

April 15, 2015

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Robert Perdue
Executive Officer
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Colorado River Basin Region
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**Subject: Topock IM-3 First Quarter 2015 Monitoring Report
PG&E Topock Compressor Station, Needles, California
Interim Measure No. 3 Groundwater Treatment System
(Document ID: PGE20150415A)**

Dear Ms. Innis and Mr. Perdue:

Enclosed is the First Quarter 2015 Monitoring 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.

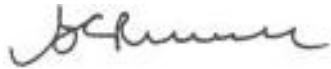
The IM-3 groundwater extraction and treatment system has extracted and treated approximately 17,097,717 gallons of water and removed approximately 6,418 pounds of total chromium from August 1, 2005 through March 31, 2015.

Pamela S. Innis
Robert Perdue
April 15, 2015
Page 2

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

If you have any questions regarding this report, please call me at (760) 326-5582.

Sincerely,

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

Curt Russell
Topock Site Manager

Enclosures:

Topock IM-3 First Quarter 2015 Monitoring Report

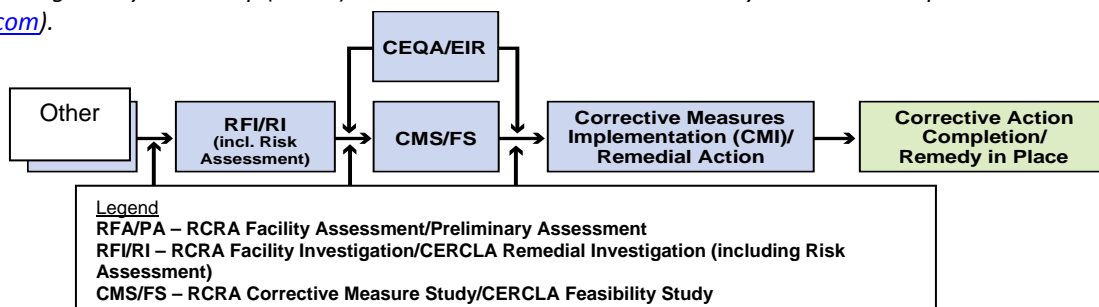
cc: José Cortez, Colorado River Basin Regional Water Board
Thomas Vandenberg, Colorado River Basin Regional Water Board
Chris Guerre, California Department of Toxic Substances Control
Aaron Yue, California Department of Toxic Substances Control

Topock Project Executive Abstract

<p>Document Title:</p> <p>Topock IM-3 First Quarter 2015 Monitoring Report</p> <p>Submitting Agency/Author: U.S. Department of the Interior and Regional Water Quality Control Board</p> <p>Final Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Date of Document: April 15, 2015</p> <p>Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other)</p> <p>PG&E</p> <p>Document ID Number:</p> <p>PGE20150415A</p>
<p>Priority Status: <input type="checkbox"/> HIGH <input type="checkbox"/> MED <input checked="" type="checkbox"/> LOW</p> <p>Is this time critical? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Action Required:</p> <p><input checked="" type="checkbox"/> Information Only <input type="checkbox"/> Review & Comment</p> <p>Return to: _____</p> <p>By Date: _____</p> <p><input type="checkbox"/> Other / Explain:</p>
<p>Type of Document:</p> <p><input type="checkbox"/> Draft <input checked="" type="checkbox"/> Report <input type="checkbox"/> Letter <input type="checkbox"/> Memo</p> <p><input type="checkbox"/> Other / Explain:</p>	<p>What does this information pertain to?</p> <p><input type="checkbox"/> Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)</p> <p><input type="checkbox"/> RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)</p> <p><input type="checkbox"/> Corrective Measures Study (CMS)/Feasibility Study (FS)</p> <p><input type="checkbox"/> Corrective Measures Implementation (CMI)/Remedial Action</p> <p><input type="checkbox"/> California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR)</p> <p><input checked="" type="checkbox"/> Interim Measures</p> <p><input type="checkbox"/> Other / Explain:</p>
<p>What is the consequence of NOT doing this item? What is the consequence of DOING this item?</p> <p>Submittal of this report is a compliance requirement of the ARARs for waste discharge as documented in Attachment A to the Letter Agreement issued July 26, 2011.</p>	<p>Is this a Regulatory Requirement?</p> <p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>If no, why is the document needed?</p>
<p>Other Justification/s:</p> <p><input type="checkbox"/> Permit <input type="checkbox"/> Other / Explain:</p>	
<p>Brief Summary of attached document:</p> <p>This report covers the Interim Measures No. 3 (IM-3) groundwater treatment system monitoring activities during the First Quarter 2015 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.</p> <p>Written by: PG&E</p>	
<p>Recommendations:</p> <p>This report is for your information only.</p>	
<p>How is this information related to the Final Remedy or Regulatory Requirements?</p> <p>The Topock IM-3 First Quarter 2015 Monitoring Report is related to the Interim Measure. PG&E is currently operating the IM-3 groundwater treatment system as authorized by the U.S. Department of the Interior (DOI) Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs) as documented in Attachment A to the Letter Agreement issued July 26, 2011 from the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) to DOI, and the subsequent Letter of Concurrence issued August 18, 2011 from DOI to the Regional Water Board.</p>	
<p>Other requirements of this information?</p> <p>None.</p>	

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

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

Document ID: PGE20150415A

**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

April 15, 2015

CH2MHILL®

155 Grand Avenue, Suite 800
Oakland, CA 94612

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

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

Prepared for

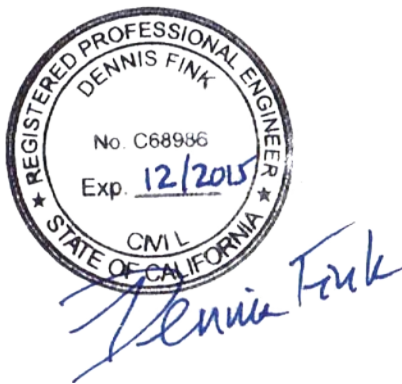
United States Department of the Interior
and
Colorado River Basin Regional Water Quality Control Board

on behalf of

Pacific Gas and Electric Company

April 15, 2015

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



Dennis Fink, P.E.
Project Engineer

Contents

Section	Page
Acronyms and Abbreviations	vii
1 Introduction	1-1
2 Sampling Station Locations	2-1
3 Description of Activities	3-1
4 Groundwater Treatment System Flow Rates	4-1
4.1 January 2015	4-1
4.2 February 2015	4-2
4.3 March 2015	4-2
5 Sampling and Analytical Procedures	5-1
6 Analytical Results	6-1
7 Conclusions	7-1
8 Certification	8-1

Tables

1	Sampling Station Descriptions
2	Flow Monitoring Results
3	Sample Collection Dates
4	Topock IM-3 Waste Discharge ARARs Influent Monitoring Results
5	Topock IM-3 Waste Discharge ARARs Effluent Monitoring Results
6	Topock IM-3 Waste Discharge ARARs Reverse Osmosis Concentrate Monitoring Results
7	Topock IM-3 Waste Discharge ARARs Sludge Monitoring Results
8	Topock IM-3 Waste Discharge ARARs Monitoring Information

Figures

1	IM-3 Project Site Features
TP-PR-10-10-04	Raw Water Storage and Treated Water Storage Tanks and Sampling Locations
PR-10-03	Reverse Osmosis System Sampling and Metering Locations (1 of 2)
PR-10-04	Reverse Osmosis System Sampling and Metering Locations (2 of 2)
TP-PR-10-10-06	Sludge Storage Tanks Sampling Locations
TP-PR-10-10-03	Extraction Wells - Influent Metering Locations
TP-PR-10-10-11	Injection Wells - Effluent Metering Locations

Appendix

A	First Quarter 2015 Laboratory Analytical Reports
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Acronyms and Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements
ASSET	ASSET Laboratories
DOI	United States Department of the Interior
gpm	gallons per minute
IM	Interim Measure
IW	injection well
MRP	Monitoring and Reporting Program
PG&E	Pacific Gas and Electric Company
PST	Pacific Standard Time
Regional Water Board	Colorado River Basin Regional Water Quality Control Board
RO	reverse osmosis
Truesdail	Truesdail Laboratories, Inc.
WDR	Waste Discharge Requirements

Introduction

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

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

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

This report covers monitoring activities related to operation of the IM-3 groundwater treatment system during the First Quarter 2015. 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.

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

- 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.

During the First Quarter 2015, extraction wells TW-3D and PE-1 operated at a target pumping rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Extraction well TW-2D was operated on March 10, 2015. Extraction well TW-2S was not operated during First Quarter 2015. The recorded operational run time for the IM-3 groundwater extraction system (combined or individual pumping), by month, was approximately:

- 97.1 percent during January 2015
- 99.9 percent during February 2015
- 96.0 percent during March 2015

Operation of the groundwater treatment system results in the following three out-flow components:

- **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. Disposal occurs each time a sludge waste storage bin reaches capacity or within 90 days of the start date for accumulation in the storage container.

Activities during the First Quarter 2015 are detailed in Section 4.

Groundwater Treatment System Flow Rates

The First Quarter 2015 treatment system monthly average flow rates (influent, effluent, and reverse osmosis concentrate) are presented in Table 2.

The system influent flow rate was measured by flow meters at groundwater extraction wells TW-2S, TW-2D, TW-3D, and PE-1 (Figure TP-PR-10-10-03). The treatment system effluent flow rate was measured by flow meters in the piping into injection wells IW-2 and IW-3 (Figure TP-PR-10-10-11). The RO concentrate flow rate was measured by a flow meter 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 treated approximately 17,097,717 gallons of extracted groundwater during the First Quarter 2015. The IM-3 facility also treated approximately 150 gallons of water generated from the groundwater monitoring program and approximately 9,000 gallons of injection well backwashing/re-development water.

Eight containers of solids (sludge) were transported offsite from the IM-3 facility during First Quarter 2015.

Periods of planned and unplanned extraction system downtime (that, together, resulted in approximately 2.4 percent downtime during First Quarter 2015) are summarized below. The times shown are in Pacific Standard Time (PST) to be consistent with other data collected (for example, water level data) at the site.

4.1 January 2015

During January 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm, excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during January 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 97.1 percent during the January 2015 reporting period.

The IM-3 facility treated approximately 5,839,161 gallons of extracted groundwater during January 2015. The IM-3 facility treated 2,700 gallons of injection well backwashing/re-development. Two containers of solids from the IM No. 3 facility were transported offsite during January 2015.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 2.9 percent downtime during January 2015) are summarized below. The times shown are in PST to be consistent with other data collected (for example, water level data) at the site.

- **January 5, 2015 (unplanned):** The extraction well system was offline from 1:20 a.m. to 3:08 a.m. due to the failure of a belt on the air compressor. Extraction system downtime was 1 hour, 48 minutes.
- **January 7, 2015 (planned):** The extraction well system was offline from 2:40 p.m. to 2:42 p.m., 2:50 p.m. to 2:52 p.m., 3:00 p.m. to 3:02 p.m., 3:08 p.m. to 3:10 p.m., 3:12 p.m. to 3:14 p.m., 3:16 p.m. to 3:18 p.m., and 3:22 p.m. to 3:24 p.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 14 minutes.
- **January 10, 2015 (unplanned):** The extraction well system was offline from 12:42 a.m. to 1:56 a.m., 2:44 a.m. to 3:46 a.m., and 4:10 a.m. to 7:00 a.m. to clean the microfilter and process drain tank (T-900) strainers and adjust pH levels in the flow to the treated water storage tank (T-700). Extraction system downtime was 5 hours, 6 minutes.
- **January 15, 2015 (unplanned):** The extraction well system was offline from 3:16 a.m. to 3:38 a.m. and 4:04 a.m. to 4:22 a.m. due to high-level alarms in the reverse osmosis feed tank (T-600). Extraction system downtime was 40 minutes.

- **January 16, 2015 (unplanned):** The extraction well system was offline from 2:22 a.m. to 2:26 a.m. due to the shutdown of the air compressor. Extraction system downtime was 4 minutes.
- **January 21, 2015 (unplanned):** The extraction well system was offline from 8:54 a.m. to 7:52 p.m. and 8:12 p.m. to 9:50 p.m. to replace the microfilter actuator valve and a seal in the recirculation pump (P-501). Extraction system downtime was 12 hours, 36 minutes.
- **January 31, 2015 (unplanned):** The extraction well system was offline from 6:04 p.m. to 7:06 p.m. due to loss of power from the City of Needles. Extraction system downtime was 1 hour, 2 minutes.

4.2 February 2015

During February 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm, excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during February 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.9 percent during the February 2015 reporting period.

The IM-3 facility treated approximately 5,431,317 gallons of extracted groundwater during February 2015. The IM-3 facility treated 2,700 gallons of injection well backwashing/re-development and 150 gallons from groundwater monitoring well sampling. Two containers of solids from the IM No. 3 facility were transported offsite during February 2015.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 0.1 percent downtime during February 2015) are summarized below. The times shown are in PST to be consistent with other data collected (for example, water level data) at the site.

- **February 5, 2015 (planned):** The extraction well system was offline from 9:20 a.m. to 9:26 a.m., from 9:40 to 9:42 a.m., from 9:54 to 9:56 a.m., and from 10:08 to 10:10 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 12 minutes.
- **February 5, 2015 (planned):** The extraction well system was offline from 12:58 p.m. to 1:06 p.m. to run specific capacity and injectivity tests on the injection wells. Extraction system downtime was 8 minutes.
- **February 10, 2015 (unplanned):** The extraction well system was offline from 10:24 a.m. to 10:52 a.m. to clean the raw water storage tank (T-100) strainer and the ferrous flow meter (FSL-201). Extraction system downtime was 28 minutes.

4.3 March 2015

During March 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm, excluding periods of planned and unplanned downtime. Extraction well TW-2D was run for a brief time on March 10, 2015 to test a newly installed groundwater pump. Extraction well TW-2S was not operated during March 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 96.0 percent during the March 2015 reporting period.

The IM-3 facility treated approximately 5,827,239 gallons of extracted groundwater during March 2015. The IM-3 facility treated 3,600 gallons of injection well backwashing/re-development. Four containers of solids from the IM No. 3 facility was transported offsite during March 2015.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 4.0 percent downtime during March 2015) are summarized below. The times shown are in PST to be consistent with other data collected (for example, water level data) at the site.

- **March 8, 2015 (unplanned):** The extraction well system was offline from 8:50 p.m. to 10:56 p.m. due to shutdown of the air compressor. Extraction system downtime was 2 hour, 6 minutes.

- **March 10, 2015 (planned):** The extraction well system was offline from 11:08 a.m. to 11:10 am, 11:16 a.m. to 11:18 am, and 11:34 a.m. to 11:36 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 6 minutes.
- **March 11, 2015 (planned):** The extraction well system was offline from 5:56 a.m. to 1:04 p.m. for maintenance activities, including removal of a blockage in the piping between the chromium reduction reactor (T-300) and the first iron oxidation reactor (T-301A), installation of a new microfilter pump (P-501), repair of a microfilter pump (P-502), and repair of the clarifier feed pump (P-400). Extraction system downtime was 7 hours, 8 minutes.
- **March 11, 2015 (unplanned):** The extraction well system was offline from 9:34 p.m. to 9:46 a.m. due to a high-level alarm in the raw water storage tank (T-100). Extraction system downtime was 12 minutes.
- **March 11, 2015 (unplanned):** The extraction well system was offline from 11:16 p.m. to 11:38 p.m. due to failure of the raw water feed pump (P-200). Extraction system downtime was 22 minutes.
- **March 12, 2015 (unplanned):** The extraction well system was offline from 4:52 a.m. to 5:04 a.m. due to a high-level alarm in the raw water storage tank (T-100). Extraction system downtime was 12 minutes.
- **March 12, 2015 (planned):** The extraction well system was offline from 9:56 a.m. to 12:34 p.m. to perform maintenance at on the clarifier feed pump (P-400). Extraction system downtime was 2 hours, 38 minutes.
- **March 13, 2015 (unplanned):** The extraction well system was offline from 8:28 a.m. to 10:00 a.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 1 hour, 32 minutes.
- **March 13, 2015 (unplanned):** The extraction well system was offline from 1:08 p.m. to 1:34 p.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 26 minutes.
- **March 14, 2015 (unplanned):** The extraction well system was offline from 1:48 a.m. to 3:06 a.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 1 hour, 18 minutes.
- **March 14, 2015 (unplanned):** The extraction well system was offline from 7:00 a.m. to 8:54 a.m. to repair the clarifier feed pump (P-400). Extraction system downtime was 1 hour, 54 minutes.
- **March 15, 2015 (unplanned):** The extraction well system was offline from 9:58 a.m. to 11:46 a.m. to change the microfilter modules. Extraction system downtime was 1 hour, 48 minutes.
- **March 15, 2015 (unplanned):** The extraction well system was offline from 10:54 p.m. to 11:12 p.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 18 minutes.
- **March 16, 2015 (unplanned):** The extraction well system was offline from 9:20 a.m. to 3:44 p.m. to replace the clarifier feed pump (P-400). Extraction system downtime was 6 hours, 24 minutes.
- **March 17, 2015 (unplanned):** The extraction well system was offline from 10:28 a.m. to 11:00 a.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 32 minutes.
- **March 17-18, 2015 (unplanned):** The extraction well system was offline from 11:46 p.m. on March 17, 2015 to 12:56 a.m. on March 18, 2015 due to a high level alarm in the third iron oxidation reactor (T-301C) and the raw water storage tank (T-100). Extraction system downtime was 1 hour, 10 minutes.

- **March 24, 2015 (unplanned):** The extraction well system was offline from 9:22 a.m. to 9:34 a.m. to clean the microfilter strainer. Extraction system downtime was 12 minutes.
- **March 25, 2015 (unplanned):** The extraction well system was offline from 8:22 a.m. to 8:36 a.m. and from 12:10 p.m. to 12:22 p.m. to repair the clarifier feed pump (P-400). Extraction system downtime was 26 minutes.
- **March 30, 2015 (unplanned):** The extraction well system was offline from 7:46 a.m. to 8:48 a.m. to change the microfilter modules. Extraction system downtime was 1 hour, 2 minutes.

SECTION 5

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) or ASSET Laboratories (ASSET). Sample containers were labeled and packaged according to standard sampling procedures.

The samples were stored in a sealed container chilled with ice and transported to Truesdail via courier under chain-of-custody documentation. The laboratories confirmed the samples were received in chilled condition upon arrival.

Truesdail is certified by the California Department of Health Services (Certification No. 1237) under the State of California's Environmental Laboratory Accreditation Program. ASSET is certified by the California Department of Health Services (Certification No. 2676) under the State of California's Environmental Laboratory Accreditation Program. California-certified laboratory analyses were performed in accordance with the latest edition of the *Guidelines Establishing Test Procedures for Analysis of Pollutants* (40 Code of Federal Regulations Part 136), promulgated by the U.S. Environmental Protection Agency.

During the First Quarter 2015, 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.

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. Annual 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 6

Analytical Results

Laboratory reports for samples collected in the First Quarter 2015 were prepared by certified analytical laboratories, and are presented in Appendix A.

Samples were collected in accordance with the ARARs sampling frequency requirements. See Table 3 for sample collection dates.

The influent sampling analytical results are presented in Table 4. The effluent sampling analytical results are presented in Table 5. The RO concentrate sampling analytical results are presented in Table 6. The sludge sampling analytical results are presented in Table 7.

Table 8 identifies the laboratory that performed each analysis and lists the following required information:

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

SECTION 7

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, or new releases of hazardous waste or hazardous waste constituents, or new solid waste management units were identified during the reporting period.

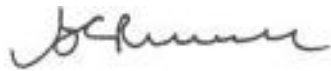
SECTION 8

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: April 15, 2015

Tables

TABLE 1

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

Sample Station	Sample ID ^a	Location
Sampling Station A: Groundwater Treatment System Influent	SC-100B-WDR-###	Sample collected from tap on pipe into T-100 (see Figure TP-RP-10-10-04).
Sampling Station B: Groundwater Treatment System Effluent	SC-700B-WDR-###	Sample collected from tap on pipe downstream from T-700 (see Figure TP-RP-10-10-04).
Sampling Station D: Groundwater Treatment System Reverse Osmosis Concentrate	SC-701-WDR-###	Sample collected from tap on pipe into T-701 (see 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*First Quarter 2015 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	System Influent ^{a,b} (gpm)	System Effluent ^b (gpm)	Reverse Osmosis Concentrate ^b (gpm)
January 2015 Average Monthly Flow Rate	130.81	129.64	0.77
February 2015 Average Monthly Flow Rate	134.71	132.74	0.93
March 2015 Average Monthly Flow Rate	130.54	129.45	0.76

Notes:^a Extraction wells TW-3D and PE-1 were operated during the First Quarter 2015. Extraction well TW-2D was operated on March 10, 2015. Extraction well TW-2S was not operated during the First Quarter 2015.^b The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the First Quarter 2015 is approximately 0.43 percent.

TABLE 3

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

Parameter	Sample Collection Dates	Results
Influent	January 6, 2015	See Table 4
	February 3, 2015	
	March 3, 2015	
Effluent	January 6, 2015	See Table 5
	January 13, 2015	
	January 20, 2015	
	January 27, 2015	
	February 3, 2015	
	February 10, 2015	
	February 17, 2015	
	February 24, 2015	
	March 3, 2015	
	March 10, 2015	
	March 17, 2015	
	March 24, 2015	
	March 31, 2015	
Reverse Osmosis Concentrate	January 6, 2015	See Table 6
Sludge ^a	January 6, 2015	See Table 7

Notes:

^a Sludge samples analysis is required quarterly by composite; samples were collected from each sludge container prior to shipment off-site for the composite sample.

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

Sampling Frequency		Monthly																						
<div>Sample ID</div>	<div>Analytes Units ^b</div> <div>MDL</div> <div>Date</div>	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/Nitrite (as N)	Sulfate	Iron	Zinc	
		mg/L	NTU	µmhos/cm	pH units	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
		50.0	0.100	0.100	---	0.150	1.60	6.20	0.0318	0.180	0.0270	0.0300	0.0190	0.0400	0.220	0.0530	0.0260	0.150	0.0320	0.110	1.60	1.30	0.230	
SC-100B-WDR-502	1/6/2015	4200	0.110	7500	7.5	580	640	ND (50.0)	ND (0.500)	ND (0.500)	3.00	24.0	0.910	ND (1.00)	6.20	ND (5.00)	ND (0.500)	21.0	ND (1.00)	2.80	480	ND (20.0)	ND (10.0)	
RL		50.0	0.100	0.100	---	5.00	20.0	50.0	0.500	0.500	0.100	1.00	0.100	1.00	2.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0	
SC-100B-WDR-506	2/3/2015	4100	0.140	6700	7.3	560	640	ND (50.0)	ND (0.500)	ND (0.500)	2.90	24.0	1.10 J	ND (1.00)	7.20	ND (5.00)	ND (0.500)	22.0	ND (1.00)	2.60	480	ND (20.0)	ND (10.0)	
RL		50.0	0.100	0.100	---	5.00	20.0	50.0	0.500	0.500	0.100	1.00	0.100	1.00	2.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0	
SC-100B-WDR-510	3/3/2015	4200	0.240	8000	7.4	560	590	ND (50.0)	ND (0.500)	ND (0.500)	2.90	26.0	1.20	ND (1.00)	4.20	ND (5.00)	ND (0.500)	19.0	ND (1.00)	2.60	500	ND (20.0)	ND (10.0)	
RL		50.0	0.100	0.100	---	5.00	40.0	50.0	0.500	0.500	0.100	1.00	0.100	1.00	2.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0	

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
First Quarter 2015 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	
	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	
Sampling Frequency		Weekly						Monthly																	
<div><div></div></div>	Analytes Units ^c MDL ^d	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/Nitrite (as N)	Sulfate	Iron	Zinc		
		mg/L	NTU	µmhos/cm	pH units	µg/L	µg/L	µg/L	mg/L	µg/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	µg/L	µg/L	
		50.0	0.100	0.100	---	0.0300	0.0150	6.20	0.0318	0.180	0.0270	0.0300	0.0190	0.0400	0.220	0.0530	0.0260	0.150	0.0320	0.110	1.60	1.30	0.230		
Sample ID	Date																								
SC-700B-WDR-502	1/6/2015	4100	0.180	7500	7.47	ND (1.00)	ND (0.200)	ND (50.0)	ND (0.500)	ND (0.500)	ND (0.100)	15.0	0.890	ND (1.00)J	6.40	ND (5.00)	ND (0.500)J	21.0	2.00	2.60	460	ND (20.0)	ND (10.0)		
	RL	50.0	0.100	0.100	---	1.00	0.200	50.0	0.500	0.500	0.100	1.00	0.100	1.00	2.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0		
SC-700B-WDR-503	1/13/2015	4000	0.140	6700	7.41	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	ND (0.500)J	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-700B-WDR-504	1/20/2015	4000	ND (0.100)	6700	7.26	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	ND (0.500)J	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-700B-WDR-505	1/27/2015	3800	0.220	6700	6.76	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	5.50	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-700B-WDR-506	2/3/2015	4100	0.240	6700	7.06	ND (1.00)	ND (0.200)	ND (50.0)	ND (0.500)	ND (0.500)	ND (0.100)	13.0	1.10	ND (1.00)J	7.00 J	ND (5.00)	9.40	24.0	4.10	2.70	480	ND (20.0)	ND (10.0)J		
	RL	50.0	0.100	0.100	---	1.00	0.200	50.0	0.500	0.500	0.100	1.00	0.100	1.00	2.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0		
SC-700B-WDR-507	2/10/2015	4000	0.170	7000	7.00	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	ND (0.500)J	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-700B-WDR-508	2/17/2015	4200	0.220	7100	6.97	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	ND (0.500)	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-700B-WDR-509	2/24/2015	4200	0.170	6800	7.12	ND (1.00)	0.210	---	---	---	---	---	---	---	---	---	ND (0.500)J	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-700B-WDR-510	3/3/2015	4100	0.140	8000	7.00	ND (1.00)	ND (0.200)	ND (50.0)	ND (0.500)	ND (0.500)	ND (0.100)	10.0	1.10	ND (1.00)J	3.80	ND (5.00)	ND (0.500)J	17.0	1.00	2.70	480	ND (20.0)	ND (10.0)		
	RL	50.0	0.100	0.100	---	1.00	0.200	50.0	0.500	0.500	0.100	1.00	0.100	1.00	2.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0		
SC-700B-WDR-511	3/10/2015	5500	0.130	7300	7.00	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	ND (0.500)	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-700B-WDR-512	3/17/2015	4400	0.140	7400	7.34	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	ND (0.500)	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-700B-WDR-513	3/24/2015	4300	0.160	7200	7.00	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	ND (0.500)J	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-700B-WDR-514	3/31/2015	4400	0.200	7300	7.21	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	ND (0.500)	---	---	---	---	---	---		
	RL	50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		

TABLE 5
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Effluent Monitoring Results^a
First Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

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

Sampling Frequency		Quarterly																						
<div>Sample ID</div>	<div>Date</div>	<div>Analytes</div>	TDS	Specific Conductance	Field ^c pH	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
		<div>Units^b</div>	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
		<div>MDL</div>	200	0.100	---	0.000030	0.000080	0.00092	0.00013	0.00015	0.000051	0.000066	0.000017	0.00020	1.10	0.000053	0.00076	0.000015	0.00016	0.00034	0.00047	0.000040	0.00016	0.0012
SC-701-WDR-502	1/6/2015		15000	22000	8.1	0.00190	ND (0.0010)	ND (0.0025)	0.000530	0.0570	ND (0.0025)	ND (0.0025)	0.000700	ND (0.0050)	22.0	ND (0.0050)	0.0750	ND (0.00020)	0.0130	0.0140	ND (0.0025)	ND (0.0025)	ND (0.0010)	ND (0.0500)
RL			200	0.100	---	0.0010	0.0010	0.0025	0.00050	0.0050	0.0025	0.0025	0.00050	0.0050	10.0	0.0050	0.0025	0.00020	0.0050	0.0025	0.0025	0.0025	0.0010	0.0500

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

Sampling Frequency		Quarterly																		
<div><div></div><div>Analytes</div><div>Units^b</div><div>MDL</div></div>	Date	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
		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
		0.370	0.270	0.560	0.270	0.370	0.330	0.350	0.370	0.280	0.630	0.310	0.340	0.0110	0.340	0.450	0.340	0.420	0.370	0.350
Sample ID																				
SC-Sludge-WDR-502	1/6/2015	2700	110	ND (5.30)	12.0	47.0	ND (2.60)	ND (2.60)	3.70	79.0	28.0	ND (2.60)	5.40	ND (0.260)	26.0	9.00	ND (2.60)	ND (5.30)	29.0	11.0
RL		2.60	5.30	5.30	2.60	2.60	2.60	2.60	2.60	5.30	2.60	2.60	2.60	0.260	2.60	2.60	2.60	5.30	2.60	2.60

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

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

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-100B	SC-100B-WDR-502	Josh Rosenberg	1/6/2015	2:20:00 PM	ASSET	EPA 120.1	SC	1/7/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	1/12/2015	Claire Ignacio
					ASSET	EPA 200.7	B	1/12/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	1/12/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	1/8/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	1/7/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	1/12/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	1/12/2015	Quennie Manimtim
					FIELD	HACH	PH	1/6/2015	Josh Rosenberg
					ASSET	SM 2540C	TDS	1/7/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	1/16/2015	Quennie Manimtim
					ASSET	SM2130B	TRB	1/8/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	2/3/2015	Maksim Gorbunov
SC-100B	SC-100B-WDR-506	Ron Phelps	2/3/2015	1:15:00 PM	ASSET	EPA 120.1	SC	2/4/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	2/18/2015	Claire Ignacio
					ASSET	EPA 200.7	B	2/18/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	2/18/2015	Claire Ignacio
					ASSET	EPA 200.7	FETD	2/11/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	2/11/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	MND	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	2/10/2015	Claire Ignacio

TABLE 8

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

Monitoring Information

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

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-100B	SC-100B-WDR-506	Ron Phelps	2/3/2015	1:15:00 PM	ASSET	EPA 200.8	SB	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	2/10/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	2/4/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	2/10/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	2/10/2015	Quennie Manimtim
					FIELD	HACH	PH	2/3/2015	Josh Rosenberg
					ASSET	SM 2320B	ALKB	2/10/2015	Quennie Manimtim
					ASSET	SM 2320B	ALKC	2/10/2015	Quennie Manimtim
					ASSET	SM 2320B	HYDX	2/10/2015	Quennie Manimtim
					ASSET	SM 2540C	TDS	2/5/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	2/16/2015	Quennie Manimtim
					ASSET	SM2130B	TRB	2/4/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	2/19/2015	Naheed Eidinejad
SC-100B	SC-100B-WDR-510	Ron Phelps	3/3/2015	1:18:00 PM	ASSET	EPA 120.1	SC	3/4/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	3/16/2015	Claire Ignacio
					ASSET	EPA 200.7	B	3/16/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	3/16/2015	Claire Ignacio
					ASSET	EPA 200.7	FETD	3/16/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MND	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	3/6/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	3/4/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	3/5/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	3/5/2015	Quennie Manimtim
					FIELD	HACH	PH	3/3/2015	R.Phelps
					ASSET	SM 2320B	ALKB	3/8/2015	Quennie Manimtim
					ASSET	SM 2320B	ALKC	3/8/2015	Quennie Manimtim
					ASSET	SM 2320B	HYDX	3/8/2015	Quennie Manimtim

TABLE 8

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

Monitoring Information

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

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-100B	SC-100B-WDR-510	Ron Phelps	3/3/2015	1:18:00 PM	ASSET	SM 2540C	TDS	3/4/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	3/10/2015	Quennie Manimtim
					ASSET	SM2130B	TRB	3/4/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	3/13/2015	Naheed Eidinejad
SC-700B	SC-700B-WDR-502	Josh Rosenberg	1/6/2015	1:00:00 PM	ASSET	EPA 120.1	SC	1/7/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	1/12/2015	Claire Ignacio
					ASSET	EPA 200.7	B	1/12/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	1/12/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	1/8/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	1/7/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	1/12/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	1/12/2015	Quennie Manimtim
					FIELD	HACH	PH	1/6/2015	Josh Rosenberg
					ASSET	SM 2540C	TDS	1/7/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	1/16/2015	Quennie Manimtim
					ASSET	SM2130B	TRB	1/8/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	2/3/2015	Maksim Gorbunov
SC-700B	SC-700B-WDR-503	Scott O Donnell	1/13/2015	12:26:00 PM	ASSET	EPA 120.1	SC	1/14/2015	Lilia Ramit/Ryan Balilu
					ASSET	EPA 200.8	CR	1/15/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	1/15/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	1/14/2015	Ryan Balilu
					FIELD	HACH	PH	1/13/2015	Scott Donell
					ASSET	SM 2540C	TDS	1/14/2015	Lilia Ramit/Ryan Balilu
SC-700B	SC-700B-WDR-504	Scott O Donnell	1/20/2015	12:51:00 PM	ASSET	SM2130B	TRB	1/15/2015	Lilia Ramit/Ryan Balilu
					ASSET	EPA 120.1	SC	1/21/2015	Lilia Ramit/Ryan Balilu
					ASSET	EPA 200.8	CR	1/22/2015	Claire Ignacio

TABLE 8

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

Monitoring Information

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

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-700B	SC-700B-WDR-504	Scott O Donnell	1/20/2015	12:51:00 PM	ASSET	EPA 200.8	MN	1/22/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	1/21/2015	Ryan Balilu
					FIELD	HACH	PH	1/20/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	1/21/2015	Lilia Ramit/Ryan Balilu
					ASSET	SM2130B	TRB	1/22/2015	Ryan Balilu
SC-700B	SC-700B-WDR-505	Chris Lentz	1/27/2015	11:05:00 AM	ASSET	EPA 120.1	SC	1/28/2015	Lilia Ramit/Ryan Balilu
					ASSET	EPA 200.8	CR	2/2/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	2/2/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	1/28/2015	Ryan Balilu
					FIELD	HACH	PH	1/27/2015	Chris Lentz
					ASSET	SM 2540C	TDS	2/2/2015	Lilia Ramit/Ryan Balilu
					ASSET	SM2130B	TRB	1/28/2015	Lilia Ramit/Ryan Balilu
SC-700B	SC-700B-WDR-506	Ron Phelps	2/3/2015	1:15:00 PM	ASSET	EPA 120.1	SC	2/4/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	2/18/2015	Claire Ignacio
					ASSET	EPA 200.7	B	2/18/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	2/18/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	2/11/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	2/10/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	2/10/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	2/4/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	2/10/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	2/10/2015	Quennie Manimtim
					FIELD	HACH	PH	2/3/2015	Josh Rosenberg
					ASSET	SM 2540C	TDS	2/5/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	2/16/2015	Quennie Manimtim
					ASSET	SM2130B	TRB	2/4/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	2/19/2015	Naheed Eidinejad
SC-700B	SC-700B-WDR-507	Ryan Phelps	2/10/2015	1:50:00 PM	ASSET	EPA 120.1	SC	2/11/2015	Lilia Ramit

TABLE 8

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

Monitoring Information

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

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-700B	SC-700B-WDR-507	Ryan Phelps	2/10/2015	1:50:00 PM	ASSET	EPA 200.8	CR	2/12/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	2/12/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	2/11/2015	Ryan Balilu
					FIELD	HACH	PH	2/10/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	2/11/2015	Lilia Ramit
					ASSET	SM2130B	TRB	2/11/2015	Lilia Ramit
SC-700B	SC-700B-WDR-508	Chris Lentz	2/17/2015	12:00:00 PM	ASSET	EPA 120.1	SC	2/18/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	2/20/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	2/20/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	2/18/2015	Ryan Balilu
					FIELD	HACH	PH	2/17/2015	Chris Lentz
					ASSET	SM 2540C	TDS	2/18/2015	Lilia Ramit
SC-700B	SC-700B-WDR-509	Chris Lentz	2/24/2015	12:30:00 PM	ASSET	SM2130B	TRB	2/18/2015	Lilia Ramit
					ASSET	EPA 120.1	SC	2/25/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	2/26/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	2/26/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	2/26/2015	Ryan Balilu
					FIELD	HACH	PH	2/24/2015	Chris Lentz
SC-700B	SC-700B-WDR-510	Ron Phelps	3/3/2015	1:15:00 PM	ASSET	SM 2540C	TDS	2/25/2015	Lilia Ramit
					ASSET	SM2130B	TRB	2/25/2015	Lilia Ramit
					ASSET	EPA 120.1	SC	3/4/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	3/16/2015	Claire Ignacio
					ASSET	EPA 200.7	B	3/16/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	3/16/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	3/6/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	3/6/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	3/4/2015	Ryan Balilu

TABLE 8

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

Monitoring Information

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

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-700B	SC-700B-WDR-510	Ron Phelps	3/3/2015	1:15:00 PM	ASSET	EPA 300.0	FL	3/5/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	3/5/2015	Quennie Manimtim
					FIELD	HACH	PH	3/3/2015	R.Phelps
					ASSET	SM 2540C	TDS	3/4/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	3/10/2015	Quennie Manimtim
					ASSET	SM2130B	TRB	3/4/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	3/13/2015	Naheed Eidinejad
SC-700B	SC-700B-WDR-511	Ryan Phelps	3/10/2015	11:50:00 AM	ASSET	EPA 120.1	SC	3/11/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	3/18/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	3/18/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	3/11/2015	Ryan Balilu
					FIELD	HACH	PH	3/10/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	3/16/2015	Lilia Ramit
					ASSET	SM2130B	TRB	3/11/2015	Lilia Ramit
SC-700B	SC-700B-WDR-512	Chris Lentz	3/17/2015	12:00:00 PM	ASSET	EPA 120.1	SC	3/18/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	3/21/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	3/21/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	3/18/2015	Ryan Balilu
					FIELD	HACH	PH	3/17/2015	Chris Lentz
					ASSET	SM 2540C	TDS	3/18/2015	Lilia Ramit
SC-700B	SC-700B-WDR-513	Ryan Phelps	3/24/2015	12:00:00 PM	ASSET	SM2130B	TRB	3/18/2015	Lilia Ramit
					ASSET	EPA 120.1	SC	3/25/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	3/27/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	3/27/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	3/26/2015	Ryan Balilu
					FIELD	HACH	PH	3/24/2015	Chris Lentz
SC-700B	SC-700B-WDR-514	Josh Rosenberg	3/31/2015	1:12:00 PM	ASSET	SM 2540C	TDS	3/25/2015	Lilia Ramit
					ASSET	SM2130B	TRB	3/25/2015	Lilia Ramit
					ASSET	EPA 120.1	SC	4/1/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	4/2/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	4/2/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	4/1/2015	Ryan Balilu
SC-700B	SC-700B-WDR-514	Josh Rosenberg	3/31/2015	1:12:00 PM	FIELD	HACH	PH	3/31/2015	Josh Rosenberg
					ASSET	SM 2540C	TDS	4/1/2015	Lilia Ramit
					ASSET	SM2130B	TRB	4/1/2015	Lilia Ramit
					ASSET	SM2130B	TRB	4/1/2015	Lilia Ramit

TABLE 8

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

Monitoring Information

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

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-701	SC-701-WDR-502	Josh Rosenberg	1/6/2015	2:20:00 PM	ASSET	EPA 120.1	SC	1/7/2015	Lilia Ramit
					ASSET	EPA 200.8	AG	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BE	1/12/2015	Claire Ignacio
					ASSET	EPA 200.8	CD	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CO	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	1/12/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SE	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	TL	1/12/2015	Claire Ignacio
					ASSET	EPA 200.8	V	1/8/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	1/8/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	1/7/2015	Ryan Balilu
					ASSET	EPA 245.1	HG	1/12/2015	Claire Ignacio
					ASSET	EPA 300.0	FL	1/12/2015	Quennie Manimtim
					FIELD	HACH	PH	1/6/2015	Josh Rosenberg
					ASSET	SM 2540C	TDS	1/7/2015	Lilia Ramit
Phase Separator	SC-Sludge-WDR-502	Josh Rosenberg	1/6/2015	1:40:00 PM	ASSET	EPA 300.0	FL	1/19/2015	Quennie Manimtim
					ASSET	EPA 6010B	AG	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	AS	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	BA	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	BE	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	CD	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	CO	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	CR	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	CU	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	MN	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	MO	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	NI	1/13/2015	Claire Ignacio

TABLE 8

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

Monitoring Information

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

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
Phase Separator	SC-Sludge-WDR-502	Josh Rosenberg	1/6/2015	1:40:00 PM	ASSET	EPA 6010B	PB	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	SB	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	SE	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	TL	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	V	1/13/2015	Claire Ignacio
					ASSET	EPA 6010B	ZN	1/13/2015	Claire Ignacio
					ASSET	EPA 7471A	HG	1/13/2015	Claire Ignacio
					ASSET	SW 7199	CR6	1/12/2015	Ryan Balilu

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).

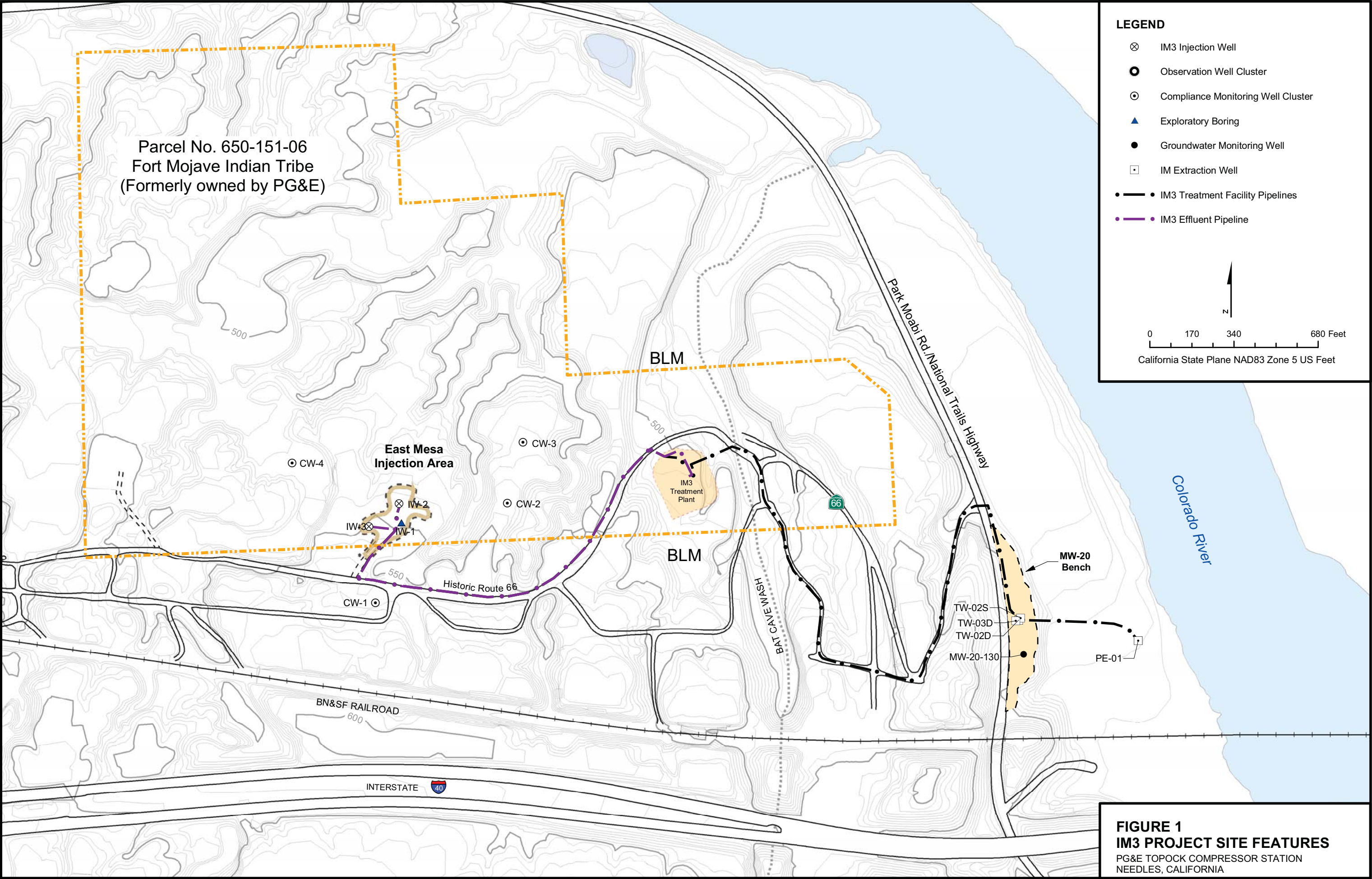
SC-100B = Sampling location for all influent samples is tap on pipe from extraction wells into tank T-100 (see attached P&ID TP-PR-10-10-04).

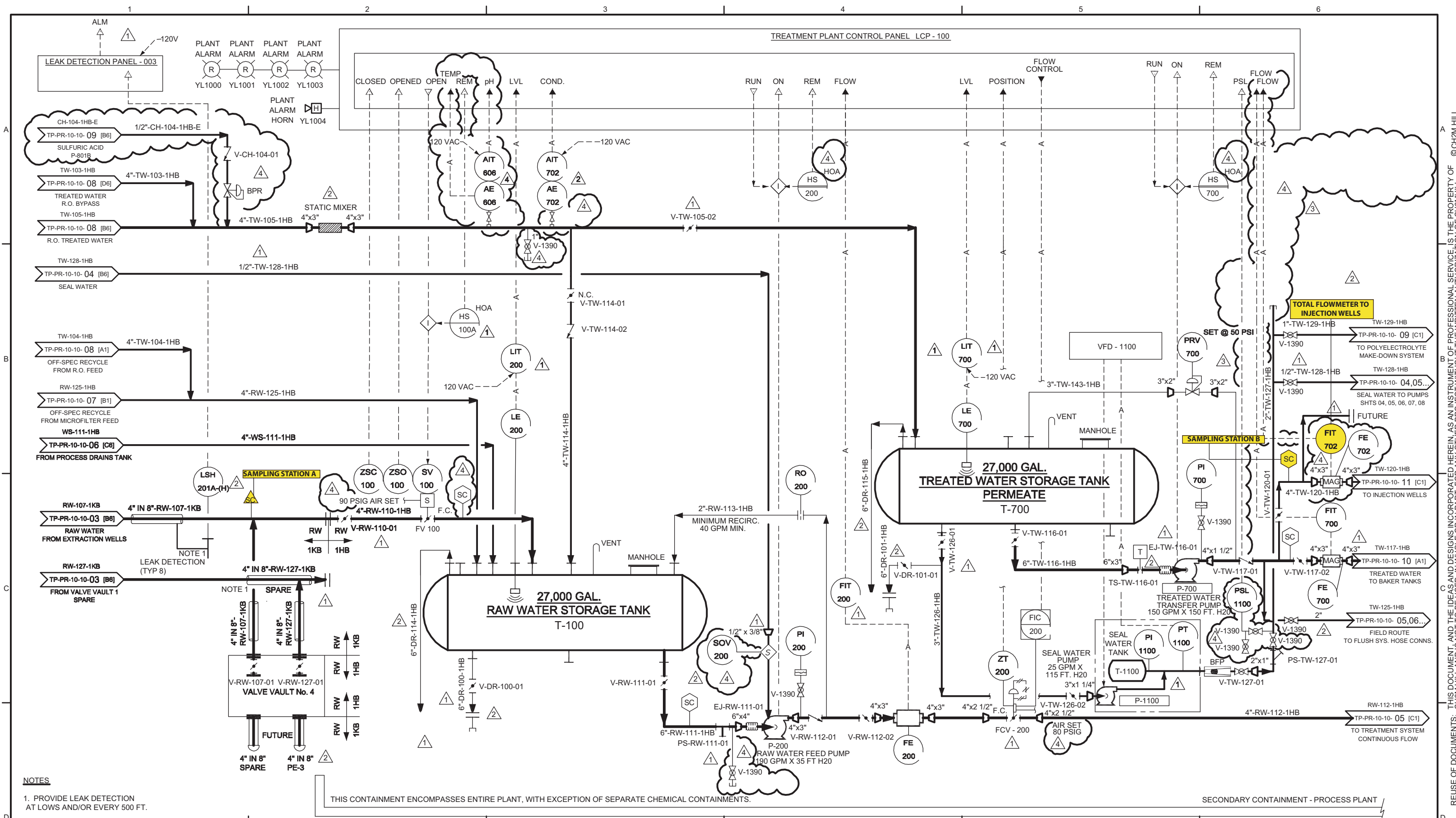
SC-701 = Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&ID PR-10-04).

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.

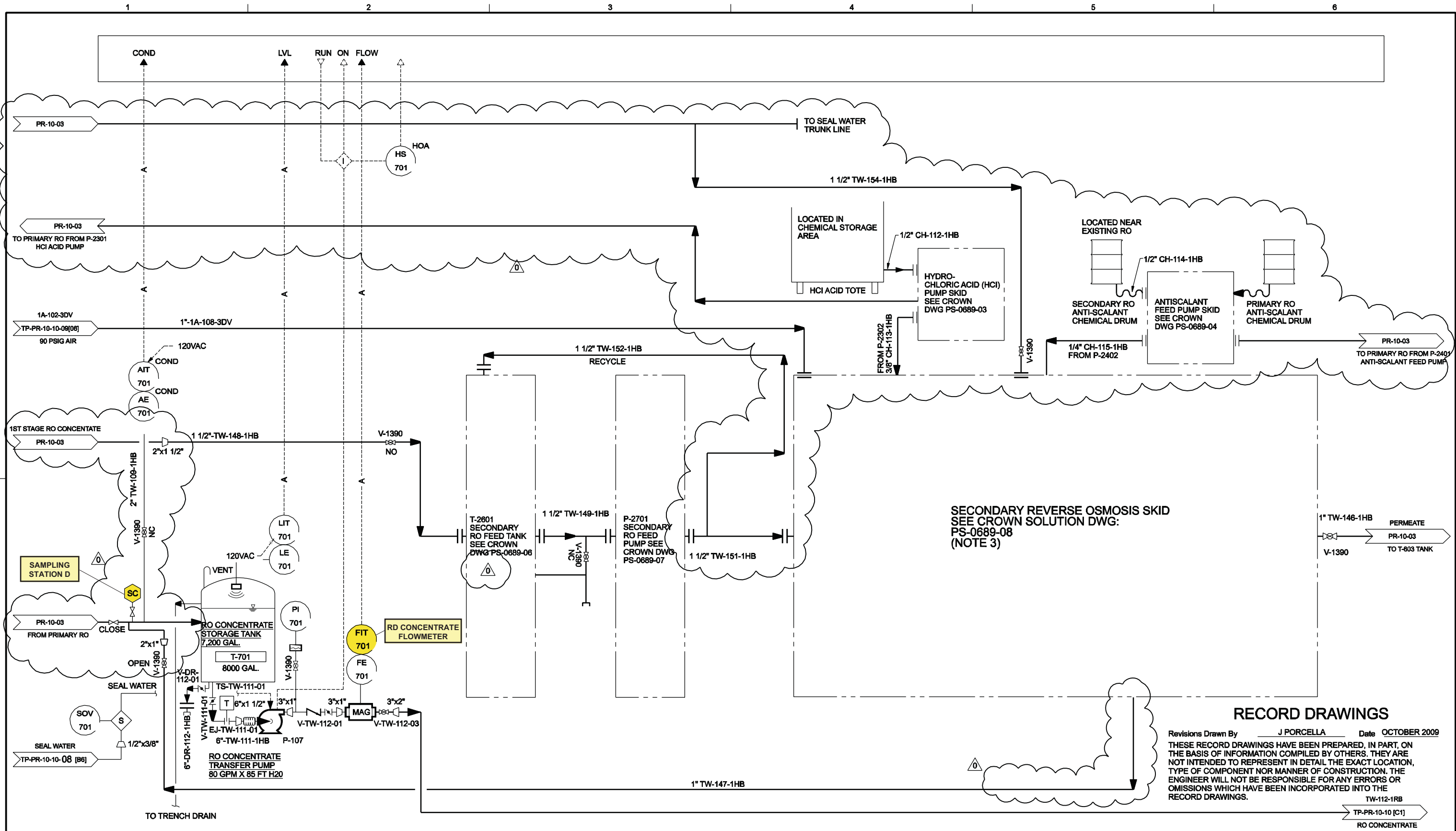
ALKB = alkalinity, bicarb as CaCO ₃	MO = molybdenum
ALKC = alkalinity, carb as CaCO ₃	MOIST = moisture
AL = aluminum	NH ₃ N = ammonia (as N)
Ag = silver	NI = nickel
AS = arsenic	NO ₃ NO ₂ N = nitrate/nitrite (as N)
B = boron	PB = lead
BA = barium	PH = pH
BE = beryllium	SB = antimony
CD = cadmium	SC = specific conductance
CO = cobalt	SE = selenium
CR = chromium	SO ₄ = sulfate
CR6 = hexavalent chromium	TDS = total dissolved solids
CU = copper	TL = thallium
FE = iron	TLI = Truesdail Laboratories, Inc.
FETD = iron, dissolved	TRB = turbidity
FL = fluoride	V = vanadium
HG = mercury	ZN = zinc
MN = manganese	
MND = manganese, dissolved	

Figures



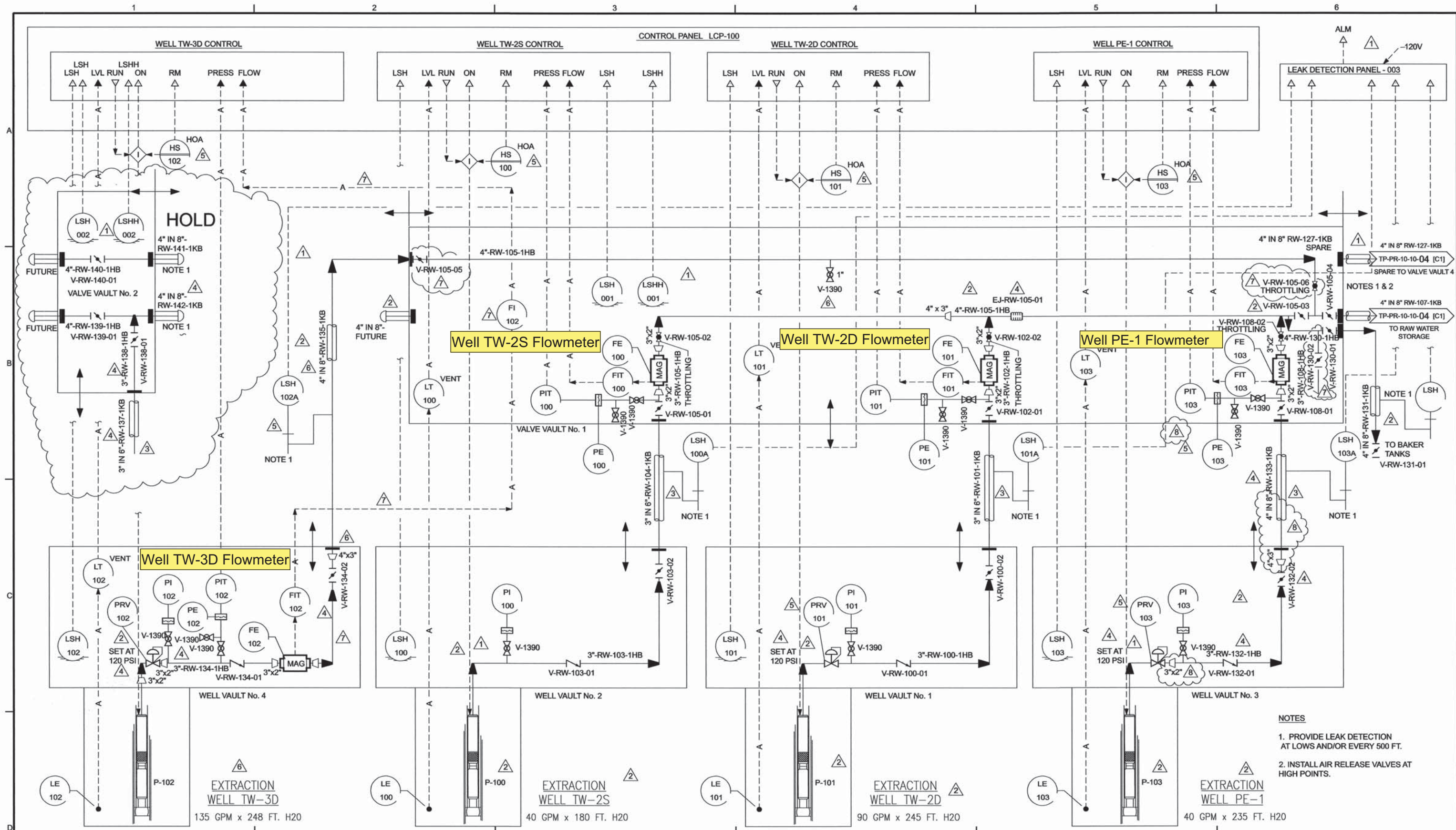


RESPONSIBLE ENGINEER: Kenneth L. Martins CH4876 PE #	NO.	DATE	REVISION	BY	CHK	REVISION APPROVAL	REV 4	DATE 09/21/05	PRINT DISTRIBUTION	STATUS					PACIFIC GAS & ELECTRIC CO. TOPOCK COMPRESSOR STATION INTERIM MEASURE 3 EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM PROJ NO. 315994	PROCESS AND INSTRUMENTATION DIAGRAM SHEET 04 STORAGE AREA		
	0	07/28/04	FOR INTERNAL REVIEW	EFC	AJ	DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE	ISSUED	REV	DATE	SDE				PEM
	0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ	CIVIL		ELECTRICAL		STATUS	PRELIMINARY							
	1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	STRUCTURAL		INST & CONTROL		REV.	FOR REVIEW AND APPROVAL	D	07/28/04					
	2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	MECHANICAL		ARCHITECTURAL		CLIENT	APPROVED FOR CONSTRUCTION	0	09/03/04	KLM				TP
	3	02/14/05	ADDED RECIRC. LINE AND PRV VALVE TO T-700 - APPROVED FOR CONSTRUCTION	EFC	AJ	PROCESS		ENVIRONMENTAL		FIELD	REVISED & APPROVED FOR CONSTRUCTION	4	/ /					
	4	09/21/05	REVISED PER AS-BUILT CONDITIONS	EFC	AJ	PIPING		GEN. ARRANG.		INTRA CO.								
										SCALE NONE					CH2MHILL		DWG. NO. TP-PR-10-10-04	REV. 4



** ORIGINALLY STAMPED AND SIGNED BY: JOHN PORCELLA CALIFORNIA PE NO. C70145 ON 04-01-2009 **	RESPONSIBLE ENGINEER John Porcella C70145 Exp. 3-30-10 PE #	NO.	DATE	REVISION		BY	CHK	REVISION APPROVAL		REV 0	DATE 10/02/09	PRINT DISTRIBUTION		STATUS					PACIFIC GAS & ELECTRIC CO. TOPOCK COMPRESSOR STATION INTERIM MEASURE 3 PLANT PERFORMANCE IMPROVEMENTS		PROCESS AND INSTRUMENTATION DIAGRAM REVERSE OSMOSIS SYSTEM SHEET TWO OF TWO				
		A	2/12/09	INTERNAL REVIEW				DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED		DATE		ISSUED	REV	DATE	SDE						PEM	
		B	2/12/09	CLIENT REVIEW				CIVIL	SJ	ELECTRICAL	FH		STATUS		PRELIMINARY	A	2/12/09	JP						JP	
		C	4/01/09	FOR REVIEW AND APPROVAL		JR	JP	STRUCTURAL		INST & CONTROL	JG		REV.		FOR REVIEW AND APPROVAL	C	4/01/09	JP						JP	
		D	11/17/09	FINAL RECORD ISSUE		JR	JP	MECHANICAL	SJ	ARCHITECTURAL			CLIENT		APPROVED FOR CONSTRUCTION										
								PROCESS	DF	ENVIRONMENTAL			FIELD		REVISED & APPROVED FOR CONSTRUCTION	0	10/02/09	JP	JP	PROJ NO. 362032					
								PIPING	SJ	GEN. ARRANG.	SJ		INTRA CO.		SCALE NONE					CH2MHILL		DWG. NO.	PR-10-04	REV.	0

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

NO.	DATE	REVISION	BY	CHK	REVISION APPROVAL	REV 8	DATE 12/06/05	PRINT DISTRIBUTION	STATUS
8	12/07/05	REMOVED PE-1 HOLDS	JBW	SDH	DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	CIVIL	—	ELECTRICAL	—	STATUS
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	STRUCTURAL	—	INST. & CONTROL	—	REV.
3	03/16/05	DELETED NOTES, APPROVED FOR CONSTRUCTION	EFC	AJ	MECHANICAL	—	ARCHITECTURAL	—	CLIENT
4	07/20/05	RELIEF VALVE SETTINGS, WELL PE-1 LINE TAGS, HOLDS REMOVED, APPROVED FOR CONSTRUCTION	EFC	AJ	PROCESS	—	ENVIRONMENTAL	—	FIELD
5	09/27/05	FINAL RECORD ISSUE	EFC	AJ	PIPING	SDH	GEN. ARRANG.	—	INTRA CD.
6	10/06/05	REVISED FINAL RECORD - ADDED TW-3D	EFC	AJ	—	—	—	—	—
7	10/19/05	REVISED AS NOTED	EFC	AJ	—	—	—	—	—

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 03
EXTRACTION WELLS
PE-1, TW-2D, TW-2S AND TW-3D

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

FILENAME: tpr101003.dwg

PLOT DATE: 19-OCT-2005

PLOT TIME:

THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

D

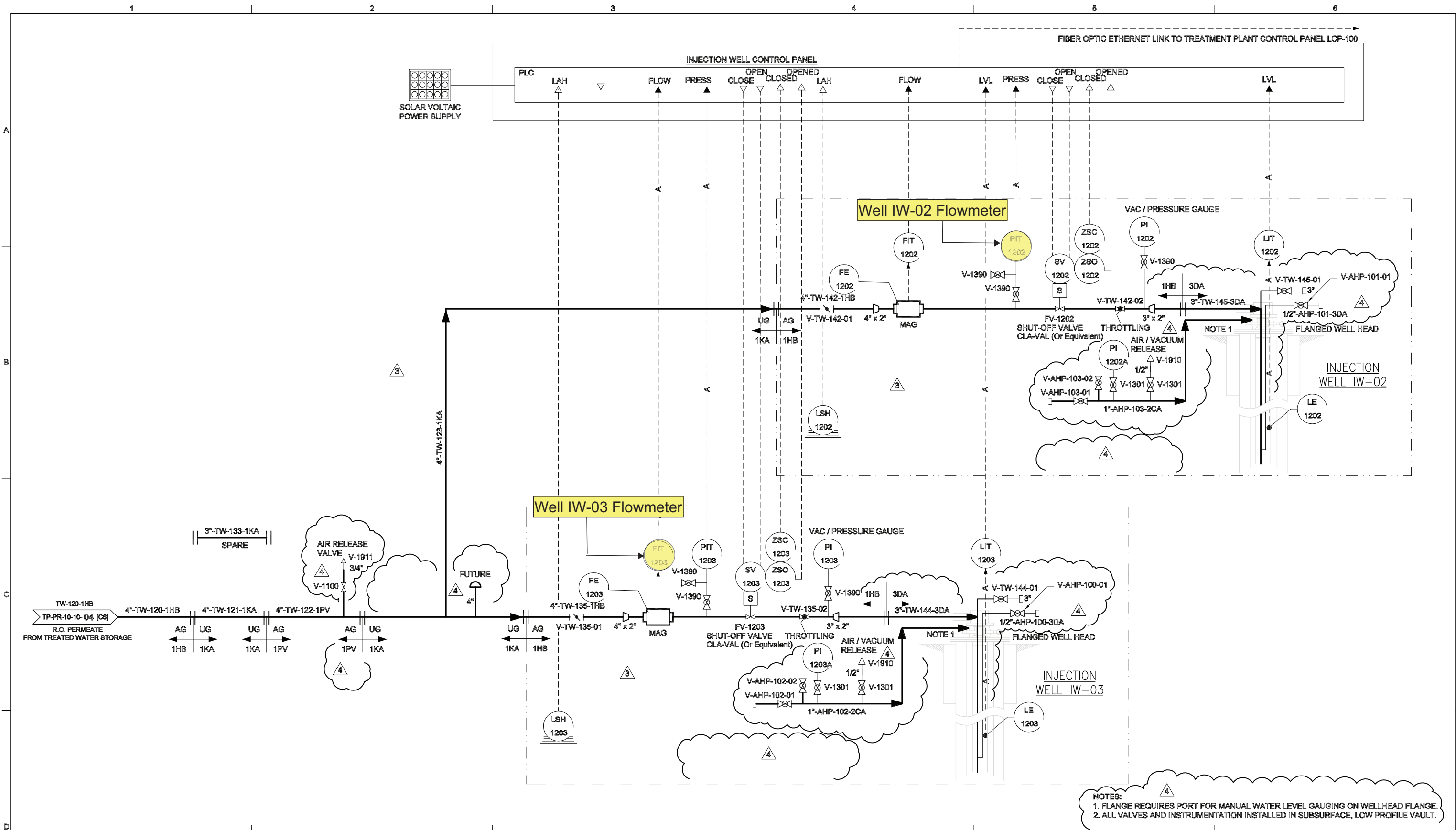
A

B

C

D

© CH2M HILL



NO.	DATE	REVISION	BY	CHK	REVISION APPROVAL	REV 4	DATE 03/10/05	PRINT DISTRIBUTION	STATUS					PACIFIC GAS & ELECTRIC CO. TOPOCK COMPRESSOR STATION INTERIM MEASURE 3 EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM PROJ NO. 315994	PROCESS AND INSTRUMENTATION DIAGRAM SHEET 11 INJECTION WELLS	
									ISSUED	REV	DATE	SDE	PEM			
A	07/28/04	FOR INTERNAL REVIEW	EFC	AJ	DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE							
0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ	CIVIL		ELECTRICAL		STATUS							
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	STRUCTURAL		INST & CONTROL		REV.							
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	MECHANICAL		ARCHITECTURAL		CLIENT							
3	02/14/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	PROCESS		ENVIRONMENTAL		FIELD							
4	03/10/05	REMOVED HOLD AND APPROVED FOR CONSTRUCTION	EFC	AJ	PIPING		GEN. ARRANG.		INTRA CO.							

Appendix A
First Quarter 2015 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

February 11, 2015

ASSET Laboratories

Mr. Marlon Cartin
3151 W Post Road
Las Vegas, NV 89118

Dear Mr. Cartin:

SUBJECT: CASE NARRATIVE; PG&E TOPOCK PROJECT;
TLI NO.: 815125

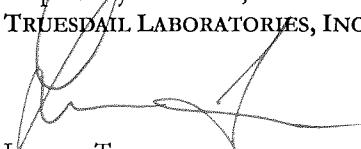
Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Ammonia results. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms are included in Sections 3 and 4.

The samples were received and delivered with the chain of custody on January 8, 2015, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter they will either be disposed or kept in warm storage for an additional 2 months.

The samples were analyzed and recorded in the raw data as SDG 15A0082 but are reported as SDG 815125 in all final report pages.

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.



Laureen Tan,
Project Manager

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

Client: ASSET Laboratories
3151 W Post Road
Las Vegas, NV 89118

Attention: Marlon Cartin

Sample: Two (2) Water Samples

Project Name: PG&E Topock Project

Project No.: N/A

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

Laboratory No.: 815125

Date: February 11, 2015

Collected: January 6, 2015

Received: January 8, 2015

ANALYST LIST

METHOD	PARAMETER	ANALYST
SM 4500-NH3 D	Ammonia	Maksim Gorbunov
SM 4500-Si D	Soluble Silica	Jenny Tankunakorn



Client: ASSET Laboratories
3151 W Post Road
Las Vegas, NV 89118
Attention: Marlon Cartin

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

Laboratory No.: 815125

Date Received: January 8, 2015

Project No.: N/A

P.O. No.: N14305A

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815125-001	SC-700B-WDR-502	SM4500NH3D	NONE	1/6/2015	---	Ammonia-N	ND	mg/L	0.500
815125-002	SC-100B-WDR-502	SM4500NH3D	NONE	1/6/2015	---	Ammonia-N	ND	mg/L	0.500

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.

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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

REPORT

Client: ASSET Laboratories

3151 W Post Road
Las Vegas, NV 89118

Attention: Marlon Cartin

Project Name: PG&E Topock Project

Project Number: N/A

P.O. Number: N14305A

Laboratory No. 815125

Page 1 of 2

Printed 2/11/2015

Samples Received on 1/8/2015 10:30:00 AM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-502	815125-001	01/06/2015	Water
SC-100B-WDR-502	815125-002	01/06/2015	Water

Ammonia Nitrogen by SM4500-NH3D

Batch 02NH315A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815125-001 Ammonia as N	mg/L	02/03/2015	1.00	0.0318	0.500	ND
815125-002 Ammonia as N	mg/L	02/03/2015	1.00	0.0318	0.500	ND

Method Blank

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.80	8.00	97.5	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.65	8.00	95.6	90 - 110

Matrix Spike

Lab ID = 815126-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	10.5	10.2(10.0)	103	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.50	6.00	108	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.11	6.00	102	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.



TRUESDAIL LABORATORIES, INC.

Report Continued

Client: ASSET Laboratories

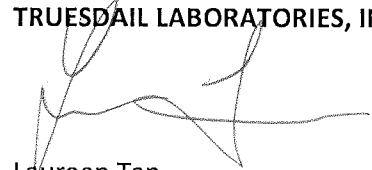
Project Name: PG&E Topock Project

Page 2 of 2

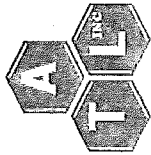
Project Number: N/A

Printed 2/11/2015

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.



Laureen Tan
Project Manager

**ASSET Laboratories**

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

www.assetlabs.com

TEL: 7023072659

FAX: 7023072691

Subcontractor:

Truesdail

14201 Franklin Ave.

Tustin, CA 92680

TEL: (714) 730-6239

FAX: (714) 730-6462

Acct #:

QC Level: Level IV

Field Sampler: None Specified

07-Jan-15

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests	
				SM4500-NH3C	
N014305-001D / SC-700B-WDR-502	Water	1/6/2015	16OZP	1	
N014305-002D / SC-100B-WDR-502	Water	1/6/2015	16OZP	1	

ALERT!!
Level IV QC

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO#: N14305A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT

Please analyze for Ammonia by SM4500.

GSO# 526578283

Date/Time	
Relinquished by: <i>[Signature]</i> 01/07/14	Received by: <i>Linda, Tel</i> 1-8-15 10:30
Relinquished by:	Received by:

15A0082

Truesdail Laboratories, Inc

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

Project Manager: Laureen Tan
Project Number: [none]

Report To:

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

Invoice To:

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

Date Due: 01/20/2015 16:30 (7 day TAT)

Received By: Luda Shabunina

Date Received: 01/08/2015 10:30

Logged In By: Luda Shabunina

Date Logged In: 01/08/2015 14:03

Samples Received at: 4.1°C

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

15A0082-01 SC-700B-WDR-502 [Water] Sampled 01/06/2015 12:00
(GMT-08:00) Pacific Time (US &

Ammonia E	01/22/2015 12:00	7	02/03/2015 12:00	
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15A0082-02 SC-100B-WDR-502 [Water] Sampled 01/06/2015 12:00
(GMT-08:00) Pacific Time (US &

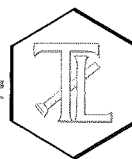
Ammonia E	01/22/2015 12:00	7	02/03/2015 12:00	
-----------	------------------	---	------------------	--

Reviewed By

Date

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

February 24, 2015

ASSET Laboratories

Mr. Marlon Cartin
3151 W Post Road
Las Vegas, NV 89118

Dear Mr. Cartin:

SUBJECT: CASE NARRATIVE; PG&E TOPOCK PROJECT;

TLI NO.: 815129

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Ammonia and Reactive Silica results. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms are included in Sections 3 and 4.

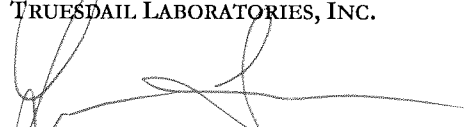
The samples were received and delivered with the chain of custody on February 5, 2015, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter they will either be disposed or kept in warm storage for an additional 2 months.

The samples were analyzed and recorded in the raw data as SDG 15B0112 but are reported as SDG 815129 in all final report pages.

An LCS and LCSD were analyzed in lieu of the sample duplicate and matrix spike for ammonia due to insufficient sample volume.

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.



Laureen Tan,
Project Manager

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

Client: ASSET Laboratories
3151 W Post Road
Las Vegas, NV 89118

Attention: Marlon Cartin

Sample: Two (2) Water Samples

Project Name: PG&E Topock Project

Project No.: N/A

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

Laboratory No.: 815129

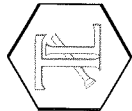
Date: February 24, 2015

Collected: February 3, 2015

Received: February 5, 2015

ANALYST LIST

METHOD	PARAMETER	ANALYST
SM 4500-NH3 D	Ammonia	Naheed Eidinejad
SM 4500-Si D	Soluble Silica	Jenny Tankunakorn



Client: ASSET Laboratories
3151 W Post Road
Las Vegas, NV 89118
Attention: Marlon Cartin

Laboratory No.: 815129

Date Received: February 5, 2015

Project No.: N/A

P.O. No.: N14575A

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815129-001	SC-700B-WDR-506	SM4500NH3D	NONE	2/3/2015	13:15	Ammonia-N	ND	mg/L	0.500
815129-002	SC-100B-WDR-506	SM4500NH3D	NONE	2/3/2015	13:15	Ammonia-N	ND	mg/L	0.500
815129-002	SC-100B-WDR-506	SM4500SI	LABELT	2/3/2015	13:15	Soluble Silica	17.8	mg/L	1.00

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.

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

REPORT

Client: ASSET Laboratories

3151 W Post Road
Las Vegas, NV 89118

Attention: Marlon Cartin

Project Name: PG&E Topock Project

Project Number: N/A

P.O. Number: N14575A

Laboratory No. 815129

Page 1 of 2

Printed 2/24/2015

Samples Received on 2/5/2015 8:15:00 AM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-506	815129-001	02/03/2015 13:15	Water
SC-100B-WDR-506	815129-002	02/03/2015 13:15	Water

Reactive Silica by SM4500-Si D

Batch 1502152

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815129-002 Silica	mg/L	02/13/2015	25.0	0.252	1.00	17.8

Method Blank

Parameter	Unit	DF	Result
Silica	mg/L	1.00	ND

Duplicate

Lab ID = 815129-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Silica	mg/L	25.0	18.0	17.8	1.10	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.341	0.376	90.6	90 - 110

Matrix Spike

Lab ID = 815129-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Silica	mg/L	25.0	27.8	27.2(9.40)	107	75 - 125

MRCCS - Secondary

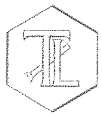
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.341	0.376	90.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.378	0.400	94.5	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.

006

Client: **ASSET Laboratories**Project Name: **PG&E Topock Project**

Page 2 of 2

Project Number: **N/A**

Printed 2/24/2015

Ammonia Nitrogen by SM4500-NH3D

Batch 1502347

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815129-001 Ammonia as N	mg/L	02/19/2015	1.00	0.0318	0.500	ND
815129-002 Ammonia as N	mg/L	02/19/2015	1.00	0.0318	0.500	ND

Method Blank

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.34	8.00	104	90 - 110

Lab Control Sample Duplicate

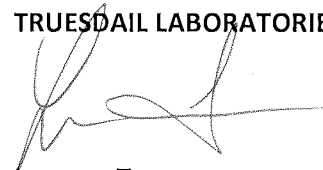
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.64	8.00	108	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.46	6.00	91.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.01	6.00	100	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.
Laureen Tan
Project Manager

1580112

CHAIN-OF-CUSTODY RECORD

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

QC Level: Level IV

Subcontractor:
Tuesdail
14201 Franklin Ave.
Tustin, CA 92680

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

04-Feb-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests	
				SM 4500-SiO2 C	SM4500-NH3C
N014575-001D / SC-700B-WDR-506	Water	2/3/2015 1:15:00 PM	16OZP		1
N014575-002D / SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	16OZP		1
N014575-002H / SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	16OZP	1	

ALERT !!
Level IV QC

General Comments: Please email sample receipt acknowledgement to the PM.
Please use PO#: N14575A For questions, call Marlon at (702)-307-2659, Please e-mail results to reports.lv@assetlaboratories.com by:
Normal TAT
Please analyze for Ammonia and Soluable Silica-Reactive. **CH2MHill Samples** **GSO# 526853589**

Relinquished by: <i>Jag</i>	Date/Time: 02/04/15
Relinquished by:	Date/Time:
Received by: <i>Lucia, T. I.</i>	Date/Time: 2-5-15 08:15
Received by:	Date/Time:

15B0112

Truesdail Laboratories, Inc

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

Project Manager: Laureen Tan
Project Number: [none]

Report To:

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

Invoice To:

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

Date Due: 02/17/2015 16:30 (7 day TAT)

Received By: Luda Shabunina

Date Received: 02/05/2015 08:15

Logged In By: Luda Shabunina

Date Logged In: 02/05/2015 10:11

Samples Received at: 4.2°C
Chain of Custody re Yes Samples intact? Yes
Letter (if sent) matc No Custody seals (if any) No
Requested analyses Yes Analyses within hold Yes
Samples received in Yes

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

15B0112-01 SC-700B-WDR-506 [Water] Sampled 02/03/2015 13:15
(GMT-08:00) Pacific Time (US &

Ammonia-N	02/23/2015 12:00	7	03/03/2015 13:15	
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15B0112-02 SC-100B-WDR-506 [Water] Sampled 02/03/2015 13:15
(GMT-08:00) Pacific Time (US &

Silica	02/23/2015 12:00	7	03/03/2015 13:15	
Ammonia-N	02/23/2015 12:00	7	03/03/2015 13:15	

Reviewed By

Date

2/24/15

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

March 20, 2015

ASSET Laboratories

Mr. Marlon Cartin
3151 W Post Road
Las Vegas, NV 89118

Dear Mr. Cartin:

SUBJECT: CASE NARRATIVE; PG&E TOPOCK PROJECT;
TLI NO.: 815130

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Ammonia and Reactive Silica results. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms are included in Sections 3 and 4.

The samples were received and delivered with the chain of custody on March 5, 2015, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter they will either be disposed or kept in warm storage for an additional 2 months.

The samples were analyzed and recorded in the raw data as SDG 15C0137 but are reported as SDG 815130 in all final report pages.

An LCS and LCSD were analyzed in lieu of the sample duplicate and matrix spike for ammonia due to insufficient sample volume.

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. 206.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

Laureen Tan,
Project Manager

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

Client: ASSET Laboratories
3151 W Post Road
Las Vegas, NV 89118

Attention: Marlon Cartin

Sample: Two (2) Water Samples

Project Name: PG&E Topock Project

Project No.: N/A

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

Laboratory No.: 815130

Date: March 20, 2015

Collected: March 3, 2015

Received: March 5, 2015

ANALYST LIST

METHOD	PARAMETER	ANALYST
SM 4500-NH3 D	Ammonia	Naheed Eidinejad
SM 4500-Si D	Soluble Silica	Jenny Tankunakorn



Client: ASSET Laboratories
3151 W Post Road
Las Vegas, NV 89118
Attention: Marlon Cartin

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

Laboratory No.: 815130

Date Received: March 5, 2015

Project No.: N/A

P.O. No.: N14575A

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815130-001	SC-700B-WDR-510	SM4500NH3D	NONE	3/3/2015	13:15	Ammonia-N	ND	mg/L	0.500
815130-002	SC-100B-WDR-510	SM4500NH3D	NONE	3/3/2015	13:18	Ammonia-N	ND	mg/L	0.500
815130-002	SC-100B-WDR-510	SM4500SI	LABFT	3/3/2015	13:18	Soluble Silica	18.6	mg/L	1.00

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.

TRUESDAIL LABORATORIES, INC.

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REPORT

Client: ASSET Laboratories

3151 W Post Road
Las Vegas, NV 89118

Laboratory No. 815130

Page 1 of 2

Attention: Marlon Cartin

Printed 3/19/2015

Project Name: PG&E Topock Project

Project Number: N/A

P.O. Number: N14859A

Samples Received on 3/5/2015 8:00:00 AM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-510	815130-001	03/03/2015 13:15	Water
SC-100B-WDR-510	815130-002	03/03/2015 13:18	Water

Reactive Silica by SM4500-Si D

Batch 1502484

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815130-002 Silica	mg/L	03/06/2015	25.0	0.252	1.00	18.6

Method Blank

Parameter	Unit	DF	Result
Silica	mg/L	1.00	ND

Duplicate

Lab ID = 815131-001

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.341	0.376	90.6	90 - 110

Matrix Spike

Lab ID = 815130-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Silica	mg/L	25.0	26.9	28.0(9.40)	88.5	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.341	0.376	90.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.378	0.400	94.5	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.

006



Report Continued

Client: **ASSET Laboratories**

Project Name: PG&E Topock Project

Page 2 of 2

Project Number: N/A

Printed 3/19/2015

Ammonia Nitrogen by SM4500-NH3D

Batch 03NH315A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815130-001 Ammonia as N	mg/L	03/13/2015	1.00	0.0318	0.500	ND
815130-002 Ammonia as N	mg/L	03/13/2015	1.00	0.0318	0.500	ND

Method Blank

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.72	8.00	96.4	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.18	8.00	102	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.00	6.00	100	90 - 110

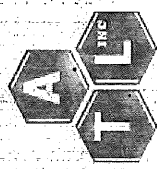
MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.00	6.00	100	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.
Laureen Tan
Project Manager

815130/1SC 0137

CHAIN-OF-CUSTODY RECORD



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

QC Level: Level IV

Subcontractor: Truesdail
14201 Franklin Ave.
Tustin, CA 92680

Field Sampler: SIGNED

Acct #: _____

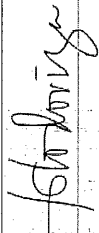
04-Mar-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests	
				SM 4500-SiO2 C	SM4500-NH3C
N014859-001D / SC-700B-WDR-510		3/3/2015 1:15:00 PM	-32OZP		1
N014859-002D / SC-100B-WDR-510		3/3/2015 1:18:00 PM	-32OZP		1
N014859-002H / SC-100B-WDR-510		3/3/2015 1:18:00 PM	-32OZP	1	

802P
#Se 3/4/15

ALERT!!
Level IV QC

General Comments: Please email sample receipt acknowledgement to the PM.
Please use PO#N14859A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by:Normal TAT
Please analyze for Ammonia and Soluable Silica - Reactive. CH2MHILL Sample.

Relinquished by: 	Date/Time: 3/4/2015 17:00
Relinquished by: _____	Date/Time: _____
Received by: _____	GSO #: 527131174
Received by: _____	Date/Time: 3-5-15 8:00am

WORK ORDER

Printed: 3/20/2015 3:38:52PM

15C0137

Truesdail Laboratories, Inc

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

Project Manager: Laureen Tan
Project Number: [none]

Report To:

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

Invoice To:

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

Date Due: 03/16/2015 16:30 (7 day TAT)

Received By: Luda Shabunina

Date Received: 03/05/2015 08:00

Logged In By: Luda Shabunina

Date Logged In: 03/05/2015 13:18

Samples Received at: 4.2°C

Chain of Custody rece Yes Samples intact? Yes

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

Requested analyses ac Yes Analyses within hold t Yes

Samples received in a Yes

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

15C0137-01 SC-700B-WDR-510 [Water] Sampled 03/03/2015 13:15
(GMT-08:00) Pacific Time (US &

Ammonia-N	03/16/2015 12:00	7	03/31/2015 13:15	
-----------	------------------	---	------------------	--

15C0137-02 SC-100B-WDR-510 [Water] Sampled 03/03/2015 13:18
(GMT-08:00) Pacific Time (US &

Silica	03/16/2015 12:00	7	03/31/2015 13:18	
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Ammonia-N	03/16/2015 12:00	7	03/31/2015 13:18	
-----------	------------------	---	------------------	--

Reviewed By

Date

Page 1 of 1

017

January 20, 2015

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

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

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

Workorder No.: N014305

RE: PG&E Topock IM3, 652547.PT.0P.00

Attention: Shawn P. Duffy

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

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

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

Sincerely,



Glen Gesmundo
QA Manager

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



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

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

"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab Order: N014305

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS:**

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Subcontracted Analyses:

Ammonia was subcontracted to Truesdail-Tustin, CA.

Analytical Comments for EPA 200.8:

Because the results for total chromium (1.9 ug/L) and hexavalent chromium (0.30 ug/L) for sample N014305-003 (SC-701-WDR-502) are discrepant, sample from both the total chromium and hexavalent chromium containers were redigested and analyzed for total chromium. The results from the redigested samples were 1.76 and 0.804 ug/L, respectively. Since these data confirmed the original result for total chromium, the original result is reported.

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

Dilution was necessary for some analytes on samples N014305-001, N014305-002 and N014305-003 due to failed Internal Standard when samples were analyzed at no dilution.

Analytical Comments for EPA 218.6:

Dilution was necessary for sample N014305-003 due to matrix interference. Sample was analyzed at lower dilution however matrix spike was not recovered indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit.



ASSET Laboratories

Date: 20-Jan-15

CLIENT: CH2M HILL
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab Order: N014305
Contract No: IM3Plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014305-001A	SC-700B-WDR-502	Water	1/6/2015 1:00:00 PM	1/6/2015	1/20/2015
N014305-001B	SC-700B-WDR-502	Water	1/6/2015 1:00:00 PM	1/6/2015	1/20/2015
N014305-001C	SC-700B-WDR-502	Water	1/6/2015 1:00:00 PM	1/6/2015	1/20/2015
N014305-001D	SC-700B-WDR-502	Water	1/6/2015 1:00:00 PM	1/6/2015	1/20/2015
N014305-001E	SC-700B-WDR-502	Water	1/6/2015 1:00:00 PM	1/6/2015	1/20/2015
N014305-002A	SC-100B-WDR-502	Water	1/6/2015 2:20:00 PM	1/6/2015	1/20/2015
N014305-002B	SC-100B-WDR-502	Water	1/6/2015 2:20:00 PM	1/6/2015	1/20/2015
N014305-002C	SC-100B-WDR-502	Water	1/6/2015 2:20:00 PM	1/6/2015	1/20/2015
N014305-002D	SC-100B-WDR-502	Water	1/6/2015 2:20:00 PM	1/6/2015	1/20/2015
N014305-002E	SC-100B-WDR-502	Water	1/6/2015 2:20:00 PM	1/6/2015	1/20/2015
N014305-003A	SC-701-WDR-502	Water	1/6/2015 2:20:00 PM	1/6/2015	1/20/2015
N014305-003B	SC-701-WDR-502	Water	1/6/2015 2:20:00 PM	1/6/2015	1/20/2015
N014305-003C	SC-701-WDR-502	Water	1/6/2015 2:20:00 PM	1/6/2015	1/20/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-001

Client Sample ID: SC-700B-WDR-502
Collection Date: 1/6/2015 1:00:00 PM
Matrix: WATER

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

SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_150107C	QC Batch: R97449			PrepDate		Analyst: RB
Specific Conductance	7500	0.10	0.10	umhos/cm	1	1/7/2015 12:00 PM

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-002

Client Sample ID: SC-100B-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_150107C	QC Batch: R97449			PrepDate		Analyst: RB
Specific Conductance	7500	0.10	0.10	umhos/cm	1	1/7/2015 12:00 PM

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-003

Client Sample ID: SC-701-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_150107C	QC Batch: R97449			PrepDate		Analyst: RB
Specific Conductance	22000	0.10	0.10	umhos/cm	1	1/7/2015 12:00 PM

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

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

Sample ID	N014305-001BDUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	97449		
Client ID:	ZZZZZZ	Batch ID:	R97449	TestNo:	EPA 120.1			Analysis Date:	1/7/2015	SeqNo:	1903549		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		7510.000		0.10						7530	0.266	10	

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-001

Client Sample ID: SC-700B-WDR-502
Collection Date: 1/6/2015 1:00:00 PM
Matrix: WATER

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

TOTAL FILTERABLE RESIDUE**SM2540C**

RunID: WETCHEM_150107D	QC Batch: 48346			PrepDate	1/7/2015	Analyst: RB
Total Dissolved Solids (Residue, Filterable)	4100	50	50	mg/L	1	1/7/2015 02:40 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-002

Client Sample ID: SC-100B-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

TOTAL FILTERABLE RESIDUE
SM2540C

RunID: WETCHEM_150107D	QC Batch: 48346			PrepDate	1/7/2015	Analyst: RB
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L	1	1/7/2015 02:40 PM

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-003

Client Sample ID: SC-701-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

TOTAL FILTERABLE RESIDUE**SM2540C**

RunID: WETCHEM_150107D	QC Batch: 48346			PrepDate	1/7/2015	Analyst: RB
Total Dissolved Solids (Residue, Filterable)	15000	200	200	mg/L	1	1/7/2015 02:40 PM

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



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00

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

Sample ID	MB-48346	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	1/7/2015	RunNo:	97465		
Client ID:	PBW	Batch ID:	48346	TestNo:	SM2540C			Analysis Date:	1/7/2015	SeqNo:	1904116		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10									

Sample ID	LCS-48346	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	1/7/2015	RunNo:	97465		
Client ID:	LCSW	Batch ID:	48346	TestNo:	SM2540C			Analysis Date:	1/7/2015	SeqNo:	1904117		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		1000.000		10	1000	0	100	80	120				

Sample ID	N014305-001B-DUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	1/7/2015	RunNo:	97465		
Client ID:	ZZZZZZ	Batch ID:	48346	TestNo:	SM2540C			Analysis Date:	1/7/2015	SeqNo:	1904119		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		4115.000		50						4085	0.732	5	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-001

Client Sample ID: SC-700B-WDR-502
Collection Date: 1/6/2015 1:00:00 PM
Matrix: WATER

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

RunID: ICP2_150112B	QC Batch: 48364	PrepDate	1/8/2015	Analyst: CEI
Aluminum	ND 6.2	50	µg/L	1 1/12/2015 02:02 PM
Boron	890 19	100	µg/L	1 1/12/2015 02:02 PM
Iron	ND 1.3	20	µg/L	1 1/12/2015 02:02 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-002

Client Sample ID: SC-100B-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: ICP2_150112B	QC Batch: 48364	PrepDate	1/8/2015	Analyst: CEI
Aluminum	ND 6.2	50	µg/L	1 1/12/2015 02:28 PM
Boron	910 19	100	µg/L	1 1/12/2015 02:28 PM
Iron	ND 1.3	20	µg/L	1 1/12/2015 02:28 PM

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WPGEPBB**

Sample ID	LCS1-48364	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97502
Client ID:	LCSW	Batch ID:	48364	TestNo:	EPA 200.7			Analysis Date:	1/12/2015	SeqNo:	1906653
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	9607.657	50	10000	0	96.1	85	115				
Boron	4925.021	100	5000	0	98.5	85	115				
Iron	111.418	20	100.0	0	111	85	115				

Sample ID	N014305-001C-MS1	SampType:	MS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97502
Client ID:	ZZZZZZ	Batch ID:	48364	TestNo:	EPA 200.7			Analysis Date:	1/12/2015	SeqNo:	1906657
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10531.964	50	10000	0	105	75	125				
Boron	5870.239	100	5000	890.7	99.6	75	125				
Iron	100.677	20	100.0	9.588	91.1	75	125				

Sample ID	N014305-001C-MSD	SampType:	MSD	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97502
Client ID:	ZZZZZZ	Batch ID:	48364	TestNo:	EPA 200.7			Analysis Date:	1/12/2015	SeqNo:	1906658
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10611.972	50	10000	0	106	75	125	10530	0.757	20	
Boron	5929.486	100	5000	890.7	101	75	125	5870	1.00	20	
Iron	102.411	20	100.0	9.588	92.8	75	125	100.7	1.71	20	

Sample ID	MB-48364	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97502
Client ID:	PBW	Batch ID:	48364	TestNo:	EPA 200.7			Analysis Date:	1/12/2015	SeqNo:	1906664
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	50									
Boron	32.366	100									
Iron	ND	20									

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-001

Client Sample ID: SC-700B-WDR-502
Collection Date: 1/6/2015 1:00:00 PM
Matrix: WATER

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

RunID: ICP7_150108A	QC Batch: 48372	PrepDate	1/8/2015	Analyst: CEI		
Antimony	ND	0.18	0.50	µg/L	1	1/8/2015 02:04 PM
Arsenic	ND	0.027	0.10	µg/L	1	1/8/2015 02:04 PM
Barium	15	0.030	1.0	µg/L	1	1/8/2015 02:04 PM
Copper	ND	0.040	1.0	µg/L	1	1/8/2015 02:04 PM
Lead	ND	0.053	5.0	µg/L	5	1/8/2015 02:31 PM
Manganese	ND	0.026	0.50	µg/L	1	1/8/2015 02:04 PM
Molybdenum	21	0.15	0.50	µg/L	1	1/8/2015 02:04 PM
Nickel	2.0	0.032	1.0	µg/L	1	1/8/2015 02:04 PM
Zinc	ND	0.23	10	µg/L	1	1/8/2015 02:04 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-002

Client Sample ID: SC-100B-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: ICP7_150108A	QC Batch: 48372	PrepDate	1/8/2015	Analyst: CEI
Antimony	ND 0.18	0.50	µg/L	1 1/8/2015 02:09 PM
Arsenic	3.0 0.027	0.10	µg/L	1 1/8/2015 02:09 PM
Barium	24 0.030	1.0	µg/L	1 1/8/2015 02:09 PM
Copper	ND 0.040	1.0	µg/L	1 1/8/2015 02:09 PM
Lead	ND 0.053	5.0	µg/L	5 1/8/2015 02:15 PM
Manganese	ND 0.026	0.50	µg/L	1 1/8/2015 02:09 PM
Molybdenum	21 0.15	0.50	µg/L	1 1/8/2015 02:09 PM
Nickel	ND 0.032	1.0	µg/L	1 1/8/2015 02:09 PM
Zinc	ND 0.23	10	µg/L	1 1/8/2015 02:09 PM

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



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ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-003

Client Sample ID: SC-701-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: ICP7_150108A	QC Batch: 48372	PrepDate	1/8/2015	Analyst: CEI		
Antimony	ND	0.92	2.5	µg/L	5	1/8/2015 02:26 PM
Arsenic	0.53	0.13	0.50	µg/L	5	1/8/2015 02:26 PM
Barium	57	0.15	5.0	µg/L	5	1/8/2015 02:26 PM
Beryllium	ND	0.051	2.5	µg/L	5	1/12/2015 12:51 PM
Cadmium	ND	0.066	2.5	µg/L	5	1/8/2015 02:26 PM
Cobalt	0.70	0.017	0.50	µg/L	1	1/8/2015 02:20 PM
Copper	ND	0.20	5.0	µg/L	5	1/8/2015 02:26 PM
Lead	ND	0.053	5.0	µg/L	5	1/12/2015 12:51 PM
Manganese	140	0.026	0.50	µg/L	1	1/8/2015 02:20 PM
Molybdenum	75	0.76	2.5	µg/L	5	1/8/2015 02:26 PM
Nickel	13	0.16	5.0	µg/L	5	1/8/2015 02:26 PM
Selenium	14	0.34	2.5	µg/L	5	1/8/2015 02:26 PM
Silver	ND	0.47	2.5	µg/L	5	1/8/2015 02:26 PM
Thallium	ND	0.040	2.5	µg/L	5	1/12/2015 12:51 PM
Vanadium	ND	0.16	1.0	µg/L	1	1/8/2015 02:20 PM
Zinc	ND	1.2	50	µg/L	5	1/8/2015 02:26 PM

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-48372	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97477	
Client ID:	PBW	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1905763	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		ND	0.50									
Arsenic		ND	0.10									
Barium		ND	1.0									
Cadmium		ND	0.50									
Cobalt		ND	0.50									
Copper		ND	1.0									
Lead		ND	1.0									
Manganese		ND	0.50									
Molybdenum		ND	0.50									
Nickel		ND	1.0									
Selenium		ND	0.50									
Silver		ND	0.50									
Thallium		ND	0.50									
Vanadium		ND	1.0									
Zinc		ND	10									

Sample ID	LCS-48372	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/8/2015	RunNo: 97477					
Client ID:	LCSW	Batch ID: 48372	TestNo: EPA 200.8		Analysis Date: 1/8/2015	SeqNo: 1905764					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.771	0.50	10.00	0	108	85	115				
Arsenic	10.634	0.10	10.00	0	106	85	115				
Barium	102.895	1.0	100.0	0	103	85	115				
Cadmium	10.817	0.50	10.00	0	108	85	115				
Cobalt	10.003	0.50	10.00	0	100	85	115				
Copper	10.551	1.0	10.00	0	106	85	115				
Lead	10.927	1.0	10.00	0	109	85	115				
Manganese	100.878	0.50	100.0	0	101	85	115				

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	LCS-48372	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97477
Client ID:	LCSW	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1905764
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Molybdenum	9.904	0.50	10.00	0	99.0	85	115				
Nickel	10.384	1.0	10.00	0	104	85	115				
Selenium	10.892	0.50	10.00	0	109	85	115				
Silver	10.813	0.50	10.00	0	108	85	115				
Thallium	10.966	0.50	10.00	0	110	85	115				
Vanadium	10.271	1.0	10.00	0	103	85	115				
Zinc	110.103	10	100.0	0	110	85	115				

Sample ID	N014305-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97477
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1905777
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	10.811	0.50	10.00	0	108	75	125				
Arsenic	10.719	0.10	10.00	0.06069	107	75	125				
Barium	114.604	1.0	100.0	14.66	99.9	75	125				
Cadmium	8.269	0.50	10.00	0	82.7	75	125				
Cobalt	8.562	0.50	10.00	0	85.6	75	125				
Copper	3.687	1.0	10.00	0	36.9	75	125				S
Manganese	74.057	0.50	100.0	0	74.1	75	125				S
Molybdenum	33.563	0.50	10.00	20.99	126	75	125				S
Nickel	11.794	1.0	10.00	2.038	97.6	75	125				
Selenium	13.925	0.50	10.00	3.685	102	75	125				
Silver	9.828	0.50	10.00	0	98.3	75	125				
Vanadium	10.314	1.0	10.00	0.2212	101	75	125				
Zinc	84.132	10	100.0	0	84.1	75	125				

Sample ID	N014305-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97477
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1905778
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014305-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97477
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1905778
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.470	5.0	10.00	0	115	75	125				
Thallium	11.800	2.5	10.00	0.04256	118	75	125				

Sample ID	N014305-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97477
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1905779
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.709	0.50	10.00	0	107	75	125	10.81	0.948	20	
Arsenic	10.463	0.10	10.00	0.06069	104	75	125	10.72	2.42	20	
Barium	114.282	1.0	100.0	14.66	99.6	75	125	114.6	0.281	20	
Cadmium	8.263	0.50	10.00	0	82.6	75	125	8.269	0.0689	20	
Cobalt	8.730	0.50	10.00	0	87.3	75	125	8.562	1.94	20	
Copper	3.572	1.0	10.00	0	35.7	75	125	3.687	3.17	20	S
Manganese	74.826	0.50	100.0	0	74.8	75	125	74.06	1.03	20	S
Molybdenum	33.737	0.50	10.00	20.99	127	75	125	33.56	0.517	20	S
Nickel	11.676	1.0	10.00	2.038	96.4	75	125	11.79	1.00	20	
Selenium	14.034	0.50	10.00	3.685	103	75	125	13.93	0.775	20	
Silver	9.794	0.50	10.00	0	97.9	75	125	9.828	0.352	20	
Vanadium	10.320	1.0	10.00	0.2212	101	75	125	10.31	0.0639	20	
Zinc	82.994	10	100.0	0	83.0	75	125	84.13	1.36	20	

Sample ID	N014305-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97477
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1905780
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.427	5.0	10.00	0	114	75	125	11.47	0.368	20	
Thallium	11.827	2.5	10.00	0.04256	118	75	125	11.80	0.226	20	

Qualifiers:

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



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-48372	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97521
Client ID:	PBW	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/12/2015	SeqNo:	1907774
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Beryllium ND 0.50

Sample ID	LCS-48372	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97521
Client ID:	LCSW	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/12/2015	SeqNo:	1907775
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Beryllium 10.316 0.50 10.00 0 103 85 115

Sample ID	N014305-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97521
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/12/2015	SeqNo:	1907779
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Beryllium 10.263 0.50 10.00 0 103 75 125

Sample ID	N014305-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2015	RunNo:	97521
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/12/2015	SeqNo:	1907780
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Beryllium 10.148 0.50 10.00 0 101 75 125 10.26 1.13 20

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-001

Client Sample ID: SC-700B-WDR-502
Collection Date: 1/6/2015 1:00:00 PM
Matrix: WATER

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

RunID: IC6_150107A	QC Batch: R97458				PrepDate		Analyst: RB
Hexavalent Chromium	ND	0.016	0.20		µg/L	1	1/7/2015 03:06 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150108A	QC Batch: 48372				PrepDate	1/8/2015	Analyst: CEI
Chromium	ND	0.030	1.0		µg/L	1	1/8/2015 02:04 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-002

Client Sample ID: SC-100B-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: IC6_150107A	QC Batch: R97458				PrepDate		Analyst: RB
Hexavalent Chromium	640	1.6	20		µg/L	100	1/7/2015 04:15 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150108A	QC Batch: 48372				PrepDate	1/8/2015	Analyst: CEI
Chromium	580	0.15	5.0		µg/L	5	1/8/2015 02:15 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-003

Client Sample ID: SC-701-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: IC6_150107A	QC Batch: R97458				PrepDate		Analyst: RB
Hexavalent Chromium	ND	0.080	1.0		µg/L	5	1/7/2015 05:19 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150108A	QC Batch: 48372				PrepDate	1/8/2015	Analyst: CEI
Chromium	1.9	0.030	1.0		µg/L	1	1/8/2015 02:20 PM

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00

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

Sample ID MB-48372	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/8/2015	RunNo: 97477
Client ID: PBW	Batch ID: 48372	TestNo: EPA 200.8		Analysis Date: 1/8/2015	SeqNo: 1904612
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID LCS-48372	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/8/2015	RunNo: 97477
Client ID: LCSW	Batch ID: 48372	TestNo: EPA 200.8		Analysis Date: 1/8/2015	SeqNo: 1904613
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 10.200 1.0 10.00 0 102 85 115

Sample ID N014305-001C-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/8/2015	RunNo: 97477
Client ID: ZZZZZZ	Batch ID: 48372	TestNo: EPA 200.8		Analysis Date: 1/8/2015	SeqNo: 1904626
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.592 1.0 10.00 0.1781 94.1 75 125

Sample ID N014305-001C-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/8/2015	RunNo: 97477
Client ID: ZZZZZZ	Batch ID: 48372	TestNo: EPA 200.8		Analysis Date: 1/8/2015	SeqNo: 1904628
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.639 1.0 10.00 0.1781 94.6 75 125 9.592 0.497 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R97458	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97458			
Client ID:	PBW	Batch ID:	R97458	TestNo:	EPA 218.6			Analysis Date:	1/7/2015	SeqNo:	1903991			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R97458	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97458		
Client ID:	LCSW	Batch ID:	R97458	TestNo:	EPA 218.6			Analysis Date:	1/7/2015	SeqNo:	1903992		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.066 0.20 5.000 0 101 90 110

Sample ID	N014302-002A-DUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97458			
Client ID:	ZZZZZZ	Batch ID:	R97458	TestNo:	EPA 218.6			Analysis Date:	1/7/2015	SeqNo:	1904002			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 524.000 10 527.7 0.699 20

Sample ID	N014302-002A-MS	SampType: MS	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 97458					
Client ID:	ZZZZZZ	Batch ID: R97458	TestNo: EPA 218.6		Analysis Date: 1/7/2015	SeqNo: 1904003					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 772.845 10 250.0 527.7 98.1 90 110

Sample ID	N014302-002A-MSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97458			
Client ID:	ZZZZZZ	Batch ID:	R97458	TestNo:	EPA 218.6			Analysis Date:	1/7/2015	SeqNo:	1904004			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 774.650 10 250.0 527.7 98.8 90 110 772.8 0.233 20

Qualifiers:

- | | | | | | |
|----|---|--------------------------------------|--------------------------------------|---|--|
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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N014305-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97458			
Client ID:	ZZZZZZ	Batch ID:	R97458	TestNo:	EPA 218.6			Analysis Date:	1/7/2015	SeqNo:	1904014			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1.221	0.20	1.000	0.1371	108	90	110
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Sample ID	N014306-001C-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97458			
Client ID:	ZZZZZZ	Batch ID:	R97458	TestNo:	EPA 218.6			Analysis Date:	1/7/2015	SeqNo:	1904016			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	10.284	0.20	5.000	5.139	103	90	110
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Sample ID	N014305-002A-MS	SampType: MS	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:				RunNo: 97458			
Client ID:	ZZZZZZ	Batch ID: R97458	TestNo: EPA 218.6		Analysis Date: 1/7/2015				SeqNo: 1904018			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1139.260	20	500.0	643.0	99.2	90	110
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Sample ID	N014305-003A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97458			
Client ID:	ZZZZZZ	Batch ID:	R97458	TestNo:	EPA 218.6			Analysis Date:	1/7/2015	SeqNo:	1904022			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	5.796	1.0	5.000	0.2975	110	90	110
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Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-001

Client Sample ID: SC-700B-WDR-502
Collection Date: 1/6/2015 1:00:00 PM
Matrix: WATER

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

RunID: WETCHEM_150108F	QC Batch: R97486			PrepDate		Analyst: RB
Turbidity	0.18	0.10	0.10	NTU	1	1/8/2015 09:30 AM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-002

Client Sample ID: SC-100B-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: WETCHEM_150108F	QC Batch: R97486			PrepDate		Analyst: RB
Turbidity	0.11	0.10	0.10	NTU	1	1/8/2015 09:30 AM

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

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

Sample ID	N014305-001B DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	97486
Client ID:	ZZZZZZ	Batch ID:	R97486	TestNo:	SM 2130B			Analysis Date:	1/8/2015	SeqNo:	1905991
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.190		0.10						0.1800	5.41 30

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014305-003

Client Sample ID: SC-701-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: AA1_150112A	QC Batch: 48375	PrepDate	1/9/2015	Analyst: CEI		
Mercury	ND	0.015	0.20	µg/L	1	1/12/2015 12:24 PM

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

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

Sample ID MB-48375	SampType: MBLK	TestCode: 245.1_W	Units: µg/L	Prep Date: 1/9/2015	RunNo: 97498						
Client ID: PBW	Batch ID: 48375	TestNo: EPA 245.1		Analysis Date: 1/12/2015	SeqNo: 1906515						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.20									

Sample ID LCS-48375	SampType: LCS	TestCode: 245.1_W	Units: µg/L	Prep Date: 1/9/2015	RunNo: 97498						
Client ID: LCSW	Batch ID: 48375	TestNo: EPA 245.1		Analysis Date: 1/12/2015	SeqNo: 1906518						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.689	0.20	5.000	0	114	85	115				

Sample ID N014305-003B-MS	SampType: MS	TestCode: 245.1_W	Units: µg/L	Prep Date: 1/9/2015	RunNo: 97498						
Client ID: ZZZZZZ	Batch ID: 48375	TestNo: EPA 245.1		Analysis Date: 1/12/2015	SeqNo: 1906519						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.300	0.20	5.000	0	106	75	125				

Sample ID N014305-003B-MSD	SampType: MSD	TestCode: 245.1_W	Units: µg/L	Prep Date: 1/9/2015	RunNo: 97498						
Client ID: ZZZZZZ	Batch ID: 48375	TestNo: EPA 245.1		Analysis Date: 1/12/2015	SeqNo: 1906520						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.250	0.20	5.000	0	105	75	125	5.300	0.948	20	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-001

Client Sample ID: SC-700B-WDR-502
Collection Date: 1/6/2015 1:00:00 PM
Matrix: WATER

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

RunID: IC2_150112A	QC Batch: R97505				PrepDate		Analyst: QBM
Fluoride	6.4	0.22	2.0		mg/L	20	1/12/2015 05:48 PM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_150112A	QC Batch: R97505				PrepDate		Analyst: QBM
Sulfate	460	1.6	25		mg/L	50	1/12/2015 03:16 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-002

Client Sample ID: SC-100B-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: IC2_150112A	QC Batch: R97505				PrepDate		Analyst: QBM
Fluoride	6.2	0.22	2.0		mg/L	20	1/12/2015 06:00 PM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_150112A	QC Batch: R97505				PrepDate		Analyst: QBM
Sulfate	480	1.6	25		mg/L	50	1/12/2015 03:29 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-003

Client Sample ID: SC-701-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: IC2_150112A	QC Batch: R97505	PrepDate	Analyst: QBM
Fluoride	22 1.1	10 mg/L	100 1/12/2015 08:32 PM

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

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

Sample ID MB-R97505_F	SampType: MBLK	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 97505
Client ID: PBW	Batch ID: R97505	TestNo: EPA 300.0		Analysis Date: 1/12/2015	SeqNo: 1906803
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride ND 0.10

Sample ID LCS-R97505_F	SampType: LCS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 97505
Client ID: LCSW	Batch ID: R97505	TestNo: EPA 300.0		Analysis Date: 1/12/2015	SeqNo: 1906804
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 2.434 0.10 2.500 0 97.4 90 110

Sample ID N014305-002BMS	SampType: MS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 97505
Client ID: ZZZZZZ	Batch ID: R97505	TestNo: EPA 300.0		Analysis Date: 1/12/2015	SeqNo: 1906813
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 23.180 2.0 20.00 6.220 84.8 80 120

Sample ID N014305-002BMSD	SampType: MSD	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 97505
Client ID: ZZZZZZ	Batch ID: R97505	TestNo: EPA 300.0		Analysis Date: 1/12/2015	SeqNo: 1906814
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 23.300 2.0 20.00 6.220 85.4 80 120 23.18 0.516 20

Sample ID N014305-001BDUP	SampType: DUP	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 97505
Client ID: ZZZZZZ	Batch ID: R97505	TestNo: EPA 300.0		Analysis Date: 1/12/2015	SeqNo: 1907676
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 6.400 2.0 6.420 0.312 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R97505_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97505			
Client ID:	PBW	Batch ID:	R97505	TestNo:	EPA 300.0			Analysis Date:	1/12/2015	SeqNo:	1906747			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate ND 0.50

Sample ID	LCS-R97505_SO4	SampType:	LCS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97505			
Client ID:	LCSW	Batch ID:	R97505	TestNo:	EPA 300.0			Analysis Date:	1/12/2015	SeqNo:	1906748			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 4.959 0.50 5.000 0 99.2 90 110

Sample ID	N014302-003CDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97505			
Client ID:	ZZZZZZ	Batch ID:	R97505	TestNo:	EPA 300.0			Analysis Date:	1/12/2015	SeqNo:	1906759			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 118.040 10 120.6 2.16 20

Sample ID	N014302-002CMS	SampType: MS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 97505					
Client ID: ZZZZZZ	Batch ID: R97505	TestNo: EPA 300.0	Analysis Date: 1/12/2015	SeqNo: 1906760							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 129.030 5.0 50.00 81.38 95.3 80 120

Sample ID	N014302-002CMSD	SampType:	MSD	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97505			
Client ID:	ZZZZZZ	Batch ID:	R97505	TestNo:	EPA 300.0			Analysis Date:	1/12/2015	SeqNo:	1906761			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 131.760 5.0 50.00 81.38 101 80 120 129.0 2.09 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	N014302-008CMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97505	
Client ID:	ZZZZZZ	Batch ID:	R97505	TestNo:	EPA 300.0			Analysis Date:	1/12/2015	SeqNo:	1906762	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		55.375	2.5	25.00	30.74	98.5	80	120				

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-001

Client Sample ID: SC-700B-WDR-502
Collection Date: 1/6/2015 1:00:00 PM
Matrix: WATER

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

RunID: WETCHEM_150116A	QC Batch: R97598				PrepDate		Analyst: QBM
Nitrate/Nitrite as N	2.6	0.11	0.25		mg/L	5	1/16/2015

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jan-15

CLIENT: CH2M HILL
Lab Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014305-002

Client Sample ID: SC-100B-WDR-502
Collection Date: 1/6/2015 2:20:00 PM
Matrix: WATER

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

RunID: WETCHEM_150116A	QC Batch: R97598				PrepDate		Analyst: QBM
Nitrate/Nitrite as N	2.8	0.11	0.25		mg/L	5	1/16/2015

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



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CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

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

Sample ID	N014305-001EDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	97598		
Client ID:	ZZZZZZ	Batch ID:	R97598	TestNo:	SM4500-NO3			Analysis Date:	1/16/2015	SeqNo:	1911401		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		2.432		0.25						2.639	8.15	20	

Sample ID	N014305-001EMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	97598		
Client ID:	ZZZZZZ	Batch ID:	R97598	TestNo:	SM4500-NO3			Analysis Date:	1/16/2015	SeqNo:	1911402		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		7.142		0.25	5.000	2.639	90.1	75	125				

Sample ID	N014305-001EMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	97598		
Client ID:	ZZZZZZ	Batch ID:	R97598	TestNo:	SM4500-NO3			Analysis Date:	1/16/2015	SeqNo:	1911403		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		7.420		0.25	5.000	2.639	95.6	75	125	7.142	3.82	20	

Sample ID	MB-R97598	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	97598		
Client ID:	PBW	Batch ID:	R97598	TestNo:	SM4500-NO3			Analysis Date:	1/16/2015	SeqNo:	1911407		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		ND		0.050									

Sample ID	LCS-R97598	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	97598		
Client ID:	LCSW	Batch ID:	R97598	TestNo:	SM4500-NO3			Analysis Date:	1/16/2015	SeqNo:	1911408		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		0.962		0.050	1.000	0	96.2	85	115				

Qualifiers:

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



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WORK ORDER: N014305

ANALYST LIST

NAME	TEST METHOD
Quennie Manimtim	EPA 300, SM 4500NO3F
Claire Ignacio	EPA 200.7, EPA 200.8, EPA 245.1
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, EPA 2130B



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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-502]

TURNAROUND TIME 10 Days

DATE 01/06/15

PAGE 1 OF 1

COMPANY CH2M HILL				<div style="display: flex; flex-direction: column; align-items: center;"> <div>Cr(VI) (218.6) Lab Filtered</div> <div>Title 22 Metals List (200.7, 200.8, 245.1)</div> <div>EC (120.1)</div> <div>TDS (2540 c)</div> <div>Turb (2130)</div> <div>Total Metals (200.7, 200.8) See List Below</div> <div>Ammonia (4500-NH3)</div> <div>Anions (300.0) F</div> <div>Anions (300.0) F, NO3, SO4</div> <div>TOC (5310 C)</div> <div>Total Metals (200.8) Mn</div> <div>NO2 (4500-NO2B)</div> <div>NUMBER OF CONTAINERS</div> </div>														COMMENTS			
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 652547.PT.0P.00																					
SAMPLERS (SIGNATURE)																					
SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr(VI)	Title 22	EC	TDS	Turb	Total Metals	Ammonia	Anions	Anions	TOC	Total Metals	NO2	Containers	Comments				
SC-700B-WDR-502	01/06/15			X	X	X	X	X	X		X			X		4	NO/4305 - 01				
SC-100B-WDR-502	01/06/15			X	X	X	X	X	X		X			X		4	- 02				
SC-701-WDR-502	01/06/15			X	X	X	X			X			X			4	- 03				
																12	TOTAL NUMBER OF CONTAINERS				

CHAIN OF CUSTODY SIGNATURE RECORD				SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	RECEIVED	COOL <input checked="" type="checkbox"/> WARM <input type="checkbox"/> °F
	Josh Rosenberg	CH2M HILL	1-6-15 1451		
Signature (Received)	Printed Name	Company/Agency	Date/Time	CUSTODY SEALED	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Philander Galang	ASSET LABS	1-6-15 1451		
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	SPECIAL REQUIREMENTS:	
	Philander Galang	ASSET LABS	1-6-15 2043		
Signature (Received)	Printed Name	Company/Agency	Date/Time		
	Philander Galang	ASSET LABS	1-6-15 2043	The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn	
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time		
				Please Provide a preliminary Result for the Cr6 and TDS ASAP.	
Signature (Received)	Printed Name	Company/Agency	Date/Time		

ASSET Laboratories

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

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

Cooler Received/Opened On: 1/6/2015

Workorder: N014305

Rep sample Temp (Deg C): 1.5

IR Gun ID: 2

Temp Blank: ☒ Yes ☐ No

Carrier name: ATL

Last 4 digits of Tracking No.: NA

Packing Material Used: None

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

Sample Receipt Checklist

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

Comments: Sample was filtered and lab preserved. Sampler's initial taken from Sample containers.

Checklist Completed By JPG  01/08/15

Reviewed By:  01/08/15

Sample Control

From: Marlon B. Cartin [marlon@assetlaboratories.com]
Sent: Wednesday, January 07, 2015 11:49 AM
To: Shawn.Duffy@CH2M.com
Cc: 'SampleControl.LV@assetlaboratories.com'; 'John Paolo Gumawid'; 'Glen Gesmundo'
Subject: Topock Weekly sample

Hi Shawn!

Per our conversation this morning, below are what we discussed and agreed upon on the initial weekly samples that we got from Topock yesterday;

- A. For samples 700B, 100B and 701
 - 1. Cr+6 - we will filter and preserve the sample accordingly.
 - 2. Metals - we will report Totals so we will only preserve the sample.
 - 3. NO3/NO2 - we will transfer and preserve sample and analyzed using SM4500NO3F as N.
 - 4. NO3 - will no longer be reported by 300.0
 - 5. NH3 - send to TLI
 - 6. Sampling Time - We will take this from the sample container.
 - 7. Prelims/Verbal result (Cr+6, TDs, T. Cr) - will be ready by Thursday.
- B. For samples PE-01 and TW-03D
 - 1. Cr+6 - we will filter and preserve the sample accordingly.
 - 2. Metals - we will filter and preserve the sample accordingly.
 - 3. Sampling Time - We will take this from the sample container.
- C. Sludge
 - 1. We will report in dry weight.

Please let me know if I missed something. Please send a revised COC at your most convenient time.

Thanks,

Marlon Cartin

Project Manager

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

Nevada: 3151 W. Post Road, Las Vegas, NV 89118 | P: 702.307.2659 Ext. 410 | F: 702.307.2691 | M: 702.882.3289

www.assetlaboratories.com



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**ASSET Laboratories**

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

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV

Subcontractor:

Truesdail
14201 Franklin Ave.
Tustin, CA 92680TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler: None Specified

07-Jan-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests			
				SM4500-NH3C			
N014305-001D / SC-700B-WDR-502	Water	1/6/2015	16OZP	1			
N014305-002D / SC-100B-WDR-502	Water	1/6/2015	16OZP	1			

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

Please use PO#: N14305A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by:
Normal TAT

Please analyze for Ammonia by SM4500.

GSO# 526578283

	Date/Time		Date/Time
Relinquished by: <u>jjg</u>	<u>01/07/14</u>	17:00	Received by: _____
Relinquished by: _____	_____	_____	Received by: _____

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) * 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For **N014305-001B**, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(60.4208 - 60.3391) * 1000000}{20}$$

$$= 4085 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 4100 \text{ mg/L}$$

Silvia Ramif 1/9/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (A-B) \times 1000000 / C$$

WHERE:

A = weight in grams of dish + residue after drying

B = weight of dish in grams

C = volume of sample used in mL

Date Finished: 1/8/2014	vol	initial	final	calc	prep fact	TDS, mg/L	CONDUCTIVITY	RATIO
MB-48346	100	55.5515	55.552	5	1	5		
LCS-48346	100	64.2612	64.3612	1000	1	1000		
N014305-001B	20	60.3391	60.4208	817	5	4085	7530	0.542
N014305-001B DUP	20	59.8962	59.9785	823	5	4115	7530	0.546
N014305-002B	20	64.2459	64.3301	842	5	4210	7480	0.563
N014305-003C	5	61.1219	61.1965	746	20	14920	22500	0.663
N014306-001B	30	61.0151	61.0875	724	3.33333	2413.33092	4300	0.561
N014306-002C	20	60.31	60.4059	959	5	4795	8380	0.572
N014309-001D	75	63.5017	63.5692	675	1.33333	899.99775	1539	0.585
N014309-002D	100	53.6748	53.741	662	1	662	935	0.708
N014310-001C	100	55.7305	55.7917	612	1	612	793	0.772
N014310-002C	100	62.9833	63.0453	620	1	620	812	0.764
N014310-003C	100	56.0295	56.0873	578	1	578	729	0.793

Julia Ramif 1/9/2015

Sample Calculation

METHOD: EPA 200.7

TEST NAME: Heavy Metals by ICP

MATRIX: Water

FORMULA:

Calculate the Boron concentration, in ug/L, in the original sample as follows:

$$\text{Boron, ug/L} = A * DF * PF * 1000$$

where:

A = mg/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Amt. of Sample mL

For Sample **N014305-002C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Boron, ug/L} &= 0.91422 * 1 * (25/25) * 1000 \\ &= 914.2198\end{aligned}$$

Reporting results in two significant figures,

$$\text{Boron, ug/L} = 910$$

 1/16/2015

ASSET Laboratories**ICP-Metals in Water**

Work Order No.: N014305
Test Method: EPA 200.7
Analysis Date: 01/12/15

Dilution Test Summary

Matrix: Water
Batch No.: 48364

Instrument ID: ICP-02
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Al, B & Fe. The calculated concentrations are <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N014305-001C DT 5X	Aluminum	ug/L	0	NA	0		10
N014305-001C DT 5X	Boron	ug/L	1100.491604	NA	890.669555	23.56%	10
N014305-001C DT 5X	Iron	ug/L	0	NA	9.588467	100.00%	10

Note: NA - Not Applicable

CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WPGEPPB**

Sample ID	N014305-001C-PS	SampType:	PS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:		RunNo:	97502		
Client ID:	ZZZZZZ	Batch ID:	48364	TestNo:	EPA 200.7			Analysis Date:	1/12/2015	SeqNo:	1906656		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum		11049.643		50	10000	0	110	80	120				
Boron		6043.602		100	5000	890.7	103	80	120				
Iron		133.072		20	100.0	9.588	123	80	120				S

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014305-002C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 115.694 * 5 * (25/25) \\ &= 578.4710\end{aligned}$$

Reporting results in two significant figures,

$$\text{Chromium, ug/L} = 580$$

 1/20/2015

ASSET Laboratories
ICP-MS-Metals in Water

Work Order No.: N014305
 Test Method: EPA 200.8
 Analysis Date: 1/8/2015

Dilution Test Summary

Matrix: Water
 Batch No.: 48372

Instrument ID: ICP-MS #2
 Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to all analytes except Mo. The calculated values are <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014305-001C-DT-5X	Antimony	µg/L	0	NA	0.05583		10
N014305-001C-DT-5X	Arsenic	µg/L	0.00895	NA	0.06069	85.25%	10
N014305-001C-DT-5X	Barium	µg/L	15.78846	NA	14.65798	7.71%	10
N014305-001C-DT-5X	Cadmium	µg/L	0	NA	0		10
N014305-001C-DT-5X	Chromium	µg/L	0.24275	NA	0.17814	36.27%	10
N014305-001C-DT-5X	Cobalt	µg/L	0	NA	0		10
N014305-001C-DT-5X	Copper	µg/L	0	NA	0		10
N014305-001C-DT-25X	Lead	µg/L	0	NA	0 0.03030		10
N014305-001C-DT-5X	Manganese	µg/L	0	NA	0		10
N014305-001C-DT-5X	Molybdenum	µg/L	20.94535	PASS	20.98926	0.21%	10
N014305-001C-DT-5X	Nickel	µg/L	2.32704	NA	2.03761	14.20%	10
N014305-001C-DT-5X	Selenium	µg/L	3.32944	NA	3.68515	9.65%	10
N014305-001C-DT-5X	Silver	µg/L	0	NA	0		10
N014305-001C-DT-25X	Thallium	µg/L	0	NA	0.04256		10
N014305-001C-DT-5X	Vanadium	µg/L	0.33110	NA	0.22115	49.72%	10
N014305-001C-DT-5X	Zinc	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014305
Test Method: EPA 200.8
Analysis Date: 1/12/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 48372

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Be. The calculated value is <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014305-001C-DT-5X	Beryllium	µg/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014305
Project: PG&E Topock IM3, 652547.PT.0P.00

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

Sample ID	N014305-001C-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	97477
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1904624
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		9.470		1.0	10.00	0.1781	92.9	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
 Work Order: N014305
 Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014305-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	97477
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1905775
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.711	0.50	10.00	0	107	80	120				
Arsenic	10.477	0.10	10.00	0.06069	104	80	120				
Barium	115.603	1.0	100.0	14.66	101	80	120				
NR Beryllium	10.566	0.50	10.00	0	106	80	120				
Cadmium	8.111	0.50	10.00	0	81.1	80	120				
Cobalt	8.458	0.50	10.00	0	84.6	80	120				
Copper	3.261	1.0	10.00	0	32.6	80	120				S
Manganese	74.331	0.50	100.0	0	74.3	80	120				S
Molybdenum	34.688	0.50	10.00	20.99	137	80	120				S
Nickel	11.516	1.0	10.00	2.038	94.8	80	120				
Selenium	14.085	0.50	10.00	3.685	104	80	120				
Silver	9.778	0.50	10.00	0	97.8	80	120				
Vanadium	10.269	1.0	10.00	0.2212	100	80	120				
Zinc	82.562	10	100.0	0	82.6	80	120				

Sample ID	N014305-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	97477
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/8/2015	SeqNo:	1905776
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.721	5.0	10.00	0	117	80	120				
Thallium	12.009	2.5	10.00	0.04256	120	80	120				

Sample ID	N014305-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	97521
Client ID:	ZZZZZZ	Batch ID:	48372	TestNo:	EPA 200.8			Analysis Date:	1/12/2015	SeqNo:	1907778
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	10.474	0.50	10.00	0	105	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:


A = $\mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N014305-002A** concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 6.4302 * 100 \\ &= 643.02\end{aligned}$$

Reporting result in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 640$$

 1/16/2015

Sample Calculation

Work Order No.:	<u>N014305</u>
Test Method:	<u>EPA 245.1</u>
Matrix:	<u>Water</u>

FORMULA:

Calculate the Mercury concentration in ug/L in the original sample as follows:

$$\text{Hg} = [A][DF]$$

where:

A = ug/L, instrument calculated concentration

DF = dilution factor

For: **N014305-003B**

The concentration in ug/L is calculated as follows:

$$\text{Hg} = [A][DF]$$

$$\text{Hg} = [0.01193][1]$$

$$\text{Hg} = 0.01193 \text{ ug/L}$$

Since result is less than 0.2 ug/L reporting limit.

$$\text{Hg} = \text{ND} \text{ ug/L}$$

Sample Calculation

METHOD: EPA 300.0
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: Water

FORMULA:

Calculate the Fluoride concentration, in mg/L, in the original sample as follows:

$$\text{Fluoride, mg/L} = A * DF$$

where:

$$\begin{array}{ll} A & = \text{mg/L, IC calculated concentration} \\ DF & = \text{dilution factor} \end{array}$$

For **N014305-001B** concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Fluoride, mg/L} &= 0.321 * 20 \\ &= 6.42 \end{aligned}$$

Reporting result in two significant figures,

$$\text{Fluoride, mg/L} = 6.4 \quad \text{pln}$$

SAMPLE CALCULATION

METHOD: SM 4500_NO3F

TEST NAME: Nitrate by Automated Cadmium Reduction Method

MATRIX: Water

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

Where:

A= mg/L, Nitrate/Nitrite-N instrument calculated concentration

DF= dilution factor

For N014305-001E, concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{Nitrate/Nitrite-N, mg/L} &= 0.5277 * 5 \\ &= 2.6385 \text{ ug/L}\end{aligned}$$

Reporting result in 2 significant figures,

$$\text{Nitrate/Nitrite-N, mg/L} = 2.6$$

January 21, 2015

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

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

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

Workorder No.: N014307

RE: PG&E Topock IM3, 652547.PT.0P.00

Attention: Shawn P. Duffy

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

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

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

Sincerely,



Glen Gesmundo
QA Manager

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



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CLIENT: CH2M HILL
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab Order: N014307

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS:**

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 300.0:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 6010B:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) on QC samples N014320-002A-MS and N014320-002A-MSD are outside recovery criteria for Chromium possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 7199:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

RPD for Matrix Spike(MS) and Matrix Spike Duplicate(MSD) is outside criteria ; however, the analytical batch was validated by the Laboratory Control Sample (LCS).



ASSET Laboratories

Date: 21-Jan-15

CLIENT: CH2M HILL
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab Order: N014307
Contract No: IM3plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014307-001A	SC-Sludge-WDR-502	Sludge	1/6/2015 1:40:00 PM	1/6/2015	1/21/2015
N014307-001B	SC-Sludge-WDR-502	Sludge	1/6/2015 1:40:00 PM	1/6/2015	1/21/2015
N014307-001C	SC-Sludge-WDR-502	Sludge	1/6/2015 1:40:00 PM	1/6/2015	1/21/2015



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

CLIENT:	CH2M HILL	Client Sample ID:	SC-Sludge-WDR-502
Lab Order:	N014307	Collection Date:	1/6/2015 1:40:00 PM
Project:	PG&E Topock IM3, 652547.PT.0P.00	Matrix:	SLUDGE
Lab ID:	N014307-001		

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

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_150119A	QC Batch: R97611	PrepDate	Analyst: QBM
Fluoride	28 0.63	2.6	mg/Kg-dry 1 1/19/2015 11:21 AM

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


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CLIENT: CH2M HILL
Work Order: N014307
Project: PG&E Topock IM3, 652547.PT.0P.00

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

Sample ID	MB-R97611	SampType:	MBLK	TestCode:	300_S	Units:	mg/Kg	Prep Date:		RunNo:	97611		
Client ID:	PBS	Batch ID:	R97611	TestNo:	EPA 300.0			Analysis Date:	1/19/2015	SeqNo:	1912688		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride ND 1.0

Sample ID	LCS-R97611	SampType:	LCS	TestCode:	300_S	Units:	mg/Kg	Prep Date:		RunNo:	97611		
Client ID:	LCSS	Batch ID:	R97611	TestNo:	EPA 300.0			Analysis Date:	1/19/2015	SeqNo:	1912689		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 24.650 1.0 25.00 0 98.6 90 110

Sample ID	N014307-001ADUP	SampType:	DUP	TestCode:	300_S	Units:	mg/Kg-dry	Prep Date:		RunNo:	97611		
Client ID:	ZZZZZZ	Batch ID:	R97611	TestNo:	EPA 300.0			Analysis Date:	1/19/2015	SeqNo:	1912691		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 26.823 2.6 28.09 4.62 20

Sample ID	N014307-001AMS	SampType:	MS	TestCode:	300_S	Units:	mg/Kg-dry	Prep Date:		RunNo:	97611		
Client ID:	ZZZZZZ	Batch ID:	R97611	TestNo:	EPA 300.0			Analysis Date:	1/19/2015	SeqNo:	1912692		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 78.885 2.6 66.00 28.09 77.0 80 120 S

Sample ID	N014307-001AMSD	SampType:	MSD	TestCode:	300_S	Units:	mg/Kg-dry	Prep Date:		RunNo:	97611		
Client ID:	ZZZZZZ	Batch ID:	R97611	TestNo:	EPA 300.0			Analysis Date:	1/19/2015	SeqNo:	1912693		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 78.726 2.6 66.00 28.09 76.7 80 120 78.88 0.201 20 S

Qualifiers:

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



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N014307
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_S

Sample ID	N014307-001APS	SampType: MS	TestCode: 300_S	Units: mg/Kg-dry	Prep Date:	RunNo: 97611					
Client ID: ZZZZZZ	Batch ID: R97611	TestNo: EPA 300.0	Analysis Date: 1/19/2015	SeqNo: 1912696							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	88.336	2.6	66.00	28.09	91.3	80	120				

Qualifiers:

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



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

CLIENT: CH2M HILL
Lab Order: N014307
Project: PG&E Topock IM3, 652547.PT.OP.00
Lab ID: N014307-001

Client Sample ID: SC-Sludge-WDR-502
Collection Date: 1/6/2015 1:40:00 PM
Matrix: SLUDGE

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP
EPA 3050B
EPA 6010B

RunID: ICP2_150113B	QC Batch: 48395	PrepDate	1/12/2015	Analyst: CEI		
Antimony	ND	0.56	5.3	mg/Kg-dry	1	1/13/2015 04:35 PM
Arsenic	12	0.27	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Barium	47	0.37	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Beryllium	ND	0.33	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Cadmium	ND	0.35	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Chromium	2700	0.37	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Cobalt	3.7	0.37	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Copper	79	0.28	5.3	mg/Kg-dry	1	1/13/2015 04:35 PM
Lead	ND	0.31	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Manganese	290	0.68	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Molybdenum	5.4	0.34	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Nickel	26	0.34	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Selenium	9.0	0.45	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Silver	ND	0.34	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Thallium	ND	0.42	5.3	mg/Kg-dry	1	1/13/2015 04:35 PM
Vanadium	29	0.37	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM
Zinc	11	0.35	2.6	mg/Kg-dry	1	1/13/2015 04:35 PM

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



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CLIENT: CH2M HILL
Work Order: N014307
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 6010_SPGE**

Sample ID	MB-48395	SampType:	MBLK	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	1/12/2015	RunNo:	97516	
Client ID:	PBS	Batch ID:	48395	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	1/13/2015	SeqNo:	1907686	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		ND	2.0									
Arsenic		ND	1.0									
Barium		ND	1.0									
Beryllium		ND	1.0									
Cadmium		ND	1.0									
Chromium		ND	1.0									
Cobalt		ND	1.0									
Copper		0.170	2.0									
Lead		ND	1.0									
Manganese		ND	1.0									
Molybdenum		ND	1.0									
Nickel		ND	1.0									
Selenium		ND	1.0									
Silver		ND	1.0									
Thallium		ND	2.0									
Vanadium		ND	1.0									
Zinc		ND	1.0									

Sample ID	LCS-48395	SampType:	LCS	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	1/12/2015	RunNo:	97516	
Client ID:	LCSS	Batch ID:	48395	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	1/13/2015	SeqNo:	1907687	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		24.938	2.0	25.00	0	99.8	85	115				
Arsenic		23.858	1.0	25.00	0	95.4	85	115				
Barium		24.589	1.0	25.00	0	98.4	85	115				
Beryllium		22.995	1.0	25.00	0	92.0	85	115				
Cadmium		23.917	1.0	25.00	0	95.7	85	115				
Chromium		24.508	1.0	25.00	0	98.0	85	115				

Qualifiers:

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DO	Surrogate Diluted Out	Calculations are based on raw values			



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CLIENT: CH2M HILL
Work Order: N014307
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID	LCS-48395	SampType:	LCS	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	1/12/2015	RunNo:	97516
Client ID:	LCSS	Batch ID:	48395	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	1/13/2015	SeqNo:	1907687
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cobalt	23.013	1.0	25.00	0	92.1	85	115				
Copper	24.483	2.0	25.00	0	97.9	85	115				
Lead	24.705	1.0	25.00	0	98.8	85	115				
Manganese	220.275	1.0	250.0	0	88.1	85	115				
Molybdenum	23.872	1.0	25.00	0	95.5	85	115				
Nickel	22.881	1.0	25.00	0	91.5	85	115				
Selenium	21.387	1.0	25.00	0	85.5	85	115				
Silver	23.256	1.0	25.00	0	93.0	85	115				
Thallium	23.199	2.0	25.00	0	92.8	85	115				
Vanadium	24.861	1.0	25.00	0	99.4	85	115				
Zinc	22.879	1.0	25.00	0	91.5	85	115				

Sample ID	N014320-002A-MS	SampType:	MS	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:	1/12/2015	RunNo:	97516
Client ID:	ZZZZZZ	Batch ID:	48395	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	1/13/2015	SeqNo:	1907694
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	30.155	2.6	32.90	0	91.7	75	125				
Arsenic	33.909	1.3	32.90	3.104	93.6	75	125				
Barium	103.910	1.3	32.90	75.74	85.6	75	125				
Beryllium	29.044	1.3	32.90	0.1773	87.7	75	125				
Cadmium	30.026	1.3	32.90	0	91.3	75	125				
Chromium	79.429	1.3	32.90	54.82	74.8	75	125				S
Cobalt	37.027	1.3	32.90	7.402	90.1	75	125				
Copper	41.167	2.6	32.90	7.810	101	75	125				
Lead	34.638	1.3	32.90	5.245	89.3	75	125				
Manganese	375.629	1.3	329.0	104.7	82.4	75	125				
Molybdenum	29.606	1.3	32.90	0	90.0	75	125				
Nickel	68.275	1.3	32.90	33.82	105	75	125				
Selenium	30.523	1.3	32.90	1.827	87.2	75	125				
Silver	27.086	1.3	32.90	0	82.3	75	125				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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CLIENT: CH2M HILL
Work Order: N014307
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID	N014320-002A-MS	SampType:	MS	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:	1/12/2015	RunNo:	97516
Client ID:	ZZZZZZ	Batch ID:	48395	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	1/13/2015	SeqNo:	1907694
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Thallium	28.563	2.6	32.90	0	86.8	75	125				
Vanadium	63.141	1.3	32.90	38.02	76.3	75	125				
Zinc	57.482	1.3	32.90	24.63	99.9	75	125				

Sample ID	N014320-002A-MSD	SampType:	MSD	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:	1/12/2015	RunNo:	97516
Client ID:	ZZZZZZ	Batch ID:	48395	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	1/13/2015	SeqNo:	1907695
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	29.777	2.6	32.95	0	90.4	75	125	30.16	1.26	20	
Arsenic	33.723	1.3	32.95	3.104	92.9	75	125	33.91	0.551	20	
Barium	103.961	1.3	32.95	75.74	85.7	75	125	103.9	0.0491	20	
Beryllium	29.052	1.3	32.95	0.1773	87.6	75	125	29.04	0.0291	20	
Cadmium	29.905	1.3	32.95	0	90.8	75	125	30.03	0.403	20	
Chromium	79.453	1.3	32.95	54.82	74.8	75	125	79.43	0.0308	20	S
Cobalt	36.829	1.3	32.95	7.402	89.3	75	125	37.03	0.536	20	
Copper	41.190	2.6	32.95	7.810	101	75	125	41.17	0.0544	20	
Lead	34.637	1.3	32.95	5.245	89.2	75	125	34.64	0.00238	20	
Manganese	375.057	1.3	329.5	104.7	82.1	75	125	375.6	0.153	20	
Molybdenum	29.564	1.3	32.95	0	89.7	75	125	29.61	0.142	20	
Nickel	68.475	1.3	32.95	33.82	105	75	125	68.27	0.293	20	
Selenium	30.327	1.3	32.95	1.827	86.5	75	125	30.52	0.645	20	
Silver	27.177	1.3	32.95	0	82.5	75	125	27.09	0.336	20	
Thallium	28.711	2.6	32.95	0	87.1	75	125	28.56	0.518	20	
Vanadium	63.254	1.3	32.95	38.02	76.6	75	125	63.14	0.179	20	
Zinc	57.207	1.3	32.95	24.63	98.9	75	125	57.48	0.479	20	

Qualifiers:

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



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

CLIENT:	CH2M HILL	Client Sample ID:	SC-Sludge-WDR-502
Lab Order:	N014307	Collection Date:	1/6/2015 1:40:00 PM
Project:	PG&E Topock IM3, 652547.PT.OP.00	Matrix:	SLUDGE
Lab ID:	N014307-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
	EPA 3060A		EPA 7199				
RunID: IC1_150112A	QC Batch: 48378		PrepDate		1/9/2015	Analyst: RB	
Hexavalent Chromium	110	0.27	5.3		mg/Kg-dry	10	1/12/2015 04:58 PM

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


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CLIENT: CH2M HILL
 Work Order: N014307
 Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7199_S_PGE

Sample ID	MB-48378	SampType:	MBLK	TestCode:	7199_S_PGE	Units:	mg/Kg	Prep Date:	1/9/2015	RunNo:	97533			
Client ID:	PBS	Batch ID:	48378	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	1/12/2015	SeqNo:	1908484			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		ND		0.20										

Sample ID	LCS-48378	SampType:	LCS	TestCode:	7199_S_PGE	Units:	mg/Kg	Prep Date:	1/9/2015	RunNo:	97533			
Client ID:	LCSS	Batch ID:	48378	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	1/12/2015	SeqNo:	1908485			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		3.982		0.20	4.000	0		99.5	80	120				

Sample ID	N014320-002AREP	SampType:	DUP	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	1/9/2015	RunNo:	97533			
Client ID:	ZZZZZZ	Batch ID:	48378	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	1/12/2015	SeqNo:	1908487			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		0.081		0.26							0.05222	0	20	

Sample ID	N014320-002A-DUP	SampType:	DUP	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	1/9/2015	RunNo:	97533			
Client ID:	ZZZZZZ	Batch ID:	48378	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	1/12/2015	SeqNo:	1908488			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		0.127		0.26							0.05222	0	20	

Sample ID	N014320-002A-MS	SampType:	MS	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	1/9/2015	RunNo:	97533			
Client ID:	ZZZZZZ	Batch ID:	48378	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	1/12/2015	SeqNo:	1908489			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		1.069		0.26	5.255	0.05222		19.4	75	125				S

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014307
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7199_S_PGE

Sample ID	N014320-002A-MSD	SampType: MSD	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 1/9/2015	RunNo: 97533					
Client ID: ZZZZZZ	Batch ID: 48378	TestNo: EPA 7199	EPA 3060A	Analysis Date: 1/12/2015	SeqNo: 1908490						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	0.698	0.26	5.269	0.05222	12.3	75	125	1.069	42.0	20	SR
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Sample ID	N014320-002A-MS_I	SampType: MS	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 1/9/2015	RunNo: 97533					
Client ID: ZZZZZZ	Batch ID: 48378	TestNo: EPA 7199	EPA 3060A	Analysis Date: 1/12/2015	SeqNo: 1908491						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	516.160	13	918.5	0.05222	56.2	75	125				S
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Sample ID	N014320-003AREP	SampType:	DUP	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	1/9/2015	RunNo:	97533		
Client ID:	ZZZZZZ	Batch ID:	48378	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	1/12/2015	SeqNo:	1908493		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	0.177	0.25						0.1801	0	20	
---------------------	-------	------	--	--	--	--	--	--------	---	----	--

Sample ID	N014320-004AREP	SampType: DUP	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 1/9/2015	RunNo: 97533					
Client ID: ZZZZZZ	Batch ID: 48378	TestNo: EPA 7199	EPA 3060A	Analysis Date: 1/12/2015	SeqNo: 1908497						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	0.761	0.27						0.7906	3.87	20	
---------------------	-------	------	--	--	--	--	--	--------	------	----	--

Sample ID	N014307-001CREP	SampType: DUP	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 1/9/2015	RunNo: 97533					
Client ID:	ZZZZZZ	Batch ID: 48378	TestNo: EPA 7199	EPA 3060A	Analysis Date: 1/12/2015	SeqNo: 1908501					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	104.124	5.3						110.0	5.45	20	
---------------------	---------	-----	--	--	--	--	--	-------	------	----	--

Qualifiers:

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



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

CLIENT:	CH2M HILL	Client Sample ID:	SC-Sludge-WDR-502
Lab Order:	N014307	Collection Date:	1/6/2015 1:40:00 PM
Project:	PG&E Topock IM3, 652547.PT.0P.00	Matrix:	SLUDGE
Lab ID:	N014307-001		

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

RunID: AA1_150113A	QC Batch: 48400	PrepDate	1/13/2015	Analyst: CEI
Mercury	ND	0.011	0.26	mg/Kg-dry 1 1/13/2015 04:37 PM

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


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CLIENT: CH2M HILL
Work Order: N014307
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 7471_S_PGE**

Sample ID MB1-48400	SampType: MBLK	TestCode: 7471_S_PGE	Units: mg/Kg	Prep Date: 1/13/2015	RunNo: 97523
Client ID: PBS	Batch ID: 48400	TestNo: EPA 7471A		Analysis Date: 1/13/2015	SeqNo: 1907811
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury ND 0.097

Sample ID LCS-48400	SampType: LCS	TestCode: 7471_S_PGE	Units: mg/Kg	Prep Date: 1/13/2015	RunNo: 97523
Client ID: LCSS	Batch ID: 48400	TestNo: EPA 7471A		Analysis Date: 1/13/2015	SeqNo: 1907813
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.479 0.096 0.4013 0 119 75 125

Sample ID N014307-001B-MS	SampType: MS	TestCode: 7471_S_PGE	Units: mg/Kg-dry	Prep Date: 1/13/2015	RunNo: 97523
Client ID: ZZZZZZ	Batch ID: 48400	TestNo: EPA 7471A		Analysis Date: 1/13/2015	SeqNo: 1907814
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 1.222 0.25 1.059 0.1044 105 75 125

Sample ID N014307-001B-MSD	SampType: MSD	TestCode: 7471_S_PGE	Units: mg/Kg-dry	Prep Date: 1/13/2015	RunNo: 97523
Client ID: ZZZZZZ	Batch ID: 48400	TestNo: EPA 7471A		Analysis Date: 1/13/2015	SeqNo: 1907815
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 1.262 0.25 1.056 0.1044 110 75 125 1.222 3.26 20

Sample ID N014307-001B-DUP	SampType: DUP	TestCode: 7471_S_PGE	Units: mg/Kg-dry	Prep Date: 1/13/2015	RunNo: 97523
Client ID: ZZZZZZ	Batch ID: 48400	TestNo: EPA 7471A		Analysis Date: 1/13/2015	SeqNo: 1907817
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.104 0.26 0.1044 0 20

Qualifiers:

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



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

CLIENT: CH2M HILL
Lab Order: N014307
Project: PG&E Topock IM3, 652547.PT.0P.00
Lab ID: N014307-001

Client Sample ID: SC-Sludge-WDR-502
Collection Date: 1/6/2015 1:40:00 PM
Matrix: SLUDGE

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

RunID: WETCHEM_150112A	QC Batch: R97526			PrepDate		Analyst: RB
Percent Moisture	62.12	0.1000	0.1000	wt%	1	1/12/2015 09:30 AM

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



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CLIENT: CH2M HILL
Work Order: N014307
Project: PG&E Topock IM3, 652547.PT.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: PMOIST**

Sample ID	MB-R97526	SampType:	MBLK	TestCode:	PMOIST	Units:	wt%	Prep Date:		RunNo:	97526		
Client ID:	PBS	Batch ID:	R97526	TestNo:	D2216			Analysis Date:	1/12/2015	SeqNo:	1908017		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Percent Moisture ND 0.1000

Sample ID	N014320-001A-DUP	SampType:	DUP	TestCode:	PMOIST	Units:	wt%	Prep Date:		RunNo:	97526		
Client ID:	ZZZZZZ	Batch ID:	R97526	TestNo:	D2216			Analysis Date:	1/12/2015	SeqNo:	1908020		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Percent Moisture 21.931 0.1000 22.15 0.994 30

Qualifiers:

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



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WORKORDER: N014307

ANALYST LIST

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



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TURNAROUND TIME 10 Days
DATE 01/06/15 PAGE 1 OF 1

CHAIN OF CUSTODY SIGNATURE RECORD			
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
<i>Josh Rosenberg</i>	Josh Rosenberg	CH2M HILL	1-6-15 1451
Signature (Received)	Printed Name	Company/ Agency	Date/ Time
<i>Philander Galey</i>	Philander Galey	Asset Labs	1-6-15 1451
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
<i>Philander Galey</i>	Philander Galey	ASSET LABS	1-6-15 2043
Signature (Received)	Printed Name	Company/ Agency	Date/ Time
<i>Philander Galey</i>	Philander Galey	ASSET LABS	1-6-15 2043
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time

SAMPLE CONDITIONS

RECEIVED COOL ☒ WARM ☐ °F

CUSTODY SEALED YES ☐ NO ☒

SPECIAL REQUIREMENTS:

ASSET Laboratories

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

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

Cooler Received/Opened On: 1/6/2015

Workorder: N014307

Rep sample Temp (Deg C): 1.9

IR Gun ID: 2

Temp Blank: ☒ Yes ☐ No

Carrier name: ATL

Last 4 digits of Tracking No.: NA

Packing Material Used: None

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

Sample Receipt Checklist

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

Comments: Sampler's initial taken from Sample containers.

Checklist Completed By JPG  01/08/15

Reviewed By:  01/08/15

Sample Control

From: Marlon B. Cartin [marlon@assetlaboratories.com]
Sent: Wednesday, January 07, 2015 11:49 AM
To: Shawn.Duffy@CH2M.com
Cc: 'SampleControl.LV@assetlaboratories.com'; 'John Paolo Gumawid'; 'Glen Gesmundo'
Subject: Topock Weekly sample

Hi Shawn!

Per our conversation this morning, below are what we discussed and agreed upon on the initial weekly samples that we got from Topock yesterday;

- A. For samples 700B, 100B and 701
 - 1. Cr+6 - we will filter and preserve the sample accordingly.
 - 2. Metals - we will report Totals so we will only preserve the sample.
 - 3. NO3/NO2 - we will transfer and preserve sample and analyzed using SM4500NO3F as N.
 - 4. NO3 - will no longer be reported by 300.0
 - 5. NH3 - send to TLI
 - 6. Sampling Time - We will take this from the sample container.
 - 7. Prelims/Verbal result (Cr+6, TDs, T. Cr) - will be ready by Thursday.
- B. For samples PE-01 and TW-03D
 - 1. Cr+6 - we will filter and preserve the sample accordingly.
 - 2. Metals - we will filter and preserve the sample accordingly.
 - 3. Sampling Time - We will take this from the sample container.
- C. Sludge
 - 1. We will report in dry weight.

Please let me know if I missed something. Please send a revised COC at your most convenient time.

Thanks,

Marlon Cartin

Project Manager

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Sample Calculation

METHOD: EPA 300.0

TEST NAME: INORGANIC ANIONS BY IC

MATRIX: ~~Soil~~ Sludge

FORMULA:

Calculate the Fluoride concentration, in mg/kg-dry, in the original sample as follows:

$$\text{Fluoride, mg/kg-dry} = \frac{(A * DF * PF) * 100}{(100 - \% \text{Moisture})}$$

where:

A = mg/L, IC calculated concentration

DF = dilution factor


PF = prep factor, 5 g to 50 mL =10

For N014307-001A, concentration in mg/kg-dry are calculated as follows:

$$\begin{aligned} \text{Fluoride, mg/kg-dry} &= \frac{1.064 * 1 * 10 * 100}{(100 - 62.122)} \\ &= 28.0902 \text{ mg/kg-dry} \end{aligned}$$

Reporting **N014307-001A** results in two significant figures,

$$\text{Fluoride, mg/kg-dry} = 28 \text{ mg/kg-dry}$$

 1/20/2015

Sample Calculation

METHOD: EPA 6010

TEST NAME: Heavy Metals by ICP

MATRIX: Sludge

FORMULA:

Calculate the Chromium concentration, in mg/Kg-dry, in the original sample as follows:

$$\text{Chromium, mg/ Kg-dry} = A * DF * PF * 100 / (100 - \text{PMOIST})$$

where:

A = mg/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate, mL / Amt. of Sample, grams

For Sample **N014307-001B**, the concentration in mg/Kg-dry is calculated as follows:

$$\begin{aligned} \text{Chromium, mg/Kg-dry} &= 20.2687 * 1 * \frac{100/2.002}{(100/2.00)} \\ &\quad * 100 / (100 - 62.122) \\ &= \frac{2672.85}{\cancel{2675.526}} \text{ mg/Kg-dry} \end{aligned}$$

Reporting results in two significant figures,

$$\text{Chromium, mg/Kg-dry} = 2700$$



1/15/2015

ASSET Laboratories
ICP-Metals in Soil

Work Order No.: N014307
 Test Method: EPA 6010
 Analysis Date: 01/13/15

Dilution Test Summary

Matrix: Sludge
 Batch No.: 48395

Instrument ID: ICP-02
 Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Sb, As, Be, Cd, Co, Cu, Pb, Mo, S, Ag, & Tl. The calculated concentrations are <25RL.

Dilution test failed for Ba, Cr, Mn, Ni, V & Zn. However, PS passed criteria for all analytes.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N014320-002A DT 5X	Antimony	mg/Kg-dry	0	NA	0		10
N014320-002A DT 5X	Arsenic	mg/Kg-dry	3.966925893	NA	3.103814415	27.81%	10
N014320-002A DT 5X	Barium	mg/Kg-dry	87.3925608	FAIL	75.74100221	15.38%	10
N014320-002A DT 5X	Beryllium	mg/Kg-dry	0	NA	0.177348888		10
N014320-002A DT 5X	Cadmium	mg/Kg-dry	0	NA	0		10
N014320-002A DT 5X	Chromium	mg/Kg-dry	63.7654737	FAIL	54.81838212	16.32%	10
N014320-002A DT 5X	Cobalt	mg/Kg-dry	8.477740357	NA	7.401606675	14.54%	10
N014320-002A DT 5X	Copper	mg/Kg-dry	9.359536743	NA	7.809807599	19.84%	10
N014320-002A DT 5X	Lead	mg/Kg-dry	6.207742647	NA	5.245097271	18.35%	10
N014320-002A DT 5X	Manganese	mg/Kg-dry	117.1897309	FAIL	104.6503903	11.98%	10
N014320-002A DT 5X	Molybdenum	mg/Kg-dry	0	NA	0		10
N014320-002A DT 5X	Nickel	mg/Kg-dry	42.30395901	FAIL	33.81920459	25.09%	10
N014320-002A DT 5X	Selenium	mg/Kg-dry	1.742670396	NA	1.827162181	4.62%	10
N014320-002A DT 5X	Silver	mg/Kg-dry	0	NA	0		10
N014320-002A DT 5X	Thallium	mg/Kg-dry	0	NA	0		10
N014320-002A DT 5X	Vanadium	mg/Kg-dry	43.90752445	FAIL	38.02490545	15.47%	10
N014320-002A DT 5X	Zinc	mg/Kg-dry	30.31671212	FAIL	24.63406348	23.07%	10

Note: NA - Not Applicable

CLIENT: CH2M HILL
Work Order: N014307
Project: PG&E Topock IM3, 652547.PT.0P.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID	N014320-002A-PS	SampType:	PS	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:		RunNo:	97516
Client ID:	ZZZZZZ	Batch ID:	48395	TestNo:	EPA 6010B EPA 3050B	Analysis Date:	1/13/2015	SeqNo:	1907693		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	30.431	2.6	32.93	0	92.4	80	120				
Arsenic	34.583	1.3	32.93	3.104	95.6	80	120				
Barium	105.237	1.3	32.93	75.74	89.6	80	120				
Beryllium	29.628	1.3	32.93	0.1773	89.4	80	120				
Cadmium	30.534	1.3	32.93	0	92.7	80	120				
Chromium	82.754	1.3	32.93	54.82	84.8	80	120				
Cobalt	37.906	1.3	32.93	7.402	92.6	80	120				
Copper	41.138	2.6	32.93	7.810	101	80	120				
Lead	35.359	1.3	32.93	5.245	91.4	80	120				
Manganese	377.267	1.3	329.3	104.7	82.8	80	120				
Molybdenum	30.042	1.3	32.93	0	91.2	80	120				
Nickel	62.402	1.3	32.93	33.82	86.8	80	120				
Selenium	31.413	1.3	32.93	1.827	89.8	80	120				
Silver	27.444	1.3	32.93	0	83.3	80	120				
Thallium	29.122	2.6	32.93	0	88.4	80	120				
Vanadium	67.296	1.3	32.93	38.02	88.9	80	120				
Zinc	56.270	1.3	32.93	24.63	96.1	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 7199

TEST NAME: HEXAVALENT CHROMIUM BY IC

MATRIX: Sludge

FORMULA:

Calculate the Hexavalent Chromium concentration, in mg/Kg, in the original sample as follows:

$$\text{Cr}^{+6}, \text{mg/Kg-dry} = \frac{(A * DF * 0.1 * 20) \times 100}{B (100 - \% \text{Moisture}) 1000}$$

where:

A = ug/L, IC Cr⁺⁶ calculated concentration

DF = dilution factor

B = weight of sample in kg


20 = dilution due to the matrix of the digestate

For **N014307-001C**, concentration in mg/Kg is calculated as follows:

$$\begin{aligned} \text{Cr}^{+6}, \text{mg/Kg-dry} &= \frac{(5.21640 * 10 * 0.1 * 20) \times 100}{0.002505 (100 - 62.122) 1000} \\ &= \frac{109.9528}{109.947} \end{aligned}$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \text{mg/Kg-dry} = 110$$

 1/21/2015

Work Order No.: **N014307**
Test Method: **EPA 7471**
Test Name: **Mercury in Solid by Cold-Vapor Technique**
Matrix: **SLUDGE**

FORMULA:

$$\text{Mercury, mg/Kg-dry} = A * DF * PF * (100/100-P_{\text{moist}})$$

Where,

A = ug/L, calculated concentration of the Sample

DF = dilution factor used

PF = Final Volume of Digestate / Wt. Of Sample used in Grams.

P_{moist} = Percent Moisture content of the Sample

To calculate the Mercury concentration in mg/Kg-Dry in the sample is as follows:

For Sample: **N014307-001B**

A =	<u>0.48742</u>	ug/L
DF =	<u>1</u>	unit less
Wt. Of Sample =	0.6 0.616	grams
Final Vol. =	<u>0.05</u>	liters
P _{moist} =	<u>62.122</u>	%

Using the formula:

$$\text{Mercury, mg/Kg-dry} = A * DF * PF * (100/100-P_{\text{moist}})$$

The concentration in mg/Kg-dry will be equal to:

$$\text{Mercury, mg/Kg-dry} = \frac{0.104449}{\underline{\del{0.10723}}}$$

Since results is less than reporting limit,

$$\text{Mercury, mg/Kg-dry} = \underline{ND}$$

SAMPLE CALCULATION

METHOD: ASTM D 2216-05

TEST NAME: Determination of Water Content

MATRIX: ~~SOIL~~ SLUDGE

FORMULA:

Calculate the % Moisture in the original sample as follows:

$$\% \text{ Moisture} = ((A-B) / (A-C)) * 100$$

where:

A = mass of aluminum dish + sample before drying, g,

B = mass of aluminum dish + sample after drying, g,

C = mass of aluminum dish, g,

For N014307-001B, % Moisture are calculated as follows:

$$\% \text{ Moisture} = ((2.3257-1.6992) / (2.3257-1.3172)) * 100$$

$$\% \text{ Moisture} = 62.122\%$$

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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Percent moisture (%)

QC Batch No.:

R17526

Date Prepared: <u>11/2/15</u>	Date of Weighing: <u>11/2/15</u>	Oven Temperature: <u>110°C</u>
Time Prepared: <u>930</u>	Time of Reading: <u>1230</u>	
(Start Time)	(Start time)	
Prepared By: <u>LSR</u>	Weighings performed by: <u>LSR</u>	

Sample ID	Pan 1st Final Tare Wt.(g)	Pan 2nd Final Tare Wt.(g)	Pan + Sample Initial (g)	Pan+Sample 1st Final Wt(g)	Pan+Sample 2nd Final Wt(g)	% Moisture	% Solid	Comments
Blank MB	1.3186	1.3186	1.3186	1.3185	1.3185	0		
1 NO14307-001B	1.3172	1.3172	2.3257	1.6992	1.6992	62.122	37.878	
2 NO14320-001A	1.3163	1.3163	2.3217	2.0990	2.0990	22.150	77.850	
3 -001A-DUP	1.3221	1.3221	2.3280	2.1074	2.1074	21.931	78.069	
4 -002A	1.3198	1.3198	2.3265	2.0837	2.0837	24.118	75.882	
5 -003A	1.3198	1.3198	2.3306	2.1152	2.1152	21.310	78.690	
6 ↓ -004A	1.3125	1.3125	2.3164	2.0637	2.0637	25.172	74.828	
7								
8								
9								
10								
11								
12								
13								
14								
15			% MOISTURE = $\frac{(A-B)}{(A-C)} \times 100$					
16								
17								
18			where A = wt of dish + sample before drying (g)					
19			B = wt of dish + sample after drying (g)					
20			C = wt of dish (g)					
Dup								

Julia Ramit

1/14/2015

1/12/2014	WT PAN	PAN+SAMPLE	WT SAMPLE	WT PAN+SAMPLE	WT OF DRY SAMPLE	%SOLID	%MOISTURE
MB	1.3186	1.3186	0 1.3186	1.3185		0	0
N014307-001B	1.3172	2.3257	1.0085	1.6992	0.382	37.878	62.122
N014320-001A	1.3163	2.3217	1.0054	2.099	0.7827	77.850	22.150
N014320-001A DUP	1.3221	2.328	1.0059	2.1074	0.7853	78.069	21.931
N014320-002A	1.3198	2.3265	1.0067	2.0837	0.7639	75.882	24.118
N014320-003A	1.3198	2.3306	1.0108	2.1152	0.7954	78.690	21.310
N014320-004A	1.3125	2.3164	1.0039	2.0637	0.7512	74.828	25.172

Julia Ramif 1/14/2015

January 28, 2015

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

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

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

Workorder No.: N014371

RE: PG&E Topock

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on January 13, 2015 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo
QA Manager

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CLIENT: CH2M HILL
Project: PG&E Topock
Lab Order: N014371

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS:**

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 6020_Dissolved:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



ASSET Laboratories

Date: 28-Jan-15

CLIENT: CH2M HILL
Project: PG&E Topock
Lab Order: N014371
Contract No: IM3Plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014371-001A	SC-700B-WDR-503	Water	1/13/2015 12:26:00 PM	1/13/2015	1/28/2015
N014371-001B	SC-700B-WDR-503	Water	1/13/2015 12:26:00 PM	1/13/2015	1/28/2015
N014371-001C	SC-700B-WDR-503	Water	1/13/2015 12:26:00 PM	1/13/2015	1/28/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 28-Jan-15

CLIENT: CH2M HILL
Lab Order: N014371
Project: PG&E Topock
Lab ID: N014371-001

Client Sample ID: SC-700B-WDR-503
Collection Date: 1/13/2015 12:26:00 PM
Matrix: WATER

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

RunID: WETCHEM_150114B	QC Batch: R97464			PrepDate		Analyst: RB
Specific Conductance	6700	0.10	0.10	umhos/cm	1	1/14/2015 02:30 PM

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



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CLIENT: CH2M HILL
Work Order: N014371
Project: PG&E Topock

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

Sample ID	N014325-001CDUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	97464
Client ID:	ZZZZZZ	Batch ID:	R97464	TestNo:	EPA 120.1			Analysis Date:	1/14/2015	SeqNo:	1909021
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Specific Conductance		17370.000		0.10						17360	0.0576 10

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 28-Jan-15

CLIENT: CH2M HILL
Lab Order: N014371
Project: PG&E Topock
Lab ID: N014371-001

Client Sample ID: SC-700B-WDR-503
Collection Date: 1/13/2015 12:26:00 PM
Matrix: WATER

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

RunID: WETCHEM_150114D	QC Batch: 48423			PrepDate	1/14/2015	Analyst: RB
Total Dissolved Solids (Residue, Filterable)	4000	50	50	mg/L	1	1/14/2015 01:00 PM

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



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CLIENT: CH2M HILL
Work Order: N014371
Project: PG&E Topock

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

Sample ID MB-48423	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 1/14/2015	RunNo: 97682						
Client ID: PBW	Batch ID: 48423	TestNo: SM2540C			Analysis Date: 1/14/2015	SeqNo: 1917131					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-48423	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 1/14/2015	RunNo: 97682						
Client ID: LCSW	Batch ID: 48423	TestNo: SM2540C			Analysis Date: 1/14/2015	SeqNo: 1917132					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1017.000	10	1000	0	102	80	120				

Sample ID N014369-001DDUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 1/14/2015	RunNo: 97682						
Client ID: ZZZZZZ	Batch ID: 48423	TestNo: SM2540C			Analysis Date: 1/14/2015	SeqNo: 1917138					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3189.968	33					3120	2.22	5		

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 28-Jan-15

CLIENT: CH2M HILL
Lab Order: N014371
Project: PG&E Topock
Lab ID: N014371-001

Client Sample ID: SC-700B-WDR-503
Collection Date: 1/13/2015 12:26:00 PM
Matrix: WATER

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

RunID: ICP7_150115B	QC Batch: 48428			PrepDate	1/15/2015	Analyst: CEI
Manganese	ND	0.026	0.50	µg/L	1	1/15/2015 05:00 PM

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



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CLIENT: CH2M HILL
 Work Order: N014371
 Project: PG&E Topock

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-48428	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/15/2015	RunNo:	97588			
Client ID:	PBW	Batch ID:	48428	TestNo:	EPA 200.8			Analysis Date:	1/15/2015	SeqNo:	1911940			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		ND		0.50										

Sample ID	LCS-48428	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/15/2015	RunNo:	97588			
Client ID:	LCSW	Batch ID:	48428	TestNo:	EPA 200.8			Analysis Date:	1/15/2015	SeqNo:	1911941			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		102.843		0.50	100.0	0		103	85	115				

Sample ID	N014371-001B-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/15/2015	RunNo:	97588			
Client ID:	ZZZZZZ	Batch ID:	48428	TestNo:	EPA 200.8			Analysis Date:	1/15/2015	SeqNo:	1911951			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		59.514		0.50	100.0	0		59.5	75	125				S

Sample ID	N014371-001B-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/15/2015	RunNo:	97588			
Client ID:	ZZZZZZ	Batch ID:	48428	TestNo:	EPA 200.8			Analysis Date:	1/15/2015	SeqNo:	1911952			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		59.108		0.50	100.0	0		59.1	75	125	59.51	0.684	20	S

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 28-Jan-15

CLIENT: CH2M HILL
Lab Order: N014371
Project: PG&E Topock
Lab ID: N014371-001

Client Sample ID: SC-700B-WDR-503
Collection Date: 1/13/2015 12:26:00 PM
Matrix: WATER

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

RunID: IC6_150114A	QC Batch: R97572			PrepDate		Analyst: RB
Hexavalent Chromium	ND	0.016	0.20	µg/L	1	1/14/2015 01:06 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150115A	QC Batch: 48428			PrepDate	1/15/2015	Analyst: CEI
Chromium	ND	0.030	1.0	µg/L	1	1/15/2015 05:00 PM

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



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Work Order: N014371
Project: PG&E Topock

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

Sample ID MB-48428	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/15/2015	RunNo: 97559
Client ID: PBW	Batch ID: 48428	TestNo: EPA 200.8		Analysis Date: 1/15/2015	SeqNo: 1911733
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID LCS-48428	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/15/2015	RunNo: 97559
Client ID: LCSW	Batch ID: 48428	TestNo: EPA 200.8		Analysis Date: 1/15/2015	SeqNo: 1911734
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 10.032 1.0 10.00 0 100 85 115

Sample ID N014371-001B-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/15/2015	RunNo: 97559
Client ID: ZZZZZZ	Batch ID: 48428	TestNo: EPA 200.8		Analysis Date: 1/15/2015	SeqNo: 1911744
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.277 1.0 10.00 0 92.8 75 125

Sample ID N014371-001B-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/15/2015	RunNo: 97559
Client ID: ZZZZZZ	Batch ID: 48428	TestNo: EPA 200.8		Analysis Date: 1/15/2015	SeqNo: 1911745
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.128 1.0 10.00 0 91.3 75 125 9.277 1.63 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014371
Project: PG&E Topock

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R97572	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97572			
Client ID:	PBW	Batch ID:	R97572	TestNo:	EPA 218.6			Analysis Date:	1/14/2015	SeqNo:	1910240			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R97572	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97572			
Client ID:	LCSW	Batch ID:	R97572	TestNo:	EPA 218.6			Analysis Date:	1/14/2015	SeqNo:	1910241			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.007 0.20 5.000 0 100 90 110

Sample ID	N014353-010A-DUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97572			
Client ID:	ZZZZZZ	Batch ID:	R97572	TestNo:	EPA 218.6			Analysis Date:	1/14/2015	SeqNo:	1910243			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 2.343 0.20 2.312 1.34 20

Sample ID	N014353-010A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97572		
Client ID:	ZZZZZZ	Batch ID:	R97572	TestNo:	EPA 218.6			Analysis Date:	1/14/2015	SeqNo:	1910244		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 3.388 0.20 1.000 2.312 108 90 110

Sample ID	N014353-010A-MSD	SampType: MSD	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 97572					
Client ID: ZZZZZZ	Batch ID: R97572	TestNo: EPA 218.6	Analysis Date: 1/14/2015	SeqNo: 1910245							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 3.324 0.20 1.000 2.312 101 90 110 3.388 1.91 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014371
Project: PG&E Topock

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N014353-004A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97572			
Client ID:	ZZZZZZ	Batch ID:	R97572	TestNo:	EPA 218.6			Analysis Date:	1/14/2015	SeqNo:	1910247			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1.077	0.20	1.000	0	108	90	110
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Sample ID	N014353-012A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97572			
Client ID:	ZZZZZZ	Batch ID:	R97572	TestNo:	EPA 218.6			Analysis Date:	1/14/2015	SeqNo:	1910249			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	3.326	0.20	1.000	2.252	107	90	110
---------------------	-------	------	-------	-------	-----	----	-----

Sample ID	N014371-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97572			
Client ID:	ZZZZZZ	Batch ID:	R97572	TestNo:	EPA 218.6			Analysis Date:	1/14/2015	SeqNo:	1910253			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1.055	0.20	1.000	0.03860	102	90	110
---------------------	-------	------	-------	---------	-----	----	-----

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 28-Jan-15

CLIENT: CH2M HILL
Lab Order: N014371
Project: PG&E Topock
Lab ID: N014371-001

Client Sample ID: SC-700B-WDR-503
Collection Date: 1/13/2015 12:26:00 PM
Matrix: WATER

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

RunID: WETCHEM_150115A	QC Batch: R97547			PrepDate		Analyst: RB
Turbidity	0.14	0.10	0.10	NTU	1	1/15/2015 11:00 AM

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



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CLIENT: CH2M HILL
Work Order: N014371
Project: PG&E Topock

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

Sample ID	N014371-001C DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	97547
Client ID:	ZZZZZZ	Batch ID:	R97547	TestNo:	SM 2130B			Analysis Date:	1/15/2015	SeqNo:	1909048
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.150		0.10						0.1400	6.90 30

Qualifiers:

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



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WORKORDER: N014371

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit / Ryan Balilu	EPA 120.1, SM 2540C, SM 2130B



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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-503]

COC Number

TURNAROUND TIME

10 Days

DATE 01/13/15

PAGE 1 OF 1

COMPANY CH2M HILL				<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Cr6 (218.6) Lab Filtered Total Metals (EPA 200.8) Cr, Mn Specific Conductance (120.1) TDS (SM2540C) Turbidity (SM2130) </div>										NUMBER OF CONTAINERS		COMMENTS	
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 652547.PT.OP.00 TEAM 1																	
SAMPLERS (SIGNATURE <i>Scott O'Donnell</i>)																	
SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6	Total Metals	Specific Conductance	TDS	Turbidity									
SC-700B-WDR-503	01/13/15	1726	Water	x	x	x	x	x									
																3	
																3	TOTAL NUMBER OF CONTAINERS

Please Provide a preliminary Result for the TDS ASAP

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS	
Signature (Relinquished) <i>Scott O'Donnell</i>	Printed Name Scott O'Donnell	Company/Agency CH2M Hill	Date/Time 1-13-15 1240	RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/> °F
Signature (Received) <i>Philander Galan</i>	Printed Name Philander Galan	Company/Agency ASSET LABS	Date/Time 1-13-15 1240	CUSTODY SEALED	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Signature (Relinquished) <i>Philander Galan</i>	Printed Name Philander Galan	Company/Agency ASSET LABS	Date/Time 1/13/15 525	SPECIAL REQUIREMENTS:		
Signature (Received) <i>Philander Galan</i>	Printed Name Philander Galan	Company/Agency ASSET LABS	Date/Time 1/13/15 525			
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time			
Signature (Received)	Printed Name	Company/Agency	Date/Time			

ASSET Laboratories

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

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

Cooler Received/Opened On: 1/13/2015

Workorder: N014371

Rep sample Temp (Deg C): 1.6

IR Gun ID: 2

Temp Blank: ☒ Yes ☐ No

Carrier name: ATL

Last 4 digits of Tracking No.: NA

Packing Material Used: None

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

Sample Receipt Checklist

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

Comments:

Checklist Completed B JPG 01/16/15

Reviewed By: [Signature] 01/20/15

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) * 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N014371-001C, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(60.7091 - 60.6295) * 1000000}{20}$$

$$= 3980 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 4000 \text{ mg/L}$$

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (A-B) \times 1000000 / C$$

WHERE:

A = weight in grams of dish + residue after drying

B = weight of dish in grams

C = volume of sample used in mL

Date Finished: 1/15/2014	vol	initial	final	calc	prep fact	TDS, mg/L	CONDUCTIVITY	RATIO
MB-48423	100	63.9735	63.974	5	1	5		
LCS-48423	100	77.0998	77.2015	1017	1	1017		
N014354-005C	100	63.791	63.834	430	1	430	536	0.802
N014354-005C	50	53.9305	54.0315	1010	2	2020	2760	0.732
N014367-001C	100	60.7718	60.8368	650	1	650	857	0.758
N014367-002C	100	62.4501	62.4982	481	1	481	579	0.831
N014369-001D	30	59.9071	60.0007	936	3.33333	3119.99688	4030	0.774
N014369-001D DUP	30	60.3205	60.4162	957	3.33333	3189.99681	4030	0.792
N014369-002D	40	61.1279	61.2405	1126	2.5	2815	3580	0.786
N014369-003D	30	64.2555	64.3698	1143	3.33333	3809.99619	4490	0.849
N014371-001C	20	60.6295	60.7091	796	5	3980	6670	0.597

Julia Ramit 1/23/2015

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014371-001B**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 0.0000 * 1 * (25/25) \\ &= 0.0000\end{aligned}$$

Since results is less than reporting limit,

$$\text{Chromium, ug/L} = \text{ND}$$

 1/28/2015

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014371
Test Method: EPA 200.8
Analysis Date: 1/15/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 48428

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr & Mn. The calculated values are <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014371-001B DT 5X	Chromium	µg/L	0	NA	0		10
N014371-001B DT 5X	Manganese	µg/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014371
Project: PG&E Topock

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

Sample ID	N014371-001B-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	97588
Client ID:	ZZZZZZ	Batch ID:	48428	TestNo:	EPA 200.8			Analysis Date:	1/15/2015	SeqNo:	1911950
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Manganese		59.681		0.50	100.0	0	59.7	80	120		S

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N014371
Project: PG&E Topock

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N014371-001B-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	97559
Client ID:	ZZZZZZ	Batch ID:	48428	TestNo:	EPA 200.8			Analysis Date:	1/15/2015	SeqNo:	1911743
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		9.290		1.0	10.00	0	92.9	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:


$A = \mu\text{g/L}$, IC Cr^{+6} calculated concentration
 DF = dilution factor

For **N014371-001A**, concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.0386 * 1 \\ &= 0.0386\end{aligned}$$

Since PQL is $0.20 \mu\text{g/L}$,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}, \text{ since result } < \text{RL}$$

 1/28/2015

February 04, 2015

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

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

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

Workorder No.: N014434

RE: PG&E Topock, 652547.PT.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on January 20, 2015 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo
QA Manager

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CLIENT: CH2M HILL
Project: PG&E Topock, 652547.PT.OP.00
Lab Order: N014434

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS:**

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



ASSET Laboratories

Date: 04-Feb-15

CLIENT: CH2M HILL
Project: PG&E Topock, 652547.PT.OP.00
Lab Order: N014434
Contract No: IM3Plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014434-001A	SC-700B-WDR-504	Water	1/20/2015 12:51:00 PM	1/20/2015	2/4/2015
N014434-001B	SC-700B-WDR-504	Water	1/20/2015 12:51:00 PM	1/20/2015	2/4/2015
N014434-001C	SC-700B-WDR-504	Water	1/20/2015 12:51:00 PM	1/20/2015	2/4/2015



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 04-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-504
Lab Order:	N014434	Collection Date:	1/20/2015 12:51:00 PM
Project:	PG&E Topock, 652547.PT.OP.00	Matrix:	WATER
Lab ID:	N014434-001		

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

SPECIFIC CONDUCTANCE
EPA 120.1

RunID: WETCHEM_150121D	QC Batch: R97679	PrepDate	Analyst: RB
Specific Conductance	6700	0.10	0.10
		umhos/cm	1
			1/21/2015 02:30 PM

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


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CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

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

Sample ID	N014434-001CDUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	97679		
Client ID:	ZZZZZZ	Batch ID:	R97679	TestNo:	EPA 120.1			Analysis Date:	1/21/2015	SeqNo:	1917117		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		6700.000		0.10						6710	0.149	10	

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 04-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-504
Lab Order:	N014434	Collection Date:	1/20/2015 12:51:00 PM
Project:	PG&E Topock, 652547.PT.OP.00	Matrix:	WATER
Lab ID:	N014434-001		

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

TOTAL FILTERABLE RESIDUE**SM2540C**

RunID: WETCHEM_150121H	QC Batch: 48489			PrepDate	1/21/2015	Analyst: RB
Total Dissolved Solids (Residue, Filterable)	4000	50	50	mg/L	1	1/21/2015 01:30 PM

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

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CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

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

Sample ID MB-48489	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 1/21/2015	RunNo: 97761						
Client ID: PBW	Batch ID: 48489	TestNo: SM2540C			Analysis Date: 1/21/2015	SeqNo: 1921000					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-48489	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 1/21/2015	RunNo: 97761						
Client ID: LCSW	Batch ID: 48489	TestNo: SM2540C			Analysis Date: 1/21/2015	SeqNo: 1921001					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	921.000	10	1000	0	92.1	80	120				

Sample ID N014434-001CDUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 1/21/2015	RunNo: 97761						
Client ID: ZZZZZZ	Batch ID: 48489	TestNo: SM2540C			Analysis Date: 1/21/2015	SeqNo: 1921012					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4155.000	50					3965	4.68	5		

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 04-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-504
Lab Order:	N014434	Collection Date:	1/20/2015 12:51:00 PM
Project:	PG&E Topock, 652547.PT.OP.00	Matrix:	WATER
Lab ID:	N014434-001		

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

RunID: ICP7_150122A	QC Batch: 48495	PrepDate	1/22/2015	Analyst: CEI		
Manganese	ND	0.026	0.50	µg/L	1	1/22/2015 12:31 PM

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

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CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

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

Sample ID MB-48495	SampType: MBLK	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: PBW	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1917766
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	0.50			
Manganese	ND	0.50			

Sample ID LCS-48495	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: LCSW	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1917767
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	10.049	0.50	10.00	0	100	85	115
Manganese	98.792	0.50	100.0	0	98.8	85	115

Sample ID N014434-001B-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: ZZZZZZ	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1917771
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	56.017	0.50	100.0	0	56.0	75	125		S
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Sample ID N014434-001B-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: ZZZZZZ	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1917772
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	54.255	0.50	100.0	0	54.3	75	125	56.02	3.19	20	S
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Sample ID N014434-001B-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: ZZZZZZ	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1917775
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	9.810	2.5	10.00	0	98.1	75	125
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Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014434-001B-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/22/2015	RunNo:	97703		
Client ID:	ZZZZZZ	Batch ID:	48495	TestNo:	EPA 200.8			Analysis Date:	1/22/2015	SeqNo:	1917778		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	9.957	2.5	10.00	0	99.6	75	125	9.810	1.49	20
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Sample ID	N014420-009B-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/22/2015	RunNo:	97703		
Client ID:	ZZZZZZ	Batch ID:	48495	TestNo:	EPA 200.8			Analysis Date:	1/22/2015	SeqNo:	1917792		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	11.197	2.5	10.00	0.5888	106	75	125
Manganese	177.234	2.5	100.0	78.41	98.8	75	125

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 04-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-504
Lab Order:	N014434	Collection Date:	1/20/2015 12:51:00 PM
Project:	PG&E Topock, 652547.PT.OP.00	Matrix:	WATER
Lab ID:	N014434-001		

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

RunID: IC6_150121A	QC Batch: R97669	PrepDate	Analyst: RB
Hexavalent Chromium	ND	0.016	0.20
		µg/L	1
			1/21/2015 10:49 AM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150122A	QC Batch: 48495	PrepDate	1/22/2015	Analyst: CEI
Chromium	ND	0.030	1.0	
		µg/L	1	
				1/22/2015 12:31 PM

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


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CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

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

Sample ID MB-48495	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: PBW	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1918960
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID LCS-48495	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: LCSW	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1918961
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 10.049 1.0 10.00 0 100 85 115

Sample ID N014434-001B-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: ZZZZZZ	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1918965
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 8.932 1.0 10.00 0 89.3 75 125

Sample ID N014434-001B-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: ZZZZZZ	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1918966
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 8.970 1.0 10.00 0 89.7 75 125 8.932 0.429 20

Sample ID N014420-009B-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/22/2015	RunNo: 97703
Client ID: ZZZZZZ	Batch ID: 48495	TestNo: EPA 200.8		Analysis Date: 1/22/2015	SeqNo: 1918986
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 11.197 5.0 10.00 0.5888 106 75 125

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R97669	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97669			
Client ID:	PBW	Batch ID:	R97669	TestNo:	EPA 218.6			Analysis Date:	1/21/2015	SeqNo:	1916628			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R97669	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97669			
Client ID:	LCSW	Batch ID:	R97669	TestNo:	EPA 218.6			Analysis Date:	1/21/2015	SeqNo:	1916629			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.081 0.20 5.000 0 102 90 110

Sample ID	N014422-006A-DUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97669			
Client ID:	ZZZZZZ	Batch ID:	R97669	TestNo:	EPA 218.6			Analysis Date:	1/21/2015	SeqNo:	1916631			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 0.576 0.20 0.5767 0.121 20

Sample ID	N014422-006A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97669			
Client ID:	ZZZZZZ	Batch ID:	R97669	TestNo:	EPA 218.6			Analysis Date:	1/21/2015	SeqNo:	1916632			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.590 0.20 1.000 0.5767 101 90 110

Sample ID	N014422-006A-MSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97669			
Client ID:	ZZZZZZ	Batch ID:	R97669	TestNo:	EPA 218.6			Analysis Date:	1/21/2015	SeqNo:	1916633			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.644 0.20 1.000 0.5767 107 90 110 1.590 3.32 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N014434-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97669
Client ID:	ZZZZZZ	Batch ID:	R97669	TestNo:	EPA 218.6			Analysis Date:	1/21/2015	SeqNo:	1916635
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Hexavalent Chromium		1.097		0.20	1.000	0.05150	105	90	110		

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 04-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-504
Lab Order:	N014434	Collection Date:	1/20/2015 12:51:00 PM
Project:	PG&E Topock, 652547.PT.OP.00	Matrix:	WATER
Lab ID:	N014434-001		

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

RunID: WETCHEM_150122F	QC Batch: R97855	PrepDate	Analyst: RB
Turbidity	ND	0.10	0.10
		NTU	1
			1/22/2015

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


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CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

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

Sample ID	N014434-001CDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	97855		
Client ID:	ZZZZZZ	Batch ID:	R97855	TestNo:	SM 2130B			Analysis Date:	1/22/2015	SeqNo:	1925354		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		ND		0.10						0	0	30	

Qualifiers:

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



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WORKORDER: N014434

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6, SM 2130B
Lilia Ramit/Ryan Balilu	EPA 120.1, SM 2540C



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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-504]

COC Number

TURNAROUND TIME

10 Days

DATE 01/20/15

PAGE 1 OF 1

COMPANY				CH2M HILL												COMMENTS							
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				652547.PT.OP.00						TEAM 1													
SAMPLERS (SIGNATURE)				<i>Scott O'Donnell</i>																			
SAMPLE I.D.				DATE		TIME		DESCRIPTION		Cr6 (2186) Lab Filtered		Total Metals (EPA 200.8) Cr, Mn		Specific Conductance (120.1)		TDS (SM2540C)		Turbidity (SM2130)		NUMBER OF CONTAINERS		3	NO14434-01
SC-700B-WDR-504				01/20/15				Water		x		x		x		x		x					
																						TOTAL NUMBER OF CONTAINERS	

Please Provide a preliminary Result for the TDS ASAP

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS		
Signature (Relinquished)	<i>Scott O'Donnell</i>	Printed Name	Scott O'Donnell	Company/Agency	CH2M Hill	Date/Time	1-20-15 1:35
Signature (Received)	<i>[Signature]</i>	Printed Name	Wilander Galang	Company/Agency	ASSET LABS	Date/Time	1-20-15 1:35
Signature (Relinquished)	<i>[Signature]</i>	Printed Name	Wilander Galang	Company/Agency	ASSET LABS	Date/Time	1-20-15 1:35
Signature (Received)	<i>[Signature]</i>	Printed Name	Wilander Galang	Company/Agency	ASSET LABS	Date/Time	1-20-15 1:35
Signature (Relinquished)		Printed Name		Company/Agency		Date/Time	
Signature (Received)		Printed Name		Company/Agency		Date/Time	
SPECIAL REQUIREMENTS:							

ASSET Laboratories

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

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

Cooler Received/Opened On: 1/20/2015

Workorder: N014434

Rep sample Temp (Deg C): 1.6

IR Gun ID: 2

Temp Blank: ☒ Yes ☐ No

Carrier name: ATL

Last 4 digits of Tracking No.: NA

Packing Material Used: None

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

Sample Receipt Checklist

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

Comments collection time was obtain from Sample Bottle

Checklist Completed B

JPG

01/27/15

Reviewed By:

01/28/15

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) * 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N014434-001C, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(57.1662 - 57.0869) * 1000000}{20}$$

$$= 3965 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 4000 \text{ mg/L}$$

Lilia Ramit

1/28/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (A-B) \times 1000000 / C$$

WHERE:

A = weight in grams of dish + residue after drying

B = weight of dish in grams

C = volume of sample used in mL

Date Finished: 1/22/2014	vol	initial	final	calc	prep fact	TDS, mg/L	CONDUCTIVITY	RATIO
MB-48489	100	54.6235	54.6236	1	1	1		
LCS-48489	100	75.746	75.8381	921	1	921		
N014423-001C	100	55.6272	55.6723	451	1	451	767	0.588
N014423-002C	20	55.2152	55.2896	744	5	3720	5110	0.728
N014430-002D	30	54.958	55.0597	1017	3.33333	3389.99661	4370	0.776
N014430-003D	60	63.031	63.1271	961	1.66666	1601.66026	2330	0.687
N014430-004D	75	53.9644	54.039	746	1.33333	994.66418	1534	0.648
N014432-001C	100	55.5701	55.635	649	1	649	987	0.658
N014432-002C	100	64.1078	64.17	622	1	622	989	0.629
N014432-003C	100	53.8498	53.8961	463	1	463	730	0.634
N014432-004C	100	61.242	61.2675	255	1	255	375	0.680
N014434-001C	20	57.0869	57.1662	793	5	3965	6710	0.591
N014434-001C DUP	20	64.2928	64.3759	831	5	4155	6710	0.619

Sample Calculation

METHOD: EPA 6020

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014434-001B**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 0 * 1 * (25/25) \\ &= 0\end{aligned}$$

Since results is less than reporting limit,

$$\text{Chromium, ug/L} = \text{ND}$$

 2/3/2015

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014434
Test Method: EPA 200.8
Analysis Date: 1/22/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 48495

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr & Mn. The calculated values are <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014434-001B DT 5X	Chromium	ug/L	0	NA	0		10
N014434-001B DT 5X	Manganese	ug/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

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

Sample ID	N014434-001B-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	97703		
Client ID:	ZZZZZZ	Batch ID:	48495	TestNo:	EPA 200.8			Analysis Date:	1/22/2015	SeqNo:	1917770		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		54.838		0.50	100.0	0	54.8	80	120				S

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N014434
Project: PG&E Topock, 652547.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N014434-001B-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	97703
Client ID:	ZZZZZZ	Batch ID:	48495	TestNo:	EPA 200.8			Analysis Date:	1/22/2015	SeqNo:	1918964
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		8.767		1.0	10.00	0	87.7	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

$A = \mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N014434-001A**, concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.0515 * 1 \\ &= 0.0515\end{aligned}$$

Since PQL is $0.20 \mu\text{g/L}$,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$



February 10, 2015

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

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

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

Workorder No.: N014502

RE: PG&E Topock, XXXXXX.PT.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on January 27, 2015 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo
QA Manager

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock, XXXXXX.PT.OP.00
Lab Order: N014502

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.



ASSET Laboratories

Date: 10-Feb-15

CLIENT: CH2M HILL
Project: PG&E Topock, XXXXXX.PT.OP.00
Lab Order: N014502
Contract No: IM3Plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014502-001A	SC-700B-WDR-505	Water	1/27/2015 11:05:00 AM	1/27/2015	2/10/2015
N014502-001B	SC-700B-WDR-505	Water	1/27/2015 11:05:00 AM	1/27/2015	2/10/2015
N014502-001C	SC-700B-WDR-505	Water	1/27/2015 11:05:00 AM	1/27/2015	2/10/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 10-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-505
Lab Order:	N014502	Collection Date:	1/27/2015 11:05:00 AM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014502-001		

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

RunID: WETCHEM_150128B	QC Batch: R97777	PrepDate	Analyst: RB			
Specific Conductance	6700	0.10	0.10	umhos/cm	1	1/28/2015 12:10 PM

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

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CLIENT: CH2M HILL
Work Order: N014502
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	N014502-001CDUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	97777		
Client ID:	ZZZZZZ	Batch ID:	R97777	TestNo:	EPA 120.1			Analysis Date:	1/28/2015	SeqNo:	1921527		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		6670.000		0.10						6700	0.449	10	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 10-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-505
Lab Order:	N014502	Collection Date:	1/27/2015 11:05:00 AM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014502-001		

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

RunID: WETCHEM_150202C	QC Batch: 48586	PrepDate	2/2/2015	Analyst: RB
Total Dissolved Solids (Residue, Filterable)	3800	50	50	mg/L
			1	2/2/2015 02:00 PM

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


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CLIENT: CH2M HILL
Work Order: N014502
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	MB-48586	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	2/2/2015	RunNo:	97845		
Client ID:	PBW	Batch ID:	48586	TestNo:	SM2540C			Analysis Date:	2/2/2015	SeqNo:	1924965		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10									

Sample ID	LCS-48586	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	2/2/2015	RunNo:	97845		
Client ID:	LCSW	Batch ID:	48586	TestNo:	SM2540C			Analysis Date:	2/2/2015	SeqNo:	1924966		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		950.000		10	1000	0	95.0	80	120				

Sample ID	N014502-001C-DUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	2/2/2015	RunNo:	97845		
Client ID:	ZZZZZZ	Batch ID:	48586	TestNo:	SM2540C			Analysis Date:	2/2/2015	SeqNo:	1924968		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		4030.000		50						3835	4.96	5	

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 10-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-505
Lab Order:	N014502	Collection Date:	1/27/2015 11:05:00 AM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014502-001		

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

RunID: ICP7_150202C	QC Batch: 48575	PrepDate	1/31/2015	Analyst: CEI
Manganese	5.5 0.026 0.50	µg/L	1	2/2/2015 07:13 AM

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

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CLIENT: CH2M HILL
Work Order: N014502
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID MB-48575	SampType: MBLK	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/31/2015	RunNo: 97828
Client ID: PBW	Batch ID: 48575	TestNo: EPA 200.8		Analysis Date: 2/2/2015	SeqNo: 1923836
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	0.50			
Manganese	ND	0.50			

Sample ID LCS-48575	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/31/2015	RunNo: 97828
Client ID: LCSW	Batch ID: 48575	TestNo: EPA 200.8		Analysis Date: 2/2/2015	SeqNo: 1923837
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	10.244	0.50	10.00	0	102	85	115
Manganese	99.385	0.50	100.0	0	99.4	85	115

Sample ID N014502-001B-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/31/2015	RunNo: 97828
Client ID: ZZZZZZ	Batch ID: 48575	TestNo: EPA 200.8		Analysis Date: 2/2/2015	SeqNo: 1923841
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	9.458	0.50	10.00	0	94.6	75	125
Manganese	95.145	0.50	100.0	5.536	89.6	75	125

Sample ID N014502-001B-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/31/2015	RunNo: 97828
Client ID: ZZZZZZ	Batch ID: 48575	TestNo: EPA 200.8		Analysis Date: 2/2/2015	SeqNo: 1923842
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	9.519	0.50	10.00	0	95.2	75	125	9.458	0.648	20
Manganese	95.412	0.50	100.0	5.536	89.9	75	125	95.14	0.281	20

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 10-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-505
Lab Order:	N014502	Collection Date:	1/27/2015 11:05:00 AM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014502-001		

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

RunID: IC6_150128A	QC Batch: R97808	PrepDate	Analyst: RB
Hexavalent Chromium	ND	0.016	0.20
		µg/L	1
			1/28/2015 11:24 AM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150202C	QC Batch: 48575	PrepDate	1/31/2015	Analyst: CEI
Chromium	ND	0.030	1.0	
		µg/L	1	
				2/2/2015 07:13 AM

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


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CLIENT: CH2M HILL
Work Order: N014502
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID MB-48575	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/31/2015	RunNo: 97828
Client ID: PBW	Batch ID: 48575	TestNo: EPA 200.8		Analysis Date: 2/2/2015	SeqNo: 1924082
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID LCS-48575	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/31/2015	RunNo: 97828
Client ID: LCSW	Batch ID: 48575	TestNo: EPA 200.8		Analysis Date: 2/2/2015	SeqNo: 1924083
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 10.244 1.0 10.00 0 102 85 115

Sample ID N014502-001B-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/31/2015	RunNo: 97828
Client ID: ZZZZZZ	Batch ID: 48575	TestNo: EPA 200.8		Analysis Date: 2/2/2015	SeqNo: 1924087
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.458 1.0 10.00 0 94.6 75 125

Sample ID N014502-001B-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 1/31/2015	RunNo: 97828
Client ID: ZZZZZZ	Batch ID: 48575	TestNo: EPA 200.8		Analysis Date: 2/2/2015	SeqNo: 1924088
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.519 1.0 10.00 0 95.2 75 125 9.458 0.648 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014502
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R97808	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97808			
Client ID:	PBW	Batch ID:	R97808	TestNo:	EPA 218.6			Analysis Date:	1/28/2015	SeqNo:	1922190			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R97808	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97808			
Client ID:	LCSW	Batch ID:	R97808	TestNo:	EPA 218.6			Analysis Date:	1/28/2015	SeqNo:	1922191			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.148 0.20 5.000 0 103 90 110

Sample ID	N014502-001A-MS	SampType: MS	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 97808					
Client ID: ZZZZZZ	Batch ID: R97808	TestNo: EPA 218.6	Analysis Date: 1/28/2015	SeqNo: 1922193							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.096 0.20 1.000 0.07920 102 90 110

Sample ID	N014502-001A-MSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97808			
Client ID:	ZZZZZZ	Batch ID:	R97808	TestNo:	EPA 218.6			Analysis Date:	1/28/2015	SeqNo:	1922194			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.133 0.20 1.000 0.07920 105 90 110 1.096 3.27 20

Sample ID	N014430-016A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97808			
Client ID:	ZZZZZZ	Batch ID:	R97808	TestNo:	EPA 218.6			Analysis Date:	1/28/2015	SeqNo:	1922196			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 3.117 0.40 2.000 0.9356 109 90 110

Qualifiers:

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



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NEVADA
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 P: 702.307.2659 F: 702.307.2691

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CLIENT: CH2M HILL
Work Order: N014502
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N014431-021A-DUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97808			
Client ID:	ZZZZZZ	Batch ID:	R97808	TestNo:	EPA 218.6			Analysis Date:	1/28/2015	SeqNo:	1922198			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		3.805		0.20							3.830	0.660	20	

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 10-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-505
Lab Order:	N014502	Collection Date:	1/27/2015 11:05:00 AM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014502-001		

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

RunID: WETCHEM_150128D	QC Batch: R97780	PrepDate	Analyst: RB
Turbidity	0.22 0.10 0.10	NTU	1 1/28/2015 02:30 PM

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

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CLIENT: CH2M HILL
Work Order: N014502
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	N014502-001C DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	97780
Client ID:	ZZZZZZ	Batch ID:	R97780	TestNo:	SM 2130B			Analysis Date:	1/28/2015	SeqNo:	1921533
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.200		0.10						0.2200	9.52 30

Qualifiers:

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



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WORKORDER: N014502

ANALYST LIST

NAME	TEST METHOD
Lilia S. Ramit and Ryan E. Balilu	EPA 120.1, SM 2540C and SM 2130B
Claire E. Ignacio	EPA 200.8
Ryan E. Balilu	EPA 218.6



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CHAIN OF CUSTODY RECORD


[IM3Plant-WDR-505]

COC Number

TURNAROUND TIME 10 Days

DATE 01/27/15

PAGE 1 OF 1

COMPANY		CH2M HILL																COMMENTS													
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		xxxxxx.PT.OP.00				TEAM		1																							
SAMPLERS (SIGNATURE)																															
SAMPLE I.D.		DATE		TIME		DESCRIPTION		Cr6 (218.6) Lab Filtered		Total Metals (EPA 200.8) Cr, Mn		Specific Conductance (120.1)		TDS (SM2540C)		Turbidity (SM2130)														NUMBER OF CONTAINERS	
SC-700B-WDR-505		01/27/15		11:05		Water		X	X	X	X		X															3	NOI4502 - 01		
																											3	TOTAL NUMBER OF CONTAINERS			

Please Provide a preliminary Result for the TDS ASAP

CHAIN OF CUSTODY SIGNATURE RECORD				
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SAMPLE CONDITIONS RECEIVED COOL <input checked="" type="checkbox"/> WARM <input type="checkbox"/> °F _____ CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/>
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SPECIAL REQUIREMENTS:
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	

ASSET Laboratories

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

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

Cooler Received/Opened On: 1/27/2015

Workorder: N014502

Rep sample Temp (Deg C): 1.8

IR Gun ID: 2

Temp Blank: ☒ Yes ☐ No

Carrier name: ATL

Last 4 digits of Tracking No.: NA

Packing Material Used: None

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


Sample Receipt Checklist

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

Comments

Checklist Completed B

JPG

 01/28/15

Reviewed By:

 02/02/15

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) * 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N014502-001C, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(54.0284 - 53.9517) * 1000000}{20}$$

$$= 3835 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 3800 \text{ mg/L}$$

Lilia Ramit 2/3/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (\text{A-B}) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:2/3/15								
MB-48586	100	54.8494	54.8497	3	1	3		
LCS-48586	100	75.7453	75.8403	950	1	950		
N014502-001C	20	53.9517	54.0284	767	5	3835	6690	0.573
N014502-001C DUP	20	53.7073	53.7879	806	5	4030	6690	0.602
N014523-001F	30	53.7638	53.8198	560	3.33333333	1866.66667	4460	0.419

Lilia Ramif 2/3/2015

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Manganese concentration, in ug/L, in the original sample as follows:

$$\text{Manganese, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014502-001B**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Manganese, ug/L} &= 5.53556350643568 * 1 * (25/25) \\ &= 5.53556350643568\end{aligned}$$

Reporting results in two significant figures,

$$\text{Manganese, ug/L} = 5.5$$

 2/6/2015

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014502
Test Method: EPA 200.8
Analysis Date: 2/2/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 48575

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr & Mn. The calculated values are <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014502-001B DT 5X	Chromium	ug/L	0	NA	0		10
N014502-001B DT 5X	Manganese	ug/L	7.716769322	NA	5.535563506	39.40%	10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014502
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014502-001B-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	97828
Client ID:	ZZZZZZ	Batch ID:	48575	TestNo:	EPA 200.8			Analysis Date:	2/2/2015	SeqNo:	1923840
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Manganese		94.151		0.50	100.0	5.536	88.6	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N014502
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N014502-001B-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	97828
Client ID:	ZZZZZZ	Batch ID:	48575	TestNo:	EPA 200.8			Analysis Date:	2/2/2015	SeqNo:	1924086
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		9.310		1.0	10.00	0	93.1	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A = $\mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N014502-001A** concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.0792 * 1 \\ &= 0.0792\end{aligned}$$

Since PQL is $0.20 \mu\text{g/L}$,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$



February 23, 2015

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

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

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

Workorder No.: N014575

RE: PG&E Topock IM3, XXXXXX.01.IM.OP.00

Attention: Shawn P. Duffy

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

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

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

Sincerely,



Glen Gesmundo
QA Manager

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CLIENT: CH2M HILL
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab Order: N014575

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Subcontracted Analyses:

Ammonia and Soluble Silica were subcontracted to Truesdail-Tustin,CA.

Analytical Comments for EPA 200.7_Total:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Boron possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 200.8_Total:

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

Dilution was necessary on Lead for samples N014575-001 and N014575-002 due to associated internal standard not meeting method criteria possibly due to matrix interference.

Analytical Comments for EPA 300.0:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Fluoride possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



ASSET Laboratories

Date: 23-Feb-15

CLIENT: CH2M HILL
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab Order: N014575
Contract No: IM3Plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014575-001A	SC-700B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-001B	SC-700B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-001C	SC-700B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-001D	SC-700B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-001E	SC-700B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002A	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002B	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002C	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002D	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002E	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002F	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002G	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002H	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002I	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015
N014575-002J	SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	2/3/2015	2/23/2015



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Page 1 of 1

ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-001

Client Sample ID: SC-700B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_150204B	QC Batch: R97873			PrepDate		Analyst: LR
Specific Conductance	6700	0.10	0.10	umhos/cm	1	2/4/2015 11:00 AM

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_150204B	QC Batch: R97873			PrepDate		Analyst: LR
Specific Conductance	6700	0.10	0.10	umhos/cm	1	2/4/2015 11:00 AM

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



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CLIENT: CH2M HILL

Work Order: N014575

Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID	N014575-001B DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	97873		
Client ID:	ZZZZZZ	Batch ID:	R97873	TestNo:	EPA 120.1			Analysis Date:	2/4/2015	SeqNo:	1926327		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		6670.000		0.10						6680	0.150	10	

Qualifiers:

B Analyte detected in the associated Method Blank

ND Not Detected at the Reporting Limit

DO Surrogate Diluted Out

E Value above quantitation range

R RPD outside accepted recovery limits

Calculations are based on raw values

H Holding times for preparation or analysis exceeded

S Spike/Surrogate outside of limits due to matrix interference

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-001

Client Sample ID: SC-700B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150205C	QC Batch: 48621			PrepDate	2/5/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4100	50	50	mg/L	1	2/5/2015 01:00 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150205C	QC Batch: 48621			PrepDate	2/5/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4100	50	50	mg/L	1	2/5/2015 01:00 PM

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

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

Sample ID MB-48621	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 2/5/2015	RunNo: 97899						
Client ID: PBW	Batch ID: 48621	TestNo: SM2540C			Analysis Date: 2/5/2015	SeqNo: 1927374					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND	10								

Sample ID LCS-48621	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 2/5/2015	RunNo: 97899						
Client ID: LCSW	Batch ID: 48621	TestNo: SM2540C			Analysis Date: 2/5/2015	SeqNo: 1927375					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		961.000	10	1000	0	96.1	80	120			

Sample ID N014582-004A DUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 2/5/2015	RunNo: 97899						
Client ID: ZZZZZZ	Batch ID: 48621	TestNo: SM2540C			Analysis Date: 2/5/2015	SeqNo: 1927382					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		5160.000	50					5140	0.388	5	

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-001

Client Sample ID: SC-700B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: ICP2_150218A	QC Batch: 49657	PrepDate	2/10/2015	Analyst: CEI
Aluminum	ND 6.2	50	µg/L	1 2/18/2015 10:55 AM
Boron	1100 19	100	µg/L	1 2/18/2015 10:55 AM
Iron	ND 1.3	20	µg/L	1 2/18/2015 10:55 AM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: ICP2_150211C	QC Batch: 49658			PrepDate	2/10/2015	Analyst: CEI
Iron	ND	1.3	20	µg/L	1	2/11/2015 05:45 PM

TOTAL METALS BY ICP
EPA 200.7

RunID: ICP2_150218A	QC Batch: 49657			PrepDate	2/10/2015	Analyst: CEI
Aluminum	ND	6.2	50	µg/L	1	2/18/2015 11:00 AM
Boron	1100	19	100	µg/L	1	2/18/2015 11:00 AM
Iron	ND	1.3	20	µg/L	1	2/18/2015 11:00 AM

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID	MB-49658	SampType:	MBLK	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97975			
Client ID:	PBW	Batch ID:	49658	TestNo:	EPA 200.7			Analysis Date:	2/11/2015	SeqNo:	1931798			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 5.956 20

Sample ID	LCS-49658	SampType:	LCS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97975			
Client ID:	LCSW	Batch ID:	49658	TestNo:	EPA 200.7			Analysis Date:	2/11/2015	SeqNo:	1931799			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 111.031 20 100.0 0 111 85 115

Sample ID	N014575-002G-MS	SampType:	MS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97975			
Client ID:	ZZZZZZ	Batch ID:	49658	TestNo:	EPA 200.7			Analysis Date:	2/11/2015	SeqNo:	1931803			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 98.610 20 100.0 0 98.6 75 125

Sample ID	N014575-002G-MSD	SampType:	MSD	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97975			
Client ID:	ZZZZZZ	Batch ID:	49658	TestNo:	EPA 200.7			Analysis Date:	2/11/2015	SeqNo:	1931804			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 98.332 20 100.0 0 98.3 75 125 98.61 0.282 20

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPBB

Sample ID	MB-49657	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	98075			
Client ID:	PBW	Batch ID:	49657	TestNo:	EPA 200.7			Analysis Date:	2/18/2015	SeqNo:	1936931			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum		ND		50										
Boron		ND		100										
Iron		2.137		20										

Sample ID	LCS1-49657	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	98075			
Client ID:	LCSW	Batch ID:	49657	TestNo:	EPA 200.7			Analysis Date:	2/18/2015	SeqNo:	1936932			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum		9464.032		50	10000	0		94.6	85	115				
Boron		5171.506		100	5000	0		103	85	115				
Iron		106.807		20	100.0	0		107	85	115				

Sample ID	N014575-002C-MS1	SampType: MS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 2/10/2015	RunNo: 98075					
Client ID: ZZZZZZ	Batch ID: 49657	TestNo: EPA 200.7	Analysis Date: 2/18/2015	SeqNo: 1936939							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	11143.425	50	10000	0	111	75	125				
Boron	7515.917	100	5000	1093	128	75	125				S
Iron	112.110	20	100.0	0	112	75	125				

Sample ID	N014575-002C-MSD	SampType: MSD	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 2/10/2015	RunNo: 98075					
Client ID:	ZZZZZZ	Batch ID: 49657	TestNo: EPA 200.7		Analysis Date: 2/18/2015	SeqNo: 1936940					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10946.037	50	10000	0	109	75	125	11140	1.79	20	
Boron	7578.000	100	5000	1093	130	75	125	7516	0.823	20	S
Iron	111.663	20	100.0	0	112	75	125	112.1	0.400	20	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-001

Client Sample ID: SC-700B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: ICP7_150210B	QC Batch: 49655	PrepDate	2/10/2015	Analyst: CEI		
Antimony	ND	0.18	0.50	µg/L	1	2/10/2015 03:32 PM
Arsenic	ND	0.027	0.10	µg/L	1	2/10/2015 03:32 PM
Barium	13	0.030	1.0	µg/L	1	2/11/2015 02:03 PM
Copper	ND	0.040	1.0	µg/L	1	2/10/2015 03:32 PM
Lead	ND	0.053	5.0	µg/L	5	2/10/2015 04:28 PM
Manganese	9.4	0.026	0.50	µg/L	1	2/10/2015 03:32 PM
Molybdenum	24	0.15	0.50	µg/L	1	2/10/2015 03:32 PM
Nickel	4.1	0.032	1.0	µg/L	1	2/10/2015 03:32 PM
Zinc	ND	0.23	10	µg/L	1	2/10/2015 03:32 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: ICP7_150210B	QC Batch: 49655	PrepDate	2/10/2015	Analyst: CEI		
Antimony	ND	0.18	0.50	µg/L	1	2/10/2015 03:38 PM
Arsenic	2.9	0.027	0.10	µg/L	1	2/10/2015 03:38 PM
Barium	24	0.030	1.0	µg/L	1	2/11/2015 02:08 PM
Copper	ND	0.040	1.0	µg/L	1	2/10/2015 03:38 PM
Lead	ND	0.053	5.0	µg/L	5	2/10/2015 06:12 PM
Manganese	ND	0.026	0.50	µg/L	1	2/10/2015 03:38 PM
Molybdenum	22	0.15	0.50	µg/L	1	2/10/2015 03:38 PM
Nickel	ND	0.032	1.0	µg/L	1	2/10/2015 03:38 PM
Zinc	ND	0.23	10	µg/L	1	2/10/2015 03:38 PM

DISSOLVED METALS BY ICPMS
EPA 200.8

RunID: ICP7_150210B	QC Batch: 49656	PrepDate	2/10/2015	Analyst: CEI		
Manganese	ND	0.026	0.50	µg/L	1	2/10/2015 05:45 PM

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-49655	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97952			
Client ID:	PBW	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1929913			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		ND		0.50										
Arsenic		ND		0.10										
Copper		0.124		1.0										
Lead		ND		1.0										
Manganese		ND		0.50										
Molybdenum		ND		0.50										
Nickel		ND		1.0										
Zinc		ND		10										

Sample ID	LCS-49655	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97952
Client ID:	LCSW	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1929914
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.859	0.50	10.00	0	109	85	115				
Arsenic	10.242	0.10	10.00	0	102	85	115				
Copper	9.638	1.0	10.00	0	96.4	85	115				
Lead	11.256	1.0	10.00	0	113	85	115				
Manganese	101.453	0.50	100.0	0	101	85	115				
Molybdenum	10.158	0.50	10.00	0	102	85	115				
Nickel	9.738	1.0	10.00	0	97.4	85	115				
Zinc	95.082	10	100.0	0	95.1	85	115				

Sample ID	N014575-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97952	
Client ID:	ZZZZZZ	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1929927	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		10.830	0.50	10.00	0	108	75	125				
Arsenic		9.798	0.10	10.00	0.06611	97.3	75	125				

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014575-001C-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 2/10/2015	RunNo: 97952					
Client ID: ZZZZZZ	Batch ID: 49655	TestNo: EPA 200.8	Analysis Date: 2/10/2015	SeqNo: 1929927							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	3.025	1.0	10.00	0	30.3	75	125				S
Manganese	100.847	0.50	100.0	9.436	91.4	75	125				
Molybdenum	35.407	0.50	10.00	23.95	115	75	125				
Nickel	12.516	1.0	10.00	4.065	84.5	75	125				
Zinc	68.122	10	100.0	0	68.1	75	125				S

Sample ID	N014575-001C-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 2/10/2015	RunNo: 97952					
Client ID: ZZZZZZ	Batch ID: 49655	TestNo: EPA 200.8	Analysis Date: 2/10/2015	SeqNo: 1929928							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.747	0.50	10.00	0	107	75	125	10.83	0.767	20	
Arsenic	9.605	0.10	10.00	0.06611	95.4	75	125	9.798	1.98	20	
Copper	3.268	1.0	10.00	0	32.7	75	125	3.025	7.71	20	S
Manganese	101.582	0.50	100.0	9.436	92.1	75	125	100.8	0.726	20	
Molybdenum	35.342	0.50	10.00	23.95	114	75	125	35.41	0.185	20	
Nickel	12.638	1.0	10.00	4.065	85.7	75	125	12.52	0.968	20	
Zinc	69.002	10	100.0	0	69.0	75	125	68.12	1.28	20	S

Sample ID	N014575-001C-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 2/10/2015	RunNo: 97952					
Client ID: ZZZZZZ	Batch ID: 49655	TestNo: EPA 200.8	Analysis Date: 2/10/2015	SeqNo: 1929942							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.453	5.0	10.00	0	115	75	125				

Sample ID	N014575-001C-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 2/10/2015	RunNo: 97952					
Client ID: ZZZZZZ	Batch ID: 49655	TestNo: EPA 200.8	Analysis Date: 2/10/2015	SeqNo: 1929943							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.478	5.0	10.00	0	115	75	125	11.45	0.221	20	

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-49655	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97989		
Client ID:	PBW	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/11/2015	SeqNo:	1932047		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium ND 1.0

Sample ID	LCS-49655	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97989		
Client ID:	LCSW	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/11/2015	SeqNo:	1932048		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium 108.745 1.0 100.0 0 109 85 115

Sample ID	N014575-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97989		
Client ID:	ZZZZZZ	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/11/2015	SeqNo:	1932053		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium 119.409 1.0 100.0 13.31 106 75 125

Sample ID	N014575-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97989		
Client ID:	ZZZZZZ	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/11/2015	SeqNo:	1932054		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium 119.405 1.0 100.0 13.31 106 75 125 119.4 0.00318 20

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID	MB-49656	SampType:	MBLK	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97952			
Client ID:	PBW	Batch ID:	49656	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1930284			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese ND 0.50

Sample ID	LCS-49656	SampType:	LCS	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97952			
Client ID:	LCSW	Batch ID:	49656	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1930285			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 102.966 0.50 100.0 0 103 85 115

Sample ID	N014574-001A-MS	SampType:	MS	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97952			
Client ID:	ZZZZZZ	Batch ID:	49656	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1930289			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 129.097 0.50 100.0 36.34 92.8 75 125

Sample ID	N014574-001A-MSD	SampType:	MSD	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:	2/10/2015	RunNo:	97952			
Client ID:	ZZZZZZ	Batch ID:	49656	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1930292			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 128.412 0.50 100.0 36.34 92.1 75 125 129.1 0.532 20

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-001

Client Sample ID: SC-700B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: IC6_150204A	QC Batch: R97877				PrepDate		Analyst: RB
Hexavalent Chromium	ND	0.016	0.20		µg/L	1	2/4/2015 06:17 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150210B	QC Batch: 49655				PrepDate	2/10/2015	Analyst: CEI
Chromium	ND	0.030	1.0		µg/L	1	2/10/2015 03:32 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: IC6_150204A	QC Batch: R97877				PrepDate		Analyst: RB
Hexavalent Chromium	640	1.6	20		µg/L	100	2/4/2015 05:57 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150210B	QC Batch: 49655				PrepDate	2/10/2015	Analyst: CEI
Chromium	560	0.15	5.0		µg/L	5	2/10/2015 06:12 PM

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

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

Sample ID MB-49655	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/10/2015	RunNo: 97952						
Client ID: PBW	Batch ID: 49655	TestNo: EPA 200.8			Analysis Date: 2/10/2015	SeqNo: 1930339					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID LCS-49655	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/10/2015	RunNo: 97952						
Client ID: LCSW	Batch ID: 49655	TestNo: EPA 200.8			Analysis Date: 2/10/2015	SeqNo: 1930340					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.861	1.0	10.00	0	98.6	85	115				

Sample ID N014575-001C-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/10/2015	RunNo: 97952						
Client ID: ZZZZZZ	Batch ID: 49655	TestNo: EPA 200.8			Analysis Date: 2/10/2015	SeqNo: 1930353					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	8.925	1.0	10.00	0	89.3	75	125				

Sample ID N014575-001C-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/10/2015	RunNo: 97952						
Client ID: ZZZZZZ	Batch ID: 49655	TestNo: EPA 200.8			Analysis Date: 2/10/2015	SeqNo: 1930354					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.054	1.0	10.00	0	90.5	75	125	8.925	1.44	20	

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID MB-R97877	SampType: MBLK	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 97877
Client ID: PBW	Batch ID: R97877	TestNo: EPA 218.6	Analysis Date: 2/4/2015	SeqNo: 1926432	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID LCS-R97877	SampType: LCS	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 97877
Client ID: LCSW	Batch ID: R97877	TestNo: EPA 218.6	Analysis Date: 2/4/2015	SeqNo: 1926433	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 5.074 0.20 5.000 0 101 90 110

Sample ID N014572-001A-DUP	SampType: DUP	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 97877
Client ID: ZZZZZZ	Batch ID: R97877	TestNo: EPA 218.6	Analysis Date: 2/4/2015	SeqNo: 1926435	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 1.798 0.20 1.742 3.19 20

Sample ID N014572-001A-MS	SampType: MS	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 97877
Client ID: ZZZZZZ	Batch ID: R97877	TestNo: EPA 218.6	Analysis Date: 2/4/2015	SeqNo: 1926436	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 6.904 0.20 5.000 1.742 103 90 110

Sample ID N014572-001A-MSD	SampType: MSD	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 97877
Client ID: ZZZZZZ	Batch ID: R97877	TestNo: EPA 218.6	Analysis Date: 2/4/2015	SeqNo: 1926437	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 6.897 0.20 5.000 1.742 103 90 110 6.904 0.113 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N014575-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97877
Client ID:	ZZZZZZ	Batch ID:	R97877	TestNo:	EPA 218.6			Analysis Date:	2/4/2015	SeqNo:	1926441
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	1.141	0.20	1.000	0.1799	96.1	90	110
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Sample ID	N014574-001D-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97877
Client ID:	ZZZZZZ	Batch ID:	R97877	TestNo:	EPA 218.6			Analysis Date:	2/4/2015	SeqNo:	1926443
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	9.770	0.20	5.000	4.737	101	90	110
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Sample ID	N014575-002A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97877
Client ID:	ZZZZZZ	Batch ID:	R97877	TestNo:	EPA 218.6			Analysis Date:	2/4/2015	SeqNo:	1926445
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	1134.670	20	500.0	644.3	98.1	90	110
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Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-001

Client Sample ID: SC-700B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150204C	QC Batch: R97874			PrepDate		Analyst: LR
Turbidity	0.24	0.10	0.10	NTU	1	2/4/2015 11:30 AM

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150204C	QC Batch: R97874			PrepDate		Analyst: LR
Turbidity	0.14	0.10	0.10	NTU	1	2/4/2015 11:30 AM

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



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CLIENT: CH2M HILL

Work Order: N014575

Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	N014575-001BDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	97874		
Client ID:	ZZZZZZ	Batch ID:	R97874	TestNo:	SM 2130B			Analysis Date:	2/4/2015	SeqNo:	1926350		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		0.230		0.10						0.2400	4.26	30	

Qualifiers:

B Analyte detected in the associated Method Blank

ND Not Detected at the Reporting Limit

DO Surrogate Diluted Out

E Value above quantitation range

R RPD outside accepted recovery limits

Calculations are based on raw values

H Holding times for preparation or analysis exceeded

S Spike/Surrogate outside of limits due to matrix interference

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ALKALINITY, SPECIATED
SM 2320 B

RunID: WETCHEM_150210C	QC Batch: R98034			PrepDate		Analyst: QBM
Alkalinity, Bicarbonate (As CaCO ₃)	150	1.2	5.0	mg/L	1	2/10/2015
Alkalinity, Carbonate (As CaCO ₃)	ND	1.2	5.0	mg/L	1	2/10/2015
Alkalinity, Hydroxide (As CaCO ₃)	ND	1.2	5.0	mg/L	1	2/10/2015
Alkalinity, Total (As CaCO ₃)	150	1.2	5.0	mg/L	1	2/10/2015

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 2320_W_SP**

Sample ID	LCS-R98034	SampType: LCS	TestCode: 2320_W_SP	Units: mg/L	Prep Date:				RunNo: 98034		
Client ID:	LCSW	Batch ID: R98034	TestNo: SM 2320 B		Analysis Date: 2/10/2015				SeqNo: 1934662		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	100.000	5.0	100.0	0	100	85	115				
Alkalinity, Total (As CaCO3)	100.000	5.0	100.0	0	100	85	115				

Sample ID	MB-R98034	SampType:	MBLK	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	98034			
Client ID:	PBW	Batch ID:	R98034	TestNo:	SM 2320 B			Analysis Date:	2/10/2015	SeqNo:	1934663			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)		ND		5.0										
Alkalinity, Carbonate (As CaCO3)		ND		5.0										
Alkalinity, Hydroxide (As CaCO3)		ND		5.0										
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	N014574-001CDUP	SampType:	DUP	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	98034		
Client ID:	ZZZZZZ	Batch ID:	R98034	TestNo:	SM 2320 B			Analysis Date:	2/10/2015	SeqNo:	1934665		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)		218.085		5.0						217.0	0.489	30	
Alkalinity, Carbonate (As CaCO3)		ND		5.0						0	0	30	
Alkalinity, Hydroxide (As CaCO3)		ND		5.0						0	0	30	
Alkalinity, Total (As CaCO3)		218.085		5.0						217.0	0.489	30	

Sample ID	N014574-002DMS	SampType:	MS	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	98034	
Client ID:	ZZZZZZ	Batch ID:	R98034	TestNo:	SM 2320 B			Analysis Date:	2/10/2015	SeqNo:	1934667	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)		235.106	5.0	100.0	138.3	96.8	75	125				
Alkalinity, Total (As CaCO3)		235.106	5.0	100.0	138.3	96.8	75	125				

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID	N014574-002DMSD	SampType:	MSD	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	98034
Client ID:	ZZZZZZ	Batch ID:	R98034	TestNo:	SM 2320 B			Analysis Date:	2/10/2015	SeqNo:	1934668
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	235.106	5.0	100.0	138.3	96.8	75	125	235.1	0	20	
Alkalinity, Total (As CaCO3)	235.106	5.0	100.0	138.3	96.8	75	125	235.1	0	20	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-001

Client Sample ID: SC-700B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: IC2_150210A	QC Batch: R97948				PrepDate		Analyst: QBM
Fluoride	7.0	0.22	2.0		mg/L	20	2/10/2015 04:18 PM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_150210A	QC Batch: R97948				PrepDate		Analyst: QBM
Sulfate	480	1.6	25		mg/L	50	2/10/2015 02:55 PM

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



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ANALYTICAL RESULTS

Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

EPA 300.0

RunID: IC2_150210A	QC Batch: R97948				PrepDate		Analyst: QBM
Fluoride	7.2	0.22	2.0		mg/L	20	2/10/2015 04:28 PM

ANIONS BY ION CHROMATOGRAPHY

EPA 300.0

RunID: IC2_150210A	QC Batch: R97948				PrepDate		Analyst: QBM
Sulfate	480	1.6	25		mg/L	50	2/10/2015 03:06 PM

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPG

Sample ID	MB-R97948_F	SampType:	MBLK	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	97948			
Client ID:	PBW	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929531			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride ND 0.10

Sample ID	LCS-R97948_F	SampType:	LCS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	97948		
Client ID:	LCSW	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929532		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 2.270 0.10 2.500 0 90.8 90 110

Sample ID	N014575-002BDUP	SampType:	DUP	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	97948		
Client ID:	ZZZZZZ	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929541		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 6.980 2.0 7.180 2.82 20

Sample ID	N014575-001BMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	97948		
Client ID:	ZZZZZZ	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929542		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 22.180 2.0 20.00 7.000 75.9 80 120 S

Sample ID	N014575-001BMSD	SampType:	MSD	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	97948		
Client ID:	ZZZZZZ	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929543		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 22.420 2.0 20.00 7.000 77.1 80 120 22.18 1.08 20 S

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R97948_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97948			
Client ID:	PBW	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929550			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate ND 0.50

Sample ID	LCS-R97948_SO4	SampType:	LCS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97948			
Client ID:	LCSW	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929551			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 4.730 0.50 5.000 0 94.6 90 110

Sample ID	N014571-007CDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97948			
Client ID:	ZZZZZZ	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929572			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 66.280 5.0 68.56 3.38 20

Sample ID	N014571-008CMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97948			
Client ID:	ZZZZZZ	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929573			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 99.380 5.0 50.00 47.05 105 80 120

Sample ID	N014571-016CMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	97948			
Client ID:	ZZZZZZ	Batch ID:	R97948	TestNo:	EPA 300.0			Analysis Date:	2/10/2015	SeqNo:	1929574			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 244.160 10 100.0 133.3 111 80 120

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	N014571-016CMSD	SampType: MSD	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 97948					
Client ID: ZZZZZZ	Batch ID: R97948	TestNo: EPA 300.0	Analysis Date: 2/10/2015	SeqNo: 1929575							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	230.660	10	100.0	133.3	97.4	80	120	244.2	5.69	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL PHOSPHORUS**EPA 365.3**

RunID: WETCHEM_150213B	QC Batch: 49697			PrepDate	2/13/2015	Analyst: QBM
Phosphorus, Total (As P)	ND	0.0030	0.020	mg/L	1	2/13/2015

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 365.3_W_T

Sample ID	LCS-49697	SampType:	LCS	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	2/13/2015	RunNo:	97999			
Client ID:	LCSW	Batch ID:	49697	TestNo:	EPA 365.3			Analysis Date:	2/13/2015	SeqNo:	1933007			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		0.411		0.020	0.4000	0		103	80	120				

Sample ID	MB-49697	SampType:	MBLK	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	2/13/2015	RunNo:	97999			
Client ID:	PBW	Batch ID:	49697	TestNo:	EPA 365.3			Analysis Date:	2/13/2015	SeqNo:	1933008			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		ND		0.020										

Sample ID	N014575-002EMS	SampType:	MS	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	2/13/2015	RunNo:	97999			
Client ID:	ZZZZZZ	Batch ID:	49697	TestNo:	EPA 365.3			Analysis Date:	2/13/2015	SeqNo:	1933010			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		0.419		0.020	0.4000	0		105	80	120				

Sample ID	N014575-002EMSD	SampType:	MSD	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	2/13/2015	RunNo:	97999			
Client ID:	ZZZZZZ	Batch ID:	49697	TestNo:	EPA 365.3			Analysis Date:	2/13/2015	SeqNo:	1933011			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		0.423		0.020	0.4000	0		106	80	120	0.4190	0.950	20	

Sample ID	N014631-003DDUP	SampType:	DUP	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	2/13/2015	RunNo:	97999			
Client ID:	ZZZZZZ	Batch ID:	49697	TestNo:	EPA 365.3			Analysis Date:	2/13/2015	SeqNo:	1933014			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		ND		0.020							0	0	20	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-001

Client Sample ID: SC-700B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150216B	QC Batch: R98020				PrepDate		Analyst: QBM
Nitrate/Nitrite as N	2.7	0.11	0.25		mg/L	5	2/16/2015

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150216B	QC Batch: R98020			PrepDate			Analyst: QBM
Nitrate/Nitrite as N	2.6	0.11	0.25	mg/L	5		2/16/2015

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R98020	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	98020		
Client ID:	PBW	Batch ID:	R98020	TestNo:	SM4500-NO3			Analysis Date:	2/16/2015	SeqNo:	1933641		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		ND		0.050									

Sample ID	LCS-R98020	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	98020		
Client ID:	LCSW	Batch ID:	R98020	TestNo:	SM4500-NO3			Analysis Date:	2/16/2015	SeqNo:	1933642		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		0.981		0.050	1.000	0	98.1	85	115				

Sample ID	N014575-001EDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	98020		
Client ID:	ZZZZZZ	Batch ID:	R98020	TestNo:	SM4500-NO3			Analysis Date:	2/16/2015	SeqNo:	1933644		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		2.615		0.25						2.666	1.93	20	

Sample ID	N014575-002IMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	98020		
Client ID:	ZZZZZZ	Batch ID:	R98020	TestNo:	SM4500-NO3			Analysis Date:	2/16/2015	SeqNo:	1933646		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		7.643		0.25	5.000	2.563	102	75	125				

Sample ID	N014575-002IMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	98020		
Client ID:	ZZZZZZ	Batch ID:	R98020	TestNo:	SM4500-NO3			Analysis Date:	2/16/2015	SeqNo:	1933647		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		7.407		0.25	5.000	2.563	96.9	75	125	7.643	3.14	20	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 23-Feb-15

CLIENT: CH2M HILL
Lab Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00
Lab ID: N014575-002

Client Sample ID: SC-100B-WDR-506
Collection Date: 2/3/2015 1:15:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL ORGANIC CARBON
SM 5310C

RunID: TOC2_150206A	QC Batch: R97918				PrepDate		Analyst: QBM
Organic Carbon, Total	ND	0.041	1.0		mg/L	1	2/7/2015 04:52 AM

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



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CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 5310C_W_T**

Sample ID	MB-R97918	SampType:	MBLK	TestCode:	5310C_W_T	Units:	mg/L	Prep Date:		RunNo:	97918		
Client ID:	PBW	Batch ID:	R97918	TestNo:	SM 5310C			Analysis Date:	2/6/2015	SeqNo:	1928142		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total		ND		1.0									

Sample ID	LCS-R97918	SampType:	LCS	TestCode:	5310C_W_T	Units:	mg/L	Prep Date:		RunNo:	97918		
Client ID:	LCSW	Batch ID:	R97918	TestNo:	SM 5310C			Analysis Date:	2/6/2015	SeqNo:	1928143		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total		5.001		1.0	5.000	0	100	85	115				

Sample ID	N014571-017DMS	SampType:	MS	TestCode:	5310C_W_T	Units:	mg/L	Prep Date:		RunNo:	97918		
Client ID:	ZZZZZZ	Batch ID:	R97918	TestNo:	SM 5310C			Analysis Date:	2/6/2015	SeqNo:	1928144		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total		5.445		1.0	5.000	0.5468	98.0	75	125				

Sample ID	N014571-017DMSD	SampType:	MSD	TestCode:	5310C_W_T	Units:	mg/L	Prep Date:		RunNo:	97918		
Client ID:	ZZZZZZ	Batch ID:	R97918	TestNo:	SM 5310C			Analysis Date:	2/6/2015	SeqNo:	1928145		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total		5.456		1.0	5.000	0.5468	98.2	75	125	5.445	0.191	20	

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference



ASSET LABORATORIES
 ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

3151 W. Post Road, Las Vegas, NV 89118 P: 702.307.2659 F: 702.307.2691
www.assetlaboratories.com

WORKORDER: N014575

ANALYST LIST

NAME	TEST METHOD
Quennie Manimtim	EPA 300.0, SM 2320B, SM 5310C, EPA 365.3, SM 4500-NO3F
Claire Ignacio	EPA 200.7, EPA 200.8
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B
Ryan Balilu	EPA 218.6

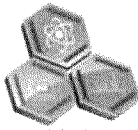


ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

NEVADA
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3151W. Post Road, Las Vegas, NV 89118
(702) 307-2659 FAX: (702) 307-2691

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-506]

TURNAROUND TIME

10 Days

DATE 02/03/15

PAGE 1 OF 1

COMPANY CH2M HILL 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 xxxxxx.01.IM.OP.00 SAMPLERS (SIGNATURE)				COMMENTS														
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, SO4	TOC (5310 C)	Dissolved Metals (200.7) Fe, Mn lab filtered	Soluble Silica - Reactive (4500-Si CorD)	NO3/NO2 (SM4500-NO3)	NUMBER OF CONTAINERS	
SC-700B-WDR-506	02/03/15	13:15		X		X	X	X	X		X				X		4	NO14575-01
SC-100B-WDR-506	02/03/15	13:15		X	X	X	X	X	X	X	X	X	X	X	X		9	-02
TOTAL NUMBER OF CONTAINERS																		

CHAIN OF CUSTODY SIGNATURE RECORD				
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	SAMPLE CONDITIONS RECEIVED COOL <input type="checkbox"/> WARM <input type="checkbox"/> °F CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/> SPECIAL REQUIREMENTS: The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn
Signature (Received)	Printed Name	Company/Agency	Date/Time	
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	
Signature (Received)	Printed Name	Company/Agency	Date/Time	
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	
Signature (Received)	Printed Name	Company/Agency	Date/Time	

ASSET Laboratories

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

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

Cooler Received/Opened On: 2/3/2015

Workorder: N014575

Rep sample Temp (Deg C): 1.9

IR Gun ID: 2

Temp Blank: ☒ Yes ☐ No

Carrier name: ATL

Last 4 digits of Tracking No.: NA

Packing Material Used: None

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

Sample Receipt Checklist

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

Comments

For:

Checklist Completed B

JPG

MBC 2/4/2015

Reviewed By:

808 02/09/15



ASSET Laboratories

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

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV

Subcontractor:

Truesdail
14201 Franklin Ave.
Tustin, CA 92680

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler:


04-Feb-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests			
				SM 4500-SiO2 C	SM4500-NH3C		
N014575-001D / SC-700B-WDR-506	Water	2/3/2015 1:15:00 PM	16OZP		1		
N014575-002D / SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	16OZP		1		
N014575-002H / SC-100B-WDR-506	Water	2/3/2015 1:15:00 PM	16OZP	1			

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

Please use PO#: N14575A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by:
Normal TAT

Please analyze for Ammonia and Soluable Silica-Reactive. **CH2MHill Samples** **GSO# 526853589**

	Date/Time		Date/Time
Relinquished by:  02/04/15		Received by: _____	
Relinquished by: _____		Received by: _____	

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) * 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For **N014575-001B**, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(61.5080 - 61.4257) * 1000000}{20}$$

$$= 4115 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 4100 \text{ mg/L}$$

Silvia Ramit 2/6/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (A-B) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:2/6/15								
MB-48621	100	61.3428	61.3429	1	1	1		
LCS-48621	100	63.8037	63.8998	961	1	961		
N014575-001B	20	61.4257	61.508	823	5	4115	6790	0.606
N014575-002B	20	59.9133	59.995	817	5	4085	6720	0.608
N014582-001A	1	62.4615	62.5738	1123	100	112300	204000	0.550
N014582-002A	2	61.0008	61.1306	1298	50	64900	39200	1.656
N014582-003A	2	60.913	61.022	1090	50	54500	62400	0.873
N014582-004A	20	60.6295	60.7323	1028	5	5140	7880	0.652
N014582-004A DUP	20	61.0451	61.1483	1032	5	5160	7880	0.655
N014582-005D A	1	59.9269	60.0595	1326	100	132600	105000	1.263
N014582-006D A	20	60.8712	60.9177	465	5	2325	5810	0.400
N014583-009D	100	60.5151	60.5647	496	1	496	765	0.648
N014583-010D	100	60.3753	60.4522	769	1	769	1259	0.611

Julia Ramit 2/6/2015

Sample Calculation

METHOD: EPA 200.7

TEST NAME: Heavy Metals by ICP

MATRIX: Water

FORMULA:

Calculate the Iron concentration, in ug/L, in the original sample as follows:

$$\text{Iron, ug/L} = A * DF * PF * 1000$$

where:

A = mg/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Amt. of Sample mL

For Sample **N014575-002G**, the concentration in ug/L is calculated as follows:

$$\begin{aligned} \text{Iron, ug/L} &= -0.01191048818 * 1 * (25/25) * 1000 \\ &= -0.01191048818 \end{aligned}$$

Since results is less than reporting limit,

$$\text{Iron, ug/L} = \text{ND}$$

 2/19/2015

ASSET Laboratories**ICP-Metals in Water**

Work Order No.: N014575
Test Method: EPA 200.7
Analysis Date: 02/11/15

Dilution Test Summary

Matrix: Water
Batch No.: 49658

Instrument ID: ICP-02
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Fe. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N014575-002G Dt 5X	Iron	ug/L	0	NA	0		10

Note: NA - Not Applicable

CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID	N014575-002G-PS	SampType:	PS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:		RunNo:	97975
Client ID:	ZZZZZZ	Batch ID:	49658	TestNo:	EPA 200.7			Analysis Date:	2/11/2015	SeqNo:	1931802
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Iron		97.408		20	100.0	0	97.4	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 6010

TEST NAME: Heavy Metals by ICP

MATRIX: Water

FORMULA:

Calculate the Boron concentration, in ug/L, in the original sample as follows:

$$\text{Boron, ug/L} = A * DF * PF * 1000$$

where:

A = mg/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Amt. of Sample mL

For Sample **N014575-001C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Boron, ug/L} &= 1.124548596 * 1 * (25/25) * 1000 \\ &= 1124.548596\end{aligned}$$

Reporting results in two significant figures,

$$\text{Boron, ug/L} = 1100$$

 2/19/2015

ASSET Laboratories**ICP-Metals in Water**

Work Order No.: N014575
Test Method: EPA 200.7
Analysis Date: 02/18/15

Dilution Test Summary

Matrix: Water
Batch No.: 49657

Instrument ID: ICP-02
Instrument Description: Perkin Elmer Optima DV Series

Comments: Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Al, B & Fe. The calculated concentrations are <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N014575-002C DT 5X	Aluminum	ug/L	0	NA	0		10
N014575-002C DT 5X	Boron	ug/L	1157.9248	NA	1093.479997	5.89%	10
N014575-002C DT 5X	Iron	ug/L	0	NA	0		10


Note: NA - Not Applicable

CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WPGEPPB**

Sample ID	N014575-002C-PS	SampType:	PS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:		RunNo:	98075		
Client ID:	ZZZZZZ	Batch ID:	49657	TestNo:	EPA 200.7			Analysis Date:	2/18/2015	SeqNo:	1936938		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum		10897.725		50	10000	0	109	80	120				
Boron		7374.938		100	5000	1093	126	80	120				S
Iron		109.398		20	100.0	0	109	80	120				

DT @5x of B is within criteria

 2/19/2015**Qualifiers:**

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014575-002C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 111.122597472077 * 5 * (25/25) \\ &= 555.612987360385\end{aligned}$$

Reporting results in two significant figures,

$$\text{Chromium, ug/L} = 560$$

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014575
Test Method: EPA 200.8
Analysis Date: 2/10/2015

Dilution Test Summary

Matrix: Water
Batch No.: 49655

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Sb, As, Cr, Cu, Pb & Zn. The calculated values are <25X RL.

Dilution test failed for Mn. However, PS passed criteria.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014575-001C DT 5X	Antimony	ug/L	0	NA	0		10
N014575-001C DT 5X	Arsenic	ug/L	0	NA	0.066112624		10
N014575-001C DT 25X	Chromium	ug/L	0	NA	0		10
N014575-001C DT 5X	Copper	ug/L	0	NA	0		10
N014575-001C DT 25X	Lead	ug/L	0	NA	0		
N014575-001C DT 5X	Manganese	ug/L	14.68088217	FAIL	9.435573987	55.59%	10
N014575-001C DT 5X	Molybdenum	ug/L	22.9397938	PASS	23.94533002	4.20%	10
N014575-001C DT 5X	Nickel	ug/L	4.442573198	PASS	4.064747166	9.30%	10
N014575-001C DT 5X	Zinc	ug/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014575
Test Method: EPA 200.8
Analysis Date: 2/11/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 49655

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Ba. The calculated value is <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014575-001C DT 5X	Barium	ug/L	14.68315725	NA	13.30682448	10.34%	10

Note: NA - Not applicable

CLIENT: CH2M HILL
 Work Order: N014575
 Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014575-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	97952
Client ID:	ZZZZZZ	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1929926
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.871	0.50	10.00	0	109	80	120				
Arsenic	9.793	0.10	10.00	0.06611	97.3	80	120				
Copper	3.029	1.0	10.00	0	30.3	80	120				S
Manganese	100.216	0.50	100.0	9.436	90.8	80	120				
Molybdenum	35.817	0.50	10.00	23.95	119	80	120				
Nickel	12.601	1.0	10.00	4.065	85.4	80	120				
Zinc	69.609	10	100.0	0	69.6	80	120				S

Sample ID	N014575-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	97952
Client ID:	ZZZZZZ	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1929941
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.438	5.0	10.00	0	114	80	120				

Sample ID	N014575-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	97989
Client ID:	ZZZZZZ	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/11/2015	SeqNo:	1932052
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	120.275	1.0	100.0	13.31	107	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N014575-001C-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	97952
Client ID:	ZZZZZZ	Batch ID:	49655	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1930352
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		8.970		1.0	10.00	0	89.7	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Manganese concentration, in ug/L, in the original sample as follows:

$$\text{Manganese, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014575-002G**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Manganese, ug/L} &= 0 * 1 * (25/25) \\ &= 0\end{aligned}$$

Since results is less than reporting limit,

$$\text{Manganese, ug/L} = \text{ND}$$

 2/19/2015

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014575
Test Method: EPA 200.8
Analysis Date: 2/10/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 49656

Comments:

Analyzed By: Mary Claire Ignacio

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014574-001A DT 5X	Manganese	ug/L	37.8581511	PASS	36.34294532	4.17%	10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014575
Project: PG&E Topock IM3, XXXXXX.01.IM.OP.00

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

Sample ID	N014574-001A-PS	SampType:	PS	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:		RunNo:	97952
Client ID:	ZZZZZZ	Batch ID:	49656	TestNo:	EPA 200.8			Analysis Date:	2/10/2015	SeqNo:	1930288
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Manganese		125.375		0.50	100.0	36.34	89.0	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

$A = \mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N014575-002A**, concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 6.4429 * 100 \\ &= 644.29\end{aligned}$$

Reporting result in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 640$$



Sample ID: **N014575-002B @ pH 7.85**

A. Standardization of Sulfuric Acid (titrant):

$$\text{Normality of acid} = (A)(B)/(53.00)(C)$$

Where:

A, grams weighed for Na_2CO_3 solution (Na_2CO_3 Standardization Solution)

B, mL Na_2CO_3 solution taken for titration, and

C, ml of sulfuric acid used to inflection point

Spike Standards

Na_2CO_3 Standardization Solution, ACS Grade (1.00 ml = 2500ug as CaCO_3):
Dissolve 2.650 grams of Na_2CO_3 in distilled water and dilute to 1 liter.

LCS/MS/MSD Stock NaHCO_3 , ACS Grade (1.00 ml = 5000 ug as CaCO_3):
Dissolve 0.8398 grams of NaHCO_3 in distilled water and dilute to 1 liter.

Therefore,

$$\begin{aligned}\text{Normality of Acid} &= (2.65\text{g/L}) (5\text{mL}) / (53.00) (11.75\text{mL}) \\ &= \mathbf{0.0212766 \text{ N}}\end{aligned}$$

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

$$\text{Total Alkalinity (as } \text{CaCO}_3\text{), mg/L} = M_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000$$

Where:

$M_{\text{vol.}}$, volume titrant used to reach pH 4.5, ml

N, Normality of H_2SO_4


DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

$$\begin{aligned}\text{Total Alkalinity (as } \text{CaCO}_3\text{), mg/L} &= (7.20) (0.0212766 \text{ N}) (1) * 1000 \\ &= \mathbf{153.19152 \text{ mg/L}}\end{aligned}$$

Reporting results in two significant figures,

$$= \mathbf{150 \text{ mg/L as } \text{CaCO}_3}$$

 2/16/2015

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

$$\begin{aligned} \text{P alkalinity, mg/L as CaCO}_3 &= P_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000 \\ &= (0) (0.0212766 \text{ N}) (1) * 1000 \\ &= 0 \end{aligned}$$

Total Alkalinity

$$\begin{aligned} \text{T alkalinity, mg/L as CaCO}_3 &= M_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000 \\ &= (7.20 \text{ mL}) (0.0212766 \text{ N}) (1) * 1000 \\ &= 153.19152 \text{ mg/L as CaCO}_3 \end{aligned}$$

Where:

- $P_{\text{vol.}}$ - volume titrant used to reach pH 8.3, ml
- $M_{\text{vol.}}$ - volume titrant used to reach pH 4.5, ml
- N - Normality of H_2SO_4
- DF - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH, CO_3 , HCO_3 alkalinities as CaCO_3 will be calculated as follows:

Result of Titration	OH Alkalinity as CaCO_3	CO_3 Alkalinity as CaCO_3	HCO_3 Alkalinity as CaCO_3
$P = 0$	0	0	T
$P < \frac{1}{2} T$	0	2P	$T - 2P$
$P = \frac{1}{2} T$	0	2P	0
$P > \frac{1}{2} T$	$2P - T$	$2(T - P)$	0
$P = T$	T	0	0

Therefore,

$$\text{OH Alkalinity as CaCO}_3 = 0$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = 0$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = 153.19152 \text{ mg/L}$$

Reporting results in two significant figures,

$$\text{OH Alkalinity as CaCO}_3 = 0$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = 0$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = 150 \text{ mg/L}$$

Sample Calculation

METHOD: EPA 300.0
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: Water

FORMULA:

Calculate the Sulfate concentration, in mg/L, in the original sample as follows:

$$\text{Sulfate, mg/L} = A * DF$$

where:


$$\begin{array}{ll} A & = \text{mg/L, IC calculated concentration} \\ DF & = \text{dilution factor} \end{array}$$

For **N014575-002B** concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Sulfate, mg/L} &= 9.686 * 50 \\ &= 484.3 \end{aligned}$$

Reporting result in two significant figures,

$$\text{Sulfate, mg/L} = 480$$

 2/19/2015

SAMPLE CALCULATION

METHOD: EPA 365.3

TEST NAME: Total Phosphorus

MATRIX: WATER

FORMULA:

Calculate the Total Phosphorus as P concentration, in mg/L, in the original sample as follows:

$$\text{Total Phosphorus as P, mg/L} = A * DF$$

Where:

A= mg/L, UV-VIS calculated concentration


DF= dilution factor

For N014575-002E, concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{Total Phosphorus as P, mg/L} &= -0.005 * 1 \\ &= 0 \text{ mg/L}\end{aligned}$$

Since the reporting limit is 0.02 mg/L therefore,

Total Phosphorus as P = ND

 2/19/2015

SAMPLE CALCULATION

METHOD: SM 4500_NO3F

TEST NAME: Nitrate/Nitrite-N by Automated Cadmium Reduction Method

MATRIX: Water

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

Where:

A= mg/L, Nitrate/Nitrite-N instrument calculated concentration


DF= dilution factor

For N014575-001E, concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{Nitrate/Nitrite-N, mg/L} &= 0.5331 * 5 \\ &= 2.6655 \text{ mg/L}\end{aligned}$$

Reporting result in 2 significant figures,

$$\text{Nitrate/Nitrite-N, mg/L} = 2.7$$

 2/18/2015

Sample Calculation

METHOD: SM5310C

TEST NAME: TOTAL ORGANIC CARBON

MATRIX: WATER

FORMULA:

Calculate the TOC concentration, in mg/L, in the original sample as follows:

$$\text{TOC} = [A] [DF] - B$$

where:

A = mg/L, instrument calculated concentration

DF = dilution factor

B = mg/L, TOC concentration in the calibration blank

For: **N014575-002F**

The concentration in mg/L is calculated as follows:

$$\text{TOC} = [0.13960] [1] - 0.02420$$


$$\text{TOC} = 0.11540$$

Reporting results in two significant figures,

$$\text{TOC} = 0.12 \text{ mg/L}$$

Since PQL is 1.0 mg/L

$$\text{TOC} = \text{ND}$$

 2/19/2015

February 24, 2015

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

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

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

Workorder No.: N014636

RE: PG&E Topock, XXXXXX.PT.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on February 10, 2015 by ASSET Laboratories .
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in
accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo
QA Manager

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock, XXXXXX.PT.OP.00
Lab Order: N014636

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



ASSET Laboratories

Date: 24-Feb-15

CLIENT: CH2M HILL
Project: PG&E Topock, XXXXXX.PT.OP.00
Lab Order: N014636
Contract No: IM3Plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014636-001A	SC-700B-WDR-507	Water	2/10/2015 1:50:00 PM	2/10/2015	2/24/2015
N014636-001B	SC-700B-WDR-507	Water	2/10/2015 1:50:00 PM	2/10/2015	2/24/2015
N014636-001C	SC-700B-WDR-507	Water	2/10/2015 1:50:00 PM	2/10/2015	2/24/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 24-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-507
Lab Order:	N014636	Collection Date:	2/10/2015 1:50:00 PM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014636-001		

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

RunID: WETCHEM_150211B	QC Batch: R97959	PrepDate	Analyst: LR			
Specific Conductance	7000	0.10	0.10	umhos/cm	1	2/11/2015 10:00 AM

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

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CLIENT: CH2M HILL
Work Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	N014636-001CDUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	97959		
Client ID:	ZZZZZZ	Batch ID:	R97959	TestNo:	EPA 120.1			Analysis Date:	2/11/2015	SeqNo:	1930519		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		6970.000		0.10						6990	0.287	10	

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 24-Feb-15

CLIENT: CH2M HILL

Client Sample ID: SC-700B-WDR-507

Lab Order: N014636

Collection Date: 2/10/2015 1:50:00 PM

Project: PG&E Topock, XXXXXX.PT.OP.00

Matrix: WATER

Lab ID: N014636-001

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

RunID: WETCHEM_150211D

QC Batch: 49672

PrepDate 2/11/2015

Analyst: LR

Total Dissolved Solids (Residue,
Filterable)

4000

50

50

mg/L

1

2/11/2015 01:00 PM

Qualifiers:

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out

E Value above quantitation range
ND Not Detected at the Reporting Limit
Results are wet unless otherwise specified

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CLIENT: CH2M HILL
Work Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID MB-49672	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 2/11/2015	RunNo: 97992						
Client ID: PBW	Batch ID: 49672	TestNo: SM2540C		Analysis Date: 2/11/2015	SeqNo: 1932488						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-49672	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 2/11/2015	RunNo: 97992						
Client ID: LCSW	Batch ID: 49672	TestNo: SM2540C		Analysis Date: 2/11/2015	SeqNo: 1932489						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	949.000	10	1000	0	94.9	80	120				

Sample ID N014636-001C DUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 2/11/2015	RunNo: 97992						
Client ID: ZZZZZZ	Batch ID: 49672	TestNo: SM2540C		Analysis Date: 2/11/2015	SeqNo: 1932497						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4230.000	50						4040	4.59	5	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 24-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-507
Lab Order:	N014636	Collection Date:	2/10/2015 1:50:00 PM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014636-001		

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

RunID: ICP7_150212A	QC Batch: 49683	PrepDate	2/12/2015	Analyst: CEI
Manganese	ND	0.026	0.50	µg/L
				1
				2/12/2015 03:37 PM

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


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CLIENT: CH2M HILL
Work Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID MB-49683	SampType: MBLK	TestCode: 200.8_W	Units: µg/L	Prep Date: 2/12/2015	RunNo: 97994						
Client ID: PBW	Batch ID: 49683	TestNo: EPA 200.8		Analysis Date: 2/12/2015	SeqNo: 1932626						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID LCS-49683	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 2/12/2015	RunNo: 97994						
Client ID: LCSW	Batch ID: 49683	TestNo: EPA 200.8		Analysis Date: 2/12/2015	SeqNo: 1932627						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	99.809	0.50	100.0	0	99.8	85	115				

Sample ID N014636-001B-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 2/12/2015	RunNo: 97994						
Client ID: ZZZZZZ	Batch ID: 49683	TestNo: EPA 200.8		Analysis Date: 2/12/2015	SeqNo: 1932631						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	56.510	0.50	100.0	0	56.5	75	125				S

Sample ID N014636-001B-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 2/12/2015	RunNo: 97994						
Client ID: ZZZZZZ	Batch ID: 49683	TestNo: EPA 200.8		Analysis Date: 2/12/2015	SeqNo: 1932632						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	56.232	0.50	100.0	0	56.2	75	125	56.51	0.492	20	S

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 24-Feb-15

CLIENT: CH2M HILL
Lab Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00
Lab ID: N014636-001

Client Sample ID: SC-700B-WDR-507
Collection Date: 2/10/2015 1:50:00 PM
Matrix: WATER

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

RunID: IC6_150211A	QC Batch: R97978				PrepDate		Analyst: RB
Hexavalent Chromium	ND	0.016	0.20		µg/L	1	2/11/2015 03:06 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150212A	QC Batch: 49683				PrepDate	2/12/2015	Analyst: CEI
Chromium	ND	0.030	1.0		µg/L	1	2/12/2015 03:37 PM

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



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CLIENT: CH2M HILL
Work Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	MB-49683	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	2/12/2015	RunNo:	97994			
Client ID:	PBW	Batch ID:	49683	TestNo:	EPA 200.8			Analysis Date:	2/12/2015	SeqNo:	1932513			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		ND		1.0										

Sample ID	LCS-49683	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	2/12/2015	RunNo:	97994			
Client ID:	LCSW	Batch ID:	49683	TestNo:	EPA 200.8			Analysis Date:	2/12/2015	SeqNo:	1932514			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.870		1.0	10.00	0		98.7	85	115				

Sample ID	N014636-001B-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	2/12/2015	RunNo:	97994			
Client ID:	ZZZZZZ	Batch ID:	49683	TestNo:	EPA 200.8			Analysis Date:	2/12/2015	SeqNo:	1932518			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.100		1.0	10.00	0		91.0	75	125				

Sample ID	N014636-001B-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	2/12/2015	RunNo:	97994			
Client ID:	ZZZZZZ	Batch ID:	49683	TestNo:	EPA 200.8			Analysis Date:	2/12/2015	SeqNo:	1932519			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.085		1.0	10.00	0		90.8	75	125	9.100	0.166	20	

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	LCS-R97978	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97978			
Client ID:	LCSW	Batch ID:	R97978	TestNo:	EPA 218.6			Analysis Date:	2/11/2015	SeqNo:	1931274			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	5.042	0.20	5.000	0	101	90	110							
---------------------	-------	------	-------	---	-----	----	-----	--	--	--	--	--	--	--

Sample ID	MB-R97978	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97978			
Client ID:	PBW	Batch ID:	R97978	TestNo:	EPA 218.6			Analysis Date:	2/11/2015	SeqNo:	1931275			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	ND	0.20												
---------------------	----	------	--	--	--	--	--	--	--	--	--	--	--	--

Sample ID	N014584-002A-DUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97978			
Client ID:	ZZZZZZ	Batch ID:	R97978	TestNo:	EPA 218.6			Analysis Date:	2/11/2015	SeqNo:	1931277			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1.107	0.20									1.101	0.544	20	
---------------------	-------	------	--	--	--	--	--	--	--	--	-------	-------	----	--

Sample ID	N014584-002A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97978			
Client ID:	ZZZZZZ	Batch ID:	R97978	TestNo:	EPA 218.6			Analysis Date:	2/11/2015	SeqNo:	1931280			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	6.260	0.20	5.000	1.101	103	90	110							
---------------------	-------	------	-------	-------	-----	----	-----	--	--	--	--	--	--	--

Sample ID	N014584-002A-MSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97978			
Client ID:	ZZZZZZ	Batch ID:	R97978	TestNo:	EPA 218.6			Analysis Date:	2/11/2015	SeqNo:	1931281			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	6.219	0.20	5.000	1.101	102	90	110	6.260	0.646	20				
---------------------	-------	------	-------	-------	-----	----	-----	-------	-------	----	--	--	--	--

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N014584-004A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97978
Client ID:	ZZZZZZ	Batch ID:	R97978	TestNo:	EPA 218.6			Analysis Date:	2/11/2015	SeqNo:	1931300
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	1.079	0.20	1.000	0.06470	101	90	110
---------------------	-------	------	-------	---------	-----	----	-----

Sample ID	N014636-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	97978
Client ID:	ZZZZZZ	Batch ID:	R97978	TestNo:	EPA 218.6			Analysis Date:	2/11/2015	SeqNo:	1931302
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	1.143	0.20	1.000	0.09840	104	90	110
---------------------	-------	------	-------	---------	-----	----	-----

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 24-Feb-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-507
Lab Order:	N014636	Collection Date:	2/10/2015 1:50:00 PM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014636-001		

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

TURBIDITY
SM 2130B

RunID: WETCHEM_150211A	QC Batch: R97958	PrepDate	Analyst: LR
Turbidity	0.17	0.10	0.10
			NTU
			1
			2/11/2015 09:30 AM

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


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CLIENT: CH2M HILL
Work Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	N014636-001CDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	97958
Client ID:	ZZZZZZ	Batch ID:	R97958	TestNo:	SM 2130B			Analysis Date:	2/11/2015	SeqNo:	1930517
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.190		0.10						0.1700	11.1 30

Qualifiers:

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



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WORKORDER: N014636

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B
Ryan Balilu	EPA 218.6



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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-507]


COC Number

TURNAROUND TIME

10 Days

DATE 02/10/15

PAGE 1 OF 1

COMPANY		CH2M HILL		<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> <p>PROJECT NAME PG&E Topock</p> <p>PHONE (530) 229-3303 FAX (530) 339-3303</p> <p>ADDRESS 155 Grand Ave Ste 1000 Oakland, CA 94612</p> <p>P.O. NUMBER xxxxxx.PT.OP.00 TEAM 1</p> <p>SAMPLERS (SIGNATURE) </p> </div> <div style="width: 55%; text-align: center;"> <p>Cr6 (218.6) Lab Filtered</p> <p>Total Metals (EPA 200.8) Cr, Mn</p> <p>Specific Conductance (120.1)</p> <p>TDS (SM2540C)</p> <p>Turbidity (SM2130)</p> </div> <div style="width: 5%; text-align: center;"> <p>NUMBER OF CONTAINERS</p> </div> </div>																					
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		xxxxxx.PT.OP.00		TEAM		1																			
SAMPLE I.D.				DATE		TIME		DESCRIPTION																	
SC-700B-WDR-507				02/10/15		1350		Water		X	X	X	X		X									3	No14636-1
																							3	TOTAL NUMBER OF CONTAINERS	

Please Provide a preliminary Result for the TDS ASAP

CHAIN OF CUSTODY SIGNATURE RECORD				<div>1-84 1st</div> <div>SAMPLE CONDITIONS</div> <div> RECEIVED COOL <input type="checkbox"/> WARM <input type="checkbox"/> °F _____ </div> <div> CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/> </div> <div>SPECIAL REQUIREMENTS:</div>	
Signature (Relinquished)	Printed Name Ryan Phelps	Company/ Agency CH2M Hill	Date/ Time 2-10-15 15:30		
Signature (Received)	Printed Name Philander Enly	Company/ Agency ASSET LABS	Date/ Time 2/10/15 15:30		
Signature (Relinquished)	Printed Name Philander Enly	Company/ Agency ASSET LABS	Date/ Time 2/10/15 1746		
Signature (Received)	Printed Name Philander Enly	Company/ Agency ASSET LABS	Date/ Time 2/10/15 1744		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		

ASSET Laboratories

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


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

Cooler Received/Opened On: 2/10/2015 Workorder: N014636
 Rep sample Temp (Deg C): 1.8 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ATL
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments: Sample for metal analysis was lab preserved.

For:  2/11/2015

Checklist Completed By: JPG

 02/17/15
 Reviewed By:

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) * 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N014636-001C, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(61.3350 - 61.2542) * 1000000}{20}$$

$$= 4040 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 4000 \text{ mg/L}$$

Julia Ramit 2/13/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (\text{A-B}) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:2/12/15								
MB-49672	100	77.101	77.1015	5	1	5		
LCS-49672	100	75.7444	75.8393	949	1	949		
N014631-001B	20	63.8045	63.918	1135	5	5675	5860	0.968
N014631-002D	20	55.6511	55.7636	1125	5	5625	5900	0.953
N014631-003B	20	53.7836	53.8899	1063	5	5315	5750	0.924
N014631-004D	20	54.8598	54.9651	1053	5	5265	5780	0.911
N014632-001A	75	54.9526	55.0179	653	1.333333333	870.666667	1698	0.513
N014632-002A	100	64.0525	64.1137	612	1	612	969	0.632
N014636-001C	20	61.2542	61.335	808	5	4040	6970	0.580
N014636-001C DUP	20	54.3906	54.4752	846	5	4230	6970	0.607

Julia Ramit 2/13/2015

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014636-001B**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 0 * 1 * (25/25) \\ &= 0\end{aligned}$$

Since results is less than reporting limit,

$$\text{Chromium, ug/L} = \text{ND}$$

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014636
Test Method: EPA 200.8
Analysis Date: 2/12/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 49683

Comments:

Analyzed By: Mary Claire Ignacio


Dilution test is not applicable to Cr & Mn. The calculated values are <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014636-001B DT 5X	Chromium	ug/L	0	NA	0		10
N014636-001B DT 5X	Manganese	ug/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	N014636-001B-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	 2/23/2015	RunNo:	97994
Client ID:	ZZZZZZ	Batch ID:	49683	TestNo:	EPA 200.8	Analysis Date:	2/12/2015	SeqNo:	1932630		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Manganese		56.453		0.50	100.0	0	56.5	80	120		S

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N014636
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N014636-001B-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	97994
Client ID:	ZZZZZZ	Batch ID:	49683	TestNo:	EPA 200.8			Analysis Date:	2/12/2015	SeqNo:	1932517
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		9.063		1.0	10.00	0	90.6	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

$A = \mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N014636-001A**, concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.0984 * 1 \\ &= 0.0984\end{aligned}$$

Since PQL is $0.2 \mu\text{g/L}$,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$



March 03, 2015

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

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

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

Workorder No.: N014694

RE: PG&E Topock, XXXXXX.PT.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on February 17, 2015 by ASSET Laboratories .
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in
accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo
QA Manager

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CLIENT: CH2M HILL
Project: PG&E Topock, XXXXXX.PT.OP.00
Lab Order: N014694

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS:**

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.



ASSET Laboratories

Date: 03-Mar-15

CLIENT: CH2M HILL
Project: PG&E Topock, XXXXXX.PT.OP.00
Lab Order: N014694
Contract No: IM3Plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014694-001A	SC-700B-WDR-508	Water	2/17/2015 12:00:00 PM	2/17/2015	3/3/2015
N014694-001B	SC-700B-WDR-508	Water	2/17/2015 12:00:00 PM	2/17/2015	3/3/2015
N014694-001C	SC-700B-WDR-508	Water	2/17/2015 12:00:00 PM	2/17/2015	3/3/2015



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 03-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-508
Lab Order:	N014694	Collection Date:	2/17/2015 12:00:00 PM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014694-001		

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

SPECIFIC CONDUCTANCE
EPA 120.1

RunID: WETCHEM_150218A	QC Batch: R98067	PrepDate	Analyst: LR
Specific Conductance	7100	0.10	0.10
		umhos/cm	1
			2/18/2015 10:00 AM

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


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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N014694
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	N014694-001C DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	98067		
Client ID:	ZZZZZZ	Batch ID:	R98067	TestNo:	EPA 120.1			Analysis Date:	2/18/2015	SeqNo:	1936573		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		7150.000		0.10						7110	0.561	10	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 03-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-508
Lab Order:	N014694	Collection Date:	2/17/2015 12:00:00 PM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014694-001		

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

RunID: WETCHEM_150218F	QC Batch: 49731	PrepDate	2/18/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L
			1	2/18/2015 01:30 PM

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


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CLIENT: CH2M HILL
Work Order: N014694
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID MB-49731	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 2/18/2015	RunNo: 98087						
Client ID: PBW	Batch ID: 49731	TestNo: SM2540C			Analysis Date: 2/18/2015	SeqNo: 1937182					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-49731	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 2/18/2015	RunNo: 98087						
Client ID: LCSW	Batch ID: 49731	TestNo: SM2540C			Analysis Date: 2/18/2015	SeqNo: 1937183					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	998.000	10	1000	0	99.8	80	120				

Sample ID N014694-001C-DUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 2/18/2015	RunNo: 98087						
Client ID: ZZZZZZ	Batch ID: 49731	TestNo: SM2540C			Analysis Date: 2/18/2015	SeqNo: 1937185					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4315.000	50					4165	3.54	5		

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 03-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-508
Lab Order:	N014694	Collection Date:	2/17/2015 12:00:00 PM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014694-001		

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

RunID: ICP7_150220B	QC Batch: 49752	PrepDate	2/20/2015	Analyst: CEI
Manganese	ND	0.026	0.50	µg/L
			1	2/20/2015 04:40 PM

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


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CLIENT: CH2M HILL
 Work Order: N014694
 Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-49752	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/20/2015	RunNo:	98149
Client ID:	PBW	Batch ID:	49752	TestNo:	EPA 200.8			Analysis Date:	2/20/2015	SeqNo:	1940098
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	0.50									
Manganese	ND	0.50									

Sample ID	LCS-49752	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/20/2015	RunNo:	98149
Client ID:	LCSW	Batch ID:	49752	TestNo:	EPA 200.8			Analysis Date:	2/20/2015	SeqNo:	1940099
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	10.321	0.50	10.00	0	103	85	115				
Manganese	104.157	0.50	100.0	0	104	85	115				

Sample ID	N014706-001A-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/20/2015	RunNo:	98149
Client ID:	ZZZZZZ	Batch ID:	49752	TestNo:	EPA 200.8			Analysis Date:	2/20/2015	SeqNo:	1940104
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	14.421	0.50	10.00	5.553	88.7	75	125				
Manganese	89.436	0.50	100.0	0	89.4	75	125				

Sample ID	N014706-001A-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/20/2015	RunNo:	98149
Client ID:	ZZZZZZ	Batch ID:	49752	TestNo:	EPA 200.8			Analysis Date:	2/20/2015	SeqNo:	1940107
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	14.769	0.50	10.00	5.553	92.2	75	125	14.42	2.38	20	
Manganese	88.992	0.50	100.0	0	89.0	75	125	89.44	0.497	20	

Sample ID	N014670-003A-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/20/2015	RunNo:	98149
Client ID:	ZZZZZZ	Batch ID:	49752	TestNo:	EPA 200.8			Analysis Date:	2/20/2015	SeqNo:	1940110
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014694
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014670-003A-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/20/2015	RunNo:	98149
Client ID:	ZZZZZZ	Batch ID:	49752	TestNo:	EPA 200.8			Analysis Date:	2/20/2015	SeqNo:	1940110
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		10.033		0.50	10.00	0.1218	99.1	75	125		
Manganese		100.923		0.50	100.0	0	101	75	125		

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 03-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-508
Lab Order:	N014694	Collection Date:	2/17/2015 12:00:00 PM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014694-001		

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

RunID: IC6_150218A	QC Batch: R98101	PrepDate	Analyst: RB
Hexavalent Chromium	ND 0.016	0.20 µg/L	1 2/18/2015 01:43 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150220B	QC Batch: 49752	PrepDate	2/20/2015	Analyst: CEI
Chromium	ND 0.030	1.0 µg/L	1	2/20/2015 04:40 PM

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


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CLIENT: CH2M HILL
Work Order: N014694
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID MB-49752	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/20/2015	RunNo: 98149
Client ID: PBW	Batch ID: 49752	TestNo: EPA 200.8		Analysis Date: 2/20/2015	SeqNo: 1939988
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	ND	1.0			

Sample ID LCS-49752	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/20/2015	RunNo: 98149
Client ID: LCSW	Batch ID: 49752	TestNo: EPA 200.8		Analysis Date: 2/20/2015	SeqNo: 1939989
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.321	1.0	10.00	0	103 85 115

Sample ID N014706-001A-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/20/2015	RunNo: 98149
Client ID: ZZZZZZ	Batch ID: 49752	TestNo: EPA 200.8		Analysis Date: 2/20/2015	SeqNo: 1939994
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	14.421	1.0	10.00	5.553	88.7 75 125

Sample ID N014706-001A-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/20/2015	RunNo: 98149
Client ID: ZZZZZZ	Batch ID: 49752	TestNo: EPA 200.8		Analysis Date: 2/20/2015	SeqNo: 1939997
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	14.769	1.0	10.00	5.553	92.2 75 125 14.42 2.38 20

Sample ID N014670-003A-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/20/2015	RunNo: 98149
Client ID: ZZZZZZ	Batch ID: 49752	TestNo: EPA 200.8		Analysis Date: 2/20/2015	SeqNo: 1940000
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.033	1.0	10.00	0.1218	99.1 75 125

Qualifiers:

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DO	Surrogate Diluted Out	Calculations are based on raw values			



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CLIENT: CH2M HILL
Work Order: N014694
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R98101	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	98101			
Client ID:	PBW	Batch ID:	R98101	TestNo:	EPA 218.6			Analysis Date:	2/18/2015	SeqNo:	1937358			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R98101	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	98101			
Client ID:	LCSW	Batch ID:	R98101	TestNo:	EPA 218.6			Analysis Date:	2/18/2015	SeqNo:	1937359			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.988 0.20 5.000 0 99.8 90 110

Sample ID	N014694-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	98101			
Client ID:	ZZZZZZ	Batch ID:	R98101	TestNo:	EPA 218.6			Analysis Date:	2/18/2015	SeqNo:	1937360			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.136 0.20 1.000 0.09940 104 90 110

Sample ID	N014691-001A-DUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	98101			
Client ID:	ZZZZZZ	Batch ID:	R98101	TestNo:	EPA 218.6			Analysis Date:	2/18/2015	SeqNo:	1937362			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 13.448 0.20 13.42 0.201 20

Sample ID	N014691-002A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	98101			
Client ID:	ZZZZZZ	Batch ID:	R98101	TestNo:	EPA 218.6			Analysis Date:	2/18/2015	SeqNo:	1937368			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 8.981 0.20 5.000 4.016 99.3 90 110

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014694
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N014691-002A-MSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	98101		
Client ID:	ZZZZZZ	Batch ID:	R98101	TestNo:	EPA 218.6			Analysis Date:	2/18/2015	SeqNo:	1937369		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		8.868		0.20	5.000	4.016	97.0	90	110	8.981	1.27	20	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 03-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-508
Lab Order:	N014694	Collection Date:	2/17/2015 12:00:00 PM
Project:	PG&E Topock, XXXXXX.PT.OP.00	Matrix:	WATER
Lab ID:	N014694-001		

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

RunID: WETCHEM_150218B	QC Batch: R98068	PrepDate	Analyst: LR
Turbidity	0.22	0.10	0.10
			NTU
			1
			2/18/2015 10:30 AM

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


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CLIENT: CH2M HILL
Work Order: N014694
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	N014694-001CDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	98068
Client ID:	ZZZZZZ	Batch ID:	R98068	TestNo:	SM 2130B			Analysis Date:	2/18/2015	SeqNo:	1936575
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.210		0.10						0.2200	4.65 30

Qualifiers:

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



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WORKORDER: N

ANALYST LIST

NAME	TEST METHOD
O'k	-h* 'oU' # 'oU' "
Claire Ignacio	EPA 200.8
k "	EPA





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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-508]

COC Number

TURNAROUND TIME 10 Days

DATE 02/17/15 PAGE 1 OF 1

COMPANY CH2M HILL				<div>COMMENTS</div> <div>NUMBER OF CONTAINERS</div>											
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 XXXXXX.PT.OP.00 TEAM 1															
SAMPLERS (SIGNATURE)															
SAMPLE I.D. DATE TIME DESCRIPTION															
SC-700B-WDR-508 02/17/15 12:00 Water				3 N014694 -1											
				TOTAL NUMBER OF CONTAINERS											

Please Provide a preliminary Result for the TDS ASAP

CHAIN OF CUSTODY SIGNATURE RECORD

Signature (Relinquished)	Printed Name CHRIS LOWE	Company/ Agency CH2MHILL	Date/ Time 2-17-15 15:00
Signature (Received)	Printed Name Philander Gallego	Company/ Agency ASSET LABS	Date/ Time 2/17/15 15:00
Signature (Relinquished)	Printed Name Philander Gallego	Company/ Agency ASSET LABS	Date/ Time 2/17/15 17:15
Signature (Received)	Printed Name Philander Gallego	Company/ Agency ASSET LABS	Date/ Time 2/17/15 17:15
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time

1.946
1.942

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

SPECIAL REQUIREMENTS:

ASSET Laboratories

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

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

Cooler Received/Opened On: 2/17/2015 Workorder: N014694
 Rep sample Temp (Deg C): 1.9 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ATL
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments: Sample for metal analysis was lab preserved.

Checklist Completed By:

HG

2/18/2015

Reviewed By:

02/20/15

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) * 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N014694-001C, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(53.7428 - 53.6595) * 1000000}{20}$$

$$= 4165 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 4200 \text{ mg/L}$$

Julia Ramit 2/19/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (\text{A}-\text{B}) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:2/19/15								
MB-49731	100	53.7345	53.7348	3	1	3		
LCS-49731	100	77.0998	77.1996	998	1	998		
N014694-001C	20	53.6595	53.7428	833	5	4165	7110	0.586
N014694-001C DUP	20	57.0867	57.173	863	5	4315	7110	0.607
N014700-004A	200	53.9327	53.9332	5	0.5	2.5	13.44	0.186
N014700-005A	200	63.0706	63.0722	16	0.5	8	1.55	5.161
N014700-006A	200	54.3885	54.3901	16	0.5	8	15.88	0.504

Lilia Ramif 2/19/2015

Sample Calculation

METHOD: EPA 6020

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014694-001B**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 0.0603582201467905 * 1 * (25/25) \\ &= 0.0603582201467905\end{aligned}$$

Since results is less than reporting limit,

$$\text{Chromium, ug/L} = \text{ND}$$

 3/2/2015

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014694
Test Method: EPA 200.8
Analysis Date: 2/20/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 49741

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr & Mn. The calculated values are <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014706-001A DT 5X	Chromium	ug/L	5.822775854	NA	5.552692808	4.86%	10
N014706-001A DT 5X	Manganese	ug/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014694
Project: PG&E Topock, XXXXXX.PT.OP.00

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

Sample ID	N014706-001A-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	98149
Client ID:	ZZZZZZ	Batch ID:	49752	TestNo:	EPA 200.8			Analysis Date:	2/20/2015	SeqNo:	1940103
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Manganese		89.899		0.50	100.0	0	89.9	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N014694
Project: PG&E Topock, XXXXXX.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N014706-001A-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	98149
Client ID:	ZZZZZZ	Batch ID:	49752	TestNo:	EPA 200.8			Analysis Date:	2/20/2015	SeqNo:	1939993
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		14.632		1.0	10.00	5.553	90.8	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

$A = \mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N014694-001**, concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.0994 * 1 \\ &= 0.0994\end{aligned}$$

Since PQL is $0.20 \mu\text{g/L}$,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$



March 10, 2015

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

TEL: (530) 229-3303

FAX: (530) 339-3303

CA-ELAP No.: 2676

NV Cert. No.: NV-00922

Workorder No.: N014761

RE: PG&E Topock, 658274.PT.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on February 24, 2015 by ASSET Laboratories .
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in
accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo

QA Manager

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CLIENT: CH2M HILL
Project: PG&E Topock, 658274.PT.OP.00
Lab Order: N014761

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



ASSET Laboratories

Date: 10-Mar-15

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.PT.OP.00
Lab Order: N014761
Contract No: IM3Plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014761-001A	SC-700B-WDR-509	Water	2/24/2015 12:30:00 PM	2/24/2015	3/10/2015
N014761-001B	SC-700B-WDR-509	Water	2/24/2015 12:30:00 PM	2/24/2015	3/10/2015
N014761-001C	SC-700B-WDR-509	Water	2/24/2015 12:30:00 PM	2/24/2015	3/10/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 10-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-509
Lab Order:	N014761	Collection Date:	2/24/2015 12:30:00 PM
Project:	PG&E Topock, 658274.PT.OP.00	Matrix:	WATER
Lab ID:	N014761-001		

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

RunID: WETCHEM_150225A	QC Batch: R99183	PrepDate	Analyst: LR			
Specific Conductance	6800	0.10	0.10	umhos/cm	1	2/25/2015 03:30 PM

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

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CLIENT: CH2M HILL
Work Order: N014761
Project: PG&E Topock, 658274.PT.OP.00

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

Sample ID	N014760-001D DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	99183
Client ID:	ZZZZZZ	Batch ID:	R99183	TestNo:	EPA 120.1			Analysis Date:	2/25/2015	SeqNo:	1942826
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Specific Conductance		893.000		0.10						898.0	0.558 10

Sample ID	N014761-001C DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	99183
Client ID:	ZZZZZZ	Batch ID:	R99183	TestNo:	EPA 120.1			Analysis Date:	2/25/2015	SeqNo:	1942843
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Specific Conductance		6800.000		0.10						6840	0.587 10

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 10-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-509
Lab Order:	N014761	Collection Date:	2/24/2015 12:30:00 PM
Project:	PG&E Topock, 658274.PT.OP.00	Matrix:	WATER
Lab ID:	N014761-001		

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

RunID: WETCHEM_150225H	QC Batch: 49783			PrepDate	2/25/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L	1	2/25/2015 03:15 PM

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

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CLIENT: CH2M HILL
Work Order: N014761
Project: PG&E Topock, 658274.PT.OP.00

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

Sample ID	MB-49783	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	2/25/2015	RunNo:	99196		
Client ID:	PBW	Batch ID:	49783	TestNo:	SM2540C			Analysis Date:	2/25/2015	SeqNo:	1943146		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10									

Sample ID	LCS-49783	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	2/25/2015	RunNo:	99196		
Client ID:	LCSW	Batch ID:	49783	TestNo:	SM2540C			Analysis Date:	2/25/2015	SeqNo:	1943147		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		986.000		10	1000	0	98.6	80	120				

Sample ID	N014761-001C-DUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	2/25/2015	RunNo:	99196		
Client ID:	ZZZZZZ	Batch ID:	49783	TestNo:	SM2540C			Analysis Date:	2/25/2015	SeqNo:	1943151		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		4220.000		50						4210	0.237	5	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 10-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-509
Lab Order:	N014761	Collection Date:	2/24/2015 12:30:00 PM
Project:	PG&E Topock, 658274.PT.OP.00	Matrix:	WATER
Lab ID:	N014761-001		

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

RunID: ICP7_150226A	QC Batch: 49794	PrepDate	2/26/2015	Analyst: CEI
Manganese	ND	0.026	0.50	µg/L
				1
				2/26/2015 12:48 PM

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


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CLIENT: CH2M HILL
Work Order: N014761
Project: PG&E Topock, 658274.PT.OP.00

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

Sample ID	MB-49794	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/26/2015	RunNo:	99198		
Client ID:	PBW	Batch ID:	49794	TestNo:	EPA 200.8			Analysis Date:	2/26/2015	SeqNo:	1943165		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		0.086		0.50									

Sample ID	LCS-49794	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/26/2015	RunNo:	99198		
Client ID:	LCSW	Batch ID:	49794	TestNo:	EPA 200.8			Analysis Date:	2/26/2015	SeqNo:	1943166		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		94.683		0.50	100.0	0	94.7	85	115				

Sample ID	N014761-001B-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/26/2015	RunNo:	99198		
Client ID:	ZZZZZZ	Batch ID:	49794	TestNo:	EPA 200.8			Analysis Date:	2/26/2015	SeqNo:	1943170		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		64.148		0.50	100.0	0	64.1	75	125				S

Sample ID	N014761-001B-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/26/2015	RunNo:	99198		
Client ID:	ZZZZZZ	Batch ID:	49794	TestNo:	EPA 200.8			Analysis Date:	2/26/2015	SeqNo:	1943171		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		63.934		0.50	100.0	0	63.9	75	125	64.15	0.335	20	S

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 10-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-509
Lab Order:	N014761	Collection Date:	2/24/2015 12:30:00 PM
Project:	PG&E Topock, 658274.PT.OP.00	Matrix:	WATER
Lab ID:	N014761-001		

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

RunID: IC6_150226A	QC Batch: R99212	PrepDate	Analyst: RB
Hexavalent Chromium	0.21 0.016 0.20	µg/L	1 2/26/2015 04:52 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150226A	QC Batch: 49794	PrepDate	2/26/2015	Analyst: CEI
Chromium	ND 0.030 1.0	µg/L	1	2/26/2015 12:48 PM

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


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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N014761
Project: PG&E Topock, 658274.PT.OP.00

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

Sample ID MB-49794	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/26/2015	RunNo: 99198						
Client ID: PBW	Batch ID: 49794	TestNo: EPA 200.8			Analysis Date: 2/26/2015	SeqNo: 1943184					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID LCS-49794	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/26/2015	RunNo: 99198						
Client ID: LCSW	Batch ID: 49794	TestNo: EPA 200.8			Analysis Date: 2/26/2015	SeqNo: 1943185					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.305	1.0	10.00	0	93.0	85	115				

Sample ID N014761-001B-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/26/2015	RunNo: 99198						
Client ID: ZZZZZZ	Batch ID: 49794	TestNo: EPA 200.8			Analysis Date: 2/26/2015	SeqNo: 1943189					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.365	1.0	10.00	0.06893	93.0	75	125				

Sample ID N014761-001B-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 2/26/2015	RunNo: 99198						
Client ID: ZZZZZZ	Batch ID: 49794	TestNo: EPA 200.8			Analysis Date: 2/26/2015	SeqNo: 1943190					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.315	1.0	10.00	0.06893	92.5	75	125	9.365	0.538	20	

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014761
Project: PG&E Topock, 658274.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R99212	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99212		
Client ID:	PBW	Batch ID:	R99212	TestNo:	EPA 218.6			Analysis Date:	2/26/2015	SeqNo:	1943486		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R99212	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99212		
Client ID:	LCSW	Batch ID:	R99212	TestNo:	EPA 218.6			Analysis Date:	2/26/2015	SeqNo:	1943487		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 2.543 0.20 2.500 0 102 90 110

Sample ID	N014761-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99212		
Client ID:	ZZZZZZ	Batch ID:	R99212	TestNo:	EPA 218.6			Analysis Date:	2/26/2015	SeqNo:	1943497		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.241 0.20 1.000 0.2123 103 90 110

Sample ID	N014761-001A-MSD	SampType: MSD	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 99212					
Client ID: ZZZZZZ	Batch ID: R99212	TestNo: EPA 218.6	Analysis Date: 2/26/2015	SeqNo: 1943498							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.298 0.20 1.000 0.2123 109 90 110 1.241 4.51 20

Sample ID	N014761-001A-DUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99212		
Client ID:	ZZZZZZ	Batch ID:	R99212	TestNo:	EPA 218.6			Analysis Date:	2/26/2015	SeqNo:	1943499		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 0.245 0.20 0.2123 14.3 20

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 10-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-509
Lab Order:	N014761	Collection Date:	2/24/2015 12:30:00 PM
Project:	PG&E Topock, 658274.PT.OP.00	Matrix:	WATER
Lab ID:	N014761-001		

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

TURBIDITY**SM 2130B**

RunID: WETCHEM_150225C	QC Batch: R99185	PrepDate	Analyst: LR
Turbidity	0.17 0.10 0.10	NTU	1 2/25/2015 04:20 PM

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

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P: 702.307.2659 F: 702.307.2691**"Serving Clients with Passion and Professionalism"**

CLIENT: CH2M HILL
Work Order: N014761
Project: PG&E Topock, 658274.PT.OP.00

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

Sample ID	N014761-001C DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	99185
Client ID:	ZZZZZZ	Batch ID:	R99185	TestNo:	SM 2130B			Analysis Date:	2/25/2015	SeqNo:	1942861
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.160		0.10						0.1700	6.06 30

Qualifiers:

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



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WORKORDER: N014761

ANALYST LIST

NAME	TEST METHOD
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6



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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-509]

COC Number

TURNAROUND TIME 10 Days

DATE 02/24/15 PAGE 1 OF 1

COMPANY		CH2M HILL		<div style="display: flex; justify-content: space-between;"> <div style="width: 40%; text-align: center;"> <p>Cr6 (218.6) Lab Filtered</p> <p>Total Metals (EPA 200.8) Cr, Mn</p> <p>Specific Conductance (120.1)</p> <p>TDS (SM2540C)</p> <p>Turbidity (SM2130)</p> </div> <div style="width: 55%; text-align: center;"> <p>NUMBER OF CONTAINERS</p> </div> </div>												COMMENTS															
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		658274.PT.OP.00		TEAM		1																									
SAMPLERS (SIGNATURE)																															
SAMPLE I.D.		DATE		TIME		DESCRIPTION																									
SC-700B-WDR-509		02/24/15		1230		Water		x		x		x		x		x												3		No 14761-1	
																										3		TOTAL NUMBER OF CONTAINERS			

Please Provide a preliminary Result for the TDS ASAP

CHAIN OF CUSTODY SIGNATURE RECORD				<div> <div> <div>1-900</div> <div>1842</div> </div> <div> <div>SAMPLE CONDITIONS</div> <div> <div>RECEIVED</div> <div>COOL <input type="checkbox"/></div> <div>WARM <input type="checkbox"/></div> <div>°F _____</div> </div> </div> </div>	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	<div> <div>CUSTODY SEALED</div> <div>YES <input type="checkbox"/></div> <div>NO <input type="checkbox"/></div> </div>	
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	<div>SPECIAL REQUIREMENTS:</div>	
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		

ASSET Laboratories

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

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

Cooler Received/Opened On: 2/24/2015 Workorder: N014761
 Rep sample Temp (Deg C): 1.9 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ATL
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None


Sample Receipt Checklist

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


Comments: Sample for metal analysis was lab preserved.

Checklist Completed By:

HG

 2/27/2015

Reviewed By:

 03/03/15

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) \cdot 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N014761-001C, TDS concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{TDS, mg/L} &= \frac{(54.0059 - 53.9217) \cdot 1000000}{20} \\ &= 4210 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{TDS} = 4200 \text{ mg/L}$$

Julia Ramit 2/26/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (\text{A-B}) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:2/26/15								
MB-49783	100	63.9513	63.9515	2	1	2		
LCS-49783	100	64.2277	64.3263	986	1	986		
N014756-001B	100	61.2605	61.3045	440	1	440	537	0.819
N014756-002B	100	64.1595	64.215	555	1	555	649	0.855
N014761-001C	20	53.9217	54.0059	842	5	4210	6840	0.615
N014761-001C DUP	20	54.8579	54.9423	844	5	4220	6840	0.617

Lilia Ramit 2/26/2015

Sample Calculation

METHOD: EPA 6020 / 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014761-001B**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 0.068929632237 * 1 * (25/25) \\ &= 0.068929632237\end{aligned}$$

Since results is less than reporting limit,

$$\text{Chromium, ug/L} = \text{ND}$$

 3/10/2015

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014761
Test Method: EPA 200.8
Analysis Date: 2/26/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 49794

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mn & Cr. The calculated values are <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014761-001B DT 5X	Chromium	ug/L	0	NA	0.068929632	100.00%	10
N014761-001B DT 5X	Manganese	ug/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014761
Project: PG&E Topock, 658274.PT.OP.00

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

Sample ID	N014761-001B-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	99198
Client ID:	ZZZZZZ	Batch ID:	49794	TestNo:	EPA 200.8			Analysis Date:	2/26/2015	SeqNo:	1943169
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Manganese		63.023		0.50	100.0	0	63.0	80	120		S

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N014761
Project: PG&E Topock, 658274.PT.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N014761-001B-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	99198
Client ID:	ZZZZZZ	Batch ID:	49794	TestNo:	EPA 200.8			Analysis Date:	2/26/2015	SeqNo:	1943188
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		9.134		1.0	10.00	0.06893	90.7	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

$A = \mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N014761-001A**, concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.2123 * 1 \\ &= 0.2123\end{aligned}$$

Reporting result in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 0.21$$



March 18, 2015

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

TEL: (530) 229-3303

FAX: (530) 339-3303

CA-ELAP No.: 2676

NV Cert. No.: NV-00922

Workorder No.: N014859

RE: PG&E Topock IM3, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

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

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

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

Sincerely,



Glen Gesmundo

QA Manager

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



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CLIENT: CH2M HILL
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab Order: N014859

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

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

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

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

Samples were analyzed within method holding time.

Subcontracted Analyses:

Ammonia and Soluble Silica were subcontracted to Truesdail-Tustin, CA.

Analytical Comments for EPA 200.8_Dissolved:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 200.8_Total:

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

Dilution was necessary on Lead for samples N014859-001 and N014859-002 due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analyte for this failed internal standard were reported at dilution that meet internal standard recovery limit.



ASSET Laboratories

Date: 18-Mar-15

CLIENT: CH2M HILL
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab Order: N014859
Contract No: IM3Plant-WDR-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014859-001A	SC-700B-WDR-510	Water	3/3/2015 1:15:00 PM	3/3/2015	3/18/2015
N014859-001B	SC-700B-WDR-510	Water	3/3/2015 1:15:00 PM	3/3/2015	3/18/2015
N014859-001C	SC-700B-WDR-510	Water	3/3/2015 1:15:00 PM	3/3/2015	3/18/2015
N014859-001D	SC-700B-WDR-510	Water	3/3/2015 1:15:00 PM	3/3/2015	3/18/2015
N014859-001E	SC-700B-WDR-510	Water	3/3/2015 1:15:00 PM	3/3/2015	3/18/2015
N014859-002A	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015
N014859-002B	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015
N014859-002C	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015
N014859-002D	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015
N014859-002E	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015
N014859-002F	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015
N014859-002G	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015
N014859-002H	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015
N014859-002I	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015
N014859-002J	SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	3/3/2015	3/18/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 18-Mar-15

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-001

Client Sample ID: SC-700B-WDR-510
Collection Date: 3/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150304C	QC Batch: R99286			PrepDate		Analyst: LR
Specific Conductance	8000	0.10	0.10	umhos/cm	1	3/4/2015 10:45 AM

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

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

RunID: WETCHEM_150304C	QC Batch: R99286			PrepDate		Analyst: LR
Specific Conductance	8000	0.10	0.10	umhos/cm	1	3/4/2015 10:45 AM

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

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

Sample ID	N014860-001B DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	99286		
Client ID:	ZZZZZZ	Batch ID:	R99286	TestNo:	EPA 120.1			Analysis Date:	3/4/2015	SeqNo:	1946057		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		8890.000		0.10						8850	0.451	10	

Qualifiers:

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-001

Client Sample ID: SC-700B-WDR-510
Collection Date: 3/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150304F	QC Batch: 49833			PrepDate	3/4/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4100	50	50	mg/L	1	3/4/2015 02:00 PM

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 18-Mar-15

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

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

RunID: WETCHEM_150304F	QC Batch: 49833			PrepDate	3/4/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L	1	3/4/2015 02:00 PM

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

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

Sample ID MB-49833	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/4/2015	RunNo: 99291						
Client ID: PBW	Batch ID: 49833	TestNo: SM2540C			Analysis Date: 3/4/2015	SeqNo: 1946113					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-49833	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/4/2015	RunNo: 99291						
Client ID: LCSW	Batch ID: 49833	TestNo: SM2540C			Analysis Date: 3/4/2015	SeqNo: 1946114					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	960.000	10	1000	0	96.0	80	120				

Sample ID N014859-001B DUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/4/2015	RunNo: 99291						
Client ID: ZZZZZZ	Batch ID: 49833	TestNo: SM2540C			Analysis Date: 3/4/2015	SeqNo: 1946117					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4275.000	50					4130	3.45	5		

Qualifiers:

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



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ANALYTICAL RESULTS
Print Date: 18-Mar-15

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-001

Client Sample ID: SC-700B-WDR-510
Collection Date: 3/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: ICP2_150316B	QC Batch: 49842	PrepDate	3/5/2015	Analyst: CEI
Aluminum	ND 6.2	50	µg/L	1 3/16/2015 08:15 PM
Boron	1100 19	100	µg/L	1 3/16/2015 08:15 PM
Iron	ND 1.3	20	µg/L	1 3/16/2015 08:15 PM

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

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

RunID: ICP2_150316B	QC Batch: 49842			PrepDate	3/5/2015	Analyst: CEI
Iron	ND	1.3	20	µg/L	1	3/16/2015 08:47 PM

TOTAL METALS BY ICP
EPA 200.7

RunID: ICP2_150316B	QC Batch: 49842			PrepDate	3/5/2015	Analyst: CEI
Aluminum	ND	6.2	50	µg/L	1	3/16/2015 08:42 PM
Boron	1200	19	100	µg/L	1	3/16/2015 08:42 PM
Iron	ND	1.3	20	µg/L	1	3/16/2015 08:42 PM

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WDPGEPPB**

Sample ID	MB-49842	SampType:	MBLK	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99468		
Client ID:	PBW	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954312		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron		ND		20									

Sample ID	LCS1-49842	SampType:	LCS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99468		
Client ID:	LCSW	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954313		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron		99.515		20	100.0	0	99.5	85	115				

Sample ID	N014859-001C-MS1	SampType:	MS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99468		
Client ID:	ZZZZZZ	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954317		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron		98.338		20	100.0	0	98.3	75	125				

Sample ID	N014859-001C-MSD	SampType:	MSD	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99468		
Client ID:	ZZZZZZ	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954318		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron		99.561		20	100.0	0	99.6	75	125	98.34	1.24	20	

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPBB

Sample ID	MB-49842	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99468
Client ID:	PBW	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954258
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum
Boron
Iron

ND
ND
ND

50
100
20

Sample ID	LCS1-49842	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99468
Client ID:	LCSW	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954259
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum
Boron
Iron

10202.748
4982.815
99.515

50
100
20

10000
5000
100.0

0
0
0

102
99.7
99.5

85
85
85

115
115
115

Sample ID	N014859-001C-MS1	SampType:	MS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99468
Client ID:	ZZZZZ	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954263
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum
Boron
Iron

11984.332
6680.472
98.338

50
100
20

10000
5000
100.0

0
1067
0

120
112
98.3

75
75
75

125
125
125

Sample ID	N014859-001C-MSD	SampType:	MSD	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99468
Client ID:	ZZZZZ	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954264
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum
Boron
Iron

12030.944
6773.923
99.561

50
100
20

10000
5000
100.0

0
1067
0

120
114
99.6

75
75
75

125
125
125

11980
6680
98.34

0.388
1.39
1.24

20
20
20

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-001

Client Sample ID: SC-700B-WDR-510
Collection Date: 3/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: ICP7_150306A	QC Batch: 49852	PrepDate	3/5/2015	Analyst: CEI		
Antimony	ND	0.18	0.50	µg/L	1	3/6/2015 07:51 AM
Arsenic	ND	0.027	0.10	µg/L	1	3/6/2015 07:51 AM
Barium	10	0.030	1.0	µg/L	1	3/6/2015 07:51 AM
Copper	ND	0.040	1.0	µg/L	1	3/6/2015 07:51 AM
Lead	ND	0.053	5.0	µg/L	5	3/6/2015 07:56 AM
Manganese	ND	0.026	0.50	µg/L	1	3/6/2015 07:51 AM
Molybdenum	17	0.15	0.50	µg/L	1	3/6/2015 07:51 AM
Nickel	1.0	0.032	1.0	µg/L	1	3/6/2015 07:51 AM
Zinc	ND	0.23	10	µg/L	1	3/6/2015 07:51 AM

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

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

RunID: ICP7_150306A	QC Batch: 49852	PrepDate	3/5/2015	Analyst: CEI		
Antimony	ND	0.18	0.50	µg/L	1	3/6/2015 08:18 AM
Arsenic	2.9	0.027	0.10	µg/L	1	3/6/2015 08:18 AM
Barium	26	0.030	1.0	µg/L	1	3/6/2015 08:18 AM
Copper	ND	0.040	1.0	µg/L	1	3/6/2015 08:18 AM
Lead	ND	0.053	5.0	µg/L	5	3/6/2015 09:57 AM
Manganese	ND	0.026	0.50	µg/L	1	3/6/2015 08:18 AM
Molybdenum	19	0.15	0.50	µg/L	1	3/6/2015 08:18 AM
Nickel	ND	0.032	1.0	µg/L	1	3/6/2015 08:18 AM
Zinc	ND	0.23	10	µg/L	1	3/6/2015 08:18 AM

DISSOLVED METALS BY ICPMS
EPA 200.8

RunID: ICP7_150306A	QC Batch: 49851	PrepDate	3/5/2015	Analyst: CEI		
Manganese	ND	0.026	0.50	µg/L	1	3/6/2015 08:45 AM

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

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

Sample ID	MB-49852	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321		
Client ID:	PBW	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953698		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

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

Sample ID	LCS-49852	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321		
Client ID:	LCSW	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953699		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	10.765	0.50	10.00	0	108	85	115				
Arsenic	9.914	0.10	10.00	0	99.1	85	115				
Barium	98.896	1.0	100.0	0	98.9	85	115				
Copper	9.935	1.0	10.00	0	99.3	85	115				
Lead	10.448	1.0	10.00	0	104	85	115				
Manganese	100.218	0.50	100.0	0	100	85	115				
Molybdenum	9.626	0.50	10.00	0	96.3	85	115				
Nickel	9.730	1.0	10.00	0	97.3	85	115				
Zinc	102.107	10	100.0	0	102	85	115				

Sample ID	N014859-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321		
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953703		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014859-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953703
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.309	0.50	10.00	0	103	75	125				
Arsenic	9.405	0.10	10.00	0.05360	93.5	75	125				
Barium	103.474	1.0	100.0	10.33	93.1	75	125				
Copper	4.627	1.0	10.00	0	46.3	75	125				S
Manganese	63.813	0.50	100.0	0	63.8	75	125				S
Molybdenum	26.085	0.50	10.00	16.80	92.8	75	125				
Nickel	9.567	1.0	10.00	1.048	85.2	75	125				
Zinc	77.660	10	100.0	0	77.7	75	125				

Sample ID	N014859-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953704
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.282	0.50	10.00	0	103	75	125	10.31	0.269	20	
Arsenic	9.310	0.10	10.00	0.05360	92.6	75	125	9.405	1.01	20	
Barium	102.402	1.0	100.0	10.33	92.1	75	125	103.5	1.04	20	
Copper	4.586	1.0	10.00	0	45.9	75	125	4.627	0.882	20	S
Manganese	64.056	0.50	100.0	0	64.1	75	125	63.81	0.380	20	S
Molybdenum	26.277	0.50	10.00	16.80	94.7	75	125	26.08	0.735	20	
Nickel	9.507	1.0	10.00	1.048	84.6	75	125	9.567	0.637	20	
Zinc	77.281	10	100.0	0	77.3	75	125	77.66	0.490	20	

Sample ID	N014859-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953719
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	10.752	5.0	10.00	0	108	75	125				

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014859-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321		
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953722		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead		10.735		5.0	10.00	0	107	75	125	10.75	0.157	20	

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID	MB-49851	SampType:	MBLK	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321			
Client ID:	PBW	Batch ID:	49851	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953961			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese ND 0.50

Sample ID	LCS-49851	SampType:	LCS	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321			
Client ID:	LCSW	Batch ID:	49851	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953962			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 99.342 0.50 100.0 0 99.3 85 115

Sample ID	N014859-002I-MS	SampType:	MS	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321			
Client ID:	ZZZZZZ	Batch ID:	49851	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953968			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 64.630 0.50 100.0 0 64.6 75 125 S

Sample ID	N014859-002I-MSD	SampType:	MSD	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321			
Client ID:	ZZZZZZ	Batch ID:	49851	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953969			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 64.165 0.50 100.0 0 64.2 75 125 64.63 0.722 20 S

Qualifiers:

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-001

Client Sample ID: SC-700B-WDR-510
Collection Date: 3/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: IC6_150304A	QC Batch: R99304			PrepDate		Analyst: RB
Hexavalent Chromium	ND	0.015	0.20	µg/L	1	3/4/2015 11:11 AM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150306A	QC Batch: 49852			PrepDate	3/5/2015	Analyst: CEI
Chromium	ND	0.030	1.0	µg/L	1	3/6/2015 07:51 AM

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

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

RunID: IC6_150304A	QC Batch: R99304				PrepDate		Analyst: RB
Hexavalent Chromium	590	3.0	40		µg/L	200	3/4/2015 12:11 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150306A	QC Batch: 49852				PrepDate	3/5/2015	Analyst: CEI
Chromium	560	0.15	5.0		µg/L	5	3/6/2015 09:57 AM

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

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

Sample ID	MB-49852	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321			
Client ID:	PBW	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953863			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		ND		1.0										

Sample ID	LCS-49852	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321			
Client ID:	LCSW	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953864			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		10.288		1.0	10.00	0		103	85	115				

Sample ID	N014859-001C-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321			
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953868			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		8.973		1.0	10.00	0		89.7	75	125				

Sample ID	N014859-001C-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	3/5/2015	RunNo:	99321			
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953869			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.029		1.0	10.00	0		90.3	75	125	8.973	0.622	20	

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R99304	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99304			
Client ID:	PBW	Batch ID:	R99304	TestNo:	EPA 218.6			Analysis Date:	3/4/2015	SeqNo:	1946816			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	ND	0.20												
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Sample ID	LCS-R99304	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99304			
Client ID:	LCSW	Batch ID:	R99304	TestNo:	EPA 218.6			Analysis Date:	3/4/2015	SeqNo:	1946817			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	4.859	0.20	5.000	0	97.2	90	110							
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Sample ID	N014853-0011-DUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99304			
Client ID:	ZZZZZZ	Batch ID:	R99304	TestNo:	EPA 218.6			Analysis Date:	3/4/2015	SeqNo:	1946819			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1.134	0.20									1.117	1.51	20	
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Sample ID	N014859-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99304		
Client ID:	ZZZZZZ	Batch ID:	R99304	TestNo:	EPA 218.6			Analysis Date:	3/4/2015	SeqNo:	1946821		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1.058	0.20	1.000	0.02770	103	90	110							
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Sample ID	N014859-002A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99304			
Client ID:	ZZZZZZ	Batch ID:	R99304	TestNo:	EPA 218.6			Analysis Date:	3/4/2015	SeqNo:	1946825			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	808.000	40	200.0	594.7	107	90	110							
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Qualifiers:

- | | | | | | |
|----|---|---|--------------------------------------|---|--|
| B | Analyte detected in the associated Method Blank | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N014860-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99304			
Client ID:	ZZZZZZ	Batch ID:	R99304	TestNo:	EPA 218.6			Analysis Date:	3/4/2015	SeqNo:	1946827			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	990.720	40	200.0	783.7	104	90	110							
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Sample ID	N014860-001A-MSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99304			
Client ID:	ZZZZZZ	Batch ID:	R99304	TestNo:	EPA 218.6			Analysis Date:	3/4/2015	SeqNo:	1946828			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	979.380	40	200.0	783.7	97.9	90	110	990.7	1.15	20				
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Sample ID	N014857-004A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99304			
Client ID:	ZZZZZZ	Batch ID:	R99304	TestNo:	EPA 218.6			Analysis Date:	3/4/2015	SeqNo:	1946843			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	2.735	0.20	1.000	1.691	104	90	110							
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Sample ID	N014857-005A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99304			
Client ID:	ZZZZZZ	Batch ID:	R99304	TestNo:	EPA 218.6			Analysis Date:	3/4/2015	SeqNo:	1946845			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	2.756	0.20	1.000	1.845	91.1	90	110							
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Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 18-Mar-15

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-001

Client Sample ID: SC-700B-WDR-510
Collection Date: 3/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150304E	QC Batch: R99289			PrepDate		Analyst: LR
Turbidity	0.14	0.10	0.10	NTU	1	3/4/2015 01:30 PM

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

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

RunID: WETCHEM_150304E	QC Batch: R99289			PrepDate		Analyst: LR
Turbidity	0.24	0.10	0.10	NTU	1	3/4/2015 01:30 PM

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

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

Sample ID	N014859-001B DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	99289
Client ID:	ZZZZZZ	Batch ID:	R99289	TestNo:	SM 2130B			Analysis Date:	3/4/2015	SeqNo:	1946093
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.130		0.10						0.1400	7.41 30

Qualifiers:

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ALKALINITY, SPECIATED
SM 2320 B

RunID: WETCHEM_150308A	QC Batch: R99348	PrepDate	Analyst: QBM			
Alkalinity, Bicarbonate (As CaCO3)	150	1.2	5.0	mg/L	1	3/8/2015
Alkalinity, Carbonate (As CaCO3)	ND	1.2	5.0	mg/L	1	3/8/2015
Alkalinity, Hydroxide (As CaCO3)	ND	1.2	5.0	mg/L	1	3/8/2015
Alkalinity, Total (As CaCO3)	150	1.2	5.0	mg/L	1	3/8/2015

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 2320_W_SP**

Sample ID	LCS-R99348	SampType:	LCS	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	99348		
Client ID:	LCSW	Batch ID:	R99348	TestNo:	SM 2320 B			Analysis Date:	3/8/2015	SeqNo:	1948181		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	98.517	5.0	100.0	0	98.5	85	115				
Alkalinity, Total (As CaCO3)	98.517	5.0	100.0	0	98.5	85	115				

Sample ID	MB-R99348	SampType:	MBLK	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	99348		
Client ID:	PBW	Batch ID:	R99348	TestNo:	SM 2320 B			Analysis Date:	3/8/2015	SeqNo:	1948182		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	ND	5.0									
Alkalinity, Carbonate (As CaCO3)	ND	5.0									
Alkalinity, Hydroxide (As CaCO3)	ND	5.0									
Alkalinity, Total (As CaCO3)	ND	5.0									

Sample ID	N014859-002BDUP	SampType:	DUP	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	99348		
Client ID:	ZZZZZZ	Batch ID:	R99348	TestNo:	SM 2320 B			Analysis Date:	3/8/2015	SeqNo:	1948190		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	152.542	5.0						152.5	0	30	
Alkalinity, Carbonate (As CaCO3)	ND	5.0						0	0	30	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0						0	0	30	
Alkalinity, Total (As CaCO3)	152.542	5.0						152.5	0	30	

Sample ID	N014860-002CMS	SampType:	MS	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	99348		
Client ID:	ZZZZZZ	Batch ID:	R99348	TestNo:	SM 2320 B			Analysis Date:	3/8/2015	SeqNo:	1948193		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	312.500	5.0	100.0	215.0	97.5	75	125				
Alkalinity, Total (As CaCO3)	312.500	5.0	100.0	215.0	97.5	75	125				

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID	N014860-002CMSD	SampType:	MSD	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	99348
Client ID:	ZZZZZZ	Batch ID:	R99348	TestNo:	SM 2320 B			Analysis Date:	3/8/2015	SeqNo:	1948194
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	311.441	5.0	100.0	215.0	96.4	75	125	312.5	0.340	20	
Alkalinity, Total (As CaCO3)	311.441	5.0	100.0	215.0	96.4	75	125	312.5	0.340	20	

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-001

Client Sample ID: SC-700B-WDR-510
Collection Date: 3/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: IC2_150305A	QC Batch: R99317				PrepDate		Analyst: QBM
Fluoride	3.8	0.22	2.0		mg/L	20	3/5/2015 12:46 PM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_150305A	QC Batch: R99317				PrepDate		Analyst: QBM
Sulfate	480	1.6	25		mg/L	50	3/5/2015 01:11 PM

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

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

RunID: IC2_150305A	QC Batch: R99317				PrepDate		Analyst: QBM
Fluoride	4.2	0.22	2.0		mg/L	20	3/5/2015 12:58 PM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: IC2_150305A	QC Batch: R99317				PrepDate		Analyst: QBM
Sulfate	500	1.6	25		mg/L	50	3/5/2015 01:24 PM

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

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

Sample ID MB-R99317_F	SampType: MBLK	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 99317
Client ID: PBW	Batch ID: R99317	TestNo: EPA 300.0		Analysis Date: 3/5/2015	SeqNo: 1946952
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride ND 0.10

Sample ID LCS-R99317_F	SampType: LCS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 99317
Client ID: LCSW	Batch ID: R99317	TestNo: EPA 300.0		Analysis Date: 3/5/2015	SeqNo: 1946953
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 2.385 0.10 2.500 0 95.4 90 110

Sample ID N014859-001BDUP	SampType: DUP	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 99317
Client ID: ZZZZZZ	Batch ID: R99317	TestNo: EPA 300.0		Analysis Date: 3/5/2015	SeqNo: 1946960
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 4.060 2.0 3.780 7.14 20

Sample ID N014859-002BMS	SampType: MS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 99317
Client ID: ZZZZZZ	Batch ID: R99317	TestNo: EPA 300.0		Analysis Date: 3/5/2015	SeqNo: 1946961
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 51.480 2.0 50.00 4.160 94.6 80 120

Sample ID N014859-002BMSD	SampType: MSD	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 99317
Client ID: ZZZZZZ	Batch ID: R99317	TestNo: EPA 300.0		Analysis Date: 3/5/2015	SeqNo: 1946962
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 50.760 2.0 50.00 4.160 93.2 80 120 51.48 1.41 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R99317_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	99317			
Client ID:	PBW	Batch ID:	R99317	TestNo:	EPA 300.0			Analysis Date:	3/5/2015	SeqNo:	1947009			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate ND 0.50

Sample ID	LCS-R99317_SO4	SampType:	LCS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	99317			
Client ID:	LCSW	Batch ID:	R99317	TestNo:	EPA 300.0			Analysis Date:	3/5/2015	SeqNo:	1947010			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 4.884 0.50 5.000 0 97.7 90 110

Sample ID	N014859-001BDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	99317			
Client ID:	ZZZZZZ	Batch ID:	R99317	TestNo:	EPA 300.0			Analysis Date:	3/5/2015	SeqNo:	1947019			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 505.450 25 484.8 4.17 20

Sample ID	N014859-002BMS	SampType: MS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 99317					
Client ID: ZZZZZZ	Batch ID: R99317	TestNo: EPA 300.0	Analysis Date: 3/5/2015	SeqNo: 1947020							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 773.550 25 250.0 499.0 110 80 120

Sample ID	N014859-002BMSD	SampType:	MSD	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	99317			
Client ID:	ZZZZZZ	Batch ID:	R99317	TestNo:	EPA 300.0			Analysis Date:	3/5/2015	SeqNo:	1947021			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 784.500 25 250.0 499.0 114 80 120 773.6 1.41 20

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 18-Mar-15

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL PHOSPHORUS**EPA 365.3**

RunID: WETCHEM_150316C	QC Batch: 49929			PrepDate	3/16/2015	Analyst: QBM
Phosphorus, Total (As P)	ND	0.0030	0.020	mg/L	1	3/16/2015

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 365.3_W_T**

Sample ID	LCS-49929	SampType:	LCS	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	3/16/2015	RunNo:	99459		
Client ID:	LCSW	Batch ID:	49929	TestNo:	EPA 365.3			Analysis Date:	3/16/2015	SeqNo:	1953526		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		0.376		0.020	0.4000	0	94.0	80	120				

Sample ID	MB-49929	SampType:	MBLK	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	3/16/2015	RunNo:	99459		
Client ID:	PBW	Batch ID:	49929	TestNo:	EPA 365.3			Analysis Date:	3/16/2015	SeqNo:	1953527		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		ND		0.020									

Sample ID	N014859-002F-DUP	SampType:	DUP	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	3/16/2015	RunNo:	99459		
Client ID:	ZZZZZZ	Batch ID:	49929	TestNo:	EPA 365.3			Analysis Date:	3/16/2015	SeqNo:	1953529		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		ND		0.020						0	0	20	

Sample ID	N014859-002F-MS	SampType:	MS	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	3/16/2015	RunNo:	99459		
Client ID:	ZZZZZZ	Batch ID:	49929	TestNo:	EPA 365.3			Analysis Date:	3/16/2015	SeqNo:	1953530		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		0.380		0.020	0.4000	0	95.0	80	120				

Sample ID	N014859-002F-MSD	SampType:	MSD	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	3/16/2015	RunNo:	99459		
Client ID:	ZZZZZZ	Batch ID:	49929	TestNo:	EPA 365.3			Analysis Date:	3/16/2015	SeqNo:	1953531		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		0.378		0.020	0.4000	0	94.5	80	120	0.3800	0.528	20	

Qualifiers:

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-001

Client Sample ID: SC-700B-WDR-510
Collection Date: 3/3/2015 1:15:00 PM
Matrix: WATER

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

RunID: WETCHEM_150310C	QC Batch: R99360				PrepDate		Analyst: QBM
Nitrate/Nitrite as N	2.7	0.11	0.25		mg/L	5	3/10/2015

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



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

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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

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

NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: WETCHEM_150310C	QC Batch: R99360				PrepDate		Analyst: QBM
Nitrate/Nitrite as N	2.6	0.11	0.25		mg/L	5	3/10/2015

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



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CLIENT: CH2M HILL
 Work Order: N014859
 Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R99360	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	99360		
Client ID:	PBW	Batch ID:	R99360	TestNo:	SM4500-NO3			Analysis Date:	3/10/2015	SeqNo:	1948570		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		0.024		0.050									

Sample ID	LCS-R99360	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	99360		
Client ID:	LCSW	Batch ID:	R99360	TestNo:	SM4500-NO3			Analysis Date:	3/10/2015	SeqNo:	1948571		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		0.977		0.050	1.000	0	97.7	85	115				

Sample ID	N014777-001EDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	99360		
Client ID:	ZZZZZZ	Batch ID:	R99360	TestNo:	SM4500-NO3			Analysis Date:	3/10/2015	SeqNo:	1948573		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		0.433		0.050						0.4485	3.52	20	

Sample ID	N014777-002EMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	99360		
Client ID:	ZZZZZZ	Batch ID:	R99360	TestNo:	SM4500-NO3			Analysis Date:	3/10/2015	SeqNo:	1948575		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		1.470		0.050	1.000	0.4555	101	75	125				

Sample ID	N014777-002EMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	99360		
Client ID:	ZZZZZZ	Batch ID:	R99360	TestNo:	SM4500-NO3			Analysis Date:	3/10/2015	SeqNo:	1948576		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		1.449		0.050	1.000	0.4555	99.4	75	125	1.470	1.42	20	

Qualifiers:

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



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

CLIENT: CH2M HILL
Lab Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00
Lab ID: N014859-002

Client Sample ID: SC-100B-WDR-510
Collection Date: 3/3/2015 1:18:00 PM
Matrix: WATER

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

TOTAL ORGANIC CARBON
SM 5310C

RunID: TOC2_150304A	QC Batch: R99302			PrepDate		Analyst: QBM
Organic Carbon, Total	ND	0.041	1.0	mg/L	1	3/4/2015 05:18 PM

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



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CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 5310C_W_T**

Sample ID	MB-R99302	SampType:	MBLK	TestCode:	5310C_W_T	Units:	mg/L	Prep Date:		RunNo:	99302		
Client ID:	PBW	Batch ID:	R99302	TestNo:	SM 5310C			Analysis Date:	3/4/2015	SeqNo:	1946642		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total		ND		1.0									

Sample ID	LCS-R99302	SampType:	LCS	TestCode:	5310C_W_T	Units:	mg/L	Prep Date:		RunNo:	99302		
Client ID:	LCSW	Batch ID:	R99302	TestNo:	SM 5310C			Analysis Date:	3/4/2015	SeqNo:	1946643		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total		5.008		1.0	5.000	0	100	85	115				

Sample ID	N014814-001DMS	SampType:	MS	TestCode:	5310C_W_T	Units:	mg/L	Prep Date:		RunNo:	99302		
Client ID:	ZZZZZZ	Batch ID:	R99302	TestNo:	SM 5310C			Analysis Date:	3/4/2015	SeqNo:	1946644		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total		4.914		1.0	5.000	0.09860	96.3	75	125				

Sample ID	N014814-001DMS	SampType:	MSD	TestCode:	5310C_W_T	Units:	mg/L	Prep Date:		RunNo:	99302		
Client ID:	ZZZZZZ	Batch ID:	R99302	TestNo:	SM 5310C			Analysis Date:	3/4/2015	SeqNo:	1946645		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total		4.869		1.0	5.000	0.09860	95.4	75	125	4.914	0.936	20	

Qualifiers:

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



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WORKORDER: N014859

ANALYST LIST

NAME	TEST METHOD
Quennie Manimtim	EPA 300, EPA 365.3, SM 2320B, SM 4500-NO3-F, SM 5310C
Claire Ignacio	EPA 200.7, EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

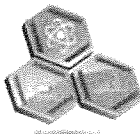


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(702) 307-2659 FAX: (702) 307-2691

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-510]

TURNAROUND TIME 10 Days

DATE 03/03/15 PAGE 1 OF 1

COMPANY CH2M HILL 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 658274.01.IM.OP.00 SAMPLERS (SIGNATURE)				COMMENTS														
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, SO4	TOC (5310 C)	Dissolved Metals (200.7) Fe, Mn lab filtered	Soluble Silica - Reactive (4500-Si CorD)	NO3/NO2 (SM4500-NO3)	NUMBER OF CONTAINERS	
SC-700B-WDR-510	03/03/15	13:15		X		X	X	X	X	X	X				X		4	N014859-1
SC-100B-WDR-510	03/03/15	13:18		X	X	X	X	X	X	X	X	X	X	X	X		9	1 - 2
<div style="float: right; border: 1px solid black; padding: 2px;"> 13 TOTAL NUMBER OF CONTAINERS </div>																		

CHAIN OF CUSTODY SIGNATURE RECORD				SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name <i>Howie Fields</i>	Company/Agency <i>OMI</i>	Date/Time <i>3-3-15 13:40</i>	RECEIVED	COOL <input type="checkbox"/> WARM <input type="checkbox"/> °F
Signature (Received)	Printed Name <i>Philander Galang</i>	Company/Agency <i>ASSET LABS</i>	Date/Time <i>3/3/15 13:45</i>	CUSTODY SEALED	YES <input type="checkbox"/> NO <input type="checkbox"/>
Signature (Relinquished)	Printed Name <i>Philander Galang</i>	Company/Agency <i>ASSET LABS</i>	Date/Time <i>3/3/15 14:05</i>	SPECIAL REQUIREMENTS: The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn	
Signature (Received)	Printed Name <i>Philander Galang</i>	Company/Agency <i>ASSET LABS</i>	Date/Time <i>3/3/15 14:05</i>		
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time		
Signature (Received)	Printed Name	Company/Agency	Date/Time		

ASSET Laboratories

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

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

Cooler Received/Opened On: 3/3/2015 Workorder: N014859
 Rep sample Temp (Deg C): 1.9 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ATL
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None


Sample Receipt Checklist

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

Comments:

Checklist Completed By:

HG

 3/10/2015

Reviewed By:

 03/13/15



ASSET Laboratories

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

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV

Subcontractor:

Truesdail
14201 Franklin Ave.
Tustin, CA 92680

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler: SIGNED

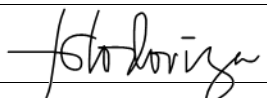
04-Mar-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM 4500-SiO2 C	SM4500-NH3C	
N014859-001D / SC-700B-WDR-510	Water	3/3/2015 1:15:00 PM	32OZP		1	
N014859-002D / SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	32OZP		1	
N014859-002H / SC-100B-WDR-510	Water	3/3/2015 1:18:00 PM	32OZP	1		

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

Please use PO#:N14859A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by:Normal TAT

Please analyze for Ammonia and Soluable Silica - Reactive. CH2MHILL Sample.

Relinquished by: 	Date/Time: 3/4/2015 17:00	Received by: GSO #: 527131174	Date/Time:
Relinquished by: _____	_____	Received by: _____	_____

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) \cdot 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For **N014859-001B**, TDS concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{TDS, mg/L} &= \frac{(55.0262 - 54.9436) \cdot 1000000}{20} \\ &= 4130 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{TDS} = 4100 \text{ mg/L}$$

Julia Ramit 3/5/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (\text{A-B}) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:3/5/15								
MB-49833	100	76.848	76.8482	2	1	2		
LCS-49833	100	75.7425	75.8385	960	1	960		
N014851-001E	40	63.782	63.9105	1285	2.5	3212.5	3970	0.809
N014859-001B	20	54.9436	55.0262	826	5	4130	8050	0.513
N014859-001B DUP	20	53.7295	53.815	855	5	4275	8050	0.531
N014859-002B	20	57.0978	57.1812	834	5	4170	8030	0.519
N014860-001C	20	55.5564	55.6475	911	5	4555	8710	0.523
N014860-002C	30	55.7341	55.8066	725	3.33333333	2416.66667	4340	0.557

Julia Ramit 3/5/2015

Sample Calculation

METHOD: EPA ~~6010~~ 200.7

TEST NAME: Heavy Metals by ICP

MATRIX: Water

FORMULA:

Calculate the Iron concentration, in ug/L, in the original sample as follows:

$$\text{Iron, ug/L} = A * DF * PF * 1000$$

where:

A = mg/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Amt. of Sample mL

For Sample **N014859-002I**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Iron, ug/L} &= -0.004010511317 * 1 * (25/25) * 1000 \\ &= 0\end{aligned}$$

Since results is less than reporting limit 20 ug/L,

$$\text{Iron, ug/L} = \text{ND}$$

ASSET Laboratories**ICP-Metals in Water**

Work Order No.: N014859
Test Method: EPA 200.7
Analysis Date: 03/16/15

Dilution Test Summary

Matrix: Water
Batch No.: 49842

Instrument ID: ICP-02
Instrument Description: Perkin Elmer Optima DV Series

Comments: _____ Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Fe. The calculated value is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N014859-001C DT 5X	Iron	ug/L	0	NA	0		10

Note: NA - Not Applicable

CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WDPGEPPB**

Sample ID	N014859-001C-PS	SampType:	PS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:		RunNo:	99468		
Client ID:	ZZZZZZ	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954316		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron		100.589		20	100.0	0	101	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA ~~6010~~ 200.7

TEST NAME: Heavy Metals by ICP

MATRIX: Water

FORMULA:

Calculate the Boron concentration, in ug/L, in the original sample as follows:

$$\text{Boron, ug/L} = A * DF * PF * 1000$$

where:

A = mg/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Amt. of Sample mL

For Sample **N014859-001C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Boron, ug/L} &= 1.066695075 * 1 * (25/25) * 1000 \\ &= 1066.695075\end{aligned}$$

Reporting results in two significant figures,

$$\text{Boron, ug/L} = 1100$$

 3/17/2015

ASSET Laboratories**ICP-Metals in Water**

Work Order No.: N014859
Test Method: EPA 200.7
Analysis Date: 03/16/15

Dilution Test Summary

Matrix: Water
Batch No.: 49842

Instrument ID: ICP-02
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Al, B & Fe. The calculated values are <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N014859-001C DT 5X	Aluminum	ug/L	0	NA	0		10
N014859-001C DT 5X	Boron	ug/L	1217.4715	NA	1066.695075	14.13%	10
N014859-001C DT 5X	Iron	ug/L	0	NA	0		10

Note: NA - Not Applicable

CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WPGEPPB**

Sample ID	N014859-001C-PS	SampType:	PS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:		RunNo:	99468	
Client ID:	ZZZZZZ	Batch ID:	49842	TestNo:	EPA 200.7			Analysis Date:	3/16/2015	SeqNo:	1954262	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum		12200.367	50	10000	0	122	80	120				S
Boron		6719.867	100	5000	1067	113	80	120				
Iron		100.589	20	100.0	0	101	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor


PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014859-002C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 111.742607912712 * 5 * (25/25) \\ &= 558.71303956356\end{aligned}$$

Reporting results in two significant figures,

$$\text{Chromium, ug/L} = 560$$

 3/17/2015

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014859
Test Method: EPA 200.8
Analysis Date: 3/6/2015

Dilution Test Summary

Matrix: Water
Batch No.: 49852

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to all analytes except Mo. The calculated values are <25X RL.

Dilution test failed for Mo. However, PS passed criteria.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014859-001C DT 5X	Antimony	ug/L	0	NA	0		10
N014859-001C DT 5X	Arsenic	ug/L	0	NA	0.053603724	100.00%	10
N014859-001C DT 5X	Barium	ug/L	11.24172142	NA	10.33402268	8.78%	10
N014859-001C DT 5X	Copper	ug/L	0	NA	0		10
N014859-001C DT 25X	Lead	ug/L	0	NA	0		10
N014859-001C DT 5X	Manganese	ug/L	0	NA	0		10
N014859-001C DT 5X	Molybdenum	ug/L	18.8150433	FAIL	16.80227731	11.98%	10
N014859-001C DT 5X	Nickel	ug/L	1.275663802	NA	1.047649006	21.76%	10
N014859-001C DT 5X	Zinc	ug/L	0	NA	0		10
N014859-001C DT 5X	Chromium	ug/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

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

Sample ID	N014859-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	99321
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953702
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.425	0.50	10.00	0	104	80	120				
Arsenic	9.605	0.10	10.00	0.05360	95.5	80	120				
Barium	103.938	1.0	100.0	10.33	93.6	80	120				
Copper	4.409	1.0	10.00	0	44.1	80	120				S
Manganese	63.493	0.50	100.0	0	63.5	80	120				S
Molybdenum	27.081	0.50	10.00	16.80	103	80	120				
Nickel	9.655	1.0	10.00	1.048	86.1	80	120				
Zinc	77.767	10	100.0	0	77.8	80	120				S

Sample ID	N014859-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	99321
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953718
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	10.450	5.0	10.00	0	105	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

H Holding times for preparation or analysis exceeded
 S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL

Work Order: N014859

Project: PG&E Topock IM3, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N014859-001C-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	99321
Client ID:	ZZZZZZ	Batch ID:	49852	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953867
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		9.033		1.0	10.00	0	90.3	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA ~~6020~~ 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Manganese concentration, in ug/L, in the original sample as follows:

$$\text{Manganese, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014859-002I**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Manganese, ug/L} &= 0 * 1 * (25/25) \\ &= 0\end{aligned}$$

Since results is less than reporting limit,

$$\text{Manganese, ug/L} = \text{ND}$$

 3/17/2015

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014859
Test Method: EPA 200.8
Analysis Date: 3/6/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 49851

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mn. The calculated value is <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014859-002I DT 5X	Manganese	ug/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014859
Project: PG&E Topock IM3, 658274.01.IM.OP.00

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

Sample ID	N014859-002I-PS	SampType:	PS	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:		RunNo:	99321		
Client ID:	ZZZZZZ	Batch ID:	49851	TestNo:	EPA 200.8			Analysis Date:	3/6/2015	SeqNo:	1953967		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		67.331		0.50	100.0	0	67.3	80	120				S

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$


where:

$A = \mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N014859-002A**, concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 2.9734 * 200 \\ &= 594.68\end{aligned}$$

Reporting result in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 590$$


Sample ID: **N014859-002B @ pH 7.61**

A. Standardization of Sulfuric Acid (titrant):

$$\text{Normality of acid} = (A)(B)/(53.00)(C)$$

Where:

A, grams weighed for Na₂CO₃ solution (Na₂CO₃ Standardization Solution)

B, mL Na₂CO₃ solution taken for titration, and

C, ml of sulfuric acid used to inflection point

Spike Standards

Na₂CO₃ Standardization Solution, ACS Grade (1.00 ml = 2500ug as CaCO₃):
Dissolve 2.650 grams of Na₂CO₃ in distilled water and dilute to 1 liter.

LCS/MS/MSD Stock NaHCO₃, ACS Grade (1.00 ml = 5000 ug as CaCO₃):
Dissolve 0.8398 grams of NaHCO₃ in distilled water and dilute to 1 liter.

Therefore,

$$\begin{aligned}\text{Normality of Acid} &= (2.65\text{g/L}) (5\text{mL}) / (53.00) (11.80\text{mL}) \\ &= \mathbf{0.021186\text{ N}}\end{aligned}$$

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

$$\text{Total Alkalinity (as CaCO}_3\text{), mg/L} = M_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000$$

Where:

M_{vol.}, volume titrant used to reach pH 4.5, ml

N, Normality of H₂SO₄


DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

$$\begin{aligned}\text{Total Alkalinity (as CaCO}_3\text{), mg/L} &= (7.20) (0.021186\text{ N}) (1) * 1000 \\ &= \mathbf{152.5392\text{ mg/L}}\end{aligned}$$

Reporting results in two significant figures,

$$= \mathbf{150\text{ mg/L as CaCO}_3}$$

 3/12/2015

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

$$\begin{aligned} \text{P alkalinity, mg/L as CaCO}_3 &= P_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000 \\ &= (0) (0.021186 \text{ N}) (1) * 1000 \\ &= 0 \end{aligned}$$

Total Alkalinity

$$\begin{aligned} \text{T alkalinity, mg/L as CaCO}_3 &= M_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000 \\ &= (7.20 \text{ mL}) (0.021186 \text{ N}) (1) * 1000 \\ &= 152.5392 \text{ mg/L as CaCO}_3 \end{aligned}$$

Where:

- $P_{\text{vol.}}$ - volume titrant used to reach pH 8.3, ml
- $M_{\text{vol.}}$ - volume titrant used to reach pH 4.5, ml
- N - Normality of H_2SO_4
- DF - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH, CO_3 , HCO_3 alkalinities as CaCO_3 will be calculated as follows:

Result of Titration	OH Alkalinity as CaCO_3	CO_3 Alkalinity as CaCO_3	HCO_3 Alkalinity as CaCO_3
$P = 0$	0	0	T
$P < \frac{1}{2} T$	0	2P	$T - 2P$
$P = \frac{1}{2} T$	0	2P	0
$P > \frac{1}{2} T$	$2P - T$	$2(T - P)$	0
$P = T$	T	0	0

Therefore,

$$\text{OH Alkalinity as CaCO}_3 = 0$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = 0$$


$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = 152.5392 \text{ mg/L}$$

Reporting results in two significant figures,

$$\text{OH Alkalinity as CaCO}_3 = 0$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = 0$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = 150 \text{ mg/L}$$

 3/12/2015

Sample Calculation

METHOD: EPA 300

TEST NAME: INORGANIC ANIONS BY IC

MATRIX: WATER

FORMULA:

Calculate the Fluoride concentration, in mg/L, in the original sample as follows:

$$\text{Fluoride, mg/L} = A * DF$$

where:

A = mg/L, IC calculated concentration


DF = dilution factor

For **N014859-001B**, concentration in mg/L are calculated as follows:

$$\begin{aligned}\text{Fluoride, mg/L} &= 0.189 * 20 \\ &= 3.78\end{aligned}$$

Reporting **N014859-001B** results in two significant figures,

$$\text{Fluoride, mg/L} = 3.8$$

 3/17/2015

SAMPLE CALCULATION

METHOD: EPA 365.3

TEST NAME: Total Phosphorus

MATRIX: WATER

FORMULA:

Calculate the Total Phosphorus concentration, in mg/L, in the original sample as follows:

$$\text{Total Phosphorus, mg/L} = A * DF$$

Where:

A= mg/L, UV-VIS Total Phosphorus calculated concentration

DF= dilution factor


For N014859-002F, concentration in mg/L is calculated as follows:

$$\text{Total Phosphorus, mg/L} = - 0.002 * 1$$

$$= 0 \text{ mg/L}$$

Since the reporting limit is 0.02 mg/L therefore,

Total Phosphorus = ND

 3/17/2015

SAMPLE CALCULATION

METHOD: SM 4500_NO3F

TEST NAME: Nitrate/Nitrite-N by Automated Cadmium Reduction Method

MATRIX: Water

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

Where:

A= mg/L, Nitrate/Nitrite-N instrument calculated concentration


DF= dilution factor

For N014859-001E, concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{Nitrate/Nitrite-N, mg/L} &= 0.5329 * 5 \\ &= 2.6645 \text{ mg/L}\end{aligned}$$

Reporting result in 2 significant figures,

$$\text{Nitrate/Nitrite-N, mg/L} = 2.7$$

 3/11/2015

Sample Calculation

METHOD: SM5310C

TEST NAME: TOTAL ORGANIC CARBON

MATRIX: WATER

FORMULA:

Calculate the TOC concentration, in mg/L, in the original sample as follows:

$$\text{TOC} = [\quad A \quad] [\quad DF \quad] - B$$

where:

A = mg/L, instrument calculated concentration

DF = dilution factor

B = mg/L, TOC concentration in the calibration blank

For: **N014859-002G**

The concentration in mg/L is calculated as follows:

$$\text{TOC} = [\quad 0.10430 \quad] [\quad 1 \quad] - 0.03970$$


$$\text{TOC} = \quad 0.06460$$

Reporting results in two significant figures,

$$\text{TOC} = \quad 0.065 \quad \text{mg/L}$$

Since PQL is 1.0 mg/L,

$$\text{TOC} = \quad \text{ND}$$

 3/17/2015

March 26, 2015

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

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

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

Workorder No.: N014939

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

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on March 10, 2015 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo
QA Manager

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N014939

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

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

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

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

Samples were analyzed within method holding time.



ASSET Laboratories

Date: 26-Mar-15

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N014939
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N014939-001A	SC-700B-WDR-511	Water	3/10/2015 11:50:00 AM	3/10/2015	3/26/2015
N014939-001B	SC-700B-WDR-511	Water	3/10/2015 11:50:00 AM	3/10/2015	3/26/2015
N014939-001C	SC-700B-WDR-511	Water	3/10/2015 11:50:00 AM	3/10/2015	3/26/2015



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 26-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-511
Lab Order:	N014939	Collection Date:	3/10/2015 11:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N014939-001		

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

RunID: WETCHEM_150311A	QC Batch: R99378	PrepDate	Analyst: LR
Specific Conductance	7300	0.10	0.10
		umhos/cm	1
			3/11/2015 10:00 AM

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


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CLIENT: CH2M HILL
Work Order: N014939
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	N014939-001B DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	99378		
Client ID:	ZZZZZZ	Batch ID:	R99378	TestNo:	EPA 120.1			Analysis Date:	3/11/2015	SeqNo:	1949921		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		7310.000		0.10						7280	0.411	10	

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 26-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-511
Lab Order:	N014939	Collection Date:	3/10/2015 11:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N014939-001		

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

RunID: WETCHEM_150316F	QC Batch: 49930			PrepDate	3/16/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	5500	50	50	mg/L	1	3/16/2015 02:20 PM

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

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CLIENT: CH2M HILL
Work Order: N014939
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID MB-49930	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/16/2015	RunNo: 99476						
Client ID: PBW	Batch ID: 49930	TestNo: SM2540C			Analysis Date: 3/16/2015	SeqNo: 1954737					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-49930	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/16/2015	RunNo: 99476						
Client ID: LCSW	Batch ID: 49930	TestNo: SM2540C			Analysis Date: 3/16/2015	SeqNo: 1954738					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1015.000	10	1000	0	102	80	120				

Sample ID N014939-001B-DUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/16/2015	RunNo: 99476						
Client ID: ZZZZZZ	Batch ID: 49930	TestNo: SM2540C			Analysis Date: 3/16/2015	SeqNo: 1954740					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5750.000	50					5510	4.26	5		

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 26-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-511
Lab Order:	N014939	Collection Date:	3/10/2015 11:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N014939-001		

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

RunID: ICP7_150318A	QC Batch: 49943	PrepDate	3/17/2015	Analyst: CEI
Manganese	ND	0.026	0.50	µg/L
			1	3/18/2015 12:56 PM

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


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CLIENT: CH2M HILL
Work Order: N014939
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID MB-49943	SampType: MBLK	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/17/2015	RunNo: 99507						
Client ID: PBW	Batch ID: 49943	TestNo: EPA 200.8		Analysis Date: 3/18/2015	SeqNo: 1956290						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID LCS-49943	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/17/2015	RunNo: 99507						
Client ID: LCSW	Batch ID: 49943	TestNo: EPA 200.8		Analysis Date: 3/18/2015	SeqNo: 1956291						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	101.722	0.50	100.0	0	102	85	115				

Sample ID N014937-001B-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/17/2015	RunNo: 99624						
Client ID: ZZZZZZ	Batch ID: 49943	TestNo: EPA 200.8		Analysis Date: 3/24/2015	SeqNo: 1964164						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	299.268	2.5	100.0	202.2	97.0	75	125				

Sample ID N014937-001B-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/17/2015	RunNo: 99624						
Client ID: ZZZZZZ	Batch ID: 49943	TestNo: EPA 200.8		Analysis Date: 3/24/2015	SeqNo: 1964165						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	300.160	2.5	100.0	202.2	97.9	75	125	299.3	0.298	20	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 26-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-511
Lab Order:	N014939	Collection Date:	3/10/2015 11:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N014939-001		

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

RunID: IC6_150311A	QC Batch: R99402	PrepDate	Analyst: RB
Hexavalent Chromium	ND	0.015	0.20
		µg/L	1
			3/11/2015 11:28 AM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150318A	QC Batch: 49943	PrepDate	3/17/2015	Analyst: CEI
Chromium	ND	0.030	1.0	
		µg/L	1	
				3/18/2015 12:56 PM

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


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CLIENT: CH2M HILL
Work Order: N014939
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID MB-49943	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 3/17/2015	RunNo: 99507
Client ID: PBW	Batch ID: 49943	TestNo: EPA 200.8		Analysis Date: 3/18/2015	SeqNo: 1956335
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID LCS-49943	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 3/17/2015	RunNo: 99507
Client ID: LCSW	Batch ID: 49943	TestNo: EPA 200.8		Analysis Date: 3/18/2015	SeqNo: 1956336
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 10.225 1.0 10.00 0 102 85 115

Sample ID N014937-001B-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 3/17/2015	RunNo: 99507
Client ID: ZZZZZZ	Batch ID: 49943	TestNo: EPA 200.8		Analysis Date: 3/18/2015	SeqNo: 1956340
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 10.147 1.0 10.00 0.4989 96.5 75 125

Sample ID N014937-001B-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 3/17/2015	RunNo: 99507
Client ID: ZZZZZZ	Batch ID: 49943	TestNo: EPA 200.8		Analysis Date: 3/18/2015	SeqNo: 1956341
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 10.109 1.0 10.00 0.4989 96.1 75 125 10.15 0.379 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014939
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R99402	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99402			
Client ID:	PBW	Batch ID:	R99402	TestNo:	EPA 218.6			Analysis Date:	3/11/2015	SeqNo:	1950769			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R99402	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99402			
Client ID:	LCSW	Batch ID:	R99402	TestNo:	EPA 218.6			Analysis Date:	3/11/2015	SeqNo:	1950770			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.883 0.20 5.000 0 97.7 90 110

Sample ID	N014939-001A-MS	SampType: MS	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 99402					
Client ID:	ZZZZZZ	Batch ID: R99402	TestNo: EPA 218.6	Analysis Date: 3/11/2015	SeqNo: 1950772						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.106 0.20 1.000 0.03080 108 90 110

Sample ID	N014938-001A-DUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99402		
Client ID:	ZZZZZZ	Batch ID:	R99402	TestNo:	EPA 218.6			Analysis Date:	3/11/2015	SeqNo:	1950774		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 13.033 0.20 13.07 0.276 20

Sample ID	N014941-001A-MS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99402			
Client ID:	ZZZZZZ	Batch ID:	R99402	TestNo:	EPA 218.6			Analysis Date:	3/11/2015	SeqNo:	1950782			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 8.429 0.20 5.000 3.574 97.1 90 110

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N014939
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N014941-001A-MSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	99402		
Client ID:	ZZZZZZ	Batch ID:	R99402	TestNo:	EPA 218.6			Analysis Date:	3/11/2015	SeqNo:	1950783		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		8.564		0.20	5.000	3.574	99.8	90	110	8.429	1.58	20	

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 26-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-511
Lab Order:	N014939	Collection Date:	3/10/2015 11:50:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N014939-001		

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

RunID: WETCHEM_150311B	QC Batch: R99379	PrepDate	Analyst: LR
Turbidity	0.13 0.10 0.10	NTU	1 3/11/2015 10:15 AM

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

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CLIENT: CH2M HILL
Work Order: N014939
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	N014939-001B DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	99379
Client ID:	ZZZZZZ	Batch ID:	R99379	TestNo:	SM 2130B			Analysis Date:	3/11/2015	SeqNo:	1949923
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.150		0.10						0.1300	14.3 30

Qualifiers:

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



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WORKORDER: N014939

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B
Ryan Balilu	EPA 218.6



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Project Name PG&E Topock Location PG&E Topock Project Number 658274.01.IM.OP.00 Project Manager Scott O'Donnell Sample Manager Shawn Duffy Task Order Project IM3PLANT-ARAR-WDR-511 Turnaround Time 10 Days Shipping Date: 3/10/2015 COC Number: 511				Container: 1 Liter Poly 250 ml Poly 1 Liter Poly 500 ml Poly 1 Liter Poly	Preservatives: 4°C 4°C 4°C 4°C 4°C	Filtered: NA NA NA NA NA	Holding Time: 2 1 2 180 2	CONDUCTIVITY (E120.1) E218.6 Lab Filtered TDS (SM2540C) Total Metals (E200.8) Cr & Mn Turbidity (SM2130)	Number of Containers 3	COMMENTS
DATE 3/10/2015 TIME 11:50 Matrix Water	X	X	X	X	X	NO14939-1				
TOTAL NUMBER OF CONTAINERS						3				

	Signatures	Date/Time	Shipping Details
Approved by	<i>Ryan Phelps</i>	3-10-15	Method of Shipment: FedEx
Sampled by	<i>[Signature]</i>	13:15	On Ice: yes / no <i>1-900</i>
Relinquished by	<i>[Signature]</i>	3/10/15 1815	Airbill No: <i>1642</i>
Received by	<i>[Signature]</i>	3/10/15 1939	Lab Name: ASSET Laboratories
Relinquished by	<i>[Signature]</i>	3/10/15 1939	Lab Phone: (702) 307-2659
Received by	<i>[Signature]</i>		

ATTN:
 Sample Custody
 and
 Glen Gesmundo

Special Instructions:

 Report Copy to
 Shawn Duffy
 530-229-3303

ASSET Laboratories

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


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

Cooler Received/Opened On: 3/10/2015 Workorder: N014939
 Rep sample Temp (Deg C): 1.9 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ATL
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments: Samples for metals are lab preserved.

Checklist Completed By:  3/13/2015
 HG

Reviewed By:  03/18/15

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) \cdot 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For **N014939-001B**, TDS concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{TDS, mg/L} &= \frac{(53.9412 - 53.8310) \cdot 1000000}{20} \\ &= 5,510 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{TDS} = 5500 \text{ mg/L}$$

Lilia Ramif 3/18/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (\text{A}-\text{B}) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:3/17/15								
MB-49930	100	76.8445	76.8451	6	1	6		
LCS-49930	100	77.097	77.1985	1015	1	1015		
N014939-001B	20	53.831	53.9412	1102	5	5510	7340	0.751
N014939-001B DUP	20	57.0801	57.1951	1150	5	5750	7340	0.783
N014967-001F	100	55.5485	55.5888	403	1	403	638	0.632
N014967-002F N014968-001F	100	55.7233	55.775	517	1	517	823	0.628
N014967-001C N014969-001C	100	53.7251	53.7647	396	1	396	646	0.613
N014992-003C	75	53.9182	53.9901	719	1.33333333	958.666667	1553	0.617

Nancy 3/24/2015
 for

Lilia Ramit 3/18/2015

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N014939-001C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 0 * 1 * (25/25) \\ &= 0\end{aligned}$$

Since results is less than reporting limit,

$$\text{Chromium, ug/L} = \text{ND}$$

 3/26/2015

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N014939
Test Method: EPA 200.8
Analysis Date: 3/18/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 49943

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr. The calculated value is <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014937-001B DT 5X	Chromium	ug/L	0.374316625	NA	0.498863816	24.97%	10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N014939
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID: N014937-001B-PS	SampType: PS	TestCode: 200.8_W	Units: µg/L	Prep Date:	RunNo: 99624						
Client ID: ZZZZZZ	Batch ID: 49943	TestNo: EPA 200.8	Analysis Date: 3/24/2015	SeqNo: 1964163							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	302.777	2.5	100.0	202.2	101	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N014939
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID: N014937-001B-PS	SampType: PS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date:	RunNo: 99507						
Client ID: ZZZZZZ	Batch ID: 49943	TestNo: EPA 200.8	Analysis Date: 3/18/2015	SeqNo: 1956339							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.038	1.0	10.00	0.4989	95.4	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: WATER

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * DF$$

where:

A = $\mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N014939-001A** concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.0308 * 1 \\ &= 0.0308\end{aligned}$$

Since PQL is $0.20 \mu\text{g/L}$,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$



March 31, 2015

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

TEL: (530) 229-3303

FAX: (530) 339-3303

CA-ELAP No.: 2676

NV Cert. No.: NV-00922

Workorder No.: N015013

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

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on March 17, 2015 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo

QA Manager

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015013

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

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

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

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

Samples were analyzed within method holding time.



ASSET Laboratories

Date: 31-Mar-15

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015013
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015013-001A	SC-700B-WDR-512	Water	3/17/2015 12:00:00 PM	3/17/2015	3/31/2015
N015013-001B	SC-700B-WDR-512	Water	3/17/2015 12:00:00 PM	3/17/2015	3/31/2015
N015013-001C	SC-700B-WDR-512	Water	3/17/2015 12:00:00 PM	3/17/2015	3/31/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 31-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-512
Lab Order:	N015013	Collection Date:	3/17/2015 12:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N015013-001		

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

RunID: WETCHEM_150318C	QC Batch: R99498	PrepDate	Analyst: LR			
Specific Conductance	7400	0.10	0.10	umhos/cm	1	3/18/2015 11:45 AM

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

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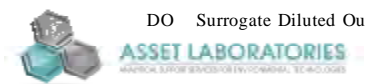
CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	N015014-002A DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	99498
Client ID:	ZZZZZZ	Batch ID:	R99498	TestNo:	EPA 120.1			Analysis Date:	3/18/2015	SeqNo:	1955792
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Specific Conductance		7870.000		0.10						7840	0.382 10

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 31-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-512
Lab Order:	N015013	Collection Date:	3/17/2015 12:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N015013-001		

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

RunID: WETCHEM_150318H	QC Batch: 49962			PrepDate	3/18/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4400	50	50	mg/L	1	3/18/2015 02:30 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
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CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID MB-49962	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/18/2015	RunNo: 99519						
Client ID: PBW	Batch ID: 49962	TestNo: SM2540C			Analysis Date: 3/18/2015	SeqNo: 1957165					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-49962	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/18/2015	RunNo: 99519						
Client ID: LCSW	Batch ID: 49962	TestNo: SM2540C			Analysis Date: 3/18/2015	SeqNo: 1957166					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	983.000	10	1000	0	98.3	80	120				

Sample ID N015014-002A-DUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/18/2015	RunNo: 99519						
Client ID: ZZZZZZ	Batch ID: 49962	TestNo: SM2540C			Analysis Date: 3/18/2015	SeqNo: 1957171					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4660.000	50					4890	4.82	5		

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 31-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-512
Lab Order:	N015013	Collection Date:	3/17/2015 12:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N015013-001		

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

RunID: ICP7_150321A	QC Batch: 49982	PrepDate	3/20/2015	Analyst: CEI
Manganese	ND	0.026	0.50	µg/L
				1
				3/21/2015 10:29 AM

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


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CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID MB-49982	SampType: MBLK	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/20/2015	RunNo: 99565
Client ID: PBW	Batch ID: 49982	TestNo: EPA 200.8		Analysis Date: 3/21/2015	SeqNo: 1960174
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	0.50			
Manganese	ND	0.50			

Sample ID LCS-49982	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/20/2015	RunNo: 99565
Client ID: LCSW	Batch ID: 49982	TestNo: EPA 200.8		Analysis Date: 3/21/2015	SeqNo: 1960175
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	9.745	0.50	10.00	0	97.5 85 115
Manganese	94.206	0.50	100.0	0	94.2 85 115

Sample ID N014937-001B-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/20/2015	RunNo: 99565
Client ID: ZZZZZZ	Batch ID: 49982	TestNo: EPA 200.8		Analysis Date: 3/21/2015	SeqNo: 1960179
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	10.981	0.50	10.00	0.6049	104 75 125
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Sample ID N014937-001B-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/20/2015	RunNo: 99565
Client ID: ZZZZZZ	Batch ID: 49982	TestNo: EPA 200.8		Analysis Date: 3/21/2015	SeqNo: 1960180
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

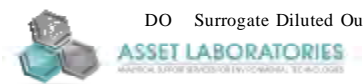
Chromium	10.852	0.50	10.00	0.6049	102 75 125 10.98 1.19 20
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Sample ID N015012-002C-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/20/2015	RunNo: 99565
Client ID: ZZZZZZ	Batch ID: 49982	TestNo: EPA 200.8		Analysis Date: 3/21/2015	SeqNo: 1960187
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	26.959	0.50	10.00	16.52	104 75 125
Manganese	89.812	0.50	100.0	0	89.8 75 125

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N014937-001B-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/20/2015	RunNo:	99565
Client ID:	ZZZZZZ	Batch ID:	49982	TestNo:	EPA 200.8			Analysis Date:	3/21/2015	SeqNo:	1960227
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Manganese	297.239	2.5	100.0	190.0	107	75	125				
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Sample ID	N014937-001B-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/20/2015	RunNo:	99565
Client ID:	ZZZZZZ	Batch ID:	49982	TestNo:	EPA 200.8			Analysis Date:	3/21/2015	SeqNo:	1960228
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Manganese	301.065	2.5	100.0	190.0	111	75	125	297.2	1.28	20	
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Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 31-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-512
Lab Order:	N015013	Collection Date:	3/17/2015 12:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N015013-001		

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

RunID: IC7_150318A	QC Batch: R99501	PrepDate	Analyst: RB
Hexavalent Chromium	ND 0.015	0.20 µg/L	1 3/18/2015 11:23 AM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150321B	QC Batch: 49982	PrepDate	3/20/2015	Analyst: CEI
Chromium	ND 0.030	1.0 µg/L	1	3/21/2015 10:29 AM

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


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CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	MB-49982	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	3/20/2015	RunNo:	99566			
Client ID:	PBW	Batch ID:	49982	TestNo:	EPA 200.8			Analysis Date:	3/21/2015	SeqNo:	1960659			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		ND		1.0										

Sample ID	LCS-49982	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	3/20/2015	RunNo:	99566			
Client ID:	LCSW	Batch ID:	49982	TestNo:	EPA 200.8			Analysis Date:	3/21/2015	SeqNo:	1960660			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.745		1.0	10.00	0		97.5	85	115				

Sample ID	N014937-001B-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	3/20/2015	RunNo:	99566			
Client ID:	ZZZZZZ	Batch ID:	49982	TestNo:	EPA 200.8			Analysis Date:	3/21/2015	SeqNo:	1960664			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		10.981		1.0	10.00	0.6049		104	75	125				

Sample ID	N014937-001B-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	3/20/2015	RunNo:	99566			
Client ID:	ZZZZZZ	Batch ID:	49982	TestNo:	EPA 200.8			Analysis Date:	3/21/2015	SeqNo:	1960665			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		10.852		1.0	10.00	0.6049		102	75	125	10.98	1.19	20	

Sample ID	N015012-002C-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	3/20/2015	RunNo:	99566			
Client ID:	ZZZZZZ	Batch ID:	49982	TestNo:	EPA 200.8			Analysis Date:	3/21/2015	SeqNo:	1960672			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		26.959		1.0	10.00	16.52		104	75	125				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R99501	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99501			
Client ID:	PBW	Batch ID:	R99501	TestNo:	EPA 218.6			Analysis Date:	3/18/2015	SeqNo:	1955918			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		ND		0.20										

Sample ID	LCS-R99501	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99501			
Client ID:	LCSW	Batch ID:	R99501	TestNo:	EPA 218.6			Analysis Date:	3/18/2015	SeqNo:	1955919			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		4.960		0.20	5.000	0		99.2	90	110				

Sample ID	N015013-001B-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99501			
Client ID:	ZZZZZZ	Batch ID:	R99501	TestNo:	EPA 218.6			Analysis Date:	3/18/2015	SeqNo:	1955921			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		1.028		0.20	1.000	0.06150		96.6	90	110				

Sample ID	N015014-001C-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99501			
Client ID:	ZZZZZZ	Batch ID:	R99501	TestNo:	EPA 218.6			Analysis Date:	3/18/2015	SeqNo:	1955923			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		8.829		0.20	5.000	4.002		96.5	90	110				

Sample ID	N015009-001A-DUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99501			
Client ID:	ZZZZZZ	Batch ID:	R99501	TestNo:	EPA 218.6			Analysis Date:	3/18/2015	SeqNo:	1955925			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		9.641		0.20							9.581	0.627	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N015009-001A-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99501
Client ID:	ZZZZZZ	Batch ID:	R99501	TestNo:	EPA 218.6			Analysis Date:	3/18/2015	SeqNo:	1955928
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	14.648	0.20	5.000	9.581	101	90	110				
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Sample ID	N015009-001A-MSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99501
Client ID:	ZZZZZZ	Batch ID:	R99501	TestNo:	EPA 218.6			Analysis Date:	3/18/2015	SeqNo:	1955929
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	14.697	0.20	5.000	9.581	102	90	110	14.65	0.336	20	
---------------------	--------	------	-------	-------	-----	----	-----	-------	-------	----	--

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 31-Mar-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-512
Lab Order:	N015013	Collection Date:	3/17/2015 12:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N015013-001		

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

RunID: WETCHEM_150318A	QC Batch: R99496	PrepDate	Analyst: LR
Turbidity	0.14	0.10	0.10
		NTU	1
			3/18/2015 11:30 AM

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


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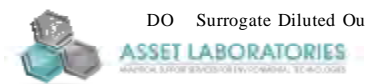
CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	N015013-001A DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	99496
Client ID:	ZZZZZZ	Batch ID:	R99496	TestNo:	SM 2130B			Analysis Date:	3/18/2015	SeqNo:	1955785
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.150		0.10						0.1400	6.90 30

Qualifiers:

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



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WORKORDER: N015013

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B
Ryan Balilu	EPA 218.6



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Project Name PG&E Topock Location PG&E Topock Project Number 658274.01.IM.OP.00 Project Manager Scott O'Donnell Sample Manager Shawn Duffy Task Order Project IM3PLANT-ARAR-WDR-512 Turnaround Time 10 Days Shipping Date: 3/17/2015 COC Number: 512				Container: 1 Liter Poly 250 ml Poly 1 Liter Poly 500 ml Poly 1 Liter Poly	4°C 4°C 4°C 4°C 4°C	NA NA NA NA NA	2 1 2 180 2	CONDUCTIVITY (E120.1) E218.6 Lab Filtered TDS (SM2540C) Total Metals(E200.8) Cr & Mn Turbidity (SM2130)	Number of Containers	COMMENTS
Preservatives: Filtered: Holding Time:										
DATE 3/17/2015 TIME 1200 Matrix Water	X	X	X	X	X	N015013-1	3			
TOTAL NUMBER OF CONTAINERS							3			

Signatures	Date/Time	Shipping Details
Approved by		
Sampled by	3/17/15	Method of Shipment: FedEx
Relinquished by	13:40	On Ice: <input checked="" type="radio"/> yes <input type="radio"/> no 1-9°C
Received by	3/17/15/1840	Airbill No: 1E#20
Relinquished by	3/17/15	Lab Name: ASSET Laboratories
Received by	3/17/15 1930	Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

ASSET Laboratories

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

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

Cooler Received/Opened On: 3/17/2015 Workorder: N015013
 Rep sample Temp (Deg C): 1.9 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ATL
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments: Sample for metals is lab preserved.

Checklist Completed By: HG  3/20/2015

Reviewed By:  03/24/15

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) \cdot 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For **N015013-001A**, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(54.0126 - 53.9248) \cdot 1000000}{20}$$

$$= 4,390 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 4400 \text{ mg/L}$$

Silvia Ramit 3/20/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (A-B) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:3/19/15								
MB-49962	100	75.7441	75.7444	3	1	3		
LCS-49962	100	77.1004	77.1987	983	1	983		
N015000-001E	30	53.6565	53.7832	1267	3.333333333	4223.33333	4230	0.998
N015013-001A	20	53.9248	54.0126	878	5	4390	7380	0.595
N015014-001A	40	57.0811	57.1801	990	2.5	2475	3680	0.673
N015014-002A	20	55.5522	55.65	978	5	4890	7840	0.624
N015014-002A DUP	20	63.7816	63.8748	932	5	4660	7840	0.594
N015017-001C	100	55.5388	55.5705	317	1	317	372	0.852
N015017-002C	100	55.7369	55.7719	350	1	350	413	0.847
N015017-003B	200	54.9416	54.9496	80	0.5	40	51.2	0.781

Lilia Ramit 3/20/2015

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Manganese concentration, in ug/L, in the original sample as follows:

$$\text{Manganese, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015013-001C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Manganese, ug/L} &= 0 * 1 * (25/25) \\ &= 0\end{aligned}$$

Since PQL is 0.5 ug/L,

$$\text{Manganese, ug/L} = \text{ND}$$

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N015013
Test Method: EPA 200.8
Analysis Date: 3/21/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 49982

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr. The calculated value is <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N014937-001B DT 25X	Manganese	ug/L	194.5077906	PASS	190.0437141	2.35%	10
N014937-001B DT 5X	Chromium	ug/L	0.706071802	NA	0.604881749	16.73%	10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID: N014937-001B-PS	SampType: PS	TestCode: 200.8_W	Units: µg/L	Prep Date:	RunNo: 99565						
Client ID: ZZZZZZ	Batch ID: 49982	TestNo: EPA 200.8	Analysis Date: 3/21/2015	SeqNo: 1960226							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	291.760	2.5	100.0	190.0	102	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values


H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N015013
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID: N014937-001B-PS	SampType: PS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date:	RunNo: 99566						
Client ID: ZZZZZZ	Batch ID: 49982	TestNo: EPA 200.8		Analysis Date: 3/21/2015	SeqNo: 1960663						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.901	1.0	10.00	0.7001 0.60488	102 103	80	120				

 3/31/2015

Qualifiers:

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

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A = $\mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N015013-001B** concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.0615 * 1 \\ &= 0.0615\end{aligned}$$

Since PQL is $0.20 \mu\text{g/L}$,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$



April 07, 2015

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

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

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

Workorder No.: N015092

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

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on March 24, 2015 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo
QA Manager

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CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015092

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

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

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) on QC samples N015092-001C-MS and N015092-001C-MSD are outside recovery criteria for Manganese possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



ASSET Laboratories

Date: 07-Apr-15

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015092
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015092-001A	SC-700B-WDR-513	Water	3/24/2015	3/24/2015	4/7/2015
N015092-001B	SC-700B-WDR-513	Water	3/24/2015	3/24/2015	4/7/2015
N015092-001C	SC-700B-WDR-513	Water	3/24/2015	3/24/2015	4/7/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 07-Apr-15

CLIENT: CH2M HILL
Lab Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015092-001

Client Sample ID: SC-700B-WDR-513
Collection Date: 3/24/2015
Matrix: WATER

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

SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: WETCHEM_150325B	QC Batch: R99617			PrepDate		Analyst: LR
Specific Conductance	7200	0.10	0.10	umhos/cm	1	3/25/2015 11:30 AM

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



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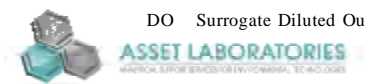
CLIENT: CH2M HILL
Work Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	N015092-001A DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	99617		
Client ID:	ZZZZZZ	Batch ID:	R99617	TestNo:	EPA 120.1			Analysis Date:	3/25/2015	SeqNo:	1964069		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		7260.000		0.10						0	0	10	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 07-Apr-15

CLIENT: CH2M HILL
Lab Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015092-001

Client Sample ID: SC-700B-WDR-513
Collection Date: 3/24/2015
Matrix: WATER

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

TOTAL FILTERABLE RESIDUE
SM2540C

RunID: WETCHEM_150325H	QC Batch: 50034			PrepDate	3/25/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4300	50	50	mg/L	1	3/25/2015 02:04 PM

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



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CLIENT: CH2M HILL
Work Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00

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

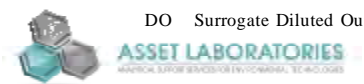
Sample ID MB-50034	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/25/2015	RunNo: 99635						
Client ID: PBW	Batch ID: 50034	TestNo: SM2540C			Analysis Date: 3/25/2015	SeqNo: 1965074					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-50034	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/25/2015	RunNo: 99635						
Client ID: LCSW	Batch ID: 50034	TestNo: SM2540C			Analysis Date: 3/25/2015	SeqNo: 1965075					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	969.000	10	1000	0	96.9	80	120				

Sample ID N015092-001A DUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 3/25/2015	RunNo: 99635						
Client ID: ZZZZZZ	Batch ID: 50034	TestNo: SM2540C			Analysis Date: 3/25/2015	SeqNo: 1965080					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4105.000	50						4275	4.06	5	

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 07-Apr-15

CLIENT: CH2M HILL
Lab Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015092-001

Client Sample ID: SC-700B-WDR-513
Collection Date: 3/24/2015
Matrix: WATER

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

TOTAL METALS BY ICPMS**EPA 200.8**

RunID: ICP7_150327B	QC Batch: 50051	PrepDate	3/27/2015	Analyst: CEI		
Manganese	ND	0.026	0.50	µg/L	1	3/27/2015 05:02 PM

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



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

"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID MB-50051	SampType: MBLK	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/27/2015	RunNo: 99685						
Client ID: PBW	Batch ID: 50051	TestNo: EPA 200.8		Analysis Date: 3/27/2015	SeqNo: 1967071						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID LCS-50051	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/27/2015	RunNo: 99685						
Client ID: LCSW	Batch ID: 50051	TestNo: EPA 200.8		Analysis Date: 3/27/2015	SeqNo: 1967074						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	89.428	0.50	100.0	0	89.4	85	115				

Sample ID N015092-001C-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/27/2015	RunNo: 99685						
Client ID: ZZZZZZ	Batch ID: 50051	TestNo: EPA 200.8		Analysis Date: 3/27/2015	SeqNo: 1967078						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	70.888	0.50	100.0	0	70.9	75	125				S

Sample ID N015092-001C-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/27/2015	RunNo: 99685						
Client ID: ZZZZZZ	Batch ID: 50051	TestNo: EPA 200.8		Analysis Date: 3/27/2015	SeqNo: 1967079						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	71.096	0.50	100.0	0	71.1	75	125	70.89	0.292	20	S

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 07-Apr-15

CLIENT: CH2M HILL
Lab Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015092-001

Client Sample ID: SC-700B-WDR-513
Collection Date: 3/24/2015
Matrix: WATER

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

RunID: IC7_150326A	QC Batch: R99647			PrepDate		Analyst: RB
Hexavalent Chromium	ND	0.015	0.20	µg/L	1	3/26/2015 12:02 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150327B	QC Batch: 50051			PrepDate	3/27/2015	Analyst: CEI
Chromium	ND	0.030	1.0	µg/L	1	3/27/2015 05:02 PM

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



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CLIENT: CH2M HILL
Work Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID MB-50051	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 3/27/2015	RunNo: 99685
Client ID: PBW	Batch ID: 50051	TestNo: EPA 200.8		Analysis Date: 3/27/2015	SeqNo: 1967119
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID LCS-50051	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 3/27/2015	RunNo: 99685
Client ID: LCSW	Batch ID: 50051	TestNo: EPA 200.8		Analysis Date: 3/27/2015	SeqNo: 1967122
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.371 1.0 10.00 0 93.7 85 115

Sample ID N015092-001C-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 3/27/2015	RunNo: 99685
Client ID: ZZZZZZ	Batch ID: 50051	TestNo: EPA 200.8		Analysis Date: 3/27/2015	SeqNo: 1967126
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

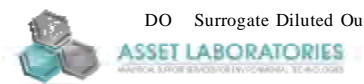
Chromium 9.980 1.0 10.00 0 99.8 75 125

Sample ID N015092-001C-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 3/27/2015	RunNo: 99685
Client ID: ZZZZZZ	Batch ID: 50051	TestNo: EPA 200.8		Analysis Date: 3/27/2015	SeqNo: 1967127
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium 9.964 1.0 10.00 0 99.6 75 125 9.980 0.160 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R99647	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99647			
Client ID:	PBW	Batch ID:	R99647	TestNo:	EPA 218.6			Analysis Date:	3/26/2015	SeqNo:	1965659			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R99647	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99647			
Client ID:	LCSW	Batch ID:	R99647	TestNo:	EPA 218.6			Analysis Date:	3/26/2015	SeqNo:	1965660			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.842 0.20 5.000 0 96.8 90 110

Sample ID	N015101-001A-DUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99647			
Client ID:	ZZZZZZ	Batch ID:	R99647	TestNo:	EPA 218.6			Analysis Date:	3/26/2015	SeqNo:	1965662			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.710 0.20 1.701 0.540 20

Sample ID	N015101-001A-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 99647					
Client ID:	ZZZZZZ	Batch ID: R99647	TestNo: EPA 218.6	Analysis Date: 3/26/2015	SeqNo: 1965663						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 6.758 0.20 5.000 1.701 101 90 110

Sample ID	N015101-001A-MSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99647			
Client ID:	ZZZZZZ	Batch ID:	R99647	TestNo:	EPA 218.6			Analysis Date:	3/26/2015	SeqNo:	1965664			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 6.825 0.20 5.000 1.701 102 90 110 6.758 0.987 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00

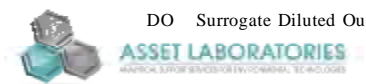
ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N015092-001B-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99647
Client ID:	ZZZZZZ	Batch ID:	R99647	TestNo:	EPA 218.6	Analysis Date:	3/26/2015	SeqNo:	1965670		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Hexavalent Chromium		1.084		0.20	1.000	0.09030	99.4	90	110		

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 07-Apr-15

CLIENT: CH2M HILL
Lab Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015092-001

Client Sample ID: SC-700B-WDR-513
Collection Date: 3/24/2015
Matrix: WATER

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

RunID: WETCHEM_150325F	QC Batch: R99623			PrepDate		Analyst: LR
Turbidity	0.16	0.10	0.10	NTU	1	3/25/2015 05:30 PM

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



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CLIENT: CH2M HILL
Work Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	N015092-001A DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	99623
Client ID:	ZZZZZZ	Batch ID:	R99623	TestNo:	SM 2130B			Analysis Date:	3/25/2015	SeqNo:	1964119
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Turbidity		0.180		0.10						0.1600	11.8 30

Qualifiers:

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



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WORK ORDER: N015092

ANALYST LIST

NAME	TEST METHOD
Ryan Balilu	EPA 218.6
Claire Ignacio	EPA 200.8
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B



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CH2MHILL

CHAIN OF CUSTODY RECORD

3/23/2015 1:02:49 PM

Page 1 OF 1

Project Name PG&E Topock Location PG&E Topock Project Number 658274.01.IM.OP.00 Project Manager Scott O'Donnell Sample Manager Shawn Duffy Task Order Project IM3PLANT-ARAR-WDR-513 Turnaround Time 10 Days Shipping Date: 3/24/2015 COC Number: 513				Container: 1 Liter Poly 250 ml Poly 1 Liter Poly 500 ml Poly 1 Liter Poly	Preservatives: 4°C 4°C 4°C 4°C 4°C	Filtered: NA NA NA NA NA	Holding Time: 7 1 7 180 7	CONDUCTIVITY (E120.1) E210.6 Lab Filtered TDS (SM2540C) Total Metals (E200.8) Cr & Mn Turbidity (SM2130)	Number of Containers	COMMENTS	
DATE TIME Matrix											
SC-700B-WDR-513	3/24/2015		Water	X	X	X	X	X	No 15092 - 1	3	
TOTAL NUMBER OF CONTAINERS										3	

Approved by

Sampled by

Relinquished by

Received by

Relinquished by

Received by

Signatures

Date/Time

3-24-15

13:05

Shipping Details

Method of Shipment: FedEx

On Ice: ☒ yes / no 1-906

Airbill No:

Lab Name: ASSET Laboratories

Lab Phone: (702) 307-2659

ATTN:

Sample Custody

and

Glen Gesmundo

Special Instructions:

Report Copy to

Shawn Duffy
530-229-3303

ASSET Laboratories

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


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

Cooler Received/Opened On: 3/24/2015 Workorder: N015092
 Rep sample Temp (Deg C): 1.9 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ATL
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments: Sample for total metals is lab preserved.

Checklist Completed By: HG  3/27/2015

Reviewed By:  03/30/15

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) \cdot 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For **N015092-001A**, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(55.6382 - 55.5527) \cdot 1000000}{20}$$

$$= 4,275 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 4300 \text{ mg/L}$$

Lilia Ramif 3/30/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (\text{A-B}) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:3/26/15								
MB-50034	100	76.8474	76.8479	5	1	5		
LCS-50034	100	75.7443	75.8412	969	1	969		
N015079-001B	100	55.5436	55.6071	635	1	635	951	0.668
N015089-001E	30	53.7239	53.8555	1316	3.33333333	4386.66667	4350	1.008
N015092-001A	20	55.5527	55.6382	855	5	4275	7230	0.591
N015092-001A DUP	20	55.1306	55.2127	821	5	4105	7230	0.568

Lilia Ramif 3/30/2015

Sample Calculation

METHOD: EPA 6020

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015092-001C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 0 * 1 * (25/25) \\ &= 0\end{aligned}$$

Since result is less than reporting limit,

$$\text{Chromium, ug/L} = \text{ND}$$

ASSET Laboratories**ICP-MS-Metals in Water**

Work Order No.: N015092
Test Method: EPA 200.8
Analysis Date: 3/27/2015

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Dilution Test Summary

Matrix: Water
Batch No.: 50051

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mn & Cr. The calculated values are <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015092-001C DT 5X	Manganese	ug/L	0	NA	0		10
N015092-001C DT 5X	Chromium	ug/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	N015092-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	99685	
Client ID:	ZZZZZZ	Batch ID:	50051	TestNo:	EPA 200.8			Analysis Date:	3/27/2015	SeqNo:	1967077	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		69.079	0.50	100.0	0	69.1	80	120				S

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N015092
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N015092-001C-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	99685
Client ID:	ZZZZZZ	Batch ID:	50051	TestNo:	EPA 200.8			Analysis Date:	3/27/2015	SeqNo:	1967125
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		9.561		1.0	10.00	0	95.6	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

$A = \mu\text{g/L}$, IC Cr^{+6} calculated concentration
 $\text{DF} = \text{dilution factor}$

For **N015092-001B** concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.0903 * 1 \\ &= 0.0903\end{aligned}$$

Since PQL is $0.20 \mu\text{g/L}$,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$



April 07, 2015

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

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

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

Workorder No.: N015151

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

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on March 31, 2015 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Glen Gesmundo
QA Manager

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015151

CASE NARRATIVE**SAMPLE RECEIVING/GENERAL COMMENTS**

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

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

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

Samples were analyzed within method holding time.



ASSET Laboratories

Date: 07-Apr-15

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015151
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015151-001A	SC-700B-WDR-514	Water	3/31/2015 1:12:00 PM	3/31/2015	4/7/2015
N015151-001B	SC-700B-WDR-514	Water	3/31/2015 1:12:00 PM	3/31/2015	4/7/2015
N015151-001C	SC-700B-WDR-514	Water	3/31/2015 1:12:00 PM	3/31/2015	4/7/2015



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 07-Apr-15

CLIENT: CH2M HILL
Lab Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015151-001

Client Sample ID: SC-700B-WDR-514
Collection Date: 3/31/2015 1:12:00 PM
Matrix: WATER

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

RunID: WETCHEM_150401B	QC Batch: R99713			PrepDate		Analyst: LR
Specific Conductance	7300	0.10	0.10	umhos/cm	1	4/1/2015 01:30 PM

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



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CLIENT: CH2M HILL
Work Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	N015151-001A DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	99713
Client ID:	ZZZZZZ	Batch ID:	R99713	TestNo:	EPA 120.1			Analysis Date:	4/1/2015	SeqNo:	1968441
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Specific Conductance		7380.000		0.10						7340	0.543 10

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 07-Apr-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-514
Lab Order:	N015151	Collection Date:	3/31/2015 1:12:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N015151-001		

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

RunID: WETCHEM_150401G	QC Batch: 50087	PrepDate	4/1/2015	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4400	50	50	mg/L
			1	4/1/2015 01:38 PM

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


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CLIENT: CH2M HILL
Work Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID MB-50087	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 4/1/2015	RunNo: 99737						
Client ID: PBW	Batch ID: 50087	TestNo: SM2540C			Analysis Date: 4/1/2015	SeqNo: 1969526					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	ND	10									

Sample ID LCS-50087	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 4/1/2015	RunNo: 99737						
Client ID: LCSW	Batch ID: 50087	TestNo: SM2540C			Analysis Date: 4/1/2015	SeqNo: 1969527					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	962.000	10	1000	0	96.2	80	120				

Sample ID N015151-001A DUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 4/1/2015	RunNo: 99737						
Client ID: ZZZZZZ	Batch ID: 50087	TestNo: SM2540C			Analysis Date: 4/1/2015	SeqNo: 1969530					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4300.000	50					4400	2.30	5		

Qualifiers:

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



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 07-Apr-15

CLIENT: CH2M HILL
Lab Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015151-001

Client Sample ID: SC-700B-WDR-514
Collection Date: 3/31/2015 1:12:00 PM
Matrix: WATER

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

RunID: ICP7_150402A	QC Batch: 50096			PrepDate	4/2/2015	Analyst: CEI
Manganese	ND	0.026	0.50	µg/L	1	4/2/2015 02:09 PM

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



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CLIENT: CH2M HILL
Work Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	MB-50096	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	4/2/2015	RunNo:	99758		
Client ID:	PBW	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970730		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		ND		0.50									

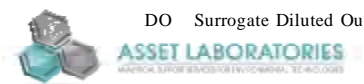
Sample ID	LCS-50096	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	4/2/2015	RunNo:	99758		
Client ID:	LCSW	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970731		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		113.202		0.50	100.0	0	113	85	115				

Sample ID	N015151-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	4/2/2015	RunNo:	99758		
Client ID:	ZZZZZZ	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970735		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		76.614		0.50	100.0	0	76.6	75	125				

Sample ID	N015151-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	4/2/2015	RunNo:	99758		
Client ID:	ZZZZZZ	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970736		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		77.575		0.50	100.0	0	77.6	75	125	76.61	1.25	20	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 07-Apr-15

CLIENT: CH2M HILL
Lab Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015151-001

Client Sample ID: SC-700B-WDR-514
Collection Date: 3/31/2015 1:12:00 PM
Matrix: WATER

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

RunID: IC7_150401A	QC Batch: R99717				PrepDate		Analyst: RB
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	4/1/2015 01:19 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: ICP7_150402A	QC Batch: 50096				PrepDate	4/2/2015	Analyst: CEI
Chromium	ND	0.030	1.0		µg/L	1	4/2/2015 02:09 PM

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



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CLIENT: CH2M HILL
Work Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	MB-50096	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	4/2/2015	RunNo:	99758		
Client ID:	PBW	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970648		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		ND		1.0									

Sample ID	LCS-50096	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	4/2/2015	RunNo:	99758		
Client ID:	LCSW	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970649		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		11.194		1.0	10.00	0	112	85	115				

Sample ID	N015151-001C-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	4/2/2015	RunNo:	99758		
Client ID:	ZZZZZZ	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970653		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		10.016		1.0	10.00	0	100	75	125				

Sample ID	N015151-001C-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	4/2/2015	RunNo:	99758		
Client ID:	ZZZZZZ	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970654		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.998		1.0	10.00	0	100	75	125	10.02	0.176	20	

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R99717	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99717			
Client ID:	PBW	Batch ID:	R99717	TestNo:	EPA 218.6			Analysis Date:	4/1/2015	SeqNo:	1968482			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID	LCS-R99717	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99717			
Client ID:	LCSW	Batch ID:	R99717	TestNo:	EPA 218.6			Analysis Date:	4/1/2015	SeqNo:	1968483			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.999 0.20 5.000 0 100 90 110

Sample ID	N015150-001A-DUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99717			
Client ID:	ZZZZZZ	Batch ID:	R99717	TestNo:	EPA 218.6			Analysis Date:	4/1/2015	SeqNo:	1968485			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.745 0.20 5.788 0.739 20

Sample ID	N015150-001A-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 99717					
Client ID:	ZZZZZZ	Batch ID: R99717	TestNo: EPA 218.6	Analysis Date: 4/1/2015	SeqNo: 1968486						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

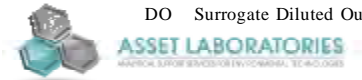
Hexavalent Chromium 10.786 0.20 5.000 5.788 100 90 110

Sample ID	N015150-001A-MSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99717			
Client ID:	ZZZZZZ	Batch ID:	R99717	TestNo:	EPA 218.6			Analysis Date:	4/1/2015	SeqNo:	1968487			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 10.856 0.20 5.000 5.788 101 90 110 10.79 0.647 20

Qualifiers:

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



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CLIENT: CH2M HILL
Work Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N015151-001B-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99717
Client ID:	ZZZZZZ	Batch ID:	R99717	TestNo:	EPA 218.6			Analysis Date:	4/1/2015	SeqNo:	1968491
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Hexavalent Chromium		1.083		0.20	1.000	0.1083	97.5	90	110		

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 07-Apr-15

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-514
Lab Order:	N015151	Collection Date:	3/31/2015 1:12:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	Matrix:	WATER
Lab ID:	N015151-001		

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

RunID: WETCHEM_150401A	QC Batch: R99712	PrepDate	Analyst: LR
Turbidity	0.20 0.10 0.10	NTU	1 4/1/2015 02:00 PM

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

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P: 702.307.2659 F: 702.307.2691**"Serving Clients with Passion and Professionalism"**

CLIENT: CH2M HILL
Work Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00

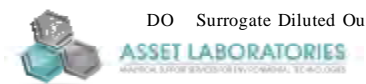
ANALYTICAL QC SUMMARY REPORT**TestCode: 2130_W**

Sample ID	MB-R99712	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	99712		
Client ID:	PBW	Batch ID:	R99712	TestNo:	SM 2130B			Analysis Date:	4/1/2015	SeqNo:	1968436		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		ND		0.10									

Sample ID	N015151-001A DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	99712		
Client ID:	ZZZZZZ	Batch ID:	R99712	TestNo:	SM 2130B			Analysis Date:	4/1/2015	SeqNo:	1968438		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		0.190		0.10						0.2000	5.13	30	

Qualifiers:

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



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

NEVADA
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 P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

WORK ORDER: N015151

ANALYST LIST

NAME	TEST METHOD
Ryan Balilu	EPA 218.6
Claire Ignacio	EPA 200.8
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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“Serving Clients with Passion and Professionalism”

Project Name PG&E Topock Location PG&E Topock Project Number 658274.01.IM.OP.00 Project Manager Scott O'Donnell Sample Manager Shawn Duffy Task Order Project IM3PLANT-ARAR-WDR-514 Turnaround Time 5 Days Shipping Date: 3/31/2015 COC Number: 514				Container: 1 Liter Poly 250 ml Poly 1 Liter Poly 500 ml Poly 1 Liter Poly	Preservatives: 4°C 4°C 4°C 4°C 4°C	Filtered: NA NA NA NA NA	Holding Time: 7 1 7 180 7	CONDUCTIVITY (E120.1) E218.6 Lab Filtered TDS (SM2540C) Total Metals (E200.8) Cr & Mn Turbidity (SM2130)	Number of Containers	COMMENTS
DATE TIME Matrix SC-700B-WDR-514 3/31/2015 1312 Water	X	X	X	X	X	NO15151-1				
TOTAL NUMBER OF CONTAINERS						3				

	Signatures	Date/Time	Shipping Details
Approved by			
Sampled by	Josh Rosenberg	3-31-15 1312	Method of Shipment: FedEx
Relinquished by	Josh Rosenberg	3-31-15 1322	On Ice: yes / no <i>no</i>
Received by	<i>[Signature]</i>	3/31/15 1322	Airbill No: <i>1042</i>
Relinquished by	<i>[Signature]</i>	3/31/15 1322	Lab Name: ASSET Laboratories
Received by	<i>[Signature]</i>	3/31/15 1838	Lab Phone: (702) 307-2659

ATTN:	Special Instructions:
Sample Custody	
and	
Glen Gesmundo	Report Copy to
	Shawn Duffy
	530-229-3303

ASSET Laboratories

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

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

Cooler Received/Opened On: 3/31/2015 Workorder: N015151
 Rep sample Temp (Deg C): 1.6 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ATL
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments: Sample for Hex Cr is lab filtered. Sample for Total Metals is lab preserved.

Checklist Completed By: HG 4/3/2015

Reviewed By: gog 4/3/15

SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B) * 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N015151-001A, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(64.0545 - 63.9665) * 1000000}{20}$$

$$= 4400 \text{ mg/L}$$

Reporting result in two significant figures,

$$\text{TDS} = 4400 \text{ mg/L}$$

Julia Ramit 4/3/2015

TOTAL DISSOLVED SOLIDS, TDS

$$\text{TDS, mg/L} = (\text{A-B}) \times 10000 \times \text{PF}$$

where:

A = weight in grams of dish + residue after drying
 B = weight of dish in grams
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO
Date Finished:4/2/15								
MB-50087	100	63.5055	63.5057	2	1	2		
LCS-50087	100	54.353	54.4492	962	1	962		
N015145-001F	100	61.3415	61.3825	410	1	410	636	0.645
N015151-001A	20	63.9665	64.0545	880	5	4400	7340	0.599
N015151-001A DUP	20	63.9487	64.0347	860	5	4300	7340	0.586

Lilia Ramit 4/3/2015

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Water

FORMULA:

Calculate the Chromium concentration, in ug/L, in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015151-001C**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Chromium, ug/L} &= 0.0000 * 1 * (25/25) \\ &= 0.0000\end{aligned}$$

Since the reporting limit is 1 ug/L therefore,

$$\text{Chromium, ug/L} = \text{ND}$$

 4/7/201

ASSET Laboratories**ICP-Metals in Water**

Work Order No.: N015151
Test Method: EPA 200.8
Analysis Date: 4/2/2015

Dilution Test Summary

Matrix: Water
Batch No.: 50096

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr and Mn. The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015151-001C-DT 5X	Chromium	µg/L	0	NA	0		10
N015151-001C-DT 5X	Manganese	µg/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00

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

Sample ID	N015151-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	99758
Client ID:	ZZZZZZ	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970734
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Manganese		80.318		0.50	100.0	0	80.3	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: CH2M HILL
Work Order: N015151
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N015151-001C-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	99758
Client ID:	ZZZZZZ	Batch ID:	50096	TestNo:	EPA 200.8			Analysis Date:	4/2/2015	SeqNo:	1970652
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Chromium		10.326		1.0	10.00	0	103	80	120		

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Sample Calculation

METHOD: EPA 218.6
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Water

FORMULA:

Calculate the Hexavalent Chromium concentration, in $\mu\text{g/L}$, in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * DF$$

where:

A = $\mu\text{g/L}$, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N015151-001B** concentration in $\mu\text{g/L}$ is calculated as follows:

$$\begin{aligned}\text{Cr}^{+6}, \mu\text{g/L} &= 0.1083 * 1 \\ &= 0.1083\end{aligned}$$

Since PQL is $0.20 \mu\text{g/L}$,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$



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-700B	1-6-14	1300	1-6-14	1310	HQ440d	1-6-14	0404	-58.59	John Rosenthal	7.47
Notes:										
2 SC-100B	1-6-14	1420	1-6-14	1425	HQ440d	1-6-14	0404	-58.59	John Rosenthal	7.55
Notes:										
3 SC-701	1-6-14	1420	1-6-14	1426	HQ440d	1-6-14	0404	-58.59	John Rosenthal	8.15
Notes:										
4 SC 700B	1-13-15	1227	1-13-15	1230	HQ440d	1-13-15	0410	-58.59	Scott D. Dell	7.41
Notes:										
5 SC-700B	1-20-15	12:55	1-20-15	12:58	HQ440D	1-20-15	0355	-57.17	Ryan Phelps	7.26
Notes:										
6 SC-700B	1-27-15	11:00	1-27-15	11:05	HQ440D	1-27-15	0411	-57.84	CHRIS LEWIS	6.76
Notes:										
7 S										
Notes:										

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

Analytical Bench Log Book

WDR pH Results

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

Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
SC-700B	2-3-15	1315	2-3-15	1318	HQ4400D	2-3-15	0342	-58.19	Josh R	7.06

Notes:

SC-100B	2-3-15	1315	2-3-15	1318	HQ4400D	2-3-15	0342	-58.19	Josh R.	7.32
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Notes:

SC-700B	2-10-15	1350	2-10-15	1355	HQ4400D	2-10-15	0357	-58.03	Ryan Phelps	7.00
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Notes:

SC-700B	2-17-15	11:55	2-17-15	12:00	HQ4400D	2-17-15	0351	-58.19	CHRIS LEATZ	6.97
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Notes:

SC-700B	2-24-15	12:25	2-24-15	1230	HQ4400D	2-24-15	0407	-58.39	CHRIS LEATZ	7.12
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Notes:

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Notes:

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Notes:

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

Analytical Bench Log Book

WDR pH Results

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

Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
SC-700B-	3-3-15	13:15	4-3-17 3-3-15	13:17	HQ4400D	3-3-15	3:38	-58.08	R. Phelps	7.0

Notes:

SC-100B	3-3-15	13:18	13:20 3-3-15	13:20	HQ4400D	3-3-15	3:38	-58.08	R. Phelps	7.47
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Notes:

SC-700B	3-10-15	11:50	3-10-15	11:55	HQ4400D	3-10-15	04:16	-57.50	Ryan Phelps	7.0
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Notes:

SC-700B	3/17/15	11:50	3/17/15	12:00	HQ4400D	3/17/15	04:08	-57.87	CHRIS LENZ	7.39
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Notes:

SC-700B	3/24/15	8:25	3/24/15	8:30	HQ4400D	3/24/15	03:43	-57.61	CHRIS LENZ	7.00
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Notes:

SC-700B	3-31-15	13:12	3-31-15	13:14	HQ4400D	3-31-15	04:15	-57.05	Josh Rosenberg	7.21
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Notes:

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Notes:

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