Pacific Gas and Electric Company

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January 15, 2014

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Robert Perdue
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California Regional Water Quality Control Board
Colorado River Basin Region
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Palm Desert, CA 92260

Subject: Topock IM-3 Combined Fourth Quarter 2013 Monitoring, Semiannual July – December 2013 and Annual January - December 2013 Operation and Maintenance Report
PG&E Topock Compressor Station, Needles, California
Interim Measure No. 3 Groundwater Treatment System
(Document ID: PGE20140115A)

Dear Ms. Innis and Mr. Perdue:

Enclosed is the Fourth Quarter 2013 Monitoring, Semiannual July - December 2013 and Annual January – December 2013 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 555,654,954 gallons of water and removed approximately 5,990 pounds of total chromium from August 1, 2005 through December 31, 2013.

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,

Curt Russell
Topock Site Manager

Enclosures:

Topock IM-3 Combined Fourth Quarter 2013 Monitoring, Semiannual July - December 2013, and Annual January - December 2013 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 2013 Monitoring, Semiannual July - December 2013 and Annual January – December 2013 Operation and Maintenance Report Submitting Agency/Authored by: U.S. Department of the Interior and Regional Water Quality Control Board Final Document? ☒ Yes ☐ No	Date of Document: January 15, 2014 Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E Document ID Number: PGE20140115A
Priority Status: ☐ HIGH ☐ MED ☒ LOW Is this time critical? ☐ Yes ☒ No Type of Document: ☐ Draft ☒ Report ☐ Letter ☐ Memo ☐ Other / Explain:	Action Required: ☒ Information Only ☐ Review & Comment Return to: _____ By Date:_____ ☐ 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:	Is this a Regulatory Requirement? ☒ Yes ☐ No If no, why is the document needed?
What is the consequence of NOT doing this item? What is the consequence of DOING this item? Submittal of this report is a compliance requirement of the ARARs for waste discharge as documented in Attachment A to the Letter Agreement issued July 26, 2011.	Other Justification/s: ☐ Permit ☐ Other / Explain:

Brief Summary of attached document:

This report covers the Interim Measures No. 3 (IM-3) groundwater treatment system monitoring activities during the Fourth Quarter 2013 period, and the operation and maintenance activities during the July 1, 2013 to December 31, 2013 semiannual and the January 1, 2013 to December 31, 2013 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. This report also covers the IM-3 operation and maintenance activities during the January – June 2013 semiannual period.

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 2013 Monitoring, Semiannual July - December 2013 and Annual January – December 2013 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

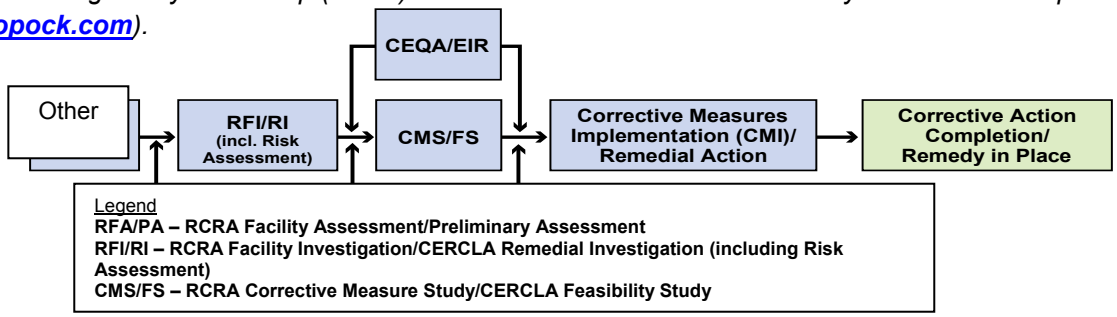
Colorado River Basin Regional Water Quality Control Board (Regional Water Board) to DOI, and the subsequent Letter of Concurrence issued August 18, 2011 from DOI to the Regional Water Board.

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 2013 Monitoring, Semiannual July – December 2013 and Annual January - December 2013 Operation and Maintenance Report

Interim Measure No. 3 Groundwater Treatment System

Document ID: PGE20140115A

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, 2014

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

Combined Fourth Quarter 2013 Monitoring, Semiannual July - December 2013, and Annual January - December 2013 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, 2014

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

Dennis Fink, P.E.
Project Engineer

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B Daily Volumes of Groundwater Treated
C Flowmeter Calibration Records
D Fourth Quarter 2013 Laboratory Analytical Reports

Acronyms and Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements
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
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

SECTION 1

Introduction

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

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

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

This report covers monitoring activities related to operation of the IM-3 groundwater treatment system during the Fourth Quarter 2013 and the operation and maintenance activities during the July 1, 2013 to December 31, 2013 semiannual period and the January 1, 2013 to December 31, 2013 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.

This report describes Fourth Quarter 2013 monitoring activities and the July 1, 2013 through December 31, 2013 (Third and Fourth Quarters) operation and maintenance activities related to the IM-3 groundwater treatment system. IM-3 monitoring activities from January 1, 2013 through September 30, 2013 (First, Second and Third Quarters) were presented in the following monitoring and O&M reports:

- *Topock IM-3 First Quarter 2013 Monitoring Report,* submitted to the DOI and Regional Water Board April 15, 2013
- *Topock IM-3 Second Quarter 2013 Monitoring and July 1, 2013 through December 31, 2013 Operation and Maintenance Report,* submitted to the DOI and Regional Water Board July 15, 2013
- *Topock IM-3 Third Quarter 2013 Monitoring Report,* submitted to the DOI and Regional Water Board October 15, 2013

This report, therefore, serves as the Semiannual July – December 2013 and Annual January – December 2013 Operation and Maintenance Report for IM-3.

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 2013

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 1.2 percent downtime during Fourth Quarter 2013) 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 2013 through September 2013 were originally reported in the *Third Quarter 2013 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System, PG&E Topock Compressor Station, Needles, CA*, published October 15, 2013, 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 2013, 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 only operated for a short time on December 19, 2013 for groundwater sampling. Extraction well TW-2S was not operated during Fourth Quarter 2013. The operational run time for the IM groundwater extraction system (combined or individual pumping), by month, was approximately:

- 99.9 percent during October 2013
- 96.5 percent during November 2013
- 99.9 percent during December 2013

The Fourth Quarter 2013 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 17,601,886 gallons of extracted groundwater during Fourth Quarter 2013.

In addition to extracted groundwater, during Fourth Quarter 2013 the IM-3 facility treated 3,675 gallons of water generated from the groundwater monitoring program and 18,300 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 17,606,809 gallons of treatment system effluent during Fourth Quarter 2013. 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 98,119 gallons of RO concentrate during Fourth Quarter 2013. 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. Six sludge containers were shipped offsite from the IM-3 facility during Fourth Quarter 2013. The shipment dates and approximate weights are provided in Section 5.3.

3.3 Sampling and Analytical Procedures

With the exception of pH, all samples were collected at the designated sampling locations and placed directly into containers provided by Truesdail Laboratories, Inc. (Truesdail). 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 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. 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 2013 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.

SECTION 4

Analytical Results

The analytical results and laboratory reports for the IM-3 groundwater treatment system monitoring program were previously reported for the First, Second and Third Quarters of 2013:

- The January 1, 2013 through March 31, 2013 results were included in the First Quarter 2013 Monitoring Report submitted to the DOI and Regional Water Board on April 15, 2013.
- The April 1, 2013 through June 30, 2013 results were included in the Second Quarter 2013 Monitoring Report submitted to the DOI and Regional Water Board on July 15, 2013.
- The July 1, 2013 through September 30, 2013 results were included in the Third Quarter 2013 Monitoring Report submitted to the DOI and Regional Water Board on October 15, 2013.

Laboratory reports for samples collected in Fourth Quarter 2013 were prepared by certified analytical laboratories, and are presented in Appendix D. The Fourth Quarter 2013 analytical results are presented in Tables 4, 5, 6, and 7:

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

The sludge is required to have an aquatic bioassay test annually. The most recent aquatic bioassay test was conducted on a September 2013 sample, and the results were presented in the Third Quarter 2013 Monitoring Report submitted to the DOI and the Regional Water Board on October 15, 2013.

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, 2013 through December 31, 2013.

All operation and maintenance 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. Operation and maintenance records are also archived using maintenance software. The subsections below summarize the operation and maintenance 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	Flowmeter Location ID	Current Flowmeter Serial No.	Date of Calibration	Date of Installation
Extraction well PE-1	FIT-103	6C036F16000	8/6/2010	9/18/2013
Extraction well TW-3D	FIT-102	6C037316000	1/7/2013	9/4/2013
Extraction well TW-2D[a]	FIT-101	6A022016000	9/20/2013	11/1/2013
Extraction well TW-2S[b]	FIT-100	6A022116000	9/20/2013	11/1/2013
Injection well IW-02	FIT-1202	6C037016000	6/19/2012	7/12/2012
Injection well IW-03	FIT-1203	6C037216000	9/20/2013	10/1/2013
Combined IW-02 and IW-03	FIT-700	7700C616000	7/25/2011	12/13/2011
Reverse osmosis concentrate	FIT-701	6A021F16000	6/19/2012	7/14/2012

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, 2013 and December 31, 2013 are provided in Appendix B. The daily volumes of groundwater treated from January 1, 2013 through June 30, 2013 were reported in the Second Quarter 2013 Monitoring Report and Semiannual January 1- June 30, 2013 Operation and Maintenance Report submitted on July 15, 2013.

Approximately 31,310,018 gallons of groundwater were extracted and treated between July 1, 2013 and December 31, 2013. Treatment of this water at the IM-3 facility is being performed in accordance with the conditions of ARARs.

Additionally, approximately 6,655 gallons of well purge water (generated during well development, monitoring well sampling, and/or aquifer testing), as well as 27,900 gallons of injection well re-development water, were treated at the IM-3 facility during the July 1, 2013 through December 31, 2013 semiannual period.

A total of approximately 34,161,742 gallons of treated groundwater were injected back into the Alluvial Aquifer between July 1, 2013 and December 31, 2013. This is approximately 3 million gallons (approximately 9%) more than the amount reported as extracted due to loss of some flowmeters on August 18, 2013 caused by lightning strikes. More detail is presented in Appendix A and in the table notes in Appendix B, including the following:

On August 18, 2013, lightning strikes caused the flow meters at TW-3D and PE-01 to fail. The extraction pumps continued to operate following the lightning strikes without operable flow meters, because replacement flow meters were not readily available. The flow meter at PE-01 was replaced on August 29, 2013, and the flow meter in TW-3D was replaced September 4, 2013. Due to the meter failures, flow data from a flow meter for PE-01 was unavailable between August 18 and August 28, 2013, and flow data from a flow meter for TW-03D was unavailable from August 18, 2013 through September 4, 2013. The data presented include only data from the time periods during which the flow meters were operating correctly. (Table Note 'd,' August and September Operational Data Tables, Appendix B)

5.3 Residual Solids Generated (Sludge)

During the July 1, 2013 through December 31, 2013 reporting period, 12 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, 2013 through December 31, 2013 reporting period is provided below.

Date Sludge Bin Removed from Site	Approximate Quantity from Waste Manifests (cubic yards)	Type of Shipment
7/23/13	8	Non-RCRA hazardous waste
7/23/13	8	Non-RCRA hazardous waste
8/6/13	8	Non-RCRA hazardous waste
8/6/13	8	Non-RCRA hazardous waste
8/27/13	8	Non-RCRA hazardous waste
8/27/13	8	Non-RCRA hazardous waste
10/1/13	8	Non-RCRA hazardous waste
10/1/13	8	Non-RCRA hazardous waste
11/12/13	8	Non-RCRA hazardous waste
11/12/13	8	Non-RCRA hazardous waste
12/10/13	8	Non-RCRA hazardous waste
12/10/13	8	Non-RCRA hazardous waste

Notes:
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, 2013 through December 31, 2013, approximately 347,701 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, 2013 through December 31, 2013 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, 2013 through December 31, 2013 semiannual reporting period.

Activities during the Fourth Quarter 2013 included no extended shutdown.

In addition to the routine O&M activities, IM-3 operators managed an extraction line valve vault release in the fourth quarter 2013. Notification was made to DTSC, BLM and the Regional Water Board by telephone and email:

------- Begin Email -------

From: *Russell, Curt [mailto:GCR4@pge.com]*
Sent: *Friday, November 08, 2013 4:37 PM*
To: *Aaron Yue; Cathy_Wolff-White@blm.gov; Jose Cortez*
Cc: *Bilbrey, Sheryl; Meeks, Yvonne J; 'Pam Innis'; 'Nora McDowell-Antone'; 'Dawn Hubbs, Hualapai'; howard.magill@crit-nsn.gov; Steven Escobar; Edgar Castillo (CocopahTPM@gmail.com); 'culturalres@cocopah.com'; Smith, Chris K; Caruso, A. Glenn; Nez, Valisa; Hong, Christina/LAC; Jayo, Juan (Law)*
Subject: *Notification - Release of IM-3 Extraction Water from Aboveground Pipeline Vault - 11/7/2013*

Aaron, Cathy, and Jose -

This e-mail is a follow-up to the telephone calls that I made to each of you yesterday about a release of IM-3 extraction water from one of the vaults along the IM-3 extraction water pipeline. Although the water released is non-hazardous and did not threaten human health or the environment, the vault is located on BLM property and some of the water was released to the ground adjacent to the vault.

Here is more specific information on the release:

- ***Date and time:*** *Thursday, 11/7/2013, approximately 10:03 a.m.*
- ***Estimated quantity of release:*** *Approximately 15 gallons*
- ***Location:*** *Extraction water pipeline vault; along IM-3 access road; east of the treatment plant; at the top of the hill by the sharp turn in the access road*
- ***Released material:*** *IM-3 extraction water, 0.8 ppm hexavalent chromium*

The air release valve assembly failed shortly before 10:00 a.m. and the sealed vault filled with extraction water. At 10:03 a.m. water was observed seeping out of the vault and soaking into the adjacent soil. The extraction system was shut down at 10:04 a.m. and the IM-3 crew responded to the release site.

The vault was filled with water, which was pumped into a container. This container was taken to the IM-3 treatment plant where the water was processed. The wetted soil was excavated using hand tools and disposed of with similar material at the IM-3 treatment plant. The hole was filled with stockpiled soil of local origin.

The failed air relief valve assembly was replaced and the extraction system was back online at10:39 a.m.

I notified BLM, DTSC, and CRRWQCB by telephone shortly after the release. We have photographs which I can't send with this e-mail, but I will forward them later.

Please call me at 760-791-5884 if you have any questions.

Curt

------- End Email -------

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, 2013 through December 31, 2013 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, 2014

Tables

TABLE 1
Sampling Station Descriptions
Fourth Quarter 2013 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 Figure 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).

Note:

= 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 2013 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 2013 Average Monthly Flowrate	134.8	135.1	0.6
November 2013 Average Monthly Flowrate	129.5	129.6	0.8
December 2013 Average Monthly Flowrate	134.2	133.9	0.8

Notes:

gpm: gallons per minute

[a] Extraction wells TW-3D and PE-1 were operated during the Fourth Quarter 2013. Extraction wells TW-2D and TW-2S operated on December 19, 2013 for groundwater sampling.

[b] The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the Fourth Quarter 2013 is approximately 0.59 percent.

TABLE 3
Sample Collection Dates
Fourth Quarter 2013 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System

Parameter	Sample Collection Dates	Results
Influent	October 1, 2013 November 5, 2013 December 3, 2013	See Table 4
Effluent	October 1, 2013 October 8, 2013 October 15, 2013 October 22, 2013 October 29, 2013 November 5, 2013 November 12, 2013 November 19, 2013 November 26, 2013 December 3, 2013 December 10, 2013 December 17, 2013 December 24, 2013 December 30, 2013	See Table 5
Reverse Osmosis Concentrate	October 1, 2013	See Table 6
Sludge[a]	Third Quarter Composite sent to lab October 1, 2013	See Table 7

Notes:

[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 2013 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Monthly																						
Analytes		TDS	Turbidity	Specific Conductance	Field [c] pH	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate (as N)	Nitrite (as N)	Sulfate	Iron	Zinc
Units [b]		mg/L	NTU	µmhos/cm	pH units	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L
MDL		1.76	0.0140	0.606	---	0.710	0.300	7.20	0.0318	0.0350	0.0500	0.300	0.0041	0.190	0.0600	0.140	0.0600	0.0500	0.240	0.0415	0.00063	0.768	3.00	5.10
Sample ID	Date																							
SC-100B-WDR-434	**10/1/2013**	**4450**	**ND (0.100)**	**6990**	**7.2**	**684**	**663**	**ND (50.0)**	**ND (0.500)**	**ND (2.00)**	**3.60**	**27.2**	**0.927**	**ND (5.00)**	**2.36**	**ND (1.00)**	**4.40**	**21.1**	**ND (2.00)**	**2.93**	**ND (0.0050)J**	**500**	**ND (20.0)**	**ND (20.0)**
RL		250	0.100	2.00	---	2.00	10.0	50.0	0.500	2.00	0.500	5.00	0.200	5.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	50.0	20.0	20.0
SC-100B-WDR-439	**11/5/2013**	**4530**	**ND (0.100)**	**7390**	**7.3**	**610**	**654**	**ND (20.0)**	**ND (0.500)**	**ND (2.00)**	**3.60**	**29.2**	**0.971**	**ND (5.00)**	**2.43**	**ND (1.00)**	**4.80**	**18.1**	**ND (2.00)**	**2.93**	**ND (0.0050)**	**513**	**ND (20.0)**	**51.0**
RL		250	0.100	2.00	---	2.00	10.0	20.0	0.500	2.00	0.500	5.00	0.200	5.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	12.5	20.0	20.0
SC-100B-WDR-443	**12/3/2013**	**4540**	**ND (0.100)**	**6760**	**7.2**	**708**	**651**	**ND (50.0)**	**ND (0.500)**	**ND (2.00)**	**3.90**	**27.6**	**1.02**	**ND (5.00)**	**2.32**	**ND (1.00)**	**4.30**	**20.6**	**ND (2.00)**	**2.93 J**	**ND (0.0050)**	**526**	**ND (20.0)**	**ND (20.0)**
RL		125	0.100	2.00	---	5.00	10.0	50.0	0.500	2.00	0.500	5.00	0.0500	5.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	25.0	20.0	20.0

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 5
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Effluent Monitoring Results[a]
Fourth Quarter 2013 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Effluent Limits[b]	Ave. Monthly	NA	NA	NA	6.5-8.4	25	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Max Daily	NA	NA	NA	6.5-8.4	50	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sampling Frequency				**Weekly**													**Monthly**								
	Analytes	TDS	Turbidity	Specific Conductance	Field pH[e]	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate (as N)	Nitrite (as N)	Sulfate	Iron	Zinc
	Units[c]	mg/L	NTU	µmhos/cm	pH units	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L
	MDL[d]	1.76	0.0140	0.606	---	0.0710	0.0060	7.20	0.0318	0.0350	0.0500	0.300	0.0041	0.190	0.0600	0.140	0.0600	0.0500	0.240	0.0415	0.00063	0.768	3.00	5.10
Sample ID	**Date**																								
SC-700B-WDR-434	**10/1/2013**	**4410**	**ND (0.100)J**	**7290**	**7.40**	**ND (1.00)**	**ND (0.200)**	**ND (50.0)**	**ND (0.500)**	**ND (2.00)**	**1.00**	**12.7**	**0.921**	**ND (5.00)**	**2.10**	**ND (1.00)**	**4.80**	**23.5**	**ND (2.00)**	**2.92**	**ND (0.0050)J**	**512**	**37.7**	**ND (20.0)**
RL		250	0.100	2.00	---	1.00	0.200	50.0	0.500	2.00	0.500	5.00	0.200	5.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	50.0	20.0	20.0
SC-700B-WDR-435	**10/8/2013**	**3640**	**ND (0.100)**	**6490**	**7.10**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.10**	**---**	**---**	**---**	**ND (0.0050)**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	0.0050	---	---	---
SC-700B-WDR-436	**10/15/2013**	**5690**	**ND (0.100)**	**6770**	**7.10**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.30**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-437	**10/22/2013**	**4340**	**ND (0.100)**	**6750**	**7.10**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.70**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-438	**10/29/2013**	**4420**	**ND (0.100)**	**6510**	**7.00**	**ND (1.00)**	**0.210**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.10**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-439	**11/5/2013**	**4430**	**ND (0.100)**	**7520**	**7.10**	**ND (1.00)**	**0.240**	**ND (20.0)**	**ND (0.500)**	**ND (2.00)**	**ND (0.500)**	**12.6**	**0.947**	**ND (5.00)**	**1.90**	**ND (1.00)**	**3.00**	**18.6**	**ND (2.00)**	**2.92**	**ND (0.0050)**	**519**	**ND (20.0)**	**ND (20.0)**
RL		250	0.100	2.00	---	1.00	0.200	20.0	0.500	2.00	0.500	5.00	0.200	5.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	12.5	20.0	20.0
SC-700B-WDR-440	**11/12/2013**	**4480**	**ND (0.100)**	**6920**	**7.00**	**ND (1.00)**	**0.240**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**2.00**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-441	**11/19/2013**	**4370**	**0.136**	**6520**	**6.90**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**0.760**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-442	**11/26/2013**	**4340**	**ND (0.100)**	**6680**	**6.80**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.70**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-443	**12/3/2013**	**4410**	**ND (0.100)**	**6640**	**7.20**	**ND (1.00)**	**ND (0.200)**	**ND (50.0)**	**ND (0.500)**	**ND (2.00)**	**0.610**	**14.3**	**0.959**	**ND (5.00)**	**2.10**	**ND (1.00)**	**2.90**	**20.2**	**ND (2.00)**	**2.87 J**	**ND (0.0050)**	**522**	**ND (20.0)**	**ND (20.0)**
RL		125	0.100	2.00	---	1.00	0.200	50.0	0.500	2.00	0.500	5.00	0.0500	5.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	25.0	20.0	20.0
SC-700B-WDR-444	**12/10/2013**	**4340**	**ND (0.100)**	**6460**	**7.10**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**2.60**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-445	**12/17/2013**	**4560**	**ND (0.100)**	**6640**	**7.00**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.50**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-446	**12/23/2013**	**4680**	**ND (0.100)**	**7330**	**6.90**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**2.00**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-447	**12/30/2013**	**4250**	**ND (0.100)**	**6290**	**7.00**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**4.20**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		125	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	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
NA = not applicable
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 effluent samples is tap on pipe downstream from tank T-700 to injection wells (see attached P&ID TP-PR-10-10-04).

[b] In addition to the listed effluent limits, the ARARs state that the effluent shall not contain heavy metals, chemicals, pesticides or other constituents in concentrations toxic to human health.

[c] Units reported in this table are those units required in the ARARs.

[d] MDL listed is the target MDL by analysis method; however, the MDL may change for each sample analysis due to the dilution required by the matrix to meet the method QC requirements. The target MDL for each method/analyte combination is calculated annually.

[e] 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 2013 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																					
Analytes		TDS	Specific Conductance	Field pH [c]	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units [b]		mg/L	µmhos/cm	pH units	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
MDL		1.76	0.606	---	0.000071	0.000030	0.000070	0.00010	0.00059	0.000072	0.000080	0.000030	0.00038	0.104	0.00029	0.00010	0.000080	0.00024	0.00021	0.000058	0.000060	0.000070	0.0051
Sample ID	Date																						
SC-701-WDR-434	**10/1/2013**	**23400**	**31800**	**7.8**	**0.00290**	**ND (0.0010)**	**ND (0.0020)**	**0.00110**	**0.0672**	**ND (0.00050)**	**ND (0.0010)**	**ND (0.0050)**	**ND (0.0050)**	**11.3**	**ND (0.0010)**	**0.108**	**ND (0.00040)**	**0.00720**	**0.0253**	**ND (0.0050)**	**ND (0.0010)**	**ND (0.0050)**	**ND (0.0200)**
RL		500	2.00	---	0.0010	0.0010	0.0020	0.00050	0.0050	0.00050	0.0010	0.0050	0.0050	0.500	0.0010	0.0020	0.00040	0.0020	0.0050	0.0050	0.0010	0.0050	0.0200

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 2013 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																		
Analytes		Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units[b]		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL		0.0140	0.0022	0.0694	0.00025	0.0188	0.00036	0.0025	0.0020	0.00095	0.0209	0.0040	0.00025	0.000080	0.0040	0.0064	0.0032	0.00015	0.0056	0.0102
Sample ID	**Date**																			
SC-Sludge-WDR-434	**10/1/2013**	**6770**	**81.2**	**158**	**31.6**	**156**	**ND (2.45)**	**25.2**	**ND (10.0)**	**36.3**	**67.3**	**6.55**	**11.2 J**	**0.243 J**	**28.2**	**ND (5.00)**	**ND (5.00)**	**ND (5.00)**	**81.1**	**86.5**
RL		24.5	2.03	34.3	5.00	10.0	2.45	4.90	10.0	5.00	10.1	5.00	10.0	0.100	5.00	5.00	5.00	5.00	5.00	10.0

NOTES:

(---) = not required by the ARARs Monitoring and Reporting Program
J = concentration or reporting limits estimated by laboratory or validation
mg/kg = milligrams per killogram
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.

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2013 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-434	Ryan Phelps	10/1/2013	2:05:00 PM	TLI	EPA 120.1	SC	10/8/2013	Maksim Gorbunov
					TLI	EPA 200.7	AL	10/15/2013	Denise Chauv
					TLI	EPA 200.7	B	10/15/2013	Denise Chauv
					TLI	EPA 200.7	FE	10/15/2013	Denise Chauv
					TLI	EPA 200.7	ZN	10/15/2013	Denise Chauv
					TLI	EPA 200.8	AS	10/7/2013	Ethel Suico
					TLI	EPA 200.8	BA	10/4/2013	Ethel Suico
					TLI	EPA 200.8	CR	10/4/2013	Ethel Suico
					TLI	EPA 200.8	CU	10/7/2013	Ethel Suico
					TLI	EPA 200.8	MN	10/4/2013	Ethel Suico
					TLI	EPA 200.8	MO	10/4/2013	Ethel Suico
					TLI	EPA 200.8	NI	10/4/2013	Ethel Suico
					TLI	EPA 200.8	PB	10/4/2013	Ethel Suico
					TLI	EPA 200.8	SB	10/4/2013	Ethel Suico
					TLI	EPA 218.6	CR6	10/2/2013	Naheed Eidinejad
					TLI	EPA 300.0	FL	10/2/2013	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	10/2/2013	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	10/7/2013	Giawad Ghenniwa
					FIELD	HACH	PH	10/1/2013	Ryan Phelps
					TLI	SM2130B	TRB	10/4/2013	Kim Luck
					TLI	SM2540C	TDS	10/7/2013	Maksim Gorbunov
					TLI	SM4500NH3D	NH3N	10/22/2013	Maria Mangarova
					TLI	SM4500NO2B	NO2N	10/4/2013	Maksim Gorbunov
SC-100B	SC-100B-WDR-439	Chris Lentz	11/5/2013	2:00:00 PM	TLI	EPA 120.1	SC	11/6/2013	Jenny Tankunakorn
					TLI	EPA 200.7	AL	11/12/2013	Denise Chauv
					TLI	EPA 200.7	B	11/11/2013	Denise Chauv
					TLI	EPA 200.7	FE	11/11/2013	Denise Chauv
					TLI	EPA 200.7	FETD	11/11/2013	Denise Chauv
					TLI	EPA 200.7	ZN	11/13/2013	Denise Chauv
					TLI	EPA 200.8	AS	11/7/2013	Ethel Suico
					TLI	EPA 200.8	BA	11/7/2013	Ethel Suico
					TLI	EPA 200.8	CR	11/7/2013	Ethel Suico
					TLI	EPA 200.8	CU	11/7/2013	Ethel Suico
					TLI	EPA 200.8	MN	11/7/2013	Ethel Suico
					TLI	EPA 200.8	MND	11/18/2013	Ethel Suico
					TLI	EPA 200.8	MO	11/7/2013	Ethel Suico

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2013 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-439	Chris Lentz	11/5/2013	2:00:00 PM	TLI	EPA 200.8	NI	11/7/2013	Ethel Suico
					TLI	EPA 200.8	PB	11/7/2013	Ethel Suico
					TLI	EPA 200.8	SB	11/7/2013	Ethel Suico
					TLI	EPA 218.6	CR6	11/6/2013	Naheed Eidinejad
					TLI	EPA 300.0	FL	11/6/2013	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	11/6/2013	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	11/6/2013	Giawad Ghenniwa
					FIELD	HACH	PH	11/5/2013	Chris Lentz
					TLI	SM 2320B	ALKB	11/6/2013	Himani Vaishnav
					TLI	SM 2320B	ALKC	11/6/2013	Himani Vaishnav
					TLI	SM2130B	TRB	11/5/2013	Kim Luck
					TLI	SM2540C	TDS	11/6/2013	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	11/8/2013	Maria Mangarova/Kim Luck
					TLI	SM4500NO2B	NO2N	11/7/2013	Jenny Tankunakorn
SC-100B	SC-100B-WDR-443	Chris Lentz	12/3/2013	1:45:00 PM	TLI	EPA 120.1	SC	12/5/2013	Jenny Tankunakorn
					TLI	EPA 200.7	AL	12/5/2013	Ethel Suico
					TLI	EPA 200.7	B	12/5/2013	Ethel Suico
					TLI	EPA 200.7	FE	12/5/2013	Ethel Suico
					TLI	EPA 200.7	FETD	12/5/2013	Ethel Suico
					TLI	EPA 200.7	ZN	12/5/2013	Ethel Suico
					TLI	EPA 200.8	AS	12/5/2013	Ethel Suico
					TLI	EPA 200.8	BA	12/5/2013	Ethel Suico
					TLI	EPA 200.8	CR	12/5/2013	Ethel Suico
					TLI	EPA 200.8	CU	12/5/2013	Ethel Suico
					TLI	EPA 200.8	MN	12/5/2013	Ethel Suico
					TLI	EPA 200.8	MND	12/6/2013	Ethel Suico
					TLI	EPA 200.8	MO	12/5/2013	Ethel Suico
					TLI	EPA 200.8	NI	12/5/2013	Ethel Suico
					TLI	EPA 200.8	PB	12/6/2013	Ethel Suico
					TLI	EPA 200.8	SB	12/5/2013	Ethel Suico
					TLI	EPA 218.6	CR6	12/4/2013	Naheed Eidinejad
					TLI	EPA 300.0	FL	12/5/2013	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	12/5/2013	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	12/5/2013	Giawad Ghenniwa
					FIELD	HACH	PH	12/3/2013	Chris Lentz
					TLI	SM 2320B	ALKB	12/16/2013	Himani Vaishnav

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2013 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-443	Chris Lentz	12/3/2013	1:45:00 PM	TLI	SM 2320B	ALKC	12/16/2013	Himani Vaishnav
					TLI	SM2130B	TRB	12/4/2013	Felipe Mendoza
					TLI	SM2540C	TDS	12/6/2013	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	12/11/2013	Maria Mangarova/Himani Vaishnav
					TLI	SM4500NO2B	NO2N	12/5/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-434	Ryan Phelps	10/1/2013	1:55:00 PM	TLI	EPA 120.1	SC	10/8/2013	Maksim Gorbunov
					TLI	EPA 200.7	AL	10/15/2013	Denise Chauv
					TLI	EPA 200.7	B	10/15/2013	Denise Chauv
					TLI	EPA 200.7	FE	10/15/2013	Denise Chauv
					TLI	EPA 200.7	ZN	10/15/2013	Denise Chauv
					TLI	EPA 200.8	AS	10/7/2013	Ethel Suico
					TLI	EPA 200.8	BA	10/4/2013	Ethel Suico
					TLI	EPA 200.8	CR	10/4/2013	Ethel Suico
					TLI	EPA 200.8	CU	10/7/2013	Ethel Suico
					TLI	EPA 200.8	MN	10/4/2013	Ethel Suico
					TLI	EPA 200.8	MO	10/4/2013	Ethel Suico
					TLI	EPA 200.8	NI	10/4/2013	Ethel Suico
					TLI	EPA 200.8	PB	10/4/2013	Ethel Suico
					TLI	EPA 200.8	SB	10/4/2013	Ethel Suico
					TLI	EPA 218.6	CR6	10/2/2013	Naheed Eidinejad
					TLI	EPA 300.0	FL	10/2/2013	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	10/2/2013	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	10/2/2013	Giawad Ghenniwa
					FIELD	HACH	PH	10/1/2013	Ryan Phelps
					TLI	SM2130B	TRB	10/4/2013	Kim Luck
					TLI	SM2540C	TDS	10/7/2013	Maksim Gorbunov
					TLI	SM4500NH3D	NH3N	10/17/2013	Maria Mangarova
					TLI	SM4500NO2B	NO2N	10/4/2013	Maksim Gorbunov
SC-700B	SC-700B-WDR-435	Ryan Phelps	10/8/2013	2:50:00 PM	TLI	EPA 120.1	SC	10/11/2013	Maksim Gorbunov
					TLI	EPA 200.8	CR	10/9/2013	Ethel Suico
					TLI	EPA 200.8	MN	10/9/2013	Ethel Suico
					TLI	EPA 218.6	CR6	10/9/2013	Tom Martinez/Naheed Eidinejad
					FIELD	HACH	PH	10/8/2013	George Gloria
					TLI	SM2130B	TRB	10/9/2013	Kim Luck
					TLI	SM2540C	TDS	10/9/2013	Kim Luck

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Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2013 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-435	Ryan Phelps	10/8/2013	2:50:00 PM	TLI	SM4500NO2B	NO2N	10/9/2013	Maksim Gorbunov
SC-700B	SC-700B-WDR-436	Ryan Phelps	10/15/2013	12:35:00 PM	TLI	EPA 120.1	SC	10/17/2013	Jenny Tankunakorn
					TLI	EPA 200.8	CR	10/22/2013	Ethel Suico
					TLI	EPA 200.8	MN	10/22/2013	Ethel Suico
					TLI	EPA 218.6	CR6	10/16/2013	Naheed Eidinejad
					FIELD	HACH	PH	10/15/2013	Jamie G
					TLI	SM2130B	TRB	10/16/2013	Kim Luck
					TLI	SM2540C	TDS	10/22/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-437	Ryan Phelps	10/22/2013	12:45:00 PM	TLI	EPA 120.1	SC	10/23/2013	Jenny Tankunakorn
					TLI	EPA 200.8	CR	10/26/2013	Ethel Suico
					TLI	EPA 200.8	MN	10/26/2013	Ethel Suico
					TLI	EPA 218.6	CR6	10/23/2013	Naheed Eidinejad
					FIELD	HACH	PH	10/22/2013	Ryan Phelps
					TLI	SM2130B	TRB	10/22/2013	Kim Luck
					TLI	SM2540C	TDS	10/23/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-438	Chris Lentz	10/29/2013	2:30:00 PM	TLI	EPA 120.1	SC	11/1/2013	Jenny Tankunakorn
					TLI	EPA 200.8	CR	10/31/2013	Ethel Suico
					TLI	EPA 200.8	MN	10/31/2013	Ethel Suico
					TLI	EPA 218.6	CR6	10/30/2013	Naheed Eidinejad
					FIELD	HACH	PH	10/29/2013	Chris Lentz
					TLI	SM2130B	TRB	10/29/2013	Kim Luck
					TLI	SM2540C	TDS	10/30/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-439	Chris Lentz	11/5/2013	2:00:00 PM	TLI	EPA 120.1	SC	11/6/2013	Jenny Tankunakorn
					TLI	EPA 200.7	AL	11/12/2013	Denise Chauv
					TLI	EPA 200.7	B	11/11/2013	Denise Chauv
					TLI	EPA 200.7	FE	11/11/2013	Denise Chauv
					TLI	EPA 200.7	ZN	11/13/2013	Denise Chauv
					TLI	EPA 200.8	AS	11/7/2013	Ethel Suico
					TLI	EPA 200.8	BA	11/7/2013	Ethel Suico
					TLI	EPA 200.8	CR	11/7/2013	Ethel Suico
					TLI	EPA 200.8	CU	11/7/2013	Ethel Suico
					TLI	EPA 200.8	MN	11/7/2013	Ethel Suico
					TLI	EPA 200.8	MO	11/7/2013	Ethel Suico
					TLI	EPA 200.8	NI	11/7/2013	Ethel Suico
					TLI	EPA 200.8	PB	11/7/2013	Ethel Suico

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2013 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-439	Chris Lentz	11/5/2013	2:00:00 PM	TLI	EPA 200.8	SB	11/7/2013	Ethel Suico
					TLI	EPA 218.6	CR6	11/6/2013	Naheed Eidinejad
					TLI	EPA 300.0	FL	11/6/2013	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	11/6/2013	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	11/6/2013	Giawad Ghenniwa
					FIELD	HACH	PH	11/5/2013	Chris Lentz
					TLI	SM2130B	TRB	11/5/2013	Kim Luck
					TLI	SM2540C	TDS	11/6/2013	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	11/8/2013	Maria Mangarova/Kim Luck
					TLI	SM4500NO2B	NO2N	11/7/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-440	Chris Lentz	11/12/2013	12:30:00 PM	TLI	EPA 120.1	SC	11/14/2013	Jenny Tankunakorn
					TLI	EPA 200.8	CR	11/13/2013	Ethel Suico
					TLI	EPA 200.8	MN	11/13/2013	Ethel Suico
					TLI	EPA 218.6	CR6	11/14/2013	Felipe Mendoza
					FIELD	HACH	PH	11/12/2013	Chris Lentz
					TLI	SM2130B	TRB	11/13/2013	Himani Vaishnav
					TLI	SM2540C	TDS	11/14/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-441	Chris Lentz	11/19/2013	11:45:00 AM	TLI	EPA 120.1	SC	11/20/2013	Jenny Tankunakorn
					TLI	EPA 200.8	CR	11/21/2013	Ethel Suico
					TLI	EPA 200.8	MN	11/21/2013	Ethel Suico
					TLI	EPA 218.6	CR6	11/20/2013	Naheed Eidinejad
					FIELD	HACH	PH	11/19/2013	Chris Lentz
					TLI	SM2130B	TRB	11/20/2013	Himani Vaishnav
					TLI	SM2540C	TDS	11/20/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-442	Chris Lentz	11/26/2013	7:05:00 AM	TLI	EPA 120.1	SC	11/27/2013	Jenny Tankunakorn
					TLI	EPA 200.8	CR	12/2/2013	Ethel Suico
					TLI	EPA 200.8	MN	12/2/2013	Ethel Suico
					TLI	EPA 218.6	CR6	12/2/2013	Naheed Eidinejad
					FIELD	HACH	PH	11/26/2013	Chris Lentz
					TLI	SM2130B	TRB	11/27/2013	Himani Vaishnav
					TLI	SM2540C	TDS	11/27/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-443	Chris Lentz	12/3/2013	1:45:00 PM	TLI	EPA 120.1	SC	12/5/2013	Jenny Tankunakorn
					TLI	EPA 200.7	AL	12/5/2013	Ethel Suico
					TLI	EPA 200.7	B	12/5/2013	Ethel Suico
					TLI	EPA 200.7	FE	12/5/2013	Ethel Suico

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2013 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-443	Chris Lentz	12/3/2013	1:45:00 PM	TLI	EPA 200.7	ZN	12/5/2013	Ethel Suico
					TLI	EPA 200.8	AS	12/5/2013	Ethel Suico
					TLI	EPA 200.8	BA	12/5/2013	Ethel Suico
					TLI	EPA 200.8	CR	12/5/2013	Ethel Suico
					TLI	EPA 200.8	CU	12/5/2013	Ethel Suico
					TLI	EPA 200.8	MN	12/5/2013	Ethel Suico
					TLI	EPA 200.8	MO	12/5/2013	Ethel Suico
					TLI	EPA 200.8	NI	12/5/2013	Ethel Suico
					TLI	EPA 200.8	PB	12/6/2013	Ethel Suico
					TLI	EPA 200.8	SB	12/5/2013	Ethel Suico
					TLI	EPA 218.6	CR6	12/4/2013	Naheed Eidinejad
					TLI	EPA 300.0	FL	12/5/2013	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	12/5/2013	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	12/5/2013	Giawad Ghenniwa
					FIELD	HACH	PH	12/3/2013	Chris Lentz
					TLI	SM2130B	TRB	12/4/2013	Felipe Mendoza
					TLI	SM2540C	TDS	12/6/2013	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	12/11/2013	Maria Mangarova/Himani Vaishnav
					TLI	SM4500NO2B	NO2N	12/5/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-444	Chris Lentz	12/10/2013	1:05:00 PM	TLI	EPA 120.1	SC	12/12/2013	Jenny Tankunakorn
					TLI	EPA 200.8	CR	12/11/2013	Ethel Suico
					TLI	EPA 200.8	MN	12/11/2013	Ethel Suico
					TLI	EPA 218.6	CR6	12/11/2013	Naheed Eidinejad
					FIELD	HACH	PH	12/10/2013	Chris Lentz
					TLI	SM2130B	TRB	12/11/2013	Felipe Mendoza
					TLI	SM2540C	TDS	12/12/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-445	Chris Lentz	12/17/2013	12:40:00 PM	TLI	EPA 120.1	SC	12/19/2013	Jenny Tankunakorn
					TLI	EPA 200.8	CR	12/18/2013	Ethel Suico
					TLI	EPA 200.8	MN	12/18/2013	Ethel Suico
					TLI	EPA 218.6	CR6	12/18/2013	Naheed Eidinejad
					FIELD	HACH	PH	12/17/2013	Chris Lentz
					TLI	SM2130B	TRB	12/19/2013	Felipe Mendoza
					TLI	SM2540C	TDS	12/19/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-446	George Gloria	12/23/2013	9:45:00 AM	TLI	EPA 120.1	SC	12/26/2013	Jenny Tankunakorn
					TLI	EPA 200.8	CR	12/27/2013	Ethel Suico

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2013 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-446	George Gloria	12/23/2013	9:45:00 AM	TLI	EPA 200.8	MN	12/27/2013	Ethel Suico
					TLI	EPA 218.6	CR6	12/23/2013	Maksim Gorbunov
					FIELD	HACH	PH	12/23/2013	George Gloria
					TLI	SM2130B	TRB	12/23/2013	Felipe Mendoza
					TLI	SM2540C	TDS	12/26/2013	Jenny Tankunakorn
SC-700B	SC-700B-WDR-447	Ron Phelps	12/30/2013	7:15:00 AM	TLI	EPA 120.1	SC	1/2/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	1/3/2014	Ethel Suico
					TLI	EPA 200.8	MN	1/3/2014	Ethel Suico
					TLI	EPA 218.6	CR6	1/2/2014	Naheed Eidinejad
					FIELD	HACH	PH	12/30/2013	Ron Phelps
					TLI	SM2130B	TRB	12/30/2013	Himani Vaishnav
					TLI	SM2540C	TDS	1/2/2014	Jenny Tankunakorn
SC-701	SC-701-WDR-434	Ryan Phelps	10/1/2013	2:13:00 PM	TLI	EPA 120.1	SC	10/14/2013	Maksim Gorbunov
					TLI	EPA 200.7	ZN	10/15/2013	Denise Chauv
					TLI	EPA 200.8	AG	10/4/2013	Ethel Suico
					TLI	EPA 200.8	AS	10/7/2013	Ethel Suico
					TLI	EPA 200.8	BA	10/4/2013	Ethel Suico
					TLI	EPA 200.8	BE	10/7/2013	Ethel Suico
					TLI	EPA 200.8	CD	10/4/2013	Ethel Suico
					TLI	EPA 200.8	CO	10/4/2013	Ethel Suico
					TLI	EPA 200.8	CR	10/4/2013	Ethel Suico
					TLI	EPA 200.8	CU	10/7/2013	Ethel Suico
					TLI	EPA 200.8	HG	10/4/2013	Ethel Suico
					TLI	EPA 200.8	MN	10/4/2013	Ethel Suico
					TLI	EPA 200.8	MO	10/4/2013	Ethel Suico
					TLI	EPA 200.8	NI	10/4/2013	Ethel Suico
					TLI	EPA 200.8	PB	10/4/2013	Ethel Suico
					TLI	EPA 200.8	SB	10/4/2013	Ethel Suico
					TLI	EPA 200.8	SE	10/4/2013	Ethel Suico
					TLI	EPA 200.8	TL	10/4/2013	Ethel Suico
					TLI	EPA 200.8	V	10/4/2013	Ethel Suico
					TLI	EPA 218.6	CR6	10/2/2013	Naheed Eidinejad
					TLI	EPA 300.0	FL	10/2/2013	Giawad Ghenniwa
					FIELD	HACH	PH	10/1/2013	Ryan Phelps
					TLI	SM2540C	TDS	10/7/2013	Maksim Gorbunov

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
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Fourth Quarter 2013 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	SC-Sludge-WDR-434	Ryan Phelps	10/1/2013	1:45:00 PM	TLI	EPA 300.0	FL	10/2/2013	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	10/2/2013	Giawad Ghenniwa
					TLI	EPA 6010B	AG	10/10/2013	Denise Chauv
					TLI	EPA 6010B	BA	10/4/2013	Denise Chauv
					TLI	EPA 6010B	CD	10/4/2013	Denise Chauv
					TLI	EPA 6010B	CO	10/4/2013	Denise Chauv
					TLI	EPA 6010B	CR	10/14/2013	Denise Chauv
					TLI	EPA 6010B	MN	10/4/2013	Denise Chauv
					TLI	EPA 6010B	NI	10/4/2013	Denise Chauv
					TLI	EPA 6010B	PB	10/4/2013	Denise Chauv
					TLI	EPA 6010B	SB	10/4/2013	Denise Chauv
					TLI	EPA 6010B	SE	10/4/2013	Denise Chauv
					TLI	EPA 6010B	V	10/4/2013	Denise Chauv
					TLI	EPA 6010B	ZN	10/4/2013	Denise Chauv
					TLI	SM2540B	MOIST	10/7/2013	Kim Luck
					TLI	SW 6020A	AS	11/6/2013	Ethel Suico
					TLI	SW 6020A	BE	11/8/2013	Ethel Suico
					TLI	SW 6020A	CU	11/6/2013	Ethel Suico
					TLI	SW 6020A	HG	10/8/2013	Ethel Suico
					TLI	SW 6020A	MO	11/6/2013	Ethel Suico
					TLI	SW 6020A	TL	11/6/2013	Ethel Suico
					TLI	SW 7199	CR6	10/8/2013	Naheed Eidinejad/Tom Martinez

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	NO2N =	nitrite (as N)
B =	boron	NO3N =	nitrate (as N)
BA =	barium	PB =	lead
BE =	beryllium	PH =	pH
CD =	cadmium	SB =	antimony
CO =	cobalt	SC =	specific conductance
CR =	chromium	SE =	selenium
CR6 =	hexavalent chromium	SO4 =	sulfate
CU =	copper	TDS =	total dissolved solids
FE =	iron	TL =	thallium
FETD =	iron, dissolved	TLI =	Truesdail Laboratories, Inc.
FL =	fluoride	TRB =	turbidity
HG =	mercury	V =	vanadium
MN =	manganese	ZN =	zinc
MND =	manganese, dissolved		

Figures

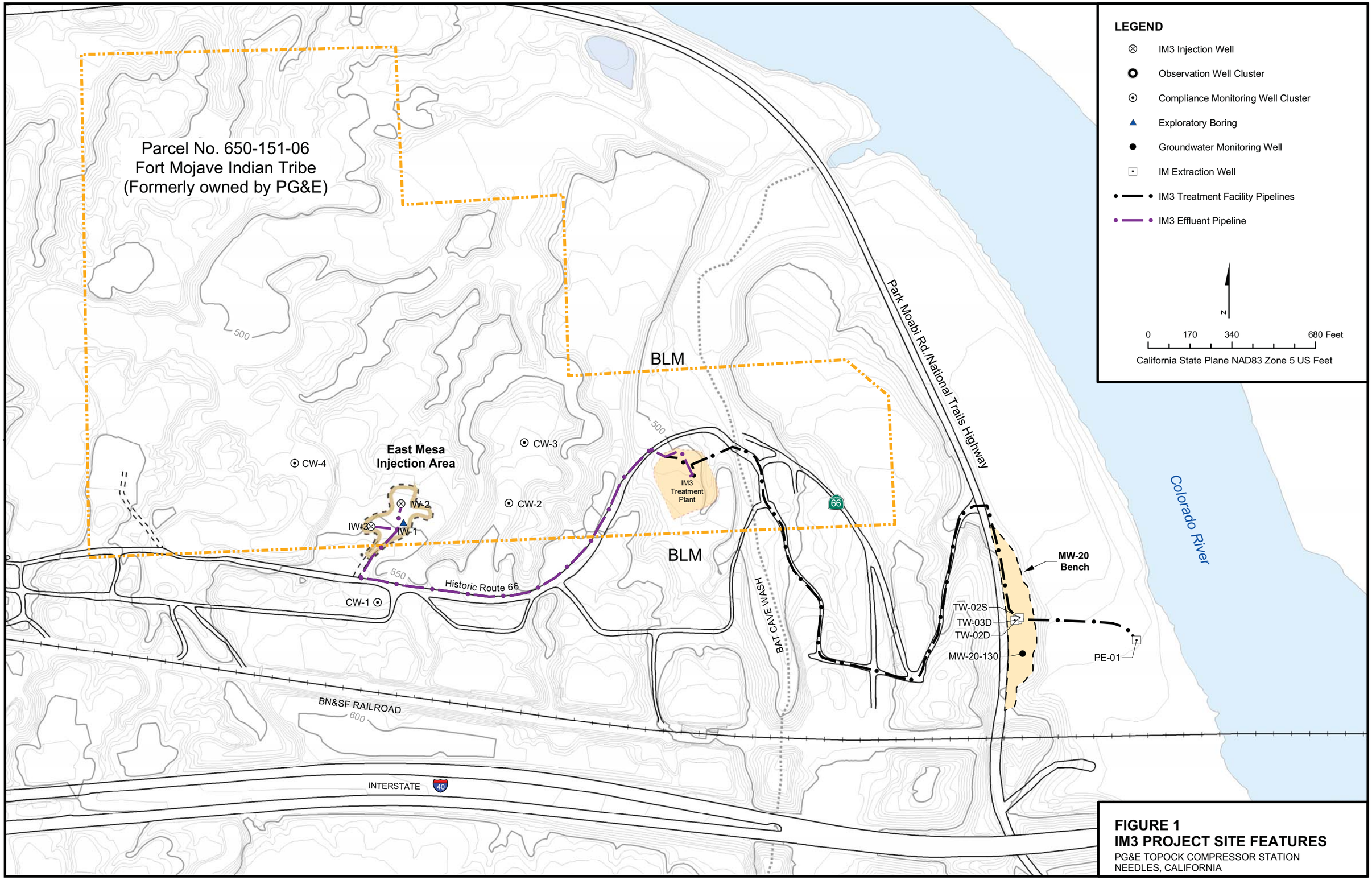
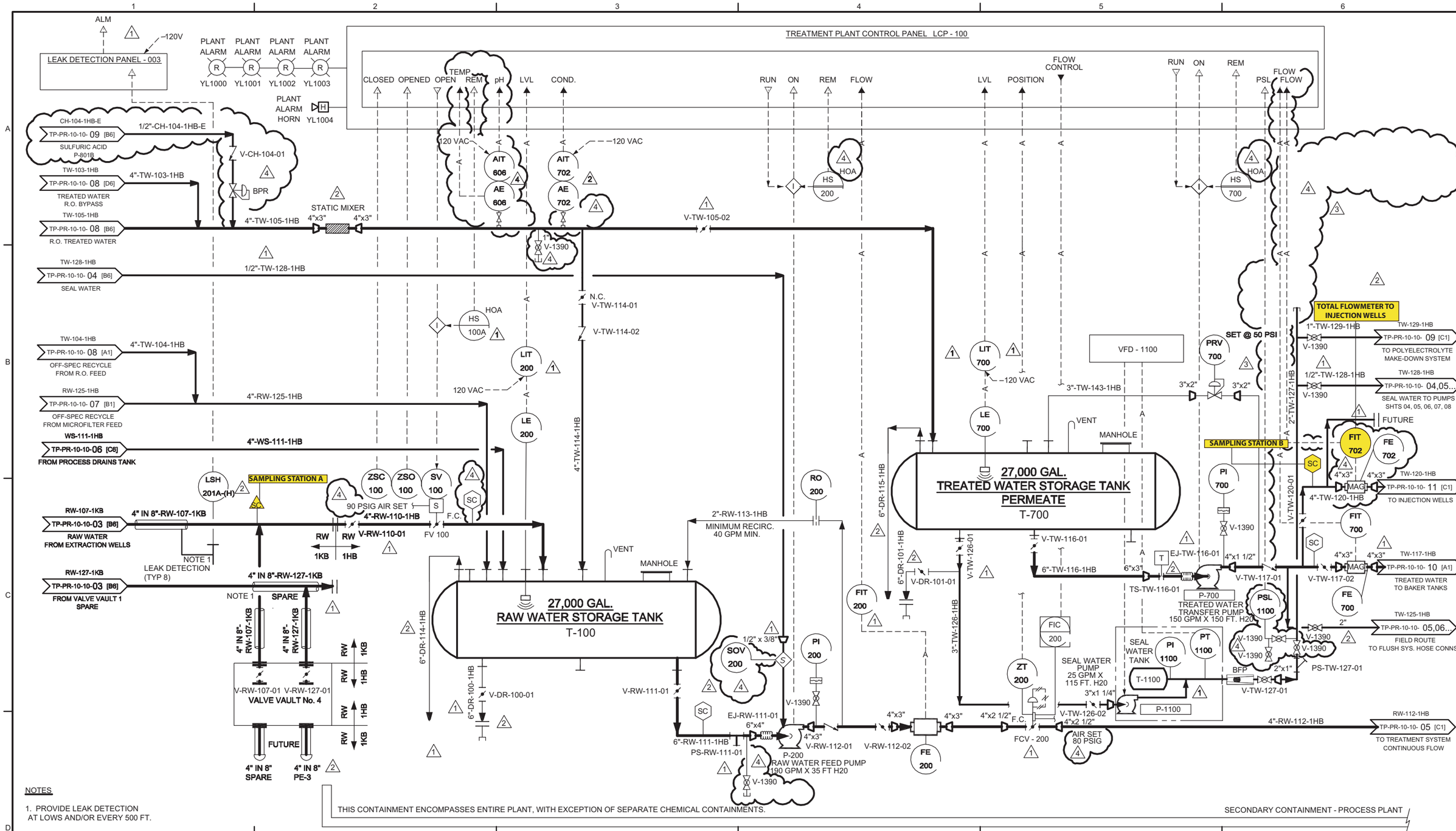


FIGURE 1
IM3 PROJECT SITE FEATURES
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

\\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS\MAPFILES\2010\IM3\IM3_PROJECT_AREA_APRIL10.MXD JLAMANTI 10/8/2010 12:12:30



NOTES

1. PROVIDE LEAK DETECTION AT LOWS AND/OR EVERY 500 FT.

NO.	DATE	REVISION	BY	CHK
D	07/28/04	FOR INTERNAL REVIEW	EFC	AJ
0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
3	02/14/05	ADDED RECIRC. LINE AND PRV VALVE TO T-700 - APPROVED FOR CONSTRUCTION	EFC	AJ
4	09/21/05	REVISED PER AS-BUILT CONDITIONS	EFC	AJ

REVISION APPROVAL		REV 4	DATE 09/21/05	PRINT DISTRIBUTION
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE
CIVIL		ELECTRICAL		STATUS
STRUCTURAL		INST & CONTROL		REV.
MECHANICAL		ARCHITECTURAL		CLIENT
PROCESS		ENVIRONMENTAL		FIELD
PIPING		GEN. ARRANG.		INTRA CO.

STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY				
FOR REVIEW AND APPROVAL	D	07/28/04		
APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP
REVISED & APPROVED FOR CONSTRUCTION	4	/ /		

SCALE NONE

RESPONSIBLE ENGINEER: Kenneth L. Martins Exp. 6-30-05 PE# CH4876

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

PROJ NO. 315994

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 04
STORAGE AREA

DWG. NO. TP-PR-10-10-04 REV. 4

BAR IS ONE INCH ON ORIGINAL DRAWING

FILENAME: tppr101004.dwg PLOT DATE: 21-SEP-2005 PLOT TIME:

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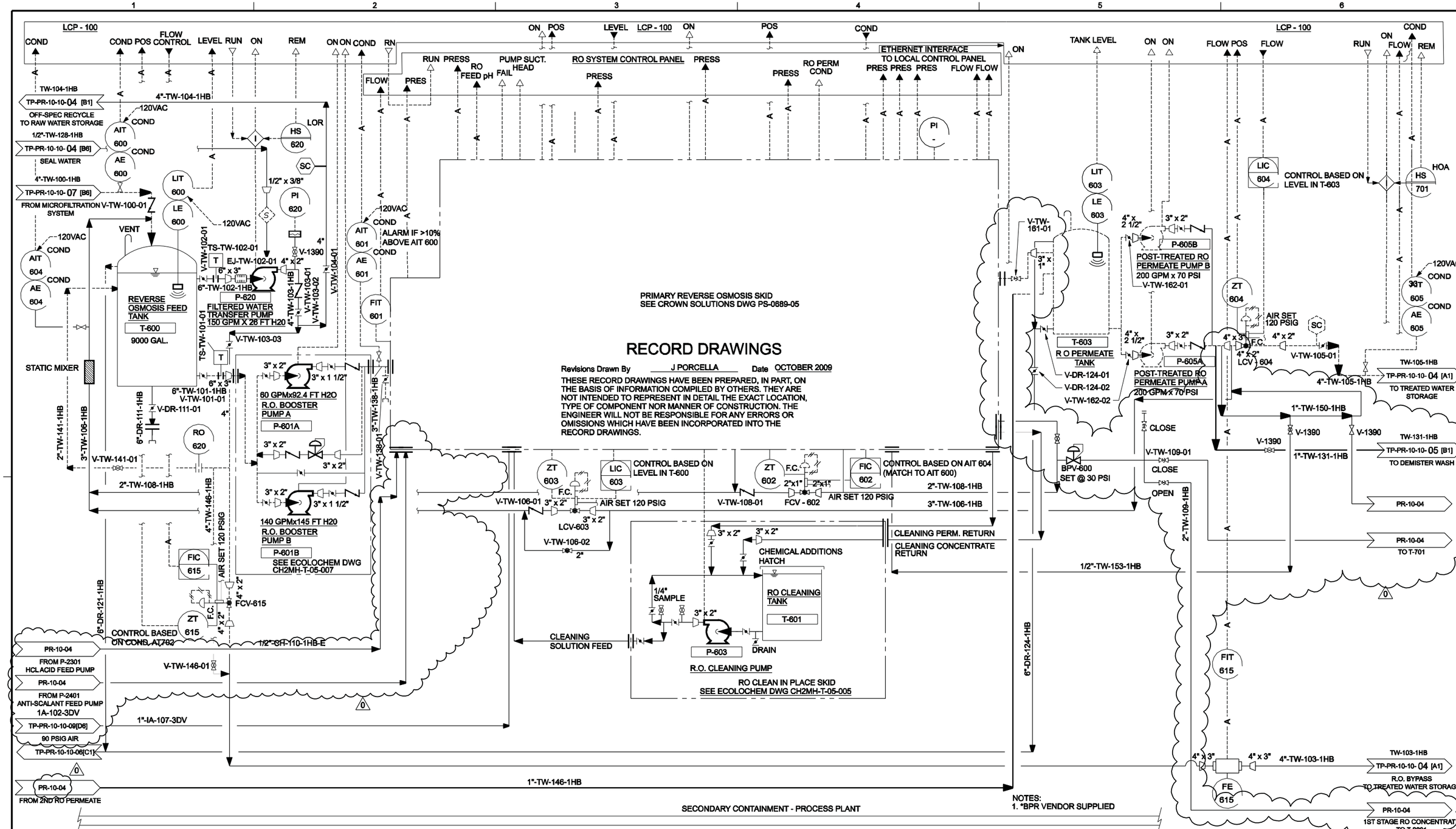

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**
ORIGINALLY STAMPED AND SIGNED BY:
JOHN PORCELLA
CALIFORNIA PE NO. C70145
ON 04-01-2009
**

RESPONSIBLE ENGINEER: John Porcella C70145 Exp. 9-30-10 PE#

NO.	DATE	REVISION	BY	CHK
A	2/12/09	INTERNAL REVIEW		
B	2/12/09	CLIENT REVIEW		
C	4/01/09	FOR REVIEW AND APPROVAL	JR	JP
0	11/17/09	FINAL RECORD ISSUE	JR	JP

REVISION APPROVAL		REV 0	DATE 10/02/09
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED
CIVIL	SJ	ELECTRICAL	FH
STRUCTURAL		INST & CONTROL	JG
MECHANICAL	SJ	ARCHITECTURAL	
PROCESS	DF	ENVIRONMENTAL	
PIPING	SJ	GEN. ARRANG.	SJ

PRINT DISTRIBUTION: DATE, STATUS, REV., CLIENT, FIELD, INTRA CO.

STATUS ISSUED	REV	DATE	SDE	PEM
PRELIMINARY	A	2/12/09	JP	JP
FOR REVIEW AND APPROVAL	C	4/01/09	JP	JP
APPROVED FOR CONSTRUCTION				
REVISED & APPROVED FOR CONSTRUCTION	0	10/02/09	JP	JP

SCALE NONE

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
PLANT PERFORMANCE IMPROVEMENTS

PROJ NO. 362032

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
REVERSE OSMOSIS SYSTEM
SHEET ONE OF TWO

DWG. NO. PR-10-03 REV. 0

BAR IS ONE INCH ON ORIGINAL DRAWING.
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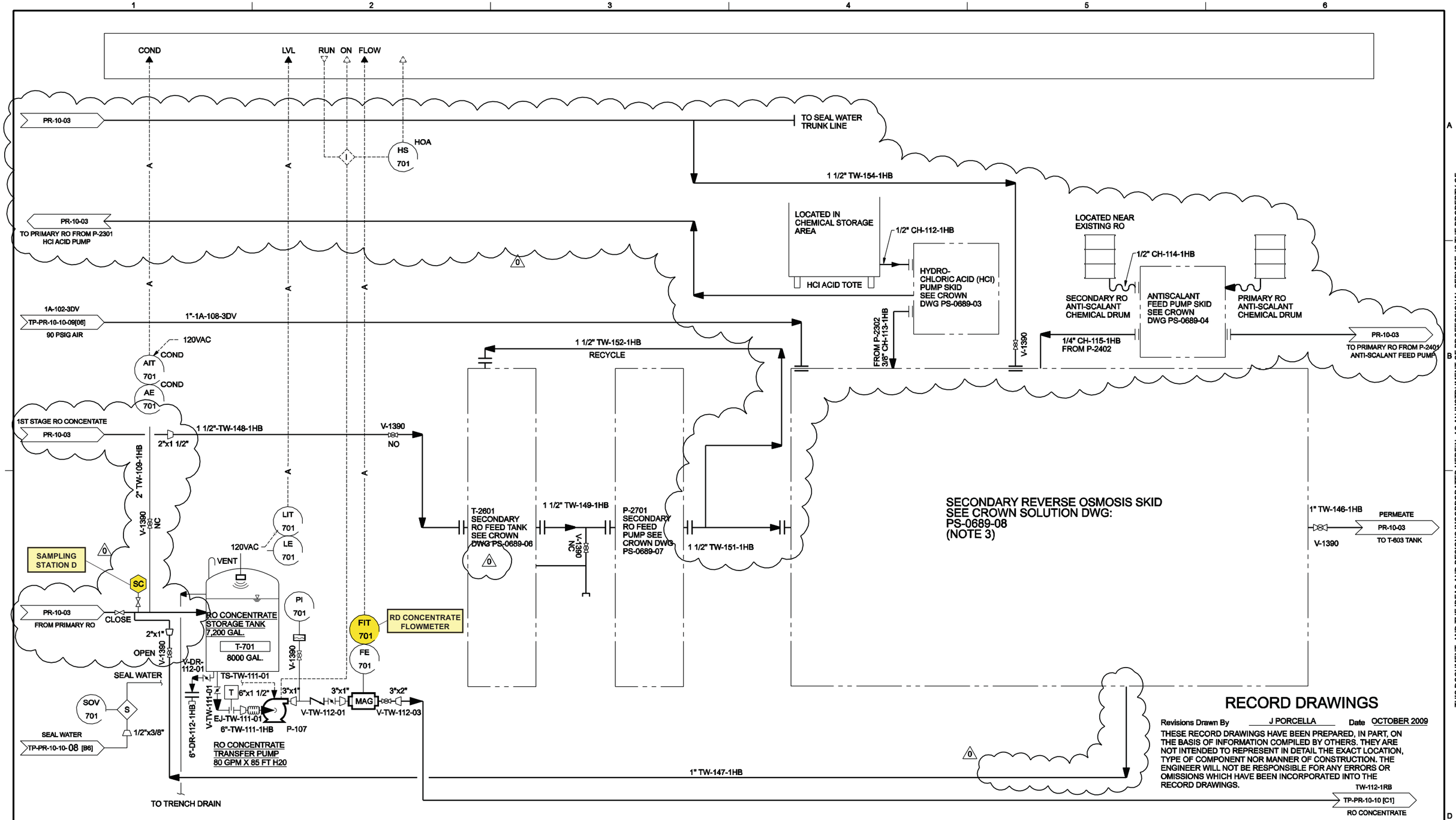

RECORD DRAWINGS

Revisions Drawn By J PORCELLA Date OCTOBER 2009

THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

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** ORIGINALLY STAMPED AND SIGNED BY: JOHN PORCELLA CALIFORNIA PE NO. C70145 ON 04-01-2009 **

RESPONSIBLE ENGINEER: John Porcella C70145 Exp. 9-30-10

NO.	DATE	REVISION	BY	CHK
A	2/12/09	INTERNAL REVIEW		
B	2/12/09	CLIENT REVIEW		
C	4/01/09	FOR REVIEW AND APPROVAL	JR	JP
0	11/17/09	FINAL RECORD ISSUE	JR	JP

REVISION APPROVAL				REV 0	DATE 10/02/09
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED		
CIVIL	SJ	ELECTRICAL	FH		
STRUCTURAL		INST & CONTROL	JG		
MECHANICAL	SJ	ARCHITECTURAL			
PROCESS	DF	ENVIRONMENTAL			
PIPING	SJ	GEN. ARRANG.	SJ		

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STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY	A	2/12/09	JP	JP
FOR REVIEW AND APPROVAL	C	4/01/09	JP	JP
APPROVED FOR CONSTRUCTION				
REVISED & APPROVED FOR CONSTRUCTION	0	10/02/09	JP	JP

SCALE NONE

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
PLANT PERFORMANCE IMPROVEMENTS

PROJ NO. 362032

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
REVERSE OSMOSIS SYSTEM
SHEET TWO OF TWO

DWG. NO. PR-10-04 REV. 0

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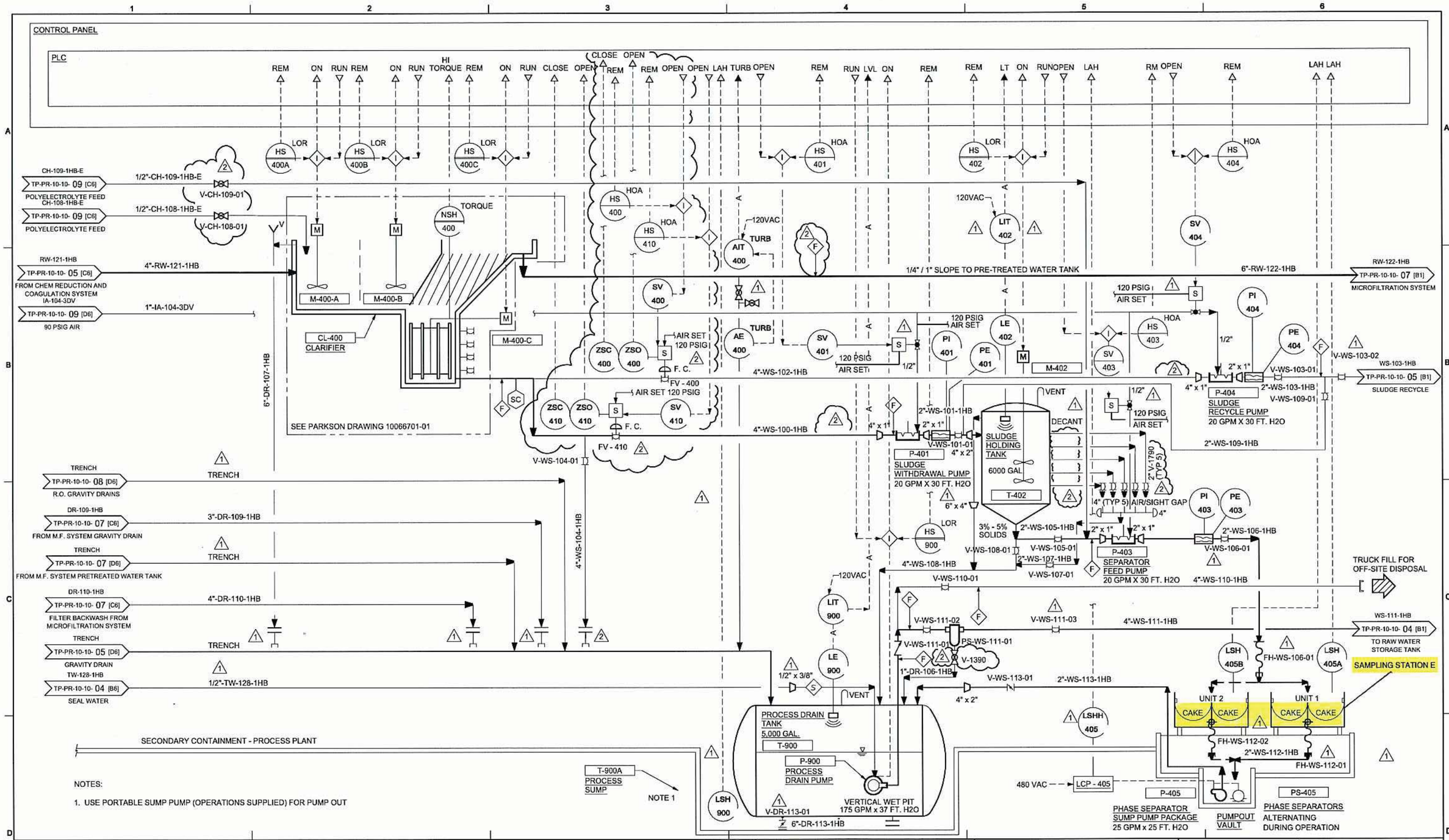

NOTES:

1. USE PORTABLE SUMP PUMP (OPERATIONS SUPPLIED) FOR PUMP OUT

NO.	DATE	REVISION	BY	CHK
0	07/28/04	FOR INTERNAL REVIEW	EFC	AJ
0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ

REVISION APPROVAL		REV 2	DATE 01/23/05
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED
CIVIL		ELECTRICAL	
STRUCTURAL		INST & CONTROL	
MECHANICAL		ARCHITECTURAL	
PROCESS		ENVIRONMENTAL	
PIPING		GEN. ARRANG.	

PRINT DISTRIBUTION: DATE, STATUS, REV., CLIENT, FIELD, INTRA CO.

STATUS	REV	DATE	SDE	PEM
PRELIMINARY				
FOR REVIEW AND APPROVAL	D	07/28/04		
APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP
REVISED & APPROVED FOR CONSTRUCTION	2	01/23/05		

SCALE NONE

RESPONSIBLE ENGINEER: Kenneth L. Martins PE # CH4876 Exp. 6-30-05

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

PROJ NO. 315994

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 06
CLARIFICATION AND SLUDGE REMOVAL

DWG. NO. TP-PR-10-10-06 REV. 2

FILENAME: tppr101006.dwg PLOT DATE: 23-JAN-2005 PLOT TIME:

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

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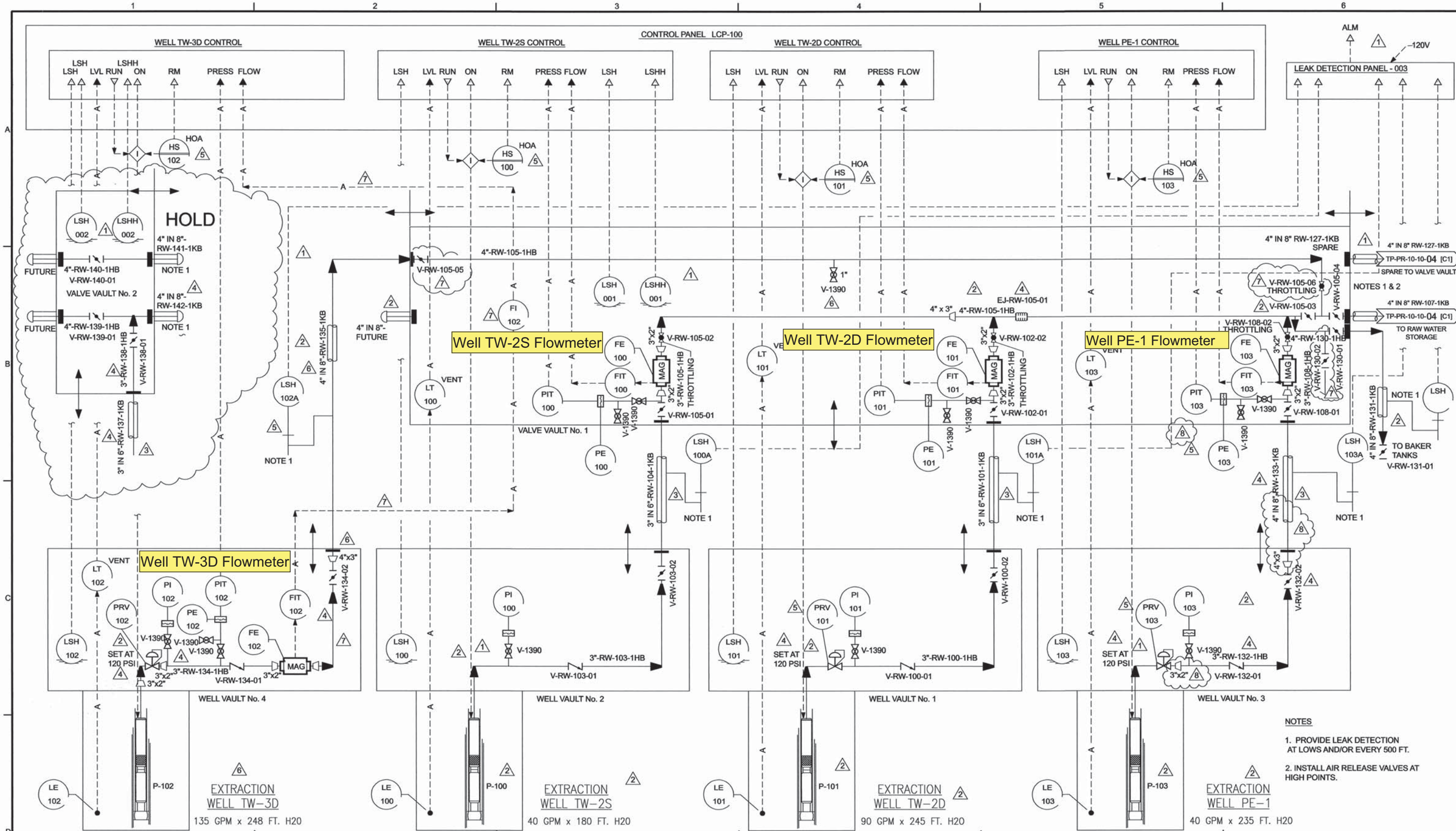

NO.	DATE	REVISION	BY	CHK
8	12/07/05	REMOVED PE-1 HOLDS	JBW	SDH
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
3	03/16/05	DELETED NOTES. APPROVED FOR CONSTRUCTION	EFC	AJ
4	07/20/05	RELIEF VALVE SETTINGS. WELL PE-1 LINE TAGS. HOLDS REMOVED. APPROVED FOR CONSTRUCTION	EFC	AJ
5	09/27/05	FINAL RECORD ISSUE	EFC	AJ
6	10/06/05	REVISED FINAL RECORD - ADDED TW-3D	EFC	AJ
7	10/19/05	REVISED AS NOTED	EFC	AJ

REVISION APPROVAL		REV 8 DATE 12/06/05	
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED
CIVIL	—	ELECTRICAL	—
STRUCTURAL	—	INST & CONTROL	—
MECHANICAL	AJ	ARCHITECTURAL	—
PROCESS	—	ENVIRONMENTAL	—
PIPING	SDH	GEN. ARRANG.	—

PRINT DISTRIBUTION: DATE / STATUS / REV. / CLIENT / FIELD / INTRA CO.

STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY				
FOR REVIEW AND APPROVAL	D	07/28/04		
APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP
REVISED & APPROVED FOR CONSTRUCTION	7	12/19/05	AJ for KLM	AJ

SCALE NONE

RESPONSIBLE ENGINEER: Kenneth L. Martins
PE # CH4876 Exp. 6-30-06

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

PROJ NO. 315994

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 03
EXTRACTION WELLS
PE-1, TW-2D, TW-2S AND TW-3D

DWG. NO. TP-PR-10-10-03 REV. 8

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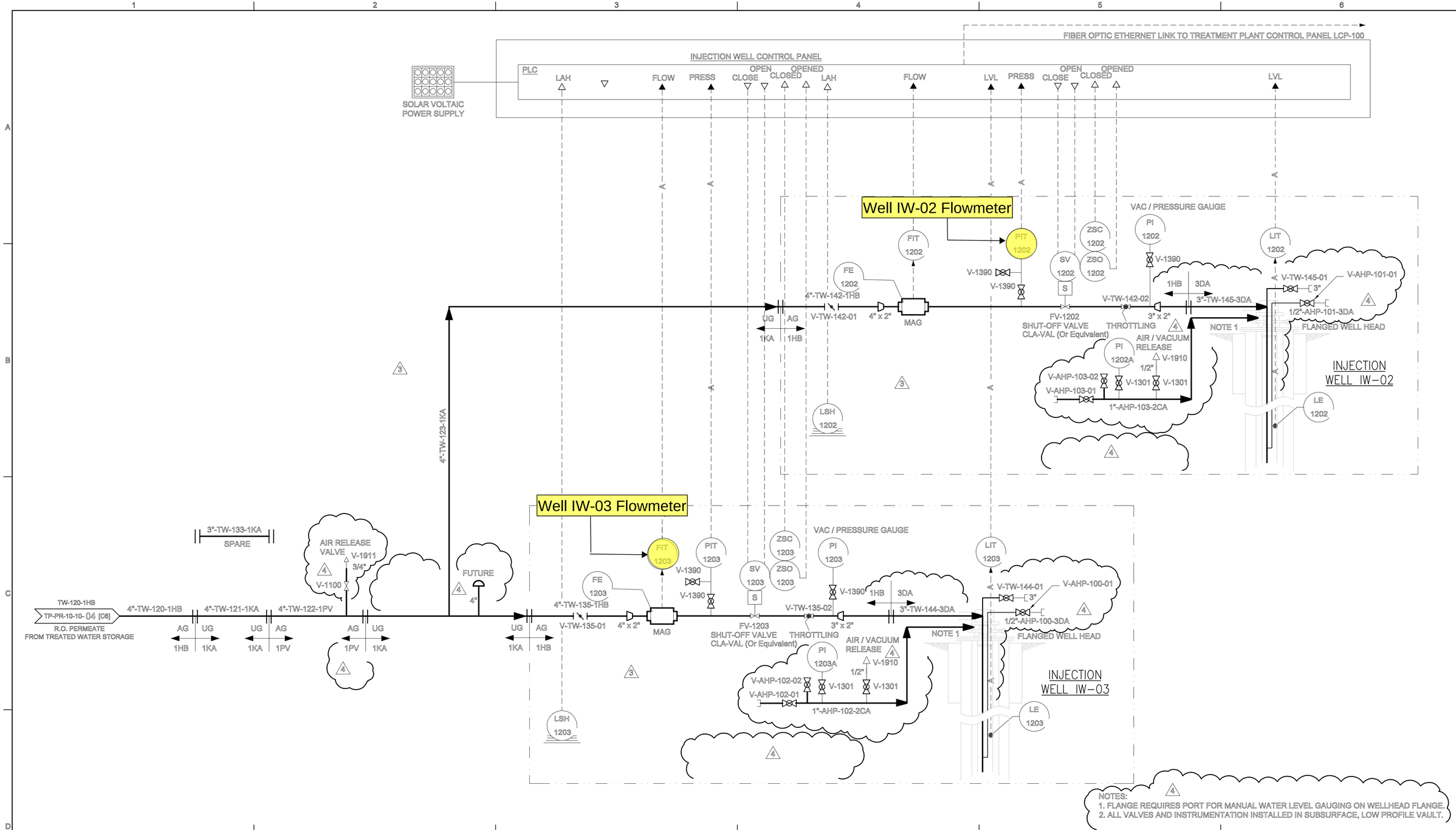
FILENAME: tppr101003.dwg PLOT DATE: 19-OCT-2005 PLOT TIME:



NOTES:
1. FLANGE REQUIRES PORT FOR MANUAL WATER LEVEL GAUGING ON WELLHEAD FLANGE.
2. ALL VALVES AND INSTRUMENTATION INSTALLED IN SUBSURFACE, LOW PROFILE VAULT.

RESPONSIBLE ENGINEER: Kenneth L. Martins CH4876 Exp. 6-30-05 PE #

NO.	DATE	REVISION	BY	CHK
A	07/28/04	FOR INTERNAL REVIEW	EFC	AJ
0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
3	02/14/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
4	03/10/05	REMOVED HOLD AND APPROVED FOR CONSTRUCTION	EFC	AJ

REVISION APPROVAL		REV 4	DATE 03/10/05	PRINT DISTRIBUTION	
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE	
CIVIL		ELECTRICAL		STATUS	
STRUCTURAL		INST & CONTROL		REV.	
MECHANICAL		ARCHITECTURAL		CLIENT	
PROCESS		ENVIRONMENTAL		FIELD	
PIPING		GEN. ARRANG.		INTRA CO.	

STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY				
FOR REVIEW AND APPROVAL	A	07/28/04		
APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP
REVISED & APPROVED FOR CONSTRUCTION	4	/ /		

SCALE NONE

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
EXPANDED GROUNDWATER EXTRACTION
AND TREATMENT SYSTEM

PROJ NO. 315994

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 11
INJECTION WELLS

DWG. NO. TP-PR-10-10-11 REV. 4

FILENAME: tppr101011.dwg PLOT DATE: 10-MAR-2005 PLOT TIME:

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Appendix A
Semiannual Operations and Maintenance Log, July 1, 2013 through December 31, 2013

APPENDIX A

Semiannual Operations and Maintenance Log, July 1, 2013 through December 31, 2013

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 2013

During July 2013, 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 2013. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 95.9 percent during the July 2013 reporting period.

The IM-3 facility treated approximately 5,771,686 gallons of extracted groundwater during July 2013. The IM-3 facility treated 6,900 gallons of injection well backwashing/re-development water and 1,010 gallons from groundwater monitoring well sampling. Two containers of solids from the IM-3 facility were transported offsite during July 2013.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 4.1 percent of downtime during July 2013) are summarized below.

- **July 1, 2013 (unplanned):** The extraction well system was offline from 12:18 am to 12:52 am due to a loss of power from the City of Needles power. Extraction system downtime was 34 minutes.
- **July 3, 2013 (planned):** The extraction well system was offline from 7:32 am to 8:06 am, from 8:10 am to 8:12 am, from 8:14 am to 8:16 am, and from 8:20 am to 8:22 am due to testing of critical alarms and leak detection system. Extraction system downtime was 40 minutes.
- **July 3, 2013 (planned):** The extraction well system was offline from 9:24 am to 12:58 pm due to testing of the injection well injectivity. Extraction system downtime was 3 hours, 34 minutes.
- **July 7, 2013 (unplanned):** The extraction well system was offline from 3:50 pm to 3:52 pm, from 4:24 pm to 4:32 pm, and from 4:38 pm to 4:42 pm due to a loss of power from the City of Needles power. Extraction system downtime was 14 minutes.
- **July 7, 2013 (unplanned):** The extraction well system was offline from 6:18 pm to 8:04 pm, from 8:06 pm to 8:16 pm, and from 10:56 pm to 11:14 pm due to high level alarm in T-100. Extraction system downtime was 2 hours, 14 minutes.
- **July 8, 2013 (unplanned**): The extraction system was offline from 2:32 pm to 2:38 pm due to loss of power from the City of Needles power. Extraction system downtime was 6 minutes.
- **July 9, 2013 (unplanned):** The extraction well system was offline from 2:18 am to 8:00 am due to a polymer feed line malfunction. Extraction system downtime was 5 hours, 42 minutes.
- **July 10, 2013 (planned):** The extraction well system was offline from 4:18 am to 8:22 am for repair of the injection line system. Extraction system downtime was 4 hours, 4 minutes.
- **July 11, 2013 (unplanned):** The extraction well system was offline from 7:38 am to 8:00 am, from 8:06 am to 8:44 am, from 11:38 am to 11:46 am, and from 1:14 pm to 1:18 pm due to loss of power from the City of Needles power. Extraction system downtime was 1 hour, 12 minutes.

- **July 16, 2013 (unplanned):** The extraction well system was offline from 3:42 am to 4:22 am due to reduced ferrous flow. Extraction system downtime was 40 minutes.
- **July 28, 2013 (unplanned):** The extraction well system was offline from 2:54 pm to 3:00 pm due to a loss of power from the City of Needles power due to a nearby storm system. Extraction system downtime was 6 minutes.
- **July 28-29, 2013 (unplanned):** The extraction well system was offline from 10:06 pm on July 28 through 8:36 am on July 29 and from 9:46 am to 9:54 am on July 29 due to a lightning strike on the City of Needles power system. Extraction system downtime was 10 hours, 38 minutes.
- **July 30, 2013 (unplanned):** The extraction well system was offline from 8:46 am to 9:42 am to replace the surge protector damaged in the lightning strike on July 28, 2013. Extraction system downtime was 56 minutes.

August 2013

During the August 2013 reporting period, a series of lightning strikes at IM-3 and to the City of Needles power system caused significant damage to electrical components at the treatment facility. On August 18, 2013, around 9:38 pm, the lightning strikes caused the flow meters at TW-3D and PE-01 to fail. The extraction pumps continued to operate following the lightning strikes without operable flow meters, because replacement flow meters were not readily available. The flow meter at PE-01 was replaced on August 29, 2013, and the flow meter in TW-3D was replaced September 4, 2013. Due to the meter failures, flow data from a flow meter for PE-01 was unavailable between August 18 and August 28, 2013, and flow data from a flow meter for TW-03D was unavailable from August 18, 2013 through the end of the month. The data presented below and on report tables include only data from the time periods during which the flow meters were operating correctly.

During August 2013, 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 August 2013. The recorded operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 85.4 percent during the August 2013 reporting period.

The IM-3 facility recorded treating approximately 2,767,047 gallons of extracted groundwater during August 2013. Four containers of solids from the IM-3 facility were transported offsite during August 2013.

Because the extraction wells' flow meters were not operable for the a portion of the month of August, the monthly extraction rate and volume was calculated by subtracting the average input flow from the Process Drain Tank (T-900) from the Raw Water Storage Tank (T-100) output flow. The input from the Process Drain Tank and the extraction wells TW-3D and PE-01 are the only contributors into the Raw Water Storage Tank. Using this information, the calculated extraction rate for wells TW-3D and PE-1 was 135 gpm excluding periods of planned and unplanned downtime. The calculated volume of extracted groundwater treated by the IM-3 facility was approximately 5,300,000 gallons during August 2013.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 14.6 percent of downtime during August 2013) are summarized below.

- **August 5, 2013 (unplanned):** The extraction well system was offline from 5:42 am to 7:06 am due to a polymer feed line malfunction. Extraction system downtime was 1 hour, 24 minutes.
- **August 7, 2013 (unplanned):** The extraction well system was offline from 11:30 am to 11:32 am due to a loss of power from the City of Needles power. Extraction system downtime was 2 minutes.
- **August 8, 2013 (unplanned):** The extraction well system was offline from 8:06 pm to 9:58 pm to replace the main flow control valve (FCV-200). Extraction system downtime was 1 hour, 52 minutes.

- **August 12-16, 2013 (planned):** The extraction well system was offline from 7:20 am on August 12th to 1:52 pm on August 15th, from 3:28 pm August 15th to 6:44 am August 16th, and from 7:26 am to 9:48 am on August 16th for semiannual scheduled maintenance. Extraction system downtime was 4 days and 10 minutes.
- **August 18, 2013 (unplanned):** The extraction well system was offline from 8:04 pm to 8:08 pm due to a loss of power from the City of Needles power caused by strong thunderstorms in the area. Extraction system downtime was 4 minutes.
- **August 29, 2013 (planned):** The extraction well system was offline from 8:20 am to 10:54 am to replace the flow meter on extraction well PE-01. Extraction system downtime was 2 hours, 34 minutes.
- **August 28, 2013 (planned):** The extraction well system was offline from 8:12 am to 1:26 pm and from 1:40 pm to 2:18 pm due to maintenance on the microfilter modules, primary RO modules, and secondary RO modules. Extraction system downtime was 5 hours, 52 minutes.
- **August 29, 2013 (unplanned):** The extraction well system was offline from 1:38 pm to 1:40 pm and 6:08 pm to 6:12 pm due to a loss of power from the City of Needles power caused by strong thunderstorms in the area. Extraction system downtime was 6 minutes.
- **August 30, 2013 (unplanned):** The extraction well system was offline from 2:36 am to 2:56 am to switch the plant from generator power to the City of Needles power system. Extraction system downtime was 20 minutes.

September 2013

As described above, on August 18, 2013 lightning strikes caused the flow meters at extraction wells TW-3D and PE-01 to fail. The extraction pumps continued to operate following the lightning strikes without operable flow meters, because replacement flow meters were not readily available. The flow meter at PE-01 was replaced on August 29, 2013, and the flow meter in TW-3D was replaced on September 4, 2013. Due to the meter failures, flow data from a flow meter for TW-03D was unavailable from September 1 through 4, 2013. The data presented below and on report tables include only data from the time periods during which the flow meters were operating correctly.

During September 2013, 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 September 2013. The recorded operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 98.7 percent during the September 2013 reporting period.

The IM-3 facility recorded treating approximately 5,169,399 gallons of extracted groundwater during September 2013. The IM-3 facility treated 2,700 gallons of injection well backwashing/re-development water and 1,970 gallons from groundwater monitoring well sampling. No containers of solids from the IM-3 facility were transported offsite during September 2013.

Because the extraction wells' flow meters were not operable for a portion of September, the monthly extraction rate and volume was calculated by subtracting the average input flow from the Process Drain Tank (T-900) from the Raw Water Storage Tank (T-100) output flow. The input from the Process Drain Tank and the extraction wells TW-3D and PE-01 are the only contributors into the Raw Water Storage Tank. Using this information, the calculated extraction rate for wells TW-3D and PE-1 was 135 gpm excluding periods of planned and unplanned downtime. The calculated volume of extracted groundwater treated by the IM-3 facility was approximately 5,700,000 gallons during September 2013.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 1.3 percent of downtime during September 2013) are summarized below.

- **September 1, 2013 (unplanned):** The extraction well system was offline from 1:40 am to 1:50 am to switch the plant to generator power due to strong thunderstorms in the area. Extraction system downtime was 10 minutes.
- **September 1, 2013 (unplanned):** The extraction well system was offline from 6:56 am to 7:06 am to switch the plant back to City of Needles power. Extraction system downtime was 10 minutes.
- **September 4, 2013 (unplanned):** The extraction well system was offline from 7:08 am to 8:26 am due to installation of spool pieces to replace damaged flowmeters at extraction wells PE-1 and TW-3D. Extraction system downtime was 1 hour, 18 minutes.
- **September 9, 2013 (unplanned):** The extraction well system was offline from 1:42 pm to 1:54 pm to switch the plant to generator power due to a power surge from City of Needles power caused by strong thunderstorms in the area. Extraction system downtime was 12 minutes.
- **September 9, 2013 (unplanned):** The extraction well system was offline from 9:40 pm to 9:54 pm to switch the plant back to City of Needles power. Extraction system downtime was 14 minutes.
- **September 10, 2013 (unplanned):** The extraction well system was offline from 12:14 am to 12:44 am to unclog the strainer at the effluent pump (P-200) for the Raw Water Tank (T-100). Extraction system downtime was 30 minutes.
- **September 11, 2013 (planned):** The extraction well system was offline from 12:28 pm to 12:34 pm, from 12:38 pm to 12:40 pm, and from 12:48 pm to 12:50 pm due to testing of critical alarms and leak detection system. Extraction system downtime was 10 minutes.
- **September 18, 2013 (unplanned):** The extraction wells system was offline from 7:04 am to 12:50 pm to make repairs to the Treated Water Tank (T-700) effluent line. Extraction system downtime was 5 hours, 46 minutes.
- **September 23, 2013 (unplanned):** The extraction well system was offline from 9:44 am to 9:50 am due to a loss of power from the City of Needles power. Extraction system downtime was 6 minutes.
- **September 24, 2013 (planned):** The extraction wells system was offline from 8:08 am to 8:12 am and from 10:16 am to 10:18 am for City of Needles Power to replace the site meter box. Extraction system downtime was 6 minutes.
- **September 26, 2013 (planned):** The extraction wells system was offline from 12:16 pm to 12:58 pm to change the microfilter bank. Extraction system downtime was 42 minutes.

October 2013

During October 2013, 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 October 2013. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.9 percent during the October 2013 reporting period.

The IM-3 facility treated approximately 6,016,459 gallons of extracted groundwater during October 2013. The IM-3 facility treated 6,600 gallons of injection well backwashing/re-development water and 1,740 gallons from groundwater monitoring well sampling. Two containers of solids from the IM-3 facility were transported offsite during October 2013.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 0.1 percent of downtime during October 2013) are summarized below.

- **October 3, 2013 (planned):** The extraction well system was offline from 10:46 am to 10:48 am due to testing of critical alarms and leak detection system. Extraction system downtime was 2 minutes.
- **October 8, 2013 (unplanned):** The extraction well system was offline from 1:04 pm to 1:06 pm and from 1:30 pm to 1:32 pm for the engineer to do maintenance on the human-machine interface (HMI) software. Extraction system downtime was 4 minutes.
- **October 10, 2013 (unplanned):** The extraction well system was offline from 7:46 am to 7:52 am, from 9:10 am to 9:20 am, from 12:46 pm to 12:52 pm, and 3:36 pm to 3:40 pm due to loss of power from the City of Needles power. Extraction system downtime was 26 minutes.
- **October 28, 2013 (unplanned):** The extraction well system was offline from 4:30 am to 4:32 am and 4:36 am to 4:38 am due to a loss of power from the City of Needles power. Extraction system downtime was 4 minutes.

November 2013

During November 2013, 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 November 2013. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 96.5 percent during the November 2013 reporting period.

The IM-3 facility treated approximately 5,594,447 gallons of extracted groundwater during November 2013. The IM-3 facility treated 11,700 gallons of injection well backwashing/re-development water and 1,475 gallons from groundwater monitoring well sampling. Two containers of solids from the IM-3 facility were transported offsite during November 2013.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 3.5 percent of downtime during November 2013) are summarized below.

- **November 4, 2013 (planned):** The extraction well system was offline from 10:46 am to 12:56 pm to change microfilter modules. Extraction system downtime was 2 hours, 10 minutes.
- **November 5, 2013 (unplanned):** The extraction well system was offline from 2:14 am to 3:10 am due to a high level alarm in the raw water tank (T-100). Extraction system downtime was 56 minutes.
- **November 5, 2013 (unplanned):** The extraction well system was offline from 3:36 pm to 3:44 pm due to a loss of power from the City of Needles power. Extraction system downtime was 8 minutes.
- **November 6, 2013 (unplanned):** The extraction well system was offline from 10:12 to 10:56 am for maintenance on the microfilters. Extraction system downtime was 44 minutes.
- **November 6, 2013 (unplanned):** The extraction well system was offline from 1:16 pm to 1:18 pm, from 1:26 pm to 1:30 pm, from 1:32 pm to 1:34 pm, from 1:50 pm to 1:52 pm and from 1:56 pm to 1:58 pm due to testing of critical alarms and leak detection system. Extraction system downtime was 12 minutes.
- **November 7, 2013 (unplanned):** The extraction well system was offline from 10:02 am to 11:12 am to repair a leak in the extraction pipeline. Extraction system downtime was 1 hour, 10 minutes.
- **November 20, 2013 (unplanned):** The extraction well system was offline from 1:20 am to 3:42 am due to a rupture in a microfilter hose. Extraction system downtime was 2 hours, 22 minutes.
- **November 20, 2013 (unplanned):** The extraction well system was offline from 9:54 am to 1:34 pm for plant maintenance including changing the microfilter membranes and microfilter strainer cleaning. Extraction system downtime was 3 hours, 40 minutes.

- **November 21, 2013 (unplanned):** The extraction well system was offline from 8:04 pm to 8:14 pm to switch to generator power due to storms in the area. Extraction system downtime was 10 minutes.
- **November 22, 2013 (unplanned):** The extraction well system was offline from 2:00 am to 2:08 am to return to City of Needles power. Extraction system downtime was 8 minutes.
- **November 25, 2014 (planned):** The extraction well system was offline from 1:20 pm to 2:04 pm due to preparation for maintenance of the injection pipeline. Extraction system downtime was 44 minutes.
- **November 26, 2014 (planned):** The extraction well system was offline from 6:48 am to 1:50 pm due to maintenance of the injection pipeline. Extraction system downtime was 7 hours, 2 minutes.
- **November 27, 2013 (unplanned):** The extraction well system was offline and the treatment plant was in recirculation mode from 12:50 pm to 7:12 pm to balance the chemical concentrations within the plant. Extraction system downtime was 6 hours, 22 minutes.

December 2013

During December 2013, 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-2D and TW-2S ran for a short period of time on December 19, 2013 to be sampled as part of the fourth quarter groundwater monitoring program sampling event. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.9 percent during the December 2013 reporting period.

The IM-3 facility treated approximately 5,990,980 gallons of extracted groundwater during December 2013. The IM-3 facility treated 460 gallons from groundwater monitoring well sampling. Two containers of solids from the IM-3 facility were transported offsite during December 2013.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 0.1 percent of downtime during December 2013) are summarized below.

- **December 2, 2013 (unplanned):** The extraction well system was offline from 9:44 am to 10:18 am due to polymer flocking problems in the clarifier. Extraction system downtime was 34 minutes.
- **December 6, 2013 (planned):** The extraction well system was offline from 12:06 pm to 12:08 pm and 12:16 pm to 12:18 pm due to testing of critical alarms and leak detection system. Extraction system downtime was 4 minutes.
- **December 19, 2013 (unplanned):** The extraction well system was offline from 11:40 am to 11:42 am due to a loss of power from the City of Needles power. Extraction system downtime was 2 minutes.

Appendix B
Daily Volumes of Groundwater Treated

July 2013 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)**	**(gallons)**
July	1	2013	--	--	150,769	39,063	189,832	188,180	0	188,180	3,008
July	2	2013	--	--	154,700	39,788	194,488	194,600	0	194,600	3,131
July	3	2013	--	--	125,912	33,097	159,010	162,704	0	162,704	5
July	4	2013	--	--	154,397	39,981	194,378	188,454	0	188,454	3,117
July	5	2013	--	--	154,393	39,920	194,313	194,439	0	194,439	3,124
July	6	2013	--	--	154,365	40,095	194,460	192,524	0	192,524	4
July	7	2013	--	--	138,303	36,382	174,685	181,275	0	181,275	3,228
July	8	2013	--	--	153,757	40,482	194,239	188,614	0	188,614	4
July	9	2013	--	--	117,460	30,597	148,056	145,241	0	145,241	3,142
July	10	2013	--	--	128,223	33,211	161,434	34,720	125,606	160,326	3,127
July	11	2013	--	--	146,854	38,511	185,365	16	185,225	185,241	3
July	12	2013	--	--	154,419	40,223	194,642	17	192,950	192,967	3,028
July	13	2013	--	--	154,274	40,071	194,345	17	193,860	193,877	3,113
July	14	2013	--	--	154,232	39,926	194,158	14	193,930	193,944	2,872
July	15	2013	--	--	154,243	39,884	194,127	13	188,882	188,894	4
July	16	2013	--	--	149,829	39,206	189,034	16	189,233	189,249	3,127
July	17	2013	--	--	154,096	40,108	194,203	16	192,151	192,166	766
July	18	2013	--	--	154,085	40,050	194,135	14	192,920	192,933	2,182
July	19	2013	--	--	153,962	39,887	193,850	13	195,010	195,023	3,176
July	20	2013	--	--	154,045	39,900	193,945	18	199,713	199,731	3,136
July	21	2013	--	--	154,326	40,038	194,363	17	190,593	190,610	590
July	22	2013	--	--	154,264	39,990	194,255	18	191,115	191,133	2,437
July	23	2013	--	--	154,192	39,874	194,065	19	194,422	194,441	2,988
July	24	2013	--	--	154,082	39,834	193,916	19	193,657	193,676	2,998
July	25	2013	--	--	153,997	39,753	193,750	26,039	167,308	193,347	5
July	26	2013	--	--	154,011	39,814	193,826	16	198,046	198,062	3,128
July	27	2013	--	--	153,936	39,700	193,636	17	192,260	192,277	4
July	28	2013	--	--	141,174	36,516	177,690	17	179,416	179,433	3,012
July	29	2013	--	--	97,670	25,610	123,279	14	123,520	123,534	5
July	30	2013	--	--	147,811	38,525	186,336	21	179,295	179,316	2,968
July	31	2013	--	--	153,927	39,944	193,870	142,499	57,245	199,744	3
Total Monthly Volumes (gal)			**0**	**0**	**4,581,709**	**1,189,977**	**5,771,686**	**1,839,599**	**3,916,356**	**5,755,955**	**61,433**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**102.6**	**26.7**	**129.3**	**41.2**	**87.7**	**128.9**	**1.4**

NOTES: gal: gallons gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during July 2013 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 2013.

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 July 2013 is approximately 0.79 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 2013 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[b] (gallons)**	**PE-1[b] (gallons)**	**Total Recorded[b] (gallons)**	**Total Calculated[e] (gallons)**	**Total Combined[f] (gallons)**	**IW-02 (gallons)**	**IW-03 (gallons)**	**Total (gallons)**	**(gallons)**
August	1	2013	--	--	153,857	39,906	193,763		193,763	200,320	22	200,342	8,429
August	2	2013	--	--	153,856	39,919	193,774		193,774	191,622	26	191,647	11,330
August	3	2013	--	--	153,847	39,847	193,694		193,694	192,532	24	192,555	12,888
August	4	2013	--	--	153,847	39,875	193,722		193,722	190,432	24	190,456	12,863
August	5	2013	--	--	144,805	37,608	182,413		182,413	181,106	25	181,132	8,757
August	6	2013	--	--	153,879	39,881	193,761		193,761	192,255	29	192,284	8,680
August	7	2013	--	--	152,391	39,839	192,231		192,231	194,344	28	194,371	7,314
August	8	2013	--	--	141,849	36,935	178,785		178,785	171,796	26	171,822	252
August	9	2013	--	--	153,858	39,816	193,674		193,674	194,322	27	194,350	2,873
August	10	2013	--	--	153,937	39,796	193,733		193,733	199,674	25	199,699	3,304
August	11	2013	--	--	154,078	39,667	193,745		193,745	177,696	22	177,719	3,397
August	12	2013	--	--	47,155	12,183	59,338		59,338	76,599	22	76,620	1,242
August	13	2013	--	--	17	3	20		20	16	22	38	1,242
August	14	2013	--	--	17	2	19		19	16	30	47	1,242
August	15	2013	--	--	10,162	2,725	12,887		12,887	16	19	35	1,242
August	16	2013	--	--	95,053	24,923	119,976		119,976	16	112,913	112,928	1,242
August	17	2013	--	--	153,840	39,961	193,801		193,801	15	195,241	195,256	3,441
August	18	2013	--	--	138,401	35,945	174,345	199,000	199,000	16	199,424	199,439	--
August	19	2013	--	--	0	0	0	192,000	192,000	15	185,217	185,231	--
August	20	2013	--	--	0	0	0	199,000	199,000	15	195,205	195,219	12,381
August	21	2013	--	--	0	0	0	200,000	200,000	12	195,097	195,109	9,837
August	22	2013	--	--	0	0	0	199,000	199,000	14	193,397	193,411	10,859
August	23	2013	--	--	0	0	0	198,000	198,000	15	196,139	196,153	648
August	24	2013	--	--	0	0	0	194,000	194,000	15	188,467	188,482	648
August	25	2013	--	--	0	0	0	195,000	195,000	17	186,503	186,520	648
August	26	2013	--	--	0	0	0	201,000	201,000	20	186,409	186,429	3,395
August	27	2013	--	--	0	0	0	200,000	200,000	15	193,018	193,033	--
August	28	2013	--	--	0	0	0	149,000	149,000	15	145,444	145,459	3,377
August	29	2013	--	--	0	22,934	22,934	188,000	188,000	13	179,635	179,648	684
August	30	2013	--	--	0	40,187	40,187	203,000	203,000	14	190,373	190,387	--
August	31	2013	--	--	0	40,245	40,245	205,000	205,000	16	195,821	195,838	4,415
Total Monthly Volumes (gal)			**0**	**0**	**2,114,850**	**652,197**	**2,767,047**	**2,722,000**	**5,211,336**	**2,162,989**	**2,938,672**	**5,101,661**	**136,631**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**47.4**	**14.6**	**62.0**		**116.7**	**48.5**	**65.8**	**114.3**	**3.1**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during August 2013 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime.

b. During the August 2013 reporting period, a series of lightning strikes at IM-3 and to the City of Needles power system caused significant damage to electrical components at the treatment facility. On August 18, 2013, lightning strikes caused the flow meters at TW-3D and PE-01 to fail. The extraction pumps continued to operate following the lightning strikes without operable flow meters, because replacement flow meters were not readily available. The flow meter at PE-01 was replaced on August 29, 2013, and the flow meter in TW-3D was replaced September 4, 2013. Due to the meter failures, flow data from a flow meter for PE-01 was unavailable between August 18 and August 28, 2013, and flow data from a flow meter for TW-03D was unavailable from August 18, 2013 through the end of the month. The data presented includes only data from the time periods during which the flow meters were operating correctly.

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the period the TW-3D and PE-01 flow meters were operating correctly (August 1, 2013 through August 17, 2013) is approximately 2.88 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.

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

e. The daily extracted volume was calculated by subtracting the average input flow from the Process Drain Tank (T-900) from the Raw Water Storage Tank (T-100) output flow. The input from the Process Drain Tank and the extraction wells TW-3D and PE-01 are the only contributors into the Raw Water Storage Tank.

f. The combined total for the extraction well system uses recorded extraction well data when the flow meters for TW-3D and PE-01 were both operating correctly (August 1 - August 17, 2013) and uses the calculated total for the extraction well system for days in which one or both of the flow meters were inoperable (August 18-August 31, 2013).

September 2013 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[b] (gallons)**	**PE-1[b] (gallons)**	**Total Recorded[b] (gallons)**	**Total Calculated[e] (gallons)**	**Total Combined[f] (gallons)**	**IW-02 (gallons)**	**IW-03 (gallons)**	**Total (gallons)**	**(gallons)**
September	1	2013	--	--	0	40,091	40,091	195,000	195,000	14	194,528	194,542	4,720
September	2	2013	--	--	0	40,794	40,794	199,000	199,000	15	183,374	183,389	297
September	3	2013	--	--	0	40,832	40,832	195,000	195,000	20	195,920	195,939	297
September	4	2013	--	--	52,770	38,443	91,212	201,000	201,000	19	164,830	164,849	3,174
September	5	2013	--	--	151,105	40,379	191,484		191,484	18	183,764	183,782	4,189
September	6	2013	--	--	153,193	40,293	193,486		193,486	18	189,151	189,169	5,034
September	7	2013	--	--	153,250	40,299	193,549		193,549	18	186,272	186,290	10,455
September	8	2013	--	--	153,290	40,013	193,303		193,303	18	195,285	195,303	2,913
September	9	2013	--	--	151,113	40,060	191,172		191,172	18	195,195	195,213	9
September	10	2013	--	--	150,018	39,089	189,107		189,107	18	188,519	188,537	9
September	11	2013	--	--	150,526	39,378	189,904		189,904	18	191,638	191,656	9
September	12	2013	--	--	153,212	39,763	192,975		192,975	18	190,761	190,779	9
September	13	2013	--	--	153,156	39,600	192,755		192,755	18	194,118	194,136	3,748
September	14	2013	--	--	153,089	39,596	192,684		192,684	18	194,309	194,327	1,062
September	15	2013	--	--	153,129	39,624	192,753		192,753	18	194,079	194,097	1,062
September	16	2013	--	--	153,180	39,628	192,808		192,808	18	192,727	192,745	1,062
September	17	2013	--	--	153,187	39,619	192,806		192,806	18	192,704	192,722	1,062
September	18	2013	--	--	116,287	30,287	146,574		146,574	62	149,444	149,506	1,062
September	19	2013	--	--	153,118	39,802	192,920		192,920	150	193,480	193,630	1,062
September	20	2013	--	--	153,030	39,630	192,660		192,660	--	193,584	193,584	1,062
September	21	2013	--	--	152,932	39,584	192,517		192,517	0	188,604	188,604	1,062
September	22	2013	--	--	153,110	39,803	192,914		192,914	1	192,783	192,784	1,062
September	23	2013	--	--	152,585	39,635	192,220		192,220	3	195,932	195,935	3,350
September	24	2013	--	--	152,641	40,083	192,723		192,723	0	196,143	196,143	--
September	25	2013	--	--	153,061	40,130	193,191		193,191	1,837	191,136	192,973	--
September	26	2013	--	--	149,708	38,797	188,505		188,505	3	188,600	188,603	--
September	27	2013	--	--	155,514	39,716	195,229		195,229	--	195,011	195,011	--
September	28	2013	--	--	155,450	39,591	195,041		195,041	--	198,536	198,536	1,303
September	29	2013	--	--	155,442	39,545	194,987		194,987	1	193,827	193,828	2,065
September	30	2013	--	--	155,409	39,470	194,879		194,879	0	190,709	190,710	378
Total Monthly Volumes (gal)			**0**	**0**	**3,992,502**	**1,183,573**	**5,176,076**	**790,000**	**5,753,146**	**2,358**	**5,694,959**	**5,697,317**	**51,518**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**92.4**	**27.4**	**119.8**			**0.1**	**131.8**	**131.9**	**1.2**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during September 2013 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime.

b. During the August 2013 reporting period, a series of lightning strikes at IM-3 and to the City of Needles power system caused significant damage to electrical components at the treatment facility. On August 18, 2013, lightning strikes caused the flow meters at TW-3D and PE-01 to fail. The extraction pumps continued to operate following the lightning strikes without operable flow meters, because replacement flow meters were not readily available. The flow meter at PE-01 was replaced on August 29, 2013, and the flow meter in TW-3D was replaced September 4, 2013. Due to the meter failures, flow data from a flow meter for PE-01 was unavailable between August 18 and August 28, 2013, and flow data from a flow meter for TW-03D was unavailable from August 18, 2013 through September 4, 2013. The data presented includes only data from the time periods during which the flow meters were operating correctly.

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the period the TW-3D and PE-01 flow meters were operating correctly (September 5, 2013 through September 30, 2013) is approximately 0.34 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.

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

e. The daily extracted volume was calculated by subtracting the average input flow from the Process Drain Tank (T-900) from the Raw Water Storage Tank (T-100) output flow. The input from the Process Drain Tank and the extraction wells TW-3D and PE-01 are the only contributors into the Raw Water Storage Tank.

f. The combined total for the extraction well system uses recorded extraction well data when the flow meters for TW-3D and PE-01 were both operating correctly (September 5 - September 30, 2013) and uses the calculated total for the extraction well system for days in which one or both of the flow meters were inoperable (September 1 - September 4, 2013).

October 2013 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)**	**(gallons)**
October	1	2013	--	--	153,520	40,039	193,559	1	198,183	198,184	0
October	2	2013	--	--	152,020	40,000	192,020	0	189,717	189,717	0
October	3	2013	--	--	154,845	39,804	194,649	1	194,723	194,724	0
October	4	2013	--	--	155,158	39,703	194,861	0	194,998	194,998	2,816
October	5	2013	--	--	155,214	39,866	195,080	0	195,564	195,564	0
October	6	2013	--	--	155,246	39,846	195,092	0	197,405	197,405	0
October	7	2013	--	--	155,298	39,964	195,262	0	192,375	192,375	0
October	8	2013	--	--	154,872	39,625	194,496	0	195,153	195,153	3,004
October	9	2013	--	--	155,294	39,977	195,271	23,533	175,311	198,843	0
October	10	2013	--	--	152,467	39,318	191,785	0	191,940	191,940	2,873
October	11	2013	--	--	155,124	39,783	194,907	0	193,996	193,996	0
October	12	2013	--	--	155,054	39,656	194,710	2	194,932	194,934	0
October	13	2013	--	--	155,002	39,529	194,530	0	197,076	197,077	0
October	14	2013	--	--	155,036	39,454	194,490	3	195,725	195,728	2,723
October	15	2013	--	--	155,009	39,382	194,391	0	192,555	192,555	0
October	16	2013	--	--	154,990	39,364	194,354	0	191,962	191,962	0
October	17	2013	--	--	154,966	39,182	194,148	0	193,404	193,404	1,435
October	18	2013	--	--	154,838	39,510	194,348	1	193,302	193,303	1,315
October	19	2013	--	--	154,748	39,472	194,221	0	195,355	195,355	0
October	20	2013	--	--	154,763	39,318	194,081	0	195,929	195,929	0
October	21	2013	--	--	154,717	39,087	193,804	0	195,445	195,445	0
October	22	2013	--	--	154,576	38,937	193,514	173,228	17,177	190,405	3,073
October	23	2013	--	--	154,570	39,155	193,725	167,686	32,897	200,583	0
October	24	2013	--	--	154,550	39,092	193,643	192,481	20	192,501	0
October	25	2013	--	--	154,503	39,206	193,709	196,866	24	196,890	2,904
October	26	2013	--	--	154,480	38,977	193,457	191,775	24	191,798	0
October	27	2013	--	--	154,446	39,029	193,475	196,530	20	196,550	0
October	28	2013	--	--	153,765	39,299	193,064	194,838	21	194,860	1,395
October	29	2013	--	--	154,432	39,392	193,824	193,577	16	193,593	0
October	30	2013	--	--	154,425	39,554	193,978	192,805	29	192,834	3,027
October	31	2013	--	--	154,441	39,568	194,009	193,302	32	193,334	2,721
Total Monthly Volumes (gallons)			**0**	**0**	**4,792,370**	**1,224,089**	**6,016,459**	**1,916,629**	**4,115,310**	**6,031,939**	**27,286**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**107.4**	**27.4**	**134.8**	**42.9**	**92.2**	**135.1**	**0.6**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during October 2013 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 2013.

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 October 2013 is approximately 0.71 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 2013 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)**	**(gallons)**
November	1	2013	--	--	154,391	39,693	194,084	197,054	19	197,074	0
November	2	2013	--	--	154,433	39,494	193,927	191,427	24	191,451	2,779
November	3	2013	--	--	154,398	39,307	193,705	194,758	20	194,778	0
November	4	2013	--	--	140,229	35,877	176,106	167,045	22	167,067	2,822
November	5	2013	--	--	147,501	37,475	184,977	192,413	23	192,436	0
November	6	2013	--	--	148,185	37,872	186,057	102,599	83,276	185,875	0
November	7	2013	--	--	146,777	37,552	184,329	0	182,539	182,540	2,776
November	8	2013	--	--	154,369	39,286	193,655	0	201,831	201,831	0
November	9	2013	--	--	154,412	39,187	193,599	0	192,261	192,261	3,163
November	10	2013	--	--	154,416	39,067	193,483	0	192,078	192,078	0
November	11	2013	--	--	154,381	39,004	193,384	1	191,673	191,674	0
November	12	2013	--	--	154,352	39,102	193,454	0	192,049	192,049	3,020
November	13	2013	--	--	154,446	39,125	193,570	0	193,777	193,777	0
November	14	2013	--	--	154,488	39,099	193,587	0	195,124	195,124	0
November	15	2013	--	--	154,497	38,991	193,489	0	194,193	194,193	0
November	16	2013	--	--	154,459	39,039	193,498	0	191,990	191,990	3,051
November	17	2013	--	--	154,535	38,870	193,404	0	191,351	191,351	0
November	18	2013	--	--	154,460	39,011	193,471	0	195,536	195,536	3,037
November	19	2013	--	--	154,398	38,779	193,177	44,191	149,523	193,714	0
November	20	2013	--	--	115,348	29,290	144,639	1	143,871	143,872	0
November	21	2013	--	--	153,485	38,925	192,410	0	191,572	191,572	2,866
November	22	2013	--	--	153,399	39,228	192,627	0	194,348	194,348	0
November	23	2013	--	--	154,195	39,077	193,272	0	194,522	194,523	3,090
November	24	2013	--	--	154,144	38,994	193,138	0	195,550	195,551	0
November	25	2013	--	--	149,071	37,710	186,780	0	186,823	186,823	3,005
November	26	2013	--	--	108,799	27,675	136,474	75,842	61,537	137,379	0
November	27	2013	--	--	113,020	28,757	141,777	135,048	18	135,067	2,870
November	28	2013	--	--	153,968	38,885	192,852	193,008	21	193,029	0
November	29	2013	--	--	153,941	38,814	192,755	197,147	24	197,171	3,677
November	30	2013	--	--	153,995	38,774	192,769	190,880	22	190,902	0
Total Monthly Volumes (gallons)			**0**	**0**	**4,462,492**	**1,131,956**	**5,594,447**	**1,881,418**	**3,715,618**	**5,597,036**	**36,156**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**103.3**	**26.2**	**129.5**	**43.6**	**86.0**	**129.6**	**0.8**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during November 2013 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 2013.

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 November 2013 is approximately 0.69 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 2013 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)**	**(gallons)**
December	1	2013	--	--	154,035	38,775	192,811	192,066	21	192,087	3,164
December	2	2013	--	--	150,228	37,921	188,149	184,423	24	184,447	0
December	3	2013	--	--	153,991	38,832	192,823	195,474	24	195,498	3,107
December	4	2013	--	--	153,872	38,664	192,536	194,855	23	194,878	0
December	5	2013	--	--	153,814	38,562	192,376	192,388	23	192,411	2,561
December	6	2013	--	--	153,266	38,660	191,926	188,404	1,080	189,484	0
December	7	2013	--	--	153,764	38,794	192,558	196,326	22	196,348	3,055
December	8	2013	--	--	153,681	38,641	192,321	191,975	23	191,998	2,938
December	9	2013	--	--	153,562	38,535	192,097	191,374	22	191,396	0
December	10	2013	--	--	153,475	38,411	191,886	192,697	22	192,719	3,018
December	11	2013	--	--	154,911	38,321	193,232	187,163	3,386	190,548	0
December	12	2013	--	--	155,675	38,357	194,031	99,634	93,909	193,543	2,933
December	13	2013	--	--	155,724	38,554	194,278	0	192,737	192,737	0
December	14	2013	--	--	155,660	38,532	194,192	0	195,835	195,835	0
December	15	2013	--	--	155,650	38,335	193,985	0	195,181	195,181	3,084
December	16	2013	--	--	155,683	38,449	194,132	0	192,271	192,271	0
December	17	2013	--	--	155,658	38,603	194,261	0	193,148	193,148	0
December	18	2013	--	--	155,562	38,394	193,956	0	192,854	192,854	0
December	19	2013	1,321	12,799	147,732	36,550	198,402	11	191,089	191,100	2,561
December	20	2013	--	--	155,366	38,386	193,752	149	188,958	189,106	0
December	21	2013	--	--	155,220	38,152	193,372	0	192,479	192,480	0
December	22	2013	--	--	155,244	38,102	193,345	0	193,810	193,810	2,898
December	23	2013	--	--	155,286	38,282	193,568	0	192,986	192,986	0
December	24	2013	--	--	155,251	38,276	193,527	0	193,417	193,417	0
December	25	2013	--	--	155,228	38,263	193,491	0	192,813	192,813	0
December	26	2013	--	--	155,198	38,161	193,359	0	188,998	188,998	0
December	27	2013	--	--	155,187	38,160	193,346	69,742	115,622	185,364	0
December	28	2013	--	--	155,114	38,194	193,307	205,168	21	205,189	2,668
December	29	2013	--	--	155,198	38,126	193,324	194,735	25	194,760	0
December	30	2013	--	--	155,172	38,171	193,343	195,325	26	195,351	0
December	31	2013	--	--	155,193	38,099	193,292	195,037	39	195,077	2,690
Total Monthly Volumes (gallons)			**1,321**	**12,799**	**4,788,600**	**1,188,261**	**5,990,980**	**3,066,946**	**2,910,888**	**5,977,834**	**34,677**
Average Pump/Injection Rates (gpm)			**0.0**	**0.3**	**107.3**	**26.6**	**134.2**	**68.7**	**65.2**	**133.9**	**0.8**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during December 2013 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 December 2013.

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 December 2013 is approximately 0.36 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

30171212-1304705

WWRA-006931-F
Purchase order number

US-19068473-30 / Endress+Hauser Flowtec
Order N°/Manufacturer

23P50-AL1A1AA022AW
Order code

PROMAG 23 P 2"
Transmitter/Sensor

6C036F16000
Serial N°

FIT-1201
Tag N°

FCP-6.F
Calibration rig

155.6102 us.gal/min (≙ 100%)
Calibrated full scale

Current 4 - 20 mA
Calibrated output

0.9101
Calibration factor

-34
Zero point

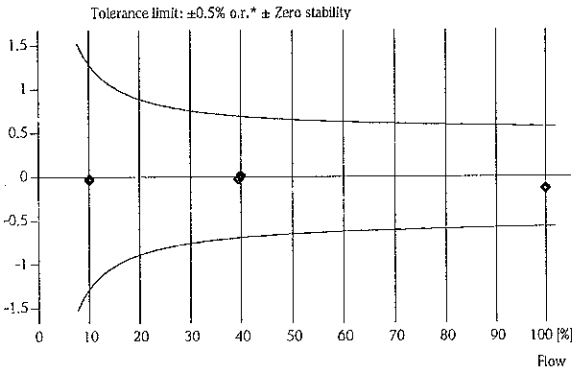
78.7 °F
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.1	15.7	30.2	7.8942	7.8921	-0.03	5.61
39.5	61.5	30.2	30.956	30.950	-0.02	10.32
39.9	62.1	30.2	31.263	31.268	0.02	10.39
100.0	155.7	30.2	78.338	78.232	-0.14	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 informations (TI), chapter Performance characteristics.

The calibration is traceable to the N.I.S.T. through standards certified at preset intervals.

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

John Davis

08-06-2010
Date of calibration

John Davis
Operator

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Certified acc. to
MIL-STD-45662A
ISO 9001, Reg.-N° 030502.2

Endress+Hauser

People for Process Automation

Flow Calibration with Adjustment

30258091-1304700

4600091011	FCP-7.1.E
Purchase order number	Calibration rig
US-3601523401-200 / Endress+Hauser Flowtec	155.6102 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1AA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9145
Transmitter/Sensor	Calibration factor
6C037316000	0
Serial N°	Zero point
FIT-1205	70.5 °F
Tag N°	Water temperature

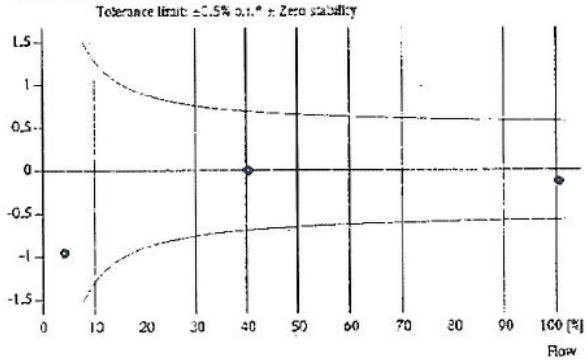
Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
4.0	6.27	55.2	5.7720	5.7163	-0.96	4.64
40.2	62.5	30.2	31.439	31.439	0.00	10.43
40.3	62.6	30.2	31.498	31.497	0.00	10.44
100.7	156.7	30.2	78.760	78.656	-0.13	20.09
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.

Tolerance limit: ±0.5% o.r.* ± Zero stability



For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.

The calibration is traceable to the N.I.S.T. through standards certified at preset intervals.

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

John Davis

01-07-2013

Date of calibration

John Davis

Operator

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Certified acc. to
ISO 9001, Reg.-N° 030502.2
ISO 14001, Reg.-N° EMS561046

Endress+Hauser
People for Process Automation

Flow Calibration without Adjustment

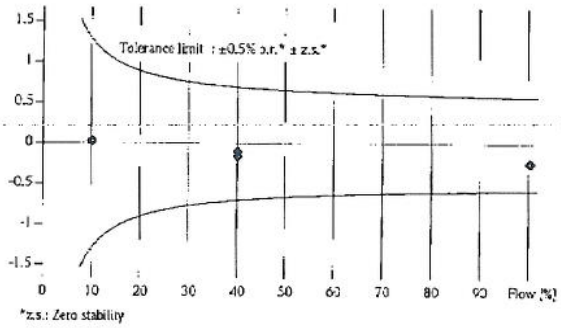
92004354-1275191

4017515743	FCP-8.2 US
Purchase order number	Calibration rig
US-3601525773-100 / Endress+Hauser Inc.	156 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1RA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9207
Transmitter/Sensor	Calibration factor
6A022016000	0
Serial N°	Zero point
FIT-101	72.6 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.661	60.0	15.672	15.677	0.03	5.61
40.1	62.621	60.0	62.668	62.570	-0.16	10.41
40.2	62.632	60.0	62.678	62.615	-0.10	10.42
100.4	156.615	60.0	156.730	156.360	-0.24	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).

Wesley Watkins

09-20-2013
Date of calibration

W. Watkins
Operator

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

Endress+Hauser
People for Process Automation

Flow Calibration without Adjustment

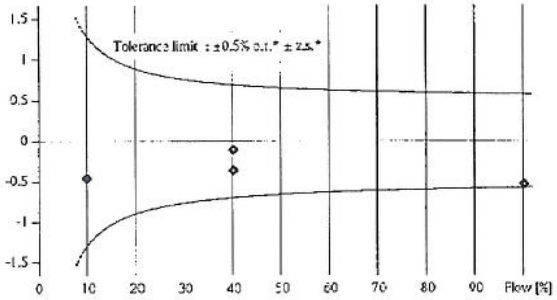
92004350-1275192

4017515743	FCP-8.2 US
Purchase order number	Calibration rig
US-3601525789-100 / Endress+Hauser Inc.	156 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1RA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9082
Transmitter/Sensor	Calibration factor
6A022116000	0
Serial N°	Zero point
FIT-102	72.3 °F
Tag N°	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 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).

Wesley Watkins

09-20-2013
Date of calibration

W. Watkins
Operator

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

Endress+Hauser
People for Process Automation

Flow Calibration without Adjustment

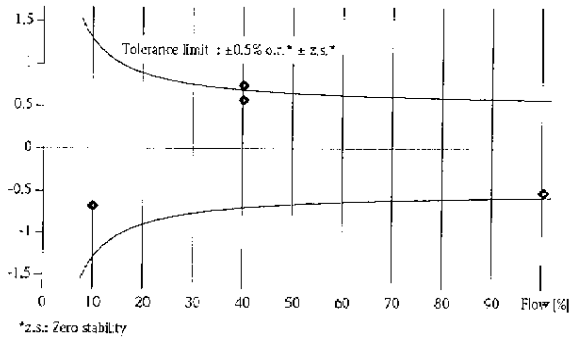
92004352-1304708

4017515743	FCP-8.2 US
Purchase order number	Calibration rig
US-3601525789-300 / Endress+Hauser Inc.	156 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1AA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9184
Transmitter/Sensor	Calibration factor
6C037216000	20
Serial N°	Zero point
FIT-1204	72.4 °F
Tag N°	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).

Wesley Watkins

09-20-2013
Date of calibration

W. Watkins
Operator

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

Endress+Hauser

People for Process Automation

Flow Calibration without Adjustment

92002720-1304706

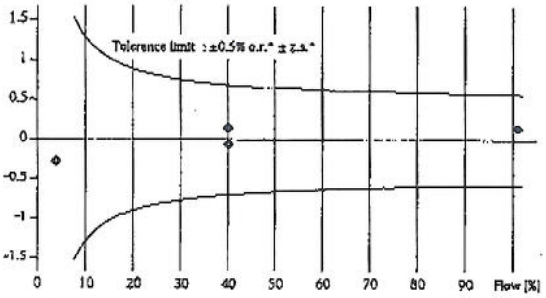
4600082515	FCP-8.2 US
Purchase order number	Calibration rig
US-3601521707-200 / Endress+Hauser Inc.	155 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1AA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9154
Transmitter/Sensor	Calibration factor
6C037016000	0
Serial N°	Zero point
FIT-1202	75.5 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
4.0	6.12	60.0	6.1222	6.1053	-0.28	4.63
40.1	62.2	60.0	62.267	62.358	0.15	10.43
40.2	62.2	60.0	62.283	62.243	-0.06	10.42
101.1	156.7	60.0	156.766	156.998	0.15	20.20
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*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).

Wesley Watkins

W. Watkins

Operator

06-19-2012

Date of calibration

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

Endress+Hauser

People for Process Automation

Flow Calibration with Adjustment

30202337-1385113

WWRA008929F Purchase order number	FCP-7.1.B Calibration rig
US-465002382-30 / Endress+Hauser Flowtec Order N°/Manufacturer	398.3621 us.gal/min (≙ 100%) Calibrated full scale
23P80-AL1A1AA022AW Order code	Current 4 - 20 mA Calibrated output
PROMAG 23 P 3" Transmitter/Sensor	1.1670 Calibration factor
7700C616000 Serial N°	35 Zero point
– Tag N°	82.3 °F Water temperature

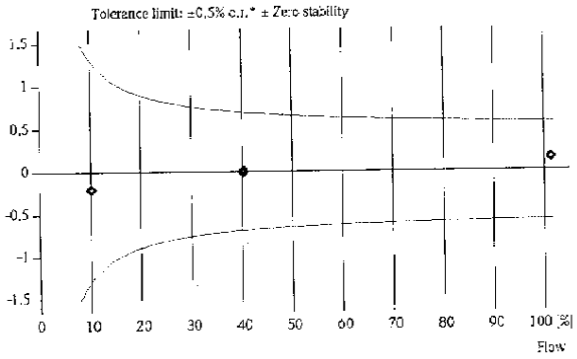
Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.1	40.0	60.1	40.074	39.992	-0.20	5.60
40.2	160.2	60.1	160.332	160.322	-0.01	10.43
40.2	160.2	60.1	160.400	160.424	0.01	10.44
101.4	404.0	60.1	404.438	405.041	0.15	20.25
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–

*o.r. of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.

Tolerance limit: ±0.5% o.r.* ± Zero stability



For detailed data concerning output specifications of the unit under test, see technical informations (TI), chapter Performance characteristics.

The calibration is traceable to the N.I.S.T. through standards certified at preset intervals.

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

07-25-2011

Date of calibration

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Taylor Shepard

Operator

Certified acc. to
ISO 9001, Reg.-N° 030502.2
ISO 14001, Reg.-N° EMS561046

Endress+Hauser

People for Process Automation

Flow Calibration without Adjustment

92002718-1275190

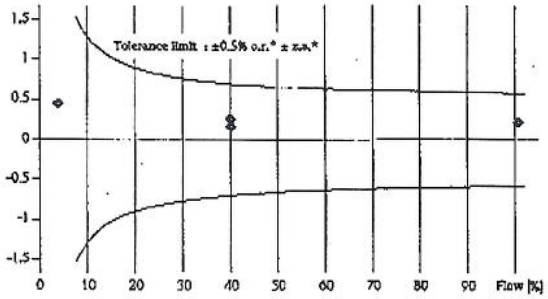
4600082515	FCP-8.2 US
Purchase order number	Calibration rig
US-3601521707-100 / Endress+Hauser Inc.	155 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1RA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9178
Transmitter/Sensor	Calibration factor
6A021F16000	0
Serial N°	Zero point
FIT-100	75.3 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
4.0	6.14	60.0	0.1423	0.1699	0.45	4.64
40.2	62.3	60.0	62.353	62.512	0.26	10.45
40.2	62.3	60.0	62.361	62.460	0.16	10.44
100.8	156.3	60.0	156.354	156.703	0.22	20.17
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*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).

Wesley Watkins

06-19-2012
Date of calibration

W. Watkins
Operator

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

Appendix D
Fourth Quarter 2013
Laboratory Analytical Reports

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

November 11, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-434 PROJECT, SLUDGE MONITORING,

TLI NO.: 810205

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-434 project sludge monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 1, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

All final results and associated dilution factors are reported on a dry weight basis, except Percent Moisture and STLC for Chromium.

The internal standard for Total Beryllium by SW 6020A analyzed at a 5x dilution was outside the recovery limits of 70% - 130% as a result of matrix interference. Therefore, the sample was re-analyzed at a 10x dilution and the internal standard was within acceptable limits. Due to the dilution, the reporting limit for Total Beryllium exceeded the Contract Required Detection Limit and the result was below the reporting limit. All other QA/QC were within acceptable limits.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Soil Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 810205
Date: November 11, 2013
Collected: October 1, 2013
Received: October 1, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 300.0	Anions	Giawad Ghenniwa
SM 2540 B	% Moisture	Kim Luck
SW 6010B	Metals by ICP	Denise Chauv
SW 6020A	Metals by ICP/MS	Ethel Suico
SW 7199	Hexavalent Chromium	Naheed Eidinejad / Tom Martinez

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

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Laboratory No.: 810205
Date Received: October 1, 2013

Analytical Results Summary

Lab I.D.	Sample I.D.	Sample Time	SW 7199 Hexavalent Chromium	EPA 300.0 Fluoride	EPA 300.0 Nitrate as N	SM 2540 B % Moisture
			mg/kg	mg/kg	mg/kg	%
810205	SC-Sludge-WDR-434	13:45	81.2	67.3	28.3	80.3

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Laboratory No.: 810205
Date Received: October 1, 2013

Analytical Results Summary

METALS ANALYSIS: **Total Metal Analyses as Requested**

Lab I.D.	Sample ID	Date of Analysis: Time Coll.	Antimony SW 6010B 10/04/13 mg/kg	Arsenic SW 6020A 11/06/13 mg/kg	Barium SW 6010B 10/04/13 mg/kg	Beryllium SW 6020A 11/08/13 mg/kg	Cadmium SW 6010B 10/04/13 mg/kg	Chromium SW 6010B 10/14/13 mg/kg	Cobalt SW 6010B 10/04/13 mg/kg	Copper SW 6020A 11/06/13 mg/kg	Lead SW 6010B 10/04/13 mg/kg
810205	SC-Sludge-WDR-434	13:45	158	31.6	156	ND	25.2	6770	ND	36.3	6.55

Lab I.D.	Sample ID	Date of Analysis: Time Coll.	Manganese SW 6010B 10/04/13 mg/kg	Mercury SW 6020A 10/08/13 mg/kg	Molybdenum SW 6020A 11/06/13 mg/kg	Nickel SW 6010B 10/04/13 mg/kg	Selenium SW 6010B 10/04/13 mg/kg	Silver SW 6010B 10/10/13 mg/kg	Thallium SW 6020A 11/06/13 mg/kg	Vanadium SW 6010B 10/04/13 mg/kg	Zinc SW 6010B 10/04/13 mg/kg
810205	SC-Sludge-WDR-434	13:45	797	0.243	11.2	28.2	ND	ND	ND	81.1	86.5

NOTES:
ND: Not detected, or below limit of detection

006

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REPORT

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Soil Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001
Prep. Batch: 10CrH13J

Laboratory No.: 810205
Date: November 11, 2013
Collected: October 1, 2013
Received: October 1, 2013
Prep/ Analyzed: October 8, 2013
Analytical Batch: 10CrH13J

Investigation: **Hexavalent Chromium by IC Using Method SW 7199**

Analytical Results Hexavalent Chromium

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
810205	SC-Sludge-WDR-434	13:45	18:04	mg/kg	1.00	2.03	81.2

QA/QC Summary

QC STD I.D.	Laboratory Number	Sample Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	810205	81.2	81.0	0.30%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc.of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	810205	81.2	100	405	405	431	487	86.3%	75-125%	Yes
IMS	810205	81.2	100	5379	5379	5010	5461	91.6%	75-125%	Yes
PDMS	810205	81.2	10.0	40.5	405	486	487	99.8%	85-115%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
Blank	ND	<0.400	---	<0.400	Yes
MRCCS	1.87	2.00	93.5%	90% - 110%	Yes
MRCVS#1	2.03	2.00	102%	90% - 110%	Yes
MRCVS#2	2.17	2.00	108.6%	90% - 110%	Yes
MRCVS#3	1.98	2.00	99.0%	90% - 110%	Yes
LLCS	0.00938	0.0100	93.8%	70% - 130%	Yes
LCS	1.96	2.00	97.8%	80% - 120%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

REPORT

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Soil Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Laboratory No.: 810205
Date: November 11, 2013
Collected: October 1, 2013
Received: October 1, 2013
Prep/ Analyzed: October 7, 2013
Analytical Batch: 10SOLID13A

Investigation: **Total Solids by SM 2540 B**

Analytical Results % Moisture

TLI I.D.	Field I.D.	Sample Time	Units	Results
810205	SC-Sludge-WDR-434	13:45	%	80.3

QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	810205	80.3	80.4	0.19%	≤ 20%	Yes

ND: Below the reporting limit (Not Detected).
DF: Dilution Factor

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

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(714) 730-6239 · FAX (714) 730-6462
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REPORT

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Soil Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Laboratory No.: 810205
Date: November 11, 2013
Collected: October 1, 2013
Received: October 1, 2013
Prep/ Analyzed: October 2, 2013
Analytical Batch: 10AN13B

Investigation: **Fluoride by Ion Chromatography using EPA 300.0**

Analytical Results Fluoride

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
810205	SC-Sludge-WDR-434	13:45	13:05	mg/kg	1.00	10.1	67.3

QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	810206-2	2.36	2.34	0.68%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc.of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	810206-2	2.36	5.00	4.00	20.0	22.3	22.4	99.5%	85-115%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
Blank	ND	<0.500	---	<0.500	Yes
MRCCS	4.12	4.00	103%	90% - 110%	Yes
MRCVS#1	3.09	3.00	103%	90% - 110%	Yes
MRCVS#2	3.07	3.00	102%	90% - 110%	Yes
MRCVS#3	3.03	3.00	101%	90% - 110%	Yes
LCS	4.16	4.00	104%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).
DF: Dilution Factor.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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REPORT

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Soil Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Laboratory No.: 810205
Date: November 11, 2013
Collected: October 1, 2013
Received: October 1, 2013
Prep/ Analyzed: October 2, 2013
Analytical Batch: 10AN13B

Investigation: **Nitrate as N by Ion Chromatography using EPA 300.0**

Analytical Results Nitrate as N

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
810205	SC-Sludge-WDR-434	13:45	13:05	mg/kg	1.00	10.1	28.3

QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	810206-2	2.93	2.92	0.31%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc.of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	810206-2	2.93	5.00	4.00	20.0	22.7	22.9	99.0%	85-115%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
Blank	ND	<0.500	---	<0.500	Yes
MRCCS	3.98	4.00	99.5%	90% - 110%	Yes
MRCVS#1	2.90	3.00	96.7%	90% - 110%	Yes
MRCVS#2	2.91	3.00	96.9%	90% - 110%	Yes
MRCVS#3	2.88	3.00	96.2%	90% - 110%	Yes
LCS	3.98	4.00	99.4%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).
DF: Dilution Factor.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

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EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

REPORT

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612

Attention: Shawn Duffy

Samples: One (1) Soil Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001
Investigation: Total Metal Analyses as Requested

Laboratory No.: 810205
Reported: November 11, 2013
Collected: October 1, 2013
Received: October 1, 2013
Analyzed: See Below

Analytical Results

SAMPLE ID: SC-Sludge-WDR-434 **Time Collected:** 13:45 **LAB ID:** 810205

Parameter	Method	Reported Value	DF	Units	RL	Batch	Date Analyzed	Time Analyzed
Antimony	SW 6010B	158	2.00	mg/kg	34.3	100413A-Th2	10/04/13	15:01
Arsenic	SW 6020A	31.6	5.00	mg/kg	5.00	110613A	11/06/13	19:11
Barium	SW 6010B	156	2.00	mg/kg	10.0	100413A-Th2	10/04/13	15:01
Beryllium	SW 6020A	ND	10.0	mg/kg	2.45	110813A-ICPMS-1	11/08/13	14:32
Cadmium	SW 6010B	25.2	2.00	mg/kg	4.90	100413A-Th2	10/04/13	15:01
Chromium	SW 6010B	6770	10.0	mg/kg	24.5	101413A	10/14/13	14:39
Cobalt	SW 6010B	ND	2.00	mg/kg	10.0	100413A-Th2	10/04/13	15:01
Copper	SW 6020A	36.3	5.00	mg/kg	5.00	110613A	11/06/13	19:11
Lead	SW 6010B	6.55	2.00	mg/kg	5.00	100413A-Th2	10/04/13	15:01
Manganese	SW 6010B	797	2.00	mg/kg	19.6	100413A-Th2	10/04/13	15:01
Mercury	SW 6020A	0.243	2.00	mg/kg	0.100	100813A	10/08/13	16:00
Molybdenum	SW 6020A	11.2	5.00	mg/kg	10.0	110613A	11/06/13	19:11
Nickel	SW 6010B	28.2	2.00	mg/kg	5.00	100413A-Th2	10/04/13	15:01
Selenium	SW 6010B	ND	2.00	mg/kg	5.00	100413A-Th2	10/04/13	15:01
Silver	SW 6010B	ND	2.00	mg/kg	5.00	101013A-Th2	10/10/13	12:44
Thallium	SW 6020A	ND	5.00	mg/kg	5.00	110613A	11/06/13	19:11
Vanadium	SW 6010B	81.1	2.00	mg/kg	5.00	100413A-Th2	10/04/13	15:01
Zinc	SW 6010B	86.5	2.00	mg/kg	10.0	100413A-Th2	10/04/13	15:01

NOTES:

Sample results and reporting limits reported on a dry weight basis.
ND: Not detected,or below limit of detection.
DF: Dilution factor.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Samples: One (1) Soil Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Laboratory No.: 810205
Reported: November 11, 2013
Collected: October 1, 2013
Received: October 1, 2013

Quality Control/Quality Assurance Report

				DIGESTED BLANK		MRCCS				MRCVS			
Parameter	Method	Batch	Units	Blank	RL	Observed Value	TRUE Value	% Rec	Control Limits	Observed Value	TRUE Value	% Rec	Control Limits %
Antimony	SW 6010B	100413A-Th2	mg/kg	ND	5.00	4.97	5.00	99.3%	90-110%	4.89	5.00	97.9%	90-110%
Arsenic	SW 6020A	110613A	mg/kg	ND	5.00	0.0201	0.0200	101%	90-110%	0.0198	0.0200	99.0%	90-110%
Barium	SW 6010B	100413A-Th2	mg/kg	ND	10.0	4.90	5.00	97.9%	90-110%	4.83	5.00	96.7%	90-110%
Beryllium	SW 6020A	110813A-ICPMS-1	mg/kg	ND	1.00	0.0203	0.0200	102%	90-110%	0.0203	0.0200	102%	90-110%
Cadmium	SW 6010B	100413A-Th2	mg/kg	ND	1.00	5.06	5.00	101%	90-110%	5.06	5.00	101%	90-110%
Chromium	SW 6010B	101413A	mg/kg	ND	5.00	5.26	5.00	105%	90-110%	4.97	5.00	99.4%	90-110%
Cobalt	SW 6010B	100413A-Th2	mg/kg	ND	10.0	4.97	5.00	99.3%	90-110%	4.97	5.00	99.3%	90-110%
Copper	SW 6020A	110613A	mg/kg	ND	5.00	0.0199	0.0200	99.5%	90-110%	0.0187	0.0200	93.4%	90-110%
Lead	SW 6010B	100413A-Th2	mg/kg	ND	5.00	4.82	5.00	96.5%	90-110%	4.98	5.00	99.5%	90-110%
Manganese	SW 6010B	100413A-Th2	mg/kg	ND	4.00	4.97	5.00	99.5%	90-110%	4.71	5.00	94.3%	90-110%
Mercury	SW 6020A	100813A	mg/kg	ND	0.100	0.00205	0.00200	102%	90-110%	0.00204	0.00200	102%	90-110%
Molybdenum	SW 6020A	110613A	mg/kg	ND	10.0	0.0214	0.0200	107%	90-110%	0.0188	0.0200	94.1%	90-110%
Nickel	SW 6010B	100413A-Th2	mg/kg	ND	5.00	5.04	5.00	101%	90-110%	4.98	5.00	99.7%	90-110%
Selenium	SW 6010B	100413A-Th2	mg/kg	ND	5.00	5.08	5.00	102%	90-110%	5.07	5.00	101%	90-110%
Silver	SW 6010B	101013A-Th2	mg/kg	ND	5.00	5.14	5.00	103%	90-110%	4.67	5.00	93.3%	90-110%
Thallium	SW 6020A	110613A	mg/kg	ND	5.00	0.0214	0.0200	107%	90-110%	0.0188	0.0200	94.0%	90-110%
Vanadium	SW 6010B	100413A-Th2	mg/kg	ND	5.00	4.90	5.00	98.1%	90-110%	5.02	5.00	100%	90-110%
Zinc	SW 6010B	100413A-Th2	mg/kg	ND	10.0	5.15	5.00	103%	90-110%	5.12	5.00	102%	90-110%

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			INTERFERENCE CHECK STANDARD (ICS A+B #1)				INTERFERENCE CHECK STANDARD (ICS A+B #2)			
Parameter	**Method**	**Units**	**ICS Obs.**	**ICS Theo.**	**% Rec.**	**Control Limits**	**ICS Obs.**	**ICS Theo.**	**% Rec.**	**Control Limits**
Arsenic	SW 6020A	mg/kg	0.0204	0.0200	102%	80-120%	0.0202	0.0200	101%	80-120%
Cadmium	SW 6010B	mg/kg	2.08	2.00	104%	80-120%	2.13	2.00	106%	80-120%
Chromium	SW 6010B	mg/kg	2.22	2.00	111%	80-120%	2.21	2.00	110%	80-120%
Cobalt	SW 6010B	mg/kg	2.09	2.00	105%	80-120%	2.13	2.00	107%	80-120%
Copper	SW 6020A	mg/kg	0.0200	0.0200	99.9%	80-120%	0.0183	0.0200	91.6%	80-120%
Manganese	SW 6010B	mg/kg	2.10	2.00	105%	80-120%	1.98	2.00	98.8%	80-120%
Mercury	SW 6020A	mg/kg	0.00203	0.00200	102%	80-120%	0.00195	0.00200	97.3%	80-120%
Nickel	SW 6010B	mg/kg	2.11	2.00	105%	80-120%	2.10	2.00	105%	80-120%
Silver	SW 6010B	mg/kg	2.01	2.00	100%	80-120%	2.00	2.00	100%	80-120%
Zinc	SW 6010B	mg/kg	2.11	2.00	106%	80-120%	2.15	2.00	108%	80-120%

			LABORATORY CONTROL SAMPLES				SAMPLE DUPLICATES				
Parameter	**Method**	**Units**	**LCS Obs.**	**LCS Theo.**	**% Rec.**	**Control Limits**	**SAMPLE ID**	**SAMPLE RESULT**	**DUP RESULT**	**% RPD**	**Precision Control Limits %**
Antimony	SW 6010B	mg/kg	1.96	2.00	97.9%	85-115%	810205	158	154	2.29%	≤20
Arsenic	SW 6020A	mg/kg	0.0470	0.0500	94.0%	85-115%	810205	31.6	31.0	1.95%	≤20
Barium	SW 6010B	mg/kg	2.00	2.00	100%	85-115%	810205	156	154	1.51%	≤20
Beryllium	SW 6020A	mg/kg	0.0542	0.0500	108%	85-115%	810205	ND	ND	0.00%	≤20
Cadmium	SW 6010B	mg/kg	2.04	2.00	102%	85-115%	810205	25.2	25.0	0.72%	≤20
Chromium	SW 6010B	mg/kg	2.08	2.00	104%	85-115%	810205	6770	6640	1.94%	≤20
Cobalt	SW 6010B	mg/kg	2.03	2.00	102%	85-115%	810205	ND	ND	0.00%	≤20
Copper	SW 6020A	mg/kg	0.0466	0.0500	93.1%	85-115%	810205	36.3	35.4	2.38%	≤20
Lead	SW 6010B	mg/kg	1.99	2.00	99.6%	85-115%	810205	6.55	6.29	4.10%	≤20
Manganese	SW 6010B	mg/kg	1.96	2.00	97.8%	85-115%	810205	797	795	0.25%	≤20
Mercury	SW 6020A	mg/kg	0.00537	0.00500	107%	85-115%	810205	0.243	0.283	15.1%	≤20
Molybdenum	SW 6020A	mg/kg	0.0470	0.0500	93.9%	85-115%	810205	11.2	11.0	1.30%	≤20
Nickel	SW 6010B	mg/kg	2.05	2.00	103%	85-115%	810205	28.2	28.3	0.23%	≤20
Selenium	SW 6010B	mg/kg	2.00	2.00	99.8%	85-115%	810205	ND	ND	0.00%	≤20
Silver	SW 6010B	mg/kg	2.07	2.00	103%	85-115%	810205	ND	ND	0.00%	≤20
Thallium	SW 6020A	mg/kg	0.0436	0.0500	87.1%	85-115%	810205	ND	ND	0.00%	≤20
Vanadium	SW 6010B	mg/kg	2.00	2.00	99.8%	85-115%	810205	81.1	80.4	0.76%	≤20
Zinc	SW 6010B	mg/kg	2.02	2.00	101%	85-115%	810205	86.5	85.7	0.94%	≤20

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MATRIX SPIKE

Sample ID	Parameter	Method	Units	Sample Result	DF	Spike Level	Total Amt. of Spike	Theo. Value	MS Obs.	% Rec.	Accuracy Control Limits %
810205	Antimony	SW 6010B	mg/kg	158	2.00	217	434	592	593	100%	75-125%
810205	Arsenic	SW 6020A	mg/kg	31.6	5.00	12.2	61.2	92.8	87.4	91.2%	75-125%
810205	Barium	SW 6010B	mg/kg	156	2.00	217	434	590	650	114%	75-125%
810205	Beryllium	SW 6020A	mg/kg	0.00	10.0	0.825	8.25	8.25	8.19	99.3%	75-125%
810205	Cadmium	SW 6010B	mg/kg	25.2	2.00	217	434	460	457	99.4%	75-125%
810205	Chromium	SW 6010B	mg/kg	6770	10.0	490	4895	11665	11400	94.6%	75-125%
810205	Cobalt	SW 6010B	mg/kg	0.00	2.00	217	434	434	427	98.4%	75-125%
810205	Copper	SW 6020A	mg/kg	36.3	5.00	12.2	61.2	97.5	83.1	76.6%	75-125%
810205	Lead	SW 6010B	mg/kg	6.55	2.00	217	434	441	362	81.8%	75-125%
810205	Manganese	SW 6010B	mg/kg	797	2.00	217	434	1231	1220	97.4%	75-125%
810205	Mercury	SW 6020A	mg/kg	0.243	2.00	0.412	0.825	1.07	0.984	89.8%	75-125%
810205	Molybdenum	SW 6020A	mg/kg	11.2	5.00	1.65	8.25	19.4	18.1	83.8%	75-125%
810205	Nickel	SW 6010B	mg/kg	28.2	2.00	217	434	463	451	97.4%	75-125%
810205	Selenium	SW 6010B	mg/kg	0.00	2.00	217	434	434	420	96.7%	75-125%
810205	Silver	SW 6010B	mg/kg	0.00	2.00	217	434	434	408	93.9%	75-125%
810205	Thallium	SW 6020A	mg/kg	0.00	5.00	1.65	8.25	8.25	7.13	86.4%	75-125%
810205	Vanadium	SW 6010B	mg/kg	81.1	2.00	217	434	515	494	95.1%	75-125%
810205	Zinc	SW 6010B	mg/kg	86.5	2.00	217	434	521	558	109%	75-125%

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MATRIX SPIKE DUPLICATE

Sample ID	Parameter	Method	Units	Sample Result	DF	Spike Level	Total Amt. of Spike	Theo. Value	MS Obs.	% Rec.	Accuracy Control Limits %
810205	Antimony	SW 6010B	mg/kg	158	2.00	223	446	604	598	98.6%	75-125%
810205	Barium	SW 6010B	mg/kg	156	2.00	223	446	602	663	114%	75-125%
810205	Beryllium	SW 6020A	mg/kg	0.00	10.0	1.25	12.5	12.5	13.2	106%	75-125%
810205	Cadmium	SW 6010B	mg/kg	25.2	2.00	223	446	471	466	98.9%	75-125%
810205	Cobalt	SW 6010B	mg/kg	0.00	2.00	223	446	446	435	97.6%	75-125%
810205	Lead	SW 6010B	mg/kg	6.55	2.00	223	446	453	370	81.5%	75-125%
810205	Manganese	SW 6010B	mg/kg	797	2.00	223	446	1243	1200	90.4%	75-125%
810205	Mercury	SW 6020A	mg/kg	0.243	2.00	0.625	1.25	1.49	1.39	91.5%	75-125%
810205	Molybdenum	SW 6020A	mg/kg	11.2	5.00	2.50	12.5	23.7	22.3	88.8%	75-125%
810205	Nickel	SW 6010B	mg/kg	28.2	2.00	223	446	474	457	96.2%	75-125%
810205	Selenium	SW 6010B	mg/kg	0.00	2.00	223	446	446	429	96.3%	75-125%
810205	Silver	SW 6010B	mg/kg	0.00	2.00	223	446	446	405	90.8%	75-125%
810205	Thallium	SW 6020A	mg/kg	0.00	5.00	2.50	12.5	12.5	11.0	88.3%	75-125%
810205	Vanadium	SW 6010B	mg/kg	81.1	2.00	223	446	527	500	94.0%	75-125%
810205	Zinc	SW 6010B	mg/kg	86.5	2.00	223	446	533	567	108%	75-125%

ND: Not detected, or below limit of detection.
DF: Dilution Factor

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

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Dry Weight Calculations

Date Calculated: 11/11/2013

	Sample Result Wet Weight mg/kg	Dilution Factor	% Moisture %	Sample Result Dry* Weight mg/kg	Reported Value mg/kg	Reporting Limit Wet Weight mg/kg	Reporting Limit Dry Weight mg/kg
Fluoride	13.279	---	80.3	67.2797	67.3	2.00	10.1
Nitrate as N	5.592	---	80.3	28.3326	28.3	2.00	10.1
Hexavalent Chromium	16.0365	---	80.3	81.2508	81.2	0.400	2.03
Hexavalent Chromium - Dup	15.9889	---	80.3	81.0100	81.0	0.400	2.03
Hexavalent Chromium - MS	85.0468	---	80.3	430.901	431	40.0	203
Hexavalent Chromium - IMS	988.369	---	80.3	5007.698	5010	40.0	203
Hexavalent Chromium - PDMS	95.8698	---	80.3	485.737	486	4.00	20.3
Antimony	31.20	2.00	80.3	158.0787	158	6.7633	34.3
Arsenic	6.236188	5.00	80.3	31.5964	31.6	0.2415	5.00
Barium	30.77	2.00	80.3	155.9001	156	1.9324	10.0
Beryllium	ND	10.0	80.3	ND	ND	0.4831	2.45
Cadmium	4.980	2.00	80.3	25.2318	25.2	0.9662	4.90
Chromium	1336	10.0	80.3	6769.0125	6770	4.8309	24.5
Cobalt	1.147	2.00	80.3	5.8114	ND	0.9662	10.0
Copper	7.157445	5.00	80.3	36.2641	36.3	0.2415	5.00
Lead	1.293	2.00	80.3	6.5511	6.55	0.9662	5.00
Manganese	157.3	2.00	80.3	796.9803	797	3.8647	19.6
Mercury	0.047962	2.00	80.3	0.24301	0.243	0.0193	0.100
Molybdenum	2.208053	5.00	80.3	11.1874	11.2	0.2415	10.0
Nickel	5.570	2.00	80.3	28.2211	28.2	0.9662	5.00
Selenium	ND	2.00	80.3	ND	ND	0.9662	5.00
Silver	ND	2.00	80.3	ND	ND	0.9662	5.00
Thallium	ND	5.00	80.3	ND	ND	0.2415	5.00
Vanadium	16.00	2.00	80.3	81.0660	81.1	0.9662	5.00
Zinc	17.08	2.00	80.3	86.5380	86.5	1.9324	10.0

Sample Result in Dry Weight = [$Sample_{ww}$ / (100-%Moisture)]*100

where:
$Sample_{ww}$ = Sample result in wet weight

TRUESDAIL LABORATORIES, INC.

Dry Weight Calculations

Date Calculated: 11/11/2013

	Sample Result Wet Weight mg/kg	Dilution Factor	% Moisture %	Sample Result Dry* Weight mg/kg	Reported Value mg/kg	Reporting Limit Wet Weight mg/kg	Reporting Limit Dry Weight mg/kg
Sample Duplicate: 810205							
Antimony	30.51	2.00	80.3	154.5828	154	6.6075	33.5
Arsenic	6.115573	5.00	80.3	30.9853	31.0	0.2360	5.00
Barium	30.31	2.00	80.3	153.5694	154	1.8879	10.0
Beryllium	ND	10.0	80.3	ND	ND	0.4720	2.39
Cadmium	4.945	2.00	80.3	25.0545	25.0	0.9439	4.78
Chromium	1310	10.0	80.3	6637.2802	6640	4.7197	23.9
Cobalt	1.242	2.00	80.3	6.2927	ND	0.9439	10.0
Copper	6.989389	5.00	80.3	35.4126	35.4	0.2360	5.00
Lead	1.24	2.00	80.3	6.2877	6.29	0.9439	5.00
Manganese	156.9	2.00	80.3	794.9536	795	3.7757	19.1
Mercury	0.05579	2.00	80.3	0.28269	0.283	0.0189	0.100
Molybdenum	2.179637	5.00	80.3	11.0434	11.0	0.2360	10.0
Nickel	5.583	2.00	80.3	28.2870	28.3	0.9439	5.00
Selenium	ND	2.00	80.3	ND	ND	0.9439	5.00
Silver	ND	2.00	80.3	ND	ND	0.9439	5.00
Thallium	ND	5.00	80.3	ND	ND	0.2360	5.00
Vanadium	15.88	2.00	80.3	80.4580	80.4	0.9439	5.00
Zinc	16.92	2.00	80.3	85.7273	85.7	1.8879	10.0
Matrix Spike: 810205							
Antimony	117.0	2.00	80.3	592.7953	593	6.0019	30.4
Arsenic	17.25245	5.00	80.3	87.4117	87.4	0.2415	5.00
Barium	128.2	2.00	80.3	649.5415	650	1.7148	10.0
Beryllium	1.617	10.0	80.3	8.1927	8.19	0.3256	1.65
Cadmium	90.24	2.00	80.3	457.2123	457	0.8574	4.34
Chromium	2260	10.0	80.3	11450.5751	11400	4.8309	24.5
Cobalt	84.35	2.00	80.3	427.3699	427	0.8574	10.0
Copper	16.40443	5.00	80.3	83.1151	83.1	0.2415	5.00
Lead	71.410	2.00	80.3	361.8078	362	0.8574	5.00
Manganese	240.9	2.00	80.3	1220.5502	1220	3.4296	17.4
Mercury	0.194139	2.00	80.3	0.983630	0.984	0.0130	0.100
Molybdenum	3.572009	5.00	80.3	18.0980	18.1	0.1628	10.0
Nickel	89.05	2.00	80.3	451.1831	451	0.8574	5.00
Selenium	82.88	2.00	80.3	419.9220	420	0.8574	5.00
Silver	80.50	2.00	80.3	407.8634	408	0.8574	5.00
Thallium	1.407124	5.00	80.3	7.1294	7.13	0.1628	5.00
Vanadium	97.6	2.00	80.3	494.2494	494	0.8574	5.00
Zinc	110.2	2.00	80.3	558.3422	558	1.7148	10.0

Sample Result in Dry Weight = [$Sample_{ww}$ / (100-%Moisture)]*100

where:
$Sample_{ww}$ = Sample result in wet weight

TRUESDAIL LABORATORIES, INC.

Dry Weight Calculations

Date Calculated: 11/11/2013

	Sample Result Wet Weight mg/kg	Dilution Factor	% Moisture %	Sample Result Dry* Weight mg/kg	Reported Value mg/kg	Reporting Limit Wet Weight mg/kg	Reporting Limit Dry Weight mg/kg
Matrix Spike Duplicate: 810205							
Antimony	118.0	2.00	80.3	597.8619	598	6.1620	31.2
Barium	130.80	2.00	80.3	662.7147	663	1.7606	10.0
Beryllium	2.607	10.0	80.3	13.2087	13.2	0.4930	2.50
Cadmium	92.01	2.00	80.3	466.1803	466	0.8803	4.46
Cobalt	85.91	2.00	80.3	435.2739	435	0.8803	10.0
Lead	73.06	2.00	80.3	370.1677	370	0.8803	5.00
Manganese	237.6	2.00	80.3	1203.8304	1200	3.5211	17.8
Mercury	0.273600	2.00	80.3	1.386229	1.39	0.0197	0.100
Molybdenum	4.396742	5.00	80.3	22.2766	22.3	0.2465	10.0
Nickel	90.24	2.00	80.3	457.2123	457	0.8803	5.00
Selenium	84.74	2.00	80.3	429.3459	429	0.8803	5.00
Silver	79.93	2.00	80.3	404.9754	405	0.8803	5.00
Thallium	2.177496	5.00	80.3	11.0326	11.0	0.2465	5.00
Vanadium	98.78	2.00	80.3	500.4813	500	0.8803	5.00
Zinc	111.9	2.00	80.3	566.9555	567	1.7606	10.0

Sample Result in Dry Weight = [$Sample_{ww}$ / (100-%Moisture)]*100

where:

$Sample_{ww}$ = Sample result in wet weight

TRUESDAIL LABORATORIES, INC.

TOTAL SOLIDS BY SM 2540 B

Date of Analysis: 10/07/13

Analytical Batch: 10SOLID13A
Oven Temp, °C: 105

Lab No.	Dish Number	Weight of dish, g	**Wt of wet sample, g**	Wt of wet sample+ dish, g	Wt of dried residue+dish,g	**Wt of dried residue, g**	% Total Solids	% Moisture
810205	1	1.3178	2.2096	3.5274	1.7539	0.4361	19.737	80.263
810205D	2	1.3193	2.165	3.4843	1.7433	0.4240	19.584	80.416

Relative Percent Difference			
Sample ID	Sample	Sample Dup	RPD
810205	19.737	19.584	0.8

$$\% \text{ Total Solids} = \frac{(A - B) * 100}{C - B} = \frac{\text{Weight of dried residue} \times 100}{\text{Weight of wet sample}}$$

Where:
A = Weight of dried Residue + Dish, g
B = Weight of dish, g
C = Weight of wet sample + Dish, g

G. Savani
Analyst Name

Analyst Signature

Reviewer Name

Reviewer Signature

TS_%M_10A.xls10/11/13

810205

TRUESDAIL LABORATORIES, INC.
14201 Franklin Avenue, Tustin, CA 92780-7008
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CHAIN OF CUSTODY RECORD

[IM3plant-WDR-434]

TURNAROUND TIME 10 Days
DATE 10/01/13 PAGE 1 OF 1

COMPANY: CH2M HILL / E2
PROJECT NAME: PG&E Topock IM3
PHONE: 530-229-3303 FAX: 530-339-3303
ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612
P.O. NUMBER: 428648.IM.CS.EX.AC
SAMPLERS (SIGNATURE):

810205
Rec'd 10/01/13
CH2M

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Anions (300.0) F, NO3	Bioassay 96hr Acute	Metals (6010B) Title 22, (includes Mercury)	Cr6 (7199)	Metals (6010B) Mn	NUMBER OF CONTAINERS	COMMENTS
SC-Sludge-WDR-434	10/01/13	13:45	Sludge	X		X	X	X	4	
									4	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Ryan Phelps	CH2MHILL	10-1-13 15:40
Signature (Received)			10-1-13 15:40
Signature (Relinquished)			10-1-13 2PM
Signature (Received)	Marchea Brady	TLI	10/1/13 2000
Signature (Relinquished)			
Signature (Received)			

SAMPLE CONDITIONS
RECEIVED COOL ☑ WARM ☐ 4.3 °F
CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

062

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810205

Date Delivered: 10/01/13 **Time:** 20:00 **By:** ☐Mail ☐Field Service ☒Client

1. Was a Chain of Custody received and signed? ☒Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☒No ☐N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☒No ☐N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☒N/A
5. Were all requested analyses understood and acceptable? ☒Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☒Yes ☐No ☐N/A
   Temperature (if yes)? 4.3 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc.)? ☒Yes ☐No ☐N/A
8. Were sample custody seals intact? ☐Yes ☐No ☒N/A
9. Does the number of samples received agree with COC? ☒Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☒Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☐Yes ☐No ☒N/A
    Preserved (if yes) by: ☐**Truesdail** ☐Client
12. Were samples pH checked? pH = _____ ☐Yes ☐No ☒N/A
13. Were all analyses within holding time at time of receipt? ☒Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ **RUSH** ☒ Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☒Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☐Other_____
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

ALERT !! Level III QC

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.

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Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

October 27, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-434 PROJECT, GROUNDWATER MONITORING,

TLI NO.: 810206

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-434 project groundwater monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 1, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Metals were analyzed by EPA 200.8 and EPA 200.7 with Mr. Shawn Duffy's approval.

Due to analyst error, samples SC-700B-WDR-434 and SC-100B-WDR-434 for Turbidity by SM 2130B and Nitrite as N by SM 4500-NO2 B were analyzed approximately 26 hours past the 48-hour holding time. Mr. Duffy was notified.

The internal standard for sample SC-701-WDR-434 analyzed straight for Total Mercury by EPA 200.8 was outside the recovery limits of 70% - 130% as a result of matrix interference. Therefore, the sample was re-analyzed at a 2x dilution. The internal standards were within acceptable limits. Due to the dilutions, the reporting limits for Total Mercury exceed the Contract Required Detection Limits. All other QA/QC were within acceptable limits.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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www.truesdail.com

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: Three (3) Groundwaters
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 810206
Date: October 27, 2013
Collected: October 1, 2013
Received: October 1, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Maksim Gorbunov
SM 2540C	Total Dissolved Solids	Maksim Gorbunov
SM 2130B	Turbidity	Kim Luck
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Maria Mangarova
SM 4500-NO2 B	Nitrite as N	Maksim Gorbunov
EPA 200.7	Metals by ICP	Denise Chauv
EPA 200.8	Metals by ICP/MS	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Laboratory No.: 810206
Date Received: October 1, 2013

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810206-001	SC-700B-WDR-434	E120.1	NONE	10/1/2013	13:55	EC	7290	umhos/cm	2.00
810206-001	SC-700B-WDR-434	E200.7	NONE	10/1/2013	13:55	Aluminum	ND	ug/L	50.0
810206-001	SC-700B-WDR-434	E200.7	NONE	10/1/2013	13:55	BORON	921	ug/L	200
810206-001	SC-700B-WDR-434	E200.7	NONE	10/1/2013	13:55	Iron	37.7	ug/L	20.0
810206-001	SC-700B-WDR-434	E200.7	NONE	10/1/2013	13:55	Zinc	ND	ug/L	20.0
810206-001	SC-700B-WDR-434	E200.8	NONE	10/1/2013	13:55	Antimony	ND	ug/L	2.0
810206-001	SC-700B-WDR-434	E200.8	NONE	10/1/2013	13:55	Arsenic	1.0	ug/L	0.50
810206-001	SC-700B-WDR-434	E200.8	NONE	10/1/2013	13:55	Barium	12.7	ug/L	5.0
810206-001	SC-700B-WDR-434	E200.8	NONE	10/1/2013	13:55	Chromium	ND	ug/L	1.0
810206-001	SC-700B-WDR-434	E200.8	NONE	10/1/2013	13:55	Copper	ND	ug/L	5.0
810206-001	SC-700B-WDR-434	E200.8	NONE	10/1/2013	13:55	Lead	ND	ug/L	1.0
810206-001	SC-700B-WDR-434	E200.8	NONE	10/1/2013	13:55	Manganese	4.8	ug/L	0.50
810206-001	SC-700B-WDR-434	E200.8	NONE	10/1/2013	13:55	Molybdenum	23.5	ug/L	2.0
810206-001	SC-700B-WDR-434	E200.8	NONE	10/1/2013	13:55	Nickel	ND	ug/L	2.0
810206-001	SC-700B-WDR-434	E218.6	LABFLT	10/1/2013	13:55	Chromium, Hexavalent	ND	ug/L	0.20
810206-001	SC-700B-WDR-434	E300	NONE	10/1/2013	13:55	Fluoride	2.10	mg/L	0.500
810206-001	SC-700B-WDR-434	E300	NONE	10/1/2013	13:55	Nitrate as N	2.92	mg/L	0.500
810206-001	SC-700B-WDR-434	E300	NONE	10/1/2013	13:55	Sulfate	512	mg/L	50.0
810206-001	SC-700B-WDR-434	SM2130B	NONE	10/1/2013	13:55	Turbidity	ND J	NTU	0.100
810206-001	SC-700B-WDR-434	SM2540C	NONE	10/1/2013	13:55	Total Dissolved Solids	4410	mg/L	250
810206-001	SC-700B-WDR-434	SM4500NH3D	NONE	10/1/2013	13:55	Ammonia-N	ND	mg/L	0.500
810206-001	SC-700B-WDR-434	SM4500NO2B	NONE	10/1/2013	13:55	Nitrite as N	ND J	mg/L	0.0050

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810206-002	SC-100B-WDR-434	E120.1	NONE	10/1/2013	14:05	EC	6990	umhos/cm	2.00
810206-002	SC-100B-WDR-434	E200.7	NONE	10/1/2013	14:05	Aluminum	ND	ug/L	50.0
810206-002	SC-100B-WDR-434	E200.7	NONE	10/1/2013	14:05	BORON	927	ug/L	200
810206-002	SC-100B-WDR-434	E200.7	NONE	10/1/2013	14:05	Iron	ND	ug/L	20.0
810206-002	SC-100B-WDR-434	E200.7	NONE	10/1/2013	14:05	Zinc	ND	ug/L	20.0
810206-002	SC-100B-WDR-434	E200.8	NONE	10/1/2013	14:05	Antimony	ND	ug/L	2.0
810206-002	SC-100B-WDR-434	E200.8	NONE	10/1/2013	14:05	Arsenic	3.6	ug/L	0.50
810206-002	SC-100B-WDR-434	E200.8	NONE	10/1/2013	14:05	Barium	27.2	ug/L	5.0
810206-002	SC-100B-WDR-434	E200.8	NONE	10/1/2013	14:05	Chromium	684	ug/L	2.0
810206-002	SC-100B-WDR-434	E200.8	NONE	10/1/2013	14:05	Copper	ND	ug/L	5.0
810206-002	SC-100B-WDR-434	E200.8	NONE	10/1/2013	14:05	Lead	ND	ug/L	1.0
810206-002	SC-100B-WDR-434	E200.8	NONE	10/1/2013	14:05	Manganese	4.4	ug/L	0.50
810206-002	SC-100B-WDR-434	E200.8	NONE	10/1/2013	14:05	Molybdenum	21.1	ug/L	2.0
810206-002	SC-100B-WDR-434	E200.8	NONE	10/1/2013	14:05	Nickel	ND	ug/L	2.0
810206-002	SC-100B-WDR-434	E218.6	LABFLT	10/1/2013	14:05	Chromium, Hexavalent	663	ug/L	10.0
810206-002	SC-100B-WDR-434	E300	NONE	10/1/2013	14:05	Fluoride	2.36	mg/L	0.500
810206-002	SC-100B-WDR-434	E300	NONE	10/1/2013	14:05	Nitrate as N	2.93	mg/L	0.500
810206-002	SC-100B-WDR-434	E300	NONE	10/1/2013	14:05	Sulfate	500	mg/L	50.0
810206-002	SC-100B-WDR-434	SM2130B	NONE	10/1/2013	14:05	Turbidity	ND J	NTU	0.100
810206-002	SC-100B-WDR-434	SM2540C	NONE	10/1/2013	14:05	Total Dissolved Solids	4450	mg/L	250
810206-002	SC-100B-WDR-434	SM4500NH3D	NONE	10/1/2013	14:05	Ammonia-N	ND	mg/L	0.500
810206-002	SC-100B-WDR-434	SM4500NO2B	NONE	10/1/2013	14:05	Nitrite as N	ND J	mg/L	0.0050

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810206-003	SC-701-WDR-434	E120.1	NONE	10/1/2013	14:13	EC	31800	umhos/cm	2.00
810206-003	SC-701-WDR-434	E200.7	NONE	10/1/2013	14:13	Zinc	ND	ug/L	20.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Antimony	ND	ug/L	2.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Arsenic	1.1	ug/L	0.50
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Barium	67.2	ug/L	5.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Beryllium	ND	ug/L	0.50
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Cadmium	ND	ug/L	1.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Chromium	2.9	ug/L	1.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Cobalt	ND	ug/L	5.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Copper	ND	ug/L	5.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Lead	ND	ug/L	1.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Manganese	25.1	ug/L	0.50
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Mercury	ND	ug/L	0.40
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Molybdenum	108	ug/L	2.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Nickel	7.2	ug/L	2.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Selenium	25.3	ug/L	5.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Silver	ND	ug/L	5.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Thallium	ND	ug/L	1.0
810206-003	SC-701-WDR-434	E200.8	NONE	10/1/2013	14:13	Vanadium	ND	ug/L	5.0
810206-003	SC-701-WDR-434	E218.6	LABFLT	10/1/2013	14:13	Chromium, Hexavalent	ND	ug/L	1.0
810206-003	SC-701-WDR-434	E300	NONE	10/1/2013	14:13	Fluoride	11.3	mg/L	0.500
810206-003	SC-701-WDR-434	SM2540C	NONE	10/1/2013	14:13	Total Dissolved Solids	23400	mg/L	500

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 810206

Printed 10/27/2013

Samples Received on 10/1/2013 8:00:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-434	810206-001	10/01/2013 13:55	Water
SC-100B-WDR-434	810206-002	10/01/2013 14:05	Water
SC-701-WDR-434	810206-003	10/01/2013 14:13	Water

Anions By I.C. - EPA 300.0

Batch 10AN13B

Parameter		Unit	Analyzed	DF	MDL	RL	Result
810206-001	Fluoride	mg/L	10/02/2013 09:40	5.00	0.104	0.500	2.10
	Nitrate as Nitrogen	mg/L	10/02/2013 09:40	5.00	0.0415	0.500	2.92
	Sulfate	mg/L	10/02/2013 12:31	100	3.07	50.0	512
810206-002	Fluoride	mg/L	10/02/2013 09:51	5.00	0.104	0.500	2.36
	Nitrate as Nitrogen	mg/L	10/02/2013 09:51	5.00	0.0415	0.500	2.93
810206-003	Fluoride	mg/L	10/02/2013 10:26	5.00	0.104	0.500	11.3

Method Blank

Parameter	Unit	DF	Result
Fluoride	mg/L	1.00	ND
Sulfate	mg/L	1.00	ND
Nitrate as Nitrogen	mg/L	1.00	ND

Duplicate — Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sulfate	mg/L	100	522	512	2.02	0 - 20

Duplicate — Lab ID = 810206-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	5.00	2.34	2.36	0.638	0 - 20
Nitrate as Nitrogen	mg/L	5.00	2.92	2.93	0.445	0 - 20

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	4.16	4.00	104	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	99.9	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.98	4.00	99.4	90 - 110

Matrix Spike — Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sulfate	mg/L	100	1010	1010(500)	99.3	85 - 115

Matrix Spike — Lab ID = 810206-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	5.00	22.3	22.4(20.0)	99.6	85 - 115
Nitrate as Nitrogen	mg/L	5.00	22.7	22.9(20.0)	98.9	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	4.12	4.00	103	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	99.8	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.98	4.00	99.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.03	3.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.07	3.00	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.09	3.00	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.5	15.0	96.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.6	15.0	97.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.6	15.0	97.6	90 - 110
Nitrate as Nitrogen	mg/L	1.00	2.91	3.00	96.9	90 - 110

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Anions By I.C. - EPA 300.0

Batch 10AN13D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810206-002 Sulfate	mg/L	10/07/2013 12:57	100	3.07	50.0	500

Method Blank

Parameter	Unit	DF	Result
Nitrate (as NO3)	mg/L	1.00	ND
Sulfate	mg/L	1.00	ND

Duplicate — Lab ID = 810206-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sulfate	mg/L	100	504	500	0.841	0 - 20

Duplicate — Lab ID = 810280-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrate (as NO3)	mg/L	1.00	ND	0	0	0 - 15

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate (as NO3)	mg/L	1.00	17.3	17.7	97.9	90 - 110
Sulfate	mg/L	1.00	19.6	20.0	98.0	90 - 110

Matrix Spike — Lab ID = 810206-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sulfate	mg/L	100	998	1000(500)	99.5	85 - 115

Matrix Spike — Lab ID = 810280-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrate (as NO3)	mg/L	1.00	9.25	8.85(8.85)	104	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate (as NO3)	mg/L	1.00	17.6	17.7	99.5	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	99.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate (as NO3)	mg/L	1.00	13.1	13.3	98.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate (as NO3)	mg/L	1.00	13.2	13.3	99.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate (as NO3)	mg/L	1.00	12.6	13.3	94.6	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Nitrite SM 4500-NO2 B

Batch 10NO213D

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
810206-001 Nitrite as Nitrogen	mg/L	10/04/2013 16:39	1.00	0.000630	0.0050	ND	J
810206-002 Nitrite as Nitrogen	mg/L	10/04/2013 16:40	1.00	0.000630	0.0050	ND	J

Method Blank

Parameter	Unit	DF	Result
Nitrite as Nitrogen	mg/L	1.00	ND

Duplicate

Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0253	0.0280	90.4	90 - 110

Matrix Spike

Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0260	0.0280(0.0280)	92.8	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0253	0.0280	90.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0206	0.0200	103	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Specific Conductivity - EPA 120.1

Batch 10EC13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810206-001 Specific Conductivity	umhos/cm	10/08/2013	1.00	0.606	2.00	7290
810206-002 Specific Conductivity	umhos/cm	10/08/2013	1.00	0.606	2.00	6990

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810237-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	750	752	0.266	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	707	706	100	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	692	706	98.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	942	1000	94.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	963	1000	96.3	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Specific Conductivity - EPA 120.1

Batch 10EC13F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810206-003 Specific Conductivity	umhos/cm	10/14/2013	1.00	0.606	2.00	31800

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810209-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	628	632	0.635	0 - 10

Duplicate — Lab ID = 810209-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	1140	1140	0.175	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	706	706	100	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	687	706	97.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	932	1000	93.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	929	1000	92.9	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 10CrH13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810206-001 Chromium, Hexavalent	ug/L	10/02/2013 12:55	1.00	0.00600	0.20	ND
810206-002 Chromium, Hexavalent	ug/L	10/02/2013 12:16	50.0	0.300	10.0	663
810206-003 Chromium, Hexavalent	ug/L	10/02/2013 13:19	5.00	0.0300	1.0	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 810204-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.16	5.25	1.70	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.186	0.200	93.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.88	5.00	97.7	90 - 110

Matrix Spike — Lab ID = 810204-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	15.1	15.2(10.0)	98.2	90 - 110

Matrix Spike — Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.14	1.15(1.00)	99.4	90 - 110

Matrix Spike — Lab ID = 810206-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1390	1410(750)	97.1	90 - 110

Matrix Spike — Lab ID = 810206-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.98	5.87(5.00)	102	90 - 110

Matrix Spike — Lab ID = 810207-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	2330	2350(1250)	98.8	90 - 110

Matrix Spike — Lab ID = 810207-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.01	1.00(1.00)	101	90 - 110

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.7, Total

Batch 101513A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810206-001 Aluminum	ug/L	10/15/2013 14:08	1.00	7.20	50.0	ND
Boron	ug/L	10/15/2013 14:08	1.00	4.10	200	921
Iron	ug/L	10/15/2013 14:08	1.00	3.00	20.0	37.7
Zinc	ug/L	10/15/2013 14:08	1.00	5.10	20.0	ND
810206-002 Aluminum	ug/L	10/15/2013 14:14	1.00	7.20	50.0	ND
Boron	ug/L	10/15/2013 14:14	1.00	4.10	200	927
Iron	ug/L	10/15/2013 14:14	1.00	3.00	20.0	ND
Zinc	ug/L	10/15/2013 14:14	1.00	5.10	20.0	ND
810206-003 Zinc	ug/L	10/15/2013 13:55	1.00	5.10	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Aluminum	ug/L	1.00	ND
Iron	ug/L	1.00	ND
Zinc	ug/L	1.00	ND
Boron	ug/L	1.00	ND

Duplicate

Lab ID = 810206-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Aluminum	ug/L	5.00	ND	0	0	
Iron	ug/L	1.00	22.3	23.2	3.96	0 - 20
Zinc	ug/L	1.00	ND	0	0	0 - 20
Boron	ug/L	1.00	1750	1800	2.99	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	2260	2000	113	85 - 115
Iron	ug/L	1.00	2190	2000	109	85 - 115
Zinc	ug/L	1.00	2130	2000	106	85 - 115
Boron	ug/L	1.00	2020	2000	101	85 - 115

Matrix Spike

Lab ID = 810206-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	5.00	7520	10000(10000)	75.2	75 - 125
Iron	ug/L	1.00	1640	2020(2000)	81.1	75 - 125
Zinc	ug/L	1.00	2470	2000(2000)	123	75 - 125
Boron	ug/L	1.00	3440	3800(2000)	82.2	75 - 125

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Matrix Spike Duplicate — Lab ID = 810206-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	1680	2020(2000)	82.7	75 - 125
Zinc	ug/L	1.00	2500	2000(2000)	125	75 - 125
Boron	ug/L	1.00	3500	3800(2000)	85.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5240	5000	105	95 - 105
Iron	ug/L	1.00	5100	5000	102	95 - 105
Zinc	ug/L	1.00	5250	5000	105	95 - 105
Boron	ug/L	1.00	5090	5000	102	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5070	5000	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5040	5000	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5140	5000	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5030	5000	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4970	5000	99.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5050	5000	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	5130	5000	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	5290	5000	106	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total Batch 100413A

Parameter		Unit	Analyzed	DF	MDL	RL	Result
810206-001	Antimony	ug/L	10/04/2013 15:30	1.00	0.0350	2.0	ND
	Barium	ug/L	10/04/2013 15:30	1.00	0.297	5.0	12.7
	Chromium	ug/L	10/04/2013 15:30	1.00	0.0710	1.0	ND
	Lead	ug/L	10/04/2013 15:30	1.00	0.143	1.0	ND
	Manganese	ug/L	10/04/2013 15:30	1.00	0.0600	0.50	4.8
	Molybdenum	ug/L	10/04/2013 15:30	1.00	0.0500	2.0	23.5
	Nickel	ug/L	10/04/2013 15:30	1.00	0.240	2.0	ND
810206-002	Antimony	ug/L	10/04/2013 16:31	1.00	0.0350	2.0	ND
	Barium	ug/L	10/04/2013 16:31	1.00	0.297	5.0	27.2
	Chromium	ug/L	10/04/2013 16:19	10.0	0.710	2.0	684
	Lead	ug/L	10/04/2013 16:31	1.00	0.143	1.0	ND
	Manganese	ug/L	10/04/2013 16:31	1.00	0.0600	0.50	4.4
	Molybdenum	ug/L	10/04/2013 16:31	1.00	0.0500	2.0	21.1
	Nickel	ug/L	10/04/2013 16:31	1.00	0.240	2.0	ND
810206-003	Antimony	ug/L	10/04/2013 16:55	2.00	0.0700	2.0	ND
	Barium	ug/L	10/04/2013 16:55	2.00	0.594	5.0	67.2
	Cadmium	ug/L	10/04/2013 16:55	2.00	0.0800	1.0	ND
	Chromium	ug/L	10/04/2013 16:43	1.00	0.0710	1.0	2.9
	Cobalt	ug/L	10/04/2013 16:55	2.00	0.0300	5.0	ND
	Lead	ug/L	10/04/2013 16:55	2.00	0.286	1.0	ND
	Manganese	ug/L	10/04/2013 16:43	1.00	0.0600	0.50	25.1
	Mercury	ug/L	10/04/2013 16:55	2.00	0.0800	0.40	ND
	Molybdenum	ug/L	10/04/2013 16:55	2.00	0.100	2.0	108
	Nickel	ug/L	10/04/2013 16:43	1.00	0.240	2.0	7.2
	Selenium	ug/L	10/04/2013 16:43	1.00	0.212	5.0	25.3
	Silver	ug/L	10/04/2013 16:55	2.00	0.0580	5.0	ND
	Thallium	ug/L	10/04/2013 16:55	2.00	0.0600	1.0	ND
	Vanadium	ug/L	10/04/2013 16:43	1.00	0.0700	5.0	ND

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Method Blank

Parameter	Unit	DF	Result
Barium	ug/L	1.00	ND
Cadmium	ug/L	1.00	ND
Cobalt	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Mercury	ug/L	1.00	ND
Nickel	ug/L	1.00	ND
Selenium	ug/L	1.00	ND
Antimony	ug/L	1.00	ND
Lead	ug/L	1.00	ND
Silver	ug/L	1.00	ND
Thallium	ug/L	1.00	ND
Vanadium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

Duplicate — Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	1.00	12.7	12.7	0.165	0 - 20
Cadmium	ug/L	1.00	ND	0	0	0 - 20
Cobalt	ug/L	1.00	ND	0	0	0 - 20
Chromium	ug/L	1.00	ND	0	0	0 - 20
Mercury	ug/L	1.00	ND	0	0	0 - 20
Nickel	ug/L	1.00	ND	0	0	0 - 20
Selenium	ug/L	1.00	ND	0	0	0 - 20
Antimony	ug/L	1.00	ND	0	0	0 - 20
Lead	ug/L	1.00	ND	0	0	0 - 20
Silver	ug/L	1.00	ND	0	0	0 - 20
Thallium	ug/L	1.00	ND	0	0	0 - 20
Vanadium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	5.57	4.85	13.8	0 - 20
Molybdenum	ug/L	1.00	22.6	23.5	3.87	0 - 20

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC Printed 10/27/2013

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	0.998	1.00	99.8	70 - 130
Cadmium	ug/L	1.00	0.211	0.200	106	70 - 130
Cobalt	ug/L	1.00	0.205	0.200	102	70 - 130
Chromium	ug/L	1.00	0.240	0.200	120	70 - 130
Mercury	ug/L	1.00	0.210	0.200	105	70 - 130
Nickel	ug/L	1.00	0.950	1.00	95.0	70 - 130
Selenium	ug/L	1.00	0.508	0.500	102	70 - 130
Antimony	ug/L	1.00	0.227	0.200	114	70 - 130
Lead	ug/L	1.00	0.480	0.500	96.0	70 - 130
Silver	ug/L	1.00	0.565	0.500	113	70 - 130
Thallium	ug/L	1.00	0.218	0.200	109	70 - 130
Vanadium	ug/L	1.00	0.155	0.200	77.5	70 - 130
Manganese	ug/L	1.00	0.217	0.200	108	70 - 130
Molybdenum	ug/L	1.00	0.214	0.200	107	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	2.00	48.4	50.0	96.8	85 - 115
Cadmium	ug/L	2.00	49.6	50.0	99.1	85 - 115
Cobalt	ug/L	2.00	42.7	50.0	85.4	85 - 115
Chromium	ug/L	2.00	47.5	50.0	94.9	85 - 115
Mercury	ug/L	2.00	4.94	5.00	98.8	85 - 115
Nickel	ug/L	2.00	47.9	50.0	95.8	85 - 115
Selenium	ug/L	2.00	45.1	50.0	90.3	85 - 115
Antimony	ug/L	2.00	49.8	50.0	99.6	85 - 115
Lead	ug/L	2.00	49.7	50.0	99.4	85 - 115
Silver	ug/L	2.00	48.0	50.0	96.1	85 - 115
Thallium	ug/L	2.00	49.3	50.0	98.6	85 - 115
Vanadium	ug/L	2.00	48.0	50.0	96.0	85 - 115
Manganese	ug/L	2.00	47.0	50.0	94.0	85 - 115
Molybdenum	ug/L	2.00	48.9	50.0	97.7	85 - 115

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Matrix Spike — Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	1.00	64.8	62.7(50.0)	104	75 - 125
Cadmium	ug/L	1.00	45.6	50.0(50.0)	91.2	75 - 125
Cobalt	ug/L	2.00	44.4	50.0(50.0)	88.7	75 - 125
Chromium	ug/L	1.00	49.2	50.0(50.0)	98.4	75 - 125
Mercury	ug/L	1.00	4.81	5.00(5.00)	96.2	75 - 125
Nickel	ug/L	1.00	46.2	50.0(50.0)	92.5	75 - 125
Selenium	ug/L	1.00	52.1	50.0(50.0)	104	75 - 125
Antimony	ug/L	1.00	53.7	50.0(50.0)	107	75 - 125
Lead	ug/L	1.00	47.4	50.0(50.0)	94.9	75 - 125
Silver	ug/L	1.00	43.8	50.0(50.0)	87.6	75 - 125
Thallium	ug/L	1.00	44.0	50.0(50.0)	88.0	75 - 125
Vanadium	ug/L	1.00	53.0	50.0(50.0)	106	75 - 125
Manganese	ug/L	1.00	54.0	54.8(50.0)	98.3	75 - 125
Molybdenum	ug/L	1.00	75.4	73.5(50.0)	104	75 - 125

Matrix Spike Duplicate — Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	1.00	63.5	62.7(50.0)	102	75 - 125
Cadmium	ug/L	1.00	46.7	50.0(50.0)	93.3	75 - 125
Cobalt	ug/L	2.00	43.6	50.0(50.0)	87.3	75 - 125
Chromium	ug/L	1.00	46.0	50.0(50.0)	92.1	75 - 125
Mercury	ug/L	1.00	4.81	5.00(5.00)	96.1	75 - 125
Nickel	ug/L	1.00	44.0	50.0(50.0)	87.9	75 - 125
Selenium	ug/L	1.00	49.6	50.0(50.0)	99.2	75 - 125
Antimony	ug/L	1.00	52.3	50.0(50.0)	104	75 - 125
Lead	ug/L	1.00	47.6	50.0(50.0)	95.2	75 - 125
Silver	ug/L	1.00	44.7	50.0(50.0)	89.5	75 - 125
Thallium	ug/L	1.00	44.6	50.0(50.0)	89.2	75 - 125
Vanadium	ug/L	1.00	49.9	50.0(50.0)	99.8	75 - 125
Manganese	ug/L	1.00	51.4	54.8(50.0)	93.1	75 - 125
Molybdenum	ug/L	1.00	76.0	73.5(50.0)	105	75 - 125

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Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Thallium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Thallium	ug/L	1.00	ND	0		
Vanadium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Vanadium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.9	20.0	99.7	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.7	20.0	98.5	80 - 120
Molybdenum	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	ND	0		

Serial Dilution Lab ID = 810206-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	5.00	27.2	27.2	0.121	0 - 10
Chromium	ug/L	50.0	657	684	3.97	0 - 10
Molybdenum	ug/L	5.00	21.1	21.1	0.00474	0 - 10

Serial Dilution Lab ID = 810206-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	10.0	70.6	67.2	4.96	0 - 10
Selenium	ug/L	5.00	23.9	25.3	5.53	0 - 10
Manganese	ug/L	5.00	23.0	25.1	8.90	0 - 10
Molybdenum	ug/L	10.0	116	108	7.07	0 - 10

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 10/27/2013

Metals by EPA 200.8, Total

Batch 100713A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810206-001 Arsenic	ug/L	10/07/2013 15:09	2.00	0.100	0.50	1.0
Copper	ug/L	10/07/2013 15:09	2.00	0.380	5.0	ND
810206-002 Arsenic	ug/L	10/07/2013 16:21	1.00	0.0500	0.50	3.6
Copper	ug/L	10/07/2013 16:21	1.00	0.190	5.0	ND
810206-003 Arsenic	ug/L	10/07/2013 16:46	2.00	0.100	0.50	1.1
Beryllium	ug/L	10/07/2013 16:46	2.00	0.0720	0.50	ND
Copper	ug/L	10/07/2013 16:46	2.00	0.380	5.0	ND

Method Blank

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Beryllium	ug/L	1.00	ND
Copper	ug/L	1.00	ND

Duplicate

Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	2.00	0.906	1.03	12.8	0 - 20
Beryllium	ug/L	2.00	ND	0	0	0 - 20
Copper	ug/L	2.00	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.228	0.200	114	70 - 130
Beryllium	ug/L	1.00	0.191	0.200	95.5	70 - 130
Copper	ug/L	1.00	0.882	1.00	88.2	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	2.00	46.0	50.0	92.1	85 - 115
Beryllium	ug/L	2.00	44.4	50.0	88.9	85 - 115
Copper	ug/L	2.00	52.6	50.0	105	85 - 115

Matrix Spike

Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.00	48.2	51.0(50.0)	94.3	75 - 125
Beryllium	ug/L	2.00	41.4	50.0(50.0)	82.7	75 - 125
Copper	ug/L	2.00	50.6	50.0(50.0)	101	75 - 125

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Matrix Spike Duplicate — Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.00	47.7	51.0(50.0)	93.3	75 - 125
Beryllium	ug/L	2.00	42.5	50.0(50.0)	85.0	75 - 125
Copper	ug/L	2.00	49.0	50.0(50.0)	98.0	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.9	20.0	99.7	90 - 110
Beryllium	ug/L	1.00	19.8	20.0	99.1	90 - 110
Copper	ug/L	1.00	19.5	20.0	97.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.4	20.0	96.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.0	20.0	95.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	18.7	20.0	93.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.4	20.0	97.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	18.5	20.0	92.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	18.3	20.0	91.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	18.6	20.0	93.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	18.7	20.0	93.4	90 - 110

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Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	19.3	20.0	96.5	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	19.5	20.0	97.6	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 10TDS13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810206-001 Total Dissolved Solids	mg/L	10/07/2013	1.00	1.76	250	4410
810206-002 Total Dissolved Solids	mg/L	10/07/2013	1.00	1.76	250	4450
810206-003 Total Dissolved Solids	mg/L	10/07/2013	1.00	1.76	500	23400

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 810200-015

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	586	575	1.89	0 - 10

Duplicate — Lab ID = 810223-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	510	520	1.94	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	496	500	99.2	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Ammonia Nitrogen by SM4500-NH3D

Batch 10NH313A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810206-001 Ammonia as N	mg/L	10/17/2013	1.00	0.0318	0.500	ND

Method Blank

Parameter	Unit	DF	Result
Ammonia as N	mg/L	1.00	ND

Duplicate — Lab ID = 810206-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Ammonia as N	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	10.1	10.0	101	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	10.9	10.0	109	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.58	6.00	110	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.44	6.00	107	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 10/27/2013

Ammonia Nitrogen by SM4500-NH3D

Batch 10NH313B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810206-002 Ammonia as N	mg/L	10/22/2013	1.00	0.0318	0.500	ND

Method Blank

Parameter	Unit	DF	Result
Ammonia as N	mg/L	1.00	ND

Duplicate — Lab ID = 810386-012

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Ammonia as N	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	9.87	10.0	98.7	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	10.7	10.0	107	90 - 110

Matrix Spike — Lab ID = 810386-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.30	10.0(10.0)	83.0	75 - 125

Matrix Spike Duplicate — Lab ID = 810386-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	9.18	10.0(10.0)	91.8	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.07	6.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.54	6.00	109	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 10/27/2013

Turbidity by SM 2130 B Batch 10TUC13D

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
810206-001 Turbidity	NTU	10/04/2013	1.00	0.0140	0.100	ND	J
810206-002 Turbidity	NTU	10/04/2013	1.00	0.0140	0.100	ND	J

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 810237-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.257	0.246	4.37	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.86	8.00	98.2	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.84	8.00	98.0	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

e2

Total Dissolved Solids by SM 2540 C

4

Calculations

Batch: 10TDS13C
Date Analyzed: 10/7/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	106.1683	106.1687	106.1687	0.0000	No	0.0004	4.0	25.0	ND	1
810200-15	100	92.0914	92.1488	92.1489	-0.0001	No	0.0575	575.0	25.0	575.0	1
810204-1	20	49.5115	49.5636	49.5634	0.0002	No	0.0519	2595.0	125.0	2595.0	1
810204-2	10	48.4760	48.5261	48.5261	0.0000	No	0.0501	5010.0	250.0	5010.0	1
810206-1	10	50.6883	50.7322	50.7324	-0.0002	No	0.0441	4410.0	250.0	4410.0	1
810206-2	10	52.0326	52.0771	52.0771	0.0000	No	0.0445	4450.0	250.0	4450.0	1
810223-1	100	78.3015	78.3535	78.3535	0.0000	No	0.0520	520.0	25.0	520.0	1
810223-2	100	111.3653	111.4187	111.4187	0.0000	No	0.0534	534.0	25.0	534.0	1
810223-3	100	112.9391	112.9894	112.989	0.0004	No	0.0499	499.0	25.0	499.0	1
810223-4	100	110.9417	110.9903	110.99	0.0003	No	0.0483	483.0	25.0	483.0	1
810237-1	100	102.7203	102.7522	102.7524	-0.0002	No	0.0321	321.0	25.0	321.0	1
810200-15d	100	103.4137	103.4723	103.4723	0.0000	No	0.0586	586.0	25.0	586.0	1
lcs	100	103.7155	103.7654	103.7651	0.0003	No	0.0496	496.0	25.0	496.0	1
810237-2	100	110.3637	110.412	110.4118	0.0002	No	0.0481	481.0	25.0	481.0	1
810237-3	100	109.8972	109.9444	109.944	0.0004	No	0.0468	468.0	25.0	468.0	1
810237-4	100	108.7301	108.7765	108.7764	0.0001	No	0.0463	463.0	25.0	463.0	1
810237-5	100	111.1970	111.256	111.2561	-0.0001	No	0.0591	591.0	25.0	591.0	1
810223-1D	100	77.4911	77.542	77.5421	-0.0001	No	0.0510	510.0	25.0	510.0	1
810206-3	5	50.5026	50.6194	50.6194	0.0000	No	0.1168	23360.0	500.0	23360.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\ 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	496	500	99.2%	90-110%	Yes
LCSD					

LCS Recovery

$P = \left(\frac{LC}{LT}\right) x\ 100$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
810223-1	0.052	0.051	1.0%	5%	Yes
810200-15	0.0575	0.0586	0.9%	5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\ 100$$

$$where \quad C = \frac{A+B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Maksim G.
Analyst Printed Name

Analyst Signature

Katia K.
Reviewer Printed Name

Reviewer Signature

WetChem Tds 2012

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS13C
Date Analyzed: 10/7/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
810200-15	870	0.66	565.5	1.02
810204-1	4160	0.62	2704	0.96
810204-2	7620	0.66	4953	1.01
810206-1	7290	0.60	4738.5	0.93
810206-2	6990	0.64	4543.5	0.98
810223-1	880	0.59	572	0.91
810223-2	872	0.61	566.8	0.94
810223-3	866	0.58	562.9	0.89
810223-4	877	0.55	570.05	0.85
810237-1	530	0.61	344.5	0.93
810200-15d	870	0.67	565.5	1.04
lcs				
810237-2	752	0.64	488.8	0.98
810237-3	728	0.64	473.2	0.99
810237-4	734	0.63	477.1	0.97
810237-5	711	0.83	462.15	1.28
810223-1D	880	0.58	572	0.89
810206-3	31800	0.73	20670	1.13

810206

810206
Rec'd 10/01/13
CH2M

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-434]

TURNAROUND TIME 10 Days
DATE 10/01/13 PAGE 1 OF 1

COMPANY CH2M HILL /E2
PROJECT NAME PG&E Topock IM3
PHONE 530-229-3303 FAX 530-339-3303
ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612
P.O. NUMBER 428648.IM.CS.EX.AC
SAMPLERS (SIGNATURE

	SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr(VI) (218.6) Lab Filtered	Title 22 Metals List (200.7, 200.8, 245.1)	EC (120.1)	TDS (2540 c)	Turb (2130)	Total Metals (200.7) See List Below	Ammonia (4500-NH3)	Anions (300.0) F	Anions (300.0) F, NO3, SO4	TOC (5310 C)	Total Metals (200.7) Mn	NO2 (4500-NO2B)			NUMBER OF CONTAINERS	COMMENTS
-1	SC-700B-WDR-434	10/01/13	13:55		X		X	X	X	X	X		X			X			4	pH=2
-2	SC-100B-WDR-434	10/01/13	14:05		X		X	X	X	X	X		X			X			4	pH>7 } metals
-3	SC-701-WDR-434	19/01/13	14:13		X	X	X	X				X			X				4	pH=2
																			12	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

Signature (Relinquished)	Printed Name Ryan Phelps	Company/ Agency CH2MHILL	Date/ Time 10-1-13 15:40
Signature (Received) Elsah Ngo	Printed Name	Company/ Agency	Date/ Time 10-1-13 15:40
Signature (Relinquished) Elsah Ngo	Printed Name	Company/ Agency	Date/ Time 10-1-13 20 pm
Signature (Received) Marcheal Brad	Printed Name Marcheal Brad	Company/ Agency TLI	Date/ Time 10/1/13 2000
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 4.3 °F

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
10/1/13	810209 -4	6.00	0.5/25mL	9.5	22:55	MR
	-5				22:58	
	-6				23:02	
10/2/13	810204-1	7.00	2ml/100ml	9.5	8:30	NE
	810206-1					
	-2					
	-3					
	810207-1	9.5	N/A	N/A	N/A	NE
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
	-16					
	-17					
	-18					
	-19					
	-20					
	-21					
10/2/13	810204-2	7.0	2ml/100ml	9.5	8:30	NE

NE 10/3/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810237-1→7	<1	<2	10/03/13	DC	NO	15:10		
810231-4	↓	↓	↓	↓	yes			
810232	↓	↓	↓	↓	↓			
810236-1,2	>1	↓	↓	↓	↓			
810239	<1	↓	↓	↓	↓			
810229	↓	↓	↓	↓	↓			
810252	>1	<2	10/04/13	DC	yes			
810206(1,3)	<1	<2	10/4/13	ES	Yes			
206-2	<1	>2	↓	↓	↓	10:00		pH<2
810227	<1	<2	↓	↓	↓			
810251(1-3)	↓	↓	↓	↓	↓			
810184	TTLC		↓	↓	↓			solid
810185(1-2)	↓		↓	↓	↓			↓
810205			↓	↓	↓			sludge
810260-4	>1	<2	10/4/13	DC	yes			
810271-4	<1	<2	10/4/13	DC	yes			
810248	↓	↓	↓	↓	↓			
810255-3,4	↓	↓	↓	↓	↓			-4 <2 pH
810242-10→12	<1	>2	↓	↓	NO	15:10		-3 digest as 3 ciOA
810262-1→5	TTLC		10/7/13	DC	yes			
810275-4	>1	<2	↓	↓	↓			
810279	<1	↓	↓	↓	↓			
810276-4	>1	↓	↓	↓	↓			
810280-4,5,6	<1	>2	10/7/13	DC	No	1:00		
810286	<1	<2	10/8/13	ES	Yes			
810301-4	↓	↓	↓	↓	↓			
810310	↓	↓	↓	↓	↓			
810305	↓	↓	↓	↓	↓			
810306	↓	↓	↓	↓	↓			
810307	↓	↓	↓	↓	↓			
810308	↓	↓	↓	↓	↓			
810309	↓	↓	↓	↓	↓			
810295	↓	>2	↓	↓	NO	5:00		
810304(1-4)	↓	↓	↓	↓	↓	↓		
810288(1-2)	>1	<2	10/8/13	ES	Yes			
810317(1,4-7)	<1	>2	10/9/13	ES	yes	10:00		Filtered thru acid-Fx
810318(1-6)	<1	<2	↓	↓	↓			
810319-1	<1	>2	↓	↓	↓	10:00		
810320(1-5)	<1	<2	↓	↓	↓			
810321(1-5)	<1	<2	↓	↓	↓			T/D
810350(1-4)	<1	<2	10/10/13	ES	Yes			
810352(1-2,4-12)	↓	↓	↓	↓	↓			
810353(1-15)	↓	↓	↓	↓	↓			

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810206

Date Delivered: 10 / 01 / 13 **Time:** 20:00 **By:** ☐Mail ☐Field Service ☑Client

1. Was a Chain of Custody received and signed? ☑Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☑No ☐N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☑No ☐N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☑N/A
5. Were all requested analyses understood and acceptable? ☑Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☑Yes ☐No ☐N/A
   Temperature (if yes)? 4.3 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc.)? ☑Yes ☐No ☐N/A
8. Were sample custody seals intact? ☐Yes ☐No ☑N/A
9. Does the number of samples received agree with COC? ☑Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☑Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☑Yes ☐No ☐N/A
    Preserved (if yes) by: ☐**Truesdail** ☑Client
12. Were samples pH checked? pH = See C.O.C ☑Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☑Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☑Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ **RUSH** ☑ Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☑Other Water
16. Comments:
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

ALERT!! Level III QC

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www.truesdail.com

November 5, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-435 PROJECT, GROUNDWATER MONITORING, TLI NO.: 810319

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-435 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, Total Dissolved Solids, and Nitrite. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 8, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: Two (2) Groundwater Samples
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 810319
Date: November 5, 2013
Collected: October 8, 2013
Received: October 8, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Maksim Gorbunov
SM 4500-NO2 B	Nitrite as N	Maksim Gorbunov
SM 2540C	Total Dissolved Solids	Kim Luck
SM 2130B	Turbidity	Kim Luck
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Tom Martinez / Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 810319
Date Received: October 8, 2013

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810319-001	SC-700B-WDR-435	E120.1	NONE	10/8/2013	14:50	EC	6490	umhos/cm	2.00
810319-001	SC-700B-WDR-435	E200.8	NONE	10/8/2013	14:50	Chromium	ND	ug/L	1.0
810319-001	SC-700B-WDR-435	E200.8	NONE	10/8/2013	14:50	Manganese	1.1	ug/L	0.50
810319-001	SC-700B-WDR-435	E218.6	LABFLT	10/8/2013	14:50	Chromium, Hexavalent	ND	ug/L	0.20
810319-001	SC-700B-WDR-435	SM2130B	NONE	10/8/2013	14:50	Turbidity	ND	NTU	0.100
810319-001	SC-700B-WDR-435	SM2540C	NONE	10/8/2013	14:50	Total Dissolved Solids	3640	mg/L	125
810319-001	SC-700B-WDR-435	SM4500NO2B	NONE	10/8/2013	14:50	Nitrite as N	ND	mg/L	0.0050
810319-002	SC-100B-WDR-435	SM4500NO2B	NONE	10/8/2013	14:50	Nitrite as N	ND	mg/L	0.0050

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 810319

Printed 11/5/2013

Samples Received on 10/8/2013 8:10:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-435	810319-001	10/08/2013 14:50	Water
SC-100B-WDR-435	810319-002	10/08/2013 14:50	Water

Nitrite SM 4500-NO2 B Batch 10NO213F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810319-001 Nitrite as Nitrogen	mg/L	10/09/2013 20:50	1.00	0.000630	0.0050	ND
810319-002 Nitrite as Nitrogen	mg/L	10/09/2013 20:49	1.00	0.000630	0.0050	ND

Method Blank

Parameter	Unit	DF	Result
Nitrite as Nitrogen	mg/L	1.00	ND

Duplicate — Lab ID = 810319-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0255	0.0280	91.1	90 - 110

Matrix Spike — Lab ID = 810319-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0242	0.0280(0.0280)	86.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0255	0.0280	91.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0202	0.0200	101	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Specific Conductivity - EPA 120.1

Batch 10EC13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810319-001 Specific Conductivity	umhos/cm	10/11/2013	1.00	0.606	2.00	6490

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810321-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	6880	6710	2.50	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	722	706	102	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	707	706	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1020	1000	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1010	1000	101	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 10CrH13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810319-001 Chromium, Hexavalent	ug/L	10/09/2013 11:17	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 810317-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	2.60	2.64	1.56	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.189	0.200	94.4	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.80	5.00	95.9	90 - 110

Matrix Spike — Lab ID = 810317-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.07	1.09(1.00)	97.9	90 - 110

Matrix Spike — Lab ID = 810317-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.48	1.50(1.00)	97.4	90 - 110

Matrix Spike — Lab ID = 810317-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.32	7.64(5.00)	93.5	90 - 110

Matrix Spike — Lab ID = 810317-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.30	1.33(1.00)	97.1	90 - 110

Matrix Spike — Lab ID = 810317-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.48	1.53(1.00)	95.3	90 - 110

Matrix Spike — Lab ID = 810318-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.03	6.14(5.00)	97.9	90 - 110

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Matrix Spike — Lab ID = 810318-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.01	1.02(1.00)	98.8	90 - 110

Matrix Spike — Lab ID = 810318-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.37	7.54(5.00)	96.6	90 - 110

Matrix Spike — Lab ID = 810318-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.18	6.38(5.00)	95.9	90 - 110

Matrix Spike — Lab ID = 810318-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.27	6.38(5.00)	97.9	90 - 110

Matrix Spike — Lab ID = 810318-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.47	1.48(1.00)	98.7	90 - 110

Matrix Spike — Lab ID = 810319-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.06	1.09(1.00)	96.6	90 - 110

Matrix Spike — Lab ID = 810320-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	179	182(100)	97.3	90 - 110

Matrix Spike — Lab ID = 810320-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.66	5.00(5.00)	93.3	90 - 110

Matrix Spike — Lab ID = 810320-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	ND	1.00(1.00)		90 - 110

Matrix Spike — Lab ID = 810320-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.72	5.00(5.00)	94.5	90 - 110

Matrix Spike — Lab ID = 810320-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	ND	1.00(1.00)		90 - 110

Matrix Spike — Lab ID = 810320-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	179	183(100)	96.0	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 100913B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810319-001 Chromium	ug/L	10/09/2013 23:06	2.00	0.142	1.0	ND
Manganese	ug/L	10/09/2013 23:06	2.00	0.120	0.50	1.1

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.190	0.200	95.0	70 - 130
Manganese	ug/L	1.00	0.191	0.200	95.5	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.0	50.0	96.0	85 - 115
Manganese	ug/L	1.00	48.7	50.0	97.4	85 - 115

Matrix Spike — Lab ID = 810319-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	47.1	50.0(50.0)	94.2	75 - 125
Manganese	ug/L	2.00	49.4	51.1(50.0)	96.5	75 - 125

Matrix Spike Duplicate — Lab ID = 810319-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	46.8	50.0(50.0)	93.6	75 - 125
Manganese	ug/L	2.00	48.4	51.1(50.0)	94.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.8	20.0	94.0	90 - 110
Manganese	ug/L	1.00	19.2	20.0	95.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.3	20.0	96.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.3	20.0	102	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Total Dissolved Solids by SM 2540 C

Batch 10TDS13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810319-001 Total Dissolved Solids	mg/L	10/09/2013	1.00	1.76	125	3640

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 810236-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	450	452	0.443	0 - 5

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	492	500	98.4	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	497	500	99.4	90 - 110

Turbidity by SM 2130 B

Batch 10TUC13G

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810319-001 Turbidity	NTU	10/09/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 810321-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.128	0.130	1.55	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.68	8.00	108	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.71	8.00	109	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 11/5/2013

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

10 e2

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS13E
Date Analyzed: 10/9/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	49.1142	49.1142	49.1142	0.0000	No	0.0000	0.0	25.0	ND	1
810234-1	100	51.0737	51.1144	51.1143	0.0001	No	0.0406	406.0	25.0	406.0	1
810236-1	100	50.151	50.1974	50.1972	0.0002	No	0.0462	462.0	25.0	462.0	1
810236-2	100	51.0509	51.0962	51.0961	0.0001	No	0.0452	452.0	25.0	452.0	1
810237-6	100	51.8779	51.9291	51.929	0.0001	No	0.0511	511.0	25.0	511.0	1
810237-7	100	49.0614	49.1119	49.1119	0.0000	No	0.0505	505.0	25.0	505.0	1
810243-1	100	51.3448	51.3676	51.3675	0.0001	No	0.0227	227.0	25.0	227.0	1
810237-1	100	50.3234	50.3559	50.3559	0.0000	No	0.0325	325.0	25.0	325.0	1
810278	1000	168.6248	168.6252	168.6252	0.0000	No	0.0004	0.4	2.5	ND	1
810288-1	100	49.4908	49.5369	49.5369	0.0000	No	0.0461	461.0	25.0	461.0	1
810288-2	100	51.5673	51.6121	51.6121	0.0000	No	0.0448	448.0	25.0	448.0	1
810280-7	100	50.7492	50.7972	50.7972	0.0000	No	0.0480	480.0	25.0	480.0	1
810319-1	20	50.9511	51.0239	51.0239	0.0000	No	0.0728	3640.0	125.0	3640.0	1
810298	1000	167.3432	167.3436	167.3435	0.0001	No	0.0003	0.3	2.5	ND	1
810304-2	100	50.8193	50.8383	50.8382	0.0001	No	0.0189	189.0	25.0	189.0	1
810304-4	100	49.4908	49.533	49.5329	0.0001	No	0.0421	421.0	25.0	421.0	1
810333	400	173.2291	173.2398	173.2397	0.0001	No	0.0106	26.5	6.3	26.5	1
810236-2D	100	50.4884	50.5335	50.5334	0.0001	No	0.0450	450.0	25.0	450.0	1
810237-4	100	78.7976	78.8419	78.8419	0.0000	No	0.0443	443.0	25.0	443.0	1
810237-5	100	78.9115	78.9565	78.9565	0.0000	No	0.0450	450.0	25.0	450.0	1
LCS1	100	70.8826	70.9319	70.9318	0.0001	No	0.0492	492.0	25.0	492.0	1
LCS2	100	112.9387	112.9884	112.9884	0.0000	No	0.0497	497.0	25.0	497.0	1

Calculation as follows:

$$\text{Filterable residue (TDS), mg/L} = \left(\frac{A-B}{C}\right) x\, 10^6$$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	492	500	98.4%	90-110%	Yes
LCSD	497	500	99.4%	90-110%	Yes

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\, 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
810236-2	0.0452	0.045	0.2%	≤5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\, 100$$

$$where \quad C = \frac{A+B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS13E
Date Analyzed: 10/9/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
810234-1	726	0.56	471.9	0.86
810236-1	773	0.60	502.45	0.92
810236-2	745	0.61	484.25	0.93
810237-6	875	0.58	568.75	0.90
810237-7	777	0.65	505.05	1.00
810243-1	322	0.70	209.3	1.08
810237-1	455	0.71	295.75	1.10
810278	11.1	ND	7.215	ND
810288-1	607	0.76	394.55	1.17
810288-2	766	0.58	497.9	0.90
810280-7	686	0.70	445.9	1.08
810319-1	6990	0.52	4543.5	0.80
810298	9.88	ND	6.422	ND
810304-2	261	0.72	169.65	1.11
810304-4	502	0.84	326.3	1.29
810333	46	0.58	29.9	0.89
810236-2D	745	0.60	484.25	0.93
810237-4	734	0.60	477.1	0.93
810237-5	711	0.63	462.15	0.97
LCS1				

810319

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(714)730-6239 FAX: (714) 730-6462
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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-435]

COC Number

TURNAROUND TIME 10 Days

DATE 10/8/13 PAGE 1 OF 1

COMPANY: E2

PROJECT NAME: PG&E Topock

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

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 456827.01.DM TEAM: 1

SAMPLERS (SIGNATURE):

Rec'd 10/08/13 S 810319

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Nitrite	Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-435	10/8/13	1450	Water	x	x	x	x	X	x									3	pH-7 (200.7)
SC-100B-WDR-435	10/8/13	1450	Water					X										1	TOTAL NUMBER OF CONTAINERS
																		4	

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)		Ryan Phelps	CH2MHILL	10-8-13 1500
Signature (Received)	Thanh Ngo	Thanh Ngo	TLI	10-8-13 1500
Signature (Relinquished)	Thanh Ngo	Thanh Ngo	TLI	10-8-13 2000
Signature (Received)	Marchea Bra	Marchea Bra	TLI	10/8/13 2010
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 3.5 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

046

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
10/1/13	810209 -4	6.00	0.5/25mL	9.5	22:55	MVR
	-5				22:58	
	-6				23:02	
10/02/13	810204-1	7.00	2ml/100ml	9.5	8:30	NE
	810206-1					
	-2					
	-3					
	810207-1	9.5	N/A	N/A	N/A	NE
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
	-16					
	-17					
	-18					
	-19					
	-20					
	-21					
10/2/13	810204-2	7.0	2ml/100ml	9.5	8:30	NE
10/9/13	810319-1	7.0	2mL/100mL	9.5	8:30	[illegible]
10/9/13	810317-1	7.0	0.5mL/25mL	9.5	8:35	[illegible]

10/15/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810237-1→7	<1	<2	10/03/13	DC	NO	15:10		
810231-4	↓	↓	↓	↓	yes			
810232					↓			
810236-1,2	>1							
810239	<1							
810229	↓	↓	↓	↓	↓			
810252	>1	<2	10/04/13	DC	yes			
810206(1,3)	<1	<2	10/4/13	ES	yes			
206-2	<1	>2	↓	↓	↓	10:00		pH<2
810227	<1	<2						
810251(1-3)	↓	↓		↓				
810184	TTLC							
810185(1-2)	↓							solid
810205			↓	↓	↓			↓
810200-4	>1	<2	10/4/13	DC	yes			sludge
810271-4	<1	<2	10/4/13	DC	yes			
810248	↓	↓	↓	↓	↓			
810255-3,4								-4 <2 pH
810242-10→12	<1	>2	↓	↓	NO	15:10		-3 digest as acid
810262-1→5	TTLC		10/7/13	DC	yes			
810275-4	>1	<2						
810279	<1	↓	↓	↓	↓			
810276-4	>1							
810280-4,5,6	<1	>2	10/7/13	DC	No	1:00		
810286	<1	<2	10/8/13	ES	Yes			
810301-4	↓	↓	↓	↓	↓			
810310								
810305								
810306								
810307								
810308								
810309		↓			↓			
810295		>2			No	5:00		
810304(1-4)	↓	↓	↓	↓	↓	↓		
810288(1-2)	>1	<2	10/8/13	ES	Yes			
810317(1,4-7)	<1	>2	10/9/13	ES	yes	10:00		Filtered from acid pH
810318(1-6)	<1	<2	↓	↓	↓			
810319-1	<1	>2				10:00		
810320(1-5)	<1	<2						
810321(1-5)	<1	<2	↓	↓	↓			TID
810350(1-4)	<1	<2	10/10/13	ES	Yes			
810352(1-2,4-12)	↓	↓	↓	↓	↓			
810353(1-15)								

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810319

Date Delivered: 10 / 8 / 13 **Time:** 20:10 **By:** ☐ Mail ☐ Field Service ☑ Client

1. Was a Chain of Custody received and signed? ☑ Yes ☐ No ☐ N/A
2. Does Customer require an acknowledgement of the COC? ☐ Yes ☑ No ☐ N/A
3. Are there any special requirements or notes on the COC? ☐ Yes ☑ No ☐ N/A
4. If a letter was sent with the COC, does it match the COC? ☐ Yes ☐ No ☑ N/A
5. Were all requested analyses understood and acceptable? ☑ Yes ☐ No ☐ N/A
6. Were samples received in a chilled condition? ☑ Yes ☐ No ☐ N/A
   Temperature (if yes)? 3.5 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☑ Yes ☐ No ☐ N/A
8. Were sample custody seals intact? ☐ Yes ☐ No ☑ N/A
9. Does the number of samples received agree with COC? ☑ Yes ☐ No ☐ N/A
10. Did sample labels correspond with the client ID's? ☑ Yes ☐ No ☐ N/A
11. Did sample labels indicate proper preservation? ☐ Yes ☐ No ☑ N/A
    Preserved (if yes) by: ☐ **Truesdail** ☐ Client
12. Were samples pH checked? pH = See C.O.C ☑ Yes ☐ No ☐ N/A
13. Were all analyses within holding time at time of receipt? ☑ Yes ☐ No ☐ N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☑ Yes ☐ No ☐ N/A
    Turn Around Time (TAT): ☐ **RUSH** ☑ Std
15. **Sample Matrix:** ☐ Liquid ☐ Drinking Water ☐ Ground Water ☐ Waste Water ☐ Sludge ☐ Soil ☐ Wipe ☐ Paint ☐ Solid ☑ Other Water
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

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www.truesdail.com

November 4, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-436 PROJECT, GROUNDWATER MONITORING, TLI NO.: 810466

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-436 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 15, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: IM.CS.EX.AC

Laboratory No.: 810466
Date: November 4, 2013
Collected: October 15, 2013
Received: October 15, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Kim Luck
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 810466
Date Received: October 15, 2013

Project Name: PG&E Topock Project
Project No.: IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810466-001	SC-700B-WDR-436	E120.1	NONE	10/15/2013	12:35	EC	6770	umhos/cm	2.00
810466-001	SC-700B-WDR-436	E200.8	NONE	10/15/2013	12:35	Chromium	ND	ug/L	1.0
810466-001	SC-700B-WDR-436	E200.8	NONE	10/15/2013	12:35	Manganese	1.3	ug/L	0.50
810466-001	SC-700B-WDR-436	E218.6	LABFLT	10/15/2013	12:35	Chromium, Hexavalent	ND	ug/L	0.20
810466-001	SC-700B-WDR-436	SM2130B	NONE	10/15/2013	12:35	Turbidity	ND	NTU	0.100
810466-001	SC-700B-WDR-436	SM2540C	NONE	10/15/2013	12:35	Total Dissolved Solids	5690	mg/L	125

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

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TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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TUSTIN, CALIFORNIA 92780-7008
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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 810466

Printed 11/4/2013

Samples Received on 10/15/2013 6:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-436	810466-001	10/15/2013 12:35	Water

Specific Conductivity - EPA 120.1 Batch 10EC13H

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810466-001 Specific Conductivity	umhos/cm	10/17/2013	1.00	0.606	2.00	6770

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810386-010

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	6670	6660	0.150	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	684	706	96.9	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	686	706	97.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	913	1000	91.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	913	1000	91.3	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 10CrH13O

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810466-001 Chromium, Hexavalent	ug/L	10/16/2013 12:39	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 810471-006

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.2	0.101	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.199	0.200	99.4	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.79	5.00	95.8	90 - 110

Matrix Spike — Lab ID = 810380-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.00	1.00(1.00)	100	90 - 110

Matrix Spike — Lab ID = 810384-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.07	1.10(1.00)	97.6	90 - 110

Matrix Spike — Lab ID = 810466-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.13	1.13(1.00)	100	90 - 110

Matrix Spike — Lab ID = 810471-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.89	1.94(1.00)	95.2	90 - 110

Matrix Spike — Lab ID = 810471-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	16.4	16.8(10.0)	95.8	90 - 110

Matrix Spike — Lab ID = 810471-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.71	7.90(5.00)	96.1	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 102113C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810466-001 Chromium	ug/L	10/22/2013 04:16	2.00	0.142	1.0	ND
Manganese	ug/L	10/22/2013 04:16	2.00	0.120	0.50	1.3

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate — Lab ID = 810466-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	ND	0	0	0 - 20
Manganese	ug/L	2.00	1.24	1.28	3.34	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.200	0.200	100	70 - 130
Manganese	ug/L	1.00	0.227	0.200	114	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.4	50.0	98.8	85 - 115
Manganese	ug/L	1.00	50.1	50.0	100	85 - 115

Matrix Spike — Lab ID = 810466-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	47.6	50.0(50.0)	95.3	75 - 125
Manganese	ug/L	2.00	49.6	51.3(50.0)	96.6	75 - 125

Matrix Spike Duplicate — Lab ID = 810466-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	46.4	50.0(50.0)	92.8	75 - 125
Manganese	ug/L	2.00	47.9	51.3(50.0)	93.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.5	20.0	97.7	90 - 110
Manganese	ug/L	1.00	20.0	20.0	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.7	90 - 110

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Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.2	20.0	101	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 10TDS13L

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810466-001 Total Dissolved Solids	mg/L	10/22/2013	1.00	1.76	125	5690

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 810468-007

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	2260	2260	0	0 - 10

Duplicate — Lab ID = 810494-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	1240	1210	2.61	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	497	500	99.4	110 - 110

Turbidity by SM 2130 B

Batch 10TUC13M

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810466-001 Turbidity	NTU	10/16/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 810488-009

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.381	0.376	1.32	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.61	8.00	108	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.64	8.00	108	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS13L
Date Analyzed: 10/22/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	74.7357	74.7358	74.7358	0.0000	No	0.0001	1.0	25.0	ND	1
810447-1	50	49.574	49.6203	49.6199	0.0004	No	0.0459	918.0	50.0	918.0	1
810447-2	100	67.0387	67.0951	67.0949	0.0002	No	0.0562	562.0	25.0	562.0	1
810447-3	100	67.4861	67.5481	67.548	0.0001	No	0.0619	619.0	25.0	619.0	1
810447-4	100	71.3181	71.3745	71.3744	0.0001	No	0.0563	563.0	25.0	563.0	1
810448-2	100	77.2343	77.2519	77.2519	0.0000	No	0.0176	176.0	25.0	176.0	1
810448-4	100	70.3881	70.4217	70.4217	0.0000	No	0.0336	336.0	25.0	336.0	1
810466	20	30.4176	30.5314	30.5314	0.0000	No	0.1138	5690.0	125.0	5690.0	1
810467	50	51.565	51.6218	51.6218	0.0000	No	0.0568	1136.0	50.0	1136.0	1
810468-5	20	50.9485	51.0257	51.0257	0.0000	No	0.0772	3860.0	125.0	3860.0	1
810468-7	50	51.8725	51.9856	51.9856	0.0000	No	0.1131	2262.0	50.0	2262.0	1
810468-7D	50	51.8854	51.9984	51.9984	0.0000	No	0.1130	2260.0	50.0	2260.0	1
LCS	100	69.4842	69.5343	69.5339	0.0004	No	0.0497	497.0	25.0	497.0	1
810494-1	50	49.5643	49.671	49.671	0.0000	No	0.1067	2134.0	50.0	2134.0	1
810494-2	20	49.1144	49.1996	49.1996	0.0000	No	0.0852	4260.0	125.0	4260.0	1
810494-3	20	49.2762	49.3492	49.3492	0.0000	No	0.0730	3650.0	125.0	3650.0	1
810494-4	50	49.6799	49.7772	49.777	0.0002	No	0.0971	1942.0	50.0	1942.0	1
810494-5	20	50.4827	50.5755	50.5755	0.0000	No	0.0928	4640.0	125.0	4640.0	1
810494-6	50	49.4884	49.5951	49.5951	0.0000	No	0.1067	2134.0	50.0	2134.0	1
810494-7	20	51.0730	51.1791	51.1791	0.0000	No	0.1061	5305.0	125.0	5305.0	1
810494-8	50	51.0497	51.1191	51.1188	0.0003	No	0.0691	1382.0	50.0	1382.0	1
810494-9	50	50.7465	50.8158	50.8158	0.0000	No	0.0693	1386.0	50.0	1386.0	1
810494-11	50	50.8200	50.8804	50.8804	0.0000	No	0.0604	1208.0	50.0	1208.0	1
810494-11D	50	50.5002	50.5623	50.5623	0.0000	No	0.0621	1242.0	50.0	1242.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\ 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	497	500	99.4%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\ 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
810468-8	0.1131	0.113	0.0%	≤5%	Yes
810494-11	0.0604	0.0621	1.4%	5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\ 100$$

$$where \quad C = \frac{A + B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS13L
Date Analyzed: 10/22/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
810447-1	1300	0.71	845	1.09
810447-2	821	0.68	533.65	1.05
810447-3	748	0.83	486.2	1.27
810447-4	756	0.74	491.4	1.15
810448-2	285	0.62	185.25	0.95
810448-4	518	0.65	336.7	1.00
810466	6770	0.84	4400.5	1.29
810467	1490	0.76	968.5	1.17
810468-5	4660	0.83	3029	1.27
810468-7	2860	0.79	1859	1.22
810468-7D	2860	0.79	1859	1.22
LCS				
810494-1	2710	0.79	1761.5	1.21
810494-2	5130	0.83	3334.5	1.28
810494-3	4460	0.82	2899	1.26
810494-4	2360	0.82	1534	1.27
810494-5	5520	0.84	3588	1.29
810494-6	2640	0.81	1716	1.24
810494-7	6600	0.80	4290	1.24
810494-8	1800	0.77	1170	1.18
810494-9	1760	0.79	1144	1.21
810494-11	1560	0.77	1014	1.19
810494-11D	1560	0.80	1014	1.22

810466

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-436]

COC Number

TURNAROUND TIME 10 Days

DATE 10/15/13 PAGE 1 OF 1

COMPANY: E2

PROJECT NAME: PG&E Topock

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

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 456827.01.DM TEAM: 1

SAMPLERS (SIGNATURE):

Rec'd 10/15/13 Sic 810466

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-436	10/15/13	1235	Water	x	x	x	x		x								3	pH 7 (200.7)
																	3	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)		Ryan Phelps	CH2M HILL	10-15-13 14:15
Signature (Received)	Thanh Ngo	Thanh Ngo	TLI	10-15-13 14:15
Signature (Relinquished)	Thanh Ngo	Thanh Ngo	TLI	10-15-13 1830
Signature (Received)	Marchead Brady	Marchead Brady	TLI	10/15/13 1830
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☒ WARM ☐ 3.5 °C

CUSTODY SEALED YES ☐ NO ☐

SPECIAL REQUIREMENTS:

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
10/15/13	810441-9	9.5	N/A	N/A	N/A	NE
	-10					
	-11					
	810442-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
10/16/13	810466	7.0	2ml/100ml	9.5	7:45	NE
	810467-	9.5	N/A	N/A	N/A	NE
	810468-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	810469-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log

10/16/13

10/17/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810451	>1	<2	10/17/13	ES	yes			
810452	<1	↓			↓			
810457(1-2)		>2			NO	1:00 pm		pH <2
810464(1-3)		↓			↓	↓		↓
810474		<2			yes			
810475								
810476								
810477								
810479	↓	↓			↓			
810484	TTLC							
810487(10-12)	<1	>2			NO	1:00		pH<2
810488(1-8)	↓	↓			↓	↓		↓
810504(1-2)	>1	<2			yes			
810507	<1							
810511								
810514	↓	↓	↓	↓	↓			
810440(1-8)	<1	<2	10/18/13	ES	yes			
810441(1-10)								
810442(1-9)								
810461		↓						
810466		>2				10:00		pH <2
810468(1-7)		<2						
810516	↓	↓	↓	↓	↓			
810469(1-9,11-12)	<1	<2	10/21/13	KK	yes			
810470(1,3-9)	<1	<2	↓	↓	↓			
810472(1-2,4-9)	<1	<2	10/21/13	KK	yes			
810473(1-11)	<1	<2	↓	↓	↓			
810493(1-6,8)	<1	<2	10/22/13	KK	yes			
810494(1-9,11)	<1	<2	10/22/13	KK	yes			
810495(2-10)	<1	<2	↓	↓	↓			
810496(1-8)	<1	<2						
810497(1,3-10)	<1	<2	10/22/13	KK	yes			
~~810497~~ KK 10/22/13								
810513(1-3)	<1	<2	10/22/13	KK	yes			
810518(1-4,6-9)	<1	<2	↓	↓	↓			
810517(2-11)	<1	<2	10/22/13	KK	yes			
810527(1-5)	<1	<2	↓	↓	↓			
810519(1-11)	<1	<2	10/22/13	KK	yes			
810520(1-5)	<1	<2	↓	↓	↓			
810521(1-10,12)	<1	<2	10/22/13	KK	yes			
810528(13-8)	<1	<2	↓	↓	↓			
810381(1-10)	<1	<2	10/14/13	ES	yes			
810383(2-9)	↓	↓	↓	↓	↓			
810551	<1	>2	10/22/13	KK	yes	1000		

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E 2 **Lab #** 810466

Date Delivered: 10 / 15 / 13 **Time:** 18:30 **By:** ☐ Mail ☐ Field Service ☑ Client

1. Was a Chain of Custody received and signed? ☑ Yes ☐ No ☐ N/A
2. Does Customer require an acknowledgement of the COC? ☐ Yes ☑ No ☐ N/A
3. Are there any special requirements or notes on the COC? ☐ Yes ☑ No ☐ N/A
4. If a letter was sent with the COC, does it match the COC? ☐ Yes ☐ No ☑ N/A
5. Were all requested analyses understood and acceptable? ☑ Yes ☐ No ☐ N/A
6. Were samples received in a chilled condition? ☑ Yes ☐ No ☐ N/A
   Temperature (if yes)? 3.5 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☑ Yes ☐ No ☐ N/A
8. Were sample custody seals intact? ☐ Yes ☐ No ☑ N/A
9. Does the number of samples received agree with COC? ☑ Yes ☐ No ☐ N/A
10. Did sample labels correspond with the client ID's? ☑ Yes ☐ No ☐ N/A
11. Did sample labels indicate proper preservation? ☐ Yes ☐ No ☑ N/A
    Preserved (if yes) by: ☐ **Truesdail** ☐ Client
12. Were samples pH checked? pH = See C.O.C. ☑ Yes ☐ No ☐ N/A
13. Were all analyses within holding time at time of receipt? ☑ Yes ☐ No ☐ N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☑ Yes ☐ No ☐ N/A
    Turn Around Time (TAT): ☐ **RUSH** ☑ Std
15. **Sample Matrix:** ☐ Liquid ☐ Drinking Water ☐ Ground Water ☐ Waste Water ☐ Sludge ☐ Soil ☐ Wipe ☐ Paint ☐ Solid ☑ Other Water
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

ALERT!! Level III QC

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

November 5, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-437 PROJECT, GROUNDWATER MONITORING, TLI NO.: 810578

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-437 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 22, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

The straight run for the matrix spike for sample SC-700B-WDR-437 for Hexavalent Chromium analysis by EPA 218.6 was just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the result from the straight run was reported.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: IM.CS.EX.AC

Laboratory No.: 810578
Date: November 5, 2013
Collected: October 22, 2013
Received: October 22, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Kim Luck
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 810578
Date Received: October 22, 2013

Project Name: PG&E Topock Project
Project No.: IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810578-001	SC-700B-WDR-437	E120.1	NONE	10/22/2013	12:45	EC	6750	umhos/cm	2.00
810578-001	SC-700B-WDR-437	E200.8	NONE	10/22/2013	12:45	Chromium	ND	ug/L	1.0
810578-001	SC-700B-WDR-437	E200.8	NONE	10/22/2013	12:45	Manganese	1.7	ug/L	0.50
810578-001	SC-700B-WDR-437	E218.6	LABFLT	10/22/2013	12:45	Chromium, Hexavalent	ND	ug/L	0.20
810578-001	SC-700B-WDR-437	SM2130B	NONE	10/22/2013	12:45	Turbidity	ND	NTU	0.100
810578-001	SC-700B-WDR-437	SM2540C	NONE	10/22/2013	12:45	Total Dissolved Solids	4340	mg/L	125

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 810578

Printed 11/5/2013

Samples Received on 10/22/2013 7:00:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-437	810578-001	10/22/2013 12:45	Water

Specific Conductivity - EPA 120.1 Batch 10EC13K

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810578-001 Specific Conductivity	umhos/cm	10/23/2013	1.00	0.606	2.00	6750

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810544-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	754	749	0.665	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	680	706	96.3	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	679	706	96.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	972	1000	97.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	932	1000	93.2	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 10CrH13Y

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810578-001 Chromium, Hexavalent	ug/L	10/23/2013 12:55	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 810442-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	11.8	11.9	0.403	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.203	0.200	101	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.87	5.00	97.4	90 - 110

Matrix Spike — Lab ID = 810440-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.28	7.71(5.00)	91.3	90 - 110

Matrix Spike — Lab ID = 810440-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.939	1.00(1.00)	93.9	90 - 110

Matrix Spike — Lab ID = 810440-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	15.7	15.8(10.0)	98.5	90 - 110

Matrix Spike — Lab ID = 810440-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.98	7.32(5.00)	93.2	90 - 110

Matrix Spike — Lab ID = 810440-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.30	7.75(5.00)	91.1	90 - 110

Matrix Spike — Lab ID = 810440-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.06	7.36(5.00)	93.9	90 - 110

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Matrix Spike — Lab ID = 810578-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.10	1.11(1.00)	99.2	90 - 110

Matrix Spike — Lab ID = 810578-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.88	5.10(5.00)	95.6	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.86	5.00	97.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.0	10.0	100	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.0	10.0	100.	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.0	10.0	100	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.0	10.0	100	95 - 105

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 102513B-ICPMS-1

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810578-001 Chromium	ug/L	10/26/2013 02:51	1.00	0.0710	1.0	ND
Manganese	ug/L	10/26/2013 02:51	1.00	0.0600	0.50	1.7

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Uranium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 810578-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Uranium	ug/L	1.00	4.26	4.09	4.16	0 - 20
Manganese	ug/L	1.00	1.50	1.73	14.3	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.216	0.200	108	70 - 130
Uranium	ug/L	1.00	0.204	0.200	102	70 - 130
Manganese	ug/L	1.00	0.542	0.500	108	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.00	48.2	50.0	96.4	85 - 115
Uranium	ug/L	2.00	50.5	50.0	101	85 - 115
Manganese	ug/L	2.00	49.2	50.0	98.5	85 - 115

Matrix Spike

Lab ID = 810578-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	53.3	50.0(50.0)	107	75 - 125
Uranium	ug/L	1.00	54.4	54.1(50.0)	100	75 - 125
Manganese	ug/L	1.00	53.4	51.7(50.0)	103	75 - 125

Matrix Spike Duplicate

Lab ID = 810578-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	55.4	50.0(50.0)	111	75 - 125
Uranium	ug/L	1.00	55.0	54.1(50.0)	102	75 - 125
Manganese	ug/L	1.00	55.6	51.7(50.0)	108	75 - 125

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Total Dissolved Solids by SM 2540 C

Batch 10TDS13M

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810578-001 Total Dissolved Solids	mg/L	10/23/2013	1.00	1.76	125	4340

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 810521-009

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	1710	1680	1.65	0 - 10

Duplicate — Lab ID = 810578-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4320	4340	0.578	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	498	500	99.6	90 - 110

Turbidity by SM 2130 B

Batch 10TUC13O

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810578-001 Turbidity	NTU	10/22/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 810535-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.84	8.00	98.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.82	8.00	97.8	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 11/5/2013

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS13M
Date Analyzed: 10/23/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	69.2305	69.2305	69.2305	0.0000	No	0.0000	0.0	25.0	ND	1
810517-11	100	76.8133	76.8759	76.8759	0.0000	No	0.0626	626.0	25.0	626.0	1
810521-1	100	75.1594	75.1834	75.1834	0.0000	No	0.0240	240.0	25.0	240.0	1
810521-2	100	75.4162	75.44	75.4399	0.0001	No	0.0237	237.0	25.0	237.0	1
810521-3	50	75.8161	75.911	75.911	0.0000	No	0.0949	1898.0	50.0	1898.0	1
810521-4	20	50.1570	50.2205	50.2205	0.0000	No	0.0635	3175.0	125.0	3175.0	1
810521-5	50	78.2492	78.3153	78.3153	0.0000	No	0.0661	1322.0	50.0	1322.0	1
810521-6	100	77.4999	77.5439	77.5439	0.0000	No	0.0440	440.0	25.0	440.0	1
810521-7	50	50.3225	50.3844	50.3841	0.0003	No	0.0616	1232.0	50.0	1232.0	1
810521-8	50	50.5570	50.6088	50.6084	0.0004	No	0.0514	1028.0	50.0	1028.0	1
810521-9	50	51.3340	51.4179	51.4179	0.0000	No	0.0839	1678.0	50.0	1678.0	1
810521-9D	50	48.4766	48.5620	48.5620	0.0000	No	0.0854	1708.0	50.0	1708.0	1
LCS	100	74.1489	74.199	74.1987	0.0003	No	0.0498	498.0	25.0	498.0	1
810521-10	20	50.7035	50.7846	50.7842	0.0004	No	0.0807	4035.0	125.0	4035.0	1
810521-12	50	50.6889	50.7476	50.7476	0.0000	No	0.0587	1174.0	50.0	1174.0	1
810578	20	50.7259	50.8132	50.8128	0.0004	No	0.0869	4345.0	125.0	4345.0	1
810504-1	100	75.7503	75.7962	75.7961	0.0001	No	0.0458	458.0	25.0	458.0	1
810504-2	100	74.5976	74.6449	74.6445	0.0004	No	0.0469	469.0	25.0	469.0	1
810500-1	100	73.5742	73.6217	73.6217	0.0000	No	0.0475	475.0	25.0	475.0	1
810500-2	100	66.7930	66.841	66.8406	0.0004	No	0.0476	476.0	25.0	476.0	1
810500-3	100	78.7971	78.845	78.845	0.0000	No	0.0479	479.0	25.0	479.0	1
810500-4	100	78.6073	78.6558	78.6557	0.0001	No	0.0484	484.0	25.0	484.0	1
810578D	20	51.7240	51.8103	51.8103	0.0000	No	0.0863	4315.0	125.0	4315.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\ 1\ 0^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	498	500	99.6%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\ 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
810521-9	0.0839	0.0854	0.9%	≤5%	Yes
810578	0.0869	0.0863	0.3%	5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C}\ x\ 100$$

$$where \quad C = \frac{A + B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

WetChem TDS 2012.xls

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS13M
Date Analyzed: 10/23/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
810517-11	944	0.66	613.6	1.02
810521-1	399	0.60	259.35	0.93
810521-2	392	0.60	254.8	0.93
810521-3	2750	0.69	1787.5	1.06
810521-4	4430	0.72	2879.5	1.10
810521-5	1780	0.74	1157	1.14
810521-6	682	0.65	443.3	0.99
810521-7	1680	0.73	1092	1.13
810521-8	1428	0.72	928.2	1.11
810521-9	2400	0.70	1560	1.08
810521-9D	2400	0.71	1560	1.09
LCS				
810521-10	4860	0.83	3159	1.28
810521-12	1650	0.71	1072.5	1.09
810578	6750	0.64	4387.5	0.99
810504-1	775	0.59	503.75	0.91
810504-2	708	0.66	460.2	1.02
810500-1	830	0.57	539.5	0.88
810500-2	810	0.59	526.5	0.90
810500-3	818	0.59	531.7	0.90
810500-4	806	0.60	523.9	0.92
810578D	6750	0.64	4387.5	0.98

10/29/13

810578

TRUESDAIL LABORATORIES, INC.
14201 Franklin Avenue, Tustin, CA 92780-7008
(714)730-6239 FAX: (714) 730-6462
www.truesdail.com

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-437]

COC Number

TURNAROUND TIME 10 Days

DATE 10/22/13 PAGE 1 OF 1

COMPANY: E2

PROJECT NAME: PG&E Topock

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

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 456827.01.DM TEAM: 1

SAMPLERS (SIGNATURE)

Rec'd 10/22/13

S26 810578

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-437	10/22/13	1245	Water	x	x	x	x		x								3	pH=6 (200.7)
																	3	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Ryan Phelps	[illegible]	CH2MHILL	10-22-13 14:45
Signature (Received)	Thanh Ngo	Thanh Ngo	TLI	10-22-13 14:45
Signature (Relinquished)	Thanh Ngo	Thanh Ngo	TLI	10-22-13 19:00
Signature (Received)	[illegible]	Marchel Brady	TLI	10/22/13 1900
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☒ WARM ☐ 4.5 °C

CUSTODY SEALED YES ☐ NO ☒

SPECIAL REQUIREMENTS:

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
10/19/13	810527-5	9.5	N/A	N/A	N/A	NE
	-6					
	810528-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
10/23/13	810578	7.00	2ml / 100ml	9.5	8:00	NE
10/29/13	810679	7.00	2ml / 100ml	9.5	7:30	NE
10/29/13	810683 -1	7.00	2ml / 100ml	9.5	12:00	NE
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810544-1,2	>1	<2	10/22/13	DL	yes			
810540	<1	↓	↓	↓	↓			
810539	↓							
810533-1,2	>1							
810531-1,2,3	>1							
810532	<1							
810525 (-2-7)	<1	<2	10/22/13	DL	yes			
810526 (1-4)	<1	<2	↓	↓	↓			
810559	<1	<2	10/22/13	RK	yes			
810560	↓	↓	↓	↓	↓			
810561								
810562								
810563								
810564	>1	↓	↓	↓	↓			
810568	<1	>2	10/24/13	ES	NO	1:00 p.m.		
810572 (1-2,4)	↓	↓	↓	↓	↓	↓		
810580	>1	<2	↓	↓	Yes			
810603 (1-3)	<1	>2	↓	↓	No	1:00 pm		
810606 (10-12)	↓	↓	↓	↓	↓	↓		
810607 (1-3)	↓	↓	↓	↓	↓	↓		
810609	>1	<2	↓	↓	Yes			
810618 (1-2)	<1	<2	↓	↓	↓			
810578	<1	>2	10/25/13	ES	Yes	10:00		pH <2
810626 (1-5)	↓	<2	↓	↓	↓			
810627 (1-3)	↓	↓	↓	↓	↓			
810651	<1	<2	10/28/13	DL	yes			
810653-1,2	↓	↓	↓	↓	↓			
810655-1,2	>1	<2	↓	↓	↓			
810664-1,2,4	<1	>2	10/29/13	DL	NO	13:50		
810666	<1	<2	↓	↓	Yes			
810667	>1	<2	↓	↓	↓			
810674	<1	<2	10/30/13	DL	yes			
810672	↓	↓	↓	↓	↓			
810673	↓	↓	↓	↓	↓			
810680	<1	>2	↓	DL	NO	1015		
810659	<1	<2	↓	↓	Yes			
810679	<1	>2	10/30/13	ES	Yes	11:00		pH <2

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: CD **Lab #** 810578

Date Delivered: 10 / 22 / 13 **Time:** 1900 **By:** ☐ Mail ☐ Field Service ☒ Client

1. Was a Chain of Custody received and signed? ☒ Yes ☐ No ☐ N/A
2. Does Customer require an acknowledgement of the COC? ☒ Yes ☐ No ☐ N/A
3. Are there any special requirements or notes on the COC? ☐ Yes ☒ No ☐ N/A
4. If a letter was sent with the COC, does it match the COC? ☐ Yes ☐ No ☒ N/A
5. Were all requested analyses understood and acceptable? ☒ Yes ☐ No ☐ N/A
6. Were samples received in a chilled condition? ☒ Yes ☐ No ☐ N/A
   Temperature (if yes)? 4.5 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒ Yes ☐ No ☐ N/A
8. Were sample custody seals intact? ☐ Yes ☐ No ☒ N/A
9. Does the number of samples received agree with COC? ☒ Yes ☐ No ☐ N/A
10. Did sample labels correspond with the client ID's? ☒ Yes ☐ No ☐ N/A
11. Did sample labels indicate proper preservation? ☐ Yes ☐ No ☒ N/A
    Preserved (if yes) by: ☐ **Truesdail** ☐ Client
12. Were samples pH checked? pH = 6 ☒ Yes ☐ No ☐ N/A
13. Were all analyses within holding time at time of receipt? ☒ Yes ☐ No ☐ N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒ Yes ☐ No ☐ N/A
    Turn Around Time (TAT): ☐ **RUSH** ☒ Std
15. **Sample Matrix:** ☐ Liquid ☐ Drinking Water ☒ Ground Water ☐ Waste Water ☐ Sludge ☐ Soil ☐ Wipe ☐ Paint ☐ Solid ☐ Other _____
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Michael Brady

ALERT !!
Level III QC

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

November 12, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-438 PROJECT, GROUNDWATER MONITORING, TLI NO.: 810679

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-438 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 29, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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www.truesdail.com

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: IM.CS.EX.AC

Laboratory No.: 810679
Date: November 12, 2013
Collected: October 29, 2013
Received: October 29, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Kim Luck
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 810679
Date Received: October 29, 2013

Project Name: PG&E Topock Project
Project No.: IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810679-001	SC-700B-WDR-438	E120.1	NONE	10/29/2013	14:30	EC	6510	umhos/cm	2.00
810679-001	SC-700B-WDR-438	E200.8	NONE	10/29/2013	14:30	Chromium	ND	ug/L	1.0
810679-001	SC-700B-WDR-438	E200.8	NONE	10/29/2013	14:30	Manganese	1.1	ug/L	0.50
810679-001	SC-700B-WDR-438	E218.6	LABFLT	10/29/2013	14:30	Chromium, Hexavalent	0.21	ug/L	0.20
810679-001	SC-700B-WDR-438	SM2130B	NONE	10/29/2013	14:30	Turbidity	ND	NTU	0.100
810679-001	SC-700B-WDR-438	SM2540C	NONE	10/29/2013	14:30	Total Dissolved Solids	4420	mg/L	125

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 810679

Printed 11/12/2013

Samples Received on 10/29/2013 7:15:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-438	810679-001	10/29/2013 14:30	Water

Specific Conductivity - EPA 120.1 Batch 11EC13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810679-001 Specific Conductivity	umhos/cm	11/01/2013	1.00	0.606	2.00	6510

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810681-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	135	130	3.77	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	720	706	102	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	719	706	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	911	1000	91.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	913	1000	91.3	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 10CrH13AK

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810679-001 Chromium, Hexavalent	ug/L	10/30/2013 11:49	1.00	0.00600	0.20	0.21

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 810679-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.184	0.210	13.4	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.202	0.200	101	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.86	5.00	97.3	90 - 110

Matrix Spike — Lab ID = 810494-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.37	1.32(1.00)	105	90 - 110

Matrix Spike — Lab ID = 810494-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.89	1.85(1.00)	104	90 - 110

Matrix Spike — Lab ID = 810679-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.20	1.21(1.00)	99.0	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.85	5.00	97.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 103113A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810679-001 Chromium	ug/L	10/31/2013 14:46	1.00	0.0710	1.0	ND
Manganese	ug/L	10/31/2013 14:46	1.00	0.0600	0.50	1.1

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate — Lab ID = 810679-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	1.17	1.13	3.65	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.222	0.200	111	70 - 130
Manganese	ug/L	1.00	0.575	0.500	115	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	47.6	50.0	95.2	85 - 115
Manganese	ug/L	1.00	49.5	50.0	99.1	85 - 115

Matrix Spike — Lab ID = 810679-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	46.4	50.0(50.0)	92.7	75 - 125
Manganese	ug/L	1.00	48.1	51.1(50.0)	93.9	75 - 125

Matrix Spike Duplicate — Lab ID = 810679-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	45.5	50.0(50.0)	90.9	75 - 125
Manganese	ug/L	1.00	47.5	51.1(50.0)	92.7	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.8	20.0	94.0	90 - 110
Manganese	ug/L	1.00	19.3	20.0	96.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.8	20.0	94.2	90 - 110

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Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.5	20.0	97.3	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 10TDS13O

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810679-001 Total Dissolved Solids	mg/L	10/30/2013	1.00	1.76	125	4420

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 810679-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4520	4420	2.24	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	496	500	99.2	90 - 110

Turbidity by SM 2130 B

Batch 10TUC13R

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810679-001 Turbidity	NTU	10/29/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 810647-009

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.155	0.156	0.643	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.21	8.00	103	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.18	8.00	102	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for - Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS13O
Date Analyzed: 10/30/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	71.9674	71.9674	71.9674	0.0000	No	0.0000	0.0	25.0	ND	1
810679	20	29.4165	29.5049	29.5048	0.0001	No	0.0883	4415.0	125.0	4415.0	1
810664-2	100	67.8156	67.8278	67.8274	0.0004	No	0.0118	118.0	25.0	118.0	1
810664-4	100	76.1770	76.2135	76.2132	0.0003	No	0.0362	362.0	25.0	362.0	1
810679 D	20	28.7560	28.8465	28.8464	0.0001	No	0.0904	4520.0	125.0	4520.0	1
LCS	100	75.7527	75.8023	75.8023	0.0000	No	0.0496	496.0	25.0	496.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\ 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	496	500	99.2%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\ 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
810679	0.0883	0.0904	1.2%	≤5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\ 100$$

$$where \quad C = \frac{A + B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS13O
Date Analyzed: 10/30/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
810679	6510	0.68	4231.5	1.04
810664-2	207	0.57	134.55	0.88
810664-4	560	0.65	364	0.99
810679	6510	0.69	4231.5	1.07
LCS				

810679

TRUESDAIL LABORATORIES, INC.
14201 Franklin Avenue, Tustin, CA 92780-7008
(714)730-6239 FAX: (714) 730-6462
www.truesdail.com

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-438]

COC Number
TURNAROUND TIME 10 Days
DATE 10/29/13 PAGE 1 OF 1

COMPANY E2
PROJECT NAME PG&E Topock
PHONE (530) 229-3303 FAX (530) 339-3303
ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612
P.O. NUMBER 456827.01.DM TEAM 1
SAMPLERS (SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)		Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-438	10/29/13	14:30	Water	x	x	x	x		x									3	pH=7
																		3	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

Rec'd 10/~~30~~29/13
~~S2d~~ 810679

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

Signature (Relinquished)	[signature]	Printed Name	CHRIS LEMAR	Company/ Agency	CH2M HILL	Date/ Time	10/29/13 14:50
Signature (Received)	[signature]	Printed Name	THANH NGO	Company/ Agency	TUEANDAIL	Date/ Time	10-29-13 14.50
Signature (Relinquished)	[signature]	Printed Name		Company/ Agency		Date/ Time	10-29-13 19-15
Signature (Received)	Marcheal Brady	Printed Name	Marcheal Brady	Company/ Agency	TLI	Date/ Time	10/29/13 1915
Signature (Relinquished)		Printed Name		Company/ Agency		Date/ Time	
Signature (Received)		Printed Name		Company/ Agency		Date/ Time	

SAMPLE CONDITIONS
RECEIVED COOL ☒ WARM ☐ 38.2 °F
CUSTODY SEALED YES ☐ NO ☒

SPECIAL REQUIREMENTS:

036

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
10/19/13	810527-5	9.5	N/A	N/A	N/A	NE
	-6					
	810528-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
10/23/13	810578	7.00	2ml / 100ml	9.5	8:00	NE
10/29/13	810679	7.00	2ml / 100ml	9.5	7:30	NE

10/30/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810544-1,2	>1	<2	10/22/13	DL	yes			
810540	<1	↓	↓	↓	↓			
810539	↓							
810533-1,2	>1							
810531-1,2,3	~~>1~~							
810532	<1	↓	↓	↓	↓			
810525 (-2-7)	<1	<2	10/22/13	DL	yes			
810526 (1-4)	<1	<2	↓	↓	↓			
810559	<1	<2	10/22/13	DL	yes			
810560	↓	↓	↓	↓	↓			
810561								
810562								
810563								
810564	>1	↓	↓	↓	↓			
810568	<1	>2	10/24/13	ES	NO	1:00 p.m.		
810575 (1-2,4)	↓	↓	↓	↓	↓	↓		
810580	>1	<2	↓	↓	Yes			
810603 (1-3)	<1	>2	↓	↓	NO	1:00 pm		
810606 (10-12)	↓	↓	↓	↓	↓	↓		
810607 (1-3)	↓	↓	↓	↓	↓	↓		
810609	>1	<2	↓	↓	Yes			
810618 (1-2)	<1	<2	↓	↓	↓			
810578	<1	>2	10/25/13	ES	Yes	10:00		pH <2
810626 (1-5)	↓	<2	↓	↓	↓			
810627 (1-3)	↓	↓	↓	↓	↓			
810651	<1	<2	10/28/13	DL	yes			
810653-1,2	↓	↓	↓	↓	↓			
810655-1,2	>1	<2	↓	↓	↓			
810664-1,2,4	<1	>2	10/29/13	DL	NO	13:50		
810666	<1	<2	↓	↓	Yes			
810667	>1	<2	↓	↓	↓			
810674	<1	<2	10/30/13	DL	yes			
810672	↓	↓	↓	↓	↓			
810673	↓	↓	↓	↓	↓			
810680	<1	>2	↓	DL	NO	1015		
810659	<1	<2	↓	↓	Yes			
810679	<1	>2	10/30/13	ES	Yes	11:00		pH <2
810693-1-7	<1	>2	10/31/13	DL	NO	1230		
810702-1-7	<1	>2	↓	↓	↓	↓		-2 NTU>1
810700-10,11,12	↓	↓	↓	↓	↓			
810703-1,2	↓	↓	↓	↓	↓			
810691-1,2	>1	<2	↓	DL	yes			
810714-1,2	>1	<2	11/1/13	DL	Yes			
810716	<1	↓	↓	↓	↓			

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810679

Date Delivered: 10/29/13 **Time:** 1715 **By:** ☐ Mail ☐ Field Service ☒ Client

1. Was a Chain of Custody received and signed? ☒ Yes ☐ No ☐ N/A
2. Does Customer require an acknowledgement of the COC? ☒ Yes ☐ No ☐ N/A
3. Are there any special requirements or notes on the COC? ☐ Yes ☒ No ☐ N/A
4. If a letter was sent with the COC, does it match the COC? ☐ Yes ☐ No ☒ N/A
5. Were all requested analyses understood and acceptable? ☒ Yes ☐ No ☐ N/A
6. Were samples received in a chilled condition? ☒ Yes ☐ No ☐ N/A
   Temperature (if yes)? 3.8 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒ Yes ☐ No ☐ N/A
8. Were sample custody seals intact? ☐ Yes ☐ No ☒ N/A
9. Does the number of samples received agree with COC? ☒ Yes ☐ No ☐ N/A
10. Did sample labels correspond with the client ID's? ☒ Yes ☐ No ☐ N/A
11. Did sample labels indicate proper preservation? ☐ Yes ☐ No ☒ N/A
    Preserved (if yes) by: ☐ **Truesdail** ☐ Client
12. Were samples pH checked? pH = See COC ☒ Yes ☐ No ☐ N/A
13. Were all analyses within holding time at time of receipt? ☒ Yes ☐ No ☐ N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒ Yes ☐ No ☐ N/A
    Turn Around Time (TAT): ☐ **RUSH** ☒ Std
15. **Sample Matrix:** ☐ Liquid ☐ Drinking Water ☐ Ground Water ☐ Waste Water ☐ Sludge ☐ Soil ☐ Wipe ☐ Paint ☐ Solid ☒ Other Water
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Yankel Brady

ALERT !!
Level III QC

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

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
1	SC-100B	9-3-13	1400	9-3-13	15:05	METER #2	9-3-13	0120	-53.3	Ryan Phelps	7.2
Notes:											
2	~~SC-700B~~ SC-700B	9-10-13	14:20	9-10-13	14:25	METER #2	9-10-13	03:30	-54.3	Ryan Phelps	7.0
Notes:											
3	SC-700B	9-17-13	11:35	9-17-13	11:45	METER #2	9-17-13	00:55	-53.8	Ryan Phelps	7.1
Notes:											
4	SC-700B	9-24-13	14~~50~~45	9-24-13	1450	METER #2	9-24-13	00:45	-53.3	Ryan Phelps	7.1
Notes:											
5	SC-100B	10-1-13	14:10	10-1-13	14:34	METER #2	10-1-13	00:40	-53.5	Ryan Phelps	7.2
Notes:											
6	SC-700B	10-1-13	13:59	10-1-13		METER #2	10-1-13	00:40	-53.5	Ryan Phelps	7.4
Notes:											
7	SC-701	10-1-13	14:14	10-1-13		METER #2	10-1-13	00:40	-53.5	Ryan Phelps	7.8
Notes:											

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

p.4
760-326-3329
CH2MHILL Topock

Analytical Bench Log Book

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
1	SC-700B -	10-08-13	14:50	10-08-13	14:58	METER #2	10-08-13	00:20	-53.3	GEORGE GLORIA	7.1
Notes:											
2	SC-700B	10-15-13	1235	10-15-13	1242	METER #2	[illegible]	0032	-54.3	Jamie G	7.1
Notes:											
3	SC-700B	10-22-13	1245	10-22-13	1255	METER #2	10-22-13	0032	-54.1	Ryan Phelps	7.1
Notes:											
4	SC-700B	10/29/13	~~01:50~~ 14:25	10/29/13	14:30	METER #2	10/29/13	01:50	-53.5	CHRIS LEGAL	7.0
Notes:											
5	SC-700B	11/5/13	1400	11/5/13	1405	METER #2	11/5/13	00:01	-54.0	CHRIS LEGAL	7.1
Notes:											
6	SC-100B	11/5/13	1400	11/5/13	1405	METER #2	11/5/13	00:01	-54.0	CHRIS LEGAL	7.3
Notes:											
7	SC-700B	11/12/13	12:25	11/12/13	12:30	METER #2	11/12/13	00:50	-53.5	CHRIS LEGAL	7.0
Notes.											

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

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

November 21, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-439 PROJECT, GROUNDWATER MONITORING,

TLI NO.: 810751

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-439 project groundwater monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on November 5, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Metals were analyzed by EPA 200.8 and EPA 200.7 with Mr. Shawn Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: Two (2) Groundwaters
Project Name: PG&E Topock Project
Project No.: IM.CS.EX.AC

Laboratory No.: 810751
Date: November 21, 2013
Collected: November 5, 2013
Received: November 5, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2320B	Total Alkalinity	Himani Vaishnav
SM 4500-Si D	Soluble Silica	Jenny Tankunakorn
SM 4500-P B,E	Total Phosphorus	Jenny Tankunakorn
SM 5310C	Total Organic Carbon	Jenny Tankunakorn
SM 2130B	Turbidity	Kim Luck
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Maria Mangarova / Kim Luck
SM 4500-NO2 B	Nitrite as N	Jenny Tankunakorn
EPA 200.7	Metals by ICP	Denise Chauv
EPA 200.8	Metals by ICP/MS	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project
Project No.: IM.CS.EX.AC
P.O. No.: PGEIM11111001

Laboratory No.: 810751
Date Received: November 5, 2013

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810751-001	SC-700B-WDR-439	E120.1	NONE	11/5/2013	14:00	EC	7520	umhos/cm	2.00
810751-001	SC-700B-WDR-439	E200.7	NONE	11/5/2013	14:00	Aluminum	ND	ug/L	20.0
810751-001	SC-700B-WDR-439	E200.7	NONE	11/5/2013	14:00	BORON	947	ug/L	200
810751-001	SC-700B-WDR-439	E200.7	NONE	11/5/2013	14:00	Iron	ND	ug/L	20.0
810751-001	SC-700B-WDR-439	E200.7	NONE	11/5/2013	14:00	Zinc	ND	ug/L	20.0
810751-001	SC-700B-WDR-439	E200.8	NONE	11/5/2013	14:00	Antimony	ND	ug/L	2.0
810751-001	SC-700B-WDR-439	E200.8	NONE	11/5/2013	14:00	Arsenic	ND	ug/L	0.50
810751-001	SC-700B-WDR-439	E200.8	NONE	11/5/2013	14:00	Barium	12.6	ug/L	5.0
810751-001	SC-700B-WDR-439	E200.8	NONE	11/5/2013	14:00	Chromium	ND	ug/L	1.0
810751-001	SC-700B-WDR-439	E200.8	NONE	11/5/2013	14:00	Copper	ND	ug/L	5.0
810751-001	SC-700B-WDR-439	E200.8	NONE	11/5/2013	14:00	Lead	ND	ug/L	1.0
810751-001	SC-700B-WDR-439	E200.8	NONE	11/5/2013	14:00	Manganese	3.0	ug/L	0.50
810751-001	SC-700B-WDR-439	E200.8	NONE	11/5/2013	14:00	Molybdenum	18.6	ug/L	2.0
810751-001	SC-700B-WDR-439	E200.8	NONE	11/5/2013	14:00	Nickel	ND	ug/L	2.0
810751-001	SC-700B-WDR-439	E218.6	LABFLT	11/5/2013	14:00	Chromium, Hexavalent	0.24	ug/L	0.20
810751-001	SC-700B-WDR-439	E300	NONE	11/5/2013	14:00	Fluoride	1.90	mg/L	0.500
810751-001	SC-700B-WDR-439	E300	NONE	11/5/2013	14:00	Nitrate as N	2.92	mg/L	0.500
810751-001	SC-700B-WDR-439	E300	NONE	11/5/2013	14:00	Sulfate	519	mg/L	12.5
810751-001	SC-700B-WDR-439	SM2130B	NONE	11/5/2013	14:00	Turbidity	ND	NTU	0.100
810751-001	SC-700B-WDR-439	SM2540C	NONE	11/5/2013	14:00	Total Dissolved Solids	4430	mg/L	250
810751-001	SC-700B-WDR-439	SM4500NH3D	NONE	11/5/2013	14:00	Ammonia-N	ND	mg/L	0.500
810751-001	SC-700B-WDR-439	SM4500NO2B	NONE	11/5/2013	14:00	Nitrite as N	ND	mg/L	0.0050

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

TRUESDAIL LABORATORIES, INC.

Report Continued

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810751-002	SC-100B-WDR-439	E120.1	NONE	11/5/2013	14:00	EC	7390	umhos/cm	2.00
810751-002	SC-100B-WDR-439	E200.7	NONE	11/5/2013	14:00	Aluminum	ND	ug/L	20.0
810751-002	SC-100B-WDR-439	E200.7	NONE	11/5/2013	14:00	BORON	971	ug/L	200
810751-002	SC-100B-WDR-439	E200.7	NONE	11/5/2013	14:00	Iron	ND	ug/L	20.0
810751-002	SC-100B-WDR-439	E200.7	LABFLT	11/5/2013	14:00	Iron	ND	ug/L	20.0
810751-002	SC-100B-WDR-439	E200.7	NONE	11/5/2013	14:00	Zinc	51.0	ug/L	20.0
810751-002	SC-100B-WDR-439	E200.8	NONE	11/5/2013	14:00	Antimony	ND	ug/L	2.0
810751-002	SC-100B-WDR-439	E200.8	NONE	11/5/2013	14:00	Arsenic	3.6	ug/L	0.50
810751-002	SC-100B-WDR-439	E200.8	NONE	11/5/2013	14:00	Barium	29.2	ug/L	5.0
810751-002	SC-100B-WDR-439	E200.8	NONE	11/5/2013	14:00	Chromium	610	ug/L	2.0
810751-002	SC-100B-WDR-439	E200.8	NONE	11/5/2013	14:00	Copper	ND	ug/L	5.0
810751-002	SC-100B-WDR-439	E200.8	NONE	11/5/2013	14:00	Lead	ND	ug/L	1.0
810751-002	SC-100B-WDR-439	E200.8	NONE	11/5/2013	14:00	Manganese	4.8	ug/L	0.50
810751-002	SC-100B-WDR-439	E200.8	LABFLT	11/5/2013	14:00	Manganese	4.1	ug/L	0.50
810751-002	SC-100B-WDR-439	E200.8	NONE	11/5/2013	14:00	Molybdenum	18.1	ug/L	2.0
810751-002	SC-100B-WDR-439	E200.8	NONE	11/5/2013	14:00	Nickel	ND	ug/L	2.0
810751-002	SC-100B-WDR-439	E218.6	LABFLT	11/5/2013	14:00	Chromium, Hexavalent	654	ug/L	10.0
810751-002	SC-100B-WDR-439	E300	NONE	11/5/2013	14:00	Fluoride	2.43	mg/L	0.500
810751-002	SC-100B-WDR-439	E300	NONE	11/5/2013	14:00	Nitrate as N	2.93	mg/L	0.500
810751-002	SC-100B-WDR-439	E300	NONE	11/5/2013	14:00	Sulfate	513	mg/L	12.5
810751-002	SC-100B-WDR-439	SM2130B	NONE	11/5/2013	14:00	Turbidity	ND	NTU	0.100
810751-002	SC-100B-WDR-439	SM2320B	NONE	11/5/2013	14:00	Alkalinity	150	mg/L	5.00
810751-002	SC-100B-WDR-439	SM2320B	NONE	11/5/2013	14:00	Alkalinity, Bicarbonate (As CaCO3)	150	mg/L	5.00
810751-002	SC-100B-WDR-439	SM2320B	NONE	11/5/2013	14:00	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
810751-002	SC-100B-WDR-439	SM2540C	NONE	11/5/2013	14:00	Total Dissolved Solids	4530	mg/L	250
810751-002	SC-100B-WDR-439	SM4500NH3D	NONE	11/5/2013	14:00	Ammonia-N	ND	mg/L	0.500
810751-002	SC-100B-WDR-439	SM4500NO2B	NONE	11/5/2013	14:00	Nitrite as N	ND	mg/L	0.0050
810751-002	SC-100B-WDR-439	SM4500-PB_E	NONE	11/5/2013	14:00	Total Phosphorous-P	ND	mg/L	0.0200
810751-002	SC-100B-WDR-439	SM4500SI	LABFLT	11/5/2013	14:00	Soluble Silica	20.1	mg/L	1.00
810751-002	SC-100B-WDR-439	SM5310C	NONE	11/5/2013	14:00	Total Organic Carbon	ND	mg/L	0.300

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 810751

Printed 11/21/2013

Samples Received on 11/5/2013 7:40:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-439	810751-001	11/05/2013 14:00	Water
SC-100B-WDR-439	810751-002	11/05/2013 14:00	Water

Anions By I.C. - EPA 300.0

Batch 11AN13D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Fluoride	mg/L	11/06/2013 11:18	5.00	0.104	0.500	1.90
Nitrate as Nitrogen	mg/L	11/06/2013 11:18	5.00	0.0415	0.500	2.92
Sulfate	mg/L	11/06/2013 15:20	25.0	0.768	12.5	519
810751-002 Fluoride	mg/L	11/06/2013 11:30	5.00	0.104	0.500	2.43
Nitrate as Nitrogen	mg/L	11/06/2013 11:30	5.00	0.0415	0.500	2.93
Sulfate	mg/L	11/06/2013 15:32	25.0	0.768	12.5	513

Method Blank

Parameter	Unit	DF	Result
Fluoride	mg/L	1.00	ND
Sulfate	mg/L	1.00	ND
Nitrate as Nitrogen	mg/L	1.00	ND

Duplicate — Lab ID = 810741-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sulfate	mg/L	25.0	117	116	0.973	0 - 20

Duplicate — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	5.00	1.82	1.90	4.25	0 - 20
Nitrate as Nitrogen	mg/L	5.00	2.93	2.92	0.274	0 - 20

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	4.05	4.00	101	90 - 110
Sulfate	mg/L	1.00	19.8	20.0	99.0	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.95	4.00	98.7	90 - 110

Matrix Spike — Lab ID = 810741-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sulfate	mg/L	25.0	381	366(250)	106	85 - 115

Matrix Spike — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	5.00	22.3	21.9(20.0)	102	85 - 115
Nitrate as Nitrogen	mg/L	5.00	23.2	22.9(20.0)	101	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	4.09	4.00	102	90 - 110
Sulfate	mg/L	1.00	19.9	20.0	99.7	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.98	4.00	99.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.05	3.00	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.04	3.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.06	3.00	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.9	15.0	99.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.8	15.0	98.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.8	15.0	99.0	90 - 110

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.8	15.0	98.9	90 - 110
Nitrate as Nitrogen	mg/L	1.00	2.95	3.00	98.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	2.94	3.00	98.1	90 - 110

Nitrite SM 4500-NO2 B

Batch 11NO213C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Nitrite as Nitrogen	mg/L	11/07/2013 11:28	1.00	0.000630	0.0050	ND
810751-002 Nitrite as Nitrogen	mg/L	11/07/2013 11:29	1.00	0.000630	0.0050	ND

Method Blank

Parameter	Unit	DF	Result
Nitrite as Nitrogen	mg/L	1.00	ND

Duplicate — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0210	0.0230	91.3	90 - 110

Matrix Spike — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0232	0.0230(0.0230)	101	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0210	0.0230	91.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0188	0.0200	94.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0188	0.0200	94.0	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 11/21/2013

Alkalinity by SM 2320B

Batch 11ALK13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-002 Alkalinity as CaCO3	mg/L	11/06/2013	1.00	1.68	5.00	150
Bicarbonate (Calculated)	mg/L	11/06/2013	1.00	1.68	5.00	150
Carbonate (Calculated)	mg/L	11/06/2013	1.00	1.68	5.00	ND

Method Blank

Parameter	Unit	DF	Result
Alkalinity as CaCO3	mg/L	1.00	ND

Duplicate — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	150	150	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	98.0	100	98.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	98.0	100	98.0	90 - 110

Matrix Spike — Lab ID = 810750-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	302	313(100)	89.0	75 - 125

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Specific Conductivity - EPA 120.1

Batch 11EC13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Specific Conductivity	umhos/cm	11/06/2013	1.00	0.606	2.00	7520
810751-002 Specific Conductivity	umhos/cm	11/06/2013	1.00	0.606	2.00	7390

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7440	7390	0.674	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	702	706	99.4	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	700	706	99.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	917	1000	91.7	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 11CrH13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Chromium, Hexavalent	ug/L	11/06/2013 10:53	1.00	0.00600	0.20	0.24
810751-002 Chromium, Hexavalent	ug/L	11/06/2013 11:56	50.0	0.300	10.0	654

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 810750-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.15	5.23	1.56	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.211	0.200	106	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.84	5.00	96.9	90 - 110

Matrix Spike — Lab ID = 810750-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	15.2	15.2(10.0)	100	90 - 110

Matrix Spike — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.25	1.24(1.00)	101	90 - 110

Matrix Spike — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1360	1400(750)	94.3	90 - 110

Matrix Spike — Lab ID = 810752-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.03	1.00(1.00)	103	90 - 110

Matrix Spike — Lab ID = 810752-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.04	1.00(1.00)	104	90 - 110

Matrix Spike — Lab ID = 810752-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.998	1.00(1.00)	99.8	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 11/21/2013

Metals by EPA 200.7, Total

Batch 111113A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Boron	ug/L	11/11/2013 16:29	1.00	4.10	200	947
Iron	ug/L	11/11/2013 16:29	1.00	3.00	20.0	ND
810751-002 Boron	ug/L	11/11/2013 16:54	1.00	4.10	200	971
Iron	ug/L	11/11/2013 16:54	1.00	3.00	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND
Boron	ug/L	1.00	ND

Duplicate — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	ND	0	0	0 - 20
Boron	ug/L	1.00	977	947	3.12	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2130	2000	107	85 - 115
Boron	ug/L	1.00	2020	2000	101	85 - 115

Matrix Spike — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	1850	2000(2000)	92.6	75 - 125
Boron	ug/L	1.00	2800	2950(2000)	92.9	75 - 125

Matrix Spike Duplicate — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	1880	2000(2000)	94.2	75 - 125
Boron	ug/L	1.00	2810	2950(2000)	93.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5110	5000	102	95 - 105
Boron	ug/L	1.00	5100	5000	102	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5120	5000	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4970	5000	99.4	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.7, Total

Batch 111213A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Aluminum	ug/L	11/12/2013 13:16	1.00	7.20	20.0	ND
810751-002 Aluminum	ug/L	11/12/2013 13:41	1.00	7.20	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Aluminum	ug/L	1.00	ND

Duplicate — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Aluminum	ug/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1990	2000	99.7	85 - 115

Matrix Spike — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1780	2000(2000)	89.0	75 - 125

Matrix Spike Duplicate — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1780	2000(2000)	89.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5010	5000	100	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5020	5000	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4990	5000	99.8	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1880	2000	93.8	80 - 120

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1940	2000	97.2	80 - 120

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Metals by EPA 200.7, Total

Batch 111313A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Zinc	ug/L	11/13/2013 13:29	1.00	5.10	20.0	ND
810751-002 Zinc	ug/L	11/13/2013 13:54	1.00	5.10	20.0	51.0

Method Blank

Parameter	Unit	DF	Result
Zinc	ug/L	1.00	ND

Duplicate — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Zinc	ug/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	2080	2000	104	85 - 115

Matrix Spike — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Zinc	ug/L	1.00	2200	2000(2000)	110	75 - 125

Matrix Spike Duplicate — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Zinc	ug/L	1.00	2200	2000(2000)	110	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	5140	5000	103	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	5170	5000	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	5140	5000	103	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	ND	0		

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	ND	0		

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 110613B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Antimony	ug/L	11/07/2013 01:47	2.00	0.0700	2.0	ND
Arsenic	ug/L	11/07/2013 01:47	2.00	0.100	0.50	ND
Chromium	ug/L	11/07/2013 01:47	2.00	0.142	1.0	ND
Copper	ug/L	11/07/2013 01:47	2.00	0.380	5.0	ND
Lead	ug/L	11/07/2013 01:47	2.00	0.286	1.0	ND
Molybdenum	ug/L	11/07/2013 01:47	2.00	0.100	2.0	18.6
810751-002 Antimony	ug/L	11/07/2013 02:11	2.00	0.0700	2.0	ND
Arsenic	ug/L	11/07/2013 02:11	2.00	0.100	0.50	3.6
Chromium	ug/L	11/07/2013 02:17	10.0	0.710	2.0	610
Copper	ug/L	11/07/2013 02:11	2.00	0.380	5.0	ND
Lead	ug/L	11/07/2013 02:11	2.00	0.286	1.0	ND
Molybdenum	ug/L	11/07/2013 02:11	2.00	0.100	2.0	18.1

Method Blank

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Antimony	ug/L	1.00	ND
Copper	ug/L	1.00	ND
Lead	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

Duplicate

Lab ID = 810706-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	2.00	ND	0	0	0 - 20
Chromium	ug/L	2.00	ND	0	0	0 - 20
Antimony	ug/L	2.00	ND	0	0	0 - 20
Copper	ug/L	2.00	ND	0	0	0 - 20
Lead	ug/L	2.00	ND	0	0	0 - 20
Molybdenum	ug/L	2.00	ND	0	0	0 - 20

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.218	0.200	109	70 - 130
Chromium	ug/L	1.00	0.237	0.200	118	70 - 130
Antimony	ug/L	1.00	0.238	0.200	119	70 - 130
Copper	ug/L	1.00	0.868	1.00	86.8	70 - 130
Lead	ug/L	1.00	0.566	0.500	113	70 - 130
Molybdenum	ug/L	1.00	0.232	0.200	116	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	50.7	50.0	101	85 - 115
Chromium	ug/L	1.00	50.1	50.0	100	85 - 115
Antimony	ug/L	1.00	51.7	50.0	103	85 - 115
Copper	ug/L	1.00	50.8	50.0	102	85 - 115
Lead	ug/L	1.00	51.3	50.0	103	85 - 115
Molybdenum	ug/L	1.00	50.8	50.0	102	85 - 115

Matrix Spike — Lab ID = 810706-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.00	48.8	50.0(50.0)	97.7	75 - 125
Chromium	ug/L	2.00	47.5	50.0(50.0)	95.1	75 - 125
Antimony	ug/L	2.00	48.9	50.0(50.0)	97.9	75 - 125
Copper	ug/L	2.00	47.5	50.0(50.0)	95.0	75 - 125
Lead	ug/L	2.00	50.7	50.0(50.0)	101	75 - 125
Molybdenum	ug/L	2.00	48.9	50.0(50.0)	97.8	75 - 125

Matrix Spike Duplicate — Lab ID = 810706-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.00	48.2	50.0(50.0)	96.4	75 - 125
Chromium	ug/L	2.00	46.6	50.0(50.0)	93.2	75 - 125
Antimony	ug/L	2.00	49.2	50.0(50.0)	98.3	75 - 125
Copper	ug/L	2.00	47.6	50.0(50.0)	95.1	75 - 125
Lead	ug/L	2.00	51.1	50.0(50.0)	102	75 - 125
Molybdenum	ug/L	2.00	49.2	50.0(50.0)	98.4	75 - 125

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	ND	0		

Serial Dilution

Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	50.0	588	610	3.72	0 - 10

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 110713A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Barium	ug/L	11/07/2013 17:36	1.00	0.297	5.0	12.6
Manganese	ug/L	11/07/2013 17:36	1.00	0.0600	0.50	3.0
Nickel	ug/L	11/07/2013 17:36	1.00	0.240	2.0	ND
810751-002 Barium	ug/L	11/07/2013 17:42	1.00	0.297	5.0	29.2
Manganese	ug/L	11/07/2013 17:42	1.00	0.0600	0.50	4.8
Nickel	ug/L	11/07/2013 17:42	1.00	0.240	2.0	ND

Method Blank

Parameter	Unit	DF	Result
Barium	ug/L	1.00	ND
Nickel	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 810706-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	2.00	99.7	101	1.25	0 - 20
Nickel	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	2.03	2.00	102	70 - 130
Nickel	ug/L	1.00	2.36	2.00	118	70 - 130
Manganese	ug/L	1.00	0.588	0.500	118	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	2.00	49.4	50.0	98.9	85 - 115
Nickel	ug/L	2.00	54.9	50.0	110	85 - 115
Manganese	ug/L	2.00	50.4	50.0	101	85 - 115

Matrix Spike

Lab ID = 810706-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	2.00	149	151(50.0)	96.4	75 - 125
Nickel	ug/L	1.00	46.5	50.0(50.0)	93.0	75 - 125
Manganese	ug/L	1.00	50.6	50.0(50.0)	101	75 - 125

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Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	21.6	20.0	108	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.4	20.0	102	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	21.1	20.0	106	80 - 120

Serial Dilution — Lab ID = 810706-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	10.0	100	101	0.504	0 - 10

Reactive Silica by SM4500-Si D

Batch 11Si13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-002 Silica	mg/L	11/12/2013	25.0	0.252	1.00	20.1

Method Blank

Parameter	Unit	DF	Result
Silica	mg/L	1.00	ND

Duplicate — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Silica	mg/L	25.0	20.5	20.1	1.96	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.205	0.206	99.5	90 - 110

Matrix Spike — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Silica	mg/L	25.0	24.9	25.2(5.15)	93.6	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.205	0.206	99.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.390	0.400	97.4	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Total Dissolved Solids by SM 2540 C

Batch 11TDS13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Total Dissolved Solids	mg/L	11/06/2013	1.00	1.76	250	4430
810751-002 Total Dissolved Solids	mg/L	11/06/2013	1.00	1.76	250	4530

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate

Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4460	4530	1.56	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	498	500	99.6	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Total Organic Carbon (T/DOC) SM 5310 C

Batch 11TOC13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-002 Total Organic Carbon	mg/L	11/06/2013 14:30	1.00	0.0877	0.300	ND

Method Blank

Parameter	Unit	DF	Result
Total Organic Carbon	mg/L	1.00	ND

Duplicate — Lab ID = 810688-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Organic Carbon	mg/L	1.00	0.636	0.603	5.25	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.75	10.0	97.5	90 - 110

Matrix Spike — Lab ID = 810688-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.72	10.6(10.0)	90.9	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.7	10.0	107	85 - 115

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.34	10.0	93.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.22	10.0	92.2	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 11/21/2013

Total Phosphate, SM 4500-PB,E

Batch 11TP13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-002 Phosphate, Total As P	mg/L	11/13/2013	1.00	0.00460	0.0200	ND

Method Blank

Parameter	Unit	DF	Result
Phosphate, Total As P	mg/L	1.00	ND

Duplicate — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Phosphate, Total As P	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0664	0.0650	102	90 - 110

Matrix Spike — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0715	0.0650(0.0650)	110	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0664	0.0650	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0671	0.0660	102	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 11/21/2013

Ammonia Nitrogen by SM4500-NH3D

Batch 11NH313A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Ammonia as N	mg/L	11/08/2013	1.00	0.0318	0.500	ND
810751-002 Ammonia as N	mg/L	11/08/2013	1.00	0.0318	0.500	ND

Method Blank

Parameter	Unit	DF	Result
Ammonia as N	mg/L	1.00	ND

Duplicate — Lab ID = 810751-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Ammonia as N	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	11.0	10.0	110	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	10.7	10.0	107	90 - 110

Matrix Spike — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	9.39	10.0(10.0)	93.9	75 - 125

Matrix Spike Duplicate — Lab ID = 810751-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	9.76	10.0(10.0)	97.6	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.43	6.00	90.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.05	6.00	101	90 - 110

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Metals by EPA 200.8, Dissolved

Batch 111813A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-002 Manganese	ug/L	11/18/2013 14:17	2.00	0.120	0.50	4.1

Method Blank

Parameter	Unit	DF	Result
Manganese	ug/L	1.00	ND

Duplicate — Lab ID = 810752-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Manganese	ug/L	2.00	97.8	101	3.27	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	0.227	0.200	113	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	49.4	50.0	98.9	85 - 115

Matrix Spike — Lab ID = 810752-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.00	143	151(50.0)	84.4	75 - 125

Matrix Spike Duplicate — Lab ID = 810752-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.00	145	151(50.0)	87.3	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.4	20.0	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.4	20.0	97.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.6	20.0	97.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.0	20.0	99.8	90 - 110

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Metals by 200.7, Dissolved

Batch 111113A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-002 Iron	ug/L	11/11/2013 14:46	1.00	3.00	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate — Lab ID = 810750-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2130	2000	107	85 - 115

Matrix Spike — Lab ID = 810750-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	1950	2000(2000)	97.6	75 - 125

Matrix Spike Duplicate — Lab ID = 810750-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	1950	2000(2000)	97.6	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5110	5000	102	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4970	5000	99.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5020	5000	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5050	5000	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5120	5000	102	90 - 110

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Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2080	2000	104	80 - 120

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2100	2000	105	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2060	2000	103	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2090	2000	104	80 - 120

Turbidity by SM 2130 B

Batch 11TUC13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810751-001 Turbidity	NTU	11/05/2013	1.00	0.0140	0.100	ND
810751-002 Turbidity	NTU	11/05/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate

Lab ID = 810739-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.521	0.515	1.16	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.59	8.00	94.9	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.54	8.00	94.2	90 - 110

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Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 11TDS13A
Date Analyzed: 11/6/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	49.1142	49.1142	49.1142	0.0000	No	0.0000	0.0	25.0	ND	1
810692-1	100	77.7714	77.8216	77.8215	0.0001	No	0.0501	501.0	25.0	501.0	1
810692-2	100	66.694	66.7447	66.7444	0.0003	No	0.0504	504.0	25.0	504.0	1
810692-3	100	76.6639	76.7139	76.7137	0.0002	No	0.0498	498.0	25.0	498.0	1
810692-4	100	78.7874	78.8365	78.8364	0.0001	No	0.0490	490.0	25.0	490.0	1
810691-1	100	75.2663	75.3123	75.3122	0.0001	No	0.0459	459.0	25.0	459.0	1
810691-2	100	66.8805	66.9279	66.9274	0.0005	No	0.0469	469.0	25.0	469.0	1
810708	480	166.0017	166.0042	166.0042	0.0000	No	0.0025	5.2	5.2	ND	1
810716	200	108.7362	108.7511	108.7508	0.0003	No	0.0146	73.0	12.5	73.0	1
810733-1	100	68.1097	68.1577	68.1574	0.0003	No	0.0477	477.0	25.0	477.0	1
810733-2	100	67.033	67.0838	67.0837	0.0001	No	0.0507	507.0	25.0	507.0	1
810692-4D	100	78.9054	78.9544	78.9543	0.0001	No	0.0489	489.0	25.0	489.0	1
LCS	100	67.9690	68.0189	68.0188	0.0001	No	0.0498	498.0	25.0	498.0	1
810739	100	112.3548	112.3684	112.3684	0.0000	No	0.0136	136.0	25.0	136.0	1
810741-2	100	70.3863	70.399	70.399	0.0000	No	0.0127	127.0	25.0	127.0	1
810741-4	100	75.7482	75.7845	75.7845	0.0000	No	0.0363	363.0	25.0	363.0	1
810744-9	100	74.5951	74.6496	74.6496	0.0000	No	0.0545	545.0	25.0	545.0	1
810750-1	20	29.4836	29.5353	29.5351	0.0002	No	0.0515	2575.0	125.0	2575.0	1
810750-2	10	30.5212	30.5711	30.5711	0.0000	No	0.0499	4990.0	250.0	4990.0	1
810751-1	10	29.5841	29.6288	29.6284	0.0004	No	0.0443	4430.0	250.0	4430.0	1
810751-2	10	28.6681	28.7138	28.7134	0.0004	No	0.0453	4530.0	250.0	4530.0	1
810771-1	100	78.6045	78.6487	78.6487	0.0000	No	0.0442	442.0	25.0	442.0	1
810771-2	100	78.7944	78.8404	78.8404	0.0000	No	0.0460	460.0	25.0	460.0	1
810751-2D	10	30.3841	30.4287	30.4287	0.0000	No	0.0446	4460.0	250.0	4460.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\ 1\ 0^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	498	500	99.6%	90-110%	Yes
LCSD					

LCS Recovery

$P = \left(\frac{LC}{LT}\right) x\ 100$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
810692-4	0.049	0.0489	0.1%	≤5%	Yes
810751-2	0.0453	0.0446	0.8%	5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\ 100$$

$$where \quad C = \frac{A+B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

WetChem TDS 2012.xls

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 11TDS13A
Date Analyzed: 11/6/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
810692-1	793	0.63	515.45	0.97
810692-2	804	0.63	522.6	0.96
810692-3	801	0.62	520.65	0.96
810692-4	800	0.61	520	0.94
810691-1	822	0.56	534.3	0.86
810691-2	751	0.62	488.15	0.96
810708	150	ND	97.5	ND
810716	112	0.65	72.8	1.00
810733-1	760	0.63	494	0.97
810733-2	725	0.70	471.25	1.08
810692-4D	800	0.61	520	0.94
LCS				
810739	201	0.68	130.65	1.04
810741-2	222	0.57	144.3	0.88
810741-4	628	0.58	408.2	0.89
810744-9	881	0.62	572.65	0.95
810750-1	4160	0.62	2704	0.95
810750-2	7550	0.66	4907.5	1.02
810751-1	7520	0.59	4888	0.91
810751-2	7390	0.61	4803.5	0.94
810771-1	716	0.62	465.4	0.95
810771-2	703	0.65	456.95	1.01
810751-2D	7390	0.60	4803.5	0.93

TRUESDAIL LABORATORIES, INC.

Alkalinity by SM 2320B
Calculations

Analytical Batch: 11ALK13B
Matrix: WATER
Date of Analysis: 11/6/13

Lab ID	Sample pH	Sample Volume (ml)	N of HCL	Titrant Volume to reach pH 8.3	P Alkalinity as CaCO3	Titrant Volume to reach pH 4.5	Total mL titrant to reach pH 0.3 unit lower	Total Alkalinity as CaCO3	RL, ppm	Total Alkalinity Reported Value	HCO3 Conc. as $CaCO_3$ (ppm)	CO3 Alkalinity as $CaCO_3$ (ppm)	OH Alkalinity as $CaCO_3$ (ppm)	Low Alkalinity as $CaCO_3$ (<20ppm)
BLANK	5.30	50	0.02		0.0	0.00		0.0	5	ND	ND	ND	ND	
810717-17	8.22	50	0.02		0.0	5.85		117.0	5	117.0	117.0	ND	ND	
810717-21	8.04	50	0.02		0.0	5.80		116.0	5	116.0	116.0	ND	ND	
810739	8.25	50	0.02		0.0	4.75		95.0	5	95.0	95.0	ND	ND	
810750-1	7.84	50	0.02		0.0	10.65		213.0	5	213.0	213.0	ND	ND	
810750-2	7.76	50	0.02		0.0	6.65		133.0	5	133.0	133.0	ND	ND	
810751-2	7.60	50	0.02		0.0	7.50		150.0	5	150.0	150.0	ND	ND	
810751-2 DUP	7.60	50	0.02		0.0	7.50		150.0	5	150.0	150.0	ND	ND	
LCS	10.34	50	0.02	2.1	42.0	4.90		98.0	5	98.0	14.0	84	ND	
LCSD	10.28	50	0.02	2.1	41.0	4.90		98.0	5	98.0	16.0	82	ND	
810750-1 MS	9.02	50	0.02		0.0	15.10		302.0	5	302.0	302.0	0	ND	

Calculations as follows:

T or P = $\left(\frac{A \times N \times 50000}{mL\ sample}\right)$

Where:
T = Total Alkalinity, mg CaCO3/L
P = Phenolphthalein Alkalinity, mg CaCO3/L
A = mL standard acid used
N = normality of standard acid

Low Alkalinity: as mg/L CaCO3 = $\frac{(2 \times B - C) \times N \times 50000}{\text{mL sample}}$

Where:
B = mL titrant to first recorded pH
C = Total mL titrant to reach pH 0.3 unit lower
N = Normality of standard acid

LCS = Laboratory Control Standard/Duplicate
MS/MSD = Matrix Spike/Duplicate
ND = Not Detected (below the reporting limit)

Blank Summary

Reporting Limit, RL	Measured Value, ppm	Accept Limit	QC Within Control?
5 ppm	0	<5	Yes

Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	% Recovery	Accetance Limit	QC Within Control?
LCS	98	100	98.0%	90-110	Yes
LCSD	98	100	98.0%	90-110	Yes

Duplicate Determination Difference Summary

Lab Number I.D.	Measured Value, ppm	Dup Value, ppm	RPD	Accetance Limit	QC Within Control?
810751-2	150	150	0.0%	20%	Yes

Sample Matrix Spike (MS/MSD) Summary

Lab Number	Conc of Unspk spl	Dil Factor	Added Spk Conc	MS/MSD Amt	Measrd Conc of Spk Spl	Theor Conc of Spk Spl	MS/MSD % Rec	MS Accept Limit	QC Within Control?	RPD	RPD Accept Limit	QC Within Control?
810750-1	213	1	100	100	302	313.00	89%	75-125	Yes			
				0								

Himani
Analyst Printed Name

Analyst Signature

Maksim Gorbunov
Reviewer Printed Name

Reviewer Signature

110613b

064

3

810751

Rec'd 11/5/13

TRUESDAIL LABORATORIES, INC.
14201 Franklin Avenue, Tustin, CA 92780-7008
(714)730-6239 FAX: (714) 730-6462
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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-439]

COC Number ~~S3b~~ 810751

TURNAROUND TIME 10 Days

DATE 11/05/13 PAGE 1 OF 1

COMPANY: CH2M HILL /E2

PROJECT NAME: PG&E Topock IM3

PHONE: 530-229-3303 FAX: 530-339-3303

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 428648.IM.CS.LB

SAMPLERS (SIGNATURE): Chris Lo

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr(VI) (218.6) Lab Filtered	Alkalinity (2320-B)	EC (120.1)	TDS (2540 c)	Turb (2130)	Total Metals (200.7) See List Below	Ammonia (4500-NH3)	Total P (4500-P)	Anions (300.0) F, NO3, SO4	TOC (5310 C)	Dissolved Metals (200.7) Fe, Mn lab filtered	Soluable Silica - Reactive (4500-Si CorD)	NO2 (4500-NO2B)		NUMBER OF CONTAINERS	COMMENTS
-1 SC-700B-WDR-439	11/05/13	14:00		X		X	X	X	X	X		X				X			
-2 SC-100B-WDR-439	11/05/13	14:00		X	X	X	X	X	X	X	X	X	X	X	X	X			pm-6 (200.7)
																		TOTAL NUMBER OF CONTAINERS	13

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/Agency	Date/Time
Signature (Relinquished)	Chris Lo	CHRIS LOW	CH2M HILL	11-5-13 15:05
Signature (Received)	Thanh Ngo	THANH	TRUEDAIL	11-5-13 1605
Signature (Relinquished)	Thanh Ngo		11-5-13	11-5-13 1940
Signature (Received)	Marchel Brady	Marchel Brady	TLI	11/5/13 1940
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☒ WARM ☐ 5.3 °C

CUSTODY SEALED YES ☐ NO ☒

SPECIAL REQUIREMENTS:

The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

164

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
10/19/13	810527-5	9.5	N/A	N/A	N/A	NE
	-6					
	810528-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
10/23/13	810578	7.00	2ml / 100ml	9.5	8:00	NE
10/29/13	810679	7.00	2ml / 100ml	9.5	7:30	NE
10/29/13	810683-1	7.00	2ml / 100ml	9.5	12:00	NE
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
11/5/13	810739	7.00	2ml / 100 ml	9.5	16:00	NE
11/6/13	810750-1	7.00	2ml / 100ml	9.5	7:30	NE
	-2					
	810751-1					
	-2					
	810752-1	9.5	N/A	N/A	N/A	NE
	-2					
	-3					
	-4					
	-5					
	-6					

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810710-1-10	TTLC		11/11/13	DC	Yes			SOLID
810689	TCLP		↓	DC	↓			SLUDGE
810683 (1-8)	PLANT		11/1/13	ES	yes			
810723	>1	<2	11/4/13	DC	yes			
810724	<1	↓	↓	↓	↓			
810706 (1-3)	<1	<2	11/6/13	ES	yes			
810750 (1-2)	<1	>2				10:00		Filtered then acidify
810751-2		↓				↓		↓
810751 (1-2)		~~>~~2				10:00		TOTAL
810752 (4-11)	↓	<2	↓	↓	↓			
810321 (1-5)	<1	>2	11/6/13	ES	yes	10:00		Filtered then acidify
810745	<1	<2	11/6/13	DC	yes			
810730	↓							
810733-1,2	>1							
810756	<1							
810757								
810758								
810759								
810760	↓	↓	↓	↓	↓			
810739	<1	>2	11/6/13	DC	NO	15:30		
810741-1,2,4	↓	↓	↓	↓	↓	↓		
810736-6	↓	↓	↓	↓	↓			
810779 (1-2)	<1	<2	11/7/13	ES	yes			
810760 (1-5)	↓	↓	↓	↓	↓			TID
810776	>1	<2	11/8/13	DC	yes			
810777	>1	<2						
810784	<1	<2						
810771-1,2	>1	<2	↓	↓	↓			
810772-1-6	<1	<2			NO			
810766-4,5,6	<1	>2				11:40		
810773-10,11,12								
810793								
810807-24	↓	↓	↓	↓	↓	↓		
810815	<1	>2	11/11/13	DC	NO	10:40		
810818	<1	<2	↓	↓	yes			
810792-1-5	TTLC		11/11/13	DC	yes			SOLID
810828	<1	<2	11/12/13	DC	yes			
810827								
810837	↓	↓	↓	↓	↓			

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810751

Date Delivered: 11 / 5 / 13 **Time:** 1940 **By:** ☐ Mail ☐ Field Service ☒ Client

1. Was a Chain of Custody received and signed? ☒ Yes ☐ No ☐ N/A
2. Does Customer require an acknowledgement of the COC? ☒ Yes ☐ No ☐ N/A
3. Are there any special requirements or notes on the COC? ☒ Yes ☐ No ☐ N/A
4. If a letter was sent with the COC, does it match the COC? ☐ Yes ☐ No ☒ N/A
5. Were all requested analyses understood and acceptable? ☒ Yes ☐ No ☐ N/A
6. Were samples received in a chilled condition? ☒ Yes ☐ No ☐ N/A
   Temperature (if yes)? 5.3 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒ Yes ☐ No ☐ N/A
8. Were sample custody seals intact? ☐ Yes ☐ No ☒ N/A
9. Does the number of samples received agree with COC? ☒ Yes ☐ No ☐ N/A
10. Did sample labels correspond with the client ID's? ☒ Yes ☐ No ☐ N/A
11. Did sample labels indicate proper preservation? ☒ Yes ☐ No ☐ N/A
    Preserved (if yes) by: ☒ **Truesdail** ☐ Client
12. Were samples pH checked? pH = See COC ☒ Yes ☐ No ☐ N/A
13. Were all analyses within holding time at time of receipt? ☒ Yes ☐ No ☐ N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒ Yes ☐ No ☐ N/A
    Turn Around Time (TAT): ☐ **RUSH** ☒ Std
15. **Sample Matrix:** ☐ Liquid ☐ Drinking Water ☒ Ground Water ☐ Waste Water
    ☐ Sludge ☐ Soil ☐ Wipe ☐ Paint ☐ Solid ☐ Other _____
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Marchea Brady

ALERT
Level III

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

November 26, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-440 PROJECT, GROUNDWATER MONITORING, TLI NO.: 810858

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-440 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on November 12, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 810858
Date: November 26, 2013
Collected: November 12, 2013
Received: November 12, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Himani Vaishnav
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Felipe Mendoza

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 810858
Date Received: November 12, 2013

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810858-001	SC-700B-WDR-440	E120.1	NONE	11/12/2013	12:30	EC	6920	umhos/cm	2.00
810858-001	SC-700B-WDR-440	E200.8	NONE	11/12/2013	12:30	Chromium	ND	ug/L	1.0
810858-001	SC-700B-WDR-440	E200.8	NONE	11/12/2013	12:30	Manganese	2.0	ug/L	0.50
810858-001	SC-700B-WDR-440	E218.6	LABFLT	11/12/2013	12:30	Chromium, Hexavalent	0.24	ug/L	0.20
810858-001	SC-700B-WDR-440	SM2130B	NONE	11/12/2013	12:30	Turbidity	ND	NTU	0.100
810858-001	SC-700B-WDR-440	SM2540C	NONE	11/12/2013	12:30	Total Dissolved Solids	4480	mg/L	125

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 810858

Printed 11/26/2013

Samples Received on 11/12/2013 8:05:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-440	810858-001	11/12/2013 12:30	Water

Specific Conductivity - EPA 120.1 Batch 11EC13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810858-001 Specific Conductivity	umhos/cm	11/14/2013	1.00	0.606	2.00	6920

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810879-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	803	798	0.625	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	741	706	105	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	750	706	106	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	950	1000	95.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	951	1000	95.1	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 11CrH13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810858-001 Chromium, Hexavalent	ug/L	11/14/2013 16:36	1.00	0.00600	0.20	0.24

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 810861-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.433	0.469	8.05	0 - 20

Duplicate — Lab ID = 810861-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	12.2	12.3	0.505	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.194	0.200	96.8	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.89	5.00	97.8	90 - 110

Matrix Spike — Lab ID = 810858-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.26	1.24(1.00)	102	90 - 110

Matrix Spike — Lab ID = 810861-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.71	5.00(5.00)	94.2	90 - 110

Matrix Spike — Lab ID = 810861-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.978	1.00(1.00)	97.8	90 - 110

Matrix Spike — Lab ID = 810861-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.35	5.47(5.00)	97.6	90 - 110

Matrix Spike — Lab ID = 810861-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.07	1.45(1.00)	62.1	90 - 110

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 111313B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810858-001 Chromium	ug/L	11/13/2013 20:49	1.00	0.0710	1.0	ND
Manganese	ug/L	11/13/2013 20:49	1.00	0.0600	0.50	2.0

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Uranium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate — Lab ID = 810811-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Uranium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	0.515	0.478	7.45	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.224	0.200	112	70 - 130
Uranium	ug/L	1.00	0.183	0.200	91.5	70 - 130
Manganese	ug/L	1.00	0.238	0.200	119	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	46.1	50.0	92.2	85 - 115
Uranium	ug/L	1.00	48.9	50.0	97.8	85 - 115
Manganese	ug/L	1.00	47.2	50.0	94.4	85 - 115

Matrix Spike — Lab ID = 810811-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	45.6	50.0(50.0)	91.2	75 - 125
Uranium	ug/L	1.00	48.8	50.0(50.0)	97.5	75 - 125
Manganese	ug/L	1.00	46.4	50.5(50.0)	91.8	75 - 125

Matrix Spike Duplicate — Lab ID = 810811-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	46.4	50.0(50.0)	92.7	75 - 125
Uranium	ug/L	1.00	49.5	50.0(50.0)	99.0	75 - 125
Manganese	ug/L	1.00	47.1	50.5(50.0)	93.2	75 - 125

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Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.6	20.0	93.1	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.0	20.0	94.8	80 - 120
Uranium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Uranium	ug/L	1.00	ND	0		
Manganese	ug/L	1.00	19.0	20.0	94.9	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.2	20.0	96.0	80 - 120

Serial Dilution — Lab ID = 810811-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Uranium	ug/L	10.0	27.0	26.6	1.64	0 - 10

Total Dissolved Solids by SM 2540 C

Batch 11TDS13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810858-001 Total Dissolved Solids	mg/L	11/14/2013	1.00	1.76	125	4480

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 810881-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	441	442	0.226	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	481	500	96.2	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 11/26/2013

Turbidity by SM 2130 B

Batch 11TUC13J

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810858-001 Turbidity	NTU	11/13/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate

Lab ID = 810848-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.102	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.21	8.00	103	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.90	8.00	98.8	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 11TDS13C
Date Analyzed: 11/14/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	49.4908	49.4910	49.4910	0.0000	No	0.0002	2.0	25.0	ND	1
810823-1	100	78.2421	78.2924	78.2924	0.0000	No	0.0503	503.0	25.0	503.0	1
810823-2	100	75.4066	75.4535	75.4535	0.0000	No	0.0469	469.0	25.0	469.0	1
810835-1	500	174.7950	174.7970	174.7970	0.0000	No	0.0020	4.0	5.0	ND	1
810835-2	500	158.8764	158.8789	158.8789	0.0000	No	0.0025	5.0	5.0	ND	1
810850-1	50	51.9234	51.9801	51.9799	0.0002	No	0.0565	1130.0	50.0	1130.0	1
810850-2	50	51.8311	51.8583	51.8579	0.0004	No	0.0268	536.0	50.0	536.0	1
810850-3	50	47.8404	47.8973	47.8969	0.0004	No	0.0565	1130.0	50.0	1130.0	1
810850-4	50	49.2692	49.3034	49.3033	0.0001	No	0.0341	682.0	50.0	682.0	1
810850-5	50	47.4801	47.5142	47.5138	0.0004	No	0.0337	674.0	50.0	674.0	1
810850-6	50	51.6420	51.6703	51.6703	0.0000	No	0.0283	566.0	50.0	566.0	1
810850-6D	50	49.5733	49.6018	49.6016	0.0002	No	0.0283	566.0	50.0	566.0	1
LCS	100	75.0107	75.059	75.0588	0.0002	No	0.0481	481.0	25.0	481.0	1
810850-7	50	51.0473	51.0954	51.0953	0.0001	No	0.0480	960.0	50.0	960.0	1
810850-8	50	52.0554	52.1148	52.1147	0.0001	No	0.0593	1186.0	50.0	1186.0	1
810850-9	50	50.6209	50.6782	50.678	0.0002	No	0.0571	1142.0	50.0	1142.0	1
810850-10	50	51.2241	51.2742	51.2738	0.0004	No	0.0497	994.0	50.0	994.0	1
810858	20	29.3780	29.4676	29.4675	0.0001	No	0.0895	4475.0	125.0	4475.0	1
810881-1	100	76.2529	76.2979	76.2976	0.0003	No	0.0447	447.0	25.0	447.0	1
810881-2	100	76.2730	76.3174	76.317	0.0004	No	0.0440	440.0	25.0	440.0	1
810881-3	100	73.4341	73.4795	73.4791	0.0004	No	0.0450	450.0	25.0	450.0	1
810881-4	100	75.2701	75.3143	75.3143	0.0000	No	0.0442	442.0	25.0	442.0	1
810881-4D	100	74.7345	74.7786	74.7786	0.0000	No	0.0441	441.0	25.0	441.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\, 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	481	500	96.2%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\, 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
810850-6	0.0283	0.0283	0.0%	≤5%	Yes
810881-4	0.0442	0.0441	0.1%	5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\, 100$$

$$where \quad C = \frac{A+B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 11TDS13C
Date Analyzed: 11/14/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
810823-1	788	0.64	512.2	0.98
810823-2	718	0.65	466.7	1.00
810835-1	11.5	ND	7.475	ND
810835-2	12.6	ND	8.19	ND
810850-1	1558	0.73	1012.7	1.12
810850-2	918	0.58	596.7	0.90
810850-3	1550	0.73	1007.5	1.12
810850-4	1050	0.65	682.5	1.00
810850-5	1088	0.62	707.2	0.95
810850-6	920	0.62	598	0.95
810850-6D	920	0.62	598	0.95
LCS				
810850-7	1300	0.74	845	1.14
810850-8	1600	0.74	1040	1.14
810850-9	1540	0.74	1001	1.14
810850-10	1384	0.72	899.6	1.10
810858	6920	0.65	4498	0.99
810881-1	798	0.56	518.7	0.86
810881-2	782	0.56	508.3	0.87
810881-3	805	0.56	523.25	0.86
810881-4	762	0.58	495.3	0.89
810881-4D	762	0.58	495.3	0.89

810858

Rec'd 11/12/13

TRUESDAIL LABORATORIES, INC.
14201 Franklin Avenue, Tustin, CA 92780-7008
(714)730-6239 FAX: (714) 730-6462
www.truesdail.com

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-440]

COC Number S810858

TURNAROUND TIME 10 Days

DATE 11/12/13 PAGE 1 OF 1

COMPANY: E2

PROJECT NAME: PG&E Topock

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

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 428648.IM.CS.EX.AC TEAM: 1

SAMPLERS (SIGNATURE): Chris Lear

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-440	11/12/13	12:30	Water	x	x	x	x		x								3	pH 7 (200.7)
																	3	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Chris Lear	CHRIS LEAR	CH2M HILL	11-12-13 15:15
Signature (Received)	Thanh Ngo	THANH NGO	TRUESDAIL	11-12-13 1515
Signature (Relinquished)	Thanh Ngo			11-12-13 200
Signature (Received)	[illegible]	MARCHELL BRADY	TLI	11/12/13 2005
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 4.8°C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

041

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
11/6/13	810752-7	9.5	N/A	N/A	N/A	NE
	-8					
	-9					
	-10					
	-11					
	810779-1	9.5	N/A	N/A	N/A	NE
	-2					
	810780-1					
	-2					
	-3					
	-4					
	-5					
11/13/13	810858	7.0	2ml/100ml	9.5	7:30am	[illegible]
	810859-1	9.5	N/A	N/A	N/A	[illegible]
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	810860-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					

[illegible] NE 11/18/13

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810710-1-10	TTLC		11/1/13	DC	Yes			SOLID
810689	TCLP		↓	DC	↓			SLUDGE
810683 (1-8)	PLANT		11/1/13	ES	yes			
810723	>1	<2	11/4/13	DC	yes			
810724	<1	↓	↓	↓	↓			
810706 (1-3)	<1	<2	11/6/13	ES	yes			
810750 (1-2)	<1	>2				10:00		Filtered then acidify
810751-2		↓				↓		↓
810751 (1-2)		~~>~~2				10:00		TOTAL
810752 (4-11)	↓	<2	↓	↓	↓			
810321 (1-5)	<1	>2	11/6/13	ES	yes	10:00		Filtered then acidifying
810745	<1	<2	11/6/13	DC	yes			
810730	↓							
810733-1,2	>1							
810756	<1							
810757								
810758								
810759								
810760	↓	↓	↓	↓	↓			
810739	<1	>2	11/6/13	DC	NO	15:30		
810741-1,2,4	↓	↓	↓	↓	↓	↓		
810736-6	↓	↓	↓	↓	↓	↓		
810779 (1-2)	<1	<2	11/7/13	ES	yes			
810780 (1-5)	↓	↓	↓	↓	↓			TID
810776	>1	<2	11/8/13	DC	yes			
810777	>1	<2						
810784	<1	<2						
810771-1,2	>1	<2	↓	↓	↓			
810772-1-76	<1	<2			NO			
810766-4,5,6	<1	>2				11:40		
810773-10,11,12								
810793								
810807-24	↓	↓	↓	↓	↓	↓		
810815	<1	>2	11/11/13	DC	NO	10:40		
810818	<1	<2	↓	↓	yes			
810792-1-75	TTLC		11/11/13	DC	yes			SOLID
810828	<1	<2	11/12/13	DC	yes			
810827								
810837	↓	↓	↓	↓	↓			
810811 (1-5)	<1	<2	11/13/13	ES	yes			
810858		>2				10:00		pH <2
810859 (1-7)		<2						
810860 (1-5,9-12)	↓	↓	↓	↓	↓			
810901	<1	<2	11/14/13	ES	yes			

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810858

Date Delivered: 11/12/13 **Time:** 20:05 **By:** ☐Mail ☐Field Service ☒Client

1. Was a Chain of Custody received and signed? ☒Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☒No ☐N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☒No ☐N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☒N/A
5. Were all requested analyses understood and acceptable? ☒Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☒Yes ☐No ☐N/A
   Temperature (if yes)? 4.8 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒Yes ☐No ☐N/A
   ALERT !! Level III QC
8. Were sample custody seals intact? ☐Yes ☐No ☒N/A
9. Does the number of samples received agree with COC? ☒Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☒Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☐Yes ☐No ☒N/A
    Preserved (if yes) by: ☐**Truesdail** ☐Client
12. Were samples pH checked? pH = see code ☒Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☒Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ **RUSH** ☒ Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

December 3, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-441 PROJECT, GROUNDWATER MONITORING, TLI NO.: 810984

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-441 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on November 19, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 810984
Date: December 3, 2013
Collected: November 19, 2013
Received: November 19, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Himani Vaishnav
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 810984
Date Received: November 19, 2013

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810984-001	SC-700B-WDR-441	E120.1	NONE	11/19/2013	11:45	EC	6520	umhos/cm	2.00
810984-001	SC-700B-WDR-441	E200.8	NONE	11/19/2013	11:45	Chromium	ND	ug/L	1.0
810984-001	SC-700B-WDR-441	E200.8	NONE	11/19/2013	11:45	Manganese	0.76	ug/L	0.50
810984-001	SC-700B-WDR-441	E218.6	LABFLT	11/19/2013	11:45	Chromium, Hexavalent	ND	ug/L	0.20
810984-001	SC-700B-WDR-441	SM2130B	NONE	11/19/2013	11:45	Turbidity	0.136	NTU	0.100
810984-001	SC-700B-WDR-441	SM2540C	NONE	11/19/2013	11:45	Total Dissolved Solids	4370	mg/L	125

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 810984

Printed 12/3/2013

Samples Received on 11/19/2013 7:40:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-441	810984-001	11/19/2013 11:45	Water

Specific Conductivity - EPA 120.1 Batch 11EC13F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810984-001 Specific Conductivity	umhos/cm	11/20/2013	1.00	0.606	2.00	6520

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810948-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	42200	42300	0.237	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	714	706	101	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	717	706	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1010	1000	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1070	1000	107	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 11CrH13I

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810984-001 Chromium, Hexavalent	ug/L	11/20/2013 11:31	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 810986-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	20.4	20.5	0.688	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.196	0.200	98.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.93	5.00	98.7	90 - 110

Matrix Spike — Lab ID = 810984-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.14	1.12(1.00)	103	90 - 110

Matrix Spike — Lab ID = 810986-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	43.4	45.5(25.0)	91.6	90 - 110

Matrix Spike — Lab ID = 810986-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	78.5	79.9(50.0)	97.1	90 - 110

Matrix Spike — Lab ID = 810986-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.993	1.00(1.00)	99.3	90 - 110

Matrix Spike — Lab ID = 810986-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.03	1.00(1.00)	103	90 - 110

Matrix Spike — Lab ID = 810986-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.03	1.00(1.00)	103	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 12/3/2013

Metals by EPA 200.8, Total

Batch 112113B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810984-001 Chromium	ug/L	11/21/2013 22:30	2.00	0.142	1.0	ND
Manganese	ug/L	11/21/2013 22:30	2.00	0.120	0.50	0.76

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Uranium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate — Lab ID = 810950-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	ND	0	0	0 - 20
Uranium	ug/L	2.00	2.90	2.90	0.0689	0 - 20
Manganese	ug/L	2.00	8.38	8.35	0.406	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.213	0.200	106	70 - 130
Uranium	ug/L	1.00	0.199	0.200	99.5	70 - 130
Manganese	ug/L	1.00	0.220	0.200	110	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.4	50.0	101	85 - 115
Uranium	ug/L	1.00	51.7	50.0	103	85 - 115
Manganese	ug/L	1.00	50.4	50.0	101	85 - 115

Matrix Spike — Lab ID = 810950-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	48.1	50.0(50.0)	96.3	75 - 125
Uranium	ug/L	2.00	54.1	52.9(50.0)	102	75 - 125
Manganese	ug/L	2.00	57.0	58.4(50.0)	97.2	75 - 125

Matrix Spike Duplicate — Lab ID = 810950-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	46.5	50.0(50.0)	93.0	75 - 125
Uranium	ug/L	2.00	52.3	52.9(50.0)	98.8	75 - 125
Manganese	ug/L	2.00	55.5	58.4(50.0)	94.2	75 - 125

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Serial Dilution — Lab ID = 811016-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Uranium	ug/L	10.0	26.2	25.2	3.81	0 - 10

Total Dissolved Solids by SM 2540 C

Batch 11TDS13D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810984-001 Total Dissolved Solids	mg/L	11/20/2013	1.00	1.76	125	4370

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 810948-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	29900	30000	0.334	0 - 10

Duplicate — Lab ID = 810984-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4340	4370	0.689	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	489	500	97.8	90 - 110

Turbidity by SM 2130 B

Batch 11TUC13N

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810984-001 Turbidity	NTU	11/20/2013	1.00	0.0140	0.100	0.136

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 810952-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.129	0.124	3.95	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.80	8.00	97.5	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.92	8.00	99.0	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 11TDS13D
Date Analyzed: 11/20/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	75.7541	75.7548	75.7548	0.0000	No	0.0007	7.0	25.0	ND	1
810879-1	100	69.4805	69.5274	69.5273	0.0001	No	0.0468	468.0	25.0	468.0	1
810879-2	100	70.8778	70.9267	70.9266	0.0001	No	0.0488	488.0	25.0	488.0	1
810948	2	30.2458	30.3059	30.3059	0.0000	No	0.0601	30050.0	1250.0	30050.0	1
810892-1	50	79.1514	79.1861	79.1858	0.0003	No	0.0344	688.0	50.0	688.0	1
810892-2	50	74.5125	74.5390	74.5386	0.0004	No	0.0261	522.0	50.0	522.0	1
810892-3	50	79.2587	79.2867	79.2867	0.0000	No	0.0280	560.0	50.0	560.0	1
810892-4	50	76.7874	76.8180	76.8179	0.0001	No	0.0305	610.0	50.0	610.0	1
810893-2	100	69.2222	69.2369	69.2368	0.0001	No	0.0146	146.0	25.0	146.0	1
810893-4	100	76.1754	76.2149	76.2149	0.0000	No	0.0395	395.0	25.0	395.0	1
810939-1	100	72.4848	72.5281	72.528	0.0001	No	0.0432	432.0	25.0	432.0	1
810948D	2	28.8147	28.8745	28.8745	0.0000	No	0.0598	29900.0	1250.0	29900.0	1
LCS	100	75.6085	75.6574	75.6574	0.0000	No	0.0489	489.0	25.0	489.0	1
810939-2	100	67.8128	67.86	67.8599	0.0001	No	0.0471	471.0	25.0	471.0	1
810963-2	100	71.9585	71.9727	71.9726	0.0001	No	0.0141	141.0	25.0	141.0	1
810963-4	100	77.4952	77.535	77.5347	0.0003	No	0.0395	395.0	25.0	395.0	1
810984	20	29.2236	29.3111	29.3110	0.0001	No	0.0874	4370.0	125.0	4370.0	1
810993-1	100	77.0684	77.1176	77.1175	0.0001	No	0.0491	491.0	25.0	491.0	1
810993-2	100	76.8059	76.8568	76.8566	0.0002	No	0.0507	507.0	25.0	507.0	1
810993-3	100	74.6948	74.7444	74.7443	0.0001	No	0.0495	495.0	25.0	495.0	1
810993-4	100	76.0250	76.0747	76.0743	0.0004	No	0.0493	493.0	25.0	493.0	1
810997-1	100	78.3898	78.432	78.4319	0.0001	No	0.0421	421.0	25.0	421.0	1
810997-2	100	69.1956	69.2406	69.2406	0.0000	No	0.0450	450.0	25.0	450.0	1
810984D	20	30.3392	30.4261	30.426	0.0001	No	0.0868	4340.0	125.0	4340.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\ 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	489	500	97.8%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\ 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
810948	0.0601	0.0598	0.3%	≤5%	Yes
810984	0.0874	0.0868	0.3%	5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\ 100$$

$$where \quad C = \frac{A+B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

WetChem TDS_2012.xls

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 11TDS13D
Date Analyzed: 11/20/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
810879-1	845	0.55	549.25	0.85
810879-2	798	0.61	518.7	0.94
810948	42300	0.71	27495	1.09
810892-1	1128	0.61	733.2	0.94
810892-2	884	0.59	574.6	0.91
810892-3	906	0.62	588.9	0.95
810892-4	983	0.62	638.95	0.95
810893-2	251	0.58	163.15	0.89
810893-4	643	0.61	417.95	0.95
810939-1	785	0.55	510.25	0.85
810948D	42300	0.71	27495	1.09
LCS				
810939-2	774	0.61	503.1	0.94
810963-2	249	0.57	161.85	0.87
810963-4	641	0.62	416.65	0.95
810984	6520	0.67	4238	1.03
810993-1	815	0.60	529.75	0.93
810993-2	803	0.63	521.95	0.97
810993-3	806	0.61	523.9	0.94
810993-4	826	0.60	536.9	0.92
810997-1	698	0.60	453.7	0.93
810997-2	696	0.65	452.4	0.99
810984D	6520	0.67	4238	1.02

810984

TRUESDAIL LABORATORIES, INC.
14201 Franklin Avenue, Tustin, CA 92780-7008
(714)730-6239 FAX: (714) 730-6462
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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-441]

Rec'd 11/19/13

COC Number S810984

TURNAROUND TIME 10 Days

DATE 11/19/13 PAGE 1 OF 1

COMPANY: E2

PROJECT NAME: PG&E Topock

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

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 428648.IM.CS.EX.AC TEAM: 1

SAMPLERS (SIGNATURE): Chris Lee

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)								NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-441	11/19/13	11:45	Water	X	X	X	X		X							3	pH=6 (200.7)
																3	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Chris Lee	CHRIS LEE	CH2M HILL	11-19-13 15:00
Signature (Received)	Thanh Ngo	THANH NGO	TRUESDAIL	11-19-13 1500
Signature (Relinquished)	Thanh Ngo	THANH NGO	TLI	11-19-13 1940
Signature (Received)	[illegible]	Marchel Bady	TLI	11/19/13 1940
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☒ WARM ☐ 23°C

CUSTODY SEALED YES ☐ NO ☒

SPECIAL REQUIREMENTS:

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
11/20/13	810984	7.00	2ml/100ml	9.5	7:30	NE
	810985-1	9.5	N/A	N/A	N/A	
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	810986-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
11/20/13	810969	9.5	N/A	N/A	N/A	NE
11/21/13	811005-1	9.5	N/A	N/A	N/A	EM
	-2					
	-3					

NE
11/21/13

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log

TRUESDAIL LABORATORIES, INC.
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
810823(1-2)	>1	<2	11/14/13	ES	Yes			
810838	<1	↓	↓	↓	↓			
810841	↓	↓	↓	↓	↓			
810846		↓	↓	↓	↓			
810847		↓	↓	↓	↓			
810857		>2	↓	↓	NO	11:00		
810869		<2	↓	↓	↓			
810870		↓	↓	↓	↓			
810872		↓	↓	↓	↓			
810879		↓	↓	↓	↓			
810891 (1-3)		>2	↓	↓	NO	11:00		
810892 (1-4)		↓	↓	↓	↓	↓		
810893 (1-2,4)		↓	↓	↓	↓	↓		
810896	↓	<2	↓	↓	↓			
810902-1→3	<1	<2 ~~>2~~ DC	11/14/13	DC	NO			
810861 (1-6,10-11)	<1	<2	11/14/13	ES	Yes			
810862 (1-5,8-16)	↓	↓ ES 11/15/13	↓	↓	↓			
810915	<1	~~>2~~ >2	11/15/13	ES	NO	2:00		
810916	↓	ES 11/15/13 ~~<2~~ <2	↓	↓	Yes			
810926	<1	<2	↓	↓	↓			
810928	↓	↓	↓	↓	↓			
810912 (1-7)	<1	<2	11/18/13	ES	Yes			
810939-1,2	>1	<2	11/19/13	DC	Yes			
810943	<1	↓	↓	↓	↓			
810944	<1	↓	↓	↓	↓			
810948	>1	↓	↓	↓	↓			
810957	<1	<2	11/19/13	DC	Yes			
810963-1,2,4	<1	>2	11/19/13	DC	NO	15:30		
810958	<1	<2	↓	↓	Yes			
810959	↓	↓	↓	↓	↓			
810960								
810961								
810962								
810970								
810971	<1	<2	11/20/13	ES	Yes			
810972	↓	↓	↓	↓	↓			
810937(4,5)	TTLC		↓	↓	↓			
810987 11/20/13 1,3-4	<1	>2	↓	↓	NO	10:00		
810985 (1-12)	<1	<2	11/20/13	ES	Yes			
810986 (1-11)	↓	↓	↓	↓	↓			
810950	<1	<2	11/21/13	ES	Yes			
810984	↓	>2	↓	↓	↓	11:00		pH <2
811005 (1-3,6-12,14-15)		<2						
811016 (1-3)		↓						

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E 2 **Lab #** 810984

Date Delivered: 11 / 19 / 13 **Time:** 19:40 **By:** ☐ Mail ☐ Field Service ☒ Client

1. Was a Chain of Custody received and signed? ☒ Yes ☐ No ☐ N/A
2. Does Customer require an acknowledgement of the COC? ☐ Yes ☒ No ☐ N/A
3. Are there any special requirements or notes on the COC? ☐ Yes ☒ No ☐ N/A
4. If a letter was sent with the COC, does it match the COC? ☐ Yes ☐ No ☒ N/A
5. Were all requested analyses understood and acceptable? ☒ Yes ☐ No ☐ N/A
6. Were samples received in a chilled condition? ☒ Yes ☐ No ☐ N/A
   Temperature (if yes)? 2.3 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒ Yes ☐ No ☐ N/A
8. Were sample custody seals intact? ☐ Yes ☐ No ☒ N/A
9. Does the number of samples received agree with COC? ☒ Yes ☐ No ☐ N/A
10. Did sample labels correspond with the client ID's? ☒ Yes ☐ No ☐ N/A
11. Did sample labels indicate proper preservation? ☐ Yes ☐ No ☒ N/A
    Preserved (if yes) by: ☐ **Truesdail** ☐ Client
12. Were samples pH checked? pH = See C.O.C ☒ Yes ☐ No ☐ N/A
13. Were all analyses within holding time at time of receipt? ☒ Yes ☐ No ☐ N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒ Yes ☐ No ☐ N/A
    Turn Around Time (TAT): ☐ **RUSH** ☒ Std
15. **Sample Matrix:** ☐ Liquid ☐ Drinking Water ☐ Ground Water ☐ Waste Water ☐ Sludge ☐ Soil ☐ Wipe ☐ Paint ☐ Solid ☒ Other Water
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Leida

ALERT !! Level III QC

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.
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Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

December 9, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-442 PROJECT, GROUNDWATER MONITORING, TLI NO.: 811083

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-442 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on November 26, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 811083
Date: December 9, 2013
Collected: November 26, 2013
Received: November 26, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Himani Vaishnav
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 811083
Date Received: November 26, 2013

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
811083-001	SC-700B-WDR-442	E120.1	NONE	11/26/2013	7:05	EC	6680	umhos/cm	2.00
811083-001	SC-700B-WDR-442	E200.8	NONE	11/26/2013	7:05	Chromium	ND	ug/L	1.0
811083-001	SC-700B-WDR-442	E200.8	NONE	11/26/2013	7:05	Manganese	1.7	ug/L	0.50
811083-001	SC-700B-WDR-442	E218.6	LABFLT	11/26/2013	7:05	Chromium, Hexavalent	ND	ug/L	0.20
811083-001	SC-700B-WDR-442	SM2130B	NONE	11/26/2013	7:05	Turbidity	ND	NTU	0.100
811083-001	SC-700B-WDR-442	SM2540C	NONE	11/26/2013	7:05	Total Dissolved Solids	4340	mg/L	125

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG & E Topock
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 811083

Printed 12/9/2013

Samples Received on 11/26/2013 7:10:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-442	811083-001	11/26/2013 07:05	Water

Specific Conductivity - EPA 120.1

Batch 11EC13J

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811083-001 Specific Conductivity	umhos/cm	11/27/2013	1.00	0.606	2.00	6680

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate

Lab ID = 811063-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	52.7	52.6	0.190	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	693	706	98.2	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	690	706	97.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1000	1000	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1000	1000	100	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG & E Topock
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 12CrH13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811083-001 Chromium, Hexavalent	ug/L	12/02/2013 13:53	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate

Lab ID = 811083-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.182	0.171	6.40	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.204	0.200	102	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.97	5.00	99.4	90 - 110

Matrix Spike

Lab ID = 811083-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.18	1.17(1.00)	101	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.81	5.00	96.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105

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Client: E2 Consulting Engineers, Inc.

Project Name: PG & E Topock
Project Number: 428648.IM.CS.EX.AC

Printed 12/9/2013

Metals by EPA 200.8, Total

Batch 120213A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811083-001 Chromium	ug/L	12/02/2013 14:23	1.00	0.0710	1.0	ND
Manganese	ug/L	12/02/2013 14:23	1.00	0.0600	0.50	1.7

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 811083-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	1.64	1.69	3.25	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.582	0.500	116	70 - 130
Manganese	ug/L	1.00	0.234	0.200	117	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	51.3	50.0	102	85 - 115
Manganese	ug/L	1.00	51.7	50.0	103	85 - 115

Matrix Spike

Lab ID = 811083-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	52.7	50.0(50.0)	105	75 - 125
Manganese	ug/L	1.00	53.6	51.7(50.0)	104	75 - 125

Matrix Spike Duplicate

Lab ID = 811083-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	53.5	50.0(50.0)	107	75 - 125
Manganese	ug/L	1.00	54.4	51.7(50.0)	105	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	97.9	90 - 110
Manganese	ug/L	1.00	19.3	20.0	96.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.5	20.0	102	90 - 110
Manganese	ug/L	1.00	20.1	20.0	101	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG & E Topock
Project Number: 428648.IM.CS.EX.AC

Printed 12/9/2013

Total Dissolved Solids by SM 2540 C

Batch 11TDS13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811083-001 Total Dissolved Solids	mg/L	11/27/2013	5.00	8.80	125	4340

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 811067-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	141	139	1.43	0 - 10

Duplicate — Lab ID = 811083-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	5.00	4280	4340	1.28	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	502	500	100	90 - 110

Turbidity by SM 2130 B

Batch 11TUC13R

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811083-001 Turbidity	NTU	11/27/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 811083-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.45	8.00	93.1	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.29	8.00	91.1	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG & E Topock
Project Number: 428648.IM.CS.EX.AC

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

6 e2

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 11TDS13E
Date Analyzed: 11/27/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	78.3923	78.3925	78.3925	0.0000	No	0.0002	2.0	25.0	ND	1
811021-2	100	66.6933	66.7238	66.7238	0.0000	No	0.0305	305.0	25.0	305.0	1
811021-3	100	78.7933	78.8087	78.8087	0.0000	No	0.0154	154.0	25.0	154.0	1
811065-1	100	77.7693	77.8099	77.8096	0.0003	No	0.0403	403.0	25.0	403.0	1
811065-2	100	75.7454	75.7887	75.7886	0.0001	No	0.0432	432.0	25.0	432.0	1
811067-2	100	78.9026	78.9165	78.9165	0.0000	No	0.0139	139.0	25.0	139.0	1
811067-4	100	75.2636	75.2995	75.2991	0.0004	No	0.0355	355.0	25.0	355.0	1
811090-1	100	78.7828	78.8305	78.8301	0.0004	No	0.0473	473.0	25.0	473.0	1
811090-2	100	71.2955	71.3424	71.3423	0.0001	No	0.0468	468.0	25.0	468.0	1
811090-3	100	76.5008	76.5476	76.5475	0.0001	No	0.0467	467.0	25.0	467.0	1
811090-4	100	67.0324	67.0798	67.0795	0.0003	No	0.0471	471.0	25.0	471.0	1
811067-2D	100	74.5927	74.6069	74.6068	0.0001	No	0.0141	141.0	25.0	141.0	1
LCS	100	70.3818	70.432	70.432	0.0000	No	0.0502	502.0	25.0	502.0	1
811083	20	29.2830	29.3701	29.3697	0.0004	No	0.0867	4335.0	125.0	4335.0	1
811094-1	100	72.7580	72.8021	72.8017	0.0004	No	0.0437	437.0	25.0	437.0	1
811094-2	100	75.7496	75.7951	75.7948	0.0003	No	0.0452	452.0	25.0	452.0	1
811025-13	100	72.5225	72.5791	72.5789	0.0002	No	0.0564	564.0	25.0	564.0	1
811083D	20	28.8874	28.9734	28.9731	0.0003	No	0.0857	4285.0	125.0	4285.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\, 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	502	501	100.2%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\, 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
811067-2	0.0139	0.0141	0.7%	≤5%	Yes
811083	0.0867	0.0857	0.6%	5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\, 100$$

$$where \quad C = \frac{A + B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

WetChem TDS_2012.xls

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 11TDS13E
Date Analyzed: 11/27/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
811021-2	419	0.73	272.35	1.12
811021-3	216	0.71	140.4	1.10
811065-1	722	0.56	469.3	0.86
811065-2	691	0.63	449.15	0.96
811067-2	236	0.59	153.4	0.91
811067-4	561	0.63	364.65	0.97
811090-1	715	0.66	464.75	1.02
811090-2	704	0.66	457.6	1.02
811090-3	736	0.63	478.4	0.98
811090-4	706	0.67	458.9	1.03
811067-2D	236	0.60	153.4	0.92
LCS				
811083	6680	0.65	4342	1.00
811094-1	693	0.63	450.45	0.97
811094-2	658	0.69	427.7	1.06
811025-13	846	0.67	549.9	1.03
811083D	6680	0.64	4342	0.99

811083

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-442]

Rec'd 11/26/13 811083

COC Number ~~S5d~~

TURNAROUND TIME 10 Days

DATE 11/26/13 PAGE 1 OF 1

COMPANY E2

PROJECT NAME PG&E Topock

PHONE (530) 229-3303 FAX (530) 339-3303

ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612

P.O. NUMBER 428648.IM.CS.EX.AC TEAM 1

SAMPLERS (SIGNATURE

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-442	11/26/13	7:05	Water	x	x	x	x		x								3	pH=7(200.7)
																	3	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

or Sample Conditions
See Form Attached

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	CHRIS LEMR	CH2M HILL	11-26-13 14:30
Signature (Received)	THANH	TRUESDAIL	11.26.13 1430
Signature (Relinquished)	THANH	TLI	11-26-13 1910
Signature (Received)	Marcheol Braid	TLI	11/26/13 1910
Signature (Relinquished)			
Signature (Received)			

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 33 °C/°F

CUSTODY SEALED YES ☐ NO ☐

SPECIAL REQUIREMENTS:

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
11/22/13	811025-12	9.5	N/A	N/A	N/A	NR
↓	↓ -13	↓	↓	↓	↓	↓
↓	↓ -14	↓	↓	↓	↓	↓
↓	↓ -15	↓	↓	↓	↓	↓
11/27/13	811083	7.0	2 ml / 100 ml	9.5	8:30	NE

NE
12/2/13

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log

TRUESDAIL LABORATORIES, INC.
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
811020-1,2	>1	<2	11/22/13	DC	Yes			
810997-1,2	>1	<2	11/22/13	DC	↓			
811000-1,2,3	<1	>2	↓	↓	NO	13:10		
811002-10,11,12	↓	↓	↓	↓	↓	↓		
810030 (1-4)	>1	<2	11/25/13	ES	yes			
810036 (1-3)	↓	↓	↓	↓	↓			
811040								
811043 (1-2)								
811048	>1	<2	11/25/13	KK	YES			
811024 (1-7)	<1	<2	11/25/13	ES	yes			
811025 (1-3,6-13,15)	↓	↓	↓	↓	↓			T/D
811053	<1	<2	11/27/13	ES	yes			
811065 (1-2	↓	↓	↓	↓	↓			
811076								
811083	<1	>2	11/27/13	ES	yes	1:30		pH <2
811057 (1-3)	<1	>2	11/27/13	ES	NO	3:00		
811067 (1-2,4	↓	↓	↓	↓	↓	↓		
811069 (1-2)								
811079 (1-2)								
811073	<1	<2	12/2/13	ES	yes			
811094 (1-2)	↓	↓	↓	↓	↓			
811099 (10-12)		>2			NO	3:00		
811104		<2			yes			
811106 (1-3)	↓	>2	↓	↓	NO	3:00		
811107	<1	>2	11/27/13	KK	NO	1:50		
811117	>1	<2	12/3/13	KK	yes			
811118 (1-2)	>1	<2	↓	↓	↓			
811119 (1-3)	↓	↓	↓	↓	↓			
811123 (1-2)	↓	↓	↓	↓	↓			
811130-6	<1	>2	12/3/13	ES	NO	5:00		
811131 (1-3)	↓	↓	↓	↓	↓	↓		
811139 (1-2,4)								
811133		>2			yes			
811134		↓			↓			
811135								
811136								
811137	↓	↓	↓	↓	↓			
811156	>1	<2	12/4/13	ES	yes			
811160 (1-9)	<1	<2	12/4/13	KK	yes			
811157	<1	>2	↓	↓	↓			
811158 (1-2)	<1	>2						
811159 (1-2,2)	<1	>2						
811110	<1	<2	↓	↓	↓			

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: ej **Lab #** 811083

Date Delivered: 11 / 26 / 13 **Time:** 1910 **By:** ☐ Mail ☐ Field Service ☒ Client

1. Was a Chain of Custody received and signed? ☒ Yes ☐ No ☐ N/A
2. Does Customer require an acknowledgement of the COC? ☐ Yes ☐ No ☒ N/A
3. Are there any special requirements or notes on the COC? ☐ Yes ☒ No ☐ N/A
4. If a letter was sent with the COC, does it match the COC? ☐ Yes ☐ No ☒ N/A
5. Were all requested analyses understood and acceptable? ☒ Yes ☐ No ☐ N/A
6. Were samples received in a chilled condition? ☒ Yes ☐ No ☐ N/A
   Temperature (if yes)? 3.3 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒ Yes ☐ No ☐ N/A
8. Were sample custody seals intact? ☐ Yes ☐ No ☒ N/A
9. Does the number of samples received agree with COC? ☒ Yes ☐ No ☐ N/A
10. Did sample labels correspond with the client ID's? ☒ Yes ☐ No ☐ N/A
11. Did sample labels indicate proper preservation? ☐ Yes ☐ No ☒ N/A
    Preserved (if yes) by: ☐ Truesdail ☐ Client
12. Were samples pH checked? pH = see COC ☒ Yes ☐ No ☐ N/A
13. Were all analyses within holding time at time of receipt? ☒ Yes ☐ No ☐ N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒ Yes ☐ No ☐ N/A
    Turn Around Time (TAT): ☐ RUSH ☒ Std
15. **Sample Matrix:** ☐ Liquid ☐ Drinking Water ☐ Ground Water ☐ Waste Water ☐ Sludge ☐ Soil ☐ Wipe ☐ Paint ☐ Solid ☒ Other Water
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Kendal Brady

ALERT !!
Level III QC

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

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
1	SC-100B	9-3-13	1400	9-3-13	15:05	METER #2	9-3-13	0120	-53.3	Ryan Phelps	7.2
Notes:											
2	~~SC-700B~~ SC-700B	9-10-13	14:20	9-10-13	14:25	METER #2	9-10-13	03:30	-54.3	Ryan Phelps	7.0
Notes:											
3	SC-700B	9-17-13	11:35	9-17-13	11:45	METER #2	9-17-13	00:55	-53.8	Ryan Phelps	7.1
Notes:											
4	SC-700B	9-24-13	14~~50~~45	9-24-13	1450	METER #2	9-24-13	00:45	-53.3	Ryan Phelps	7.1
Notes:											
5	SC-100B	10-1-13	14:10	10-1-13	14:34	METER #2	10-1-13	00:40	-53.5	Ryan Phelps	7.2
Notes:											
6	SC-700B	10-1-13	13:59	10-1-13		METER #2	10-1-13	00:40	-53.5	Ryan Phelps	7.4
Notes:											
7	SC-701	10-1-13	14:14	10-1-13		METER #2	10-1-13	00:40	-53.5	Ryan Phelps	7.8
Notes:											

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

p.4
760-326-3329
CH2MHILL Topock

Analytical Bench Log Book

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
1	SC-700B -	10-08-13	14:50	10-08-13	14:58	METER #2	10-08-13	00:20	-53.3	GEORGE GLORIA	7.1
Notes:											
2	SC-700B	10-15-13	1235	10-15-13	1242	METER #2	[illegible]	0032	-54.3	Jamie G	7.1
Notes:											
3	SC-700B	10-22-13	1245	10-22-13	1255	METER #2	10-22-13	0032	-54.1	Ryan Phelps	7.1
Notes:											
4	SC-700B	10/29/13	~~01:50~~ 14:25	10/29/13	14:30	METER #2	10/29/13	01:50	-53.5	CHRIS LEGAL	7.0
Notes:											
5	SC-700B	11/5/13	1400	11/5/13	1405	METER #2	11/5/13	00:01	-54.0	CHRIS LEGAL	7.1
Notes:											
6	SC-100B	11/5/13	1400	11/5/13	1405	METER #2	11/5/13	00:01	-54.0	CHRIS LEGAL	7.3
Notes:											
7	SC-700B	11/12/13	12:25	11/12/13	12:30	METER #2	11/12/13	00:50	-53.5	CHRIS LEGAL	7.0
Notes.											

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

TRUESDAIL LABORATORIES, INC.
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www.truesdail.com

December 17, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-443 PROJECT, GROUNDWATER MONITORING,

TLI NO.: 811159

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-443 project groundwater monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 3, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Metals were analyzed by EPA 200.8 and EPA 200.7 with Mr. Shawn Duffy's approval.

Due to instrument problems, the samples for Nitrate as N by EPA 300.0 were analyzed approximately four hours past the method specified holding time. Mr. Duffy was notified.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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www.truesdail.com

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: Two (2) Groundwaters
Project Name: PG&E Topock Project
Project No.: 428648-IM.CS.EX.AC

Laboratory No.: 811159
Date: December 17, 2013
Collected: December 3, 2013
Received: December 3, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2320B	Total Alkalinity	Himani Vaishnav
SM 4500-Si D	Soluble Silica	Jenny Tankunakorn
SM 4500-P B,E	Total Phosphorus	Jenny Tankunakorn
SM 5310C	Total Organic Carbon	Jenny Tankunakorn
SM 2130B	Turbidity	Felipe Mendoza
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Maria Mangarova / Himani Vaishnav
SM 4500-NO2 B	Nitrite as N	Jenny Tankunakorn
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612

Laboratory No.: 811159
Date Received: December 3, 2013

Attention: Shawn Duffy

Project Name: PG&E Topock Project
Project No.: 428648-IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
811159-001	SC-700B-WDR-443	E120.1	NONE	12/3/2013	13:45	EC	6640	umhos/cm	2
811159-001	SC-700B-WDR-443	E200.7	NONE	12/3/2013	13:45	Aluminum	ND	ug/L	50
811159-001	SC-700B-WDR-443	E200.7	NONE	12/3/2013	13:45	BORON	959	ug/L	50
811159-001	SC-700B-WDR-443	E200.7	NONE	12/3/2013	13:45	Iron	ND	ug/L	20
811159-001	SC-700B-WDR-443	E200.7	NONE	12/3/2013	13:45	Zinc	ND	ug/L	20
811159-001	SC-700B-WDR-443	E200.8	NONE	12/3/2013	13:45	Antimony	ND	ug/L	2
811159-001	SC-700B-WDR-443	E200.8	NONE	12/3/2013	13:45	Arsenic	0.61	ug/L	0.5
811159-001	SC-700B-WDR-443	E200.8	NONE	12/3/2013	13:45	Barium	14.3	ug/L	5
811159-001	SC-700B-WDR-443	E200.8	NONE	12/3/2013	13:45	Chromium	ND	ug/L	1
811159-001	SC-700B-WDR-443	E200.8	NONE	12/3/2013	13:45	Copper	ND	ug/L	5
811159-001	SC-700B-WDR-443	E200.8	NONE	12/3/2013	13:45	Lead	ND	ug/L	1
811159-001	SC-700B-WDR-443	E200.8	NONE	12/3/2013	13:45	Manganese	2.9	ug/L	0.5
811159-001	SC-700B-WDR-443	E200.8	NONE	12/3/2013	13:45	Molybdenum	20.2	ug/L	2
811159-001	SC-700B-WDR-443	E200.8	NONE	12/3/2013	13:45	Nickel	ND	ug/L	2
811159-001	SC-700B-WDR-443	E218.6	LABFLT	12/3/2013	13:45	Chromium, Hexavalent	ND	ug/L	0.2
811159-001	SC-700B-WDR-443	E300	NONE	12/3/2013	13:45	Fluoride	2.10	mg/L	0.5
811159-001	SC-700B-WDR-443	E300	NONE	12/3/2013	13:45	Nitrate as N	2.87 J	mg/L	0.5
811159-001	SC-700B-WDR-443	E300	NONE	12/3/2013	13:45	Sulfate	522	mg/L	25
811159-001	SC-700B-WDR-443	SM2130B	NONE	12/3/2013	13:45	Turbidity	ND	NTU	0.1
811159-001	SC-700B-WDR-443	SM2540C	NONE	12/3/2013	13:45	Total Dissolved Solids	4410	mg/L	125
811159-001	SC-700B-WDR-443	SM4500NH3D	NONE	12/3/2013	13:45	Ammonia-N	ND	mg/L	0.5
811159-001	SC-700B-WDR-443	SM4500NO2B	NONE	12/3/2013	13:45	Nitrite as N	ND	mg/L	0.005

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
811159-002	SC-100B-WDR-443	E120.1	NONE	12/3/2013	13:45	EC	6760	umhos/cm	2
811159-002	SC-100B-WDR-443	E200.7	NONE	12/3/2013	13:45	Aluminum	ND	ug/L	50
811159-002	SC-100B-WDR-443	E200.7	NONE	12/3/2013	13:45	BORON	1020	ug/L	50
811159-002	SC-100B-WDR-443	E200.7	LABFLT	12/3/2013	13:45	Iron	ND	ug/L	20
811159-002	SC-100B-WDR-443	E200.7	NONE	12/3/2013	13:45	Iron	ND	ug/L	20
811159-002	SC-100B-WDR-443	E200.7	NONE	12/3/2013	13:45	Zinc	ND	ug/L	20
811159-002	SC-100B-WDR-443	E200.8	NONE	12/3/2013	13:45	Antimony	ND	ug/L	2
811159-002	SC-100B-WDR-443	E200.8	NONE	12/3/2013	13:45	Arsenic	3.9	ug/L	0.5
811159-002	SC-100B-WDR-443	E200.8	NONE	12/3/2013	13:45	Barium	27.6	ug/L	5
811159-002	SC-100B-WDR-443	E200.8	NONE	12/3/2013	13:45	Chromium	708	ug/L	5
811159-002	SC-100B-WDR-443	E200.8	NONE	12/3/2013	13:45	Copper	ND	ug/L	5
811159-002	SC-100B-WDR-443	E200.8	NONE	12/3/2013	13:45	Lead	ND	ug/L	1
811159-002	SC-100B-WDR-443	E200.8	NONE	12/3/2013	13:45	Manganese	4.3	ug/L	0.5
811159-002	SC-100B-WDR-443	E200.8	LABFLT	12/3/2013	13:45	Manganese	4.1	ug/L	0.5
811159-002	SC-100B-WDR-443	E200.8	NONE	12/3/2013	13:45	Molybdenum	20.6	ug/L	2
811159-002	SC-100B-WDR-443	E200.8	NONE	12/3/2013	13:45	Nickel	ND	ug/L	2
811159-002	SC-100B-WDR-443	E218.6	LABFLT	12/3/2013	13:45	Chromium, Hexavalent	651	ug/L	10
811159-002	SC-100B-WDR-443	E300	NONE	12/3/2013	13:45	Fluoride	2.32	mg/L	0.5
811159-002	SC-100B-WDR-443	E300	NONE	12/3/2013	13:45	Nitrate as N	2.93 J	mg/L	0.5
811159-002	SC-100B-WDR-443	E300	NONE	12/3/2013	13:45	Sulfate	526	mg/L	25
811159-002	SC-100B-WDR-443	SM2130B	NONE	12/3/2013	13:45	Turbidity	ND	NTU	0.1
811159-002	SC-100B-WDR-443	SM2320B	NONE	12/3/2013	13:45	Alkalinity	147	mg/L	5
811159-002	SC-100B-WDR-443	SM2320B	NONE	12/3/2013	13:45	Alkalinity, Bicarbonate (As CaCO3)	147	mg/L	5
811159-002	SC-100B-WDR-443	SM2320B	NONE	12/3/2013	13:45	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5
811159-002	SC-100B-WDR-443	SM2540C	NONE	12/3/2013	13:45	Total Dissolved Solids	4540	mg/L	125
811159-002	SC-100B-WDR-443	SM4500NH3D	NONE	12/3/2013	13:45	Ammonia-N	ND	mg/L	0.5
811159-002	SC-100B-WDR-443	SM4500NO2B	NONE	12/3/2013	13:45	Nitrite as N	ND	mg/L	0.005
811159-002	SC-100B-WDR-443	SM4500-PB_E	NONE	12/3/2013	13:45	Total Phosphorous-P	ND	mg/L	0.02
811159-002	SC-100B-WDR-443	SM4500SI	LABFLT	12/3/2013	13:45	Soluble Silica	19.7	mg/L	1
811159-002	SC-100B-WDR-443	SM5310C	NONE	12/3/2013	13:45	Total Organic Carbon	ND	mg/L	0.3

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 811159

Printed 12/17/2013

Samples Received on 12/3/2013 11:00:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-443	811159-001	12/03/2013 13:45	Water
SC-100B-WDR-443	811159-002	12/03/2013 13:45	Water

Anions By I.C. - EPA 300.0

Batch 12AN13C

Parameter		Unit	Analyzed	DF	MDL	RL	Result	
811159-001	Fluoride	mg/L	12/05/2013 16:10	5.00	0.0600	0.500	2.10	
	Nitrate as Nitrogen	mg/L	12/05/2013 16:10	5.00	0.0415	0.500	2.87	J
	Sulfate	mg/L	12/05/2013 21:52	50.0	1.54	25.0	522	
811159-002	Fluoride	mg/L	12/05/2013 16:21	5.00	0.0600	0.500	2.32	
	Nitrate as Nitrogen	mg/L	12/05/2013 16:21	5.00	0.0415	0.500	2.93	J
	Sulfate	mg/L	12/05/2013 22:04	50.0	1.54	25.0	526	

Method Blank

Parameter	Unit	DF	Result
Fluoride	mg/L	1.00	ND
Sulfate	mg/L	1.00	ND
Nitrate as Nitrogen	mg/L	1.00	ND

Duplicate — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	5.00	2.29	2.32	1.17	0 - 20
Nitrate as Nitrogen	mg/L	5.00	2.91	2.93	0.822	0 - 20

Duplicate — Lab ID = 811185-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sulfate	mg/L	5.00	42.5	43.1	1.31	0 - 20

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.86	4.00	96.5	90 - 110
Sulfate	mg/L	1.00	19.9	20.0	99.4	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.97	4.00	99.2	90 - 110

Matrix Spike — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	5.00	20.9	22.3(20.0)	93.1	85 - 115
Nitrate as Nitrogen	mg/L	5.00	23.8	22.9(20.0)	104	85 - 115

Matrix Spike — Lab ID = 811185-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sulfate	mg/L	5.00	97.3	93.1(50.0)	108	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	4.08	4.00	102	90 - 110
Sulfate	mg/L	1.00	19.8	20.0	99.2	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.94	4.00	98.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.12	3.00	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	15.3	15.0	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	15.1	15.0	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	15.4	15.0	102	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.09	3.00	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	3.00	3.00	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	3.10	3.00	103	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Nitrite SM 4500-NO2 B

Batch 12NO213B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-001 Nitrite as Nitrogen	mg/L	12/05/2013 12:43	1.00	0.000630	0.0050	ND
811159-002 Nitrite as Nitrogen	mg/L	12/05/2013 12:44	1.00	0.000630	0.0050	ND

Method Blank

Parameter	Unit	DF	Result
Nitrite as Nitrogen	mg/L	1.00	ND

Duplicate

Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0239	0.0230	104	90 - 110

Matrix Spike

Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0235	0.0230(0.0230)	102	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0239	0.0230	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0200	0.0200	100	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 12/17/2013

Alkalinity by SM 2320B

Batch 12ALK13D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-002 Alkalinity as CaCO3	mg/L	12/16/2013	1.00	1.68	5.00	147
Bicarbonate (Calculated)	mg/L	12/16/2013	1.00	1.68	5.00	147
Carbonate (Calculated)	mg/L	12/16/2013	1.00	1.68	5.00	ND

Method Blank

Parameter	Unit	DF	Result
Alkalinity as CaCO3	mg/L	1.00	ND

Duplicate — Lab ID = 811205-021

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	116	115	0.866	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	99.0	100	99.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	98.0	100	98.0	90 - 110

Matrix Spike — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	238	247(100)	91.0	75 - 125

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Specific Conductivity - EPA 120.1

Batch 12EC13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-001 Specific Conductivity	umhos/cm	12/05/2013	1.00	0.606	2.00	6640
811159-002 Specific Conductivity	umhos/cm	12/05/2013	1.00	0.606	2.00	6760

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate

Lab ID = 811193-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	699	696	0.430	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	737	706	104	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	736	706	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1030	1000	103	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 12CrH13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-001 Chromium, Hexavalent	ug/L	12/04/2013 11:22	1.00	0.00600	0.20	ND
811159-002 Chromium, Hexavalent	ug/L	12/04/2013 12:14	50.0	0.300	10.0	651

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 811157-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	3.55	3.60	1.33	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.207	0.200	104	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.03	5.00	101	90 - 110

Matrix Spike — Lab ID = 811157-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.65	8.60(5.00)	101	90 - 110

Matrix Spike — Lab ID = 811158-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	15.4	15.5(10.0)	99.6	90 - 110

Matrix Spike — Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.13	1.14(1.00)	99.6	90 - 110

Matrix Spike — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1390	1400(750)	98.8	90 - 110

Matrix Spike — Lab ID = 811160-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.993	1.00(1.00)	99.3	90 - 110

Matrix Spike — Lab ID = 811160-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.03	1.00(1.00)	103	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.7, Total

Batch 120513A-Th2

Parameter		Unit	Analyzed	DF	MDL	RL	Result
811159-001	Aluminum	ug/L	12/05/2013 17:10	1.00	7.20	50.0	ND
	Boron	ug/L	12/05/2013 17:10	1.00	4.10	50.0	959
	Iron	ug/L	12/05/2013 17:10	1.00	3.00	20.0	ND
	Zinc	ug/L	12/05/2013 17:10	1.00	5.10	20.0	ND
811159-002	Aluminum	ug/L	12/05/2013 17:41	1.00	7.20	50.0	ND
	Boron	ug/L	12/05/2013 17:41	1.00	4.10	50.0	1020
	Iron	ug/L	12/05/2013 17:41	1.00	3.00	20.0	ND
	Zinc	ug/L	12/05/2013 17:41	1.00	5.10	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Aluminum	ug/L	1.00	ND
Iron	ug/L	1.00	ND
Zinc	ug/L	1.00	ND
Boron	ug/L	1.00	ND

Duplicate

Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Aluminum	ug/L	1.00	ND	0	0	0 - 20
Iron	ug/L	1.00	ND	0	0	0 - 20
Zinc	ug/L	1.00	ND	0	0	0 - 20
Boron	ug/L	1.00	994	959	3.54	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1850	2000	92.4	85 - 115
Iron	ug/L	1.00	1980	2000	98.8	85 - 115
Zinc	ug/L	1.00	2020	2000	101	85 - 115
Boron	ug/L	1.00	1980	2000	98.9	85 - 115

Matrix Spike

Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1760	2000(2000)	87.8	75 - 125
Iron	ug/L	1.00	1880	2000(2000)	93.8	75 - 125
Zinc	ug/L	1.00	2200	2000(2000)	110	75 - 125
Boron	ug/L	1.00	2930	2960(2000)	98.7	75 - 125

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Matrix Spike Duplicate — Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1690	2000(2000)	84.6	75 - 125
Iron	ug/L	1.00	1800	2000(2000)	90.0	75 - 125
Zinc	ug/L	1.00	2180	2000(2000)	109	75 - 125
Boron	ug/L	1.00	2890	2960(2000)	96.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5030	5000	101	95 - 105
Iron	ug/L	1.00	5100	5000	102	95 - 105
Zinc	ug/L	1.00	5270	5000	105	95 - 105
Boron	ug/L	1.00	5140	5000	103	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4670	5000	93.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4980	5000	99.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4850	5000	97.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4970	5000	99.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4520	5000	90.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4820	5000	96.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5040	5000	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4920	5000	98.3	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 120513B

Parameter		Unit	Analyzed	DF	MDL	RL	Result
811159-001	Antimony	ug/L	12/05/2013 20:10	1.00	0.0350	2.0	ND
	Arsenic	ug/L	12/05/2013 20:10	1.00	0.0500	0.50	0.61
	Barium	ug/L	12/05/2013 20:10	1.00	0.297	5.0	14.3
	Chromium	ug/L	12/05/2013 20:10	1.00	0.0710	1.0	ND
	Copper	ug/L	12/05/2013 20:10	1.00	0.190	5.0	ND
	Manganese	ug/L	12/05/2013 20:10	1.00	0.0600	0.50	2.9
	Molybdenum	ug/L	12/05/2013 20:10	1.00	0.0500	2.0	20.2
	Nickel	ug/L	12/05/2013 20:10	1.00	0.240	2.0	ND
811159-002	Antimony	ug/L	12/05/2013 20:46	1.00	0.0350	2.0	ND
	Arsenic	ug/L	12/05/2013 20:46	1.00	0.0500	0.50	3.9
	Barium	ug/L	12/05/2013 20:46	1.00	0.297	5.0	27.6
	Chromium	ug/L	12/05/2013 19:34	10.0	0.710	5.0	708
	Copper	ug/L	12/05/2013 20:46	1.00	0.190	5.0	ND
	Manganese	ug/L	12/05/2013 20:46	1.00	0.0600	0.50	4.3
	Molybdenum	ug/L	12/05/2013 20:46	1.00	0.0500	2.0	20.6
	Nickel	ug/L	12/05/2013 20:46	1.00	0.240	2.0	ND

Method Blank

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Barium	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Nickel	ug/L	1.00	ND
Antimony	ug/L	1.00	ND
Copper	ug/L	1.00	ND
Uranium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Duplicate — Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	1.00	0.645	0.613	5.09	0 - 20
Barium	ug/L	1.00	14.5	14.3	1.15	0 - 20
Chromium	ug/L	1.00	ND	0	0	0 - 20
Nickel	ug/L	1.00	ND	0	0	0 - 20
Antimony	ug/L	1.00	ND	0	0	0 - 20
Copper	ug/L	1.00	ND	0	0	0 - 20
Uranium	ug/L	1.00	3.04	3.03	0.231	0 - 20
Manganese	ug/L	1.00	2.56	2.90	12.6	0 - 20
Molybdenum	ug/L	1.00	20.3	20.2	0.415	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.208	0.200	104	70 - 130
Barium	ug/L	1.00	1.10	1.00	110	70 - 130
Chromium	ug/L	1.00	0.542	0.500	108	70 - 130
Nickel	ug/L	1.00	1.72	2.00	85.8	70 - 130
Antimony	ug/L	1.00	0.225	0.200	112	70 - 130
Copper	ug/L	1.00	2.01	2.00	100	70 - 130
Uranium	ug/L	1.00	0.187	0.200	93.5	70 - 130
Manganese	ug/L	1.00	0.537	0.500	107	70 - 130
Molybdenum	ug/L	1.00	0.229	0.200	114	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	49.0	50.0	98.1	85 - 115
Barium	ug/L	1.00	49.0	50.0	97.9	85 - 115
Chromium	ug/L	1.00	50.9	50.0	102	85 - 115
Nickel	ug/L	1.00	51.0	50.0	102	85 - 115
Antimony	ug/L	1.00	48.0	50.0	96.0	85 - 115
Copper	ug/L	1.00	52.2	50.0	104	85 - 115
Uranium	ug/L	1.00	51.2	50.0	102	85 - 115
Manganese	ug/L	1.00	49.4	50.0	98.8	85 - 115
Molybdenum	ug/L	1.00	51.1	50.0	102	85 - 115

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Matrix Spike — Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	50.0	50.6(50.0)	98.9	75 - 125
Barium	ug/L	1.00	63.1	64.3(50.0)	97.7	75 - 125
Chromium	ug/L	1.00	49.8	50.0(50.0)	99.6	75 - 125
Nickel	ug/L	1.00	46.7	50.0(50.0)	93.4	75 - 125
Antimony	ug/L	1.00	47.4	50.0(50.0)	94.8	75 - 125
Copper	ug/L	1.00	46.4	50.0(50.0)	92.9	75 - 125
Uranium	ug/L	1.00	52.3	53.0(50.0)	98.6	75 - 125
Manganese	ug/L	1.00	52.1	52.9(50.0)	98.4	75 - 125
Molybdenum	ug/L	1.00	71.1	70.2(50.0)	102	75 - 125

Matrix Spike Duplicate — Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	51.2	50.6(50.0)	101	75 - 125
Barium	ug/L	1.00	64.4	64.3(50.0)	100	75 - 125
Chromium	ug/L	1.00	51.5	50.0(50.0)	103	75 - 125
Nickel	ug/L	1.00	47.6	50.0(50.0)	95.1	75 - 125
Antimony	ug/L	1.00	48.4	50.0(50.0)	96.7	75 - 125
Copper	ug/L	1.00	47.6	50.0(50.0)	95.2	75 - 125
Uranium	ug/L	1.00	51.9	53.0(50.0)	97.7	75 - 125
Manganese	ug/L	1.00	54.1	52.9(50.0)	102	75 - 125
Molybdenum	ug/L	1.00	71.8	70.2(50.0)	103	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.3	20.0	96.5	90 - 110
Barium	ug/L	1.00	19.2	20.0	96.2	90 - 110
Chromium	ug/L	1.00	19.5	20.0	97.4	90 - 110
Nickel	ug/L	1.00	19.6	20.0	98.1	90 - 110
Antimony	ug/L	1.00	19.3	20.0	96.3	90 - 110
Copper	ug/L	1.00	19.7	20.0	98.6	90 - 110
Uranium	ug/L	1.00	19.5	20.0	97.4	90 - 110
Manganese	ug/L	1.00	19.2	20.0	96.3	90 - 110
Molybdenum	ug/L	1.00	20.1	20.0	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	18.9	20.0	94.5	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Antimony	ug/L	1.00	ND	0		
Copper	ug/L	1.00	19.4	20.0	97.2	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	19.1	20.0	95.6	80 - 120
Uranium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Uranium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.6	20.0	98.2	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.5	20.0	97.7	80 - 120
Molybdenum	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	ND	0		

Serial Dilution — Lab ID = 811110-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Uranium	ug/L	10.0	27.6	27.2	1.44	0 - 10

Serial Dilution — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	10.0	28.1	25.5	9.62	0 - 10

Serial Dilution — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	50.0	712	708	0.524	0 - 10

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 120613A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-001 Lead	ug/L	12/06/2013 14:10	2.00	0.286	1.0	ND
811159-002 Lead	ug/L	12/06/2013 14:35	2.00	0.286	1.0	ND

Method Blank

Parameter	Unit	DF	Result
Lead	ug/L	1.00	ND

Duplicate

Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Lead	ug/L	2.00	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	0.494	0.500	98.8	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	49.3	50.0	98.7	85 - 115

Matrix Spike

Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Lead	ug/L	2.00	42.5	50.0(50.0)	85.1	75 - 125

Matrix Spike Duplicate

Lab ID = 811159-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Lead	ug/L	2.00	42.1	50.0(50.0)	84.1	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	18.7	20.0	93.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	18.1	20.0	90.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	18.1	20.0	90.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	18.4	20.0	91.8	90 - 110

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Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	ND	0		

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	ND	0		

Reactive Silica by SM4500-Si D

Batch 12Si13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-002 Silica	mg/L	12/11/2013	25.0	0.252	1.00	19.7

Method Blank

Parameter	Unit	DF	Result
Silica	mg/L	1.00	ND

Duplicate — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Silica	mg/L	25.0	21.1	19.7	6.75	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.190	0.206	92.0	90 - 110

Matrix Spike — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Silica	mg/L	25.0	25.1	24.8(5.15)	105	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.190	0.206	92.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.382	0.400	95.4	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Total Dissolved Solids by SM 2540 C

Batch 12TDS13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-001 Total Dissolved Solids	mg/L	12/06/2013	1.00	1.76	125	4410
811159-002 Total Dissolved Solids	mg/L	12/06/2013	1.00	1.76	125	4540

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate

Lab ID = 811186-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	496	506	2.00	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	497	500	99.4	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Total Organic Carbon (T/DOC) SM 5310 C

Batch 12TOC13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-002 Total Organic Carbon	mg/L	12/06/2013 02:30	1.00	0.0877	0.300	ND

Method Blank

Parameter	Unit	DF	Result
Total Organic Carbon	mg/L	1.00	ND

Duplicate — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Organic Carbon	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.0	10.0	100.	90 - 110

Matrix Spike — Lab ID = 811108-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	14.3	14.1(10.0)	102	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.1	10.0	101	85 - 115

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.7	10.0	107	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.4	10.0	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.2	10.0	102	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Total Phosphate, SM 4500-PB,E

Batch 12TP13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-002 Phosphate, Total As P	mg/L	12/04/2013	1.00	0.00460	0.0200	ND

Method Blank

Parameter	Unit	DF	Result
Phosphate, Total As P	mg/L	1.00	ND

Duplicate — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Phosphate, Total As P	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0632	0.0650	97.2	90 - 110

Matrix Spike — Lab ID = 811159-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0632	0.0650(0.0650)	97.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0632	0.0650	97.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0650	0.0660	98.5	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Ammonia Nitrogen by SM4500-NH3D

Batch 12NH313B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-001 Ammonia as N	mg/L	12/11/2013	1.00	0.0318	0.500	ND
811159-002 Ammonia as N	mg/L	12/11/2013	1.00	0.0318	0.500	ND

Method Blank

Parameter	Unit	DF	Result
Ammonia as N	mg/L	1.00	ND

Duplicate

Lab ID = 811072-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Ammonia as N	mg/L	1.00	ND	0	0	0 - 0

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.35	8.00	104	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.45	8.00	106	90 - 110

Matrix Spike

Lab ID = 811072-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	10.7	10.0(10.0)	107	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.47	6.00	108	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.52	6.00	109	90 - 110

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Metals by EPA 200.8, Dissolved

Batch 120613A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-002 Manganese	ug/L	12/06/2013 13:52	1.00	0.0600	0.50	4.1

Method Blank

Parameter	Unit	DF	Result
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 811160-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Manganese	ug/L	20.0	611	610	0.155	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	0.524	0.500	105	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	49.1	50.0	98.2	85 - 115

Matrix Spike

Lab ID = 811160-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	20.0	1540	1610(1000)	93.3	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.3	20.0	96.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.4	20.0	96.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.4	20.0	96.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.5	20.0	97.7	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	ND	0		

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Metals by 200.7, Dissolved

Batch 120513A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-002 Iron	ug/L	12/05/2013 18:41	1.00	3.00	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate — Lab ID = 811160-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	697	690	1.02	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	1980	2000	98.8	85 - 115

Matrix Spike — Lab ID = 811160-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	2450	2690(2000)	87.8	75 - 125

Matrix Spike Duplicate — Lab ID = 811160-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	2550	2690(2000)	93.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5100	5000	102	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5040	5000	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4920	5000	98.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4820	5000	96.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5100	5000	102	90 - 110

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5020	5000	100	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2060	2000	103	80 - 120

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2080	2000	104	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2060	2000	103	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2100	2000	105	80 - 120

Turbidity by SM 2130 B

Batch 12TUC13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811159-001 Turbidity	NTU	12/04/2013	1.00	0.0140	0.100	ND
811159-002 Turbidity	NTU	12/04/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate

Lab ID = 811131-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.479	0.437	9.17	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.24	8.00	103	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.94	8.00	99.2	90 - 110

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Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

8 e2

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 12TDS13B
Date Analyzed: 12/6/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	106.1683	106.1689	106.1687	0.0002	No	0.0004	4.0	25.0	ND	1
811158-1	20	29.3785	29.4297	29.4297	0.0000	No	0.0512	2560.0	125.0	2560.0	1
811158-2	10	29.3206	29.3692	29.3692	0.0000	No	0.0486	4860.0	250.0	4860.0	1
811159-1	20	29.4879	29.5761	29.5761	0.0000	No	0.0882	4410.0	125.0	4410.0	1
811159-2	20	28.7593	28.8502	28.8502	0.0000	No	0.0909	4545.0	125.0	4545.0	1
811169-1	495	173.2202	173.2224	173.2223	0.0001	No	0.0021	4.2	5.1	ND	1
811176-7	100	77.4786	77.5304	77.5300	0.0004	No	0.0514	514.0	25.0	514.0	1
811186-1	100	77.2304	77.2909	77.2909	0.0000	No	0.0605	605.0	25.0	605.0	1
811186-2	100	80.8559	80.9068	80.9066	0.0002	No	0.0507	507.0	25.0	507.0	1
811186-3	100	73.5693	73.6192	73.6192	0.0000	No	0.0499	499.0	25.0	499.0	1
811186-4	100	79.4407	79.4914	79.4913	0.0001	No	0.0506	506.0	25.0	506.0	1
811186-4 Dup	100	76.5299	76.5795	76.5795	0.0000	No	0.0496	496.0	25.0	496.0	1
LCS	100	66.7877	66.8376	66.8374	0.0002	No	0.0497	497.0	25.0	497.0	1
811187-1	50	51.9142	51.9625	51.9624	0.0001	No	0.0482	964.0	50.0	964.0	1
811187-2	100	78.6036	78.6550	78.6549	0.0001	No	0.0513	513.0	25.0	513.0	1
811187-3	100	79.4941	79.5513	79.5511	0.0002	No	0.0570	570.0	25.0	570.0	1
811187-4	100	78.2903	78.3510	78.3510	0.0000	No	0.0607	607.0	25.0	607.0	1
811194-1	100	79.7951	79.8205	79.8201	0.0004	No	0.0250	250.0	25.0	250.0	1
811205-17	50	50.8135	50.8494	50.8493	0.0001	No	0.0358	716.0	50.0	716.0	1
811219	100	79.0554	79.1049	79.1045	0.0004	No	0.0491	491.0	25.0	491.0	1
811205-17 Dup	50	51.7878	51.8246	51.8246	0.0000	No	0.0368	736.0	50.0	736.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\, 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	497.0	500	99.4%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\, 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
811186-4	0.0506	0.0496	1.0%	≤5%	Yes
811205-17	0.0358	0.0368	1.4%	5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\, 100$$

$$where \quad C = \frac{A + B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 12TDS13B
Date Analyzed: 12/6/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
811158-1	3950	0.65	2567.5	1.00
811158-2	7410	0.66	4816.5	1.01
811159-1	6640	0.66	4316	1.02
811159-2	6760	0.67	4394	1.03
811169-1	6.3	ND	4.095	ND
811176-7	759	0.68	493.35	1.04
811186-1	806	0.75	523.9	1.15
811186-2	811	0.63	527.15	0.96
811186-3	805	0.62	523.25	0.95
811186-4	806	0.63	523.9	0.97
811186-4 Dup	806	0.62	523.9	0.95
LCS				
811187-1	1535	0.63	997.75	0.97
811187-2	785	0.65	510.25	1.01
811187-3	850	0.67	552.5	1.03
811187-4	935	0.65	607.75	1.00
811194-1	343	0.73	222.95	1.12
811205-17	1079	0.66	701.35	1.02
811219	725	0.68	471.25	1.04
811205-17 Dup	1079	0.68	701.35	1.05

TRUESDAIL LABORATORIES, INC.

Alkalinity by SM 2320B
Calculations

Analytical Batch:	12ALK13D
Matrix:	WATER
Date of Analysis:	12/16/2013

Lab ID	Sample pH	Sample Volume (ml)	N of HCL	Titrant Volume to reach pH 8.3	P Alkalinity as CaCO3	Titrant Volume to reach pH 4.5	Total mL titrant to reach pH 0.3 unit lower	Total Alkalinity as CaCO3	RL, ppm	Total Alkalinity Reported Value	HCO3 Conc. as $CaCO_3$ (ppm)	CO3 Alkalinity as $CaCO_3$ (ppm)	OH Alkalinity as $CaCO_3$ (ppm)	Low Alkalinity as $CaCO_3$ (<20ppm)
BLANK	5.54	50	0.02		0.0	0.00		0.0	5	ND	ND	ND	ND	
811176-1	7.88	50	0.02		0.0	5.60		112.0	5	112.0	112.0	ND	ND	
811159-2	7.69	50	0.02		0.0	7.35		147.0	5	147.0	147.0	ND	ND	
811205-17	7.81	50	0.02		0.0	5.10		102.0	5	102.0	102.0	ND	ND	
811205-21	7.97	50	0.02		0.0	5.75		115.0	5	115.0	115.0	ND	ND	
811310	7.91	50	0.02		0.0	7.25		145.0	5	145.0	145.0	ND	ND	
811344-20	8.00	50	0.02		0.0	5.65		113.0	5	113.0	113.0	ND	ND	
811374	7.78	50	0.02		0.0	5.85		117.0	5	117.0	117.0	ND	ND	
811205-21 D	7.99	50	0.02		0.0	5.80		116.0	5	116.0	116.0	ND	ND	
811159-2 MS	9.11	50	0.02		0.0	11.90		238.0	5	238.0	238.0	0	ND	
LCS	10.36	50	0.02	2.05	41.0	4.95		99.0	5	99.0	17.0	82	ND	
LCSD	10.34	50	0.02	2.00	40.0	4.90		98.0	5	98.0	18.0	80	ND	

Calculations as follows:

T or P = $\left(\frac{A \times N \times 50000}{mL\ sample}\right)$

Where:
T = Total Alkalinity, mg CaCO3/L
P = Phenolphthalein Alkalinity, mg CaCO3/L
A = mL standard acid used
N = normality of standard acid

Low Alkalinity: as mg/L CaCO3 = $\frac{(2 \times B - C) \times N \times 50000}{mL\ sample}$

Where:
B = mL titrant to first recorded pH
C = Total mL titrant to reach pH 0.3 unit lower
N = Normality of standard acid

LCS = Laboratory Control Standard/Duplicate
MS/MSD = Matrix Spike/Duplicate
ND = Not Detected (below the reporting limit)

Blank Summary

Reporting Limit, RL	Measured Value, ppm	Accept Limit	QC Within Control?
5 ppm	0	<5	Yes

Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	% Recovery	Accetance Limit	QC Within Control?
LCS	99	100	99.0%	90-110	Yes
LCSD	98	100	98.0%	90-110	Yes

Duplicate Determination Difference Summary

Lab Number I.D.	Measured Value, ppm	Dup Value, ppm	RPD	Accetance Limit	QC Within Control?
811205-21	115	116	0.9%	≤20%	Yes

Sample Matrix Spike (MS/MSD) Summary

Lab Number	Conc of Unspk spl	Dil Factor	Added Spk Conc	MS/MSD Amt	Measrd Conc of Spk Spl	Theor Conc of Spk Spl	MS/MSD % Rec	MS Accept Limit	QC Within Control?	RPD	RPD Accept Limit	QC Within Control?
811159-2	147	1	100	100	238	247.00	91%	75-125	Yes			
				0								

Himani Vaishnav
Analyst Printed Name

Himani
Analyst Signature

Maksim Gorbunov
Reviewer Printed Name

Reviewer Signature

1213D

052

TRUESDAIL LABORATORIES, INC.
14201 Franklin Avenue, Tustin, CA 92780-7008
(714)730-6239 FAX: (714) 730-6462
www.truesdail.com

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-443] 811159

COC Number

TURNAROUND TIME 10 Days

DATE 12/03/13 PAGE 1 OF 1

COMPANY: CH2M HILL /E2

PROJECT NAME: PG&E Topock IM3

PHONE: 530-229-3303 FAX: 530-339-3303

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 428648.IM.CS.EX.AC

SAMPLERS (SIGNATURE): Chris Lee

	SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr(VI) (218.6) Lab Filtered	Alkalinity (2320-B)	EC (120.1)	TDS (2540 c)	Turb (2130)	Total Metals (200.7) See List Below	Ammonia (4500-NH3)	Total P (4500-P)	Anions (300.0) F, NO3, SO4	TOC (5310 C)	Dissolved Metals (200.7) Fe, Mn lab filtered	Soluable Silica - Reactive (4500-Si CorD)	NO2 (4500-NO2B)		NUMBER OF CONTAINERS	COMMENTS
1	SC-700B-WDR-443	12/03/13	13:45		X		X	X	X	X	X		X				X			pH=6 } 200.7
2	SC-100B-WDR-443	12/03/13	13:45		X	X	X	X	X	X	X	X	X	X	X	X	X			pH=6 }
																			13	TOTAL NUMBER OF CONTAINERS

ALERT Level III

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Chris Lee	CHRIS LEE	CH2MHILL	12-3-13 1837
Signature (Received)	Thanh Ngo	THANH NGO	TRUESDAIL	12-3-13 1837
Signature (Relinquished)	Thanh Ngo			12.3.13 2300
Signature (Received)	J.B. David	JAY B. DAVID	TLI	12/3/13 2300
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 3.9 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
11/22/13	811025-12	9.5	N/A	N/A	N/A	NR
	-13					
	-14					
	-15					
11/27/13	811083	7.0	2ml / 100ml	9.5	8:30	NE
12/3/13	811131-1	7.0	2ml / 100ml	9.5	12:00	NE
	-2					
	-3					
12/4/13	811157	7.0	2ml / 100ml	9.5	8:30	[illegible]
	811158-1					
	-2					
	811159-1					
	-2					
	811160-1	9.5	N/A	N/A	N/A	[illegible]
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					

NE
12/5/13

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log

TRUESDAIL LABORATORIES, INC.
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
811020-1,2	>1	<2	11/22/13	DC	Yes			
810997-1,2	>1	<2	11/22/13	DC	↓			
811000-1,2,3	<1	>2	↓	↓	NO	13:10		
811002-10,11,12	↓	↓	↓	↓	↓	↓		
810030 (1-4)	>1	<2	11/25/13	ES	yes			
810036 (1-3)	↓	↓	↓	↓	↓			
811040	↓	↓	↓	↓	↓			
811043 (1-2)	↓	↓	↓	↓	↓			
811048	>1	<2	11/25/13	KK	YES			
811024 (1-7)	<1	<2	11/25/13	ES	yes			
811025 (1-3,6-13,15)	↓	↓	↓	↓	↓			T/D
811053	<1	<2	11/27/13	ES	yes			
811065 (1-2	↓	↓	↓	↓	↓			
811076	↓	↓	↓	↓	↓			
811083	<1	>2	11/27/13	ES	yes	1:30		pH <2
811057 (1-3)	<1	>2	11/27/13	ES	NO	3:00		
811067 (1-2,4	↓	↓	↓	↓	↓	↓		
811069 (1-2)	↓	↓	↓	↓	↓	↓		
811079 (1-2)	↓	↓	↓	↓	↓	↓		
811073	<1	<2	12/2/13	ES	yes			
811094 (1-2)	↓	↓	↓	↓	↓			
811099 (10-12)	↓	>2	↓	↓	NO	3:00		
811104	↓	<2	↓	↓	yes			
811106 (1-3)	↓	>2	↓	↓	NO	3:00		
811107	<1	>2	11/27/13	KK	NO	1:50		
811117 12/3/13	>1	<2	12/3/13	KK	yes			
811118 (1-3)	>1	<2	↓	↓	↓			
811119 (1-3)	↓	↓	↓	↓	↓			
811123 (1-2)	↓	↓	↓	↓	↓			
811130-6	<1	>2	12/3/13	ES	NO	5:00		
811131 (1-3)	↓	↓	↓	↓	↓	↓		
811139 (1-2,4)	↓	↓	↓	↓	↓	↓		
811133	↓	>2	↓	↓	yes			
811134	↓	↓	↓	↓	↓			
811135	↓	↓	↓	↓	↓			
811136	↓	↓	↓	↓	↓			
811137	↓	↓	↓	↓	↓			
811156	>1	<2	12/4/13	ES	yes			
811160 (1-9)	<1	<2	12/4/13	KK	yes			
811157	<1	>2	↓	↓	↓			lab filtered
811158 (1-2)	<1	>2	↓	↓	↓			lab filtered
811159 (1-2,2)	<1	>2	↓	↓	↓			-2 lab filtered
811110	<1	<2	↓	↓	↓			
811162	>1	<2	12/6/13	KK	Yes			

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 811159

Date Delivered: 12/3/13 **Time:** 23:00 **By:** ☐Mail ☐Field Service ☑Client

1. Was a Chain of Custody received and signed? ☑Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☑No ☐N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☑No ☐N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☑N/A
5. Were all requested analyses understood and acceptable? ☑Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☑Yes ☐No ☐N/A
   Temperature (if yes)? 3.9 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☑Yes ☐No ☐N/A
8. Were sample custody seals intact? ☐Yes ☐No ☑N/A
9. Does the number of samples received agree with COC? ☑Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☑Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☐Yes ☐No ☑N/A
    Preserved (if yes) by: ☐**Truesdail** ☐Client
12. Were samples pH checked? pH = See C.O.C ☑Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☑Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☑Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ **RUSH** ☑ Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

ALERT! Level III QC

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

December 18, 2013

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-444 PROJECT, GROUNDWATER MONITORING, TLI NO.: 811312

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-444 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 10, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 811312
Date: December 18, 2013
Collected: December 10, 2013
Received: December 10, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Felipe Mendoza
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 811312
Date Received: December 10, 2013

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
811312-001	SC-700B-WDR-444	E120.1	NONE	12/10/2013	13:05	EC	6460	umhos/cm	2.00
811312-001	SC-700B-WDR-444	E200.8	NONE	12/10/2013	13:05	Chromium	ND	ug/L	1.0
811312-001	SC-700B-WDR-444	E200.8	NONE	12/10/2013	13:05	Manganese	2.6	ug/L	0.50
811312-001	SC-700B-WDR-444	E218.6	LABFLT	12/10/2013	13:05	Chromium, Hexavalent	ND	ug/L	0.20
811312-001	SC-700B-WDR-444	SM2130B	NONE	12/10/2013	13:05	Turbidity	ND	NTU	0.100
811312-001	SC-700B-WDR-444	SM2540C	NONE	12/10/2013	13:05	Total Dissolved Solids	4340	mg/L	125

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 811312

Printed 12/18/2013

Samples Received on 12/10/2013 7:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-444	811312-001	12/10/2013 13:05	Water

Specific Conductivity - EPA 120.1 Batch 12EC13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811312-001 Specific Conductivity	umhos/cm	12/12/2013	1.00	0.606	2.00	6460

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 811290-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	1700	1680	1.01	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	715	706	101	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	705	706	99.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	979	1000	97.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1000	1000	100	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 12CrH13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811312-001 Chromium, Hexavalent	ug/L	12/11/2013 11:12	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 811312-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.137	0.130	5.32	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.207	0.200	104	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.00	5.00	100	90 - 110

Matrix Spike — Lab ID = 811312-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.12	1.13(1.00)	98.7	90 - 110

Matrix Spike — Lab ID = 811313-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.991	1.00(1.00)	99.1	90 - 110

Matrix Spike — Lab ID = 811313-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	123	127(75.0)	94.6	90 - 110

Matrix Spike — Lab ID = 811313-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	2230	2350(1250)	90.2	90 - 110

Matrix Spike — Lab ID = 811313-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.746	1.00(1.00)	74.6	90 - 110

Matrix Spike — Lab ID = 811313-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.93	5.00(5.00)	98.6	90 - 110

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC Printed 12/18/2013

Metals by EPA 200.8, Total

Batch 121113B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811312-001 Chromium	ug/L	12/11/2013 19:10	1.00	0.0710	1.0	ND
Manganese	ug/L	12/11/2013 19:10	1.00	0.0600	0.50	2.6

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 811312-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	2.55	2.59	1.67	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.211	0.200	106	70 - 130
Manganese	ug/L	1.00	0.201	0.200	100	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.7	50.0	99.3	85 - 115
Manganese	ug/L	1.00	50.3	50.0	101	85 - 115

Matrix Spike

Lab ID = 811312-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.6	50.0(50.0)	97.3	75 - 125
Manganese	ug/L	1.00	52.0	52.6(50.0)	98.9	75 - 125

Matrix Spike Duplicate

Lab ID = 811312-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.2	50.0(50.0)	100	75 - 125
Manganese	ug/L	1.00	53.5	52.6(50.0)	102	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.8	20.0	94.2	90 - 110
Manganese	ug/L	1.00	19.0	20.0	94.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.1	20.0	95.3	90 - 110

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Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.1	20.0	90.5	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 12TDS13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811312-001 Total Dissolved Solids	mg/L	12/12/2013	5.00	8.80	125	4340

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 811312-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	5.00	4320	4340	0.578	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	513	500	103	90 - 110

Turbidity by SM 2130 B

Batch 12TUC13H

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811312-001 Turbidity	NTU	12/11/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 811296-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.110	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.20	8.00	102	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.08	8.00	101	90 - 110

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Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 12TDS13C
Date Analyzed: 12/12/13

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	74.1426	74.1439	74.1439	0.0000	No	0.0013	13.0	25.0	ND	1
811267-1	100	76.2504	76.2934	76.2934	0.0000	No	0.0430	430.0	25.0	430.0	1
811267-2	100	67.4857	67.5328	67.5328	0.0000	No	0.0471	471.0	25.0	471.0	1
811274	100	72.4065	72.4467	72.4467	0.0000	No	0.0402	402.0	25.0	402.0	1
811278-1	100	68.3644	68.4022	68.4020	0.0002	No	0.0376	376.0	25.0	376.0	1
811278-2	100	73.8034	73.8295	73.8295	0.0000	No	0.0261	261.0	25.0	261.0	1
811278-3	100	74.2133	74.2434	74.2434	0.0000	No	0.0301	301.0	25.0	301.0	1
811278-4	100	71.3149	71.3524	71.3524	0.0000	No	0.0375	375.0	25.0	375.0	1
811278-6	100	80.5711	80.6097	80.6093	0.0004	No	0.0382	382.0	25.0	382.0	1
811293	490	173.2242	173.2265	173.2265	0.0000	No	0.0023	4.7	5.1	ND	1
811301-2	100	68.7292	68.7454	68.7452	0.0002	No	0.0160	160.0	25.0	160.0	1
811301-2 Dup	100	74.7013	74.7177	74.7177	0.0000	No	0.0164	164.0	25.0	164.0	1
LCS	100	68.1078	68.1595	68.1591	0.0004	No	0.0513	513.0	25.0	513.0	1
811301-4	100	67.9695	68.0055	68.0052	0.0003	No	0.0357	357.0	25.0	357.0	1
811303	20	29.3251	29.3866	29.3866	0.0000	No	0.0615	3075.0	125.0	3075.0	1
811310	50	51.4948	51.5332	51.5329	0.0003	No	0.0381	762.0	50.0	762.0	1
811312	20	30.3518	30.4388	30.4385	0.0003	No	0.0867	4335.0	125.0	4335.0	1
811334-1	100	75.2794	75.3268	75.3268	0.0000	No	0.0474	474.0	25.0	474.0	1
811334-2	100	74.0374	74.0832	74.0832	0.0000	No	0.0458	458.0	25.0	458.0	1
811334-4	100	66.8799	66.9252	66.9252	0.0000	No	0.0453	453.0	25.0	453.0	1
811334-5	100	73.1691	73.2150	73.2150	0.0000	No	0.0459	459.0	25.0	459.0	1
811336-1	100	74.6430	74.6860	74.6860	0.0000	No	0.0430	430.0	25.0	430.0	1
811336-2	100	74.4587	74.5041	74.5038	0.0003	No	0.0451	451.0	25.0	451.0	1
811312 Dup	20	28.8538	28.9402	28.9401	0.0001	No	0.0863	4315.0	125.0	4315.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\, 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	513.0	500	102.6%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\, 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
811301-2	0.0160	0.0164	1.2%	≤5%	Yes
811312	0.0867	0.0863	0.2%	≤5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\, 100$$

$$where \quad C = \frac{A + B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 12TDS13C
Date Analyzed: 12/12/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
811267-1	684	0.63	444.6	0.97
811267-2	631	0.75	410.15	1.15
811274	576	0.70	374.4	1.07
811278-1	501	0.75	325.65	1.15
811278-2	381	0.69	247.65	1.05
811278-3	383	0.79	248.95	1.21
811278-4	465	0.81	302.25	1.24
811278-6	468	0.82	304.2	1.26
811293	7.2	ND	4.68	ND
811301-2	220	0.73	143	1.12
811301-2 Dup	220	0.75	143	1.15
LCS				
811301-4	541	0.66	351.65	1.02
811303	4410	0.70	2866.5	1.07
811310	1031	0.74	670.15	1.14
811312	6460	0.67	4199	1.03
811334-1	746	0.64	484.9	0.98
811334-2	671	0.68	436.15	1.05
811334-4	675	0.67	438.75	1.03
811334-5	680	0.68	442	1.04
811336-1	680	0.63	442	0.97
811336-2	674	0.67	438.1	1.03
811312 Dup	6460	0.67	4199	1.03

811312

Rec'd 12/10/13

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-444]

COC Number S-811312

TURNAROUND TIME 10 Days

DATE 12/10/13 PAGE 1 OF 1

COMPANY: E2

PROJECT NAME: PG&E Topock

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

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 428648.IM.CS.EX.AC TEAM: 1

SAMPLERS (SIGNATURE): Chris Lenz

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)	NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-444	12/10/13	13:05	Water	x	x	x	x	x	3	DM-7 (200.7)
									3	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

For Sample Conditions See Form Attached

ALERT !! Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished) Chris Lenz	CHRIS LENZ	CH2M HILL	12-10-13 15:03
Signature (Received) Edward Ngo	THANH	TRUESDAIL	12-10-13 1503
Signature (Relinquished) Edward Ngo			12-10-13 1930
Signature (Received) [illegible]	Michael Brady	TLI	12/10 1930
Signature (Relinquished)			
Signature (Received)			

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 3.0 °C

CUSTODY SEALED YES ☐ NO ☐

SPECIAL REQUIREMENTS:

045

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
11/22/13	811025-12	9.5	N/A	N/A	N/A	NR
	-13					
	-14					
	-15					
11/27/13	811083	7.0	2ml / 100ml	9.5	8:30	NE
12/3/13	811131-1	7.0	2ml / 100ml	9.5	12:00	NE
	-2					
	-3					
12/4/13	811157	7.0	2ml / 100ml	9.5	8:30	[illegible]
	811158-1					
	-2					
	811159-1					
	-2					
	811160-1	9.5	N/A	N/A	N/A	[illegible]
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
12/6/13 ~~811278~~	811278-1	9.5	N/A	N/A	N/A	[illegible]
12/10/13	-2	9.5				
	-3					
	-4					
	-6					
~~12/11/13~~	811312	7.0	100ml / 2ml	9.5	7:45	NE
~~12/11/13~~	811313-1	9.5	N/A	N/A	N/A	NE
	-2					

NE
12/12/13

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log

TRUESDAIL LABORATORIES, INC.
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
811218	>1	<2	12/10/13	KK	Y			
811155 (2 bottles)	>1	↓			↓			
811188 (10-12)	<1	>2			N	12/9/13 @ 12pm	12/9/13 @ 10am	pH <2
811178 (1-3)	<1	↓			↓	↓	↓	↓
811193 (1-2)	>1	<2			Y			
811196	<1	↓			↓			
811154		>2			N	12 pm	12/9/13 @ 10	pH <2
811187 (1-4)	↓							
811176 (1-4-6)	<1							
811170 (1-2)	<1							
811205 (17, 24)	<1	↓	↓	↓	↓	↓	↓	↓
811208	<1	<2	12/9/13	ES	Yes			
811226 (1-2)								
811227								
811248	↓	↓	↓	↓	↓			
811199 (1-3)	<1	<2	12/10/13	ES	Yes			
811278 (1-6)	↓	↓	↓	↓	↓			TID
811267 (1-2)	<1	<2	12/11/13	ES	Yes			
811274	↓	↓						
811283	TTL	C						
811285 (1-4)	<1	<2						
811286								
811288								
811289	↓							
811290	>1							
811291	<1							
811292	>1							
811297	<1							
811298	↓	↓	↓	↓	↓			
811312	<1	>2	12/11/13	ES	Yes	11:00		pH <2
811313 (2-12)		<2						
811314 (1-11)								
811315 (1-3, 6-9)	↓	↓	↓	↓	↓			
811301 (1-2, 4)	<1	>2	12/12/13	ES	NO	11:00		
811302		<2			Yes			
811304								
811309		↓						
811310		>2			NO	11:00		
811316								
811317 (1-3)	↓	↓	↓	↓	↓	↓		

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 811312

Date Delivered: 12 / 10 / 13 **Time:** 1930 **By:** ☐Mail ☐Field Service ☐Client

1. Was a Chain of Custody received and signed? ☒Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☐No ☒N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☒No ☐N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☒N/A
5. Were all requested analyses understood and acceptable? ☒Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☒Yes ☐No ☐N/A
   Temperature (if yes)? 3.0 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒Yes ☐No ☐N/A
8. Were sample custody seals intact? ☐Yes ☐No ☒N/A
9. Does the number of samples received agree with COC? ☒Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☒Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☐Yes ☐No ☒N/A
    Preserved (if yes) by: ☐Truesdail ☐Client
12. Were samples pH checked? pH = See COC ☒Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☒Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ RUSH ☒ Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water
16. Comments: _____
17. Sample Check-In completed by Truesdail Log-In/Receiving: [signature]

ALERT !!
Level III QC

C:\Users\Ten\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.
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Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
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www.truesdail.com

January 3, 2014

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-445 PROJECT, GROUNDWATER MONITORING, TLI NO.: 811408

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-445 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 17, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 811408
Date: January 3, 2014
Collected: December 17, 2013
Received: December 17, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Felipe Mendoza
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 811408
Date Received: December 17, 2013

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
811408-001	SC-700B-WDR-445	E120.1	NONE	12/17/2013	12:40	EC	6640	umhos/cm	2.00
811408-001	SC-700B-WDR-445	E200.8	NONE	12/17/2013	12:40	Chromium	ND	ug/L	1.0
811408-001	SC-700B-WDR-445	E200.8	NONE	12/17/2013	12:40	Manganese	1.5	ug/L	0.50
811408-001	SC-700B-WDR-445	E218.6	LABFLT	12/17/2013	12:40	Chromium, Hexavalent	ND	ug/L	0.20
811408-001	SC-700B-WDR-445	SM2130B	NONE	12/17/2013	12:40	Turbidity	ND	NTU	0.100
811408-001	SC-700B-WDR-445	SM2540C	NONE	12/17/2013	12:40	Total Dissolved Solids	4560	mg/L	125

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 811408

Printed 1/3/2014

Samples Received on 12/17/2013 7:40:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-445	811408-001	12/17/2013 12:40	Water

Specific Conductivity - EPA 120.1 Batch 12EC13D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811408-001 Specific Conductivity	umhos/cm	12/19/2013	1.00	0.606	2.00	6640

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 811421-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	635	661	4.01	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	681	706	96.4	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	691	706	97.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	984	1000	98.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1020	1000	102	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 12CrH13G

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811408-001 Chromium, Hexavalent	ug/L	12/18/2013 14:16	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 811408-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.164	0.162	1.35	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.218	0.200	109	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.97	5.00	99.4	90 - 110

Matrix Spike — Lab ID = 811408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.18	1.16(1.00)	101	90 - 110

Matrix Spike — Lab ID = 811409-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	250.0	8710	8860(5000)	97.1	90 - 110

Matrix Spike — Lab ID = 811409-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	100	3890	3950(2000)	97.1	90 - 110

Matrix Spike — Lab ID = 811409-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.86	5.00(5.00)	97.1	90 - 110

Matrix Spike — Lab ID = 811409-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.03	1.00(1.00)	103	90 - 110

Matrix Spike — Lab ID = 811409-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.14	1.10(1.00)	103	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 121813B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811408-001 Chromium	ug/L	12/18/2013 22:07	1.00	0.0710	1.0	ND
Manganese	ug/L	12/18/2013 22:07	1.00	0.0600	0.50	1.5

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 811408-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	1.58	1.47	7.24	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.236	0.200	118	70 - 130
Manganese	ug/L	1.00	0.217	0.200	109	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.5	50.0	99.1	85 - 115
Manganese	ug/L	1.00	50.4	50.0	101	85 - 115

Matrix Spike

Lab ID = 811408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	47.6	50.0(50.0)	95.2	75 - 125
Manganese	ug/L	1.00	49.8	51.5(50.0)	96.6	75 - 125

Matrix Spike Duplicate

Lab ID = 811408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	46.7	50.0(50.0)	93.4	75 - 125
Manganese	ug/L	1.00	49.0	51.5(50.0)	95.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.1	20.0	95.4	90 - 110
Manganese	ug/L	1.00	19.7	20.0	98.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.6	20.0	93.2	90 - 110

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Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.5	20.0	92.6	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.8	20.0	93.9	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.7	20.0	93.3	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.9	20.0	94.6	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 12TDS13D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811408-001 Total Dissolved Solids	mg/L	12/19/2013	1.00	1.76	125	4560

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 811123-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	403	429	6.25	0 - 10

Duplicate — Lab ID = 811408-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4480	4560	1.77	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	532	500	106	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 1/3/2014

Turbidity by SM 2130 B

Batch 12TUC13M

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811408-001 Turbidity	NTU	12/19/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 811417-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.114	0.110	3.57	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.75	8.00	96.9	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.80	8.00	97.5	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

4 e2

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 12TDS13D
Date Analyzed: 12/19/13

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	69.4886	69.4886	69.4886	0.0000	No	0.0000	0.0	25.0	ND	1
811381-1	100	78.2396	78.2837	78.2837	0.0000	No	0.0441	441.0	25.0	441.0	1
811381-2	100	69.4780	69.5210	69.5206	0.0004	No	0.0426	426.0	25.0	426.0	1
811408	20	29.4750	29.5662	29.5662	0.0000	No	0.0912	4560.0	125.0	4560.0	1
811421-1	100	73.4324	73.4823	73.4822	0.0001	No	0.0498	498.0	25.0	498.0	1
811421-2	100	76.2713	76.3218	76.3214	0.0004	No	0.0501	501.0	25.0	501.0	1
811421-3	100	74.7323	74.7828	74.7824	0.0004	No	0.0501	501.0	25.0	501.0	1
811421-4	100	75.2680	75.3125	75.3125	0.0000	No	0.0445	445.0	25.0	445.0	1
811422-1	100	70.8756	70.9202	70.9201	0.0001	No	0.0445	445.0	25.0	445.0	1
811422-2	100	75.0103	75.0602	75.0602	0.0000	No	0.0499	499.0	25.0	499.0	1
811123-1	100	76.8028	76.8457	76.8457	0.0000	No	0.0429	429.0	25.0	429.0	1
811408 Dup	20	29.3297	29.4195	29.4193	0.0002	No	0.0896	4480.0	125.0	4480.0	1
LCS	100	75.4039	75.4572	75.4571	0.0001	No	0.0532	532.0	25.0	532.0	1
811123-2	100	78.9026	78.9463	78.9463	0.0000	No	0.0437	437.0	25.0	437.0	1
811123-1 Dup	100	75.8088	75.8491	75.8491	0.0000	No	0.0403	403.0	25.0	403.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\, 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	532.0	500	106.4%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\, 100$$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
811408	0.0912	0.0896	0.9%	≤5%	Yes
811123-1	0.0429	0.0403	3.1%	≤5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A - or - B = C|}{C} x\, 100$$

$$where \quad C = \frac{A + B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 12TDS13D
Date Analyzed: 12/19/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
811381-1	794	0.56	516.1	0.85
811381-2	700	0.61	455	0.94
811408	6640	0.69	4316	1.06
811421-1	675	0.74	438.75	1.14
811421-2	678	0.74	440.7	1.14
811421-3	660	0.76	429	1.17
811421-4	661	0.67	429.65	1.04
811422-1	614	0.72	399.1	1.12
811422-2	679	0.73	441.35	1.13
811123-1	695	0.62	451.75	0.95
811408 Dup	6640	0.67	4316	1.04
LCS				
811123-2	660	0.66	429	1.02
811123-1 Dup	695	0.58	451.75	0.89

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-445]

811408

COC Number

TURNAROUND TIME 10 Days

DATE 12/17/13 PAGE 1 OF 1

COMPANY: E2

PROJECT NAME: PG&E Topock

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

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 428648.IM.CS.EX.MC TEAM: 1

SAMPLERS (SIGNATURE): Chris Leutz

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-445	12/17/13	12:40	Water	x	x	x	x		x								3	pH=6 (300.7)
																	3	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Chris Leutz	CHRIS LEUTZ	CH2M HILL	12/17/13 15:05
Signature (Received)	Thanh Ngo	THANH NGO	TRUESDAIL	12-17-13 1506
Signature (Relinquished)	Thanh Ngo			12-17-13 1940
Signature (Received)	Sean Condon	Sean Condon	TLE	12/17/13 1940
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 5.4 °C

CUSTODY SEALED YES ☐ NO ☐

SPECIAL REQUIREMENTS:

043

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
12/11/13	811315-7	9.5	N/A	N/A	N/A	NE
	-8					
	-9					
	-10					
12/11/13	811310	7.0	2ml/100ml	9.5	8:30	NE
12/18/13	811408	7.00			9:00	NE
	811409-2	9.5	N/A	N/A	N/A	NE
	-3					
	-4	7.0	2ml/100ml	9.5	9:00	NE
	-7	9.5	N/A	N/A	N/A	NE
	-9					
	-10					
	-12					
	-13					
	-14					
	-15					
	-16					
	-17					
	-18					
	-19					
	-20	7.0	2ml/100ml	9.5	9:00	NE
	-21	9.5	N/A	N/A	N/A	NE
	-22					
	811410-1	9.5	N/A	N/A	N/A	NE
	-2					
12/20/13	811468	7.00	2ml/100ml	9.5	9:00	NE

NE
12/20/13

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log

TRUESDAIL LABORATORIES, INC.
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
811345	<1	<2	12/13/13	ES	yes			
346								
347								
348								
349								
350								
351								
352								
353								
354								
355								
811359								
811361								
811363								
811366-1								
-2	SOIL							
811369	<1	<2	12/17/13	ES	yes			
811371								
811373								
811376	SOIL							
811381 (1-2)	<1	<2						
811384								
811408	<1	>2	12/18/13	ES	yes	2:00		pH <2
811409-20	>1							
811409 (1-6, 8-11, 16-19, 21-22)	<1	<2						
Gr6 811409-20	>1	>2	12/19/13	ES	yes	10:00		Filtered then acidify
811390	<1	<2	12/20/13	ES	yes			
410 811393								
811394								
811395								
811396								
811397								
811399		>2			No	12:00		pH <2
811426 (10-12)								
811400 (1-2)								
811404		<2			yes			
811422 (1-2)								
811451								
811453								
811454								
811457								
811466								
811431 (1-3)	<1	<2	12/26/13	ES	yes			

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E 2 **Lab #** 811408

Date Delivered: 12/17/13 **Time:** 19:40 **By:** ☐Mail ☐Field Service ☒Client

1. Was a Chain of Custody received and signed? ☒Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☒No ☐N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☒No ☐N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☒No ☒N/A
5. Were all requested analyses understood and acceptable? ☒Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☒Yes ☐No ☐N/A
   Temperature (if yes)? 5.4 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒Yes ☐No ☐N/A
8. Were sample custody seals intact? ☐Yes ☐No ☒N/A
9. Does the number of samples received agree with COC? ☒Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☒Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☐Yes ☐No ☒N/A
    Preserved (if yes) by: ☐Truesdail ☐Client
12. Were samples pH checked? pH = see C.O.C ☒Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☒Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ RUSH ☒ Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water
16. Comments: _____
17. Sample Check-In completed by Truesdail Log-In/Receiving: L. Shabunina

ALERT !! Level III QC

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

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January 3, 2014

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-446 PROJECT, GROUNDWATER MONITORING, TLI NO.: 811496

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-446 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 23, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 811496
Date: January 3, 2014
Collected: December 23, 2013
Received: December 23, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Felipe Mendoza
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Maksim Gorbunov

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 811496
Date Received: December 23, 2013

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
811496-001	SC-700B-WDR-446	E120.1	NONE	12/23/2013	9:45	EC	7330	umhos/cm	2.00
811496-001	SC-700B-WDR-446	E200.8	NONE	12/23/2013	9:45	Chromium	ND	ug/L	1.0
811496-001	SC-700B-WDR-446	E200.8	NONE	12/23/2013	9:45	Manganese	2.0	ug/L	0.50
811496-001	SC-700B-WDR-446	E218.6	LABFLT	12/23/2013	9:45	Chromium, Hexavalent	ND	ug/L	0.20
811496-001	SC-700B-WDR-446	SM2130B	NONE	12/23/2013	9:45	Turbidity	ND	NTU	0.100
811496-001	SC-700B-WDR-446	SM2540C	NONE	12/23/2013	9:45	Total Dissolved Solids	4680	mg/L	250

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 811496

Printed 1/3/2014

Samples Received on 12/23/2013 3:56:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-446	811496-001	12/23/2013 09:45	Water

Specific Conductivity - EPA 120.1 Batch 12EC13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811496-001 Specific Conductivity	umhos/cm	12/26/2013	1.00	0.606	2.00	7330

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 811462-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	125	125	0	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	721	706	102	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	711	706	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	932	1000	93.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	912	1000	91.2	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 1/3/2014

Chrome VI by EPA 218.6

Batch 12CrH13I

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811496-001 Chromium, Hexavalent	ug/L	12/23/2013 21:30	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 811497-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.141	0.142	0.920	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.207	0.200	104	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.04	5.00	101	90 - 110

Matrix Spike — Lab ID = 811496-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.15	1.17(1.00)	97.7	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.98	5.00	99.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.3	10.0	103	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 122613B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811496-001 Chromium	ug/L	12/27/2013 00:41	1.00	0.0710	1.0	ND
Manganese	ug/L	12/27/2013 00:41	1.00	0.0600	0.50	2.0

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 811437-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	1.15	1.39	18.6	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.204	0.200	102	70 - 130
Manganese	ug/L	1.00	0.188	0.200	94.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.5	50.0	99.0	85 - 115
Manganese	ug/L	1.00	50.6	50.0	101	85 - 115

Matrix Spike

Lab ID = 811437-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	46.2	50.0(50.0)	92.4	75 - 125
Manganese	ug/L	1.00	47.4	51.4(50.0)	92.0	75 - 125

Matrix Spike Duplicate

Lab ID = 811437-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	46.8	50.0(50.0)	93.6	75 - 125
Manganese	ug/L	1.00	48.3	51.4(50.0)	93.8	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.6	90 - 110
Manganese	ug/L	1.00	19.7	20.0	98.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	98.9	90 - 110

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Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.7	20.0	98.6	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 12TDS13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811496-001 Total Dissolved Solids	mg/L	12/26/2013	1.00	1.76	250	4680

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 811496-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4820	4680	2.95	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	499	500	99.8	90 - 110

Turbidity by SM 2130 B

Batch 12TUC13O

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811496-001 Turbidity	NTU	12/23/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 811486-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.183	0.171	6.78	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.40	8.00	92.5	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.64	8.00	95.5	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 1/3/2014

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 12TDS13E
Date Analyzed: 12/26/13

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	75.7469	75.7475	75.7474	0.0001	No	0.0005	5.0	25.0	ND	1
811468	100	75.7409	75.7940	75.7936	0.0004	No	0.0527	527.0	25.0	527.0	1
811486-1	100	76.4967	76.5464	76.5460	0.0004	No	0.0493	493.0	25.0	493.0	1
811486-2	100	67.0302	67.0816	67.0812	0.0004	No	0.0510	510.0	25.0	510.0	1
811486-3	100	74.5899	74.6397	74.6396	0.0001	No	0.0497	497.0	25.0	497.0	1
811486-4	100	71.2931	71.3439	71.3436	0.0003	No	0.0505	505.0	25.0	505.0	1
811488-1	100	79.1468	79.1923	79.1922	0.0001	No	0.0454	454.0	25.0	454.0	1
811488-2	100	72.7550	72.8036	72.8035	0.0001	No	0.0485	485.0	25.0	485.0	1
811496	10	29.3965	29.4434	29.4433	0.0001	No	0.0468	4680.0	250.0	4680.0	1
811496 Dup	10	30.1424	30.1910	30.1906	0.0004	No	0.0482	4820.0	250.0	4820.0	1
LCS	100	74.6919	74.7419	74.7418	0.0001	No	0.0499	499.0	25.0	499.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\, 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	499.0	500	99.8%	90-110%	Yes
LCSD					

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) x\, 100$$

P = Percent recovery.
LC= Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
811496	0.0468	0.0482	1.5%	≤5%	Yes

Duplicate Determination Difference

$$\%\ Difference = \frac{|A \text{ or } B - C|}{C} x\, 100$$

$$where \quad C = \frac{A + B}{2}$$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 12TDS13E
Date Analyzed: 12/26/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
811468	762	0.69	495.3	1.06
811486-1	771	0.64	501.15	0.98
811486-2	782	0.65	508.3	1.00
811486-3	770	0.65	500.5	0.99
811486-4	776	0.65	504.4	1.00
811488-1	732	0.62	475.8	0.95
811488-2	716	0.68	465.4	1.04
811496	7330	0.64	4764.5	0.98
811496 Dup	7330	0.66	4764.5	1.01
LCS				

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-446] 811496

COC Number

TURNAROUND TIME 10 Days

DATE 12/23/13 PAGE 1 OF 1

COMPANY: E2

PROJECT NAME: PG&E Topock

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

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 428648.IM.CS.EX.AC TEAM: 1

SAMPLERS (SIGNATURE): [signature]

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)								NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-446	12/23/13	09:45	Water	x	x	x	x		x							3	pH = b (200.7)
																	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	[signature]	GEORGE GLORIA	E-2	12-23-13 10:50
Signature (Received)	[signature]	~~TRUESDAIL~~ THANH NGO	TRUESDAIL	12-23-13 1050
Signature (Relinquished)	[signature]			12-23-13 1555
Signature (Received)	[signature]	Shabunma	TLI	12-23-13 15:56
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 5.8 °C

CUSTODY SEALED YES ☐ NO ☐

SPECIAL REQUIREMENTS:

035

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
12/23/13	811496	7.0	2mL /100mL	9.5	18:30	MM
	811497-1	7.0	2mL/100mL	9.5	18:40	MM
	811497-2	9.5	N/A	N/A	N/A	
	811498-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
	-16					

12/26/13 NE

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log

MM 12/27/13

TRUESDAIL LABORATORIES, INC.
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
811496	<1	>2	12/26/13	ES	yes	10:00		pH<2
811497 (1-2)	>1	>2	↓	↓	↓	10:00		↓
811510 (1-3)	<1	<2	↓	↓	↓			
811469	>1	<2	12/26/13	ES	yes			
811488 (1-2)	↓	↓	↓	↓	↓			
811490 (1-5)	↓	↓	↓	↓	↓			
811491	<1	↓	↓	↓	↓			
811492	↓	↓	↓	↓	↓			
811493	↓	↓	↓	↓	↓			
811468	↓	>2	↓	↓	No	4:00	12/30/13 10:00	pH<2
811503	↓	↓	↓	↓	↓	↓	↓	↓
811514 (1-3)	↓	↓	↓	↓	↓	↓	↓	↓
811517 (10-12)	↓	↓	↓	↓	↓	↓	↓	↓
811540	<1	>2	1/2/14	ES	yes	10:00		pH<2
811410 (1,2)	<1	<2	12/18/13	ES	yes			
811526 (1-2)	<1	<2	1/2/14	ES	yes			
811545	↓	↓	↓	↓	↓			
811546	↓	↓	↓	↓	↓			
811547	↓	↓	↓	↓	↓			
811549 (1-2)	↓	↓	↓	↓	↓			
811536	↓	↓	↓	↓	↓			
811559	↓	>2	↓	↓	NO	2:00	1/3/14 11:00	pH<2
811519 (4-7	↓	↓	↓	↓	↓	↓		
11,13,19,20,26	↓	↓	↓	↓	↓	↓		
811566 (17,24	↓	↓	↓	↓	↓	↓		
811531 (1-3)	<1	<2	1/2/14	ES	yes			
ES 1/2/14 ~~811498 (14,15)~~	↓	↓	↓	↓	↓			
811498 (13,14)	↓	↓	↓	↓	↓			TOTAL DISSOLVED
811498 (1-6,8-10,15,16)	<1	<2	1/3/14	ES	yes			
811574 (4-6)	<1	>2	1/3/14	KK	NO	1:20 pm		
811567 (1-3)	<1	>2	↓	↓	↓	↓		
811577 (1-2)	>1	<2	1/3/14	KK	yes			
811505 (1-3)	<1	>2	1/3/14	KK	NO	1:20pm		

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 811496

Date Delivered: 12/23/13 **Time:** 15:56 **By:** ☐Mail ☐Field Service ☑Client

1. Was a Chain of Custody received and signed? ☑Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☑No ☐N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☑No ☐N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☑N/A
5. Were all requested analyses understood and acceptable? ☑Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☑Yes ☐No ☐N/A
   Temperature (if yes)? 5.8 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc.)? ☑Yes ☐No ☐N/A
8. Were sample custody seals intact? ☐Yes ☐No ☑N/A
9. Does the number of samples received agree with COC? ☑Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☑Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☐Yes ☐No ☑N/A
    Preserved (if yes) by: ☐Truesdail ☐Client
12. Were samples pH checked? pH = see c.o.e ☑Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☑Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☑Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ RUSH ☑ Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☑Other Water
16. Comments:
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

ALERT!! Level III QC

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.

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Established 1931

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January 6, 2014

E2 Consulting Engineers, Inc.
Mr. Shawn Duffy
155 Grand Ave., Suite 1000
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-447 PROJECT, GROUNDWATER MONITORING, TLI NO.: 811544

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-447 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 30, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Duffy's approval.

The straight run for the matrix spike on sample SC-700B-WDR-447 for Hexavalent Chromium analysis by EPA 218.6 was just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: One (1) Groundwater Sample
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

Laboratory No.: 811544
Date: January 6, 2014
Collected: December 30, 2013
Received: December 30, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Himani Vaishnav
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy

Laboratory No.: 811544
Date Received: December 30, 2013

Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC
P.O. No.: PGEIM11111001

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
811544-001	SC-700B-WDR-447	E120.1	NONE	12/30/2013	7:15	EC	6290	umhos/cm	2.00
811544-001	SC-700B-WDR-447	E200.8	NONE	12/30/2013	7:15	Chromium	ND	ug/L	1.0
811544-001	SC-700B-WDR-447	E200.8	NONE	12/30/2013	7:15	Manganese	4.2	ug/L	0.50
811544-001	SC-700B-WDR-447	E218.6	LABFLT	12/30/2013	7:15	Chromium, Hexavalent	ND	ug/L	0.20
811544-001	SC-700B-WDR-447	SM2130B	NONE	12/30/2013	7:15	Turbidity	ND	NTU	0.100
811544-001	SC-700B-WDR-447	SM2540C	NONE	12/30/2013	7:15	Total Dissolved Solids	4250	mg/L	125

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC
P.O. Number: PGEIM11111001
Release Number:

Laboratory No. 811544

Printed 1/6/2014

Samples Received on 12/30/2013 1:50:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-447	811544-001	12/30/2013 07:15	Water

Specific Conductivity - EPA 120.1 Batch 01EC14A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811544-001 Specific Conductivity	umhos/cm	01/02/2014	1.00	0.606	2.00	6290

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 811519-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	813	812	0.123	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	732	706	104	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	738	706	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	962	1000	96.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	967	1000	96.7	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Chrome VI by EPA 218.6

Batch 01CrH14A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811544-001 Chromium, Hexavalent	ug/L	01/02/2014 13:07	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate — Lab ID = 811544-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.104	0.104	0.0961	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.198	0.200	99.2	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.92	5.00	98.3	90 - 110

Matrix Spike — Lab ID = 811544-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.86	5.10(5.00)	95.2	90 - 110

Matrix Spike — Lab ID = 811544-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.11	1.12(1.00)	98.8	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.94	5.00	98.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.52	10.0	95.2	95 - 105

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Metals by EPA 200.8, Total

Batch 010314A-ICPMS1

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811544-001 Chromium	ug/L	01/03/2014 15:54	1.00	0.0710	1.0	ND
Manganese	ug/L	01/03/2014 15:54	1.00	0.0600	0.50	4.2

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Uranium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 811544-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Uranium	ug/L	1.00	2.73	2.96	8.01	0 - 20
Manganese	ug/L	1.00	4.18	4.19	0.167	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.437	0.500	87.4	70 - 130
Uranium	ug/L	1.00	0.210	0.200	105	70 - 130
Manganese	ug/L	1.00	0.508	0.500	102	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.1	50.0	98.3	85 - 115
Uranium	ug/L	1.00	50.1	50.0	100	85 - 115
Manganese	ug/L	1.00	48.6	50.0	97.1	85 - 115

Matrix Spike

Lab ID = 811544-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	56.0	50.0(50.0)	112	75 - 125
Uranium	ug/L	1.00	47.1	53.0(50.0)	88.3	75 - 125
Manganese	ug/L	1.00	51.7	54.2(50.0)	95.0	75 - 125

Matrix Spike Duplicate

Lab ID = 811544-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	57.3	50.0(50.0)	114	75 - 125
Uranium	ug/L	1.00	47.8	53.0(50.0)	89.8	75 - 125
Manganese	ug/L	1.00	52.8	54.2(50.0)	97.3	75 - 125

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.2	20.0	95.8	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.6	20.0	103	80 - 120
Uranium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Uranium	ug/L	1.00	ND	0		
Manganese	ug/L	1.00	18.3	20.0	91.6	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.8	20.0	93.8	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 01TDS14A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811544-001 Total Dissolved Solids	mg/L	01/02/2014	1.00	1.76	125	4250

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate — Lab ID = 811544-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4480	4250	5.38	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	498	500	99.6	90 - 110

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 428648.IM.CS.EX.AC

Printed 1/6/2014

Turbidity by SM 2130 B Batch 12TUC13P

Parameter	Unit	Analyzed	DF	MDL	RL	Result
811544-001 Turbidity	NTU	12/30/2013	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 811551-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.258	0.270	4.54	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.65	8.00	95.6	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.92	8.00	99.0	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 01TDS14A
Date Analyzed: 1/2/14

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	74.2203	74.2208	74.2208	0.0000	No	0.0005	5.0	25.0	ND	1
811526-1	100	78.3881	78.4323	78.4323	0.0000	No	0.0442	442.0	25.0	442.0	1
811526-2	100	79.2530	79.3020	79.3020	0.0000	No	0.0490	490.0	25.0	490.0	1
811530-2	100	66.7869	66.8028	66.8026	0.0002	No	0.0157	157.0	25.0	157.0	1
811530-4	100	78.2874	78.3281	78.3277	0.0004	No	0.0403	403.0	25.0	403.0	1
811536	100	75.1541	75.2025	75.2021	0.0004	No	0.0480	480.0	25.0	480.0	1
811544	20	29.4734	29.5584	29.5584	0.0000	No	0.0850	4250.0	125.0	4250.0	1
811553-2	200	110.9422	110.9607	110.9607	0.0000	No	0.0185	92.5	12.5	92.5	1
811553-4	100	75.2634	75.2980	75.2980	0.0000	No	0.0346	346.0	25.0	346.0	1
811562-1	50	51.2259	51.2747	51.2743	0.0004	No	0.0484	968.0	50.0	968.0	1
811562-2	100	71.9552	72.0146	72.0145	0.0001	No	0.0593	593.0	25.0	593.0	1
811544 Dup	20	29.1651	29.2551	29.2548	0.0003	No	0.0897	4485.0	125.0	4485.0	1
LCS	100	77.7776	77.8274	77.8274	0.0000	No	0.0498	498.0	25.0	498.0	1
811549-1	100	79.0559	79.0986	79.0984	0.0002	No	0.0425	425.0	25.0	425.0	1
811549-2	100	77.0669	77.1109	77.1109	0.0000	No	0.0440	440.0	25.0	440.0	1
811566-17	50	51.7183	51.7593	51.7591	0.0002	No	0.0408	816.0	50.0	816.0	1
811568-1	100	67.8093	67.8442	67.8438	0.0004	No	0.0345	345.0	25.0	345.0	1
811566-17 Dup	50	52.0331	52.0729	52.0729	0.0000	No	0.0398	796.0	50.0	796.0	1

Calculation as follows:

Filterable residue (TDS), mg/L = $\left(\frac{A-B}{C}\right) x\, 10^6$

Where:

A = weight of dish + residue in grams.
B = weight of dish in grams.
C = mL of sample filtered.

RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	498.0	500	99.6%	90-110%	Yes
LCSD					

LCS Recovery

$P = \left(\frac{LC}{LT}\right) x\, 100$

P = Percent recovery.
LC = Measured LCS value (ppm).
LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
811544	0.0850	0.0897	2.7%	≤5%	Yes
811566-17	0.0408	0.0398	1.2%	≤5%	Yes

Duplicate Determination Difference

$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} x\, 100$

where $C = \frac{A + B}{2}$

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 01TDS14A
Date Analyzed: 1/2/14

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
811526-1	760	0.58	494	0.89
811526-2	721	0.68	468.65	1.05
811530-2	221	0.71	143.65	1.09
811530-4	556	0.72	361.4	1.12
811536	780	0.62	507	0.95
811544	6290	0.68	4088.5	1.04
811553-2	153	0.60	99.45	0.93
811553-4	514	0.67	334.1	1.04
811562-1	1452	0.67	943.8	1.03
811562-2	855	0.69	555.75	1.07
811544 Dup	6290	0.71	4088.5	1.10
LCS				
811549-1	722	0.59	469.3	0.91
811549-2	675	0.65	438.75	1.00
811566-17	1214	0.67	789.1	1.03
811568-1	526	0.66	341.9	1.01
811566-17 Dup	1214	0.66	789.1	1.01

Rec'd 12/30/13

Soc 811544

TRUESDAIL LABORATORIES, INC.
14201 Franklin Avenue, Tustin, CA 92780-7008
(714)730-6239 FAX: (714) 730-6462
www.truesdail.com

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-447]

811544

COC Number

TURNAROUND TIME 5 Days

DATE 12/30/13 PAGE 1 OF 1

COMPANY: E2

PROJECT NAME: PG&E Topock

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

ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612

P.O. NUMBER: 428648.IM.CS.EX.AC TEAM: 1

SAMPLERS (SIGNATURE):

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-447	12/30/13	7:15	Water	x	x	x	x		x								3	M = G (200.7)
																	3	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

RUSH

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)		Ron Phelps	OMI	12-30-13 9:30
Signature (Received)		THANH TRUESDAIL	TRUESDAIL	12-30-13 9:30
Signature (Relinquished)				12-30-13 13:50
Signature (Received)		Alexander Wood	TLI	12/30/13 1:50
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 4.4°C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

036

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
12/23/13	811496	7.0	2mL/100mL	9.5	18:30	MK
	811497-1	7.0	2mL/100mL	9.5	18:40	MK
	811497-2	9.5	N/A	N/A	N/A	
	811498-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
	-16					
12/30/13	811544	7.0	2mL/100mL	MK ~~N/A~~ 9.5	20:00	MK

NE

01/02/14

TRUESDAIL LABORATORIES, INC.
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
811496	<1	>2	12/26/13	ES	yes	10:00		pH<2
811497 (1-2)	>1	>2	↓	↓	↓	10:00		↓
811510 (1-3)	<1	<2						
811469	>1	<2	12/26/13	ES	yes			
811488 (1-2)	↓	↓	↓	↓	↓			
811490 (1-5)								
811491	<1							
811492								
811493		↓			↓			
811468		>2			No	4:00	12/30/13 10:00	pH<2
811503		↓	↓	↓	↓	↓	↓	↓
811514 (1-3)								
811517 (10-12)	↓	↓	↓	↓	↓	↓		
811540	<1	>2	1/2/14	ES	yes	10:00		pH<2
811410 (1,2)	<1	<2	12/18/13	ES	yes			
811526 (1-2)	<1	<2	1/2/14	ES	yes			
811545	↓	↓	↓	↓	↓			
811546								
811547								
811549 (1-2)								
811536		↓			↓			
811559		>2			NO	2:00	1/3/14 11:00	pH<2
811519 (4-7		↓	↓	↓	↓	↓		
11,13,19,20,26								
811566 (17,24	↓	↓	↓	↓	↓	↓		
811531 (1-3)	<1	<2	1/2/14	ES	yes			
ES 1/2/14 ~~811498 (14 15)~~	↓	↓	↓	↓	↓			
811498 (13,14)	↓	↓	↓	↓	↓			TOTAL
811498 (1-6,9-10,15,16)	<1	<2	1/3/14	ES	yes			DISSOLVED
811574 (4-6)	<1	>2	1/3/14	KK	NO	1:20 pm		
811567 (1-3)	<1	>2	↓	↓	↓	↓		
811577 (1-2)	>1	<2	1/3/14	KK	yes			
811565 (1-3)	<1	>2	1/3/14	KK	NO	1:20pm		

Notes:
1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

TRUESDAIL LABORATORIES, INC.

ALERT !!
Level III QC

Sample Integrity & Analysis Discrepancy Form

Client: E 2 **Lab #** 311544

Date Delivered: 12 / 30 / 13 **Time:** 13:50 **By:** ☐Mail ☐Field Service ☒Client

1. Was a Chain of Custody received and signed? ☒Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☒No ☐N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☒No ☐N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☒N/A
5. Were all requested analyses understood and acceptable? ☒Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☒Yes ☐No ☐N/A
   Temperature (if yes)? 4.4 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒Yes ☐No ☐N/A
8. Were sample custody seals intact? ☐Yes ☐No ☒N/A
9. Does the number of samples received agree with COC? ☒Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☒Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☐Yes ☐No ☒N/A
    Preserved (if yes) by: ☐Truesdail ☐Client
12. Were samples pH checked? pH = See C.O.C ☒Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☒Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒Yes ☐No ☐N/A
    Turn Around Time (TAT): ☒ RUSH ☐ Std

RUSH

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water
16. Comments: _____
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

Analy"cal Bench Log Book

WDR pH Resu'

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 700 B	11/19/13	11:40	11/19/13	11:45	METER #2	11/19/13	00:40	-54.0	CHRIS LEGUE	6.9
otes:										
SC 700B	11/26/13	7:00	11/26/13	7:05	METER # 2	11/26/13	00:46	-54.3	CHRIS LEGUE	6.8
otes:										
SC-700B	12-3-13	1345	12-3-13	1350	METER # 2	12-3-13	00:02	-53.8	CHRIS LEGUE	7.2
otes:										
SC-100-B	12-3-13	1345	12-3-13	1350	METER 2	12-3-13	00:02	-53.8	CHRIS LEGUE	7.2
otes.										
SC-700-B	12/10/13	13:00	12/10/13	13:05	METER #2	12/10/13	00:01	-53.2	CHRIS LEGUE	7.1
tes:										
SC-700B	12/17/13	12:35	12/17/13	12:40	METER #2	12/17/13	00:30	-54.1	CHRIS LEGUE	7.0
otes:										
SC-700B	12-23-13	09:43	12-23-13	09:45	METER # 2	12-23-13	00:41	-54.1	GEORGE GLORIA	6.9
tes:										
SC-700B	12-30-13	0715	12-30-13	720	METER #2	12-30-13	0080	-54.1	[illegible]	7.0

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