



**Pacific Gas and
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January 15, 2016

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**Subject: Topock IM-3 Combined Fourth Quarter 2015 Monitoring, Semiannual July – December 2015 and Annual January - December 2015 Operation and Maintenance Report
PG&E Topock Compressor Station, Needles, California
Interim Measure No. 3 Groundwater Treatment System
(Document ID: TPK IM3 20154Q Final)**

Dear Ms. Innis and Mr. Perdue:

Enclosed is the Fourth Quarter 2015 Monitoring, Semiannual July - December 2015 and Annual January – December 2015 Operation and Maintenance Report for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station, Interim Measure No. 3 (IM-3) Groundwater Treatment System.

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 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.

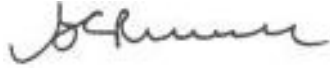
The IM-3 groundwater extraction and treatment system has extracted and treated approximately 697,273,725 gallons of water and removed approximately 6,655 pounds of total chromium from August 1, 2005 through December 31, 2015.

Pamela S. Innis
Robert Perdue
January 15, 2016
Page 2

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) 326-5582.

Sincerely,

A handwritten signature in dark ink, appearing to read "Curt Russell", is positioned above the printed name.

Curt Russell
Topock Site Manager

Enclosures:

Topock IM-3 Combined Fourth Quarter 2015 Monitoring, Semiannual July - December 2015, and Annual January - December 2015 Operation and Maintenance Report

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

Topock Project Executive Abstract

Document Title: Topock IM-3 Fourth Quarter 2015 Monitoring, Semiannual July - December 2015 and Annual January – December 2015 Operation and Maintenance Report Submitting Agency/Author: U.S. Department of the Interior and Regional Water Quality Control Board Final Document? ☒ Yes ☐ No	Date of Document: January 15, 2016 Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E Document ID Number: TPK IM3 20154Q Final
Priority Status: ☐ HIGH ☐ MED ☒ LOW Is this time critical? ☐ Yes ☒ No	Action Required: ☒ Information Only ☐ Review & Comment Return to: _____ By Date: _____ ☐ Other / Explain:
Type of Document: ☐ Draft ☒ Report ☐ Letter ☐ Memo ☐ Other / Explain:	What does this information pertain to? ☐ Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA) ☐ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment) ☐ Corrective Measures Study (CMS)/Feasibility Study (FS) ☐ Corrective Measures Implementation (CMI)/Remedial Action ☐ California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR) ☒ Interim Measures ☐ Other / Explain:
What is the consequence of NOT doing this item? What is the consequence of DOING this item? 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.	Is this a Regulatory Requirement? ☒ Yes ☐ No If no, why is the document needed?
Other Justification/s: ☐ Permit ☐ Other / Explain:	
Brief Summary of attached document: This report covers the Interim Measure No. 3 (IM-3) groundwater treatment system monitoring activities during the Fourth Quarter 2015 period, and the operation and maintenance activities during the July 1, 2015 to December 31, 2015 semiannual and the January 1, 2015 to December 31, 2015 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. Written by: PG&E	
Recommendations: This report is for your information only.	
How is this information related to the Final Remedy or Regulatory Requirements? The Topock IM-3 Fourth Quarter 2015 Monitoring, Semiannual July - December 2015 and Annual January – December 2015 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	

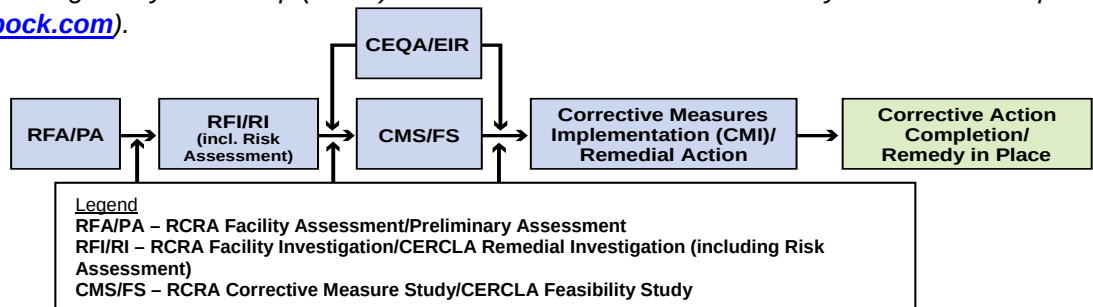
Concurrence issued August 18, 2011 from DOI to the Regional Water Board.

Other requirements of this information?

None.

Related Reports and Documents:

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).



Version 9

**Combined Fourth Quarter 2015 Monitoring,
Semiannual July – December 2015 and
Annual January - December 2015 Operation and
Maintenance Report
Interim Measure No. 3 Groundwater
Treatment System**

Document ID: TPK IM3 20154Q Final

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

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

January 15, 2016

CH2MHILL®
155 Grand Avenue, Suite 800
Oakland, CA 94612

**Combined Fourth Quarter 2015 Monitoring, Semiannual July - December 2015, and
Annual January - December 2015 Operation and Maintenance Report
for Interim Measure No. 3 Groundwater Treatment System**

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

Prepared for

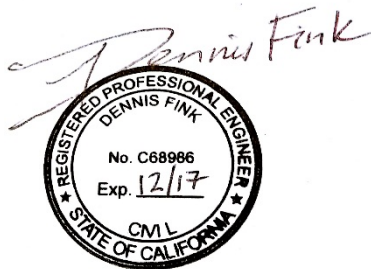
United States Department of the Interior
and
Colorado River Basin Regional Water Quality Control Board

on behalf of

Pacific Gas and Electric Company

January 15, 2016

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



Dennis Fink, P.E.
Project Engineer

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Acronyms and Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements
ASSET	ASSET Laboratories
DOI	United States Department of the Interior
gpm	gallons per minute
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
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

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 2015 and the operation and maintenance (O&M) activities during the July 1, 2015 to December 31, 2015 semiannual period and the January 1, 2015 to December 31, 2015 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.

SECTION 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.

SECTION 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 2015 monitoring activities and the July 1, 2015 through December 31, 2015 (Third and Fourth Quarters) O&M activities related to the IM-3 groundwater treatment system. It also serves as the Annual January – December 2015 O&M Report for IM-3. IM-3 monitoring activities from January 1, 2015 through September 30, 2015 (First, Second and Third Quarters) were presented in the following monitoring and O&M reports:

- *Topock IM-3 First Quarter 2015 Monitoring Report*, submitted to the DOI and Regional Water Board April 15, 2015
- *Topock IM-3 Second Quarter 2015 Monitoring and Semi-annual January 1, 2015 through June 30, 2015 Operation and Maintenance Report*, submitted to the DOI and Regional Water Board July 15, 2015
- *Topock IM-3 Third Quarter 2015 Monitoring Report*, submitted to the DOI and Regional Water Board October 15, 2015

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 2015

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 1.4 percent downtime during Fourth Quarter 2015) 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 2015 through September 2015 were originally reported in the *Third Quarter 2015 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System, PG&E Topock Compressor Station, Needles, CA*, published October 15, 2015, 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 2015, extraction wells TW-3D and PE-1 operated with a target pumping rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were operated for a brief time on December 9, 2015 for annual sampling. The operational run time for the IM groundwater extraction system (combined or individual pumping), by month, was approximately:

- 98.3 percent during October 2015
- 99.3 percent during November 2015
- 98.1 percent during December 2015

The Fourth Quarter 2015 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 17,707,186 gallons of extracted groundwater during Fourth Quarter 2015.

In addition to extracted groundwater, during Fourth Quarter 2015 the IM-3 facility treated 4,235 gallons of water generated from the groundwater monitoring program and 19,800 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 17,721,848 gallons of treatment system effluent during Fourth Quarter 2015. The monthly average flow rate to injection wells is shown in Table 2.

The RO concentrate flow rate was 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). The IM-3 facility generated 15,518 gallons of RO concentrate during Fourth Quarter 2015. 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. Two sludge containers were shipped offsite from the IM-3 facility during Fourth Quarter 2015. 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 2015 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 Measures 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.

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 2015:

- The January 1, 2015 through March 31, 2015 results were included in the First Quarter 2015 Monitoring Report submitted to the DOI and Regional Water Board on April 15, 2015.
- The April 1, 2015 through June 30, 2015 results were included in the Second Quarter 2015 Monitoring Report submitted to the DOI and Regional Water Board on July 15, 2015.
- The July 1, 2015 through September 30, 2015 results were included in the Third Quarter 2015 Monitoring Report submitted to the DOI and Regional Water Board on October 15, 2015.

Laboratory reports for samples collected in Fourth Quarter 2015 were prepared by certified analytical laboratories, and are presented in Appendix D. The Fourth Quarter 2015 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 results are presented in Table 7.

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

SECTION 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, 2015 through December 31, 2015.

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	6A021F16000	9/16/2015	1/6/2016
Extraction well TW-3D	FIT-102	6C037116000	9/17/2015	1/6/2016
Extraction well TW-2D ^a	FIT-101	6C037016000	9/19/2014	11/1/2015
Extraction well TW-2S ^b	FIT-100	6A022116000	9/20/2014	7/8/2015
Injection well IW-03	FIT-1203	6C037216000	9/20/2013	10/1/2013
Injection well IW-02	FIT-1202	7700F216000	3/22/2014	4/14/2015
Combined IW-02 and IW-03	FIT-700	7700F316000	6/19/2012	8/31/2015
Reverse osmosis concentrate	FIT-701	6A022016000	9/19/2014	7/8/2015

Notes:

^a TW-2D is a backup extraction well only operated for brief testing and sampling periods since January 2006.

^b TW-2S is a backup extraction well only operated for brief testing and sampling periods since October 2005.

5.2 Volumes of Groundwater Treated

Data regarding daily volumes of groundwater treated between July 1, 2015 and December 31, 2015 are provided in Appendix B. The daily volumes of groundwater treated from January 1, 2015 through June 30, 2015 were reported in the Second Quarter 2015 Monitoring Report and Semiannual January 1- June 30, 2015 Operation and Maintenance Report submitted on July 15, 2015.

Approximately 34,518,656 gallons of groundwater were extracted and treated between July 1, 2015 and December 31, 2015. Treatment of this water at the IM-3 facility is being performed in accordance with the conditions of ARARs.

Additionally, approximately 4,235 gallons of well purge water (generated during well development, monitoring well sampling, and/or aquifer testing), as well as 49,500 gallons of injection well re-development

water, were treated at the IM-3 facility during the July 1, 2015 through December 31, 2015 semiannual period.

A total of approximately 34,241,934 gallons of treated groundwater were injected back into the Alluvial Aquifer between July 1, 2015 and December 31, 2015.

5.3 Residual Solids Generated (Sludge)

During the July 1, 2015 through December 31, 2015 reporting period, 10 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, 2015 through December 31, 2015 reporting period is provided below.

Date Sludge Bin Removed from Site	Approximate Quantity from Waste Manifests (cubic yards)	Type of Shipment
July 1, 2015	8	Non-RCRA hazardous waste
July 1, 2015	8	Non-RCRA hazardous waste
July 29, 2015	8	Non-RCRA hazardous waste
July 29, 2015	8	Non-RCRA hazardous waste
August 31, 2015	8	Non-RCRA hazardous waste
August 31, 2015	8	Non-RCRA hazardous waste
September 29, 2015	8	Non-RCRA hazardous waste
September 29, 2015	8	Non-RCRA hazardous waste
October 28, 2015	8	Non-RCRA hazardous waste
October 28, 2015	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). From July 1, 2015 through December 31, 2015, approximately 155,089 gallons of RO concentrate were transported to Liquid Environmental Solutions in Phoenix, Arizona for disposal.

5.5 Summary of ARARs Compliance

No ARAR violations were identified during the July 1, 2015 through December 31, 2015 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, 2015 through December 31, 2015 semiannual reporting period.

Activities during the Third and Fourth Quarters 2015 included one extended shutdown: the extraction well system was offline from 6:52 a.m. on August 10, 2015 through 7:48 a.m. on August 14, 2015 and from 10:28 a.m. to 2:54 p.m. on August 14, 2015 for semiannual scheduled maintenance. Extraction system downtime was 4 days, 5 hours and 22 minutes. Per consultation with the California Department of Toxic Substances Control, extraction well PE-1 was taken off-line on August 31, 2015 at 9:44 a.m. to evaluate the impact on chromium removal and groundwater gradient flow. PE-1 was brought back online on September 11, 2015 at 7:36 p.m.

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, 2015 through December 31, 2015 semiannual period.

SECTION 6

Conclusions

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

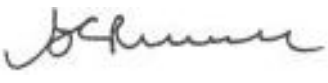
In addition, no incidents of non-compliance were identified during the reporting period. No events that caused an immediate or potential threat to human health or the environment, and no new releases of hazardous waste or hazardous waste constituents, or new solid waste management units, were identified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

SECTION 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 15, 2016

Tables

TABLE 1

Sampling Station Descriptions*Fourth Quarter 2015 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 (see 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 (see 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 (see 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 (see 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 2015 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	System Influent ^{a,b} (gpm)	System Effluent ^b (gpm)	Reverse Osmosis Concentrate ^b (gpm)
October 2015 Average Monthly Flowrate	133.48	133.69	0.35
November 2015 Average Monthly Flowrate	134.59	134.04	0.00
December 2015 Average Monthly Flowrate	132.93	133.59	0.00

Notes:

gpm: gallons per minute

^a Extraction wells TW-3D and PE-1 were operated during the Fourth Quarter 2015. Extraction wells TW-2D and TW-2S were operated for a brief time on December 9, 2015 for annual sampling.

^b The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the Fourth Quarter 2015 is approximately 0.17 percent.

TABLE 3

Sample Collection Dates*Fourth Quarter 2015 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	Sample Collection Dates	Results
Influent	October 6, 2015 November 3, 2015 December 1, 2015	See Table 4
Effluent	October 6, 2015 November 3, 2015 December 1, 2015	See Table 5
Reverse Osmosis Concentrate	October 6, 2015	See Table 6
Sludge ^a	Composite sample sent to lab October 6, 2015	See Table 7

Note:^a Sludge samples analysis is required quarterly by composite.

TABLE 4
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Influent Monitoring Results ^a
Fourth Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Monthly					Quarterly																		
Sample ID	Analytes Units ^b MDL	Date	TDS	Turbidity	Specific Conductance	Field ^c	Chromium	Hexavalent Chromium	Ammonia (as N)					Manganese					Nitrate/Nitrite (as N)					Iron	Zinc
			mg/L	NTU	µmhos/cm	pH	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	
SC-100B-WDR-532	10/6/2015	RL	4100	0.210	6900	7.3	530	540	ND (50.0)	ND (0.0500)	ND (0.500)	3.00	25.0	0.880	ND (1.00)J	2.30	ND (1.00)	14.0	19.0	ND (1.00)	2.60	470	ND (20.0)	ND (10.0)	
			50.0	0.100	0.100	---	5.00	10.0	50.0	0.0500	0.500	0.100	1.00	0.100	1.00	1.00	1.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0	
SC-100B-WDR-533	11/3/2015	RL	4200	0.250	7500	7.4	520	560	---	---	---	---	---	---	---	---	---	12.0	---	---	---	---	---	---	
			50.0	0.100	0.100	---	5.00	10.0	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	
SC-100B-WDR-534	12/1/2015	RL	4200	0.310	6900	7.4	550	550	---	---	---	---	---	---	---	---	---	14.0	---	---	---	---	---	---	
			50.0	0.100	0.100	---	5.00	10.0	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	

NOTES:

(---) = not required by the ARARs Monitoring and Reporting Program
J = concentration or reporting limits estimated by laboratory or validation
MDL = method detection limit
mg/L = milligrams per liter
N = nitrogen
ND = parameter not detected at the listed value
NTU = nephelometric turbidity units
RL = project reporting limit
µg/L = micrograms per liter
µmhos/cm = micromhos per centimeter

^a Sampling Location for all influent samples is tap on pipe from extraction wells into tank T-100 (see attached P&ID TP-PR-10-10-04).
^b Units reported in this table are those units required in the ARARs.
^c Starting 11/20/2007, analysis of pH was switched from California certified laboratory analysis to field method pursuant to the Water Board letter dated October 16, 2007 – Clarification of Monitoring and Reporting Program Requirements, stating that pH measurements may be conducted in the field.

TABLE 6

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Reverse Osmosis Concentrate Monitoring Results ^a
Fourth Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																								
Sample ID	Analytes Units ^b MDL Date	TDS mg/L 100	Specific Conductance µmhos/cm 0.100	Field ^c		Hexavalent Chromium				Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	
				pH	pH units	Chromium mg/L	Chromium mg/L	Antimony mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SC-701-WDR-532	10/6/2015	12000	19000	8.0		0.00130	0.00140	ND (0.00050)	0.000290	0.0370	ND (0.0120)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.0010)	5.70	ND (0.0050)	0.0610	ND (0.00020)	0.00720	0.0110	ND (0.00050)	ND (0.0025)	ND (0.0010)	ND (0.0100)
	RL	100	0.100	---		0.0010	0.0010	0.00050	0.00010	0.0010	0.0120	0.00050	0.00050	0.00050	0.00050	0.0010	5.00	0.0050	0.00050	0.00020	0.0010	0.00050	0.00050	0.0025	0.0010	0.0100

NOTES:

(---) = not required by the ARARs Monitoring and Reporting Program

MDL = method detection limit

mg/L = milligrams per liter

ND = parameter not detected at the listed value

RL = project reporting limit

µg/L = micrograms per liter

µmhos/cm = micromhos per centimeter

^a Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&ID PR-10-04).

^b Units reported in this table are those units required in the ARARs.

^c Starting 11/20/2007, analysis of pH was switched from California certified laboratory analysis to field method pursuant to the Water Board letter dated October 16, 2007 – Clarification of Monitoring and Reporting Program Requirements, stating that pH measurements may be conducted in the field.

TABLE 7

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Sludge Monitoring Results ^a
Fourth Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																			Annually
Sample ID	Analytes Units ^b MDL ^c Date	Hexavalent Chromium																			Bioassay
		Chromium mg/kg 0.170	Chromium mg/kg 0.130	Antimony mg/kg 0.180	Arsenic mg/kg 0.130	Barium mg/kg 0.0200	Beryllium mg/kg 0.0410	Cadmium mg/kg 0.130	Cobalt mg/kg 0.0650	Copper mg/kg 0.0970	Fluoride mg/kg 0.620	Lead mg/kg 0.0890	Molybdenum mg/kg 0.0460	Mercury mg/kg 0.0079	Nickel mg/kg 0.0330	Selenium mg/kg 0.170	Silver mg/kg 0.0390	Thallium mg/kg 0.120	Vanadium mg/kg 0.200	Zinc mg/kg 0.210	% Survival at 750 mg/L ^c
Phase Separator-Sludge-532	10/6/2015	2700	57.0	ND (5.10)	12.0	57.0	ND (2.60)	ND (2.60)	6.70	240	28.0	ND (2.60)	7.60	ND (0.260)	44.0	ND (2.60)	ND (2.60)	ND (5.10)	30.0	22.0	100
RL		2.60	2.60	5.10	2.60	2.60	2.60	2.60	2.60	5.10	2.60	2.60	2.60	0.260	2.60	2.60	2.60	5.10	2.60	2.60	100

NOTES:

(---) = not required by the ARARs Monitoring and Reporting Program
J = concentration or reporting limits estimated by laboratory or validation
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
MDL = method detection limit
ND = parameter not detected at the listed reporting limit
RL = project reporting limit

- ^a Sampling location for all sludge samples is the sludge collection bin (see attached P&ID TP-PR-10-10-06).
- ^b Units reported in this table are those units required in the ARARs.
- ^c Sludge samples analysis is required quarterly by composite; sludge samples were collected from each container prior to shipment off-site, and combined for the composite sample of the preceding quarter.

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-100B	SC-100B-WDR-532	Ryan Phelps	10/6/2015	2:46:00 PM	ASSET	EPA 120.1	SC	10/7/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	10/8/2015	Claire Ignacio
					ASSET	EPA 200.7	B	10/8/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	10/20/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	10/9/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	10/9/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	10/8/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	10/8/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	10/7/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	10/7/2015	Quennie Manimtim
					FIELD	HACH	PH	10/6/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	10/7/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	10/13/2015	Ryan Balilu
SC-100B	SC-100B-WDR-533	Ryan Phelps	11/3/2015	10:05:00 AM	ASSET	SM2130B	TRB	10/7/2015	Lilia Ramit
					ASSET	SM4500NH3D	NH3N	10/9/2015	Alex Luna
					ASSET	EPA 120.1	SC	11/4/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	11/5/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	11/5/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	11/6/2015	Ryan Balilu
					FIELD	HACH	PH	11/3/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	11/4/2015	Lilia Ramit
					ASSET	SM2130B	TRB	11/4/2015	Lilia Ramit
					ASSET	EPA 120.1	SC	12/2/2015	Lilia Ramit
SC-100B	SC-100B-WDR-534	Ryan Phelps	12/1/2015	12:03:00 PM	ASSET	EPA 200.8	CR	12/3/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	12/3/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	12/2/2015	Ryan Balilu
					FIELD	HACH	PH	12/1/2016	Ryan Phelps
					ASSET	SM 2540C	TDS	12/2/2015	Lilia Ramit
					ASSET	EPA 120.1	SC	12/2/2015	Lilia Ramit

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information

Fourth Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-100B	SC-100B-WDR-534	Ryan Phelps	12/1/2015	12:03:00 PM	ASSET	SM2130B	TRB	12/2/2015	Lilia Ramit
SC-700B	SC-700B-WDR-532	Ryan Phelps	10/6/2015	2:35:00 PM	ASSET	EPA 120.1	SC	10/7/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	10/8/2015	Claire Ignacio
					ASSET	EPA 200.7	B	10/8/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	10/20/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	10/9/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	10/9/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	10/8/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	10/8/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	10/7/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	10/7/2015	Quennie Manimtim
					FIELD	HACH	PH	10/6/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	10/7/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	10/13/2015	Ryan Balilu
					ASSET	SM2130B	TRB	10/7/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	10/9/2015	Alex Luna
SC-700B	SC-700B-WDR-533	Ryan Phelps	11/3/2015	9:50:00 AM	ASSET	EPA 120.1	SC	11/4/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	11/16/2015	Claire Ignacio
					ASSET	EPA 200.7	B	11/16/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	11/16/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	11/5/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	11/5/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	11/5/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	11/5/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	11/5/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	11/5/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	11/5/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	11/5/2015	Claire Ignacio

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information

Fourth Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-700B	SC-700B-WDR-533	Ryan Phelps	11/3/2015	9:50:00 AM	ASSET	EPA 200.8	SB	11/5/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	11/5/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	11/6/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	11/9/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	11/9/2015	Quennie Manimtim
					FIELD	HACH	PH	11/3/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	11/4/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	11/10/2015	Ryan Balilu
					ASSET	SM2130B	TRB	11/4/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	11/20/2015	Alex Luna
					ASSET	EPA 120.1	SC	12/2/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	12/4/2015	Claire Ignacio
					ASSET	EPA 200.7	B	12/4/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	12/4/2015	Claire Ignacio
SC-700B	SC-700B-WDR-534	Ryan Phelps	12/1/2015	11:55:00 AM	ASSET	EPA 200.8	AS	12/3/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	12/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	12/3/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	12/3/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	12/3/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	12/3/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	12/3/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	12/3/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	12/3/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	12/3/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	12/2/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	12/2/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	12/2/2015	Quennie Manimtim
					FIELD	HACH	PH	12/1/2016	Ryan Phelps
SC-701	SC-701-WDR-532	Ryan Phelps	10/6/2015	2:25:00 PM	ASSET	SM 2540C	TDS	12/2/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	12/11/2015	Ryan Balilu
					ASSET	SM2130B	TRB	12/2/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	12/8/2015	Alex Luna
					ASSET	EPA 120.1	SC	10/7/2015	Lilia Ramit
					ASSET	EPA 200.8	AG	10/9/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	10/8/2015	Claire Ignacio

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-701	SC-701-WDR-532	Ryan Phelps	10/6/2015	2:25:00 PM	ASSET	EPA 200.8	BA	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BE	10/20/2015	Claire Ignacio
					ASSET	EPA 200.8	CD	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CO	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	10/20/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	10/9/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SE	10/9/2015	Claire Ignacio
					ASSET	EPA 200.8	SE	10/9/2015	Claire Ignacio
					ASSET	EPA 200.8	TL	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	V	10/8/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	10/8/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	10/8/2015	Ryan Balilu
					ASSET	EPA 245.1	HG	10/9/2015	Claire Ignacio
					ASSET	EPA 300.0	FL	10/7/2015	Quennie Manimtim
					FIELD	HACH	PH	10/6/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	10/7/2015	Lilia Ramit
Phase Separator	Phase Separator-Sludge-532	Ryan Phelps	10/6/2015	2:00:00 PM	ASSET	EPA 300.0	FL	10/8/2015	Quennie Manimtim
					ASSET	EPA 6010B	AG	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	AS	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	BA	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	BE	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	CD	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	CO	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	CR	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	CU	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	MN	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	MO	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	NI	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	PB	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	SB	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	SE	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	TL	10/8/2015	Claire Ignacio

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
Phase Separator	Phase Separator-Sludge-532	Ryan Phelps	10/6/2015	2:00:00 PM	ASSET	EPA 6010B	V	10/8/2015	Claire Ignacio
					ASSET	EPA 6010B	ZN	10/8/2015	Claire Ignacio
					ASSET	EPA 7471A	HG	10/9/2015	Claire Ignacio
					ASSET	SW 7199	CR6	10/8/2015	Ryan Balilu
Phase Separator	Phase Separator-Sludge-532	Ryan Phelps	10/6/2015	14:00:00 PM	ASSET	96-Hour Acute Aquatic Toxicity Screening Test	BIO	10/09/2015 - 10/13/2015	Joe Freas

NOTES:

SC-700B = Sampling location for all effluent samples is tap on pipe downstream from tank T-700 to injection well IW-2 (see attached P&ID TP-PR-10-10-04).

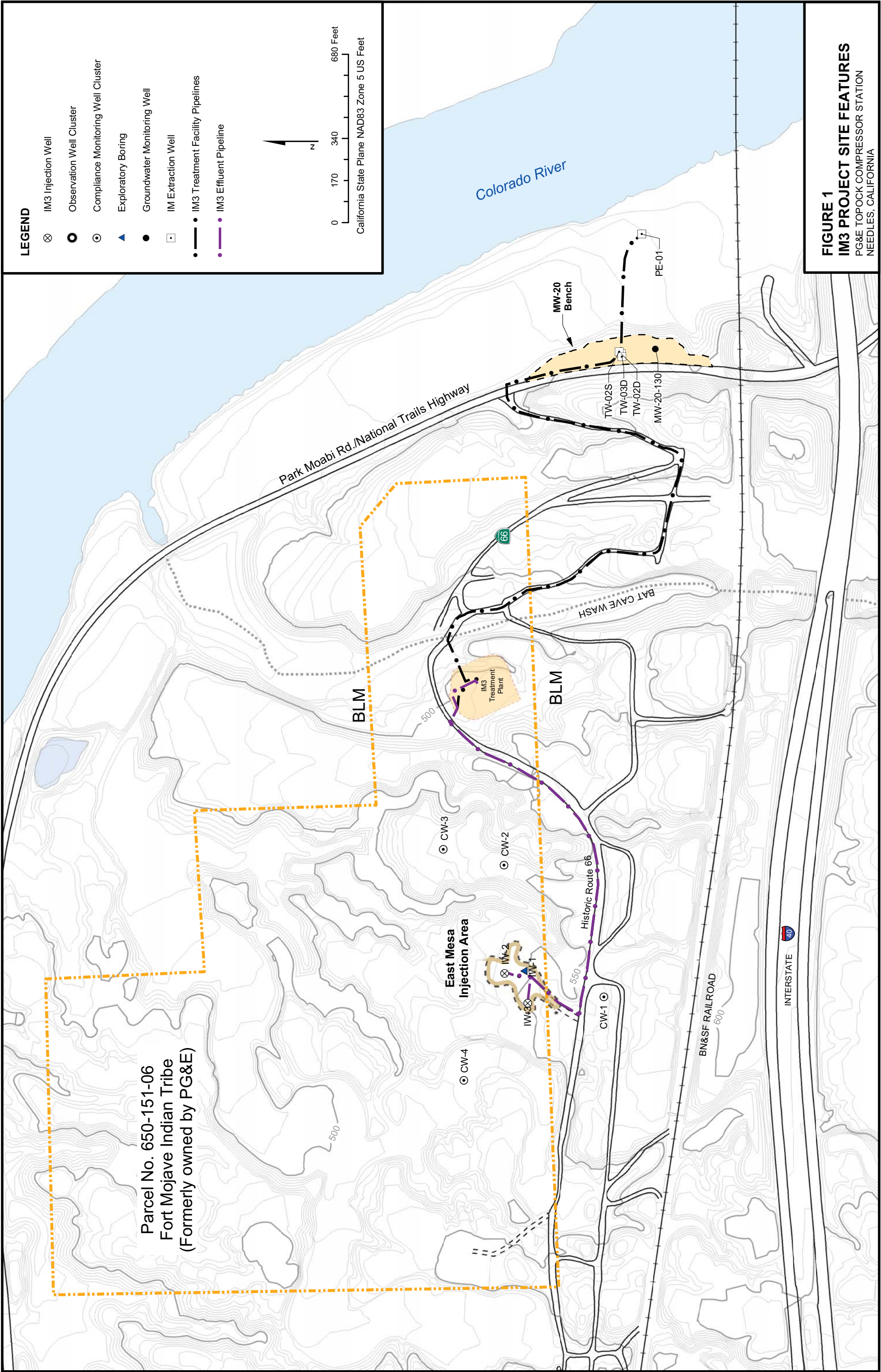
SC-100B = Sampling location for all influent samples is tap on pipe from extraction wells into tank T-100 (see attached P&ID TP-PR-10-10-04).

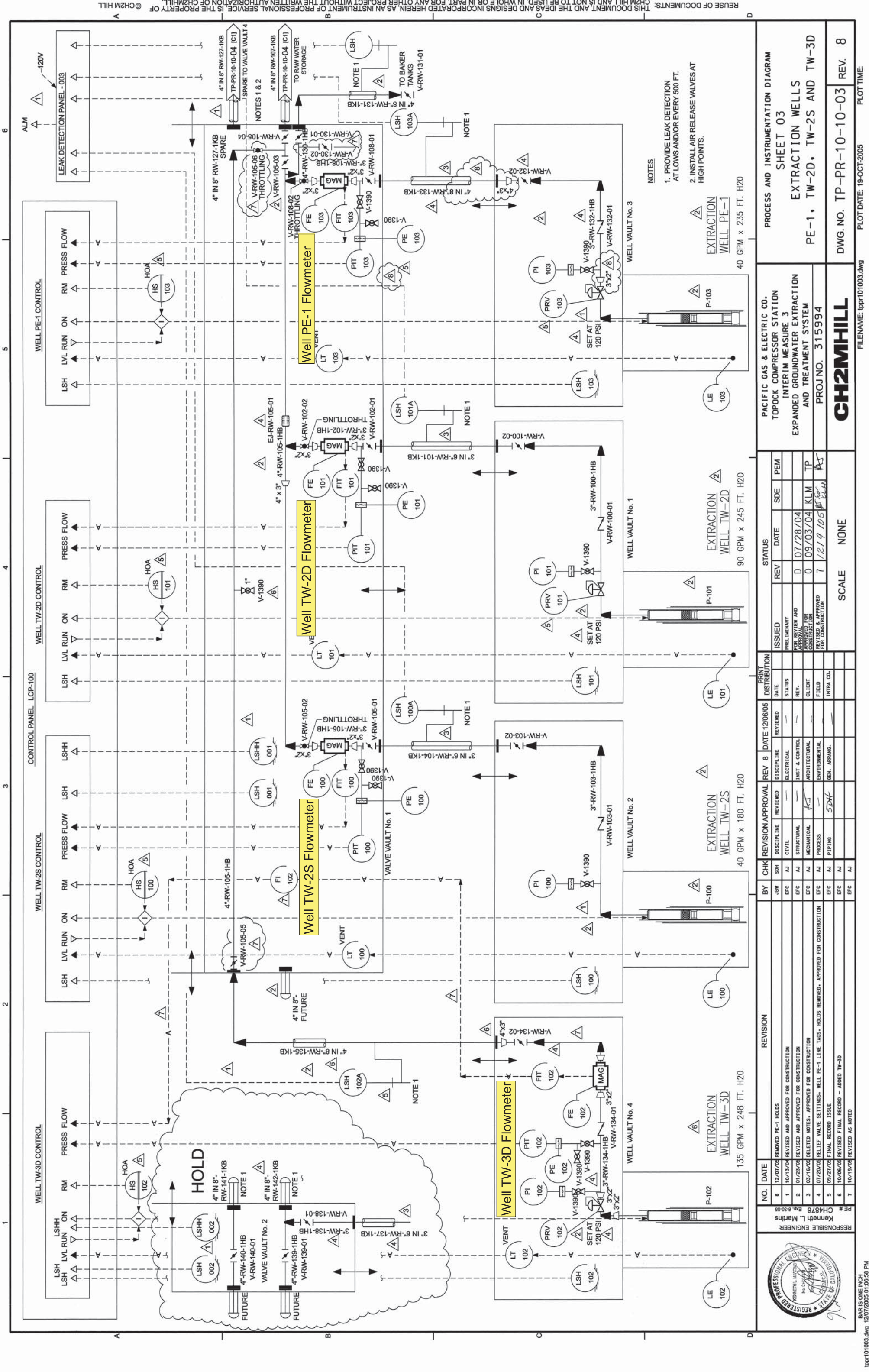
SC-701 = Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&ID PR-10-04).

Prior to April 11, 2007 the analytical methods listed in the 40 CFR Part 136 for pH and TDS were E150.1 and E160.1, respectively. Per EPA and Department of Health Services guidelines, the analytical methods listed in the current 40 CFR Part 136 have changed to SM4500-H B and SM2540C as shown on the table.

ALKB = alkalinity, bicarb as CaCO3	MO = molybdenum
ALKC = alkalinity, carb as CaCO3	MOIST = moisture
AL = aluminum	NH3N = ammonia (as N)
Ag = silver	NI = nickel
AS = arsenic	NO3NO2N = nitrate/nitrite (as N)
B = boron	PB = lead
BA = barium	PH = pH
BE = beryllium	SB = antimony
CD = cadmium	SC = specific conductance
CO = cobalt	SE = selenium
CR = chromium	SO4 = sulfate
CR6 = hexavalent chromium	TDS = total dissolved solids
CU = copper	TL = thallium
FE = iron	TLI = Truesdail Laboratories, Inc.
FETD = iron, dissolved	TRB = turbidity
FL = fluoride	V = vanadium
HG = mercury	ZN = zinc
MN = manganese	
MND = manganese, dissolved	

Figures





REVISION				REVISION APPROVAL				PRINT DISTRIBUTION				STATUS			
NO.	DATE	DESCRIPTION	BY	CHK	DISCIPLINE	REVIEWED	REV	DATE	ISSUED	REV	DATE	REV	DATE	ISSUED	REV
8	12/07/05	REMOVED PE-1 HOLDS	EFC	AJ	CIVIL	—	—	—	—	—	—	—	—	—	—
7	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	ELECTRICAL	—	—	—	—	—	—	—	—	—	—
6	07/23/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	STRUCTURAL	—	—	—	—	—	—	—	—	—	—
5	03/16/04	DELETED NOTES, APPROVED FOR CONSTRUCTION	EFC	AJ	MECHANICAL	—	—	—	—	—	—	—	—	—	—
4	07/20/03	RELIEF VALVE SETTINGS, WELL PE-1 LINE TAGS, HOLDS REMOVED, APPROVED FOR CONSTRUCTION	EFC	AJ	PROCESS	—	—	—	—	—	—	—	—	—	—
3	09/27/03	FINAL RECORD ISSUE	EFC	AJ	PIPING	—	—	—	—	—	—	—	—	—	—
2	10/06/03	REVISED FINAL RECORD - ADDED TW-3D	EFC	AJ	GEN. ARRANG.	—	—	—	—	—	—	—	—	—	—
1	10/19/03	REVISED AS NOTED	EFC	AJ	—	—	—	—	—	—	—	—	—	—	—

RESPONSIBLE ENGINEER		REVISION		REVISION APPROVAL		PRINT DISTRIBUTION		STATUS		PACIFIC GAS & ELECTRIC CO.		PROCESS AND INSTRUMENTATION DIAGRAM	
Kenneth L. Martins		CH4876 Exp. 6-30-05		—		—		—		TOPOCK COMPRESSOR STATION		SHEET 03	
—		—		—		—		—		EXPANDED GROUNDWATER EXTRACTION		EXTRACTION WELLS	
—		—		—		—		—		AND TREATMENT SYSTEM		PE-1, TW-2D, TW-2S AND TW-3D	
—		—		—		—		—		PROJ. NO. 315994		DWG. NO. TP-PR-10-10-03	
—		—		—		—		—		SCALE NONE		REV. 8	

Appendix A
Semiannual Operations and Maintenance Log,
July 1, 2015 through December 31, 2015

Semiannual Operations and Maintenance Log, July 1, 2015 through December 31, 2015

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 are summarized here. The times shown are in Pacific Standard Time to be consistent with other data collected at the site.

July 2015

During July 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during July 2015.

The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 96.3 percent during the July 2015 reporting period.

The IM-3 facility treated approximately 5,854,705 gallons of extracted groundwater during July 2015. The IM-3 facility treated 2,700 gallons of injection well backwashing/re-development water.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 3.7 percent downtime during July 2015) are summarized below.

- **July 1, 2015 (unplanned):** The extraction well system was offline from 12:22 a.m. to 2:24 a.m. due to loss of power from the City of Needles. Extraction system downtime was 2 hours, 2 minutes.
- **July 1, 2015 (unplanned):** The extraction well system was offline from 7:12 a.m. to 7:20 a.m. due to loss of power from the City of Needles. Extraction system downtime was 8 minutes.
- **July 7, 2015 (planned):** The extraction well system was offline from 9:42 a.m. to 9:44 a.m., from 9:56 a.m. to 10:00 a.m., from 10:08 a.m. to 10:10 a.m., from 10:12 a.m. to 10:14 a.m., from 10:18 a.m. to 10:20 a.m., and from 10:30 a.m. to 10:34 a.m. due to testing of critical alarms and the leak detection system. Extraction system downtime was 16 minutes.
- **July 8, 2015 (unplanned):** The extraction well system was offline from 9:22 a.m. to 11:20 a.m. and 11:32 a.m. to 11:54 a.m. to change out the microfilter modules and replace flow control valves FCV-200 and FCV-701. Extraction system downtime was 2 hours, 20 minutes.
- **July 10, 2015 (unplanned):** The extraction well system was offline from 6:40 a.m. to 7:24 a.m. to clean the microfilter strainer. Extraction system downtime was 44 minutes.
- **July 13, 2015 (unplanned):** The extraction well system was offline from 12:12 p.m. to 1:52 p.m. to replace a valve on the reverse osmosis system and conduct tank management. Extraction system downtime was 1 hour, 40 minutes.
- **July 13, 2015 (unplanned):** The extraction well system was offline from 5:46 p.m. to 5:56 p.m. due to loss of power from the City of Needles. Extraction system downtime was 10 minutes.
- **July 14, 2015 (unplanned):** The extraction well system was offline from 11:06 a.m. to 11:38 a.m. to clean the microfilter strainer. Extraction system downtime was 32 minutes.
- **July 16, 2015 (unplanned):** The extraction well system was offline from 8:12 p.m. to 8:28 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 16 minutes.

- **July 17, 2015 (unplanned):** The extraction well system was offline from 5:00 a.m. to 5:06 a.m. to return the facility to power from the City of Needles. Extraction system downtime was 6 minutes.
- **July 17, 2015 (unplanned):** The extraction well system was offline from 7:00 p.m. to 7:02 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 2 minutes.
- **July 18, 2015 (unplanned):** The extraction well system was offline from 12:18 a.m. to 12:24 a.m. and from 12:34 a.m. to 12:58 a.m. to return the facility to power from the City of Needles. Extraction system downtime was 30 minutes.
- **July 18, 2015 (unplanned):** The extraction well system was offline from 1:34 p.m. to 4:08 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 2 hours, 34 minutes.
- **July 19, 2015 (unplanned):** The extraction well system was offline from 10:42 a.m. to 10:44 a.m. to return the facility to power from the City of Needles. Extraction system downtime was 2 minutes.
- **July 20, 2015 (unplanned):** The extraction well system was offline from 9:38 a.m. to 11:24 a.m. due to the failure of the air compressor. Extraction system downtime was 1 hour, 46 minutes.
- **July 27, 2015 (unplanned):** The extraction well system was offline from 2:20 a.m. to 2:36 a.m. due to a high level alarm in the iron oxidation reactor 1 (T-301A). Extraction system downtime was 16 minutes.
- **July 26, 2015 (unplanned):** The extraction well system was offline from 6:10 a.m. to 8:50 a.m. and 11:10 a.m. to 3:00 p.m. to repair leaks in the microfilter system. Extraction system downtime was 6 hours, 30 minutes.
- **July 27, 2015 (unplanned):** The extraction well system was offline from 11:50 a.m. to 12:52 p.m. to change out the microfilter modules. Extraction system downtime was 1 hour, 2 minutes.
- **July 30, 2015 (unplanned):** The extraction well system was offline from 3:02 p.m. to 3:22 p.m., from 3:26 p.m. to 3:32 p.m., and from 4:44 p.m. to 8:24 p.m. due to storms that resulted in the City of Needles supplying single-phase power instead of the required 3-phase power. This event caused failure of the main air compressor and failure of the CPU for the primary reverse osmosis system. Extraction system downtime was 4 hours, 6 minutes.
- **July 31, 2015 (unplanned):** The extraction well system was offline from 5:26 p.m. to 6:00 p.m. due to failure of the air compressor and resetting of the microfilter system settings. Extraction system downtime was 34 minutes.
- **July 31, 2015 (unplanned):** The extraction well system was offline from 10:14 p.m. to 11:22 p.m. due to the failure of the air compressor. Extraction system downtime was 1 hour, 8 minutes.

August 2015

During August 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2S was operated for a brief time on August 31, 2015. Extraction well TW-2D was not operated during August 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 84.0 percent during the August 2015 reporting period.

The IM-3 facility treated approximately 5,122,887 gallons of extracted groundwater during August 2015.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 16.0 percent downtime during August 2015) are summarized below.

- **August 1, 2015 (unplanned):** The extraction well system was offline from 12:40 a.m. to 12:48 a.m. due to failure of the air compressor. Extraction system downtime was 8 minutes.
- **August 1, 2015 (unplanned):** The extraction well system was offline from 08:02 a.m. to 08:30 a.m. due to failure of the air compressor. Extraction system downtime was 28 minutes.
- **August 6, 2015 (planned):** The extraction well system was offline from 8:46 a.m. to 9:16 a.m. due to testing of critical alarms and the leak detection system. Extraction system downtime was 30 minutes.
- **August 6, 2015 (unplanned):** The extraction well system was offline from 3:48 p.m. to 5:20 p.m. and from 5:36 p.m. to 6:54 p.m. due to loss of power from the City of Needles caused by a storm in the area. During the power outage, the ferrous pump lost connection with the human-machine interface (HMI) which had to be reestablished before the extraction well system could be restarted. Extraction system downtime was 2 hours, 50 minutes.
- **August 7, 2015 (unplanned):** The extraction well system was offline from 12:00 a.m. to 12:14 a.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 14 minutes.
- **August 7, 2015 (unplanned):** The extraction well system was offline from 5:20 a.m. to 5:32 a.m. to return the facility to power from the City of Needles. Extraction system downtime was 12 minutes.
- **August 10-14, 2015 (planned):** The extraction well system was offline from 6:52 a.m. on August 10, 2015 through 7:48 a.m. on August 14, 2015 and from 10:28 a.m. to 2:54 p.m. on August 14, 2015 for semiannual scheduled maintenance. Extraction system downtime was 4 days, 5 hours and 22 minutes.
- **August 14, 2015 (unplanned):** The extraction well system was offline from 4:42 p.m. to 5:22 p.m. due to loss of power from the City of Needles. Extraction system downtime was 40 minutes.
- **August 17, 2015 (unplanned):** The extraction well system was offline from 4:50 a.m. to 5:02 a.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 12 minutes.
- **August 17, 2015 (unplanned):** The extraction well system was offline from 10:40 a.m. to 10:42 a.m. to return the facility to power from the City of Needles. Extraction system downtime was 2 minutes.
- **August 17, 2015 (unplanned):** The extraction well system was offline from 1:38 p.m. to 3:08 p.m. to replace a belt on the air compressor. Extraction system downtime was 1 hour, 30 minutes.
- **August 17, 2015 (unplanned):** The extraction well system was offline from 3:50 p.m. to 4:42 p.m. to replace a leaking seal on the Raw Water Feed Pump (P-200). Extraction system downtime was 52 minutes.
- **August 18, 2015 (unplanned):** The extraction well system was offline from 12:32 p.m. to 1:50 p.m. to replace a CPVC fitting on the polymer skid. Extraction system downtime was 1 hour, 18 minutes.
- **August 21, 2015 (unplanned):** The extraction well system was offline from 11:42 a.m. to 12:02 p.m. for tank management. Extraction system downtime was 20 minutes.
- **August 25, 2015 (unplanned):** The extraction well system was offline from 11:30 a.m. to 1:16 p.m. to repair the Raw Water Feed Pump (P-200). Extraction system downtime was 1 hour, 46 minutes.
- **August 26, 2015 (unplanned):** The extraction well system was offline from 10:38 a.m. to 2:20 p.m. to repair the LCV-603 Reverse Osmosis valve. Extraction system downtime was 3 hours, 42 minutes.

- **August 29, 2015 (unplanned):** The extraction well system was offline from 4:30 p.m. to 6:12 p.m. to repair the treated water pH control acid pump (P-801B). Extraction system downtime was 1 hour, 42 minutes.
- **August 31, 2015 (unplanned):** The extraction well system was offline from 5:58 p.m. to 6:22 p.m. and 7:04 p.m. to 7:46 p.m. to diagnose an HMI connection issue with a pneumatically controlled valve. The valve was replaced with a manual version to maintain plant operation. Extraction system downtime was 1 hour, 6 minutes.

September 2015

During September 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2S was operated on September 1 through September 3, 2015, and extraction well TW-2D was operated on September 2 and September 3, 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.3 percent during the September 2015 reporting period.

The IM-3 facility treated approximately 5,833,878 gallons of extracted groundwater during September 2015. The IM-3 facility treated 27,000 gallons of water from injection well backwashing/re-development.

Per consultation with the California Department of Toxic Substances Control, extraction well PE-1 was taken off-line on August 31, 2015 at 9:44 a.m. to evaluate the impact on chromium removal and groundwater gradient flow. PE-1 was brought back online on September 11, 2015 at 7:36 p.m. Periods of planned and unplanned extraction system downtime (that together resulted in approximately 0.7 percent downtime during September 2015) are summarized below.

- **September 1, 2015 (unplanned):** The extraction well system was offline from 7:40 p.m. to 8:48 p.m. due to high level in the Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour, 8 minutes.
- **September 2, 2015 (planned):** The extraction well system was offline from 12:28 p.m. to 12:36 p.m. and 12:50 p.m. to 12:56 p.m. due to testing of critical alarms and the leak detection system. Extraction system downtime was 14 minutes.
- **September 10, 2015 (unplanned):** The extraction well system was offline from 5:16 p.m. to 6:20 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 1 hour, 4 minutes.
- **September 10, 2015 (unplanned):** The extraction well system was offline from 10:58 p.m. to 11:16 p.m. to return the facility to power from the City of Needles. Extraction system downtime was 18 minutes.
- **September 11, 2015 (planned):** The extraction well system was offline from 7:28 p.m. to 7:36 p.m. to bring extraction well PE-1 back online. Extraction system downtime was 8 minutes.
- **September 14, 2015 (unplanned):** The extraction well system was offline from 10:02 a.m. to 11:08 a.m. due to a failure of the microfilter system. Extraction system downtime was 1 hour, 6 minutes.
- **September 21, 2015 (unplanned):** The extraction well system was offline from 1:36 p.m. to 1:48 p.m. for maintenance of the extraction well electrical boxes at the IM-2 area. Extraction system downtime was 12 minutes.
- **September 29, 2015 (unplanned):** The extraction well system was offline from 9:38 a.m. to 10:34 a.m. to change out the microfilter modules. Extraction system downtime was 56 minutes.

October 2015

During October 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during October 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 98.3 percent during the October 2015 reporting period.

The IM-3 facility treated approximately 5,958,738 gallons of extracted groundwater during October 2015. The IM-3 facility treated 5,400 gallons of water from injection well backwashing/re-development. The IM-3 facility treated 1,145 gallons of water from groundwater monitoring well sampling. Two containers of solids from the IM No. 3 facility were transported offsite during October 2015.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 1.7 percent downtime during October 2015) are summarized below.

- **October 3, 2015 (unplanned):** The extraction well system was offline from 2:26 a.m. to 2:28 a.m. due to loss of power from the City of Needles. Extraction system downtime was 2 minutes.
- **October 5, 2015 (unplanned):** The extraction well system was offline from 5:22 p.m. to 5:32 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 10 minutes.
- **October 5, 2015 (unplanned):** The extraction well system was offline from 9:42 p.m. to 9:54 p.m. and 9:56 p.m. to 10:10 p.m. to return the facility to power from the City of Needles. Extraction system downtime was 26 minutes.
- **October 6, 2015 (unplanned):** The extraction well system was offline from 7:38 a.m. to 8:32 a.m. to repair a solenoid failure at the secondary Reverse Osmosis system control valve. Extraction system downtime was 54 minutes.
- **October 7, 2015 (planned):** The extraction well system was offline from 9:54 a.m. to 10:00 a.m., from 10:02 a.m. to 10:04 a.m., from 10:06 a.m. to 10:08 a.m., from 10:10 a.m. to 10:12 a.m., from 10:22 a.m. to 10:24 a.m., and from 10:44 a.m. to 11:06 a.m. due to testing of critical alarms and the leak detection system. Extraction system downtime was 36 minutes.
- **October 13, 2015 (unplanned):** The extraction well system was offline from 8:28 a.m. to 11:26 a.m. to remove a blockage in the piping between Iron Oxidation Reactor 2 (T-301B) and Iron Oxidation Reactor 3 (T-301C). Extraction system downtime was 2 hour, 58 minutes.
- **October 14, 2015 (unplanned):** The extraction well system was offline from 12:04 p.m. to 1:06 p.m. to change out the microfilter modules. Extraction system downtime was 1 hour, 2 minutes.
- **October 16, 2015 (unplanned):** The extraction well system was offline from 5:36 a.m. to 5:48 a.m. to switch to generator power due to storms in the area. Extraction system downtime was 12 minutes.
- **October 16, 2015 (unplanned):** The extraction well system was offline from 11:04 a.m. to 11:08 a.m. to return the facility to power from the City of Needles. Extraction system downtime was 4 minutes.
- **October 16, 2015 (unplanned):** The extraction well system was offline from 9:30 p.m. to 9:36 p.m. due to failure of the air compressor. Extraction system downtime was 6 minutes.
- **October 20, 2015 (unplanned):** The extraction well system was offline from 12:58 p.m. to 1:52 p.m. due to maintenance on the City of Needles transformer. The facility was transferred to backup generator power during this time. Extraction system downtime was 54 minutes.

- **October 21, 2015 (unplanned):** The extraction well system was offline from 10:08 a.m. to 10:22 a.m. to return the facility to power from the City of Needles. Extraction system downtime was 14 minutes.
- **October 27, 2015 (unplanned):** The extraction well system was offline from 4:22 p.m. to 9:04 p.m. to repair the Pretreated Water Transfer Pump (P-500) that seized due to scaling. Extraction system downtime was 4 hours, 42 minutes.

November 2015

During November 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during November 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.3 percent during the November 2015 reporting period.

The IM-3 facility treated approximately 5,814,350 gallons of extracted groundwater during November 2015. The IM-3 facility treated 12,600 gallons of water from injection well backwashing/re-development.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 0.7 percent downtime during November 2015) are summarized below.

- **November 2, 2015 (unplanned):** The extraction well system was offline from 12:02 p.m. to 1:14 p.m. to change out the microfilter modules. Extraction system downtime was 1 hour, 12 minutes.
- **November 4, 2015 (planned):** The extraction well system was offline from 1:10 p.m. to 1:22 p.m., from 1:24 p.m. to 1:26 p.m., from 1:30 p.m. to 1:36 p.m., and from 1:44 p.m. to 1:50 p.m. due to testing of critical alarms and the leak detection system. Extraction system downtime was 26 minutes.
- **November 19, 2015 (unplanned):** The extraction well system was offline from 2:10 p.m. to 3:20 p.m. to change out the microfilter modules. Extraction system downtime was 1 hour, 10 minutes.
- **November 19, 2015 (unplanned):** The extraction well system was offline from 5:36 p.m. to 6:04 p.m. due to a high level alarm in the Raw Water Storage Tank (T-100). Extraction system downtime was 28 minutes.
- **November 30, 2015 (unplanned):** The extraction well system was offline from 1:24 p.m. to 3:30 p.m. to repair a seal in the (microfilter) recirculation pump (P-501). Extraction system downtime was 2 hours, 6 minutes.

December 2015

During December 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were operated for a brief time on December 9, 2015 for annual sampling. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 98.1 percent during the December 2015 reporting period.

The IM-3 facility treated approximately 5,934,097 gallons of extracted groundwater during December 2015. The IM-3 facility treated 1,800 gallons of water from injection well backwashing/re-development. The IM-3 facility treated 3,090 gallons of water from groundwater monitoring well sampling.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 1.9 percent downtime during December 2015) are summarized below.

- **December 2, 2015 (planned):** The extraction well system was offline from 7:54 a.m. to 7:56 a.m., from 8:02 a.m. to 8:04 a.m., from 8:22 a.m. to 8:26 a.m., from 8:28 a.m. to 8:30 a.m., and from 8:32 a.m. to 8:36 a.m. due to testing of critical alarms and the leak detection system. Extraction system downtime was 14 minutes.

- **December 2, 2015 (unplanned):** The extraction well system was offline from 11:54 a.m. to 1:16 p.m. to change out the microfilter modules. Extraction system downtime was 1 hour, 22 minutes.
- **December 6, 2015 (unplanned):** The extraction well system was offline from 11:48 a.m. to 11:56 a.m. due to loss of power from the City of Needles. Extraction system downtime was 8 minutes.
- **December 6, 2015 (unplanned):** The extraction well system was offline from 11:44 p.m. to 11:46 p.m. due to loss of power from the City of Needles. Extraction system downtime was 2 minutes.
- **December 7, 2015 (unplanned):** The extraction well system was offline from 12:30 p.m. to 12:44 p.m. due to failure of the air compressor. Extraction system downtime was 14 minutes.
- **December 9, 2015 (unplanned):** The extraction well system was offline from 8:06 a.m. to 8:08 a.m. and from 9:10 a.m. to 9:18 a.m. to switch extraction wells for annual sampling of TW-2S and TW-2D. Extraction system downtime was 10 minutes.
- **December 24, 2015 (unplanned):** The extraction well system was offline from 8:16 a.m. to 8:34 a.m. due to a high level alarm in the Raw Water Storage Tank (T-100). Extraction system downtime was 18 minutes.
- **December 24, 2015 (unplanned):** The extraction well system was offline from 3:00 p.m. to 3:12 p.m. due to a high level alarm in the Raw Water Storage Tank (T-100). Extraction system downtime was 12 minutes.
- **December 25, 2015 (unplanned):** The extraction well system was offline from 10:06 a.m. to 3:14 p.m. to clean the microfilter flow meter. Extraction system downtime was 5 hours, 8 minutes.
- **December 25, 2015 (unplanned):** The extraction well system was offline from 4:10 p.m. to 7:22 p.m. to clean and repair the clarifier feed pump (P-400). Extraction system downtime was 3 hours, 12 minutes.
- **December 26, 2015 (unplanned):** The extraction well system was offline from 9:10 a.m. to 10:02 a.m. and from 10:12 a.m. to 10:34 a.m. for tank level management. Extraction system downtime was 1 hour, 14 minutes.
- **December 27, 2015 (unplanned):** The extraction well system was offline from 4:36 a.m. to 4:42 a.m. to return the plant to power from the City of Needles after a time on generator power. Extraction system downtime was 6 minutes.
- **December 27, 2015 (unplanned):** The extraction well system was offline from 3:36 p.m. to 4:34 p.m. due to a high level alarm in the Raw Water Storage Tank (T-100). Extraction system downtime was 58 minutes.
- **December 30, 2015 (unplanned):** The extraction well system was offline from 11:06 a.m. to 11:18 a.m. and from 12:56 p.m. to 1:24 p.m. to repair a flow issue at the clarifier feed pump (P-400). Extraction system downtime was 40 minutes.

Appendix B
Daily Volumes of Groundwater Treated

July 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

Month	Day	Year	Extraction Well System					Injection Well System			RO Brine	
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)		
July	1	2015	--	--	143,519	34,521	178,039	0	180,128	180,128	3,046	
July	2	2015	--	--	155,051	41,935	196,986	0	193,624	193,624	3,765	
July	3	2015	--	--	155,776	41,724	197,500	0	191,595	191,595	0	
July	4	2015	--	--	155,807	41,765	197,572	0	192,786	192,786	3,536	
July	5	2015	--	--	155,874	41,785	197,659	0	192,593	192,593	3,438	
July	6	2015	--	--	155,742	42,268	198,010	0	194,961	194,961	0	
July	7	2015	--	--	153,989	41,027	195,016	0	195,407	195,407	3,647	
July	8	2015	--	121	140,617	37,435	178,172	0	175,373	175,373	4,001	
July	9	2015	--	4,485	157,141	37,720	199,346	21,992	170,533	192,525	0	
July	10	2015	--	--	139,261	40,820	180,081	0	184,306	184,306	4,347	
July	11	2015	--	--	155,165	42,129	197,294	0	192,725	192,725	4,211	
July	12	2015	--	--	155,073	41,953	197,026	0	192,699	192,699	4,238	
July	13	2015	--	--	143,176	38,907	182,083	0	182,156	182,156	0	
July	14	2015	--	--	151,788	40,794	192,582	0	184,223	184,223	4,201	
July	15	2015	--	--	155,206	41,362	196,568	0	195,717	195,717	0	
July	16	2015	--	--	153,543	41,150	194,692	0	195,942	195,942	0	
July	17	2015	--	--	154,338	42,069	196,406	0	195,606	195,606	0	
July	18	2015	--	--	135,457	36,430	171,888	0	160,384	160,384	0	
July	19	2015	--	--	155,349	41,475	196,824	0	192,387	192,387	3,754	
July	20	2015	--	--	138,110	38,581	176,691	139,489	38,676	178,165	0	
July	21	2015	--	--	154,435	42,153	196,588	201,135	0	201,135	0	
July	22	2015	--	--	152,604	41,305	193,909	181,011	1,642	182,653	4,114	
July	23	2015	--	--	154,101	41,566	195,667	188,226	0	188,226	0	
July	24	2015	--	--	153,787	41,417	195,204	190,099	0	190,099	0	
July	25	2015	--	--	153,658	41,387	195,045	189,925	0	189,925	165	
July	26	2015	--	--	111,120	30,317	141,437	135,925	106	136,031	3,912	
July	27	2015	--	--	147,140	40,167	187,307	186,403	78	186,481	0	
July	28	2015	--	--	153,560	42,318	195,878	191,036	0	191,036	0	
July	29	2015	--	--	153,269	42,417	195,685	180,681	0	180,681	4,076	
July	30	2015	--	--	124,005	32,744	156,749	159,613	0	159,613	0	
July	31	2015	--	--	142,370	38,430	180,800	177,799	0	177,799	0	
Total Monthly Volumes (gallons)			0	4,606	4,610,029	1,240,070	5,854,705	2,143,335	3,603,645	5,746,980	54,452	
Average Pump/Injection Rates (gpm)			0.0	0.1	103.3	27.8	131.2	48.0	80.7	128.7	1.2	

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during July 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime.
Extraction well TW-2S was not operated during July 2015.
- Effluent was discharged into injection wells IW-02 and IW-03.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during July 2015 is approximately 0.91 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

August 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

			Extraction Well System				Injection Well System				RO Brine	
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)		
August	1	2015	--	--	149,432	40,690	190,122	185,785	119	185,904	0	0
August	2	2015	--	--	153,338	41,241	194,580	197,176	0	197,176	0	0
August	3	2015	--	--	154,902	41,257	196,160	187,099	0	187,099	4,088	0
August	4	2015	--	--	156,068	41,223	197,291	187,411	0	187,411	0	0
August	5	2015	--	--	152,349	40,116	192,465	191,347	0	191,347	0	0
August	6	2015	--	--	137,598	36,400	173,998	157,227	0	157,227	0	0
August	7	2015	--	--	153,554	40,893	194,447	202,125	0	202,125	0	0
August	8	2015	--	--	155,612	41,239	196,851	187,016	0	187,016	0	0
August	9	2015	--	--	155,084	41,274	196,358	186,179	0	186,179	4,025	0
August	10	2015	--	--	44,344	11,869	56,213	79,616	0	79,616	0	0
August	11	2015	--	--	0	0	0	0	0	0	0	0
August	12	2015	--	--	0	0	0	0	0	0	0	0
August	13	2015	--	--	0	0	0	0	0	0	0	0
August	14	2015	--	--	71,258	19,124	90,382	62,060	0	62,060	0	0
August	15	2015	--	--	154,500	41,885	196,385	201,918	0	201,918	0	0
August	16	2015	--	--	154,892	41,939	196,831	193,958	0	193,958	0	0
August	17	2015	--	--	139,771	37,954	177,726	173,924	1,303	175,227	0	0
August	18	2015	--	--	148,448	39,184	187,632	178,337	115	178,452	4,950	0
August	19	2015	--	--	156,151	41,321	197,472	194,730	0	194,730	0	0
August	20	2015	--	--	154,794	41,261	196,054	196,075	5,317	201,392	4,102	0
August	21	2015	--	--	152,662	40,611	193,273	172,703	305	173,008	0	0
August	22	2015	--	--	155,103	40,785	195,889	203,167	0	203,167	0	0
August	23	2015	--	--	155,285	40,865	196,150	197,465	0	197,465	4,341	0
August	24	2015	--	--	155,505	40,874	196,379	192,023	0	192,023	0	0
August	25	2015	--	--	144,152	38,096	182,248	168,463	214	168,677	0	0
August	26	2015	--	--	131,812	35,057	166,869	153,403	5,659	159,062	4,644	0
August	27	2015	--	--	155,918	41,275	197,193	194,091	0	194,091	0	0
August	28	2015	--	--	155,834	41,029	196,863	194,422	0	194,422	0	0
August	29	2015	--	--	144,339	38,316	182,655	183,985	37	184,021	0	0
August	30	2015	--	--	155,587	41,966	197,553	165,977	30,646	196,623	0	0
August	31	2015	11,253	--	158,475	17,120	186,848	102	189,715	189,817	0	0
Total Monthly Volumes (gallons)			11,253	0	4,056,769	1,054,865	5,122,887	4,787,785	233,429	5,021,214	26,150	
Average Pump/Injection Rates (gpm)			0.3	0.0	90.9	23.6	114.8	107.3	5.2	112.5	0.6	

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during August 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2S was operated for a brief time on August 31, 2015. Extraction well TW-2D was not operated during August 2015.
- Effluent was discharged into injection wells IW-02 and IW-03.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during August 2015 is approximately 1.47 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

September 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

Month	Day	Year	Extraction Well System					Injection Well System				RO Brine	
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	Total (gallons)		
September	1	2015	24,905	--	162,693	158	187,756	40,648	159,767	200,415	200,415	0	0
September	2	2015	10,160	33,069	156,436	0	199,665	127,136	70,451	197,588	197,588	0	0
September	3	2015	3,757	21,641	166,944	0	192,341	188,177	0	188,177	188,177	0	0
September	4	2015	--	--	198,132	0	198,132	192,092	0	192,092	192,092	4,148	4,148
September	5	2015	--	--	197,503	0	197,503	193,663	0	193,663	193,663	0	0
September	6	2015	--	--	197,353	0	197,353	188,750	0	188,750	188,750	4,312	4,312
September	7	2015	--	--	195,583	0	195,583	196,876	0	196,876	196,876	0	0
September	8	2015	--	--	195,857	0	195,857	192,703	0	192,703	192,703	1,469	1,469
September	9	2015	--	--	195,812	0	195,812	195,831	0	195,831	195,831	2,349	2,349
September	10	2015	--	--	185,075	0	185,075	180,385	0	180,385	180,385	3,970	3,970
September	11	2015	--	--	187,794	7,743	195,537	168,516	0	168,516	168,516	4,090	4,090
September	12	2015	--	--	151,580	41,803	193,383	199,652	0	199,652	199,652	0	0
September	13	2015	--	--	153,772	41,784	195,556	192,194	0	192,194	192,194	3,849	3,849
September	14	2015	--	--	147,572	39,826	187,398	165,015	0	165,015	165,015	11,030	11,030
September	15	2015	--	--	155,865	41,689	197,553	193,922	0	193,922	193,922	0	0
September	16	2015	--	--	155,740	41,557	197,297	196,392	0	196,392	196,392	0	0
September	17	2015	--	--	155,705	41,359	197,064	190,425	0	190,425	190,425	3,762	3,762
September	18	2015	--	--	155,527	41,295	196,822	198,706	0	198,706	198,706	0	0
September	19	2015	--	--	155,335	41,135	196,471	192,527	0	192,527	192,527	3,961	3,961
September	20	2015	--	--	155,194	41,102	196,296	192,843	0	192,843	192,843	0	0
September	21	2015	--	--	156,161	40,985	197,147	190,899	0	190,899	190,899	0	0
September	22	2015	--	--	158,852	41,372	200,224	191,787	0	191,787	191,787	3,802	3,802
September	23	2015	--	--	154,944	41,190	196,133	192,383	0	192,383	192,383	0	0
September	24	2015	--	--	141,676	41,337	183,013	182,106	12,411	194,517	194,517	0	0
September	25	2015	--	--	154,308	41,444	195,752	114,695	73,369	188,064	188,064	4,086	4,086
September	26	2015	--	--	154,162	41,393	195,555	0	197,293	197,293	197,293	0	0
September	27	2015	--	--	147,007	41,766	188,773	21,759	177,814	199,573	199,573	3,746	3,746
September	28	2015	--	--	154,030	41,772	195,802	0	199,085	199,085	199,085	0	0
September	29	2015	--	--	147,850	39,982	187,832	0	187,149	187,149	187,149	0	0
September	30	2015	--	--	153,928	41,265	195,194	0	194,471	194,471	194,471	4,395	4,395
Total Monthly Volumes (gallons)			38,822	54,709	4,948,388	791,959	5,833,878	4,480,082	1,271,810	5,751,891	58,969		
Average Pump/Injection Rates (gpm)			0.9	1.3	114.5	18.3	135.0	103.7	29.4	133.1	1.4		

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during September 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime.
Extraction wells TW-2D and TW-2S were operated during September 2015.

b. Effluent was discharged into injection wells IW-02 and IW-03.

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during September 2015 is approximately 0.39 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

October 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

RO Brine										
Injection Well System										
Extraction Well System										
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)
October	1	2015	--	--	154,530	41,246	195,776	0	196,261	196,261
October	2	2015	--	--	154,299	41,198	195,497	0	193,164	193,164
October	3	2015	--	--	154,139	40,897	195,036	0	189,133	189,133
October	4	2015	--	--	154,378	40,741	195,119	0	192,104	192,104
October	5	2015	--	--	150,807	40,352	191,159	0	193,628	193,628
October	6	2015	--	--	148,443	39,859	188,301	0	185,281	185,281
October	7	2015	--	--	150,665	40,447	191,112	0	194,180	194,180
October	8	2015	--	--	154,490	40,776	195,266	0	179,726	179,726
October	9	2015	--	--	154,282	40,595	194,877	0	197,169	197,169
October	10	2015	--	--	154,217	40,341	194,558	0	197,692	197,692
October	11	2015	--	--	154,125	40,618	194,743	0	195,984	195,984
October	12	2015	--	--	155,071	40,774	195,844	0	192,930	192,930
October	13	2015	--	--	136,086	36,255	172,341	0	161,206	161,206
October	14	2015	--	--	148,534	40,087	188,621	124,470	68,113	192,582
October	15	2015	--	--	154,768	42,319	197,087	207,677	0	207,677
October	16	2015	--	--	152,180	41,608	193,787	190,450	0	190,450
October	17	2015	--	--	154,401	41,515	195,916	196,434	0	196,434
October	18	2015	--	--	154,397	41,410	195,807	202,092	0	202,092
October	19	2015	--	--	154,493	41,559	196,051	197,324	0	197,324
October	20	2015	--	--	149,590	40,759	190,349	193,162	0	193,162
October	21	2015	--	--	153,595	41,886	195,482	199,682	0	199,682
October	22	2015	--	--	153,973	41,750	195,723	191,141	0	191,141
October	23	2015	--	--	153,676	41,754	195,430	202,821	0	202,821
October	24	2015	--	--	153,406	41,706	195,113	194,550	0	194,550
October	25	2015	--	--	153,291	41,732	195,023	201,981	0	201,981
October	26	2015	--	--	152,937	41,698	194,636	193,468	0	193,468
October	27	2015	--	--	122,746	33,453	156,199	152,573	0	152,573
October	28	2015	--	--	153,190	41,153	194,343	196,474	0	196,474
October	29	2015	--	--	152,782	41,013	193,795	198,090	0	198,090
October	30	2015	--	--	152,336	40,772	193,108	196,810	0	196,810
October	31	2015	--	--	151,931	40,710	192,641	192,143	0	192,143
Total Monthly Volumes (gallons)			0	0	4,697,756	1,260,982	5,958,738	3,431,343	2,536,570	5,967,913
Average Pump/Injection Rates (gpm)			0.0	0.0	105.2	28.2	133.5	76.9	56.8	133.7
NOTES: gpm: gallons per minute RO: Reverse Osmosis										

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during October 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime.
- Extraction wells TW-2D and TW-2S were not operated during October 2015.
- Effluent was discharged into injection well IW-02.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during October 2015 is approximately 0.41 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

November 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	RO Brine (gallons)
November	1	2015	--	--	151,660	40,871	192,531	199,553	0	199,553	0
November	2	2015	--	--	145,312	38,687	183,999	186,021	0	186,021	0
November	3	2015	--	--	155,411	40,592	196,002	195,808	0	195,808	0
November	4	2015	--	--	152,950	39,594	192,544	196,460	0	196,460	0
November	5	2015	--	--	156,196	39,691	195,887	154,514	0	154,514	0
November	6	2015	--	--	156,494	39,590	196,085	201,423	0	201,423	0
November	7	2015	--	--	156,604	39,595	196,199	198,547	0	198,547	0
November	8	2015	--	--	156,648	39,323	195,972	197,926	0	197,926	0
November	9	2015	--	--	156,642	39,578	196,219	197,616	0	197,616	0
November	10	2015	--	--	156,838	39,517	196,355	197,264	0	197,264	0
November	11	2015	--	--	157,114	39,437	196,551	197,275	0	197,275	0
November	12	2015	--	--	156,995	39,687	196,682	197,239	0	197,239	0
November	13	2015	--	--	156,940	39,636	196,577	197,377	0	197,377	0
November	14	2015	--	--	156,840	39,815	196,655	197,071	0	197,071	0
November	15	2015	--	--	156,663	39,784	196,446	196,751	0	196,751	0
November	16	2015	--	--	156,554	39,570	196,124	196,089	0	196,089	0
November	17	2015	--	--	156,393	39,582	195,975	196,858	0	196,858	0
November	18	2015	--	--	155,933	40,060	195,993	146,612	0	146,612	0
November	19	2015	--	--	145,075	37,732	182,807	179,970	0	179,970	0
November	20	2015	--	--	155,977	39,859	195,836	201,288	0	201,288	0
November	21	2015	--	--	155,629	39,737	195,366	209,660	0	209,660	0
November	22	2015	--	--	155,219	39,950	195,169	196,820	0	196,820	0
November	23	2015	--	--	154,955	39,790	194,746	197,801	0	197,801	0
November	24	2015	--	--	154,718	39,663	194,381	195,852	0	195,852	0
November	25	2015	--	--	154,411	39,639	194,050	196,541	0	196,541	0
November	26	2015	--	--	154,060	39,486	193,547	196,473	0	196,473	0
November	27	2015	--	--	153,908	39,513	193,421	189,706	0	189,706	0
November	28	2015	--	--	153,986	39,200	193,186	204,227	0	204,227	0
November	29	2015	--	--	153,907	39,081	192,988	194,574	0	194,574	0
November	30	2015	--	--	139,807	36,253	176,060	177,196	0	177,196	0
Total Monthly Volumes (gallons)			0	0	4,629,840	1,184,511	5,814,350	5,790,514	0	5,790,514	0
Average Pump/Injection Rates (gpm)			0.0	0.0	107.2	27.4	134.6	134.0	0.0	134.0	0.0

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during November 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during November 2015.
- Effluent was discharged into injection well IW-02.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during November 2015 is approximately 0.41 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

December 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

		Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)
December	1	2015	--	--	153,772	40,147	193,919	194,783	0	194,783
December	2	2015	--	--	143,873	37,685	181,558	180,466	0	180,466
December	3	2015	--	--	155,044	40,118	195,163	195,471	0	195,471
December	4	2015	--	--	154,771	40,098	194,869	195,696	0	195,696
December	5	2015	--	--	154,722	39,960	194,682	195,766	0	195,766
December	6	2015	--	--	153,488	40,095	193,584	197,861	0	197,861
December	7	2015	--	--	153,209	39,725	192,933	197,655	0	197,655
December	8	2015	--	--	154,680	40,237	194,917	195,840	0	195,840
December	9	2015	2,358	3,337	147,002	37,933	190,629	194,430	0	194,430
December	10	2015	--	--	154,686	39,560	194,245	169,188	0	169,188
December	11	2015	--	--	154,625	39,496	194,121	194,800	0	194,800
December	12	2015	--	--	154,506	39,412	193,919	195,486	0	195,486
December	13	2015	--	--	154,222	39,720	193,941	198,219	0	198,219
December	14	2015	--	--	154,010	39,553	193,563	199,032	0	199,032
December	15	2015	--	--	155,465	39,759	195,224	194,806	0	194,806
December	16	2015	--	--	157,483	39,981	197,464	194,803	0	194,803
December	17	2015	--	--	157,318	39,799	197,118	199,581	0	199,581
December	18	2015	--	--	157,360	39,717	197,078	200,057	0	200,057
December	19	2015	--	--	157,456	39,975	197,431	196,328	0	196,328
December	20	2015	--	--	157,385	39,929	197,314	198,201	0	198,201
December	21	2015	--	--	157,119	39,634	196,753	197,377	0	197,377
December	22	2015	--	--	156,924	39,408	196,332	195,410	0	195,410
December	23	2015	--	--	156,621	39,571	196,192	195,355	0	195,355
December	24	2015	--	--	153,448	38,630	192,078	196,673	0	196,673
December	25	2015	--	--	102,444	25,708	128,153	137,355	0	137,355
December	26	2015	--	--	151,502	34,322	185,824	180,355	0	180,355
December	27	2015	--	--	148,924	35,279	184,203	189,877	0	189,877
December	28	2015	--	--	147,943	39,398	187,341	186,945	0	186,945
December	29	2015	--	--	154,032	40,916	194,948	197,347	0	197,347
December	30	2015	--	--	153,635	40,760	194,395	199,460	0	199,460
December	31	2015	--	--	153,395	40,814	194,208	198,796	0	198,796
Total Monthly Volumes (gallons)			2,358	3,337	4,721,062	1,207,340	5,934,097	5,963,422	0	5,963,422
Average Pump/Injection Rates (gpm)			0.1	0.1	105.8	27.0	132.9	133.6	0.0	133.6

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during December 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were operated for a brief time on December 9, 2015 for annual sampling.
- Effluent was discharged into injection well IW-02.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during December 2015 is approximately 0.49 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

Appendix C

Flowmeter Calibration Records

Endress+Hauser 
People for Process Automation

Flow Calibration with Adjustment

92009500-1304707

WWRA017112F

Purchase order number

US-3601532757-200 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C037116000

Serial N°

-

Tag N°

FCP-8.2 US

Calibration rig

156 us.gal/min ($\pm 100\%$)

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9164

Calibration factor

5

Zero point

77 °F

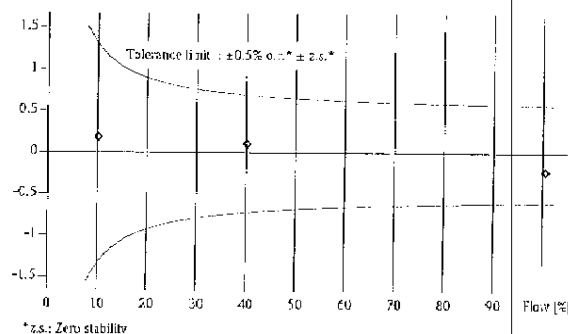
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V mens. [us.gal]	Δ p.p.* [%]	Outp.** [mA]
10.0	15.575	60.1	15.590	15.620	0.19	5.60
40.0	62.448	60.1	62.513	62.585	0.11	10.41
40.0	62.468	60.0	62.512	62.583	0.11	10.41
100.4	156.636	60.1	156.798	156.474	-0.21	20.03
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.p.: of rate

**Calculated value [4 - 20 mA]

Measured error % o.r.



For detailed data concerning output: specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

Calvin Williams

09-17-2015

Date of calibration

Endress+Hauser Inc.
16057 Porter Road
La Porte, Texas 77571

Calvin Williams
Operator

Endress+Hauser 

People for Process Automation

Flow Calibration without Adjustment

92000404-1275100

WWRA017112F

Purchase order number

US-3601532757-100 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1RA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6A021F16000

Serial N°

FIT-100

Tag N°

FCP-8.2 US

Calibration rig

155 us.gal/min

($\pm 100\%$)

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9159

Calibration factor

-17

Zero point

76.5 °F

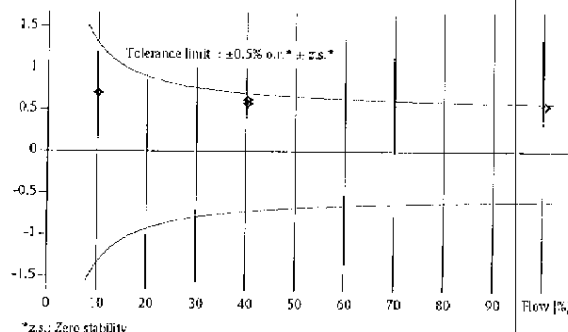
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.496	60.0	15.507	15.616	0.70	5.61
40.1	62.217	60.1	62.277	62.664	0.62	10.46
40.2	62.237	60.0	62.285	62.643	0.58	10.46
100.4	155.557	60.0	155.665	156.522	0.55	20.15
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

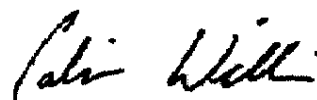
**Calculated value (4-20 mA)

Measured error % o.r.



For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).



Calvin Williams
Operator

09-16-2015

Date of calibration

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571

Endress+Hauser

People for Process Automation

Flow Calibration with Adjustment

92066085-1304706

WWRA015491F

Purchase order number

US-3601529220-200 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C037016000

Serial N°

FIT-1202

Tag N°

FCP-7.1.6 US

Calibration rig

155.6102 us.gal/min ($\pm 100\%$)

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9145

Calibration factor

5

Zero point

72.7 °F

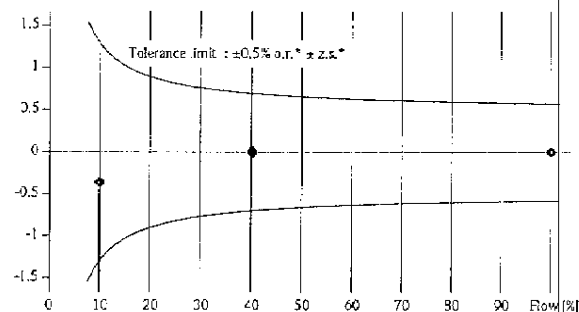
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.537	60.1	15.551	15.496	-0.36	5.59
40.2	62.542	60.1	62.609	62.620	0.02	10.43
40.2	62.568	60.1	62.632	62.627	-0.01	10.43
100.2	155.849	60.1	156.011	156.017	0.00	20.03
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

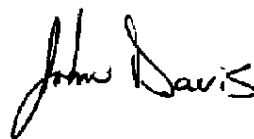
Measured error % o.r.



*z.s.: Zero stability

For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).



John Davis

Operator

09-19-2014

Date of calibration

Endress+Hauser Inc.
2350 Endress Place
Greenwood, IN 46143

Endress+Hauser 
People for Process Automation

Flow Calibration without Adjustment

92004356-1275192

4017515743

Purchase order number

US-3601525789-100 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1RA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6A022116000

Serial N°

FIT-102

Tag N°

FCP-8.2 US

Calibration rig

156 us.gal/min ($\pm 100\%$)

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9082

Calibration factor

0

Zero point

72.3 °F

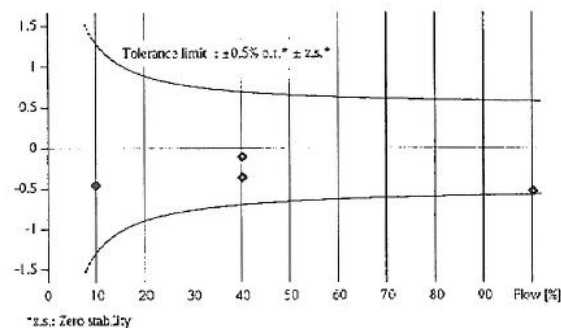
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.643	60.0	15.654	15.582	-0.46	5.60
40.1	62.618	60.0	62.665	62.440	-0.36	10.40
40.2	62.628	60.0	62.673	62.607	-0.11	10.42
100.3	156.535	60.0	156.646	155.804	-0.54	19.97
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of race

**Calculated value (4 - 20 mA)

Measured error % o.r.



For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter: Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reimach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

09-20-2013

Date of calibration

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571



W. Watkins

Operator

Endress+Hauser 

People for Process Automation

Flow Calibration without Adjustment

92004352-1304708

4017515743

Purchase order number

US-3601525789-300 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C037216000

Serial N°

FIT-1204

Tag N°

FCP-8.2 US

Calibration rig

156 us.gal/min ($\pm 100\%$)

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9184

Calibration factor

20

Zero point

72.4 °F

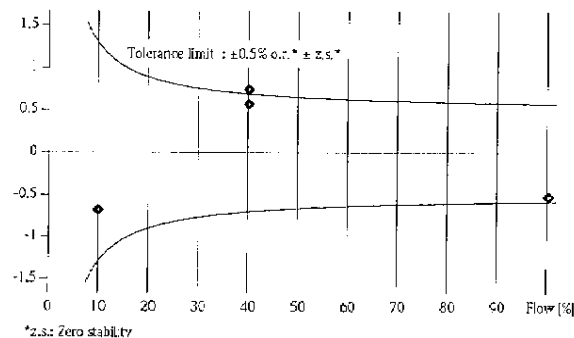
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.636	60.0	15.646	15.540	-0.68	5.59
40.2	62.632	60.1	62.693	63.163	0.75	10.47
40.2	62.630	60.0	62.671	63.033	0.58	10.46
100.4	156.630	60.0	156.742	155.931	-0.52	19.98
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

09-20-2013

Date of calibration

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571

Wesley Watkins

W. Watkins

Operator

Endress+Hauser 

People for Process Automation

Flow Calibration without Adjustment

92005412-1385272

4017522194

Purchase order number

US-3601527563-100 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

7700F216000

Serial N°

-

Tag N°

FCP-8.2 US

Calibration rig

156 us.gal/min ($\pm 100\%$)

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9215

Calibration factor

0

Zero point

75.4 °F

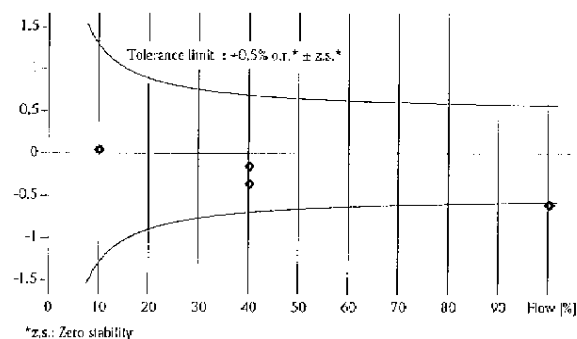
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.1	15.699	60.0	15.710	15.717	0.04	5.61
40.2	62.675	60.0	62.718	62.490	-0.36	10.40
40.2	62.681	60.0	62.724	62.627	-0.15	10.42
100.4	156.590	60.0	156.696	155.730	-0.62	19.96
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*out of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

03-22-2014

Date of calibration

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571



W. Watkins

Operator

Flow Calibration with Adjustment

12302717 1365273

4600082515

Purchase order number

US-3601521707-300 / Endress+Hauser Inc.

Order N°/Manufacturer

23P80-AL1A1AA022AW

Order code

PROMAG 23 P 3"

Transmitter/Sensor

7700F316000

Serial N°

-

Tag N°

FCP-8.2 US

Calibration rig

400 us.gal/min

($\pm 100\%$)

Calibrated full scale

Current 4 - 20 mA

Calibrated output

1.1672

Calibration factor

-18

Zero point

75.1 °F

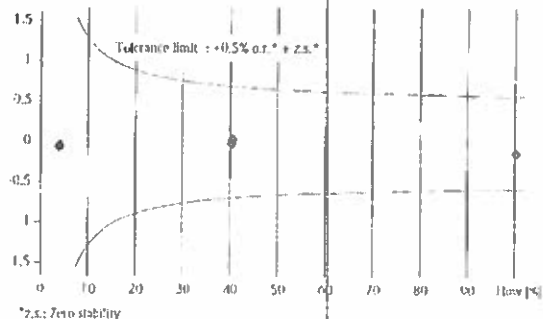
Water temperature

Flow [°]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
4.0	16.0	60.0	15.964	15.954	-0.06	4.64
40.3	161.3	60.0	161.426	161.393	-0.02	10.45
40.6	162.3	60.0	162.432	162.486	0.03	10.49
100.4	401.5	60.0	401.815	401.258	-0.14	20.04
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*rate of rate

**Calibrated value (4 - 20 mA)

Measured error % o.r.



For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

06-19-2012

Date of calibration

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571

Wesley Watkins

W. Watkins

Operator

Endress+Hauser 

People for Process Automation

Flow Calibration with Adjustment

92006682-1275191

WWRA015491F

Purchase order number

US-3601529220-100 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1RA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6A022016000

Serial N°

FIT-101

Tag N°

FCP-7.1.6 US

Calibration rig

155.6102 us.gal/min ($\pm 100\%$)

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9193

Calibration factor

0

Zero point

72.7 °F

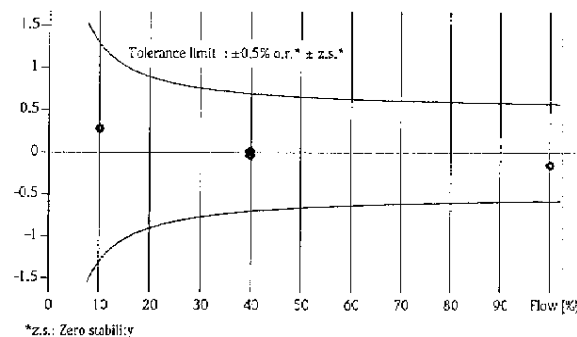
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.596	60.1	15.612	15.657	0.29	5.61
39.9	62.142	60.1	62.207	62.221	0.02	10.39
40.0	62.171	60.1	62.236	62.217	-0.03	10.39
100.1	155.761	60.1	155.922	155.691	-0.15	19.99
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

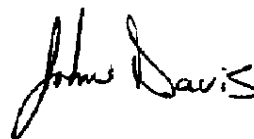
**Calculated value (4 - 20 mA)

Measured error % o.r.



For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).



John Davis
Operator

09-19-2014

Date of calibration

Endress+Hauser Inc.
2350 Endress Place
Greenwood, IN 46143

Appendix D
Fourth Quarter 2015
Laboratory Analytical Reports

October 21, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N017130

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on October 06, 2015 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Glen Gesmundo
QA Manager

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA
11060 Artesia Blvd., Ste C, Cerritos, CA 90703
P: 562.219.7435 F: 562.219.7436

NEVADA
3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N017130

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

Subcontracted Analyses:

Ammonia was subcontracted to Truesdail-Tustin, CA.

Analytical Comments for EPA 200.7:

Method Blank has hit above the reporting limit for Aluminum. Sample results were non-detect (ND) for this analyte therefore reanalysis of the samples was not necessary.

Analytical Comments for EPA 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium on QC samples N017130-001D-MS and N017130-001D-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for some analytes on QC samples N017130-001D-MS and N017130-001D-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Dilution was necessary on some analytes for sample N017130-003 due to associated internal standard not meeting method criteria possibly due to matrix interference. Sample was analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.



CLIENT: CH2M HILL

Project: PG&E Topock, 658274.01.IM.OP.00

Lab Order: N017130

CASE NARRATIVE

Analytical Comments for EPA 218.6:

Dilution was necessary for sample N017130-003 (SC-701-WDR-532) due to matrix interference. Sample was analyzed at lower dilution however retention time criteria was not met indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA
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Page 2 of 2
N017130-003
3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

ASSET Laboratories

Date: 21-Oct-15

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N017130
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N017130-001A	SC-100B-WDR-532	Water	10/6/2015 2:46:00 PM	10/6/2015	10/21/2015
N017130-001B	SC-100B-WDR-532	Water	10/6/2015 2:46:00 PM	10/6/2015	10/21/2015
N017130-001C	SC-100B-WDR-532	Water	10/6/2015 2:46:00 PM	10/6/2015	10/21/2015
N017130-001D	SC-100B-WDR-532	Water	10/6/2015 2:46:00 PM	10/6/2015	10/21/2015
N017130-001E	SC-100B-WDR-532	Water	10/6/2015 2:46:00 PM	10/6/2015	10/21/2015
N017130-002A	SC-700B-WDR-532	Water	10/6/2015 2:35:00 PM	10/6/2015	10/21/2015
N017130-002B	SC-700B-WDR-532	Water	10/6/2015 2:35:00 PM	10/6/2015	10/21/2015
N017130-002C	SC-700B-WDR-532	Water	10/6/2015 2:35:00 PM	10/6/2015	10/21/2015
N017130-002D	SC-700B-WDR-532	Water	10/6/2015 2:35:00 PM	10/6/2015	10/21/2015
N017130-002E	SC-700B-WDR-532	Water	10/6/2015 2:35:00 PM	10/6/2015	10/21/2015
N017130-003A	SC-701-WDR-532	Water	10/6/2015 2:25:00 PM	10/6/2015	10/21/2015
N017130-003B	SC-701-WDR-532	Water	10/6/2015 2:25:00 PM	10/6/2015	10/21/2015
N017130-003C	SC-701-WDR-532	Water	10/6/2015 2:25:00 PM	10/6/2015	10/21/2015



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA
11060 Artesia Blvd., Ste C, Cerritos, CA 90703
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NEVADA
3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:46:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE
EPA 120.1

RunID: WETCHEM_151007D	QC Batch: R103456	PrepDate	Analyst: LR
Specific Conductance	6900	0.10	0.10
		umhos/cm	1
			10/7/2015 11:25 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:35:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_151007D	QC Batch: R103456	PrepDate	Analyst: LR			
Specific Conductance	6800	0.10	0.10	umhos/cm	1	10/7/2015 11:25 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-701-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:25:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_151007D	QC Batch: R103456	PrepDate	Analyst: LR
Specific Conductance	19000 0.10 0.10	umhos/cm	1 10/7/2015 11:25 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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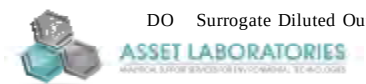
CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 120.1_WPGE**

Sample ID	N017130-003ADUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	103456
Client ID:	ZZZZZZ	Batch ID:	R103456	TestNo:	EPA 120.1			Analysis Date:	10/7/2015	SeqNo:	2100605
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Specific Conductance		18920.000		0.10						18960	0.211 10

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:46:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: WETCHEM_151007G	QC Batch: 52633	PrepDate	10/7/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4100	50	50	mg/L
			1	10/7/2015 02:00 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-002

Client Sample ID: SC-700B-WDR-532
Collection Date: 10/6/2015 2:35:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: WETCHEM_151007G	QC Batch: 52633			PrepDate	10/7/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L	1	10/7/2015 02:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference
 DO Surrogate Diluted Out
 E Value above quantitation range
 ND Not Detected at the Reporting Limit
 Results are wet unless otherwise specified



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-003

Client Sample ID: SC-701-WDR-532
Collection Date: 10/6/2015 2:25:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: WETCHEM_151007G	QC Batch: 52633				PrepDate: 10/7/2015		Analyst: LR
Total Dissolved Solids (Residue, Filterable)	12000	100	100		mg/L	1	10/7/2015 02:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference
 DO Surrogate Diluted Out
 E Value above quantitation range
 ND Not Detected at the Reporting Limit
 Results are wet unless otherwise specified



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CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 160.1_2540C_W**

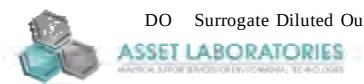
Sample ID	MB-52633	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	10/7/2015	RunNo:	103459		
Client ID:	PBW	Batch ID:	52633	TestNo:	SM2540C			Analysis Date:	10/7/2015	SeqNo:	2100666		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10									

Sample ID	LCS-52633	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	10/7/2015	RunNo:	103459		
Client ID:	LCSW	Batch ID:	52633	TestNo:	SM2540C			Analysis Date:	10/7/2015	SeqNo:	2100667		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		986.000		10	1000	0	98.6	80	120				

Sample ID	N017130-003A-DUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	10/7/2015	RunNo:	103459		
Client ID:	ZZZZZZ	Batch ID:	52633	TestNo:	SM2540C			Analysis Date:	10/7/2015	SeqNo:	2100674		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		11560.000		100						12100	4.56	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-001

Client Sample ID: SC-100B-WDR-532
Collection Date: 10/6/2015 2:46:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP
EPA 200.7

RunID: ICP2_151008A	QC Batch: 52623	PrepDate	10/7/2015	Analyst: CEI
Aluminum	ND 12	50	µg/L	1 10/8/2015 12:05 PM
Boron	880 11	100	µg/L	1 10/8/2015 12:05 PM
Iron	ND 17	20	µg/L	1 10/8/2015 12:05 PM

Qualifiers: B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference
 DO Surrogate Diluted Out
 E Value above quantitation range
 ND Not Detected at the Reporting Limit
 Results are wet unless otherwise specified



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-002

Client Sample ID: SC-700B-WDR-532
Collection Date: 10/6/2015 2:35:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP
EPA 200.7

RunID: ICP2_151008A	QC Batch: 52623	PrepDate	10/7/2015	Analyst: CEI
Aluminum	ND 12	50	µg/L	1 10/8/2015 12:20 PM
Boron	900 11	100	µg/L	1 10/8/2015 12:20 PM
Iron	ND 17	20	µg/L	1 10/8/2015 12:20 PM

Qualifiers: B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference
 DO Surrogate Diluted Out
 E Value above quantitation range
 ND Not Detected at the Reporting Limit
 Results are wet unless otherwise specified



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CLIENT: CH2M HILL
 Work Order: N017130
 Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPBB

Sample ID	MB-52623	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103478
Client ID:	PBW	Batch ID:	52623	TestNo:	EPA 200.7			Analysis Date:	10/8/2015	SeqNo:	2101761
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	57.016	50									
Boron	11.971	100									
Iron	ND	20									

Sample ID	LCS1-52623	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103478
Client ID:	LCSW	Batch ID:	52623	TestNo:	EPA 200.7			Analysis Date:	10/8/2015	SeqNo:	2101762
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	9532.757	50	10000	0	95.3	85	115				B
Boron	4497.635	100	5000	0	90.0	85	115				
Iron	89.016	20	100.0	0	89.0	85	115				

Sample ID	N017129-001B-MS	SampType:	MS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:		RunNo:	103478
Client ID:	ZZZZZZ	Batch ID:	52623	TestNo:	EPA 200.7			Analysis Date:	10/8/2015	SeqNo:	2101766
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

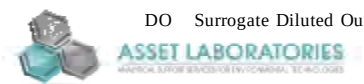
Aluminum	9738.381	50	10000	0	97.4	75	125				B
Boron	5244.144	100	5000	514.3	94.6	75	125				
Iron	91.540	20	100.0	0	91.5	75	125				

Sample ID	N017129-001B-MSD	SampType:	MSD	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:		RunNo:	103478
Client ID:	ZZZZZZ	Batch ID:	52623	TestNo:	EPA 200.7			Analysis Date:	10/8/2015	SeqNo:	2101767
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	9847.550	50	10000	0	98.5	75	125	9738	1.11	20	B
Boron	5373.344	100	5000	514.3	97.2	75	125	5244	2.43	20	
Iron	87.885	20	100.0	0	87.9	75	125	91.54	4.07	20	

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-001

Client Sample ID: SC-100B-WDR-532
Collection Date: 10/6/2015 2:46:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151009A	QC Batch: 52628	PrepDate	10/7/2015	Analyst: CEI		
Antimony	ND	0.026	0.50	µg/L	1	10/9/2015 12:29 PM
Arsenic	3.0	0.016	0.10	µg/L	1	10/8/2015 02:25 PM
Barium	25	0.072	1.0	µg/L	1	10/8/2015 02:25 PM
Copper	ND	0.26	1.0	µg/L	1	10/20/2015 11:55 AM
Lead	ND	0.053	1.0	µg/L	1	10/8/2015 02:25 PM
Manganese	14	0.023	0.50	µg/L	1	10/8/2015 02:25 PM
Molybdenum	19	0.029	0.50	µg/L	1	10/9/2015 12:29 PM
Nickel	ND	0.038	1.0	µg/L	1	10/8/2015 02:25 PM
Zinc	ND	0.039	10	µg/L	1	10/8/2015 02:25 PM

Qualifiers: B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference
 DO Surrogate Diluted Out
 E Value above quantitation range
 ND Not Detected at the Reporting Limit
 Results are wet unless otherwise specified



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-002

Client Sample ID: SC-700B-WDR-532
Collection Date: 10/6/2015 2:35:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151009A	QC Batch: 52628	PrepDate	10/7/2015	Analyst: CEI
Antimony	ND	0.026	0.50	µg/L
Arsenic	ND	0.016	0.10	µg/L
Barium	11	0.072	1.0	µg/L
Copper	ND	0.26	1.0	µg/L
Lead	ND	0.053	1.0	µg/L
Manganese	12	0.023	0.50	µg/L
Molybdenum	21	0.029	0.50	µg/L
Nickel	1.9	0.038	1.0	µg/L
Zinc	ND	0.039	10	µg/L

Qualifiers: B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference
 DO Surrogate Diluted Out
 E Value above quantitation range
 ND Not Detected at the Reporting Limit
 Results are wet unless otherwise specified



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ASSET Laboratories
ANALYTICAL RESULTS

Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-003

Client Sample ID: SC-701-WDR-532
Collection Date: 10/6/2015 2:25:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151009A	QC Batch: 52628	PrepDate	10/7/2015	Analyst: CEI		
Antimony	ND	0.026	0.50	µg/L	1	10/9/2015 01:02 PM
Arsenic	0.29	0.016	0.10	µg/L	1	10/8/2015 03:09 PM
Barium	37	0.072	1.0	µg/L	1	10/8/2015 03:09 PM
Beryllium	ND	0.66	12	µg/L	25	10/20/2015 12:40 PM
Cadmium	ND	0.0098	0.50	µg/L	1	10/8/2015 03:09 PM
Cobalt	ND	0.013	0.50	µg/L	1	10/8/2015 03:09 PM
Copper	ND	0.26	1.0	µg/L	1	10/20/2015 11:42 AM
Lead	ND	0.27	5.0	µg/L	5	10/8/2015 04:31 PM
Manganese	25	0.023	0.50	µg/L	1	10/8/2015 03:09 PM
Molybdenum	61	0.029	0.50	µg/L	1	10/9/2015 01:02 PM
Nickel	7.2	0.038	1.0	µg/L	1	10/8/2015 03:09 PM
Selenium	11	0.070	0.50	µg/L	1	10/9/2015 01:02 PM
Silver	ND	0.023	0.50	µg/L	1	10/9/2015 01:02 PM
Thallium	ND	0.17	2.5	µg/L	5	10/8/2015 04:31 PM
Vanadium	ND	0.025	1.0	µg/L	1	10/8/2015 03:09 PM
Zinc	ND	0.039	10	µg/L	1	10/8/2015 03:09 PM

Qualifiers: B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference
 DO Surrogate Diluted Out
 E Value above quantitation range
 ND Not Detected at the Reporting Limit
 Results are wet unless otherwise specified



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 11060 Artesia Blvd., Ste C, Cerritos, CA 90703
 P: 562.219.7435 F: 562.219.7436

NEVADA
 3151 W. Post Rd., Las Vegas, NV 89118
 P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-52628	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103487		
Client ID:	PBW	Batch ID:	52628	TestNo:	EPA 200.8			Analysis Date:	10/8/2015	SeqNo:	2102248		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

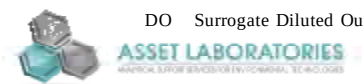
Arsenic	ND	0.10									
Barium	ND	1.0									
Cadmium	ND	0.50									
Cobalt	ND	0.50									
Lead	ND	1.0									
Manganese	ND	0.50									
Nickel	ND	1.0									
Thallium	ND	0.50									
Vanadium	ND	1.0									
Zinc	ND	10									

Sample ID	LCS-52628	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103487		
Client ID:	LCSW	Batch ID:	52628	TestNo:	EPA 200.8			Analysis Date:	10/8/2015	SeqNo:	2102249		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	9.968	0.10	10.00	0	99.7	85	115				
Barium	104.637	1.0	100.0	0	105	85	115				
Cadmium	9.980	0.50	10.00	0	99.8	85	115				
Cobalt	9.571	0.50	10.00	0	95.7	85	115				
Lead	10.220	1.0	10.00	0	102	85	115				
Manganese	99.384	0.50	100.0	0	99.4	85	115				
Nickel	10.106	1.0	10.00	0	101	85	115				
Thallium	9.980	0.50	10.00	0	99.8	85	115				
Vanadium	10.052	1.0	10.00	0	101	85	115				
Zinc	102.747	10	100.0	0	103	85	115				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

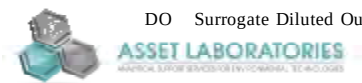
Sample ID	N017130-001D-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103487					
Client ID:	ZZZZZZ	Batch ID: 52628	TestNo: EPA 200.8	Analysis Date: 10/8/2015	SeqNo: 2102253						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.696	0.10	10.00	2.988	97.1	75	125				
Barium	124.731	1.0	100.0	24.96	99.8	75	125				
Cadmium	9.200	0.50	10.00	0	92.0	75	125				
Cobalt	8.199	0.50	10.00	0	82.0	75	125				
Lead	9.685	1.0	10.00	0	96.9	75	125				
Manganese	103.304	0.50	100.0	13.63	89.7	75	125				
Nickel	8.936	1.0	10.00	0	89.4	75	125				
Thallium	8.850	0.50	10.00	0.1752	86.7	75	125				
Vanadium	16.859	1.0	10.00	7.662	92.0	75	125				
Zinc	87.142	10	100.0	0	87.1	75	125				

Sample ID	N017130-001D-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103487					
Client ID:	ZZZZZZ	Batch ID: 52628	TestNo: EPA 200.8	Analysis Date: 10/8/2015	SeqNo: 2102256						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.871	0.10	10.00	2.988	98.8	75	125	12.70	1.37	20	
Barium	124.301	1.0	100.0	24.96	99.3	75	125	124.7	0.345	20	
Cadmium	9.149	0.50	10.00	0	91.5	75	125	9.200	0.559	20	
Cobalt	8.263	0.50	10.00	0	82.6	75	125	8.199	0.776	20	
Lead	9.780	1.0	10.00	0	97.8	75	125	9.685	0.970	20	
Manganese	103.862	0.50	100.0	13.63	90.2	75	125	103.3	0.539	20	
Nickel	8.718	1.0	10.00	0	87.2	75	125	8.936	2.46	20	
Thallium	8.821	0.50	10.00	0.1752	86.5	75	125	8.850	0.329	20	
Vanadium	16.992	1.0	10.00	7.662	93.3	75	125	16.86	0.783	20	
Zinc	87.068	10	100.0	0	87.1	75	125	87.14	0.0855	20	

Sample ID	MB-52628	SampType: MBLK	TestCode: 200.8_W	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103515					
Client ID:	PBW	Batch ID: 52628	TestNo: EPA 200.8	Analysis Date: 10/9/2015	SeqNo: 2104075						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
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| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-52628	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103515
Client ID:	PBW	Batch ID:	52628	TestNo:	EPA 200.8			Analysis Date:	10/9/2015	SeqNo:	2104075
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									
Silver	0.090	0.50									

Sample ID	LCS-52628	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103515
Client ID:	LCSW	Batch ID:	52628	TestNo:	EPA 200.8			Analysis Date:	10/9/2015	SeqNo:	2104076
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.505	0.50	10.00	0	105	85	115				
Molybdenum	9.683	0.50	10.00	0	96.8	85	115				
Selenium	10.002	0.50	10.00	0	100	85	115				
Silver	9.987	0.50	10.00	0	99.9	85	115				

Sample ID	N017130-001D-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103515
Client ID:	ZZZZZZ	Batch ID:	52628	TestNo:	EPA 200.8			Analysis Date:	10/9/2015	SeqNo:	2104080
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.144	0.50	10.00	0	101	75	125				
Molybdenum	30.504	0.50	10.00	19.08	114	75	125				
Selenium	13.013	0.50	10.00	3.462	95.5	75	125				
Silver	5.843	0.50	10.00	0.3276	55.2	75	125				S

Sample ID	N017130-001D-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103515
Client ID:	ZZZZZZ	Batch ID:	52628	TestNo:	EPA 200.8			Analysis Date:	10/9/2015	SeqNo:	2104081
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.134	0.50	10.00	0	101	75	125	10.14	0.0933	20	
Molybdenum	30.070	0.50	10.00	19.08	110	75	125	30.50	1.43	20	

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
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ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N017130-001D-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103515					
Client ID: ZZZZZZ	Batch ID: 52628	TestNo: EPA 200.8	Analysis Date: 10/9/2015	SeqNo: 2104081							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	12.205	0.50	10.00	3.462	87.4	75	125	13.01	6.41	20	
Silver	5.884	0.50	10.00	0.3276	55.6	75	125	5.843	0.704	20	S

Sample ID	MB-52628	SampType: MBLK	TestCode: 200.8_W	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103657					
Client ID:	PBW	Batch ID: 52628	TestNo: EPA 200.8	Analysis Date: 10/20/2015	SeqNo: 2110392						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	ND	0.50									
Copper	ND	1.0									

Sample ID	LCS-52628	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103657					
Client ID:	LCSW	Batch ID: 52628	TestNo: EPA 200.8	Analysis Date: 10/20/2015	SeqNo: 2110393						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	10.034	0.50	10.00	0	100	85	115				
Copper	10.522	1.0	10.00	0	105	85	115				

Sample ID	N017130-001D-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103657					
Client ID: ZZZZZZ	Batch ID: 52628	TestNo: EPA 200.8	Analysis Date: 10/20/2015	SeqNo: 2110400							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	7.841	1.0	10.00	0.9641	68.8	75	125				S

Sample ID	N017130-001D-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103657					
Client ID: ZZZZZZ	Batch ID: 52628	TestNo: EPA 200.8	Analysis Date: 10/20/2015	SeqNo: 2110401							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	7.519	1.0	10.00	0.9641	65.5	75	125	7.841	4.19	20	S

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
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Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N017130-001D-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103657
Client ID:	ZZZZZZ	Batch ID:	52628	TestNo:	EPA 200.8			Analysis Date:	10/20/2015	SeqNo:	2110408
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

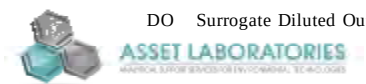
Beryllium	9.616	2.5	10.00	0	96.2	75	125				
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Sample ID	N017130-001D-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	10/7/2015	RunNo:	103657
Client ID:	ZZZZZZ	Batch ID:	52628	TestNo:	EPA 200.8			Analysis Date:	10/20/2015	SeqNo:	2110409
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Beryllium	9.348	2.5	10.00	0	93.5	75	125	9.616	2.83	20	
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Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-001

Client Sample ID: SC-100B-WDR-532
Collection Date: 10/6/2015 2:46:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: IC7_151008A	QC Batch: R103490				PrepDate		Analyst: RB
Hexavalent Chromium	540	0.75	10		µg/L	50	10/8/2015 01:20 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151008B	QC Batch: 52628				PrepDate	10/7/2015	Analyst: CEI
Chromium	530	0.43	5.0		µg/L	5	10/8/2015 02:30 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



ASSET LABORATORIES
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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-002

Client Sample ID: SC-700B-WDR-532
Collection Date: 10/6/2015 2:35:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: IC7_151008A	QC Batch: R103490			PrepDate		Analyst: RB
Hexavalent Chromium	0.24	0.015	0.20	µg/L	1	10/8/2015 01:39 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151008B	QC Batch: 52628			PrepDate	10/7/2015	Analyst: CEI
Chromium	ND	0.086	1.0	µg/L	1	10/8/2015 03:03 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-003

Client Sample ID: SC-701-WDR-532
Collection Date: 10/6/2015 2:25:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: IC7_151008B	QC Batch: R103491				PrepDate		Analyst: RB
Hexavalent Chromium	1.4	0.075	1.0		µg/L	5	10/8/2015 05:54 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151008B	QC Batch: 52628				PrepDate	10/7/2015	Analyst: CEI
Chromium	1.3	0.086	1.0		µg/L	1	10/8/2015 03:09 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
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	DO	Surrogate Diluted Out		



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CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W_CRPGE**

Sample ID MB-52628	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103487							
Client ID: PBW	Batch ID: 52628	TestNo: EPA 200.8		Analysis Date: 10/8/2015	SeqNo: 2102192							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chromium	ND	1.0										

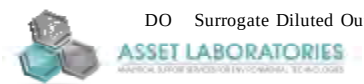
Sample ID LCS-52628	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103487							
Client ID: LCSW	Batch ID: 52628	TestNo: EPA 200.8		Analysis Date: 10/8/2015	SeqNo: 2102193							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chromium	9.912	1.0	10.00	0	99.1	85	115					

Sample ID N017130-001D-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103487							
Client ID: ZZZZZZ	Batch ID: 52628	TestNo: EPA 200.8		Analysis Date: 10/8/2015	SeqNo: 2102215							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chromium	552.841	5.0	10.00	527.2	256	75	125				S	

Sample ID N017130-001D-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 10/7/2015	RunNo: 103487							
Client ID: ZZZZZZ	Batch ID: 52628	TestNo: EPA 200.8		Analysis Date: 10/8/2015	SeqNo: 2102216							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chromium	553.606	5.0	10.00	527.2	264	75	125	552.8	0.138	20	S	

Qualifiers:

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R103490	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103490			
Client ID:	PBW	Batch ID:	R103490	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2102926			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R103490	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103490			
Client ID:	LCSW	Batch ID:	R103490	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2102927			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.066 0.20 5.000 0 101 90 110

Sample ID	N017151-001ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103490			
Client ID:	ZZZZZZ	Batch ID:	R103490	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2102929			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.128 0.20 1.122 0.515 20

Sample ID	N017151-001AMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103490			
Client ID:	ZZZZZZ	Batch ID:	R103490	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2102930			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 2.169 0.20 1.000 1.122 105 90 110

Sample ID	N017151-001AMSD	SampType: MSD	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:				RunNo: 103490			
Client ID: ZZZZZZ	Batch ID: R103490		TestNo: EPA 218.6		Analysis Date: 10/8/2015				SeqNo: 2102931			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Hexavalent Chromium 2.159 0.20 1.000 1.122 104 90 110 2.169 0.458 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N017129-001CMS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:				RunNo: 103490		
Client ID: ZZZZZZ	Batch ID: R103490	TestNo: EPA 218.6			Analysis Date: 10/8/2015				SeqNo: 2102963		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	4.148	0.20	1.000	3.166	98.2	90	110
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Sample ID	N017130-001CMS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:				RunNo: 103490			
Client ID:	ZZZZZZ	Batch ID: R103490	TestNo: EPA 218.6		Analysis Date: 10/8/2015				SeqNo: 2102965			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	793.885	10	250.0	544.1	99.9	90	110
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Sample ID	N017130-002CMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103490			
Client ID:	ZZZZZZ	Batch ID:	R103490	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2102967			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1.236	0.20	1.000	0.2443	99.2	90	110
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Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R103491	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103491			
Client ID:	PBW	Batch ID:	R103491	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2103098			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R103491	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103491			
Client ID:	LCSW	Batch ID:	R103491	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2103099			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.050 0.20 5.000 0 101 90 110

Sample ID	N017150-002ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103491			
Client ID:	ZZZZZZ	Batch ID:	R103491	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2103101			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 3.610 0.20 3.588 0.622 20

Sample ID	N017150-002AMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103491			
Client ID:	ZZZZZZ	Batch ID:	R103491	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2103102			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 8.731 0.20 5.000 3.588 103 90 110

Sample ID	N017150-002AMSD	SampType: MSD	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:				RunNo: 103491			
Client ID:	ZZZZZZ	Batch ID: R103491	TestNo: EPA 218.6		Analysis Date: 10/8/2015				SeqNo: 2103103			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 8.798 0.20 5.000 3.588 104 90 110 8.731 0.756 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N017130-003BMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	103491	
Client ID:	ZZZZZZ	Batch ID:	R103491	TestNo:	EPA 218.6			Analysis Date:	10/8/2015	SeqNo:	2103119	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		6.640	1.0	5.000	1.369	105	90	110				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		



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ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:46:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY
SM 2130B

RunID: WETCHEM_151007C	QC Batch: R103455	PrepDate	Analyst: LR
Turbidity	0.21 0.10 0.10	NTU	1 10/7/2015 10:50 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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ANALYTICAL RESULTS

Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:35:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY

SM 2130B

RunID: WETCHEM_151007C	QC Batch: R103455	PrepDate	Analyst: LR
Turbidity	0.20	0.10	0.10
			NTU
			1
			10/7/2015 10:50 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 2130_W**

Sample ID	MB-R103455	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	103455		
Client ID:	PBW	Batch ID:	R103455	TestNo:	SM 2130B			Analysis Date:	10/7/2015	SeqNo:	2100595		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

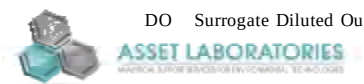
Turbidity ND 0.10

Sample ID	N017130-001BDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	103455			
Client ID:	ZZZZZZ	Batch ID:	R103455	TestNo:	SM 2130B			Analysis Date:	10/7/2015	SeqNo:	2100597			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Turbidity 0.210 0.10 0.2100 0 30

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-701-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:25:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL MERCURY BY COLD VAPOR TECHNIQUE
EPA 245.1

RunID: AA1_151009B	QC Batch: 52646	PrepDate	10/8/2015	Analyst: CEI
Mercury	ND	0.025	0.20	µg/L
			1	10/9/2015 12:00 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 245.1_W**

Sample ID MB-52646	SampType: MBLK	TestCode: 245.1_W	Units: µg/L	Prep Date: 10/8/2015	RunNo: 103517						
Client ID: PBW	Batch ID: 52646	TestNo: EPA 245.1		Analysis Date: 10/9/2015	SeqNo: 2110417						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.20									

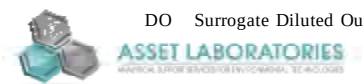
Sample ID LCS-52646	SampType: LCS	TestCode: 245.1_W	Units: µg/L	Prep Date: 10/8/2015	RunNo: 103517						
Client ID: LCSW	Batch ID: 52646	TestNo: EPA 245.1		Analysis Date: 10/9/2015	SeqNo: 2110418						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.034	0.20	5.000	0	101	85	115				

Sample ID N017130-003C-MS	SampType: MS	TestCode: 245.1_W	Units: µg/L	Prep Date: 10/8/2015	RunNo: 103517						
Client ID: ZZZZZZ	Batch ID: 52646	TestNo: EPA 245.1		Analysis Date: 10/9/2015	SeqNo: 2110419						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	4.686	0.20	5.000	0	93.7	75	125				

Sample ID N017130-003C-MSD	SampType: MSD	TestCode: 245.1_W	Units: µg/L	Prep Date: 10/8/2015	RunNo: 103517						
Client ID: ZZZZZZ	Batch ID: 52646	TestNo: EPA 245.1		Analysis Date: 10/9/2015	SeqNo: 2110420						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.056	0.20	5.000	0	101	75	125	4.686	7.58	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-001

Client Sample ID: SC-100B-WDR-532
Collection Date: 10/6/2015 2:46:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_151007A	QC Batch: R103466						Analyst: QBM
Fluoride	2.3	0.12	1.0		mg/L	10	10/7/2015 04:59 PM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_151007A	QC Batch: R103466						Analyst: QBM
Sulfate	470	1.6	25		mg/L	50	10/7/2015 04:27 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT: CH2M HILL
Lab Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017130-002

Client Sample ID: SC-700B-WDR-532
Collection Date: 10/6/2015 2:35:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_151007A	QC Batch: R103466				PrepDate		Analyst: QBM
Fluoride	2.1	0.12	1.0		mg/L	10	10/7/2015 05:30 PM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_151007A	QC Batch: R103466				PrepDate		Analyst: QBM
Sulfate	480	1.6	25		mg/L	50	10/7/2015 04:43 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-701-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:25:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_151007A	QC Batch: R103466	PrepDate	Analyst: QBM
Fluoride	5.7 0.62	5.0 mg/L	50 10/7/2015 06:17 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 300_W_FPG**

Sample ID	MB-R103466_F	SampType:	MBLK	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	103466			
Client ID:	PBW	Batch ID:	R103466	TestNo:	EPA 300.0			Analysis Date:	10/7/2015	SeqNo:	2101297			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride ND 0.10

Sample ID	LCS-R103466_F	SampType:	LCS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	103466		
Client ID:	LCSW	Batch ID:	R103466	TestNo:	EPA 300.0			Analysis Date:	10/7/2015	SeqNo:	2101298		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 2.522 0.10 2.500 0 101 90 110

Sample ID	N017130-001BDUP	SampType:	DUP	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	103466			
Client ID:	ZZZZZZ	Batch ID:	R103466	TestNo:	EPA 300.0			Analysis Date:	10/7/2015	SeqNo:	2101304			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 2.160 1.0 2.300 6.28 20

Sample ID	N017130-002BMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	103466		
Client ID:	ZZZZZZ	Batch ID:	R103466	TestNo:	EPA 300.0			Analysis Date:	10/7/2015	SeqNo:	2101306		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

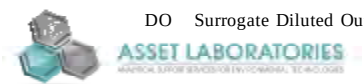
Fluoride 27.120 1.0 25.00 2.140 99.9 80 120

Sample ID	N017130-002BMSD	SampType:	MSD	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	103466		
Client ID:	ZZZZZZ	Batch ID:	R103466	TestNo:	EPA 300.0			Analysis Date:	10/7/2015	SeqNo:	2101307		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 27.930 1.0 25.00 2.140 103 80 120 27.12 2.94 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R103466_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	103466		
Client ID:	PBW	Batch ID:	R103466	TestNo:	EPA 300.0			Analysis Date:	10/7/2015	SeqNo:	2101278		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate ND 0.50

Sample ID	LCS-R103466_SO4	SampType: LCS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 103466					
Client ID: LCSW	Batch ID: R103466	TestNo: EPA 300.0	Analysis Date: 10/7/2015	SeqNo: 2101279							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 4.979 0.50 5.000 0 99.6 90 110

Sample ID	N017129-001ADUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	103466		
Client ID:	ZZZZZZ	Batch ID:	R103466	TestNo:	EPA 300.0			Analysis Date:	10/7/2015	SeqNo:	2101283		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 372.950 25 381.4 2.24 20

Sample ID	N017129-002AMS	SampType: MS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 103466					
Client ID: ZZZZZZ	Batch ID: R103466	TestNo: EPA 300.0	Analysis Date: 10/7/2015	SeqNo: 2101285							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 1040.600 50 500.0 521.1 104 80 120

Sample ID	N017129-002AMSD	SampType: MSD	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 103466					
Client ID: ZZZZZZ	Batch ID: R103466	TestNo: EPA 300.0	Analysis Date: 10/7/2015	SeqNo: 2101286							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 1023.900 50 500.0 521.1 101 80 120 1041 1.62 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:46:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: WETCHEM_151013D	QC Batch: R103580	PrepDate	Analyst: RB
Nitrate/Nitrite as N	2.6 0.11	0.25 mg/L	5 10/13/2015

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-532
Lab Order:	N017130	Collection Date:	10/6/2015 2:35:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017130-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: WETCHEM_151013D	QC Batch: R103580	PrepDate	Analyst: RB
Nitrate/Nitrite as N	2.6 0.11	0.25 mg/L	5 10/13/2015

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
Work Order: N017130
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 4500N03F_W**

Sample ID MB-R103580	SampType: MBLK	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 103580
Client ID: PBW	Batch ID: R103580	TestNo: SM4500-NO3		Analysis Date: 10/13/2015	SeqNo: 2107033
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N ND 0.050

Sample ID LCS-R103580	SampType: LCS	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 103580
Client ID: LCSW	Batch ID: R103580	TestNo: SM4500-NO3		Analysis Date: 10/13/2015	SeqNo: 2107034
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 0.483 0.050 0.5000 0 96.6 85 115

Sample ID N017129-002CDUP	SampType: DUP	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 103580
Client ID: ZZZZZZ	Batch ID: R103580	TestNo: SM4500-NO3		Analysis Date: 10/13/2015	SeqNo: 2107036
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 3.536 0.25 3.331 5.96 20

Sample ID N017129-002CMS	SampType: MS	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 103580
Client ID: ZZZZZZ	Batch ID: R103580	TestNo: SM4500-NO3		Analysis Date: 10/13/2015	SeqNo: 2107037
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

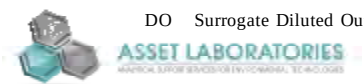
Nitrate/Nitrite as N 6.235 0.25 2.500 3.331 116 75 125

Sample ID N017129-002CMSD	SampType: MSD	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 103580
Client ID: ZZZZZZ	Batch ID: R103580	TestNo: SM4500-NO3		Analysis Date: 10/13/2015	SeqNo: 2107038
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 6.334 0.25 2.500 3.331 120 75 125 6.235 1.58 20

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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Project Name PG&E Topock Location PG&E Topock Project Number 658274.01.IM.OP.00 Project Manager Scott O'Donnell Sample Manager Shawn Duffy Task Order Project IM3PLANT-ARAR-WDR-532 Turnaround Time 10 Days Shipping Date: COC Number: 532			Container: 1 Liter Poly Preservatives: 4°C Lab H2SO4 Filtered: NA Holding Time: 28	1 Liter Poly 4°C NA 7	1 Liter Poly 4°C NA 7	1 Liter Poly 4°C NA 7	250 ml Poly 4°C NA 1	1 Liter Poly 4°C Lab H2SO4 NA 28	1 Liter Poly 4°C NA 7	500 ml Poly 4°C NA 180	500 ml Poly 4°C NA 180	500 ml Poly 4°C NA 180	1 Liter Poly 4°C NA 7	Number of Containers	COMMENTS		
DATE TIME Matrix	AMMONIA (SM4500NH3D) Anions (E300.0) Anions (E300.0) Fluoride CONDUCTIVITY (E120.1) E218.6 Lab Filtered Nitrate/Nitrite (SM4500NO3-E) TDS (SM2540C) Total Metals (E200.7 and E200.8) Total Metals (E200.8 Mn) Total Title2Metals Turbidity (SM2130)																
SC-100B-WDR-532	10-6-15	14:46	Water	X	X		X	X	X	X		X		X	NO 17130-1	4	
SC-700B-WDR-532	10-6-15	14:35	Water	X	X		X	X	X	X		X		X	1-2	4	
SC-701-WDR-532	10-6-15	14:25	Water			X	X	X		X	X		X		★ -3	3	
TOTAL NUMBER OF CONTAINERS															11		

Approved by Sampled by Relinquished by Received by Relinquished by Received by	Signatures 10-6-15 1500 10-6-15 1500 10-6-15 1208 10/6/15 1708 10/6/15 @ 1911	Shipping Details Method of Shipment: FedEx On Ice: yes / no 1.1°C, 1.8°C Airbill No: Lab Name: ASSET Laboratories Lab Phone: (702) 307-2659	ATTN: Sample Custody and Glen Gesmundo	Special Instructions: Metal List - Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn Report Copy to Shawn Duffy 530-229-3303
---	---	--	---	---

ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 10/6/2015

Workorder: N017130

Rep sample Temp (Deg C): 1.1, 1.8

IR Gun ID: 1

Temp Blank: ☒ Yes ☐ No

Carrier name: ASSET

Last 4 digits of Tracking No.: NA

Packing Material Used: None

Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

- | | | | |
|---|---|--|---|
| 1. Shipping container/cooler in good condition? | Yes ☒ | No ☐ | Not Present ☐ |
| 2. Custody seals intact, signed, dated on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☒ |
| 3. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☒ |
| 4. Chain of custody present? | Yes ☒ | No ☐ | |
| 5. Sampler's name present in COC? | Yes ☒ | No ☐ | |
| 6. Chain of custody signed when relinquished and received? | Yes ☒ | No ☐ | |
| 7. Chain of custody agrees with sample labels? | Yes ☒ | No ☐ | |
| 8. Samples in proper container/bottle? | Yes ☒ | No ☐ | |
| 9. Sample containers intact? | Yes ☒ | No ☐ | |
| 10. Sufficient sample volume for indicated test? | Yes ☒ | No ☐ | |
| 11. All samples received within holding time? | Yes ☒ | No ☐ | |
| 12. Temperature of rep sample or Temp Blank within acceptable limit? | Yes ☒ | No ☐ | NA ☐ |
| 13. Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | NA ☒ |
| 14. Water - pH acceptable upon receipt?
Example: pH > 12 for (CN,S); pH<2 for Metals | Yes ☐ | No ☒ | NA ☐ |
| 15. Did the bottle labels indicate correct preservatives used? | Yes ☐ | No ☒ | NA ☐ |
| 16. Were there Non-Conformance issues at login? | Yes ☒ | No ☐ | NA ☐ |
| Was Client notified? | Yes ☐ | No ☐ | NA ☒ |

Comments Lab filtered and preserved

Checklist Completed B for MBC 10/7/2015

Reviewed By: 10/12/15

**ASSET Laboratories**

3151-3153 W Post Rd., Las Vegas, NV 89118

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV**Subcontractor:**

Truesdail
3337 Michelson Drive, Suite CN750
Irvine, CA 92612

TEL: (714) 730-6239

FAX: (714) 730-6462

Acct #:

Field Sampler: Signed

07-Oct-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3D		
N017130-001A / SC-100B-WDR-532	Water	10/6/2015 2:46:00 PM	32OZP	1		
N017130-002A / SC-700B-WDR-532	Water	10/6/2015 2:35:00 PM	32OZP	1		

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#: N17130A. Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: 5-DAY TAT.

Please analyze Ammonia by SM4500NH3D.

	Date/Time		Date/Time
Relinquished by: <u>AT</u>	<u>10/7/15 1700</u>	Received by: <u>GSO TRK# 529527549</u>	
Relinquished by: _____	_____	Received by: _____	_____

WORK ORDER: N017130

ANALYST LIST

NAME	TEST METHOD
Quennie Manimtim	EPA 300.0
Claire Ignacio	EPA 200.7, EPA 200.8, EPA 245.1
Ryan Balilu	EPA 218.6, SM 4500-NO3F
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B



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REPORT

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www.truesdail.com

Client: Advanced Technology Laboratories-NV

3151 W Post Rd

Las Vegas, NV 89118

Attention: Marlon Cartin

Project Name: ATL-NV

Work Order No.: 15J0169

Printed: 10/23/2015

CASE NARRATIVE

SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
N017130-001A/SC-100B-WDR-532	15J0169-01	Water	Grab	10/06/2015 14:46	10/08/2015 10:15
N017130-002A/SC-700B-WDR-532	15J0169-02	Water	Grab	10/06/2015 14:35	10/08/2015 10:15

DEFINITIONS

Symbol	Definition
DF	Dilution Factor
MDL	Method Detection Limit
ND	Not Detected
RL	Reporting Limit

Respectfully yours,

Lyn Phaerakkakit
Project Manager



Client: Advanced Technology Laboratories-N

Project Name: ATL-NV

Printed: 10/16/2015

N017130-001A/SC-100B-WDR-532

15J0169-01 (Water)

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
---------	--------	----	-------	----	-------	----------	---------	--------	-------

Truesdail Laboratories, Inc

Wet Chemistry

Ammonia	ND	0.0500	mg/L	1	1510190	10/09/2015 10:35	AL	SM 4500-NH3 D M	
---------	----	--------	------	---	---------	------------------	----	-----------------	--

N017130-002A/SC-700B-WDR-532

15J0169-02 (Water)

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
---------	--------	----	-------	----	-------	----------	---------	--------	-------

Truesdail Laboratories, Inc

Wet Chemistry

Ammonia	0.0582	0.0500	mg/L	1	1510190	10/09/2015 10:37	AL	SM 4500-NH3 D M	
---------	--------	--------	------	---	---------	------------------	----	-----------------	--

ANALYSIS DATA SHEET

Inorganics

Client: Advanced Technology Laboratories-NV
Client Sample ID: N017130-001A/SC-100B-WDR-532
Lab Sample ID: 15J0169-01
Project: ATL-NV

Date Sampled: 10/06/15 14:46

Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	ND	0.0318	0.0500	1		AL	10/09/15 10:35	SM 4500-NH3 D M

ANALYSIS DATA SHEET

Inorganics

Client: Advanced Technology Laboratories-NV
Client Sample ID: N017130-002A/SC-700B-WDR-532
Lab Sample ID: 15J0169-02
Project: ATL-NV

Date Sampled: 10/06/15 14:35 Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	0.0582	0.0318	0.0500	1		AL	10/09/15 10:37	SM 4500-NH3 D M

METHOD BLANK DATA SHEET

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV

Project: ATL-NV

Laboratory ID: 1510190-BLK1

Prepared: 10/09/15 09:11

Preparation: SM 4500-NH3 B

Matrix: Water

Analyzed: 10/09/15 09:59

Instrument: TL01

File ID: 5J09001-018

Batch: 1510190

Sequence: 5J09001

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7664-41-7	Ammonia	ND	0.0318	0.0500	

LCS / LCS DUPLICATE RECOVERY

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV
Project: ATL-NV
Work Order: 15J0169

Matrix: Water
Prep Batch: 1510190

Prep Method: SM 4500-NH3 B
Lab Sample ID: 1510190-BS1

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC.	QC LIMITS REC.
Ammonia	0.400	0.361	90	90 - 110

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

N017130-002A/SC-700B-WDR-532

Client: Advanced Technology Laboratories-NV
 Project: ATL-NV
 Work Order: 15J0169

Matrix: Water
 Prep Batch: 1510190
 Analysis Method: SM 4500-NH3 D M
 Prep Method: SM 4500-NH3 B
 Laboratory ID: 1510190-MS1
 Source Sample ID: 15J0169-02

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	QC LIMITS REC.
Ammonia	0.400	0.0582	0.462	101	75 - 125

ANALYTE	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC. #	% RPD	RPD	QC LIMITS REC.
Ammonia	0.400	0.459	100	0.7	20	75 - 125

* Values outside of QC limits

Duplicate

Matrix:	Water	Laboratory ID:	1510190-DUP1
Prep Batch:	1510190	Initial/Final:	50 mL / 50 mL
Prep Method:	SM 4500-NH3 B	Analysis:	SM 4500-NH3 D M

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Ammonia	0.223	0.225	0.8		20

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(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

Client: Advanced Technology Laboratories - NV

3151 W Post Road

Las Vegas, NV 89118

Attention: Marlon Cartin

Sample: Two (2) Water Samples

Project Name: PG&E Topock Project

Project No.: N/A

Laboratory No.: 15J0169

Date: January 8, 2016

Collected: October 6, 2015

Received: October 8, 2015

ANALYST LIST

METHOD	PARAMETER	ANALYST
SM 4500-NH3 D	Ammonia	Alex Luna



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3151-3153 W Post Rd., Las Vegas, NV 89118
www.all-labs.com
TEL: 7023072659 FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

1550169

QC Level: Level IV

Subcontractor:

Truesdail
3337 Michelson Drive, Suite CN750
Irvine, CA 92612

TEL: (714) 730-6239
FAX: (714) 730-6462
Accel #: _____

Field Sampler: Signed

07-Oct-15

Sample ID	Matrix	Date Collected	Bottle Type	SM4500-NH3D	Requested Tests
N017130-001A	Water	10/6/2015 2:46:00 PM	32OZP	1	
N017130-002A	Water	10/6/2015 2:35:00 PM	32OZP	1	

ALERT !!
Level IV QC

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO#: N17130A. Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: 5-DAY TAT.

Please analyze Ammonia by SM4500NH3D.

Relinquished by: <u>AT</u>	Date/Time: <u>10/7/15 1700</u>
Relinquished by: _____	Date/Time: _____
Received by: <u>GSO TRK# 529527549</u>	Date/Time: _____
Received by: <u>groudi 10/08/15</u>	Date/Time: _____
Received by: _____	Date/Time: _____

10:15 AM 5.2 c

ALERT !!
Level IV QC

Log-in check list
For level III data package

Client: ATL

Lab Number: 15J0169

Received Date: 10/08/15

Sample receiving review

	Yes	No	N/A	Comment
Was special login form received by login personnel?	✓			
Was COC received and signed by client and login personnel?	✓			
Were all sample temperature measured and recorded on COC?	✓			
Did you measure and record the pH on all metals samples on COC?			✓	
Has sample integrity and analysis discrepancy form been filled out completely?	✓			
Were all intercompany yellow forms generated and stamped with "alert level III QC" note?	✓			
Have check-in and check out lists been filled out and attached to appropriate form?	✓			
Were sample containers labeled with TLI numbers, date, and time sampled?	✓			
Did you notify analyst or group leader about short holding time?	✓			
Was a copy of COC attached to all yellow intracompany form?			✓	
For special clients, have all their samples been logged into the Internal COC book?	✓			
Were samples locked in fridge or special storage area?	✓			
Was temperature recorded in the log book?	✓			
Sample receiving Signature: <i>[Signature]</i>				

ALERT !!
Level IV QC

WORK ORDER

Printed: 10/8/15 10:31:31AM

15J0169

Truesdail Laboratories, Inc

Client: Advanced Technology Laboratories-NV
Project: ATL-NV

Project Manager: Lyn Phaerakkakit
Project Number: [none]

Report To:

Advanced Technology Laboratories-NV
Marlon Cartin
3151 W Post Rd
Las Vegas, NV 89118
Phone: (702) 307-2659
Fax: (702) 307-2691

Invoice To:

Advanced Technology Laboratories-NV
Marlon Cartin
3151 W Post Rd
Las Vegas, NV 89118
Phone: (702) 307-2659
Fax: (702) 307-2691

Date Due: 10/19/2015 16:30 (7 day TAT)

Received By: Nirali Patel

Date Received: 10/08/2015 10:15

Logged In By: Nirali Patel

Date Logged In: 10/08/2015 10:28

Samples Received at: 5.2°C

Chain of Custody received Yes Samples intact? Yes

Letter (if sent) matches No Custody seals (if any) No

Requested analyses accepted Yes Analyses within hold time Yes

Samples received in a Yes

Analysis	Due	TAT	Expires	Comments
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15J0169-01 N017130-001A/SC-100B-WDR-532 [Water] Sampled 10/06/2015

14:46 (GMT-08:00) Pacific Time (US &

Ammonia E	10/19/2015 12:00	7	11/03/2015 14:46	
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15J0169-02 N017130-002A/SC-700B-WDR-532 [Water] Sampled 10/06/2015

14:35 (GMT-08:00) Pacific Time (US &

Ammonia E	10/19/2015 12:00	7	11/03/2015 14:35	
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Analytical Bench Log Book

WDR pH Results

If the on site laboratory pH result for T-700 tank is less than pH 6.6 or greater than pH 8.3 the Injection well should be shut down until the problem is fixed.

Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
-------------	------------------	------------------	------------------	------------------	---	--------------------------	--------------------------	--------------------	----------------------------------	-----------

SC-100B-	10-6-15	14:46	10-6-15	14:49	HQ440D	10-6-15	00:05	-57.42	Ryan Phelps	7.36
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Notes:

SC-700B	10-6-15	14:35	10-6-15	14:37	HQ440D	10-6-15	00:05	-57.42	Ryan Phelps	7.10
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Notes:

SC-701	10-6-15	14:25	10-6-15	14:29	HQ440D	10-6-15	00:05	-57.42	Ryan Phelps	8.01
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Notes:

SC-PE-1	10-6-15	14:30	10-6-15		HQ440D	10-6-15	00:05	-57.42	Ryan Phelps	7.48
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Notes:

Tw-3D	10-6-15	14:30	10-6-15		HQ440D	10-6-15	00:05	-57.42	Ryan Phelps	7.50
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Notes:

6										
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Notes:

7										
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Notes:

Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4										
--	--	--	--	--	--	--	--	--	--	--

October 21, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N017146

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on October 06, 2015 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Glen Gesmundo
QA Manager

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA
11060 Artesia Blvd., Ste C, Cerritos, CA 90703
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NEVADA
3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N017146

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

Subcontracted Analyses:

Bioassay was subcontracted to ABC Laboratories-Ventura,CA.

Analytical Comments for EPA 6010B:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium on QC samples N017131-001A-MS and N017131-001A-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for some analytes on QC samples N017131-001A-MS and N017131-001A-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 7199:

Matrix Spike Duplicate (MSD) is outside recovery criteria on QC sample N017131-001A-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



ASSET Laboratories

Date: 21-Oct-15

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N017146
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N017146-001A	Phase Separator-Sludge-532	Soil	10/6/2015 2:00:00 PM	10/6/2015	10/21/2015
N017146-001B	Phase Separator-Sludge-532	Soil	10/6/2015 2:00:00 PM	10/6/2015	10/21/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	Phase Separator-Sludge-532
Lab Order:	N017146	Collection Date:	10/6/2015 2:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	SOIL
Lab ID:	N017146-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY**EPA 300.0**

RunID: IC2_151008B	QC Batch: R103486	PrepDate	Analyst: QBM
Fluoride	28 0.62 2.6	mg/Kg-dry	1 10/8/2015 03:12 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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CLIENT: CH2M HILL
 Work Order: N017146
 Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_S

Sample ID	MB-R103486	SampType:	MBLK	TestCode:	300_S	Units:	mg/Kg	Prep Date:		RunNo:	103486		
Client ID:	PBS	Batch ID:	R103486	TestNo:	EPA 300.0			Analysis Date:	10/8/2015	SeqNo:	2102053		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride ND 1.0

Sample ID	LCS-R103486	SampType:	LCS	TestCode:	300_S	Units:	mg/Kg	Prep Date:		RunNo:	103486		
Client ID:	LCSS	Batch ID:	R103486	TestNo:	EPA 300.0			Analysis Date:	10/8/2015	SeqNo:	2102054		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 26.440 1.0 25.00 0 106 90 110

Sample ID	N017131-001ADUP	SampType:	DUP	TestCode:	300_S	Units:	mg/Kg-dry	Prep Date:		RunNo:	103486		
Client ID:	ZZZZZZ	Batch ID:	R103486	TestNo:	EPA 300.0			Analysis Date:	10/8/2015	SeqNo:	2102058		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 27.601 3.1 27.60 0 20

Sample ID	N017146-001AMS	SampType:	MS	TestCode:	300_S	Units:	mg/Kg-dry	Prep Date:		RunNo:	103486		
Client ID:	ZZZZZZ	Batch ID:	R103486	TestNo:	EPA 300.0			Analysis Date:	10/8/2015	SeqNo:	2102060		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

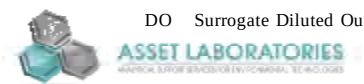
Fluoride 81.395 2.6 64.07 27.63 83.9 80 120

Sample ID	N017146-001AMSD	SampType:	MSD	TestCode:	300_S	Units:	mg/Kg-dry	Prep Date:		RunNo:	103486		
Client ID:	ZZZZZZ	Batch ID:	R103486	TestNo:	EPA 300.0			Analysis Date:	10/8/2015	SeqNo:	2102061		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 82.420 2.6 64.07 27.63 85.5 80 120 81.39 1.25 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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ASSET Laboratories
ANALYTICAL RESULTS

Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	Phase Separator-Sludge-532
Lab Order:	N017146	Collection Date:	10/6/2015 2:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	SOIL
Lab ID:	N017146-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP

	EPA 3050B		EPA 6010B			
RunID: ICP2_151008B	QC Batch: 52625		PrepDate	10/7/2015	Analyst: CEI	
Antimony	ND	0.18	5.1	mg/Kg-dry	1	10/8/2015 04:38 PM
Arsenic	12	0.13	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Barium	57	0.020	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Beryllium	ND	0.041	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Cadmium	ND	0.13	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Chromium	2700	0.17	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Cobalt	6.7	0.065	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Copper	240	0.097	5.1	mg/Kg-dry	1	10/8/2015 04:38 PM
Lead	ND	0.089	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Manganese	440	0.15	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Molybdenum	7.6	0.046	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Nickel	44	0.033	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Selenium	ND	0.17	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Silver	ND	0.039	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Thallium	ND	0.12	5.1	mg/Kg-dry	1	10/8/2015 04:38 PM
Vanadium	30	0.20	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM
Zinc	22	0.21	2.6	mg/Kg-dry	1	10/8/2015 04:38 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
 Work Order: N017146
 Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

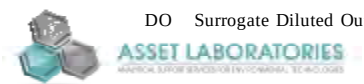
TestCode: 6010_SPGE

Sample ID	MB-52625	SampType:	MBLK	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	10/7/2015	RunNo:	103477
Client ID:	PBS	Batch ID:	52625	TestNo:	EPA 6010B EPA 3050B	Analysis Date:	10/8/2015	SeqNo:	2102017		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.546	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Manganese	ND	1.0									
Molybdenum	0.093	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	0.547	1.0									
Thallium	0.189	2.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID	LCS-52625	SampType:	LCS	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	10/7/2015	RunNo:	103477
Client ID:	LCSS	Batch ID:	52625	TestNo:	EPA 6010B EPA 3050B	Analysis Date:	10/8/2015	SeqNo:	2102019		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	24.040	2.0	25.00	0	96.2	85	115				
Arsenic	24.428	1.0	25.00	0	97.7	85	115				
Barium	24.684	1.0	25.00	0	98.7	85	115				
Beryllium	24.843	1.0	25.00	0	99.4	85	115				
Cadmium	24.483	1.0	25.00	0	97.9	85	115				
Chromium	24.626	1.0	25.00	0	98.5	85	115				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017146
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

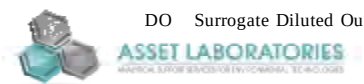
TestCode: 6010_SPGE

Sample ID	LCS-52625	SampType:	LCS	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	10/7/2015	RunNo:	103477
Client ID:	LCSS	Batch ID:	52625	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	10/8/2015	SeqNo:	2102019
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cobalt	25.432	1.0	25.00	0	102	85	115				
Copper	24.200	2.0	25.00	0	96.8	85	115				
Lead	24.542	1.0	25.00	0	98.2	85	115				
Manganese	50.060	1.0	50.00	0	100	85	115				
Molybdenum	24.344	1.0	25.00	0	97.4	85	115				
Nickel	25.728	1.0	25.00	0	103	85	115				
Selenium	24.522	1.0	25.00	0	98.1	85	115				
Silver	24.329	1.0	25.00	0	97.3	85	115				
Thallium	24.155	2.0	25.00	0	96.6	85	115				
Vanadium	24.437	1.0	25.00	0	97.7	85	115				
Zinc	25.405	1.0	25.00	0	102	85	115				

Sample ID	N017131-001A-MS	SampType:	MS	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:	10/7/2015	RunNo:	103477
Client ID:	ZZZZZZ	Batch ID:	52625	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	10/8/2015	SeqNo:	2102025
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	81.117	6.2	76.92	6.102	97.5	75	125				
Arsenic	89.536	3.1	76.92	14.48	97.6	75	125				
Barium	125.859	3.1	76.92	57.69	88.6	75	125				
Beryllium	68.243	3.1	76.92	0	88.7	75	125				
Cadmium	67.077	3.1	76.92	0	87.2	75	125				
Chromium	3351.385	3.1	76.92	3391	-52.0	75	125				S
Cobalt	80.186	3.1	76.92	6.629	95.6	75	125				
Copper	249.742	6.2	76.92	149.2	131	75	125				S
Lead	69.351	3.1	76.92	0	90.2	75	125				
Manganese	575.583	3.1	153.8	404.5	111	75	125				
Molybdenum	76.957	3.1	76.92	8.977	88.4	75	125				
Nickel	112.768	3.1	76.92	38.97	95.9	75	125				
Selenium	61.303	3.1	76.92	0	79.7	75	125				
Silver	57.758	3.1	76.92	0	75.1	75	125				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		



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CLIENT: CH2M HILL
Work Order: N017146
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID	N017131-001A-MS	SampType:	MS	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:	10/7/2015	RunNo:	103477
Client ID:	ZZZZZZ	Batch ID:	52625	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	10/8/2015	SeqNo:	2102025
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Thallium	69.872	6.2	76.92	0	90.8	75	125				
Vanadium	103.302	3.1	76.92	33.23	91.1	75	125				
Zinc	82.584	3.1	76.92	17.92	84.1	75	125				

Sample ID	N017131-001A-MSD	SampType:	MSD	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:	10/7/2015	RunNo:	103477
Client ID:	ZZZZZZ	Batch ID:	52625	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	10/8/2015	SeqNo:	2102026
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	80.664	6.2	77.42	6.102	96.3	75	125	81.12	0.560	20	
Arsenic	89.186	3.1	77.42	14.48	96.5	75	125	89.54	0.391	20	
Barium	123.840	3.1	77.42	57.69	85.4	75	125	125.9	1.62	20	
Beryllium	69.717	3.1	77.42	0	90.0	75	125	68.24	2.14	20	
Cadmium	67.343	3.1	77.42	0	87.0	75	125	67.08	0.395	20	
Chromium	3372.835	3.1	77.42	3391	-24.0	75	125	3351	0.638	20	S
Cobalt	79.859	3.1	77.42	6.629	94.6	75	125	80.19	0.408	20	
Copper	251.184	6.2	77.42	149.2	132	75	125	249.7	0.576	20	S
Lead	70.011	3.1	77.42	0	90.4	75	125	69.35	0.947	20	
Manganese	571.325	3.1	154.8	404.5	108	75	125	575.6	0.743	20	
Molybdenum	76.870	3.1	77.42	8.977	87.7	75	125	76.96	0.113	20	
Nickel	111.393	3.1	77.42	38.97	93.5	75	125	112.8	1.23	20	
Selenium	63.009	3.1	77.42	0	81.4	75	125	61.30	2.74	20	
Silver	57.625	3.1	77.42	0	74.4	75	125	57.76	0.231	20	S
Thallium	69.565	6.2	77.42	0	89.8	75	125	69.87	0.440	20	
Vanadium	103.412	3.1	77.42	33.23	90.6	75	125	103.3	0.106	20	
Zinc	83.898	3.1	77.42	17.92	85.2	75	125	82.58	1.58	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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"Serving Clients with Passion and Professionalism"

ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	Phase Separator-Sludge-532
Lab Order:	N017146	Collection Date:	10/6/2015 2:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	SOIL
Lab ID:	N017146-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
	EPA 3060A		EPA 7199				
RunID: IC1_151008A	QC Batch: 52635		PrepDate		10/7/2015	Analyst: RB	
Hexavalent Chromium	57	0.13	2.6		mg/Kg-dry	5	10/8/2015 04:26 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
Work Order: N017146
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 7199_S_PGE**

Sample ID MB-52635	SampType: MBLK	TestCode: 7199_S_PGE	Units: mg/Kg	Prep Date: 10/7/2015	RunNo: 103493
Client ID: PBS	Batch ID: 52635	TestNo: EPA 7199	EPA 3060A	Analysis Date: 10/8/2015	SeqNo: 2102439
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID LCS-52635	SampType: LCS	TestCode: 7199_S_PGE	Units: mg/Kg	Prep Date: 10/7/2015	RunNo: 103493
Client ID: LCSS	Batch ID: 52635	TestNo: EPA 7199	EPA 3060A	Analysis Date: 10/8/2015	SeqNo: 2102440
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 3.923 0.20 4.000 0 98.1 80 120

Sample ID N017131-001A-MS_I	SampType: MS	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 10/7/2015	RunNo: 103493
Client ID: ZZZZZZ	Batch ID: 52635	TestNo: EPA 7199	EPA 3060A	Analysis Date: 10/8/2015	SeqNo: 2102441
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 2459.388 31 2153 74.48 111 75 125

Sample ID N017131-001AREP	SampType: DUP	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 10/7/2015	RunNo: 103493
Client ID: ZZZZZZ	Batch ID: 52635	TestNo: EPA 7199	EPA 3060A	Analysis Date: 10/8/2015	SeqNo: 2102445
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

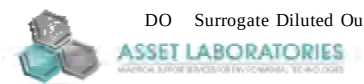
Hexavalent Chromium 76.035 3.1 74.48 2.06 20

Sample ID N017131-001A-DUP	SampType: DUP	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 10/7/2015	RunNo: 103493
Client ID: ZZZZZZ	Batch ID: 52635	TestNo: EPA 7199	EPA 3060A	Analysis Date: 10/8/2015	SeqNo: 2102446
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 85.477 3.1 74.48 13.7 20

Qualifiers:

- | | | |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range | H Holding times for preparation or analysis exceeded |
| ND Not Detected at the Reporting Limit | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out | Calculations are based on raw values | |



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CLIENT: CH2M HILL
Work Order: N017146
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7199_S_PGE

Sample ID	N017146-001AREP	SampType:	DUP	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	10/7/2015	RunNo:	103493
Client ID:	ZZZZZZ	Batch ID:	52635	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	10/8/2015	SeqNo:	2102448
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	57.354	2.6								56.73	1.10	20
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Sample ID	N017131-001A-MS	SampType:	MS	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	10/7/2015	RunNo:	103493
Client ID:	ZZZZZZ	Batch ID:	52635	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	10/8/2015	SeqNo:	2102449
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	89.624	3.1	12.30	74.48	123	75	125					
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Sample ID	N017131-001A-MSD	SampType:	MSD	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	10/7/2015	RunNo:	103493
Client ID:	ZZZZZZ	Batch ID:	52635	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	10/8/2015	SeqNo:	2102450
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	94.208	3.1	12.35	74.48	160	75	125	89.62	4.99	20	S
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Qualifiers:

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ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	Phase Separator-Sludge-532
Lab Order:	N017146	Collection Date:	10/6/2015 2:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	SOIL
Lab ID:	N017146-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL MERCURY BY COLD VAPOR TECHNIQUE**EPA 7471A**

RunID: AA1_151009A	QC Batch: 52627	PrepDate	10/8/2015	Analyst: CEI	
Mercury	ND 0.0079	0.26	mg/Kg-dry	1	10/9/2015 09:45 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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CLIENT: CH2M HILL
Work Order: N017146
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S_PGE

Sample ID	MB-52627	SampType:	MBLK	TestCode:	7471_S_PGE	Units:	mg/Kg	Prep Date:	10/8/2015	RunNo:	103495			
Client ID:	PBS	Batch ID:	52627	TestNo:	EPA 7471A			Analysis Date:	10/9/2015	SeqNo:	2102474			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.005		0.10										

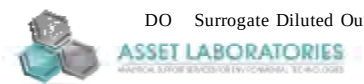
Sample ID	LCS-52627	SampType:	LCS	TestCode:	7471_S_PGE	Units:	mg/Kg	Prep Date:	10/8/2015	RunNo:	103495			
Client ID:	LCSS	Batch ID:	52627	TestNo:	EPA 7471A			Analysis Date:	10/9/2015	SeqNo:	2102475			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.381		0.10	0.4167	0		91.4	75	125				

Sample ID	N017131-001A-MS	SampType:	MS	TestCode:	7471_S_PGE	Units:	mg/Kg-dry	Prep Date:	10/8/2015	RunNo:	103495			
Client ID:	ZZZZZZ	Batch ID:	52627	TestNo:	EPA 7471A			Analysis Date:	10/9/2015	SeqNo:	2102476			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		1.255		0.31	1.288	0.06808		92.2	75	125				

Sample ID	N017131-001A-MSD	SampType:	MSD	TestCode:	7471_S_PGE	Units:	mg/Kg-dry	Prep Date:	10/8/2015	RunNo:	103495			
Client ID:	ZZZZZZ	Batch ID:	52627	TestNo:	EPA 7471A			Analysis Date:	10/9/2015	SeqNo:	2102477			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		1.218		0.31	1.279	0.06808		89.8	75	125	1.255	3.04	20	

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 21-Oct-15

CLIENT:	CH2M HILL	Client Sample ID:	Phase Separator-Sludge-532
Lab Order:	N017146	Collection Date:	10/6/2015 2:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	SOIL
Lab ID:	N017146-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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PERCENT MOISTURE**D2216**

RunID: WETCHEM_151007F	QC Batch: R103458	PrepDate	Analyst: LR
Percent Moisture	60.98 0.1000 0.1000	wt%	1 10/7/2015 12:00 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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CLIENT: CH2M HILL
Work Order: N017146
Project: PG&E Topock, 658274.01.IM.OP.00

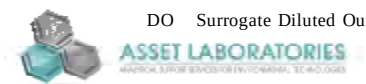
ANALYTICAL QC SUMMARY REPORT**TestCode: PMOIST**

Sample ID	MB-R103458	SampType:	MBLK	TestCode:	PMOIST	Units:	wt%	Prep Date:		RunNo:	103458		
Client ID:	PBS	Batch ID:	R103458	TestNo:	D2216			Analysis Date:	10/7/2015	SeqNo:	2100662		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture		ND		0.1000									

Sample ID	N017131-001ADUP	SampType:	DUP	TestCode:	PMOIST	Units:	wt%	Prep Date:		RunNo:	103458		
Client ID:	ZZZZZZ	Batch ID:	R103458	TestNo:	D2216			Analysis Date:	10/7/2015	SeqNo:	2100664		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture		70.698		0.1000						67.65	4.41	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			

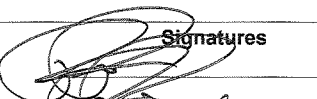


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Project Name PG&E Topock Location PG&E Topock Project Number 658274.01.IM.OP.00 Project Manager Scott O'Donnell Sample Manager Shawn Duffy Task Order Project IM3PLANT-ARAR-WDR-532-SLUDGE Turnaround Time 10 Days Shipping Date: COC Number: 532-B				Container: Glass Jar(8 oz) Preservatives: none Filtered: NA Holding Time: NA				250ml Glass 4°C 4 oz jar 4°C NA 14 NA 180				Metals (60103 Soil) Title 22, Mercury, Mn Bloassay (Bloassay, 96hr Acute) FI Anions (E300, Soil) FI Metals (7199)								Number of Containers		COMMENTS	
DATE TIME Matrix																							
Phase Separator-Sludge-532				10-6-15 1400 Soil				X X X X				NO17146-1											
																TOTAL NUMBER OF CONTAINERS		6					

Signatures		Date/Time		Shipping Details		ATTN:		Special Instructions:	
Approved by 		10-6-15 1500		Method of Shipment: FedEx		Sample Custody		Sample composited from July, August, and September bins	
Sampled by 		10-6-15 1500		On Ice: ☒ yes / no					
Relinquished by 		10-6-15 1708		Airbill No:		1.1°C, 1.8°C			
Received by 		10/6/15 1708		Lab Name:		IR#1			
Relinquished by 		10/6/15 1911		Lab Phone:					
Received by 		10/6/15 1911						Report Copy to Shawn Duffy 530-229-3303	

ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 10/6/2015

Workorder: N017146

Rep sample Temp (Deg C): 1.1/1.8

IR Gun ID: 1

Temp Blank: ☒ Yes ☐ No

Carrier name: ASSET

Last 4 digits of Tracking No.: NA

Packing Material Used: None

Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

- | | | | |
|---|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition? | Yes ☒ | No ☐ | Not Present ☐ |
| 2. Custody seals intact, signed, dated on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☒ |
| 3. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☒ |
| 4. Chain of custody present? | Yes ☒ | No ☐ | |
| 5. Sampler's name present in COC? | Yes ☒ | No ☐ | |
| 6. Chain of custody signed when relinquished and received? | Yes ☒ | No ☐ | |
| 7. Chain of custody agrees with sample labels? | Yes ☒ | No ☐ | |
| 8. Samples in proper container/bottle? | Yes ☒ | No ☐ | |
| 9. Sample containers intact? | Yes ☒ | No ☐ | |
| 10. Sufficient sample volume for indicated test? | Yes ☒ | No ☐ | |
| 11. All samples received within holding time? | Yes ☒ | No ☐ | |
| 12. Temperature of rep sample or Temp Blank within acceptable limit? | Yes ☒ | No ☐ | NA ☐ |
| 13. Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | NA ☒ |
| 14. Water - pH acceptable upon receipt?
Example: pH > 12 for (CN,S); pH<2 for Metals | Yes ☐ | No ☐ | NA ☒ |
| 15. Did the bottle labels indicate correct preservatives used? | Yes ☐ | No ☐ | NA ☒ |
| 16. Were there Non-Conformance issues at login? | Yes ☐ | No ☐ | NA ☒ |
| Was Client notified? | Yes ☐ | No ☐ | NA ☒ |

Comments

Checklist Completed B forMBC PA 10/8/2015

Reviewed By: rog 10/12/15



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CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV

Subcontractor:

ABC Laboratories
29 North Olive Street
Ventura, CA 93001

TEL: (805) 643-5621

FAX: (805) 643-2930

Acct #: 21027

Field Sampler: SIGNED

07-Oct-15

				Requested Tests		
Sample ID	Matrix	Date Collected	Bottle Type	Bioassay		
N017146-001B / Phase Separator-Sludge-532	Soil	10/6/2015 2:50:00 PM	8OZG	1		

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#: N17146A. Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: 5-DAY TAT.

Please analyze Bioassay.

Date/Time

Date/Time

Relinquished by:

10/7/15 1700

Received by:

GSO TRK#529527573

Relinquished by:

Received by:

WORK ORDER: N017146

ANALYST LIST

NAME	TEST METHOD
Quennie Manimtim	EPA 300
Claire Ignacio	EPA 6010B, EPA 7471A
Ryan Balilu	EPA 7199
Lilia Ramit	ASTM D2216



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October 13, 2015

Mr. Marlon Cartin
Asset Laboratories
3151 W Post Rd.
Las Vegas, NV 89118

Dear Mr. Cartin:

We are pleased to present the enclosed acute bioassay report. The test was conducted under the guidelines prescribed in "Static Acute Bioassay Procedures for Hazardous Waste Samples" California Department of Fish and Game, 1988. The results were as follows:

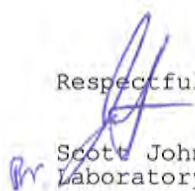
CLIENT:	Asset Laboratories
SAMPLE I.D.:	N017146-001B
DATE RECEIVED:	10/08/15
ABC LAB. NO.:	AST1015.043

DOHS (TITLE 22) HAZARDOUS WASTE BIOASSAY USING FATHEAD MINNOWS

96 HOUR LC50 = >750 mg/l

STATUS = Pass

Respectfully yours,


Scott Johnson
Laboratory Director

AQUATIC BIOASSAY AND CONSULTING LABORATORIES, INC.
29 North Olive Street
Ventura, CA 93001
(805) 643-5621

DOHS Bioassay for Hazardous Waste (Title 22)

SAMPLE INFORMATION

CLIENT:	Asset Laboratories	Date:	10/08/15
SAMPLE I.D.:	N017146-001B	LAB #	AST1015.043

WATER QUALITY

DILUTION WATER	Reconst. Fresh	AERATION:	Single Bubble Air
CONTROL HARDNESS		CONTROL ALKALINITY	
Beg:	46 mg/l	End:	45 mg/l
Beg:	33 mg/l	End:	33 mg/l
SAMPLE HARDNESS		SAMPLE ALKALINITY	
Beg:	63 mg/l	End:	87 mg/l
Beg:	50 mg/l	End:	74 mg/l

ORGANISM INFORMATION

SPECIES:	Pimephales promelas	DATE REC'D:	09/22/15
COMMON NAME	Fathead Minnow	AVERAGE LNTH:	40 mm
SOURCE:	Thomas Fish Co.	AVERAGE WT:	1.05 gm
CARRIER:	California Overnight	NO. FISH / TANK:	10

TEST DATA

	INITIAL				24 HOURS				48 HOURS				72 HOURS				96 HOURS			
DATE:	10/09/15				10/10/15				10/11/15				10/12/15				10/13/15			
TIME:	1302				1230				1230				1240				1130			
CONC.	Dis. Oxy.	Temp. dg.C	pH		Dis. Oxy.	Temp. dg.C	pH	#Fish Dead	Dis. Oxy.	Temp. dg.C	pH	#Fish Dead	Dis. Oxy.	Temp. dg.C	pH	#Fish Dead	Dis. Oxy.	Temp. dg.C	pH	#Fish Dead
0 (Con.)	8.2	19.8	7.2		8.1	19.7	7.3	0	8.0	19.8	7.5	0	7.8	18.9	7.2	0	8.5	18.5	7.3	0
400 mg/l	7.7	19.7	7.6		7.8	19.8	7.7	0	7.7	19.8	7.6	0	8.0	18.8	7.3	0	8.5	18.4	7.8	0
400 mg/l	7.8	19.7	7.6		7.8	19.8	7.7	0	7.7	19.8	7.7	0	8.0	18.9	7.3	0	8.4	18.4	7.7	0
750 mg/l	7.8	19.8	7.6		7.7	19.8	7.7	0	7.7	19.8	7.7	0	7.8	18.9	7.3	0	8.4	18.5	7.7	0
750 mg/l	8.0	19.7	7.6		7.7	19.8	7.6	0	7.7	19.8	7.7	0	7.8	18.9	7.3	0	8.2	18.6	7.7	0

FINAL DATA

TOTAL MORTALITIES	
0 (Con.)	0
400 mg/l	0
400 mg/l	0
750 mg/l	0
750 mg/l	0

FINAL RESULTS

96 HOUR LC50 =	>750 mg/l
STATUS =	Pass
CALCULATION METHOD =	Binomial Test

Joe Freas, Senior Toxicologist

Date 10/13/15



ASSET Laboratories
3151-3153 W Post Rd., Las Vegas, NV 89118
www.afl-labs.com
TEL: 7023072659 FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Subcontractor:

ABC Laboratories
29 North Olive Street
Ventura, CA 93001

TEL: (805) 643-6621
FAX: (805) 643-2930
Acct #: 21027

QC Level: Level IV

Field Sampler: SIGNED

07-Oct-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests	
				Bioassay	
N017146-001B	/ Phase Separator-Sludge-532	Soil	10/6/2015 2:50:00 PM	80ZG	1

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#: N17146A. Please email Invoices and Account Receivable Statements to AssetAP@assellaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assellaboratories.com by: 5-DAY TAT.

Please analyze Bioassay.

Date/Time		Date/Time	
Relinquished by:	10/7/15 1700	Received by:	GSO TRK # 529527573
Relinquished by:		Received by:	10/8/15 16030

November 18, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N017469

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on November 03, 2015 by ASSET Laboratories .
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Glen Gesmundo
QA Manager

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in
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NEVADA
3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N017469

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

Subcontracted Analyses:

Ammonia was subcontracted to Truesdail-Tustin, CA.

Analytical Comments for EPA 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Barium on QC samples N017471-001E-MS and N017471-001E-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 300.0:

Dilution was necessary on sample N017469-002 due to precipitation upon the addition of eluent.



ASSET Laboratories

Date: 18-Nov-15

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N017469
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N017469-001A	SC-100B-WDR-533	Water	11/3/2015 10:05:00 AM	11/3/2015	11/18/2015
N017469-001B	SC-100B-WDR-533	Water	11/3/2015 10:05:00 AM	11/3/2015	11/18/2015
N017469-001C	SC-100B-WDR-533	Water	11/3/2015 10:05:00 AM	11/3/2015	11/18/2015
N017469-002A	SC-700B-WDR-533	Water	11/3/2015 9:50:00 AM	11/3/2015	11/18/2015
N017469-002B	SC-700B-WDR-533	Water	11/3/2015 9:50:00 AM	11/3/2015	11/18/2015
N017469-002C	SC-700B-WDR-533	Water	11/3/2015 9:50:00 AM	11/3/2015	11/18/2015
N017469-002D	SC-700B-WDR-533	Water	11/3/2015 9:50:00 AM	11/3/2015	11/18/2015
N017469-002E	SC-700B-WDR-533	Water	11/3/2015 9:50:00 AM	11/3/2015	11/18/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 10:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_151104A	QC Batch: R103974	PrepDate	Analyst: LR			
Specific Conductance	7500	0.10	0.10	umhos/cm	1	11/4/2015 11:20 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 9:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_151104A	QC Batch: R103974	PrepDate	Analyst: LR			
Specific Conductance	7600	0.10	0.10	umhos/cm	1	11/4/2015 11:20 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 120.1_WPGE**

Sample ID	N017469-001ADUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	103974		
Client ID:	ZZZZZZ	Batch ID:	R103974	TestNo:	EPA 120.1			Analysis Date:	11/4/2015	SeqNo:	2127303		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		7450.000		0.10						7490	0.535	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 10:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: WETCHEM_151104D	QC Batch: 52943	PrepDate	11/4/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L
			1	11/4/2015 02:12 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 9:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: WETCHEM_151104D	QC Batch: 52943	PrepDate	11/4/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4100	50	50	mg/L
			1	11/4/2015 02:12 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 160.1_2540C_W**

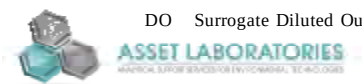
Sample ID MB-52943	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 11/4/2015	RunNo: 103977						
Client ID: PBW	Batch ID: 52943	TestNo: SM2540C		Analysis Date: 11/4/2015	SeqNo: 2127320						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-52943	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 11/4/2015	RunNo: 103977						
Client ID: LCSW	Batch ID: 52943	TestNo: SM2540C		Analysis Date: 11/4/2015	SeqNo: 2127321						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	979.000	10	1000	0	97.9	80	120				

Sample ID N017470-002ADUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 11/4/2015	RunNo: 103977						
Client ID: ZZZZZZ	Batch ID: 52943	TestNo: SM2540C		Analysis Date: 11/4/2015	SeqNo: 2127327						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4425.000	50						4605	3.99	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 9:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP
EPA 200.7

RunID: ICP2_151116E	QC Batch: 52937	PrepDate	11/4/2015	Analyst: CEI
Aluminum	ND	12	50	µg/L
Boron	1000	11	100	µg/L
Iron	ND	17	20	µg/L

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
 Work Order: N017469
 Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPBB

Sample ID	MB-52937	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104197
Client ID:	PBW	Batch ID:	52937	TestNo:	EPA 200.7			Analysis Date:	11/16/2015	SeqNo:	2140307
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	ND	50									
Boron	12.195	100									
Iron	ND	20									

Sample ID	LCS1-52937	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104197
Client ID:	LCSW	Batch ID:	52937	TestNo:	EPA 200.7			Analysis Date:	11/16/2015	SeqNo:	2140308
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	10224.791	50	10000	0	102	85	115				
Boron	5002.822	100	5000	0	100	85	115				
Iron	101.114	20	100.0	0	101	85	115				

Sample ID	N017469-002E-MS1	SampType:	MS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104197
Client ID:	ZZZZZZ	Batch ID:	52937	TestNo:	EPA 200.7			Analysis Date:	11/16/2015	SeqNo:	2140312
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

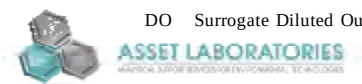
Aluminum	11466.426	50	10000	0	115	75	125				
Boron	6406.806	100	5000	1043	107	75	125				
Iron	105.231	20	100.0	0	105	75	125				

Sample ID	N017469-002E-MSD	SampType:	MSD	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104197
Client ID:	ZZZZZZ	Batch ID:	52937	TestNo:	EPA 200.7			Analysis Date:	11/16/2015	SeqNo:	2140313
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	11389.671	50	10000	0	114	75	125	11470	0.672	20	
Boron	6443.946	100	5000	1043	108	75	125	6407	0.578	20	
Iron	104.904	20	100.0	0	105	75	125	105.2	0.311	20	

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 10:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID:	ICP7_151105B	QC Batch:	52939	PrepDate	11/4/2015	Analyst:	CEI
Manganese	12	0.023	0.50	µg/L	1	11/5/2015 04:46 PM	

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT: CH2M HILL
Lab Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017469-002

Client Sample ID: SC-700B-WDR-533
Collection Date: 11/3/2015 9:50:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151105B	QC Batch: 52939	PrepDate	11/4/2015	Analyst: CEI		
Antimony	ND	0.026	0.50	µg/L	1	11/5/2015 04:57 PM
Arsenic	ND	0.016	0.10	µg/L	1	11/5/2015 04:57 PM
Barium	11	0.072	1.0	µg/L	1	11/5/2015 04:57 PM
Copper	ND	0.26	1.0	µg/L	1	11/5/2015 04:57 PM
Lead	ND	0.053	1.0	µg/L	1	11/5/2015 04:57 PM
Manganese	5.1	0.023	0.50	µg/L	1	11/5/2015 04:57 PM
Molybdenum	23	0.029	0.50	µg/L	1	11/5/2015 04:57 PM
Nickel	ND	0.038	1.0	µg/L	1	11/5/2015 04:57 PM
Zinc	ND	0.039	10	µg/L	1	11/5/2015 04:57 PM

Qualifiers: B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference
 DO Surrogate Diluted Out
 E Value above quantitation range
 ND Not Detected at the Reporting Limit
 Results are wet unless otherwise specified



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NEVADA
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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
 Work Order: N017469
 Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-52939	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104029
Client ID:	PBW	Batch ID:	52939	TestNo:	EPA 200.8			Analysis Date:	11/5/2015	SeqNo:	2129852
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	ND	0.50									
Arsenic	ND	0.10									
Barium	ND	1.0									
Copper	ND	1.0									
Lead	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Nickel	ND	1.0									
Zinc	ND	10									

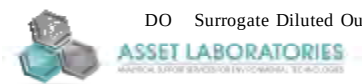
Sample ID	LCS-52939	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104029
Client ID:	LCSW	Batch ID:	52939	TestNo:	EPA 200.8			Analysis Date:	11/5/2015	SeqNo:	2129853
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	9.592	0.50	10.00	0	95.9	85	115				
Arsenic	9.563	0.10	10.00	0	95.6	85	115				
Barium	97.329	1.0	100.0	0	97.3	85	115				
Copper	9.423	1.0	10.00	0	94.2	85	115				
Lead	9.578	1.0	10.00	0	95.8	85	115				
Manganese	93.698	0.50	100.0	0	93.7	85	115				
Molybdenum	9.419	0.50	10.00	0	94.2	85	115				
Nickel	9.560	1.0	10.00	0	95.6	85	115				
Zinc	97.907	10	100.0	0	97.9	85	115				

Sample ID	N017471-001E-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104029
Client ID:	ZZZZZZ	Batch ID:	52939	TestNo:	EPA 200.8			Analysis Date:	11/5/2015	SeqNo:	2129861
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

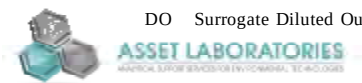
Sample ID	N017471-001E-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 11/4/2015	RunNo: 104029					
Client ID:	ZZZZZZ	Batch ID: 52939	TestNo: EPA 200.8	Analysis Date: 11/5/2015	SeqNo: 2129861						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.006	0.50	10.00	0.06024	99.5	75	125				
Arsenic	42.803	0.10	10.00	32.29	105	75	125				
Copper	7.874	1.0	10.00	0	78.7	75	125				
Lead	9.035	1.0	10.00	0	90.4	75	125				
Manganese	86.033	0.50	100.0	0	86.0	75	125				
Molybdenum	11.985	0.50	10.00	1.085	109	75	125				
Nickel	9.250	1.0	10.00	0.4005	88.5	75	125				
Zinc	97.238	10	100.0	4.279	93.0	75	125				

Sample ID	N017471-001E-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 11/4/2015	RunNo: 104029					
Client ID: ZZZZZZ	Batch ID: 52939	TestNo: EPA 200.8	Analysis Date: 11/5/2015	SeqNo: 2129864							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	428.119	5.0	100.0	300.1	128	75	125				S

Sample ID	N017471-001E-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 11/4/2015	RunNo: 104029					
Client ID: ZZZZZZ	Batch ID: 52939	TestNo: EPA 200.8	Analysis Date: 11/5/2015	SeqNo: 2129865							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.035	0.50	10.00	0.06024	99.7	75	125	10.01	0.290	20	
Arsenic	42.030	0.10	10.00	32.29	97.4	75	125	42.80	1.82	20	
Copper	7.821	1.0	10.00	0	78.2	75	125	7.874	0.678	20	
Lead	9.041	1.0	10.00	0	90.4	75	125	9.035	0.0663	20	
Manganese	87.233	0.50	100.0	0	87.2	75	125	86.03	1.38	20	
Molybdenum	11.930	0.50	10.00	1.085	108	75	125	11.99	0.466	20	
Nickel	9.261	1.0	10.00	0.4005	88.6	75	125	9.250	0.128	20	
Zinc	96.543	10	100.0	4.279	92.3	75	125	97.24	0.718	20	

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

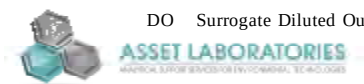
ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N017471-001E-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 11/4/2015	RunNo: 104029					
Client ID: ZZZZZZ	Batch ID: 52939	TestNo: EPA 200.8	Analysis Date: 11/5/2015	SeqNo: 2129866							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	435.646	5.0	100.0	300.1	135	75	125	428.1	1.74	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 10:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: IC6_151106B	QC Batch: R104087	PrepDate	Analyst: RB
Hexavalent Chromium	560 0.75	10 µg/L	50 11/6/2015 08:37 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151105B	QC Batch: 52939	PrepDate	11/4/2015	Analyst: CEI
Chromium	520 0.43	5.0 µg/L	5	11/5/2015 04:52 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 9:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: IC6_151106B	QC Batch: R104087	PrepDate	Analyst: RB
Hexavalent Chromium	ND	0.015	0.20
		µg/L	1
			11/6/2015 08:57 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151105B	QC Batch: 52937	PrepDate	11/4/2015	Analyst: CEI
Chromium	ND	0.086	1.0	
		µg/L	1	
				11/5/2015 04:57 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W_CRPGE**

Sample ID	MB-52939	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104029		
Client ID:	PBW	Batch ID:	52939	TestNo:	EPA 200.8			Analysis Date:	11/5/2015	SeqNo:	2129907		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		ND		1.0									

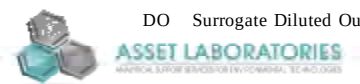
Sample ID	LCS-52939	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104029		
Client ID:	LCSW	Batch ID:	52939	TestNo:	EPA 200.8			Analysis Date:	11/5/2015	SeqNo:	2129908		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.528		1.0	10.00	0	95.3	85	115				

Sample ID	N017471-001E-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104029		
Client ID:	ZZZZZZ	Batch ID:	52939	TestNo:	EPA 200.8			Analysis Date:	11/5/2015	SeqNo:	2129916		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.111		1.0	10.00	0	91.1	75	125				

Sample ID	N017471-001E-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	11/4/2015	RunNo:	104029		
Client ID:	ZZZZZZ	Batch ID:	52939	TestNo:	EPA 200.8			Analysis Date:	11/5/2015	SeqNo:	2129920		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.157		1.0	10.00	0	91.6	75	125	9.111	0.498	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R104087	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104087			
Client ID:	PBW	Batch ID:	R104087	TestNo:	EPA 218.6			Analysis Date:	11/6/2015	SeqNo:	2133915			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R104087	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104087			
Client ID:	LCSW	Batch ID:	R104087	TestNo:	EPA 218.6			Analysis Date:	11/6/2015	SeqNo:	2133916			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.941 0.20 5.000 0 98.8 90 110

Sample ID	N017472-019ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104087			
Client ID:	ZZZZZZ	Batch ID:	R104087	TestNo:	EPA 218.6			Analysis Date:	11/6/2015	SeqNo:	2133923			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 3.921 0.20 3.844 1.99 20

Sample ID	N017472-018A-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:				RunNo: 104087			
Client ID:	ZZZZZZ	Batch ID: R104087	TestNo: EPA 218.6		Analysis Date: 11/6/2015				SeqNo: 2133924			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 11.053 0.20 5.000 5.948 102 90 110

Sample ID	N017472-018A-MSD	SampType: MSD	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:					RunNo: 104087		
Client ID:	ZZZZZZ	Batch ID: R104087	TestNo: EPA 218.6		Analysis Date: 11/6/2015					SeqNo: 2133925		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 11.003 0.20 5.000 5.948 101 90 110 11.05 0.449 20

Qualifiers:

- | | | | | | |
|----|---|---|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | | Calculations are based on raw values | | |



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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N017469-001B-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104087
Client ID:	ZZZZZZ	Batch ID:	R104087	TestNo:	EPA 218.6			Analysis Date:	11/6/2015	SeqNo:	2133935
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	806.850	10	250.0	560.2	98.6	90	110
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Sample ID	N017469-002C-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104087
Client ID:	ZZZZZZ	Batch ID:	R104087	TestNo:	EPA 218.6			Analysis Date:	11/6/2015	SeqNo:	2133937
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	1.271	0.20	1.000	0.1963	107	90	110
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Sample ID	N017470-001C-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104087
Client ID:	ZZZZZZ	Batch ID:	R104087	TestNo:	EPA 218.6			Analysis Date:	11/6/2015	SeqNo:	2133939
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	4.502	0.20	1.000	3.434	107	90	110
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Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 10:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY
SM 2130B

RunID: WETCHEM_151104B	QC Batch: R103975	PrepDate	Analyst: LR
Turbidity	0.25 0.10 0.10	NTU	1 11/4/2015 11:47 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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ANALYTICAL RESULTS

Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 9:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY

SM 2130B

RunID: WETCHEM_151104B	QC Batch: R103975	PrepDate	Analyst: LR
Turbidity	0.19 0.10 0.10	NTU	1 11/4/2015 11:47 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 2130_W**

Sample ID	MB-R103975	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	103975		
Client ID:	PBW	Batch ID:	R103975	TestNo:	SM 2130B			Analysis Date:	11/4/2015	SeqNo:	2127308		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		ND		0.10									

Sample ID	N017469-002BDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	103975		
Client ID:	ZZZZZZ	Batch ID:	R103975	TestNo:	SM 2130B			Analysis Date:	11/4/2015	SeqNo:	2127311		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		0.200		0.10						0.1900	5.13	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT: CH2M HILL
Lab Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N017469-002

Client Sample ID: SC-700B-WDR-533
Collection Date: 11/3/2015 9:50:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_151109A	QC Batch: R104077				PrepDate		Analyst: QBM
Fluoride	1.8	0.12	1.0		mg/L	10	11/9/2015 11:24 AM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_151109A	QC Batch: R104077				PrepDate		Analyst: QBM
Sulfate	450	1.6	25		mg/L	50	11/9/2015 07:50 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 300_W_FPG**

Sample ID	MB-R104077_F	SampType:	MBLK	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104077		
Client ID:	PBW	Batch ID:	R104077	TestNo:	EPA 300.0			Analysis Date:	11/9/2015	SeqNo:	2133316		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride ND 0.10

Sample ID	LCS-R104077_F	SampType:	LCS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104077		
Client ID:	LCSW	Batch ID:	R104077	TestNo:	EPA 300.0			Analysis Date:	11/9/2015	SeqNo:	2133317		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 2.277 0.10 2.500 0 91.1 90 110

Sample ID	N017469-002BMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104077		
Client ID:	ZZZZZZ	Batch ID:	R104077	TestNo:	EPA 300.0			Analysis Date:	11/9/2015	SeqNo:	2133324		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 23.220 1.0 25.00 1.840 85.5 80 120

Sample ID	N017469-002BMSD	SampType:	MSD	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104077			
Client ID:	ZZZZZZ	Batch ID:	R104077	TestNo:	EPA 300.0			Analysis Date:	11/9/2015	SeqNo:	2133325			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

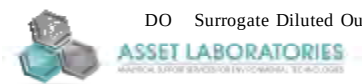
Fluoride 23.280 1.0 25.00 1.840 85.8 80 120 23.22 0.258 20

Sample ID	N017415-005DDUP	SampType:	DUP	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104077		
Client ID:	ZZZZZZ	Batch ID:	R104077	TestNo:	EPA 300.0			Analysis Date:	11/9/2015	SeqNo:	2133328		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 2.545 0.50 2.600 2.14 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
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| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID	N017415-005DMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104077	
Client ID:	ZZZZZZ	Batch ID:	R104077	TestNo:	EPA 300.0			Analysis Date:	11/9/2015	SeqNo:	2133329	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		13.715	0.50	12.50	2.600	88.9	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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DO	Surrogate Diluted Out		Calculations are based on raw values		



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CLIENT: CH2M HILL
Work Order: N017469
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R104077_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	104077			
Client ID:	PBW	Batch ID:	R104077	TestNo:	EPA 300.0			Analysis Date:	11/9/2015	SeqNo:	2133355			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate ND 0.50

Sample ID	LCS-R104077_SO4	SampType: LCS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 104077					
Client ID: LCSW	Batch ID: R104077	TestNo: EPA 300.0	Analysis Date: 11/9/2015	SeqNo: 2133356							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 4.758 0.50 5.000 0 95.2 90 110

Sample ID	N017521-006AMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	104077			
Client ID:	ZZZZZZ	Batch ID:	R104077	TestNo:	EPA 300.0			Analysis Date:	11/9/2015	SeqNo:	2133365			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 471.600 25 250.0 226.0 98.2 80 120

Sample ID	N017521-006AMSD	SampType: MSD	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 104077					
Client ID: ZZZZZZ	Batch ID: R104077	TestNo: EPA 300.0	Analysis Date: 11/9/2015	SeqNo: 2133366							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 468.500 25 250.0 226.0 97.0 80 120 471.6 0.660 20

Sample ID	N017521-003AMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	104077			
Client ID:	ZZZZZZ	Batch ID:	R104077	TestNo:	EPA 300.0			Analysis Date:	11/9/2015	SeqNo:	2133372			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 118.150 5.0 50.00 68.61 99.1 80 120

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 18-Nov-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-533
Lab Order:	N017469	Collection Date:	11/3/2015 9:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017469-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: WETCHEM_151110B	QC Batch: R104112	PrepDate	Analyst: RB
Nitrate/Nitrite as N	2.8 0.11	0.25 mg/L	5 11/10/2015

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
 Work Order: N017469
 Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R104112	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	104112		
Client ID:	PBW	Batch ID:	R104112	TestNo:	SM4500-NO3			Analysis Date:	11/10/2015	SeqNo:	2135658		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N ND 0.050

Sample ID	LCS-R104112	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	104112			
Client ID:	LCSW	Batch ID:	R104112	TestNo:	SM4500-NO3			Analysis Date:	11/10/2015	SeqNo:	2135659			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.499 0.050 0.5000 0 99.8 85 115

Sample ID	N017427-001EDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	104112			
Client ID:	ZZZZZZ	Batch ID:	R104112	TestNo:	SM4500-NO3			Analysis Date:	11/10/2015	SeqNo:	2135662			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 2.588 0.25 2.656 2.63 20

Sample ID	N017427-001EMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	104112			
Client ID:	ZZZZZZ	Batch ID:	R104112	TestNo:	SM4500-NO3			Analysis Date:	11/10/2015	SeqNo:	2135663			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

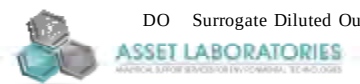
Nitrate/Nitrite as N 5.187 0.25 2.500 2.656 101 75 125

Sample ID	N017427-001EMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	104112			
Client ID:	ZZZZZZ	Batch ID:	R104112	TestNo:	SM4500-NO3			Analysis Date:	11/10/2015	SeqNo:	2135664			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 5.648 0.25 2.500 2.656 120 75 125 5.187 8.51 20

Qualifiers:

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ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			

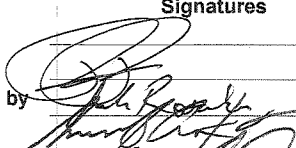
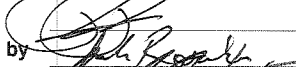
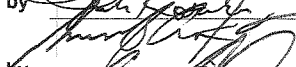


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Project Name PG&E Topock Location PG&E Topock Project Number 658274.01.IM.OP.00 Project Manager Scott O'Donnell Sample Manager Shawn Duffy Task Order Project IM3PLANT-ARAR-WDR-533 Turnaround Time 10 Days Shipping Date: COC Number: 533			Container: 1 Liter Poly 1 Liter Poly 1 Liter Poly 250 ml Poly 1 Liter Poly 1 Liter Poly 500 ml Poly 500 ml Poly 1 Liter Poly	Preservatives: 4°C Lab H2SO4 4°C 4°C 4°C 4°C Lab H2SO4 4°C 4°C 4°C 4°C	Filtered: NA NA NA NA NA NA NA NA NA	Holding Time: 28 7 7 1 28 7 180 180 7	AMMONIA (SM4500NH3D) Anions (E300.0) F-, SO4 CONDUCTIVITY (E120.1) E218.6 Lab Filtered Nitrate/Nitrite (SM4500NO3-E) TDS (SM2540C) Total Metals(E200.7 and E200.8) Total Metals(E200.8) Cr & Mn Turbidity (SM2130)	Number of Containers	COMMENTS					
DATE TIME Matrix														
SC-100B-WDR-533	11-3-15	10:05	Water			X	X		X		X	NO 7469-1	3	
SC-700B-WDR-533	11-3-15	9:50	Water	X	X	X	X	X	X	X	X	↓ -2	4	
TOTAL NUMBER OF CONTAINERS												7		

Signatures		Date/Time	Shipping Details		ATTN:	Special Instructions:
Approved by 		11-3-15 10:05	Method of Shipment: FedEx			Total metals List: Cr,Al,Sb,As,Ba,B,Cu,Pb,Mn,Mo,Ni,Fe,Zn
Sampled by 		11-3-15 10:06	On Ice: yes / no	4.0°C	Sample Custody	
Relinquished by 		11/3/15 @ 10:00	Airbill No:	1R#2	and	
Received by 		11/3/15 @ 1805	Lab Name: ASSET Laboratories		Glen Gesmundo	Report Copy to Shawn Duffy (530) 229-3303
Relinquished by 			Lab Phone: (702) 307-2659			
Received by 						

ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 11/3/2015

Workorder: N017469

Rep sample Temp (Deg C): 4.0

IR Gun ID: 2

Temp Blank: ☒ Yes ☐ No

Carrier name: ASSET

Last 4 digits of Tracking No.: NA

Packing Material Used: None

Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

- | | | | |
|---|---|--|---|
| 1. Shipping container/cooler in good condition? | Yes ☒ | No ☐ | Not Present ☐ |
| 2. Custody seals intact, signed, dated on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☒ |
| 3. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☒ |
| 4. Chain of custody present? | Yes ☒ | No ☐ | |
| 5. Sampler's name present in COC? | Yes ☒ | No ☐ | |
| 6. Chain of custody signed when relinquished and received? | Yes ☒ | No ☐ | |
| 7. Chain of custody agrees with sample labels? | Yes ☒ | No ☐ | |
| 8. Samples in proper container/bottle? | Yes ☒ | No ☐ | |
| 9. Sample containers intact? | Yes ☒ | No ☐ | |
| 10. Sufficient sample volume for indicated test? | Yes ☒ | No ☐ | |
| 11. All samples received within holding time? | Yes ☒ | No ☐ | |
| 12. Temperature of rep sample or Temp Blank within acceptable limit? | Yes ☒ | No ☐ | NA ☐ |
| 13. Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | NA ☒ |
| 14. Water - pH acceptable upon receipt?
Example: pH > 12 for (CN,S); pH<2 for Metals | Yes ☐ | No ☒ | NA ☐ |
| 15. Did the bottle labels indicate correct preservatives used? | Yes ☒ | No ☐ | NA ☐ |
| 16. Were there Non-Conformance issues at login? | Yes ☒ | No ☐ | NA ☐ |
| Was Client notified? | Yes ☐ | No ☒ | NA ☐ |

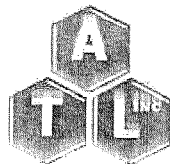
Comments Lab filtered and/or preserved.

Checklist Completed B forMBC *PA* 11/5/2015

Reviewed By:

gog

11/12/15



ASSET Laboratories

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www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV

Subcontractor:

Truesdail
3337 Michelson Drive, Suite CN750
Irvine, CA 92612

TEL: (714) 730-6239

FAX: (714) 730-6462

Acct #:

Field Sampler: SIGNED

09-Nov-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3D		
N017469-002A / SC-700B-WDR-533	Water	11/3/2015 9:50:00 AM	32OZP	1		

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#: N17469A. Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: 5-DAY TAT.

Please analyze Ammonia by SM4500.

Relinquished by: <u>AA</u>	Date/Time: <u>11/9/15 1700</u>	Received by: <u>GSO TRK # 529896296</u>	Date/Time: _____
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____

List of Analysts

ASSET Laboratories Work Order: N017469

NAME	TEST METHOD
Quennie Manimtim	EPA 300.0
Claire Ignacio	EPA 200.7, EPA 200.8
Ryan Balilu	EPA 218.6, SM4500-NO3F
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B



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REPORT

3337 MICHELSON DRIVE, SUITE CN 750
IRVINE, CA 92612
(714) 730-6239 • FAX (714) 730-6462
www.truesdail.com

Client: Advanced Technology Laboratories-NV

3151 W Post Rd
Las Vegas, NV 89118

Attention: Marlon Cartin

Project Name: ATL-NV

Work Order No.: 15K0235

Printed: 11/23/2015

CASE NARRATIVE

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Ammonia result. A summary table for this laboratory number is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

The sample was received and delivered with the chain of custody on November 12, 2015, intact and in chilled condition. The sample will be kept in a locked refrigerator for 30 days; thereafter will be kept in warm storage for additional 2 months before disposal.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 201.

SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
SC-700B-WDR-533	15K0235-01	Water	Grab	11/03/2015 09:50	11/12/2015 10:15

DEFINITIONS

Symbol	Definition
DF	Dilution Factor
MDL	Method Detection Limit
ND	Not Detected
RL	Reporting Limit

Respectfully yours,

Lyn Phaerakkakit
Project Manager



Client: Advanced Technology Laboratories-N

Project Name: ATL-NV

Printed: 11/23/2015

SC-700B-WDR-533

15K0235-01 (Water)

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
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Truesdail Laboratories, Inc

Wet Chemistry

Ammonia	0.0579	0.0500	mg/L	1	1511469	11/20/2015 16:48	AL	SM 4500-NH3 D M	
---------	--------	--------	------	---	---------	------------------	----	-----------------	--



Client: Advanced Technology Laboratories - NV

3151 W Post Road

Las Vegas, NV 89118

Attention: Marlon Cartin

Sample: One (1) Water Sample

Project Name: PG&E Topock Project

Project No.: N/A

Laboratory No.: 15K0235

Date: November 23, 2015

Collected: November 3, 2015

Received: November 12, 2015

ANALYST LIST

METHOD	PARAMETER	ANALYST
SM 4500-NH3 D	Ammonia	Alex Luna

ANALYSIS DATA SHEET

Inorganics

Client: Advanced Technology Laboratories-NV
Client Sample ID: SC-700B-WDR-533
Lab Sample ID: 15K0235-01
Project: ATL-NV

Date Sampled: 11/03/15 09:50 Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	0.0579	0.0318	0.0500	1		AL	11/20/15 16:48	SM 4500-NH3 D M

METHOD BLANK DATA SHEET

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV

Project: ATL-NV

Laboratory ID: 1511469-BLK1

Prepared: 11/20/15 15:30

Preparation: SM 4500-NH3 B

Matrix: Water

Analyzed: 11/20/15 16:43

Instrument: TL01

File ID: 5K02005-008

Batch: 1511469

Sequence: 5K20005

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7664-41-7	Ammonia	ND	0.0318	0.0500	

LCS / LCS DUPLICATE RECOVERY

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV
Project: ATL-NV
Work Order: 15K0235

Matrix: Water
Prep Batch: 1511469
Prep Method: SM 4500-NH3 B
Lab Sample ID: 1511469-BS1

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC.	QC LIMITS REC.
Ammonia	0.400	0.370	93	90 - 110

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SC-700B-WDR-533

Client: Advanced Technology Laboratories-NV
Project: ATL-NV
Work Order: 15K0235

Matrix: Water
Prep Batch: 1511469
Analysis Method: SM 4500-NH3 D M
Prep Method: SM 4500-NH3 B
Laboratory ID: 1511469-MS1
Source Sample ID: 15K0235-01

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	QC LIMITS REC.
Ammonia	0.400	0.0579	0.444	97	75 - 125

ANALYTE	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC. #	% RPD	QC LIMITS RPD	REC.
Ammonia	0.400	0.438	95	1	20	75 - 125

* Values outside of QC limits

DUPLICATES

SC-700B-WDR-533

Client: Advanced Technology Laboratories-NV
Project: ATL-NV

Matrix:	Water	Laboratory ID:	1511469-DUP1
Prep Batch:	1511469	Initial/Final:	50 mL / 50 mL
Prep Method:	SM 4500-NH3 B	Analysis:	SM 4500-NH3 D M

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Ammonia	0.0579	0.0532	9		20

* Values outside of QC limits



ASSET Laboratories
3151-3153 W Post Rd., Las Vegas, NV 89118
www.aill-labs.com
TEL: 7023072659 FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

15K0235

QC Level: Level IV

Subcontractor:

Truesdail
3337 Michelson Drive, Suite CN750
Irvine, CA 92612

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler: SIGNED

09-Nov-15

Sample ID	Matrix	Date Collected	Bottle Type	SM4500-NH3D	Requested Tests	
N017469-002A / SC-700B-WDR-533	Water	11/3/2015 9:50:00 AM	320ZP	1		

ALERT !!
Level IV QC

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#: N17469A. Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: 5-DAY TAT.

Please analyze Ammonia by SM4500.

Date/Time

Date/Time

Relinquished by:

11/10/15

Received by:

ESU TRK # 529896296

Relinquished by:

Received by:

11/12/15

10:15 a.m.

ALERT !!
Level IV QC

Log-in check list
For level III data package

Client: ATLLab Number: 15K0235Received Date: 11/12/15**Sample receiving review**

	Yes	No	N/A	Comment
Was special login form received by login personnel?	✓			
Was COC received and signed by client and login personnel?	✓			
Were all sample temperature measured and recorded on COC?	✓			
Did you measure and record the pH on all metals samples on COC?			✓	
Has sample integrity and analysis discrepancy form been filled out completely?	✓			
Were all intercompany yellow forms generated and stamped with "alert level III QC" note?	✓			
Have check-in and check out lists been filled out and attached to appropriate form?	✓			
Were sample containers labeled with TLI numbers, date, and time sampled?	✓			
Did you notify analyst or group leader about short holding time?	✓			
Was a copy of COC attached to all yellow intracompany form?	✓			
For special clients, have all their samples been logged into the internal COC book?	✓			
Were samples locked in fridge or special storage area?	✓			
Was temperature recorded in the log book?	✓			

Sample receiving Signature:

Direlli

ALERT !!
Level IV QC

WORK ORDER

Printed: 11/12/15 10:48:39AM

15K0235

Truesdail Laboratories, Inc

Client: Advanced Technology Laboratories-NV
Project: ATL-NV

Project Manager: Lyn Phaerakkakit
Project Number: [none]

Report To:

Advanced Technology Laboratories-NV
Marlon Cartin
3151 W Post Rd
Las Vegas, NV 89118
Phone: (702) 307-2659
Fax: (702) 307-2691

Invoice To:

Advanced Technology Laboratories-NV
Marlon Cartin
3151 W Post Rd
Las Vegas, NV 89118
Phone : (702) 307-2659
Fax: (702) 307-2691

Date Due: 11/23/2015 16:30 (7 day TAT)

Received By: Nirali Patel

Logged In By: Nirali Patel

Date Received: 11/12/2015 10:15

Date Logged In: 11/12/2015 10:44

Samples Received at: 2.1°C

Chain of Custody rece	Yes	Samples intact?	Yes
Letter (if sent) matche	No	Custody seals (if any)	No
Requested analyses ac	Yes	Analyses within hold t	Yes
Samples received in a	Yes		

Analysis	Due	TAT	Expires	Comments
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15K0235-01 SC-700B-WDR-533 [Water] Sampled 11/03/2015 09:50
(GMT-08:00) Pacific Time (US &

Ammonia E	11/23/2015 12:00	7	12/01/2015 09:50	
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Analytical Bench Log Book

WDR pH Results

If the on site Laboratory pH result for T-700 tank is less than pH 6.6 or greater than pH 8.3 the Injection well should be shut down until the problem is fixed.

Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
PE-1	11-3-15	9:30	11-3-15	10:10	HQ440D	11-3-15	01:21	-57.50	Ryan Phelps	7.58

Notes:

TW-3D	11-3-15	9:35	11-3-15	10:11	HQ440D	11-3-15	1:21	-57.50	Ryan Phelps	7.60
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Notes:

SC-100B	11-3-15	10:05	11-3-15	10:12	HQ440D	11-3-15	1:21	-57.50	Ryan Phelps	7.40
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Notes:

SC-700B	11-3-15	9:50	11-3-15	10:13	HQ440D	11-3-15	1:21	-57.50	Ryan Phelps	7.05
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Notes:

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Notes:

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Notes:

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Notes:

Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4										
--	--	--	--	--	--	--	--	--	--	--

December 15, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N017783

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on December 01, 2015 by ASSET Laboratories .
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Glen Gesmundo
QA Manager

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in
its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



ASSET LABORATORIES
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NEVADA
3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N017783

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

Subcontracted Analyses:

Ammonia was subcontracted to Truesdail-Tustin, CA.

Analytical Comments for EPA 200.7:

Dilution was necessary on sample N017783-002 since plasma was extinguished when sample was analyzed at no dilution.

Analytical Comments for EPA 200.8:

Dilution was necessary on Lead for sample N017783-002 due to associated internal standard not meeting method criteria possibly due to matrix interference. Sample was analyzed with dilution and internal standard met method criteria. Affected analyte for this failed internal standard was reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for some analytes on QC samples N017783-002E-MS and N017783-002E-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



ASSET Laboratories

Date: 15-Dec-15

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N017783
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N017783-001A	SC-100B-WDR-534	Water	12/1/2015 12:03:00 PM	12/1/2015	12/15/2015
N017783-001B	SC-100B-WDR-534	Water	12/1/2015 12:03:00 PM	12/1/2015	12/15/2015
N017783-001C	SC-100B-WDR-534	Water	12/1/2015 12:03:00 PM	12/1/2015	12/15/2015
N017783-002A	SC-700B-WDR-534	Water	12/1/2015 11:55:00 AM	12/1/2015	12/15/2015
N017783-002B	SC-700B-WDR-534	Water	12/1/2015 11:55:00 AM	12/1/2015	12/15/2015
N017783-002C	SC-700B-WDR-534	Water	12/1/2015 11:55:00 AM	12/1/2015	12/15/2015
N017783-002D	SC-700B-WDR-534	Water	12/1/2015 11:55:00 AM	12/1/2015	12/15/2015
N017783-002E	SC-700B-WDR-534	Water	12/1/2015 11:55:00 AM	12/1/2015	12/15/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 12:03:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_151202G	QC Batch: R104441	PrepDate	Analyst: LR
Specific Conductance	6900 0.10 0.10	umhos/cm	1 12/2/2015 02:20 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 11:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_151202G	QC Batch: R104441	PrepDate	Analyst: LR
Specific Conductance	7100 0.10 0.10	umhos/cm	1 12/2/2015 02:20 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 120.1_WPGE**

Sample ID	N017786-003C DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	104441		
Client ID:	ZZZZZZ	Batch ID:	R104441	TestNo:	EPA 120.1			Analysis Date:	12/2/2015	SeqNo:	2153246		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		38200.000		0.10						37900	0.788	10	

Sample ID	N017786-011C DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	104441		
Client ID:	ZZZZZZ	Batch ID:	R104441	TestNo:	EPA 120.1			Analysis Date:	12/2/2015	SeqNo:	2153258		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		18910.000		0.10						18850	0.318	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 12:03:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE**SM2540C**

RunID: WETCHEM_151202F	QC Batch: 55212			PrepDate	12/2/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L	1	12/2/2015 02:20 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 11:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: WETCHEM_151202F	QC Batch: 55212	PrepDate	12/2/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4100	50	50	mg/L
			1	12/2/2015 02:20 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

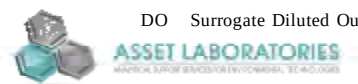
Sample ID MB-55212	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 12/2/2015	RunNo: 104440						
Client ID: PBW	Batch ID: 55212	TestNo: SM2540C		Analysis Date: 12/2/2015	SeqNo: 2153207						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-55212	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 12/2/2015	RunNo: 104440						
Client ID: LCSW	Batch ID: 55212	TestNo: SM2540C		Analysis Date: 12/2/2015	SeqNo: 2153208						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	964.000	10	1000	0	96.4	80	120				

Sample ID N017787-001C-DUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 12/2/2015	RunNo: 104440						
Client ID: ZZZZZZ	Batch ID: 55212	TestNo: SM2540C		Analysis Date: 12/2/2015	SeqNo: 2153218						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	13240.000	200						12680	4.32	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 11:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

TOTAL METALS BY ICP**EPA 200.7**

RunID: ICP2_151204B	QC Batch: 55219	PrepDate	12/3/2015	Analyst: CEI		
Aluminum	ND	25	100	µg/L	2	12/4/2015 03:50 PM
Boron	1100	21	200	µg/L	2	12/4/2015 03:50 PM
Iron	ND	34	40	µg/L	2	12/4/2015 03:50 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

**ASSET LABORATORIES**
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3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691**"Serving Clients with Passion and Professionalism"**

CLIENT: CH2M HILL
 Work Order: N017783
 Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPBB

Sample ID	MB-55219	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	12/3/2015	RunNo:	104461
Client ID:	PBW	Batch ID:	55219	TestNo:	EPA 200.7			Analysis Date:	12/4/2015	SeqNo:	2154379
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	ND	50									
Boron	ND	100									
Iron	ND	20									

Sample ID	LCS-55219	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	12/3/2015	RunNo:	104461
Client ID:	LCSW	Batch ID:	55219	TestNo:	EPA 200.7			Analysis Date:	12/4/2015	SeqNo:	2154380
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	9438.297	50	10000	0	94.4	85	115				
Boron	4492.907	100	5000	0	89.9	85	115				
Iron	99.520	20	100.0	0	99.5	85	115				

Sample ID	N017785-001B-MS	SampType:	MS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	12/3/2015	RunNo:	104461
Client ID:	ZZZZZZ	Batch ID:	55219	TestNo:	EPA 200.7			Analysis Date:	12/4/2015	SeqNo:	2154385
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

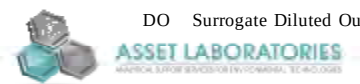
Aluminum	10242.696	50	10000	12.81	102	75	125				
Boron	5298.252	100	5000	532.5	95.3	75	125				
Iron	96.822	20	100.0	0	96.8	75	125				

Sample ID	N017785-001B-MSD	SampType:	MSD	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	12/3/2015	RunNo:	104461
Client ID:	ZZZZZZ	Batch ID:	55219	TestNo:	EPA 200.7			Analysis Date:	12/4/2015	SeqNo:	2154386
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	10190.873	50	10000	12.81	102	75	125	10240	0.507	20	
Boron	5278.104	100	5000	532.5	94.9	75	125	5298	0.381	20	
Iron	96.535	20	100.0	0	96.5	75	125	96.82	0.297	20	

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 12:03:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS**EPA 200.8**

RunID: ICP7_151203C	QC Batch: 55218	PrepDate	12/3/2015	Analyst: CEI
Manganese	14 0.023 0.50	µg/L	1	12/3/2015 09:50 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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ASSET Laboratories
ANALYTICAL RESULTS

Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 11:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151203C	QC Batch: 55218	PrepDate	12/3/2015	Analyst: CEI
Antimony	ND	0.026	0.50	µg/L
Arsenic	ND	0.016	0.10	µg/L
Barium	13	0.072	1.0	µg/L
Copper	ND	0.26	1.0	µg/L
Lead	ND	0.27	5.0	µg/L
Manganese	4.4	0.023	0.50	µg/L
Molybdenum	20	0.029	0.50	µg/L
Nickel	1.1	0.038	1.0	µg/L
Zinc	ND	0.039	10	µg/L

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
 Work Order: N017783
 Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-55218	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	12/3/2015	RunNo:	104488
Client ID:	PBW	Batch ID:	55218	TestNo:	EPA 200.8			Analysis Date:	12/3/2015	SeqNo:	2155937
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	ND	0.50									
Arsenic	ND	0.10									
Copper	ND	1.0									
Lead	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Nickel	0.038	1.0									
Zinc	ND	10									

Sample ID	LCS-55218	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	12/3/2015	RunNo:	104488
Client ID:	LCSW	Batch ID:	55218	TestNo:	EPA 200.8			Analysis Date:	12/3/2015	SeqNo:	2155938
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

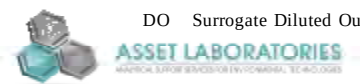
Antimony	9.315	0.50	10.00	0	93.2	85	115				
Arsenic	9.226	0.10	10.00	0	92.3	85	115				
Copper	10.556	1.0	10.00	0	106	85	115				
Lead	11.046	1.0	10.00	0	110	85	115				
Manganese	94.830	0.50	100.0	0	94.8	85	115				
Molybdenum	8.994	0.50	10.00	0	89.9	85	115				
Nickel	10.240	1.0	10.00	0	102	85	115				
Zinc	94.343	10	100.0	0	94.3	85	115				

Sample ID	N017783-002E-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	12/3/2015	RunNo:	104488
Client ID:	ZZZZZZ	Batch ID:	55218	TestNo:	EPA 200.8			Analysis Date:	12/3/2015	SeqNo:	2155951
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	9.602	0.50	10.00	0	96.0	75	125				
Arsenic	9.290	0.10	10.00	0.07208	92.2	75	125				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		



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CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N017783-002E-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104488					
Client ID:	ZZZZZZ	Batch ID: 55218	TestNo: EPA 200.8	Analysis Date: 12/3/2015	SeqNo: 2155951						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	6.124	1.0	10.00	0	61.2	75	125				S
Manganese	93.954	0.50	100.0	4.416	89.5	75	125				
Molybdenum	32.479	0.50	10.00	20.48	120	75	125				
Nickel	9.919	1.0	10.00	1.082	88.4	75	125				
Zinc	78.658	10	100.0	0.8993	77.8	75	125				

Sample ID	N017783-002E-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104488					
Client ID:	ZZZZZZ	Batch ID: 55218	TestNo: EPA 200.8	Analysis Date: 12/3/2015	SeqNo: 2155952						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	12.997	5.0	10.00	0	130	75	125				S

Sample ID	N017783-002E-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104488					
Client ID:	ZZZZZZ	Batch ID: 55218	TestNo: EPA 200.8	Analysis Date: 12/3/2015	SeqNo: 2155953						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	9.583	0.50	10.00	0	95.8	75	125	9.602	0.194	20	S
Arsenic	9.275	0.10	10.00	0.07208	92.0	75	125	9.290	0.166	20	
Copper	6.174	1.0	10.00	0	61.7	75	125	6.124	0.823	20	
Manganese	94.129	0.50	100.0	4.416	89.7	75	125	93.95	0.186	20	
Molybdenum	32.554	0.50	10.00	20.48	121	75	125	32.48	0.233	20	
Nickel	10.084	1.0	10.00	1.082	90.0	75	125	9.919	1.65	20	
Zinc	78.703	10	100.0	0.8993	77.8	75	125	78.66	0.0573	20	

Sample ID	N017783-002E-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104488					
Client ID: ZZZZZZ	Batch ID: 55218	TestNo: EPA 200.8	Analysis Date: 12/3/2015	SeqNo: 2155956							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	12.946	5.0	10.00	0	129	75	125	13.00	0.393	20	S

Qualifiers:

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CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-55218	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	12/3/2015	RunNo:	104520		
Client ID:	PBW	Batch ID:	55218	TestNo:	EPA 200.8			Analysis Date:	12/8/2015	SeqNo:	2158606		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium ND 1.0

Sample ID	LCS-55218	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	12/3/2015	RunNo:	104520		
Client ID:	LCSW	Batch ID:	55218	TestNo:	EPA 200.8			Analysis Date:	12/8/2015	SeqNo:	2158607		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium 96.915 1.0 100.0 0 96.9 85 115

Sample ID	N017783-002E-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104520					
Client ID: ZZZZZZ	Batch ID: 55218	TestNo: EPA 200.8	Analysis Date: 12/8/2015	SeqNo: 2158611							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

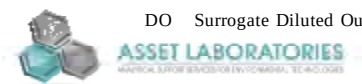
Barium 116.769 1.0 100.0 13.18 104 75 125

Sample ID	N017783-002E-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104520					
Client ID: ZZZZZZ	Batch ID: 55218	TestNo: EPA 200.8	Analysis Date: 12/8/2015	SeqNo: 2158612							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium 117.145 1.0 100.0 13.18 104 75 125 116.8 0.321 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
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| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 12:03:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: IC7_151202A	QC Batch: R104415	PrepDate	Analyst: RB
Hexavalent Chromium	550 0.75	10 µg/L	50 12/2/2015 02:47 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151203A	QC Batch: 55218	PrepDate	12/3/2015	Analyst: CEI
Chromium	550 0.43	5.0 µg/L	5	12/3/2015 09:55 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 11:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: IC7_151202A	QC Batch: R104415	PrepDate	Analyst: RB
Hexavalent Chromium	0.21 0.015 0.20	µg/L	12/2/2015 03:25 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_151203A	QC Batch: 55218	PrepDate	12/3/2015	Analyst: CEI
Chromium	ND 0.086 1.0	µg/L	1	12/3/2015 10:01 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W_CRPGE**

Sample ID MB-55218	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104443
Client ID: PBW	Batch ID: 55218	TestNo: EPA 200.8		Analysis Date: 12/3/2015	SeqNo: 2153418
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID LCS-55218	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104443
Client ID: LCSW	Batch ID: 55218	TestNo: EPA 200.8		Analysis Date: 12/3/2015	SeqNo: 2153419
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.825 1.0 10.00 0 98.3 85 115

Sample ID N017783-002E-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104443
Client ID: ZZZZZZ	Batch ID: 55218	TestNo: EPA 200.8		Analysis Date: 12/3/2015	SeqNo: 2153432
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

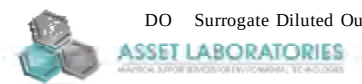
Chromium 9.769 1.0 10.00 0.3709 94.0 75 125

Sample ID N017783-002E-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 12/3/2015	RunNo: 104443
Client ID: ZZZZZZ	Batch ID: 55218	TestNo: EPA 200.8		Analysis Date: 12/3/2015	SeqNo: 2153434
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.801 1.0 10.00 0.3709 94.3 75 125 9.769 0.319 20

Qualifiers:

B Analyte detected in the associated Method Blank	E Value above quantitation range	H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit	R RPD outside accepted recovery limits	S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out	Calculations are based on raw values	



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CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R104415	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104415			
Client ID:	PBW	Batch ID:	R104415	TestNo:	EPA 218.6			Analysis Date:	12/2/2015	SeqNo:	2151622			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R104415	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104415			
Client ID:	LCSW	Batch ID:	R104415	TestNo:	EPA 218.6			Analysis Date:	12/2/2015	SeqNo:	2151623			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.762 0.20 5.000 0 95.2 90 110

Sample ID	N017770-001ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104415			
Client ID:	ZZZZZZ	Batch ID:	R104415	TestNo:	EPA 218.6			Analysis Date:	12/2/2015	SeqNo:	2151625			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 3.998 0.20 4.004 0.170 20

Sample ID	N017770-001AMS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 104415					
Client ID: ZZZZZZ	Batch ID: R104415	TestNo: EPA 218.6	Analysis Date: 12/2/2015	SeqNo: 2151626							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 9.026 0.20 5.000 4.004 100 90 110

Sample ID	N017770-001AMSD	SampType: MSD	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:				RunNo: 104415			
Client ID:	ZZZZZZ	Batch ID: R104415	TestNo: EPA 218.6		Analysis Date: 12/2/2015				SeqNo: 2151627			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 8.989 0.20 5.000 4.004 99.7 90 110 9.026 0.413 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N017783-001BMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104415
Client ID:	ZZZZZZ	Batch ID:	R104415	TestNo:	EPA 218.6			Analysis Date:	12/2/2015	SeqNo:	2151638
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	779.705	10	250.0	548.2	92.6	90	110
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Sample ID	N017783-002CMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104415
Client ID:	ZZZZZZ	Batch ID:	R104415	TestNo:	EPA 218.6			Analysis Date:	12/2/2015	SeqNo:	2151642
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

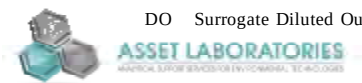
Hexavalent Chromium	1.234	0.20	1.000	0.2082	103	90	110
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Sample ID	N017785-001CMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	104415
Client ID:	ZZZZZZ	Batch ID:	R104415	TestNo:	EPA 218.6			Analysis Date:	12/2/2015	SeqNo:	2151644
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	8.695	0.20	5.000	3.608	102	90	110
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Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | Calculations are based on raw values | | | |



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 12:03:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY**SM 2130B**

RunID: WETCHEM_151202I	QC Batch: R104444	PrepDate	Analyst: LR
Turbidity	0.31 0.10 0.10	NTU	1 12/2/2015 12:20 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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ASSET Laboratories

ANALYTICAL RESULTS

Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 11:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY

SM 2130B

RunID: WETCHEM_151202I	QC Batch: R104444	PrepDate	Analyst: LR
Turbidity	0.25 0.10 0.10	NTU	1 12/2/2015 12:20 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 2130_W**

Sample ID	MB-R104444	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	104444		
Client ID:	PBW	Batch ID:	R104444	TestNo:	SM 2130B			Analysis Date:	12/2/2015	SeqNo:	2153271		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		ND		0.10									

Sample ID	N017783-001A DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	104444		
Client ID:	ZZZZZZ	Batch ID:	R104444	TestNo:	SM 2130B			Analysis Date:	12/2/2015	SeqNo:	2153273		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		0.310		0.10						0.3100	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 11:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY**EPA 300.0**

RunID: IC2_151202A	QC Batch: R104421			PrepDate		Analyst: QBM
Fluoride	1.9	0.12	1.0	mg/L	10	12/2/2015 10:36 AM

ANIONS BY ION CHROMATOGRAPHY**EPA 300.0**

RunID: IC2_151202A	QC Batch: R104421			PrepDate		Analyst: QBM
Sulfate	450	1.6	25	mg/L	50	12/2/2015 10:51 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 300_W_FPG**

Sample ID	MB-R104421_F	SampType:	MBLK	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104421		
Client ID:	PBW	Batch ID:	R104421	TestNo:	EPA 300.0			Analysis Date:	12/2/2015	SeqNo:	2151861		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride ND 0.10

Sample ID	LCS-R104421_F	SampType:	LCS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104421			
Client ID:	LCSW	Batch ID:	R104421	TestNo:	EPA 300.0			Analysis Date:	12/2/2015	SeqNo:	2151862			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 2.254 0.10 2.500 0 90.2 90 110

Sample ID	N017783-002BDUP	SampType:	DUP	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104421			
Client ID:	ZZZZZZ	Batch ID:	R104421	TestNo:	EPA 300.0			Analysis Date:	12/2/2015	SeqNo:	2151872			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 1.810 1.0 1.870 3.26 20

Sample ID	N017783-002BMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104421		
Client ID:	ZZZZZZ	Batch ID:	R104421	TestNo:	EPA 300.0			Analysis Date:	12/2/2015	SeqNo:	2151873		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

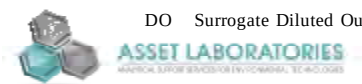
Fluoride 24.970 1.0 25.00 1.870 92.4 80 120

Sample ID	N017783-002BMSD	SampType:	MSD	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	104421		
Client ID:	ZZZZZZ	Batch ID:	R104421	TestNo:	EPA 300.0			Analysis Date:	12/2/2015	SeqNo:	2151874		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 25.120 1.0 25.00 1.870 93.0 80 120 24.97 0.599 20

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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CLIENT: CH2M HILL
Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R104421_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	104421			
Client ID:	PBW	Batch ID:	R104421	TestNo:	EPA 300.0			Analysis Date:	12/2/2015	SeqNo:	2151914			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate ND 0.50

Sample ID	LCS-R104421_SO4	SampType: LCS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 104421					
Client ID: LCSW	Batch ID: R104421	TestNo: EPA 300.0	Analysis Date: 12/2/2015	SeqNo: 2151915							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 4.958 0.50 5.000 0 99.2 90 110

Sample ID	N017785-001ADUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	104421			
Client ID:	ZZZZZZ	Batch ID:	R104421	TestNo:	EPA 300.0			Analysis Date:	12/2/2015	SeqNo:	2151930			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 351.600 25 347.0 1.30 20

Sample ID	N017785-002AMS	SampType: MS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 104421					
Client ID: ZZZZZZ	Batch ID: R104421	TestNo: EPA 300.0	Analysis Date: 12/2/2015	SeqNo: 2151931							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

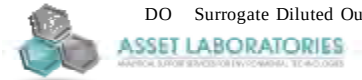
Sulfate 970.400 50 500.0 486.6 96.8 80 120

Sample ID	N017785-002AMSD	SampType: MSD	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:				RunNo: 104421			
Client ID:	ZZZZZZ	Batch ID: R104421	TestNo: EPA 300.0		Analysis Date: 12/2/2015				SeqNo: 2151932			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 963.400 50 500.0 486.6 95.4 80 120 970.4 0.724 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
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Work Order: N017783
Project: PG&E Topock, 658274.01.IM.OP.00

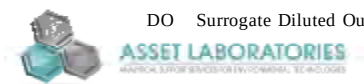
ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	N017789-001BMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	104421	
Client ID:	ZZZZZZ	Batch ID:	R104421	TestNo:	EPA 300.0			Analysis Date:	12/2/2015	SeqNo:	2151941	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		280.740	10	100.0	180.4	100	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 15-Dec-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-534
Lab Order:	N017783	Collection Date:	12/1/2015 11:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N017783-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: WETCHEM_151211C	QC Batch: R104578	PrepDate	Analyst: RB
Nitrate/Nitrite as N	2.6 0.11	0.25 mg/L	5 12/11/2015

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		


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CLIENT: CH2M HILL
 Work Order: N017783
 Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R1044578	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	104578			
Client ID:	PBW	Batch ID:	R104578	TestNo:	SM4500-NO3			Analysis Date:	12/11/2015	SeqNo:	2162751			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N ND 0.050

Sample ID	LCS-R104578	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	104578			
Client ID:	LCSW	Batch ID:	R104578	TestNo:	SM4500-NO3			Analysis Date:	12/11/2015	SeqNo:	2162753			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.495 0.050 0.5000 0 99.0 85 115

Sample ID	N017783-002DDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	104578			
Client ID:	ZZZZZZ	Batch ID:	R104578	TestNo:	SM4500-NO3			Analysis Date:	12/11/2015	SeqNo:	2162755			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 2.616 0.25 2.588 1.10 20

Sample ID	N017783-002DMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	104578			
Client ID:	ZZZZZZ	Batch ID:	R104578	TestNo:	SM4500-NO3			Analysis Date:	12/11/2015	SeqNo:	2162757			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

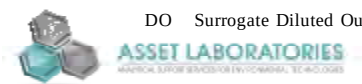
Nitrate/Nitrite as N 5.304 0.25 2.500 2.588 109 75 125

Sample ID	N017783-002DMSD	SampType: MSD	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 104578					
Client ID: ZZZZZZ	Batch ID: R104578	TestNo: SM4500-NO3	Analysis Date: 12/11/2015	SeqNo: 2162758							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 5.291 0.25 2.500 2.588 108 75 125 5.304 0.236 20

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



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Project Name PG&E Topock Location PG&E Topock Project Number 658274.01.IM.OP.00 Project Manager Scott O'Donnell Sample Manager Shawn Duffy Task Order Project IM3PLANT-ARAR-WDR-534 Turnaround Time 10 Days Shipping Date: 12/1/2015 COC Number: 534				Container: 1 Liter Poly 1 Liter Poly 1 Liter Poly 250 ml Poly 1 Liter Poly 1 Liter Poly 500 ml Poly 500 ml Poly 1 Liter Poly		Preservatives: 4°C Lab H2SO4 4°C 4°C 4°C 4°C Lab H2SO4 4°C 4°C 4°C		Filtered: NA NA NA NA NA NA NA NA		Holding Time: 28 7 7 1 28 7 180 180 7		AMMONIA (SM4500NH3O) Anions (E300.0) F ₁ , SO ₄ CONDUCTIVITY (E120.1) E218.6 Lab Filtered Nitrate/Nitrite (SM4500NO3-E) TDS (SM2540C) Total Metals(E200.7 and E200.8) Total Metals(E200.8) Cr & Mn Turbidity (SM2130)		Number of Containers	COMMENTS	
DATE	TIME	Matrix														
SC-100B-WDR-534	12-1-15	1203	Water			X	X		X		X			NO17783-1	3	
SC-700B-WDR-534	12-1-15	1155	Water	X	X	X	X	X	X	X	X			I -2	4	
TOTAL NUMBER OF CONTAINERS													7			

	Signatures	Date/Time
Approved by		12-1-15 12:05
Sampled by		12-1-15 12:05
Relinquished by		12-1-15 12:05
Received by		12/1/15 01615
Relinquished by		12/1/15 01921
Received by		12/1/15 01921

Shipping Details

Method of Shipment: FedEx

On Ice: ☒ yes ☐ no 12#2

Airbill No: 1.6°C

Lab Name: ASSET Laboratories

Lab Phone: (702) 307-2659

ATTN:

Sample Custody

and

Glen Gesmundo

Special Instructions:

Total metals List:
Cr,Al,Sb,As,Ba,B,Cu,Pb,Mn,Mo,Ni,Fe,Zn

Report Copy to
Shawn Duffy
(530) 229-3303

ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 12/1/2015 Workorder: N017783
Rep sample Temp (Deg C): 1.6 IR Gun ID: 2
Temp Blank: ☒ Yes ☐ No
Carrier name: ASSET
Last 4 digits of Tracking No.: NA Packing Material Used: None
Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

- | | | | |
|---|---|--|---|
| 1. Shipping container/cooler in good condition? | Yes ☒ | No ☐ | Not Present ☐ |
| 2. Custody seals intact, signed, dated on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☒ |
| 3. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☒ |
| 4. Chain of custody present? | Yes ☒ | No ☐ | |
| 5. Sampler's name present in COC? | Yes ☒ | No ☐ | |
| 6. Chain of custody signed when relinquished and received? | Yes ☒ | No ☐ | |
| 7. Chain of custody agrees with sample labels? | Yes ☒ | No ☐ | |
| 8. Samples in proper container/bottle? | Yes ☒ | No ☐ | |
| 9. Sample containers intact? | Yes ☒ | No ☐ | |
| 10. Sufficient sample volume for indicated test? | Yes ☒ | No ☐ | |
| 11. All samples received within holding time? | Yes ☒ | No ☐ | |
| 12. Temperature of rep sample or Temp Blank within acceptable limit? | Yes ☒ | No ☐ | NA ☐ |
| 13. Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | NA ☒ |
| 14. Water - pH acceptable upon receipt?
Example: pH > 12 for (CN,S); pH<2 for Metals | Yes ☐ | No ☒ | NA ☐ |
| 15. Did the bottle labels indicate correct preservatives used? | Yes ☒ | No ☐ | NA ☐ |
| 16. Were there Non-Conformance issues at login?
Was Client notified? | Yes ☒
Yes ☐ | No ☐
No ☐ | NA ☐
NA ☒ |

Comments: Sample for metals came in at pH 8.

Checklist Completed By: MBC For: [Signature] 12/4/2015

Reviewed By: [Signature] 12/09/15
35



ASSET Laboratories

3151-3153 W Post Rd., Las Vegas, NV 89118

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV

Subcontractor:

Truesdail
3337 Michelson Drive, Suite CN750
Irvine, CA 92612

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler: SIGNED

03-Dec-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests			
				SM4500-NH3D			
N017783-002A / SC-700B-WDR-534	Water	12/1/2015 11:55:00 AM	32OZP	1			

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#:N17783A Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT

Please analyze for Ammonia by SM4500NH3D. CH2MHILL Sample.

	Date/Time		Date/Time
Relinquished by: 	12/3/2015 17:00	Received by: GSO: 530159887	
Relinquished by: _____	_____	Received by: _____	_____

List of Analysts

ASSET Laboratories Work Order: **N017783**

NAME	TEST METHOD
Quennie Manimtim	EPA 300.0
Claire Ignacio	EPA 200.7, EPA 200.8
Ryan Balilu	EPA 218.6, SM4500-NO3F
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA
11060 Artesia Blvd., Ste C, Cerritos, CA 90703
P: 562.219.7435 F: 562.219.7436

NEVADA
3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691

“Serving Clients with Passion and Professionalism”



REPORT

3337 MICHELSON DRIVE, SUITE CN 750
IRVINE, CA 92612
(714) 730-6239 • FAX (714) 730-6462
www.truesdail.com

Client: Advanced Technology Laboratories-NV

3151 W Post Rd
Las Vegas, NV 89118

Attention: Marlon Cartin

Project Name: ATL-NV

Work Order No.: 15L0115

Printed: 12/14/2015

CASE NARRATIVE

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Ammonia result. A summary table for this laboratory number is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

The sample was received and delivered with the chain of custody on December 4, 2015, intact and in chilled condition. The sample will be kept in a locked refrigerator for 30 days; thereafter will be kept in warm storage for additional 2 months before disposal.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 201.

SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
SC-700B-WDR-534	15L0115-01	Water	Grab	12/01/2015 11:55	12/04/2015 08:40

DEFINITIONS

Symbol	Definition
DF	Dilution Factor
MDL	Method Detection Limit
ND	Not Detected
RL	Reporting Limit

Respectfully yours,

Lyn Phaerakkakit
Project Manager



Client: Advanced Technology Laboratories-N

Project Name: ATL-NV

Printed: 12/14/2015

SC-700B-WDR-534

15L0115-01 (Water)

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
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Truesdail Laboratories, Inc

Wet Chemistry

Ammonia	ND	0.0500	mg/L	1	1512135	12/08/2015 11:16	AL	SM 4500-NH3 D M	
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Client: Advanced Technology Laboratories - NV

3151 W Post Road

Las Vegas, NV 89118

Attention: Marlon Cartin

Sample: One (1) Water Sample

Project Name: PG&E Topock Project

Project No.: N/A

Laboratory No.: 15L0115

Date: December 14, 2015

Collected: December 1, 2015

Received: December 4, 2015

ANALYST LIST

METHOD	PARAMETER	ANALYST
SM 4500-NH3 D	Ammonia	Alex Luna

ANALYSIS DATA SHEET

Inorganics

Client: Advanced Technology Laboratories-NV
Client Sample ID: SC-700B-WDR-534
Lab Sample ID: 15L0115-01
Project: ATL-NV

Date Sampled: 12/01/15 11:55 Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	ND	0.0318	0.0500	1		AL	12/08/15 11:16	SM 4500-NH3 D M

METHOD BLANK DATA SHEET

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV

Project: ATL-NV

Laboratory ID: 1512135-BLK1

Prepared: 12/08/15 10:35

Preparation: SM 4500-NH3 B

Matrix: Water

Analyzed: 12/08/15 11:10

Instrument: TL01

File ID: 5L08002-008

Batch: 1512135

Sequence: 5L08002

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7664-41-7	Ammonia	ND	0.0318	0.0500	

LCS / LCS DUPLICATE RECOVERY

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV
Project: ATL-NV
Work Order: 15L0115

Matrix: Water
Prep Batch: 1512135
Prep Method: SM 4500-NH3 B
Lab Sample ID: 1512135-BS1

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC.	QC LIMITS REC.
Ammonia	0.400	0.363	91	90 - 110

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SC-700B-WDR-534

Client: Advanced Technology Laboratories-NV
Project: ATL-NV
Work Order: 15L0115

Matrix: Water
Prep Batch: 1512135
Analysis Method: SM 4500-NH3 D M
Prep Method: SM 4500-NH3 B
Laboratory ID: 1512135-MS1
Source Sample ID: 15L0115-01

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	QC LIMITS REC.
Ammonia	0.400	0.0402	0.418	94	75 - 125

ANALYTE	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC. #	% RPD	QC LIMITS RPD	REC.
Ammonia	0.400	0.421	95	0.7	20	75 - 125

DUPLICATES

SC-700B-WDR-534

Client: Advanced Technology Laboratories-NV
Project: ATL-NV

Matrix:	Water	Laboratory ID:	1512135-DUP1
Prep Batch:	1512135	Initial/Final:	50 mL / 50 mL
Prep Method:	SM 4500-NH3 B	Analysis:	SM 4500-NH3 D M

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Ammonia	0.0402	0.0409			20

* Values outside of QC limits



ASSET Laboratories
3151-3153 W Post Rd., Las Vegas, NV 89118
www.asset-labs.com
TEL: 7023072659 FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

15L0115

QC Level: Level IV

Subcontractor:

Tuesdall
3337 Michelson Drive, Suite CN750
Irvine, CA 92612

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler: SIGNED

03-Dec-15

Sample ID	Matrix	Date Collected	Bottle Type	SM4500-NH3D	Requested Tests
N017783-002A / SC-700B-WDR-534	Water	12/1/2015 11:55:00 AM	32OZP	1	

ALERT !!
Level IV QC

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO# N17783A. Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marion at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT

Please analyze for Ammonia by SM4500NH3D, CH2MHLL Sample.

Date/Time		Date/Time	
Relinquished by:	12/3/2015 17:00	Received by:	GSO: 530159887
Relinquished by:		Received by:	12/04/15 8:40 2.8°C

ALERT !!
Level IV QC

Log-in check list
For level III data package

Client: ATLLab Number: 15L0115Received Date: 12/06/15**Sample receiving review**

	Yes	No	N/A	Comment
Was special login form received by login personnel?	✓			
Was COC received and signed by client and login personnel?	✓			
Were all sample temperature measured and recorded on COC?	✓			
Did you measure and record the pH on all metals samples on COC?			✓	
Has sample integrity and analysis discrepancy form been filled out completely?	✓			
Were all intercompany yellow forms generated and stamped with "alert level III QC" note?	✓			
Have check-in and check out lists been filled out and attached to appropriate form?	✓			
Were sample containers labeled with TLI numbers, date, and time sampled?	✓			
Did you notify analyst or group leader about short holding time?	✓			
Was a copy of COC attached to all yellow intracompany form?	✓			
For special clients, have all their samples been logged into the Internal COC book?	✓			
Were samples locked in fridge or special storage area?	✓			
Was temperature recorded in the log book?				

Sample receiving Signature: gdiruli

ALERT !!
Level IV QC

WORK ORDER

Printed: 12/4/15 9:00:14AM

15L0115

Truesdail Laboratories, Inc

Client: Advanced Technology Laboratories-NV
Project: ATL-NV

Project Manager: Lyn Phaerakkakit
Project Number: [none]

Report To:

Advanced Technology Laboratories-NV
Marlon Cartin
3151 W Post Rd
Las Vegas, NV 89118
Phone: (702) 307-2659
Fax: (702) 307-2691

Invoice To:

Advanced Technology Laboratories-NV
Marlon Cartin
3151 W Post Rd
Las Vegas, NV 89118
Phone : (702) 307-2659
Fax: (702) 307-2691

Date Due: 12/15/2015 16:30 (7 day TAT)

Received By: Nirali Patel

Date Received: 12/04/2015 08:40

Logged In By: Nirali Patel

Date Logged In: 12/04/2015 08:56

Samples Received at: 2.8°C
Chain of Custody rece Yes Samples intact? Yes
Letter (if sent) matche No Custody seals (if any) No
Requested analyses ac Yes Analyses within hold t Yes
Samples received in a Yes

Analysis	Due	TAT	Expires	Comments
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15L0115-01 SC-700B-WDR-534 [Water] Sampled 12/01/2015 11:55
(GMT-08:00) Pacific Time (US &

Ammonia E	12/15/2015 12:00	7	12/29/2015 11:55	
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Michelle Reed

Reviewed By

12/7/15

Date

Analytical Bench Log Book

WDR pH Results

If the on site laboratory pH result for T-700 tank is less than pH 6.6 or greater than pH 8.3 the Injection well should be shut down until the problem is fixed.

Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
SC-100B	12-1-15	1203	12-1-15	1205	HQ440d	12-1-15	00:04	-57.29	Ryan P.	7.41

Notes:

SC-700B	12-1-15	1155	12-1-15	1206	HQ440d	12-1-15	00:04	-57.29	Ryan P.	6.95
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Notes:

PE-1	12-1-15	14:35	12-1-15	14:42	HQ440d	12-1-15	00:04	-57.29	Ryan P.	7.55
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Notes:

TW-3D	12-1-15	14:35	12-1-15	14:42	HQ440d	12-1-15	00:04	-57.29	Ryan P.	7.30
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Notes:

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Notes:

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Notes:

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Notes:

Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4