



*Pacific Gas
and
Electric
Company*

John Glass
Pacific Gas and Electric Co
Program Manager

300 Lakeside Drive
Oakland, CA 94612
(628) 219-4369
f2g5@pge.com

December 14, 2023

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

Subject: *Third Quarter 2023 Well Performance Report, PG&E Topock Compressor Station, Needles, California (PGE20180115A)*

Dear Mr. Yue:

Enclosed is the Third Quarter 2023 Well Performance Report for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station located in Needles, California (the Site). In December 2021, startup began for Phase 1 of the groundwater remedy system, including start of National Trails Highway in-situ reactive zone (IRZ) system operation, maintenance, and monitoring to address hexavalent chromium in groundwater. Operation of the IRZ injection and extraction wells using Topock Compressor Station (TCS) power continued in Third Quarter 2023.

In accordance with the reporting requirements outlined in the Basis of Design Report/Final (100%) Design Submittal, this well performance report presents an overview of the groundwater remedy and well maintenance objectives; a summary of Third Quarter 2023 well operations, maintenance, and performance monitoring activities; and recommendations and planned activities for the next reporting period.

Please contact me at (628) 219-4369 if you have any questions about the well performance report.

Sincerely,

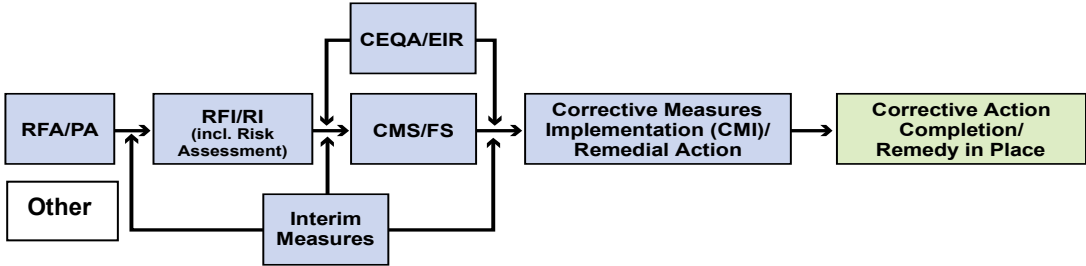
A handwritten signature in black ink, appearing to read 'John Glass'.

John Glass
Pacific Gas and Electric Co
Program Manager

Cc: Chris Guerre/DTSC
Veronica Dickerson/DOI
Ken Foster/CA-SLC
Bruce Campbell/AZ-SLD

Topock Project Executive Abstract

Document Title:	Third Quarter 2023 Well Performance Report, PG&E Topock Compressor Station, Needles CA
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Is this a regulatory requirement?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, why is the document needed?
What is the consequence of NOT doing this item? What is the consequence of DOING this item?	Submittal of this report is a compliance requirement under DTSC and DOI requirements.
Other Justification/s:	<input type="checkbox"/> Permit <input type="checkbox"/> Other / Explain:
Brief Summary of Attached Document:	In December 2021, startup began for Phase 1 of the groundwater remedy system, including start of National Trails Highway in-situ reactive zone (IRZ) system operation, maintenance, and monitoring to address hexavalent chromium in groundwater. Operation of the IRZ injection and extraction wells using Topock Compressor Station (TCS) power continued in Third Quarter 2023. In accordance with the reporting requirements outlined in the Basis of Design Report/Final (100%) Design Submittal, this well performance report presents an overview of the groundwater remedy and well maintenance objectives; a summary of Third Quarter 2023 well operations, maintenance, and performance monitoring activities; and recommendations and planned activities for the next reporting period. Written by: PG&E
Recommendations:	None.
How is this information related to the Final Remedy or Regulatory Requirements?:	This report is required by DTSC and DOI as part of the Basis of Design Report/Final (100%) Design Submittal for the Final Groundwater Remedy.

Other requirements of this information?:	None.
Related Reports and Documents:	<p>Click any boxes in the Regulatory Road Map (below) to be linked to the Documents Library on the DTSC Topock Web Site (www.dtsc-topock.com).</p>  <pre> graph LR RFA[RFA/PA] --> RFI[RFI/RI (incl. Risk Assessment)] Other[Other] --> RFI RFI --> CEQA[CEQA/EIR] RFI --> CMS[CMS/FS] CEQA --> CMS CMS --> CMI[Corrective Measures Implementation (CMI)/ Remedial Action] Interim[Interim Measures] --> CMS CMI --> CAP[Corrective Action Completion/ Remedy in Place] </pre> <p>Legend RFA/PA – RCRA Facility Assessment/Preliminary Assessment RFI/RI – RCRA Facility Investigation/CERCLA Remedial Investigation (including Risk Assessment) CMS/FS – RCRA Corrective Measure Study/CERCLA Feasibility Study CEQA/EIR – California Environmental Quality Act/Environmental Impact Report</p>

Version 9

Pacific Gas and Electric Company

Third Quarter 2023 Well Performance Report

**Topock Compressor Station
Needles, California**

December 14, 2023

Third Quarter 2023 Well Performance Report

Topock Compressor Station

Needles, California

December 14, 2023

Prepared By:

Arcadis U.S., Inc.
100 Montgomery Street
Suite 300
San Francisco
California 94104
Phone: 415 374 2744
Fax: 415 374 2745

Our Ref:

30121866

This report was prepared under the supervision of a California Professional Engineer.



Kimberly Wojcik
Arcadis Report Lead



Margaret Gentile, PhD, PE No. 77488
Principal Engineer



Treck Hohman
Arcadis Project Manager

Contents

Acronyms and Abbreviations..... iv

1 Introduction..... 1

2 NTH IRZ Well Maintenance Program 3

2.1 Routine Maintenance..... 3

2.2 Long-Term Performance Tracking..... 3

2.2.1 Specific Capacity Monitoring 4

2.2.2 Water Quality Monitoring 6

3 NTH IRZ Well Performance 7

3.1 System Operation Summary 7

3.2 NTH IRZ Extraction Well Performance 8

3.2.1 Extraction Well O&M and Specific Capacity Summary 9

3.2.2 Extraction Well Water Quality 9

3.3 NTH IRZ Injection Well Performance 11

3.3.1 Injection Well O&M and Specific Capacity Summary 11

3.3.2 Well Rehabilitation Procedure..... 13

3.3.3 Injection Well Water Quality 13

4 Monitoring Well Performance..... 15

4.1 Wellhead Condition 15

4.2 Turbidity..... 15

4.3 Depth to Well Bottom 15

4.4 Specific Capacity 16

5 Recommendations and Planned Activities for Next Reporting Period..... 17

6 References 18

Exhibits (in text)

- Exhibit 2.1 Routine Maintenance Matrix for Injection and Extraction Wells
- Exhibit 2.2 Performance Monitoring Frequencies
- Exhibit 3.1 Third Quarter 2023 NTH IRZ Extraction Well Analytical Results

Tables

Table 3.1	Summary of NTH IRZ Well Operations
Table 3.2	NTH IRZ System Operations and Non-Routine Maintenance Log
Table 3.3	Summary of NTH IRZ Well Specific Capacities
Table 3.4	Third Quarter 2023 Water Quality Field Parameters
Table 4.1	Monitoring Well Inspection Results
Table 4.2	Monitoring Well Water Levels and Specific Capacities

Figures

Figure 1.1	Partial Remedy System Layout
Figure 3.1	Extraction Well Specific Capacity Trends
Figure 3.2	Injection Well Specific Capacity Trends Part 1
Figure 3.3	Injection Well Specific Capacity Trends Part 2
Figure 3.4	Injection Well Specific Capacity Trends Part 3
Figure 4.1	Monitoring Well Network

Acronyms and Abbreviations

Agencies	U.S. Department of the Interior and the California Department of Toxic Substances Control
CH2M Hill	CH2M Hill, Inc.
Cr6	hexavalent chromium
DOI	U.S. Department of the Interior
DTSC	California Department of Toxic Substances Control
Final BOD	Basis of Design Report/Final (100%) Design Submittal and Construction/Remedial Action Work Plan for the Final Groundwater Remedy
gpm	gallons per minute
IRZ	in-situ reactive zone
mg/L	milligrams per liter
NTH	National Trails Highway
NTU	nephelometric turbidity unit
O&M	operation and maintenance
PG&E	Pacific Gas and Electric Company
SCADA	supervisory control and data acquisition
Site	PG&E Topock Compressor Station, located in eastern San Bernardino County, 15 miles southeast of the City of Needles, California
TCS	Topock Compressor Station
TOC	total organic carbon

1 Introduction

Pacific Gas and Electric Company (PG&E) is implementing a final groundwater remedy to address hexavalent chromium (Cr6) 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 Site). PG&E is implementing the groundwater remedy at the TCS in conformance with the requirements of the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act. The U.S. Department of the Interior (DOI) and the California Department of Toxic Substances Control (DTSC), collectively known as the Agencies, executed a Memorandum of Understanding on November 22, 2011, which established coordination guidelines for overseeing implementation of a groundwater response action at the TCS (DTSC and DOI 2011). In a coordinated effort, the Agencies selected the final groundwater remedy to address chromium in groundwater, which is presented in the Record of Decision (DOI 2010).

In November 2015, PG&E submitted a Basis of Design Report/Final (100%) Design Submittal (Final BOD), which presents the final design basis, design criteria, drawings, specifications, and operation and maintenance (O&M) requirements for the groundwater remedy (CH2M Hill, Inc. [CH2M Hill] 2015a). The infrastructure for the groundwater remedy is being constructed following the plans and procedures documented in the Construction/Remedial Action Work Plan (CH2M Hill 2015b). Construction and startup of the groundwater remedy is proceeding in phases.

Construction of Phase 1 began in October 2018 and was completed in December 2021 sufficient for initial system startup. The design was modified during construction to accommodate conditions encountered including a plume footprint smaller than that documented in the Final BOD (CH2M Hill 2015a). As a result, the National Trails Highway (NTH) in-situ reactive zone (IRZ) system was installed with 10 fewer wells than planned in the Final BOD, with these 10 wells being deferred from Phase 1 to Phase 2 of construction.

The NTH IRZ is a recirculation system in which water is extracted from up to four NTH IRZ extraction wells, amended with carbon substrate, and injected into up to 25 NTH IRZ injection intervals. In wells with triple screens (IRZ-25 and IRZ-27), two of the three well screens are combined into single intervals by packers. The NTH IRZ extraction wells include IRZ-9, IRZ-13S, IRZ-13D, and IRZ-23.

Injection well intervals include IRZ-15 (upper), IRZ-15 (lower), IRZ-16 (upper), IRZ-16 (lower), IRZ-17 (upper), IRZ-17 (lower), IRZ-18 (upper), IRZ-18 (lower), IRZ-20 (upper), IRZ-20 (lower), IRZ-21 (upper), IRZ-21 (lower), IRZ-25 (upper/upper middle), IRZ-25 (lower), IRZ-27 (upper/upper middle), IRZ-27 (lower), IRZ-29 (upper), IRZ-29 (lower), IRZ-31 (upper), IRZ-31 (lower), IRZ-33 (upper), IRZ-33 (lower), IRZ-35, IRZ-37, and IRZ-39.

A site layout, including locations of the extraction wells, the remedy-produced water conditioning system, and the carbon amendment system, is shown on Figure 1.1.

In December 2021, startup began for Phase 1 of the groundwater remedy system including the start of NTH IRZ system operation, maintenance, and monitoring. O&M are being performed in accordance with the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a). This report documents well maintenance and well performance from July 1 to September 30, 2023 (the Third Quarter 2023). The remainder of this report is organized into the following sections:

- Section 2 provides an overview of the well maintenance program.
- Section 3 summarizes the well performance and maintenance for the NTH IRZ remedial wells.

Third Quarter 2023 Well Performance Report

- Section 4 summarizes monitoring well performance.
- Section 5 provides recommendations for modifications to the well maintenance program and planned activities for the next reporting period.
- Section 6 provides the references for the documents cited throughout this report.

2 NTH IRZ Well Maintenance Program

The well maintenance program consists of routine maintenance and performance tracking including tracking well performance over time, collecting analytical data, and inspecting wells to evaluate well integrity over time. This section summarizes these activities.

2.1 Routine Maintenance

Well maintenance is incorporated into the routine operations of the NTH IRZ. Exhibit 2.1 in this section summarizes the initially planned maintenance for NTH IRZ wells. Injection wells are prone to fouling, as the injection of organic carbon stimulates the growth of bacteria, generation of gases such as carbon dioxide, and formation of mineral precipitates. To mitigate fouling resulting from these processes, routine maintenance plans include backwashing and mechanical and chemical rehabilitation. Injection wells are backwashed by extracting groundwater for a short period using a downhole pump to loosen and remove sediments and deposits present on the well screen or in the filter pack. Backwashing of injection wells was initially planned to occur weekly during operations. Mechanical rehabilitation physically agitates and removes dislodged and detached deposits. Chemical rehabilitation uses additives to remove deposits (for example, by increasing solubility). Mechanical and chemical rehabilitation was planned to occur after periods of extended injection well operation and before planned extended downtime (approximately every 6 months to 1.5 years). The frequencies of injection well rehabilitation initially planned are presented in Exhibit 2.1 in this section but frequency or manner of application may change in response to well performance monitoring data as detailed in Section 2.2. Extraction wells are less prone to fouling and, as such, the frequency of routine rehabilitation is significantly less than for the injection wells. The O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a) recommended mechanical rehabilitation (i.e., pumping and surging) for routine maintenance as needed. Chemical rehabilitation may be warranted in some cases.

Exhibit 2.1 Routine Maintenance Matrix for Injection and Extraction Wells

Injection Well Backwashing Frequency	Injection Well Chemical/Mechanical Rehabilitation Frequency	Extraction Well Mechanical Rehabilitation Frequency
Weekly	6 months to 1.5 years	As needed

2.2 Long-Term Performance Tracking

The purpose of well performance tracking is to assess the frequency and methods required for well maintenance, report well performance trends, and identify potential performance declines within the IRZ system and monitoring wells. Routine preventative maintenance is performed regularly to aid in maintaining well health as described in Section 2.1. Long-term performance monitoring consists of specific capacity monitoring, water quality monitoring, and wellhead inspection. Exhibit 2.2 in this section presents the planned frequency of these activities, and specific capacity and water quality monitoring are detailed in the following subsections.

Exhibit 2.2. Performance Monitoring Frequencies

Performance Monitoring Activity	Injection Wells	Extraction Wells
Specific capacity evaluation	Monthly	Monthly
Water quality monitoring	Baseline, then as needed	Baseline, as well as the following: Monthly total organic carbon (TOC), manganese, iron, and field parameter screening in 2022 and First and Second Quarter 2023, then quarterly for the remainder of 2023, then annually or as needed thereafter. Annual or as needed biological and geochemical sampling. Annual or as needed biological activity tests, sand content tests, and modified fouling index tests.
Wellhead inspection	Quarterly	Quarterly

Notes:

1. Field parameter screening includes temperature, pH, specific conductance, turbidity, dissolved oxygen, and oxidation reduction potential.
2. Biological and geochemical sampling parameters for extraction wells include TOC, total dissolved solids, iron and manganese (total and dissolved), calcium, potassium, magnesium, sodium (total), chloride, fluoride, bromide, nitrate, nitrite, sulfate, alkalinity (total, carbonate, and bicarbonate), and hardness as calcium carbonate. Parameters measured during baseline only include Title 22 metals (total and dissolved), sulfide, phosphate, total phosphorus, silica, ammonia as nitrogen, total Kjeldahl nitrogen, and biochemical oxygen demand.

2.2.1 Specific Capacity Monitoring

One measure that will be used to assess well performance is a specific capacity evaluation. The specific capacity for each extraction, injection, and monitoring well is determined by the rate of extraction or injection per unit of drawdown or draw-up in the well. Mathematically, this is calculated using the following equation:

$$\text{Specific Capacity} \left(\frac{\text{gpm}}{\text{ft}} \right) = \frac{\text{discharge rate (gpm)}}{\text{operating water level (ft)} - \text{static water level (ft)}}$$

Where:

ft = foot/feet

gpm = gallons per minute

As discussed in the First Quarter 2022 Well Performance Report (Arcadis 2022a), baseline specific capacities are determined for each extraction and injection well once the wells are operating consistently and the flowrates and

water levels stabilize. Baseline capacities were established in Second Quarter 2022 for wells that operated continuously for most of the quarter including IRZ-13S, IRZ-13D, IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-23, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37 (Arcadis 2022b, 2022c). Baseline capacities were modified in Third Quarter 2022 for extraction wells IRZ-13S, IRZ-13D, and IRZ-23 as explained below. Extraction well IRZ-9 and injection wells IRZ-21 and IRZ-25 did not operate continuously in 2022 or in the First and Second Quarters of 2023; therefore, sufficient data were not available to establish baselines for these wells. IRZ-39 operated for most of First Quarter 2023; however, IRZ-39 flowrates were low and unsustainable. IRZ-39 is not currently needed for treatment based on Cr6 concentrations at nearby performance monitoring wells, as discussed in the First Quarter 2023 Quarterly Progress Report (Arcadis 2023a), and so this well remained offline following the mid-March 2023 storm through Third Quarter 2023. Baseline capacities were established for IRZ-15 (upper) and IRZ-15 (lower) in Second Quarter 2023 and Third Quarter 2023, respectively, following continuous operation at these intervals at their target flowrates for an extended period of time.

Monthly average specific capacities are provided in Table 3.3. Static water levels were collected for each injection and extraction well during well development. There is a natural variation in static water level depending on the time of year. To account for this natural variation, the static water levels collected before system operation were adjusted by the typically observed difference in water levels at time of development and in January, which is the month in which water levels are at their lowest at the Site. Continuous operation of the NTH IRZ began on March 10, 2022; however, there were several system shutdowns associated with a storm event, transformer repairs, and TCS turning off power to the remedy based on station activities. The system was on with minimal interruption from May 20 through June 27, 2022, during which, the operating injection and extraction wells equilibrated. Accordingly, the equilibrated data from June were averaged and are being used as baseline and a reference point for comparison of future data to evaluate well performance. Specific capacity values may be affected by planned IRZ operational changes such as setting a new target flowrate. Where this occurs, baseline specific capacity values may be adjusted.

In June 2022, little to no drawdown was observed at extraction wells IRZ-13S, IRZ-13D, and IRZ-23 due to operating at lower flowrates and natural variations in static water level based on time of year. This led to elevated extraction well specific capacity values that were not representative of routine operating conditions. Once extraction well flowrates were increased on June 15, 2022, drawdown was observed, and extraction well specific capacities stabilized at lower values. Therefore, baseline specific capacities were modified for extraction wells IRZ-13S, IRZ-13D, and IRZ-23 using data from July 2022, when the wells were consistently operating at the established target flowrates.

Starting in Third Quarter 2022, specific capacities for each well were calculated monthly and compared to the baseline values to assess well performance decline over time. As presented in the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a), specific capacities greater than or equal to 90 percent of the baseline capacities will be classified as having good performance; specific capacities that fall between 80 and 90 percent of the baseline capacities will be classified as having fair performance; specific capacities below 80 percent of the baseline capacities will be classified as having poor performance. Specific capacities that fall below 80 percent of the baseline capacities will be flagged as needing evaluation and potential additional maintenance such as increasing the frequency of backwashing or rehabilitation. Specific capacity data collected during operations are presented in Section 3.

2.2.2 Water Quality Monitoring

Water quality monitoring, including field parameter collection and sampling, provides information on system status, which may help diagnose well clogging issues and provide information for designing corrective measures. Baseline water quality sampling included biological, geochemical, and field parameters as specified in Exhibits 4.1-1 and 4.1-2 of the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a). Additionally, extraction wells were sampled quarterly during the Third Quarter 2023 as stated in Exhibit 2.2 and in alignment with expectations in the O&M Manual (Appendix L, Volumes 1 and 2; CH2M Hill 2015a) for extraction of constituents associated with in-situ injections including TOC and dissolved metals. Samples were collected and analyzed according to standard operating procedures presented in Appendix B to the Phase 1 Interim Monitoring Plan (Arcadis 2021) and the PG&E Program Quality Assurance Project Plan (CH2M Hill 2014; Critigen 2020). Sample results are discussed in Sections 3.2.2 and 3.3.2 of this report.

3 NTH IRZ Well Performance

This section summarizes NTH IRZ system operational changes, well specific capacities, and water quality monitoring that occurred during the Third Quarter 2023.

3.1 System Operation Summary

Throughout Third Quarter 2023, operation of the IRZ system continued. IRZ wells operating at the beginning of the quarter included extraction well IRZ-23 and injection wells IRZ-15, IRZ-16, IRZ-17, IRZ-18, IRZ -20, and IRZ-27. The remaining southern IRZ injection wells that had been operating at the time of the March 15, 2023 storm (injection wells IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37) remained offline due to storm damage. In early July 2023, the southern IRZ injection well system was repaired and modified to move electrical equipment above ground from the vaults prone to water damage from storm events. Following repairs and upgrades, the southern injection wells were re-started in mid-July 2023. Injection well IRZ-33 (lower) remained offline to minimize mounding that may have caused increased Cr6 concentrations at MW-39-100 by concurrent operations of IRZ-33, IRZ-35, and IRZ-37 lower injection wells. As the southern injection wells were returned to operation, the northern upper injection wells were temporarily shut down to focus treatment on the southern portion of the plume.

Following the significant increase of Cr6 concentrations at MW-39-100 in May 2023, the target extraction rate of IRZ-23 was increased to approximately 70 gallons per minute (gpm) in late May 2023 to mitigate potential migration of Cr6 within this part of the floodplain. To further improve hydraulic control of the Cr6 plume and limit potential eastward migration, PG&E is planning to begin groundwater extraction from PTI-1D in Fourth Quarter 2023. As a back-up option to extraction at PTI-1D, PG&E upgraded IRZ-23 on September 15, 2023 to allow for increased extraction. In the second half of September 2023, IRZ-23 was operating at rates between 120 to 130 gpm. IRZ-33 (lower) was restarted in mid-September 2023 following the extraction well upgrades at IRZ-23. System runtime, ethanol, and recirculated groundwater injection volumes and flowrates, and average flowrates, are summarized in Table 3.1. An IRZ system operations and non-routine maintenance log is presented as Table 3.2. Further discussion regarding Cr6 concentrations is provided in the Third Quarter 2023 Quarterly Progress Report (Arcadis 2023b).

Average systemwide uptime was 85 percent in Third Quarter 2023¹. The following notable events occurred in Third Quarter 2023:

- Injection wells IRZ-16 (upper), IRZ-17 (upper), IRZ-18 (upper), and IRZ-20 (upper) were shut down by July 10, 2023 and remained offline until September 15, 2023. These wells were shut down as the southern injection wells returned to operation to focus treatment on the southern portion of the plume. Northern shallow wells had been operating for approximately 16 months to build reducing capacity so that they could be rotated while maintaining treatment and to minimize fouling by operation when not needed. Second Quarter 2023 sample results indicated that treatment objectives were met in the northern upper intervals, and further ethanol injection was not needed at this time.

¹ Systemwide uptime is calculated using total run time hours (run time in hours are calculated from extraction well operating hours during the month) divided by total possible run time hours in Third Quarter 2023.

- Extraction wells IRZ-13S and IRZ-13D operated intermittently during Third Quarter 2023 to provide additional extraction capacity as southern injection wells returned to operation. Extraction wells IRZ-13S and IRZ-13D were shut down on September 15, 2023 when extraction well IRZ-23 began operating at a higher rate.
- On July 20, 2023, the ethanol pump hose in the Carbon Amendment Building failed, triggering a low ethanol level alarm. A replacement hose was installed, and the IRZ system was restarted following approximately 11 hours of downtime.
- Between August 7 and August 15, 2023, the IRZ system was offline due to a planned shutdown for Phase 2A construction tie-in work at the Carbon Amendment Building.
- Starting on August 17, 2023, ethanol dosing frequency was reduced from twice weekly to once weekly to manage water levels and improve specific capacity trends of injection wells. The ethanol dose per week was approximately 26 milligrams per liter (mg/L) TOC time-weighted target average. Ethanol dosing frequency will return to twice weekly once the southern injection wells exhibiting reduced performance have been rehabilitated and/or the wells return to target flowrates. The northern injection wells will continue to be dosed one time per week.
- On August 18, 2023, a significant rain event caused a 40-hour IRZ system shutdown. Injection well vaults IRZ-25, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37 were flooded, but electrical equipment remained in good condition. IRZ system restart was delayed due to supervisory control and data acquisition (SCADA) communication errors that resulted from the unexpected power loss. The SCADA system was rebooted, power was restored, and the system restarted on August 20, 2023.
- Between September 5 and September 14, 2023, extraction well IRZ-23 infrastructure was modified to increase pumping capacity and achieve higher extraction flowrates in the floodplain where Cr6 concentrations had increased at wells including MW-39-100, PT-5D, and MW-44-115. Modifications included upsizing the pump and flowmeter. All operating southern injection wells (IRZ-27, IRZ-29, IRZ-31, IRZ-33 [upper], IRZ-35, and IRZ-37) were shut down while IRZ-23 was offline. During this period, extraction wells IRZ-13S and IRZ-13D operated with injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), and IRZ-20 (lower).
- Chemical and mechanical well rehabilitation of the operating southern IRZ injection wells (IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37) was conducted in Third Quarter 2023. Chemical application at the wellhead was also trialed at injection wells IRZ-31 and IRZ-37 during Third Quarter 2023. Further discussion regarding well performance, rehabilitation, and well maintenance results is provided in Section 3.3.

3.2 NTH IRZ Extraction Well Performance

Extraction wells in Phase 1 of the groundwater remedy include IRZ-9, IRZ-13S, IRZ-13D, and IRZ-23. Extraction well run time, including monthly average extraction well flowrates and average water levels, is documented in Table 3.1. A discussion of observed extraction well performance in Third Quarter 2023 is provided in the following subsections.

3.2.1 Extraction Well O&M and Specific Capacity Summary

As described in Section 2.2.1 of this report, average specific capacities from July 2022 were established as the baseline specific capacities for extraction wells IRZ-23, IRZ-13S, and IRZ-13D. A baseline specific capacity has not been established for extraction well IRZ-9 due to limited and inconsistent operation during 2022 and 2023.

Extraction well specific capacities calculated during Third Quarter 2023 are documented in Table 3.3. Graphs of average daily specific capacity for extraction wells IRZ-13S, IRZ-13D, and IRZ-23 during this period are presented on Figure 3.1. Average daily specific capacities are presented as percentages compared to the baseline specific capacities for each well. Extraction well IRZ-23 operated throughout most of Third Quarter 2023. Extraction well IRZ-13D was off for the beginning of Third Quarter 2023 until July 5, 2023 to balance reduced injection flowrates due to storm damage. Extraction well IRZ-13S was brought online July 13, 2023 to accommodate increased injection flowrates from southern injection wells returning to operation. In Third Quarter 2023, IRZ-13S, IRZ-13D, and IRZ-23 all operated below 80 percent baseline capacity when operating in July 2023. However, specific capacity for extraction well IRZ-23 improved to above 90 percent baseline by the end of August 2023, and specific capacity for extraction well IRZ-13D improved to above 90 percent baseline capacity by the end of September 2023. IRZ-23 infrastructure underwent modifications in September 2023 to increase pumping capacity, resulting in further increased specific capacity observed at this well at the end of September 2023. The low specific capacities at IRZ-13S reflect the low target flowrates and do not indicate fouling. Increased target flowrates at IRZ-13D and IRZ-23 resulted in improved specific capacities.

In accordance with the Final BOD (CH2M Hill 2015a), routine maintenance of extraction wells could include pump-and-surge redevelopment as needed. No routine maintenance was performed on the extraction wells in Third Quarter 2023.

Extraction wells are inspected quarterly at minimum for visible leaks and damage. Any notable damage or equipment needing replacement is identified in Table 3.2. Leak detection switches within the vaults are also used as an additional measure to identify maintenance needs in a timely manner. Notable damage to extraction wells and/or non-routine maintenance during Third Quarter 2023 included the following:

- Between September 5 and September 14, 2023, extraction well IRZ-23 was shut down while undergoing well infrastructure modifications to increase pumping capacity and achieve higher flowrates. Modifications included upsizing the pump and flowmeter. Extraction well IRZ-23 returned to operation on September 15, 2023 and operated at target flowrates between 110 and 140 gallons per minute for the remainder of the month.
- On September 21, 2023, minor leaks were identified in the IRZ-23 vault piping, and the IRZ system was shut down for approximately 4 hours to make repairs. The piping was tightened and/or reinstalled until leaks were verified to be absent.

3.2.2 Extraction Well Water Quality

The potential for extraction well fouling resulting from carbon injection is monitored during system operations. This monitoring includes measuring TOC and metal byproduct concentrations at the extraction wells for conditions that may generate well fouling. The Third Quarter 2023 Quarterly Progress Report (Arcadis 2023b) provides the extraction well monitoring analytical results; however, the results are also summarized and discussed herein.

Baseline analytical data for extraction wells is provided in Table 3.4 of the First Quarter 2022 Well Performance Report (Arcadis 2022a). Baseline analytical data were collected during December 2021, January 2022, and March 2022, when extraction wells were respectively brought online.

Exhibit 3.1 in this section presents the quarterly analytical results from extraction wells IRZ-9, IRZ-23, IRZ-13S, and IRZ-13D for Third Quarter 2023 and includes the baseline analytical results of key indicator parameters as a reference. The extraction wells were sampled in August 2023 (quarterly); however, IRZ-13S and IRZ-13D were also sampled in July 2023 to evaluate the influence of active IRZ operations at IRZ-15 on these extraction wells. Extraction well IRZ-9 was not operated in Third Quarter 2023, except during a 4-hour pump test conducted in September 2023. TOC, total iron, dissolved iron, and dissolved manganese concentrations were generally lower than the reporting limits and baseline concentrations, with a few isolated exceptions. The isolated detections do not indicate a consistent trend that would be of concern for causing well fouling. Therefore, no adjustments to operations were needed in Third Quarter 2023.

Exhibit 3.1. Third Quarter 2023 NTH IRZ Extraction Well Analytical Results

Extraction Well	Sample Date	Active Time Operating (percent)	Total Organic Carbon Method 5310B (mg/L)	Total Iron (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
IRZ-9	Baseline: January 2022	9	--	Less than 0.02	Less than 0.02	0.0027
IRZ-9	August 2023	0	0.36	0.84	0.065	0.00093
IRZ-23	Baseline: December 2021	8	--	0.69	0.091 J	Less than 0.0005
IRZ-23	August 2023	68	0.63	Less than 0.02	Less than 0.02	Less than 0.0005
IRZ-13S	Baseline: March 2022	53	--	0.06	Less than 0.02	Less than 0.0005
IRZ-13S	July 2023	43	1.5	0.12 J	Less than 0.1	Less than 0.0005
IRZ-13S	August 2023	42	0.48	Less than 0.02	Less than 0.02	Less than 0.0005
IRZ-13D	Baseline: March 2022	53	--	Less than 0.02	0.059	0.062
IRZ-13D	July 2023	82	1.4	Less than 0.1	Less than 0.1	Less than 0.0005
IRZ-13D	August 2023	68	0.35	Less than 0.02	Less than 0.02	Less than 0.0005

Notes:

--= not analyzed

J = estimated concentration

Table 3.4 includes field parameter data for extraction wells IRZ-13S, IRZ-13D, and IRZ-23 collected during Third Quarter 2023. Field parameter data collected include temperature, pH, specific conductance, turbidity, dissolved oxygen, and redox potential.

3.3 NTH IRZ Injection Well Performance

Injection wells of the Phase 1 groundwater remedy include IRZ-15, IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-21, IRZ-25, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, and IRZ-39. Injection well run time, including average well flowrates and average water levels, is documented in Table 3.1. A discussion of observed injection well performance in Third Quarter 2023 is provided in the following subsections.

3.3.1 Injection Well O&M and Specific Capacity Summary

Injection wells IRZ-21, IRZ-25, and IRZ-39 remained offline during Third Quarter 2023. Injection wells IRZ-15, IRZ-16, IRZ-17, IRZ-18, IRZ-20, and IRZ-27 operated throughout the quarter. IRZ-29, IRZ-31, IRZ-33 (upper), IRZ-35, and IRZ-37 began operation by mid-July 2023 and operated for the remainder of the quarter. IRZ-33 (lower) began operation in late September 2023 following the extraction well upgrades at IRZ-23 and operated for the remainder of the quarter. Operating periods of each injection well are provided in Table 3.2. Routine injection well maintenance during Third Quarter 2023 included backwashing of injection wells during system operation, as detailed in Table 3.2. Each operating injection well was backwashed to remove solids that may have accumulated in the well screen and gravel pack during injections. Backwashing occurred three times weekly to proactively manage the well health and water levels at injection wells.

Routine operation for injection wells includes daily monitoring of injection well flowrates and water levels. Corresponding injection well average monthly specific capacities, calculated from Third Quarter 2023 operational data, are documented in Table 3.3. Graphs of average daily specific capacities for injection wells operating from Third Quarter 2022 through Third Quarter 2023 are plotted on Figures 3.2 through 3.4. Average specific capacities are plotted as percentage values compared to the baseline specific capacities established in Second Quarter 2022. Values between 80 and 90 percent are considered fair and indicate that backwashing frequency should increase to once every 0.75 week. Values below 80 percent are considered poor and indicate that backwashing frequency should increase or additional well maintenance should be considered to manage fouling.

Well performance and specific capacity data and modifications to maintenance based on specific capacity performance are documented in Table 3.3. A baseline specific capacity was established for IRZ-15 (lower) in July 2023 following 3 months of sustained operation. Additional data evaluation and establishment of baseline specific capacities for the remaining injection wells (IRZ-21, IRZ-25, and IRZ-39) will occur once those wells have been operating continuously and specific capacities stabilize. Many wells exhibited poor well performance during Third Quarter 2023. Backwashing three times weekly sustained good well performance. The northern lower injection well specific capacities remained stable or improved during Third Quarter 2023 as the seasonal river stage began to decline. Specific capacities at the southern injection wells improved following Second Quarter 2023 rehabilitation, but then deteriorated, with a few exceptions at which the capacity stabilized or improved in August and September 2023 (IRZ-29, IRZ-31, IRZ-35, and IRZ-37). Refer to Table 3.3 for more information. As shown on Figure 3.1, the northern upper injection wells were offline for a majority of Third Quarter 2023 and returned to operation in late September 2023.

A third round of mechanical and chemical rehabilitation (with a modified procedure) was initiated to manage well fouling began for operating southern injection wells (IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37) during Third Quarter 2023 and is scheduled to continue in Fourth Quarter 2023. Rehabilitation was conducted following approximately 2 to 3 months of operation after the second round of rehabilitation. As discussed in the Second Quarter 2023 Well Performance Report (Arcadis 2023c), the well rehabilitation procedure was adjusted during the

second rehabilitation event in an attempt to improve performance. Mechanical cleaning of the well included using a double-surge block, and chemicals sat in the well for a minimum of 5 days to allow time for mineral and biofilm dissolution. Additionally, the percentage of acid included in the dose was increased from 25 to 35 percent to 50 percent. Well performance in Third Quarter 2023 indicated that this updated procedure was not effective at prolonging well health, as the wells began to foul after a month of operation following rehabilitation. A review of the well procedure, analytical results, and downhole camera surveys previously conducted in IRZ-16 and IRZ-18 suggests that the rehabilitation procedure was effective at removing fouling in the well casing and ineffective at removing fouling occurring in the filter pack. To manage filter pack fouling, a jetting procedure was added to the Third Quarter 2023 Well Rehabilitation Procedure, as discussed further in Section 3.3.2.

On September 11, 2023 and September 28, 2023, injection wells IRZ-31 and IRZ-29, respectively, were dosed with rehabilitation chemicals at the wellhead to determine if additional well maintenance conducted routinely at the wellhead will extend the timing between rehabilitation events and prolong well performance. The procedure used is described in Section 3.3.3. Performance at these injection wells will continue to be monitored in Fourth Quarter 2023 to determine if the well maintenance procedure was effective.

The northern injection wells were not rehabilitated in Second Quarter 2023 in order to maximize extraction at IRZ-23 when the southern injection wells were offline due to storm damage. As documented in Table 3.3, performance was better in the lower screens than in the upper screens for IRZ-16, IRZ-17, IRZ-18, and IRZ-20. In the lower screens, specific capacity was improving or stable in Second Quarter 2023 as three times a week backwashing was implemented. As noted above, specific capacity in upper screen intervals decreased as water levels rose in the spring with seasonal high river stage, and flowrates were reduced to manage water levels and pressure on well screens to prevent damage. Sampling results discussed in the Second Quarter 2023 Quarterly Progress Report indicate that treatment was observed in the northern area of the plume despite the lower IRZ flowrates. The northern upper injection well intervals were shut down in early July 2023 once the remaining southern injection wells were brought online, as they were not needed for treatment. Well maintenance for the northern injection wells will be revisited in Fourth Quarter 2023 because the wells returned to operation in late September 2023.

Injection wells are inspected quarterly at minimum for visible leaks and damage. Any notable damage or equipment needing replacement is identified in Table 3.2. Leak detection switches within the vaults are also used as an additional measure to identify maintenance needs in a timely manner. Notable damage to injection wells and/or non-routine maintenance during Third Quarter 2023 included the following:

- On March 15, 2023, a significant rain and hail event (larger than previous storms of the quarter) damaged electrical equipment in injection well vaults IRZ-18, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, and IRZ-39. Programming and electrical equipment replacement of damaged components continued in Third Quarter 2023, and the injection wells returned to operation by mid-July 2023. Injection well IRZ-39 will remain offline until further notice as it is not currently needed for treatment.
- On August 7, 2023, a check valve failed in the injection well IRZ-18 (lower) vault, resulting in flooding of the IRZ-18 vault. Water was pumped out of the well vault and transferred to the backwash tank, and the check valve was replaced. Electrical equipment was not damaged.
- On September 29, 2023, the sump pump check valve leaked in the injection well IRZ-18 vault, resulting in partial flooding of the IRZ-18 vault sump. Water was pumped out of the well vault and transferred to the backwash tank. The check valve was cleaned and tightened to prevent leaking. Electrical equipment was not damaged.

3.3.2 Well Rehabilitation Procedure

Well rehabilitation was performed on injection wells IRZ-27 and IRZ-18 in Third Quarter 2023 and is scheduled to occur in the remaining southern injection wells (IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37) in Fourth Quarter 2023.

Rehabilitation for each well involved the following process:

- Confirm injection well is offline.
- Open well vault and begin continuous air monitoring.
- Remove downhole equipment, including packer (if applicable), drop pipe, and pump(s), from injection well. Inspect equipment during removal for corrosion, damage, deposits, and/or odor. Brush, clean, and/or pressure-wash equipment if needed.
- Mechanically clean the well casing and screen section(s) using a double-surge block.
- Jet mixed well chemical solution down the well using a jetting tool, first into the lower well screen, then the upper screen, and surge screen intervals. Well chemical solution includes fresh water, NuWell phosphoric acid, and a NuWell biodispersant. Following jetting, install a dual-swab block brush and swab the screen intervals. Downwell camera surveys and well performance following previous well rehabilitation events suggest that the previous rehabilitation procedures have been effective at treating fouling within the well casing but ineffective at treating fouling in the filter pack. Adding jetting to the procedure is intended to distribute the chemical solution further into the filter pack and reduce fouling at the filter pack.
- If using a packer, install packer following jetting and swabbing of the chemicals in all screens.
- Allow the chemicals to sit in the well overnight. The following day, check pH of screen intervals.
- Once pH is above 3, remove the packer (if applicable) and conduct mechanical rehabilitation. Add fresh water as needed to adjust pH.
- Pump purge water into backwash piping.
- Reinstall downhole well equipment and restart well.

3.3.3 Wellhead Dosing Procedure

Wellhead dosing was performed on injection wells IRZ-31 and IRZ-37 in Third Quarter 2023. Potential advantages of implementing wellhead dosing as an additional well maintenance strategy include the ability to inject reagent further into the filter pack than the original rehabilitation procedure that did not include jetting, the reduced intrusiveness compared to well rehabilitation, and the ability to complete wellhead dosing at increased frequency compared to well rehabilitation.

Wellhead dosing for each well involved the following process:

- Deliver chemical solution of NuWell phosphoric acid and NuWell biodispersant into the injection well injection pipe using a peristaltic pump. Immediately following injection of chemical solution, inject well with recirculated groundwater from the IRZ system.
- Turn off injection well and let sit overnight.
- The following day, inject 250 gallons of remedy water from the IRZ system into each screen. Bump the backwash pump in each screen interval to collect a pH reading in the sampling port in the metering vault.

- If pH is below 2.0: Add 250 gallons of remedy water to buffer. Wait 30 minutes, then retest pH using backwash pump.
- If pH is above 2.0: Purge approximately 2,000 gallons of water from each screen interval. Collect pH readings every 5 minutes until pH shows clear increasing trend. Operation of backwash pump will be monitored from control room, and purge will be stopped when water level decreases below 10 feet above the pump to prevent cycling. Pumping will resume after water level recovers. Collect final pH reading at the end of the 2,000-gallon purge. Additionally, collect pH reading of backwash tank following the 2,000-gallon purge to confirm that pH is within the acceptable range for conditioning (6.5 to 8.5).
- Turn on injection well at target operational flowrate.

3.3.4 Injection Well Water Quality

The potential for well fouling at IRZ injection wells as the result of carbon injection is monitored during system operation. Baseline analytical results for each injection well are provided in the First Quarter 2022 Well Performance Report (Arcadis 2022a). Baseline analytical data were collected during December 2021 and January 2022. Future analytical results will be collected as needed for fouling troubleshooting purposes.

4 Monitoring Well Performance

Monitoring wells are inspected to determine whether monitoring well maintenance, such as wellhead repair or well screen redevelopment, is needed. Monitoring well inspections include assessment of the following:

- Wellhead condition is assessed to determine if well protection features, including the well seal, well vault/protective casing, and concrete pad, are in place and functioning as designed.
- Turbidity indicates that the monitoring well screen and filter pack are intact and functioning.
- Depth to bottom of the well indicates infill (siltation).
- Specific capacity evaluation confirms consistency with sampling standard operating procedures.

This section provides a summary of each of these parameters.

4.1 Wellhead Condition

Wellheads are inspected routinely during sampling, and observations are documented in the field tablet. The inspection results are presented in Table 4.1. One well, Marina-1, is missing labels, which will be added in Fourth Quarter 2023. Overall, the wellheads were in good condition in Third Quarter 2023.

4.2 Turbidity

In accordance with Section 4.2.4 of the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a), wells that consistently yield turbidity above the range of 20 to 30 nephelometric turbidity units (NTUs) will undergo additional evaluation to determine if redevelopment is warranted, potentially including evaluation of previous purge data, specific capacity, and longer-term pressure transducer data. Turbidity data are presented in Table 3.4. A summary of monitoring wells that exhibited turbidity above 30 NTUs is provided below.

Monitoring wells MW-35-135 and MW-97-042 yielded turbidity readings greater than 30 NTU in three consecutive sampling events. These wells are not recommended for redevelopment at this time because the wellhead condition, depth to well bottom, and specific capacity assessments for these wells indicate that well integrity is intact and siltation is not sufficient to warrant redevelopment.

Monitoring wells MW-35-060 and MW-82-046 were redeveloped in Second Quarter 2023. Turbidity at these wells following redevelopment was documented at 43 NTU and 30 NTU, respectively. In Third Quarter 2023, the most recent sampling events for these two wells yielded 45 NTU and 30 NTU, respectively, indicating that well performance has not declined at these monitoring wells.

4.3 Depth to Well Bottom

Depths to bottom are measured manually during sampling events using a water level meter and compared to the as-constructed well depth and bottom of the screened interval to assess siltation, integrity of the well screen, and integrity of the well casing. Monitoring well depth-to-bottom data are presented in Table 4.2. If the measured well depth for consecutive sampling events suggests that at least 20 percent of the screened interval is silted in, the well will be flagged for further evaluation to determine if redevelopment is necessary. There were no new wells identified in Third Quarter 2023 for which depth to well bottoms measured more than 20 percent of the

constructed screen interval during at least three consecutive sampling events. Refer to Table 4.2 for ongoing issues of monitoring wells that are not recommended for redevelopment as discussed in the Second Quarter 2023 Well Performance Report (Arcadis 2023c).

4.4 Specific Capacity

Purging is conducted at rates between 100 and 500 milliliters per minute, and drawdown at these rates typically ranges from a few hundredths to a few tenths of a foot. If drawdown of greater than 1 foot is observed for a fluvial or alluvial well, the well will be flagged for further evaluation to determine if it needs rehabilitation. Bedrock wells are excluded from this evaluation method due to the potential for larger drawdown during purging. Purging data, including purge rate, drawdown, and calculated specific capacity, are presented in Table 4.2. No wells were identified for potential rehabilitation in Third Quarter 2023 based on this criterion.

4.5 Response to Monitoring Well Performance Evaluation

The locations of the monitoring wells inspected are shown on Figure 4.1.

In Second Quarter 2023, during bailing at MW-28-025, MW-30-030, and MW-39-040, sediment infiltrated the well and inhibited the ability to effectively remove sediment and complete redevelopment. Due to the high volume of sediment, the surge block at MW-30-030 became stuck and could not be removed by jetting and mechanical means. Additionally, during attempted surge block removal, the well casing and monument moved approximately 3 inches, causing the field team to cease efforts to retrieve the surge block.

Well MW-30-030 will be over-drilled and replaced with a new well in Fourth Quarter 2023. Plans to replace MW-30-030 were presented to the Technical Working Group on July 11, 2023, and a field walk for the replacement was conducted on August 9, 2023.

As a result of the experiences at MW-28-025, MW-30-030, and MW-39-040, the following adjustments were implemented following Second Quarter 2023 redevelopment and will continue moving forward:

- Wells will be redeveloped using a smaller-diameter surge block to reduce the risk of the surge block being lodged between sediment and the well casing.
- Wells located in fluvial sediments (see Well Screen Lithology column in Table 4.2) where sediment infiltration is likely given the screen slot size and/or filter pack combination will not be redeveloped. Redevelopment of these wells is expected to have a detrimental effect on well performance due to increased potential for sediment infiltration.
- Wells in which significant sediment infiltration occurs during redevelopment will not be considered for future redevelopment.

Monitoring well MW-46-205 was resurveyed in Third Quarter 2023 due to observed discrepancies between constructed and measured well depths while reviewing the data collected in 2022 and 2023. The resurveyed well data are incorporated in Table 4.2.

5 Recommendations and Planned Activities for Next Reporting Period

Phase 1 groundwater remedy operations and the Phase 1 monitoring program will continue in Fourth Quarter 2023 (October to December 2023) in accordance with the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a) and Phase 1 Interim Monitoring Plan (Arcadis 2021). Arcadis recommends the following modifications to the well maintenance program:

- Complete mechanical and chemical rehabilitation at injection wells IRZ-15, IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37 using the updated rehabilitation procedure.
- Implement routine wellhead chemical application at injection wells to prolong well performance between rehabilitation events.

In addition to routine groundwater remedy operations and monitoring, the following activities related to well performance are planned for Fourth Quarter 2023:

- Continue operation of target extraction and injection wells.
- Continue quarterly extraction and injection well monitoring to evaluate the potential for well fouling of the IRZ injection wells.
- Continue three times weekly injection well backwashing during operation.
- Monitor average specific capacities for remedial and monitoring wells to determine if additional maintenance is needed.
- Continue quarterly inspections of sampled monitoring wells.

Well performance monitoring will be reported in a Fourth Quarter 2023 Well Performance Report. A Fourth Quarter 2023 Quarterly Progress Report will also be submitted to document operations and monitoring results in accordance with the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a).

6 References

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Tables

Table 3.1**Summary of NTH IRZ Well Operations****Third Quarter 2023 Well Performance Report****Pacific Gas and Electric Company, Topock Compressor Station, Needles, California**

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-15	Upper	Injection	Oct-22	--	--	--	--	--
IRZ-15	Upper	Injection	Nov-22	--	--	--	--	--
IRZ-15	Upper	Injection	Dec-22	--	--	--	--	--
IRZ-15	Upper	Injection	Jan-23	--	--	--	--	--
IRZ-15	Upper	Injection	Feb-23	--	--	--	--	--
IRZ-15	Upper	Injection	Mar-23	209,677	22	547	74	6.4
IRZ-15	Upper	Injection	Apr-23	249,997	18	648	90	6.4
IRZ-15	Upper	Injection	May-23	221,166	17	599	81	6.2
IRZ-15	Upper	Injection	Jun-23	219,524	20	615	85	5.9
IRZ-15	Upper	Injection	Jul-23	241,926	16	644	87	6.3
IRZ-15	Upper	Injection	Aug-23	189,775	17	487	65	6.5
IRZ-15	Upper	Injection	Sep-23	246,561	16	640	89	6.4
IRZ-15	Lower	Injection	Oct-22	--	--	--	--	--
IRZ-15	Lower	Injection	Nov-22	--	--	--	--	--
IRZ-15	Lower	Injection	Dec-22	--	--	--	--	--
IRZ-15	Lower	Injection	Jan-23	--	--	--	--	--
IRZ-15	Lower	Injection	Feb-23	--	--	--	--	--
IRZ-15	Lower	Injection	Mar-23	--	--	--	--	--
IRZ-15	Lower	Injection	Apr-23	204,824	16	260	36	13
IRZ-15	Lower	Injection	May-23	503,129	36	599	81	14
IRZ-15	Lower	Injection	Jun-23	636,661	58	616	86	17
IRZ-15	Lower	Injection	Jul-23	579,185	39	644	87	15
IRZ-15	Lower	Injection	Aug-23	388,099	34	485	65	13
IRZ-15	Lower	Injection	Sep-23	506,905	34	637	88	13
IRZ-16	Upper	Injection	Oct-22	202,307	13	695	93	4.9
IRZ-16	Upper	Injection	Nov-22	188,414	14	600	83	5.2
IRZ-16	Upper	Injection	Dec-22	216,201	23	696	94	5.2
IRZ-16	Upper	Injection	Jan-23	179,946	28	577	78	5.2
IRZ-16	Upper	Injection	Feb-23	93,902	13	320	48	4.9
IRZ-16	Upper	Injection	Mar-23	184,780	28	652	88	4.7
IRZ-16	Upper	Injection	Apr-23	202,478	25	696	97	4.8
IRZ-16	Upper	Injection	May-23	117,004	9.2	663	89	2.9
IRZ-16	Upper	Injection	Jun-23	114,041	16	651	90	2.9
IRZ-16	Upper	Injection	Jul-23	41,861	2.3	219	29	3.2
IRZ-16	Upper	Injection	Aug-23	--	--	--	--	--
IRZ-16	Upper	Injection	Sep-23	26,346	2.7	106	15	4.1
IRZ-16	Lower	Injection	Oct-22	444,263	28	695	93	11
IRZ-16	Lower	Injection	Nov-22	406,317	29	600	83	11
IRZ-16	Lower	Injection	Dec-22	386,647	46	593	80	11
IRZ-16	Lower	Injection	Jan-23	368,129	59	579	78	11
IRZ-16	Lower	Injection	Feb-23	175,091	24	306	46	10

Table 3.1

Summary of NTH IRZ Well Operations

Third Quarter 2023 Well Performance Report

Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-16	Lower	Injection	Mar-23	391,682	60	669	90	10
IRZ-16	Lower	Injection	Apr-23	437,161	53	709	98	10
IRZ-16	Lower	Injection	May-23	447,822	57	729	98	10
IRZ-16	Lower	Injection	Jun-23	417,451	56	695	97	10
IRZ-16	Lower	Injection	Jul-23	438,115	46	693	93	11
IRZ-16	Lower	Injection	Aug-23	322,725	34	513	69	10
IRZ-16	Lower	Injection	Sep-23	404,893	27	645	90	10
IRZ-17	Upper	Injection	Oct-22	260,134	16	695	93	6.2
IRZ-17	Upper	Injection	Nov-22	253,938	18	603	84	7.0
IRZ-17	Upper	Injection	Dec-22	265,579	27	699	94	6.3
IRZ-17	Upper	Injection	Jan-23	123,531	21	317	43	6.5
IRZ-17	Upper	Injection	Feb-23	208,093	32	591	88	5.9
IRZ-17	Upper	Injection	Mar-23	247,211	38	668	90	6.2
IRZ-17	Upper	Injection	Apr-23	267,131	31	709	98	6.3
IRZ-17	Upper	Injection	May-23	223,798	28	730	98	5.1
IRZ-17	Upper	Injection	Jun-23	186,192	27	717	100	4.3
IRZ-17	Upper	Injection	Jul-23	66,365	3.1	226	30	4.9
IRZ-17	Upper	Injection	Aug-23	--	--	--	--	--
IRZ-17	Upper	Injection	Sep-23	36,626	3.5	110	15	5.5
IRZ-17	Lower	Injection	Oct-22	537,554	35	695	93	13
IRZ-17	Lower	Injection	Nov-22	414,384	29	583	81	12
IRZ-17	Lower	Injection	Dec-22	397,147	42	670	90	9.9
IRZ-17	Lower	Injection	Jan-23	161,918	28	319	43	8.5
IRZ-17	Lower	Injection	Feb-23	256,180	39	589	88	7.2
IRZ-17	Lower	Injection	Mar-23	173,037	26	666	90	4.3
IRZ-17	Lower	Injection	Apr-23	204,824	24	709	98	4.8
IRZ-17	Lower	Injection	May-23	254,746	32	731	98	5.8
IRZ-17	Lower	Injection	Jun-23	337,549	49	718	100	7.8
IRZ-17	Lower	Injection	Jul-23	320,752	33	694	93	7.7
IRZ-17	Lower	Injection	Aug-23	242,520	25	511	69	7.9
IRZ-17	Lower	Injection	Sep-23	298,115	20	644	89	7.7
IRZ-18	Upper	Injection	Oct-22	287,310	18	691	93	6.9
IRZ-18	Upper	Injection	Nov-22	231,786	16	621	86	6.2
IRZ-18	Upper	Injection	Dec-22	163,169	18	508	68	5.4
IRZ-18	Upper	Injection	Jan-23	230,695	35	600	81	6.4
IRZ-18	Upper	Injection	Feb-23	140,867	17	370	55	6.3
IRZ-18	Upper	Injection	Mar-23	80,539	13	206	28	6.5
IRZ-18	Upper	Injection	Apr-23	--	--	--	--	--
IRZ-18	Upper	Injection	May-23	5,070	--	13	2	6.5
IRZ-18	Upper	Injection	Jun-23	103,561	16	544	76	3.2
IRZ-18	Upper	Injection	Jul-23	14,210	--	108	15	2.2

Table 3.1

Summary of NTH IRZ Well Operations

Third Quarter 2023 Well Performance Report

Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-18	Upper	Injection	Aug-23	--	--	--	--	--
IRZ-18	Upper	Injection	Sep-23	3,430	--	22	3	2.6
IRZ-18	Lower	Injection	Oct-22	535,482	34	696	94	13
IRZ-18	Lower	Injection	Nov-22	507,976	34	624	87	14
IRZ-18	Lower	Injection	Dec-22	423,143	47	517	69	14
IRZ-18	Lower	Injection	Jan-23	490,939	74	602	81	14
IRZ-18	Lower	Injection	Feb-23	283,957	39	418	62	11
IRZ-18	Lower	Injection	Mar-23	151,097	23	207	28	12
IRZ-18	Lower	Injection	Apr-23	--	--	--	--	--
IRZ-18	Lower	Injection	May-23	9,360	--	13	2	12
IRZ-18	Lower	Injection	Jun-23	363,173	62	562	78	11
IRZ-18	Lower	Injection	Jul-23	409,395	42	696	94	10
IRZ-18	Lower	Injection	Aug-23	235,470	25	508	68	7.7
IRZ-18	Lower	Injection	Sep-23	275,619	19	625	87	7.3
IRZ-20	Upper	Injection	Oct-22	250,695	16	695	93	6.0
IRZ-20	Upper	Injection	Nov-22	237,842	17	604	84	6.6
IRZ-20	Upper	Injection	Dec-22	257,431	27	675	91	6.4
IRZ-20	Upper	Injection	Jan-23	153,460	21	416	56	6.1
IRZ-20	Upper	Injection	Feb-23	163,940	27	451	67	6.1
IRZ-20	Upper	Injection	Mar-23	221,486	34	661	89	5.6
IRZ-20	Upper	Injection	Apr-23	254,618	30	705	98	6.0
IRZ-20	Upper	Injection	May-23	176,899	23	548	74	5.4
IRZ-20	Upper	Injection	Jun-23	127,028	10	533	74	4.0
IRZ-20	Upper	Injection	Jul-23	16,061	--	108	15	2.5
IRZ-20	Upper	Injection	Aug-23	--	--	--	--	--
IRZ-20	Upper	Injection	Sep-23	78,937	6.3	263	37	5.0
IRZ-20	Lower	Injection	Oct-22	440,740	28	695	93	11
IRZ-20	Lower	Injection	Nov-22	413,854	29	604	84	11
IRZ-20	Lower	Injection	Dec-22	439,559	47	692	93	11
IRZ-20	Lower	Injection	Jan-23	224,399	33	409	55	9.1
IRZ-20	Lower	Injection	Feb-23	282,155	48	451	67	10
IRZ-20	Lower	Injection	Mar-23	360,442	56	676	91	8.9
IRZ-20	Lower	Injection	Apr-23	347,887	42	679	94	8.5
IRZ-20	Lower	Injection	May-23	256,876	33	547	74	7.8
IRZ-20	Lower	Injection	Jun-23	320,118	49	619	86	8.6
IRZ-20	Lower	Injection	Jul-23	369,320	38	694	93	8.9
IRZ-20	Lower	Injection	Aug-23	277,611	29	507	68	9.1
IRZ-20	Lower	Injection	Sep-23	358,400	24	636	88	9.4
IRZ-21	Upper	Injection	Oct-22	--	--	--	--	--
IRZ-21	Upper	Injection	Nov-22	--	--	--	--	--
IRZ-21	Upper	Injection	Dec-22	--	--	--	--	--

Table 3.1

Summary of NTH IRZ Well Operations

Third Quarter 2023 Well Performance Report

Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-21	Upper	Injection	Jan-23	--	--	--	--	--
IRZ-21	Upper	Injection	Feb-23	--	--	--	--	--
IRZ-21	Upper	Injection	Mar-23	--	--	--	--	--
IRZ-21	Upper	Injection	Apr-23	--	--	--	--	--
IRZ-21	Upper	Injection	May-23	--	--	--	--	--
IRZ-21	Upper	Injection	Jun-23	--	--	--	--	--
IRZ-21	Upper	Injection	Jul-23	--	--	--	--	--
IRZ-21	Upper	Injection	Aug-23	--	--	--	--	--
IRZ-21	Upper	Injection	Sep-23	--	--	--	--	--
IRZ-21	Lower	Injection	Oct-22	--	--	--	--	--
IRZ-21	Lower	Injection	Nov-22	--	--	--	--	--
IRZ-21	Lower	Injection	Dec-22	--	--	--	--	--
IRZ-21	Lower	Injection	Jan-23	--	--	--	--	--
IRZ-21	Lower	Injection	Feb-23	--	--	--	--	--
IRZ-21	Lower	Injection	Mar-23	--	--	--	--	--
IRZ-21	Lower	Injection	Apr-23	--	--	--	--	--
IRZ-21	Lower	Injection	May-23	--	--	--	--	--
IRZ-21	Lower	Injection	Jun-23	--	--	--	--	--
IRZ-21	Lower	Injection	Jul-23	--	--	--	--	--
IRZ-21	Lower	Injection	Aug-23	--	--	--	--	--
IRZ-21	Lower	Injection	Sep-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Oct-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Nov-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Dec-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Jan-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Feb-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Mar-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Apr-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	May-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Jun-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Jul-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Aug-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Sep-23	--	--	--	--	--
IRZ-25	Lower	Injection	Oct-22	--	--	--	--	--
IRZ-25	Lower	Injection	Nov-22	--	--	--	--	--
IRZ-25	Lower	Injection	Dec-22	--	--	--	--	--
IRZ-25	Lower	Injection	Jan-23	--	--	--	--	--
IRZ-25	Lower	Injection	Feb-23	--	--	--	--	--
IRZ-25	Lower	Injection	Mar-23	--	--	--	--	--
IRZ-25	Lower	Injection	Apr-23	--	--	--	--	--
IRZ-25	Lower	Injection	May-23	--	--	--	--	--

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Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-25	Lower	Injection	Jun-23	--	--	--	--	--
IRZ-25	Lower	Injection	Jul-23	--	--	--	--	--
IRZ-25	Lower	Injection	Aug-23	--	--	--	--	--
IRZ-25	Lower	Injection	Sep-23	--	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	Oct-22	473,082	30	695	93	11
IRZ-27	Upper / Upper Middle	Injection	Nov-22	401,552	30	595	83	11
IRZ-27	Upper / Upper Middle	Injection	Dec-22	439,279	44	661	89	11
IRZ-27	Upper / Upper Middle	Injection	Jan-23	267,621	40	419	56	11
IRZ-27	Upper / Upper Middle	Injection	Feb-23	383,975	56	585	87	11
IRZ-27	Upper / Upper Middle	Injection	Mar-23	177,753	12	314	42	9.4
IRZ-27	Upper / Upper Middle	Injection	Apr-23	--	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	May-23	--	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	Jun-23	311,822	46	536	74	9.7
IRZ-27	Upper / Upper Middle	Injection	Jul-23	354,065	40	692	93	8.5
IRZ-27	Upper / Upper Middle	Injection	Aug-23	179,084	19	508	68	5.9
IRZ-27	Upper / Upper Middle	Injection	Sep-23	100,528	4.0	286	40	5.9
IRZ-27	Lower	Injection	Oct-22	291,064	18	695	93	7.0
IRZ-27	Lower	Injection	Nov-22	258,032	19	595	83	7.2
IRZ-27	Lower	Injection	Dec-22	297,470	29	663	89	7.5
IRZ-27	Lower	Injection	Jan-23	187,983	29	419	56	7.5
IRZ-27	Lower	Injection	Feb-23	261,555	39	588	88	7.4
IRZ-27	Lower	Injection	Mar-23	138,665	9.4	316	42	7.3
IRZ-27	Lower	Injection	Apr-23	--	--	--	--	--
IRZ-27	Lower	Injection	May-23	--	--	--	--	--
IRZ-27	Lower	Injection	Jun-23	202,855	43	480	67	7.0
IRZ-27	Lower	Injection	Jul-23	335,696	36	692	93	8.1
IRZ-27	Lower	Injection	Aug-23	244,538	24	510	69	8.0
IRZ-27	Lower	Injection	Sep-23	129,156	4.8	287	40	7.5
IRZ-29	Upper	Injection	Oct-22	--	--	--	--	--
IRZ-29	Upper	Injection	Nov-22	--	--	--	--	--
IRZ-29	Upper	Injection	Dec-22	205,250	23	408	55	8.4
IRZ-29	Upper	Injection	Jan-23	307,780	51	601	81	8.5
IRZ-29	Upper	Injection	Feb-23	143,630	20	302	45	7.9
IRZ-29	Upper	Injection	Mar-23	147,814	9.8	318	43	7.7
IRZ-29	Upper	Injection	Apr-23	--	--	--	--	--
IRZ-29	Upper	Injection	May-23	--	--	--	--	--
IRZ-29	Upper	Injection	Jun-23	--	--	--	--	--
IRZ-29	Upper	Injection	Jul-23	194,939	27	447	60	7.3
IRZ-29	Upper	Injection	Aug-23	221,466	23	509	68	7.3
IRZ-29	Upper	Injection	Sep-23	163,459	9.4	393	55	6.9
IRZ-29	Lower	Injection	Oct-22	--	--	--	--	--

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Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-29	Lower	Injection	Nov-22	--	--	--	--	--
IRZ-29	Lower	Injection	Dec-22	269,253	30	408	55	11
IRZ-29	Lower	Injection	Jan-23	340,843	55	605	81	9.4
IRZ-29	Lower	Injection	Feb-23	176,202	26	301	45	10
IRZ-29	Lower	Injection	Mar-23	191,367	12	316	42	10
IRZ-29	Lower	Injection	Apr-23	--	--	--	--	--
IRZ-29	Lower	Injection	May-23	--	--	--	--	--
IRZ-29	Lower	Injection	Jun-23	--	--	--	--	--
IRZ-29	Lower	Injection	Jul-23	251,875	35	446	60	9.4
IRZ-29	Lower	Injection	Aug-23	234,683	25	508	68	7.7
IRZ-29	Lower	Injection	Sep-23	199,745	11	392	54	8.5
IRZ-31	Upper	Injection	Oct-22	367,228	23	695	93	8.8
IRZ-31	Upper	Injection	Nov-22	287,841	22	543	75	8.8
IRZ-31	Upper	Injection	Dec-22	373,064	38	691	93	9.0
IRZ-31	Upper	Injection	Jan-23	247,762	39	474	64	8.7
IRZ-31	Upper	Injection	Feb-23	305,888	45	588	88	8.7
IRZ-31	Upper	Injection	Mar-23	147,354	8.8	314	42	7.8
IRZ-31	Upper	Injection	Apr-23	--	--	--	--	--
IRZ-31	Upper	Injection	May-23	--	--	--	--	--
IRZ-31	Upper	Injection	Jun-23	--	--	--	--	--
IRZ-31	Upper	Injection	Jul-23	359,914	36	606	81	9.9
IRZ-31	Upper	Injection	Aug-23	157,794	18	508	68	5.2
IRZ-31	Upper	Injection	Sep-23	112,490	6.5	392	54	4.8
IRZ-31	Lower	Injection	Oct-22	357,619	23	695	93	8.6
IRZ-31	Lower	Injection	Nov-22	282,636	21	546	76	8.6
IRZ-31	Lower	Injection	Dec-22	375,126	38	691	93	9.0
IRZ-31	Lower	Injection	Jan-23	248,563	40	473	64	8.8
IRZ-31	Lower	Injection	Feb-23	304,637	45	588	88	8.6
IRZ-31	Lower	Injection	Mar-23	140,347	8.1	314	42	7.4
IRZ-31	Lower	Injection	Apr-23	--	--	--	--	--
IRZ-31	Lower	Injection	May-23	--	--	--	--	--
IRZ-31	Lower	Injection	Jun-23	--	--	--	--	--
IRZ-31	Lower	Injection	Jul-23	299,528	38	589	79	8.5
IRZ-31	Lower	Injection	Aug-23	236,772	25	508	68	7.8
IRZ-31	Lower	Injection	Sep-23	198,854	11	387	54	8.6
IRZ-33	Upper	Injection	Oct-22	237,922	15	695	93	5.7
IRZ-33	Upper	Injection	Nov-22	219,324	15	632	88	5.8
IRZ-33	Upper	Injection	Dec-22	141,118	15	398	53	5.9
IRZ-33	Upper	Injection	Jan-23	200,646	27	578	78	5.8
IRZ-33	Upper	Injection	Feb-23	196,782	29	586	87	5.6
IRZ-33	Upper	Injection	Mar-23	81,299	4.8	313	42	4.3

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Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-33	Upper	Injection	Apr-23	--	--	--	--	--
IRZ-33	Upper	Injection	May-23	--	--	--	--	--
IRZ-33	Upper	Injection	Jun-23	--	--	--	--	--
IRZ-33	Upper	Injection	Jul-23	117,385	11	349	47	5.6
IRZ-33	Upper	Injection	Aug-23	182,385	18	507	68	6.0
IRZ-33	Upper	Injection	Sep-23	138,505	8.0	390	54	5.9
IRZ-33	Lower	Injection	Oct-22	262,987	16	695	93	6.3
IRZ-33	Lower	Injection	Nov-22	235,350	16	634	88	6.2
IRZ-33	Lower	Injection	Dec-22	145,332	15	398	53	6.1
IRZ-33	Lower	Injection	Jan-23	218,603	30	578	78	6.3
IRZ-33	Lower	Injection	Feb-23	211,466	31	586	87	6.0
IRZ-33	Lower	Injection	Mar-23	122,490	8.0	314	42	6.5
IRZ-33	Lower	Injection	Apr-23	--	--	--	--	--
IRZ-33	Lower	Injection	May-23	--	--	--	--	--
IRZ-33	Lower	Injection	Jun-23	--	--	--	--	--
IRZ-33	Lower	Injection	Jul-23	--	--	--	--	--
IRZ-33	Lower	Injection	Aug-23	--	--	--	--	--
IRZ-33	Lower	Injection	Sep-23	124,178	8.0	330	46	6.3
IRZ-35	Upper	Injection	Oct-22	299,152	18	695	93	7.2
IRZ-35	Upper	Injection	Nov-22	295,939	20	638	89	7.7
IRZ-35	Upper	Injection	Dec-22	326,679	31	679	91	8.0
IRZ-35	Upper	Injection	Jan-23	271,265	37	578	78	7.8
IRZ-35	Upper	Injection	Feb-23	195,571	29	426	63	7.7
IRZ-35	Upper	Injection	Mar-23	141,918	9.5	313	42	7.6
IRZ-35	Upper	Injection	Apr-23	--	--	--	--	--
IRZ-35	Upper	Injection	May-23	--	--	--	--	--
IRZ-35	Upper	Injection	Jun-23	--	--	--	--	--
IRZ-35	Upper	Injection	Jul-23	183,289	27	469	63	6.5
IRZ-35	Upper	Injection	Aug-23	184,739	21	484	65	6.4
IRZ-35	Upper	Injection	Sep-23	158,865	9.1	387	54	6.8
IRZ-37	Upper	Injection	Oct-22	174,701	11	695	93	4.2
IRZ-37	Upper	Injection	Nov-22	165,652	12	638	89	4.3
IRZ-37	Upper	Injection	Dec-22	189,945	18	674	91	4.7
IRZ-37	Upper	Injection	Jan-23	156,072	22	578	78	4.5
IRZ-37	Upper	Injection	Feb-23	119,166	19	465	69	4.3
IRZ-37	Upper	Injection	Mar-23	80,268	5.3	313	42	4.3
IRZ-37	Upper	Injection	Apr-23	--	--	--	--	--
IRZ-37	Upper	Injection	May-23	--	--	--	--	--
IRZ-37	Upper	Injection	Jun-23	--	--	--	--	--
IRZ-37	Upper	Injection	Jul-23	122,465	17	469	63	4.4
IRZ-37	Upper	Injection	Aug-23	92,012	10	501	67	3.1

Table 3.1

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IRZ-37	Upper	Injection	Sep-23	51,602	3.4	287	40	3.0
IRZ-39	Upper	Injection	Oct-22	--	--	--	--	--
IRZ-39	Upper	Injection	Nov-22	--	--	--	--	--
IRZ-39	Upper	Injection	Dec-22	--	--	--	--	--
IRZ-39	Upper	Injection	Jan-23	12,763	2.0	159	21	1.3
IRZ-39	Upper	Injection	Feb-23	31,539	4.3	540	80	1.0
IRZ-39	Upper	Injection	Mar-23	5,597	--	164	22	0.57
IRZ-39	Upper	Injection	Apr-23	--	--	--	--	--
IRZ-39	Upper	Injection	May-23	--	--	--	--	--
IRZ-39	Upper	Injection	Jun-23	--	--	--	--	--
IRZ-39	Upper	Injection	Jul-23	--	--	--	--	--
IRZ-39	Upper	Injection	Aug-23	--	--	--	--	--
IRZ-39	Upper	Injection	Sep-23	--	--	--	--	--
IRZ-9	Upper	Extraction	Oct-22	3,928	--	1.5	0.20	44
IRZ-9	Upper	Extraction	Nov-22	620,626	--	182	25	57
IRZ-9	Upper	Extraction	Dec-22	--	--	--	--	--
IRZ-9	Upper	Extraction	Jan-23	307,046	--	100	13	51
IRZ-9	Upper	Extraction	Feb-23	58,437	--	17	2.6	57
IRZ-9	Upper	Extraction	Mar-23	30,590	--	8.3	1.1	61
IRZ-9	Upper	Extraction	Apr-23	--	--	--	--	--
IRZ-9	Upper	Extraction	May-23	1,231	--	1.0	0.13	21
IRZ-9	Upper	Extraction	Jun-23	--	--	--	--	--
IRZ-9	Upper	Extraction	Jul-23	--	--	--	--	--
IRZ-9	Upper	Extraction	Aug-23	7,197	--	1.7	0.23	71
IRZ-9	Upper	Extraction	Sep-23	21,671	--	4.3	0.60	84
IRZ-13D	Lower	Extraction	Oct-22	1,416,084	--	695	93	34
IRZ-13D	Lower	Extraction	Nov-22	1,055,303	--	544	76	32
IRZ-13D	Lower	Extraction	Dec-22	1,389,277	--	661	89	35
IRZ-13D	Lower	Extraction	Jan-23	962,725	--	434	58	37
IRZ-13D	Lower	Extraction	Feb-23	872,383	--	585	87	25
IRZ-13D	Lower	Extraction	Mar-23	491,660	--	330	44	25
IRZ-13D	Lower	Extraction	Apr-23	--	--	--	--	--
IRZ-13D	Lower	Extraction	May-23	254	--	1	0.13	4.2
IRZ-13D	Lower	Extraction	Jun-23	279,365	--	302	42	15
IRZ-13D	Lower	Extraction	Jul-23	991,621	--	612	82	27
IRZ-13D	Lower	Extraction	Aug-23	739,443	--	508	68	24
IRZ-13D	Lower	Extraction	Sep-23	504,512	--	297	41	28
IRZ-13S	Upper	Extraction	Oct-22	1,745,715	--	695	93	42
IRZ-13S	Upper	Extraction	Nov-22	1,329,795	--	577	80	38
IRZ-13S	Upper	Extraction	Dec-22	1,405,225	--	672	90	35
IRZ-13S	Upper	Extraction	Jan-23	973,076	--	434	58	37

Table 3.1**Summary of NTH IRZ Well Operations****Third Quarter 2023 Well Performance Report****Pacific Gas and Electric Company, Topock Compressor Station, Needles, California**

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-13S	Upper	Extraction	Feb-23	986,523	--	532	79	31
IRZ-13S	Upper	Extraction	Mar-23	726,270	--	330	44	37
IRZ-13S	Upper	Extraction	Apr-23	--	--	--	--	--
IRZ-13S	Upper	Extraction	May-23	7,568	--	12	1.6	11
IRZ-13S	Upper	Extraction	Jun-23	79,102	--	127	18	10
IRZ-13S	Upper	Extraction	Jul-23	341,748	--	320	43	18
IRZ-13S	Upper	Extraction	Aug-23	237,930	--	310	42	13
IRZ-13S	Upper	Extraction	Sep-23	336,885	--	260	36	22
IRZ-23	Lower	Extraction	Oct-22	2,335,186	--	696	94	56
IRZ-23	Lower	Extraction	Nov-22	1,590,684	--	449	62	59
IRZ-23	Lower	Extraction	Dec-22	2,290,752	--	649	87	59
IRZ-23	Lower	Extraction	Jan-23	1,952,979	--	541	73	60
IRZ-23	Lower	Extraction	Feb-23	1,829,473	--	516	77	59
IRZ-23	Lower	Extraction	Mar-23	1,942,227	--	673	90	48
IRZ-23	Lower	Extraction	Apr-23	2,058,390	--	708	98	48
IRZ-23	Lower	Extraction	May-23	2,126,924	--	728	98	49
IRZ-23	Lower	Extraction	Jun-23	3,033,291	--	718	100	70
IRZ-23	Lower	Extraction	Jul-23	3,178,936	--	695	93	76
IRZ-23	Lower	Extraction	Aug-23	2,272,188	--	508	68	75
IRZ-23	Lower	Extraction	Sep-23	2,704,317	--	394	55	114

Abbreviations:

-- = not applicable

gal = gallon

gpm = gallons per minute

ID = identification

IRZ = In-Situ Reactive Zone

NTH = National Trails Highway

Table 3.2
NTH IRZ System Operations and Non-Routine Maintenance Log
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
6/30/2023 through 7/5/2023	--	Extraction well IRZ-13 (lower) offline.	Injection well flowrates turned down over long weekend due to high water levels. Therefore the additional extraction at IRZ-13 was not required.
7/5/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27.	--
7/5/2023	--	IRZ-31 brought online. Shut off IRZ-18 (upper) and IRZ-20 (upper).	--
7/6/2023	--	Ethanol dosing occurred.	--
7/7/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16, IRZ-17, IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-31.	--
7/10/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16, IRZ-17, IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-31.	--
7/10/2023	--	IRZ-35 and IRZ-37 brought online. IRZ-16 (upper) and IRZ-17 (upper) shut down to flow balance.	--
7/11/2023	--	IRZ-29 brought online.	--
7/11/2023	--	Ethanol dosing occurred.	--
7/12/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-35 and IRZ-37.	--
7/12/2023 through 7/13/2023	--	Reinjected conditioned water into injection wells.	--
7/13/2023	--	Extraction well IRZ-13 (upper) brought online.	To accomodate extra flow from southern wells getting turned back on.
7/13/2023	--	Ethanol dosing occurred.	--
7/14/2023	--	IRZ-33 (upper) brought online.	--
7/14/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-35 and IRZ-37.	--
7/17/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
7/17/2023	0.7	IRZ system offline.	Load shed by Topock Compressor Station.

Table 3.2
NTH IRZ System Operations and Non-Routine Maintenance Log
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
7/18/2023	--	Ethanol dosing occurred. Injection well IRZ-33 (upper) was not dosed.	High water levels observed at IRZ-33 (upper).
7/19/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
7/20/2023	--	Ethanol dosing occurred.	--
7/20/2023 through 7/21/2023	0.5	IRZ system offline.	Ethanol pump hose failure triggered a low ethanol level alarm inside the Carbon Amendment Building. Replacement hose installed.
7/21/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
7/24/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
7/24/2023	--	Reinjected conditioned water into injection wells.	--
7/25/2023	--	Ethanol dosing occurred.	--
7/26/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
7/26/2023 through 7/27/2023	--	Reinjected conditioned water into injection wells.	--
7/27/2023	--	Ethanol dosing occurred.	--
7/27/2023 through 7/28/2023	0.8	IRZ system offline.	SCADA system crashed, required reloading program. Steps to prevent occurrence are being planned for next sitewide outage.
7/28/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
7/31/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
7/31/2023	--	Reinjected conditioned water into injection wells.	--
8/1/2023	--	Ethanol dosing occurred.	--

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Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
8/1/2023	--	Reinjected conditioned water into injection wells.	--
8/2/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
8/3/2023	--	Ethanol dosing occurred.	--
8/4/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
8/4/2023	--	Reinjected conditioned water into injection wells.	--
8/4/2023 through 8/16/2023	--	Extraction well IRZ-13S offline.	--
8/7/2023 through 8/15/2023	8.2	IRZ system offline.	Pre-planned shutdown for construction tie-in at Carbon Amendment Building.
8/7/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-18 (lower), IRZ-27 (lower), IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
8/7/2023	--	Injection well IRZ-18 (lower) check valve failure.	Check valve failure resulted in flooding IRZ-18 well vault. Water pumped out of well vault and transferred to backwash tank. The check valve was replaced.
8/14/2023	--	Replacement Carbon Amendment Building (CAB) Freshwater PVC block valve cracked. Installed metal valve from sump pump line.	--
8/15/2023	--	Reinjected conditioned water into injection wells.	--
8/16/2023	--	Reinjected conditioned water into injection wells.	--
8/17/2023	--	Ethanol dosing occurred.	--
8/17/2023	--	Ethanol dosing frequency adjusted to once weekly.	Less fouling in injection wells allows for higher flowrates for treatment to reach a high radius of impact.
8/17/2023	--	Rubber flex coupler for influent of Pump 0641 found to have a drip leak during Ethanol Vapor Test. Rubber flex coupler removed and replaced with metal flex coupler. Ethanol Vapor Testing confirmed no more leaking at location.	--
8/18/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--

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Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
8/18/2023 through 8/20/2023	1.8	IRZ system offline.	Significant rain event caused flooding in injection vaults IRZ-25, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37. The reconfiguration of the electrical system completed after the mid-March 2023 storm protected the electrical equipment during the storm and it was not damaged.
8/18/2023 through 8/22/2023	--	Extraction well IRZ-13S offline.	--
8/21/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
8/23/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
8/24/2023	--	Ethanol dosing occurred.	--
8/25/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
8/28/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
8/30/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper) IRZ-35 and IRZ-37.	--
8/31/2023	--	Ethanol dosing occurred.	--
9/1/2023 through 9/2/2023	0.4	IRZ system offline.	Manually shutdown the system due to ongoing rain prior to the weekend.
9/1/2023	--	Reinjected conditioned water into injection wells.	--
9/2/2023	--	IRZ system brought back online.	--
9/2/2023 through 9/3/2023	0.4	IRZ system offline.	System shut off due to another thunderstorm.
9/3/2023	--	IRZ system brought back online.	--
9/5/2023 through 9/14/2023	--	All southern injection wells and extraction well IRZ-23 offline. Extraction wells operating include IRZ-13S and IRZ-13D. Injection wells operating include IRZ-15, IRZ-16 (lower), IRZ-18 (lower), and IRZ-20 (lower).	Pre-planned shutdown for piping modifications to increase pumping capacity at IRZ-23. All southern injection wells shut down while northern injection wells remained operational using IRZ-13S and IRZ-13D.

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Third Quarter 2023 Well Performance Report
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Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
9/5/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33 (upper), IRZ-35, and IRZ-37.	--
9/7/2023	--	Ethanol dosing occurred.	--
9/7/2023 through 9/8/2023	--	Reinjected conditioned water into injection wells.	--
9/8/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), and IRZ-20 (lower).	--
9/11/2023 through 9/12/2023	--	Dosed IRZ injection well IRZ-31 with chemical solution of NuWell phosphoric acid and NuWell biodispersant at wellhead to test additional well maintenance strategy.	Chemicals used are for well maintenance. Testing to see if additional well maintenance conducted routinely at wellhead extends timing between rehabilitation events and prolongs well performance.
9/11/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), and IRZ-20 (lower).	--
9/12/2023	--	Effluent pH meter AE-1481A at the Remedy Produced Water Conditioning System malfunctioned.	While waiting for replacement, manual effluent pH readings will be collected when conveying water to the conditioned water tank.
9/13/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), and IRZ-20 (lower).	--
9/14/2023	--	Ethanol dosing occurred.	--
9/15/2023	--	Extraction well IRZ-23 resumes operation at increased extraction rate (110 gpm). Injection wells IRZ-27, IRZ-29, IRZ-31, IRZ-33, and IRZ-35 resume operation. Extraction wells IRZ-13S and IRZ-13D offline.	--
9/18/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20 (lower), IRZ-27, IRZ-29, IRZ-31, IRZ-33, and IRZ-35.	--
9/18/2023	--	Injection wells IRZ-20 (upper) and IRZ-37 resume operation. Extraction well IRZ-23 extraction rate increased to approximately 130 gpm.	--
9/19/2023	--	Ethanol dosing occurred.	--
9/20/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
9/21/2023	0.2	IRZ system offline.	Tightened minor leaks identified in IRZ-23 piping.
9/22/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--

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9/25/2023	--	Backwashed IRZ injection wells IRZ-15, IRZ-16 (lower), IRZ-17 (lower), IRZ-18 (lower), IRZ-20, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
9/25/2023	--	IRZ injection well IRZ-27 shut down for well rehabilitation.	--
9/25/2023	--	IRZ injection wells IRZ-16 (upper), IRZ-17 (upper), and IRZ-18 (upper) brought online.	--
9/25/2023 through 9/26/2023	--	Reinjected conditioned water into injection wells.	--
9/26/2023	--	Ethanol dosing occurred.	--
9/26/2023	--	IRZ-18 (upper) shut down prior to ethanol dosing.	High water levels.
9/27/2023	--	Backwashed IRZ injection wells IRZ-16, IRZ-17, IRZ-18 (lower), IRZ-20, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
9/27/2023	0.3	IRZ system shutdown.	Electrical shutdown for PTI-1D construction.
9/28/2023	--	Backwashed IRZ injection wells IRZ-15 and IRZ-29.	--
9/28/2023 through 9/29/2023	--	Dosed IRZ injection well IRZ-37 with chemical solution of NuWell phosphoric acid and NuWell biodispersant at wellhead to test additional well maintenance strategy.	Chemicals used are for well maintenance. Testing to see if additional well maintenance conducted routinely at wellhead extends timing between rehabilitation events and prolongs well performance.
9/28/2023	0.3	IRZ system shutdown.	Extraction well IRZ-23 pressure transmitter error. Transmitter alarm setpoint adjusted to prevent shutdown.
9/29/2023	--	Backwashed IRZ injection wells IRZ-16, IRZ-17, IRZ-20, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
9/29/2023 through 9/30/2023	0.6	IRZ system shutdown.	Vault leak detection in IRZ-18 due to leak in sump pump check valve. Cleaned check valve and verified leak was stopped. Pumped out sump and restarted IRZ system.

Abbreviations:
-- = not applicable
CAB = Carbon Amendment Building
IRZ = In-Situ Reactive Zone
NTH = National Trails Highway
TCS = Topock Compressor Station

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-15	Upper	Injection	Oct-22	--	--	--	NC
IRZ-15	Upper	Injection	Nov-22	--	--	--	NC
IRZ-15	Upper	Injection	Dec-22	--	--	--	NC
IRZ-15	Upper	Injection	Jan-23	--	--	--	NC
IRZ-15	Upper	Injection	Feb-23	--	--	--	NC
IRZ-15	Upper	Injection	Mar-23	1.1	--	--	NC
IRZ-15	Upper	Injection	Apr-23	0.89	--	--	NC
IRZ-15	Upper	Injection	May-23	0.71	--	--	NC
IRZ-15	Upper	Injection	Jun-23	0.52	0.52	Good	None needed. Well performance is good.
IRZ-15	Upper	Injection	Jul-23	0.57	0.52	Good	None needed. Well performance is good.
IRZ-15	Upper	Injection	Aug-23	0.56	0.52	Good	None needed. Well performance is good.
IRZ-15	Upper	Injection	Sep-23	0.47	0.52	Good	None needed. Well performance is good.
IRZ-15	Lower	Injection	Oct-22	--	--	--	NC
IRZ-15	Lower	Injection	Nov-22	--	--	--	NC
IRZ-15	Lower	Injection	Dec-22	--	--	--	NC
IRZ-15	Lower	Injection	Jan-23	--	--	--	NC
IRZ-15	Lower	Injection	Feb-23	--	--	--	NC
IRZ-15	Lower	Injection	Mar-23	--	--	--	NC
IRZ-15	Lower	Injection	Apr-23	1.3	--	--	NC
IRZ-15	Lower	Injection	May-23	1.4	--	--	NC
IRZ-15	Lower	Injection	Jun-23	1.8	--	--	NC
IRZ-15	Lower	Injection	Jul-23	1.7	--	--	NC
IRZ-15	Lower	Injection	Aug-23	1.6	1.6	Good	None needed. Well performance is good.
IRZ-15	Lower	Injection	Sep-23	1.4	1.6	Fair	Backwashing occurred three times weekly to manage high water levels. Reduced specific capacity in late September suggests well may be starting to foul. Continue to monitor and recommend rehabilitation in Fourth Quarter 2023 if reduced capacity continues.
IRZ-16	Upper	Injection	Oct-22	0.59	0.60	Good	None needed. Well performance is good.
IRZ-16	Upper	Injection	Nov-22	0.66	0.60	Good	None needed. Well performance is good.
IRZ-16	Upper	Injection	Dec-22	0.70	0.60	Good	None needed. Well performance is good.
IRZ-16	Upper	Injection	Jan-23	0.82	0.60	Good	None needed. Well performance is good.
IRZ-16	Upper	Injection	Feb-23	0.80	0.60	Good	None needed. Well performance is good.
IRZ-16	Upper	Injection	Mar-23	0.48	0.60	Fair	Well rehabilitation occurred in February and March 2023. Backwashing frequency increased to three times weekly.
IRZ-16	Upper	Injection	Apr-23	0.37	0.60	Poor	Lower specific capacity coincides with days where flowrate was reduced to manage ethanol mounding and higher water levels resulting from seasonal river stage. Not interpreted as fouling.
IRZ-16	Upper	Injection	May-23	0.18	0.60	Poor	Well operating at reduced flowrate due to high water levels caused by high river stage, resulting in lower specific capacity.
IRZ-16	Upper	Injection	Jun-23	0.17	0.60	Poor	Well operating at reduced flowrate due to high water levels caused by high river stage, resulting in lower specific capacity.
IRZ-16	Upper	Injection	Jul-23	0.17	0.60	Poor, but sustained	Well operating at reduced flowrate due to high water levels caused by high river stage, resulting in lower specific capacity. Well was shut down in early July following completion of treatment in northern upper zone. Well will be monitored upon restart.

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IRZ-16	Upper	Injection	Aug-23	--	0.60	--	NC
IRZ-16	Upper	Injection	Sep-23	0.27	0.60	Poor, but improving	Well operating at reduced flowrate due to high water levels caused by high river stage, resulting in lower specific capacity.
IRZ-16	Lower	Injection	Oct-22	0.71	0.78	Good	None needed. Well performance is good.
IRZ-16	Lower	Injection	Nov-22	0.66	0.78	Fair	Well rehabilitation scheduled for First Quarter 2023.
IRZ-16	Lower	Injection	Dec-22	0.53	0.78	Poor	Well rehabilitation scheduled for February 2023. Backwashing frequency to increase to twice weekly in January 2023.
IRZ-16	Lower	Injection	Jan-23	0.59	0.78	Poor	Backwashing frequency continued twice weekly. Well rehabilitation scheduled for February 2023.
IRZ-16	Lower	Injection	Feb-23	0.39	0.78	Poor	Well rehabilitation occurred.
IRZ-16	Lower	Injection	Mar-23	0.48	0.78	Poor	Well rehabilitation occurred in February and March 2023. Backwashing frequency increased to three times weekly.
IRZ-16	Lower	Injection	Apr-23	0.40	0.78	Poor	Lower specific capacity coincides with days where flowrate was reduced to manage ethanol mounding and higher water levels resulting from seasonal river stage. Not interpreted as fouling.
IRZ-16	Lower	Injection	May-23	0.39	0.78	Poor	Well operating at reduced flowrate as river stage increased, contributing to lower specific capacity.
IRZ-16	Lower	Injection	Jun-23	0.36	0.78	Poor	Lower specific capacity coincides with days where flowrate was reduced. Well is highly sensitive to minor adjustments to flowrate. Continue to monitor in Third Quarter as river stage has settled to determine if fouled.
IRZ-16	Lower	Injection	Jul-23	0.49	0.78	Poor, but improving	Lower specific capacity coincides with days where flowrate was reduced. Well is highly sensitive to minor adjustments to flowrate. Continue to monitor as river stage decreases.
IRZ-16	Lower	Injection	Aug-23	0.58	0.78	Poor, but improving	Well performance is improving. Gradual decrease in water level potentially associated with decreasing river stage. Continue to monitor as water level settles.
IRZ-16	Lower	Injection	Sep-23	0.51	0.78	Poor, but sustained	Well operating at or above target flowrate. Water level remained relatively stable. Not currently recommended for rehabilitation based on ability to maintain water level at target flowrate.
IRZ-17	Upper	Injection	Oct-22	0.88	0.76	Good	None needed. Well performance is good.
IRZ-17	Upper	Injection	Nov-22	0.93	0.76	Good	None needed. Well performance is good.
IRZ-17	Upper	Injection	Dec-22	0.82	0.76	Good	Well rehabilitation scheduled for January 2023 based on IRZ-17 (lower) performance.
IRZ-17	Upper	Injection	Jan-23	0.98	0.76	Good	None needed. Well performance is good.
IRZ-17	Upper	Injection	Feb-23	0.90	0.76	Good	None needed. Well performance is good.
IRZ-17	Upper	Injection	Mar-23	0.54	0.76	Poor	Backwashing frequency increased to three times weekly. Well operating at reduced flowrate due to high water levels, resulting in lower specific capacity.
IRZ-17	Upper	Injection	Apr-23	0.41	0.76	Poor	Well operating at reduced flowrate as river stage increased, contributing to lower specific capacity.
IRZ-17	Upper	Injection	May-23	0.36	0.76	Poor	Well operating at reduced flowrate as river stage increased, contributing to lower specific capacity.

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IRZ-17	Upper	Injection	Jun-23	0.26	0.76	Poor	Lower specific capacity coincides with beginning of the month when flowrate was low to manage higher water levels resulting from seasonal river stage. As river stage settled, flowrate increased 3 gpm and specific capacity improved.
IRZ-17	Upper	Injection	Jul-23	0.30	0.76	Poor, but improving	Lower specific capacity coincides with reduced flowrate. Specific capacity gradually improved from June as river stage settled. Well was shut down in early July following completion of treatment in northern upper zone. Well will be monitored upon restart.
IRZ-17	Upper	Injection	Aug-23	--	0.76	--	NC
IRZ-17	Upper	Injection	Sep-23	0.37	0.76	Poor, but improving	Injection well returned to operation on September 25th and flowrate gradually increased. Well will continue to be monitored for improvement in Fourth Quarter 2023.
IRZ-17	Lower	Injection	Oct-22	0.56	0.71	Poor	Backwashing frequency increased to twice weekly.
IRZ-17	Lower	Injection	Nov-22	0.50	0.71	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.
IRZ-17	Lower	Injection	Dec-22	0.42	0.71	Poor	Backwashing continued twice weekly.
IRZ-17	Lower	Injection	Jan-23	0.38	0.71	Poor	Well rehabilitation conducted in January.
IRZ-17	Lower	Injection	Feb-23	0.30	0.71	Poor	Backwashing continued twice weekly. Well operating at reduced flowrate due to high water levels, resulting in lower specific capacity.
IRZ-17	Lower	Injection	Mar-23	0.19	0.71	Poor	Backwashing increased to three times weekly. Well operating at reduced flowrate due to high water levels, resulting in lower specific capacity.
IRZ-17	Lower	Injection	Apr-23	0.22	0.71	Poor	Well operating at reduced flowrate as river stage increased, contributing to lower specific capacity.
IRZ-17	Lower	Injection	May-23	0.29	0.71	Poor	Well operating at reduced flowrate as river stage increased, contributing to lower specific capacity.
IRZ-17	Lower	Injection	Jun-23	0.37	0.71	Poor	Capacity improved as seasonal river stage relaxed and flowrate increased 3gpm. Not indicative of fouling.
IRZ-17	Lower	Injection	Jul-23	0.37	0.71	Poor, but sustained	Well performance stabilized below target flow rate at 8 gpm. Further action not needed.
IRZ-17	Lower	Injection	Aug-23	0.40	0.71	Poor, but sustained	Well performance stabilized below target flow rate at 8 gpm. Further action not needed.
IRZ-17	Lower	Injection	Sep-23	0.37	0.71	Poor, but sustained	Well performance stabilized below target flow rate at 8 gpm. Further action not needed.
IRZ-18	Upper	Injection	Oct-22	0.38	0.61	Poor	Backwashing frequency increased to twice weekly.
IRZ-18	Upper	Injection	Nov-22	0.36	0.61	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for December 2022.
IRZ-18	Upper	Injection	Dec-22	0.32	0.61	Poor	Well rehabilitation conducted in December. Well will continue to be monitored in January.
IRZ-18	Upper	Injection	Jan-23	0.36	0.61	Poor	Backwashing conducted twice weekly.
IRZ-18	Upper	Injection	Feb-23	0.27	0.61	Poor	Second well rehabilitation conducted in February.
IRZ-18	Upper	Injection	Mar-23	0.36	0.61	Poor	Backwashing frequency increased to three times weekly.
IRZ-18	Upper	Injection	Apr-23	--	0.61	--	NC
IRZ-18	Upper	Injection	May-23	--	0.61	--	Specific capacity was unable to be determined due to SCADA data loss. IRZ-18 operated on May 31, 2023 only.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-18	Upper	Injection	Jun-23	0.13	0.61	Poor	Well operating at reduced flowrate due to high water levels caused by high river stage, resulting in lower specific capacity. Well will continue to be monitored in Third Quarter 2023 to determine if well is fouled following period of downtime in Second Quarter 2023.
IRZ-18	Upper	Injection	Jul-23	0.11	0.61	Poor	Well operated at reduced flowrate due to high water levels, resulting in lower specific capacity. Well was shut down in early July following completion of treatment in northern upper zone. Well will be monitored upon restart.
IRZ-18	Upper	Injection	Aug-23	--	0.61	--	NC
IRZ-18	Upper	Injection	Sep-23	0.08	0.61	Poor	Well operated for two days, then shut down due to high water levels. Well performance was impacted by check valve installed in well to relieve pressure on lower well interval. Check valve will be removed and performance will continue to be monitored for fouling upon restart.
IRZ-18	Lower	Injection	Oct-22	0.64	0.73	Fair	Backwashing increased to twice weekly in November based on October performance.
IRZ-18	Lower	Injection	Nov-22	0.62	0.73	Fair	Backwash conducted twice weekly. Well rehabilitation scheduled for December 2022.
IRZ-18	Lower	Injection	Dec-22	0.56	0.73	Poor	Well rehabilitation conducted in mid to late December. Well will continue to be monitored in January.
IRZ-18	Lower	Injection	Jan-23	0.50	0.73	Poor	Backwashing conducted twice weekly.
IRZ-18	Lower	Injection	Feb-23	0.33	0.73	Poor	Second well rehabilitation conducted in February.
IRZ-18	Lower	Injection	Mar-23	0.40	0.73	Poor	Backwashing frequency increased to three times weekly.
IRZ-18	Lower	Injection	Apr-23	--	0.73	--	NC
IRZ-18	Lower	Injection	May-23	--	0.73	--	Specific capacity was unable to be determined due to SCADA data loss. IRZ-18 operated on May 31, 2023 only.
IRZ-18	Lower	Injection	Jun-23	0.33	0.73	Poor	Well will continue to be monitored in Third Quarter 2023 to determine if seasonal river stage is affecting capacity or if well is fouled following period of downtime in Second Quarter 2023.
IRZ-18	Lower	Injection	Jul-23	0.26	0.73	Poor	Well operating at reduced flowrates throughout the month to manage water levels with seasonal river stage. Continue to monitor to see if capacity stabilizes at lower flowrate.
IRZ-18	Lower	Injection	Aug-23	0.21	0.73	Poor, but sustained	Specific capacity is sustained at reduced flowrate. No further action needed.
IRZ-18	Lower	Injection	Sep-23	0.20	0.73	Poor, but sustained	Well scheduled for inspection and rehabilitation in early October 2023 due to observations at IRZ-18 upper.
IRZ-20	Upper	Injection	Oct-22	0.64	0.59	Good	None needed. Well performance is good.
IRZ-20	Upper	Injection	Nov-22	0.73	0.59	Good	None needed. Well performance is good.
IRZ-20	Upper	Injection	Dec-22	0.62	0.59	Good	Well rehabilitation scheduled for January 2023 based on IRZ-20 (lower) performance.
IRZ-20	Upper	Injection	Jan-23	0.52	0.59	Fair	Well rehabilitation occurred.
IRZ-20	Upper	Injection	Feb-23	0.63	0.59	Good	None needed. Well performance is good.
IRZ-20	Upper	Injection	Mar-23	0.36	0.59	Poor	Backwashing frequency increased to three times weekly.
IRZ-20	Upper	Injection	Apr-23	0.32	0.59	Poor	Well operating at reduced flowrate as river stage increased, contributing to lower specific capacity.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-20	Upper	Injection	May-23	0.25	0.59	Poor	Well operating at reduced flowrate as river stage increased, contributing to lower specific capacity.
IRZ-20	Upper	Injection	Jun-23	0.16	0.59	Poor	Well operating at reduced flowrate. Well is likely fouling as seasonal river stage settles in June. Continued operation at reduced flowrates to complete treatment in northern upper zone.
IRZ-20	Upper	Injection	Jul-23	0.11	0.59	Poor	Well operated at reduced flowrate due to high water levels, resulting in lower specific capacity. Well was shut down in early July following completion of treatment in northern upper zone. Well will be monitored upon restart.
IRZ-20	Upper	Injection	Aug-23	--	0.59	--	NC
IRZ-20	Upper	Injection	Sep-23	0.20	0.59	Poor, but improving	Specific capacity improved as flowrate returned to target rate and water levels continue to decrease with seasonal river stage. Will continue to monitor for possible rehabilitation after completion of rehabilitation of southern injection wells, since target flowrate is currently able to be maintained despite possible fouling.
IRZ-20	Lower	Injection	Oct-22	0.47	0.54	Fair	Backwashing conducted twice weekly.
IRZ-20	Lower	Injection	Nov-22	0.37	0.54	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.
IRZ-20	Lower	Injection	Dec-22	0.28	0.54	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.
IRZ-20	Lower	Injection	Jan-23	0.24	0.54	Poor	Well rehabilitation occurred.
IRZ-20	Lower	Injection	Feb-23	0.39	0.54	Poor	Backwashing occurred twice weekly.
IRZ-20	Lower	Injection	Mar-23	0.25	0.54	Poor	Backwashing frequency increased to three times weekly.
IRZ-20	Lower	Injection	Apr-23	0.21	0.54	Poor	Well operating at reduced flowrate as river stage increased, contributing to lower specific capacity.
IRZ-20	Lower	Injection	May-23	0.22	0.54	Poor	Well operating at reduced flowrate as river stage increased, contributing to lower specific capacity.
IRZ-20	Lower	Injection	Jun-23	0.32	0.54	Poor	Flowrate marginally increased after short period of downtime relaxed water levels, contributing to increased specific capacity.
IRZ-20	Lower	Injection	Jul-23	0.40	0.54	Poor, but improving	Specific capacity is poor, but improving throughout the month. Well continuing to operate at reduced flowrate due to seasonal river stage. Continue to monitor.
IRZ-20	Lower	Injection	Aug-23	0.70	0.54	Good	None needed. Well performance is good.
IRZ-20	Lower	Injection	Sep-23	0.59	0.54	Good	None needed. Well performance is good.
IRZ-21	Upper	Injection	Oct-22	--	--	--	NC
IRZ-21	Upper	Injection	Nov-22	--	--	--	NC
IRZ-21	Upper	Injection	Dec-22	--	--	--	NC
IRZ-21	Upper	Injection	Jan-23	--	--	--	NC
IRZ-21	Upper	Injection	Feb-23	--	--	--	NC
IRZ-21	Upper	Injection	Mar-23	--	--	--	NC
IRZ-21	Upper	Injection	Apr-23	--	--	--	NC
IRZ-21	Upper	Injection	May-23	--	--	--	NC
IRZ-21	Upper	Injection	Jun-23	--	--	--	NC
IRZ-21	Upper	Injection	Jul-23	--	--	--	NC
IRZ-21	Upper	Injection	Aug-23	--	--	--	NC
IRZ-21	Upper	Injection	Sep-23	--	--	--	NC
IRZ-21	Lower	Injection	Oct-22	--	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-21	Lower	Injection	Nov-22	--	--	--	NC
IRZ-21	Lower	Injection	Dec-22	--	--	--	NC
IRZ-21	Lower	Injection	Jan-23	--	--	--	NC
IRZ-21	Lower	Injection	Feb-23	--	--	--	NC
IRZ-21	Lower	Injection	Mar-23	--	--	--	NC
IRZ-21	Lower	Injection	Apr-23	--	--	--	NC
IRZ-21	Lower	Injection	May-23	--	--	--	NC
IRZ-21	Lower	Injection	Jun-23	--	--	--	NC
IRZ-21	Lower	Injection	Jul-23	--	--	--	NC
IRZ-21	Lower	Injection	Aug-23	--	--	--	NC
IRZ-21	Lower	Injection	Sep-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Oct-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Nov-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Dec-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jan-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Feb-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Mar-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Apr-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	May-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jun-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jul-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Aug-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Sep-23	--	--	--	NC
IRZ-25	Lower	Injection	Oct-22	--	--	--	NC
IRZ-25	Lower	Injection	Nov-22	--	--	--	NC
IRZ-25	Lower	Injection	Dec-22	--	--	--	NC
IRZ-25	Lower	Injection	Jan-23	--	--	--	NC
IRZ-25	Lower	Injection	Feb-23	--	--	--	NC
IRZ-25	Lower	Injection	Mar-23	--	--	--	NC
IRZ-25	Lower	Injection	Apr-23	--	--	--	NC
IRZ-25	Lower	Injection	May-23	--	--	--	NC
IRZ-25	Lower	Injection	Jun-23	--	--	--	NC
IRZ-25	Lower	Injection	Jul-23	--	--	--	NC
IRZ-25	Lower	Injection	Aug-23	--	--	--	NC
IRZ-25	Lower	Injection	Sep-23	--	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Oct-22	0.60	0.67	Fair	Backwashing increased to twice weekly in November based on October performance.
IRZ-27	Upper / Upper Middle	Injection	Nov-22	0.54	0.67	Fair	Backwashing conducted twice weekly.
IRZ-27	Upper / Upper Middle	Injection	Dec-22	0.50	0.67	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.
IRZ-27	Upper / Upper Middle	Injection	Jan-23	0.48	0.67	Poor	Well rehabilitation occurred.
IRZ-27	Upper / Upper Middle	Injection	Feb-23	0.42	0.67	Poor	Backwashing conducted twice weekly.
IRZ-27	Upper / Upper Middle	Injection	Mar-23	0.35	0.67	Poor	Backwashing frequency increased to three times weekly.
IRZ-27	Upper / Upper Middle	Injection	Apr-23	--	0.67	--	NC
IRZ-27	Upper / Upper Middle	Injection	May-23	--	0.67	--	NC
IRZ-27	Upper / Upper Middle	Injection	Jun-23	0.33	0.67	Poor	Rehabilitation conducted April through May 2023. Backwashing conducted thrice weekly starting in June. Reduced performance possibly influenced by seasonal river stage resulting in higher water levels. Will continue to monitor in Third Quarter to assess rehabilitation effectiveness.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-27	Upper / Upper Middle	Injection	Jul-23	0.25	0.67	Poor	Well performance initially improved after rehabilitation, but deteriorated following a few weeks of operation. Well operating at reduced flowrate, contributing to reduced specific capacity. Continue to monitor as water levels relax with seasonal river stage to determine if fouled.
IRZ-27	Upper / Upper Middle	Injection	Aug-23	0.17	0.67	Poor	Well rehabilitation scheduled for September 2023. Unable to maintain target flowrates with water levels.
IRZ-27	Upper / Upper Middle	Injection	Sep-23	0.16	0.67	Poor	Rehabilitation occurred end of September 2023 with modified procedure and will continue in Fourth Quarter 2023. See Section 3.3 for additional information.
IRZ-27	Lower	Injection	Oct-22	0.52	0.49	Good	None needed. Well performance is good.
IRZ-27	Lower	Injection	Nov-22	0.52	0.49	Good	None needed. Well performance is good.
IRZ-27	Lower	Injection	Dec-22	0.51	0.49	Good	Well rehabilitation scheduled for January 2023 based on IRZ-27 (upper) performance.
IRZ-27	Lower	Injection	Jan-23	0.47	0.49	Good	Well rehabilitation occurred.
IRZ-27	Lower	Injection	Feb-23	0.40	0.49	Fair	Backwashing conducted twice weekly.
IRZ-27	Lower	Injection	Mar-23	0.33	0.49	Poor	Backwashing frequency increased to three times weekly.
IRZ-27	Lower	Injection	Apr-23	--	0.49	--	NC
IRZ-27	Lower	Injection	May-23	--	0.49	--	NC
IRZ-27	Lower	Injection	Jun-23	0.37	0.49	Poor	Rehabilitation conducted April through May 2023. Backwashing conducted thrice weekly starting in June. Reduced performance possibly influenced by seasonal river stage resulting in higher water levels. Will continue to monitor in Third Quarter to assess rehabilitation effectiveness.
IRZ-27	Lower	Injection	Jul-23	0.28	0.49	Poor	Well performance initially improved after rehabilitation, but deteriorated following a few weeks of operation. Reduced specific capacity coincides with days where flowrate was reduced to manage high water levels. Will continue to monitor as river stage decreases to determine if fouled.
IRZ-27	Lower	Injection	Aug-23	0.24	0.49	Poor	Specific capacity decreased with continued operation. Rehabilitation scheduled for September 2023.
IRZ-27	Lower	Injection	Sep-23	0.22	0.49	Poor	Rehabilitation occurred end of September 2023 with modified procedure and will continue in Fourth Quarter 2023. See Section 3.3 for additional information.
IRZ-29	Upper	Injection	Oct-22	--	--	--	NC
IRZ-29	Upper	Injection	Nov-22	--	--	--	NC
IRZ-29	Upper	Injection	Dec-22	0.31	0.41	Poor	Well brought online after an extended period of downtime. Well will be monitored in January for flowrate and water level stabilization. Well rehabilitation scheduled for February 2023.
IRZ-29	Upper	Injection	Jan-23	0.26	0.41	Poor	Backwashing frequency increased to twice weekly.
IRZ-29	Upper	Injection	Feb-23	0.37	0.41	Good	Well rehabilitation occurred.
IRZ-29	Upper	Injection	Mar-23	0.35	0.41	Fair	Backwashing frequency increased to three times weekly.
IRZ-29	Upper	Injection	Apr-23	--	0.41	--	NC
IRZ-29	Upper	Injection	May-23	--	0.41	--	Well rehabilitation occurred.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-29	Upper	Injection	Jun-23	--	0.41	--	NC
IRZ-29	Upper	Injection	Jul-23	0.41	0.41	Good	None needed. Well performance is good.
IRZ-29	Upper	Injection	Aug-23	0.28	0.41	Poor, but sustained	Well performance initially improved after rehabilitation, but deteriorated with continued operation. Performance is poor, but specific capacity began to stabilize in August. Continue to monitor as river stage decreases.
IRZ-29	Upper	Injection	Sep-23	0.28	0.41	Poor, but sustained	Specific capacity is sustained. Well scheduled for rehabilitation in Fourth Quarter 2023.
IRZ-29	Lower	Injection	Oct-22	--	--	--	NC
IRZ-29	Lower	Injection	Nov-22	--	--	--	NC
IRZ-29	Lower	Injection	Dec-22	0.45	0.52	Fair	Well brought online after an extended period of downtime. Well will be monitored in January for flowrate and water level stabilization. Well rehabilitation scheduled for February 2023.
IRZ-29	Lower	Injection	Jan-23	0.37	0.52	Poor	Backwashing frequency increased to twice weekly.
IRZ-29	Lower	Injection	Feb-23	0.38	0.52	Poor	Well rehabilitation occurred.
IRZ-29	Lower	Injection	Mar-23	0.36	0.52	Poor	Backwashing frequency increased to three times weekly.
IRZ-29	Lower	Injection	Apr-23	--	0.52	--	NC
IRZ-29	Lower	Injection	May-23	--	0.52	--	Well rehabilitation occurred.
IRZ-29	Lower	Injection	Jun-23	--	0.52	--	NC
IRZ-29	Lower	Injection	Jul-23	0.30	0.52	Poor	Well performance initially improved after rehabilitation, but deteriorated with continued operation. Well operated at reduced flowrate due to seasonal river stage, contributing to reduced specific capacity. Continue to monitor as river stage relaxes to determine if fouled.
IRZ-29	Lower	Injection	Aug-23	0.28	0.52	Poor, but sustained	Specific capacity is poor, but stabilized at reduced flowrates. Continue to monitor as river stage decreases. Rehabilitation procedure is being reviewed.
IRZ-29	Lower	Injection	Sep-23	0.38	0.52	Poor, but improving	Specific capacity is improving. Well scheduled for rehabilitation in Fourth Quarter 2023.
IRZ-31	Upper	Injection	Oct-22	0.56	0.58	Good	None needed. Well performance is good.
IRZ-31	Upper	Injection	Nov-22	0.54	0.58	Good	None needed. Well performance is good.
IRZ-31	Upper	Injection	Dec-22	0.46	0.58	Poor	Well rehabilitation scheduled for January 2023.
IRZ-31	Upper	Injection	Jan-23	0.43	0.58	Poor	Well rehabilitation occurred.
IRZ-31	Upper	Injection	Feb-23	0.41	0.58	Poor	Backwashing frequency occurred twice weekly.
IRZ-31	Upper	Injection	Mar-23	0.33	0.58	Poor	Backwashing frequency increased to three times weekly.
IRZ-31	Upper	Injection	Apr-23	--	0.58	--	NC
IRZ-31	Upper	Injection	May-23	--	0.58	--	Well rehabilitation occurred.
IRZ-31	Upper	Injection	Jun-23	--	0.58	--	NC
IRZ-31	Upper	Injection	Jul-23	0.38	0.58	Poor	Well performance initially improved after rehabilitation, but deteriorated with continued operation. Well operated at reduced flowrate due to seasonal river stage, contributing to reduced specific capacity. Continue to monitor as river stage relaxes to determine if fouled.
IRZ-31	Upper	Injection	Aug-23	0.21	0.58	Poor	Flowrate reduced to manage high water levels. Fouling is suspected. Well rehabilitation procedure is being reviewed to improve effectiveness.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-31	Upper	Injection	Sep-23	0.26	0.58	Poor, but improving	Wellhead dosing conducted on well as additional maintenance strategy to manage fouling. See Table 3.2. Well performance improved following wellhead dosing. Well scheduled for rehabilitation in Fourth Quarter 2023.
IRZ-31	Lower	Injection	Oct-22	0.41	0.46	Fair	Backwashing increased to twice weekly in November based on October performance.
IRZ-31	Lower	Injection	Nov-22	0.39	0.46	Fair	Backwashing conducted twice weekly.
IRZ-31	Lower	Injection	Dec-22	0.35	0.46	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.
IRZ-31	Lower	Injection	Jan-23	0.31	0.46	Poor	Well rehabilitation occurred.
IRZ-31	Lower	Injection	Feb-23	0.30	0.46	Poor	Backwashing frequency occurred twice weekly.
IRZ-31	Lower	Injection	Mar-23	0.25	0.46	Poor	Backwashing frequency increased to three times weekly.
IRZ-31	Lower	Injection	Apr-23	--	0.46	--	NC
IRZ-31	Lower	Injection	May-23	--	0.46	--	Well rehabilitation occurred.
IRZ-31	Lower	Injection	Jun-23	--	0.46	--	NC
IRZ-31	Lower	Injection	Jul-23	0.31	0.46	Poor	Well performance initially improved after rehabilitation, but deteriorated with continued operation. Well operated at reduced flowrate due to seasonal river stage, contributing to reduced specific capacity. Continue to monitor as river stage relaxes to determine if fouled.
IRZ-31	Lower	Injection	Aug-23	0.27	0.46	Poor	Flowrate reduced to manage high water levels. Fouling is suspected. Well rehabilitation procedure is being reviewed to improve effectiveness.
IRZ-31	Lower	Injection	Sep-23	0.33	0.46	Poor, but improving	Wellhead dosing conducted on well as additional maintenance strategy to manage fouling. See Table 3.2. Well performance improved following wellhead dosing. Well scheduled for rehabilitation in Fourth Quarter 2023.
IRZ-33	Upper	Injection	Oct-22	0.39	0.50	Poor	Backwashing increased to twice weekly in November based on October performance.
IRZ-33	Upper	Injection	Nov-22	0.30	0.50	Poor	Backwashing conducted twice weekly. Well rehabilitation scheduled for December 2022.
IRZ-33	Upper	Injection	Dec-22	0.34	0.50	Poor	Well rehabilitation conducted in December. Well will continue to be monitored in January.
IRZ-33	Upper	Injection	Jan-23	0.36	0.50	Poor	Backwashing frequency increased to twice weekly.
IRZ-33	Upper	Injection	Feb-23	0.23	0.50	Poor	Backwashing continued twice weekly.
IRZ-33	Upper	Injection	Mar-23	0.18	0.50	Poor	Backwashing frequency increased to three times weekly.
IRZ-33	Upper	Injection	Apr-23	--	0.50	--	NC
IRZ-33	Upper	Injection	May-23	--	0.50	--	Well rehabilitation occurred.
IRZ-33	Upper	Injection	Jun-23	--	0.50	--	NC
IRZ-33	Upper	Injection	Jul-23	0.28	0.50	Poor	Well rehabilitation occurred in Second Quarter 2023 and well returned to operation by mid-July 2023. Well performance initially improved after rehabilitation. Continue to monitor in August to determine rehabilitation effectiveness.
IRZ-33	Upper	Injection	Aug-23	0.27	0.50	Poor, but sustained	Specific capacity is sustained. Well rehabilitation procedure is being reviewed and well is planned for rehabilitation in Fourth Quarter 2023.
IRZ-33	Upper	Injection	Sep-23	0.27	0.50	Poor, but sustained	Specific capacity is sustained. Well scheduled for rehabilitation in Fourth Quarter 2023.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-33	Lower	Injection	Oct-22	0.34	0.36	Good	None needed. Well performance is good.
IRZ-33	Lower	Injection	Nov-22	0.30	0.36	Fair	Well rehabilitation scheduled for December 2022.
IRZ-33	Lower	Injection	Dec-22	0.25	0.36	Poor	Well rehabilitation conducted in December. Well performance will continue to be monitored in January for improved performance.
IRZ-33	Lower	Injection	Jan-23	0.28	0.36	Poor	Backwashing frequency increased to twice weekly.
IRZ-33	Lower	Injection	Feb-23	0.22	0.36	Poor	Backwashing continued twice weekly.
IRZ-33	Lower	Injection	Mar-23	0.20	0.36	Poor	Backwashing frequency increased to three times weekly.
IRZ-33	Lower	Injection	Apr-23	--	0.36	--	NC
IRZ-33	Lower	Injection	May-23	--	0.36	--	Well rehabilitation occurred.
IRZ-33	Lower	Injection	Jun-23	--	0.36	--	NC
IRZ-33	Lower	Injection	Jul-23	0.98	0.36	Good	None needed. Well performance is good.
IRZ-33	Lower	Injection	Aug-23	--	0.36	--	NC
IRZ-33	Lower	Injection	Sep-23	0.23	0.36	Poor	Well scheduled for rehabilitation in Fourth Quarter 2023.
IRZ-35	Upper	Injection	Oct-22	0.41	0.48	Fair	Backwashing intended to occur twice weekly in November based on October performance.
IRZ-35	Upper	Injection	Nov-22	0.39	0.48	Fair	Operations team determined backwash pump wires for IRZ-37 and IRZ-35 were switched, causing IRZ-37 to be backwashed twice weekly instead of IRZ-35. The switched pump wires were identified and corrected in January 2023.
IRZ-35	Upper	Injection	Dec-22	0.37	0.48	Poor	Well rehabilitation scheduled for January 2023.
IRZ-35	Upper	Injection	Jan-23	0.33	0.48	Poor	Backwashing frequency increased to twice weekly.
IRZ-35	Upper	Injection	Feb-23	0.33	0.48	Poor	Well rehabilitation occurred.
IRZ-35	Upper	Injection	Mar-23	0.28	0.48	Poor	Backwashing frequency increased to three times weekly.
IRZ-35	Upper	Injection	Apr-23	--	0.48	--	NC
IRZ-35	Upper	Injection	May-23	--	0.48	--	Well rehabilitation occurred.
IRZ-35	Upper	Injection	Jun-23	--	0.48	--	NC
IRZ-35	Upper	Injection	Jul-23	0.30	0.48	Poor	Well rehabilitation occurred in Second Quarter 2023 and well returned to operation by mid-July 2023. Well performance initially improved after rehabilitation. Continue to monitor in August to determine rehabilitation effectiveness.
IRZ-35	Upper	Injection	Aug-23	0.28	0.48	Poor	Well operating at reduced flowrate to manage water levels, contributing to reduced specific capacity. Well rehabilitation procedure is being reviewed and well is planned for rehabilitation in Fourth Quarter 2023.
IRZ-35	Upper	Injection	Sep-23	4.9	0.48	Good	None needed. Well performance is good.
IRZ-37	Upper	Injection	Oct-22	0.32	0.35	Good	None needed. Well performance is good.
IRZ-37	Upper	Injection	Nov-22	0.31	0.35	Fair	Backwashing conducted twice weekly. Well rehabilitation scheduled for First Quarter 2023.
IRZ-37	Upper	Injection	Dec-22	0.30	0.35	Fair	Backwashing conducted twice weekly. Well rehabilitation scheduled for First Quarter 2023.
IRZ-37	Upper	Injection	Jan-23	0.22	0.35	Poor	Well rehabilitation occurred.
IRZ-37	Upper	Injection	Feb-23	0.22	0.35	Poor	Backwashing conducted twice weekly.
IRZ-37	Upper	Injection	Mar-23	0.18	0.35	Poor	Backwashing frequency increased to three times weekly.
IRZ-37	Upper	Injection	Apr-23	--	0.35	--	NC
IRZ-37	Upper	Injection	May-23	--	0.35	--	Well rehabilitation occurred.
IRZ-37	Upper	Injection	Jun-23	--	0.35	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-37	Upper	Injection	Jul-23	0.19	0.35	Poor	Well performance initially improved after rehabilitation but began to deteriorate after continued operation. Target flowrate was unable to be maintained due to high water levels. Well rehabilitation procedure is being reviewed.
IRZ-37	Upper	Injection	Aug-23	0.12	0.35	Poor	Well operated at reduced flowrate to manage high water levels, contributing to reduced specific capacity. Specific capacity stabilized by the end of the month.
IRZ-37	Upper	Injection	Sep-23	0.12	0.35	Poor, but sustained	Wellhead dosing conducted on well as additional maintenance strategy to manage fouling. Well scheduled for rehabilitation in October 2023.
IRZ-39	Upper	Injection	Oct-22	--	--	--	NC
IRZ-39	Upper	Injection	Nov-22	--	--	--	NC
IRZ-39	Upper	Injection	Dec-22	--	--	--	NC
IRZ-39	Upper	Injection	Jan-23	0.06	--	--	NC
IRZ-39	Upper	Injection	Feb-23	0.11	--	--	NC
IRZ-39	Upper	Injection	Mar-23	0.03	--	--	NC
IRZ-39	Upper	Injection	Apr-23	--	--	--	NC
IRZ-39	Upper	Injection	May-23	--	--	--	NC
IRZ-39	Upper	Injection	Jun-23	--	--	--	NC
IRZ-39	Upper	Injection	Jul-23	--	--	--	NC
IRZ-39	Upper	Injection	Aug-23	--	--	--	NC
IRZ-39	Upper	Injection	Sep-23	--	--	--	NC
IRZ-9	Upper	Extraction	Oct-22	--	--	--	NC
IRZ-9	Upper	Extraction	Nov-22	47	--	--	NC
IRZ-9	Upper	Extraction	Dec-22	--	--	--	NC
IRZ-9	Upper	Extraction	Jan-23	47	--	--	NC
IRZ-9	Upper	Extraction	Feb-23	72	--	--	NC
IRZ-9	Upper	Extraction	Mar-23	39	--	--	NC
IRZ-9	Upper	Extraction	Apr-23	--	--	--	NC
IRZ-9	Upper	Extraction	May-23	--	--	--	NC
IRZ-9	Upper	Extraction	Jun-23	--	--	--	NC
IRZ-9	Upper	Extraction	Jul-23	--	--	--	NC
IRZ-9	Upper	Extraction	Aug-23	62	--	--	NC
IRZ-9	Upper	Extraction	Sep-23	--	--	--	NC
IRZ-13D	Lower	Extraction	Oct-22	4.9	6.2	Poor	Lower specific capacities measured when flowrate increased and greater drawdown occurred. Not interpreted as fouling. No action taken.
IRZ-13D	Lower	Extraction	Nov-22	4.9	6.2	Poor	Low specific capacity continued while higher flowrate was maintained. Not interpreted as fouling. No action taken.
IRZ-13D	Lower	Extraction	Dec-22	4.2	6.2	Poor	Lower specific capacities measured when flowrate increased and greater drawdown occurred. Not interpreted as fouling. No action taken.
IRZ-13D	Lower	Extraction	Jan-23	6.1	6.2	Good	None needed. Well performance is good.
IRZ-13D	Lower	Extraction	Feb-23	18	6.2	Good	None needed. Well performance is good.
IRZ-13D	Lower	Extraction	Mar-23	5.1	6.2	Fair	Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-13D	Lower	Extraction	Apr-23	--	--	--	NC
IRZ-13D	Lower	Extraction	May-23	--	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-13D	Lower	Extraction	Jun-23	1.4	6.2	Poor	Well operated intermittently. Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-13D	Lower	Extraction	Jul-23	4.9	6.2	Poor	Well operated intermittently. Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-13D	Lower	Extraction	Aug-23	5.2	6.2	Fair	Well operated intermittently. Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-13D	Lower	Extraction	Sep-23	6.4	6.2	Good	None needed. Well performance is good.
IRZ-13S	Upper	Extraction	Oct-22	12	9.3	Good	None needed. Well performance is good.
IRZ-13S	Upper	Extraction	Nov-22	12	9.3	Good	None needed. Well performance is good.
IRZ-13S	Upper	Extraction	Dec-22	12	9.3	Good	None needed. Well performance is good.
IRZ-13S	Upper	Extraction	Jan-23	16	9.3	Good	None needed. Well performance is good.
IRZ-13S	Upper	Extraction	Feb-23	10	9.3	Good	None needed. Well performance is good.
IRZ-13S	Upper	Extraction	Mar-23	9.4	9.3	Good	None needed. Well performance is good.
IRZ-13S	Upper	Extraction	Apr-23	--	--	--	NC
IRZ-13S	Upper	Extraction	May-23	1.6	9.3	Poor	Well operated intermittently. Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-13S	Upper	Extraction	Jun-23	1.6	9.3	Poor	Well operated intermittently. Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-13S	Upper	Extraction	Jul-23	3.2	9.3	Poor	Well operated intermittently. Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-13S	Upper	Extraction	Aug-23	2.4	9.3	Poor	Well operated intermittently. Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-13S	Upper	Extraction	Sep-23	3.7	9.3	Poor	Well operated intermittently. Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-23	Lower	Extraction	Oct-22	39	41	Good	None needed. Well performance is good.
IRZ-23	Lower	Extraction	Nov-22	25	41	Poor	Lower specific capacities measured when flowrate increased and greater drawdown occurred. Not interpreted as fouling. No action taken.
IRZ-23	Lower	Extraction	Dec-22	21	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Jan-23	17	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Feb-23	16	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Mar-23	8.9	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Apr-23	6.1	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-23	Lower	Extraction	May-23	6.2	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Jun-23	22	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Jul-23	32	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Aug-23	57	41	Good	None needed. Well performance is good.
IRZ-23	Lower	Extraction	Sep-23	70	41	Good	None needed. Well performance is good.

- Notes:**
- Specific capacities are calculated on five-minute intervals as flowrates measured from flowmeters divided by the change in water level measured from transducers compared to baseline.
Baseline static water levels were adjusted by the typically observed difference in water levels at time of development and January, which is the month where water levels are at their lowest at the Site. Average monthly specific capacities were then calculated by averaging the five-minute interval specific capacities.
 - Target flowrates in the north (IRZ-15, IRZ-16, IRZ-17, IRZ-18, IRZ-20) are the nominal design flowrates. Target flowrates in the south (IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, IRZ-39) are 1.5 times the nominal design flowrate.

Acronyms and Abbreviations:
-- = not operating or not applicable due to baseline not having been established yet
btoc = below top of casing
ft = foot
gpm = gallon per minute
ID = identification
IRZ = in-situ reactive zone
NC = no comment
NTH = National Trails Highway
SCADA = supervisory data control and acquisition

Table 3.4
Third Quarter 2023 Water Quality Field Parameters
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	Depth to Water (ft bTOC)	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
C-BNS	08/16/2023	nm	8.08	1,155	1.00	8.46	23.7	0.57	750	99.8
C-CON-D	08/17/2023	nm	8.07	1,153	2.00	8.35	22.8	0.57	750	93.6
C-CON-S	08/17/2023	nm	8.06	1,154	2.00	8.31	22.8	0.57	750	91.7
C-I-3-D	08/16/2023	nm	8.10	1,155	2.00	8.40	23.6	0.57	750	95.6
C-I-3-S	08/16/2023	nm	8.10	1,155	2.00	8.45	23.5	0.57	750	96.1
C-MAR-D	08/17/2023	nm	8.02	1,158	9.00	4.89	23.1	0.58	750	75.3
C-MAR-S	08/17/2023	nm	7.99	1,161	7.00	4.75	23.1	0.58	750	77.1
C-NR1-D	08/17/2023	nm	8.05	1,152	2.00	8.30	22.7	0.57	750	93.9
C-NR1-S	08/17/2023	nm	8.06	1,153	2.00	8.25	22.7	0.57	740	92.6
C-NR3-D	08/17/2023	nm	8.05	1,154	2.00	8.18	22.8	0.57	750	92.7
C-NR3-S	08/17/2023	nm	8.05	1,152	3.00	8.22	22.8	0.57	750	93.2
C-NR4-D	08/17/2023	nm	8.04	1,153	1.00	8.41	22.8	0.57	750	91.4
C-NR4-S	08/17/2023	nm	8.04	1,155	1.00	8.35	22.8	0.57	750	94.9
C-R22A-D	08/16/2023	nm	8.10	1,157	2.00	8.48	24.2	0.57	750	96.5
C-R22A-S	08/16/2023	nm	8.09	1,158	2.00	8.41	24.2	0.58	750	96.1
C-R27-D	08/16/2023	nm	8.08	1,156	2.00	8.53	23.9	0.57	750	97.5
C-R27-S	08/16/2023	nm	8.08	1,155	2.00	8.57	23.8	0.57	750	97.9
C-TAZ-D	08/16/2023	nm	8.04	1,164	2.00	8.53	23.8	0.58	750	96.5
C-TAZ-S	08/16/2023	nm	8.07	1,158	1.00	8.56	23.7	0.58	750	98.1
IRZ-09-100	08/23/2023	nm	8.21	10,256	0.10	1.27	28.9	0.00	0	0.0
IRZ-13D-210	08/23/2023	nm	8.01	15,569	0.60	0.88	27.5	0.00	0	51.2
IRZ-13S-095	07/28/2023	nm	7.99	8,440	3.20	2.13	27.1	0.00	0	45.2
IRZ-13S-095	08/23/2023	nm	8.30	7,977	0.20	3.68	26.8	0.00	0	51.2
IRZ-21-065	08/15/2023	nm	8.27	7,911	1.60	2.10	27.7	0.00	0	60.8
IRZ-21-157	08/15/2023	nm	8.03	9,316	0.50	1.83	30.6	0.00	0	15.2
IRZ-23-143	08/23/2023	nm	8.35	8,444	1.20	1.62	27.2	0.00	0	65.2
IRZ-25-100	08/15/2023	nm	7.78	9,476	2.09	4.00	29.3	0.00	0	86.5
IRZ-25-166	08/15/2023	nm	7.65	11,580	2.00	1.19	29.9	0.00	0	47.1
MARINA-1	09/14/2023	33.32	7.50	32,226	6.00	0.31	32.4	0.20	20,950	-36.8
MTS-1	08/15/2023	112.7	7.40	2,944	4.00	2.09	36.7	1.49	1,910	64.3
MTS-2	08/15/2023	33.62	7.71	3,137	5.00	1.60	39.5	1.60	2,040	16.8
MW-20-070	07/20/2023	44.33	7.68	3,335	12.00	0.80	30.3	1.73	2,160	-41.8
MW-20-070	08/11/2023	43.9	7.38	3,730	3.00	0.69	29.1	1.95	2,420	-28.4

Table 3.4
Third Quarter 2023 Water Quality Field Parameters
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	Depth to Water (ft bTOC)	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
MW-20-070	09/14/2023	44.47	8.01	3,724	5.00	1.25	30.5	1.94	2,420	26.8
MW-20-100	07/20/2023	44.81	7.21	5,100	6.00	0.70	31.8	2.71	3,310	-62.3
MW-20-100	08/11/2023	43.03	7.23	5,172	2.00	1.04	28.9	2.77	3,360	3.3
MW-20-100	09/14/2023	43.73	7.91	4,728	3.00	0.65	31.2	2.50	3,060	-4.7
MW-20-130	07/20/2023	45.14	7.10	13,740	9.00	0.87	31.3	7.84	8,910	-43.6
MW-20-130	08/11/2023	43.52	7.61	11,272	4.00	0.50	29.6	6.35	7,320	-34.8
MW-20-130	09/14/2023	44.2	7.47	11,079	7.00	0.99	31.0	6.22	7,180	12.1
MW-21	07/20/2023	48.69	6.80	9,307	35.00	0.52	38.9	5.09	6,080	-23.3
MW-21	08/09/2023	49.05	7.87	9,305	29.00	0.62	36.3	5.10	5,970	-96.9
MW-21	09/14/2023	50	7.24	8,764	6.00	1.20	33.0	4.83	5,700	-93.1
MW-22	08/16/2023	4.31	6.70	29,188	14.00	1.72	31.7	0.18	18,900	-78.9
MW-26	07/20/2023	45.28	7.43	9,781	23.00	0.83	30.5	5.46	6,370	65.9
MW-26	08/10/2023	45.32	7.41	9,819	13.00	0.79	30.9	5.43	6,390	77.8
MW-26	09/14/2023	47	7.22	8,338	11.00	0.73	32.0	4.58	5,410	202.6
MW-27-020	08/23/2023	6.9	7.27	1,745	7.00	1.55	21.8	0.88	1,120	35.7
MW-27-060	08/23/2023	7.14	7.83	2,166	5.00	1.45	20.3	1.12	1,440	23.5
MW-27-085	08/23/2023	6.97	7.72	13,459	4.00	2.20	20.6	7.75	8,710	62.8
MW-28-025	08/24/2023	12.82	7.23	1,531	4.00	1.33	24.2	0.77	990	26.7
MW-28-090	08/24/2023	13.5	7.30	7,704	4.00	0.72	24.4	4.28	5,030	-84.7
MW-29	08/22/2023	30.84	7.18	2,278	8.00	0.45	28.9	1.16	1,480	30.4
MW-30-050	07/18/2023	12.94	7.28	1,977	7.00	1.46	27.0	1.00	1,280	56.8
MW-30-050	08/08/2023	12.63	7.30	2,201	5.00	1.49	29.5	1.26	1,530	48.1
MW-30-050	09/12/2023	14.31	7.65	1,636	4.00	1.48	25.9	0.82	1,060	169.2
MW-31-060	08/11/2023	38.12	7.29	7,816	6.00	0.74	29.9	4.42	5,190	-305.6
MW-31-060	09/14/2023	40.22	7.63	9,525	4.00	0.76	30.3	5.30	6,190	96.1
MW-31-135	07/21/2023	39.83	7.88	12,985	46.00	0.52	28.9	7.41	8,430	-88.8
MW-31-135	08/11/2023	39.61	7.74	12,969	18.00	0.72	29.8	7.47	8,450	-36.1
MW-31-135	09/14/2023	40.74	7.63	11,375	12.00	0.90	30.6	6.42	7,390	191.8
MW-32-020	08/16/2023	6.41	7.06	28,485	4.00	1.09	28.6	0.17	18,510	-86.6
MW-32-035	08/16/2023	6.91	6.95	11,905	14.00	1.04	26.6	6.78	7,740	-87.9
MW-33-040	08/23/2023	33.08	7.63	19,105	8.00	0.64	28.3	0.11	12,430	35.8
MW-33-090	08/23/2023	33.12	7.17	10,363	4.00	0.44	28.8	5.82	6,730	38.6
MW-33-150	08/23/2023	33.61	7.43	15,940	4.00	0.33	29.9	9.26	10,370	35.9

Table 3.4
Third Quarter 2023 Water Quality Field Parameters
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	Depth to Water (ft bTOC)	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
MW-33-210	08/23/2023	33.27	7.29	17,794	6.00	0.42	28.7	0.10	11,540	42.9
MW-34-055	08/23/2023	6.58	7.52	963	1.00	1.96	21.5	0.47	610	95.8
MW-34-080	07/18/2023	4.84	7.80	9,065	5.00	1.77	20.7	4.91	5,740	-24.4
MW-34-080	08/09/2023	6.63	7.54	8,553	4.00	2.47	21.7	4.80	5,500	83.1
MW-34-080	09/14/2023	7.24	7.33	8,409	5.00	1.50	22.2	4.68	5,460	43.3
MW-34-100	08/23/2023	6.8	7.58	13,541	3.00	3.20	20.8	7.88	8,840	115.5
MW-35-060	08/17/2023	27.29	7.41	7,712	45.00	1.03	28.3	4.21	4,970	117.5
MW-35-135	08/17/2023	26.32	7.68	11,298	48.00	1.79	27.5	6.38	7,340	48.9
MW-36-020	08/15/2023	14.22	7.55	1,301	8.00	0.60	23.0	0.65	840	-106.0
MW-36-040	08/15/2023	14.54	7.59	1,625	6.00	0.87	21.8	0.82	1,050	-101.7
MW-36-050	08/15/2023	14.57	7.51	1,427	5.00	0.58	21.4	0.72	920	-55.3
MW-36-070	08/15/2023	14.23	7.56	1,044	6.00	0.59	21.6	0.52	670	-36.6
MW-36-090	07/18/2023	13.8	7.46	7,813	7.00	1.01	21.6	4.34	5,080	31.4
MW-36-090	08/10/2023	13.61	7.52	7,806	5.00	1.07	29.3	3.95	4,840	33.8
MW-36-090	09/14/2023	15.32	7.52	7,172	3.00	0.87	21.5	3.97	4,660	179.3
MW-36-100	07/18/2023	13.95	7.24	7,723	6.00	0.79	21.4	4.29	5,070	-35.5
MW-36-100	08/10/2023	13.82	7.23	7,789	7.00	0.79	29.4	4.25	4,960	-27.1
MW-36-100	09/14/2023	15.4	7.45	7,753	5.00	0.77	21.7	4.29	5,030	53.2
MW-38D	08/18/2023	70.43	10.72	18,287	14.00	0.83	29.2	0.11	11,880	68.3
MW-38S	08/18/2023	68.93	7.96	2,135	7.00	0.97	29.3	1.08	1,380	106.4
MW-39-040	07/18/2023	12.18	7.61	1,118	13.00	0.46	24.6	0.55	720	-150.3
MW-39-040	08/08/2023	12.11	7.50	1,202	6.00	1.74	30.2	0.51	690	-17.6
MW-39-040	09/12/2023	13.28	8.09	1,162	17.00	0.82	23.6	0.58	760	56.1
MW-39-050	07/18/2023	12.09	7.27	1,098	5.00	0.46	24.2	0.54	700	71.6
MW-39-050	08/08/2023	12.1	7.09	1,070	3.00	0.33	30.3	0.50	680	67.1
MW-39-050	09/12/2023	13.21	7.63	1,082	4.00	0.80	25.6	0.53	700	171.5
MW-39-060	07/18/2023	12.24	7.25	1,198	4.00	0.32	25.3	0.59	770	82.1
MW-39-060	08/08/2023	12.16	7.26	1,171	4.00	0.45	30.2	0.59	760	97.1
MW-39-060	09/12/2023	13.33	7.45	2,551	48.00	0.47	23.7	1.31	1,650	178.4
MW-39-070	07/18/2023	12.4	7.06	6,846	8.00	0.52	23.1	3.76	4,450	18.7
MW-39-070	08/08/2023	12.26	7.04	8,116	3.00	0.53	30.1	3.39	4,100	17.1
MW-39-070	09/12/2023	13.15	7.31	5,714	4.00	1.20	22.6	3.10	3,710	183.6
MW-39-080	07/18/2023	12.43	6.94	11,784	6.00	0.44	23.9	6.74	7,670	97.9

Table 3.4
Third Quarter 2023 Water Quality Field Parameters
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	Depth to Water (ft bTOC)	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
MW-39-080	08/08/2023	12.52	6.98	11,116	5.00	0.52	30.4	5.20	5,860	89.4
MW-39-080	09/12/2023	13.19	7.14	10,879	3.00	0.39	24.1	6.18	7,080	167.5
MW-39-100	07/18/2023	12.42	7.02	15,481	7.00	0.27	23.9	8.94	9,930	126.0
MW-39-100	08/08/2023	12.35	7.19	15,828	10.00	0.48	30.9	7.62	8,850	92.3
MW-39-100	09/12/2023	13.21	7.12	13,115	12.00	0.50	24.1	7.52	8,470	189.4
MW-42-030	08/14/2023	8.76	7.95	1,150	2.00	0.81	23.2	0.57	740	-90.1
MW-42-055	08/14/2023	8.84	7.58	1,384	3.00	1.04	23.6	0.68	890	-8.3
MW-42-065	08/14/2023	8.32	7.13	9,808	7.00	1.07	24.2	5.51	6,350	195.9
MW-43-025	08/24/2023	8.62	7.69	1,973	38.00	0.51	22.3	1.00	1,280	-133.3
MW-43-075	08/24/2023	8.82	7.00	12,666	6.00	0.40	22.0	7.28	8,220	-41.8
MW-43-090	08/24/2023	9.1	6.98	18,048	3.00	0.36	22.7	0.11	11,720	-63.8
MW-44-070	08/16/2023	17.17	7.43	2,596	7.00	0.89	21.6	1.34	1,680	-46.8
MW-44-115	07/17/2023	16.71	7.85	15,440	5.00	2.51	25.6	8.96	10,020	50.2
MW-44-115	08/08/2023	17.78	7.95	13,497	4.00	2.58	22.3	7.79	8,640	92.5
MW-44-115	09/14/2023	17.91	7.94	13,181	3.00	0.80	23.0	7.41	8,620	162.6
MW-44-125	07/17/2023	16.41	8.02	15,177	4.00	0.94	25.2	8.83	9,870	14.5
MW-44-125	08/08/2023	17.1	7.99	14,412	7.00	1.38	22.2	8.35	9,540	27.8
MW-44-125	09/14/2023	17.71	8.46	14,161	5.00	0.85	22.1	8.22	9,210	135.2
MW-45-095A	07/17/2023	12.76	7.42	10,033	3.00	0.94	23.7	5.63	6,500	20.1
MW-45-095A	08/09/2023	13.84	7.49	8,819	6.00	1.57	22.1	5.29	5,460	79.1
MW-45-095A	09/12/2023	13.52	7.34	8,531	4.00	0.80	21.3	4.76	5,540	181.3
MW-46-175	08/23/2023	28.2	8.06	20,196	4.00	0.62	26.3	0.12	13,130	35.7
MW-46-205	08/23/2023	28.41	8.08	22,334	3.00	0.42	26.2	0.14	14,860	32.9
MW-47-055	08/21/2023	29.44	7.47	4,593	9.00	1.40	29.3	2.44	2,980	43.1
MW-47-115	08/21/2023	29.85	7.48	14,867	7.00	0.59	29.8	8.58	9,660	37.1
MW-49-135	08/22/2023	30.8	7.59	14,961	4.00	0.70	25.7	8.68	9,720	34.3
MW-49-275	08/22/2023	31.1	7.44	24,793	3.00	1.32	28.6	0.15	16,100	38.6
MW-49-365	08/22/2023	32.62	7.36	38,614	2.00	0.77	28.5	0.25	25,150	36.8
MW-51	07/20/2023	44.34	7.68	5,415	5.00	0.75	30.6	2.94	3,580	-89.2
MW-51	08/10/2023	44.45	7.65	5,273	7.00	0.81	30.1	2.71	3,300	-27.3
MW-51	09/13/2023	46.24	7.33	8,851	6.00	0.86	29.7	4.93	5,830	145.3
MW-52D	08/22/2023	13.38	7.20	21,043	12.00	0.74	21.8	0.13	13,640	-31.9
MW-52M	08/22/2023	13.12	7.45	16,412	9.00	0.33	22.4	9.65	10,680	-136.5

Table 3.4
Third Quarter 2023 Water Quality Field Parameters
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	Depth to Water (ft bTOC)	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
MW-52S	08/22/2023	13.5	7.13	18,349	6.00	0.42	22.9	0.11	11,960	-110.0
MW-53D	08/22/2023	12.76	7.82	25,401	7.00	0.51	20.1	0.16	16,950	-8.8
MW-53M	08/22/2023	17.64	7.23	16,430	8.00	0.43	20.3	9.69	10,690	-41.8
MW-53S	08/22/2023	18.35	7.50	1,450	28.00	0.46	21.4	0.73	940	-175.1
MW-65-160	08/18/2023	140.58	7.13	4,733	23.00	0.98	30.7	2.51	3,070	34.3
MW-65-225	08/18/2023	140.32	7.15	8,569	4.00	0.76	29.7	4.75	5,580	36.3
MW-67-185	07/21/2023	169.82	7.42	5,471	20.00	0.44	32.0	2.93	3,430	-41.2
MW-67-185	08/18/2023	170.05	7.44	5,176	22.00	1.42	34.4	2.59	3,200	47.6
MW-67-185	09/11/2023	170.3	7.67	4,815	10.00	0.84	32.1	2.57	3,160	84.4
MW-68-180	07/21/2023	164.9	7.25	2,924	11.00	1.04	31.6	1.56	1,950	-70.6
MW-68-180	08/18/2023	165.13	7.50	3,410	9.00	1.44	31.3	1.81	2,280	36.4
MW-68-180	09/11/2023	165.31	7.73	3,331	8.00	3.26	31.2	1.75	2,200	98.1
MW-69-195	08/17/2023	174.71	7.36	3,596	8.00	0.55	32.8	1.85	2,320	34.1
MW-71-035	07/20/2023	27.43	7.73	11,400	40.00	0.80	31.9	6.46	7,440	35.3
MW-71-035	08/09/2023	27.19	7.24	9,163	40.00	1.21	31.1	5.09	5,920	26.6
MW-71-035	09/14/2023	27.96	7.23	7,240	27.00	1.33	30.9	3.93	4,690	39.3
MW-75-033	08/14/2023	18.17	7.17	4,110	34.00	1.30	28.3	2.17	2,660	24.4
MW-75-117	08/14/2023	18.3	7.80	11,976	18.00	1.14	30.2	6.79	7,780	87.2
MW-75-202	08/14/2023	18.18	7.56	16,906	5.00	0.48	31.9	9.83	10,950	-103.9
MW-75-267	08/14/2023	17.93	7.79	22,955	6.00	0.41	31.8	0.14	14,910	-84.7
MW-75-337	08/14/2023	20.49	7.93	29,938	10.00	0.77	41.0	0.18	19,470	22.5
MW-76-039	07/17/2023	25.58	7.21	9,352	33.00	3.19	29.0	5.05	5,900	89.2
MW-76-039	08/07/2023	25.61	7.90	9,527	8.00	1.88	28.8	5.33	6,190	44.3
MW-76-039	09/13/2023	26.82	7.95	8,279	17.00	1.53	28.7	4.56	5,380	29.2
MW-76-156	07/17/2023	27.03	7.19	11,723	28.00	2.27	31.0	6.58	7,560	52.6
MW-76-156	08/07/2023	26.11	7.68	13,568	5.00	2.36	31.5	7.75	8,840	76.8
MW-76-156	09/14/2023	28.03	7.59	14,342	6.00	1.22	31.2	8.23	9,320	168.6
MW-76-181	07/17/2023	25.81	7.15	10,986	10.00	1.38	31.0	6.15	7,110	19.8
MW-76-181	08/07/2023	26.22	7.61	10,545	6.00	2.34	31.2	5.83	6,720	69.5
MW-76-181	09/13/2023	27.93	8.21	9,594	6.00	0.75	30.3	5.32	6,210	-9.9
MW-76-218	07/17/2023	25.72	7.05	9,534	18.00	1.30	32.4	5.25	6,180	31.8
MW-76-218	08/07/2023	26.14	7.73	9,900	6.00	2.04	34.0	5.50	6,440	96.5
MW-76-218	09/13/2023	27.11	7.82	14,837	8.00	1.60	31.9	8.54	9,640	92.3

Table 3.4
Third Quarter 2023 Water Quality Field Parameters
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	Depth to Water (ft bTOC)	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
MW-77-046	07/17/2023	23.41	7.18	7,146	6.00	0.33	31.0	3.92	4,660	94.8
MW-77-046	08/07/2023	23.28	7.23	7,191	4.00	0.53	33.9	3.93	4,710	60.1
MW-77-046	09/11/2023	24.25	7.31	9,682	5.00	0.74	29.1	5.41	6,290	167.4
MW-77-102	07/17/2023	23.19	7.43	12,971	12.00	0.31	28.1	7.42	8,430	164.5
MW-77-102	08/07/2023	23.09	7.46	13,143	9.00	0.45	34.1	7.51	8,460	92.1
MW-77-102	09/11/2023	24.1	7.69	12,915	27.00	0.29	28.5	7.38	8,390	166.9
MW-77-158	07/17/2023	22.7	7.09	8,115	6.00	0.24	29.2	4.47	5,270	31.2
MW-77-158	08/07/2023	22.62	7.08	8,492	4.00	0.31	34.7	4.59	5,470	29.4
MW-77-158	09/11/2023	23.17	7.24	9,141	4.00	1.24	29.8	5.10	5,970	104.6
MW-77-187	07/17/2023	22.9	7.92	10,626	5.00	0.22	34.9	5.93	6,910	45.8
MW-77-187	08/07/2023	22.81	7.92	10,676	5.00	0.75	35.4	5.64	6,610	105.9
MW-77-187	09/11/2023	23.21	8.17	9,948	6.00	0.94	33.7	5.44	6,370	162.9
MW-78-070	07/20/2023	45.5	7.37	9,434	45.00	1.13	29.2	5.25	6,120	116.9
MW-78-070	08/09/2023	45.46	7.38	9,776	16.00	1.74	30.4	5.32	6,150	104.9
MW-78-070	09/13/2023	46.23	7.22	9,208	48.00	1.78	30.1	5.11	5,980	210.2
MW-78-142	07/20/2023	45.83	7.68	10,342	7.00	1.19	29.5	5.79	6,720	123.1
MW-78-142	08/09/2023	45.61	7.66	10,360	8.00	1.82	31.1	5.75	6,690	95.8
MW-78-142	09/13/2023	46.27	7.42	10,189	6.00	1.80	30.4	5.71	6,630	208.7
MW-79-058	07/20/2023	44.51	7.36	9,882	21.00	2.85	29.1	5.52	6,410	146.7
MW-79-058	08/09/2023	44.43	7.41	8,794	12.00	2.78	30.1	4.55	5,440	115.9
MW-79-058	09/13/2023	46.17	7.27	8,520	15.00	2.83	32.0	4.70	5,540	198.7
MW-79-102	07/20/2023	44.48	7.62	9,956	8.00	1.16	29.4	5.57	6,460	11.4
MW-79-102	08/09/2023	44.52	7.64	9,917	11.00	1.64	30.2	5.53	6,410	4.9
MW-79-102	09/13/2023	45.92	7.34	9,459	6.00	1.31	30.0	5.28	6,170	114.2
MW-80-057	07/20/2023	46.81	7.37	9,487	20.00	2.63	30.8	5.27	6,160	114.6
MW-80-057	08/09/2023	47.01	7.31	9,489	6.00	2.71	29.1	5.09	6,050	117.9
MW-80-057	09/13/2023	48.4	7.19	8,845	5.00	3.14	31.1	4.89	5,740	202.8
MW-80-082	07/20/2023	46.18	7.56	9,795	18.00	1.40	31.4	5.45	6,360	-2.8
MW-80-082	08/09/2023	46.49	7.51	9,630	10.00	2.71	29.2	2.65	3,290	-1.7
MW-80-082	09/13/2023	48.28	7.33	9,427	4.00	0.98	32.7	5.22	6,140	167.2
MW-81-043	08/10/2023	22.43	7.52	8,315	9.00	1.29	29.5	4.74	5,550	63.9
MW-81-043	09/13/2023	23.53	7.38	7,907	24.00	0.77	27.6	4.36	5,140	80.2
MW-81-098	08/10/2023	22.31	7.41	14,369	10.00	1.09	29.6	8.39	9,470	22.9

Table 3.4
Third Quarter 2023 Water Quality Field Parameters
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	Depth to Water (ft bTOC)	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
MW-81-098	09/13/2023	23.4	7.88	11,429	6.00	0.29	28.7	6.46	7,430	-173.6
MW-82-046	07/18/2023	29.41	7.20	12,903	43.00	1.28	28.8	7.35	8,340	-76.1
MW-82-046	08/08/2023	29.6	7.32	13,069	50.00	1.21	26.8	7.47	8,460	-104.1
MW-82-046	09/13/2023	30.03	7.91	12,364	30.00	0.40	25.8	7.07	8,040	-204.8
MW-82-112	08/08/2023	29.5	7.49	9,123	3.00	0.37	27.3	5.08	5,930	-118.4
MW-82-168	07/18/2023	27.51	7.60	8,194	8.00	0.87	26.9	4.58	5,330	-33.6
MW-82-168	08/08/2023	29.89	7.49	7,884	5.00	0.76	27.7	4.35	5,120	-69.8
MW-82-168	09/13/2023	28.58	8.12	8,277	4.00	0.32	27.0	4.58	5,380	-51.9
MW-82-198	07/18/2023	27.62	7.40	9,633	18.00	0.71	27.9	5.39	6,270	18.1
MW-82-198	08/08/2023	28.45	7.25	9,380	4.00	0.86	29.0	5.04	6,020	23.1
MW-82-198	09/13/2023	28.83	7.78	8,204	7.00	1.46	31.6	5.04	6,050	53.7
MW-86-030	08/17/2023	13.3	7.40	1,223	17.00	0.47	21.5	0.61	790	-42.1
MW-86-066	08/17/2023	13.1	7.40	7,923	3.00	0.94	21.5	4.39	5,140	-64.8
MW-86-120	08/17/2023	13.73	7.58	11,523	4.00	0.80	24.2	6.56	7,540	-99.4
MW-86-140	08/17/2023	13.79	7.55	13,369	5.00	0.94	29.4	7.67	8,730	-73.6
MW-88-107	07/18/2023	90.16	7.79	1,178	9.00	3.35	30.6	0.58	770	74.6
MW-88-107	08/10/2023	90.3	7.62	2,272	17.00	1.59	29.3	1.19	1,560	23.8
MW-88-107	09/12/2023	90.71	7.40	819	12.00	5.48	28.5	0.39	510	55.3
MW-90-031	08/16/2023	4.9	6.83	19,329	7.00	1.41	25.5	0.11	12,560	-70.0
MW-96-045	08/15/2023	28.75	7.36	10,592	8.00	0.24	31.9	5.91	6,880	18.2
MW-96-217	08/15/2023	29.14	7.18	20,883	3.00	0.32	30.2	0.12	13,560	25.5
MW-97-042	08/21/2023	27.46	7.52	3,431	42.00	3.31	27.5	1.79	2,220	93.6
MW-97-202	08/21/2023	28.81	7.05	18,987	8.00	0.77	29.8	0.11	12,360	36.3
PT5D	07/17/2023	18.32	7.73	17,857	4.00	0.86	26.8	0.10	11,610	10.1
PT5D	08/09/2023	19	7.38	15,145	5.00	4.24	24.0	8.82	9,830	25.2
PT5D	09/11/2023	19.25	7.33	13,310	4.00	0.39	24.7	7.75	8,770	31.2
PT5M	08/15/2023	18.58	7.24	4,664	5.00	0.74	23.2	2.49	3,020	97.6
PT5S	08/15/2023	18.54	7.66	1,224	7.00	0.97	23.0	0.61	790	-111.6
R-19	08/17/2023	nm	8.08	1,155	2.00	8.45	23.1	0.57	750	90.6
R-28	08/16/2023	nm	8.09	1,158	2.00	8.25	24.3	0.57	750	91.6
R-63	08/16/2023	nm	7.91	1,162	2.00	5.36	24.1	0.58	750	87.5
RRB	08/17/2023	nm	8.06	1,156	3.00	5.11	23.9	0.57	750	82.9
SW1	08/16/2023	nm	8.02	1,161	3.00	5.21	24.3	0.58	750	73.2

Table 3.4
Third Quarter 2023 Water Quality Field Parameters
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	Depth to Water (ft bTOC)	pH	Specific Conductance (μ S/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
SW2	08/16/2023	nm	8.05	1,160	3.00	5.25	24.3	0.58	750	75.9
TW-02D	07/20/2023	38.32	7.30	10,418	8.00	4.41	28.9	5.70	6,610	-33.9
TW-02D	08/08/2023	37.94	7.31	9,385	5.00	1.01	32.4	5.20	6,090	39.5
TW-02D	09/14/2023	38.28	7.52	8,830	6.00	1.69	29.3	4.93	5,770	68.1
TW-02S	07/20/2023	38.6	7.05	8,791	7.00	0.40	29.1	4.85	5,700	162.7
TW-02S	08/08/2023	38.39	7.10	8,862	9.00	1.29	31.6	4.89	5,750	101.6
TW-02S	09/14/2023	38.91	7.93	8,292	5.00	1.63	27.5	4.58	5,410	59.6
TW-03D	07/20/2023	38.1	7.13	10,391	5.00	3.37	28.6	5.82	6,740	157.6
TW-03D	08/08/2023	37.53	7.03	9,936	8.00	1.63	35.0	5.51	6,350	44.6
TW-03D	09/14/2023	37.93	7.93	7,905	4.00	3.52	30.1	4.34	5,130	53.8
TW-04	08/21/2023	30.85	7.54	20,240	4.00	1.90	28.3	0.12	13,110	71.6

Notes:

ppt = parts per thousand
 μ S/cm = microsiemens per centimeter
deg C = degrees Celsius
ft bTOC = feet below the top of casing
mg/L = milligrams per liter
mV = millivolts
nm = parameter was not measured
NTU = nephelometric turbidity units
ORP = oxidation-reduction potential

Table 4.1
Monitoring Well Inspection Results
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Date	Well Labeled On Casing Or Pad	Traffic Poles Intact	Concrete Pad Intact?	Erosion Around Wellhead?	Steel Casing Or Well Box Intact?	Any Tabs Stripped Or Missing?	Water In Well Box?	J Plug Replaced Properly?	Well Locked At Arrival?	All Bolts Present?	Comments
FW-02B-127	7/18/2023	no	n/a	yes	no	yes	n/a	no	yes	n/a	n/a	Label will be added August 2023.
FW-02B-127	8/10/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
FW-02B-127	9/12/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
HNWR-01A-098	8/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
HNWR-01A-174	8/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
Marina-1	9/14/2023	no	n/a	yes	no	yes	n/a	no	yes	n/a	n/a	Label will be added Fourth Quarter 2023.
MTS-1	8/15/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MTS-2	8/15/2023	yes	yes	yes	no	yes	no	no	yes	yes	yes	
MW-20-070	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-20-070	8/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-20-070	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-20-100	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-20-100	8/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-20-100	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-20-130	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-20-130	8/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-20-130	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-21	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-21	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-21	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-22	8/16/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-26	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-26	8/10/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-26	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-27-020	8/23/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-27-060	8/23/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-27-085	8/23/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-28-025	8/24/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-28-090	8/24/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-29	8/22/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-30-050	7/18/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-30-050	8/8/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-30-050	9/12/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-31-060	7/21/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-31-060	8/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-31-060	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-31-135	7/21/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-31-135	8/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-31-135	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-32-020	8/16/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-32-035	8/16/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-33-040	8/23/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-33-090	8/23/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-33-150	8/23/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-33-210	8/23/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-34-055	8/23/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	

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Monitoring Well Inspection Results
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

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MW-34-080	7/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-34-080	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-34-080	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-34-100	8/23/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-35-060	8/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-35-135	8/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-36-020	8/15/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-36-040	8/15/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-36-050	8/15/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-36-070	8/15/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-36-090	7/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-36-090	8/10/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-36-090	9/14/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-36-100	7/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-36-100	8/10/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-36-100	9/14/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-38D	8/18/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-38S	8/18/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-39-040	7/18/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-040	8/8/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-040	9/12/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-39-050	7/18/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-050	8/8/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-050	9/12/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-39-060	7/18/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-060	8/8/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-060	9/12/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-39-070	7/18/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-070	8/8/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-070	9/12/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-39-080	7/18/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-080	8/8/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-080	9/12/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-39-100	7/18/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-100	8/8/2023	yes	n/a	yes	no	yes	n/a	n/a	yes	yes	n/a	
MW-39-100	9/12/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-42-030	8/14/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-42-055	8/14/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-42-065	8/14/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-43-025	8/24/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-43-075	8/24/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-43-090	8/24/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-44-070	8/16/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-44-115	7/17/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-44-115	8/8/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-44-115	9/14/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-44-125	7/17/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-44-125	8/8/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	

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Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

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MW-44-125	9/14/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-45-095a	7/17/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-45-095a	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-45-095a	9/12/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-46-175	8/23/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-46-205	8/23/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-47-055	8/21/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-47-115	8/21/2023	yes	yes	yes	no	yes	n/a	no	yes	yes	n/a	
MW-49-135	8/22/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-49-275	8/22/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-49-365	8/22/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-51	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-51	8/10/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-51	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-52D	8/22/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-52M	8/22/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-52S	8/22/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-53D	8/22/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-53M	8/22/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-53S	8/22/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-65-160	8/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-65-225	8/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-67-185	7/21/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-67-185	8/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-67-185	9/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-68-180	7/21/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-68-180	8/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-68-180	9/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-69-195	8/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-71-035	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-71-035	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-71-035	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-75-033	8/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-75-117	8/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-75-202	8/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-75-267	8/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-75-337	8/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-039	7/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-039	8/7/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-039	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-156	7/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-156	8/7/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-156	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-181	7/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-181	8/7/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-181	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-218	7/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-76-218	8/7/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	

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Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

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MW-76-218	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-046	7/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-046	8/7/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-046	9/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-102	7/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-102	8/7/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-102	9/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-158	7/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-158	8/7/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-158	9/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-187	7/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-187	8/7/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-77-187	9/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-78-070	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-78-070	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-78-070	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-78-142	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-78-142	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-78-142	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-79-058	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-79-058	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-79-058	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-79-102	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-79-102	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-79-102	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-80-057	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-80-057	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-80-057	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-80-082	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-80-082	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-80-082	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-81-043	7/21/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-81-043	8/10/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-81-043	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-81-098	7/21/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-81-098	8/10/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-81-098	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-046	7/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-046	8/8/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-046	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-112	8/8/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-168	7/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-168	8/8/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-168	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-198	7/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-198	8/8/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-82-198	9/13/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	

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MW-86-030	8/17/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-86-066	8/17/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-86-120	8/17/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-86-140	8/17/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
MW-88-107	7/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-88-107	8/10/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-88-107	9/12/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-90-031	8/16/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-94-030	8/15/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-94-100	8/15/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-94-175	8/15/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-96-045	8/15/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-96-217	8/15/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-97-042	8/21/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-97-202	8/21/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-99-060	8/16/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
MW-99-140	8/16/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
PGE-09N	8/16/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
PGE-09S	8/16/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
PT5D	7/17/2023	no	n/a	yes	no	yes	n/a	no	yes	n/a	n/a	Label will be added August 2023.
PT5D	8/9/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
PT5D	9/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
PT5M	8/15/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
PT5S	8/15/2023	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	
PT6D	7/18/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
PT6D	8/7/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
PT6D	9/11/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
Site B-165	8/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
Site B-220	8/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
Site B-285	8/17/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-02D	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-02D	8/8/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-02D	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-02S	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-02S	8/8/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-02S	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-03D	7/20/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-03D	8/8/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-03D	9/14/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	
TW-04	8/21/2023	yes	n/a	yes	no	yes	no	no	yes	yes	yes	

Acronyms and Abbreviations:

ID = identification
n/a = not applicable
-- = no comment

Table 4.2
Monitoring Well Water Levels and Specific Capacities
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Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Well Screen Lithology	Sample Date	Constructed Well Depth (feet bTOC)	Measured Well Depth (feet bTOC)	Difference in Constructed and Measured Well Depth (feet)	Screen Start Depth (feet bTOC)	Screen End Depth (feet bTOC)	Pre-Purge Depth to Water (feet bTOC)	Post-Purge Depth to Water (feet bTOC)	Drawdown During Purging (feet)	Purging Rate (ml/min)	Specific Capacity (gpm/feet)	Measured Depth Covering Greater than 20% of screen?	Flagged for Evaluation	Planned for Resurvey	Planned for Redevelopment	Notes
MW-20-070	Alluvial	07/20/2023	69.69	68.40	1.29	49.69	69.69	44.33	44.40	0.07	500	1.89	No				
MW-20-070	Alluvial	08/11/2023	69.69	68.38	1.31	49.69	69.69	43.90	43.98	0.08	500	1.65	No				
MW-20-070	Alluvial	09/14/2023	69.69	68.36	1.33	49.69	69.69	44.47	44.50	0.03	500	4.40	No				
MW-20-100	Alluvial	07/20/2023	100.49	98.10	2.39	88.59	98.59	44.81	44.85	0.04	500	3.30	No				
MW-20-100	Alluvial	08/11/2023	100.49	98.08	2.41	88.59	98.59	43.03	43.10	0.07	500	1.89	No				
MW-20-100	Alluvial	09/14/2023	100.49	98.10	2.39	88.59	98.59	43.73	43.80	0.07	500	1.89	No				
MW-20-130	Alluvial	07/20/2023	131.49	129.57	1.92	120.15	130.15	45.14	45.20	0.06	500	2.20	No				
MW-20-130	Alluvial	08/11/2023	131.49	129.52	1.97	120.15	130.15	43.52	43.60	0.08	500	1.65	No				
MW-20-130	Alluvial	09/14/2023	131.49	129.55	1.94	120.15	130.15	44.20	44.30	0.10	500	1.32	No				
MW-21	Alluvial	07/20/2023	58.95	58.36	0.59	38.45	58.45	48.69	49.25	0.56	100	0.05	No				
MW-21	Alluvial	08/09/2023	58.95	58.36	0.59	38.45	58.45	49.05	49.70	0.65	100	0.04	No				
MW-21	Alluvial	09/14/2023	58.95	58.36	0.59	38.45	58.45	50.00	50.60	0.60	100	0.04	No				
MW-22	Fluvial	08/16/2023	12.05	10.96	1.09	5.15	10.15	4.31	4.49	0.18	500	0.73	No				
MW-26	Alluvial	07/20/2023	70.82	69.24	1.58	50.82	70.82	45.28	45.41	0.13	500	1.02	No				
MW-26	Alluvial	08/10/2023	70.82	69.10	1.72	50.82	70.82	45.32	45.39	0.07	500	1.89	No				
MW-26	Alluvial	09/14/2023	70.82	69.13	1.69	50.82	70.82	47.00	47.07	0.07	500	1.89	No				
MW-27-020	Fluvial	08/23/2023	18.92	13.84	5.08	8.92	18.92	6.90	6.95	0.05	500	2.64	Yes	X			Not recommended for redevelopment based on location and fluvial sediments.
MW-27-060	Fluvial	08/23/2023	61.91	58.80	3.11	50.21	60.21	7.14	7.20	0.06	500	2.20	No				
MW-27-085	Fluvial	08/23/2023	100.05	100.38	-0.33	80.05	90.05	6.97	7.00	0.03	500	4.40	No				
MW-28-025	Fluvial	08/24/2023	25.10	24.00	1.10	15.10	25.10	12.82	12.90	0.08	500	1.65	No				
MW-28-090	Fluvial	08/24/2023	101.46	98.22	3.24	73.10	93.10	13.50	13.55	0.05	500	2.64	No				
MW-29	Fluvial	08/22/2023	43.73	40.70	3.03	31.71	41.71	30.84	30.88	0.04	500	3.30	No				
MW-30-050	Fluvial	07/18/2023	55.01	52.56	2.45	42.41	52.41	12.94	12.99	0.05	500	2.64	No				
MW-30-050	Fluvial	08/08/2023	55.01	52.62	2.39	42.41	52.41	12.63	12.69	0.06	500	2.20	No				
MW-30-050	Fluvial	09/12/2023	55.01	52.60	2.41	42.41	52.41	14.31	14.38	0.07	500	1.89	No				
MW-31-060	Alluvial	08/11/2023	65.71	61.60	4.11	43.21	63.21	38.12	38.22	0.10	500	1.32	No				
MW-31-060	Alluvial	09/14/2023	65.71	61.58	4.13	43.21	63.21	40.22	40.32	0.10	500	1.32	No				
MW-31-135	Alluvial	07/21/2023	133.16	130.90	2.26	112.86	132.86	39.83	39.90	0.07	500	1.89	No				
MW-31-135	Alluvial	08/11/2023	133.16	130.83	2.33	112.86	132.86	39.61	39.69	0.08	500	1.65	No				
MW-31-135	Alluvial	09/14/2023	133.16	130.83	2.33	112.86	132.86	40.74	40.82	0.08	500	1.65	No				
MW-32-020	Fluvial	08/16/2023	22.41	19.32	3.09	12.41	22.41	6.41	6.73	0.32	500	0.41	Yes	X			Not recommended for redevelopment based on location and fluvial sediments.
MW-32-035	Fluvial	08/16/2023	39.58	36.78	2.80	29.93	37.43	6.91	6.99	0.08	500	1.65	No				
MW-33-040	Fluvial	08/23/2023	44.64	40.99	3.65	31.80	41.80	33.08	33.13	0.05	500	2.64	No				
MW-33-090	Alluvial	08/23/2023	91.83	88.10	3.73	71.83	91.11	33.12	33.15	0.03	500	4.40	No				
MW-33-150	Alluvial	08/23/2023	158.15	155.05	3.10	134.77	154.77	33.61	33.65	0.04	500	3.30	No				
MW-33-210	Alluvial	08/23/2023	225.64	222.14	3.50	192.64	212.64	33.27	33.31	0.04	500	3.30	No				
MW-34-055	Fluvial	08/23/2023	58.81	56.30	2.51	47.21	57.21	6.58	6.60	0.02	500	6.61	No				
MW-34-080	Fluvial	07/18/2023	86.56	84.12	2.44	75.26	85.26	4.84	4.88	0.04	500	3.30	No				
MW-34-080	Fluvial	08/09/2023	86.56	84.12	2.44	75.26	85.26	6.63	6.70	0.07	500	1.89	No				
MW-34-080	Fluvial	09/14/2023	86.56	84.12	2.44	75.26	85.26	7.24	7.30	0.06	500	2.20	No				
MW-34-100	Fluvial	08/23/2023	116.44	115.72	0.72	91.44	101.44	6.80	6.85	0.05	500	2.64	No				
MW-35-060	Alluvial	08/17/2023	61.63	58.00	3.63	41.33	61.33	27.29	27.39	0.10	500	1.32	No	X			Consecutive high turbidity readings. Turbidity readings consistent with data following Second Quarter 2023 redevelopment.
MW-35-135	Alluvial	08/17/2023	158.98	154.39	4.59	116.28	136.28	26.32	26.43	0.11	500	1.20	No	X			Consecutive high turbidity readings. Not recommended for redevelopment given screen remains clear and specific capacity indicates good yield.

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Well ID	Well Screen Lithology	Sample Date	Constructed Well Depth (feet bTOC)	Measured Well Depth (feet bTOC)	Difference in Constructed and Measured Well Depth (feet)	Screen Start Depth (feet bTOC)	Screen End Depth (feet bTOC)	Pre-Purge Depth to Water (feet bTOC)	Post-Purge Depth to Water (feet bTOC)	Drawdown During Purging (feet)	Purging Rate (ml/min)	Specific Capacity (gpm/feet)	Measured Depth Covering Greater than 20% of screen?	Flagged for Evaluation	Planned for Resurvey	Planned for Redevelopment	Notes
MW-36-020	Fluvial	08/15/2023	23.08	22.02	1.06	12.78	22.78	14.22	14.72	0.50	500	0.26	No				
MW-36-040	Fluvial	08/15/2023	43.15	42.23	0.92	32.85	42.85	14.54	14.71	0.17	500	0.78	No				
MW-36-050	Fluvial	08/15/2023	55.79	53.06	2.73	48.79	53.79	14.57	14.62	0.05	500	2.64	No				
MW-36-070	Fluvial	08/15/2023	73.02	72.33	0.69	62.72	72.72	14.23	14.28	0.05	500	2.64	No				
MW-36-090	Fluvial	07/18/2023	93.35	92.38	0.97	83.05	93.05	13.80	13.90	0.10	500	1.32	No				
MW-36-090	Fluvial	08/10/2023	93.35	92.20	1.15	83.05	93.05	13.61	13.69	0.08	500	1.65	No				
MW-36-090	Fluvial	09/14/2023	93.35	92.17	1.18	83.05	93.05	15.32	15.40	0.08	500	1.65	No				
MW-36-100	Fluvial	07/18/2023	111.36	109.71	1.65	91.36	101.36	13.95	14.00	0.05	500	2.64	No				
MW-36-100	Fluvial	08/10/2023	111.36	109.81	1.55	91.36	101.36	13.82	13.91	0.09	500	1.47	No				
MW-36-100	Fluvial	09/14/2023	111.36	109.83	1.53	91.36	101.36	15.40	15.49	0.09	500	1.47	No				
MW-38D	Alluvial	08/18/2023	186.58	185.09	1.49	166.28	186.28	70.43	70.50	0.07	500	1.89	No	X			
MW-38S	Alluvial	08/18/2023	97.77	96.98	0.79	77.47	97.47	68.93	69.04	0.11	500	1.20	No				
MW-39-040	Alluvial	07/18/2023	44.92	37.80	7.12	32.82	42.82	12.18	12.24	0.06	500	2.20	Yes	X			Second Quarter 2023 redevelopment with Waterra pump did not improve siltation. Well will not be considered for future redevelopment.
MW-39-040	Alluvial	08/08/2023	44.92	37.69	7.23	32.82	42.82	12.11	12.18	0.07	500	1.89	Yes	X			Second Quarter 2023 redevelopment with Waterra pump did not improve siltation. Well will not be considered for future redevelopment.
MW-39-040	Alluvial	09/12/2023	44.92	37.67	7.25	32.82	42.82	13.28	13.35	0.07	500	1.89	Yes	X			Second Quarter 2023 redevelopment with Waterra pump did not improve siltation. Well will not be considered for future redevelopment.
MW-39-050	Alluvial	07/18/2023	57.43	54.40	3.03	49.83	54.83	12.09	12.17	0.08	500	1.65	No				
MW-39-050	Alluvial	08/08/2023	57.43	54.52	2.91	49.83	54.83	12.10	12.15	0.05	500	2.64	No				
MW-39-050	Alluvial	09/12/2023	57.43	54.56	2.87	49.83	54.83	13.21	13.26	0.05	500	2.64	No				
MW-39-060	Alluvial	07/18/2023	69.00	60.81	8.19	51.70	61.70	12.24	12.32	0.08	500	1.65	No				
MW-39-060	Alluvial	08/08/2023	69.00	60.70	8.30	51.70	61.70	12.16	12.21	0.05	500	2.64	No				
MW-39-060	Alluvial	09/12/2023	69.00	60.70	8.30	51.70	61.70	13.33	13.39	0.06	500	2.20	No				
MW-39-070	Alluvial	07/18/2023	74.51	71.72	2.79	62.82	72.82	12.40	12.52	0.12	500	1.10	No				
MW-39-070	Alluvial	08/08/2023	74.51	71.81	2.70	62.82	72.82	12.26	12.31	0.05	500	2.64	No				
MW-39-070	Alluvial	09/12/2023	74.51	71.84	2.67	62.82	72.82	13.15	13.20	0.05	500	2.64	No				
MW-39-080	Alluvial	07/18/2023	85.37	82.17	3.20	72.82	82.82	12.43	12.48	0.05	500	2.64	No				
MW-39-080	Alluvial	08/08/2023	85.37	82.12	3.25	72.82	82.82	12.52	12.57	0.05	500	2.64	No				
MW-39-080	Alluvial	09/12/2023	85.37	82.10	3.27	72.82	82.82	13.19	13.24	0.05	500	2.64	No				
MW-39-100	Alluvial	07/18/2023	120.53	116.41	4.12	82.82	102.82	12.42	12.49	0.07	500	1.89	No				
MW-39-100	Alluvial	08/08/2023	120.53	116.41	4.12	82.82	102.82	12.35	12.41	0.06	500	2.20	No				
MW-39-100	Alluvial	09/12/2023	120.53	116.40	4.13	82.82	102.82	13.21	13.27	0.06	500	2.20	No				
MW-42-030	Fluvial	08/14/2023	32.55	31.00	1.55	12.25	32.25	8.76	8.80	0.04	500	3.30	No				
MW-42-055	Fluvial	08/14/2023	55.29	55.26	0.03	44.99	54.99	8.84	8.87	0.03	500	4.40	No				
MW-42-065	Fluvial	08/14/2023	82.52	83.67	-1.16	58.72	68.72	8.32	8.38	0.06	500	2.20	No				
MW-43-025	Fluvial	08/24/2023	27.52	26.58	0.94	17.52	27.52	8.62	8.65	0.03	500	4.40	No				
MW-43-075	Fluvial	08/24/2023	77.79	77.50	0.29	67.79	77.79	8.82	8.90	0.08	500	1.65	No				
MW-43-090	Fluvial	08/24/2023	99.82	102.59	-2.77	82.82	92.82	9.10	9.13	0.03	500	4.40	No				
MW-44-070	Fluvial	08/16/2023	72.10	72.35	-0.25	62.10	72.10	17.17	17.30	0.13	500	1.02	No				
MW-44-115	Alluvial	07/17/2023	114.52	114.45	0.07	106.52	114.52	16.71	16.76	0.05	500	2.64	No				
MW-44-115	Alluvial	08/08/2023	114.52	114.43	0.09	106.52	114.52	17.78	17.88	0.10	500	1.32	No				
MW-44-115	Alluvial	09/14/2023	114.52	114.40	0.12	106.52	114.52	17.91	17.94	0.03	500	4.40	No				
MW-44-125	Alluvial	07/17/2023	130.35	128.62	1.73	117.55	126.55	16.41	16.45	0.04	500	3.30	No				
MW-44-125	Alluvial	08/08/2023	130.35	128.60	1.75	117.55	126.55	17.10	17.15	0.05	500	2.64	No				
MW-44-125	Alluvial	09/14/2023	130.35	128.60	1.75	117.55	126.55	17.71	17.76	0.05	500	2.64	No				

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MW-46-175	Alluvial	08/23/2023	176.84	176.14	0.70	166.34	176.34	28.20	28.25	0.05	500	2.64	No				
MW-46-205	Alluvial	08/23/2023	209.49	218.68	-9.19	199.49	209.49	28.41	28.46	0.05	500	2.64	No				
MW-47-055	Alluvial	08/21/2023	56.45	56.53	-0.08	46.45	56.45	29.44	29.50	0.06	500	2.20	No				
MW-47-115	Alluvial	08/21/2023	116.58	115.51	1.07	106.58	116.58	29.85	29.89	0.04	500	3.30	No				
MW-49-135	Alluvial	08/22/2023	136.52	136.23	0.29	126.52	136.52	30.80	30.83	0.03	500	4.40	No				
MW-49-275	Alluvial	08/22/2023	276.45	274.73	1.72	256.45	276.45	31.10	31.15	0.05	500	2.64	No				
MW-49-365	Alluvial	08/22/2023	368.86	367.34	1.52	347.51	367.51	32.62	32.67	0.05	500	2.64	No				
MW-51	Alluvial	07/20/2023	112.94	113.31	-0.37	96.69	111.69	44.34	44.42	0.08	500	1.65	No				
MW-51	Alluvial	08/10/2023	112.94	113.48	-0.54	96.69	111.69	44.45	44.52	0.07	500	1.89	No				
MW-51	Alluvial	09/13/2023	112.94	113.53	-0.59	96.69	111.69	46.24	46.31	0.07	500	1.89	No				
MW-65-160	Alluvial	08/18/2023	159.70	160.41	-0.71	149.60	159.60	140.58	140.64	0.06	500	2.20	No				
MW-65-225	Alluvial	08/18/2023	224.68	225.33	-0.65	214.59	224.59	140.32	140.39	0.07	500	1.89	No				
MW-67-185	Alluvial	07/21/2023	186.73	186.72	0.01	176.73	186.73	169.82	169.85	0.03	500	4.40	No				
MW-67-185	Alluvial	08/18/2023	186.73	186.69	0.04	176.73	186.73	170.05	170.10	0.05	500	2.64	No				
MW-67-185	Alluvial	09/11/2023	186.73	186.70	0.03	176.73	186.73	170.30	170.35	0.05	500	2.64	No				
MW-68-180	Alluvial	07/21/2023	179.68	180.02	-0.34	164.59	179.59	164.90	164.95	0.05	500	2.64	No				
MW-68-180	Alluvial	08/18/2023	179.68	180.02	-0.34	164.59	179.59	165.13	165.20	0.07	500	1.89	No				
MW-68-180	Alluvial	09/11/2023	179.68	180.01	-0.33	164.59	179.59	165.31	165.35	0.04	500	3.30	No				
MW-69-195	Bedrock	08/17/2023	195.27	195.52	-0.25	175.27	195.27	174.71	174.76	0.05	500	2.64	No				
MW-71-035	Bedrock	07/20/2023	35.90	35.77	0.13	25.70	35.70	27.43	28.08	0.65	100	0.04	No				
MW-71-035	Bedrock	08/09/2023	35.90	35.00	0.90	25.70	35.70	27.19	27.85	0.66	100	0.04	No				
MW-71-035	Bedrock	09/14/2023	35.90	35.65	0.25	25.70	35.70	27.96	28.50	0.54	100	0.05	No				
MW-75-033	Alluvial	08/14/2023	35.48	34.80	0.68	18.08	33.08	18.17	18.20	0.03	500	4.40	No				
MW-75-117	Alluvial	08/14/2023	119.45	118.31	1.14	97.15	117.15	18.30	18.33	0.03	500	4.40	No				
MW-75-202	Alluvial	08/14/2023	204.49	204.37	0.12	182.49	202.49	18.18	18.20	0.02	500	6.61	No				
MW-75-267	Alluvial	08/14/2023	269.50	268.50	1.00	247.20	267.20	17.93	17.95	0.02	500	6.61	No				
MW-75-337	Alluvial	08/14/2023	339.79	338.50	1.29	317.49	337.49	20.49	20.52	0.03	500	4.40	No				
MW-76-039	Alluvial	07/17/2023	39.10	38.63	0.47	23.60	38.60	25.58	25.60	0.02	500	6.61	No				
MW-76-039	Alluvial	08/07/2023	39.10	38.60	0.50	23.60	38.60	25.61	25.65	0.04	500	3.30	No				
MW-76-039	Alluvial	09/13/2023	39.10	38.56	0.54	23.60	38.60	26.82	26.85	0.03	500	4.40	No				
MW-76-156	Alluvial	07/17/2023	158.01	155.56	2.45	135.71	155.71	27.03	27.10	0.07	500	1.89	No				
MW-76-156	Alluvial	08/07/2023	158.01	155.52	2.49	135.71	155.71	26.11	26.15	0.04	500	3.30	No				
MW-76-156	Alluvial	09/14/2023	158.01	155.51	2.50	135.71	155.71	28.03	28.07	0.04	500	3.30	No				
MW-76-181	Alluvial	07/17/2023	183.12	182.56	0.56	170.82	180.82	25.81	25.85	0.04	500	3.30	No				
MW-76-181	Alluvial	08/07/2023	183.12	182.56	0.56	170.82	180.82	26.22	26.25	0.03	500	4.40	No				
MW-76-181	Alluvial	09/13/2023	183.12	182.54	0.58	170.82	180.82	27.93	28.00	0.07	500	1.89	No				
MW-76-218	Alluvial	07/17/2023	220.05	219.55	0.50	197.75	217.75	25.72	25.48	-0.24	500	0.55	No				
MW-76-218	Alluvial	08/07/2023	220.05	219.52	0.53	197.75	217.75	26.14	26.20	0.06	500	2.20	No				
MW-76-218	Alluvial	09/13/2023	220.05	219.60	0.45	197.75	217.75	27.11	27.15	0.04	500	3.30	No				
MW-77-046	Alluvial	07/17/2023	48.15	39.68	8.47	25.85	45.85	23.41	23.44	0.03	500	4.40	Yes	X			Not recommended for redevelopment at this time. Low turbidity readings.
MW-77-046	Alluvial	08/07/2023	48.15	39.59	8.56	25.85	45.85	23.28	23.32	0.04	500	3.30	Yes	X			Not recommended for redevelopment at this time. Low turbidity readings.
MW-77-046	Alluvial	09/11/2023	48.15	39.63	8.52	25.85	45.85	24.25	24.31	0.06	500	2.20	Yes	X			Not recommended for redevelopment at this time. Low turbidity readings.
MW-77-102	Alluvial	07/17/2023	104.21	104.10	0.11	81.91	101.91	23.19	23.26	0.07	500	1.89	No				
MW-77-102	Alluvial	08/07/2023	104.21	104.02	0.19	81.91	101.91	23.09	23.13	0.04	500	3.30	No				
MW-77-102	Alluvial	09/11/2023	104.21	104.10	0.11	81.91	101.91	24.10	24.17	0.07	500	1.89	No				
MW-77-158	Alluvial	07/17/2023	160.14	159.84	0.30	137.64	157.74	22.70	22.85	0.15	500	0.88	No				
MW-77-158	Alluvial	08/07/2023	160.14	159.90	0.24	137.64	157.74	22.62	22.66	0.04	500	3.30	No				
MW-77-158	Alluvial	09/11/2023	160.14	159.88	0.26	137.64	157.74	23.17	23.21	0.04	500	3.30	No				
MW-77-187	Alluvial	07/17/2023	189.21	189.20	0.01	166.71	186.81	22.90	22.95	0.05	500	2.64	No				

Table 4.2
Monitoring Well Water Levels and Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

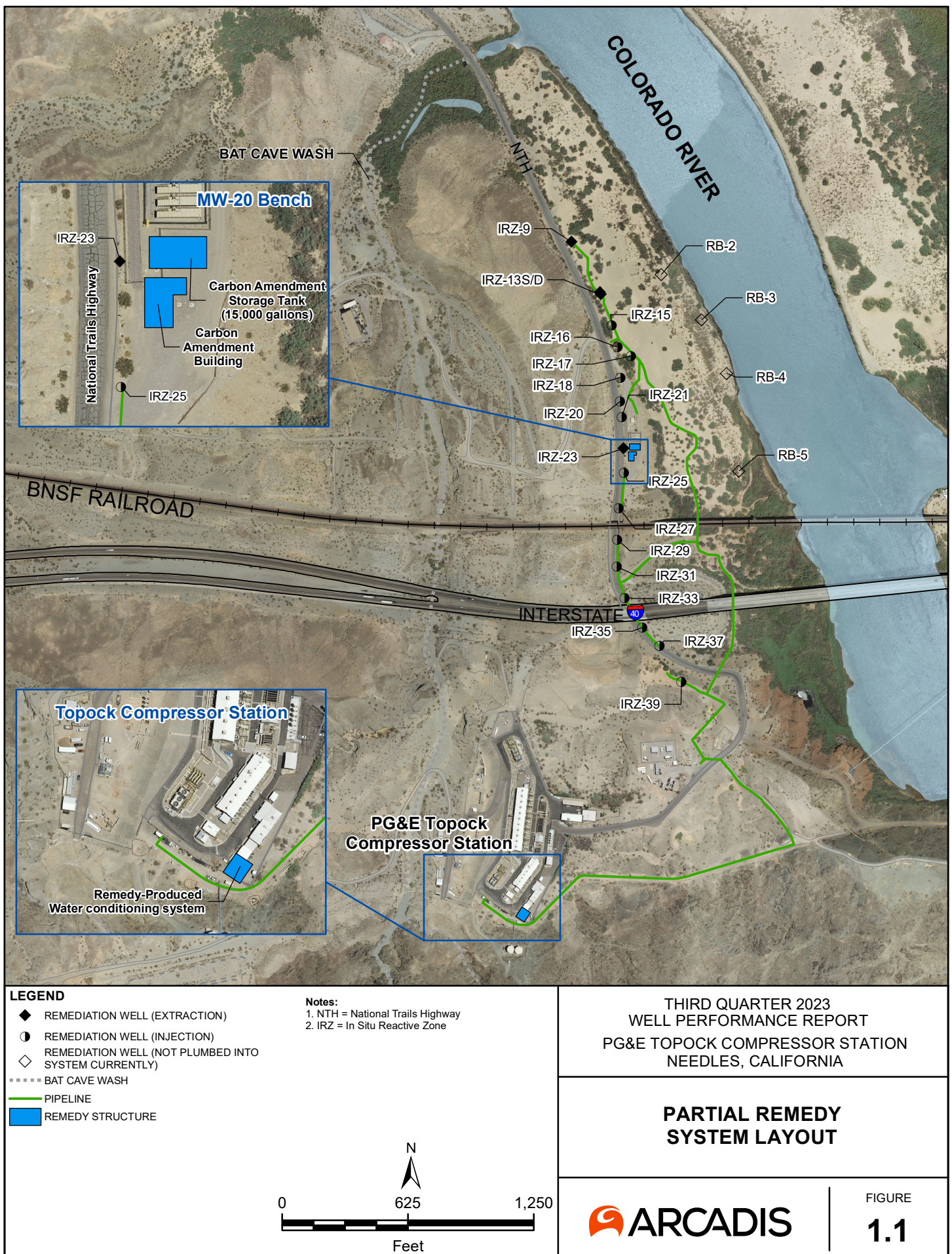
Well ID	Well Screen Lithology	Sample Date	Constructed Well Depth (feet bTOC)	Measured Well Depth (feet bTOC)	Difference in Constructed and Measured Well Depth (feet)	Screen Start Depth (feet bTOC)	Screen End Depth (feet bTOC)	Pre-Purge Depth to Water (feet bTOC)	Post-Purge Depth to Water (feet bTOC)	Drawdown During Purging (feet)	Purging Rate (ml/min)	Specific Capacity (gpm/feet)	Measured Depth Covering Greater than 20% of screen?	Flagged for Evaluation	Planned for Resurvey	Planned for Redevelopment	Notes
MW-77-187	Alluvial	08/07/2023	189.21	189.10	0.11	166.71	186.81	22.81	22.85	0.04	500	3.30	No				
MW-77-187	Alluvial	09/11/2023	189.21	189.11	0.10	166.71	186.81	23.21	23.26	0.05	500	2.64	No				
MW-78-070	Alluvial	07/20/2023	71.85	72.00	-0.15	49.55	69.55	45.50	45.57	0.07	500	1.89	No				
MW-78-070	Alluvial	08/09/2023	71.85	72.30	-0.45	49.55	69.55	45.46	45.51	0.05	500	2.64	No				
MW-78-070	Alluvial	09/13/2023	71.85	72.33	-0.48	49.55	69.55	46.23	46.29	0.06	500	2.20	No				
MW-78-142	Alluvial	07/20/2023	141.76	141.97	-0.21	121.46	141.46	45.83	45.91	0.08	500	1.65	No				
MW-78-142	Alluvial	08/09/2023	141.76	141.90	-0.14	121.46	141.46	45.61	45.69	0.08	500	1.65	No				
MW-78-142	Alluvial	09/13/2023	141.76	141.86	-0.10	121.46	141.46	46.27	46.36	0.09	500	1.47	No				
MW-79-058	Alluvial	07/20/2023	60.05	60.41	-0.36	47.55	57.55	44.51	44.57	0.06	500	2.20	No				
MW-79-058	Alluvial	08/09/2023	60.05	60.50	-0.45	47.55	57.55	44.43	44.51	0.08	500	1.65	No				
MW-79-058	Alluvial	09/13/2023	60.05	60.54	-0.49	47.55	57.55	46.17	46.25	0.08	500	1.65	No				
MW-79-102	Alluvial	07/20/2023	104.23	104.42	-0.19	91.43	101.43	44.48	44.56	0.08	500	1.65	No				
MW-79-102	Alluvial	08/09/2023	104.23	104.36	-0.13	91.43	101.43	44.52	44.63	0.11	500	1.20	No				
MW-79-102	Alluvial	09/13/2023	104.23	104.31	-0.08	91.43	101.43	45.92	45.99	0.07	500	1.89	No				
MW-80-057	Alluvial	07/20/2023	59.46	59.23	0.23	46.96	56.96	46.81	46.86	0.05	500	2.64	No				
MW-80-057	Alluvial	08/09/2023	59.46	59.30	0.16	46.96	56.96	47.01	47.11	0.10	500	1.32	No				
MW-80-057	Alluvial	09/13/2023	59.46	59.26	0.20	46.96	56.96	48.40	48.50	0.10	500	1.32	No				
MW-80-082	Alluvial	07/20/2023	84.00	83.82	0.18	66.50	81.50	46.18	46.24	0.06	500	2.20	No				
MW-80-082	Alluvial	08/09/2023	84.00	83.73	0.27	66.50	81.50	46.49	46.56	0.07	500	1.89	No				
MW-80-082	Alluvial	09/13/2023	84.00	83.71	0.29	66.50	81.50	48.28	48.35	0.07	500	1.89	No				
MW-81-043	Alluvial	08/10/2023	44.73	43.22	1.51	22.43	42.43	22.43	22.48	0.05	500	2.64	No				
MW-81-043	Alluvial	09/13/2023	44.73	43.30	1.43	22.43	42.43	23.53	23.60	0.07	500	1.89	No				
MW-81-098	Alluvial	08/10/2023	99.82	99.93	-0.11	77.52	97.52	22.31	22.43	0.12	500	1.10	No				
MW-81-098	Alluvial	09/13/2023	99.82	99.41	0.41	77.52	97.52	23.40	23.50	0.10	500	1.32	No				
MW-82-046	Alluvial	07/18/2023	48.87	48.10	0.77	26.57	46.57	29.41	29.45	0.04	500	3.30	No	X			Consecutive high turbidity readings. Well already redeveloped Second Quarter 2023 and consistent turbidity readings followed.
MW-82-046	Alluvial	08/08/2023	48.87	48.04	0.83	26.57	46.57	29.60	29.65	0.05	500	2.64	No	X			Consecutive high turbidity readings. Well already redeveloped Second Quarter 2023 and consistent turbidity readings followed.
MW-82-046	Alluvial	09/13/2023	48.87	47.80	1.07	26.57	46.57	30.03	30.10	0.07	500	1.89	No	X			Consecutive high turbidity readings. Well already redeveloped Second Quarter 2023 and consistent turbidity readings followed.
MW-82-112	Alluvial	08/08/2023	114.78	114.20	0.58	92.48	112.48	29.50	29.55	0.05	500	2.64	No				
MW-82-168	Alluvial	07/18/2023	170.34	169.80	0.54	148.04	168.04	27.51	27.55	0.04	500	3.30	No				
MW-82-168	Alluvial	08/08/2023	170.34	169.23	1.11	148.04	168.04	29.89	29.92	0.03	500	4.40	No				
MW-82-168	Alluvial	09/13/2023	170.34	169.75	0.59	148.04	168.04	28.58	28.65	0.07	500	1.89	No				
MW-82-198	Alluvial	07/18/2023	200.25	199.48	0.77	177.95	197.95	27.62	27.65	0.03	500	4.40	No				
MW-82-198	Alluvial	08/08/2023	200.25	199.61	0.64	177.95	197.95	28.45	28.50	0.05	500	2.64	No				
MW-82-198	Alluvial	09/13/2023	200.25	199.61	0.64	177.95	197.95	28.83	28.90	0.07	500	1.89	No				
MW-86-030	Alluvial	08/17/2023	34.51	31.86	2.65	12.21	32.21	13.30	13.34	0.04	500	3.30	No				
MW-86-066	Alluvial	08/17/2023	70.40	69.15	1.25	48.10	68.10	13.10	13.15	0.05	500	2.64	No				
MW-86-120	Alluvial	08/17/2023	124.67	123.13	1.54	102.37	122.37	13.73	13.73	0.00	500	N/A	No				
MW-86-140	Alluvial	08/17/2023	144.53	143.20	1.33	132.23	142.23	13.79	13.85	0.06	500	2.20	No				
MW-88-107	Bedrock	07/18/2023	109.06	109.06	0.00	86.76	106.76	90.16	90.21	0.05	500	2.64	No				
MW-88-107	Bedrock	08/10/2023	109.06	109.11	-0.05	86.76	106.76	90.30	90.35	0.05	500	2.64	No				
MW-88-107	Bedrock	09/12/2023	109.06	109.11	-0.05	86.76	106.76	90.71	90.75	0.04	500	3.30	No				
MW-90-031	Alluvial	08/16/2023	33.60	31.15	2.45	21.30	31.30	4.90	4.98	0.08	500	1.65	No				
MW-96-045	Alluvial	08/15/2023	47.52	46.26	1.26	25.22	45.22	28.75	28.80	0.05	500	2.64	No				

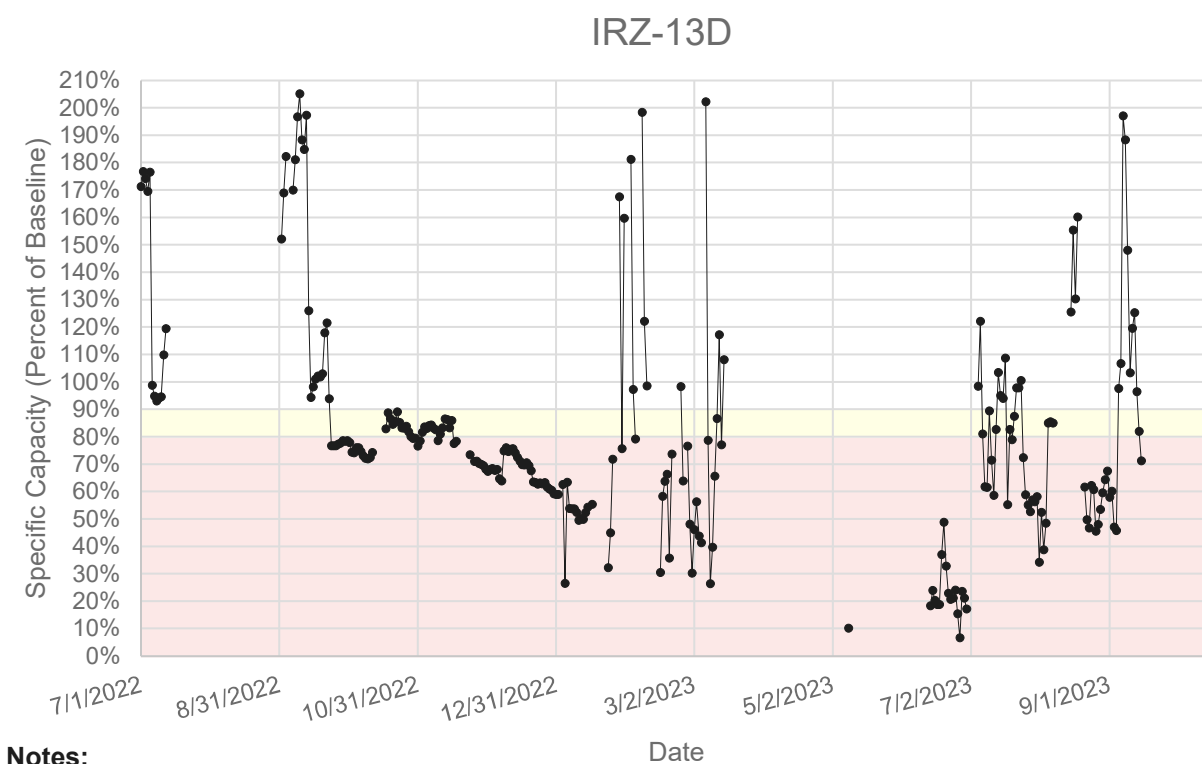
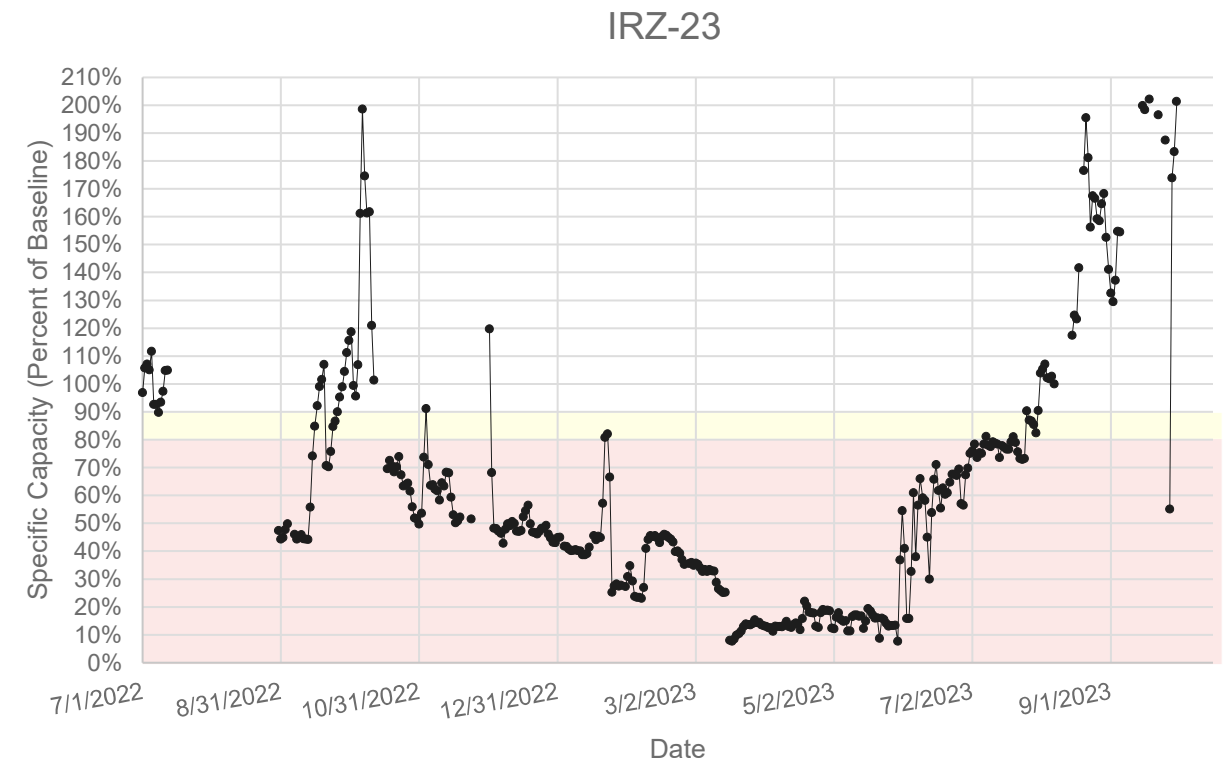
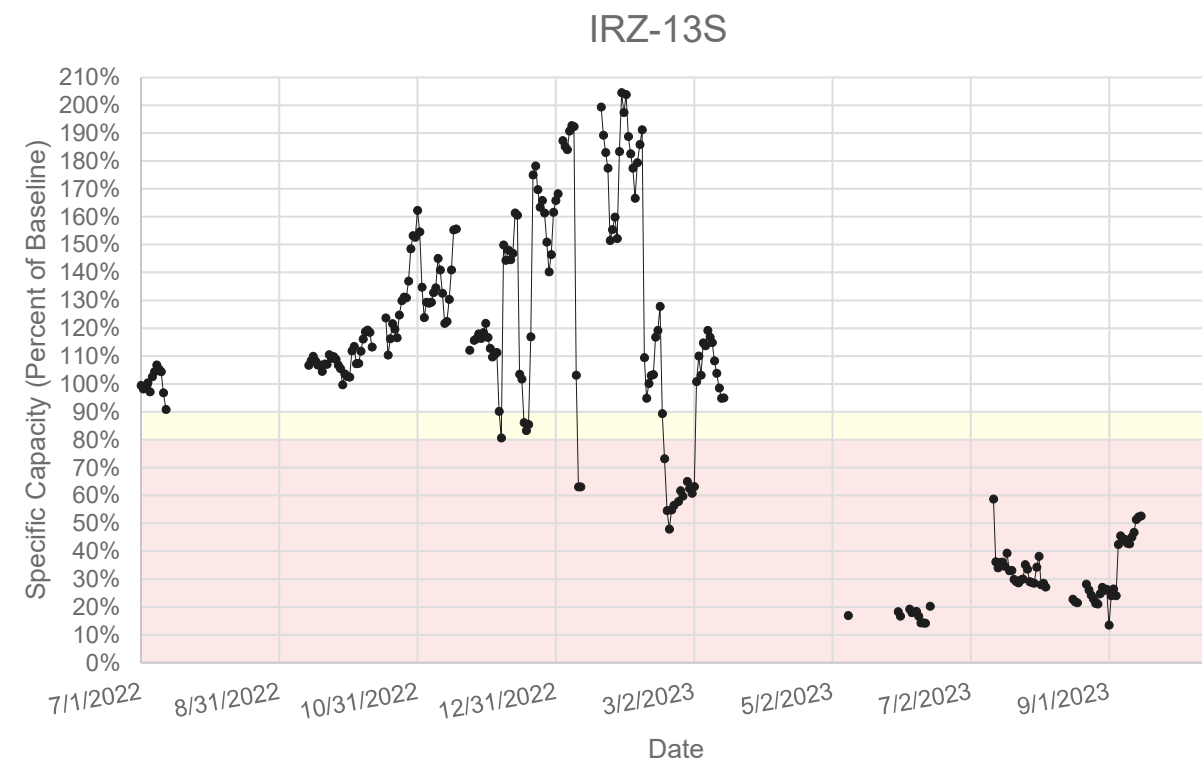
Table 4.2
Monitoring Well Water Levels and Specific Capacities
Third Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Well Screen Lithology	Sample Date	Constructed Well Depth (feet bTOC)	Measured Well Depth (feet bTOC)	Difference in Constructed and Measured Well Depth (feet)	Screen Start Depth (feet bTOC)	Screen End Depth (feet bTOC)	Pre-Purge Depth to Water (feet bTOC)	Post-Purge Depth to Water (feet bTOC)	Drawdown During Purging (feet)	Purging Rate (ml/min)	Specific Capacity (gpm/feet)	Measured Depth Covering Greater than 20% of screen?	Flagged for Evaluation	Planned for Resurvey	Planned for Redevelopment	Notes
MW-96-217	Alluvial	08/15/2023	219.33	218.45	0.88	197.03	217.03	29.14	29.20	0.06	500	2.20	No				
MW-97-042	Alluvial	08/21/2023	42.63	41.92	0.71	22.13	42.13	27.46	27.50	0.04	500	3.30	No	X			High turbidity. Not recommended for redevelopment based on measured well depth and specific capacity.
MW-97-202	Alluvial	08/21/2023	201.47	200.90	0.57	190.97	200.97	28.81	28.85	0.04	500	3.30	No				
PT5D	Alluvial	07/17/2023	107.37	107.31	0.06	97.53	107.53	18.32	18.36	0.04	500	3.30	No				
PT5D	Alluvial	08/09/2023	107.37	105.00	2.37	97.53	107.53	19.00	19.10	0.10	500	1.32	Yes	X			Elevated depth to bottom measurement not repeated in September 2023, so not recommended for redevelopment at this time.
PT5D	Alluvial	09/11/2023	107.37	107.26	0.11	97.53	107.53	19.25	19.30	0.05	500	2.64	No				
PT5M	Alluvial	08/15/2023	N/A	72.81	N/A	62.37	72.37	18.58	18.64	0.06	500	2.20	N/A				
PT5S	Alluvial	08/15/2023	N/A	47.84	N/A	37.35	47.35	18.54	18.62	0.08	500	1.65	N/A				
TW-02D	Alluvial	07/20/2023	146.50	149.61	-3.11	109.50	144.50	38.32	38.36	0.04	3,785	25.00	No				
TW-02D	Alluvial	08/08/2023	146.50	149.61	-3.11	109.50	144.50	37.94	38.00	0.06	3,785	16.67	No				
TW-02D	Alluvial	09/14/2023	146.50	149.61	-3.11	109.50	144.50	38.28	38.35	0.07	3,785	14.29	No				
TW-02S	Alluvial	07/20/2023	100.14	96.27	3.87	45.14	95.14	38.60	38.62	0.02	3,785	50.00	No				
TW-02S	Alluvial	08/08/2023	100.14	96.27	3.87	45.14	95.14	38.39	38.42	0.03	3,785	33.33	No				
TW-02S	Alluvial	09/14/2023	100.14	96.27	3.87	45.14	95.14	38.91	39.00	0.09	3,785	11.11	No				
TW-03D	Alluvial	07/20/2023	156.81	152.71	4.10	111.81	156.81	38.10	38.13	0.03	3,785	33.33	No				
TW-03D	Alluvial	08/08/2023	156.81	152.32	4.49	111.81	156.81	37.53	37.58	0.05	3,785	20.00	No				
TW-03D	Alluvial	09/14/2023	156.81	152.32	4.49	111.81	156.81	37.93	38.00	0.07	3,785	14.29	No				
TW-04	Alluvial	08/21/2023	256.49	253.95	2.54	211.49	251.49	30.85	30.90	0.05	500	2.64	No				

Notes and Abbreviations:
1. Slant wells (MW-52D, MW-52M, MW-52S, MW-53D, MW-53M, and MW-53S) are not included in this evaluation.
2. Specific capacity is evaluated for alluvial and fluvial wells. Bedrock wells are not included in this evaluation.
3. Monitoring wells MW-20-70, MW-20-100, MW-20-130, MW-22, MW-22, MW-38-D, MW-38-S, PGE-9N, and PGE-9S were resurveyed on July 25, 2022 due to observed discrepancies between constructed and measured well depths.
4. Monitoring wells MW-75-33 and MW-75-117 were resurveyed on August 25, 2022 due to observed discrepancies between constructed and measured well depths.
5. Monitoring wells MW-15, MW-31-135, MW-34-100, MW-39-40, MW-39-60, MW-45-95, MW-57-50, MW-64BR, MW-70BR-200, MW-70BR-225, MW-70BR-287, MW-72BR-200, MW-99-60, and MW-99-140 were resurveyed on November 15, 2022 due to observed discrepancies between constructed and measured well depths.
6. Monitoring wells MW-75-202 and MW-75-267 were resurveyed on April 25, 2023 due to observed discrepancies between constructed and measured well depths.
7. Monitoring well MW-46-205 was resurveyed on August 31, 2023 due to observed discrepancies between constructed and measured well depths.
N/A = Not Applicable
-- = No drawdown during purging.

Figures

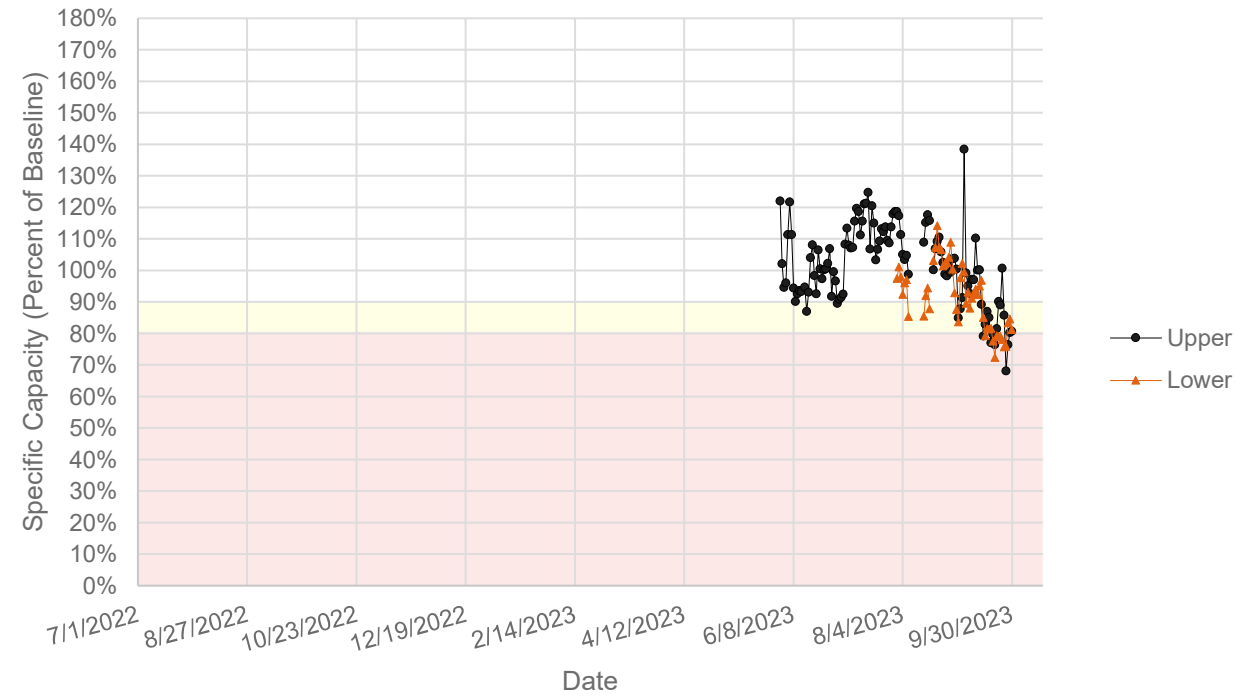




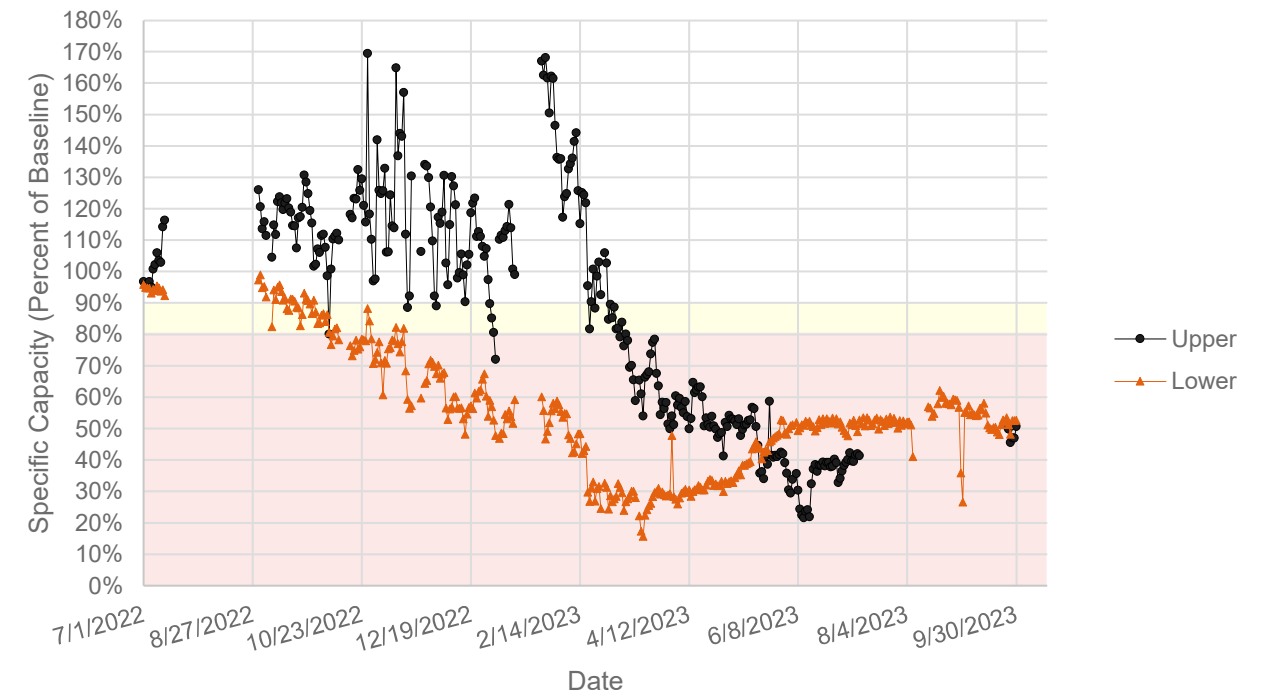
Notes:

1. % - percent
2. Baseline specific capacity for each screen interval is represented as 100% on the y-axis.
3. Values greater than 100% indicate performance exceeding baseline. Values between 80% and 90% are considered fair. Values under 80% are considered poor. Values in the 80% to 90% range are shown in yellow, and values in the under 80% range are shown in red. Extraction wells consistently operating below 80% of baseline will be evaluated for potential rehabilitation.
4. Some increases in specific capacity exceeding 210% of baseline were observed during First Quarter 2023 at IRZ-13D due to system operation adjustments. These data are not considered representative of extraction operations and is excluded from the trend graph.
5. IRZ-13D, IRZ-13S, and IRZ-23 operated 10/11/22-10/15/22, 11/17/22-11/20/22, and 11/21/22-11/23/22. Water level data was not collected during these timeframes due to a SCADA error and therefore specific capacities were not calculated.
6. Baseline specific capacity has not been established for IRZ-9 due to limited operation. Therefore, a graph of IRZ-9 is not included.

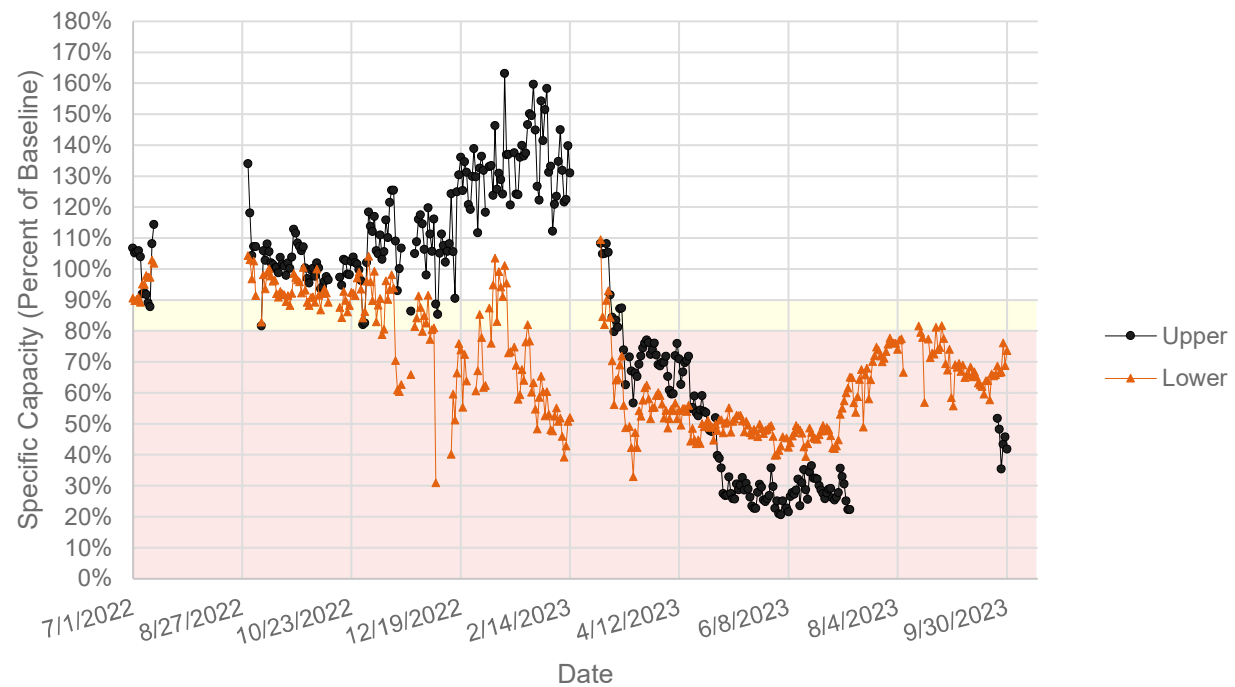
IRZ-15 Injection Screens



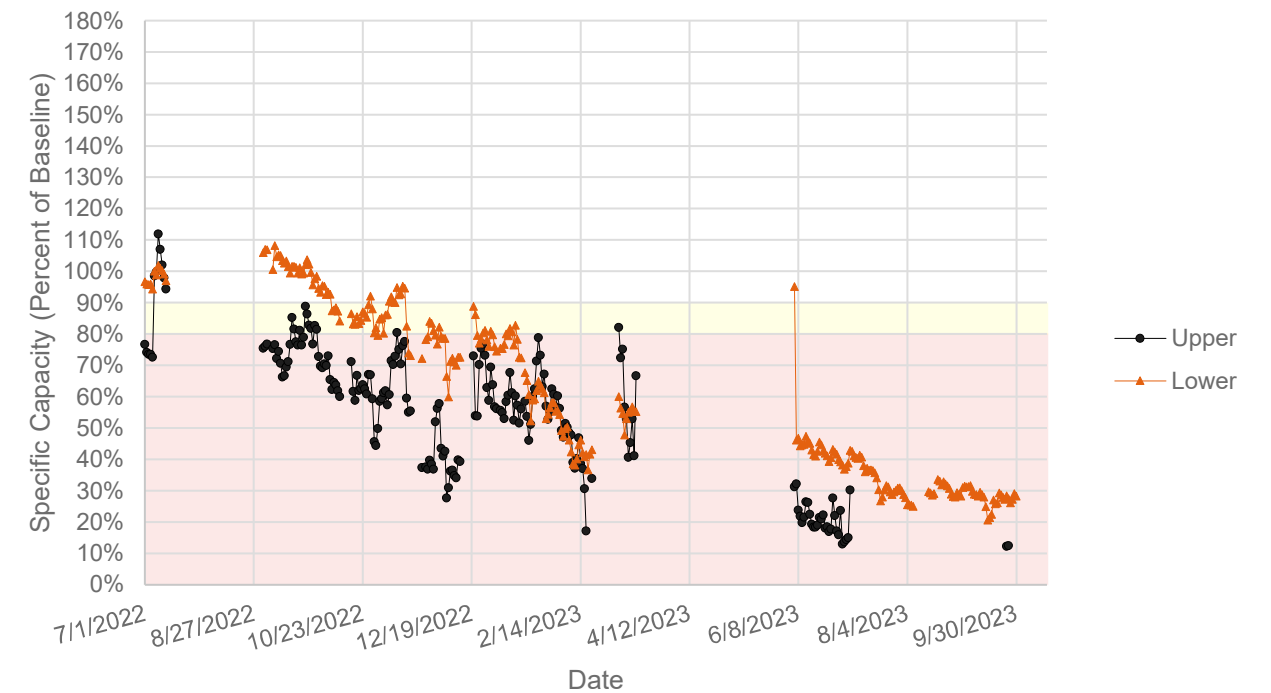
IRZ-17 Injection Screens



IRZ-16 Injection Screens



IRZ-18 Injection Screens



Notes:

1. % - percent
2. Baseline specific capacity for each screen interval is represented as 100% on the y-axis.
3. Specific capacity values greater than 100% indicate performance exceeding baseline. Values between 80% and 90% are considered fair and indicate backwashing frequency should increase to once every 0.75 weeks. Values under 80% are considered poor and indicate backwashing frequency should increase to twice weekly. Values in the 80% to 90% range are shown in yellow, and values in the under 80% range are shown in red.
4. IRZ-15 upper began operation in March 2023. IRZ-15 lower began operation in April 2023. Baseline specific capacities were established for these wells in June and August 2023, respectively. The graphs exclude data collected prior to the baseline specific capacity being established.

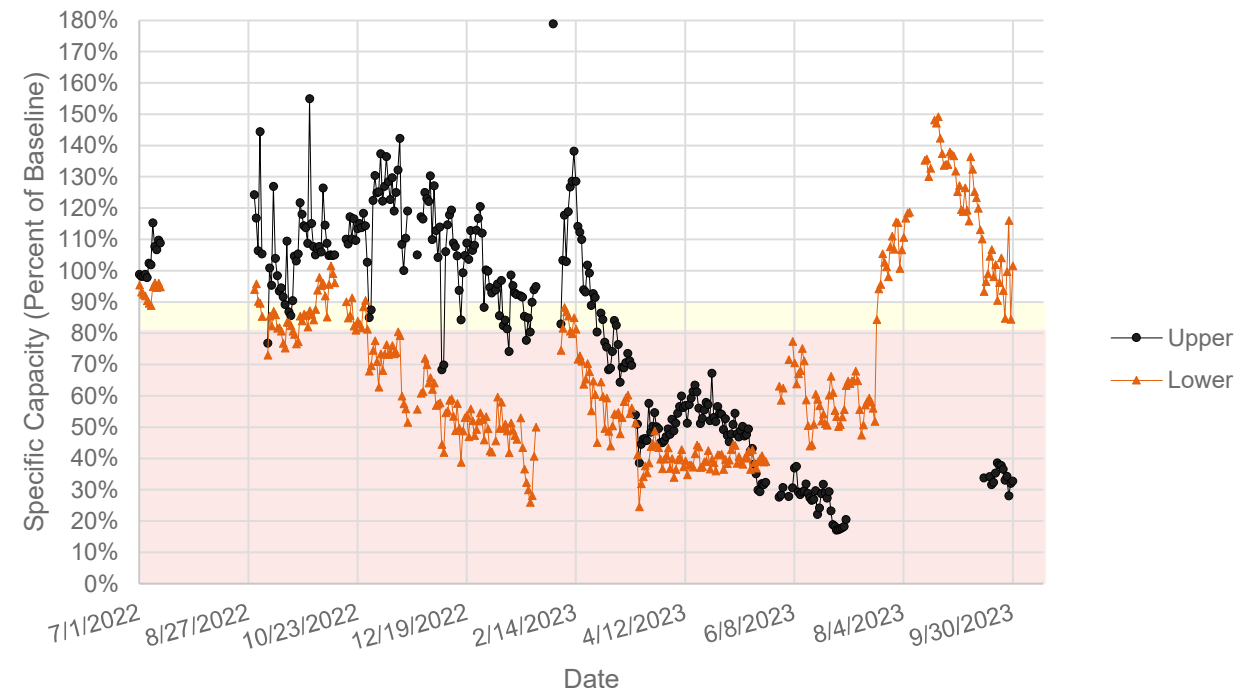
THIRD QUARTER 2023
WELL PERFORMANCE REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

INJECTION WELL SPECIFIC CAPACITY TRENDS PART 1

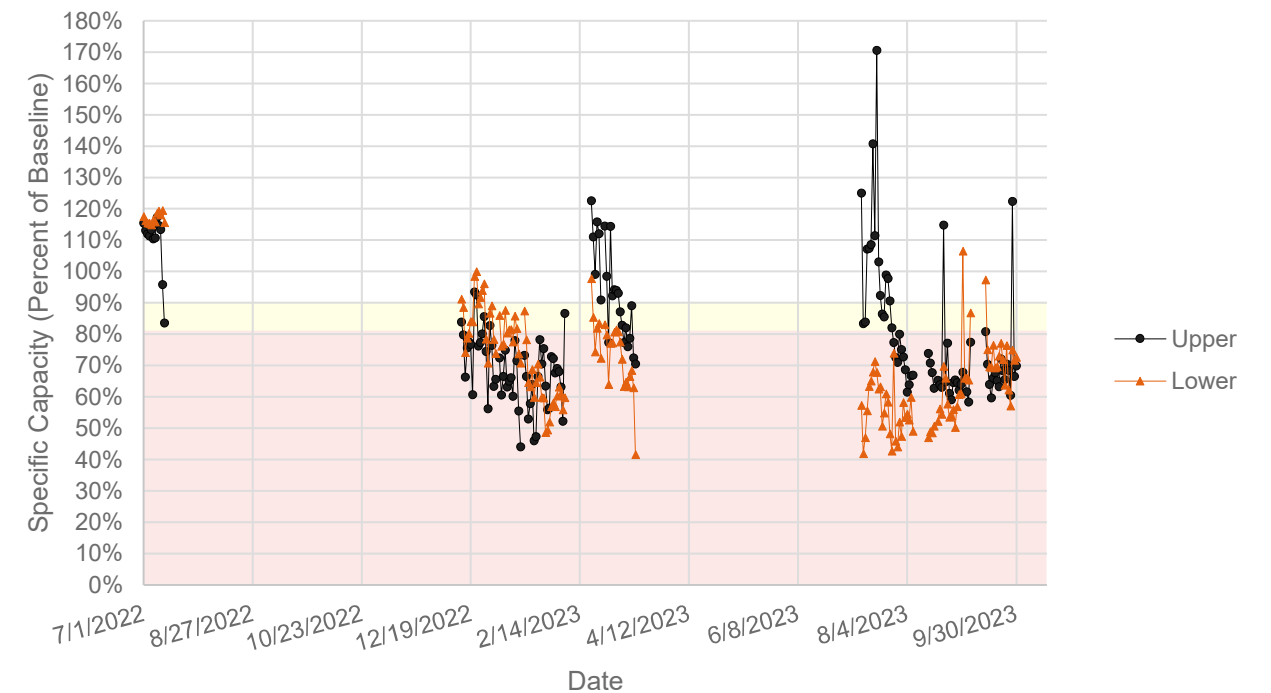


FIGURE
3.2

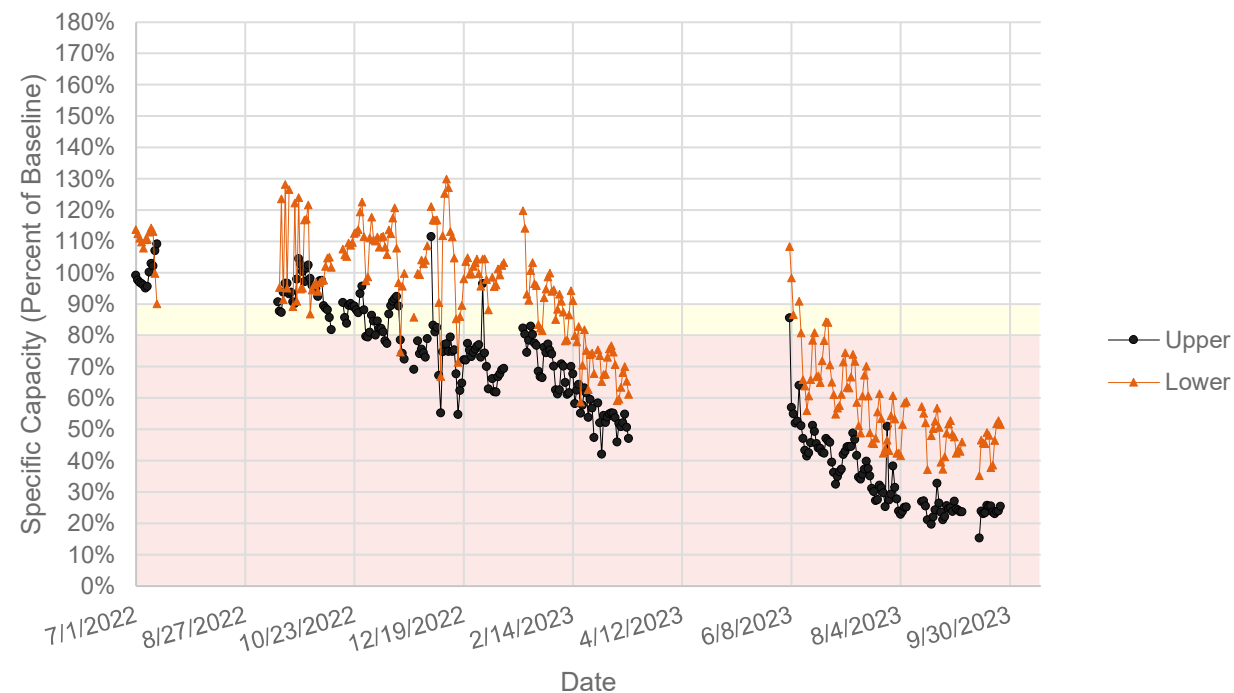
IRZ-20 Injection Screens



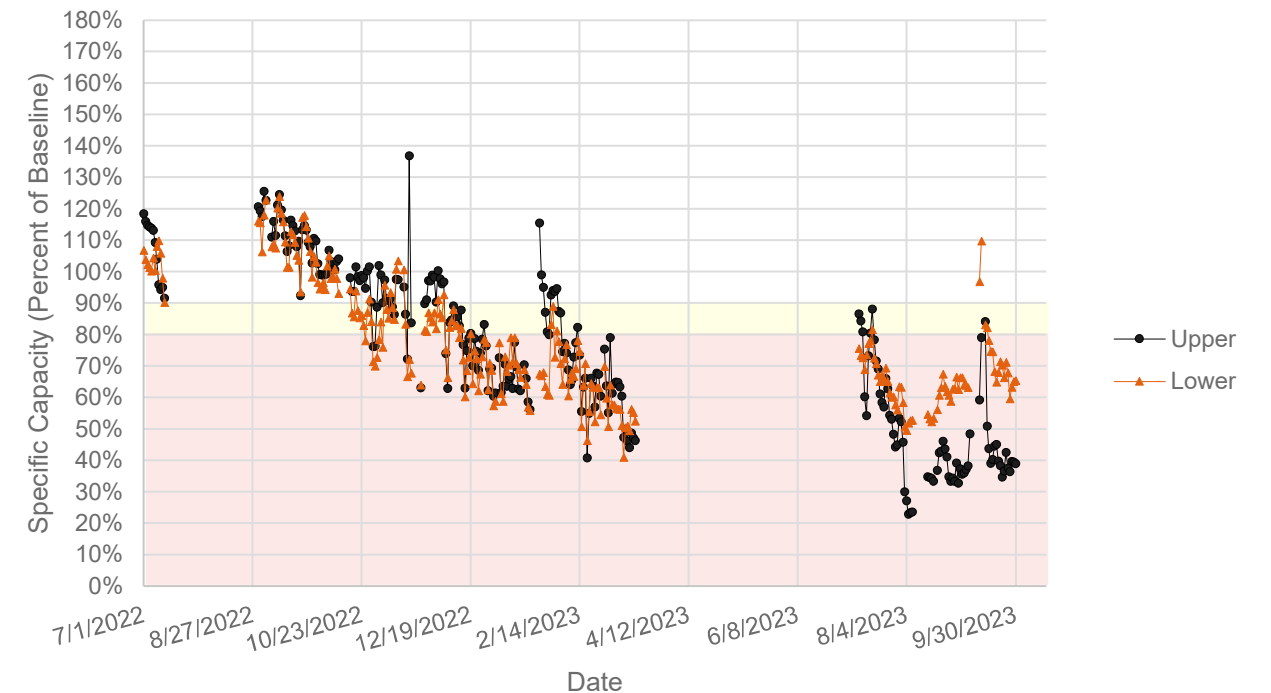
IRZ-29 Injection Screens



IRZ-27 Injection Screens



IRZ-31 Injection Screens



Notes:

1. % - percent
2. Baseline specific capacity for each screen interval is represented as 100% on the y-axis.
3. Specific capacity values greater than 100% indicate performance exceeding baseline. Values between 80% and 90% are considered fair and indicate backwashing frequency should increase to once every 0.75 weeks. Values under 80% are considered poor and indicate backwashing frequency should increase to twice weekly. Values in the 80% to 90% range are shown in yellow, and values in the under 80% range are shown in red.
4. Due to flow totalizer communication errors, data for IRZ-31 between July 5, 2023 and July 10, 2023 is unavailable. IRZ-31 was operational during this timeframe.

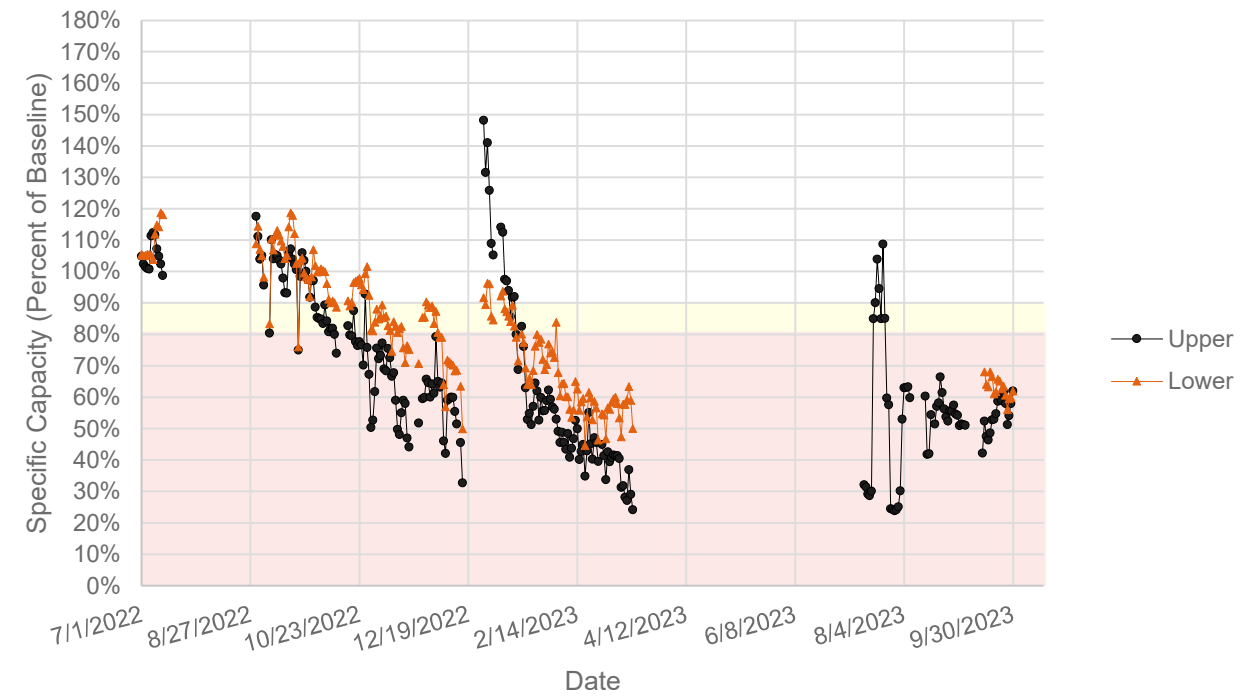
THIRD QUARTER 2023
WELL PERFORMANCE REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

INJECTION WELL SPECIFIC CAPACITY TRENDS PART 2

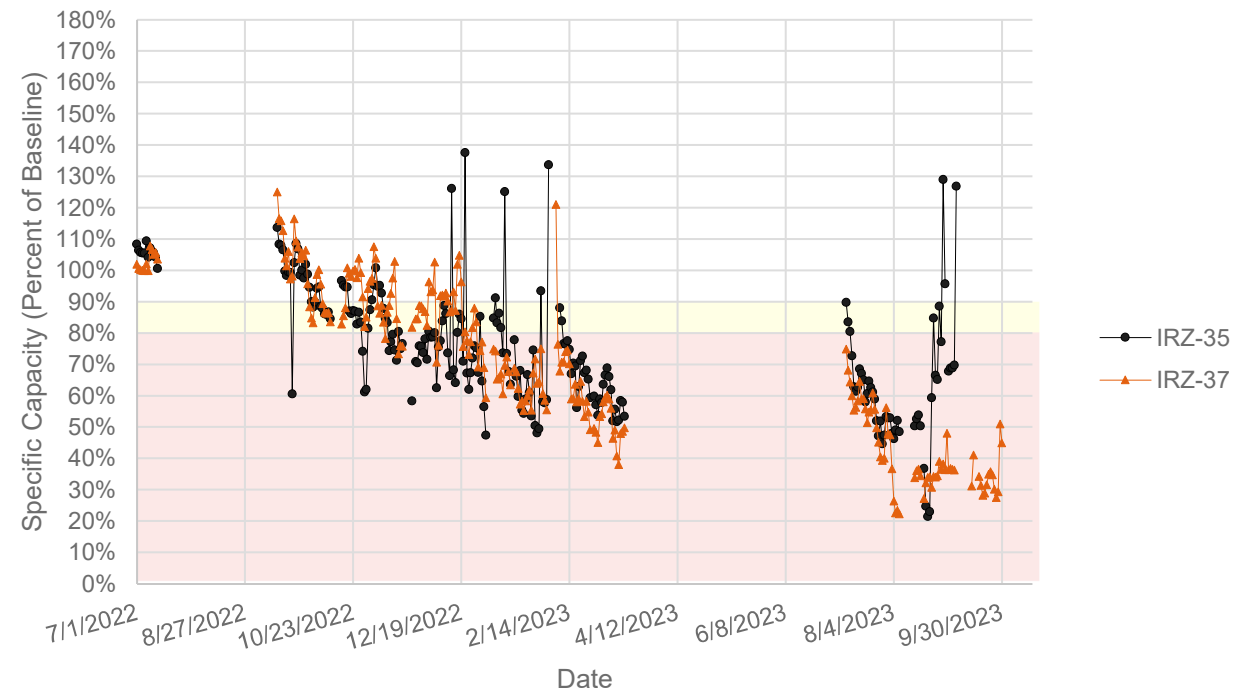


FIGURE
3.3

IRZ-33 Injection Screens



IRZ-35 and IRZ-37 Injection Screens



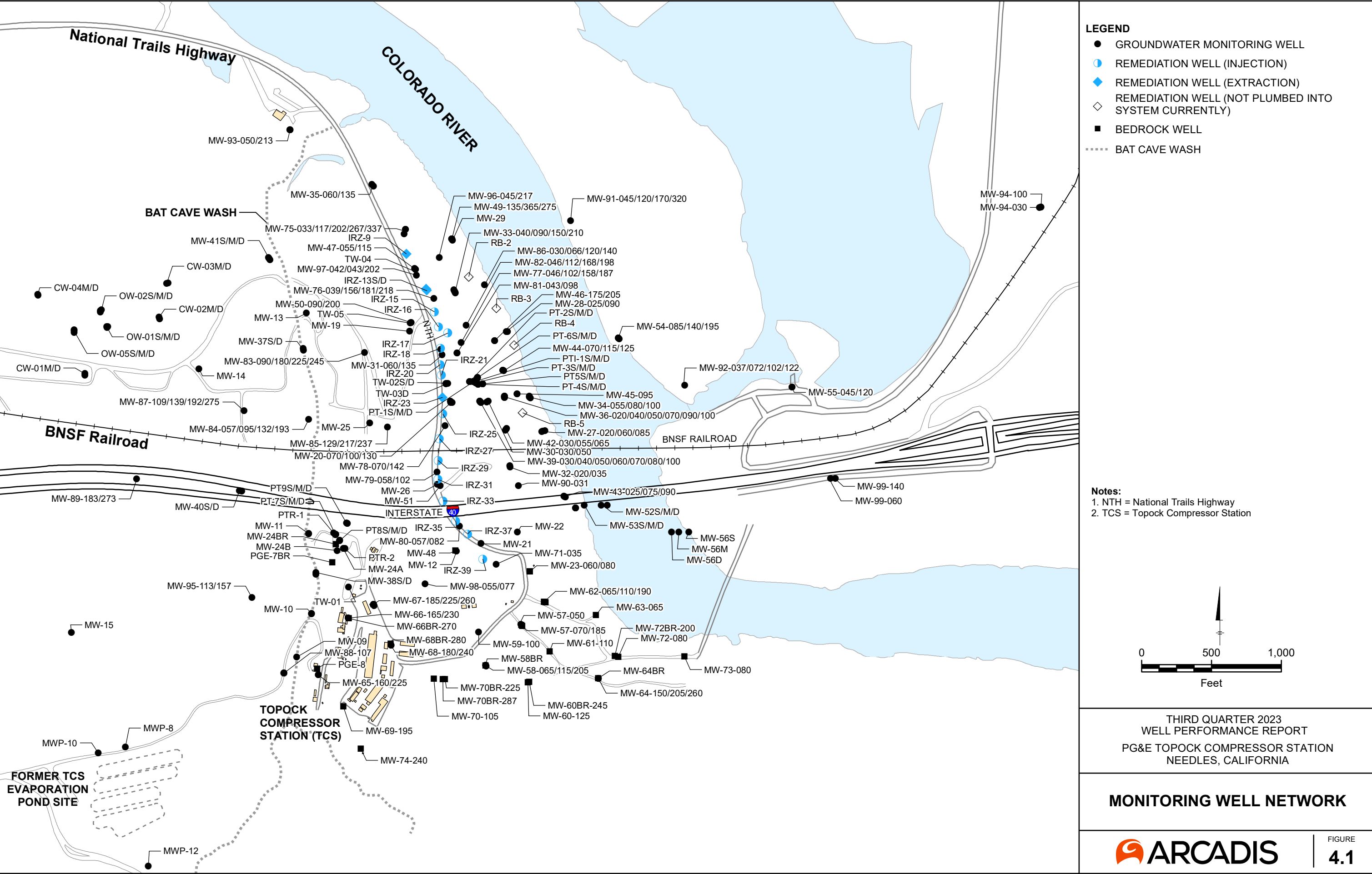
Notes:

1. % - percent
2. Baseline specific capacity for each screen interval is represented as 100% on the y-axis.
3. Specific capacity values greater than 100% indicate performance exceeding baseline. Values between 80% and 90% are considered fair and indicate backwashing frequency should increase to once every 0.75 weeks. Values under 80% are considered poor and indicate backwashing frequency should increase to twice weekly. Values in the 80% to 90% range are shown in yellow, and values in the under 80% range are shown in red.
4. IRZ-39 did not operate in Third Quarter 2023, and previous quarter IRZ-39 flowrates were low and unsustainable. As a result, a baseline specific capacity has not been determined for IRZ-39. Therefore, IRZ-39 is not included in Figures 3.2 through 3.4.

THIRD QUARTER 2023
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**INJECTION WELL SPECIFIC
CAPACITY TRENDS PART 3**





Arcadis U.S., Inc.
100 Montgomery Street
Suite 300
San Francisco
California 94104
Phone: 415 374 2744
Fax: 415 374 2745
www.arcadis.com