.00	31
Simple   D						-	-				
1			<u> </u>			1					
14	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	
46 - 47	42 43 	108	44 5/2/2019		Fluvial			to round; trace granules to large pebbles, round;			gallons of water used; 0 gallons of water recovered; 15 gallons of water
- 48 _	 46 				Fluvial	sw		brown (10YR 5/3); very fine grained to very coar to round; trace granules to large pebbles, round;	se grained, subround trace mica; wet		gallons of water used; 0 gallons of water recovered; 10 gallons of water
Filvial Deposits    SP   Drown (10YR 5/3); fine grained, subround to round; trace mica; wet	 49 	72	50 5/2/2019		Fluvial	GW		(GW); dark grayish brown / dark yellowish brown to small cobbles, subround to round; some very grained sand, subangular to round; trace silt; sor composed of metadiorite; trace mica; wet	(10YR 4/2); granules fine to very coarse me coarser clasts		
		12				SP		(50.0 - 51.0') Topock - Fluvial Deposits; Poorly g brown (10YR 5/3); fine grained, subround to rour	graded sand (SP); nd; trace mica; wet		
	51					<u> </u>					
Topock - Fluvial Deposits  RB-3-SS-56-60 5/2/2019 09:53  RB-3-SS-56-60  ML  Topock - Fluvial Deposits  GW  Topock - Fluvial Deposits; Silt with sand (ML); brown (7.5 YR 5/4); medium plasticity, slow dilatency; little very fine to very coarse grained sand, subangular to round; trace silt; some coarser clasts composed of metadiorite; trace mica; wet  GW  Topock - Fluvial Deposits; Silt with sand (ML); brown (7.5 YR 5/4); medium plasticity, slow dilatency; little very fine to very coarse grained sand, subangular to subround; little clay; trace small to very large pebbles, subround to round; trace subround; trace organics; trace mica; wet; soft to medium stiff  ML  ML  (59.5 - 65.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML);	53 _ 54 _ 54		56 5/2/2019	50-55 (0.100 J) 4/27/2019		NR					
RB-3-SS-56- 60 Topock - Fluvial Deposits; Silt with sand (ML); brown (7.5/YR 5/4); medium plasticity, slow dilatency; little very fine to very coarse grained sand, subangular to subround; little clay; trace small to very large pebbles, subround to round; trace subround; trace organics; trace mica; wet; soft to medium stiff  ML  ML  (57.0 - 59.5') Topock - Fluvial Deposits; Silt with sand (ML); brown (7.5/YR 5/4); medium plasticity, slow dilatency; little very fine to very coarse grained sand, subangular to subround; little clay; trace small to very large pebbles, subround to round; trace subround; trace organics; trace mica; wet; soft to medium stiff  ML  (59.5 - 65.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML);					Fluvial	GW		(GW); dark grayish brown / dark yellowish brown to small cobbles, subround to round; some very t grained sand, subangular to round; trace silt; sor	n(10YR 4/2); granules fine to very coarse		gallons of water used; 0 gallons of water recovered; 15 gallons of water
	 58 	120	60 5/2/2019		Fluvial	ML		(7.5YR 5/4), medium plasticity, slow dilatency; lit coarse grained sand, subangular to subround; lit very large pebbles, subround to round; trace sub	tle very fine to very ttle clay; trace small to		
	-				<b></b>	- <del></del>		(59.5 - 65.0') Topock - Alluvium Deposits; Sand	y silt with gravel (ML):		
		/iation	s: USCS =	■ Unified Soil C	L Classificati		<u>                                      </u>	, , ,		l I an sea level G	W =

9/	<b>ARC</b>	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log				She	eet: 4 of	13
Date S					Surface			66.3 ft amsl		Boring	a No.:	RB-3 Pilo	ot
		eted: <u>05/07/2</u>			Northing		•	103172.5					
Drilling		Casca			Easting	•		616213.0		_	PG&E	W. D	
Drilling	-		-			•						W Remedy Ph	
Drill Ri			onic track mo					-12 inches		Location:	PG&E	Topock, Topoc	ck, California
Driller Drilling			llmantel / J. I		•			1.35 ft bgs inch x 10 ft Core	Barrel	Project Nu	ımhar	PC000753 004	 51
Logge		Gantt J			Samplin	-		Continuous	Darrer	i rojective	iiiibci. j	110000733.000	<i>7</i> I
Editor:			Willford		Convert	-		Yes No					
				0 5									
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil De	escription			Drilling Notes	Drilling Fluid
61 - 62 - 62 - 63 64 - 65	120	RB-3-SS-60- 65 5/2/2019 09:58		Topock - Alluvium Deposits	ML		dilatency; some very coarser cl weak cem	FYR 4/3) trace weak red (some granules to very landing fine to very coarse grain asts composed of metadientation; interbeded silt and arthered pebbles	arge pebbles, a ned sand, ang iorite; trace mi	angular to suba ular to subroun ca; moist; very	ngular; id; stiff;		(55.0 - 65.0') 15 gallons of water used; 0 gallons of water recovered; 15 gallons of water lost
03  66				Topock - Alluvium Deposits	GM		brown (7.5 subangula	0') Topock - Alluvium De iYR 4/3); granules to very r; and very fine to very co	y large pebble coarse grained	s, angular to sand, angular	to	(65.0 - 75.0') Rough drilling	(65.0 - 75.0') 15 gallons of water used; 0 gallons of water
67 68 69 70	120	RB-3-SS-65- 70 5/2/2019 10:01					mica; wet (66.0 - 77 reddish br coarse gra pebbles, a clay; coars weak cem	little silt; coarser clasts of the coarse clasts composed of mentation; interbedded silt pathered pebbles	eposits; Silty s (2.5YR 4/6); fi ular; some gra me silt; trace s netadiorite; trace	and with grave ine grained to v inules to very la subangular; tra ce mica; dry to	I (SM); very arge ce moist;		recovered; 15 gallons of water lost
		RB-3-SS-70- 75 5/2/2019 10:06		Topock - Alluvium Deposits	SM			silt; increase in granules e silt; decrease granules	·				
76 77 78	120	RB-3-SS-75- 80 5/2/2019 10:10		Topock - Alluvium Deposits	ML		reddish br dilatency; some ang	0') Topock - Alluvium De own (5YR 5/4) trace red some granules to very la ular to subangular; trace s; trace mica; wet; very st	(2.5YR 4/6); r arge pebbles, a clay; coarser	no plasticity, no angular to suba clasts compose	ngular;		
79 79				Topock - Alluvium	SM		pebbles (79.0 - 89 reddish br	0') Topock - Alluvium De own (5YR 5/4) trace red	eposits; Silty s (2.5YR 4/6); fi	and with grave	I (SM);		
80 Abbres	viation	e: 11909 - 1	Inified Soil C	Deposits	on Sveta	m ft -		nined, angular to subanguns = below ground			ŭ	n sea level C	\ <u>\</u> =
' MNIG	v iatiOi l	J. JUJU - (	ornica oui C	,,aoointali	JII UYJE	,, it -	ויייני, טנ	o – polow ground	Juliaut, c	411131 – abuv	· · iiica	Jou level, G	

RB-3-SS-85  RB-3-SS-90  RB-3-SS-95  RB-3-S	9/	AR(	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log Sheet: 5 of	13
Date Completed Date (2017) (2	Date S	Started	l: <u>04/25/</u>	2019		Surface	Eleva	ation: 466.3 ft amsl	t
Defilling Method: Sonic Drilling Control of the Con	Date C	Comple	eted: <u>05/07/</u>	2019	I	Northin	g (NAI	D83): <u>2103172.5</u>	<u>''</u>
Driller Name: Driller Name: Driller Name: Driller Assit: Education: Driller Assit: Driller Assi	Drilling	g Co.:	<u>Casca</u>	de	I	Easting	(NAD	,	
Dellier Marie: Den O'Mara  Den O'Mara  Den Chiller Assist. E. Huellmantel. J. Probeco. Gantt Jeffers  Crant Willford  Crant Willford  Crant Willford  Crant Willford  Crant Willford  Dellier Sampling Method  Sampling Interval: Continuous  Dellier Marie Dellier Fluid  Delli	Drilling	g Meth	od: <u>Sonic</u>	Drilling			-	·	
Drilling Asst: E. Huellmande/ J. Paches. Sampling Interval: Confidence Sampling Interval: S								•	<u>k, California</u>
Logger   Gant Willford   Converted to Well   S   Yes   No						-		· · · · · · · · · · · · · · · · · · ·	
Editor: Grant Willtord Converted to Well: Vers No.  Sample ID Countedor Surgice ID Specification Surgice ID Specification ID Specification ID Description  Delling Notes Defining Fluid  Part Surgice ID Surgice ID Surgice ID Specification ID Specification In Counter Count						-	-	<del>-</del>	)1
Surple ID Circumdeator Sample ID Circumdeator Sample ID Grandeator International Content Sample ID Grandeator Sample ID Grandeator International Content Sample ID Grandeator ID Grandeator International Content Sample ID Grandeator ID Grandeat						-	-		
BB-3-SS-80	Luitoi.		Grant	VVIIIIOI U		T	T	vveii. A res into	
RB-3-S-80 RB-3-S	Depth (ft)	Recovery (in)			Geologic Formation	Code	USCS Class		Drilling Fluid
RB-3-SS-90 522019 120 120 120 120 120 120 120 120 120 120	82 83 84 85 86	120	85 5/2/2019 10:18	80-85 (0.132 J) 4/27/2019	Alluvium	SM		metadiorite; trace mica; wet; weak cementation; interbedded silt and granule to very large pebble lenses, weathered pebbles  Geology osberved good interval to collect a sample  (81.5'); and granules to very large pebbles, angular to subangular; little silt; none cementation	recovered; 20 gallons of water
BB-3-SS-90- 95- 97- 98- 98- 120 RB-3-SS-95- 12	 88  89 	400	90 5/2/2019					very large pebbles, angular to subangular; some silt; trace clay; weak cementation; color change  (89.0 - 91.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown(5YR 4/4) trace red (2.5YR 4/6); no plasticity, no dilatency; some very fine to very coarse grained sand,	
RB-3-SS-90- 95 5/2/2019 11:09  RB-3-SS-90- 96 96 97 98 RB-3-SS-95- 100 5/2/2019 11:11  RB-3-SS-95- 100 5/2/2019 11:11	 91	120				IVIL		subangular; trace subangular; trace clay, trace mica; coarser clasts composed of metadiorite; moist; weak cementation; interbedded very fine to very coarse sand and granule to very large pebble lenses,	
96	93 94 		95 5/2/2019		Alluvium	SM		reddish brown / moderate brown(5YR 4/4) trace red (2.5YR 4/6); fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; some silt; coarser clasts composed of metadiorite; trace mica; wet; interbedded silt and granule	
	96 97 98	120	100 5/2/2019		Alluvium	GM		(GM); reddish brown / moderate brown(5YR 4/4) trace red (2.5YR 4/6); granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subround; little silt; coarser clasts composed of metadiorite; trace mica; wet; interbedded	(95.0 - 105.0') 25 gallons of water used; 0 gallons of water recovered; 25 gallons of water lost
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =		. ,.	11000	11 :5 10 ::			<u> </u>		A /

9/	<b>ARC</b>	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 6 of	13
Date S	Started	: <u>04/25/</u>	2019		Surface	Eleva	tion:	466.3 ft amsl	Borin	a No.:	RB-3 Pilo	ot
Date C	Comple	eted: <u>05/07/</u>	2019		Northing	g (NAD	083):	2103172.5		9	112 01 111	<u> </u>
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD	33):	7616213.0	Client:	PG&E		
Drilling	y Meth	od: <u>Sonic</u>	Drilling		Total De	epth:		245 ft bgs	Project:	Final G	W Remedy Ph	nase 1
Drill Ri	ig Type	e: <u>Terras</u>	onic track mo	ount	Borehol	le Dian	neter:	6-12 inches	Location	PG&E ]	<u> Fopock, Topoc</u>	ck, California
Driller	Name							11.35 ft bgs	-			
Drilling			<u>ellmantel / J. I</u>		-	-		4 inch x 10 ft Core Barrel	Project N	lumber: <u>I</u>	RC000753.00	51
Logge			Jeffers		Samplir	•		Continuous	-			
Editor:		<u>Grant</u>	Willford		Convert	ted to \	Nell:					ı
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 _101_				Topock - Alluvium Deposits	GM							(95.0 - 105.0') 25 gallons of water used; 0 gallons of water recovered; 25
	120	RB-3-SS- 100-105 5/2/2019 11:16		Topock - Alluvium Deposits	SM		(SM); re 4/6); fin some g coarser cement weather (102.5')	- 105.0') Topock - Alluvium Deposits; Silt eddish brown / moderate brown(5/R 4/4) e grained to very coarse grained, subang ranules to very large pebbles, angular to clasts composed of metadiorite; trace mation; interbedded silt and granule to very red pebbles; some silt; trace clay	trace red (2.5 gular to subrou subangular; li ica; wet; weak	SYR und; ttle silt;		gallons of water lost
106 107 108		RB-3-SS- 105-107 5/2/2019 11:18		Topock - Alluvium Deposits	GM		(GM); regranule to very clasts o	- 108.0') Topock - Alluvium Deposits; Silt eddish brown / moderate brown(5YR 4/4) s to very large pebbles, angular to suban coarse grained sand, angular to subroun omposed of metadiorite; trace mica; wet; e to very coarse sand lenses, weathered	) little red (2.5) gular; some v d; little silt; co interbedded s	YR 4/6); ery fine arser		(105.0 - 115.0') 25 gallons of water used; 0 gallons of water recovered; 25 gallons of water lost
108  109		11.10		Topock - Alluvium Deposits	SM		(SM); re fine gra granule	109.0') Topock - Alluvium Deposits; Silteddish brown / moderate brown(5YR 4/4) ined to very coarse grained, subangular s to very large pebbles, angular to suban	) little red (2.5) to subround; s igular; some s	YR 4/6); some ilt;		
	120	RB-3-SS- 110-115 5/2/2019 11:21		Topock - Alluvium Deposits	GM		silt and (109.0 · (GM); rud/(GM); rud/(GM); grafine to vocarser silt and	clasts composed of metadiorite; trace m granule to very large pebble lenses, wea - 115.0') Topock - Alluvium Deposits; Silt eddish brown / moderate brown (5YR 4/4) anules to very large pebbles, angular to sivery coarse grained sand, angular to subclasts composed of metadiorite; trace m very fine to very coarse sand lenses, we	thered pebble ty gravel with : ) trace red (2.3 subangular; ar angular; little s ica; wet; intert athered pebbl	s sand 57YR dd very silt; sedded es		
116 117 118 119 120	120	RB-3-SS- 115-120 5/2/2019 11:24		Topock - Alluvium Deposits	SM		(SM); refine graule granule angular interbec	- 135.0°) Topock - Alluvium Deposits; Siltedish brown / moderate brown(5YR 4/4) ined to very coarse grained, subangular s to very large pebbles, angular to suban; coarser clasts composed of metadiorite ided silt and granule to very large pebbles.	little red (2.5° to subround; sigular; some s; trace mica; vilenses, weath	YR 4/6); some illt; trace vet; ered		

9/	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 7 of	13
Date S					Surface			Boring No.	: RB-3 Pilo	ot
	•	ted: <u>05/07/2</u>			Northin	• •	,			_
Drilling		Casca			Easting	•	•	_ Client: PG&E	24/ 5 1 51	4
Drilling			onic track mo		Total De Borehol	-	245 ft bgs neter: 6-12 inches	-	SW Remedy Ph	
Drill Ri							Water: <u>11.35 ft bgs</u>	_ Location: <u>PG&amp;E</u>	тороск, торос	JK, Calliottia
Drilling			Ilmantel / J. I		-		_	Proiect Number:	RC000753.00	 51
Logge		Gantt J			Samplir	-				<u> </u>
Editor:		<u>Grant \</u>	<u> Willford</u>	(	Conver	ed to V	Vell: ⊠ Yes □ No			
	ery			. <u>5</u> F0	(0.4)	(0, 10				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	120	RB-3-SS- 120-125 5/2/2019 11:31	RB-3-VAS- 120-125 (<0.17 U) 4/28/2019 11:29				(120.5'); weak cementation; increase in silt, depebbles	crease in granule to		(125.0 - 135.0') 25 gallons of water used; 0 gallons of water recovered; 25 gallons of water
127_ 128_ - 129_ - 130_	120	RB-3-SS- 125-130 5/2/2019 11:44		Topock - Alluvium Deposits	SM		(127.5'); none cementation; increase in granule silt	e to pebbles, decrease		lost
131										
132		RB-3-SS-								
133		130-135 5/2/2019 11:46								
_134_										
<u> </u>										
_135_						600	(135.0 - 144.5') Topock - Alluvium Deposits; S	ilty gravel with sand		(135.0 - 145.0')
136 137 137 138	120	RB-3-SS- 135-140 5/2/2019 11:50		Topock - Alluvium Deposits	GM		(GM); reddish brown / moderate brown(5YR 4/4/6); granules to small cobbles, angular to subart to very coarse grained sand, angular to subart clasts composed of metadiorite; trace mica; we very fine to very coarse sand lenses, weathere	4) trace red (2.5YR angular; and very fine gular; little silt; coarser t; interbedded silt and		25 gallons of water used; 0 gallons of water recovered; 25 gallons of water lost
						601				
						H				
140						<u> 6 Pja</u>				
Abbre	viation	s: USCS = l	Jnified Soil C	Classification	on Syste	em, ft =	feet, bgs = below ground surface,	amsl = above mea	an sea level, G	W =

Date S					Bo		,			
	tarted	: <u>04/25/</u>	2019		Surface	Elevation:	466.3 ft amsl	Boring N	o.: <u>RB-3 Pilo</u>	ot
	-	eted: <u>05/07/</u>				g (NAD83):	2103172.5	_		
Drilling		<u>Casca</u>			_	(NAD83):	7616213.0	Client: PG8		
-	Meth		•	7		•	245 ft bgs	•	<u>I GW Remedy Ph</u>	
	д Туре		sonic track mo				6-12 inches	_ Location: <u>PG8</u>	E Topock, Topoc	ck, California
	Name:				-		11.35 ft bgs	<u> </u>		
-	Asst:		ellmantel / J.		-	-	4 inch x 10 ft Core Barrel	_ Project Numbe	er: <u>RC000753.00</u>	51
oggei			Jeffers		-	ng Interval:	Continuous	_		
Editor:		<u>Grant</u>	Willford	(	Conver	ted to Well:	Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
141 142 143 144	120	RB-3-SS- 140-145 5/2/2019 11:54		Topock - Alluvium Deposits	GM					(135.0 - 145.0' 25 gallons of water used; 0 gallons of wate recovered; 25 gallons of wate lost
_ _145						:  :  : (SM);	- 149.0') Topock - Alluvium Deposits; Sil eddish brown / moderate brown(5YR 4/4 te grained to very coarse grained, suban	) trace red (2.5YR		(145.0 - 155.0)
146 - 147 - 148 - 149		RB-3-SS- 145-150 5/2/2019 11:57		Topock - Alluvium Deposits	SM	some coarse silt and	ranules to very large pebbles, angular to clasts composed of metadiorite; trace m granule to very large pebble lenses	subangular; some sil iica; wet; interbedded	t; 	35 gallons of water used; 0 gallons of wate recovered; 35 gallons of wate lost
_						(GM);	- 152.0') Topock - Alluvium Deposits; Sil eddish brown / moderate brown(5YR 4/4	) trace red (2.5YR		
150 - 151 152_	120		DD 0.V40	Topock - Alluvium Deposits	GM	to very clasts	anules to small cobbles, angular to subal coarse grained sand, angular to subangi composed of metadiorite; trace mica; wet; ery fine to very coarse sand lenses	ular; some silt; coarse		
.104		RB-3-SS- 150-155	RB-3-VAS- 150-155				- 155.0') Topock - Alluvium Deposits; Sil		71	
		5/2/2019 12:05	(<0.17 U) 4/29/2019 10:13	Topock - Alluvium Deposits	SM	4/6); fi granul coarse	eddish brown / moderate brown(5YR 4/4 te grained to very coarse grained, angula is to very large pebbles, angular to subar clasts composed of metadiorite; trace m granule to very large pebble lenses	ar to subround; some ngular; some silt;		
155							- 191.5') Topock - Weathered Bedrock -			
- 156_ - 157_ - 158_	120	RB-3-SS- 155-160 5/2/2019 12:11		Topock - Weathered Bedrock - conglomerate	ML	silt with 3/6); lo sand, angula clasts weak o	gravel (ML); reddish brown (2.5YR 4/4) w plasticity, no dilatency; some very fine ubangular to subround; little granules to to subangular; trace angular to subangusomposed of metadiorite; trace mica; moismentation; interbedded very fine to very to very large pebble lenses	trace dark red (2.5YF to very coarse graine very large pebbles, ular; trace clay; coarse st; very stiff to hard;	Core is moderately cemented	
 _159										
- _159										

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring l	Log			She	eet: 9 of	13
Date S						Elevation		466.3 ft amsl	Borii	na No.:	RB-3 Pilo	ot
	-	eted: <u>05/07/2</u>				g (NAD8	,	2103172.5	_		112 0 1 110	
Drilling		Cascad				(NAD83		7616213.0	_ Client:	PG&E		
Drilling	•		-		Total D	-		245 ft bgs	_ Project:		W Remedy Ph	
Drill R Driller			onic track mo	ount				6-12 inches 11.35 ft bgs	_ Location	i: PG&E	Гороск, Торос	k, California
Drilling			Ilmantel / J. I	Pacheco	-			4 inch x 10 ft Core Barrel	<ul><li>Project I</li></ul>	Jumber	RC000753.00	 51
Logge	-	Gantt J			-	ng Interv		Continuous				•
Editor		Grant V	Villford		-	ted to W		Yes □ No				
	ک			.º E								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
							(160'); d	ry			(155.0 - 165.0') Core is	
161											moderately cemented groundwater	
 _162_											sample to be collected above	
	120	RB-3-SS- 160-165										
_163_		5/2/2019 12:13							9			
164												
165								100			(165.0 - 175.0')	(165.0 - 175.0')
 166											Rough drilling	30 gallons of water used; 10
												gallons of water recovered; 20 gallons of water
167		RB-3-SS-										lost
-		165-170 5/2/2019										
168		12:14										
 169							U					
_109_							(169'); d	ry				
_170_	120			Topock - Weathered	ML							
				conglomerat	е							
_171_				ì								
 _172_												
		RB-3-SS- 170-175 5/2/2019										
_173_		5/2/2019 12:18										
_174_												
 _175_												
_176_												
-												
177		RB-3-SS-										
 _178_	120	175-180 5/2/2019 12:20										
		12.20										
179												
<u> </u>												
180	viotios	c: 11909 - 1	Inified Sail C	lacoificati	on Sunt	om ft = 1	foot L	ogs = below ground surface,	amel = ab	ove mes	n soa lovel C	N -
Lynnie,	vialiOH	a. UOUO – l	JIIIIGU JUII (	/เลออเเเCall	un oyst	⊏ııı, ıι – I	ıccı, l	ys - pelow ground sunace,	amsı – ab	ove mea	ıı əca ievel, G'	/v —

9/	<b>ARC</b>	<b>ADIS</b>	Design & Consultancy for natural and built assets		Boring Lo	g		Sheet: 10 of	13
Date S	tarted	: <u>04/25/</u>	2019	{	Surface Elevation:	466.3 ft amsl	Boring	No.: RB-3 Pilo	ot .
	-	eted: <u>05/07/</u>		1	Northing (NAD83):	2103172.5	. — —		
Drilling		<u>Casca</u>	de		Easting (NAD83):	<u>7616213.0</u>		G&E	
Drilling			<u>Drilling</u>		Total Depth:	245 ft bgs	•	<u>nal GW Remedy Ph</u>	
	д Туре		onic track mo		Borehole Diameter		Location: Po	G&E Topock, Topoc	k, California
	Name:				Depth to First Wate	_	·		
_	Asst:				Sampling Method:	4 inch x 10 ft Core Barrel	Project Num	nber: <u>RC000753.005</u>	51
.ogger			<u>Jeffers</u>		Sampling Interval:	Continuous			
ditor:		<u>Grant</u>	Willford	_	Converted to Well:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_ _181_									
4									
182_		RB-3-SS-	RB-3-VAS- 180-185						
-	120	180-185 5/2/2019	(<0.033 U <0.033 U)						
183_		12:22	4/29/2019 15:38						
4			10.00						
184_									
-									
185									
_				Topock - Weathered					
186				Bedrock -	ML				
_				conglomerate					
187		RB-3-SS-							
_		185-190							
188_		5/2/2019 12:24							
189_						7			
_									
190_	120								
	0				(190	; dry			
191_									
192_						5 - 196.0') Topock - Weathered Bedrock - with gravel (SM); reddish brown (2.5YR 4/4			
		RB-3-SS- 190-195			4/6);	ine grained to very coarse grained, angula les to very large pebbles, angular to suban	r to subangular; s	ome	
193_		5/2/2019 12:28			angu	ar; trace clay; coarser clasts composed of		400	
				Topock -	mica	Wet			
 194				Weathered Bedrock -	SM				
				conglomerate					
- 195_									
190								(195.0 - 215.0')	
106								Rough drilling	
196						0 - 212.5') Topock - Weathered Bedrock -			
<u> </u>						th gravel (ML); reddish brown (2.5YR 4/4) to no plasticity, no dilatency; some granules to			
197		RB-3-SS-			angu	ar to subangular; some very fine to very congular to subround; trace angular to subround;	arse grained sand		
	120	195-200 5/2/2019		Topock -	coars	er clasts composed of metadiorite; trace mi	ica; moist; very sti		
198_		12:37		Weathered Bedrock -	ML   and	weak cementation; interbedded very fine to ranule to very large pebble lenses	•		
-				conglomerate		5'); low plasticity; little granules to very largengular; increase in silt, decrease in sand, ne		r to	
199						; no plasticity; some granules to very large		to	
_						ngular; decrease in silt, increase in sand	,,		
				1	1 1334			1.1	

<b>A</b>	RC	ADIS	Design & Consultancy for natural and built assets		<b>Boring Lo</b>	g		Sheet: 11 of	13
Date S	tarted	04/25/	2019		Surface Elevation:	466.3 ft amsl	Boring	No.: RB-3 Pilo	ot .
	-	ted: <u>05/07/</u>			Northing (NAD83):	2103172.5			<u></u>
Drilling		<u>Casca</u>	<u>ide</u>		Easting (NAD83):	7616213.0		G&E	
Drilling			Drilling		Total Depth:	245 ft bgs	•	<u>inal GW Remedy Ph</u>	
Orill Rio			sonic track m		Borehole Diameter:		Location: P	G&E Topock, Topoc	k, California
Oriller N					Depth to First Wate	_			
Drilling					Sampling Method:	4 inch x 10 ft Core Barrel	Project Nur	mber: <u>RC000753.005</u>	51
_ogger	:		<u>Jeffers</u>		Sampling Interval:	Continuous	-		
Editor:		Grant	Willford		Converted to Well:	X Yes		T	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
								(195.0 - 215.0') Rough drilling	
		RB-3-SS-							
203_	120	200-205 5/2/2019 12:39							
205						10		(205.0') Sample	
- 206_				Topock -				interval chosen based on	
200_				Weathered Bedrock -	ML			lithology	
207_			DD 0.1/40	conglomerate					
201_		RB-3-SS- 205-210	RB-3-VAS- 205-210						
208		5/2/2019 12:41	(<0.17 U) 4/30/2019						
200_		12.11	15:15						
209_									
210_	120								
. ]	~								
211_									
_									
212_		RB-3-SS-							
4		210-215 5/2/2019			(212	5 - 218.0') Topock - Weathered Bedrock -	conglomerate: Sil	ltv	
213_		12:43			sand v	vith gravel (SM); reddish brown (2.5YR 4/ ine grained to very coarse grained, angula	4) trace red (2.5Y	Ŕ	
4					granu	es to very large pebbles, angular to subar	ngular; some silt; t	trace	
214_					weak	coarser clasts composed of metadiorite; tracementation; interbeded silt and granules			
					pebble	es			
215				Topock - Weathered	SM				
. 4				Bedrock - conglomerate	1 1.45134				
216_				2 2 3 3 5 1 10 1 4 10					
217		RB-3-SS-							
-	120	215-220 5/2/2019							
218_		12:44			(218.0	0 - 227.0') Topock - Weathered Bedrock -	conglomerate: Sa	andy	
				Topock -	l l silt wit	h gravel (ML); reddish brown (2.5YR 4/4) bw plasticity, no dilatency; some granules	trace dark red (2.	.5YŘ	
_219				Weathered Bedrock -	ML . angula	ar to subangular; some very fine to very co	oarse grained san	nd,	
. 4				conglomerate	metad	gular to subround; trace clay; coarser clas iorite; trace mica; moist; very stiff; weak co	ementation;		
220				<u> </u>		edded sand very fine to very coarse sand bgs = below ground surface, a		-	

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3		SI	neet: 12 of	13
Date S					Surface			466.3 ft am		Boring No.	.: <u>RB-3 Pil</u>	ot
	-	ted: <u>05/07/2</u>			Northing			2103172.5				<del></del>
Drilling	-	Cascac			Easting	•	83):	7616213.0		_ Client: PG&E		
Drilling	-		_		Total Do			245 ft bgs			GW Remedy Ph	
Drill Ri Driller			onic track mo							_ Location: <u>PG&amp;E</u>	Тороск, Торо	ck, California
Drilling			llmantel / J.		-			11.35 ft bg		 Project Number:	PC000753 00	 51
Logge		Gantt J		<u>raciieco</u>	Samplin	-		Continuous		_ Froject Number.	<u> </u>	<u> </u>
Editor:			Willford		Convert	-		× Yes		_		
					1							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class			Soil Description		Drilling Notes	Drilling Fluid
							large pe	ebble lenses, we	athered pebbles			
221_												
222												
	120						1					
223	120											
				Topock - Weathered	ML							
224				Bedrock - conglomerat								
_												
225												
_226_												
_227							(007.0	045 Ol\ T	Marthaurd Dadorda			
							sand wi	th gravel (SM); i	<ul> <li>Weathered Bedrock reddish brown (2.5YR 4</li> </ul>	4/4) trace red (2.5YR		
_228_							granule	s to very large p	ebbles, angular to suba	llar to subangular; some angular; some silt; trace		
									race clay; coarser clas moist; weak cementati	sts composed of on; interbeded silt and		
_229_							granule	s to pebbles				
_230_	120						-					
-												
_231_							:					
					Ť							
_232_												
_233_				Topock -			(233');	dry to moist; son	ne dry lenses			
				Weathered Bedrock -	SIVI							
_234_				conglomerat	e							
_235_							:					
_236_							:					
							:					
	405						]					
 _238_	120						:					
							:					
240					$\perp$		:					
	viation	s: LISCS = I	Inified Soil (	laccificati	on Syste	m ft =	= foot	has = helaw	around surface	amsl = above me	an sea level G	\/\/ =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 13 of	13
Date S	Started	: 04/2	5/2019		Surface	Elevat	ion: <u>466.3 ft amsl</u>	Borin	a No .	RB-3 Pilo	nt
Date 0	Comple	eted: <u>05/0</u> 7	7/2019		Northing	g (NAD	83): <u>2103172.5</u>		9 110	TO OT III	<u>^</u>
Drilling		Caso	ade		Easting	(NAD8	(3): <u>7616213.0</u>	_ Client:	PG&E		
Drilling	g Meth	od: <u>Soni</u>	c Drilling		Total De	•	245 ft bgs	_ Project:	Final GV	N Remedy Ph	ıase 1
	ig Type		asonic track mo				eter: <u>6-12 inches</u>	_ Location:	PG&E T	opock, Topoc	k, California
	Name		O'Mara				Water: <u>11.35 ft bgs</u>	_			
	g Asst:		uellmantel / J.					_ Project N	umber: <u>F</u>	RC000753.00	<u>51</u>
Logge			t Jeffers		Samplin	-		_			
Editor		<u>Gran</u>	t Willford		Convert	led to v	Vell: ⊠ Yes □ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
			no sample (Interval did	Topock -			(241'); dry to moist; some dry lenses				
 _243_	120		not produce.) 5/1/2019 14:00	Weathered Bedrock - conglomerate	Sivi						
_244_											
245				<u> </u>			End of Boring at 245.0 'bg	ıs.			
 _246_											
							7 62,				
 _248_											
249					<b>.</b>						
250											
251											
252											
253											
_254_											
_255_											
_256_											
_257_ 											
_258_											
_259_											
260 Abbre	viation	s: USCS	 = Unified Soil (	Classificati	on Svste	 em, ft =	feet, bgs = below ground surface,	amsl = abo	ve mear	 ı sea level. G'	W =

**Temporary Backfill Log** Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase I 245 ft bgs Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California Drilling Asst: E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs **Grant Willford** Project Number: RC000753.0051 Logger: **Gantt Jeffers** Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed (0.0 - 4.0') 12"(0.0 - 4.5') Choker Borehole (0.0 - 4.5') 6 bags (-15%) (0.0 - 4.5') 7.1 bags Sand Seal Note: Wildcat Washed Plastering Topock - Fill SP NR (4.0 - 245.0') 6" (4.5 - 210.0') Cemex (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) Borehole #3 MESH (8x10) Note: Lapis Lustre Sand baas Topock - Fill SP RB-3-VAS-15-(<0.033 U) 4/26/2019 18 NR Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water 🎍 table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

ARCADIS Design & Consumor for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase I 245 ft bgs Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed .21. 22 23 25 26 Topock - Fill SP 28 29 (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 30 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand 32 33 NR 35 36 Topock - Fill 38 39 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water 🎍 table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 245 ft bgs Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -42 SW Fluvial Deposits 43 NR 45 Topock -Fluvial Deposits Topock -Fluvial Deposits (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 50 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Fluvial SP Deposits 51 52 RB-3-VAS-50-55 (0.100 J) 4/27/2019 53 NR 55 Topock -56 Fluvial Deposits 57 58 Topock -Fluvial ML Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water 🎍 table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

ARCA	DIS Design & C for natura built asset	Consultancy l and ts		Temporary E	Backfill Log	S	heet: 4 of 13	
Date Started:	04/25/2019			_ Surface Elevation:	466.3 ft amsl	Well ID: R	B-3 Pilot	
Date Completed:				_ Northing (NAD83):	2103172.5			
orilling Co.:	Cascade			_ Easting (NAD83):	7616213.0	Client: PG&E		
orilling Method: Oriller Name:	Sonic Drilling Dan O'Mara	-		_ Total Depth: _ Borehole Diameter:	245 ft bgs	•	GW Remedy Phase I Topock, Needles, Californ	
rilling Asst:			Pacheco	_ Depth to First Water:		Location. FGQL	Topock, Needles, Callon	
ogger:	Gantt Jeffers		4011000	_ Editor:	Grant Willford	Project Number: RC000753.0051		
	.º E							
Groundwate Sample ID		USCS	USCS	Well (	Construction	Calculated Material Volumes	Material Volumes Installed	
	Topock - Alluvium Deposits	ML						
.05_	Topock - Alluvium	GM				*		
.66_	Deposits	GIVI						
- 67 68 68 69 69 70 68 69				(4.5 - 210.0') Cernex #3 MESH (8x10)	(4.0 - 245.0') 6" Borehole	(4.5 - 210.0') 80.7 bags	(4.5 - 210.0') 94 bags (16%) Note: Lapis Lustre Sand	
-7171727373747576777	Topock - Alluvium Deposits	SM						
- – _ 78 _ - – _ 79 _	Topock - Alluvium Deposits	ML						
	Alluvium Deposits	SM						
_ซบเ bbreviations: U	· ·	d Soil C	Classifica	ation System, ft = feet, l	ogs = below ground surfac	ce, amsl = above me	an sea level, GW =	
roundwater, ppt	o = parts per b	oillion, l	J = not d	detected above the labo	ratory reporting limit, J - e	stimated value, NR	= no recovery, blue water	
able symbol repr				ured during the first VA the well.	S interval Note: Granule b	ackfill material will b	e excavated from the pilot	

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: 13 Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 245 ft bgs Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed .81 RB-3-VAS-80-85 (0.132 J) 4/27/2019 83 15:18 84 Topock -Alluvium SM Deposits 85 86 87 88 89 Topock -(4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 90 ML Alluvium #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Deposits 92 Topock -93 Alluvium SM Deposits 95 96 97 Topock -GM Alluvium Deposits 98 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 245 ft bgs Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -Alluvium \_101\_ Deposits 102 \_103\_ Topock -Alluvium Deposits 104 \_105\_ \_106\_ Topock -Alluvium Deposits 107. \_108\_ Topock -Alluvium Deposits 109 (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 110 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Alluvium Deposits 116 Topock -SM Alluvium Deposits 118 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 245 ft bgs Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed \_121. 122 RB-3-VAS-120-125 (<0.17 U) À/28/2019 123\_ 11:29 124 125 \_126\_ 127 Topock -Alluvium SM Deposits 128 129 (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 130 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand 131 132 \_135\_ 136 137 Topock -Alluvium Deposits 138 \_139\_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: 13 Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 245 ft bgs Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed \_141\_ 142 Topock -Alluvium Deposits \_143\_ 144 145 \_146\_ Topock -Alluvium Deposits 149 (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 150 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Alluvium GM Deposits \_151 152 RB-3-VAS-150-155 (<0.17 U) 4/29/2019 153 Topock -SM Alluvium Deposits \_155. 156 157 Topock -Weathered MLBedrock -158 conglomerate \_159\_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

Northing (No. 105   Northing (No. 105   Northing (No. 105   No.	Northing (NADS)   2103172.5	ARCA		Consultancy al and ts		Temporary I			neet: 9 of 13
Northing (NADS)   2003172.5   Client   DGASC   Client   Client   Color   Col	Sales Completed: 5507/2019. Northing (NAD83): 2103172.5.  Diffing Method: Seascate Easting (NAD83): 70161213.0.  Diffing Accident Sonic D	Date Started:	04/25/2019			Surface Elevation:	466.3 ft amsl	—∣ Well ID: RE	3-3 Pilot
Total Depth:   Sonic Dilling	Total Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Phase I Depth: 245 ft bgs Project Final GW Remedy Final Fina					- , ,			
Dan CMara   Dan	Dan CMara   Dan	Orilling Co.:	<u>Cascade</u>			_ Easting (NAD83):	<u>7616213.0</u>	Client: <u>PG&amp;E</u>	
Dan CMara   Dan	Description	Orilling Method:	Sonic Drilling	<b>]</b>		Total Depth:	245 ft bgs	Project: <u>Final C</u>	SW Remedy Phase I
Second Continued   Continued	Section   Sect	Oriller Name:	Dan O'Mara			Borehole Diameter:	6-12 inches	Location: PG&E	Topock, Needles, Califor
Carolidade   Malerial Volumes   Malerial Volumes	Well Construction  Cabustand Material Volumes  M	Orilling Asst:	E. Huellman	tel / J.	Pacheco	Depth to First Water	: <u>11.35 ft bgs</u>		
161	181	₋ogger:	Gantt Jeffers	S		Editor:	Grant Willford	Project Number:	RC000753.0051
161	181	£ 0tt-	gic	ν <sub>Φ</sub>	တ ဖွ			Calandatad	Madada Nalara
162	162 163 164 165 166 166 166 166 166 166 166 166 166	Sample ID	Geolo	DSD DSD	Clas	Well	Construction		
addreviations: 2005 = Unitied 5011 Classification 5ystem, π = teet, dgs = delow ground surface, amsl = above mean sea level, GW =	roundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water		Weathered Bedrock - conglomerate		Classifica	#3 MESH (8x10)	Borehole	bags	Note: Lapis Lustre Sand
ADMINISTRAL DOD - DODE DO DUMOD LL - DOLDOLOGO ODOLO DO ISDOCOTORA FORMULA ILMIT L. COMMOTOS VALLO NID - DO COCACOS. MILIO MOSSO	abie avinou represents debit to water measured ducing the first MAS interval Note. Crantile backill material will be excavated from the bills								

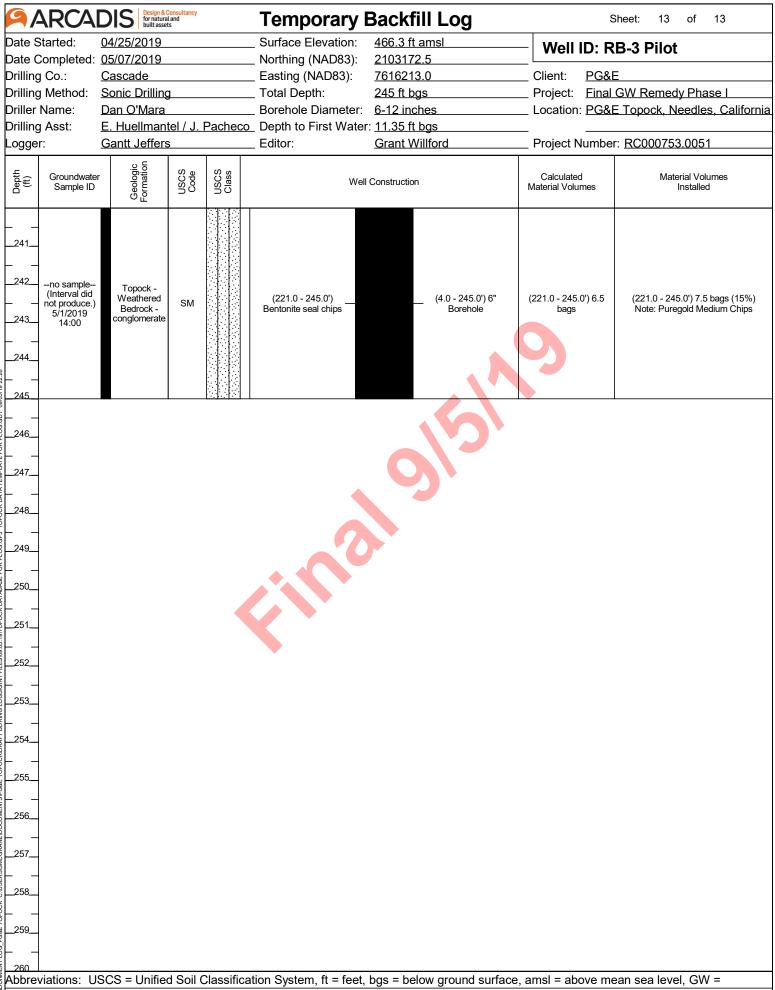
ARCADIS Design & Consultant of the Consultant of **Temporary Backfill Log** Sheet: 10 13 Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase I 245 ft bgs Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed \_181\_ RB-3-VAS-182 180-185 (<0.033 U <0.033 U) 4/29/2019 \_183\_ 15:38 184 185 Topock -Weathered ML\_186\_ Bedrock conglomerate 187. \_188\_ 189 (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 190 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand 191 192 193 Topock -Weathered Bedrock conglomerate \_195\_ 196 197 Topock -Weathered 198 Bedrock conalomerate \_199\_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

**Temporary Backfill Log** Sheet: 13 Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: Cascade Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase I 245 ft bgs Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California Drilling Asst: E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed .201. 202 203 204 (4.5 - 210.0') Cemex (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 205 #3 MESH (8x10) bags Note: Lapis Lustre Sand Topock -\_206\_ . Weathered ML Bedrock conglomerate 207 RB-3-VAS-205-210 (<0.17 U) 4/30/2019 208 209 (4.0 - 245.0') 6" 210 Borehole 212 Topock -(210.0 - 221.0') (210.0 - 221.0') 4.3 (210.0 - 221.0') 5 bags (16%) 215 Weathered Indicator Sand Note: Wildcat Washed Plastering bags Bedrock conglomerate 216 217 218 Topock -Weathered 219 ML Bedrock conglomerate Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

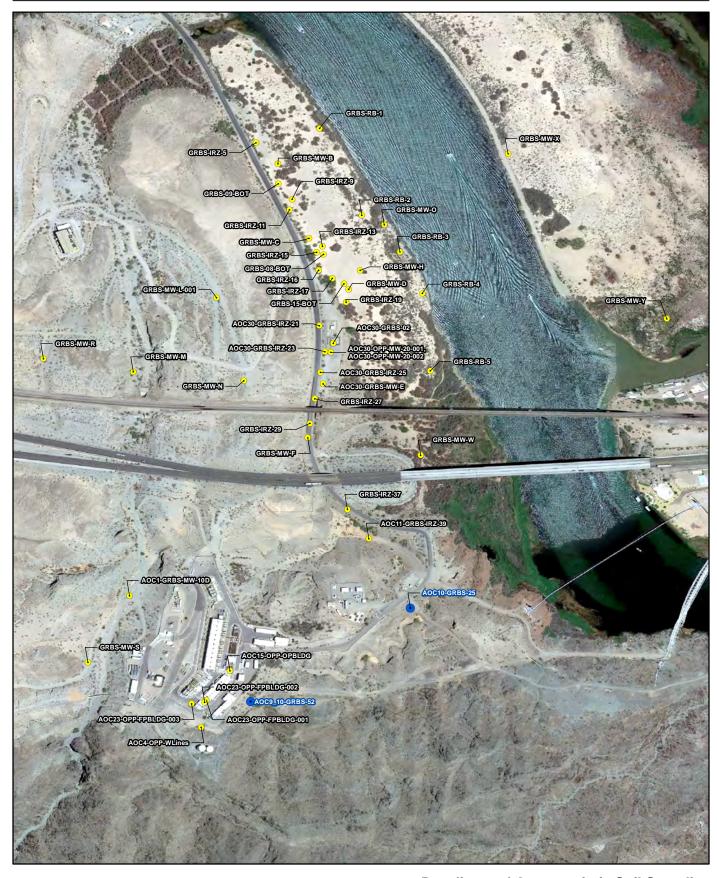
groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

Topock - Weathered Bedrock - Conglomerate   MIL c	ARCA	DIS   Design & C for natura built asset	Consultancy Land es		Temporary E	Backfill Log	S	heet: 12 of 13
Total Depth: 245 ft bgs Project: Elna GW Remedy Phase Location: PG&E Topock, Needles, Califorgraph (Phase) Cantil Leffers.  Be Grantwich Start Leffers.  Be Grant	Date Completed:	05/07/2019			Northing (NAD83):	2103172.5		
Service   Serv								
Second   S	-	-	]		-	-		-
Cant   Jeffers   Editor:   Crant   Willford   Project   Number   RC000753.0051			tol / I	Dachaca			Location: PG&E	: Topock, Needles, Calilori
Calculation   Calculation   Calculation   Material Volumes   Material Volumes   Protein   Calculation   Material Volumes   Protein   Calculation   Material Volumes   Protein   Calculation   Calculation   Material Volumes   Protein   Calculation   Calcu	-			<u> Facileco</u>	-		Project Number	PC000753 0051
	ogger.		•		_ Luitor.	Giant Willioid	Floject Number	. 10000733.0031
Indicator Sand   Indi	Groundwate Sample ID	Geologic Formatio	USCS	USCS	Well	Construction		
		Weathered Bedrock -	ML					(210.0 - 221.0') 5 bags (16%) Note: Wildcat Washed Plastering
236_ 		Weathered Bedrock -	SM		(221.0 - 245.0') Bentonite seal chips			(221.0 - 245.0') 7.5 bags (15%) Note: Puregold Medium Chips
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =								
·		SCS - Unifica	1 8011 (	Classificat	tion System ft - feet	has = helow around ourfo	ce amel = above ma	ean sea leval CIM -
poundwater, $ppp$ – parts per billion, $\phi$ – not detected above the laboratory reporting limit, $\sigma$ - estimated value, $\eta \kappa$ = no recovery. Dide water						<u> </u>		
able symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot		ı – paπs per t	niion,					



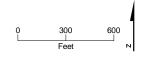
groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot Attachment C Soil Sampling Locations and Available Soil Analytical Results

(Soil Data Presented in Excel File)



#### **LEGEND**

- Soil Sample Collected from this Location in August 2019
  - Soil Sample Location



# **Baseline and Opportunistic Soil Sampling Locations**

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



Attachment D
Perimeter Air Sampling Analytical Results



## **Attachment D. Perimeter Air Sampling Analytical Results**

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

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

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

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

- The LOCs, which represent conservative concentrations of compounds that receptors outside the work area could be safely exposed to during construction, have been evaluated for all compounds that have been detected in soil samples collected at the site in the prior investigations. The LOCs were developed using standard U.S. Environmental Protection Agency (USEPA) and California Environmental Protection Agency risk assessment methodology, toxicology data, and exposure assumptions (USEPA, 2009, 2017; California Department of Toxic Substances Control [DTSC], 2018). Both cancer and noncancer health effects were considered. For each type of health effect, the LOC was back-calculated from an established target or from acceptable cancer risk or noncancer hazard where USEPA or DTSC toxicity values are available. The LOCs for cancer effects are based on a target excess cancer risk of one in a million (1 x 10-6). The LOCs for noncancer effects are based on a target hazard quotient of 1. The LOCs were developed using these assumptions:
  - Receptors are present outside the perimeter of the work areas
  - Exposure via inhalation is 10 hours per day for a 10 days on /4 days off schedule
  - Duration of Phase 1 of the final groundwater remedy construction is 20 months
- The action level for fugitive dust monitoring is 100 micrograms per cubic meter (μg/m³) for a net (downwind minus upwind) dust concentration. This action level is based on MDAQMD Rule 403, Part C. A 10-hour time-weighted average of readings collected throughout the work day will be used to document compliance with MDAQMD Rule 403.
- For analytes detected in soil, the following equation was used to calculate maximum allowable airborne particulate concentrations for receptor exposure outside the work area (based on the approach presented by Marlowe (1999):

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

Where:

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

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

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

#### Action levels were determined as follows:

- Soil data from prior investigations were gathered for the entire site.
- Sample locations within the maximum construction footprint were evaluated. Some sample locations
  were removed from evaluation as they were within the compressor station in locations where no
  construction activities will actually occur.
- The maximum reported soil concentration for each compound was determined and then used to calculate an airborne particulate action level.
- All compounds had allowable airborne particulate action levels greater than 100 μg/m³ except for hexavalent chromium at a few locations.
- Lead does not have USEPA or DTSC toxicity values; however, an action level was calculated using the DTSC (2011) LeadSpread 8 model. This is based on the maximum reported soil concentration for lead of 1,400 mg/kg from samples collected within the construction footprint and a blood level of concern through inhalation of 1 microgram per deciliter. The resulting action level for lead is 548 µg/m³.
- Therefore, keeping fugitive dust below the action level 100 μg/m³ will result in airborne particulate concentrations of contaminants (other than hexavalent chromium) remaining below their respective LOCs.
- Fugitive dust monitoring will be used to evaluate airborne contaminants in dust for all compounds except for hexavalent chromium.

In August 2019, 277 real time dust observation/monitoring events were conducted at the perimeter of the work areas (outside of the exclusion zone). There was one temporary exceedance of the action level for fugitive dust monitoring (100  $\mu$ g/m3) on August 20, 2019 due to backfilling of very dry soil/dirt using excavator at Pipeline B/J. Contractor applied water to reduce fugitive dust.

Two perimeter air sampling events occurred in August 2019, during construction of the portion of Pipeline B/J in the vicinity of AOCs 9 and 10. Table 1 presents analytical results from the August air sampling events.

#### **References Cited:**

California Department of Toxic Substances Control (DTSC). 2011. LeadSpread 8. <a href="https://www.dtsc.ca.gov/AssessingRisk/LeadSpread8.cfm">https://www.dtsc.ca.gov/AssessingRisk/LeadSpread8.cfm</a>.

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**Table 1. Perimeter Air Sampling Results** 

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

Location ID	Location	Date	Sample Type	Hexavalent Chromium (ug/m ³)
AOC13-D1	AOC13 Downwind 1	10/09/18	N	0.000732 J
AOC13-D2	AOC13 Downwind 2	10/09/18	N	0.000709 J
AOC13-U	AOC13 Upwind	10/09/18	N	ND (0.000172)
AOC30-IRZ-23-D1	AOC30-IRZ-23 Downwind 1	2/20/2019	N	ND (0.0000859)
AOC30-IRZ-23-D2	AOC30-IRZ-23 Downwind 2	2/20/2019	N	ND (0.0000862)
AOC30-IRZ-23-U1	AOC30-IRZ-23 Upwind	2/20/2019	N	0.000104 J
AOC4-D1	AOC4 Downwind 1	5/14/2019	N	ND (0.000148)
AOC4-D2	AOC4 Downwind 2	5/14/2019	N	ND (0.000155)
AOC4-U	AOC4 Upwind	5/14/2019	N	ND (0.000148)
AOC11-D1	AOC11 Downwind 1	5/15/2019	N	ND (0.0000392)
AOC11-D2	AOC11 Downwind 2	5/15/2019	N	0.0001262 J
AOC11-U	AOC11 Upwind	5/15/2019	N	ND (0.000386)
AOC4-D1	AOC4 Downwind 1	5/16/2019	N	0.0000423 J
AOC4-D2	AOC4 Downwind 2	5/16/2019	N	ND (0.0000385)
AOC4-U	AOC4 Upwind	5/16/2019	N	ND (0.0000378)
AOC30-D1	AOC30 Downwind 1	6/17/2019	N	ND (0.000633)
AOC30-D2	AOC30 Downwind 2	6/17/2019	N	ND (0.000636)
AOC30-U1	AOC30 Upwind	6/17/2019	N	ND (0.0000589)
AOC30-D1	AOC30 Downwind 1	6/18/2019	N	0.0000407 J
AOC30-D2	AOC30 Downwind 2	6/18/2019	N	ND (0.0000313)
AOC30-U1	AOC30 Upwind	6/18/2019	N	ND (0.000031)
PIPE B-D1	PIPE B Downwind 1	8/12/2019	N	ND (0.0000278)
PIPE B-D2	PIPE B Downwind 2	8/12/2019	N	0.000035 J
PIPE B-U1	PIPE B Upwind	8/12/2019	N	ND (0.0000279)
PIPE B-D1	PIPE B Downwind 1	8/13/2019	N	ND (0.0000276)
PIPE B-D2	PIPE B Downwind 2	8/13/2019	N	ND (0.0000276)
PIPE B-U1	PIPE B Upwind	8/13/2019	N	ND (0.0000276)

### Notes:

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

concentration or reporting limit estimated by laboratory or data validation

J concentration or N primary sample

ND not detected at the listed reporting limit

D-4 AX0206192356BAO

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



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

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

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

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

In August 2019, the following monitoring events were conducted:

- Thirty-two (32) events at a location west of the mobile home park at Moabi Regional Park. Construction activities closest to this monitoring location include activities at the SPY and CHQ, as well as construction traffic on NTH. The sound level typically varied between 37 and 59 dBA, with an average and median of just above 48 dBA.
- Thirty-one (31) events at a location in the Upland just off the IM-3 access road, and near the top of the hill closest to the NTH and MW-20 Bench. Construction activities closest to this monitoring location include activities at MW-20 Bench, and construction traffic on the access road. The sound levels varied between 46 and 64 dBA, with an average and median of about 52 dBA.
- Thirty-one (31) events at the old restaurant location west of NTH. Construction activities closest to this monitoring location include construction traffic on NTH, pipeline and access road construction activities in the northern end of the floodplain. The sound level typically varied between 43 and 60 dBA, with an average and median of 52-54 dBA.
- Seventeen (17) events at a location along the edge of the Colorado River within the mobile home park at Topock Marina. Construction activities closest to this monitoring location are associated with drilling at MW-X and MW-Y. The sound level typically varied between 48 and 64 dBA, with an average of 57 dBA and median of 56 dBA. Sound levels spiked when there are boat traffic, train traffic, and bird activities around the mobile homes. When there were no boats, trains, or birds, the sound level was about 54 dbA.
- Twelve (12) events on the MW-24 bench below and east of the Compressor Station. Construction activities closest to this monitoring location are associated with Pipeline B/J. The sound level typically varied between 53 and 60 dBA, with an average of 56 dBA. It appears most of the sound was from I-40 and/or TCS.

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

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

D-2 AX0206192356BAO

## **Dishcarge Monitoring Record**



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

Affected System: Pipeline C5 STA 17+80 to C3 14+85

^	inceted System: Tipeline C5 517	17180 to C3 14183	
Discharge Date	C6 Discharge Location - Approximate QTY (gal)	C5 Discharge Location - Approximate QTY (gal)	Discharge Monitor Initials*
5/17/2019	6,300		ST
5/20/2019	1,800	5400	ST
5/21/2019	2,700		ST
5/22/2019	3,100	3,000	ST
5/23/2019		4,500	ST
5/24/2019		4,500	ST
5/28/2019		300	ST
6/4/2019		300	DZ
6/5/2019		800	DZ

<sup>\*</sup> By signing this record form, I acknowledge that all ground discharge has been observed and monitored for the following compliance requirements:

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

Attachment G Six-Week Look-Ahead Schedule (September 1 through October 12, 2019)

PG&E Topock Final Groundwater Remedy	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Primary Planned Activities	9/1/2019	9/2/2019	9/3/2019	9/4/2019	9/5/2019	9/6/2019	9/7/2019
Start Time (PST)	5/1/2019	5/2/2015	9/3/2019	6:30 AM	6:30 AM	6:30 AM	6:30 AM
Pipeline C Installation							
E5, F5				Punch list tasks @ Pipeline C5		Punch list tasks @ Pipeline C3	Punch list tasks @ Pipeline C3
TCS Approach Pipeline Installation		No Work		Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J
F5, G5, G6	No Work	Labor Day	No Work				
Well Installation					MW-Y (E6), IRZ-19 pilot (E5), RB-3 (E5),	MW-Y (E6), IRZ-19 pilot (E5), RB-3 (E5),	MW-Y (E6), IRZ-19 pilot (E5), RB-3 (E5),
Well Development				MW-D (E5) MW-C (E5)	MW-D (E5) RB-4 (E5)	MW-D (E5) RB-4 (E5)	MW-D (E5) RB-4 (E5)
Well Testing				IRZ-20 (E5) - Injection Testing	IRZ-20 (E5) - Injection Testing	IRZ-20 (E5) - Injection Testing	IRZ-20 (E5) - Injection Testing
Primary Planned Activities	9/8/2019	9/9/2019	9/10/2019	9/11/2019	9/12/2019	9/13/2019	9/14/2019
Start Time (PST)	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	
TCS Approach Pipeline Installation F5, G5, G6		Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	
-,,	ANN D 267 -its (FF) ANN V (FC)	1404 D 267 -it (FE) 1404 V (FG)	ANN D 267 (FF) ANN V (FG) 107 10 -11-14	ANY D 267 (FE) ANY V (FG) ANY C (GE)	ANN D 207 (FF) ANN V (FC) ANN C (CF)		N = 14/==1-
Well Installation	MW-B-267 site prep (E5), MW-Y (E6),	MW-B-267 site prep (E5), MW-Y (E6),		MW-B-267 (E5), MW-Y (E6), MW-S (G5), RB-2 (E5)	RB-2 (E5)		No Work
	IRZ-19 pilot (E5), RB-3 (E5), MW-D (E5)	IRZ-19 pilot (E5), RB-3 (E5), MW-D (E5)	(E5), RB-2 (E5)		, · · /		
Well Development	RB-4 (E5)	RB-5 (E5)	RB-5 (E5)	RB-5 (E5)	RB-5 (E5)		
Well Testing	IRZ-20 (E5) - Injection Testing	IRZ-21 (E5) - Injection Testing	IRZ-21 (E5) - Injection Testing	IRZ-21 (E5) - Injection Testing	IRZ-21 (E5) - Injection Testing		- 6 - 15
Primary Planned Activities Start Time (PST)	9/15/2019	9/16/2019	<b>9/17/2019</b> 6:30 AM	9/18/2019 6:30 AM	<b>9/19/2019</b> 6:30 AM	<b>9/20/2019</b> 6:30 AM	<b>9/21/2019</b> 6:30 AM
Start Time (PST)			6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM
			Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6
Pipeline C Installation			OR	OR	OR	OR	OR
E5, F5			Tentative: Pipeline installation @C5/C7	Tentative: Pipeline installation @C5/C7	Tentative: Pipeline installation @C5/C7	Tentative: Pipeline installation @C5/C7	Tentative: Pipeline installation @C5/C7
TCS Approach Pipeline Installation	No Work	No Work	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J
F5, G5, G6			ripeline installation @ 6 and 3	ripellile liistaliation @ 8 and 3	ripellile listaliation @ B and 3	ripellile ilistaliation @ B and 3	ripellile ilistaliation @ B and 3
Well Installation			MW-B-267 (E5), MW-S (G5), RB-2 (E5)	MW-B-267 (E5), MW-S (G5), RB-2 (E5)	MW-B-267 (E5), MW-S (G5), RB-2 (E5)	MW-B-267 (E5), MW-S (G5), RB-2 (E5)	MW-B-267 (E5), IRZ-29 site prep (F5),
							MW-S (G5), RB-2 (E5)
Well Development			RB-5 (E5), MW-D (E5)	MW-D (E5)	MW-D (E5)	MW-D (E5)	MW-D (E5)
Well Testing	- 1 1	- 1 1	- 11	RB-5 (E5)	RB-5 (E5)	RB-5 (E5)	RB-5 (E5)
Primary Planned Activities Start Time (PST)	<b>9/22/2019</b> 6:30 AM	<b>9/23/2019</b> 6:30 AM	<b>9/24/2019</b> 6:30 AM	<b>9/25/2019</b> 6:30 AM	<b>9/26/2019</b> 6:30 AM	<b>9/27/2019</b> 6:30 AM	9/28/2019
Start Time (F31)	0.30 AIVI	0.30 AW	0.30 AIVI	0.30 AIVI	0.30 AW	0.30 AW	
		Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	
Pipeline C Installation		Tentative: Pipeline installation @ C6 OR	Tentative: Pipeline installation @ C6 OR	Tentative: Pipeline installation @ C6 OR	Tentative: Pipeline installation @ C6 OR	Tentative: Pipeline installation @ C6 OR	
Pipeline C Installation E5, F5							
E5, F5	-	OR	OR	OR	OR	OR	
E5, F5  TCS Approach Pipeline Installation		OR	OR	OR	OR	OR	No Work
E5, F5	-	OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @C5/C7	No Work
E5, F5  TCS Approach Pipeline Installation F5, G6, G6	 MW-B-267 (ES), IRZ-29 site prep (FS),	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	No Work
E5, F5  TCS Approach Pipeline Installation	-	OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @C5/C7	No Work
E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-S (G5), R8-2 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), R8-2 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-S (G5), R8-2 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), R8-2 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J	No Work
E5, F5  TCS Approach Pipeline Installation F5, G6, G6	 MW-B-267 (ES), IRZ-29 site prep (FS),	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @CS/C7 Pipeline installation @ B and J	No Work
E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development  Well Testing  Primary Planned Activities		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-29 pilot (FS), MW-S (GS), RB-2 (ES) MW-H (ES)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5) 10/1/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5)  10/2/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/3/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J 10/4/2019	10/5/2019
E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development  Well Testing  Primary Planned Activities  Start Time (PST)	 MW-B-267 (E5), IRZ-29 site prep (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-5 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J	
E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development  Well Testing  Primary Planned Activities  Start Time (PST)  Soil Processing Yard	 MW-B-267 (E5), IRZ-29 site prep (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-5 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5) 10/1/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5)  10/2/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/3/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J 10/4/2019	10/5/2019
E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development  Well Testing  Primary Planned Activities  Start Time (PST)	 MW-B-267 (E5), IRZ-29 site prep (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-5 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5)  10/1/2019 6:30 AM	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5)  10/2/2019 6:30 AM	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5)  10/3/2019 6:30 AM	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J 10/4/2019 6:30 AM	10/5/2019 6:30 AM
TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Soil Processing Yard D1	 MW-B-267 (E5), IRZ-29 site prep (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-5 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/1/2019 G:30 AM Fence installation	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) R8-4 (E5) 10/2/2019 G:30 AM Fence installation	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5)  MW-H (E5)  RB-4 (E5)  10/3/2019  6:30 AM Fence installation	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J	<b>10/5/2019</b> 6:30 AM Fence installation
E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development Well Testing  Primary Planned Activities Start Time (PST) Soil Processing Yard D1  Pipeline C Installation	 MW-B-267 (E5), IRZ-29 site prep (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-5 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5)  10/1/2019 6:30 AM	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5)  10/2/2019 6:30 AM	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J 10/4/2019 6:30 AM	10/5/2019 6:30 AM
TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Soil Processing Yard D1	 MW-B-267 (E5), IRZ-29 site prep (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-5 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5)  MW-H (E5)  RB-4 (E5)  10/3/2019  6:30 AM Fence installation	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  10/4/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6	10/5/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6
E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development Well Testing  Primary Planned Activities  Start Time (PST)  Soll Processing Yard D1  Pipeline C Installation	 MW-B-267 (E5), IRZ-29 site prep (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-5 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 30/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (FS), MW-S (GS), RB-2 (ES) MW-H (ES) RB-4 (ES) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J  10/4/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR	10/5/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR
TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development Well Testing  Primary Planned Activities Start Time (PST) Soil Processing Yard D1  Pipeline C Installation E5, F5  TCS Approach Pipeline Installation		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), R8-2 (E5)  MW-H (E5)  R8-4 (E5)  9/30/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/1/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @C6 OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/3/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @C5/C7	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  10/4/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @C5/C7	10/5/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7
TCS Approach Pipeline Installation F5, G5, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Soil Processing Yard D1 Pipeline C Installation E5, F5		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), R8-2 (E5)  MW-H (E5)  R8-4 (E5)  9/30/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 30/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J  10/4/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR	10/5/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR
TCS Approach Pipeline Installation F5, 65, 66  Well Installation  Well Development Well Testing  Primary Planned Activities Start Time (PST) Soil Processing Yard D1  Pipeline C Installation E5, F5  TCS Approach Pipeline Installation F5, G5, G6		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), R8-2 (E5)  MW-H (E5)  R8-4 (E5)  9/30/2019	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), MW-11D	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) R8-4 (E5) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), IR2-31 site set up (F5),	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), IRZ-31 site set up (F5),	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  10/4/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @C5/C7	10/5/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7
TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development Well Testing  Primary Planned Activities Start Time (PST) Soil Processing Yard D1  Pipeline C Installation E5, F5  TCS Approach Pipeline Installation		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), R8-2 (E5)  MW-H (E5)  R8-4 (E5)  9/30/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @C6 OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), IR2-31 site set up (F5), RW-S (G5), MW-110 site set up (F5), RM-S (G5), MW-110 site set up (F5), R8	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @C6 OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IRZ-29 pilot (F5), IRZ-31 site set up (F5), RW-S (G5), MW-110 site set up (F5), RW-S (G5), MW-110 site set up (F5), RM-S (G5), MW-110 site	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  10/4/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J	10/5/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J
TCS Approach Pipeline Installation F5, 65, 66  Well Installation  Well Development Well Testing  Primary Planned Activities Start Time (PST) Soil Processing Yard D1  Pipeline C Installation E5, F5  TCS Approach Pipeline Installation F5, G5, G6		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), R8-2 (E5)  MW-H (E5)  R8-4 (E5)  9/30/2019	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), MW-11D	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) R8-4 (E5) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), IR2-31 site set up (F5),	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), IRZ-31 site set up (F5),	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J	10/5/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-31 pilot (F5), MW-110 (F5), IRZ-39
TCS Approach Pipeline Installation F5, G5, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Soil Processing Yard D1 Pipeline C Installation E5, F5 TCS Approach Pipeline Installation F5, G5, G6 Well Installation		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (G5), R8-2 (E5)  MW-H (E5)  R8-4 (E5)  9/30/2019	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 30/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), MW-11D site set up (F5), RB-2 (E5)	OR Tentative: Pipeline installation @ C5/C7  Pipeline installation @ B and J  IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5)  RB-4 (E5)  10/2/2019  6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7  Pipeline installation @ B and J  IRZ-29 pilot (F5), IRZ-31 site set up (F5), MW-S (G5), MW-11D site set up (F5), RB	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (FS), MW-S (GS), RB-2 (ES) MW-H (ES) RB-4 (ES) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (FS), IR2-31 site set up (FS), RB-25 (ES), MW-110 site set up (FS), RB-26 (ES), MW-110 site set up (FS), RB-26 (ES)	OR Tentative: Pipeline installation @ C5/C7  Pipeline installation @ B and J   10/4/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7  Pipeline installation @ B and J  IRZ-31 pilot (F5), MW-11D (F5), IRZ-39 (F5)	10/5/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J  IRZ-31 pilot (F5), MW-11D (F5), IRZ-39 (F5)
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TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development Well Testing  Primary Planned Activities Start Time (PST) Soil Processing Yard D1  Pipeline C Installation E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation Well Development Well Testing		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 9/30/2019  No Work	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), MW-11D site set up (F5), RB-2 (E5) MW-X (E6) IR2-25 (F5)	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), IR2-31 site set up (F5), RW-5 (G5), MW-11D site set up (F5), RB 2 (E5) MW-5 (E5) IR2-25 (F5)	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), IRZ-31 site set up (F5), RW-5 (G5), MW-11D site set up (F5), RB 2 (E5) MW-5 (G5), MW-11D site set up (F5), RB 2 (E5) MW-2 (E6)	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J   10/4/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J  IRZ-31 pilot (FS), MW-110 (FS), IRZ-39 (FS)  MW-X (E6) IRZ-25 (FS)	10/5/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-31 pilot (F5), MW-110 (F5), IR2-39 (F5) MW-X (E6) IR2-25 (F5)
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TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development Well Testing  Primary Planned Activities  Start Time (PST)  Soil Processing Yard D1  Pipeline C Installation E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation Well Development Well Testing  Primary Planned Activities  Start Time (PST)  Pipeline C Installation  Start Time (PST)  Pipeline C Installation E5, F5		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) R8-4 (E5) 9/30/2019  No Work  10/7/2019 6:30 AM Tentative: Pipeline installation @ C5/C7	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), MW-11D site set up (F5), RB-2 (E5) MW-X (E6) IRZ-25 (F5) 10/9/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C6	OR Tentative: Pipeline installation @ C5/C7  Pipeline installation @ B and J  IR2-29 pilot (F5), MW-S (GS), RB-2 (ES)  MW-H (ES) R8-4 (ES) 10/2/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7  Pipeline installation @ B and J  IR2-29 pilot (F5), IR2-31 site set up (F5), RB 2 (ES) MW-S (GS), MW-11D site set up (F5), RB 2 (ES) MW-S (GS), MW-12 (ES) IR2-25 (FS) 10/9/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (FS), MW-S (GS), RB-2 (ES) MW-H (ES) RB-4 (ES) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (FS), IRZ-31 site set up (FS), RB 2 (ES) MW-S (GS), MW-11D site set up (FS), RB 2 (ES) MW-125 (ES) 10/10/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7	OR Tentative: Pipeline installation @ C5/C7  Pipeline installation @ B and J	10/5/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-31 pilot (F5), MW-11D (F5), IRZ-39 (F5) MW-X (E6) IRZ-25 (F5) 10/12/2019
TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development Well Testing  Primary Planned Activities  Start Time (PST)  Soil Processing Yard D1  Pipeline C Installation E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation Well Development Well Testing  Primary Planned Activities Start Time (PST)  Pipeline C Installation		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 9/30/2019  No Work  No Work  10/7/2019 6:30 ne installation @ C6 OR	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-5 (G5), MW-11D site set up (F5), RB-2 (E5) MW-X (E6) IRZ-25 (F5) 10/8/2019 6:30 AM Tentative: Pipeline installation @ C6 OR	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) R8-4 (E5) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), IR2-31 site set up (F5), RB 1R2-25 (F5) 10/9/2019 6:30 AM Tentative: Pipeline installation @ C6 OR	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), IRZ-31 site set up (F5), RB JESS (F5), MW-S (G5), MW-11D site set up (F5), RB JESS (F5) 10/10/2019 6:30 AM Tentative: Pipeline installation @ C6 OR	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J	10/5/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-31 pilot (F5), MW-110 (F5), IR2-39 (F5) MW-X (E6) IR2-25 (F5)
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TCS Approach Pipeline Installation F5, G5, G6  Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Soil Processing Yard D1  Pipeline C Installation E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST)  Pipeline C Installation E5, F5  TCS Approach Pipeline Installation F5, G5, G6  Well Installation F5, G5, G6  TCS Approach Pipeline Installation F5, F5  TCS Approach Pipeline Installation F5, G5, G6 Well Installation		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) R8-4 (E5) 9/30/2019  No Work  10/7/2019 6:30 AM Tentative: Pipeline installation @C6 OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-31 pilot (F5), MW-110 (F5), IR2-39 (F5)	OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5) 10/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), MW-11D site set up (F5), RB-2 (E5) 10/9/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C7/C7 Pipeline installation @ C6/C7 Pipeline installation @ S and J IRZ-31 pilot (F5), IRZ-33 site set up (F5), MZ-33 site set up (F5), IRZ-33 site set up (F5), IRZ-32 site se	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-S (GS), RB-2 (ES)  MW-H (ES) R8-4 (ES) 10/2/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), IR2-31 site set up (F5), RB 2 (ES) MW-S (GS), MW-11D site set up (F5), RB 2 (ES) 10/9/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ C5/C7 Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-31 pilot (F5), IR2-33 fes)	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (FS), MW-S (GS), RB-2 (ES) MW-H (ES) RB-4 (ES) 10/3/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (FS), IRZ-31 site set up (FS), RB 2 (ES) MW-S (GS), MW-11D site set up (FS), RB 2 (ES) 10/10/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-33 pilot (FS), MW-11D (FS), IRZ-39 (FS)	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J  10/4/2019 6:30 AM Fence installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J  IR2-31 pilot (F5), MW-11D (F5), IR2-39 (F5) MW-X (E6) IR2-25 (F5) 10/11/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C7 Tentative: Pipeline installation @ C8 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J	10/5/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-31 pilot (F5), MW-110 (F5), IRZ-39 (F5) MW-X (E6) IRZ-25 (F5) 10/12/2019
TCS Approach Pipeline Installation FS, GS, G6  Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Soil Processing Yard D1  Pipeline C Installation ES, FS  TCS Approach Pipeline Installation FS, GS, G6  Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS  TCS Approach Pipeline Installation FS, GS, G6  TOS Approach Pipeline Installation FS, GS, G6  TCS Approach Pipeline Installation FS, GS, G6		OR Tentative: Pipeline installation @C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 9/30/2019  No Work  10/7/2019 6:30 AM Tentative: Pipeline installation @C5/C7 Pipeline installation @C5/C7 Pipeline installation @B and J IR2-31 pilot (F5), MW-110 (F5), IR2-39	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), RB-2 (E5) MW-H (E5) RB-4 (E5) 30/1/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-5 (G5), MW-11D site set up (F5), RB-2 (E5) MW-X (E6) IR2-25 (F5) 10/8/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-31 pilot (F5), IR2-33 site set up (F5), IR2-34 site set up (F5),	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5) 10/2/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-29 pilot (F5), IR2-31 site set up (F5), RB 2 (E5) MW-S (G5), MW-11D site set up (F5), RB 2 (E5) IR2-25 (F5) 10/9/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ C5/C7 Pipeline installation @ B and J IR2-31 pilot (F5), IR2-33 site set up (F5), IR2-33 pilot (F5), IR2-33 site set up (F5), IR2-33 pilot (F5), IR2-33 site set up (F5), IR2-34 site set up (F5), I	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), MW-S (G5), RB-2 (E5)  MW-H (E5) RB-4 (E5) 10/3/2019 6:30 AM Fence installation  Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-29 pilot (F5), IRZ-31 site set up (F5), RB-2 (E5) IRZ-25 (F5) 10/10/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-33 pilot (F5), MW-110 (F5), IRZ-39	OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J  10/4/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J  IRZ-31 pilot (F5), MW-11D (F5), IRZ-39 (F5) MW-X (E6) IRZ-25 (F5) 10/11/2019 6:30 AM Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C7/C7 Pipeline installation @ C5/C7 Pipeline installation @ B and J	10/5/2019 6:30 AM Fence installation Tentative: Pipeline installation @ C6 OR Tentative: Pipeline installation @ C5/C7 Pipeline installation @ B and J IRZ-31 pilot (F5), MW-110 (F5), IRZ-39 (F5) MW-X (E6) IRZ-25 (F5) 10/12/2019

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



## **Attachment H. Available Groundwater Monitoring Data**

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

AX0206192356BAO H-1

ΔΛΕ	RCADI	C Des	ign & Consultancy natural and t assets	Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
/-\[	くしへい	buil	t assets	Description	Alkalinity, total as CaCO3	Aluminum	Aluminum, dissolved	Antimony	Antimony, dissolved	Arsenic	Arsenic, dissolved	Barium	Barium, dissolved	Beryllium	Beryllium, dissolved	Boron
TMP 2019-06 Base	eline Sampling			Method	SM 2320 B	SW 6010B	SW 6010B	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6010B
				Units	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample														
Location ID	Sample ID	Type	Parent Sample	Date Sampled												
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N		6/30/2019	64	ND (50)	ND (50)	ND (0.5)	ND (0.5)	1.2	1	120	120	ND (0.5)	ND (0.5)	620
MW-10D	MW-10D-0619	N		6/26/2019	130	1,400	ND (50)	ND (0.5)	ND (0.5)	1.5	1.1	130	80	ND (0.5)	ND (0.5)	1,200
MW-B-117	MW-B-117-0619	N		6/27/2019	79	110	ND (50)	ND (0.5)	ND (0.5)	2.1	2	98	95	ND (2.5)	ND (0.5)	760
MW-B-33	MW-B-33-0619	N		6/27/2019	82	400	ND (50)	ND (0.5)	ND (0.5)	3.3	3.1	93	95	ND (0.5)	ND (0.5)	550
MW-B-33	MW-921-Q219	FD	MW-B-33-0619	6/27/2019	82	610	ND (50)	ND (0.5)	ND (0.5)	3.2	2.8	93	88	ND (0.5)	ND (0.5)	530
MW-F-104	MW-F-104-0619	N		6/26/2019	130	560	ND (50)	ND (0.5)	ND (0.5)	4.7	4.6	77	69	ND (2.5)	ND (2.5)	1,600
MW-F-60	MW-F-60-3V-0619	N		6/26/2019	84	ND (50)	ND (50)	ND (0.5)	ND (0.5)	1.4	1.3	90	84	ND (0.5)	ND (0.5)	610
MW-F-60	MW-F-60-LF-0619	N		6/26/2019	85	340	ND (50)	ND (0.5)	ND (0.5)	1.3	1.4	92	89	ND (0.5)	ND (0.5)	620
MW-G-57	MW-G-57-0619	N		6/24/2019	120	880	ND (50)	ND (0.5)	ND (0.5)	3.7	3.3	51	39	ND (0.5)	ND (0.5)	860
MW-M-57	MW-M-57-0619	N		6/26/2019	89	930	94	ND (0.5)	ND (0.5)	1.2	1.1	44	42	ND (0.5)	ND (0.5)	400
MW-M-95	MW-M-95-0619	N		6/26/2019	66	320	ND (50)	ND (0.5)	ND (0.5)	2.2	2.1	340	330	ND (0.5)	ND (0.5)	470
MW-U-183	MW-U-183-0619	N		6/26/2019	54	210	ND (50)	ND (0.5)	ND (0.5)	1.1	1.1	150	150	ND (0.5)	ND (0.5)	740
MW-U-273	MW-U-273-0619	N		6/26/2019	60	270	52	ND (0.5)	ND (0.5)	5.4	5	43	39	ND (2.5)	ND (0.5)	1,200
MW-W-31	MW-W-31-0619	N		6/24/2019	820	640	ND (50)	ND (0.5)	ND (0.5)	5.5	5.5	130	130	ND (0.5)	ND (0.5)	1,500

<sup>=</sup> Preliminary result. Data results were significantly delayed in the second quarter due to lab instrument issues.

		Desi	gn & Consultancy	Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
AF	RCADI	built	ign & Consultancy natural and t assets	Description	Boron, dissolved	Bromide	Cadmium	Cadmium, dissolved	Calcium	Calcium, dissolved	Chloride	Chromium, Hexavalent	Chromium, total	Chromium, total dissolved	Cobalt	Cobalt, dissolved
TMP 2019-06 Base	eline Sampling			Method	SW 6010B	EPA 300.0	SW 6020	SW 6020	SW 6010B	SW 6010B	EPA 300.0	EPA 218.6	SW 6020	SW 6020	SW 6020	SW 6020
	1		<u> </u>	Units	mg/L	mg/L	ug/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L
Location ID	Sample ID	Sample Type	Parent Sample	Date Sampled												
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N	, , , , , , , , , , , , , , , , , , ,	6/30/2019	0.63	ND (2.5)	ND (0.5)	ND (0.5)	320,000	320	2,300	240	250	230	ND (0.5)	ND (0.5)
MW-10D	MW-10D-0619	N		6/26/2019	1.1	ND (2.5)	ND (0.5)	ND (0.5)	150,000	140	1,000	230	230	210	0.63	ND (0.5)
MW-B-117	MW-B-117-0619	N		6/27/2019	0.75	ND (2.5)	ND (0.5)	ND (0.5)	200,000	190	3,300	ND (0.2)	ND (1.0)	ND (1.0)	ND (0.5)	ND (0.5)
MW-B-33	MW-B-33-0619	N		6/27/2019	0.55	ND (2.5)	ND (0.5)	ND (0.5)	170,000	170	1,400	3.9	6.1	4.2	ND (0.5)	ND (0.5)
MW-B-33	MW-921-Q219	FD	MW-B-33-0619	6/27/2019	0.54	ND (2.5)	ND (0.5)	ND (0.5)	170,000	170	1,400	4	6.3	4.7	ND (0.5)	ND (0.5)
MW-F-104	MW-F-104-0619	N		6/26/2019	1.6	ND (2.5)	ND (0.5)	ND (0.5)	160,000	150	2,200	2,900	2,900	3,000	ND (0.5)	ND (0.5)
MW-F-60	MW-F-60-3V-0619	N		6/26/2019	0.59	ND (2.5)	ND (0.5)	ND (0.5)	190,000	180	760	2,100	2,200	2,000	ND (0.5)	ND (0.5)
MW-F-60	MW-F-60-LF-0619	N		6/26/2019	0.62	ND (2.5)	ND (0.5)	ND (0.5)	190,000	190	760	1,800	2,000	1,800	ND (0.5)	ND (0.5)
MW-G-57	MW-G-57-0619	N		6/24/2019	0.83	1.2	ND (0.5)	ND (0.5)	100,000	97	1,300	660	700	690	ND (0.5)	ND (0.5)
MW-M-57	MW-M-57-0619	N		6/26/2019	0.37	ND (1.0)	ND (0.5)	ND (0.5)	81,000	77	490	2.8	7.6	3.4	ND (0.5)	ND (0.5)
MW-M-95	MW-M-95-0619	N		6/26/2019	0.43	ND (2.5)	ND (0.5)	ND (0.5)	310,000	270	1,700	ND (0.2)	1.2	ND (1.0)	ND (0.5)	ND (0.5)
MW-U-183	MW-U-183-0619	N		6/26/2019	0.69	ND (2.5)	ND (0.5)	ND (0.5)	380,000	340	2,200	ND (0.2)	2.3	ND (1.0)	ND (0.5)	ND (0.5)
MW-U-273	MW-U-273-0619	N		6/26/2019	1.1	ND (2.5)	ND (0.5)	ND (0.5)	140,000	140	2,200	0.52	3.2	1	ND (0.5)	ND (0.5)
MW-W-31	MW-W-31-0619	N		6/24/2019	1.6	ND (2.5)	ND (0.5)	ND (0.5)	390,000	390	4,000	ND (1.0)	ND (1.0)	ND (1.0)	ND (0.5)	ND (0.5)

<sup>=</sup> Preliminary result. Data results were significantly delayed in the second quarter due to lab instrument issues.

	RCADI	C Desi	ign & Consultancy natural and t assets	Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
/-\[	くしろしい	buil	t assets	Description	Copper	Copper, dissolved	Fluoride	Iron	Iron, dissolved	Lead	Lead, dissolved	Magnesium	Magnesium, dissolved	Manganese	Manganese, dissolved	Mercury
TMP 2019-06 Base	eline Sampling			Method	SW 6020	SW 6020	EPA 300.0	SW 6010B	SW 6010B	SW 6020	SW 6020	SW 6010B	SW 6010B	SW 6020	SW 6020	EPA 7470A
				Units	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L
		Sample														
Location ID	Sample ID	Type	Parent Sample	Date Sampled												
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N		6/30/2019	ND (1.0)	ND (1.0)	2.5	59	35	ND (1.0)	ND (1.0)	46,000	46	3.4	ND (0.5)	ND (0.2)
MW-10D	MW-10D-0619	N		6/26/2019	ND (1.0)	ND (1.0)	1	2,600	ND (20)	ND (1.0)	ND (1.0)	31,000	29	350	53	ND (0.2)
MW-B-117	MW-B-117-0619	N		6/27/2019	ND (1.0)	ND (1.0)	3.1	310	160	ND (1.0)	ND (1.0)	34,000	34	1,100	1,100	ND (0.2)
MW-B-33	MW-B-33-0619	N		6/27/2019	ND (1.0)	ND (1.0)	2.6	530	62	ND (1.0)	ND (1.0)	34,000	34	770	900	ND (0.2)
MW-B-33	MW-921-Q219	FD	MW-B-33-0619	6/27/2019	ND (1.0)	ND (1.0)	2.7	630	46	ND (1.0)	ND (1.0)	33,000	33	780	760	ND (0.2)
MW-F-104	MW-F-104-0619	N		6/26/2019	ND (1.0)	ND (1.0)	2.3	690	ND (20)	ND (1.0)	ND (1.0)	15,000	14	210	180	ND (0.2)
MW-F-60	MW-F-60-3V-0619	N		6/26/2019	ND (1.0)	ND (1.0)	1.1	64	ND (20)	ND (1.0)	ND (1.0)	37,000	37	260	200	ND (0.2)
MW-F-60	MW-F-60-LF-0619	N		6/26/2019	ND (1.0)	ND (1.0)	0.91	350	ND (20)	ND (1.0)	ND (1.0)	38,000	38	280	250	ND (0.2)
MW-G-57	MW-G-57-0619	N		6/24/2019	ND (1.0)	ND (1.0)	3	1,300	23	ND (1.0)	ND (1.0)	15,000	14	9.9	ND (0.5)	ND (0.2)
MW-M-57	MW-M-57-0619	N		6/26/2019	17	ND (1.0)	1.9	1,100	120	1.3	ND (1.0)	16,000	16	330	270	ND (0.2)
MW-M-95	MW-M-95-0619	N		6/26/2019	ND (1.0)	ND (1.0)	3.4	1,200	680	ND (1.0)	ND (1.0)	52,000	47	2,100	1,800	ND (0.2)
MW-U-183	MW-U-183-0619	N		6/26/2019	ND (1.0)	ND (1.0)	3.1	230	33	ND (1.0)	ND (1.0)	57,000	52	470	400	ND (0.2)
MW-U-273	MW-U-273-0619	N		6/26/2019	ND (1.0)	ND (1.0)	4.8	320	50	ND (1.0)	ND (1.0)	8,000	7.4	ND (0.5)	ND (0.5)	ND (0.2)
MW-W-31	MW-W-31-0619	N		6/24/2019	ND (1.0)	ND (1.0)	1.8	10,000	9,500	ND (1.0)	ND (1.0)	210,000	220	350	310	ND (0.2)

<sup>=</sup> Preliminary result. Data results were significantly delayed in the second quarter due to lab instrument issues.

$\bigcirc$ $\land$ $\Box$	RCADI	C Desi	ign & Consultancy natural and t assets	Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
/-\[	へしてい	built	t assets	Description	Mercury, dissolved	Molybdenum	Molybdenum, dissolved	Nickel	Nickel, dissolved	Nitrate/Nitrite as Nitrogen	Potassium, dissolved	Selenium	Selenium, dissolved	Silver	Silver, dissolved	Sodium, dissolved
TMP 2019-06 Bas	eline Sampling			Method	EPA 7470A	SW 6020	SW 6020	SW 6020	SW 6020	SM 4500-NO3 F	SW 6010B	SW 6020	SW 6020	SW 6020	SW 6020	SW 6010B
				Units	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	mg/L
		Sample							_							
Location ID	Sample ID	Type	Parent Sample	Date Sampled												
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N		6/30/2019	ND (0.2)	16	15	53	51	2.5	13	1.6	1.5	ND (0.5)	ND (0.5)	1,300
MW-10D	MW-10D-0619	N		6/26/2019	ND (0.2)	4.4	5	1.7	ND (1.0)	11	13	7.7	7	ND (0.5)	ND (0.5)	670
MW-B-117	MW-B-117-0619	N		6/27/2019	ND (0.2)	44	40	ND (1.0)	ND (1.0)	0.69	17	0.64	0.55	ND (0.5)	ND (0.5)	1,600
MW-B-33	MW-B-33-0619	N		6/27/2019	ND (0.2)	14	14	ND (1.0)	ND (1.0)	0.61	11	0.58	0.73	ND (0.5)	ND (0.5)	690
MW-B-33	MW-921-Q219	FD	MW-B-33-0619	6/27/2019	ND (0.2)	14	13	ND (1.0)	ND (1.0)	0.59	11	0.79	0.75	ND (0.5)	ND (0.5)	730
MW-F-104	MW-F-104-0619	N		6/26/2019	ND (0.2)	27	28	1.3	ND (1.0)	15	17	77	79	ND (0.5)	ND (0.5)	1,500
MW-F-60	MW-F-60-3V-0619	N		6/26/2019	ND (0.2)	13	13	1.2	ND (1.0)	8.2	14	9.8	10	ND (0.5)	ND (0.5)	390
MW-F-60	MW-F-60-LF-0619	N		6/26/2019	ND (0.2)	13	14	ND (1.0)	ND (1.0)	7.5	15	9.7	9.4	ND (0.5)	ND (0.5)	390
MW-G-57	MW-G-57-0619	N		6/24/2019	ND (0.2)	33	34	1.1	ND (1.0)	14	12	30	28	ND (0.5)	ND (0.5)	1,100
MW-M-57	MW-M-57-0619	N		6/26/2019	ND (0.2)	21	22	6.5	1.5	5.6	9	3.1	3.3	ND (0.5)	ND (0.5)	270
MW-M-95	MW-M-95-0619	N		6/26/2019	ND (0.2)	20	20	ND (1.0)	ND (1.0)	0.35	14	0.5	ND (0.5)	ND (0.5)	ND (0.5)	700
MW-U-183	MW-U-183-0619	N		6/26/2019	ND (0.2)	13	13	1.1	ND (1.0)	1.8	14	2	1.6	ND (0.5)	ND (0.5)	990
MW-U-273	MW-U-273-0619	N		6/26/2019	ND (0.2)	38	36	1.8	1	2.7	16	4.1	3.5	ND (0.5)	ND (0.5)	1,500
MW-W-31	MW-W-31-0619	N		6/24/2019	ND (0.2)	14	15	ND (1.0)	ND (1.0)	0.088	15	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	2,900

<sup>=</sup> Preliminary result. Data results were significantly delayed in the second quarter due to lab instrument issues.

	RCADI	<b>Desi</b>	ign & Consultancy natural and t assets	Lab	ASSET	ASSET	ASSET	ASSET Total	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	BCLabs
	ノしてレー	<b>b</b> uilt	t assets				Thallium,	dissolved	Total organic	TPH as	TPH as		Vanadium,		Zinc,	Ammonia as
			1	Description	Sulfate	Thallium	dissolved	solids	carbon	diesel	motor oil	Vanadium	dissolved	Zinc	dissolved	nitrogen SM 4500-NH3
TMP 2019-06 Bas	eline Sampling			Method	EPA 300.0	SW 6020	SW 6020	SM 2540 C	SM 5310 C	SW 8015B	SW 8015B	SW 6020	SW 6020	SW 6020	SW 6020	G
	-			Units	mg/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L
		Sample														
Location ID	Sample ID	Type	Parent Sample	Date Sampled												
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N		6/30/2019	340	ND (0.5)	ND (0.5)	4,700	ND (1.0)	ND (54)	ND (54)	4.4	3.2	60	61	ND (0.2)
MW-10D	MW-10D-0619	N		6/26/2019	350	ND (0.5)	ND (0.5)	2,300	ND (1.0)			8.2	5.4	ND (10)	ND (10)	ND (0.2)
MW-B-117	MW-B-117-0619	N		6/27/2019	480	ND (0.5)	ND (0.5)	6,600	ND (1.0)			ND (1.0)	ND (1.0)	ND (10)	ND (10)	ND (0.2)
MW-B-33	MW-B-33-0619	N		6/27/2019	250	ND (0.5)	ND (0.5)	3,200	ND (1.0)			1.5	ND (1.0)	ND (10)	ND (10)	ND (0.2)
MW-B-33	MW-921-Q219	FD	MW-B-33-0619	6/27/2019	240	ND (0.5)	ND (0.5)	3,100	ND (1.0)			1.5	ND (1.0)	ND (10)	ND (10)	ND (0.2)
MW-F-104	MW-F-104-0619	N		6/26/2019	860	ND (0.5)	ND (0.5)	4,800	ND (1.0)			3.9	3.1	ND (10)	ND (10)	ND (0.2)
MW-F-60	MW-F-60-3V-0619	N		6/26/2019	390	ND (0.5)	ND (0.5)	1,800	ND (1.0)			2.7	2.5	ND (10)	ND (10)	ND (0.2)
MW-F-60	MW-F-60-LF-0619	N		6/26/2019	390	ND (0.5)	ND (0.5)	1,900	ND (10)			2.7	2.1	ND (10)	ND (10)	ND (0.2)
MW-G-57	MW-G-57-0619	N		6/24/2019	490	ND (0.5)	ND (0.5)	3,000	ND (1.0)			5.6	3.8	ND (10)	ND (10)	ND (2.0)
MW-M-57	MW-M-57-0619	N		6/26/2019	170	ND (0.5)	ND (0.5)	1,100	ND (1.0)			3.6	2.3	51	ND (10)	ND (0.2)
MW-M-95	MW-M-95-0619	N		6/26/2019	210	ND (0.5)	ND (0.5)	3,000	ND (1.0)			1.2	ND (1.0)	ND (10)	ND (10)	ND (0.2)
MW-U-183	MW-U-183-0619	N		6/26/2019	440	ND (0.5)	ND (0.5)	4,100	ND (1.0)			2.1	2.2	ND (10)	ND (10)	ND (0.2)
MW-U-273	MW-U-273-0619	N		6/26/2019	480	ND (0.5)	ND (0.5)	4,000	ND (1.0)			15	13	ND (10)	ND (10)	ND (0.2)
MW-W-31	MW-W-31-0619	N		6/24/2019	1,400	ND (0.5)	ND (0.5)	8,300	ND (2.0)			3.7	2.6	ND (10)	ND (10)	9.5

<sup>=</sup> Preliminary result. Data results were significantly delayed in the second quarter due to lab instrument issues.

,	RCADIS  ost-Development Sampling	Design & Co for natural built assets	and	Lab  Description  Method  Unit	EPA 218.6	ASSET Chromium, total dissolved SW 6020 ug/L
Location ID	Sample ID	Sample Type	Matrix	Date Sampled	<i>ug</i> /	ug/ =
MW-B-337	MW-B-337-062619-INTERIM	N	GW	6/26/2019	ND (1.0)	ND (1.0)

	RCAD	Designation built	gn & Consultancy atural and assets	Lab  Description  Method	ASSET Alkalinity, total as CaCO3 SM 2320 B	ASSET Calcium, dissolved EPA 200.7	ASSET Chloride EPA 300.0	ASSET Chromium, Hexavalent EPA 218.6	ASSET Chromium, total dissolved EPA 200.8	ASSET Iron, dissolved EPA 200.7	ASSET Magnesium, dissolved EPA 200.7	dissolved	ASSET Nitrate/Nitrite as Nitrogen SM 4500-NO3 F	pН	ASSET Sodium, dissolved EPA 200.7	ASSET Specific conductance EPA 120.1	ASSET Sulfate EPA 300.0	ASSET Total dissolved solids SM 2540 C
FMF 2019-07	PMP 2019-07 Sampling				mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	mg/L	ug/L	mg/L	PHUNITS	mg/L	uS/cm	mg/L	mg/L
Location ID	Sample ID	Sample Type	Matrix	Date Sampled														
PE-01	PE-01-0719	N	GW	7/24/2019	250	140	810	ND (0.2)	ND (1.0)	ND (20)	37	450	ND (0.05)	7.3	510	3,300	310	2,000
TW-03D	TW-03D-0719	N	GW	7/24/2019	160	180	2,100	450	430	ND (20)	27	ND (0.5)	2.7	7.2	1,400	7,200	470	4,300

= Preliminary result. Data results continued to be significantly late this quarter due to lab issues.

, ,	RCAD	IS	Design & Consultancy for natural and built assets		Lab Description	ASSET Alkalinity, total as CaCO3	ASSET Aluminum	ASSET Aluminum, dissolved	ASSET Antimony	ASSET Antimony, dissolved	ASSET Arsenic	ASSET Arsenic, dissolved	ASSET Barium	ASSET Barium, dissolved
TMP 2019-07 Ba	seline Sampling				Method	SM 2320 B	SW 6010B	SW 6010B	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020
					Unit	mg/L	ug/L	ug/L	ua/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample				<i>J</i> ,	· <i>3</i> /	- 31	3,	3,	- J,	- 3,	- 3,	<i>J</i> ,
Location ID	Sample ID	Type	Parent Sample	Matrix	Date Sampled									
IRZ-20-SC-49-71	IRZ-20-SC-49-71	N		GW	7/11/2019	72	ND (50)	ND (50)	ND (0.5)	ND (0.5)	1.5	1.6	69	73
MW-10D	MW-10D-0719	Ν		GW	7/24/2019	120	200	ND (50)	4.3	4.5	1.9	1.6	120	110
MW-B-117	MW-B-117-0719	N		GW	7/23/2019	80	69	ND (50)	ND (0.5)	ND (0.5)	2.1	2.1	100	94
MW-B-33	MW-906-Q319	FD	MW-B-33-0719	GW	7/23/2019	86	620	ND (50)	ND (0.5)	ND (0.5)	3.2	2.9	96	86
MW-B-33	MW-B-33-0719	N		GW	7/23/2019	85	620	ND (50)	ND (0.5)	ND (0.5)	3.2	3.1	99	86
MW-F-60	MW-F-60-3V-0719	N		GW	7/25/2019	82	150	ND (50)	ND (0.5)	ND (0.5)	1.2	1.1	87	92
MW-F-60	MW-F-60-LF-0719	N		GW	7/25/2019	83	400	ND (50)	ND (0.5)	ND (0.5)	1.3	1.2	94	91
MW-L-180	MW-907-Q319	FD	MW-L-180-0719	GW	7/25/2019	37	460	ND (50)	ND (0.5)	ND (0.5)	3.9	3.1	56	54
MW-L-180	MW-L-180-0719	N		GW	7/25/2019	38	390	ND (50)	ND (0.5)	ND (0.5)	3.8	3.1	55	55
MW-M-132	MW-M-132-0719	N		GW	7/22/2019	62	1,500	ND (50)	ND (0.5)	ND (0.5)	2.5	2.3	180	170
MW-M-193	MW-M-193-0719	N		GW	7/22/2019	49	2,100	70	ND (0.5)	ND (0.5)	3.5	2.8	110	98
MW-M-57	MW-M-57-0719	N		GW	7/22/2019	80	890	ND (50)	ND (0.5)	ND (0.5)	1.2	1.1	49	42
MW-M-95	MW-M-95-0719	N		GW	7/22/2019	55	220	ND (50)	ND (0.5)	ND (0.5)	1.2	1.1	290	270
MW-N-217	MW-N-217-0719	N		GW	7/23/2019	110	430	54	2.7	1	4.6	4.6	45	37
MW-R-109	MW-R-109-0719	N		GW	7/23/2019	73	ND (50)	ND (50)	ND (0.5)	ND (0.5)	1.5	1.4	51	46
MW-R-192	MW-R-192-0719	N		GW	7/23/2019	45	760	83	ND (0.5)	ND (0.5)	1.6	1.7	190	190
MW-R-275	MW-R-275-0719	N		GW	7/23/2019	49	320	52	ND (0.5)	ND (0.5)	3	2.7	230	220
MW-U-183	MW-U-183-0719	N		GW	7/24/2019	53	350	ND (50)	ND (0.5)	ND (0.5)	1.2	1.1	170	170
MW-U-273	MW-U-273-0719	N		GW	7/24/2019	58	2,100	51	ND (0.5)	ND (0.5)	6.4	5.4	53	41

<sup>=</sup> Preliminary result. Data results continued to be significantly late this quarter due to lab issues.

9A	RCAD	IS	Design & Consultancy for natural and built assets		Lab Description	ASSET Beryllium	ASSET Beryllium, dissolved	ASSET Boron	ASSET Boron, dissolved	ASSET Bromide	ASSET Cadmium	ASSET Cadmium, dissolved	ASSET Calcium	ASSET Calcium, dissolved
TMP 2019-07 Ba	seline Sampling				Method	SW 6020	SW 6020	SW 6010B	SW 6010B	EPA 300.0	SW 6020	SW 6020	SW 6010B	SW 6010B
					Unit	ug/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	mg/L
		Sample				51 –		51	9/ _	<i>9i</i> –			- 91 –	
Location ID	Sample ID	Type	Parent Sample	Matrix	Date Sampled									
IRZ-20-SC-49-71	IRZ-20-SC-49-71	N		GW	7/11/2019	ND (0.5)	ND (0.5)	440	0.5	ND (2.5)	ND (0.5)	ND (0.5)	180,000	200
MW-10D	MW-10D-0719	N		GW	7/24/2019	ND (0.5)	ND (0.5)	1,100	1.1	ND (2.5)	ND (0.5)	ND (0.5)	100,000	99
MW-B-117	MW-B-117-0719	N		GW	7/23/2019	ND (2.5)	ND (0.5)	880	0.88	ND (2.5)	ND (0.5)	ND (0.5)	200,000	200
MW-B-33	MW-906-Q319	FD	MW-B-33-0719	GW	7/23/2019	ND (0.5)	ND (0.5)	560	0.61	ND (2.5)	ND (0.5)	ND (0.5)	170,000	180
MW-B-33	MW-B-33-0719	N		GW	7/23/2019	ND (0.5)	ND (0.5)	620	0.58	ND (2.5)	ND (0.5)	ND (0.5)	190,000	170
MW-F-60	MW-F-60-3V-0719	N		GW	7/25/2019	ND (0.5)	ND (0.5)	640	0.65	ND (2.5)	ND (0.5)	ND (0.5)	200,000	190
MW-F-60	MW-F-60-LF-0719	N		GW	7/25/2019	ND (0.5)	ND (0.5)	640	0.67	ND (2.5)	ND (0.5)	ND (0.5)	190,000	200
MW-L-180	MW-907-Q319	FD	MW-L-180-0719	GW	7/25/2019	ND (0.5)	ND (0.5)	1,400	0.7	ND (2.5)	ND (0.5)	ND (0.5)	270,000	310
MW-L-180	MW-L-180-0719	N		GW	7/25/2019	ND (0.5)	ND (0.5)	1,400	1.5	ND (2.5)	ND (0.5)	ND (0.5)	280,000	280
MW-M-132	MW-M-132-0719	N		GW	7/22/2019	ND (2.5)	ND (0.5)	1,000	0.99	ND (2.5)	ND (0.5)	ND (0.5)	270,000	260
MW-M-193	MW-M-193-0719	N		GW	7/22/2019	ND (2.5)	ND (0.5)	1,700	1.7	ND (2.5)	ND (0.5)	ND (0.5)	200,000	210
MW-M-57	MW-M-57-0719	N		GW	7/22/2019	ND (0.5)	ND (0.5)	420	0.4	ND (1.0)	ND (0.5)	ND (0.5)	84,000	82
MW-M-95	MW-M-95-0719	N		GW	7/22/2019	ND (0.5)	ND (0.5)	450	0.42	ND (2.5)	ND (0.5)	ND (0.5)	290,000	270
MW-N-217	MW-N-217-0719	N		GW	7/23/2019	ND (0.5)	ND (0.5)	1,000	1	ND (1.0)	ND (0.5)	ND (0.5)	71,000	70
MW-R-109	MW-R-109-0719	N		GW	7/23/2019	ND (0.5)	ND (0.5)	350	0.35	ND (1.0)	ND (0.5)	ND (0.5)	88,000	87
MW-R-192	MW-R-192-0719	N		GW	7/23/2019	ND (2.5)	ND (0.5)	1,100	1.1	ND (2.5)	ND (0.5)	ND (0.5)	240,000	240
MW-R-275	MW-R-275-0719	N		GW	7/23/2019	ND (2.5)	ND (0.5)	1,500	1.5	ND (2.5)	ND (0.5)	ND (0.5)	250,000	240
MW-U-183	MW-U-183-0719	N		GW	7/24/2019	ND (0.5)	ND (0.5)	720	1.5	ND (2.5)	ND (0.5)	ND (0.5)	360,000	290
MW-U-273	MW-U-273-0719	N		GW	7/24/2019	ND (0.5)	ND (0.5)	1,200	1.3	ND (2.5)	ND (0.5)	ND (0.5)	130,000	140

<sup>=</sup> Preliminary result. Data results continued to be significantly late this quarter due to lab issues.

9A	RCAD	IS	Design & Consultancy for natural and built assets		Lab Description	ASSET Chloride	ASSET Chromium, Hexavalent	ASSET Chromium, total	ASSET Chromium, total dissolved	ASSET Cobalt	ASSET Cobalt, dissolved	ASSET Copper	ASSET Copper, dissolved	ASSET Fluoride
TMP 2019-07 Ba	seline Sampling				Method	EPA 300.0	EPA 218.6	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	EPA 300.0
					Unit	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L
		Sample			1	···g/ –			- 9/ -	51 –	- 51 -	51 –	- 51 -	
Location ID	Sample ID	Туре	Parent Sample	Matrix	Date Sampled									
IRZ-20-SC-49-71	IRZ-20-SC-49-71	N		GW	7/11/2019	1,200	87	93	90	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.4
MW-10D	MW-10D-0719	N		GW	7/24/2019	880	31	33	29	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2
MW-B-117	MW-B-117-0719	N		GW	7/23/2019	3,400	0.6	4.6	ND (1.0)	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.9
MW-B-33	MW-906-Q319	FD	MW-B-33-0719	GW	7/23/2019	1,500	8.3	9.5	6.7	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.7
MW-B-33	MW-B-33-0719	N		GW	7/23/2019	1,400	8.3	9.6	8.3	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.6
MW-F-60	MW-F-60-3V-0719	N		GW	7/25/2019	760	2,400	2,400	2,400	0.62	ND (0.5)	ND (1.0)	ND (1.0)	1.7
MW-F-60	MW-F-60-LF-0719	N		GW	7/25/2019	770	2,000	2,300	2,000	0.99	ND (0.5)	ND (1.0)	ND (1.0)	0.76
MW-L-180	MW-907-Q319	FD	MW-L-180-0719	GW	7/25/2019	3,600	ND (1.0)	12	1.1	0.53	ND (0.5)	ND (1.0)	ND (1.0)	4.3
MW-L-180	MW-L-180-0719	N		GW	7/25/2019	3,700	ND (1.0)	10	1.3	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	4.2
MW-M-132	MW-M-132-0719	N		GW	7/22/2019	2,700	ND (0.2)	7	ND (1.0)	1.9	ND (0.5)	ND (1.0)	ND (1.0)	3.4
MW-M-193	MW-M-193-0719	N		GW	7/22/2019	4,100	ND (1.0)	61	1.2	21	1.3	14	ND (1.0)	4
MW-M-57	MW-M-57-0719	N		GW	7/22/2019	450	12	15	11	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	1.8
MW-M-95	MW-M-95-0719	N		GW	7/22/2019	1,700	ND (0.2)	ND (1.0)	ND (1.0)	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.7
MW-N-217	MW-N-217-0719	N		GW	7/23/2019	1,200	0.66	24	2.8	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	4.4
MW-R-109	MW-R-109-0719	N		GW	7/23/2019	430	11	10	10	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.1
MW-R-192	MW-R-192-0719	N		GW	7/23/2019	2,700	ND (0.2)	1.8	ND (1.0)	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	3.5
MW-R-275	MW-R-275-0719	N		GW	7/23/2019	3,500	ND (1.0)	24	2	8.1	1.3	3.6	ND (1.0)	4.3
MW-U-183	MW-U-183-0719	N		GW	7/24/2019	2,200	0.4	2.9	ND (1.0)	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	3
MW-U-273	MW-U-273-0719	N		GW	7/24/2019	2,200	0.41	56	1	5.2	0.63	9.5	ND (1.0)	4.8

<sup>=</sup> Preliminary result. Data results continued to be significantly late this quarter due to lab issues.

<b>9</b> A	RCAD	IS	Design & Consultancy for natural and built assets		Lab	ASSET Iron	ASSET  Iron, dissolved	ASSET Lead	ASSET Lead, dissolved	ASSET Magnesium	ASSET Magnesium, dissolved	ASSET Manganese	ASSET Manganese, dissolved	ASSET Mercury
TMP 2019-07 Ba	TMP 2019-07 Baseline Sampling					SW 6010B	SW 6010B	SW 6020	SW 6020	SW 6010B	SW 6010B	SW 6020	SW 6020	EPA 7470A
					Unit	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L
		Sample				- 5/	3,	· <i>3</i> i	3,	- Ji	<i>J</i> ,	- 3,	- J,	3,
Location ID	Sample ID	Type	Parent Sample	Matrix	Date Sampled									
IRZ-20-SC-49-71	IRZ-20-SC-49-71	N		GW	7/11/2019	64	35	ND (1.0)	ND (1.0)	29,000	33	ND (0.5)	ND (0.5)	ND (0.2)
MW-10D	MW-10D-0719	N		GW	7/24/2019	330	60	ND (1.0)	ND (1.0)	25,000	24	130	ND (0.5)	ND (0.2)
MW-B-117	MW-B-117-0719	N		GW	7/23/2019	130	71	ND (1.0)	ND (1.0)	40,000	40	1,000	1,100	ND (0.2)
MW-B-33	MW-906-Q319	FD	MW-B-33-0719	GW	7/23/2019	790	44	ND (1.0)	ND (1.0)	33,000	36	470	500	ND (0.2)
MW-B-33	MW-B-33-0719	N		GW	7/23/2019	800	53	ND (1.0)	ND (1.0)	38,000	35	480	470	ND (0.2)
MW-F-60	MW-F-60-3V-0719	N		GW	7/25/2019	290	43	ND (1.0)	ND (1.0)	41,000	41	170	170	ND (0.2)
MW-F-60	MW-F-60-LF-0719	N		GW	7/25/2019	620	110	ND (1.0)	ND (1.0)	41,000	43	170	160	ND (0.2)
MW-L-180	MW-907-Q319	FD	MW-L-180-0719	GW	7/25/2019	710	43	ND (5.0)	ND (1.0)	19,000	19	ND (0.5)	ND (0.5)	ND (0.2)
MW-L-180	MW-L-180-0719	N		GW	7/25/2019	640	25	ND (5.0)	ND (5.0)	20,000	20	ND (0.5)	ND (0.5)	ND (0.2)
MW-M-132	MW-M-132-0719	N		GW	7/22/2019	2,700	480	ND (1.0)	ND (1.0)	32,000	31	730	740	ND (0.2)
MW-M-193	MW-M-193-0719	N		GW	7/22/2019	3,400	180	ND (1.0)	ND (1.0)	12,000	11	350	320	ND (0.2)
MW-M-57	MW-M-57-0719	N		GW	7/22/2019	1,300	48	ND (1.0)	ND (1.0)	15,000	15	190	180	ND (0.2)
MW-M-95	MW-M-95-0719	N		GW	7/22/2019	580	230	ND (1.0)	ND (1.0)	53,000	51	1,400	1,400	ND (0.2)
MW-N-217	MW-N-217-0719	N		GW	7/23/2019	610	97	ND (1.0)	ND (1.0)	6,800	6.7	27	26	ND (0.2)
MW-R-109	MW-R-109-0719	N		GW	7/23/2019	53	23	ND (1.0)	ND (1.0)	15,000	15	ND (0.5)	ND (0.5)	ND (0.2)
MW-R-192	MW-R-192-0719	N		GW	7/23/2019	830	300	ND (1.0)	ND (1.0)	27,000	27	480	540	ND (0.2)
MW-R-275	MW-R-275-0719	N		GW	7/23/2019	880	260	ND (1.0)	ND (1.0)	23,000	22	500	500	ND (0.2)
MW-U-183	MW-U-183-0719	N		GW	7/24/2019	370	31	ND (1.0)	ND (1.0)	62,000	20	140	120	ND (0.2)
MW-U-273	MW-U-273-0719	N		GW	7/24/2019	4,000	60	ND (1.0)	ND (1.0)	8,800	8.4	17	ND (0.5)	ND (0.2)

<sup>=</sup> Preliminary result. Data results continued to be significantly late this quarter due to lab issues.

A	RCAD	IS	Design & Consultancy for natural and built assets		Lab Description	ASSET Mercury, dissolved	ASSET Molybdenum	ASSET Molybdenum, dissolved	ASSET Nickel	ASSET Nickel, dissolved	ASSET Nitrate/Nitrite as Nitrogen	ASSET Potassium, dissolved	ASSET Selenium	ASSET Selenium, dissolved
TMP 2019-07 Ba	seline Sampling				Method	EPA 7470A	SW 6020	SW 6020	SW 6020	SW 6020	SM 4500-NO3 F	SW 6010B	SW 6020	SW 6020
					Unit	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L
		Sample				- 31	3,	· <i>Si</i>	- 5/	- J,	<i>J</i> ,	<i>3</i> ,	- J,	3,
Location ID	Sample ID	Type	Parent Sample	Matrix	Date Sampled									
IRZ-20-SC-49-71	IRZ-20-SC-49-71	N		GW	7/11/2019	ND (0.2)	8	8.1	6.4	6.7	2.8	9.2	1.4	2
MW-10D	MW-10D-0719	N		GW	7/24/2019	ND (0.2)	37	34	1.3	ND (1.0)	5.1	15	5	4.6
MW-B-117	MW-B-117-0719	N		GW	7/23/2019	ND (0.2)	44	43	ND (1.0)	ND (1.0)	0.51	17	0.77	0.52
MW-B-33	MW-906-Q319	FD	MW-B-33-0719	GW	7/23/2019	ND (0.2)	11	11	ND (1.0)	ND (1.0)	0.77	11	0.7	0.56
MW-B-33	MW-B-33-0719	N		GW	7/23/2019	ND (0.2)	11	11	ND (1.0)	ND (1.0)	0.78	11	0.77	1.1
MW-F-60	MW-F-60-3V-0719	N		GW	7/25/2019	ND (0.2)	13	14	7.9	2.7	8.1	15	11	11
MW-F-60	MW-F-60-LF-0719	N		GW	7/25/2019	ND (0.2)	14	14	12	3.2	9.8	15	10	10
MW-L-180	MW-907-Q319	FD	MW-L-180-0719	GW	7/25/2019	ND (0.2)	36	35	3.8	ND (1.0)	0.37	15	0.71	0.52
MW-L-180	MW-L-180-0719	N		GW	7/25/2019	ND (0.2)	35	35	2.8	ND (1.0)	0.44	19	0.66	0.55
MW-M-132	MW-M-132-0719	N		GW	7/22/2019	ND (0.2)	24	24	6.7	ND (1.0)	0.13	17	ND (0.5)	ND (0.5)
MW-M-193	MW-M-193-0719	N		GW	7/22/2019	ND (0.2)	73	52	110	8.4	0.4	29	0.94	0.69
MW-M-57	MW-M-57-0719	N		GW	7/22/2019	ND (0.2)	18	18	1.8	ND (1.0)	7.3	9.1	3.7	3.9
MW-M-95	MW-M-95-0719	N		GW	7/22/2019	ND (0.2)	11	10	ND (1.0)	ND (1.0)	0.45	13	ND (0.5)	ND (0.5)
MW-N-217	MW-N-217-0719	N		GW	7/23/2019	ND (0.2)	58	58	3.5	ND (1.0)	ND (0.05)	17	0.72	ND (0.5)
MW-R-109	MW-R-109-0719	N		GW	7/23/2019	ND (0.2)	14	14	ND (1.0)	ND (1.0)	6.6	11	5.4	4.5
MW-R-192	MW-R-192-0719	N		GW	7/23/2019	ND (0.2)	27	27	ND (1.0)	ND (1.0)	0.19	16	ND (0.5)	ND (0.5)
MW-R-275	MW-R-275-0719	N		GW	7/23/2019	ND (0.2)	63	57	32	6.1	ND (0.05)	23	ND (0.5)	ND (0.5)
MW-U-183	MW-U-183-0719	N		GW	7/24/2019	ND (0.2)	12	12	1.3	ND (1.0)	1.8	20	2.2	1.9
MW-U-273	MW-U-273-0719	N		GW	7/24/2019	ND (0.2)	50	44	40	8.6	2.6	17	4	3.8

<sup>=</sup> Preliminary result. Data results continued to be significantly late this quarter due to lab issues.

A	RCAD	IS	Design & Consultancy for natural and built assets		Lab	ASSET Silver	ASSET Silver, dissolved	ASSET Sodium, dissolved	ASSET Sulfate	ASSET Thallium	ASSET Thallium, dissolved	ASSET Total dissolved solids	ASSET Total organic carbon	ASSET TPH as diesel
TMP 2019-07 Ba	seline Sampling				Method	SW 6020	SW 6020	SW 6010B	EPA 300.0	SW 6020	SW 6020	SM 2540 C	SM 5310 C	SW 8015B
					Unit	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	mg/L	mg/L	ug/L
		Sample	_		1	49/ 5	ug/ L	1119/ =	mg/ L	ug/ L	<u> </u>	mg/ L	1119/ L	ug/ L
Location ID	Sample ID	Type	Parent Sample	Matrix	Date Sampled									
IRZ-20-SC-49-71	IRZ-20-SC-49-71	N		GW	7/11/2019	ND (0.5)	ND (0.5)	670	230	ND (0.5)	ND (0.5)	2,800	ND (1.0)	ND (50)
MW-10D	MW-10D-0719	N		GW	7/24/2019	ND (0.5)	ND (0.5)	610	320	ND (0.5)	ND (0.5)	2,100	ND (1.0)	
MW-B-117	MW-B-117-0719	N		GW	7/23/2019	ND (0.5)	ND (0.5)	2,200	530	ND (0.5)	ND (0.5)	6,100	ND (1.0)	
MW-B-33	MW-906-Q319	FD	MW-B-33-0719	GW	7/23/2019	ND (0.5)	ND (0.5)	830	250	ND (0.5)	ND (0.5)	3,200	ND (1.0)	
MW-B-33	MW-B-33-0719	N		GW	7/23/2019	ND (0.5)	ND (0.5)	830	250	ND (0.5)	ND (0.5)	3,100	ND (1.0)	
MW-F-60	MW-F-60-3V-0719	N		GW	7/25/2019	4.1	ND (0.5)	420	390	ND (0.5)	ND (0.5)	2,100	ND (1.0)	
MW-F-60	MW-F-60-LF-0719	N		GW	7/25/2019	7.7	ND (0.5)	430	390	ND (0.5)	ND (0.5)	2,100	ND (1.0)	
MW-L-180	MW-907-Q319	FD	MW-L-180-0719	GW	7/25/2019	1.8	ND (0.5)	1,100	490	ND (2.5)	ND (0.5)	6,800	ND (1.0)	
MW-L-180	MW-L-180-0719	N		GW	7/25/2019	1.2	ND (0.5)	2,100	490	ND (2.5)	ND (2.5)	7,000	ND (1.0)	
MW-M-132	MW-M-132-0719	N		GW	7/22/2019	2	ND (0.5)	1,500	330	ND (0.5)	ND (0.5)	5,400	ND (1.0)	
MW-M-193	MW-M-193-0719	N		GW	7/22/2019	53	0.85	2,700	520	ND (0.5)	ND (0.5)	7,200	ND (1.0)	
MW-M-57	MW-M-57-0719	N		GW	7/22/2019	ND (0.5)	ND (0.5)	300	170	ND (0.5)	ND (0.5)	1,200	ND (1.0)	
MW-M-95	MW-M-95-0719	N		GW	7/22/2019	ND (0.5)	ND (0.5)	770	240	ND (0.5)	ND (0.5)	4,300	ND (1.0)	
MW-N-217	MW-N-217-0719	N		GW	7/23/2019	ND (0.5)	ND (0.5)	910	350	ND (0.5)	ND (0.5)	2,600	ND (1.0)	
MW-R-109	MW-R-109-0719	N		GW	7/23/2019	ND (0.5)	ND (0.5)	310	140	ND (0.5)	ND (0.5)	950	ND (1.0)	
MW-R-192	MW-R-192-0719	N		GW	7/23/2019	ND (0.5)	ND (0.5)	1,600	320	ND (0.5)	ND (0.5)	5,100	ND (1.0)	
MW-R-275	MW-R-275-0719	N		GW	7/23/2019	26	2.2	2,200	430	ND (0.5)	ND (0.5)	6,600	ND (1.0)	
MW-U-183	MW-U-183-0719	N		GW	7/24/2019	ND (0.5)	ND (0.5)	2,400	450	ND (0.5)	ND (0.5)	5,100	ND (1.0)	
MW-U-273	MW-U-273-0719	N		GW	7/24/2019	42	1.1	1,500	480	ND (0.5)	ND (0.5)	4,300	ND (1.0)	

<sup>=</sup> Preliminary result. Data results continued to be significantly late this quarter due to lab issues.

A	RCAD	IS	Design & Consultancy for natural and built assets		Lab Description	ASSET TPH as motor oil	ASSET Vanadium	ASSET Vanadium, dissolved	ASSET Zinc	ASSET Zinc, dissolved	BCLabs Ammonia as nitrogen
TMP 2019-07 Ba	seline Sampling				Method	SW 8015B	SW 6020	SW 6020	SW 6020	SW 6020	SM 4500-NH3 G
					Unit	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L
		Sample				<i>5.</i>	<u> </u>	<u> </u>	3.	<u> </u>	3.
Location ID	Sample ID	Type	Parent Sample	Matrix	Date Sampled						
IRZ-20-SC-49-71	IRZ-20-SC-49-71	N		GW	7/11/2019	ND (50)	6.5	6.6	40	40	ND (2.0)
MW-10D	MW-10D-0719	Ν		GW	7/24/2019		3.2	2.6	42	30	ND (2.0)
MW-B-117	MW-B-117-0719	Ν		GW	7/23/2019		ND (1.0)	ND (1.0)	ND (10)	ND (10)	ND (2.0)
MW-B-33	MW-906-Q319	FD	MW-B-33-0719	GW	7/23/2019		2.4	1.4	ND (10)	ND (10)	ND (2.0)
MW-B-33	MW-B-33-0719	N		GW	7/23/2019		2.4	1.6	ND (10)	ND (10)	ND (2.0)
MW-F-60	MW-F-60-3V-0719	Ν		GW	7/25/2019		3.4	3	ND (10)	ND (10)	ND (2.0)
MW-F-60	MW-F-60-LF-0719	Ν		GW	7/25/2019		3.3	2.2	ND (10)	ND (10)	ND (2.0)
MW-L-180	MW-907-Q319	FD	MW-L-180-0719	GW	7/25/2019		8.4	6.8	ND (10)	ND (10)	ND (2.0)
MW-L-180	MW-L-180-0719	Ν		GW	7/25/2019		8	6.7	ND (10)	ND (10)	ND (2.0)
MW-M-132	MW-M-132-0719	Ν		GW	7/22/2019		2.6	ND (1.0)	ND (10)	ND (10)	ND (2.0)
MW-M-193	MW-M-193-0719	N		GW	7/22/2019		7.7	3	18	ND (10)	ND (2.0)
MW-M-57	MW-M-57-0719	Ν		GW	7/22/2019		6.3	4.7	ND (10)	ND (10)	ND (2.0)
MW-M-95	MW-M-95-0719	Ν		GW	7/22/2019		1.3	ND (1.0)	ND (10)	ND (10)	ND (2.0)
MW-N-217	MW-N-217-0719	N		GW	7/23/2019		1.7	ND (1.0)	32	ND (10)	ND (2.0)
MW-R-109	MW-R-109-0719	N		GW	7/23/2019		2.4	2.4	ND (10)	ND (10)	ND (2.0)
MW-R-192	MW-R-192-0719	N		GW	7/23/2019		1.4	ND (1.0)	ND (10)	ND (10)	ND (2.0)
MW-R-275	MW-R-275-0719	N		GW	7/23/2019		1.4	ND (1.0)	38	12	ND (2.0)
MW-U-183	MW-U-183-0719	Ν		GW	7/24/2019		3.2	2.6	ND (10)	ND (10)	ND (2.0)
MW-U-273	MW-U-273-0719	N		GW	7/24/2019		20	14	32	ND (10)	ND (2.0)

<sup>=</sup> Preliminary result. Data results continued to be significantly late this quarter due to lab issues.

ARCADIS  Design & Consultancy for natural and built assets			Lab Description	ASSET Arsenic, dissolved	ASSET Chromium, Hexavalent	ASSET Chromium, total dissolved	ASSET Iron, dissolved	ASSET Manganese, dissolved	ASSET Molybdenum, dissolved	ASSET Nitrate/Nitrite as Nitrogen	ASSET Selenium, dissolved	ASSET Sulfate	ASSET Total organic carbon	
TMP 2019-0	TMP 2019-07 Pilot Test Location Sampling			Method	SW 6020	EPA 218.6	SW 6020	SW 6010B	SW 6020	SW 6020	SM 4500-NO3 F	SW 6020	EPA 300.0	SM 5310 C
				Unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	mg/L	mg/L
Location ID	Sample ID	Sample Type	Matrix	Date Sampled										
PT8D	PT8D-Q319	N	GW	7/24/2019	1.2	1,300	1,200	39	41	46	7.7	8.6	1,000	ND (1.0)
PT8M	PT8M-Q319	N	GW	7/24/2019	5.3	ND (0.2)	38	9,900	6,000	7	0.12	ND (0.5)	890	ND (1.0)
PT8S	PT8S-Q319	N	GW	7/24/2019	7.7	ND (0.2)	1.6	120	660	33	0.58	0.76	300	ND (1.0)
PT9D	PT9D-Q319	N	GW	7/24/2019	3.9	9,500	9,300	69	ND (0.5)	75	9.1	8.9	1,300	ND (1.0)
PT9M	PT9M-Q319	N	GW	7/24/2019	0.82	200	210	65	ND (0.5)	5	0.48	4.9	740	ND (2.0)
PT9S	PT9S-Q319	N	GW	7/24/2019	3	65	63	79	700	21	2.8	2.4	300	ND (1.0)

<sup>=</sup> Preliminary result. Data results continued to be significantly late this quarter due to lab issues.

A	RCADI	S Design for nat built as	& Consultancy ural and ssets	Lab Description	ASSET Chromium, Hexavalent	ASSET Chromium, total dissolved
TMP 2019-07 F	Post-Development Sampling	g		Method	EPA 218.6	SW 6020
				Unit	ug/L	ug/L
Location ID	Sample ID	Sample Type	Matrix	Date Sampled		
MW-O-120	MW-O-120-072319	N	GW	7/23/2019	ND (1.0)	ND (1.0)
MW-O-140	MW-O-140-071819	N	GW	7/18/2019	ND (1.0)	ND (1.0)
MW-O-30	MW-O-30-071719	N	GW	7/17/2019	ND (0.2)	ND (1.0)
MW-O-66	MW-O-66-071519	N	GW	7/15/2019	ND (0.2)	ND (1.0)
MW-R-139	MW-R-139-071319	N	GW	7/13/2019	ND (0.2)	ND (1.0)
MW-R-192	MW-R-192-070219	N	GW	7/2/2019	ND (0.2)	ND (1.0)
MW-R-275	MW-R-275-070919	N	GW	7/9/2019	ND (1.0)	ND (1.0)

<sup>=</sup> Preliminary result. Data results continued to be significantly late this quarter due to lab issues.