



**Pacific Gas and  
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April 14, 2017

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Colorado River Basin Region  
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**Subject: Topock IM-3 First Quarter 2017 Monitoring Report  
PG&E Topock Compressor Station, Needles, California  
Interim Measure No. 3 Groundwater Treatment System  
(Document ID: PGE20170414A)**

Dear Ms. Innis and Mr. Perdue:

Enclosed is the First Quarter 2017 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.

Pamela S. Innis  
Robert Perdue  
April 14, 2017  
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The IM-3 groundwater extraction and treatment system has extracted and treated approximately 775,923,755 gallons of water and removed approximately 7,070 pounds of total chromium from August 1, 2005 through March 31, 2017.

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 blue ink, appearing to read "Curt Russell", is positioned above the printed name.

Curt Russell  
Topock Site Manager

Enclosures:

Topock IM-3 First Quarter 2017 Monitoring Report

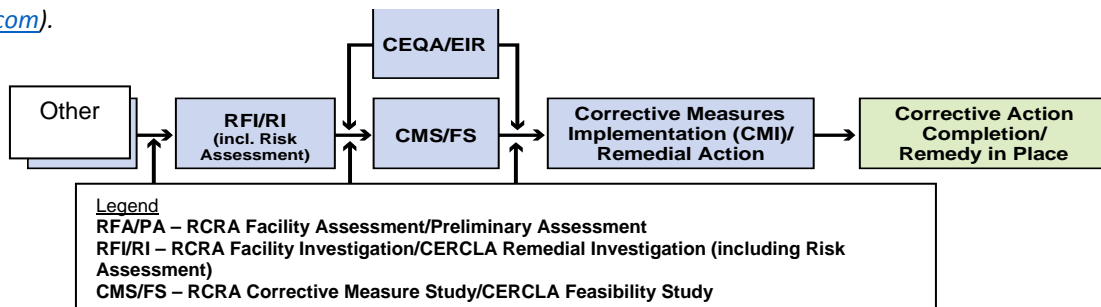
cc: José Cortez, Colorado River Basin Regional Water Board  
Thomas Vandenberg, Colorado River Basin Regional Water Board  
Aaron Yue, California Department of Toxic Substances Control

## Topock Project Executive Abstract

<p>Document Title:</p> <p>Topock IM-3 First Quarter 2017 Monitoring Report</p> <p>Submitting Agency/ Authored by: 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 14, 2017</p> <p>Who Created this Document?: (i.e. PG&amp;E, DTSC, DOI, Other)</p> <p>PG&amp;E</p> <p>Document ID Number:</p> <p>PGE20170414A</p>
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<p>Type of Document:</p> <p><input type="checkbox"/> Draft <input checked="" type="checkbox"/> Report <input type="checkbox"/> Letter <input type="checkbox"/> Memo</p> <p><input type="checkbox"/> Other / Explain:</p>	<p>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 2017 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&amp;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 2017 Monitoring Report is related to the Interim Measure. PG&amp;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](http://www.dtsc-topock.com)).



Version 9



# First Quarter 2017 Monitoring Report Interim Measure No. 3 Groundwater Treatment System

Document ID: PGE20170414A

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 14, 2017



155 Grand Avenue, Suite 800  
Oakland, CA 94612

First Quarter 2017 Monitoring Report  
for Interim Measure No. 3 Groundwater Treatment System

PG&E Topock Compressor Station  
Needles, California

Prepared for

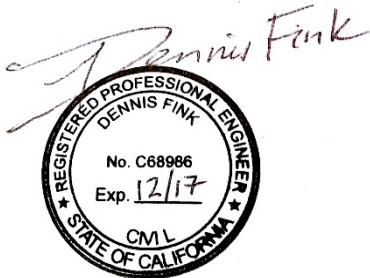
United States Department of the Interior  
and  
Colorado River Basin Regional Water Quality Control Board

on behalf of

Pacific Gas and Electric Company

April 14, 2017

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



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Dennis Fink, P.E.  
Project Engineer

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# Acronyms and Abbreviations

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ARARs	Applicable or Relevant and Appropriate Requirements
ASSET	ASSET Laboratories
DOI	United States Department of the Interior
gpm	gallons per minute
HMI	human-machine interface
IM	Interim Measure
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 2017.** 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.

## 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.

# 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 PE-1, TW-2D, TW-2S, and TW-3D.
- 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 2017, extraction wells PE-1, TW-2D, and TW-3D operated at a target pumping rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. The recorded operational run time for the IM-3 groundwater extraction system (combined or individual pumping), by month, was approximately:

- 97.0 percent during January 2017
- 97.6 percent during February 2017
- 97.7 percent during March 2017

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 2017 are detailed in Section 4.

# Groundwater Treatment System Flow Rates

The First Quarter 2017 treatment system monthly average flow rates (influent, effluent, and RO 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 16,991,019 gallons of extracted groundwater during the First Quarter 2017. The IM-3 facility also treated approximately 28,500 gallons of injection well backwashing/re-development water and 800 gallons of purge water from site sampling activities.

Four containers of solids (sludge) were transported offsite from the IM-3 facility during First Quarter 2017.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 2.55 percent downtime during First Quarter 2017) are summarized below. The times shown are in Pacific Standard Time (PST) to be consistent with other data collected (e.g., water level data) at the site.

## 4.1 January 2017

During January 2017, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during January 2017. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 97.0 percent during the January 2017 reporting period.

The IM-3 facility treated approximately 5,827,818 gallons of extracted groundwater during January 2017. The IM-3 facility treated 28,500 gallons of injection well backwash water during January 2017. Periods of planned and unplanned extraction system down time (that together resulted an approximately 3.0 percent downtime during January 2017) are summarized below.

- **January 1, 2017 (unplanned):** The extraction well system was offline from 4:58 a.m. to 6:34 a.m. for managing water levels in the Raw Water Storage tank (T-100). Extraction system downtime was 1 hour 36 minutes.
- **January 2, 2017 (unplanned):** The extraction well system was offline from 2:00 p.m. to 3:40 p.m. for managing water levels in the Raw Water Storage tank (T-100). Extraction system downtime was 1 hour 40 minutes.
- **January 3, 2017 (unplanned):** The extraction well system was offline from 10:16 p.m. to 11:50 p.m. for managing water levels in the Raw Water Storage tank (T-100). Extraction system downtime was 1 hour 34 minutes.
- **January 4, 2017 (planned):** The extraction well system was offline from 11:40 a.m. to 11:46 a.m. for extraction well sample collection by Blaine Tech at extraction well PE-1. Extraction system downtime was 6 minutes.
- **January 5, 2017 (unplanned):** The extraction well system was offline from 11:46 a.m. to 11:52 a.m., from 11:58 a.m. to 12:00 p.m., from 12:04 p.m. to 12:06 p.m., from 12:18 p.m. to 12:24 p.m., and



from 12:34 p.m. to 12:36 p.m. to perform a check of the extraction well vault leak detection systems. Extraction system downtime was 20 minutes.

- **January 8, 2017 (unplanned):** The extraction well system was offline from 10:16 p.m. to 10:40 p.m. to change pre-filters on the primary reverse osmosis system. Extraction system downtime was 24 minutes.
- **January 11, 2017 (unplanned):** The extraction well system was offline from 9:12 a.m. to 1:54 p.m. due to a blockage requiring maintenance in the iron oxidation tanks (T-301A, B and C). Extraction system downtime was 4 hours 42 minutes.
- **January 12, 2017 (unplanned):** The extraction well system was offline from 8:46 a.m. to 2:08 p.m. to replace the microfilter modules and repair the primary reverse osmosis unit. Extraction system downtime was 5 hours 22 minutes.
- **January 18, 2017 (unplanned):** The extraction well system was offline from 9:34 a.m. to 10:04 a.m. due to maintenance for leaking valves and fittings on reverse osmosis unit and the anti-scalant pump. Extraction system downtime was 30 minutes.
- **January 19, 2017 (unplanned):** The extraction well system was offline from 2:24 a.m. to 7:20 a.m. due to plant maintenance on the blower for the iron oxidation tanks (T-301A, B, and C). Extraction system downtime was 4 hours 56 minutes.
- **January 30, 2017 (planned):** The extraction well system was offline from 10:16 p.m. to 10:40 p.m. to replace the microfilter modules. Extraction system downtime was 1 hour 12 minutes.

## 4.2 February 2017

During February 2017, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during February 2017. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 97.6 percent during the February 2017 reporting period.

The IM-3 facility treated approximately 5,299,068 gallons of extracted groundwater during February 2017. The IM-3 facility treated 800 gallons of purge water during February 2017. Two containers of solids from the IM-3 facility were transported offsite during February 2017.

Periods of planned and unplanned extraction system down time (that together resulted an approximately 2.4 percent downtime during February 2017) are summarized below.

- **February 1, 2017 (unplanned):** The extraction well system was offline from 7:32 a.m. to 7:38 a.m., from 7:40 a.m. to 7:56 a.m., from 7:58 a.m. to 8:04 a.m., and from 8:10 a.m. to 8:12 a.m. for managing water levels in the Raw Water Storage tank (T-100). Extraction system downtime was 30 minutes.
- **February 14, 2017 (unplanned):** The extraction well system was offline 11:30 a.m. to 2:22 p.m. to replace the microfilter modules. Extraction system downtime was 2 hours 52 minutes.
- **February 16, 2017 (unplanned):** The extraction well system was offline from 2:26 a.m. to 8:00 a.m. for pneumatic valve repair for the Microfilter Feed Tank (T-501). Extraction system downtime was 5 hours 34 minutes.
- **February 16, 2017 (planned):** The extraction well system was offline from 8:44 a.m. to 9:34 a.m. due to maintenance on the human-machine interface (HMI) system. Extraction system downtime was 50 minutes.

- **February 22, 2017 (unplanned):** The extraction well system was offline from 8:12 a.m. to 12:48 p.m. and again from 1:00 p.m. to 2:48 p.m. to replace the microfilter modules. Extraction system downtime was 6 hours 4 minutes.

## 4.3 March 2017

During March 2017, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during March 2017. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 97.7 percent during the March 2017 reporting period.

The IM-3 facility treated approximately 5,864,133 gallons of extracted groundwater during March 2017. Two containers of solids from the IM-3 facility were transported offsite during March 2017.

Periods of planned and unplanned extraction system down time (that together resulted an approximately 2.3 percent downtime during March 2017) are summarized below.

- **March 8, 2017 (planned):** The extraction well system was offline from 12:44 p.m. to 12:46 p.m. and again from 1:48 p.m. to 2:00 p.m. for managing water levels in the Raw Water Storage tank (T-100) and for Blaine Tech sampling at extraction well TW-2D. Extraction system downtime was 14 minutes.
- **March 13, 2017 (unplanned):** The extraction well system was offline 12:54 pm. to 3:12 p.m. and again from 5:20 p.m. to 5:56 p.m. for managing water levels in the Raw Water Storage tank (T-100). Extraction system downtime was 2 hours 54 minutes.
- **March 14, 2017 (unplanned):** The extraction well system was offline from 9:34 a.m. to 4:06 p.m. for managing water levels in the Raw Water Storage tank (T-100). Extraction system downtime was 6 hours 32 minutes.
- **March 16, 2017 (unplanned):** The extraction well system was offline from 11:00 a.m. to 11:54 a.m. for microfilter module replacement. Extraction system downtime was 54 minutes.
- **March 21, 2017 (unplanned):** The extraction well system was offline from 2:06 p.m. to 2:08 p.m. due to power failure from the City of Needles. Extraction system downtime was 2 minutes.
- **March 22, 2017 (unplanned):** The extraction well system was offline from 9:58 a.m. to 10:00 a.m. due to power failure from the City of Needles. Extraction system downtime was 2 minutes.
- **March 23, 2017 (unplanned):** The extraction well system was offline from 12:40 p.m. to 1:12 p.m. and again from 1:18 p.m. to 1:46 p.m. for repairs to the acid pump. Extraction system downtime was 1 hour.
- **March 25, 2017 (unplanned):** The extraction well system was offline from 9:42 a.m. to 12:42 p.m., from 12:46 p.m. to 1:00 p.m., from 1:10 p.m. to 1:20 p.m., and from 2:02 p.m. to 2:18 p.m. to replace the pump and motor in P-500. Extraction system downtime was 3 hours 40 minutes.
- **March 25, 2017 (unplanned):** The extraction well system was offline from 2:32 p.m. to 3:30 p.m. for managing water levels in the Raw Water Storage tank (T-100). Extraction system downtime was 58 minutes.
- **March 30, 2017 (unplanned):** The extraction well system was offline from 4:40 p.m. to 5:18 p.m. and again from 5:50 p.m. to 5:54 p.m. due to power failure from the City of Needles. Extraction system downtime 42 minutes.

# 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 ASSET Laboratories (ASSET) and Truesdail Laboratories, Inc. (Truesdail). Sample containers were labeled and packaged according to standard sampling procedures.

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

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

During the First Quarter 2017, 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. Quarterly groundwater monitoring analytical results for the injection area (wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D) are reported in a separate document, in conjunction with groundwater level maps of the same monitoring wells.

# Analytical Results

Laboratory reports for samples collected in the First Quarter 2017 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

# 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.

# 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 14, 2017

Tables

**Table 1. Sampling Station Descriptions***First Quarter 2017 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

<b>Sample Station</b>	<b>Sample ID<sup>a</sup></b>	<b>Location</b>
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.

<sup>a</sup> 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 2017 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

<b>Parameter</b>	<b>System Influent<sup>a,b</sup> (gpm)</b>	<b>System Effluent<sup>b</sup> (gpm)</b>	<b>Reverse Osmosis Concentrate<sup>b</sup> (gpm)</b>
January 2017 Average Monthly Flowrate	130.55	135.10	1.12
February 2017 Average Monthly Flowrate	131.43	136.52	0
March 2017 Average Monthly Flowrate	131.36	136.56	0

**Notes:**

gpm: gallons per minute

<sup>a</sup> Extraction wells PE-1, and TW-3D were operated during the First Quarter 2017. Extraction wells TW-2S and TW-2D were not operated during the First Quarter 2017.

<sup>b</sup> The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the First Quarter 2017 is approximately 4.07 percent. This percentage difference includes instrument noise in the system, and exceeds the accuracy of the flowmeters. Based on the injection well flowmeter readings, these flowmeters will be removed from service and sent for factory calibration and adjustment.

**Table 3. Sample Collection Dates***First Quarter 2017 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	Sample Collection Dates	Results
Influent	January 3, 2017	See Table 4
	February 1, 2017	
	March 1, 2017	
Effluent	January 3, 2017	See Table 5
	February 1, 2017	
	February 7, 2017	
	February 14, 2017	
	February 21, 2017	
	March 1, 2017	
Reverse Osmosis Concentrate	January 3, 2017	See Table 6
Sludge <sup>a</sup>	January 3, 2017	See Table 7

**Notes:**

<sup>a</sup> Sludge samples analysis is required quarterly by composite; sludge samples were collected from each container prior to shipment off-site, and combined for the composite sample of the preceding quarter.

TABLE 4  
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Influent Monitoring Results <sup>a</sup>  
Fourth Quarter 2016 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Monthly						Quarterly																			
Sample ID	Date	Analytes Units <sup>b</sup>	MDL	TDS	Turbidity	Specific Conductance	Field <sup>c</sup> 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	µg/L	mg/L	µg/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	---	0.0960	6.60	2.70	0.0111	0.0310	0.0250	0.0700	0.0380	0.260	0.0870	0.180	0.0560	0.190	0.0400	0.110	3.30	1.80	0.270		
SC-100B-WDR-549	1/3/2017			4600	0.210	7800	7.3	680	650	ND (50.0)	ND (0.0500)	ND (0.500)	3.30	34.0	1.10	ND (1.00)J	2.30	ND (5.00)	8.90	23.0	ND (1.00)	3.30	540	ND (20.0)	ND (10.0)		
RL				50.0	0.100	0.100	---	5.00	20.0	50.0	0.0500	0.500	0.100	1.00	0.100	1.00	0.500	5.00	0.500	2.50	1.00	0.250	25.0	20.0	10.0		
SC-100B-WDR-550	2/1/2017			4400	0.130	7500	7.3	550	510	---	---	---	---	---	---	---	---	---	24.0	---	---	---	---	---	---		
RL				50.0	0.100	0.100	---	5.00	20.0	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		
SC-100B-WDR-555	3/1/2017			4200	0.290	7900	7.1	520	470	---	---	---	---	---	---	---	---	---	21.0	---	---	---	---	---	---		
RL				50.0	0.100	0.100	---	5.00	20.0	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---		

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

<sup>a</sup> 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).  
<sup>b</sup> Units reported in this table are those units required in the ARARs.  
<sup>c</sup> 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<sup>a</sup>  
Fourth Quarter 2016 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Effluent Limits <sup>b</sup>	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
	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
Sampling Frequency		Monthly																					
<div>Sample ID</div> <div>Date</div>	Analytes Units <sup>c</sup>  MDL <sup>d</sup>	Monthly																					
		TDS	Turbidity	Specific Conductance	Field pH <sup>e</sup>	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	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	---	0.0190	0.0660	2.70	0.0111	0.0310	0.0250	0.0700	0.0380	0.260	0.0170	0.180	0.0560	0.0390	0.0400	0.110	0.640	1.80	0.270
SC-700B-WDR-549	1/3/2017	4100	0.210	7400	7.1	ND (1.00)	ND (0.200)	ND (50.0)	ND (0.0500)	ND (0.500)	ND (0.100)	20.0	1.00	ND (1.00)	2.00	ND (5.00)	11.0	20.0	1.40	2.90	490	ND (20.0)	ND (10.0)
	RL	50.0	0.100	0.100	---	1.00	0.200	50.0	0.0500	0.500	0.100	1.00	0.100	1.00	0.500	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0
SC-700B-WDR-550	2/1/2017	5200	ND (0.100)	8800	7.1	ND (1.00)	ND (0.200)	ND (50.0)	ND (0.0500)	ND (0.500)	ND (0.100)	26.0	1.30	ND (1.00)	2.20	ND (5.00)	14.0	25.0	1.00	3.30	590	ND (20.0)	ND (10.0)
	RL	50.0	0.100	0.100	---	1.00	0.200	50.0	0.0500	0.500	0.100	1.00	0.100	1.00	0.500	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0
SC-700B-WDR-551	2/7/2017	4300	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	RL	50.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SC-700B-WDR-552	2/14/2017	4400	---	---	7.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	RL	50.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SC-700B-WDR-553	2/21/2017	4200	---	---	6.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	RL	50.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SC-700B-WDR-555	3/1/2017	4100	0.320	7600	6.8	ND (1.00)	ND (0.200)	ND (50.0)	ND (0.0500)	ND (0.500)	ND (0.100)	19.0	1.10	ND (1.00)	2.00	ND (5.00)	11.0	23.0	2.00	2.80	500	ND (20.0)	ND (10.0)
	RL	50.0	0.100	0.100	---	1.00	0.200	50.0	0.0500	0.500	0.100	1.00	0.100	1.00	0.500	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

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

<sup>a</sup> 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).

<sup>b</sup> 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.

<sup>c</sup> Units reported in this table are those units required in the ARARs.

<sup>d</sup> 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.

<sup>e</sup> 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 <sup>a</sup>  
Fourth Quarter 2016 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 <sup>c</sup> pH	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
		<div>Units<sup>b</sup></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>	500	0.100	---	0.000096	---	0.00079	0.00062	0.0017	0.0011	0.0012	0.00013	0.0066	0.350	0.00092	0.00097	0.000087	0.00099	0.00069	0.0015	0.00074	0.00011	0.0067
SC-701-WDR-549	1/3/2017		41000	58000	7.9	ND (0.0050)	---	ND (0.0120)	ND (0.0025)	0.210	ND (0.0120)	ND (0.0120)	ND (0.0025)	ND (0.0250)	18.0	ND (0.0250)	0.210	ND (0.00020)	ND (0.0250)	0.0470	ND (0.0120)	ND (0.0120)	ND (0.0050)	ND (0.250)
RL			500	0.100	---	0.0050	---	0.0120	0.0025	0.0250	0.0120	0.0120	0.0025	0.0250	2.00	0.0250	0.0120	0.00020	0.0250	0.0120	0.0120	0.0120	0.0050	0.250

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

<sup>a</sup> Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&ID PR-10-04).  
<sup>b</sup> Units reported in this table are those units required in the ARARs.  
<sup>c</sup> 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<sup>a</sup>  
Fourth Quarter 2016 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																		
<div> </div>	<div>Analytes Units<sup>b</sup> MDL</div>	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
		0.0850	0.430	0.380	0.450	0.0890	0.0800	0.0760	0.0760	0.0840	0.0720	0.0840	0.0740	0.0250	0.0880	0.320	0.0860	0.340	0.0770	0.130
Sample ID	Date																			
Phase Separator-549-Sludge	1/3/2017	2600	80.0	5.30	15.0	47.0	ND (2.10)	ND (2.10)	2.70	110	16.0	ND (2.10)	2.30	ND (0.210)	18.0	ND (2.10)	ND (2.10)	4.60	38.0	30.0
RL		2.10	4.20	4.20	2.10	2.10	2.10	2.10	2.10	4.20	2.10	2.10	2.10	0.210	2.10	2.10	2.10	4.20	2.10	2.10

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

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

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Monitoring Information  
Fourth Quarter 2016 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-549	George Gloria	1/3/2017	11:20:00 AM	ASSET	EPA 120.1	SC	1/4/2017	Lilia Ramit
					ASSET	EPA 200.7	AL	1/10/2017	Claire Ignacio
					ASSET	EPA 200.7	B	1/11/2017	Claire Ignacio
					ASSET	EPA 200.7	FE	1/10/2017	Claire Ignacio
					ASSET	EPA 200.8	AS	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	BA	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	CR	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	CU	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	MN	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	MO	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	NI	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	PB	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	SB	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	ZN	1/15/2017	Claire Ignacio
					ASSET	EPA 218.6	CR6	1/4/2017	Ria Abes
					ASSET	EPA 300.0	FL	1/4/2017	Ria Abes
					ASSET	EPA 300.0	SO4	1/4/2017	Ria Abes
					Field	HACH	PH	1/3/2017	George Gloria
					ASSET	SM 2540C	TDS	1/4/2017	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	1/5/2017	Ryan Balilu
					ASSET	SM2130B	TRB	1/4/2017	Lilia Ramit
					TLI	SM4500NH3D	NH3N	1/7/2017	Ryan Balilu
SC-100B	SC-100B-WDR-550	Ryan Phelps	2/1/2017	3:35:00 PM	ASSET	EPA 120.1	SC	2/2/2017	Ryan Balilu
					ASSET	EPA 200.8	CR	2/7/2017	Claire Ignacio
					ASSET	EPA 200.8	MN	2/7/2017	Claire Ignacio
					ASSET	EPA 218.6	CR6	2/3/2017	Ria Abes
					Field	HACH	PH	2/1/2017	Ryan Phelps
					ASSET	SM 2540C	TDS	2/2/2017	Quennie Manimtim
					ASSET	SM2130B	TRB	2/2/2017	Ryan Balilu
SC-100B	SC-100B-WDR-555	Josh Rosenberg	3/1/2017	2:40:00 PM	ASSET	EPA 120.1	SC	3/2/2017	Lilia Ramit
					ASSET	EPA 200.8	CR	3/6/2017	Claire Ignacio
					ASSET	EPA 200.8	MN	3/7/2017	Claire Ignacio
					ASSET	EPA 218.6	CR6	3/3/2017	Ria Abes
					Field	HACH	PH	3/1/2017	Josh Rosenberg
					ASSET	SM 2540C	TDS	3/2/2017	Lilia Ramit

TABLE 8

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

Monitoring Information

Fourth Quarter 2016 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-555	Josh Rosenberg	3/1/2017	2:40:00 PM	ASSET	SM2130B	TRB	3/2/2017	Lilia Ramit
SC-700B	SC-700B-WDR-549	George Gloria	1/3/2017	11:40:00 AM	ASSET	EPA 120.1	SC	1/4/2017	Lilia Ramit
					ASSET	EPA 200.7	AL	1/10/2017	Claire Ignacio
					ASSET	EPA 200.7	B	1/11/2017	Claire Ignacio
					ASSET	EPA 200.7	FE	1/10/2017	Claire Ignacio
					ASSET	EPA 200.8	AS	1/16/2017	Claire Ignacio
					ASSET	EPA 200.8	BA	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	CR	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	CU	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	MN	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	MO	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	NI	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	PB	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	SB	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	ZN	1/15/2017	Claire Ignacio
					ASSET	EPA 218.6	CR6	1/4/2017	Ria Abes
					ASSET	EPA 300.0	FL	1/4/2017	Ria Abes
					ASSET	EPA 300.0	SO4	1/4/2017	Ria Abes
					Field	HACH	PH	1/3/2017	George Gloria
					ASSET	SM 2540C	TDS	1/4/2017	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	1/5/2017	Ryan Balilu
SC-700B	SC-700B-WDR-550	Ryan Phelps	2/1/2017	3:41:00 PM	ASSET	SM2130B	TRB	1/4/2017	Lilia Ramit
					TLI	SM4500NH3D	NH3N	1/7/2017	Ryan Balilu
					ASSET	EPA 120.1	SC	2/2/2017	Ryan Balilu
					ASSET	EPA 200.7	AL	2/3/2017	Claire Ignacio
					ASSET	EPA 200.7	B	2/3/2017	Claire Ignacio
					ASSET	EPA 200.7	FE	2/3/2017	Claire Ignacio
					ASSET	EPA 200.8	AS	2/13/2017	Claire Ignacio
					ASSET	EPA 200.8	BA	2/7/2017	Claire Ignacio
					ASSET	EPA 200.8	CR	2/7/2017	Claire Ignacio
					ASSET	EPA 200.8	CU	2/7/2017	Claire Ignacio
					ASSET	EPA 200.8	MN	2/7/2017	Claire Ignacio
					ASSET	EPA 200.8	MO	2/7/2017	Claire Ignacio
					ASSET	EPA 200.8	NI	2/7/2017	Claire Ignacio
					ASSET	EPA 200.8	PB	2/7/2017	Claire Ignacio



TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Monitoring Information  
Fourth Quarter 2016 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-550	Ryan Phelps	2/1/2017	3:41:00 PM	ASSET	EPA 200.8	SB	2/7/2017	Claire Ignacio
					ASSET	EPA 200.8	ZN	2/7/2017	Claire Ignacio
					ASSET	EPA 218.6	CR6	2/3/2017	Ria Abes
					ASSET	EPA 300.0	FL	2/3/2017	Ria Abes
					ASSET	EPA 300.0	SO4	2/3/2017	Ria Abes
					Field	HACH	PH	2/1/2017	Ryan Phelps
					ASSET	SM 2540C	TDS	2/2/2017	Quennie Manimtim
					ASSET	SM 4500-NO3F	NO3NO2N	2/12/2017	Ryan Balilu
					ASSET	SM2130B	TRB	2/2/2017	Ryan Balilu
					TLI	SM4500NH3D	NH3N	2/8/2017	Ryan Balilu
SC-700B	SC-700B-WDR-551	Ryan Phelps	2/7/2017	10:50:00 AM	ASSET	SM 2540C	TDS	2/8/2017	Lilia Ramit
SC-700B	SC-700B-WDR-552	George Gloria	2/14/2017	4:25:00 PM	Field	HACH	PH	2/14/2017	George Gloria
					ASSET	SM 2540C	TDS	2/15/2017	Lilia Ramit
SC-700B	SC-700B-WDR-553	George Gloria	2/21/2017	11:20:00 AM	Field	HACH	PH	2/21/2017	George Gloria
					ASSET	SM 2540C	TDS	2/22/2017	Lilia Ramit
SC-700B	SC-700B-WDR-555	Josh Rosenberg	3/1/2017	2:45:00 PM	ASSET	EPA 120.1	SC	3/2/2017	Lilia Ramit
					ASSET	EPA 200.7	AL	3/13/2017	Claire Ignacio
					ASSET	EPA 200.7	B	3/14/2017	Claire Ignacio
					ASSET	EPA 200.7	FE	3/13/2017	Claire Ignacio
					ASSET	EPA 200.8	AS	3/6/2017	Claire Ignacio
					ASSET	EPA 200.8	BA	3/6/2017	Claire Ignacio
					ASSET	EPA 200.8	CR	3/6/2017	Claire Ignacio
					ASSET	EPA 200.8	CU	3/6/2017	Claire Ignacio
					ASSET	EPA 200.8	MN	3/7/2017	Claire Ignacio
					ASSET	EPA 200.8	MO	3/7/2017	Claire Ignacio
					ASSET	EPA 200.8	NI	3/6/2017	Claire Ignacio
					ASSET	EPA 200.8	PB	3/6/2017	Claire Ignacio
					ASSET	EPA 200.8	SB	3/6/2017	Claire Ignacio
					ASSET	EPA 200.8	ZN	3/6/2017	Claire Ignacio
					ASSET	EPA 218.6	CR6	3/3/2017	Ria Abes
					ASSET	EPA 300.0	FL	3/6/2017	Ria Abes
					ASSET	EPA 300.0	SO4	3/3/2017	Ria Abes
					Field	HACH	PH	3/1/2017	Josh Rosenberg
					ASSET	SM 2540C	TDS	3/2/2017	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	3/7/2017	Ryan Balilu

TABLE 8

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

Monitoring Information

Fourth Quarter 2016 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-555	Josh Rosenberg	3/1/2017	2:45:00 PM	ASSET	SM2130B	TRB	3/2/2017	Lilia Ramit
					TLI	SM4500NH3D	NH3N	3/13/2017	Ryan Balilu
SC-701	SC-701-WDR-549	George Gloria	1/3/2017	11:30:00 AM	ASSET	EPA 120.1	SC	1/4/2017	Lilia Ramit
					ASSET	EPA 200.8	AG	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	AS	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	BA	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	BE	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	CD	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	CO	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	CR	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	CU	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	MN	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	MO	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	NI	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	PB	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	SB	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	SE	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	TL	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	V	1/15/2017	Claire Ignacio
					ASSET	EPA 200.8	ZN	1/15/2017	Claire Ignacio
					ASSET	EPA 245.1	HG	1/5/2017	Mark Gesmundo
					ASSET	EPA 300.0	FL	1/4/2017	Ria Abes
Phase Separator	Phase Separator-549-Sludge	George Gloria	1/3/2017	11:15:00 AM	Field	HACH	PH	1/3/2017	George Gloria
					ASSET	SM 2540C	TDS	1/4/2017	Lilia Ramit
					ASSET	EPA 300.0	FL	1/9/2017	Ria Abes
					ASSET	EPA 6010B	AG	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	AS	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	BA	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	BE	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	CD	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	CO	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	CR	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	CU	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	MO	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	NI	1/10/2017	Lilia Ramit

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Monitoring Information  
Fourth Quarter 2016 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
Phase Separator	Phase Separator-549-Sludge	George Gloria	1/3/2017	11:15:00 AM	ASSET	EPA 6010B	PB	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	SB	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	SE	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	TL	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	V	1/10/2017	Lilia Ramit
					ASSET	EPA 6010B	ZN	1/10/2017	Lilia Ramit
					ASSET	EPA 7471A	HG	1/5/2017	Mark Gesmundo
					ASSET	SW 7199	CR6	1/9/2017	Ria Abes

**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).

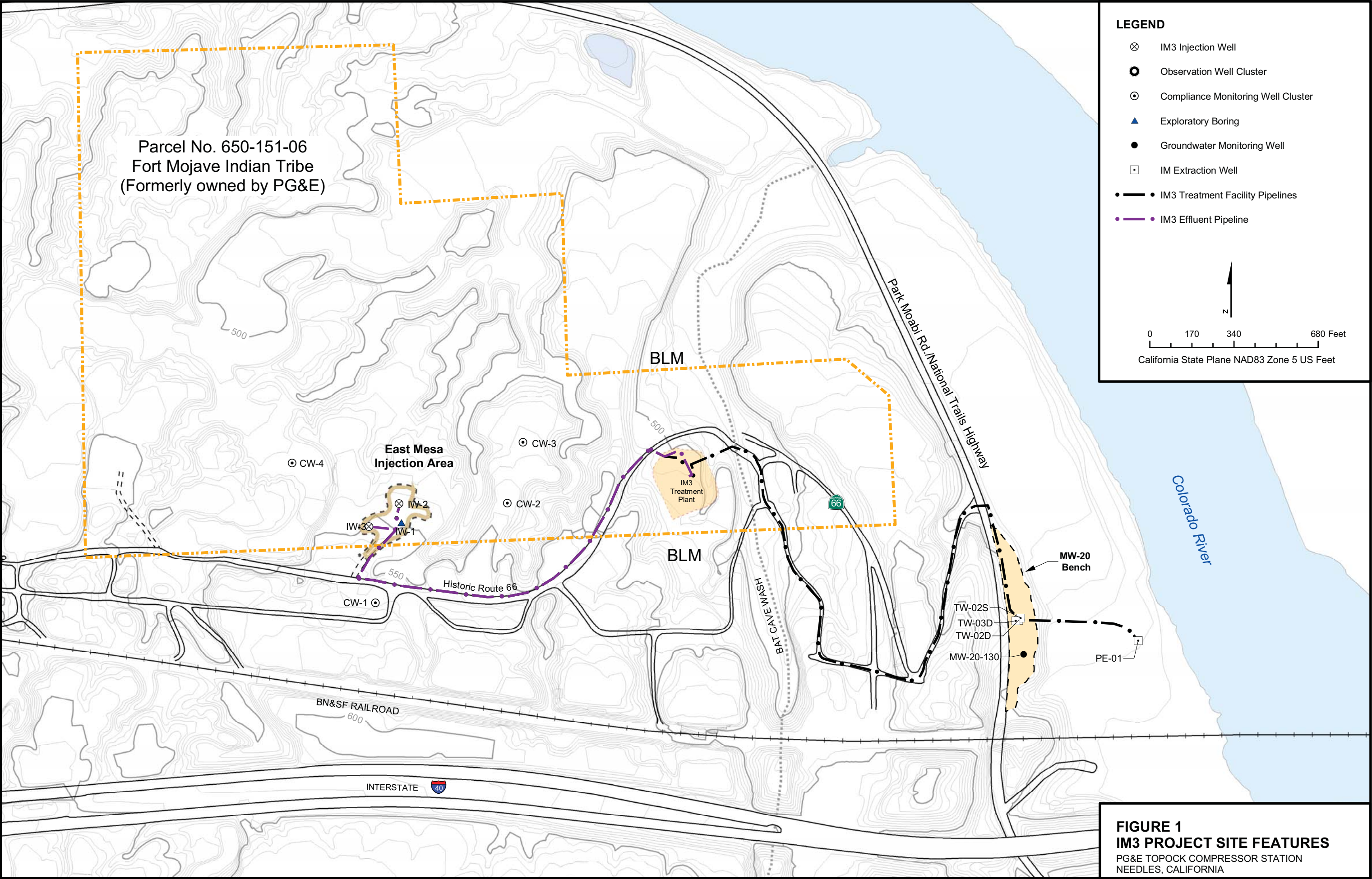
SC-100B = Sampling location for all influent samples is tap on pipe from extraction wells into tank T-100 (see attached P&ID TP-PR-10-10-04).

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 <sub>3</sub>	MO = molybdenum
ALKC = alkalinity, carb as CaCO <sub>3</sub>	MOIST = moisture
AL = aluminum	NH <sub>3</sub> N = ammonia (as N)
Ag = silver	NI = nickel
AS = arsenic	NO <sub>3</sub> NO <sub>2</sub> 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 <sub>4</sub> = 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



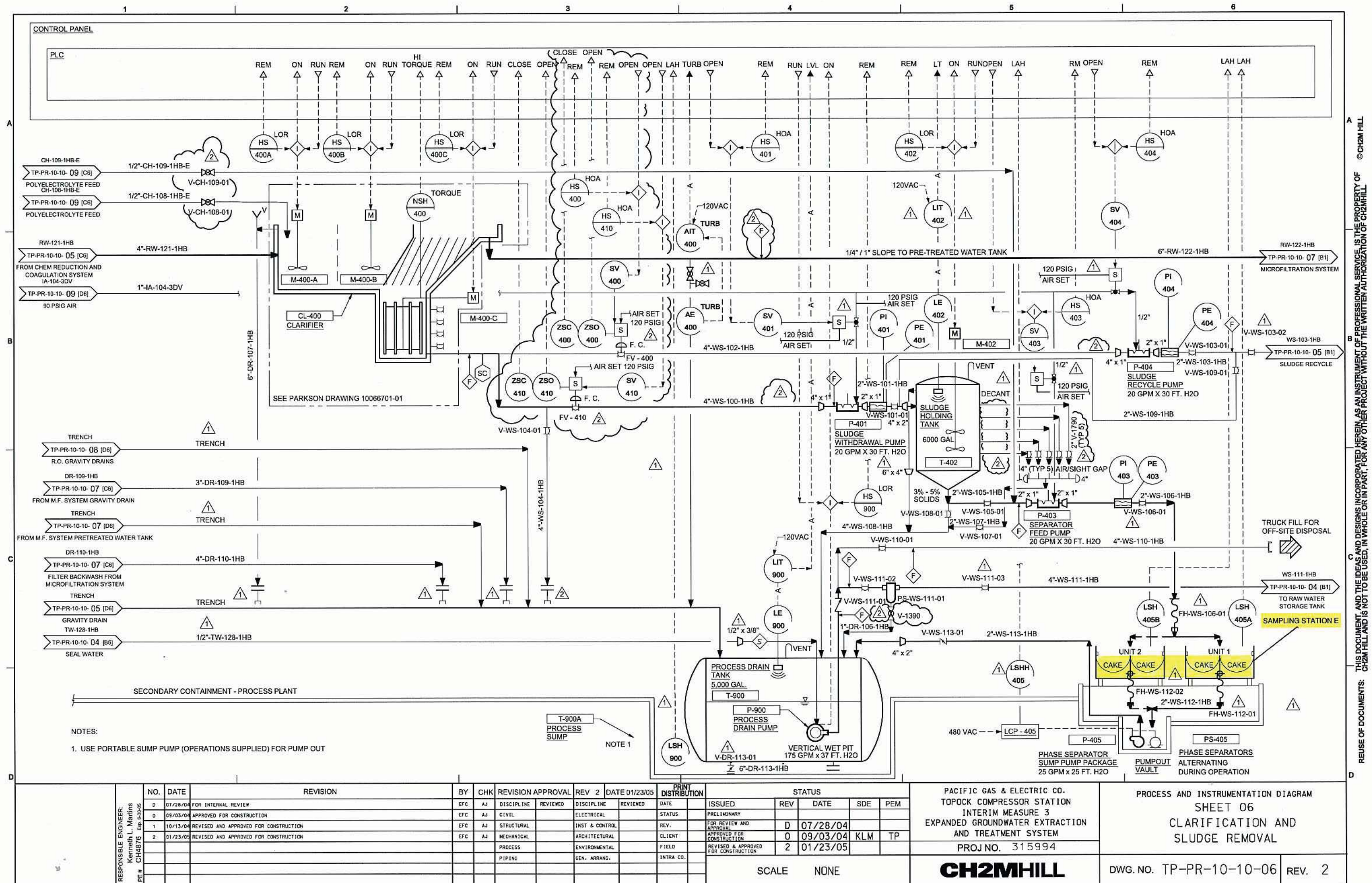












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Appendix A  
First Quarter 2017 Laboratory  
Analytical Reports

# Analytical Bench Log Book

## WDR pH Results

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

Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
1 SC-100B	2-1-17	1535	2-1-17	1539	HQ440D	2-1-17	0130	-52.03	Ryan Phelps	7.35

Notes:

2 SC-700B	2-1-17	1541	2-1-17	1544	HQ440D	2-1-17	0130	-52.03	Ryan Phelps	7.10
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Notes:

3 SC-700B	2-14-17	1627	2-14-17	1625	HQ440D	2-14-17	0030	-50.30	G. Gloria	7.01
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Notes:

4 SC-700B	2-21-17	11:20	2-21-17	11:23	HQ440D	2-21-17	0030	-50.33	G. Gloria	6.94
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Notes:

5 SC-100B	3-1-17	14:40	3-1-17	14:50	HQ440D	3-1-17	0030	-53.07	Josh R	7.10
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Notes:

6 SC-700B	3-1-17	14:45	3-1-17	14:50	HQ440D	3-1-17	0030	-53.07	Josh R	6.86
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Notes:

7										
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Notes:

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



# 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-700	12-6-16	11:21	12-6-16	11:25	HQ4400	12-6-16	01:30	-53.83	Ryan Phelps	7.04
Notes:										
2 SC-100	12-6-16	11:14	12-6-16	11:28	HQ4400	12-6-16	01:30	-53.83	Ryan Phelps	7.41
Notes:										
3 SC-100B	01-03-17	11:20	01-03-17	11:23	HQ4400	01-03-17	00:30	-53.80	G. GORJA	7.38
Notes:										
4 SC-700B	01-03-17	11:40	01-03-17	11:43	HQ4400	01-03-17	00:30	-53.80	G. GORJA	7.17
Notes:										
5 SC-701	01-03-17	11:30	01-03-17	11:33	HQ4400	01-03-17	00:30	-53.80	G. GORJA	7.92
Notes:										
6										
Notes:										
7										
Notes:										
Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4										

January 17, 2017

Doug Scott  
CH2M HILL  
155 Grand Avenue, Suite 1000  
Oakland, CA 94612

TEL: (970) 731-0636

FAX: (510) 622-9129

Workorder No.: N022454

RE: PG&E Topock, 680375.02.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on January 03, 2017 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,

*Nancy Libucano* For

Puri Romualdo  
Laboratory Director

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, 680375.02.IM.OP.00  
**Lab Order:** N022454

---

**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: 17-Jan-17

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N022454  
**Contract No:** IM3PLANT-AR

### Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N022454-001A	Phase Separator-549-Sludge	Soil	1/3/2017 11:15:00 AM	1/3/2017	1/17/2017
N022454-001B	Phase Separator-549-Sludge	Soil	1/3/2017 11:15:00 AM	1/3/2017	1/17/2017



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**ASSET Laboratories****ANALYTICAL RESULTS**

Print Date: 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	Phase Separator-549-Sludge
<b>Lab Order:</b>	N022454	<b>Collection Date:</b>	1/3/2017 11:15:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	SOIL
<b>Lab ID:</b>	N022454-001		

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

RunID: <b>NV00922-IC8_170109A</b>	QC Batch: <b>R112725</b>	PrepDate	Analyst: <b>RAB</b>
Fluoride	16 0.072 2.1	mg/Kg-dry	1 1/9/2017 02:02 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022454  
**Project:** PG&E Topock, 680375.02.IM.OP.00

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

Sample ID <b>MB-R112725</b>	SampType: <b>MBLK</b>	TestCode: <b>300_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>112725</b>
Client ID: <b>PBS</b>	Batch ID: <b>R112725</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526607</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride ND 1.0

Sample ID <b>LCS-R112725</b>	SampType: <b>LCS</b>	TestCode: <b>300_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>112725</b>
Client ID: <b>LCSS</b>	Batch ID: <b>R112725</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526608</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 12.785 1.0 12.50 0 102 90 110

Sample ID <b>N022454-001BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>300_S</b>	Units: <b>mg/Kg-dry</b>	Prep Date:	RunNo: <b>112725</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R112725</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526611</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 16.517 2.1 16.42 0.601 20

Sample ID <b>N022454-001BMS</b>	SampType: <b>MS</b>	TestCode: <b>300_S</b>	Units: <b>mg/Kg-dry</b>	Prep Date:	RunNo: <b>112725</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R112725</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526612</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 38.506 2.1 26.32 16.42 83.9 80 120

Sample ID <b>N022454-001BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>300_S</b>	Units: <b>mg/Kg-dry</b>	Prep Date:	RunNo: <b>112725</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R112725</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526613</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 39.001 2.1 26.32 16.42 85.8 80 120 38.51 1.28 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:** 17-Jan-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022454  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022454-001

**Client Sample ID:** Phase Separator-549-Sludge  
**Collection Date:** 1/3/2017 11:15:00 AM  
**Matrix:** SOIL

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

RunID: NV00922-ICP2_170110G	QC Batch: 60842	PrepDate	1/10/2017	Analyst: CEI
Antimony	5.3	0.38	4.2	mg/Kg-dry
Arsenic	15	0.45	2.1	mg/Kg-dry
Barium	47	0.089	2.1	mg/Kg-dry
Beryllium	ND	0.080	2.1	mg/Kg-dry
Cadmium	ND	0.076	2.1	mg/Kg-dry
Chromium	2600	0.085	2.1	mg/Kg-dry
Cobalt	2.7	0.076	2.1	mg/Kg-dry
Copper	110	0.084	4.2	mg/Kg-dry
Lead	ND	0.084	2.1	mg/Kg-dry
Molybdenum	2.3	0.074	2.1	mg/Kg-dry
Nickel	18	0.088	2.1	mg/Kg-dry
Selenium	ND	0.32	2.1	mg/Kg-dry
Silver	ND	0.086	2.1	mg/Kg-dry
Thallium	4.6	0.34	4.2	mg/Kg-dry
Vanadium	38	0.077	2.1	mg/Kg-dry
Zinc	30	0.13	2.1	mg/Kg-dry

**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:** N022454  
**Project:** PG&E Topock, 680375.02.IM.OP.00

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

Sample ID	MB-60842	SampType:	MBLK	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	1/10/2017	RunNo:	112747		
Client ID:	PBS	Batch ID:	60842	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	1/10/2017	SeqNo:	2527564		
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		ND		2.0									
Lead		ND		1.0									
Molybdenum		0.067		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-60842	SampType: LCS	TestCode: 6010_SPGE	Units: mg/Kg	Prep Date: 1/10/2017	RunNo: 112747					
Client ID:	LCSS	Batch ID: 60842	TestNo: EPA 6010B	EPA 3050B	Analysis Date: 1/10/2017	SeqNo: 2527565					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	24.750	2.0	25.00	0	99.0	85	115				
Arsenic	24.933	1.0	25.00	0	99.7	85	115				
Barium	25.236	1.0	25.00	0	101	85	115				
Beryllium	25.286	1.0	25.00	0	101	85	115				
Cadmium	25.556	1.0	25.00	0	102	85	115				
Chromium	25.357	1.0	25.00	0	101	85	115				
Cobalt	26.429	1.0	25.00	0	106	85	115				

**Qualifiers:**

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



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"Serving Clients with Passion and Professionalism"

**CLIENT:** CH2M HILL  
**Work Order:** N022454  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 6010\_SPGE

Sample ID	<b>LCS-60842</b>	SampType:	<b>LCS</b>	TestCode:	<b>6010_SPGE</b>	Units:	<b>mg/Kg</b>	Prep Date:	<b>1/10/2017</b>	RunNo:	<b>112747</b>
Client ID:	<b>LCSS</b>	Batch ID:	<b>60842</b>	TestNo:	<b>EPA 6010B EPA 3050B</b>			Analysis Date:	<b>1/10/2017</b>	SeqNo:	<b>2527565</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	25.314	2.0	25.00	0	101	85	115				
Lead	25.012	1.0	25.00	0	100	85	115				
Molybdenum	24.976	1.0	25.00	0	99.9	85	115				
Nickel	25.359	1.0	25.00	0	101	85	115				
Selenium	25.022	1.0	25.00	0	100	85	115				
Silver	23.918	1.0	25.00	0	95.7	85	115				
Thallium	25.500	2.0	25.00	0	102	85	115				
Vanadium	25.686	1.0	25.00	0	103	85	115				
Zinc	26.391	1.0	25.00	0	106	85	115				

Sample ID	<b>N022513-001A-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>6010_SPGE</b>	Units:	<b>mg/Kg</b>	Prep Date:	<b>1/10/2017</b>	RunNo:	<b>112747</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>60842</b>	TestNo:	<b>EPA 6010B EPA 3050B</b>			Analysis Date:	<b>1/10/2017</b>	SeqNo:	<b>2527570</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	21.699	2.0	24.99	0	86.8	75	125				
Arsenic	24.479	1.0	24.99	3.045	85.8	75	125				
Barium	82.857	1.0	24.99	61.86	84.0	75	125				
Beryllium	21.227	1.0	24.99	0	85.0	75	125				
Cadmium	21.888	1.0	24.99	0.6568	85.0	75	125				
Chromium	32.396	1.0	24.99	10.67	87.0	75	125				
Cobalt	28.820	1.0	24.99	6.194	90.5	75	125				
Copper	33.669	2.0	24.99	9.955	94.9	75	125				
Lead	25.545	1.0	24.99	4.956	82.4	75	125				
Molybdenum	21.989	1.0	24.99	0.5742	85.7	75	125				
Nickel	32.023	1.0	24.99	11.25	83.1	75	125				
Selenium	19.570	1.0	24.99	0	78.3	75	125				
Silver	25.410	1.0	24.99	0	102	75	125				
Thallium	20.796	2.0	24.99	0.7948	80.0	75	125				
Vanadium	46.467	1.0	24.99	23.61	91.5	75	125				
Zinc	54.197	1.0	24.99	34.17	80.2	75	125				

### Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** CH2M HILL  
**Work Order:** N022454  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 6010\_SPGE

Sample ID	<b>N022513-001A-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6010_SPGE</b>	Units:	<b>mg/Kg</b>	Prep Date:	<b>1/10/2017</b>	RunNo:	<b>112747</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>60842</b>	TestNo:	<b>EPA 6010B EPA 3050B</b>			Analysis Date:	<b>1/10/2017</b>	SeqNo:	<b>2527571</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	21.724	2.0	24.93	0	87.2	75	125	21.70	0.113	20	
Arsenic	24.867	1.0	24.93	3.045	87.5	75	125	24.48	1.57	20	
Barium	82.692	1.0	24.93	61.86	83.6	75	125	82.86	0.200	20	
Beryllium	21.331	1.0	24.93	0	85.6	75	125	21.23	0.489	20	
Cadmium	21.990	1.0	24.93	0.6568	85.6	75	125	21.89	0.464	20	
Chromium	32.500	1.0	24.93	10.67	87.6	75	125	32.40	0.320	20	
Cobalt	28.869	1.0	24.93	6.194	91.0	75	125	28.82	0.168	20	
Copper	33.744	2.0	24.93	9.955	95.4	75	125	33.67	0.222	20	
Lead	25.671	1.0	24.93	4.956	83.1	75	125	25.55	0.492	20	
Molybdenum	22.085	1.0	24.93	0.5742	86.3	75	125	21.99	0.439	20	
Nickel	32.099	1.0	24.93	11.25	83.7	75	125	32.02	0.236	20	
Selenium	19.616	1.0	24.93	0	78.7	75	125	19.57	0.237	20	
Silver	25.819	1.0	24.93	0	104	75	125	25.41	1.59	20	
Thallium	20.947	2.0	24.93	0.7948	80.9	75	125	20.80	0.722	20	
Vanadium	46.493	1.0	24.93	23.61	91.8	75	125	46.47	0.0544	20	
Zinc	54.301	1.0	24.93	34.17	80.8	75	125	54.20	0.191	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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	Phase Separator-549-Sludge
<b>Lab Order:</b>	N022454	<b>Collection Date:</b>	1/3/2017 11:15:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	SOIL
<b>Lab ID:</b>	N022454-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**
**EPA 3060A**
**EPA 7199**

RunID: <b>NV00922-IC6_170109A</b>	QC Batch: <b>60821</b>	PrepDate	<b>1/9/2017</b>	Analyst: <b>RAB</b>
Hexavalent Chromium	80	0.43	4.2	mg/Kg-dry
			10	1/9/2017 05:28 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022454  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 7199\_S\_PGE**

Sample ID <b>MB-60821</b>	SampType: <b>MBLK</b>	TestCode: <b>7199_S_PGE</b>	Units: <b>mg/Kg</b>	Prep Date: <b>1/9/2017</b>	RunNo: <b>112718</b>
Client ID: <b>PBS</b>	Batch ID: <b>60821</b>	TestNo: <b>EPA 7199</b>	<b>EPA 3060A</b>	Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526363</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>LCS-60821</b>	SampType: <b>LCS</b>	TestCode: <b>7199_S_PGE</b>	Units: <b>mg/Kg</b>	Prep Date: <b>1/9/2017</b>	RunNo: <b>112718</b>
Client ID: <b>LCSS</b>	Batch ID: <b>60821</b>	TestNo: <b>EPA 7199</b>	<b>EPA 3060A</b>	Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526364</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 3.891 0.20 4.000 0 97.3 80 120

Sample ID <b>N022454-001A-REP</b>	SampType: <b>DUP</b>	TestCode: <b>7199_S_PGE</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>1/9/2017</b>	RunNo: <b>112718</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>60821</b>	TestNo: <b>EPA 7199</b>	<b>EPA 3060A</b>	Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526366</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 78.944 4.2 80.31 1.72 20

Sample ID <b>N022454-001A-DUP</b>	SampType: <b>DUP</b>	TestCode: <b>7199_S_PGE</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>1/9/2017</b>	RunNo: <b>112718</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>60821</b>	TestNo: <b>EPA 7199</b>	<b>EPA 3060A</b>	Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526367</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 82.099 4.2 80.31 2.20 20

Sample ID <b>N022454-001A-MS</b>	SampType: <b>MS</b>	TestCode: <b>7199_S_PGE</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>1/9/2017</b>	RunNo: <b>112718</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>60821</b>	TestNo: <b>EPA 7199</b>	<b>EPA 3060A</b>	Analysis Date: <b>1/9/2017</b>	SeqNo: <b>2526368</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 88.959 4.2 8.396 80.31 103 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:** N022454  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 7199\_S\_PGE**

Sample ID	N022454-001A-MSD	SampType: MSD	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 1/9/2017	RunNo: 112718					
Client ID:	ZZZZZZ	Batch ID: 60821	TestNo: EPA 7199	EPA 3060A	Analysis Date: 1/9/2017	SeqNo: 2526369					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	89.623	4.2	8.403	80.31	111	75	125	88.96	0.744	20
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Sample ID	N022454-001A-MS I	SampType: MS	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 1/9/2017	RunNo: 112718					
Client ID: ZZZZZZ	Batch ID: 60821	TestNo: EPA 7199	EPA 3060A	Analysis Date: 1/9/2017	SeqNo: 2526370						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1486.585	21	1355	80.31	104	75	125
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Sample ID	N022454-001APS	SampType: MS	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date:	RunNo: 112718					
Client ID:	ZZZZZZ	Batch ID: 60821	TestNo: EPA 7199	EPA 3060A	Analysis Date: 1/9/2017	SeqNo: 2526374					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	162.285	4.2	84.09	80.31	97.5	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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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	Phase Separator-549-Sludge
<b>Lab Order:</b>	N022454	<b>Collection Date:</b>	1/3/2017 11:15:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	SOIL
<b>Lab ID:</b>	N022454-001		

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

RunID: <b>NV00922-AA1_170105B</b>	QC Batch: <b>60798</b>	PrepDate	<b>1/5/2017</b>	Analyst: <b>MG</b>
Mercury	ND	0.025	0.21	mg/Kg-dry 1 1/5/2017 12:17 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022454  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 7471\_S\_PGE**

Sample ID <b>MB-60798</b>	SampType: <b>MBLK</b>	TestCode: <b>7471_S_PGE</b>	Units: <b>mg/Kg</b>	Prep Date: <b>1/5/2017</b>	RunNo: <b>112728</b>
Client ID: <b>PBS</b>	Batch ID: <b>60798</b>	TestNo: <b>EPA 7471A</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2526648</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury ND 0.10

Sample ID <b>LCS-60798</b>	SampType: <b>LCS</b>	TestCode: <b>7471_S_PGE</b>	Units: <b>mg/Kg</b>	Prep Date: <b>1/5/2017</b>	RunNo: <b>112728</b>
Client ID: <b>LCSS</b>	Batch ID: <b>60798</b>	TestNo: <b>EPA 7471A</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2526649</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.487 0.10 0.4167 0 117 75 125

Sample ID <b>N022461-005A-MS</b>	SampType: <b>MS</b>	TestCode: <b>7471_S_PGE</b>	Units: <b>mg/Kg</b>	Prep Date: <b>1/5/2017</b>	RunNo: <b>112728</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>60798</b>	TestNo: <b>EPA 7471A</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2526650</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.489 0.099 0.4126 0.06693 102 75 125

Sample ID <b>N022461-005A-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>7471_S_PGE</b>	Units: <b>mg/Kg</b>	Prep Date: <b>1/5/2017</b>	RunNo: <b>112728</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>60798</b>	TestNo: <b>EPA 7471A</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2526651</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.543 0.099 0.4119 0.06693 115 75 125 0.4889 10.4 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	Phase Separator-549-Sludge
<b>Lab Order:</b>	N022454	<b>Collection Date:</b>	1/3/2017 11:15:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	SOIL
<b>Lab ID:</b>	N022454-001		

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

RunID: <b>NV00922-WC_170106D</b>	QC Batch: <b>R112695</b>	PrepDate	Analyst: <b>LR</b>
Percent Moisture	52.51	0.1000	0.1000
		wt%	1
			1/6/2017 09:45 AM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022454  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: PMOIST**

Sample ID	MB-R112695	SampType:	MBLK	TestCode:	PMOIST	Units:	wt%	Prep Date:		RunNo:	112695	
Client ID:	PBS	Batch ID:	R112695	TestNo:	D2216			Analysis Date:	1/6/2017	SeqNo:	2525697	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture		ND	0.1000									

Sample ID	N022454-001ADUP	SampType:	DUP	TestCode:	PMOIST	Units:	wt%	Prep Date:		RunNo:	112695	
Client ID:	ZZZZZZ	Batch ID:	R112695	TestNo:	D2216			Analysis Date:	1/6/2017	SeqNo:	2525699	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture		52.722	0.1000						52.51	0.404	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

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: 1/3/2017 Workorder: N022454  
 Rep sample Temp (Deg C): 1.9 IR Gun ID: 2  
 Temp Blank: ☒ Yes ☐ No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

### Sample Receipt Checklist

- |   |   |                             |   |
|---|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition?   | Yes <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?<br>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 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: YR  1/4/2017

Reviewed By:  1/5/2017



## List of Analysts

ASSET Laboratories Work Order: **N022454**

NAME	TEST METHOD
Claire Ignacio	EPA 6010B
Lilia Ramit	ASTM D2216
Ria Abes	EPA 300.0, EPA 7199
Mark Gesmundo	EPA 7471A



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January 27, 2017

Doug Scott  
CH2M HILL  
155 Grand Avenue, Suite 1000  
Oakland, CA 94612

TEL: (970) 731-0636  
FAX: (510) 622-9129

Workorder No.: N022455

RE: PG&E Topock, 680375.02.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on January 03, 2017 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.

This is an amended report. Please disregard all previous documentation that corresponds to the page(s) enclosed.

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,

*Nancy Libucow for*

Puri Romualdo  
Laboratory Director

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, 680375.02.IM.OP.00  
**Lab Order:** N022455

**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-Irvine, CA.

**Analytical Comments for EPA 200.8:**

Dilution was necessary on some analytes for all samples 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 analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium on QC samples N022455-001D-MS and N022455-001D-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Copper on QC samples N022455-001D-MS and N022455-001D-MSD 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 for Silver ; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

**Analytical Comments for EPA 218.6:**

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**CLIENT:** CH2M HILL

**Project:** PG&E Topock, 680375.02.IM.OP.00

**Lab Order:** N022455

## CASE NARRATIVE

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Dilution was necessary for sample N022455-003 due to matrix interference. Sample was analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.



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**ASSET Laboratories**

Date: 17-Jan-17

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N022455  
**Contract No:** IM3PLANT-AR

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N022455-001A	SC-100B-WDR-549	Water	1/3/2017 11:20:00 AM	1/3/2017	1/17/2017
N022455-001B	SC-100B-WDR-549	Water	1/3/2017 11:20:00 AM	1/3/2017	1/17/2017
N022455-001C	SC-100B-WDR-549	Water	1/3/2017 11:20:00 AM	1/3/2017	1/17/2017
N022455-001D	SC-100B-WDR-549	Water	1/3/2017 11:20:00 AM	1/3/2017	1/17/2017
N022455-001E	SC-100B-WDR-549	Water	1/3/2017 11:20:00 AM	1/3/2017	1/17/2017
N022455-002A	SC-700B-WDR-549	Water	1/3/2017 11:40:00 AM	1/3/2017	1/17/2017
N022455-002B	SC-700B-WDR-549	Water	1/3/2017 11:40:00 AM	1/3/2017	1/17/2017
N022455-002C	SC-700B-WDR-549	Water	1/3/2017 11:40:00 AM	1/3/2017	1/17/2017
N022455-002D	SC-700B-WDR-549	Water	1/3/2017 11:40:00 AM	1/3/2017	1/17/2017
N022455-002E	SC-700B-WDR-549	Water	1/3/2017 11:40:00 AM	1/3/2017	1/17/2017
N022455-003A	SC-701-WDR-549	Water	1/3/2017 11:30:00 AM	1/3/2017	1/17/2017
N022455-003B	SC-701-WDR-549	Water	1/3/2017 11:30:00 AM	1/3/2017	1/17/2017
N022455-003C	SC-701-WDR-549	Water	1/3/2017 11:30:00 AM	1/3/2017	1/17/2017



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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-100B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:20:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-001		

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

RunID: <b>NV00922-WC_170104C</b>	QC Batch: <b>R112626</b>	PrepDate	Analyst: <b>LR</b>
Specific Conductance	7800	0.10	0.10
		umhos/cm	1
			1/4/2017 02:10 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:40:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-002		

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

RunID: <b>NV00922-WC_170104C</b>	QC Batch: <b>R112626</b>	PrepDate	Analyst: <b>LR</b>
Specific Conductance	7400	0.10	0.10
		umhos/cm	1
			1/4/2017 02:10 PM

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


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**ANALYTICAL RESULTS**
**Print Date:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-701-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:30:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-003		

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

RunID: <b>NV00922-WC_170104C</b>	QC Batch: <b>R112626</b>	PrepDate	Analyst: <b>LR</b>
Specific Conductance	58000	0.10	0.10
		umhos/cm	1
			1/4/2017 02:10 PM

<b>Qualifiers:</b>	B	Analyte detected in 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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Date: 27-Jan-17

**CLIENT:** CH2M HILL  
**Work Order:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

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

Sample ID	<b>N022455-003BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>112626</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R112626</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>1/4/2017</b>	SeqNo:	<b>2524263</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Specific Conductance		58100.000		0.10						58300	0.344 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-100B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:20:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-001		

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

RunID: <b>NV00922-WC_170104F</b>	QC Batch: <b>60786</b>	PrepDate	<b>1/4/2017</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4600	50	50	mg/L
			1	1/4/2017 01:17 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:40:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-002		

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

RunID: <b>NV00922-WC_170104F</b>	QC Batch: <b>60786</b>	PrepDate	<b>1/4/2017</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4100	50	50	mg/L
			1	1/4/2017 01:17 PM

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


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**ANALYTICAL RESULTS**
**Print Date:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-701-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:30:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-003		

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

**TOTAL FILTERABLE RESIDUE**
**SM2540C**

RunID: <b>NV00922-WC_170104F</b>	QC Batch: <b>60786</b>	PrepDate	<b>1/4/2017</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	41000	500	500	mg/L
			1	1/4/2017 01:17 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 160.1\_2540C\_W**

Sample ID <b>LCS-60786</b>	SampType: <b>LCS</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>1/4/2017</b>	RunNo: <b>112629</b>
Client ID: <b>LCSW</b>	Batch ID: <b>60786</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>1/4/2017</b>	SeqNo: <b>2524487</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	944.000	10	1000	0	94.4 80 120

Sample ID <b>MB-60786</b>	SampType: <b>MBLK</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>1/4/2017</b>	RunNo: <b>112629</b>
Client ID: <b>PBW</b>	Batch ID: <b>60786</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>1/4/2017</b>	SeqNo: <b>2524488</b>
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 <b>N022455-003BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>1/4/2017</b>	RunNo: <b>112629</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>60786</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>1/4/2017</b>	SeqNo: <b>2524493</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	40250.000	500			41050 1.97 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: 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-100B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:20:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-001		

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

RunID: <b>NV00922-ICP2_170110C</b>	QC Batch: <b>60809</b>			PrepDate	<b>1/6/2017</b>	Analyst: <b>CEI</b>
Aluminum	ND	2.7	50	µg/L	1	1/10/2017 01:55 PM
Boron	1100	38	100	µg/L	1	1/11/2017 10:39 AM
Iron	ND	1.8	20	µg/L	1	1/10/2017 01:55 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:40:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-002		

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

RunID: <b>NV00922-ICP2_170110C</b>	QC Batch: <b>60809</b>	PrepDate	<b>1/6/2017</b>	Analyst: <b>CEI</b>
Aluminum	ND	2.7	50	µg/L
Boron	1000	38	100	µg/L
Iron	ND	1.8	20	µg/L

<b>Qualifiers:</b>	B	Analyte detected in 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: N022455  
 Project: PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7\_WPGEPB

Sample ID	MB-60809	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/6/2017	RunNo:	112742			
Client ID:	PBW	Batch ID:	60809	TestNo:	EPA 200.7			Analysis Date:	1/10/2017	SeqNo:	2527079			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	16.694	50												
Iron	14.283	20												

Sample ID	LCS1-60809	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/6/2017	RunNo:	112742			
Client ID:	LCSW	Batch ID:	60809	TestNo:	EPA 200.7			Analysis Date:	1/10/2017	SeqNo:	2527080			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	9641.621	50	10000	0	96.4	85	115							
Iron	108.909	20	100.0	0	109	85	115							

Sample ID	N022455-001D-MS1	SampType:	MS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/6/2017	RunNo:	112742		
Client ID:	ZZZZZZ	Batch ID:	60809	TestNo:	EPA 200.7			Analysis Date:	1/10/2017	SeqNo:	2527084		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	9254.105	50	10000	0	92.5	75	125							
Iron	89.913	20	100.0	3.429	86.5	75	125							

Sample ID	N022455-001D-MSD	SampType:	MSD	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/6/2017	RunNo:	112742		
Client ID:	ZZZZZZ	Batch ID:	60809	TestNo:	EPA 200.7			Analysis Date:	1/10/2017	SeqNo:	2527085		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	9276.174	50	10000	0	92.8	75	125	9254	0.238	20				
Iron	95.864	20	100.0	3.429	92.4	75	125	89.91	6.41	20				

Sample ID	MB-60809	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/6/2017	RunNo:	112774		
Client ID:	PBW	Batch ID:	60809	TestNo:	EPA 200.7			Analysis Date:	1/11/2017	SeqNo:	2528343		
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:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WPGEPBB**

Sample ID	MB-60809	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/6/2017	RunNo:	112774			
Client ID:	PBW	Batch ID:	60809	TestNo:	EPA 200.7			Analysis Date:	1/11/2017	SeqNo:	2528343			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron ND 100

Sample ID	LCS1-60809	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	1/6/2017	RunNo:	112774			
Client ID:	LCSW	Batch ID:	60809	TestNo:	EPA 200.7			Analysis Date:	1/11/2017	SeqNo:	2528344			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron 4814.901 100 5000 0 96.3 85 115

Sample ID	N022455-001D-MS1	SampType: MS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 1/6/2017	RunNo: 112774					
Client ID: ZZZZZZ	Batch ID: 60809	TestNo: EPA 200.7	Analysis Date: 1/11/2017	SeqNo: 2528348							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron 5895.442 100 5000 1086 96.2 75 125

Sample ID	N022455-001D-MSD	SampType: MSD	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 1/6/2017	RunNo: 112774					
Client ID:	ZZZZZZ	Batch ID: 60809	TestNo: EPA 200.7		Analysis Date: 1/11/2017	SeqNo: 2528349					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron 5881.424 100 5000 1086 95.9 75 125 5895 0.238 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-100B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:20:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-001		

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

RunID: <b>NV00922-ICP7_170115E</b>	QC Batch: <b>60817</b>	PrepDate	<b>1/8/2017</b>	Analyst: <b>CEI</b>
Antimony	ND	0.031	0.50	µg/L
Arsenic	3.3	0.025	0.10	µg/L
Barium	34	0.070	1.0	µg/L
Copper	ND	0.26	1.0	µg/L
Lead	ND	0.18	5.0	µg/L
Manganese	8.9	0.056	0.50	µg/L
Molybdenum	23	0.19	2.5	µg/L
Nickel	ND	0.040	1.0	µg/L
Zinc	ND	0.27	10	µg/L

<b>Qualifiers:</b>	B	Analyte detected in 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:40:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-002		

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

RunID: <b>NV00922-ICP7_170115E</b>	QC Batch: <b>60817</b>	PrepDate	<b>1/8/2017</b>	Analyst: <b>CEI</b>
Antimony	ND	0.031	0.50	µg/L
Arsenic	ND	0.025	0.10	µg/L
Barium	20	0.070	1.0	µg/L
Copper	ND	0.26	1.0	µg/L
Lead	ND	0.18	5.0	µg/L
Manganese	11	0.056	0.50	µg/L
Molybdenum	20	0.039	0.50	µg/L
Nickel	1.4	0.040	1.0	µg/L
Zinc	ND	0.27	10	µg/L

<b>Qualifiers:</b>	B	Analyte detected in 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-701-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:30:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-003		

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

RunID: <b>NV00922-ICP7_170115E</b>	QC Batch: <b>60817</b>	PrepDate	<b>1/8/2017</b>	Analyst: <b>CEI</b>		
Antimony	ND	0.79	12	µg/L	25	1/15/2017 09:04 PM
Arsenic	ND	0.62	2.5	µg/L	25	1/15/2017 09:04 PM
Barium	210	1.7	25	µg/L	25	1/15/2017 09:04 PM
Beryllium	ND	1.1	12	µg/L	25	1/15/2017 09:04 PM
Cadmium	ND	1.2	12	µg/L	25	1/15/2017 09:04 PM
Cobalt	ND	0.13	2.5	µg/L	5	1/15/2017 08:58 PM
Copper	ND	6.6	25	µg/L	25	1/15/2017 09:04 PM
Lead	ND	0.92	25	µg/L	25	1/15/2017 09:04 PM
Manganese	120	0.28	2.5	µg/L	5	1/15/2017 08:58 PM
Molybdenum	210	0.97	12	µg/L	25	1/15/2017 09:04 PM
Nickel	ND	0.99	25	µg/L	25	1/15/2017 09:04 PM
Selenium	47	0.69	12	µg/L	25	1/15/2017 09:04 PM
Silver	ND	1.5	12	µg/L	25	1/15/2017 09:04 PM
Thallium	ND	0.74	12	µg/L	25	1/15/2017 09:04 PM
Vanadium	ND	0.11	5.0	µg/L	5	1/15/2017 08:58 PM
Zinc	ND	6.7	250	µg/L	25	1/15/2017 09:04 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 200.8\_W**

Sample ID	MB-60817	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	1/8/2017	RunNo:	112861	
Client ID:	PBW	Batch ID:	60817	TestNo:	EPA 200.8			Analysis Date:	1/15/2017	SeqNo:	2533270	
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									
Beryllium		ND	0.50									
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		0.141	0.50									
Thallium		0.031	0.50									
Vanadium		ND	1.0									
Zinc		ND	10									

Sample ID	LCS-60817	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/8/2017	RunNo: 112861					
Client ID:	LCSW	Batch ID: 60817	TestNo: EPA 200.8		Analysis Date: 1/15/2017	SeqNo: 2533271					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	9.510	0.50	10.00	0	95.1	85	115				
Arsenic	9.377	0.10	10.00	0	93.8	85	115				
Barium	96.673	1.0	100.0	0	96.7	85	115				
Beryllium	9.286	0.50	10.00	0	92.9	85	115				
Cadmium	9.652	0.50	10.00	0	96.5	85	115				
Cobalt	9.223	0.50	10.00	0	92.2	85	115				
Copper	8.872	1.0	10.00	0	88.7	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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**CLIENT:** CH2M HILL  
**Work Order:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 200.8\_W

Sample ID	<b>LCS-60817</b>	SampType:	<b>LCS</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>1/8/2017</b>	RunNo:	<b>112861</b>
Client ID:	<b>LCSW</b>	Batch ID:	<b>60817</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>1/15/2017</b>	SeqNo:	<b>2533271</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.508	1.0	10.00	0	95.1	85	115				
Manganese	94.473	0.50	100.0	0	94.5	85	115				
Molybdenum	9.098	0.50	10.00	0	91.0	85	115				
Nickel	9.471	1.0	10.00	0	94.7	85	115				
Selenium	8.920	0.50	10.00	0	89.2	85	115				
Silver	9.622	0.50	10.00	0	96.2	85	115				
Thallium	8.909	0.50	10.00	0	89.1	85	115				
Vanadium	9.577	1.0	10.00	0	95.8	85	115				
Zinc	96.975	10	100.0	0	97.0	85	115				

Sample ID	<b>N022455-001D-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>1/8/2017</b>	RunNo:	<b>112861</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>60817</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>1/15/2017</b>	SeqNo:	<b>2533277</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	9.619	0.50	10.00	0.2612	93.6	75	125				
Arsenic	12.697	0.10	10.00	3.289	94.1	75	125				
Barium	130.045	1.0	100.0	34.48	95.6	75	125				
Cadmium	8.261	0.50	10.00	0.07032	81.9	75	125				
Cobalt	7.926	0.50	10.00	0.02827	79.0	75	125				
Copper	4.747	1.0	10.00	0	47.5	75	125				S
Manganese	92.215	0.50	100.0	8.917	83.3	75	125				
Nickel	9.173	1.0	10.00	0	91.7	75	125				
Vanadium	18.185	1.0	10.00	9.142	90.4	75	125				
Zinc	76.252	10	100.0	0	76.3	75	125				

Sample ID	<b>N022455-001D-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>1/8/2017</b>	RunNo:	<b>112861</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>60817</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>1/15/2017</b>	SeqNo:	<b>2533278</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	9.737	2.5	10.00	0	97.4	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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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL  
Work Order: N022455  
Project: PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8\_W

Sample ID	N022455-001D-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/8/2017	RunNo: 112861					
Client ID:	ZZZZZZ	Batch ID: 60817	TestNo: EPA 200.8	Analysis Date: 1/15/2017	SeqNo: 2533278						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	10.182	5.0	10.00	0	102	75	125				
Molybdenum	33.242	2.5	10.00	22.96	103	75	125				
Silver	10.450	2.5	10.00	0	105	75	125				
Thallium	9.426	2.5	10.00	0.5027	89.2	75	125				

Sample ID	N022455-001D-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/8/2017	RunNo: 112861					
Client ID: ZZZZZZ	Batch ID: 60817	TestNo: EPA 200.8	Analysis Date: 1/15/2017	SeqNo: 2533279							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	9.629	0.50	10.00	0.2612	93.7	75	125	9.619	0.0992	20	
Arsenic	12.652	0.10	10.00	3.289	93.6	75	125	12.70	0.357	20	
Barium	130.332	1.0	100.0	34.48	95.9	75	125	130.0	0.220	20	
Cadmium	8.236	0.50	10.00	0.07032	81.7	75	125	8.261	0.303	20	
Cobalt	7.853	0.50	10.00	0.02827	78.2	75	125	7.926	0.936	20	
Copper	4.681	1.0	10.00	0	46.8	75	125	4.747	1.38	20	S
Manganese	92.005	0.50	100.0	8.917	83.1	75	125	92.21	0.228	20	
Nickel	9.305	1.0	10.00	0	93.0	75	125	9.173	1.43	20	
Vanadium	18.282	1.0	10.00	9.142	91.4	75	125	18.18	0.535	20	
Zinc	76.411	10	100.0	0	76.4	75	125	76.25	0.208	20	

Sample ID	N022455-001D-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 1/8/2017	RunNo: 112861					
Client ID: ZZZZZZ	Batch ID: 60817	TestNo: EPA 200.8	Analysis Date: 1/15/2017	SeqNo: 2533282							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	9.456	2.5	10.00	0	94.6	75	125	9.737	2.92	20	
Lead	10.002	5.0	10.00	0	100	75	125	10.18	1.79	20	
Molybdenum	32.252	2.5	10.00	22.96	92.9	75	125	33.24	3.02	20	
Silver	8.379	2.5	10.00	0	83.8	75	125	10.45	22.0	20	R
Thallium	8.575	2.5	10.00	0.5027	80.7	75	125	9.426	9.46	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



**ASSET LABORATORIES**

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"Serving Clients with Passion and Professionalism"

**CLIENT:** CH2M HILL  
**Work Order:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 200.8\_W

Sample ID	<b>N022455-001D-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>1/8/2017</b>	RunNo:	<b>112861</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>60817</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>1/15/2017</b>	SeqNo:	<b>2534659</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Selenium	13.719	2.5	10.00	5.278	84.4	75	125				
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Sample ID	<b>N022455-001D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>1/8/2017</b>	RunNo:	<b>112861</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>60817</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>1/15/2017</b>	SeqNo:	<b>2534663</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Selenium	14.374	2.5	10.00	5.278	91.0	75	125	13.72	4.66	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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-100B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:20:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-001		

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

RunID: <b>NV00922-IC7_170104A</b>	QC Batch: <b>R112651</b>	PrepDate	Analyst: <b>RAB</b>
Hexavalent Chromium	650 6.6	20	1/4/2017 10:33 AM
		µg/L	100

**TOTAL METALS BY ICPMS**
**EPA 200.8**

RunID: <b>NV00922-ICP7_170115E</b>	QC Batch: <b>60817</b>	PrepDate	<b>1/8/2017</b>	Analyst: <b>CEI</b>
Chromium	680 0.096	5.0	5	1/15/2017 07:46 PM
		µg/L		

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


**ASSET LABORATORIES**  
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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:40:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-002		

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

RunID: <b>NV00922-IC7_170104A</b>	QC Batch: <b>R112651</b>	PrepDate	Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.066	0.20
			µg/L
			1
			1/4/2017 11:19 AM

**TOTAL METALS BY ICPMS**
**EPA 200.8**

RunID: <b>NV00922-ICP7_170115E</b>	QC Batch: <b>60817</b>	PrepDate	<b>1/8/2017</b>	Analyst: <b>CEI</b>
Chromium	ND	0.019	1.0	
			µg/L	
			1	
				1/15/2017 08:42 PM

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


**ASSET LABORATORIES**  
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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-701-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:30:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-003		

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

RunID: <b>NV00922-IC7_170104A</b>	QC Batch: <b>R112651</b>	PrepDate	Analyst: <b>RAB</b>
Hexavalent Chromium	ND	1.6	5.0
		µg/L	25
			1/4/2017 12:37 PM

**TOTAL METALS BY ICPMS**
**EPA 200.8**

RunID: <b>NV00922-ICP7_170115E</b>	QC Batch: <b>60817</b>	PrepDate	<b>1/8/2017</b>	Analyst: <b>CEI</b>
Chromium	ND	0.096	5.0	
		µg/L	5	
				1/15/2017 08:58 PM

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


**ASSET LABORATORIES**  
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**CLIENT:** CH2M HILL  
**Work Order:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 200.8\_W\_CRPGE**

Sample ID	MB-60817	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	1/8/2017	RunNo:	112861		
Client ID:	PBW	Batch ID:	60817	TestNo:	EPA 200.8			Analysis Date:	1/15/2017	SeqNo:	2533162		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		ND		1.0									

Sample ID	LCS-60817	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	1/8/2017	RunNo:	112861		
Client ID:	LCSW	Batch ID:	60817	TestNo:	EPA 200.8			Analysis Date:	1/15/2017	SeqNo:	2533163		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.366		1.0	10.00	0	93.7	85	115				

Sample ID	N022455-001D-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	1/8/2017	RunNo:	112861		
Client ID:	ZZZZZZ	Batch ID:	60817	TestNo:	EPA 200.8			Analysis Date:	1/15/2017	SeqNo:	2533170		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		658.612		5.0	10.00	680.4	-218	75	125				S

Sample ID	N022455-001D-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	1/8/2017	RunNo:	112861		
Client ID:	ZZZZZZ	Batch ID:	60817	TestNo:	EPA 200.8			Analysis Date:	1/15/2017	SeqNo:	2533174		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		650.606		5.0	10.00	680.4	-298	75	125	658.6	1.22	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			


**ASSET LABORATORIES**  
ANALYTICAL SERVICES PROVIDED BY PROFESSIONAL TECHNOLOGISTS

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"Serving Clients with Passion and Professionalism"

**CLIENT:** CH2M HILL  
**Work Order:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 218.6\_WU\_PGE

Sample ID	MB-R112651	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	112651			
Client ID:	PBW	Batch ID:	R112651	TestNo:	EPA 218.6			Analysis Date:	1/4/2017	SeqNo:	2523855			
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-R112651	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	112651			
Client ID:	LCSW	Batch ID:	R112651	TestNo:	EPA 218.6			Analysis Date:	1/4/2017	SeqNo:	2523856			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.076 0.20 5.000 0 102 90 110

Sample ID	N022455-001AMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	112651			
Client ID:	ZZZZZZ	Batch ID:	R112651	TestNo:	EPA 218.6			Analysis Date:	1/4/2017	SeqNo:	2523858			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1147.700 20 500.0 645.4 100 90 110

Sample ID	N022455-001AMSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	112651			
Client ID:	ZZZZZZ	Batch ID:	R112651	TestNo:	EPA 218.6			Analysis Date:	1/4/2017	SeqNo:	2523859			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1140.020 20 500.0 645.4 98.9 90 110 1148 0.671 20

Sample ID	N022455-002AMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	112651			
Client ID:	ZZZZZZ	Batch ID:	R112651	TestNo:	EPA 218.6			Analysis Date:	1/4/2017	SeqNo:	2523861			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 0.997 0.20 1.000 0 99.7 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 |                                      |   |  |



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

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ORELAP/NELAP Cert 4046

"Serving Clients with Passion and Professionalism"

**CLIENT:** CH2M HILL  
**Work Order:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 218.6\_WU\_PGE

Sample ID	N022455-003AMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	112651	
Client ID:	ZZZZZZ	Batch ID:	R112651	TestNo:	EPA 218.6			Analysis Date:	1/4/2017	SeqNo:	2523865	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	25.230	5.0	25.00	0	101	90	110					
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Sample ID	N022456-001ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	112651	
Client ID:	ZZZZZZ	Batch ID:	R112651	TestNo:	EPA 218.6			Analysis Date:	1/4/2017	SeqNo:	2523871	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	3.146	0.20							3.065	2.60	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: 17-Jan-17

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-549
Lab Order:	N022455	Collection Date:	1/3/2017 11:20:00 AM
Project:	PG&E Topock, 680375.02.IM.OP.00	Matrix:	WATER
Lab ID:	N022455-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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## TURBIDITY

## SM 2130B

RunID: NV00922-WC_170104D	QC Batch: R112627	PrepDate	Analyst: LR
Turbidity	0.21 0.10 0.10	NTU	1 1/4/2017 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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**ANALYTICAL RESULTS**
**Print Date:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:40:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-002		

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

RunID: <b>NV00922-WC_170104D</b>	QC Batch: <b>R112627</b>	PrepDate	Analyst: <b>LR</b>
Turbidity	0.21 0.10 0.10	NTU	1 1/4/2017 04:20 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

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

Sample ID	MB-R112627	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	112627		
Client ID:	PBW	Batch ID:	R112627	TestNo:	SM 2130B			Analysis Date:	1/4/2017	SeqNo:	2524264		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		ND		0.10									

Sample ID	N022455-001BDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	112627		
Client ID:	ZZZZZZ	Batch ID:	R112627	TestNo:	SM 2130B			Analysis Date:	1/4/2017	SeqNo:	2524266		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		0.220		0.10						0.2100	4.65	30	

Sample ID	N022455-002BDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	112627		
Client ID:	ZZZZZZ	Batch ID:	R112627	TestNo:	SM 2130B			Analysis Date:	1/4/2017	SeqNo:	2524268		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		0.210		0.10						0.2100	0	30	

**Qualifiers:**

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


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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-701-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:30:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-003		

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

RunID: <b>NV00922-AA1_170105A</b>	QC Batch: <b>60794</b>	PrepDate	<b>1/5/2017</b>	Analyst: <b>MG</b>
Mercury	ND	0.087	0.20	µg/L
				1
				1/5/2017 01:45 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

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

Sample ID <b>MB-60794</b>	SampType: <b>MBLK</b>	TestCode: <b>245.1_W</b>	Units: <b>µg/L</b>	Prep Date: <b>1/5/2017</b>	RunNo: <b>112647</b>
Client ID: <b>PBW</b>	Batch ID: <b>60794</b>	TestNo: <b>EPA 245.1</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2523584</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	ND	0.20			

Sample ID <b>LCS-60794</b>	SampType: <b>LCS</b>	TestCode: <b>245.1_W</b>	Units: <b>µg/L</b>	Prep Date: <b>1/5/2017</b>	RunNo: <b>112647</b>
Client ID: <b>LCSW</b>	Batch ID: <b>60794</b>	TestNo: <b>EPA 245.1</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2523586</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	5.326	0.20	5.000	0	107 85 115

Sample ID <b>N022455-003C-MS</b>	SampType: <b>MS</b>	TestCode: <b>245.1_W</b>	Units: <b>µg/L</b>	Prep Date: <b>1/5/2017</b>	RunNo: <b>112647</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>60794</b>	TestNo: <b>EPA 245.1</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2523587</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	4.972	0.20	5.000	0	99.4 75 125

Sample ID <b>N022455-003C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>245.1_W</b>	Units: <b>µg/L</b>	Prep Date: <b>1/5/2017</b>	RunNo: <b>112647</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>60794</b>	TestNo: <b>EPA 245.1</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2523588</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	5.003	0.20	5.000	0	100 75 125 4.972 0.605 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-100B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:20:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-001		

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

RunID: <b>NV00922-IC8_170104A</b>	QC Batch: <b>R112633</b>	PrepDate	Analyst: <b>RAB</b>
Fluoride	2.3 0.087	0.50	mg/L 5 1/4/2017 03:04 PM

**ANIONS BY ION CHROMATOGRAPHY**
**EPA 300.0**

RunID: <b>NV00922-IC8_170104A</b>	QC Batch: <b>R112633</b>	PrepDate	Analyst: <b>RAB</b>
Sulfate	540 3.3	25	mg/L 50 1/4/2017 06:45 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:40:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-002		

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

RunID: <b>NV00922-IC8_170104A</b>	QC Batch: <b>R112633</b>	PrepDate	Analyst: <b>RAB</b>
Fluoride	2.0 0.087	0.50	mg/L 5 1/4/2017 03:19 PM

**ANIONS BY ION CHROMATOGRAPHY**
**EPA 300.0**

RunID: <b>NV00922-IC8_170104A</b>	QC Batch: <b>R112633</b>	PrepDate	Analyst: <b>RAB</b>
Sulfate	490 3.3	25	mg/L 50 1/4/2017 07:00 PM

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


**ASSET LABORATORIES**  
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# ASSET Laboratories

# ANALYTICAL RESULTS

Print Date: 17-Jan-17

CLIENT:	CH2M HILL	Client Sample ID:	SC-701-WDR-549
Lab Order:	N022455	Collection Date:	1/3/2017 11:30:00 AM
Project:	PG&E Topock, 680375.02.IM.OP.00	Matrix:	WATER
Lab ID:	N022455-003		

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

### EPA 300.0

RunID: NV00922-IC8_170104A	QC Batch: R112633	PrepDate	Analyst: RAB
Fluoride	18 0.35 2.0	mg/L	20 1/4/2017 03:34 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:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 300\_W\_FPG**

Sample ID <b>MB-R112633_F</b>	SampType: <b>MBLK</b>	TestCode: <b>300_W_FPG</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112633</b>
Client ID: <b>PBW</b>	Batch ID: <b>R112633</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/4/2017</b>	SeqNo: <b>2523189</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride ND 0.10

Sample ID <b>LCS-R112633_F</b>	SampType: <b>LCS</b>	TestCode: <b>300_W_FPG</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112633</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R112633</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/4/2017</b>	SeqNo: <b>2523190</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 1.205 0.10 1.250 0 96.4 90 110

Sample ID <b>N022455-001BMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_FPG</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112633</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R112633</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/4/2017</b>	SeqNo: <b>2523196</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 8.345 0.50 6.250 2.332 96.2 80 120

Sample ID <b>N022455-001BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>300_W_FPG</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112633</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R112633</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/4/2017</b>	SeqNo: <b>2523197</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 8.374 0.50 6.250 2.332 96.7 80 120 8.345 0.347 20

Sample ID <b>N022455-002BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>300_W_FPG</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112633</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R112633</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>1/4/2017</b>	SeqNo: <b>2523198</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 1.997 0.50 1.996 0.0250 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			



**ASSET LABORATORIES**  
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**CLIENT:** CH2M HILL  
**Work Order:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 300\_W\_SO4PGE

Sample ID	<b>MB-R112633_SO4</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>112633</b>
Client ID:	<b>PBW</b>	Batch ID:	<b>R112633</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>1/4/2017</b>	SeqNo:	<b>2523260</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate ND 0.50

Sample ID	<b>LCS-R112633_SO4</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>112633</b>
Client ID:	<b>LCSW</b>	Batch ID:	<b>R112633</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>1/4/2017</b>	SeqNo:	<b>2523261</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 4.048 0.50 4.000 0 101 90 110

Sample ID	<b>N022458-001CMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>112633</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R112633</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>1/4/2017</b>	SeqNo:	<b>2523267</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 99.028 5.0 40.00 58.69 101 80 120

Sample ID	<b>N022458-001CMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>112633</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R112633</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>1/4/2017</b>	SeqNo:	<b>2523268</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 98.898 5.0 40.00 58.69 101 80 120 99.03 0.131 20

Sample ID	<b>N022458-002CDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>112633</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R112633</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>1/4/2017</b>	SeqNo:	<b>2523270</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 49.044 5.0 49.53 0.986 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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 EPA ID CA01638

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 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert NV00922  
 ORELAP/NELAP Cert 4046

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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-100B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:20:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-001		

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

**NITRATE/NITRITE-N BY CADMIUM REDUCTION**
**SM4500-NO3F**

RunID: <b>NV00922-WC_170105B</b>	QC Batch: <b>R112648</b>	PrepDate	Analyst: <b>RB</b>
Nitrate/Nitrite as N	3.3 0.11	0.25 mg/L	5 1/5/2017

<b>Qualifiers:</b>	B	Analyte detected in 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:** 17-Jan-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-549
<b>Lab Order:</b>	N022455	<b>Collection Date:</b>	1/3/2017 11:40:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N022455-002		

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

**NITRATE/NITRITE-N BY CADMIUM REDUCTION**
**SM4500-NO3F**

RunID: <b>NV00922-WC_170105B</b>	QC Batch: <b>R112648</b>	PrepDate	Analyst: <b>RB</b>
Nitrate/Nitrite as N	2.9 0.11	0.25 mg/L	5 1/5/2017

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022455  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 4500N03F\_W**

Sample ID <b>MB-R112648</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112648</b>
Client ID: <b>PBW</b>	Batch ID: <b>R112648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2523576</b>
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 <b>LCS-R112648</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112648</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R112648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2523577</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.508	0.050	0.5000	0	102 85 115

Sample ID <b>N022455-001CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112648</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R112648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2523579</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	3.245	0.25			3.280 1.06 20

Sample ID <b>N022455-001CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112648</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R112648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2523581</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.268	0.25	2.500	3.280	79.5 75 125

Sample ID <b>N022455-001CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>112648</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R112648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>1/5/2017</b>	SeqNo: <b>2523595</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.362	0.25	2.500	3.280	83.3 75 125 5.268 1.78 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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<b>Project Name</b> PG&E Topock <b>Location</b> PG&E Topock <b>Project Number</b> 680375.02.IM.OP.00 <b>Project Manager</b> Scott O'Donnell <b>Sample Manager</b> Doug Scott  <b>Task Order</b> <b>Project</b> IM3PLANT-ARAR-WDR-549 <b>Turnaround Time</b> 10 Days <b>Shipping Date:</b> 1/3/2017 <b>COC Number:</b> 549				<b>Container:</b>		1 Liter Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly	250 ml Poly	1 Liter Poly	1 Liter Poly	500 ml Poly	500 ml Poly	500 ml Poly	1 Liter Poly				
				<b>Preservatives:</b>		4°C Lab H2SO4	4°C	4°C	4°C	4°C	4°C Lab H2SO4	4°C	4°C	4°C	4°C	4°C			4°C	
				<b>Filtered:</b>		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			NA	
				<b>Holding Time:</b>		28	7	7	7	1	28	7	180	180	180	7				
						AMMONIA (SM4500NH30)	Anions (E300.0)	Anions (E300.0) Fluoride	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	Nitrate/Nitrite (SM4500NO3-E)	TDS (SM2540C)	Total Metals (E200.8 Mn)	Total Metals (E200.7 and E200.8)	Total Title 2 Metals	Turbidity (SM2130)	Number of Containers	COMMENTS		
<b>DATE</b>		<b>TIME</b>		<b>Matrix</b>																
SC-100B-WDR-549		1-3-17 11:20		Water		X	X		X	X	X	X		X		X			N022455 - 01	4
SC-700B-WDR-549		1-3-17 11:40		Water		X	X		X	X	X	X		X		X			- 02	4
SC-701-WDR-549		1-3-17 11:30		Water				X	X	X		X	X		X		- 03	3		
TOTAL NUMBER OF CONTAINERS																	11			

Approved by		Signatures	Date/Time	Shipping Details
Sampled by			1-3-17	Method of Shipment: FedEx
Relinquished by			1-3-17 12:45	On Ice: yes / no 1-9°C
Received by			1/3/17 12:45	Airbill No: 1R#2
Relinquished by			1/3/17	Lab Name: ASSET Laboratories
Received by			1/3/17 1902	Lab Phone: (702) 307-2659

ATTN:

Sample Custody

and

Marlon Cartin

Special Instructions:

Report Copy to

Doug Scott  
(970) 731-0636

## 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: 1/3/2017 Workorder: N022455  
 Rep sample Temp (Deg C): 1.9 IR Gun ID: 2  
 Temp Blank: ☒ Yes ☐ No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

### Sample Receipt Checklist

- |   |   |  |   |
|---|---|--|---|
| 1. Shipping container/cooler in good condition?   | Yes <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?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input type="checkbox"/>  | No <input checked="" type="checkbox"/>                     | NA <input checked="" 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?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments: Samples for Hex Cr were Lab filtered and preserved.  
 Samples for Total Metals, Ammonia and NO3- were Lab preserved.

Checklist Completed By: YR  1/4/2017

Reviewed By:  1/5/2017

## Marlon B. Cartin

---

**From:** Doug.Scott@CH2M.com  
**Sent:** Thursday, January 05, 2017 12:04 PM  
**To:** marlon@assetlaboratories.com  
**Cc:** Erlene.Contreras@CH2M.com  
**Subject:** RE: Fluoride  
**Attachments:** image001.jpg

That is one confusing COC. The one column has 300.0 anions and the next column has 300.0 anions fluoride. Not sure what up with that but it certainly should be more clear. I am not aware of any change so if you are in a hurry do what we did last. In the mean time I cc'd Erlene to clarify.

thanks

Doug Scott  
Project Chemist  
**CH2M**  
59 Lilac Ct.  
Pagosa Springs, Co 81147  
D 970-731-0636  
C 720-445-2278

---

**From:** Marlon B. Cartin [mailto:marlon@assetlaboratories.com]  
**Sent:** Thursday, January 05, 2017 12:59 PM  
**To:** Scott, Doug/DEN <Doug.Scott@CH2M.com>  
**Subject:** Fluoride [EXTERNAL]

Hi Doug,

I assume you don't need F on samples 1 and 2 on the attached COC. Historically, you request F for these samples. Please advise so we can finalize the log-in.

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: 702.439.0421  
[www.assetlaboratories.com](http://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  
3337 Michelson Drive, Suite CN750  
Irvine, CA 92612

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

Field Sampler: Signed

**04-Jan-17**

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3D		
N022455-001E / SC-100B-WDR-549	Water	1/3/2017 11:20:00 AM	16OZP	1		
N022455-002E / SC-700B-WDR-549	Water	1/3/2017 11:40:00 AM	16OZP	1		

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

Please use PO#:N22455A Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Ammonia. CH2M Hill Samples.

GSO #: 534565281

	<b>Date/Time</b>		<b>Date/Time</b>
Relinquished by: <u>                    </u>	<u>1/4/2017 17:00</u>	Received by: <u>                    </u>	<u>                    </u>
Relinquished by: <u>                    </u>	<u>                    </u>	Received by: <u>                    </u>	<u>                    </u>

## List of Analysts

ASSET Laboratories Work Order: **N022455**

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



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NEVADA  
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P: 702.307.2659 F: 702.307.2691

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## REPORT

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

**Client: Advanced Technology Laboratories-NV**

3151 W Post Rd  
Las Vegas, NV 89118

Attention: Marlon Cartin

Project Name: ATL-NV

Work Order No.: 17A0109

Printed: 01/16/2017

### CASE NARRATIVE

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

The samples were received and delivered with the chain of custody on January 5th, 2017, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter will be kept in warm storage for additional 2 months before disposal.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 203

### SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
N022455-001E / SC-100B-WDR-549	17A0109-01	Water		01/03/2017 11:20	01/05/2017 10:00
N022455-002E / SC-700B-WDR-549	17A0109-02	Water		01/03/2017 11:40	01/05/2017 10:00

### DEFINITIONS

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

Respectfully yours,

Shelly Brady  
Customer Service Manager



Client: Advanced Technology Laboratories-N

Project Name: ATL-NV

Printed: 01/16/2017

**N022455-001E / SC-100B-WDR-549**

**17A0109-01 (Water)**

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

**Wet Chemistry**

Ammonia	ND	0.0500	mg/L	1	1701123	01/07/2017 13:33	Alexander Luna	SM 4500-NH3 D M	
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**N022455-002E / SC-700B-WDR-549**

**17A0109-02 (Water)**

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

**Wet Chemistry**

Ammonia	ND	0.0500	mg/L	1	1701123	01/07/2017 13:35	Alexander Luna	SM 4500-NH3 D M	
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Client: Advanced Technology Laboratories-N

Project Name: ATL-NV

Printed: 01/16/2017

**QUALITY CONTROL**  
**Wet Chemistry**  
**Truesdail Laboratories, Inc**

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	% Rec Limits	RPD	RPD Limit	Note
---------	--------	----	-------	-------------	---------------	------	--------------	-----	-----------	------

**Batch: 1701123 - SM 4500-NH3 D M****Blank (1701123-BLK1)**

Prepared &amp; Analyzed: 1/7/2017

Ammonia	ND	0.0500	mg/L							
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**LCS (1701123-BS1)**

Prepared &amp; Analyzed: 1/7/2017

Ammonia	0.396	0.0500	mg/L	0.400		99	90-110			
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**Duplicate (1701123-DUP1)****Source: 17A0151-03**

Prepared &amp; Analyzed: 1/7/2017

Ammonia	4.79	0.500	mg/L		5.17			8	20	
---------	------	-------	------	--	------	--	--	---	----	--

**Matrix Spike (1701123-MS1)****Source: 17A0109-02**

Prepared &amp; Analyzed: 1/7/2017

Ammonia	0.386	0.0500	mg/L	0.400	0.0199	92	75-125			
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**Matrix Spike Dup (1701123-MSD1)****Source: 17A0109-02**

Prepared &amp; Analyzed: 1/7/2017

Ammonia	0.354	0.0500	mg/L	0.400	0.0199	84	75-125	9	20	
---------	-------	--------	------	-------	--------	----	--------	---	----	--

# ANALYSIS DATA SHEET

## Inorganics

**Client:** Advanced Technology Laboratories-NV  
**Client Sample ID:** N022455-001E / SC-100B-WDR-549  
**Lab Sample ID:** 17A0109-01  
**Project:** ATL-NV

**Date Sampled:** 01/03/17 11:20                      **Matrix:** Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	ND	0.0111	0.0500	1		AXL	01/07/17 13:33	SM 4500-NH3 D M

ANALYSIS DATA SHEET

Inorganics

Client: Advanced Technology Laboratories-NV  
Client Sample ID: N022455-002E / SC-700B-WDR-549  
Lab Sample ID: 17A0109-02  
Project: ATL-NV

Date Sampled: 01/03/17 11:40                      Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	ND	0.0111	0.0500	1		AXL	01/07/17 13:35	SM 4500-NH3 D M

# METHOD BLANK DATA SHEET

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV

Project: ATL-NV

Laboratory ID: 1701123-BLK1

Prepared: 01/07/17 12:09

Preparation: SM 4500-NH3 D M

Matrix: Water

Analyzed: 01/07/17 13:24

Instrument: TL01

File ID: 7A07001-014

Batch: 1701123

Sequence: 7A07001

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7664-41-7	Ammonia	ND	0.0111	0.0500	

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

N022455-002E / SC-700B-WDR-549

Client: Advanced Technology Laboratories-NV  
Project: ATL-NV  
Work Order: 17A0109

Matrix: Water  
Prep Batch: 1701123  
Analysis Method: SM 4500-NH3 D M  
Prep Method: SM 4500-NH3 D M  
Laboratory ID: 1701123-MS1  
Source Sample ID: 17A0109-02

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	QC LIMITS REC.
Ammonia	0.400	0.0199	0.386	92	75 - 125

ANALYTE	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC. #	% RPD	QC LIMITS RPD	REC.
Ammonia	0.400	0.354	84	9	20	75 - 125

\* Values outside of QC limits

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

N022455-002E / SC-700B-WDR-549

Client: Advanced Technology Laboratories-NV  
Project: ATL-NV  
Work Order: 17A0109

Matrix: Water  
Prep Batch: 1701123  
Analysis Method: SM 4500-NH3 D M  
Prep Method: SM 4500-NH3 D M  
Laboratory ID: 1701123-MS1  
Source Sample ID: 17A0109-02

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	QC LIMITS REC.
Ammonia	0.400	0.0199	0.386	92	75 - 125

ANALYTE	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC. #	% RPD	QC LIMITS RPD	REC.
Ammonia	0.400	0.354	84	9	20	75 - 125

\* Values outside of QC limits



# DUPLICATES

## Duplicate

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

Matrix:	Water	Laboratory ID:	1701123-DUP1
Prep Batch:	1701123	Initial/Final:	5 mL / 50 mL
Prep Method:	SM 4500-NH3 D M	Analysis:	SM 4500-NH3 D M

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Ammonia	5.17	4.79	8		20



# ASSET Laboratories

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

17A0109

## CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV

### Subcontractor:

Tuesdail  
3337 Michelson Drive, Suite CN750  
Irvine, CA 92612

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

Field Sampler: Signed

04-Jan-17

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests	
				SM4500-NH3D	
N022455-001E / SC-100B-WDR-549	Water	1/3/2017 11:20:00 AM	16OZP	1	
N022455-002E / SC-700B-WDR-549	Water	1/3/2017 11:40:00 AM	16OZP	1	

**ALERT !!**  
**Level IV QC**

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

Please use PO# N22455A Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Ammonia. CH2M Hill Samples.

GSO #: 534565281

Date/Time

Date/Time

Relinquished by: WJ

1/4/2017 17:00

Received by: Paula Steady

1/5/17 10:00

Relinquished by: 9.6.2

Received by:

1000

# Log-in check list For level III data package

Client: ATL

Lab Number: 1740109

Received Date: 1/5/17

## Sample receiving review

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

Sample receiving Signature:

**ALERT !!**  
**Level IV QC**

## WORK ORDER

Printed: 1/5/2017 12:04:30PM

17A0109 ✓

Truesdail Laboratories, Inc

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

Project Manager: Shelly Brady  
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: 01/16/2017 16:30 (7 day TAT)

Received By: Shelly Brady

Logged In By: Shelly Brady

Date Received: 01/05/2017 10:00 ✓

Date Logged In: 01/05/2017 11:51 ✓

Samples Received at: 9.6°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
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17A0109-01 N022455-001E / SC-100B-WDR-549 [Water] Sampled 01/03/2017  
11:20 (GMT-08:00) Pacific Time (US &

Ammonia E	01/16/2017 08:00	7	01/31/2017 11:20	
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17A0109-02 N022455-002E / SC-700B-WDR-549 [Water] Sampled 01/03/2017  
11:40 (GMT-08:00) Pacific Time (US &

Ammonia E	01/16/2017 08:00	7	01/31/2017 11:40	
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Reviewed By 

Date 1-5-17

February 15, 2017

Doug Scott  
CH2M HILL  
155 Grand Avenue, Suite 1000  
Oakland, CA 94612

TEL: (970) 731-0636

FAX: (510) 622-9129

Workorder No.: N022931

RE: PG&E Topock, 680375.02.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on February 01, 2017 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,

*Nancy Libucan* for

Puri Romualdo  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in  
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ORELAP/NELAP Cert 4046

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N022931

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

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

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

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

Samples were analyzed within method holding time.

**Subcontracted Analyses:**

Ammonia was subcontracted to Truesdail-Irvine,CA.

**Analytical Comments for EPA 200.8:**

Dilution was necessary on Lead for sample N022931-002 due to associated internal standard not meeting method criteria possibly due to matrix interference. Sample was analyzed with dilution and internal standard met method criteria. Affected analyte for this failed internal standard was reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Zinc on QC samples N022912-001D-MS and N022912-001D-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**ASSET Laboratories**

Date: 15-Feb-17

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N022931  
**Contract No:** IM3PLANT-AR

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N022931-001A	SC-100B-WDR-550	Water	2/1/2017 3:35:00 PM	2/1/2016	2/15/2017
N022931-001B	SC-100B-WDR-550	Water	2/1/2017 3:35:00 PM	2/1/2016	2/15/2017
N022931-001C	SC-100B-WDR-550	Water	2/1/2017 3:35:00 PM	2/1/2016	2/15/2017
N022931-001D	SC-100B-WDR-550	Water	2/1/2017 3:35:00 PM	2/1/2016	2/15/2017
N022931-002A	SC-700B-WDR-550	Water	2/1/2017 3:41:00 PM	2/1/2016	2/15/2017
N022931-002B	SC-700B-WDR-550	Water	2/1/2017 3:41:00 PM	2/1/2016	2/15/2017
N022931-002C	SC-700B-WDR-550	Water	2/1/2017 3:41:00 PM	2/1/2016	2/15/2017
N022931-002D	SC-700B-WDR-550	Water	2/1/2017 3:41:00 PM	2/1/2016	2/15/2017
N022931-002E	SC-700B-WDR-550	Water	2/1/2017 3:41:00 PM	2/1/2016	2/15/2017
N022931-002F	SC-700B-WDR-550	Water	2/1/2017 3:41:00 PM	2/1/2016	2/15/2017



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# ASSET Laboratories

# ANALYTICAL RESULTS

Print Date: 15-Feb-17

CLIENT: CH2M HILL  
Lab Order: N022931  
Project: PG&E Topock, 680375.02.IM.OP.00  
Lab ID: N022931-001

Client Sample ID: SC-100B-WDR-550  
Collection Date: 2/1/2017 3:35:00 PM  
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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## SPECIFIC CONDUCTANCE

## EPA 120.1

RunID: NV00922-WC_170202A	QC Batch: R113232	PrepDate	Analyst: RB
Specific Conductance	7500 0.10 0.10	umhos/cm	1 2/2/2017 02:00 PM

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



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**ANALYTICAL RESULTS**
**Print Date:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-002

**Client Sample ID:** SC-700B-WDR-550  
**Collection Date:** 2/1/2017 3:41:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-WC_170202A</b>	QC Batch: <b>R113232</b>			PrepDate		Analyst: <b>RB</b>
Specific Conductance	8800	0.10	0.10	umhos/cm	1	2/2/2017 02:00 PM

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



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**CLIENT:** CH2M HILL  
**Work Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

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

Sample ID	<b>N022931-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>113232</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R113232</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>2/2/2017</b>	SeqNo:	<b>2552459</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Specific Conductance		8810.000		0.10						8830	0.227 10

**Qualifiers:**

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

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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-001

**Client Sample ID:** SC-100B-WDR-550  
**Collection Date:** 2/1/2017 3:35:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-WC_170202C</b>	QC Batch: <b>61136</b>			PrepDate	<b>2/2/2017</b>	Analyst: <b>QBM</b>
Total Dissolved Solids (Residue, Filterable)	4400	50	50	mg/L	1	2/2/2017 04:00 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:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-002

**Client Sample ID:** SC-700B-WDR-550  
**Collection Date:** 2/1/2017 3:41:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-WC_170202C</b>	QC Batch: <b>61136</b>			PrepDate	<b>2/2/2017</b>	Analyst: <b>QBM</b>
Total Dissolved Solids (Residue, Filterable)	5200	50	50	mg/L	1	2/2/2017 04:00 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:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 160.1\_2540C\_W**

Sample ID	LCS-61136	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	2/2/2017	RunNo:	113254			
Client ID:	LCSW	Batch ID:	61136	TestNo:	SM2540C			Analysis Date:	2/2/2017	SeqNo:	2553728			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		987.000		10	1000	0		98.7	80	120				

Sample ID	MB-61136	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	2/2/2017	RunNo:	113254			
Client ID:	PBW	Batch ID:	61136	TestNo:	SM2540C			Analysis Date:	2/2/2017	SeqNo:	2553729			
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	N022868-001D-DUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	2/2/2017	RunNo:	113254			
Client ID:	ZZZZZZ	Batch ID:	61136	TestNo:	SM2540C			Analysis Date:	2/2/2017	SeqNo:	2553731			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		545.000		10							540.0	0.922	5	

**Qualifiers:**

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



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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-002

**Client Sample ID:** SC-700B-WDR-550  
**Collection Date:** 2/1/2017 3:41:00 PM  
**Matrix:** WATER

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

RunID: NV00922-ICP2_170203B	QC Batch: 61125	PrepDate	2/2/2017	Analyst: CEI		
Aluminum	ND	2.7	50	µg/L	1	2/3/2017 11:25 AM
Boron	1300	38	100	µg/L	1	2/3/2017 11:25 AM
Iron	ND	1.8	20	µg/L	1	2/3/2017 11:25 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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 ORELAP/NELAP Cert 4046

**CLIENT:** CH2M HILL  
**Work Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 200.7\_WPGEPB**

Sample ID <b>MB-61125</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WPGE</b>	Units: <b>µg/L</b>	Prep Date: <b>2/2/2017</b>	RunNo: <b>113275</b>
Client ID: <b>PBW</b>	Batch ID: <b>61125</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>2/3/2017</b>	SeqNo: <b>2554241</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	19.153	50			
Boron	ND	100			
Iron	8.383	20			

Sample ID <b>LCS-61125</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WPGE</b>	Units: <b>µg/L</b>	Prep Date: <b>2/2/2017</b>	RunNo: <b>113275</b>
Client ID: <b>LCSW</b>	Batch ID: <b>61125</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>2/3/2017</b>	SeqNo: <b>2554242</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	9646.054	50	10000	0	96.5	85	115			
Boron	4764.268	100	5000	0	95.3	85	115			
Iron	108.853	20	100.0	0	109	85	115			

Sample ID <b>N022931-002E-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WPGE</b>	Units: <b>µg/L</b>	Prep Date: <b>2/2/2017</b>	RunNo: <b>113275</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61125</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>2/3/2017</b>	SeqNo: <b>2554246</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	10687.157	50	10000	0	107	75	125			
Boron	6667.087	100	5000	1257	108	75	125			
Iron	113.558	20	100.0	11.37	102	75	125			

Sample ID <b>N022931-002E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WPGE</b>	Units: <b>µg/L</b>	Prep Date: <b>2/2/2017</b>	RunNo: <b>113275</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61125</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>2/3/2017</b>	SeqNo: <b>2554247</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	10675.128	50	10000	0	107	75	125	10690	0.113	20
Boron	6684.906	100	5000	1257	109	75	125	6667	0.267	20
Iron	113.800	20	100.0	11.37	102	75	125	113.6	0.213	20

**Qualifiers:**

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


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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-001

**Client Sample ID:** SC-100B-WDR-550  
**Collection Date:** 2/1/2017 3:35:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-ICP7_170206D</b>	QC Batch: <b>61116</b>	PrepDate	<b>2/2/2017</b>	Analyst: <b>CEI</b>
Manganese	24	0.056	0.50	µg/L
			1	2/7/2017 01:45 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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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-002

**Client Sample ID:** SC-700B-WDR-550  
**Collection Date:** 2/1/2017 3:41:00 PM  
**Matrix:** WATER

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

RunID: NV00922-ICP7_170206D	QC Batch: 61116	PrepDate	2/2/2017	Analyst: CEI		
Antimony	ND	0.031	0.50	µg/L	1	2/7/2017 01:56 AM
Arsenic	ND	0.025	0.10	µg/L	1	2/13/2017 03:13 PM
Barium	26	0.070	1.0	µg/L	1	2/7/2017 01:56 AM
Copper	ND	0.26	1.0	µg/L	1	2/7/2017 01:56 AM
Lead	ND	0.18	5.0	µg/L	5	2/7/2017 02:14 AM
Manganese	14	0.056	0.50	µg/L	1	2/7/2017 01:56 AM
Molybdenum	25	0.039	0.50	µg/L	1	2/7/2017 01:56 AM
Nickel	1.0	0.040	1.0	µg/L	1	2/7/2017 01:56 AM
Zinc	ND	0.27	10	µg/L	1	2/7/2017 01:56 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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 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:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 200.8\_W

Sample ID	MB-61116	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/2/2017	RunNo:	113331			
Client ID:	PBW	Batch ID:	61116	TestNo:	EPA 200.8			Analysis Date:	2/7/2017	SeqNo:	2557746			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	0.035	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-61116	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/2/2017	RunNo:	113331			
Client ID:	LCSW	Batch ID:	61116	TestNo:	EPA 200.8			Analysis Date:	2/7/2017	SeqNo:	2557747			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	10.624	0.50	10.00	0	106	85	115				
Arsenic	9.965	0.10	10.00	0	99.7	85	115				
Barium	100.755	1.0	100.0	0	101	85	115				
Copper	10.791	1.0	10.00	0	108	85	115				
Lead	10.830	1.0	10.00	0	108	85	115				
Manganese	98.574	0.50	100.0	0	98.6	85	115				
Molybdenum	9.533	0.50	10.00	0	95.3	85	115				
Nickel	10.157	1.0	10.00	0	102	85	115				
Zinc	100.875	10	100.0	0	101	85	115				

Sample ID	N022912-001D-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	2/2/2017	RunNo:	113331		
Client ID:	ZZZZZZ	Batch ID:	61116	TestNo:	EPA 200.8			Analysis Date:	2/7/2017	SeqNo:	2557751		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	10.227	0.50	10.00	0.05050	102	75	125				
Arsenic	9.433	0.10	10.00	0.6679	87.6	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:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 200.8\_W

Sample ID	<b>N022912-001D-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>2/2/2017</b>	RunNo:	<b>113331</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>61116</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>2/7/2017</b>	SeqNo:	<b>2557751</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	122.714	1.0	100.0	28.53	94.2	75	125				
Copper	12.792	1.0	10.00	4.010	87.8	75	125				
Lead	12.277	1.0	10.00	1.302	110	75	125				
Manganese	88.963	0.50	100.0	0	89.0	75	125				
Molybdenum	11.751	0.50	10.00	0.9350	108	75	125				
Nickel	9.183	1.0	10.00	0.2687	89.1	75	125				
Zinc	138.003	10	100.0	63.92	74.1	75	125				S

Sample ID	<b>N022912-001D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>2/2/2017</b>	RunNo:	<b>113331</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>61116</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>2/7/2017</b>	SeqNo:	<b>2557752</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.251	0.50	10.00	0.05050	102	75	125	10.23	0.237	20	
Arsenic	9.554	0.10	10.00	0.6679	88.9	75	125	9.433	1.28	20	
Barium	123.333	1.0	100.0	28.53	94.8	75	125	122.7	0.503	20	
Copper	12.906	1.0	10.00	4.010	89.0	75	125	12.79	0.884	20	
Lead	12.254	1.0	10.00	1.302	110	75	125	12.28	0.190	20	
Manganese	87.426	0.50	100.0	0	87.4	75	125	88.96	1.74	20	
Molybdenum	11.696	0.50	10.00	0.9350	108	75	125	11.75	0.468	20	
Nickel	9.262	1.0	10.00	0.2687	89.9	75	125	9.183	0.857	20	
Zinc	138.585	10	100.0	63.92	74.7	75	125	138.0	0.421	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:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-001

**Client Sample ID:** SC-100B-WDR-550  
**Collection Date:** 2/1/2017 3:35:00 PM  
**Matrix:** WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: <b>NV00922-IC7_170203A</b>	QC Batch: <b>R113266</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	510	6.6	20		µg/L	100	2/3/2017 11:30 AM
<b>TOTAL METALS BY ICPMS</b>							
<b>EPA 200.8</b>							
RunID: <b>NV00922-ICP7_170206D</b>	QC Batch: <b>61116</b>				PrepDate	<b>2/2/2017</b>	Analyst: <b>CEI</b>
Chromium	550	0.096	5.0		µg/L	5	2/7/2017 01:51 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:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-002

**Client Sample ID:** SC-700B-WDR-550  
**Collection Date:** 2/1/2017 3:41:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-IC7_170203A</b>	QC Batch: <b>R113266</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	2/3/2017 12:02 PM

**TOTAL METALS BY ICPMS**
**EPA 200.8**

RunID: <b>NV00922-ICP7_170206D</b>	QC Batch: <b>61116</b>				PrepDate	<b>2/2/2017</b>	Analyst: <b>CEI</b>
Chromium	ND	0.019	1.0		µg/L	1	2/7/2017 01:56 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:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 200.8\_W\_CRPGE**

Sample ID <b>MB-61116</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_W_CR</b>	Units: <b>µg/L</b>	Prep Date: <b>2/2/2017</b>	RunNo: <b>113331</b>
Client ID: <b>PBW</b>	Batch ID: <b>61116</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>2/7/2017</b>	SeqNo: <b>2557687</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	ND	1.0			

Sample ID <b>LCS-61116</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_W_CR</b>	Units: <b>µg/L</b>	Prep Date: <b>2/2/2017</b>	RunNo: <b>113331</b>
Client ID: <b>LCSW</b>	Batch ID: <b>61116</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>2/7/2017</b>	SeqNo: <b>2557688</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.141	1.0	10.00	0	101 85 115

Sample ID <b>N022912-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_W_CR</b>	Units: <b>µg/L</b>	Prep Date: <b>2/2/2017</b>	RunNo: <b>113331</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61116</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>2/7/2017</b>	SeqNo: <b>2557692</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	9.668	1.0	10.00	0.2510	94.2 75 125

Sample ID <b>N022912-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_W_CR</b>	Units: <b>µg/L</b>	Prep Date: <b>2/2/2017</b>	RunNo: <b>113331</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61116</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>2/7/2017</b>	SeqNo: <b>2557693</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	9.630	1.0	10.00	0.2510	93.8 75 125 9.668 0.397 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:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 218.6\_WU\_PGE

Sample ID	MB-R113266	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113266			
Client ID:	PBW	Batch ID:	R113266	TestNo:	EPA 218.6			Analysis Date:	2/3/2017	SeqNo:	2554038			
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-R113266	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113266			
Client ID:	LCSW	Batch ID:	R113266	TestNo:	EPA 218.6			Analysis Date:	2/3/2017	SeqNo:	2554039			
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	N022931-001BMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113266			
Client ID:	ZZZZZZ	Batch ID:	R113266	TestNo:	EPA 218.6			Analysis Date:	2/3/2017	SeqNo:	2554041			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1000.940 20 500.0 507.6 98.7 90 110

Sample ID	N022931-001BMSD	SampType: MSD	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 113266					
Client ID: ZZZZZZ	Batch ID: R113266	TestNo: EPA 218.6	Analysis Date: 2/3/2017	SeqNo: 2554042							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1010.470 20 500.0 507.6 101 90 110 1001 0.948 20

Sample ID	N022931-002CMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113266			
Client ID:	ZZZZZZ	Batch ID:	R113266	TestNo:	EPA 218.6			Analysis Date:	2/3/2017	SeqNo:	2554044			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1.172 0.20 1.000 0.1079 106 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 |                                      |   |  |



**ASSET LABORATORIES**

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 EPA ID CA01638

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 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert NV00922  
 ORELAP/NELAP Cert 4046

"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL  
Work Order: N022931  
Project: PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6\_WU\_PGE

Sample ID	N022924-001ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113266		
Client ID:	ZZZZZZ	Batch ID:	R113266	TestNo:	EPA 218.6			Analysis Date:	2/3/2017	SeqNo:	2554067		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		2.527		0.20						2.476	2.01	20	

### Qualifiers:

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



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# ASSET Laboratories

# ANALYTICAL RESULTS

Print Date: 15-Feb-17

CLIENT: CH2M HILL  
 Lab Order: N022931  
 Project: PG&E Topock, 680375.02.IM.OP.00  
 Lab ID: N022931-001

Client Sample ID: SC-100B-WDR-550  
 Collection Date: 2/1/2017 3:35:00 PM  
 Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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## TURBIDITY

## SM 2130B

RunID: NV00922-WC_170202B	QC Batch: R113233	PrepDate	Analyst: RB
Turbidity	0.13 0.10 0.10	NTU	1 2/2/2017 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: 15-Feb-17

CLIENT: CH2M HILL  
 Lab Order: N022931  
 Project: PG&E Topock, 680375.02.IM.OP.00  
 Lab ID: N022931-002

Client Sample ID: SC-700B-WDR-550  
 Collection Date: 2/1/2017 3:41:00 PM  
 Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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## TURBIDITY

## SM 2130B

RunID: NV00922-WC_170202B	QC Batch: R113233	PrepDate	Analyst: RB
Turbidity	ND 0.10 0.10	NTU	1 2/2/2017 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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**CLIENT:** CH2M HILL  
**Work Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

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

Sample ID	MB-R113233	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	113233		
Client ID:	PBW	Batch ID:	R113233	TestNo:	SM 2130B			Analysis Date:	2/2/2017	SeqNo:	2552460		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		ND		0.10									

Sample ID	N022931-001ADUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	113233		
Client ID:	ZZZZZZ	Batch ID:	R113233	TestNo:	SM 2130B			Analysis Date:	2/2/2017	SeqNo:	2552462		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		0.120		0.10						0.1300	8.00	30	

**Qualifiers:**

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



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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-002

**Client Sample ID:** SC-700B-WDR-550  
**Collection Date:** 2/1/2017 3:41:00 PM  
**Matrix:** WATER

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

RunID: NV00922-IC8_170203B	QC Batch: R113325				PrepDate		Analyst: RAB
Fluoride	2.2	0.017	0.50		mg/L	5	2/3/2017 08:43 PM

**ANIONS BY ION CHROMATOGRAPHY**
**EPA 300.0**

RunID: NV00922-IC8_170202B	QC Batch: R113291				PrepDate		Analyst: RAB
Sulfate	590	0.64	25		mg/L	50	2/3/2017 01:48 AM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 300\_W\_FPG**

Sample ID	LCS-R113325_F	SampType:	LCS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113325	
Client ID:	LCSW	Batch ID:	R113325	TestNo:	EPA 300.0			Analysis Date:	2/3/2017	SeqNo:	2557384	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		1.296	0.10	1.250	0	104	90	110				

Sample ID	MB-R113325_F	SampType:	MBLK	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113325	
Client ID:	PBW	Batch ID:	R113325	TestNo:	EPA 300.0			Analysis Date:	2/3/2017	SeqNo:	2557385	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		ND	0.10									

Sample ID	N022931-002BDUP	SampType:	DUP	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113325	
Client ID:	ZZZZZZ	Batch ID:	R113325	TestNo:	EPA 300.0			Analysis Date:	2/3/2017	SeqNo:	2557389	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		2.181	0.50						2.159	0.991	20	

Sample ID	N022931-002BMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113325	
Client ID:	ZZZZZZ	Batch ID:	R113325	TestNo:	EPA 300.0			Analysis Date:	2/3/2017	SeqNo:	2557390	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		8.186	0.50	6.250	2.159	96.4	80	120				

Sample ID	N022931-002BMSD	SampType:	MSD	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113325	
Client ID:	ZZZZZZ	Batch ID:	R113325	TestNo:	EPA 300.0			Analysis Date:	2/3/2017	SeqNo:	2557391	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		8.171	0.50	6.250	2.159	96.2	80	120	8.186	0.177	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:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 300\_W\_SO4PGE

Sample ID	LCS-R113291_SO4	SampType: LCS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113291					
Client ID:	LCSW	Batch ID: R113291	TestNo: EPA 300.0	Analysis Date: 2/2/2017	SeqNo: 2555804						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 4.033 0.50 4.000 0 101 90 110

Sample ID	MB-R113291_SO4	SampType: MBLK	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113291					
Client ID:	PBW	Batch ID: R113291	TestNo: EPA 300.0	Analysis Date: 2/2/2017	SeqNo: 2555805						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 0.215 0.50

Sample ID	N022922-006CMS	SampType: MS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113291					
Client ID:	ZZZZZZ	Batch ID: R113291	TestNo: EPA 300.0	Analysis Date: 2/2/2017	SeqNo: 2555811						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 60.427 2.5 20.00 40.84 97.9 80 120

Sample ID	N022922-006CMSD	SampType: MSD	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113291					
Client ID:	ZZZZZZ	Batch ID: R113291	TestNo: EPA 300.0	Analysis Date: 2/2/2017	SeqNo: 2555812						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 60.322 2.5 20.00 40.84 97.4 80 120 60.43 0.174 20

Sample ID	N022922-007CDUP	SampType: DUP	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113291					
Client ID:	ZZZZZZ	Batch ID: R113291	TestNo: EPA 300.0	Analysis Date: 2/3/2017	SeqNo: 2555814						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 39.770 2.5 39.94 0.420 20

### Qualifiers:

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



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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Feb-17

**CLIENT:** CH2M HILL  
**Lab Order:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N022931-002

**Client Sample ID:** SC-700B-WDR-550  
**Collection Date:** 2/1/2017 3:41:00 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: <b>NV00922-WC_170212A</b>	QC Batch: <b>R113466</b>			PrepDate		Analyst: <b>RB</b>
Nitrate/Nitrite as N	3.3	0.11	0.25	mg/L	5	2/12/2017

**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:** N022931  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 4500N03F\_W**

Sample ID <b>MB-R113466</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113466</b>
Client ID: <b>PBW</b>	Batch ID: <b>R113466</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>2/12/2017</b>	SeqNo: <b>2563977</b>
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 <b>LCS-R113466</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113466</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R113466</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>2/12/2017</b>	SeqNo: <b>2563978</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 0.528 0.050 0.5000 0 106 85 115

Sample ID <b>N022931-002DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113466</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R113466</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>2/12/2017</b>	SeqNo: <b>2563980</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 3.440 0.25 3.325 3.39 20

Sample ID <b>N022931-002DMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113466</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R113466</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>2/12/2017</b>	SeqNo: <b>2563981</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 5.661 0.25 2.500 3.325 93.4 75 125

Sample ID <b>N022931-002DMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113466</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R113466</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>2/12/2017</b>	SeqNo: <b>2563982</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 5.543 0.25 2.500 3.325 88.7 75 125 5.661 2.11 20

**Qualifiers:**

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



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Project Name PG&E Topock			Container:	1 Liter Poly	1 Liter Poly	1 Liter Poly	250 ml Poly	1 Liter Poly	1 Liter Poly	500 ml Poly	500 ml Poly	1 Liter Poly	Number of Containers	COMMENTS
Location PG&E Topock			Preservatives:	4°C Lab H2SO4	4°C	4°C	4°C	4°C Lab H2SO4	4°C	4°C	4°C	4°C		
Project Number 680375.02.IM.OP.00			Filtered:	NA	NA	NA	NA	NA	NA	NA	NA			
Project Manager Scott O'Donnell			Holding Time:	28	7	7	1	28	7	180	180	7		
Sample Manager Shawn Duffy				AMMONIA (SM4500NH3D)	Anions (E300.0) FI, SO4	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	Nitrate/Nitrite (SM4500NO3-E)	TDS (SM2540C)	Total Metals(E200.7 and E200.8)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)		
Task Order														
Project IM3PLANT-ARAR-WDR-550														
Turnaround Time 10 Days														
Shipping Date: 2/1/2017														
COC Number: 550														
DATE	TIME	Matrix												
SC-100B-WDR-550	2-1-17	1535	Water			X	X		X		X	X	N022931 - 01	3
SC-700B-WDR-550	2-1-17	1541	Water	X	X	X	X	X	X	X		X	- 02	4
TOTAL NUMBER OF CONTAINERS													7	

Signatures	Date/Time	Shipping Details
Approved by 	2-1-17 1535	Method of Shipment: FedEx
Sampled by 	2-1-17 1535	On Ice: yes / no 2 / 100
Relinquished by 	2/1/17 2015	Airbill No: 1846
Received by 	2/1/17 2354	Lab Name: ASSET Laboratories
Relinquished by 		Lab Phone: (702) 307-2659

ATTN:

Sample Custody  
and  
Marlon Cartin

Special Instructions:

Report Copy to  
Doug Scott  
(970) 731-0636

## 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: 2/1/2017 Workorder: N022931  
 Rep sample Temp (Deg C): 2.1 IR Gun ID: 2  
 Temp Blank: ☒ Yes ☐ No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

### Sample Receipt Checklist

- |   |   |  |   |
|---|---|--|---|
| 1. Shipping container/cooler in good condition?   | Yes <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?<br>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?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments: Samples for Hex Cr were Lab filtered and preserved.  
 Samples for Total Metals, Ammonia and NO<sub>3</sub><sup>-</sup> were Lab preserved.

Checklist Completed By: YR  2/2/2017

Reviewed By:  2/7/2017

**ASSET Laboratories**

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

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

# CHAIN-OF-CUSTODY RECORD

Page 1 of 1

**QC Level: Level IV****Subcontractor:**

Truesdail  
3337 Michelson Drive, Suite CN750  
Irvine, CA 92612

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

Field Sampler: SIGNED

**02-Feb-17**


Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3D		
N022931-002A / SC-700B-WDR-550	Water	2/1/2017 3:41:00 PM	16OZP	1		

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

Please use PO#:N22931A Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Ammonia. CH2M Hill Sample.

GSO #: 534908061

Date/Time		Date/Time	
Relinquished by: 	2/2/2017 17:00	Received by: _____	_____
Relinquished by: _____	_____	Received by: _____	_____

## List of Analysts

ASSET Laboratories Work Order: **N022931**

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



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## REPORT

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

**Client: Advanced Technology Laboratories-NV**

3151 W Post Rd  
Las Vegas, NV 89118

Attention: Marlon Cartin

Project Name: ATL-NV

Work Order No.: 17B0075

Printed: 02/23/2017

### CASE NARRATIVE

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

The sample was received and delivered with the chain of custody on February 3rd, 2017, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter will be kept in warm storage for additional 2 months before disposal.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 203

### SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
N022931-002A / SC-700B-WDR-550	17B0075-01	Water		02/01/2017 15:41	02/03/2017 09:20

### DEFINITIONS

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

Respectfully yours,

Shelly Brady  
Customer Service Manager



Client: **Advanced Technology Laboratories-N** Project Name: ATL-NV  
Project Number: [none]

Printed: 02/23/2017

**N022931-002A / SC-700B-WDR-550**  
**17B0075-01 (Water)**

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

**Truesdail Laboratories, Inc**

**Wet Chemistry**

Ammonia	ND	0.0500	mg/L	1	1702246	02/08/2017 14:48	Alexander Luna	SM 4500-NH3 D M	
---------	----	--------	------	---	---------	------------------	----------------	-----------------	--



**Client:** Advanced Technology Laboratories-N  
**Project Name:** ATL-NV  
**Project Number:** [none]

Printed: 02/23/2017

**QUALITY CONTROL**  
**Wet Chemistry**  
**Truesdail Laboratories, Inc**

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	% Rec Limits	RPD	RPD Limit	Note
---------	--------	----	-------	-------------	---------------	------	--------------	-----	-----------	------

**Batch: 1702246 - SM 4500-NH3 D M**

**Blank (1702246-BLK1)**

Prepared & Analyzed: 2/8/2017

Ammonia	ND	0.0500	mg/L							
---------	----	--------	------	--	--	--	--	--	--	--

**LCS (1702246-BS1)**

Prepared & Analyzed: 2/8/2017

Ammonia	0.361	0.0500	mg/L	0.400		90	90-110			
---------	-------	--------	------	-------	--	----	--------	--	--	--

**Duplicate (1702246-DUP1)**

**Source: 17B0153-03**

Prepared & Analyzed: 2/8/2017

Ammonia	0.806	0.0500	mg/L		0.776			4	20	
---------	-------	--------	------	--	-------	--	--	---	----	--

**Matrix Spike (1702246-MS1)**

**Source: 17B0010-02**

Prepared & Analyzed: 2/8/2017

Ammonia	0.662	0.0500	mg/L	0.400	0.310	88	75-125			
---------	-------	--------	------	-------	-------	----	--------	--	--	--

**Matrix Spike Dup (1702246-MSD1)**

**Source: 17B0010-02**

Prepared & Analyzed: 2/8/2017

Ammonia	0.664	0.0500	mg/L	0.400	0.310	89	75-125	0.3	20	
---------	-------	--------	------	-------	-------	----	--------	-----	----	--

ANALYSIS DATA SHEET

Inorganics

Client: Advanced Technology Laboratories-NV  
Client Sample ID: N022931-002A / SC-700B-WDR-550  
Lab Sample ID: 17B0075-01  
Project: ATL-NV

Date Sampled: 02/01/17 15:41                      Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	ND	0.0111	0.0500	1		AxL	02/08/17 14:48	SM 4500-NH3 D M



# METHOD BLANK DATA SHEET

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV

Project: ATL-NV

Laboratory ID: 1702246-BLK1

Prepared: 02/08/17 09:58

Preparation: SM 4500-NH3 D M

Matrix: Water

Analyzed: 02/08/17 14:31

Instrument: TL01

File ID: 7B08001-016

Batch: 1702246

Sequence: 7B08001

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7664-41-7	Ammonia	ND	0.0111	0.0500	

## LCS / LCS DUPLICATE RECOVERY

SM 4500-NH3 D M

**Client:** Advanced Technology Laboratories-NV  
**Project:** ATL-NV  
**Work Order:** 17B0075

Matrix:	Water	Prep Method:	SM 4500-NH3 D M
Prep Batch:	1702246	Lab Sample ID:	1702246-BS1

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

# DUPLICATES

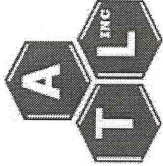
## Duplicate

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

Matrix:	Water	Laboratory ID:	1702246-DUP1
Prep Batch:	1702246	Initial/Final:	50 mL / 50 mL
Prep Method:	SM 4500-NH3 D M	Analysis:	SM 4500-NH3 D M

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Ammonia	0.776	0.806	4		20





## 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

17B0075

QC Level: Level IV

### Subcontractor:

Truesdail

3337 Michelson Drive, Suite CN750  
Irvine, CA 92612

TEL: (714) 730-6239

FAX: (714) 730-6462

Acct #:

Field Sampler: SIGNED

02-Feb-17

Sample ID	Matrix	Date Collected	Bottle Type	SM4500-NH3D	Requested Tests
N022931-002A / SC-700B-WDR-550	Water	2/1/2017 3:41:00 PM	16OZP	1	

**ALERT !!**  
**Level IV QC**

### General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO#:N22931A Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Ammonia. CH2M Hill Sample.

GSO #: 534908061

Relinquished by:	Date/Time	Received by:	Date/Time
RA	2/2/2017 17:00	<i>[Signature]</i>	2-3-17-9:20
Relinquished by:		Received by:	

5.3°C

## Log-in check list For level III data package

Client:

ATL

Lab Number:

17B0075

Received Date:

2-3-17

**Sample receiving review**

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

Sample receiving Signature:

Brown

**ALERT !!**  
**Level IV QC**

**ALERT !!**  
**Level IV QC**

## WORK ORDER

Printed: 2/3/17 9:47:28AM

17B0075

Truesdail Laboratories, Inc

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

Project Manager: Shelly Brady  
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: 02/14/2017 16:30 (7 day TAT)

Received By: Jacqueline Brown

Date Received: 02/03/2017 09:20

Logged In By: Jacqueline Brown

Date Logged In: 02/03/2017 09:31

Samples Received at: 5.3°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
----------	-----	-----	---------	----------

17B0075-01 N022931-002A / SC-700B-WDR-550 [Water] Sampled 02/01/2017  
15:41 (GMT-08:00) Pacific Time (US &

Ammonia E	02/14/2017 08:00	7	03/01/2017 15:41	
-----------	------------------	---	------------------	--

Reviewed By

Date

Page 1 of 1

February 14, 2017

Doug Scott  
CH2M HILL  
155 Grand Avenue, Suite 1000  
Oakland, CA 94612

TEL: (970) 731-0636

FAX: (510) 622-9129

Workorder No.: N023000

RE: PG&E Topock, 680375.02.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on February 07, 2017 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,



Puri Romualdo  
Laboratory Director

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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ORELAP/NELAP Cert 4046



---

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N023000

---

**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.

Sample was analyzed within method holding time.



## ASSET Laboratories

Date: 14-Feb-17

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N023000  
**Contract No:** IM3PLANT-AR

### Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N023000-001A	SC-700B-WDR-551	Water	2/7/2017 10:50:00 AM	2/7/2017	2/14/2017



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ORELAP/NELAP Cert 4046

**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 14-Feb-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-551
<b>Lab Order:</b>	N023000	<b>Collection Date:</b>	2/7/2017 10:50:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N023000-001		

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

**TOTAL FILTERABLE RESIDUE**
**SM2540C**

RunID: <b>NV00922-WC_170208G</b>	QC Batch: <b>61208</b>	PrepDate	<b>2/8/2017</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4300	50	50	mg/L
			1	2/8/2017 12:45 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N023000  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 160.1\_2540C\_W**

Sample ID <b>LCS-61208</b>	SampType: <b>LCS</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>2/8/2017</b>	RunNo: <b>113408</b>
Client ID: <b>LCSW</b>	Batch ID: <b>61208</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>2/8/2017</b>	SeqNo: <b>2561561</b>
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 <b>MB-61208</b>	SampType: <b>MBLK</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>2/8/2017</b>	RunNo: <b>113408</b>
Client ID: <b>PBW</b>	Batch ID: <b>61208</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>2/8/2017</b>	SeqNo: <b>2561562</b>
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 <b>N022999-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>2/8/2017</b>	RunNo: <b>113408</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61208</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>2/8/2017</b>	SeqNo: <b>2561565</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	4590.000	50			4660 1.51 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			




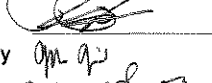
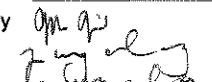
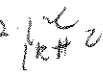


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<b>Project Name</b> PG&E Topock <b>Location</b> PG&E Topock <b>Project Number</b> 680375.02.IM.OP.00 <b>Project Manager</b> Scott O'Donnell <b>Sample Manager</b> Shawn Duffy  <b>Task Order</b> <b>Project</b> IM3PLANT-ARAR-WDR-551 <b>Turnaround Time</b> 10 Days <b>Shipping Date:</b> 2/7/2017 <b>COC Number:</b> 551				<b>Container:</b> 1 Liter Poly <b>Preservatives:</b> 4°C <b>Filtered:</b> NA <b>Holding Time:</b> 7	TDS (SM2540C)		Number of Containers	COMMENTS
<b>DATE</b> <b>TIME</b> <b>Matrix</b>								
SC-700B-WDR-551	2-7-17	10:50	Water	X	N023000 - 01	1		
TOTAL NUMBER OF CONTAINERS						1		

	Signatures	Date/Time	Shipping Details
Approved by			
Sampled by		2-7-17 10:55	Method of Shipment: FedEx
Relinquished by		2-7-17 1530	On Ice: <u>yes</u> / no 2 
Received by		2/7/17 1530	Airbill No:
Relinquished by		2/7/17 2050	Lab Name: ASSET Laboratories
Received by			Lab Phone: (702) 307-2659

ATTN:

Sample Custody  
and  
Marlon Cartin

Special Instructions:

Report Copy to  
Doug Scott  
(970) 731-0636

## 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: 2/7/2017 Workorder: N023000  
 Rep sample Temp (Deg C): 2.1 IR Gun ID: 2  
 Temp Blank: ☒ Yes ☐ No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None


### Sample Receipt Checklist

- |   |   |                             |   |
|---|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition?   | Yes <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?<br>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 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: YR  2/9/2017

Reviewed By:

 2/10/2017

## List of Analysts

ASSET Laboratories Work Order: **N023000**

NAME	TEST METHOD
Lilia Ramit	SM 2540C



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P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

February 20, 2017

Doug Scott  
CH2M HILL  
155 Grand Avenue, Suite 1000  
Oakland, CA 94612

TEL: (970) 731-0636  
FAX: (510) 622-9129

Workorder No.: N023108

RE: PG&E Topock, 680375.02.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on February 14, 2017 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,



Puri Romualdo  
Laboratory Director

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**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N023108

---

**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.

Sample was analyzed within method holding time.



## ASSET Laboratories

Date: 20-Feb-17

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N023108  
**Contract No:** IM3PLANT-AR

### Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N023108-001A	SC-700B-WDR-552	Water	2/14/2017 4:25:00 PM	2/14/2017	2/20/2017



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**ASSET Laboratories****ANALYTICAL RESULTS**

Print Date: 20-Feb-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-552
<b>Lab Order:</b>	N023108	<b>Collection Date:</b>	2/14/2017 4:25:00 PM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N023108-001		

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

RunID: <b>NV00922-WC_170215E</b>	QC Batch: <b>61271</b>	PrepDate	<b>2/15/2017</b>	Analyst: <b>LR</b>		
Total Dissolved Solids (Residue, Filterable)	4400	50	50	mg/L	1	2/15/2017 12:55 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N023108  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 160.1\_2540C\_W**

Sample ID <b>LCS-61271</b>	SampType: <b>LCS</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>2/15/2017</b>	RunNo: <b>113531</b>
Client ID: <b>LCSW</b>	Batch ID: <b>61271</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>2/15/2017</b>	SeqNo: <b>2568687</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	966.000	10	1000	0	96.6 80 120

Sample ID <b>MB-61271</b>	SampType: <b>MBLK</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>2/15/2017</b>	RunNo: <b>113531</b>
Client ID: <b>PBW</b>	Batch ID: <b>61271</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>2/15/2017</b>	SeqNo: <b>2568688</b>
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 <b>N023108-001ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>2/15/2017</b>	RunNo: <b>113531</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61271</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>2/15/2017</b>	SeqNo: <b>2568698</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	4250.000	50			4360 2.56 5

**Qualifiers:**

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



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## ASSET Laboratories

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: 2/14/2017 Workorder: N023108  
 Rep sample Temp (Deg C): 2.1 IR Gun ID: 2  
 Temp Blank: ☒ Yes ☐ No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

### Sample Receipt Checklist

- |   |   |                             |   |
|---|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition?   | Yes <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?<br>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 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: YR YR 2/17/2017

Reviewed By: MM 2/20/2017

## List of Analysts

ASSET Laboratories Work Order: **N023108**

NAME	TEST METHOD
Lilia Ramit	SM 2540C



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**“Serving Clients with Passion and Professionalism”**

March 01, 2017

Doug Scott  
CH2M HILL  
155 Grand Avenue, Suite 1000  
Oakland, CA 94612

TEL: (970) 731-0636

FAX: (510) 622-9129

Workorder No.: N023179

RE: PG&E Topock, 680375.02.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on February 21, 2017 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,

*Nancy Libucos Tor*

Puri Romualdo  
Laboratory Director

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---

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N023179

---

**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.

Sample was analyzed within method holding time.



## ASSET Laboratories

Date: 01-Mar-17

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N023179  
**Contract No:** IM3PLANT-AR

### Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N023179-001A	SC-700B-WDR-553	Water	2/21/2017 11:20:00 AM	2/21/2017	3/1/2017



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ORELAP/NELAP Cert 4046

**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 01-Mar-17

<b>CLIENT:</b>	CH2M HILL	<b>Client Sample ID:</b>	SC-700B-WDR-553
<b>Lab Order:</b>	N023179	<b>Collection Date:</b>	2/21/2017 11:20:00 AM
<b>Project:</b>	PG&E Topock, 680375.02.IM.OP.00	<b>Matrix:</b>	WATER
<b>Lab ID:</b>	N023179-001		

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

RunID: <b>NV00922-WC_170222H</b>	QC Batch: <b>61356</b>	PrepDate	<b>2/22/2017</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L
			1	2/22/2017 01:02 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N023179  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 160.1\_2540C\_W**

Sample ID <b>LCS-61356</b>	SampType: <b>LCS</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>2/22/2017</b>	RunNo: <b>113731</b>
Client ID: <b>LCSW</b>	Batch ID: <b>61356</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>2/22/2017</b>	SeqNo: <b>2577711</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	966.000	10	1000	0	96.6 80 120

Sample ID <b>MB-61356</b>	SampType: <b>MBLK</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>2/22/2017</b>	RunNo: <b>113731</b>
Client ID: <b>PBW</b>	Batch ID: <b>61356</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>2/22/2017</b>	SeqNo: <b>2577712</b>
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 <b>N023179-001ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>2/22/2017</b>	RunNo: <b>113731</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61356</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>2/22/2017</b>	SeqNo: <b>2577714</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	4285.000	50			4245 0.938 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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Project Name PG&E Topock Location PG&E Topock Project Number 680375.02.IM.OP.00 Project Manager Scott O'Donnell Sample Manager Shawn Duffy  Task Order Project IM3PLANT-ARAR-WDR-553 Turnaround Time 10 Days Shipping Date: 2/21/2017 COC Number: 553				Container: 1 Liter Poly Preservatives: 4°C Filtered: NA Holding Time: 7  TDS (SM2540C)	Number of Containers	COMMENTS	
DATE	TIME	Matrix					
SC-700B-WDR-553	2-21-17	11:20	Water	x	N023179 - 01	1	
TOTAL NUMBER OF CONTAINERS						1	

	Signatures	Date/Time	Shipping Details
Approved by	<i>gn. d</i>	02-21-17 11:20	Method of Shipment: FedEx
Sampled by	<i>gn. d</i>	02-21-17 13:45	On Ice: <i>yes</i> / no <i>1-2</i>
Relinquished by	<i>gn. d</i>	2/21/17 1845	Airbill No:
Received by	<i>gn. d</i>	2/21/17 1845	Lab Name: ASSET Laboratories
Relinquished by	<i>gn. d</i>	2/21/17 1845	Lab Phone: (702) 307-2659
Received by	<i>gn. d</i>	2/21/17 1845	

ATTN:  
Sample Custody  
and  
Marlon Cartin

## Special Instructions:

Report Copy to  
Doug Scott  
(970) 731-0636

## 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: 2/21/2017 Workorder: N023179  
 Rep sample Temp (Deg C): 1.7 IR Gun ID: 2  
 Temp Blank: ☒ Yes ☐ No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

### Sample Receipt Checklist

1. Shipping container/cooler in good condition?	Yes <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 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 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: YR  2/23/2017

Reviewed By:  2/27/2017

## List of Analysts

ASSET Laboratories Work Order: **N023179**

NAME	TEST METHOD
Lilia Ramit	SM 2540C



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"Serving Clients with Passion and Professionalism"

March 15, 2017

Doug Scott  
CH2M HILL  
155 Grand Avenue, Suite 1000  
Oakland, CA 94612

TEL: (970) 731-0636

FAX: (510) 622-9129

Workorder No.: N023268

RE: PG&E Topock, 680375.02.IM.OP.00


Attention: Doug Scott

Enclosed are the results for sample(s) received on March 01, 2017 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,

 Puri Romualdo

Puri Romualdo  
Laboratory Director

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, 680375.02.IM.OP.00  
**Lab Order:** N023268

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

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

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

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

Samples were analyzed within method holding time.

**Subcontracted Analyses:**

Ammonia was subcontracted to Truesdail-Irvine, CA.

**Analytical Comments for EPA 200.8:**

Dilution was necessary on some analytes for all samples 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 analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Copper on QC samples N023268-001C-MS and N023268-001C-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium on QC samples N023268-001C-MS and N023268-001C-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.



## ASSET Laboratories

Date: 15-Mar-17

**CLIENT:** CH2M HILL  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab Order:** N023268  
**Contract No:**

### Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N023268-001A	SC-100B-WDR-555	Water	3/1/2017 2:40:00 PM	3/1/2017	3/15/2017
N023268-001B	SC-100B-WDR-555	Water	3/1/2017 2:40:00 PM	3/1/2017	3/15/2017
N023268-001C	SC-100B-WDR-555	Water	3/1/2017 2:40:00 PM	3/1/2017	3/15/2017
N023268-001D	SC-100B-WDR-555	Water	3/1/2017 2:40:00 PM	3/1/2017	3/15/2017
N023268-002A	SC-700B-WDR-555	Water	3/1/2017 2:45:00 PM	3/1/2017	3/15/2017
N023268-002B	SC-700B-WDR-555	Water	3/1/2017 2:45:00 PM	3/1/2017	3/15/2017
N023268-002C	SC-700B-WDR-555	Water	3/1/2017 2:45:00 PM	3/1/2017	3/15/2017
N023268-002D	SC-700B-WDR-555	Water	3/1/2017 2:45:00 PM	3/1/2017	3/15/2017
N023268-002E	SC-700B-WDR-555	Water	3/1/2017 2:45:00 PM	3/1/2017	3/15/2017
N023268-002F	SC-700B-WDR-555	Water	3/1/2017 2:45:00 PM	3/1/2017	3/15/2017



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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-001

**Client Sample ID:** SC-100B-WDR-555  
**Collection Date:** 3/1/2017 2:40:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-WC_170302A</b>	QC Batch: <b>R113871</b>			PrepDate		Analyst: <b>LR</b>
Specific Conductance	7900	0.10	0.10	umhos/cm	1	3/2/2017 10:35 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:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-002

**Client Sample ID:** SC-700B-WDR-555  
**Collection Date:** 3/1/2017 2:45:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-WC_170302A</b>	QC Batch: <b>R113871</b>			PrepDate		Analyst: <b>LR</b>
Specific Conductance	7600	0.10	0.10	umhos/cm	1	3/2/2017 10:35 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:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

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

Sample ID	<b>N023268-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>113871</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R113871</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>3/2/2017</b>	SeqNo:	<b>2585032</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Specific Conductance		7630.000		0.10						7640	0.131 10

**Qualifiers:**

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

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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-001

**Client Sample ID:** SC-100B-WDR-555  
**Collection Date:** 3/1/2017 2:40:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-WC_170302F</b>	QC Batch: <b>61443</b>			PrepDate	<b>3/2/2017</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L	1	3/2/2017 01:18 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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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-002

**Client Sample ID:** SC-700B-WDR-555  
**Collection Date:** 3/1/2017 2:45:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-WC_170302F</b>	QC Batch: <b>61443</b>			PrepDate	<b>3/2/2017</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4100	50	50	mg/L	1	3/2/2017 01:18 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:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 160.1\_2540C\_W**

Sample ID <b>LCS-61443</b>	SampType: <b>LCS</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>3/2/2017</b>	RunNo: <b>113876</b>
Client ID: <b>LCSW</b>	Batch ID: <b>61443</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>3/2/2017</b>	SeqNo: <b>2585055</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	942.000	10	1000	0	94.2 80 120

Sample ID <b>MB-61443</b>	SampType: <b>MBLK</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>3/2/2017</b>	RunNo: <b>113876</b>
Client ID: <b>PBW</b>	Batch ID: <b>61443</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>3/2/2017</b>	SeqNo: <b>2585056</b>
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 <b>N023268-001ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.1_2540C</b>	Units: <b>mg/L</b>	Prep Date: <b>3/2/2017</b>	RunNo: <b>113876</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61443</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>3/2/2017</b>	SeqNo: <b>2585061</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	4095.000	50			4200 2.53 5

**Qualifiers:**

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



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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-002

**Client Sample ID:** SC-700B-WDR-555  
**Collection Date:** 3/1/2017 2:45:00 PM  
**Matrix:** WATER

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

RunID: NV00922-ICP2_170313C	QC Batch: 61511	PrepDate	3/9/2017	Analyst: CEI
Aluminum	ND 2.7	50	µg/L	1 3/13/2017 05:00 PM
Boron	1100 38	100	µg/L	1 3/14/2017 09:24 AM
Iron	ND 1.8	20	µg/L	1 3/13/2017 05:00 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:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 200.7\_WPGEPB**

Sample ID <b>MB-61511</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WPGE</b>	Units: <b>µg/L</b>	Prep Date: <b>3/9/2017</b>	RunNo: <b>114065</b>
Client ID: <b>PBW</b>	Batch ID: <b>61511</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>3/13/2017</b>	SeqNo: <b>2593443</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	23.338	50			
Iron	12.838	20			

Sample ID <b>LCS1-61511</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WPGE</b>	Units: <b>µg/L</b>	Prep Date: <b>3/9/2017</b>	RunNo: <b>114065</b>
Client ID: <b>LCSW</b>	Batch ID: <b>61511</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>3/13/2017</b>	SeqNo: <b>2593444</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	9527.539	50	10000	0	95.3 85 115
Iron	109.987	20	100.0	0	110 85 115

Sample ID <b>N023268-002E-MS1</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WPGE</b>	Units: <b>µg/L</b>	Prep Date: <b>3/9/2017</b>	RunNo: <b>114065</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61511</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>3/13/2017</b>	SeqNo: <b>2593448</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	10118.433	50	10000	2.987	101 75 125
Iron	110.842	20	100.0	15.33	95.5 75 125

Sample ID <b>N023268-002E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WPGE</b>	Units: <b>µg/L</b>	Prep Date: <b>3/9/2017</b>	RunNo: <b>114065</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61511</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>3/13/2017</b>	SeqNo: <b>2593449</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	10182.420	50	10000	2.987	102 75 125 10120 0.630 20
Iron	111.174	20	100.0	15.33	95.8 75 125 110.8 0.299 20

Sample ID <b>MB-61511</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WPGE</b>	Units: <b>µg/L</b>	Prep Date: <b>3/9/2017</b>	RunNo: <b>114080</b>
Client ID: <b>PBW</b>	Batch ID: <b>61511</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>3/14/2017</b>	SeqNo: <b>2593996</b>
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:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WPGEPBB**

Sample ID	MB-61511	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	3/9/2017	RunNo:	114080			
Client ID:	PBW	Batch ID:	61511	TestNo:	EPA 200.7			Analysis Date:	3/14/2017	SeqNo:	2593996			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron ND 100

Sample ID	LCS1-61511	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	3/9/2017	RunNo:	114080			
Client ID:	LCSW	Batch ID:	61511	TestNo:	EPA 200.7			Analysis Date:	3/14/2017	SeqNo:	2593997			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron 4693.575 100 5000 0 93.9 85 115

Sample ID	N023268-002E-MS1	SampType: MS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 3/9/2017	RunNo: 114080					
Client ID: ZZZZZZ	Batch ID: 61511	TestNo: EPA 200.7	Analysis Date: 3/14/2017	SeqNo: 2594001							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron 6128.322 100 5000 1051 102 75 125

Sample ID	N023268-002E-MSD	SampType:	MSD	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	3/9/2017	RunNo:	114080			
Client ID:	ZZZZZZ	Batch ID:	61511	TestNo:	EPA 200.7			Analysis Date:	3/14/2017	SeqNo:	2594002			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron 6141.016 100 5000 1051 102 75 125 6128 0.207 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 |                                      |   |  |



**ASSET LABORATORIES**

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 EPA ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
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 ELAP Cert 2676 | NV Cert NV00922  
 ORELAP/NELAP Cert 4046

"Serving Clients with Passion and Professionalism"

**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-001

**Client Sample ID:** SC-100B-WDR-555  
**Collection Date:** 3/1/2017 2:40:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-ICP7_170307A</b>	QC Batch: <b>61450</b>			PrepDate	<b>3/3/2017</b>	Analyst: <b>CEI</b>
Manganese	21	0.056	0.50	µg/L	1	3/7/2017 09:12 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



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-002

**Client Sample ID:** SC-700B-WDR-555  
**Collection Date:** 3/1/2017 2:45:00 PM  
**Matrix:** WATER

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

RunID: NV00922-ICP7_170306C	QC Batch: 61450	PrepDate	3/3/2017	Analyst: CEI		
Antimony	ND	0.031	0.50	µg/L	1	3/6/2017 08:20 PM
Arsenic	ND	0.025	0.10	µg/L	1	3/6/2017 08:20 PM
Barium	19	0.070	1.0	µg/L	1	3/6/2017 08:20 PM
Copper	ND	0.26	1.0	µg/L	1	3/6/2017 08:20 PM
Lead	ND	0.18	5.0	µg/L	5	3/6/2017 08:26 PM
Manganese	11	0.056	0.50	µg/L	1	3/7/2017 10:13 PM
Molybdenum	23	0.039	0.50	µg/L	1	3/7/2017 10:13 PM
Nickel	2.0	0.040	1.0	µg/L	1	3/6/2017 08:20 PM
Zinc	ND	0.27	10	µg/L	1	3/6/2017 08:20 PM

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



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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 ORELAP/NELAP Cert 4046

**CLIENT:** CH2M HILL  
**Work Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 200.8\_W**

Sample ID	MB-61450	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/3/2017	RunNo:	113941		
Client ID:	PBW	Batch ID:	61450	TestNo:	EPA 200.8			Analysis Date:	3/6/2017	SeqNo:	2588561		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	0.097	0.50									
Arsenic	ND	0.10									
Barium	ND	1.0									
Copper	ND	1.0									
Lead	ND	1.0									
Nickel	ND	1.0									
Zinc	0.846	10									

Sample ID	LCS-61450	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/3/2017	RunNo:	113941		
Client ID:	LCSW	Batch ID:	61450	TestNo:	EPA 200.8			Analysis Date:	3/6/2017	SeqNo:	2588562		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	10.258	0.50	10.00	0	103	85	115				
Arsenic	10.104	0.10	10.00	0	101	85	115				
Barium	100.587	1.0	100.0	0	101	85	115				
Copper	10.269	1.0	10.00	0	103	85	115				
Lead	10.365	1.0	10.00	0	104	85	115				
Nickel	10.283	1.0	10.00	0	103	85	115				
Zinc	94.860	10	100.0	0	94.9	85	115				

Sample ID	N023268-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/3/2017	RunNo:	113941		
Client ID:	ZZZZZZ	Batch ID:	61450	TestNo:	EPA 200.8			Analysis Date:	3/6/2017	SeqNo:	2588568		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	10.091	0.50	10.00	0.05738	100	75	125				
Arsenic	12.874	0.10	10.00	2.848	100	75	125				
Barium	129.242	1.0	100.0	31.03	98.2	75	125				
Copper	5.132	1.0	10.00	0	51.3	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		



**ASSET LABORATORIES**  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** CH2M HILL  
**Work Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 200.8\_W

Sample ID	<b>N023268-001C-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>3/3/2017</b>	RunNo:	<b>113941</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>61450</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>3/6/2017</b>	SeqNo:	<b>2588568</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nickel	9.503	1.0	10.00	0	95.0	75	125				
Zinc	75.004	10	100.0	0	75.0	75	125				

Sample ID	<b>N023268-001C-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>3/3/2017</b>	RunNo:	<b>113941</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>61450</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>3/6/2017</b>	SeqNo:	<b>2588569</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.482	5.0	10.00	0	115	75	125				

Sample ID	<b>N023268-001C-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>3/3/2017</b>	RunNo:	<b>113941</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>61450</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>3/6/2017</b>	SeqNo:	<b>2588570</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.036	0.50	10.00	0.05738	99.8	75	125	10.09	0.547	20	
Arsenic	13.057	0.10	10.00	2.848	102	75	125	12.87	1.41	20	
Barium	128.775	1.0	100.0	31.03	97.7	75	125	129.2	0.362	20	
Copper	5.265	1.0	10.00	0	52.7	75	125	5.132	2.56	20	S
Nickel	9.441	1.0	10.00	0	94.4	75	125	9.503	0.649	20	
Zinc	75.610	10	100.0	0	75.6	75	125	75.00	0.805	20	

Sample ID	<b>N023268-001C-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>200.8_W</b>	Units:	<b>µg/L</b>	Prep Date:	<b>3/3/2017</b>	RunNo:	<b>113941</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>61450</b>	TestNo:	<b>EPA 200.8</b>			Analysis Date:	<b>3/6/2017</b>	SeqNo:	<b>2588573</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.355	5.0	10.00	0	114	75	125	11.48	1.11	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			



**ASSET LABORATORIES**

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"Serving Clients with Passion and Professionalism"

**CLIENT:** CH2M HILL  
**Work Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 200.8\_W

Sample ID	MB-61450	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/3/2017	RunNo:	113972			
Client ID:	PBW	Batch ID:	61450	TestNo:	EPA 200.8			Analysis Date:	3/7/2017	SeqNo:	2590059			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese	ND	0.50
Molybdenum	0.094	0.50

Sample ID	LCS-61450	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/3/2017	RunNo:	113972			
Client ID:	LCSW	Batch ID:	61450	TestNo:	EPA 200.8			Analysis Date:	3/7/2017	SeqNo:	2590060			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese	106.524	0.50	100.0	0	107	85	115
Molybdenum	10.202	0.50	10.00	0	102	85	115

Sample ID	N023268-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/3/2017	RunNo:	113972			
Client ID:	ZZZZZZ	Batch ID:	61450	TestNo:	EPA 200.8			Analysis Date:	3/7/2017	SeqNo:	2590066			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese	109.640	0.50	100.0	21.05	88.6	75	125
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Sample ID	N023268-001C-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/3/2017	RunNo: 113972					
Client ID: ZZZZZZ	Batch ID: 61450	TestNo: EPA 200.8	Analysis Date: 3/7/2017	SeqNo: 2590067							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Molybdenum	33.459	2.5	10.00	21.32	121	75	125
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Sample ID	N023268-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	3/3/2017	RunNo:	113972			
Client ID:	ZZZZZZ	Batch ID:	61450	TestNo:	EPA 200.8			Analysis Date:	3/7/2017	SeqNo:	2590068			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese	109.328	0.50	100.0	21.05	88.3	75	125	109.6	0.285	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			



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

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**CLIENT:** CH2M HILL  
**Work Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 200.8\_W

Sample ID	N023268-001C-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 3/3/2017	RunNo: 113972					
Client ID: ZZZZZZ	Batch ID: 61450	TestNo: EPA 200.8	Analysis Date: 3/7/2017	SeqNo: 2590071							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	33.020	2.5	10.00	21.32	117	75	125	33.46	1.32	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 |                                      |   |  |



**ASSET LABORATORIES**

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 ELAP Cert 2921  
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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-001

**Client Sample ID:** SC-100B-WDR-555  
**Collection Date:** 3/1/2017 2:40:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-IC7_170303A</b>	QC Batch: <b>R113878</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	470	6.6	20		µg/L	100	3/3/2017 11:36 AM

**TOTAL METALS BY ICPMS**
**EPA 200.8**

RunID: <b>NV00922-ICP7_170306C</b>	QC Batch: <b>61450</b>				PrepDate	<b>3/3/2017</b>	Analyst: <b>CEI</b>
Chromium	520	0.096	5.0		µg/L	5	3/6/2017 07:26 PM

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



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-002

**Client Sample ID:** SC-700B-WDR-555  
**Collection Date:** 3/1/2017 2:45:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-IC7_170303A</b>	QC Batch: <b>R113878</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	3/3/2017 12:16 PM

**TOTAL METALS BY ICPMS**
**EPA 200.8**

RunID: <b>NV00922-ICP7_170306C</b>	QC Batch: <b>61450</b>				PrepDate	<b>3/3/2017</b>	Analyst: <b>CEI</b>
Chromium	ND	0.019	1.0		µg/L	1	3/6/2017 08:20 PM

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



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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"Serving Clients with Passion and Professionalism"

**CLIENT:** CH2M HILL  
**Work Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 200.8\_W\_CRPGE**

Sample ID <b>MB-61450</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_W_CR</b>	Units: <b>µg/L</b>	Prep Date: <b>3/3/2017</b>	RunNo: <b>113941</b>							
Client ID: <b>PBW</b>	Batch ID: <b>61450</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>3/6/2017</b>	SeqNo: <b>2588647</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chromium	ND	1.0										

Sample ID <b>LCS-61450</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_W_CR</b>	Units: <b>µg/L</b>	Prep Date: <b>3/3/2017</b>	RunNo: <b>113941</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>61450</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>3/6/2017</b>	SeqNo: <b>2588648</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chromium	9.936	1.0	10.00	0	99.4	85	115					

Sample ID <b>N023268-001C-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_W_CR</b>	Units: <b>µg/L</b>	Prep Date: <b>3/3/2017</b>	RunNo: <b>113941</b>							
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61450</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>3/6/2017</b>	SeqNo: <b>2588655</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chromium	509.888	5.0	10.00	516.9	-70.1	75	125				S	

Sample ID <b>N023268-001C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_W_CR</b>	Units: <b>µg/L</b>	Prep Date: <b>3/3/2017</b>	RunNo: <b>113941</b>							
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>61450</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>3/6/2017</b>	SeqNo: <b>2588659</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chromium	506.902	5.0	10.00	516.9	-99.9	75	125	509.9	0.587	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:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 218.6\_WU\_PGE

Sample ID	MB-R113878	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113878			
Client ID:	PBW	Batch ID:	R113878	TestNo:	EPA 218.6			Analysis Date:	3/3/2017	SeqNo:	2585086			
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-R113878	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113878			
Client ID:	LCSW	Batch ID:	R113878	TestNo:	EPA 218.6			Analysis Date:	3/3/2017	SeqNo:	2585087			
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	N023268-001BDUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113878			
Client ID:	ZZZZZZ	Batch ID:	R113878	TestNo:	EPA 218.6			Analysis Date:	3/3/2017	SeqNo:	2585089			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 470.320 20 468.4 0.403 20

Sample ID	N023268-001BMS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 113878					
Client ID: ZZZZZZ	Batch ID: R113878	TestNo: EPA 218.6	Analysis Date: 3/3/2017	SeqNo: 2585090							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 966.030 20 500.0 468.4 99.5 90 110

Sample ID	N023268-001BMSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113878			
Client ID:	ZZZZZZ	Batch ID:	R113878	TestNo:	EPA 218.6			Analysis Date:	3/3/2017	SeqNo:	2585091			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 964.660 20 500.0 468.4 99.2 90 110 966.0 0.142 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: N023268  
Project: PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6\_WU\_PGE

Sample ID	N023268-002CMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	113878
Client ID:	ZZZZZZ	Batch ID:	R113878	TestNo:	EPA 218.6	Analysis Date:	3/3/2017	SeqNo:	2585093		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Hexavalent Chromium		1.010		0.20	1.000	0	101	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:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-001

**Client Sample ID:** SC-100B-WDR-555  
**Collection Date:** 3/1/2017 2:40:00 PM  
**Matrix:** WATER

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

RunID: <b>NV00922-WC_170302B</b>	QC Batch: <b>R113872</b>			PrepDate		Analyst: <b>LR</b>
Turbidity	0.29	0.10	0.10	NTU	1	3/2/2017 11:20 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: 15-Mar-17

CLIENT: CH2M HILL  
 Lab Order: N023268  
 Project: PG&E Topock, 680375.02.IM.OP.00  
 Lab ID: N023268-002

Client Sample ID: SC-700B-WDR-555  
 Collection Date: 3/1/2017 2:45:00 PM  
 Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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## TURBIDITY

## SM 2130B

RunID: NV00922-WC_170302B	QC Batch: R113872	PrepDate	Analyst: LR
Turbidity	0.32 0.10 0.10	NTU	1 3/2/2017 11:20 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:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

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

Sample ID	MB-R113872	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	113872		
Client ID:	PBW	Batch ID:	R113872	TestNo:	SM 2130B			Analysis Date:	3/2/2017	SeqNo:	2585033		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Turbidity ND 0.10

Sample ID	N023268-001ADUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	113872			
Client ID:	ZZZZZZ	Batch ID:	R113872	TestNo:	SM 2130B			Analysis Date:	3/2/2017	SeqNo:	2585035			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Turbidity 0.270 0.10 0.2900 7.14 30

**Qualifiers:**

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



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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-002

**Client Sample ID:** SC-700B-WDR-555  
**Collection Date:** 3/1/2017 2:45:00 PM  
**Matrix:** WATER

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

RunID: NV00922-IC8_170306A	QC Batch: R113925				PrepDate		Analyst: RAB
Fluoride	2.0	0.017	0.50		mg/L	5	3/6/2017 05:08 PM

**ANIONS BY ION CHROMATOGRAPHY**
**EPA 300.0**

RunID: NV00922-IC8_170303B	QC Batch: R113898				PrepDate		Analyst: RAB
Sulfate	500	0.64	25		mg/L	50	3/3/2017 03:55 PM

<b>Qualifiers:</b>	B	Analyte detected in 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:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 300\_W\_FPG**

Sample ID	MB-R113925_F	SampType:	MBLK	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113925		
Client ID:	PBW	Batch ID:	R113925	TestNo:	EPA 300.0			Analysis Date:	3/6/2017	SeqNo:	2588117		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 0.049 0.10

Sample ID	LCS-R113925_F	SampType:	LCS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113925			
Client ID:	LCSW	Batch ID:	R113925	TestNo:	EPA 300.0			Analysis Date:	3/6/2017	SeqNo:	2588118			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 1.148 0.10 1.250 0 91.8 90 110

Sample ID	N023268-002BDUP	SampType:	DUP	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113925		
Client ID:	ZZZZZZ	Batch ID:	R113925	TestNo:	EPA 300.0			Analysis Date:	3/6/2017	SeqNo:	2588120		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 2.010 0.50 2.025 0.744 20

Sample ID	N023268-002BMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113925			
Client ID:	ZZZZZZ	Batch ID:	R113925	TestNo:	EPA 300.0			Analysis Date:	3/6/2017	SeqNo:	2588121			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 7.764 0.50 6.250 2.025 91.8 80 120

Sample ID	N023268-002BMSD	SampType:	MSD	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	113925			
Client ID:	ZZZZZZ	Batch ID:	R113925	TestNo:	EPA 300.0			Analysis Date:	3/6/2017	SeqNo:	2588122			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 7.719 0.50 6.250 2.025 91.1 80 120 7.764 0.581 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:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 300\_W\_SO4PGE

Sample ID	LCS-R113898_SO4	SampType: LCS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113898					
Client ID:	LCSW	Batch ID: R113898	TestNo: EPA 300.0	Analysis Date: 3/3/2017	SeqNo: 2586671						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 3.875 0.50 4.000 0 96.9 90 110

Sample ID	MB-R113898_SO4	SampType: MBLK	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113898					
Client ID:	PBW	Batch ID: R113898	TestNo: EPA 300.0	Analysis Date: 3/3/2017	SeqNo: 2586672						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate ND 0.50

Sample ID	N023268-002BDUP	SampType: DUP	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113898					
Client ID:	ZZZZZZ	Batch ID: R113898	TestNo: EPA 300.0	Analysis Date: 3/3/2017	SeqNo: 2586677						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 494.780 25 498.3 0.712 20

Sample ID	N023268-002BMS	SampType: MS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113898					
Client ID:	ZZZZZZ	Batch ID: R113898	TestNo: EPA 300.0	Analysis Date: 3/3/2017	SeqNo: 2586680						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 691.760 25 200.0 498.3 96.7 80 120

Sample ID	N023268-002BMSD	SampType: MSD	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 113898					
Client ID:	ZZZZZZ	Batch ID: R113898	TestNo: EPA 300.0	Analysis Date: 3/3/2017	SeqNo: 2586681						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 692.445 25 200.0 498.3 97.1 80 120 691.8 0.0990 20

### Qualifiers:

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



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**ASSET Laboratories**
**ANALYTICAL RESULTS**
**Print Date:** 15-Mar-17

**CLIENT:** CH2M HILL  
**Lab Order:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00  
**Lab ID:** N023268-002

**Client Sample ID:** SC-700B-WDR-555  
**Collection Date:** 3/1/2017 2:45:00 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: <b>NV00922-WC_170307C</b>	QC Batch: <b>R113934</b>			PrepDate			Analyst: <b>RB</b>
Nitrate/Nitrite as N	2.8	0.11	0.25	mg/L	5		3/7/2017

**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:** N023268  
**Project:** PG&E Topock, 680375.02.IM.OP.00

**ANALYTICAL QC SUMMARY REPORT****TestCode: 4500N03F\_W**

Sample ID <b>MB-R113934</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113934</b>
Client ID: <b>PBW</b>	Batch ID: <b>R113934</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>3/7/2017</b>	SeqNo: <b>2588256</b>
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 <b>LCS-R113934</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113934</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R113934</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>3/7/2017</b>	SeqNo: <b>2588257</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 0.537 0.050 0.5000 0 107 85 115

Sample ID <b>N023268-002DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113934</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R113934</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>3/7/2017</b>	SeqNo: <b>2588259</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 2.819 0.25 2.786 1.14 20

Sample ID <b>N023268-002DMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113934</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R113934</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>3/7/2017</b>	SeqNo: <b>2588260</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 5.274 0.25 2.500 2.786 99.5 75 125

Sample ID <b>N023268-002DMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>113934</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R113934</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>3/7/2017</b>	SeqNo: <b>2588261</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 5.249 0.25 2.500 2.786 98.5 75 125 5.274 0.485 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			



**ASSET LABORATORIES**  
ANALYTICAL SERVICES PROVIDED FOR ENVIRONMENTAL MONITORING

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
EPA ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert NV00922  
ORELAP/NELAP Cert 4046

"Serving Clients with Passion and Professionalism"

CH2MHILL

## CHAIN OF CUSTODY RECORD

Page 1 OF 1

<b>Project Name</b> PG&E Topock <b>Location</b> PG&E Topock <b>Project Number</b> 680375.02.IM.OP.00 <b>Project Manager</b> Scott O'Donnell <b>Sample Manager</b> Shawn Duffy  <b>Task Order</b> <b>Project</b> IM3PLANT-ARAR-WDR-555 <b>Turnaround Time</b> 10 Days <b>Shipping Date:</b> 3/1/2017 <b>COC Number:</b> 555			<b>Container:</b>		1 Liter Poly	1 Liter Poly	1 Liter Poly	250 ml Poly	1 Liter Poly	1 Liter Poly	500 ml Poly	500 ml Poly	1 Liter Poly			
			<b>Preservatives:</b>		4°C Lab H2SO4	4°C	4°C	4°C	4°C Lab H2SO4	4°C	4°C	4°C	4°C			4°C
			<b>Filtered:</b>		NA	NA	NA	NA	NA	NA	NA	NA	NA			NA
			<b>Holding Time:</b>		28	7	7	1	28	7	180	180	7			
					AMMONIA (SM4500NH3D)	Anions (E300.0) FI, SO4	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	Nitrate/Nitrite (SM4500NO3-E)	TDS (SM2540C)	Total Metals(E200.7 and E200.8)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)			
<b>DATE</b>	<b>TIME</b>	<b>Matrix</b>														
SC-100B-WDR-555			Water			X	X		X		X	X	N023268 - 01	3		
SC-700B-WDR-555			Water	X	X	X	X	X	X	X		X	- 02	4		
TOTAL NUMBER OF CONTAINERS													7			

<b>Approved by</b>	<b>Signatures</b>	<b>Date/Time</b>	<b>Shipping Details</b>
Sampled by	<i>Josh Rosenberg</i>	3-1-17/1445	Method of Shipment: FedEx
Relinquished by	<i>Josh Rosenberg</i>	3-1-17/1552	On Ice: <input checked="" type="radio"/> yes / no 8-8°C
Received by	<i>Paul J. Galey</i>	3/1/17 1512	Airbill No: 1K42
Relinquished by	<i>Paul J. Galey</i>	3/1/17	Lab Name: ASSET Laboratories
Received by	<i>Paul J. Galey</i>	3/1/17 1608	Lab Phone: (702) 307-2659

ATTN:

Sample Custody  
and  
Marion Cartin

Special Instructions:

Report Copy to  
Doug Scott  
(970) 731-0636

## 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: 3/1/2017 Workorder: N023268  
 Rep sample Temp (Deg C): 3.3 IR Gun ID: 2  
 Temp Blank: ☒ Yes ☐ No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

### Sample Receipt Checklist

1. Shipping container/cooler in good condition?	Yes <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: Collection date and time were taken from sample labels.  
 Samples for Hex Cr were lab filtered and preserved.  
 Samples for Total Metals, Ammonia and NO2/NO3 were lab preserved.

Checklist Completed By: YR  3/2/2017

Reviewed By:  3/3/2017





## ASSET Laboratories

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

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

# CHAIN-OF-CUSTODY RECORD

Page 1 of 1

**QC Level: Level IV**

**Subcontractor:**

Truesdail  
3337 Michelson Drive, Suite CN750  
Irvine, CA 92612

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

Field Sampler:

**02-Mar-17**


Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3D		
N023268-002A / SC-700B-WDR-555	Water	3/1/2017 2:45:00 PM	16OZP	1		

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

Please use PO#:N23268A Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Ammonia by SM4500. CH2M Hill Sample.

GSO #: 535235537

		<b>Date/Time</b>			<b>Date/Time</b>
Relinquished by:		3/2/2017 17:00	Received by:		
Relinquished by:			Received by:		

## List of Analysts

ASSET Laboratories Work Order: **N023268**

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



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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

**“Serving Clients with Passion and Professionalism”**



## REPORT

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

**Client: Advanced Technology Laboratories-NV**

3151 W Post Rd  
Las Vegas, NV 89118

Attention: Marlon Cartin

Project Name: ATL-NV

Work Order No.: 17C0072

Printed: 03/20/2017

### CASE NARRATIVE

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

The sample was received and delivered with the chain of custody on March 3rd, 2017, intact and in chilled condition. The sample will be kept in a locked refrigerator for 30 days; thereafter will be kept in warm storage for additional 2 months before disposal.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 203.

### SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
N023268-002A / SC-700B-WDR-555	17C0072-01	Water		03/01/2017 14:45	03/03/2017 08:45

### DEFINITIONS

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

Respectfully yours,

Shelly Brady  
Customer Service Manager



Client: **Advanced Technology Laboratories-N** Project Name: ATL-NV  
Project Number: [none]

Printed: 03/20/2017

**N023268-002A / SC-700B-WDR-555**  
**17C0072-01 (Water)**

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

**Wet Chemistry**

Ammonia	ND	0.0500	mg/L	1	1703275	03/13/2017 10:26	Alexander Luna	SM 4500-NH3 D M	
---------	----	--------	------	---	---------	------------------	----------------	-----------------	--



**Client:** Advanced Technology Laboratories-N  
**Project Name:** ATL-NV  
**Project Number:** [none]

Printed: 03/20/2017

**QUALITY CONTROL****Wet Chemistry****Truesdail Laboratories, Inc**

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	% Rec Limits	RPD	RPD Limit	Note
---------	--------	----	-------	-------------	---------------	------	--------------	-----	-----------	------

**Batch: 1703275 - SM 4500-NH3 D M****Blank (1703275-BLK1)**

Prepared &amp; Analyzed: 3/13/2017

Ammonia	ND	0.0500	mg/L							
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**LCS (1703275-BS1)**

Prepared &amp; Analyzed: 3/13/2017

Ammonia	0.392	0.0500	mg/L	0.400		98	90-110			
---------	-------	--------	------	-------	--	----	--------	--	--	--

**Duplicate (1703275-DUP1)****Source: 17C0072-01**

Prepared &amp; Analyzed: 3/13/2017

Ammonia	0.0277	0.0500	mg/L		0.0266			4	20	
---------	--------	--------	------	--	--------	--	--	---	----	--

**Matrix Spike (1703275-MS1)****Source: 17C0057-02**

Prepared &amp; Analyzed: 3/13/2017

Ammonia	15.4	1.25	mg/L	5.00	10.1	106	75-125			
---------	------	------	------	------	------	-----	--------	--	--	--

**Matrix Spike Dup (1703275-MSD1)****Source: 17C0057-02**

Prepared &amp; Analyzed: 3/13/2017

Ammonia	15.2	1.25	mg/L	5.00	10.1	101	75-125	1	20	
---------	------	------	------	------	------	-----	--------	---	----	--

ANALYSIS DATA SHEET

Inorganics

Client: Advanced Technology Laboratories-NV  
Client Sample ID: N023268-002A / SC-700B-WDR-555  
Lab Sample ID: 17C0072-01  
Project: ATL-NV

Date Sampled: 03/01/17 14:45                      Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	ND	0.0111	0.0500	1		AxL	03/13/17 10:26	SM 4500-NH3 D M

# METHOD BLANK DATA SHEET

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV

Project: ATL-NV

Laboratory ID: 1703275-BLK1

Prepared: 03/13/17 09:36

Preparation: SM 4500-NH3 D M

Matrix: Water

Analyzed: 03/13/17 10:18

Instrument: TL01

File ID: 7C13001-018

Batch: 1703275

Sequence: 7C13001

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7664-41-7	Ammonia	ND	0.0111	0.0500	

# DUPLICATES

N023268-002A / SC-700B-WDR-555

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

Matrix:	Water	Laboratory ID:	1703275-DUP1
Prep Batch:	1703275	Initial/Final:	50 mL / 50 mL
Prep Method:	SM 4500-NH3 D M	Analysis:	SM 4500-NH3 D M

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Ammonia	0.0266	0.0277			20



# LCS / LCS DUPLICATE RECOVERY

SM 4500-NH3 D M

**Client:** Advanced Technology Laboratories-NV  
**Project:** ATL-NV  
**Work Order:** 17C0072

**Matrix:** Water  
**Prep Batch:** 1703275

**Prep Method:** SM 4500-NH3 D M  
**Lab Sample ID:** 1703275-BS1

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC.	QC LIMITS REC.
Ammonia	0.400	0.392	98	90 - 110

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Matrix Spike

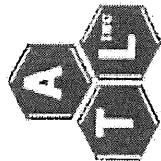
Client: Advanced Technology Laboratories-NV  
Project: ATL-NV  
Work Order: 17C0072

Matrix: Water  
Prep Batch: 1703275  
Analysis Method: SM 4500-NH3 D M  
Prep Method: SM 4500-NH3 D M  
Laboratory ID: 1703275-MS1  
Source Sample ID: 17C0057-02

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	QC LIMITS REC.
Ammonia	5.00	10.1	15.4	106	75 - 125

ANALYTE	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC. #	% RPD	QC LIMITS RPD	REC.
Ammonia	5.00	15.2	101	1	20	75 - 125

\* Values outside of QC limits



# ASSET Laboratories

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

www.asset-labs.com

TEL: 7023072659

FAX: 7023072691

# CHAIN-OF-CUSTODY RECORD

# 17C0072

QC Level: Level IV

## Subcontractor:

Truesdail

3337 Michelson Drive, Suite CN750  
Irvine, CA 92612

TEL: (714) 730-6239

FAX: (714) 730-6462

Acct #:

Field Sampler:

02-Mar-17

Sample ID		Matrix	Date Collected	Bottle Type	Requested Tests
N023268-002A	/ SC-700B-WDR-555	Water	3/1/2017 2:45:00 PM	16OZP	SM4500-NH3D 1

## General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO# N23268A Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Ammonia by SM4500. CH2M Hill Sample.

GSO #: 535235537

Relinquished by: <u>YD</u>	Date/Time: <u>3/2/2017 17:00</u>	Received by: <u>f. Baw</u>	Date/Time: <u>3/3/17 8:45</u>
Relinquished by:		Received by:	

5.3 C

## Log-in check list For level III data package

Client:

ATL

Lab Number:

17C0072

Received Date:

9/3/17

**Sample receiving review**

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

Sample receiving Signature:

*[Signature]*

## WORK ORDER

Printed: 3/17/2017 4:43:10PM

17C0072

## Truesdail Laboratories, Inc

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

Project Manager: Shelly Brady  
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: 03/14/2017 16:30 (7 day TAT)

Received By: Jacqueline Brown

Logged In By: Jacqueline Brown

Date Received: 03/03/2017 08:45

Date Logged In: 03/03/2017 10:05

Samples Received at: 5.3°C  
Chain of Custody re Yes Samples intact? Yes  
Letter (if sent) matc No Custody seals (if any) No  
Requested analyses Yes Analyses within hol Yes  
Samples received in No

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

17C0072-01 NO23268-002A / SC-700B-WDR-555 [Water] Sampled 03/01/2017  
14:45 (GMT-08:00) Pacific Time (US &

Ammonia E	03/14/2017 08:00	7	03/29/2017 14:45	
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Reviewed By

Date