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January 28, 2020

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**Subject: Revised Topock IM-3 Combined Fourth Quarter 2019 Monitoring, Semiannual July – December 2019 and Annual January - December 2019 Operation and Maintenance Report
PG&E Topock Compressor Station, Needles, California
Interim Measure No. 3 Groundwater Treatment System
(Document ID: PGE20200123)**

Dear Ms. Innis and Mr. Stormo:

Enclosed is the Revised Fourth Quarter 2019 Monitoring, Semiannual July – December 2019 and Annual January – December 2019 Operation and Maintenance Report (Revised 4Q2019 Report) for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station, Interim Measure No. 3 (IM-3) Groundwater Treatment System.

This Revised 4Q2019 Report is being issued due to the inadvertent omission of Reverse Osmosis Concentrate (RO Concentrate) flow data in the Fourth Quarter 2019 Monitoring, Semiannual July – December 2019 and Annual January – December 2019 Operation and Maintenance Report submitted January 15, 2020. The omission of the RO concentrate data was discovered after we sent the report on January 15, 2020, and this revised report is being issued with corrected volume data.

RO Concentrate is a by-product of the IM-3 treatment process and is shipped off-site by tanker truck as non-hazardous waste. Due to Final Groundwater Remedy construction activities at the MW-20 Bench adjacent to the IM-3 RO Concentrate storage tank, the RO Concentrate is temporarily being stored and shipped from the RO Concentrate process collection tank. Since the flowmeter is located between the RO Concentrate process collection tank and the RO Concentrate storage tank, the RO Concentrate flow from the process collection tank was not recorded by the flowmeter. The additional RO Concentrate flow data in this Revised 4Q2019 Report is from Liquid Environmental Solutions non-hazardous waste manifests (provided in Appendix B).

From July 2005 through September 2011 PG&E was operating the IM-3 groundwater treatment system as authorized by the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) Order No. R7-2004-0103 (issued October 13, 2004); Order No. R7-2006-0060 (issued September 20,

Pamela S. Innis
Scot Stormo
January 28, 2020
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2006); and the revised Monitoring and Reporting Program under Order No. R7-2006-0060 (issued August 28, 2008). Order No. R7-2006-0060 expired on September 20, 2011.

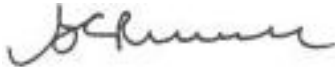
PG&E is currently operating the IM-3 groundwater treatment system as authorized by the U.S. Department of the Interior (DOI) Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs) as documented in Attachment A to the Letter Agreement issued July 26, 2011 from the Regional Water Board to DOI, and the subsequent Letter of Concurrence issued August 18, 2011 from DOI to the Regional Water Board. Quarterly monitoring reports are required to be submitted by the fifteenth day of the month following the end of the quarter.

The IM-3 groundwater extraction and treatment system has extracted and treated approximately 959,679,229 gallons of water and removed approximately 7,850 pounds of total chromium from August 1, 2005 through December 31, 2019.

The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover, as part of the Compliance Monitoring Program.

If you have any questions regarding this report, please call me at (760) 791-5884.

Sincerely,



Curt Russell
Topock Site Manager

Enclosures:

Revised Topock IM-3 Combined Fourth Quarter 2019 Monitoring, Semiannual July - December 2019, and Annual January - December 2019 Operation and Maintenance Report

cc: Thomas Vandenberg, Colorado River Basin Regional Water Board
Aaron Yue, California Department of Toxic Substances Control

Topock Project Executive Abstract

<p>Document Title: <i>Revised Topock IM-3 Fourth Quarter 2019 Monitoring, Semiannual July - December 2019 and Annual January – December 2019 Operation and Maintenance Report</i></p> <p>Submitting Agency/Author: U.S. Department of the Interior and Regional Water Quality Control Board</p> <p>Final Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Is this time critical? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Date of Document: January 28, 2020</p> <p>Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E</p> <p>Document ID Number: PGE20200123</p>
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<p>Type of Document:</p> <p><input type="checkbox"/> Draft <input checked="" type="checkbox"/> Report <input type="checkbox"/> Letter <input type="checkbox"/> Memo</p> <p><input type="checkbox"/> Other / Explain:</p>	<p>Action Required:</p> <p><input checked="" type="checkbox"/> Information Only <input type="checkbox"/> Review and Input</p> <p><input type="checkbox"/> Other / Explain:</p>
<p>What does this information pertain to?</p> <p><input type="checkbox"/> Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)</p> <p><input type="checkbox"/> RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)</p> <p><input type="checkbox"/> Corrective Measures Study (CMS)/Feasibility Study (FS)</p> <p><input type="checkbox"/> Corrective Measures Implementation (CMI)/ Remedial Action (RA)</p> <p><input type="checkbox"/> California Environmental Quality Act (CEQA)/ Environmental Impact Report (EIR)</p> <p><input checked="" type="checkbox"/> Interim Measures</p> <p><input type="checkbox"/> Other / Explain:</p>	<p>Is this a Regulatory Requirement?</p> <p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>If no, why is the document needed?</p>
<p>What is the consequence of NOT doing this item? What is the consequence of DOING this item?</p> <p>Submittal of this report is a compliance requirement of the ARARs for waste discharge as documented in Attachment A to the Letter Agreement issued July 26, 2011.</p>	<p>Other Justification/s:</p> <p><input type="checkbox"/> Permit <input type="checkbox"/> Other / Explain:</p>
<p>Brief Summary of attached document:</p> <p>This report covers the Interim Measure No. 3 (IM-3) groundwater treatment system monitoring activities during the Fourth Quarter 2019 period, and the operation and maintenance activities during the July 1, 2019 to December 31, 2019 semiannual and the January 1, 2019 to December 31, 2019 annual periods. The groundwater monitoring results for wells OW 1S/M/D, OW 2S/M/D, OW 5S/M/D, CW 1M/D, CW 2M/D, CW 3M/D, and CW 4M/D will be submitted under separate cover, as part of the Compliance Monitoring Program.</p> <p>Written by: Pacific Gas and Electric Company</p>	
<p>Recommendations:</p> <p>This report is for your information only.</p>	
<p>How is this information related to the Final Remedy or Regulatory Requirements?</p> <p>The Topock IM-3 Fourth Quarter 2019 Monitoring, Semiannual July - December 2019 and Annual January – December 2019 Operation and Maintenance Report is related to the Interim Measure. PG&E is currently operating the IM-3 groundwater treatment system as authorized by the U.S. Department of the Interior (DOI) Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs) as documented in Attachment A to the Letter Agreement issued July 26, 2011 from the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) to DOI, and the subsequent Letter of Concurrence issued August 18, 2011 from DOI to the Regional Water Board.</p>	
<p>Other requirements of this information?</p> <p>None.</p>	



**Revised Combined Fourth Quarter 2019 Monitoring,
Semiannual July – December 2019 and
Annual January – December 2019 Operation and
Maintenance Report
Interim Measure No. 3 Groundwater Treatment System**

**PG&E Topock Compressor Station
Needles, California**

Document ID: PGE20200123

January 28, 2020

Prepared for

Colorado River Basin Regional Water Quality Control Board
and
United States Department of the Interior
on behalf of
Pacific Gas and Electric Company



Revised Combined Fourth Quarter 2019 Monitoring,
Semiannual July – December 2019, and Annual January – December 2019
Operation and Maintenance Report
for Interim Measure No. 3 Groundwater Treatment System

PG&E Topock Compressor Station
Needles, California

Prepared for

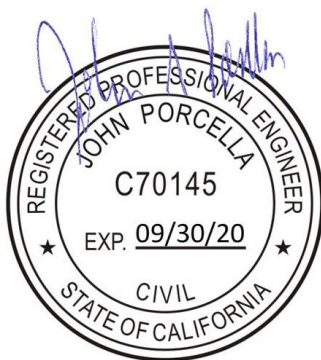
United States Department of the Interior
and
Colorado River Basin Regional Water Quality Control Board

on behalf of

Pacific Gas and Electric Company

January 28, 2020

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



John Porcella, P.E.
Project Engineer

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- B Daily Volumes of Groundwater Treated
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- D Fourth Quarter 2019 Laboratory Analytical Reports

Acronyms and Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements
ASSET	ASSET Laboratories
DOI	United States Department of the Interior
gpm	gallons per minute
HMI	human-machine interface
IM	Interim Measure
IM-3	Interim Measure No. 3
IW	injection well
MRP	Monitoring and Reporting Program
O&M	operation and maintenance
PG&E	Pacific Gas and Electric Company
PLC	programmable logic controller
PST	Pacific Standard Time
RCRA	Resource Conservations and Recovery Act
Regional Water Board	Colorado River Basin Regional Water Quality Control Board
RO	reverse osmosis
Truesdail	Truesdail Laboratories, Inc.
WDR	Waste Discharge Requirements

1. Introduction

Pacific Gas and Electric Company (PG&E) is implementing an Interim Measure (IM) to address chromium concentrations in groundwater at the Topock Compressor Station near Needles, California. The IM consists of groundwater extraction for hydraulic control of the plume boundaries in the Colorado River floodplain, treatment of extracted groundwater, and treated groundwater injection into injection wells located on San Bernardino County Assessor's Parcel No. 650-151-06. The groundwater extraction, treatment, and injection systems collectively are referred to as Interim Measure No. 3 (IM-3). Figure 1 provides a map of the project area. All figures are located at the end of this report.

From July 2005 through September 2011 PG&E was operating the IM-3 groundwater treatment system as authorized by the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) Order No. R7-2004-0103 (issued October 13, 2004), Order No. R7-2006-0060 (issued September 20, 2006), and the revised Monitoring and Reporting Program (MRP) under Order No. R7-2006-0060 (issued August 28, 2008). Order No. R7-2006-0060 expired September 20, 2011.

PG&E is currently operating the IM-3 groundwater treatment system as authorized by the U.S. Department of the Interior (DOI) Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs) as documented in Attachment A to the Letter Agreement issued July 26, 2011 from the Regional Water Board to DOI, and the subsequent Letter of Concurrence issued August 18, 2011 from DOI to the Regional Water Board. Quarterly monitoring reports are required to be submitted by the fifteenth day of the month following the end of the quarter.

This report covers monitoring activities related to operation of the IM-3 groundwater treatment system during the Fourth Quarter 2019, as well as the operation and maintenance (O&M) activities during the July 1, 2019 to December 31, 2019 semiannual period and the January 1, 2019 to December 31, 2019 annual period. The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover, as part of the Compliance Monitoring Program.

2. Sampling Station Locations

Table 1 lists the locations of sampling stations (all tables are located at the end of this report.) Sampling station locations are shown on the process and instrumentation diagrams (Figures TP-PR-10-10-04, PR-10-03, PR-10-04, and TP-PR-10-10-06) provided at the end of this report.

3. Description of Activities

The treatment system was initially operated between July 25 and July 28, 2005 for the Waste Discharge Requirement (WDR)-mandated startup phase. Discharge to the injection wells was initiated July 31, 2005 after successfully completing the startup phase in accordance with Order No. R7-2004-0103. Full-time operation of the treatment system commenced in August 2005.

As previously noted, this report describes Fourth Quarter 2019 monitoring activities and the July 1, 2019 through December 31, 2019 (Third and Fourth Quarters) O&M activities related to the IM-3 groundwater treatment system. It also serves as the Annual January – December 2019 O&M Report for IM-3. IM-3 monitoring activities from January 1, 2019 through September 30, 2019 (First, Second and Third Quarters) were presented in the following monitoring and O&M reports:

- Topock IM-3 First Quarter 2019 Monitoring Report, submitted to the DOI and Regional Water Board April 15, 2019
- Topock IM-3 Second Quarter 2019 Monitoring and Semi-annual January 1, 2019 through June 30, 2019 Operation and Maintenance Report, submitted to the DOI and Regional Water Board July 15, 2019
- Topock IM-3 Third Quarter 2019 Monitoring Report, submitted to the DOI and Regional Water Board October 15, 2019

3.1 Groundwater Treatment System

The treatment system was initially operated between July 25 and July 28, 2005 for the WDR-mandated startup phase. Discharge to the injection wells was initiated July 31, 2005 after successfully completing the startup phase in accordance with Order R7-2004-0103. Full-time operation of the treatment system commenced in August 2005.

Influent to the treatment facility, as listed in Attachment A, Waste Discharge ARARs, to the Letter Agreement issued July 26, 2011, includes the following:

- Groundwater from extraction wells TW-2S, TW-2D, TW-3D, and PE-1
- Purged groundwater and water generated from rinsing field equipment during monitoring events
- Groundwater generated during well installation, well development, and aquifer testing

Operation of the groundwater treatment system results in the following three effluent streams:

- **Treated Effluent:** Treated water that is discharged to the injection well(s)
- **Reverse Osmosis (RO) Concentrate (brine):** Treatment byproduct that is transported and disposed of offsite at a permitted facility
- **Sludge:** Treatment byproduct that is transported offsite for disposal at a permitted facility, which occurs either when a sludge waste storage bin reaches capacity, or within 90 days of the start date for accumulation in the storage container, whichever occurs first

3.2 Groundwater Treatment System Flow Rates for Fourth Quarter 2019

Downtime is defined as any periods when all extraction wells are not operating so that no groundwater is being extracted and piped into IM-3 as influent. Periods of planned and unplanned extraction system downtime (that together resulted in approximately 3.1 percent downtime during Fourth Quarter 2019) are summarized in the Semiannual Operations and Maintenance Log provided in Appendix A. The times shown are in Pacific Standard Time to be consistent with other data collected (e.g., water level data) at the site. Periods of planned and unplanned extraction system downtime during the months July 2019 through September 2019 were originally reported in the *Third Quarter 2019 Monitoring Report for Interim*

Measure No. 3 Groundwater Treatment System, PG&E Topock Compressor Station, Needles, CA, published October 15, 2019, and are also included in Appendix A of this report.

Data regarding daily volumes of groundwater treated and discharged are provided in Appendix B. The IM-3 groundwater treatment system flowmeter calibration records are included in Appendix C.

3.2.1 Treatment System Influent

During the Fourth Quarter 2019, extraction well TW-3D operated with a target pumping rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Extraction wells PE-01 and TW-2D were only operated to collect a sample. TW-2S was not operated during Fourth Quarter 2019. The operational run time for the IM groundwater extraction system (combined or individual pumping), by month, was approximately:

- 98.5 percent during October 2019
- 96.3 percent during November 2019
- 95.9 percent during December 2019

The Fourth Quarter 2019 treatment system monthly average flow rates (influent, effluent, and RO concentrate) are presented in Table 2. The system influent flow rate was measured by flowmeters at groundwater extraction wells TW-2S, TW-2D, TW-3D, and PE-1 (Figure TP-PR-10-10-03).

The IM-3 facility treated approximately 17,157,730 gallons of extracted groundwater during Fourth Quarter 2019.

In addition to extracted groundwater, during Fourth Quarter 2019 the IM-3 facility treated 40,000 gallons of Final Groundwater Remedy waste water, 3,500 gallons of water generated from the groundwater monitoring program and 1,050 gallons of injection well development water.

3.2.2 Effluent Streams

The treatment system effluent flow rate was measured by flowmeters in the piping leading to injection wells IW-2 and IW-3 (Figure TP-PR-10-10-11) and in the piping running from the treated water tank T-700 to the injection wells (Figure TP-PR-10-10-04). The IM-3 facility injected 17,198,006 gallons of treatment system effluent during Fourth Quarter 2019. The monthly average flow rate to injection wells is shown in Table 2.

The RO concentrate flow rate is measured by a flowmeter at the piping carrying water from RO concentrate tank T-701 to the truck load-out station (Figure PR-10-04) or from Liquid Environmental Solutions non-hazardous waste manifests (provided in Appendix B). Due to Final Groundwater Remedy construction activities at the MW-20 Bench adjacent to the IM-3 RO concentrate storage tank, the RO concentrate is temporarily being stored and shipped from the RO concentrate process collection tank. Since the flowmeter is located between the RO Concentrate process collection tank and the RO Concentrate storage tank, the RO Concentrate flow from the process collection tank was not recorded by the flowmeter.

The IM-3 facility generated an estimated 9,000 gallons of RO concentrate during Fourth Quarter 2019. The monthly average RO concentrate flow rate is shown in Table 2.

The sludge flow rate is measured by the size and weight of containers shipped offsite. Four sludge containers were shipped offsite from the IM-3 facility during Fourth Quarter 2019. The shipment dates and approximate weights are provided in Section 5.3.

3.3 Sampling and Analytical Procedures

With the exception of pH, samples were collected at the designated sampling locations and placed directly into containers provided by Truesdail Laboratories, Inc. (Truesdail) or ASSET Laboratories (ASSET). Sample containers were labeled and packaged according to standard sampling procedures.

The samples were stored in a sealed container chilled with ice and transported to Truesdail or ASSET via courier under chain-of-custody documentation. The laboratories confirmed the samples were received in chilled condition upon arrival. Truesdail is certified by the California Department of Health Services (Certification No. 1237) under the State of California's Environmental Laboratory Accreditation Program. ASSET is certified by the California Department of Health Services (Certification No. 2676) under the State of California's Environmental Laboratory Accreditation Program. California-certified laboratory analyses were performed in accordance with the latest edition of the *Guidelines Establishing Test Procedures for Analysis of Pollutants* (40 Code of Federal Regulations Part 136), promulgated by the U.S. Environmental Protection Agency.

Analysis of pH was conducted by field method pursuant to the Regional Water Board letter dated October 16, 2007 (subject: Clarification of Monitoring and Reporting Program Requirements) authorizing pH measurements to be conducted in the field. The field method pH samples were collected at the designated sampling locations and field tested within 15 minutes of sampling.

As required by the MRP, the analytical method selected for total chromium has a method detection limit of 1 part per billion, and the analytical method selected for hexavalent chromium has a method detection limit of 0.2 part per billion.

Influent, effluent, RO concentrate, and sludge sampling frequency were in accordance with the MRP. The Fourth Quarter 2019 sample collection schedule is shown in Table 3.

Groundwater quality is being monitored in observation and compliance wells according to Attachment A, Waste Discharge ARARs, to the Letter Agreement issued July 26, 2011, and the procedures and schedules approved in the *Groundwater Compliance Monitoring Plan for Interim Measure No. 3 Injection Area* submitted to the Regional Water Board on June 17, 2005. Quarterly groundwater monitoring analytical results for the injection area (wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D) are reported in a separate document, in conjunction with groundwater level maps of the same monitoring wells.

4. Analytical Results

The analytical results and laboratory reports for the IM-3 groundwater treatment system monitoring program were previously reported for the First, Second and Third Quarters of 2019:

- The January 1, 2019 through March 31, 2019 results were included in the First Quarter 2019 Monitoring Report submitted to the DOI and Regional Water Board on April 15, 2019.
- The April 1, 2019 through June 30, 2019 results were included in the Second Quarter 2019 Monitoring Report submitted to the DOI and Regional Water Board on July 15, 2019.
- The July 1, 2019 through September 30, 2019 results were included in the Third Quarter 2019 Monitoring Report submitted to the DOI and Regional Water Board on October 15, 2019.

Laboratory reports for samples collected in Fourth Quarter 2019 were prepared by certified analytical laboratories, and are presented in Appendix D. The Fourth Quarter 2019 analytical results are presented in Tables 4, 5, 6, and 7:

- Influent analytical results are presented in Table 4.
- Effluent analytical results are presented in Table 5. There were no exceedances of effluent limitations during the reporting period.
- RO concentrate analytical results are presented in Table 6.
- Sludge analytical results are presented in Table 7.

The sludge is required to have an aquatic bioassay test annually. The most recent aquatic bioassay test was conducted in the third quarter 2019, and the results were presented in the Third Quarter 2019 Monitoring Report submitted to the DOI and Regional Water Board on October 15, 2019.

Table 8 identifies the following information for each analysis:

- Sample location
- Sample identification number
- Sampler name
- Sample date
- Sample time
- Laboratory performing analysis
- Analysis method
- Analysis date
- Laboratory technician

5. Semiannual Operation and Maintenance

This section includes the Semiannual Operation and Maintenance Report for the IM-3 groundwater treatment system for the period July 1, 2019 through December 31, 2019.

All O&M records are maintained at the facility, including site inspection forms, process monitoring records, hazardous waste generator records (i.e., waste manifests), and self-monitoring reports. These records will be maintained onsite for a period of at least 5 years. Operational programmable logic controller data (flow rates, system alarms, process monitoring data, etc.) are maintained electronically via data historian software. O&M records are also archived using maintenance software. The subsections below summarize the O&M activities during this semiannual reporting period.

5.1 Flowmeter Calibration Records

The IM-3 groundwater treatment system flowmeter calibration records are included in Appendix C. Flowmeter calibrations are performed in a timely manner consistent with the use, flow, material, and manufacturer recommendations. The following flowmeters are used at the facility to measure groundwater flow:

Location	Location ID Where Flowmeter is Installed	Current Flowmeter Serial No.	Date of Calibration	Date of Installation
Extraction well PE-1	FIT-103	6A022016000	12/5/2018	5/1/2019
Extraction well TW-3D	FIT-102	N6005016000	6/13/2018	5/1/2019
Extraction well TW-2D	FIT-101	6A021F16000	12/5/2018	12/4/2019
Extraction well TW-2S	FIT-100	6A022016000	12/5/2018	12/4/2019
Injection well IW-03	FIT-1203	N6004E16000	6/13/2018	5/1/2019
Injection well IW-02	FIT-1202	7700F216000	5/4/2017	8/8/2017
Combined IW-02 and IW-03	FIT-700	7700F316000	10/28/2016	10/19/2018
Reverse osmosis concentrate	FIT-701	N6004F16000	6/13/2018	11/17/2018

5.2 Volumes of Groundwater Treated

Data regarding daily volumes of groundwater treated between July 1, 2019 and December 31, 2019 are provided in Appendix B. The daily volumes of groundwater treated from January 1, 2019 through June 30, 2019 were reported in the Second Quarter 2019 Monitoring Report and Semiannual January 1- June 30, 2019 Operation and Maintenance Report submitted on July 15, 2019.

Approximately 33,130,820 gallons of groundwater were extracted and treated between July 1, 2019 and December 31, 2019. Treatment of this water at the IM-3 facility is being performed in accordance with the conditions of ARARs.

Additionally, approximately treated 78,300 gallons of Final Groundwater Remedy waste water, 3,950 gallons of well purge water (generated during monitoring well sampling), as well as 26,150 gallons of injection well re-development water, were treated at the IM-3 facility during the July 1, 2019 through December 31, 2019 semiannual period.

A total of approximately 33,284,341 gallons of treated groundwater were injected back into the Alluvial Aquifer between July 1, 2019 and December 31, 2019. This is greater than the metered influent, but is within the accuracy of the flow meters.

5.3 Residual Solids Generated (Sludge)

During the July 1, 2019 through December 31, 2019 reporting period, twelve containers of sludge were shipped offsite for disposal. The sludge was shipped to U.S. Ecology in Beatty, Nevada, for disposal. A listing of each shipment during the July 1, 2019 through December 31, 2019 reporting period is provided below.

Date Sludge Bin Removed from Site	Approximate Quantity from Waste Manifests (cubic yards)	Type of Shipment
7/17/2019	8	Non-RCRA hazardous waste
7/17/2019	8	Non-RCRA hazardous waste
7/18/2019	8	Non-RCRA hazardous waste
9/11/2019	8	Non-RCRA hazardous waste
9/11/2019	8	Non-RCRA hazardous waste
9/12/2019	8	Non-RCRA hazardous waste
9/25/2019	8	Non-RCRA hazardous waste
9/25/2019	8	Non-RCRA hazardous waste
10/23/2019	8	Non-RCRA hazardous waste
10/23/2019	8	Non-RCRA hazardous waste
12/4/2019	8	Non-RCRA hazardous waste
12/4/2019	8	Non-RCRA hazardous waste

Note:

RCRA = Resource Conservation and Recovery Act

5.4 Reverse Osmosis Concentrate Generated

Data regarding daily volumes of RO concentrate generated are provided in Appendix B, as measured by flowmeter FIT-701 (Figures PR-10-03 and PR-10-04).

This Revised 4Q2019 Report is being issued due to the inadvertent omission of RO concentrate flow data in the Fourth Quarter 2019 Monitoring, Semiannual July – December 2019 and Annual January – December 2019 Operation and Maintenance Report submitted January 15, 2020. The omission of the RO concentrate data was discovered after we sent the report on January 15, 2020, and this revised report is being issued with corrected volume data.

RO concentrate is a by-product of the IM-3 treatment process and is shipped off-site by tanker truck as non-hazardous waste. Due to Final Groundwater Remedy construction activities at the MW-20 Bench adjacent to the IM-3 RO concentrate storage tank, the RO concentrate is temporarily being stored and shipped from the RO concentrate process collection tank. Since the flowmeter is located between the RO concentrate process collection tank and the RO concentrate storage tank, the RO concentrate flow from the process collection tank was not recorded by the flowmeter. The additional RO concentrate flow data in this Revised 4Q2019 Report is from Liquid Environmental Solutions non-hazardous waste manifests (provided in Appendix B).

From July 1, 2019 through December 31, 2019, approximately 424 gallons of RO concentrate was measured at the flowmeter between the RO concentrate process collection tank and the RO concentrate storage tank. Additionally, approximately 13,850 gallons of RO concentrate were transported to Liquid

Environmental Solutions in Phoenix, Arizona for disposal according to the non-hazardous waste manifests provided in Appendix B.

5.5 Summary of ARARs Compliance

No ARAR violations were identified during the July 1, 2019 through December 31, 2019 semiannual reporting period.

5.6 Operation and Maintenance – Required Shutdowns

Records of routine maintenance are kept onsite.

Appendix A contains a summary of the operation or maintenance issues that required the groundwater extraction system to be shut down during the July 1, 2019 through December 31, 2019 semiannual reporting period.

Activities during the Third and Fourth Quarters 2019 included one extended shutdown:

- **August 12-16, 2019 (planned):** The extraction well system was offline from 5:52 a.m. on August 12, 2019 to 8:40 a.m. on August 15, 2019; from 10:02 a.m. to 12:44 p.m. August 15, 2019; and from 1:58 p.m. on August 15, 2019 to 2:44 p.m. on August 16, 2019 for the semiannual scheduled maintenance. Extraction system downtime was 4 days 6 hours 16 minutes.

5.7 Treatment Facility Modifications

No modifications were made to the IM-3 treatment facility that resulted in a material change in the quality or quantity of wastewater treated or discharged, nor resulted in a material change in the location of discharge, during the July 1, 2019 through December 31, 2019 semiannual period.

6. Conclusions

There were no exceedances of effluent limitations during the reporting period.

In addition, no incidents of non-compliance were identified during the reporting period. No events that caused an immediate or potential threat to human health or the environment, and no new releases of hazardous waste or hazardous waste constituents, or new solid waste management units, were identified during the reporting period.

7. Certification

Certification Statement:

I declare under the penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations.

Signature:  _____

Name: Curt Russell

Company: Pacific Gas and Electric Company

Title: Topock Site Manager

Date: January 28, 2020

Tables

Table 1. Sampling Station Descriptions*Fourth Quarter 2019 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Sample Station	Sample ID ^a	Location
Sampling Station A: Groundwater Treatment System Influent	SC-100B-WDR-###	Sample collected from tap on pipe into T-100 (refer to Figure TP-RP-10-10-04).
Sampling Station B: Groundwater Treatment System Effluent	SC-700B-WDR-###	Sample collected from tap on pipe downstream from T-700 (refer to Figure TP-RP-10-10-04).
Sampling Station D: Groundwater Treatment System Reverse Osmosis Concentrate	SC-701-WDR-###	Sample collected from tap on pipe into T-701 (refer to Figures PR-10-03 and PR-10-04).
Sampling Station E: Groundwater Treatment System Sludge	SC-SLUDGE-WDR-###	Sample collected from sludge accumulated in the phase separator used this quarter (refer to Figure TP-RP-10-10-06).

Notes:

= Sequential sample identification number at each sample station

^a The sample event number is included at the end of the sample ID (e.g., SC-100B-WDR-015).

Table 2. Flow Monitoring Results*Fourth Quarter 2019 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	System Influent ^{a,b} (gpm)	System Effluent ^b (gpm)	Reverse Osmosis Concentrate ^{b,c} (gpm)
October 2019 Average Monthly Flowrate	131.9	132.2	0
November 2019 Average Monthly Flowrate	129.8	129.9	0
December 2019 Average Monthly Flowrate	126.9	127.4	0

Notes:

gpm: gallons per minute

^a Extraction well TW-3D was operated during the Fourth Quarter 2019. Extraction wells PE-01 and TW-2D were only operated to collect a sample. TW-2S was not operated during Fourth Quarter 2019.

^b The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the Fourth Quarter 2019 is approximately -0.23 percent.

^c Due to Final Groundwater Remedy construction activities at the MW-20 bench, brine (RO) concentrate was no longer sent to the brine tanks since May 8, 2019. The total gallons removed from IM-3 since that date are an estimate from the Liquid Environmental Systems non-hazardous waste manifests. On December 12, 2019, it is estimated that 5,000 gallons were removed, and again on December 16, 2019, it is estimated that 4,000 gallons of RO concentrate were removed. Using these estimates, that would make the RO Concentration be 0.2 gpm for December 2019.

Table 3. Sample Collection Dates*Fourth Quarter 2019 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	Sample Collection Dates	Results
Influent	October 1, 2019 November 5, 2019 December 3, 2019	Refer to Table 4
Effluent	October 1, 2019 November 5, 2019 December 3, 2019	Refer to Table 5
Reverse Osmosis Concentrate	October 1, 2019	Refer to Table 6
Sludge ^a	Composite sample sent to lab October 1, 2019	Refer to Table 7

Note:

^a Sludge samples analysis is required quarterly by composite.

