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November 29, 2013

Mr. Aaron Yue
Project Manager
California Environmental Protection Agency,
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630

Subject: *Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California* (Document ID: PGE20131129A)

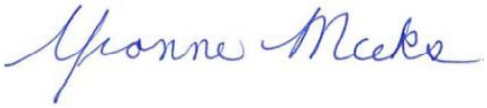
Dear Mr. Yue:

Enclosed is the *Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California* for PG&E's Interim Measures (IM) Performance Monitoring Program and the Groundwater Monitoring Program and Surface Water Monitoring Program for the Topock project. This report presents the Third Quarter (July through October 2013) performance monitoring results for the IM hydraulic containment system and summarizes the operations and performance evaluation for the reporting period. This report also presents groundwater and surface water monitoring activities, results, and analyses related to the Groundwater and Surface Water Monitoring programs during Third Quarter 2013.

The IM quarterly performance monitoring report is submitted in conformance with the reporting requirements in the California Environmental Protection Agency, Department of Toxic Substances Control's (DTSC) IM directive, dated February 14, 2005, and updates and modifications approved by DTSC in letters or emails dated October 12, 2007, July 14, 2008, July 17, 2008, March 3, 2010, April 28, 2010, and July 23, 2010.

Please contact me at (805) 234-2257 if you have any questions on the combined monitoring report.

Sincerely,



Yvonne Meeks
Topock Project Manager

Enclosure
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report

cc: Chris Guerre/DTSC
Karen Baker/DTSC
Pam Innis/DOI
Susan Young/CA-SLC
Nancy Garcia/AZ-SLD

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Topock Project Executive Abstract

Document Title: Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Submitting Agency: DTSC

Final Document? ☒ Yes ☐ No

Date of Document: 11/29/2013

Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other)

PG&E

Priority Status: ☐ HIGH ☐ MED ☒ LOW
Is this time critical? ☐ Yes ☒ No

Type of Document:
☐ Draft ☒ Report ☐ Letter ☐ Memo
☐ Other/Explain:

Action Required:
☒ Information Only ☐ Review & Comment
Return to: _____

By Date: _____
☐ Other/Explain:

What does this information pertain to?
☐ Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)
☐ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)
☐ Corrective Measures Study (CMS)/Feasibility Study (FS)
☐ Corrective Measures Implementation (CMI)/Remedial Action
☐ California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR)
☒ Interim Measures
☐ Other/Explain:

Is this a Regulatory Requirement?
☒ Yes
☐ No
If no, why is the document needed?

What is the consequence of NOT doing this item? What is the consequence of DOING this item?
Report is required to be in compliance with DTSC requirements.

Other Justification/s:
☐ Permit ☐ Other / Explain:

Brief Summary of attached document:

This quarterly report documents the monitoring activities and performance evaluation of the Interim Measure (IM) hydraulic containment system under the IM Performance Monitoring Program, the Groundwater Monitoring Program, and the Surface Water Monitoring Program for the Topock project. Hydraulic and chemical monitoring data were collected and used to evaluate IM hydraulic containment system performance based on a set of standards approved by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). Key items included in this report are: (1) measured groundwater elevations and hydraulic gradient data at compliance well pairs that indicate the direction of groundwater flow is away from the Colorado River and toward the pumping centers onsite, (2) hexavalent chromium data for monitoring wells, (3) pumping rates and volumes from the IM extraction system, and (4) Groundwater Monitoring Program and Surface Water Monitoring Program activities and results.

Based on the data and evaluation presented in this report, the IM performance standard has been met for Third Quarter 2013, which includes the months of July, August, September, and October 2013. The average pumping rate for the IM extraction system during the Third Quarter 2013 was 128.9 gallons per minute. To date, the IM extraction system has removed a total of 7,700 pounds (3,490 kilograms) of chromium.

Written by: PG&E

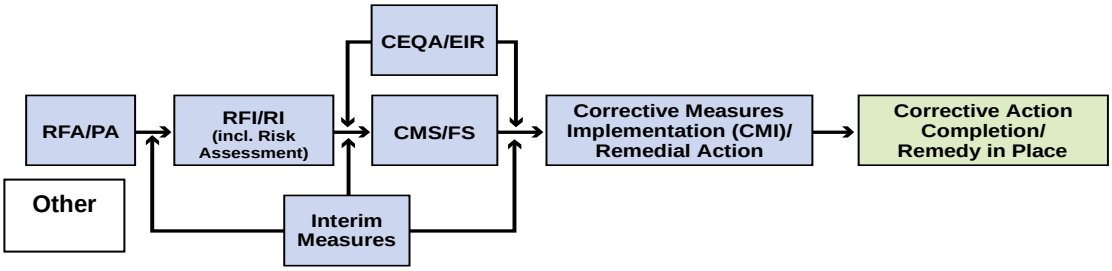
Recommendations:
This report is for information only.

How is this information related to the Final Remedy or Regulatory Requirements:
This report is required by DTSC as part of the Interim Measures Performance Monitoring Program.

Other requirements of this information?
None.

Related Reports and Documents:

Click any boxes in the Regulatory Road Map (below) to be linked to the Documents Library on the DTSC Topock Web Site (www.dtsc-topock.com).



Legend

RFA/PA – RCRA Facility Assessment/Preliminary Assessment
RFI/RI – RCRA Facility Investigation/CERCLA Remedial Investigation (including Risk Assessment)
CMS/FS – RCRA Corrective Measure Study/CERCLA Feasibility Study
CEQA/EIR – California Environmental Quality Act/Environmental Impact Report

Version 9

Final Report

Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,

PG&E Topock Compressor Station, Needles, California

Document ID: PGE20131129A

Prepared for
California Environmental Protection Agency,
Department of Toxic Substances Control

On behalf of
Pacific Gas and Electric Company

November 29, 2013

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Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,

PG&E Topock Compressor Station, Needles, California

Prepared for

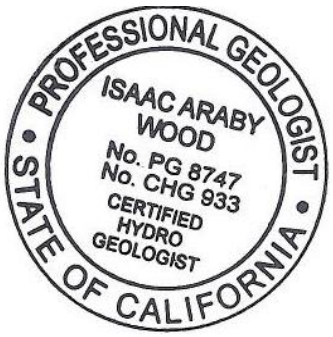
California Environmental Protection Agency, Department of Toxic Substances Control

On behalf of

Pacific Gas and Electric Company

November 29, 2013

This report was prepared under the supervision of a California Professional Geologist.



Isaac Wood
Project Hydrogeologist, P.G., C.Hg

Jay Piper
CH2M HILL Project Manager

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Acronyms and Abbreviations

µg/L	micrograms per liter
COPC	chemical of potential concern
Cr(VI)	hexavalent chromium
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
ft/ft	feet per foot
GMP	Groundwater Monitoring Program
gpm	gallons per minute
IM	Interim Measure
IM-3	Interim Measure Number 3
IMCP	Interim Measures Contingency Plan
PG&E	Pacific Gas and Electric Company
PMP	Performance Monitoring Program
RCRA	Resource Conservation and Recovery Act
RMP	Surface Water Monitoring Program
TDS	total dissolved solids
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency

SECTION 1

Introduction

Pacific Gas and Electric Company (PG&E) is implementing Interim Measures (IMs) to address chromium concentrations in groundwater at the Topock Compressor Station near Needles, California. The Topock Compressor Station is located in eastern San Bernardino County, 15 miles southeast of the city of Needles, California, as shown on Figure 1-1. (Figures are located at the end of the report.) This report presents monitoring data from three PG&E monitoring programs:

- Site-wide Groundwater Monitoring Program (GMP)
- Site-wide Surface Water Monitoring Program (RMP)
- Interim Measure Number 3 (IM-3) Performance Monitoring Program (PMP) (data and evaluations)

This report presents the monitoring data from PG&E's GMP, RMP, and PMP, collected from July 1, 2013 through October 31, 2013 (hereafter referred to as the reporting period). The data collected as part of the GMP and RMP are presented in Section 3. The data collected as part of the PMP are presented in Section 4. This combined PMP and GMP (including RMP) reporting format was approved by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) in May 2009 (DTSC, 2009). On July 23, 2010, DTSC approved a new sampling event timing and reporting schedule for the PMP, GMP, and RMP programs (DTSC, 2010a). Table 1-1 shows the current reporting schedule.

1.1 Site-wide Groundwater and Surface Water Monitoring Program

The Topock GMP and RMP were initiated as part of a Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)facility investigation/remedial investigation groundwater investigation. These programs are being regulated under a Corrective Action Consent Agreement issued by the DTSC in 1996 for the Topock site (United States Environmental Protection Agency [USEPA] ID No. CAT080011729).

Groundwater monitoring data collected between July 1997 and October 2007 are presented in the *Revised Final RCRA Facility Investigation and Remedial Investigation Report, Volume 2 – Hydrogeologic Characterization and Results of Groundwater and Surface Water Investigation, Pacific Gas and Electric Company, Topock Compressor Station, Needles, California*, dated February 11, 2009 (CH2M HILL, 2009a). Select groundwater and surface water monitoring data from November 2007 through September 2008 are presented in the *Final RCRA Facility Investigation/Remedial Investigation Report, Volume 2 Addendum—Hydrogeologic Characterization and Results of Groundwater and Surface Water Investigation, Pacific Gas and Electric Company, Topock Compressor Station, Needles, California,* dated June 29, 2009 (CH2M HILL, 2009b).

Background information (including well construction details) and descriptions of the current groundwater and surface water sampling, analyses, and monitoring programs are discussed in PG&E's *Fourth Quarter 2012 and Annual Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California*, dated March 15, 2013 (CH2M HILL, 2013a).

In compliance with the requirements for the GMP and RMP directive of April 2005 (DTSC, 2005a), this document presents the Third Quarter 2013 GMP and RMP report for the monitoring activities from July 1, 2013 through October 31, 2013.

Groundwater Monitoring Program and Surface Water Monitoring Program Monitoring Networks

Figure 1-2 shows the current locations and sampling frequencies of the monitoring wells in the GMP. The complete GMP includes over 100 wells that monitor the Alluvial Aquifer and the bedrock and consist of:

- One hundred twenty-four monitoring wells in California.
- Eight monitoring wells in Arizona.
- Two water supply wells.
- Two active extraction wells.
- Five test wells.

Sampling frequencies for the GMP wells were updated beginning in First Quarter 2010 following the DTSC directive dated March 3, 2010 (DTSC, 2010b). Figure 1-2 shows these updated frequencies. Sampling frequencies for the Arizona monitoring wells were updated following the April 23, 2010 approval from the Arizona Department of Environmental Quality (Arizona Department of Environmental Quality, 2010) and the April 28, 2010 directive from DTSC (DTSC, 2010c).

As directed by DTSC (DTSC, 2013), the repair or replacement work for monitoring wells MW-38S and MW-38D, which followed the *Final Revised Implementation Plan for Repair of Monitoring Wells MW-38S and MW-38D and Old Well/Pipe Reconnaissance* (CH2M HILL, 2011a), was completed at the end of Second Quarter 2013. Wells MW-38S and MW-38D were sampled during Third Quarter 2013 per the proposed GMP sampling plan submitted to DTSC in March 2013, which proposed two quarterly samplings after the repair work was completed (CH2M HILL, 2013a) and subsequent technical call discussions regarding the MW-38 repair and replacement progress. The groundwater sample results are presented in this report.

Figure 1-3 shows the locations and sampling frequencies of the RMP, which consists of:

- Ten river channel surface water monitoring locations.
- Four shoreline surface water monitoring locations.
- Two other surface water monitoring locations.

1.2 Interim Measure Performance Monitoring Program

In compliance with the requirements for IM monitoring and reporting outlined in the DTSC IM performance directive of February 2005 and in subsequent directives from the DTSC in 2007 (DTSC, 2005b, 2007a-c), this document presents the Third Quarter 2013 PMP evaluation report for the IM monitoring activities from July 1, 2013 through October 31, 2013.

The Topock IM project consists of groundwater extraction for hydraulic control of the plume boundaries in the Colorado River floodplain and management of extracted groundwater. The groundwater extraction, treatment, and injection systems are collectively referred to as IM-3. The IM monitors only the Alluvial Aquifer. Currently, the IM-3 facilities include a groundwater extraction system (four extraction wells: TW-2D, TW-3D, TW-2S, and PE-1), conveyance piping, a groundwater treatment plant, and an injection well field for the discharge of the treated groundwater. At this time, extraction wells PE-1 and TW-3D operate full time. Figure 1-1 shows the locations of the IM-3 extraction, conveyance, treatment, and injection facilities.

In a letter dated February 14, 2005, DTSC established the criteria for evaluating the performance of the IM (DTSC, 2005c). As defined by DTSC, the performance standard for this IM is to "establish and maintain a net landward hydraulic gradient, both horizontally and vertically, that ensures that hexavalent chromium [Cr(VI)] concentrations at or greater than 20 micrograms per liter [µg/L] in the floodplain are contained for removal and treatment" (DTSC, 2005b). A *Draft Performance Monitoring Plan for Interim Measures in the Floodplain Area, Pacific Gas and Electric Company, Topock Compressor Station, Needles, California* (CH2M HILL, 2005a) was submitted to DTSC on April 15, 2005 (herein referred to as the Performance Monitoring Plan).

The February 2005 DTSC directive also defined the monitoring and reporting requirements for the IM (DTSC, 2005b-c). In October 2007, DTSC modified the reporting requirements for the PMP (DTSC, 2007a) to discontinue monthly performance monitoring reports (the quarterly and annual reporting requirements were unchanged). Additional updates and modifications to the PMP were approved by DTSC in letters dated October 12, 2007, July 14, 2008, July 17, 2008, and July 23, 2010 (DTSC, 2007a, 2008a-b, and 2010a).

Performance Monitoring Program Monitoring Networks

Figure 1-4 shows the locations of wells used for IM extraction, performance monitoring, and hydraulic gradient measurements. With approval from DTSC, the list of wells included in the PMP was modified beginning August 1, 2008. The performance monitoring wells in service/active during this reporting period are defined as:

- Floodplain wells: monitoring wells on the Colorado River floodplain.
- Intermediate wells: monitoring wells immediately north, west, and southwest of the floodplain.
- Interior wells: monitoring wells upgradient of IM pumping.
- Extraction wells: TW-2D, TW-3D, TW-2S, and PE-1.

Three extraction wells (TW-2D, TW-3D, and TW-2S) are located on the MW-20 bench. Extraction well PE-1 is on the floodplain approximately 450 feet east of extraction well TW-3D, as shown on Figure 1-4. Extraction wells TW-3D and PE-1 operate full time.

Groundwater monitoring wells installed on the Arizona side of the Colorado River are not formally part of the PMP, but some of these wells have been used to collect groundwater elevation data for evaluating the hydraulic gradient on the Arizona side of the river.

The PMP monitors hydrogeologic conditions in the Alluvial Aquifer. The wells screened in the unconsolidated alluvial fan and fluvial deposits, which comprise the Alluvial Aquifer, have been separated into three depth intervals to present groundwater quality and groundwater level data. The depth intervals of the Alluvial Aquifer in the floodplain area—designated upper (shallow wells), middle (mid-depth wells), and lower (deep wells)—are based on grouping the monitoring wells screened at common elevations. These divisions do not correspond to any lithostratigraphic layers within the aquifer. The Alluvial Aquifer is considered to be hydraulically undivided. The subdivision of the aquifer into three depth intervals is an appropriate construct for presenting and evaluating spatial and temporal distribution of groundwater quality data in the floodplain. The three-interval concept is also useful for presenting and evaluating lateral gradients while minimizing effects of vertical gradients and observing the influence of pumping from partially penetrating wells.

SECTION 2

Third Quarter 2013 Monitoring Activities

This section summarizes the monitoring and sampling activities completed during the reporting period.

2.1 Groundwater Monitoring Program

2.1.1 Monthly

Groundwater was sampled from the active IM extraction wells (PE-1 and TW-3D) in July, August, September, and October 2013 and analyzed for Cr(VI) and chromium .

2.1.2 Quarterly

Per the July 23, 2010 sampling schedule approval (DTSC, 2010a), the Third Quarter 2013 GMP quarterly groundwater monitoring event was conducted from September 9, 2013 through October 2, 2013. Select field parameters recorded during well purging included oxidation-reduction potential and pH. Groundwater samples were analyzed for Cr(VI), chromium, and specific conductance.

During the Third Quarter 2013 sampling event, groundwater samples were collected at selected GMP wells and were submitted for laboratory analysis of Cr(VI) and other constituents, including:

- California Code of Regulations Title 22 metals, which includes arsenic, at MW-12.
- Chemicals of potential concern (COPCs), including molybdenum, nitrate as nitrogen (referred to as nitrate hereafter), selenium, potential in situ byproducts (manganese and arsenic), and other analytes. In an email dated March 3, 2010, DTSC directed monitoring of these COPCs, potential in situ byproducts, and other analytes at selected wells (DTSC, 2010d, 2011).
- Arsenic at select GMP wells screened in alluvial and fluvial sediments and select bedrock monitoring wells.

2.1.3 Well Maintenance

In a letter from DTSC dated January 28, 2013, PG&E was directed to assess conditions at existing wells pursuant to PG&E's *Draft Performance Monitoring Plan for Interim Measures in the Floodplain Area, Pacific Gas and Electric Company, Topock Compressor Station, Needles, California* (CH2M HILL, 2005a) and the *Sampling and Analysis Field Procedures Topock Program Manual, Revision 1, Pacific Gas and Electric Company, Topock Project* (CH2M HILL, 2005b) to ensure that monitoring wells are in compliance with the California Well Standards. Appendix A and Table A-1 provide the quarterly inspection log, field observations, and required mitigation actions for well maintenance. This well inspection appendix will become a regular feature of quarterly GMP reporting as discussed with DTSC in follow-up to the DTSC January 2013 letter.

2.2 Surface Water Monitoring Program

Quarterly surface water sampling was conducted on July 15, 2013 and July 16, 2013, from the complete RMP monitoring network. Samples were analyzed for Cr(VI), chromium, specific conductance, and pH. Samples were also analyzed for COPCs (molybdenum, nitrate, and selenium), in situ byproducts (manganese, iron, and arsenic), and geochemical indicator parameters to develop baseline concentrations for future remedy performance evaluation.

2.3 Performance Monitoring Program

Groundwater samples for the PMP were collected during the GMP sampling event the GMP sampling event. In addition, PMP pressure transducers, which monitor hydraulic gradients of the Alluvial Aquifer, were downloaded in the first week of every month (July, August, September, and October). The transducers in the

key monitoring wells (MW-27-085, MW-31-125, MW-33-150, MW-34-100, and MW-45-095a; Figure 1-4) are downloaded via a cellular telemetry system.

SECTION 3

Results for Site-wide Groundwater Monitoring and Surface Water Sampling

3.1 Groundwater Results for Hexavalent Chromium and Chromium

Table 3-1 presents the results for Cr(VI), chromium, field oxidation-reduction potential, laboratory-specific conductance, and field pH in groundwater samples collected from the reporting period. During Third Quarter 2013, the maximum detected Cr(VI) concentration was 19,200 µg/L at well MW-68-180. The laboratory reports for analytical results from Third Quarter 2013 sampling are presented in Appendix B.

Figures 3-1a through 3-1c present the Cr(VI) results for wells monitoring the shallow (upper depth interval), mid-depth (middle depth interval), and deep (lower depth interval) wells of the Alluvial Aquifer and bedrock, respectively, from Third Quarter 2013. Figures 3-1a through 3-1c each show the approximate outline of Cr(VI) concentration contours greater than 32 µg/L for the Alluvial Aquifer and bedrock. These contour outlines are based on results from groundwater sampling events conducted in Second Quarter, where a larger number of wells were sampled, and Third Quarter 2013. The value of 32 µg/L is based on the calculated natural background upper tolerance limit for Cr(VI) in groundwater from the background study (CH2M HILL, 2008, 2009a).

The areas where Cr(VI) concentrations are greater than 32 µg/L in the shallow, mid-depth, and deep intervals of the Alluvial Aquifer and bedrock wells are generally similar to the previous quarterly monitoring events (CH2M HILL, 2009c-e, 2010a-c, 2011b-e, 2012a-d, and 2013a-c).

3.2 Other Groundwater Monitoring Results

3.2.1 Chemicals of Potential Concern, In Situ Byproducts, and Other Analytes

Table 3-2 presents the COPCs, in situ byproducts, and other analytes results for groundwater monitoring wells sampled in Third Quarter 2013. The wells where maximum concentrations of these analytes were reported are summarized as follows:

- MW-33-40 with a molybdenum concentration of 290 µg/L
- MW-66-165 and MW-67-185 with a nitrate concentration of 31.8 milligrams per liter
- MW-67-185 with a selenium concentration of 170 µg/L
- MW-42-65 with a manganese concentration of 910 µg/L
- MW-12 with an arsenic concentration of 40.0 µg/L (arsenic results are discussed in Section 3.2.3)
- MW-33-40 with a fluoride concentration of 15.0 milligrams per liter

3.2.2 Title 22 Metals

Table 3-3 presents the Title 22 metals results for the GMP monitoring well MW-12 sampled during Third Quarter 2013. The trace metals detected in MW-12, in addition to chromium, were arsenic, barium, molybdenum, selenium, and vanadium. The dissolved concentrations of the trace metals—other than chromium and arsenic—are below the respective California maximum contaminant level drinking water standards.

3.2.3 Arsenic Sampling in Monitoring Wells

Select Alluvial Aquifer and bedrock wells were sampled for arsenic in the Third Quarter 2013 event. These results are presented in Appendix C, Table C-1.

3.3 Surface Water Sampling Results

Table 3-4 presents results of Cr(VI), chromium, specific conductance, and lab pH from the surface water sampling event conducted during this reporting period. Neither Cr(VI) nor chromium was detected above reporting limits at any in-channel, shoreline, or other surface water monitoring locations.

Table 3-5 presents results for the COPCs (molybdenum, nitrate, and selenium); in situ byproducts (manganese, iron, and arsenic); and other geochemical indicator parameters for surface water samples. Nitrate and selenium results were below laboratory reporting limits, while low arsenic (equal to or less than 3 µg/L) concentrations were detected at all sampled locations. Dissolved iron and manganese results were also generally low and near or below laboratory reporting limits, with the exception of the samples collected at C-MAR-S and C-MAR-D, where moderate values were reported. The C-MAR-S and C-MAR-D sample locations are near the east side of the Colorado River at the mouth of the Topock Marsh area (Figure 1-3), where naturally reducing geochemical conditions may be present. Elevated iron and manganese concentrations are typical of reduced geochemical environments.

3.4 Data Validation and Completeness

Laboratory analytical data from the Third Quarter 2013 sampling events were reviewed by project chemists to assess data quality and to identify deviations from analytical requirements.

The following bullets summarize the notable analytical qualifications in data reported this quarter:

- Ten Cr(VI) (USEPA Method 218.6) results exhibited a matrix interference issue that required a dilution to achieve satisfactory matrix spike recovery, resulting in an elevated reporting limit. The sample results were qualified, but no flags were added.
- One nitrate (USEPA Method 353.2) field duplicate pair had a relative percent difference greater than the upper control limit. The detect results were qualified and flagged “J.” As explained in table notes, this indicates that the concentration or reporting limit is estimated by laboratory or data validation.
- Three samples—one for manganese, one for beryllium (Method SW 6020A), and one for hexavalent chromium (USEPA Method 218.6)—had matrix spike recoveries that were less than the control limits. The associated nondetect results were qualified, and the reporting limit is listed as estimated.
- Based on the March 2007 USEPA ruling, pH has a 15-minute holding time. As a result, Method SM4500-HB (pH) samples analyzed in a certified lab require qualification. Therefore, the pH results for the third quarter events analyzed in a certified lab were qualified as estimated and flagged “J.”

  No other significant analytical deficiencies were identified in the Third Quarter 2013 data. Additional details are provided in the data validation reports, which are kept in the project file and are available upon request.

SECTION 4

Interim Measure Performance Monitoring Program Evaluation

4.1 Water Quality Results for Performance Monitoring Program Floodplain Wells

Table D-1 in Appendix D, presents the results of the general chemistry and stable isotope analyses for PMP monitoring wells and river stations during sampling events from March 2005 through October 2013. In July 2008, DTSC approved modifications to the PMP IM chemical PMP (DTSC, 2008b). These wells are sampled annually (one well sampled biennially) during the Fourth Quarter sampling events. Figure 1-4 shows the locations of the monitoring wells sampled for the performance monitoring parameters. Water samples from the selected performance monitoring locations are analyzed for general chemistry parameters, including total dissolved solids (TDS), chloride, sulfate, nitrate, bromide, calcium, potassium, magnesium, sodium, boron, alkalinity, deuterium, and oxygen-18 to monitor the effects of IM pumping on groundwater chemistry.

4.2 Hexavalent Chromium Distribution and Trends in Performance Monitoring Program Wells

The Third Quarter 2013 distribution of Cr(VI) in the upper (shallow wells), middle (mid-depth wells), and lower (deep wells) intervals of the Alluvial Aquifer is shown in plan view and cross-section on Figure 4-1.[1] Figure 4-2 presents the Third Quarter 2013 Cr(VI) results for cross-section B, oriented parallel to the Colorado River. The location of cross-section B is shown on Figure 1-4. The Cr(VI) concentration contours shown for the Alluvial Aquifer on these figures are based on results for groundwater samples collected in Second Quarter, where a larger number of wells were sampled, and Third Quarter 2013.

Figure 4-3 presents Cr(VI) concentration trend graphs for selected deep monitoring wells in the floodplain area through October 2013. Sampling results are plotted for wells MW-34-100, MW-36-90, MW-36-100, MW-44-115, MW-44-125, and MW-46-175. The locations of the deep wells selected for performance evaluation are shown on Figure 1-4. Appendix D includes Cr(VI) concentration trend graphs for selected monitoring wells through October 2013.

Wells showing marked decreases in concentration are generally in the floodplain area where IM pumping is removing chromium in groundwater. Wells with historical detections near or at reporting limits (for chromium, a typical reporting limit is 0.2 to 1.0 µg/L) remained at these low levels during Third Quarter 2013. A review of Figure 4-3 and Appendix D indicates that Cr(VI) concentrations have remained steady or have decreased in many wells since IM and PE-1 pumping began in 2004 and 2005, respectively.

Key Cr(VI) and chromium trends for PMP groundwater monitoring wells (see Figure 1-4) sampled during Third Quarter 2013 include:

- Cr(VI) results for MW-28-90 have remained below or near the reporting limit since 2004, as presented in Figure D-4 in Appendix D.
- As presented in Figure D-5 in Appendix D, Cr(VI) results for mid-depth well MW-33-90 have been fairly stable since monitoring began (2004). Deep MW-33 well cluster Cr(VI) concentrations have shown stable

[1] On Figures 4-1 and 4-2, the Cr(VI) concentrations are color-coded based on the groundwater background Cr(VI) concentration, which is 32 µg/L (CH2M HILL, 2009a). The 20-µg/L and 50-µg/L Cr(VI) concentration contours presented on Figures 4-1 and 4-2 are shown in accordance with DTSC's 2005 IM directive and are not based on the background Cr(VI) concentration for groundwater.

trends since 2008, while shallow well MW-33-40 has remained below or near the reporting limit since 2004.

- As shown on Figure 4-3 and in Figure D-6 in Appendix D, Cr(VI) results for MW-34-100 have been variable, but generally declining, since June 2006. In addition to this primary overall downward trend in Cr(VI) concentration, MW-34-100 also shows a consistent but secondary seasonal effect in concentration related to high (spring/summer) and low (winter) Colorado River levels.
- Superimposed on stable or decreasing longer term trends for Cr(VI), the secondary trend of seasonal fluctuation in Cr(VI) is also seen in monitoring wells MW-35-60 and MW-46-175 (see Appendix D, Figures D-6 and D-11, respectively. River levels are discussed in Section 4.6.
- Cr(VI) results for MW-44-115 have shown a steady declining trend since the well was constructed in 2006 (Figure 4-3 and Figure D-10 in Appendix D).
- As presented on Figure 4-3 and on Figure D-11 in Appendix D, Cr(VI) results for deep well MW-46-175 have shown a seasonally fluctuating but overall decreasing trend since 2007.

4.3 Performance Monitoring Program Contingency Plan Hexavalent Chromium Monitoring

The Topock Interim Measures Contingency Plan (IMCP) was developed to detect and control any possible migration of the Cr(VI) plume toward the Colorado River. Currently, the IMCP consists of 24 wells (CH2M HILL, 2005a, 2006; PG&E, 2007, 2008). Appendix D includes Cr(VI) concentration trend graphs for the IMCP wells. The IMCP well Cr(VI) results in Third Quarter 2013 were below trigger levels.

4.4 Extraction Systems Operations

Pumping data for the IM-3 groundwater extraction system for the reporting period of July 1 through October 31, 2013 are presented in Table 4-1. During the month of August, a series of lightning strikes at the IM-3 treatment facility and to the City of Needles power system caused significant damage to electrical components at the treatment facility. On August 18, 2013, the lightning strikes caused the flow meters at both TW-3D and PE-01 to fail. However, the extraction pumps continued to operate following the lightning strikes without operable flow meters. Flow meters were replaced as soon as they were available. The flow meter at PE-01 was replaced on August 29, 2013, and the flow meter at TW-3D was replaced September 4, 2013. Chromium removed for this quarterly period include only data from the time periods during which the flow meters were operating correctly and are therefore an underestimate of the actual values. From July 1, 2013 through October 31, 2013, the volume of groundwater extracted and treated by the IM-3 system was 22,788,145 gallons. This resulted in the removal of an estimated 108 pounds (48.8 kilograms) of chromium from the aquifer during the period from June 1, 2013 through September 30, 2013.[2] To date, the IMs have removed approximately 7,700 pounds of chromium from the floodplain at the Topock site through September 2013.

Because the extraction wells' flow meters were not operable for a portion of the months of August and September, the monthly extraction rate and volume was estimated by subtracting the average input flow from the process drain tank from the raw water storage tank output flow at the IM-3 facility. Using this information, during Third Quarter 2013, extraction wells TW-3D and PE-1 operated at a combined pumping rate of 128.9 gallons per minute (gpm), including periods of planned and unplanned downtime. The average monthly pumping rates during the reporting period were 129.3 gpm (July 2013), 118.7 gpm (August 2013), 132.7 (September), and 134.8 gpm (October 2013). Extraction wells TW-2D and TW-2S were not operated

[2] Chromium removed this reporting period includes the period of June 1 through September 30, 2013. On July 23, 2010, DTSC approved a revised reporting schedule for this report that included a revised IM-3 sample collection period from June 1, 2013 through September 30, 2013.

during Third Quarter 2013. The operational run-time percentage for the IM extraction system was 95.0 percent during this reporting period. The operations log for the extraction system during Third Quarter 2013, including planned and unplanned downtime, is included in Appendix E.

The concentrate (that is, saline water) from the reverse osmosis system was shipped offsite as nonhazardous waste and was transported to Liquid Environmental Solutions in Phoenix, Arizona for treatment and disposal. Eight containers of solids from the IM-3 facility were disposed of at the U.S. Ecology Chemical Waste Management facility in Beatty, Nevada, during Third Quarter 2013. Daily IM-3 inspections included general facility inspections, flow measurements, and site security monitoring. Daily logs with documentation of inspections are maintained onsite.

During the reporting period, Cr(VI) concentrations in TW-3D remained stable, ranging from a maximum value of 934 μg/L in July 2013 to a minimum value of 728 μg/L in September 2013, as shown in Table 4-2. TDS concentrations in TW-3D for this reporting period have also remained stable, as shown in Table 4-2.

The Cr(VI) concentrations in the extracted groundwater at well PE-1 on the floodplain ranged from 4.7 to 5.2 μg/L during the reporting period, as shown in Table 4-2. TDS concentrations in PE-1 for this reporting period have also remained stable.

4.5 Hydraulic Gradient and River Levels during Quarterly Period

During the reporting period, water levels were recorded at intervals of 30 minutes with pressure transducers in more than 50 wells in the Alluvial Aquifer and two river monitoring stations (I-3 and RRB). The data are typically continuous, with only short interruptions for sampling or maintenance. The locations of the wells monitored are shown on Figure 1-4.

Daily average groundwater and river elevations calculated from the pressure transducer data for the reporting period are summarized in Table F-1 in Appendix F. Groundwater elevations (or hydraulic heads) are adjusted for temperature and salinity differences between wells (that is, adjusted to a common freshwater equivalent), as described in the Performance Monitoring Plan. Groundwater elevation hydrographs for the PMP wells during the reporting period are included in Appendix F. The elevation of the Colorado River measured at the I-3 gauge station (shown on Figure 1-4) is also shown on the hydrographs in Appendix F.

Average Third Quarter 2013 groundwater elevations for the shallow, mid-depth, and deep wells are presented and contoured in plan view on Figures 4-4a through 4-4c. Average Third Quarter 2013 groundwater elevations for wells on floodplain cross-section A are presented and contoured on Figure 4-5. Several monitoring wells are significantly deeper than other wells in the lower depth interval. Due to vertical gradients present at the Topock site, water levels in deeper wells tend to be higher than water levels in shallower wells.

Hydraulic gradients were measured during the reporting period for well pairs selected for performance monitoring of the two pumping centers (TW-3D and PE-1). The following well pairs were approved by DTSC on October 12, 2007 (DTSC, 2007a) to define the gradients induced while pumping from two locations:

- MW-31-135 and MW-33-150 (northern gradient pair)
- MW-45-95 and MW-34-100 (central gradient pair)
- MW-45-95 and MW-27-85 (southern gradient pair)

Table 4-3 presents the average monthly hydraulic gradients measured between the gradient well pairs in Third Quarter 2013. Figure 4-6 presents graphs of the hydraulic gradients, monthly average pumping rates, and river levels for the quarterly period. Strong landward gradients were measured each month. The overall average gradients for all well pairs ranged from 0.0052 to 0.0039 feet per foot (ft/ft), which is 5.2 to 3.9 times greater than the required gradient of 0.001 ft/ft. The gradient for the northern well pair ranged from

2.5 to 1.8 times the target gradient of 0.001 ft/ft. For the central well pair, the average landward gradient ranged from 9.8 to 7.2 times the target gradient. The southern well pair gradients averaged 3.7 to 2.7 times the target gradient for the reporting period.

4.6 Projected River Levels during Next Quarter

The Colorado River stage near the Topock Compressor Station is measured at the I-3 location and is directly influenced by releases from Davis Dam and, to a lesser degree, from Lake Havasu elevations, both of which are controlled by the United States Bureau of Reclamation (USBR). Total releases from Davis Dam follow a predictable annual cycle, with largest monthly releases typically in spring and early summer and smallest monthly releases in late fall/winter (November and December). In addition to this annual cycle is a diurnal cycle determined primarily by daily fluctuations in electric power demand. Releases within a given 24-hour period often fluctuate over a wider range of flows than that of monthly average flows over an entire year.

Figure 4-7 shows river stage measured at I-3 superimposed on the projected I-3 river levels. Projected river levels for future months are based on the USBR projections of Davis Dam discharge and Lake Havasu levels from the preceding month. As an example, the projected river level for November 2013 is based on the October 2013 USBR data of Davis Dam release and Lake Havasu level, not the actual release and level values. The variability between measured and projected river levels is due to the difference between measured and actual Davis Dam release and Lake Havasu levels. The more recent data plotted on Figure 4-7 are summarized in Table 4-4. The future projections shown on Figure 4-7 are based on USBR long-range projections of Davis Dam releases and Lake Havasu levels from October 2013. There is more uncertainty in these projections at longer times in the future since water demand is based on various elements including climatic factors.

Current USBR projections, presented in Table 4-4, show that the average projected Davis Dam release for November 2013 (9,400 cubic feet per second) will be less than the actual release in October 2013 (12,497 cubic feet per second). Based on November 2013 USBR predictions, it is anticipated that the Colorado River level at the I-3 gauge location in November 2013 will be approximately 1.09 feet lower compared to the actual levels in October 2013. Current projections show that the water levels will continue to decrease during the next quarterly reporting period (November through December 2013), as shown on Figure 4-7.

4.7 Quarterly Performance Monitoring Program Evaluation Summary

The groundwater elevation and hydraulic gradient data from July 2013 through October 2013 performance monitoring indicate that the minimum landward gradient target of 0.001 ft/ft was exceeded each month during the quarterly reporting period. The overall average landward gradients during Third Quarter 2013 were 5.2 to 3.9 times the required minimum magnitude. The current gradient well pairs are adequate to define the capture of the Cr(VI) plume while pumping from extraction wells TW-3D and PE-1. Based on the hydraulic and monitoring data and evaluation presented in this report, the IM performance standard has been met for the Third Quarter 2013 reporting period.

During August, a series of lightning strikes caused significant damage to electrical components at the treatment facility, including failure of the flow meters for TW-3D and PE-01. The extraction pumps continued to operate; therefore, the monthly extraction rate and volume was calculated by subtracting the average input flow from the process drain tank from the raw water storage tank output flow. However, chromium removed total for this quarterly period includes only data from the time periods during which the flow meters were operating correctly and are an underestimate of the actual values. A total of 22,788,145 gallons of groundwater was extracted between July and October 2013 by the IM-3 treatment facility. The average pumping rate for the IM extraction system during Third Quarter 2013, including system downtime, was 128.9 gpm. An estimated 108 pounds (48.8 kilograms) of chromium were removed and treated

between June 1 and September 30, 2013. To date, the IMs have removed approximately 7,700 pounds of chromium from the floodplain at the Topock site through September 2013, as shown on Figure 4-1.

The wells that are monitored to detect trends in Cr(VI) in the IM pumping area (for example, MW-36-100, MW-39-100, MW-44-115, MW-44-125, and MW-46-175) continue to show overall stable or declining Cr(VI) concentrations relative to prior monitoring results, as shown in Appendix D. As shown on Figure 4-3 and in Figure D-6 in Appendix D, Cr(VI) results for MW-34-100 have been variable, but generally declining, since June 2006. In addition to this primary overall downward trend in Cr(VI) concentration, MW-34-100 also shows a consistent but secondary seasonal effect in concentration related to high (spring/summer) and low (winter) Colorado River levels.

SECTION 5

Upcoming Operation and Monitoring Events

Reporting of the IM extraction and monitoring activities will continue as described in the PMP and under direction from DTSC. Monitoring results, operations, and performance monitoring data will be reported in the Fourth Quarter and Annual 2013 monitoring report, which will be submitted by March 15, 2013.

5.1 Groundwater Monitoring Program

5.1.1 Quarterly Monitoring

As described in the July 23, 2010 DTSC sampling schedule approval (DTSC, 2010a), the fourth monitoring event is planned for November 4, 2013 through December 19, 2013.

5.1.2 Monthly Monitoring

Monthly sampling of the two active extraction wells (TW-3D and PE-1) will continue to be performed during the first 2 weeks of each month.

5.1.3 Well Inspections

Inspection of monitoring wells will be completed during each regularly scheduled sampling event but not less than quarterly (DTSC, 2013; CH2M HILL, 2005a-b). Necessary repairs will be done in a timely manner.

5.2 Surface Water Monitoring Program

The Fourth Quarter 2013 surface water monitoring event will be conducted at locations in the RMP monitoring network in November 2013. Results will be reported in the fourth quarter and annual 2013 monitoring report.

5.3 Performance Monitoring Program

5.3.1 Extraction

Per DTSC direction, PG&E will continue to operate wells TW-3D and PE-1 at a target combined pumping rate of 135 gpm during Fourth Quarter 2013, except for periods when planned and unplanned downtime occurs. Extracted groundwater treated at the IM-3 facility will be discharged into the IM-3 injection wells in accordance with compliance requirements of the waste discharge applicable, relevant, and appropriate requirements. Saline water and solids generated as byproducts of the treatment process will continue to be transported for offsite disposal.

PG&E will balance the pumping rates between wells TW-3D and PE-1 to maintain the target pumping rate and to maintain the DTSC-specified hydraulic gradients across the Alluvial Aquifer. Well TW-2D will serve as a backup to extraction wells TW-3D and PE-1.

5.3.2 Transducer Download

Downloads of the transducers in the key gradient control wells (MW-27-085, MW-31-135, MW-33-150, MW-34-100, and MW-45-095) will continue to be conducted via telemetry during Fourth Quarter 2013. Downloads of the remainder of the transducers will occur during the first week of each month during Fourth Quarter 2013.

SECTION 6

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Tables

Table 1-1

Topock Monitoring Reporting Schedule
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Program	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Groundwater Monitoring Program	January - March	April - June	July - October	November - December
Surface Water Monitoring Program	January - March	April - June	July - October	November - December
Performance Monitoring Program	January - March	April - June	July - October	November - December
IM-3 Monitoring (Chromium removed)	January - March	April - June	July - September	October - December

Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-9	SA	05-Dec-12	259	257	2,800	-24	7.4
MW-10	SA	10-Dec-12	484	461	2,700	12	7.7
		14-May-13	267	269	10,000	240	7.4
MW-12	SA	02-Oct-12	2,740	2,970	7,100	200	7.8
		27-Nov-12	2,310	2,630	6,700	100	8.0
		26-Feb-13	2,580	2,610 J	6,500	160	8.4
		26-Feb-13 FD	2,570	2,850 J	6,500	FD	FD
		09-May-13	2,440	2,620	6,300	210	8.2
		25-Sep-13	2,260	2,590	6,700	200	8.1
MW-13	SA	11-Dec-12	20.2	24.6	2,000	-8.9	7.6
MW-14	SA	13-Dec-12	19.9	21.8	1,700	-18	7.6
MW-15	SA	15-Nov-12	10.6	11.4	1,600	110	7.7
MW-16	SA	08-Nov-12	9.7	10.0	1,300	-46	8.1
		24-Apr-13	10.6	10.4	1,100	200	8.0
MW-17	SA	03-Dec-12	13.0	14.0	1,400	160	8.0
		24-Apr-13	12.9	11.8	1,500	220	7.9
MW-18	SA	04-Dec-12	20.0	20.7	1,400	130	7.5
MW-19	SA	04-Oct-12	250	241	2,200	220	7.1
		26-Nov-12	209	212	2,200	160	7.4
		12-Mar-13	202	197	2,100	200	7.2
		02-May-13	335	331	2,000	240	7.4
		02-May-13 FD	336	341	1,900	FD	FD
MW-20-70	SA	04-Oct-12	3,280	3,030	2,300	210	7.4
		27-Nov-12	3,020	3,110	2,300	110	7.5
		12-Mar-13	3,160	3,310	2,200	220	7.4
		09-May-13	2,800	3,040	2,000	240	7.7
MW-20-100	MA	04-Oct-12	3,700	3,590	2,900	220	7.0
		29-Nov-12	2,910	3,090	2,600	150	7.3
		13-Mar-13	3,170	3,290	2,600	160	7.1
		09-May-13	3,340	3,780	2,600	270	7.3
MW-20-130	DA	09-Oct-12	9,610	11,000	12,000	250	7.1
		29-Nov-12	9,540	9,710	11,000	170	7.2
		29-Nov-12 FD	9,560	9,270	11,000	FD	FD

Refer to table footnotes for data qualifier explanation.

Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-20-130	DA	14-Mar-13	9,870	9,690	12,000	240	7.3
		14-May-13	9,120	10,500	10,000	190	7.4
MW-21	SA	12-Sep-12	ND (1.0)	2.0	12,000	58	R
		13-Nov-12	2.3	3.1	10,000	9.0	7.0
		07-Feb-13	2.6	4.6	8,500	200	6.9
		24-Apr-13	1.5	1.9	11,000	210	7.1
		10-Sep-13	ND (1.0)	1.5	10,000	120	7.1
MW-22	SA	10-Dec-12	ND (2.0)	ND (1.0)	32,000	-52	6.6
		15-May-13	ND (1.0)	ND (1.0)	13,000	-91	6.9
MW-23-060	BR	12-Sep-12	32.8	35.2	16,000	-46	R
		08-Nov-12	31.6	35.5	19,000	61	R
		18-Feb-13	33.7	34.8	17,000	63	10.0
		23-Apr-13	34.3	38.3	19,000	100	9.4
		17-Sep-13	36.9	38.4	15,000	120	9.4
MW-23-080	BR	12-Sep-12	12.8	15.9	16,000	-110	R
		12-Sep-12 FD	14.2	15.2	16,000	FD	FD
		08-Nov-12	19.2	21.6	19,000	-80	R
		18-Feb-13	11.2	10.6	17,000	50	10.7
		23-Apr-13	14.0	15.0	20,000	63	10.3
		17-Sep-13	13.7	14.3	15,000	140	9.9
MW-24BR	BR	26-Sep-12	ND (1.0)	ND (1.0)	14,000	-140	7.7
		13-Nov-12	ND (1.0)	ND (1.0)	14,000	-160	8.0
		14-Mar-13	ND (1.0)	ND (1.0)	14,000	-47	8.0
		07-May-13	ND (1.0)	ND (1.0)	14,000	-190	7.8
		10-Sep-13	ND (1.0)	ND (1.0)	14,000	-180	8.1
MW-25	SA	11-Dec-12	192	216	1,700	16	7.3
MW-26	SA	04-Oct-12	1,950	1,980	4,100	190	7.0
		27-Nov-12	1,800	1,820	4,000	110	7.2
		12-Mar-13	1,820	1,710	4,100	240	7.1
		07-May-13	1,790	1,870	3,900	240	7.3
MW-27-20	SA	03-Dec-12	0.25	1.3	950	-33	7.3
		15-Apr-13	ND (0.2)	ND (1.0)	1,000	-70	7.4
MW-27-60	MA	01-Oct-12	ND (0.2)	ND (1.0)	1,100	-140	7.8
		03-Dec-12	ND (0.2)	ND (1.0)	1,000	-61	7.8

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Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-27-60	MA	04-Feb-13	ND (0.2)	ND (1.0)	990	-66	7.6
		04-Feb-13 FD	ND (0.2)	ND (1.0)	1,000	FD	FD
		15-Apr-13	ND (0.2)	ND (1.0)	1,100	-96	7.6
		02-Oct-13	ND (0.2)	ND (1.0)	760	-86	7.4
MW-27-85	DA	01-Oct-12	ND (1.0)	ND (1.0)	12,000	-51	7.3
		03-Dec-12	ND (1.0)	ND (1.0)	11,000	28	7.4
		04-Feb-13	ND (1.0)	ND (1.0)	11,000	50	7.2
		15-Apr-13	ND (1.0)	ND (1.0)	13,000	-42	7.4
		15-Apr-13 FD	ND (1.0)	ND (1.0)	13,000	FD	FD
		02-Oct-13	ND (1.0)	ND (1.0)	9,000	-38	7.2
MW-28-25	SA	05-Dec-12	ND (0.2)	1.4	1,000	43	7.3
		18-Apr-13	ND (0.2)	ND (1.0)	1,000	58	7.4
MW-28-90	DA	10-Sep-12	ND (0.2)	ND (1.0)	7,400	-210	7.0
		05-Dec-12	ND (1.0)	ND (1.0)	7,200	-48	7.2
		05-Feb-13	ND (0.2)	ND (1.0)	7,000	-30	7.1
		18-Apr-13	ND (0.2)	ND (1.0)	7,400	-79	7.2
		11-Sep-13	ND (0.2)	ND (1.0)	6,600	-56	7.1
MW-29	SA	05-Dec-12	ND (0.2)	ND (1.0)	2,800	-67	7.3
		05-Dec-12 FD	ND (0.2)	ND (1.0)	2,400	FD	FD
		18-Apr-13	ND (0.2)	ND (1.0)	2,100	-110	7.3
MW-30-30	SA	03-Dec-12	ND (1.0)	5.5	28,000	-83	7.5
		15-Apr-13	ND (0.2)	ND (1.0)	9,000	-150	7.7
		15-Apr-13 FD	ND (0.2)	ND (1.0)	8,800	FD	FD
MW-30-50	MA	03-Dec-12	ND (0.2)	ND (1.0)	1,100	-26	7.8
MW-31-60	SA	13-Nov-12	334	369	3,300	77	7.3
		07-May-13	275	271	3,600	130	7.5
MW-31-135	DA	15-Nov-12	12.4	13.4	12,000	110	7.6
MW-32-20	SA	05-Dec-12	ND (2.0)	ND (1.0)	45,000	-92	6.7
MW-32-35	SA	05-Dec-12	ND (1.0)	ND (1.0)	15,000	-130	7.0
		17-Apr-13	ND (1.0)	ND (1.0)	16,000	-150	7.1
		17-Apr-13 FD	ND (1.0)	ND (1.0)	15,000	FD	FD
MW-33-40	SA	10-Sep-12	ND (0.2)	ND (1.0)	10,000	-2.5	7.6
		05-Dec-12	ND (1.0)	2.8	8,300	-100	8.0

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Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date		Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
							ORP (mV)	Field pH
MW-33-40	SA	05-Dec-12	FD	ND (1.0)	2.5	8,100	FD	FD
		25-Feb-13		ND (0.2)	ND (1.0)	6,100	47	8.0
		22-Apr-13		ND (0.2)	ND (1.0)	7,000	82	8.1
		16-Sep-13		ND (1.0)	ND (1.0)	10,000	180	7.7
MW-33-90	MA	24-Sep-12		16.5	17.2	10,000	170	7.1
		08-Nov-12		16.5	18.2	12,000	130	7.2
		14-Feb-13		17.8	17.9	8,700	180	7.3
		14-Feb-13	FD	16.2	18.3	8,800	FD	FD
		22-Apr-13		15.4	15.7	11,000	210	7.3
		16-Sep-13		13.6	13.6	8,800	230	7.4
MW-33-150	DA	11-Sep-12		10.9	11.9	16,000	-61	7.4
		06-Dec-12		12.4	12.4	17,000	20	7.4
		05-Feb-13		11.5 J	12.5	16,000	100	7.4
		22-Apr-13		11.2	11.8	19,000	260	7.5
		16-Sep-13		10.6	10.9	15,000	160	7.4
MW-33-210	DA	11-Sep-12		12.6	13.2	19,000	-74	7.3
		06-Dec-12		13.3	10.9	19,000	21	7.3
		05-Feb-13		12.9	14.0	18,000	120	7.3
		23-Apr-13		10.2	10.6	23,000	200	7.3
		12-Sep-13		12.5	13.0	17,000	110	7.3
MW-34-55	MA	12-Dec-12		ND (0.2)	ND (1.0)	980	-13	7.6
MW-34-80	DA	01-Oct-12		ND (0.2)	ND (1.0)	8,000	-31	7.4
		12-Dec-12		ND (0.2)	ND (1.0)	7,200	19	7.3
		12-Dec-12	FD	ND (0.2)	ND (1.0)	7,200	FD	FD
		05-Feb-13		ND (1.0)	ND (1.0)	7,000	120	7.3
		16-Apr-13		ND (0.2)	ND (1.0)	7,800	-12	7.2
		02-Oct-13		ND (1.0)	ND (1.0)	6,600	-37	7.4
MW-34-100	DA	01-Oct-12		70.0	71.9	19,000	85	7.5
		01-Oct-12	FD	70.0	75.1	18,000	FD	FD
		26-Nov-12		166	169	17,000	100	7.5
		26-Nov-12	FD	167	173	17,000	FD	FD
		12-Dec-12		228	263	---	61	7.7
		24-Jan-13		283	292	---	52	7.9
		26-Feb-13		76.8	71.9	17,000	110	7.5
		26-Feb-13	FD	77.1	71.2	17,000	FD	FD

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Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-34-100	DA	16-Apr-13	15.0	15.9	18,000	140	7.0
		16-Apr-13 FD	15.0	15.5	18,000	FD	FD
		02-Oct-13	82.6	79.5	15,000	80	7.6
		02-Oct-13 FD	81.5	84.5	15,000	FD	FD
MW-35-60	SA	10-Sep-12	22.7	24.5	7,600	80	8.1
		04-Dec-12	22.3	29.6	7,100	75	7.1
		19-Feb-13	24.3	25.3	6,500	140	7.8
		23-Apr-13	25.4	24.4	7,000	260	7.5
		10-Sep-13	21.9	21.2	7,000	200	7.2
MW-35-135	DA	04-Dec-12	30.6	37.7	10,000	61	7.6
		23-Apr-13	27.4	28.9	12,000	140	7.6
MW-36-20	SA	04-Dec-12	ND (0.2)	ND (1.0)	6,000	-170	7.6
		04-Dec-12 FD	ND (0.2)	ND (1.0)	6,200	FD	FD
MW-36-40	SA	04-Dec-12	ND (0.2)	ND (1.0)	1,500	-170	7.7
MW-36-50	MA	04-Dec-12	ND (0.2)	ND (1.0)	1,100	-110	7.6
MW-36-70	MA	04-Dec-12	ND (0.2)	ND (1.0)	1,100	-110	7.9
MW-36-90	DA	04-Dec-12	ND (0.2)	ND (1.0)	1,200	-54	8.3
		15-May-13	ND (0.2)	ND (1.0)	980	210	8.3
MW-36-100	DA	10-Oct-12	68.5	72.0	9,300	-48	7.1
		08-Nov-12	62.7	72.8	10,000	-18	7.1
		11-Mar-13	58.7	58.3	8,600	23	7.2
		24-Apr-13	56.5	52.6	9,900	-9	7.2
MW-37S	MA	14-Nov-12	9.8	10.3	5,400	56	7.6
MW-37D	DA	04-Dec-12	26.2	27.7	16,000	55	7.7
		30-Apr-13	108	120	15,000	170	7.5
MW-38S	SA	24-Sep-13	3.2	6.8	1,700	-170	7.6
MW-38D	DA	17-Sep-13	7.5	8.1	20,000	-79	8.1
MW-39-50	MA	03-Dec-12	ND (0.2)	ND (1.0)	1,300	120	7.9
MW-39-60	MA	03-Dec-12	ND (1.0)	ND (1.0)	1,500	32	8.0
MW-39-70	MA	03-Dec-12	ND (0.2)	ND (1.0)	2,500	83	7.7
MW-39-80	DA	03-Dec-12	ND (0.2)	ND (1.0)	6,700	44	7.2
MW-39-100	DA	13-Dec-12	93.2	82.0	17,000	110	6.5

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Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-40S	SA	03-Dec-12	8.0	9.5	2,200	170	7.7
MW-40D	DA	03-Dec-12	157	176	15,000	130	7.6
		01-May-13	134	137	14,000	250	7.4
MW-41S	SA	03-Dec-12	17.7	19.1	5,000	120	7.8
MW-41M	DA	05-Nov-12	9.9	13.4	16,000	-160	7.7
MW-41D	DA	05-Nov-12	3.3	4.4	22,000	-180	7.8
		23-Apr-13	2.9	3.0	26,000	210	7.6
MW-42-30	SA	06-Dec-12	ND (0.2)	ND (1.0)	4,400	-150	7.9
MW-42-55	MA	11-Sep-12	ND (0.2)	1.7	2,600	-130	7.8
		11-Sep-12 FD	ND (0.2)	1.6	2,600	FD	FD
		06-Dec-12	ND (0.2)	1.4	2,300	-57	7.9
		04-Feb-13	ND (0.2)	1.4	2,600	-83	7.8
		16-Apr-13	ND (0.2)	1.2	2,500	-97	7.9
		11-Sep-13	ND (0.2)	2.8	1,700	-110	8.0
MW-42-65	MA	11-Sep-12	ND (0.2)	ND (1.0)	7,900	-110	7.2
		06-Dec-12	ND (1.0)	ND (1.0)	8,400	14	7.2
		04-Feb-13	ND (1.0)	ND (1.0)	8,700	15	7.1
		04-Feb-13 FD	ND (1.0)	ND (1.0)	8,500	FD	FD
		17-Apr-13	ND (0.2)	ND (1.0)	8,000	-36	7.3
		11-Sep-13	ND (0.2)	ND (1.0)	6,800	-28	7.2
MW-43-25	SA	10-Dec-12	ND (0.2)	ND (1.0)	1,200	-120	7.4
		17-Apr-13	ND (0.2)	ND (1.0)	1,400	-160	7.5
MW-43-75	DA	10-Dec-12	ND (1.0)	ND (1.0)	12,000	-81	7.3
MW-43-90	DA	10-Dec-12	ND (1.0)	ND (1.0)	17,000	-36	6.9
		17-Apr-13	ND (1.0)	ND (1.0)	18,000	-80	6.9
MW-44-70	MA	06-Dec-12	ND (0.2)	ND (1.0)	2,100	-69	7.6
		22-Apr-13	ND (0.2)	ND (1.0)	2,400	-86	7.5
MW-44-115	DA	27-Sep-12	88.2	98.2	11,000	-85	7.8
		26-Nov-12	73.6	78.1	11,000	21	7.8
		26-Feb-13	75.9	78.9	11,000	110	7.8
		24-Apr-13	64.5	65.4	13,000	180	7.9
		12-Sep-13	47.1	46.0	10,000	190	7.4
MW-44-125	DA	13-Sep-12	ND (1.0)	5.3	12,000	-190	7.9

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Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date		Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
							ORP (mV)	Field pH
MW-44-125	DA	13-Sep-12	FD	ND (1.0)	4.0	12,000	FD	FD
		06-Nov-12		ND (1.0)	6.4	12,000	-170	7.9
		06-Nov-12	FD	ND (1.0)	5.9	10,000	FD	FD
		13-Feb-13		4.2	8.2	12,000	-130	7.9
		13-Feb-13	FD	3.5	8.4	12,000	FD	FD
		18-Apr-13		ND (1.0)	5.3	9,400	-160	7.7
		18-Apr-13	FD	ND (1.0)	5.3	9,700	FD	FD
		12-Sep-13		ND (1.0)	4.9	8,600	-160	7.6
		12-Sep-13	FD	ND (0.2)	4.7	8,600	FD	FD
MW-45-095a	DA	13-Dec-12		20.2	20.4	9,000	100	7.3
MW-46-175	DA	26-Sep-12		46.7	52.6	18,000	-35	8.1
		09-Nov-12		71.0	73.5	18,000	120	8.2
		12-Dec-12		73.2	79.7	---	36	8.5
		24-Jan-13		78.7	79.3	---	18	8.8
		25-Feb-13		50.4	53.7	18,000	130	8.2
		24-Apr-13		26.4	26.3	23,000	57	8.1
		11-Sep-13		29.5	29.6	17,000	130	8.0
MW-46-205	DA	12-Dec-12		ND (4.9)	5.1	22,000	4.1	8.4
		24-Apr-13		5.6	5.4	28,000	63	8.2
MW-47-55	SA	24-Sep-12		20.7	21.4	4,800	350	7.5
		07-Nov-12		28.8	29.6	5,100	160	7.3
		11-Mar-13		16.7	16.4	4,300	200	7.2
		24-Apr-13		16.4	14.3	5,200	220	7.5
MW-47-115	DA	25-Sep-12		20.0	23.2	14,000	93	7.4
		07-Nov-12		17.3	19.2	16,000	120	7.4
		27-Feb-13		21.0	22.8	13,000	120	7.3
		24-Apr-13		23.7	21.1	16,000	240	7.5
MW-48	BR	13-Sep-12		ND (1.0)	ND (1.0)	18,000	81	R
		07-Nov-12		ND (1.0)	ND (1.0)	20,000	-120	7.6
		07-Feb-13		ND (1.0)	ND (1.0)	15,000	200	6.9
		25-Apr-13		ND (1.0)	ND (1.0)	23,000	250	7.2
		11-Sep-13		ND (1.0)	ND (1.0)	16,000	24	7.4
MW-49-135	DA	11-Dec-12		1.4	29.3	14,000	59	7.9
MW-49-275	DA	11-Dec-12		ND (1.0)	1.6	26,000	45	8.2

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Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-49-365	DA	11-Dec-12	ND (2.0)	ND (1.0)	39,000	17	8.1
MW-50-095	MA	19-Sep-12	13.7	14.9	5,300	60	7.7
		05-Nov-12	12.9	12.5	5,400	220	7.6
		14-Feb-13	12.4	13.7	4,600	150	7.5
		24-Apr-13	13.6	12.4	5,800	230	7.6
		24-Apr-13 FD	13.4	12.3	5,700	FD	FD
MW-50-200	DA	03-Oct-12	8,290	8,720	22,000	150	7.4
		03-Oct-12 FD	8,000	8,520	22,000	FD	FD
		29-Nov-12	6,680	7,000	20,000	80	7.4
		27-Feb-13	7,410	7,510 J	20,000	220	7.6
		14-May-13	7,630	8,670	19,000	210	7.6
		26-Sep-13	7,060	6,760	19,000	160	7.6
MW-51	MA	09-Oct-12	4,630	5,100	11,000	---	---
		28-Nov-12	4,480	4,370	10,000	130	7.3
		14-Mar-13	4,740	4,950	11,000	180	7.2
		13-May-13	4,170	4,950	9,300	210	7.4
MW-52S	MA	05-Dec-12	ND (1.0)	ND (1.0)	9,200	-120	6.9
		16-May-13	ND (0.2)	ND (1.0)	8,400	-120	6.9
MW-52M	DA	05-Dec-12	ND (1.0)	ND (1.0)	16,000	-140	7.5
		16-May-13	ND (1.0)	ND (1.0)	14,000	-140	7.6
MW-52D	DA	05-Dec-12	ND (1.0)	ND (1.0)	22,000	-180	7.9
		16-May-13	ND (1.0)	ND (1.0)	20,000	-190	8.0
MW-53M	DA	05-Dec-12	ND (1.0)	ND (1.0)	19,000	-200	8.2
		05-Dec-12 FD	ND (1.0)	ND (1.0)	20,000	FD	FD
		16-May-13	ND (1.0)	ND (1.0)	19,000	-180	8.1
MW-53D	DA	06-Dec-12	ND (2.0)	ND (1.0)	25,000	-200	8.2
		16-May-13	ND (1.0)	ND (1.0)	24,000	-220	8.3
MW-54-85	DA	12-Dec-12	ND (1.0)	ND (1.0)	10,100	-140	7.5
		25-Apr-13	ND (0.2) J	1.3	9,170	-90	7.6
MW-54-140	DA	12-Dec-12	ND (1.0)	ND (1.0)	12,700	-66	7.7
		25-Apr-13	ND (0.2) J	ND (1.0)	11,800	-26	7.7
MW-54-195	DA	12-Dec-12	ND (1.0)	ND (1.0)	19,200	-180	8.2
		25-Apr-13	ND (1.0) J	ND (1.0)	18,300	56	8.1

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Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-54-195	DA	25-Apr-13 FD	ND (1.0) J	ND (1.0)	18,200	FD	FD
MW-55-45	MA	12-Dec-12	ND (0.2)	ND (1.0)	1,510	-190	7.6
MW-55-120	DA	12-Dec-12	7.1	6.8	8,840	-56	7.9
		12-Dec-12 FD	7.0	6.9	8,800	FD	FD
MW-56S	SA	06-Dec-12	ND (0.2)	ND (1.0)	5,380	-120	7.1
		15-May-13	ND (0.2) J	1.4	6,000	-130	7.0
MW-56M	DA	06-Dec-12	ND (1.0)	ND (1.0)	14,500	-120	7.1
		15-May-13	ND (1.0) J	1.1 J	13,800	-120	7.1
MW-56D	DA	06-Dec-12	ND (2.0)	ND (1.0)	21,400	-150	7.5
		15-May-13	ND (1.0) J	ND (1.0)	19,800	-150	7.7
MW-57-070	BR	12-Sep-12	609	614	2,300	9.2	7.1
		13-Dec-12	724	799	2,100	130	7.0
		13-Dec-12 FD	752	851	2,100	FD	FD
		20-Feb-13	272	338	2,100	190	7.1
		20-Feb-13 FD	268	376	2,100	FD	FD
		11-Mar-13	594	562	2,200	150	7.1
		06-May-13	611	696	2,100	260	7.1
		23-Sep-13	554	561	2,000	210	7.2
MW-57-185	BR	11-Sep-12	7.8	9.1	18,000	-50	R
		08-Nov-12	9.5	10.7	21,000	-130	8.7
		06-Feb-13	10.4	11.4	17,000	170	8.3
		23-Apr-13	10.2	9.8	23,000	150	9.0
		10-Sep-13	10.1	10.1	18,000	150	8.0
MW-58BR	BR	28-Feb-13	ND (1.0)	ND (1.0)	7,300	5.0	7.6
		30-Apr-13	ND (1.0)	ND (1.0)	8,400	-61	7.5
		19-Sep-13	0.73	ND (1.0)	8,400	110	7.6
MW-58BR-UPR-160	BR	03-Oct-12	ND (1.0)	ND (1.0)	10,000	-120	7.0
MW-58BR-LWR-160	BR	04-Oct-12	2.3	10.2	9,400	-91	8.0
MW-59-100	SA	02-Oct-12	4,510	4,640	9,700	310	6.6
		28-Nov-12	3,980	3,970	9,400	170	6.8
		27-Feb-13	3,920	4,030	9,800	170	6.8
		13-May-13	4,110	4,150	8,800	150	6.8
		25-Sep-13	4,180	4,120	9,800	320	6.8

Refer to table footnotes for data qualifier explanation.

Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-60-125	BR	20-Sep-12	848	846	9,600	63	7.6
		06-Dec-12	867	804	8,700	-76	7.5
		20-Feb-13	1,020	1,000	8,400	140	7.3
		06-May-13	988	959	8,600	210	7.4
		24-Sep-13	1,120	1,050	8,600	110	7.3
		24-Sep-13 FD	1,100	1,020	8,400	FD	FD
MW-60BR-245	BR	19-Sep-12	89.7	97.2	18,000	-140	8.6
		05-Dec-12	61.4	59.2	17,000	-8	8.7
		14-Mar-13	90.6	125	16,000	120	8.0
		14-Mar-13 FD	93.9	110	16,000	FD	FD
		07-May-13	46.6	49.7	18,000	-310	8.2
		17-Sep-13	ND (1.0)	2.6	16,000	-140	8.3
MW-61-110	BR	27-Sep-12	656	714	17,000	5.0	7.1
		27-Sep-12 FD	661	738	17,000	FD	FD
		27-Nov-12	666	709	15,000	12	7.2
		27-Nov-12 FD	678	716	15,000	FD	FD
		25-Feb-13	637	682 J	15,000	16	7.3
		02-May-13	518	574	14,000	76	7.4
		23-Sep-13	576	616	14,000	60	7.4
MW-62-065	BR	12-Sep-12	588	627	6,400	-28	7.3
		10-Dec-12	505	543	6,200	46	7.4
		19-Feb-13	404	406	5,400	61	7.8
		25-Apr-13	589	607	7,300	130	7.4
		23-Sep-13	500	518	5,800	180	7.4
MW-62-110	BR	13-Sep-12	894	923	9,200	130	7.4
		11-Dec-12	904	944	9,000	130	6.6
		26-Feb-13	1,050	969	8,400	-51	7.8
		08-May-13	733	782	7,800	170	7.1
		18-Sep-13	808	857	8,100	220	7.3
MW-62-190	BR	13-Sep-12	ND (1.0)	ND (1.0)	19,000	-280	7.8
		11-Dec-12	ND (1.0)	ND (1.0)	18,000	100	7.5
		26-Feb-13	ND (1.0)	ND (1.0)	17,000	-14	8.0
		08-May-13	ND (1.0)	ND (1.0)	1,600	-30	7.5
		18-Sep-13	ND (1.0)	ND (1.0)	16,000	-3	7.6
MW-63-065	BR	10-Sep-12	1.5	2.3	7,600	96	8.0

Refer to table footnotes for data qualifier explanation.

Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-63-065	BR	07-Nov-12	1.2	2.0	8,800	23	7.3
		06-Feb-13	1.2	1.5	6,300	190	7.0
		25-Apr-13	1.3	1.5	8,100	140	7.1
		09-Sep-13	1.9	1.8	7,000	110	7.2
MW-64BR	BR	01-Mar-13	ND (1.0)	ND (1.0)	12,000	-19	7.2
		01-May-13	ND (1.0)	ND (1.0)	12,000	48	7.3
		17-Sep-13	ND (1.0)	ND (1.0)	13,000	40	7.4
MW-64BR-UPR-150	BR	08-Oct-12	ND (1.0)	ND (1.0)	12,000	-140	8.0
MW-64BR-LWR-150	BR	10-Oct-12	ND (1.0)	1.0	14,000	-180	7.9
MW-65-160	SA	18-Sep-12	75.7	79.6	4,300	-76	7.2
		04-Dec-12	78.5	85.1	4,100	-9.7	7.3
		19-Feb-13	78.8	77.1	4,000	120	7.8
		01-May-13	111	112	3,600	230	7.3
		19-Sep-13	113	115	3,800	270	7.3
MW-65-225	DA	18-Sep-12	528	570	12,000	-69	7.0
		05-Dec-12	634	637	9,400	-16	7.4
		19-Feb-13	630	627	10,000	45	7.6
		02-May-13	534	549	10,000	250	7.2
		02-May-13 FD	548	572	10,000	FD	FD
		23-Sep-13	583	613	9,800	150	7.2
		23-Sep-13 FD	579	580	9,600	FD	FD
MW-66-165	SA	17-Sep-12	653	665	4,500	11	7.2
		06-Dec-12	622	583	4,300	46	7.3
		20-Feb-13	636	613	4,300	110	7.2
		02-May-13	737	695	4,100	230	7.1
		23-Sep-13	631	694	4,200	200	7.3
MW-66-230	DA	17-Sep-12	6,200	6,040	19,000	-89	8.0
		10-Dec-12	6,190	5,910	19,000	-34	8.0
		21-Feb-13	6,510	6,400	18,000	150	7.9
		13-May-13	6,520	7,280	17,000	220	7.9
		25-Sep-13	5,120	6,030	17,000	300	7.9
MW-66BR-270	BR	02-Oct-12	ND (1.0)	ND (1.0)	18,000	-97	10.6
		20-Dec-12	ND (1.0)	ND (1.0)	19,000	42	9.8
		12-Mar-13	ND (1.0)	ND (1.0)	18,000	-210	9.7

Refer to table footnotes for data qualifier explanation.

Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-66BR-270	BR	18-Jun-13	ND (1.0)	ND (1.0)	17,000	-170	10.3
		23-Sep-13	ND (1.0)	ND (1.0)	16,000	-230	9.6
MW-67-185	SA	20-Sep-12	2,370	2,320	4,700	40	7.4
		06-Dec-12	2,300	2,270	4,400	-56	7.4
		21-Feb-13	2,190	2,100	4,300	140	7.4
		21-Feb-13 FD	2,180	2,110	4,200	FD	FD
		09-May-13	2,400	2,550	4,500	290	7.2
		25-Sep-13	2,280	2,220	5,000	200	7.2
MW-67-225	MA	20-Sep-12	3,200	3,420	8,000	310	7.2
		10-Dec-12	3,210	3,110	7,500	-30	7.5
		21-Feb-13	3,310	3,110	7,000	140	7.4
		09-May-13	3,140	3,280	6,800	150	7.4
		25-Sep-13	3,100	2,920	6,800	310	7.5
MW-67-260	DA	20-Sep-12	2,130	2,160	18,000	-140	8.5
		06-Dec-12	2,020	1,930	18,000	-100	8.3
		21-Feb-13	2,130	2,060	17,000	170	8.1
		09-May-13	2,120	2,220	16,000	120	8.1
		09-May-13 FD	2,140	2,250	16,000	FD	FD
		25-Sep-13	2,040	1,980	16,000	120	8.1
		25-Sep-13 FD	2,050	1,920	16,000	FD	FD
MW-68-180	SA	20-Sep-12	16,400	16,900	4,100	370	7.3
		11-Dec-12	20,200	21,800	4,400	45	7.4
		11-Dec-12 FD	20,400	21,700	4,400	FD	FD
		21-Feb-13	17,300	15,600	3,700	140	7.4
		13-May-13	5,010	5,590	2,800	64	6.7
		26-Sep-13	19,200	20,700	3,800	200	7.2
MW-68-240	DA	20-Sep-12	2,000	1,980	17,000	R	7.5
		06-Dec-12	1,990	1,870	16,000	-110	7.5
		20-Feb-13	1,970	2,020	15,000	140	7.2
		08-May-13	2,050	2,160	14,000	66	7.3
		24-Sep-13	2,120	1,920	15,000	160	7.4
MW-68BR-280	BR	03-Oct-12	ND (1.0)	ND (1.0)	22,000	-140	8.2
		12-Nov-12	ND (1.0)	ND (1.0)	21,000	-120	8.3
		18-Feb-13	ND (1.0)	ND (1.0)	21,000	-36	8.5
		08-May-13	ND (1.0)	ND (1.0)	19,000	-62	8.5

Refer to table footnotes for data qualifier explanation.

Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-68BR-280	BR	18-Sep-13	ND (1.0)	ND (1.0)	19,000	-79	8.4
MW-69-195	BR	19-Sep-12	789	840	3,900	76	7.1
		05-Dec-12	849	869	3,800	-47	7.3
		20-Feb-13	909	852	3,500	130	7.1
		06-May-13	919	868	3,600	230	6.9
		24-Sep-13	938	963	3,500	120	7.1
MW-70-105	BR	12-Sep-12	80.8	85.6	3,300	-150	7.9
		04-Dec-12	65.1	71.1	3,500	18	8.0
		19-Feb-13	93.2	91.7	3,300	-130	8.4
		25-Apr-13	198	201	3,800	37	7.8
		23-Sep-13	122	123	3,300	35	7.8
MW-70BR-225	BR	18-Sep-12	2,410	2,500	14,000	42	7.2
		13-Dec-12	1,980	1,980	14,000	-39	7.4
		26-Feb-13	1,960	1,880	13,000	140	7.7
		07-May-13	2,000	2,070	13,000	170	7.3
		24-Sep-13	2,170	2,040	13,000	100	7.4
MW-71-035	SA	19-Sep-12	ND (0.2)	ND (1.0)	7,500	120	7.1
		08-Nov-12	ND (0.2)	ND (1.0)	9,300	190	7.4
		07-Feb-13	0.78	ND (1.0)	6,800	230	7.1
		30-Apr-13	0.44	ND (1.0)	7,800	220	7.3
		10-Sep-13	ND (1.0)	ND (1.0)	7,900	120	7.3
MW-72-080	BR	19-Sep-12	151	158	15,000	37	7.7
		05-Dec-12	150	150	16,000	89	7.8
		19-Feb-13	122	119	16,000	-46	8.2
		25-Apr-13	116	124	20,000	130	7.7
		19-Sep-13	139	141	15,000	110	7.8
		19-Sep-13 FD	138	140	15,000	FD	FD
MW-72BR-200	BR	13-Sep-12	3.9	4.5	15,000	-200	8.7
		13-Sep-12 FD	3.8	4.3	15,000	FD	FD
		14-Nov-12	6.4	7.3	16,000	-99	8.3
		07-Feb-13	7.9	8.2	12,000	35	8.3
		29-Apr-13	4.9	5.7	16,000	86	8.2
		19-Sep-13	5.7	6.2	15,000	-11	8.2
MW-73-080	BR	13-Sep-12	37.3	39.3	11,000	-15	7.3
		05-Dec-12	35.6	36.2	11,000	47	7.2

Refer to table footnotes for data qualifier explanation.

Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
						ORP (mV)	Field pH
MW-73-080	BR	19-Feb-13	25.1	25.8	8,800	40	9.0
		01-May-13	31.8	32.8	9,200	270	7.4
		11-Sep-13	31.6	30.9	9,700	300	7.2
MW-74-240	BR	27-Sep-12	0.28	ND (1.0)	1,200	-210	9.6
		20-Dec-12	ND (0.2)	ND (1.0)	1,100	-12	9.0
		20-Dec-12 FD	ND (0.2)	ND (1.0)	1,100	FD	FD
		01-Mar-13	ND (0.2)	ND (1.0)	890	-41	9.1
		02-May-13	ND (0.2)	ND (1.0)	810	-32	8.7
		18-Sep-13	ND (0.2)	ND (1.0)	780	19	8.9
OW-3S	SA	13-Nov-12	26.8	23.5	1,500	65	7.6
OW-3M	MA	13-Nov-12	16.5	15.2	5,600	17	7.8
OW-3D	DA	13-Nov-12	9.5	10.8	8,600	12	7.7
PE-1	DA	02-Jul-12	6.6	6.9	4,870	---	---
		07-Aug-12	6.2	7.3	4,830	---	---
		04-Sep-12	6.8	8.8	4,770	---	---
		02-Oct-12	6.3	7.0	4,700	---	---
		06-Nov-12	6.9	8.0	4,760	---	---
		04-Dec-12	7.0	7.3	4,760	---	---
		02-Jan-13	8.1	8.0	4,490	---	---
		05-Feb-13	7.7	8.4	4,490	---	---
		05-Mar-13	6.5	6.6	4,410	---	---
		01-Apr-13	5.6	5.6	4,540	---	---
		01-May-13	5.0	5.8	4,540	---	---
		04-Jun-13	5.1	5.6	4,350	---	---
		02-Jul-13	4.7	5.3	4,130	---	---
		06-Aug-13	5.0	5.7	4,200	---	---
		03-Sep-13	5.1	5.4	4,330	---	---
		01-Oct-13	5.2	5.1	4,160	---	---
PGE-7BR	BR	11-Dec-12	ND (1.0)	ND (1.0)	18,000	-230	7.7
PGE-8	BR	07-Nov-12	ND (1.0)	1.6	23,000	-300	8.4
Park Moabi-3	MA	08-Nov-12	7.2	8.3 UF	1,600	-13	7.8
Park Moabi-4	MA	08-Nov-12	21.3	23.0 UF	2,200	430	7.8
TW-1	SA-MA-DA	01-Oct-12	3,190	3,190	7,400	110	7.3
		11-Dec-12	3,100	3,230	7,300	-15	7.2

Refer to table footnotes for data qualifier explanation.

Table 3-1
Groundwater Sampling Results, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Aquifer Zone	Sample Date		Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Selected Field Parameters	
							ORP (mV)	Field pH
TW-1	SA-MA-DA	11-Dec-12	FD	2,980	3,090	7,600	FD	FD
		21-Feb-13		2,830	3,060	7,200	160	7.1
		14-May-13		2,830	3,160	6,500	320	7.1
		26-Sep-13		2,770	2,600	6,900	160	7.1
TW-2S	SA-MA	13-Dec-12		478	516	2,400	-27	7.6
TW-2D	DA	13-Dec-12		192	228	9,000	-33	7.1
TW-3D	DA	02-Jul-12		922	878	8,290	---	---
		07-Aug-12		885	946	8,200	---	---
		04-Sep-12		788	931	8,260	---	---
		02-Oct-12		1,000	975	8,250	---	---
		06-Nov-12		953	891	8,300	---	---
		04-Dec-12		893	879	8,470	---	---
		02-Jan-13		897	925	8,000	---	---
		05-Feb-13		1,020	950	8,260	---	---
		05-Mar-13		867	898	8,150	---	---
		01-Apr-13		836	766	8,110	---	---
		01-May-13		746	881	8,040	---	---
		04-Jun-13		846	847	7,630	---	---
		02-Jul-13		934	828	7,400	---	---
		06-Aug-13		816	892	7,530	---	---
		03-Sep-13		728	832	7,770	---	---
		01-Oct-13		846	720	7,620	---	---
TW-4	DA	15-Nov-12		7.7	9.1	22,000	120	7.5
TW-5	DA	15-Nov-12		13.5	15.6	16,000	160	7.4

Refer to table footnotes for data qualifier explanation.

Notes:

(---) = data not collected, available, rejected, or field instrument malfunction.
FD = field duplicate sample.
J = concentration or reporting limit (RL) estimated by laboratory or data validation.
mV = millivolts.
ND = not detected at listed RL.
ORP = oxidation-reduction potential.
R = result exceeded analytical criteria for precision and accuracy; should not be used for project decision making.
RL = reporting limit.
µg/L = micrograms per liter.
µS/cm = microSiemens per centimeter.

Beginning February 1, 2008, hexavalent chromium samples are field filtered per DTSC - approved change from analysis method SW7199 to E218.6.

The RLs for certain hexavalent chromium results from Method E218.6 analyses have been elevated above the standard RL of 0.2 µg/L due to required sample dilution to accommodate matrix interferences.

Monitoring wells MW-11, MW-24A, MW-24B, MW-38S, and MW-38D are currently sampled as part of the upland in situ pilot test monitoring. Results from these wells are presented in the in situ pilot test reports (ARCADIS, 2013) and are not included in this table.

ORP is reported to two significant figures. Specific conductance is reported to three significant figures.

Wells are assigned to separate Aquifer zones for results reporting:
SA: shallow interval of Alluvial Aquifer.
MA: mid-depth interval of Alluvial Aquifer.
DA: deep interval of Alluvial Aquifer.
BR: well completed in bedrock (Miocene Conglomerate or pre-Tertiary crystalline rock).

Table 3-2
Groundwater COPCs and In Situ Byproducts Sampling Results, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date	Arsenic Dissolved (µg/L)	Fluoride Dissolved (mg/L)	Molybdenum Dissolved (µg/L)	Selenium Dissolved (µg/L)	Manganese Dissolved (µg/L)	Nitrate as N (mg/L)
MW-12	SA	25-Sep-13	40.0	---	12.0	14.0	---	12.2
MW-23-060	BR	17-Sep-13	4.0	---	---	---	ND (2.5)	---
MW-23-080	BR	17-Sep-13	2.4	---	---	---	ND (0.5)	---
MW-27-60	MA	02-Oct-13	6.4	0.56	4.0	ND (0.5)	190	ND (0.01)
MW-27-85	DA	02-Oct-13	1.4	2.70	22.0	ND (0.5)	23.0	ND (0.01)
MW-28-90	DA	11-Sep-13	1.7	3.80	21.0	ND (0.5)	110	1.35
MW-33-40	SA	16-Sep-13	11.0	15.0	290	1.0	ND (0.5)	0.232
MW-33-90	MA	16-Sep-13	1.4	5.50	17.0	ND (0.5)	ND (0.5)	1.40
MW-33-150	DA	16-Sep-13	1.8	ND (2.5)	37.0	ND (2.5)	ND (2.5)	1.48
MW-33-210	DA	12-Sep-13	1.2	ND (2.0)	18.0	ND (2.5)	ND (2.5)	0.0123
MW-34-80	DA	02-Oct-13	1.3	---	---	---	---	---
MW-34-100	DA	02-Oct-13	1.2	---	---	---	---	---
		02-Oct-13 FD	1.3	---	---	---	---	---
MW-35-60	SA	10-Sep-13	0.93	---	8.7	0.8	ND (0.5)	1.51
MW-38D	DA	17-Sep-13	6.5	---	83.0	ND (2.5)	560	0.0693
MW-38S	SA	24-Sep-13	13.0	---	42.0	ND (0.5)	190	0.317
MW-42-55	MA	11-Sep-13	11.0	---	---	---	---	---
MW-42-65	MA	11-Sep-13	2.6	---	---	---	910	---
MW-44-115	DA	12-Sep-13	6.0	---	82.0	ND (2.5)	ND (0.5)	1.11
MW-44-125	DA	12-Sep-13	3.6	---	120	ND (2.5)	530	4.86 J
		12-Sep-13 FD	3.1	---	120	ND (0.5)	550	1.97 J
MW-46-175	DA	11-Sep-13	---	---	170	ND (2.5)	---	1.90
MW-57-185	BR	10-Sep-13	15.0	---	89.0	ND (2.5)	280	0.206
MW-58BR	BR	19-Sep-13	1.0	---	---	---	---	---
MW-59-100	SA	25-Sep-13	2.5	---	6.0	3.8	ND (2.5)	3.38
MW-60-125	BR	24-Sep-13	1.4	---	17.0	6.2	ND (0.5)	4.21
		24-Sep-13 FD	1.4	---	16.0	5.8	ND (0.5)	4.31
MW-60BR-245	BR	17-Sep-13	6.4	---	55.0	3.0	ND (2.5)	0.207
MW-61-110	BR	23-Sep-13	3.3	---	22.0	1.4	84.0	0.868
MW-62-110	BR	18-Sep-13	8.2	---	41.0	2.9	80.0	3.38
MW-62-190	BR	18-Sep-13	5.0	---	71.0	ND (2.5)	590	0.0192
MW-63-065	BR	09-Sep-13	1.5	---	18.0	1.1	ND (0.5) J	0.246
MW-64BR	BR	17-Sep-13	3.5	---	---	---	---	---
MW-65-160	SA	19-Sep-13	0.85	---	24.0	7.7	5.0	11.2
MW-65-225	DA	23-Sep-13	2.4	---	35.0	6.7	ND (0.5)	8.85

Table 3-2
Groundwater COPCs and In Situ Byproducts Sampling Results, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date	Arsenic Dissolved (µg/L)	Fluoride Dissolved (mg/L)	Molybdenum Dissolved (µg/L)	Selenium Dissolved (µg/L)	Manganese Dissolved (µg/L)	Nitrate as N (mg/L)
MW-65-225	DA	23-Sep-13 FD	2.4	---	34.0	7.2	ND (0.5)	8.74
MW-66-165	SA	23-Sep-13	1.2	---	5.5	34.0	ND (0.5)	31.8
MW-66-230	DA	25-Sep-13	8.1	---	89.0	ND (12)	ND (2.5)	14.7
MW-66BR-270	BR	23-Sep-13	ND (0.5)	---	17.0	ND (2.5)	ND (0.5)	0.114
MW-67-185	SA	25-Sep-13	1.7	---	9.7	170	ND (0.5)	31.8
MW-67-225	MA	25-Sep-13	3.3	---	36.0	69.0	3.2	20.9
MW-67-260	DA	25-Sep-13	12.0	---	80.0	ND (12)	80.0	1.36
		25-Sep-13 FD	12.0	---	84.0	ND (12)	84.0	1.34
MW-68-180	SA	26-Sep-13	2.7	---	45.0	15.0	3.6	26.3
MW-68-240	DA	24-Sep-13	2.0	---	20.0	4.9	ND (0.5)	4.43
MW-68BR-280	BR	18-Sep-13	2.0	---	79.0	ND (2.5)	130	0.0101
MW-69-195	BR	24-Sep-13	2.4	---	71.0	11.0	ND (0.5)	17.8
MW-70-105	BR	23-Sep-13	5.2	---	94.0	3.1	190	3.17
MW-70BR-225	BR	24-Sep-13	1.9	---	17.0	ND (2.5)	ND (2.5)	3.83
MW-71-035	SA	10-Sep-13	1.3	---	63.0	1.9	5.6	0.247
MW-72-080	BR	19-Sep-13	11.0	---	74.0	ND (2.5)	ND (0.5)	1.35
		19-Sep-13 FD	12.0	---	73.0	ND (2.5)	ND (0.5)	1.35
MW-72BR-200	BR	19-Sep-13	16.0	---	77.0	ND (2.5)	ND (0.5)	0.109
MW-73-080	BR	11-Sep-13	1.4	---	22.0	4.8	ND (0.5)	ND (0.01)
MW-74-240	BR	18-Sep-13	13.0	---	77.0	0.75	ND (0.5)	0.558
TW-1	SA-MA-DA	26-Sep-13	---	---	15.0	19.0	---	21.0

Table 3-2
Groundwater COPCs and In Situ Byproducts Sampling Results, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Notes:

(---) = data not collected, available, rejected, or field instrument malfunction.
COPC = contaminants of potential concern.
FD = field duplicate sample.
J = concentration or reporting limit estimated by laboratory or data validation.
mg/L = milligrams per liter.
ND = not detected at listed reporting limit.
µg/L = micrograms per liter.

Starting in Fourth Quarter 2012, nitrate samples were analyzed using USEPA Method 353.2, except for TW-3D and PE-1, which were still analyzed using USEPA Method 300.0. USEPA Method 353.2 reports a combination of nitrate and nitrite as nitrogen. The contribution of nitrite to the reported result of nitrate plus nitrite as nitrogen is expected to be negligible; therefore, sample results for USEPA Method 353.2 are expected to be essentially the same as previous samples analyzed using USEPA Method 300.0 and reported as nitrate as nitrogen.

The Background Study Upper Tolerance Limit (UTL) for arsenic is 24.3 µg/L.
The USEPA and California maximum contaminant level (MCL) for arsenic is 10 µg/L.
The Background Study UTL for molybdenum is 36.3 µg/L.
There is no USEPA or California MCL for molybdenum.
The Background Study UTL for selenium is 10.3 µg/L.
The USEPA and California MCL for selenium is 50.0 µg/L.
The secondary USEPA and California MCL for manganese is 50 ug/L.
The Background Study UTL for nitrate as nitrogen is 5.03 mg/L.
The USEPA and California MCL for nitrate as nitrogen is 10 mg/L.
The Background Study UTL for fluoride is 7.1 mg/L.
The USEPA MCL for fluoride is 4 mg/L, and the California MCL for fluoride is 2 mg/L.

Wells are assigned to separate Aquifer zones for results reporting:
SA = shallow interval of Alluvial Aquifer.
MA = mid-depth interval of Alluvial Aquifer.
DA = deep interval of Alluvial Aquifer.
PA = perched aquifer (unsaturated zone).
BR = well completed in bedrock (Miocene Conglomerate or pre-Tertiary crystalline rock).

Table 3-3
Title 22 Metals Results, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	California MCL: / Sample Date	6 / Antimony	10 / Arsenic	1,000 / Barium	4 / Beryllium	5 / Cadmium	NE / Cobalt	50 / Chromium	1,000* / Copper	15 / Lead	2 / Mercury	NE / Molybdenum	100 / Nickel	50 / Selenium	100* / Silver	2 / Thallium	NE / Vanadium	5,000* / Zinc
MW-12	09/25/2013	ND (2.5)	40.0	62.0	ND (1.0) J	ND (3.0)	ND (3.0)	2,590	ND (5.0)	ND (10)	ND (0.2)	12.0	ND (5.0)	14.0	ND (3.0)	ND (2.5)	19.0	ND (10)

Notes:
* = Secondary USEPA MCL.
FD = field duplicate sample.
J = concentration or reporting limit estimated by laboratory or data validation.
MCL = maximum contaminant level.
ND = not detected at listed reporting limit.
NE = not established.
USEPA = United States Environmental Protection Agency.
µg/L = micrograms per liter.

Title 22 metals are the metals listed in California Code of Regulations, Title 22, Section 66261.24(a)(2)(A).

The maximum contaminant levels (MCLs) listed, in micrograms per liter (µg/L), are the California primary drinking water standards, except where noted.

All results are dissolved metals concentrations in µg/L from field-filtered samples.

Metals analyzed by Methods SW6010B or SW6020A or SW7470A.

Table 3-4
Surface Water Sampling Results, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location	Sample Date	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Specific Conductance (µS/cm)	Lab pH
In-channel Locations					
C-BNS-D	07/15/2013	ND (0.2)	ND (1.0)	807	8.1 J
C-CON-S	07/16/2013	ND (0.2)	ND (1.0)	826	8.3 J
C-CON-D	07/16/2013	ND (0.2)	ND (1.0)	825	8.3 J
C-I-3-S	07/15/2013	ND (0.2)	ND (1.0)	794	8.2 J
C-I-3-D	07/15/2013	ND (0.2)	ND (1.0)	790	8.2 J
C-MAR-S	07/15/2013	ND (0.2)	ND (1.0)	858	8.0 J
C-MAR-D	07/15/2013	ND (0.2)	ND (1.0)	859	8.0 J
C-NR1-S	07/16/2013	ND (0.2)	ND (1.0)	819	8.3 J
C-NR1-D	07/16/2013	ND (0.2)	ND (1.0)	820	8.3 J
C-NR3-S	07/16/2013	ND (0.2)	ND (1.0)	828	8.3 J
C-NR3-D	07/16/2013	ND (0.2)	ND (1.0)	827	8.3 J
C-NR4-S	07/16/2013	ND (0.2)	ND (1.0)	832	8.2 J
C-NR4-D	07/16/2013	ND (0.2)	ND (1.0)	832	8.1 J
C-R22a-S	07/15/2013	ND (0.2)	ND (1.0)	786	8.3 J
C-R22a-D	07/15/2013	ND (0.2)	ND (1.0)	790	8.3 J
C-R27-S	07/15/2013	ND (0.2)	ND (1.0)	790	8.2 J
C-R27-D	07/15/2013	ND (0.2)	ND (1.0)	795	8.2 J
C-TAZ-S	07/15/2013	ND (0.2) J	ND (1.0)	797	8.1 J
C-TAZ-D	07/15/2013	ND (0.2)	ND (1.0)	807	8.2 J
Shoreline Samples					
R-19	07/16/2013	ND (0.2)	ND (1.0)	825	8.3 J
R-28	07/16/2013	ND (0.2)	ND (1.0)	819	8.3 J
R63	07/15/2013	ND (0.2)	ND (1.0)	795	8.3 J
RRB	07/16/2013	ND (0.2)	ND (1.0)	823	8.2 J
Other Surface Water Monitoring Locations					
SW1	07/15/2013	ND (0.2)	ND (1.0)	835	7.8 J
SW2	07/15/2013	ND (0.2)	ND (1.0)	840	7.9 J

Notes:

J = concentration or reporting limit estimated by laboratory or data validation.
ND = not detected at listed reporting limit.
µg/L = micrograms per liter.
µS/cm = microSiemens per centimeter.

Hexavalent chromium analytical Method USEPA 218.6 (reporting limit 0.2 µg/L for undiluted samples).

Other analytical methods: dissolved chromium - Method SW6020A; specific conductance - USEPA 120.1; pH -SM4500-HB.

pH is reported to two significant figures.

Table 3-5
COPCs, In Situ Byproducts, and Geochemical Indicator Parameters in Surface Water Samples, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location	Sample Date	Alkalinity, bicarbonate as CaCO3 mg/L	Alkalinity, carbonate as CaCO3 mg/L	Alkalinity, total as CaCO3 mg/L	Arsenic, dissolved µg/L	Iron, Total µg/L	Iron, dissolved µg/L	Manganese, dissolved µg/L	Molybdenum, dissolved µg/L	Nitrate/Nitrite as Nitrogen mg/L	Selenium, dissolved µg/L	Total suspended solids mg/L
In-channel Locations												
C-BNS-D	07/15/2013	123	ND (5.0)	123	2.7	ND (20.0)	ND (20.0)	0.8	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-CON-S	07/16/2013	130	ND (5.0)	130	2.7	ND (20.0)	ND (20.0)	0.63	4.5	ND (0.5)	ND (5.0)	ND (25.0)
C-CON-D	07/16/2013	130	ND (5.0)	130	2.6	23.5	ND (20.0)	0.68	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-I-3-S	07/15/2013	108	ND (5.0)	108	2.8	33.0	ND (20.0)	0.76	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-I-3-D	07/15/2013	115	ND (5.0)	115	2.7	37.6	ND (20.0)	0.78	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-MAR-S	07/15/2013	136	ND (5.0)	136	3.1	861	ND (20.0)	20.5	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-MAR-D	07/15/2013	131	ND (5.0)	131	3.0	746	22.2	19.2	4.2	ND (0.5)	ND (5.0)	ND (25.0)
C-NR1-S	07/16/2013	124	ND (5.0)	124	2.8	ND (20.0)	ND (20.0)	0.7	4.1	ND (0.5)	ND (5.0)	ND (25.0)
C-NR1-D	07/16/2013	110	ND (5.0)	110	2.6	24.4	ND (20.0)	0.67	4.1	ND (0.5)	ND (5.0)	ND (25.0)
C-NR3-S	07/16/2013	131	ND (5.0)	131	2.7	ND (20.0)	ND (20.0)	0.66	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-NR3-D	07/16/2013	126	ND (5.0)	126	2.7	ND (20.0)	ND (20.0)	0.66	4.1	ND (0.5)	ND (5.0)	ND (25.0)
C-NR4-S	07/16/2013	122	ND (5.0)	122	2.7	ND (20.0)	ND (20.0)	0.65	4.1	ND (0.5)	ND (5.0)	ND (25.0)
C-NR4-D	07/16/2013	125	ND (5.0)	125	2.7	ND (20.0)	ND (20.0)	0.65	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-R22a-S	07/15/2013	125	ND (5.0)	125	2.8	ND (20.0)	ND (20.0)	1.3	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-R22a-D	07/15/2013	127	ND (5.0)	127	2.6	ND (20.0)	ND (20.0)	0.96	3.5	ND (0.5)	ND (5.0)	ND (25.0)
C-R27-S	07/15/2013	130	ND (5.0)	130	2.8	ND (20.0)	ND (20.0)	0.88	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-R27-D	07/15/2013	130	ND (5.0)	130	2.8	ND (20.0)	ND (20.0)	0.78	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-TAZ-S	07/15/2013	126	ND (5.0)	126	2.8	20.8	ND (20.0)	0.97	4.0	ND (0.5)	ND (5.0)	ND (25.0)
C-TAZ-D	07/15/2013	130	ND (5.0)	130	2.7	24.7	ND (20.0)	0.67	4.0	ND (0.5)	ND (5.0)	ND (25.0)
Shoreline Samples												
R-19	07/16/2013	123	ND (5.0)	123	2.7	ND (20.0)	ND (20.0)	0.78	4.1	ND (0.5)	ND (5.0)	ND (25.0)
R-28	07/16/2013	124	ND (5.0)	124	2.9	ND (20.0)	ND (20.0)	0.81	3.9	ND (0.5)	ND (5.0)	ND (25.0)
R63	07/15/2013	135	ND (5.0)	135	2.7	31.1	ND (20.0)	1.6	4.0	ND (0.5)	ND (5.0)	ND (25.0)
RRB	07/16/2013	130	ND (5.0)	130	3.0	60.1	ND (20.0)	4.4	3.9	ND (0.5)	ND (5.0)	ND (25.0)

Notes:
CaCO3 = calcium carbonate.
COPC = contaminants of potential concern (molybdenum, selenium, and nitrate).
J = concentration or reporting limit estimated by laboratory or data validation.
mg/L = milligrams per liter.
ND = not detected at listed reporting limit.
TSS = total suspended solids.
µg/L = micrograms per liter.

Geochemical indicator parameters (TSS and alkalinity).
In situ byproducts (arsenic, iron and manganese).

Methods:
Alkalinity - SM2320B.
Metals - SW6010B/SW6020A.
Nitrate - USEPA 300.0.
Total Suspended Solids - SM2540D.

Table 4-1
Pumping Rate and Extracted Volume for IM System, Third Quarter 2013
Third Quarter 2013 Interim Measure Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Extraction Well ID	July 2013		August 2013		September 2013		October 2013		Third Quarter 2013	
	Average [a] Pumping Rate (gpm)	Volume Pumped (gal)	Average [a] Pumping Rate (gpm)	Volume Pumped (gal)	Average [a] Pumping Rate (gpm)	Volume Pumped (gal)	Average [a] Pumping Rate (gpm)	Volume Pumped (gal)	Average [a] Pumping Rate (gpm)	Volume Pumped (gal)
TW-02S	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
TW-02D	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
TW-03D	102.64	4,581,709	NA [b]	NA [b]	NA [b]	NA [b]	107.36	4,792,370	NA [b]	NA [b]
PE-01	26.66	1,189,977	NA [b]	NA [b]	NA [b]	NA [b]	27.42	1,224,089	NA [b]	NA [b]
TOTAL	**129.3**	**5,771,686**	**118.7** [b]	**5,300,000** [b]	**132.7** [b]	**5,700,000** [b]	**134.8**	**6,016,459**	**128.9** [b]	**22,788,145** [b]

Chromium Removed This Quarter (kg)	48.8 [b]
Chromium Removed Project to Date (kg)	3490 [b]
Chromium Removed This Quarter (lb)	108 [b]
Chromium Removed Project to Date (lb)	7700 [b]

Notes:
ac-ft = acre-feet.
DTSC = Department of Toxic Substances Control.
gal = gallons.
GMP = Groundwater Monitoring Program.
gpm = gallons per minute.
kg = kilograms.
lb = pounds.
NA = not available.
PMP = Performance Monitoring Program.

[a] The "Average Pumping Rate" is the overall average during the reporting period, including system downtime, based on flow meter readings.

[b] In August 2013, a series of lightning strikes at the IM-3 treatment facility caused significant damage to electrical components. On August 18, 2013 the lightning strikes caused the flow meters at TW-3D and PE-01 to fail. The extraction pumps continued to operate following the lightning strikes without operable flow meters because replacement flow meters were not readily available. The flow meter at PE-01 was replaced on August 29, 2013, and the flow meter in TW-3D was replaced on September 4, 2013. Flow meter data for PE-01 was unavailable between August 18 and August 28, 2013 and flow meter data for TW-03D was unavailable from August 18, 2013 through September 4, 2013. Therefore, the total volume extracted and combined pumping rates in August and September were estimated by combining the flow totals from the flow meters when they were operable and data from the IM-3 treatment plant facility when flow meter data were unavailable.

Chromium removed includes the period of June 1, 2013 through September 30, 2013. On July 23, 2010 DTSC approved a revised reporting schedule for this report that included a revised IM-3 sample collection period from June 1, 2013 through September 30, 2013. Chromium removed totals for this reporting period only include periods in which the flow meters were operating correctly (see footnote b).

Chromium removed project to date includes all Cr treatment, including IM-3 and previous IM-2 operation.

Table 4-2
Analytical Results for Extraction Wells, July 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	Sample Date	Dissolved Chromium (µg/L)	Hexavalent Chromium (µg/L)	Total Dissolved Solids (mg/L)	pH
TW-3D	02-Jul-12	878 LF	922	5,020	7.18 J
	07-Aug-12	946 LF	885	5,570	7.28 J
	04-Sep-12	931 LF	788	5,040	7.24 J
	02-Oct-12	975 LF	1,000	4,890	7.22 J
	06-Nov-12	891 LF	953	5,020	7.16 J
	04-Dec-12	879 LF	893	5,060	7.19 J
	02-Jan-13	925 LF	897	5,070	7.26 J
	05-Feb-13	950 LF	1,020	5,120	7.22 J
	05-Mar-13	898 LF	867	5,290	7.25 J
	01-Apr-13	766 LF	836	5,140	7.24 J
	01-May-13	881 LF	746	4,990	7.18 J
	04-Jun-13	847 LF	846	5,030	7.22 J
	02-Jul-13	828 LF	934	4,920	7.54 J
	06-Aug-13	892 LF	816	4,560	7.51 J
	03-Sep-13	832 LF	728	4,630	7.54 J
	01-Oct-13	720 LF	846	5,010	7.51 J
PE-1	02-Jul-12	6.90 LF	6.60	2,840	7.54 J
	07-Aug-12	7.30 LF	6.20	2,870	7.48 J
	04-Sep-12	8.80 LF	6.80	2,800	7.55 J
	02-Oct-12	7.00 LF	6.30	2,720	7.55 J
	06-Nov-12	8.00 LF	6.90	2,710	7.46 J
	04-Dec-12	7.30 LF	7.00	2,780	7.49 J
	02-Jan-13	8.00 LF	8.10	2,760	7.59 J
	05-Feb-13	8.40 LF	7.70	2,660	7.52 J
	05-Mar-13	6.60 LF	6.50	2,820	7.53 J
	01-Apr-13	5.60 LF	5.60	2,780	7.52 J
	01-May-13	5.80 LF	5.00	2,760	7.43 J
	04-Jun-13	5.60 LF	5.10	2,650	7.47 J
	02-Jul-13	5.30 LF	4.70	2,620	7.45 J
	06-Aug-13	5.70 LF	5.00	2,700	7.52 J
	03-Sep-13	5.40 LF	5.10	2,700	7.63 J
	01-Oct-13	5.10 LF	5.20	2,600	7.59 J

Notes:

J = concentration or reporting limit estimated by laboratory or data validation.
LF = lab filtered.
mg/L = milligrams per liter.
µg/L = micrograms per liter.

Groundwater samples from active extraction wells are taken at sample taps in Valve Vault 1 on the MW-20 Bench.

Dissolved chromium was analyzed by Method SW6020A or USEPA200.8 or USEPA200.7, hexavalent chromium analyzed by Method SM3500-CrB or USEPA218.6 and total dissolved solids were analyzed by Method SM2540C.

Table 4-3
Average Hydraulic Gradients Measured at Well Pairs, Third Quarter 2013
Third Quarter 2013 Interim Measure Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well Pair[a]	Reporting Period	Mean Landward[b] Hydraulic Gradient (feet/foot)	Days in[c] Monthly Average
Overall Average	July	0.0052	NA
	August	0.0039	NA
	September	0.0049	NA
	October	0.0050	NA
Northern Gradient Pair MW-31-135 / MW-33-150	July	0.0021	31 / 31
	August	0.0018	31 / 31
	September	0.0021	21 / 30
	October	0.0025	31 / 31
Central Gradient Pair MW-45-95 / MW-34-100	July	0.0098	31 / 31
	August	0.0072	31 / 31
	September	0.0090	30 / 30
	October	0.0088	31 / 31
Southern Gradient Pair MW-45-95 / MW-27-85	July	0.0037	31 / 31
	August	0.0027	31 / 31
	September	0.0037	30 / 30
	October	0.0037	31 / 31

Notes:

NA = All available data used in calculating overall average except where noted.

a Refer to Figure 1-4 for location of well pairs.
b For IM pumping, the target landward gradient for the selected well pairs is 0.001 feet/foot.
c Number of days transducers in both wells were operating correctly / total number of days in month.

Table 4-4
Predicted and Actual Monthly Average Davis Dam Discharge and Colorado River Elevation at I-3
Third Quarter 2013 Interim Measures Performance Monitoring and
Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

	Davis Dam Release			Colorado River Elevation at I-3		
Month	Projected (cfs)	Actual (cfs)	Difference (cfs)	Predicted (ft amsl)	Actual (ft amsl)	Difference (feet)
January 2011	7,700	8,172	-472	453.1	453.34	0.2
February 2011	11,000	10,547	453	454.2	454.38	0.2
March 2011	15,900	15,875	25	455.9	456.22	0.3
April 2011	17,900	17,595	305	456.9	457.02	0.2
May 2011	16,400	15,437	963	456.6	456.40	-0.2
June 2011	16,100	16,024	76	456.5	456.75	0.2
July 2011	15,500	15,333	167	456.3	456.30	0.1
August 2011	13,300	13,368	-68	455.4	455.67	0.3
September 2011	12,700	12,052	648	455.2	455.25	0.1
October 2011	9,200	9,934	-734	453.9	454.30	0.4
November 2011	8,600	7,838	762	453.7	453.61	-0.1
December 2011	6,600	6,262	338	452.6	452.49	-0.1
January 2012	9,800	10,378	-578	453.7	453.99	0.3
Febraury 2012	12,300	12,614	-314	454.8	455.25	0.4
March 2012	14,800	15,134	-334	455.8	455.88	0.1
April 2012	18,300	18,330	-30	457.1	457.33	0.2
May 2012	15,900	15,938	-38	456.4	456.63	0.2
June 2012	15,900	15,996	-96	456.4	456.59	0.2
July 2012	14,500	13,087	1,413	456.0	455.72	-0.3
August 2012	12,200	12,104	96	455.2	455.45	0.3
September 2012	13,000	12,147	853	455.2	455.31	0.1
October 2012	8,400	9,037	-637	453.6	453.95	0.3
November 2012	8,500	8,390	110	453.6	NA	NA
December 2012	6,300	6,427	-127	452.6	452.17	-0.4
January 2013	8,300	8,299	1	453.2	453.28	0.04
February 2013	10,600	10,972	-372	454.3	454.63	0.4
March 2013	15,200	15,545	-345	456.0	456.29	0.3
April 2013	17,600	17,090	510	456.9	456.74	-0.1
May 2013	15,800	15,592	208	456.4	456.44	0.0
June 2013	15,700	15,588	112	456.5	456.47	0.0
July 2013	14,400	13,165	1,235	456.0	455.79	-0.2
August 2013	13,100	12,185	915	455.4	455.43	0.0
September 2013	11,700	11,446	254	454.8	455.02	0.2
October 2013	12,300	12,497	-197	454.9	455.09	0.2
November 2013	9,700			454.0		

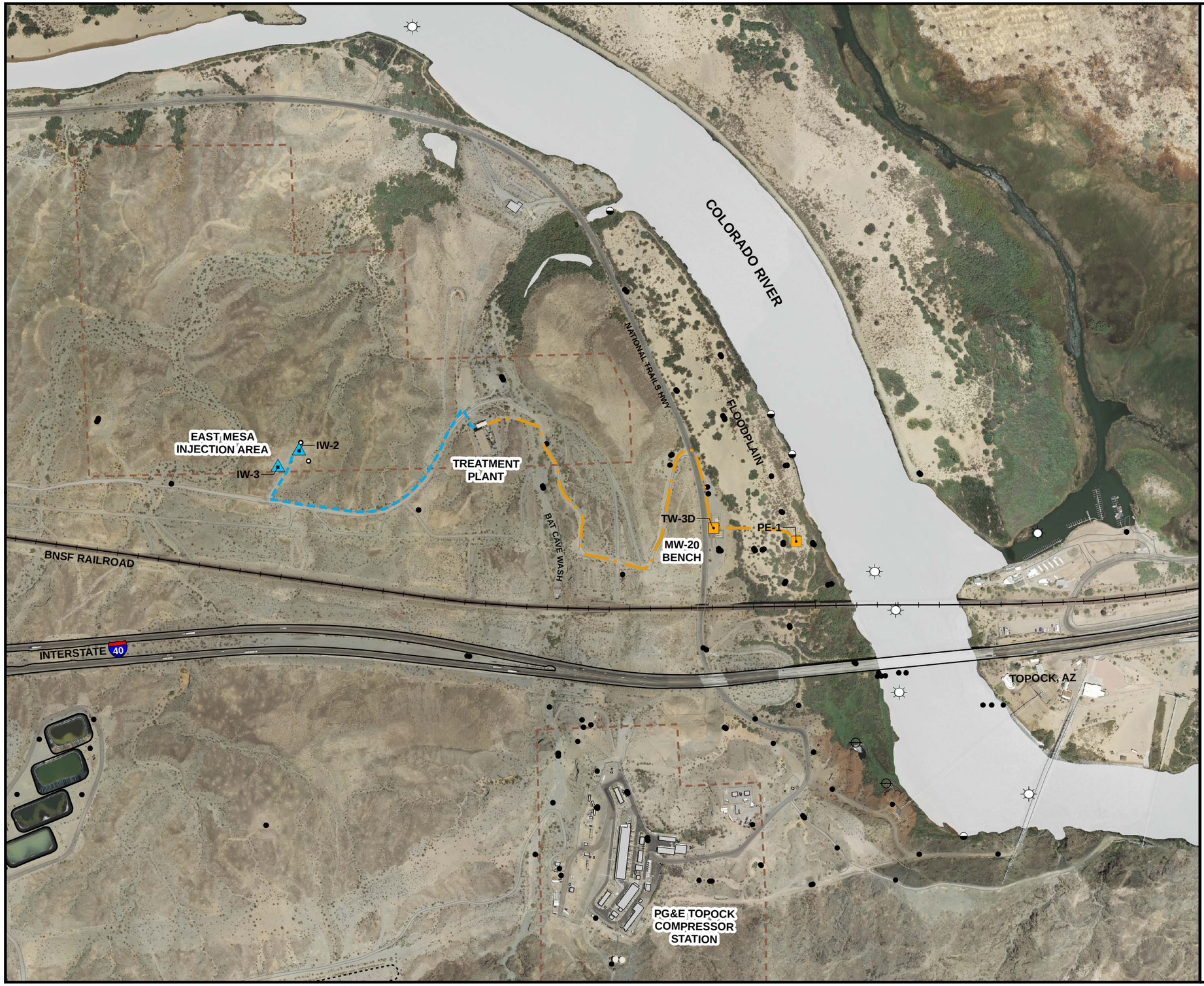
NOTES:
cfs = cubic feet per second; ft amsl = feet above mean sea level.
NA = Data unavailable during this time period.

Projected river level for each month in the past is calculated based on the preceding months USBR projections of Davis Dam release and stage in Lake Havasu. Future projections of river level at I-3 are based upon November 2013 USBR projections. These data are reported monthly by the US Department of Interior, at http://www.usbr.gov/lc/region/g4000/24mo.pdf.

The difference in I-3 elevation is the difference between the I-3 elevation predicted and the actual elevation measured at I-3. The source of this difference is differences between BOR projections and actual dam releases/Havasu reservoir levels, rather than the multiple regression error.

For data prior to 2011 please see:*Fourth Quarter 2012 and Annual Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station,* Needles, California (CH2MHILL, 2013a)

Figures



VICINITY MAP



LEGEND

- IM-3 Extraction Well (Active)
- IM-3 Injection Well
- Monitoring Well in Site-Wide Groundwater Monitoring Program (GMP)
- Monitoring Well in IM-3 Compliance Monitoring Program
- Shoreline Surface Water Monitoring Location
- River Channel Surface Water Monitoring Location
- Other Surface Water Monitoring Location
- Groundwater Extraction/Influent Pipeline
- Treatment Plant Effluent Pipeline
- Property Line

Notes:

1. Location map shows Interim Measure No. 3 (IM-3) active facilities as of current report.
2. See Figures 1-2 and 1-3 for complete monitoring locations and identifications.

N

0 600 1,200 Feet

FIGURE 1-1
LOCATIONS OF IM-3 FACILITIES AND MONITORING LOCATIONS

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL

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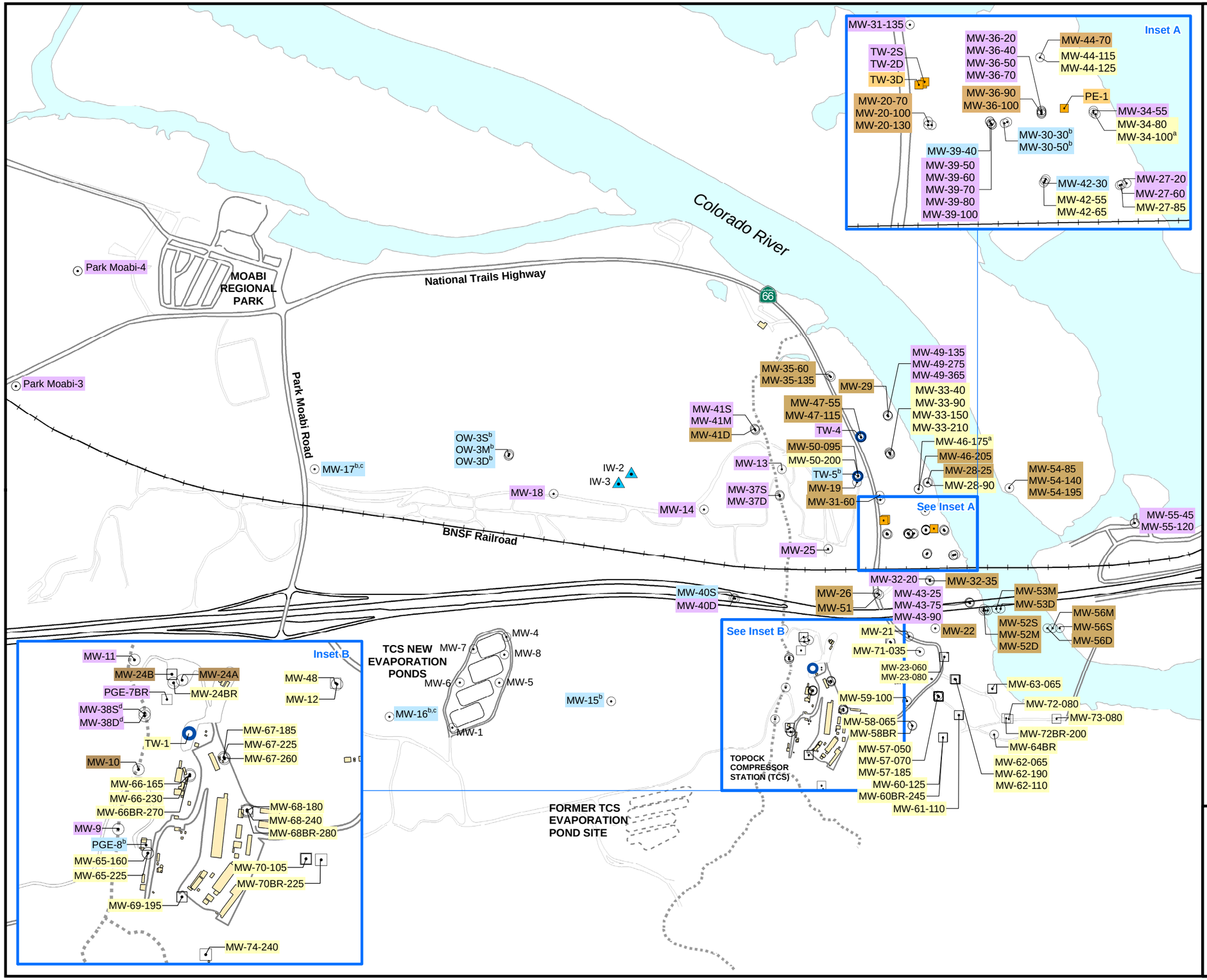


LEGEND

- Injection Well
- Groundwater Monitoring Well
- Test Well or Supply Well (inactive)
- Extraction Well
- Groundwater Well Completed in Bedrock

Sampling Frequency for Groundwater Monitoring Program (GMP)

MW-17	Biennial Sampling
MW-9	Annual Sampling
MW-22	Semiannual Sampling
MW-12	Quarterly Sampling
TW-3D	Monthly Sampling

Notes:

[a] **Monthly sampling November through February, otherwise quarterly.**

[b] **These wells required to be sampled biennially, will be sampled annually for the water quality snapshot.**

[c] **Background metals collected semiannually.**

[d] **Sampled following repair**

N

0 500 1,000

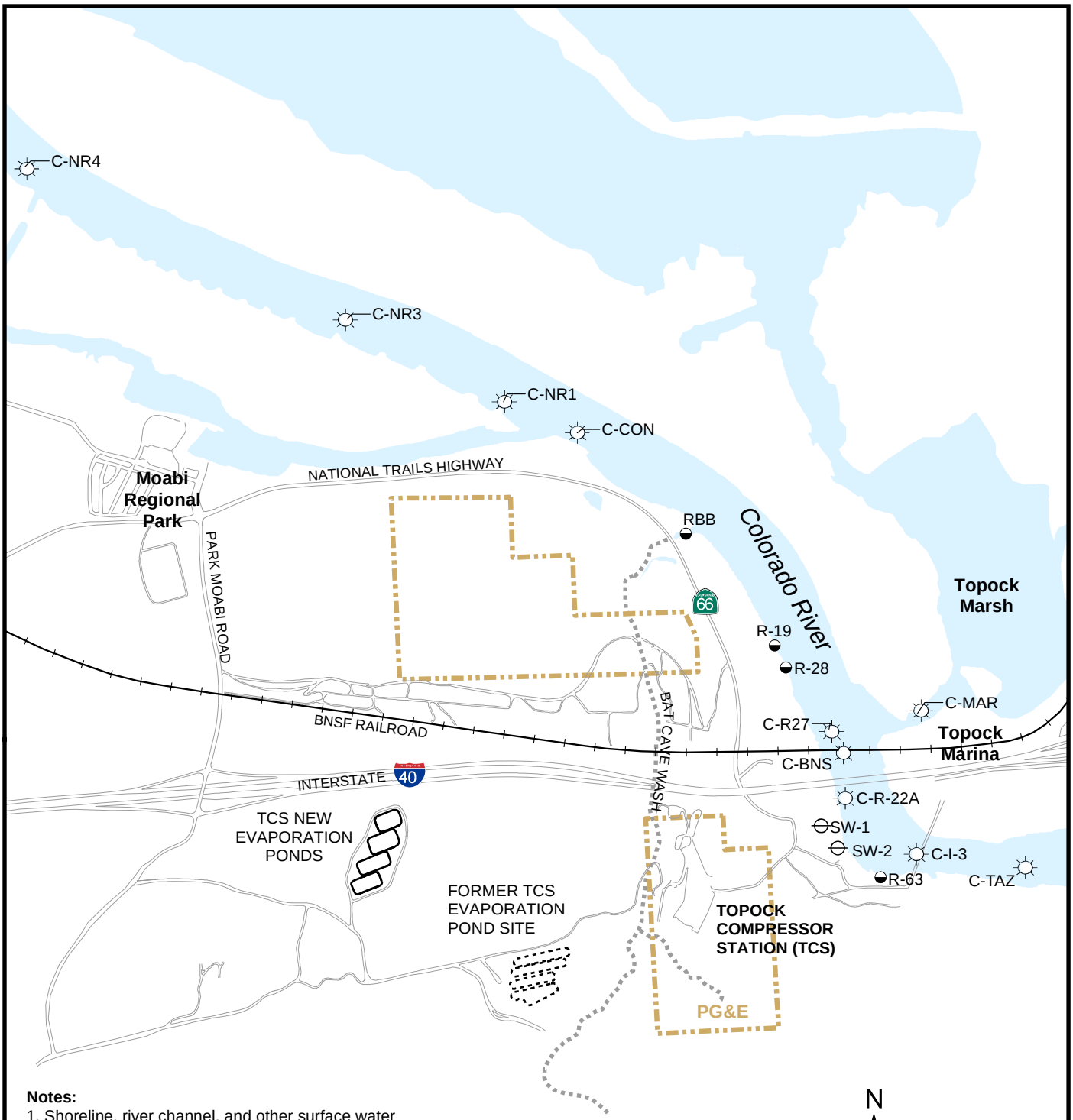
Feet

California State Plane NAD83 Zone 5 US Feet

FIGURE 1-2
MONITORING LOCATIONS AND SAMPLING FREQUENCY FOR GMP

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL



Notes:

1. Shoreline, river channel, and other surface water monitoring locations are sampled quarterly and twice during periods of low river stage (typically November - January).
2. Location for SW-2 is approximate. GPS coverage was not available.
3. RMP = River Monitoring Program
4. TCS = Topock Compressor Station

N

0 1,000 2,000

Feet

LEGEND

- Shoreline Surface Water Monitoring Location
- River Channel Surface Water Monitoring Location
- Other Surface Water Monitoring Location

FIGURE 1-3
MONITORING LOCATIONS AND SAMPLING FREQUENCY FOR RMP

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL

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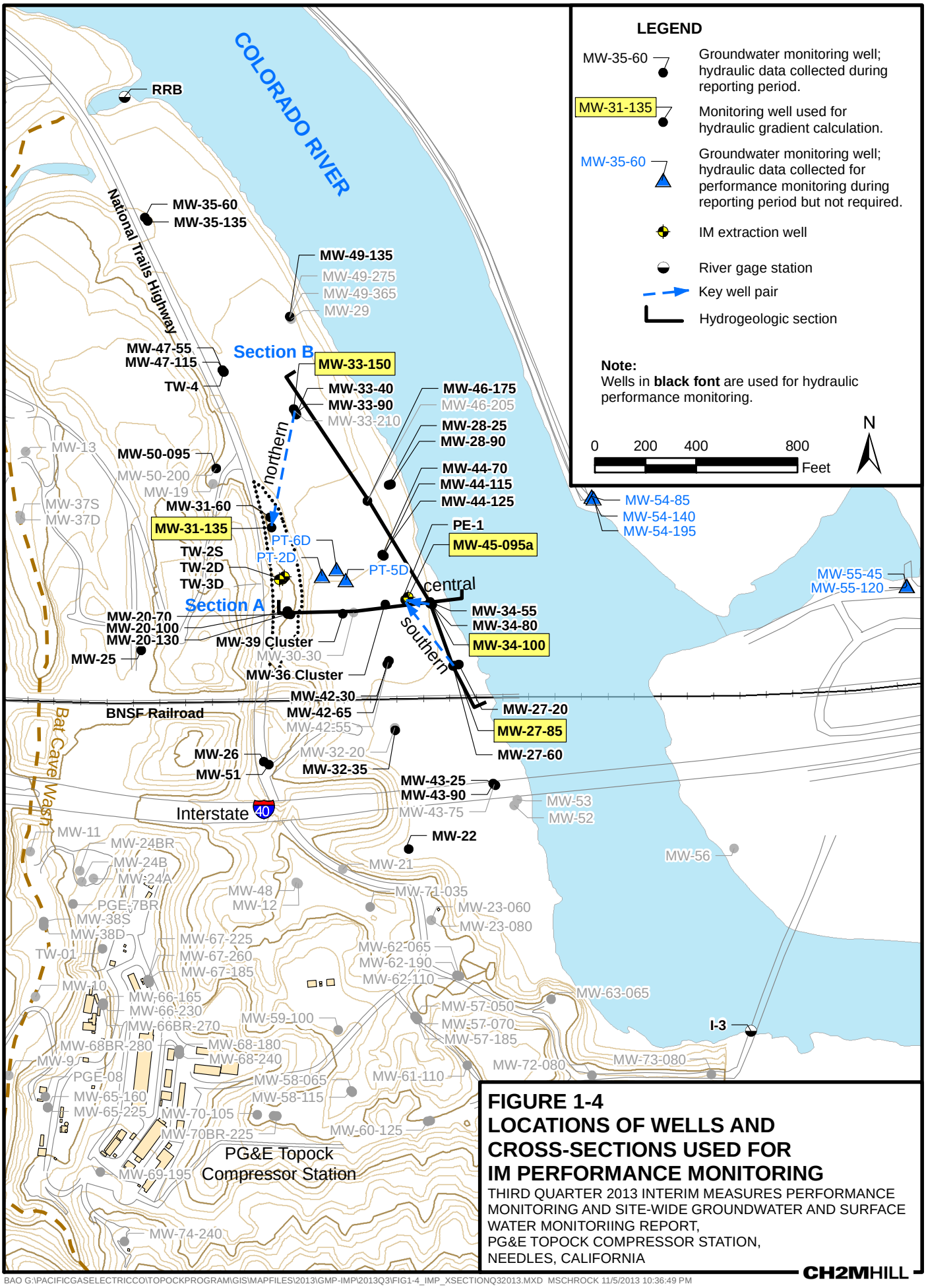

FIGURE 1-4
LOCATIONS OF WELLS AND CROSS-SECTIONS USED FOR IM PERFORMANCE MONITORING

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL

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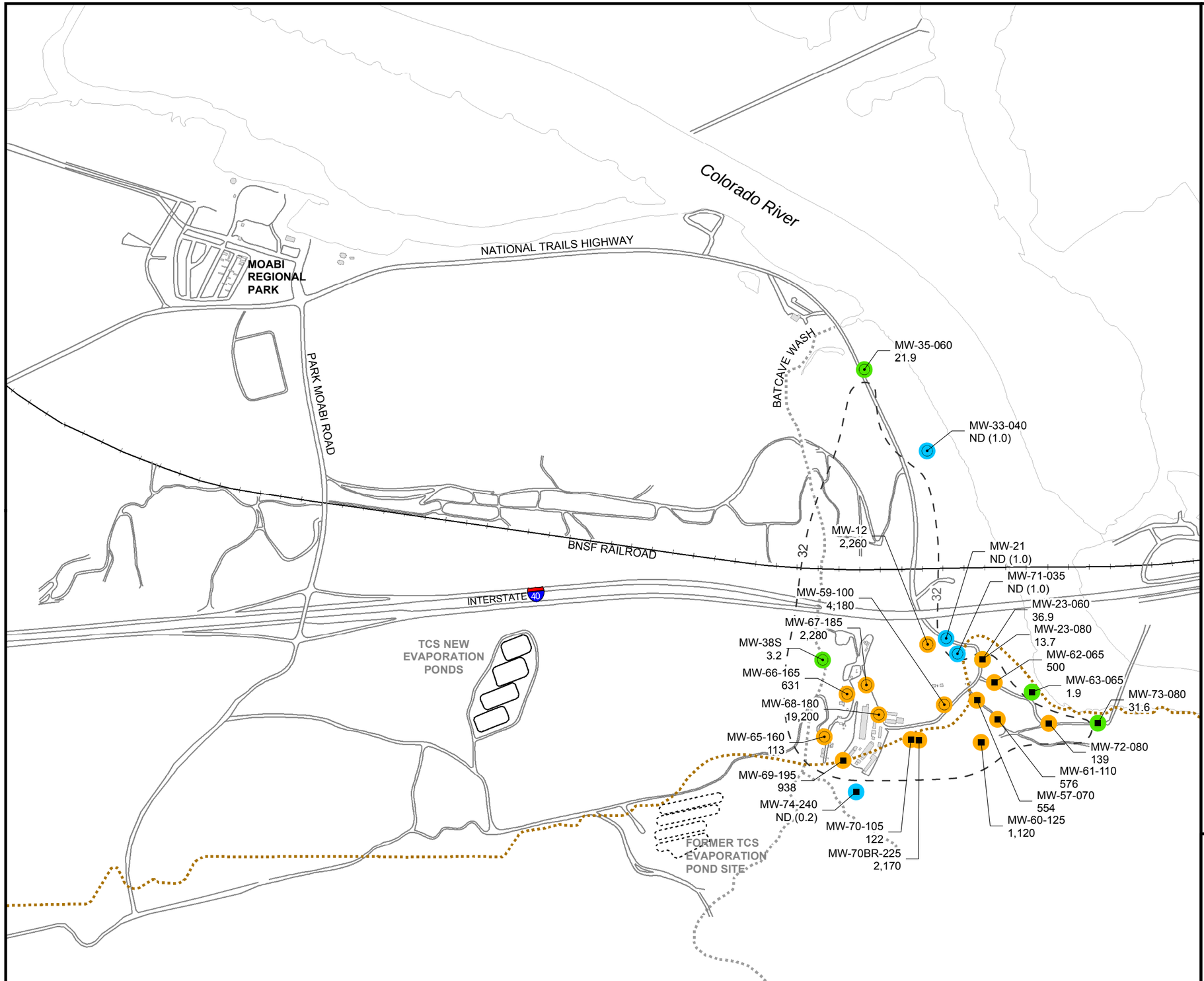


LEGEND

- Alluvial Aquifer well sampled during sampling event
- Bedrock well sampled during sampling event

6.48 Concentration of hexavalent chromium [Cr(VI)] in groundwater, micrograms per liter (µg/L)

Results shown are maximum concentrations in primary and duplicate samples from wells completed in **Shallow zone** of Alluvial Aquifer and Bedrock.

ND (0.2) Cr(VI) not detected at listed reporting limit

Cr(VI) Concentrations – Third Quarter 2013

- Not detected at analytical reporting limit
- Concentration between reporting limit and 32 µg/L
- Concentration ≥ 32 µg/L

32 Approximate outline of monitoring wells in Alluvial Aquifer and Bedrock with Cr(VI) concentrations > 32 ug/L based on Second Quarter, where a larger number of wells were sampled, and Third Quarter 2013 groundwater sampling results.

Approximate bedrock contact at 455 feet above mean sea level.

Notes:
1. Results plotted are maximum concentration from primary and duplicate samples, see Table 3-1 for complete results.
2. Long screened wells and wells screened across more than one depth interval are generally not posted on this map. See Table 3-1 for complete results.

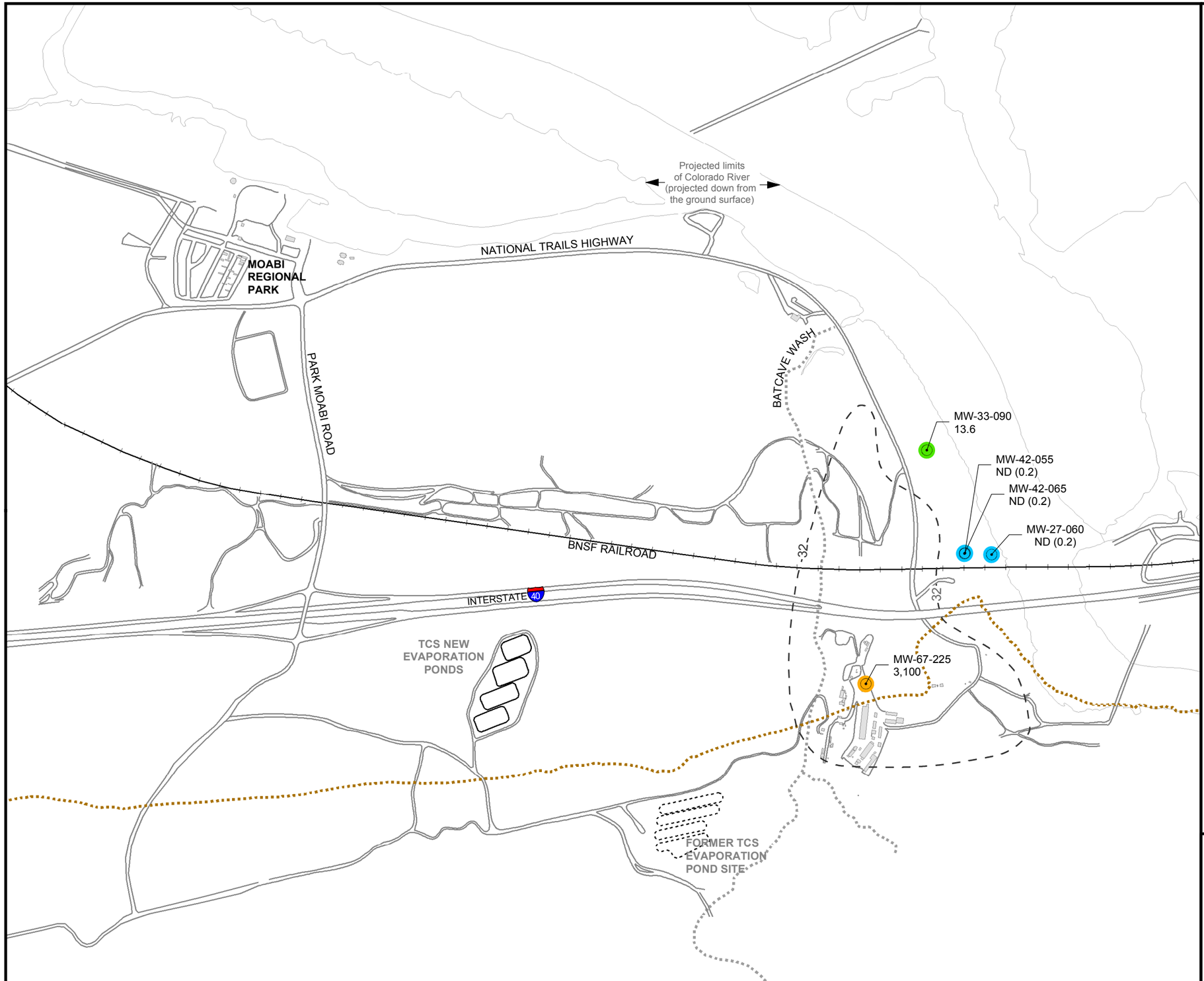
N

0 500 1,000 Feet

FIGURE 3-1a
Cr(VI) SAMPLING RESULTS, SHALLOW WELLS IN ALLUVIAL AQUIFER AND BEDROCK, THIRD QUARTER 2013

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

CH2MHILL



LEGEND

Alluvial Aquifer well sampled during sampling event

6.48 Concentration of hexavalent chromium [Cr(VI)] in groundwater, micrograms per liter (µg/L)

Results shown are maximum concentrations in primary and duplicate samples from wells completed in **Mid-Depth zone** of Alluvial Aquifer and Bedrock.

ND (0.2) Cr(VI) not detected at listed reporting limit

Cr(VI) Concentrations – Third Quarter 2013

- Not detected at analytical reporting limit
- Concentration between reporting limit and 32 µg/L
- Concentration ≥ 32 µg/L

-32- Approximate outline of monitoring wells in Alluvial Aquifer and Bedrock with Cr(VI) concentrations > 32 ug/L based on Second Quarter, where a larger number of wells were sampled, and Third Quarter 2013 groundwater sampling results.

Approximate bedrock contact at 425 feet above mean sea level.

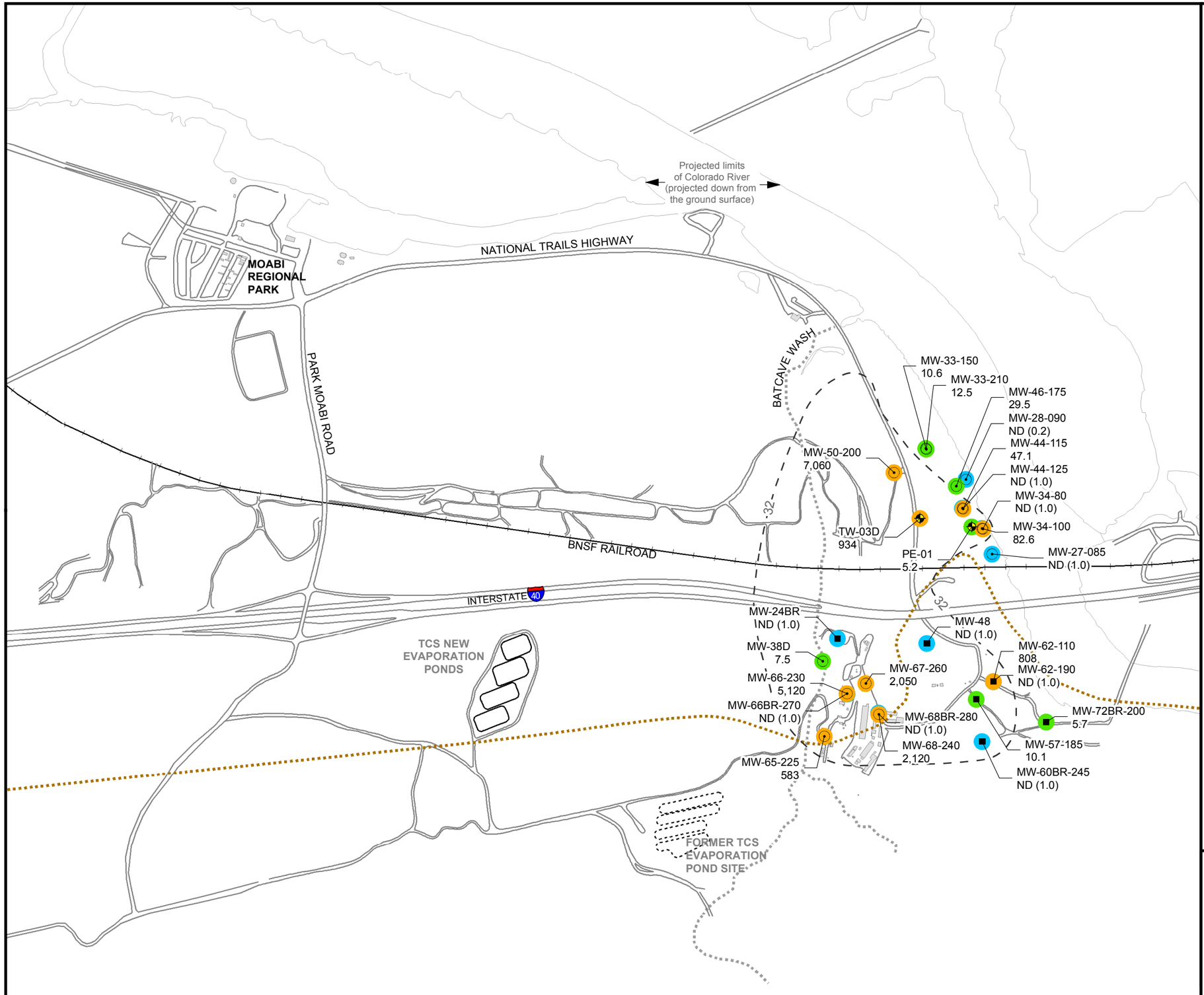
Notes:
1. Results plotted are maximum concentration from primary and duplicate samples, see Table 3-1 for complete results.
2. Long screened wells and wells screened across more than one depth interval are generally not posted on this map. See Table 3-1 for complete results.

N

0 500 1,000 Feet

FIGURE 3-1b
Cr(VI) SAMPLING RESULTS, MID-DEPTH WELLS IN ALLUVIAL AQUIFER AND BEDROCK, THIRD QUARTER 2013
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

CH2MHILL



LEGEND

- Alluvial Aquifer well sampled during sampling event
- Bedrock well sampled during sampling event
- Extraction well sampled during sampling event

6.48 Concentration of hexavalent chromium [Cr(VI)] in groundwater, micrograms per liter (µg/L)

Results shown are maximum concentrations in primary and duplicate samples from wells completed in **Deep zone** of Alluvial Aquifer and Bedrock.

ND (0.2) Cr(VI) not detected at listed reporting limit

Cr(VI) Concentrations – Third Quarter 2013

- Not detected at analytical reporting limit
- Concentration between reporting limit and 32 µg/L
- Concentration ≥ 32 µg/L

Approximate outline of monitoring wells in Alluvial Aquifer and Bedrock with Cr(VI) concentrations > 32 ug/L based on Second Quarter, where a larger number of wells were sampled, and Third Quarter 2013 groundwater sampling results.

Approximate bedrock contact at 395 feet above mean sea level.

Notes:

1. Results plotted are maximum concentration from primary and duplicate samples, see Table 3-1 for complete results.
2. In the floodplain area, the 32µg/L line for Cr(VI) in deep zone (80-90 fee below Colorado River) is estimated based on available groundwater sampling, hydrogeolgic and geochemical data. There are no data confirming the existence of Cr(VI) under the Colorado River.
3. Long screened wells and wells screened across more than one depth interval are generally not posted on this map. See Table 3-1 for complete results.
4. TCS - Topock Compressor Station

N

0 500 1,000 Feet

FIGURE 3-1c
Cr(VI) SAMPLING RESULTS, DEEP WELLS IN ALLUVIAL AQUIFER AND BEDROCK, THIRD QUARTER 2013

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

CH2MHILL

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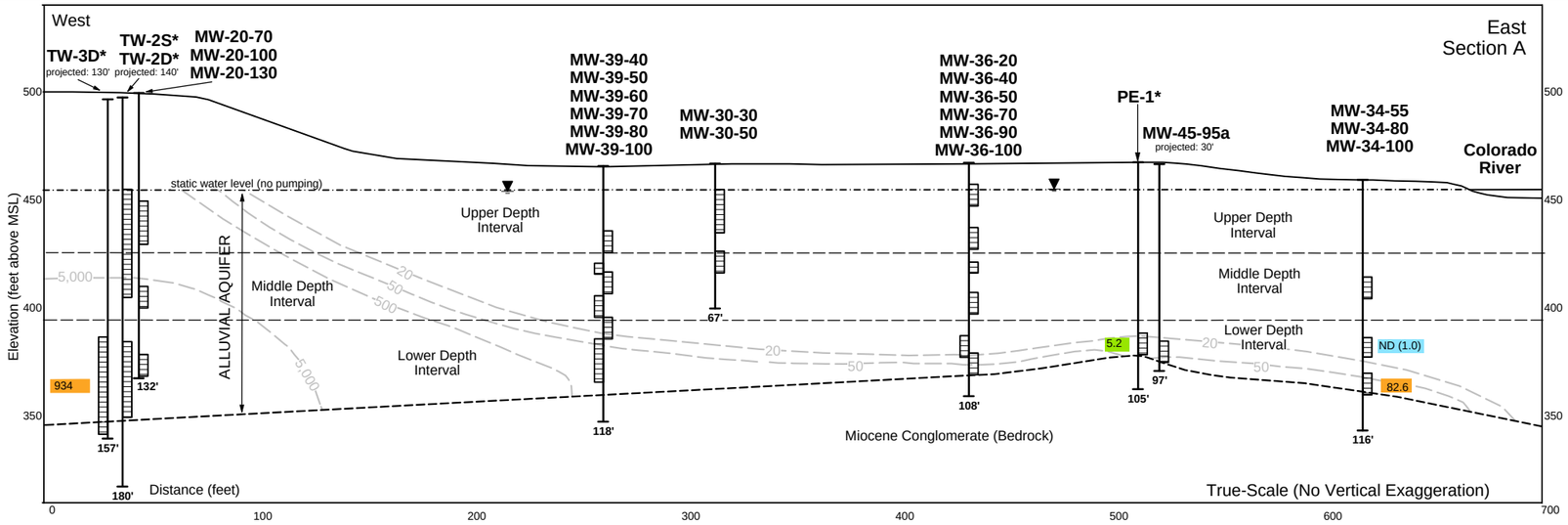
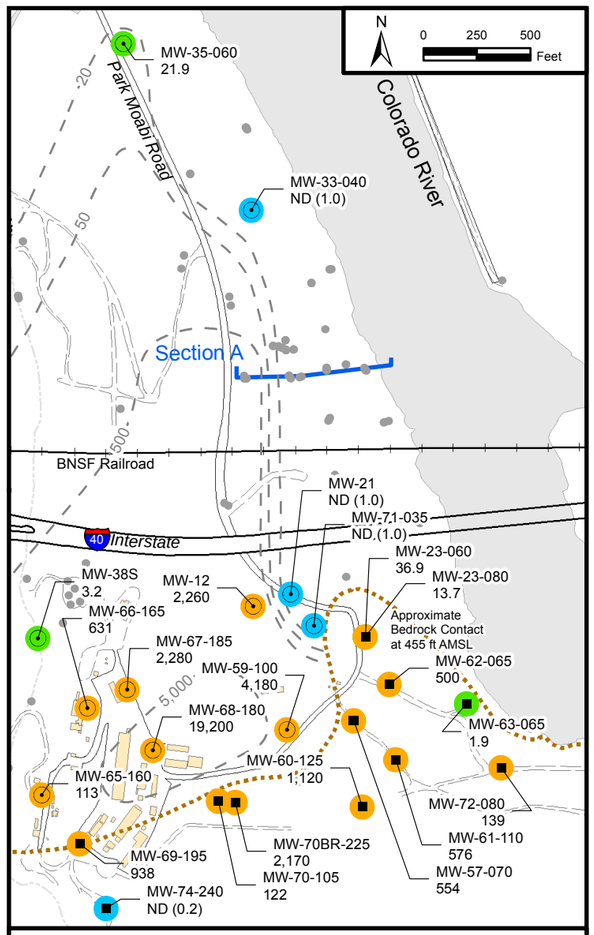
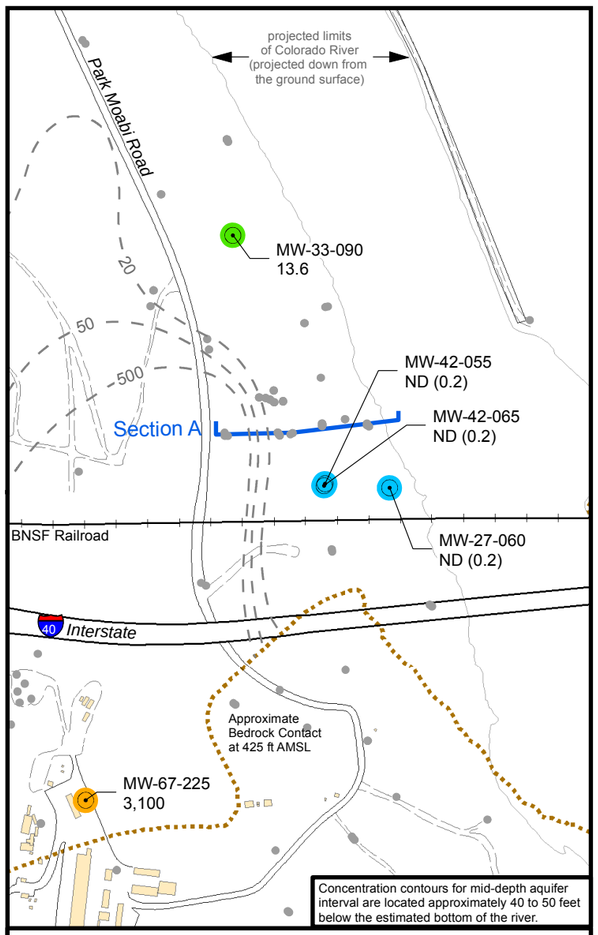
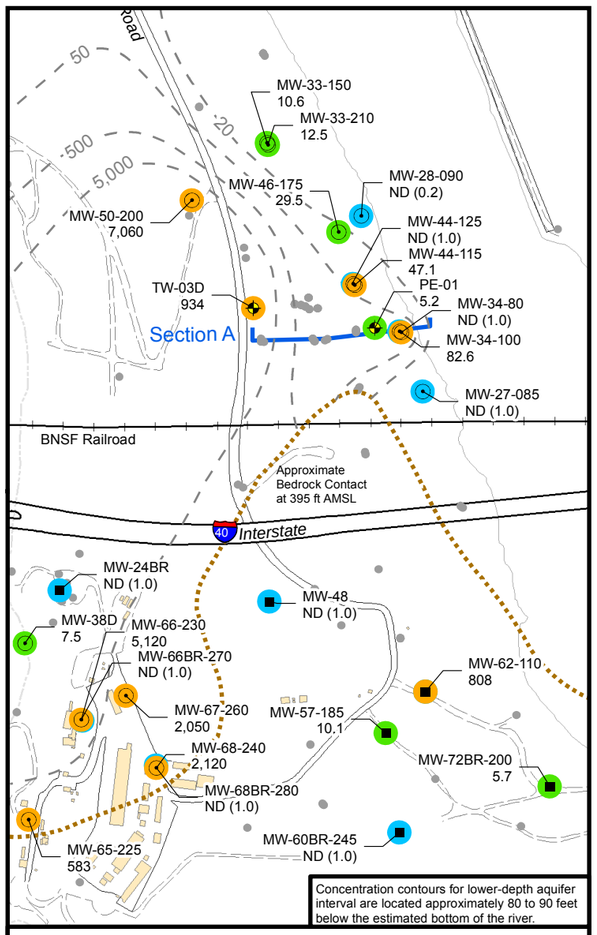




Shallow Wells (Upper Depth Interval)



Mid-Depth Wells (Middle-Depth Interval)



Deep Wells (Lower Depth Interval)

LEGEND

- Alluvial Aquifer well sampled during sampling event
- Bedrock well sampled during sampling event
- Extraction well sampled during sampling event
- Well not sampled during sampling event

6.48 Concentration of hexavalent chromium [Cr(VI)] in groundwater, micrograms per liter (µg/L). Results posted are maximum Cr(VI) concentrations.

ND (0.2) Cr(VI) not detected at listed reporting limit

Cr(VI) Concentrations - Third Quarter 2013

- Not detected at analytical reporting limit
- Concentration between reporting limit and 32 µg/L
- Concentration ≥ 32 µg/L
- 50 Inferred Cr(VI) concentration contour within Alluvial Aquifer depth interval based on Second Quarter, where a larger number of wells were sampled, and Third Quarter 2013 groundwater sampling results.
- Hydrogeologic Section A
- Approximate bedrock contact

Notes:

1. The Cr(VI) concentration contours of 20 and 50 µg/L are shown in accordance with DTSC's 2005 IM performance monitoring directive. The IM performance standard was established for containment of Cr(VI) concentrations greater than 20 ug/L in the floodplain portion of the Alluvial Aquifer.
2. Extraction wells PE-01, TW-2S, TW-2D, and TW-3D are not included in contouring. These wells draw water from a larger area and do not represent Cr(VI) concentrations at their specific locations.
3. Long screened wells and wells screened across more than one depth interval are generally not posted on this map. See Table 3-1 for complete results.

FIGURE 4-1
MAXIMUM Cr(VI) CONCENTRATIONS IN ALLUVIAL AQUIFER AND BEDROCK, THIRD QUARTER 2013

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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North

South
Section B

Cross-Section Parallel to the Colorado River

BNSF Railroad

MW-33-40
MW-33-90
MW-33-150
MW-33-210

MW-46-175
MW-46-205

MW-28-25
MW-28-90
projected: 110'

MW-44-70
MW-44-115
MW-44-125

MW-34-55
MW-34-80
MW-34-100

MW-27-20
MW-27-60
MW-27-85

Elevation (feet amsl)

700
600
500
400
300
200
100
0

water table (average 455' amsl)

Upper Depth Interval
Middle Depth Interval
Lower Depth Interval

ALLUVIAL AQUIFER

Oldest Alluvium

Fluvial Deposits

Approximate geologic contact between alluvial fan and fluvial deposits

ND (1.0)
13.6
10.6
12.5
237'

ND (0.2)
29.5
216'

20
50

47.1
ND (1.0)
134'

82.6
116'

Upper Depth Interval
Middle Depth Interval
Lower Depth Interval
ND (1.0)

ND (0.2)
ND (1.0)
107'

Miocene Conglomerate (Bedrock)

True-Scale (No Vertical Exaggeration)

-100 0 100 200 300 400 500 600 700 800 900 1,000 1,100 1,200 1,300 1,400
Distance (feet)

Notes:

amsl = above mean sea level.
ND = not detected at listed reporting limit.
µg/L = micrograms per liter.

1. See Table 3-1 for additional sampling data and prior results for wells on this figure.
2. See Figure 1-4 for location of this cross-section.

water level
well screen
3,810
boring depth (feet)
103'

-— — 50 -— —
Inferred hexavalent chromium contours (µg/L) in Alluvial Aquifer from Second Quarter 2013, where a larger number of wells were sampled, and Third Quarter 2013.

Hexavalent Chromium [Cr(VI)] concentration in micrograms per liter (µg/L), equivalent to parts per billion (ppb).

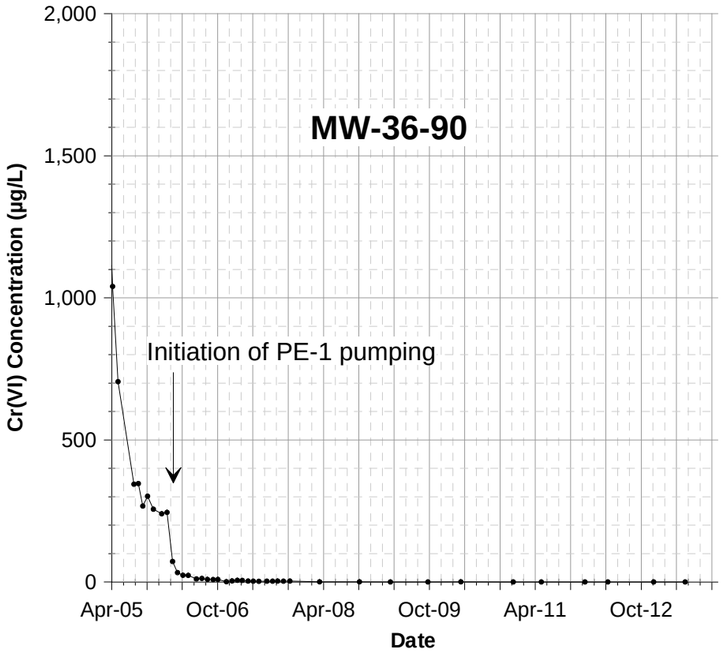
ND (0.2)	Not detected at listed reporting limit
24.2	Concentration between reporting limit and 32 µg/L
203	Concentration greater than or equal to 32 µg/L

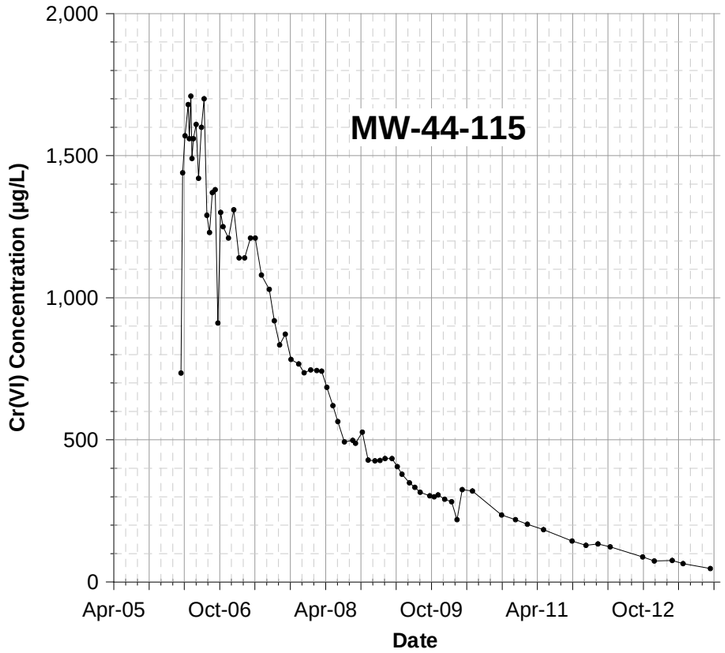
FIGURE 4-2
Cr(VI) CONCENTRATIONS
FLOODPLAIN CROSS-SECTION B,
THIRD QUARTER 2013

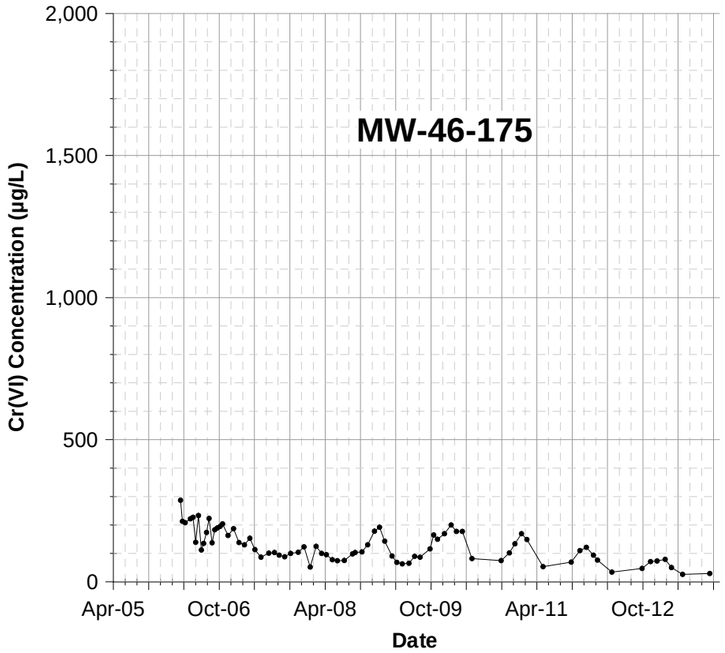
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

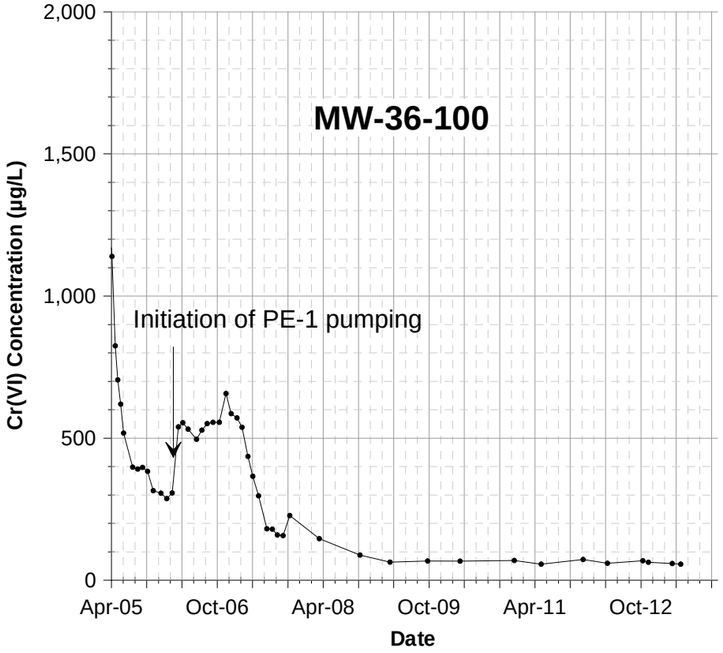
CH2MHILL

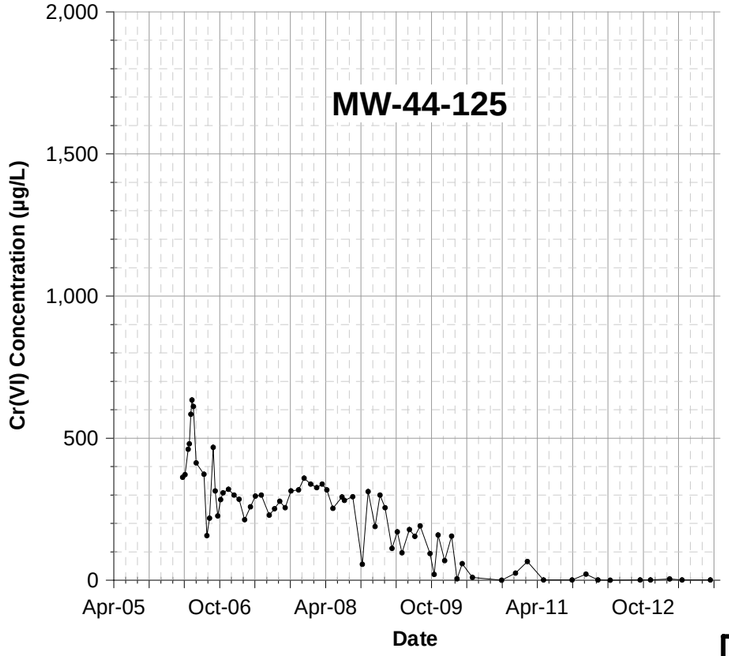
C:\USERS\E2USER\DOCUMENTS\TOPOCK\GINT\2013_3Q\FIGURE_4-2_XSECB_CR.GDW;

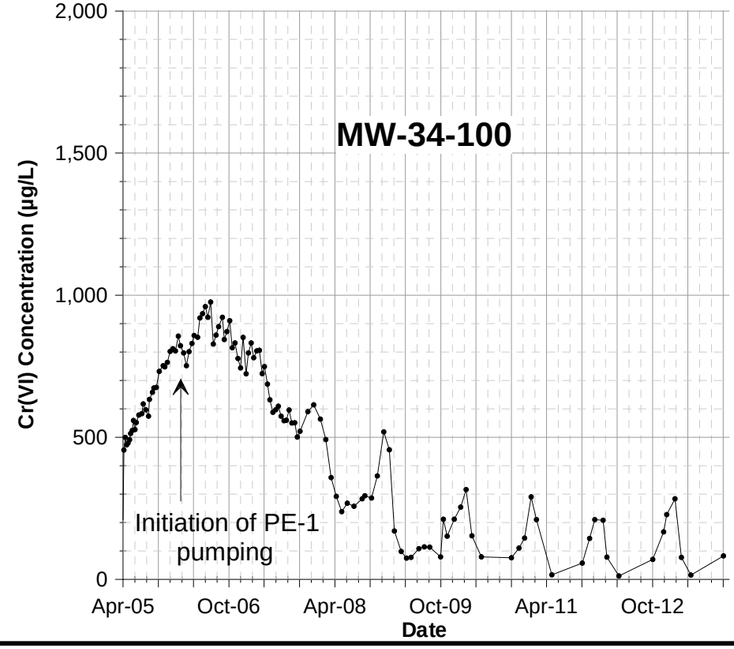












Notes:

1. Hexavalent chromium [Cr(VI)] results in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
2. Results plotted are maximum concentrations from primary and duplicate samples; see Table 3-1 for complete results.
3. MW-36 wells selected to monitor effects of PE-1 pumping on plume west of PE-1. MW-44 wells, MW-46-175, and MW-34-100 selected to monitor concentrations within the plume.

FIGURE 4-3
Cr(VI) CONCENTRATION TRENDS IN SELECTED PERFORMANCE MONITORING WELLS, APRIL 2005 THROUGH OCTOBER 2013
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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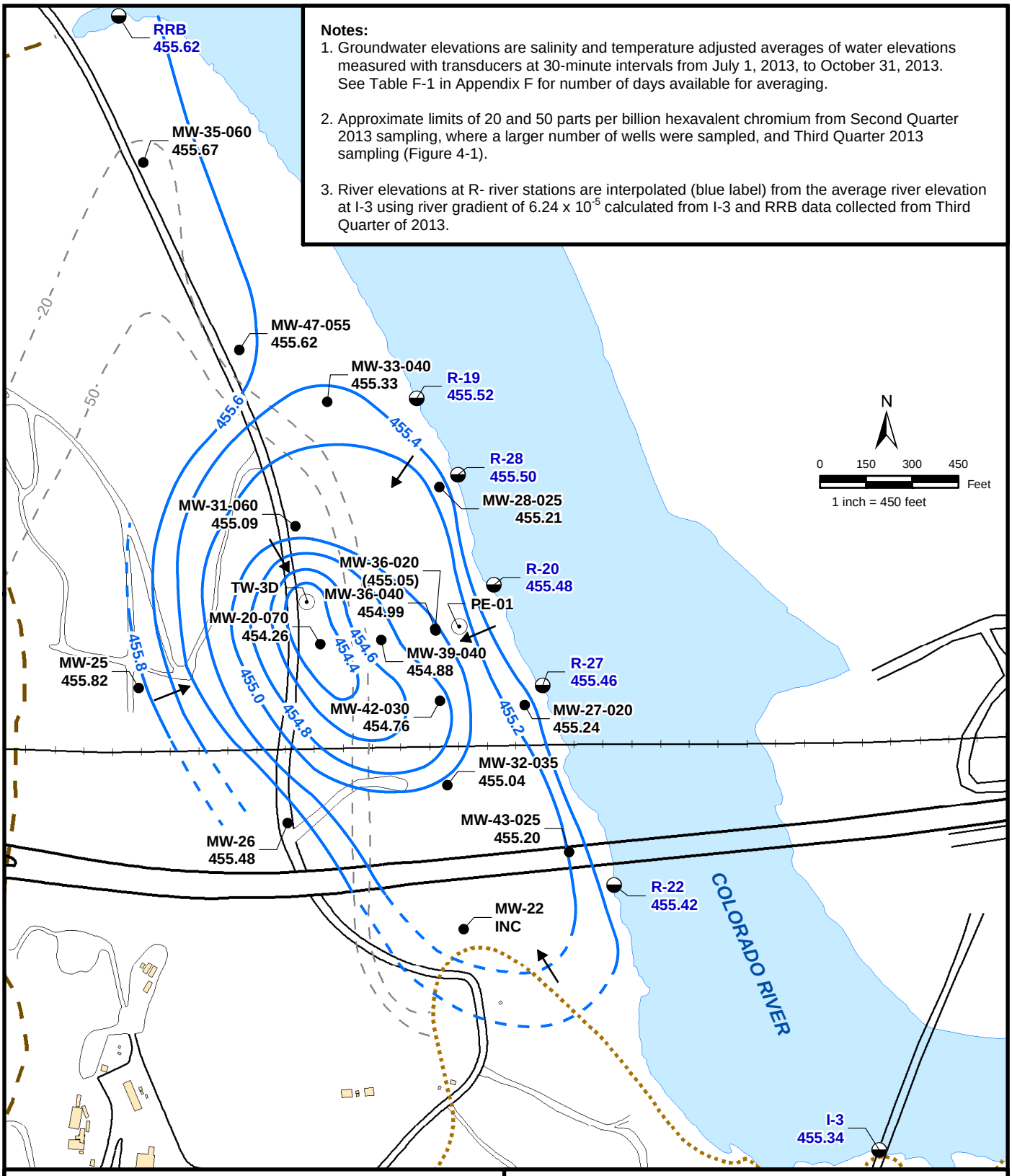

Notes:

1. Groundwater elevations are salinity and temperature adjusted averages of water elevations measured with transducers at 30-minute intervals from July 1, 2013, to October 31, 2013. See Table F-1 in Appendix F for number of days available for averaging.
2. Approximate limits of 20 and 50 parts per billion hexavalent chromium from Second Quarter 2013 sampling, where a larger number of wells were sampled, and Third Quarter 2013 sampling (Figure 4-1).
3. River elevations at R- river stations are interpolated (blue label) from the average river elevation at I-3 using river gradient of 6.24 x 10^{-5} calculated from I-3 and RRB data collected from Third Quarter of 2013.

- **MW-29 455.85** — Average Groundwater Elevation at Monitoring Station (ft AMSL)
- **MW-29 (455.85)** — Average Groundwater Elevation at Monitoring Station (ft AMSL) Not Used for Contouring
- **R-22 454.84** — River Elevation (ft MSL) Interpolated Average
- **INC** — Data incomplete for reporting period
- Bedrock Contact at 455 ft elevation
- Monitoring Well
- River Station
- Extraction Well
- Interpreted Groundwater Flow Direction
- Groundwater Elevation Contour 0.2 ft (dashed where inferred)

FIGURE 4-4a
AVERAGE GROUNDWATER ELEVATIONS IN SHALLOW WELLS AND RIVER ELEVATIONS, THIRD QUARTER 2013

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL

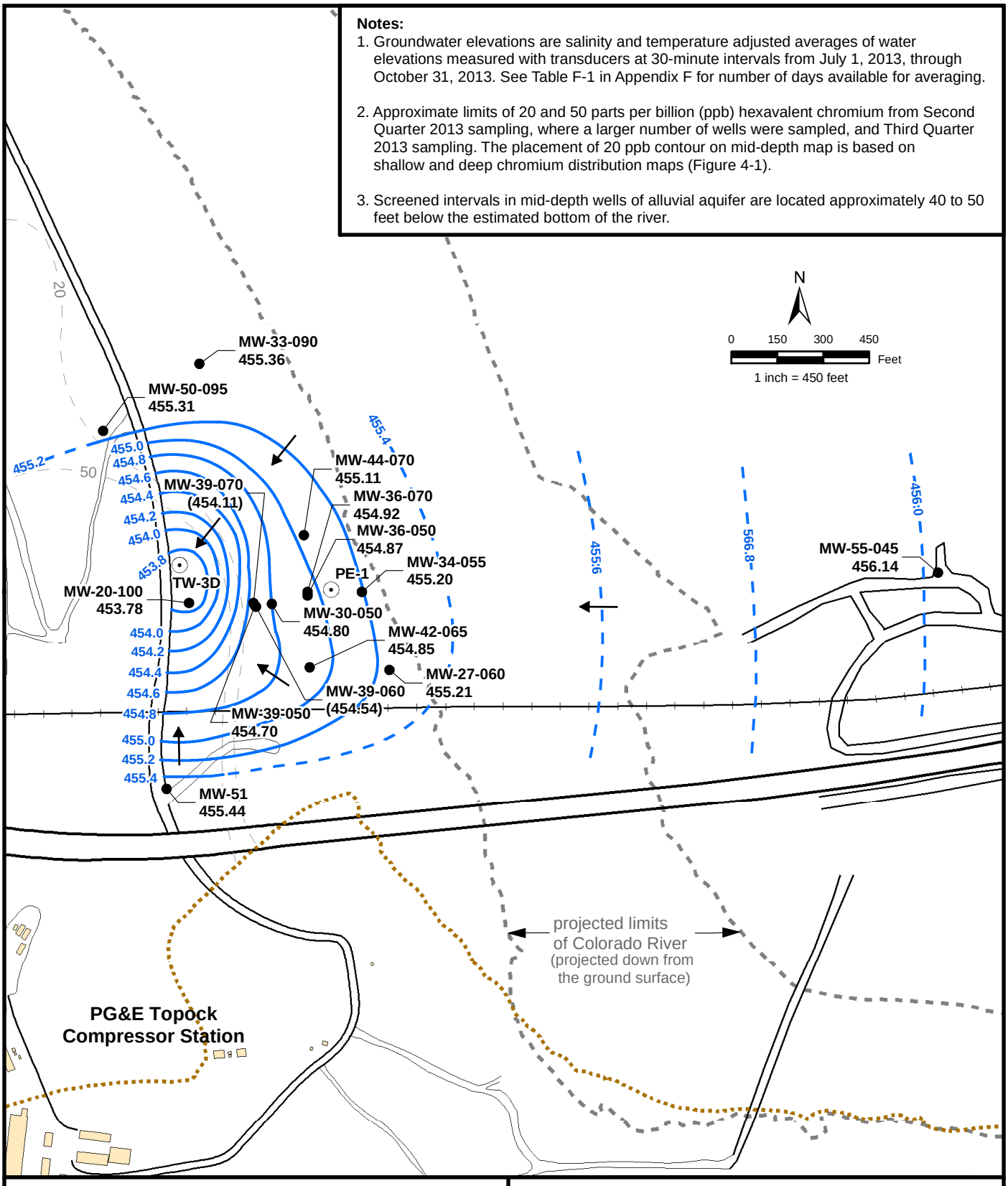

FIGURE 4-4b
AVERAGE GROUNDWATER ELEVATIONS IN MID-DEPTH WELLS, THIRD QUARTER 2013

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

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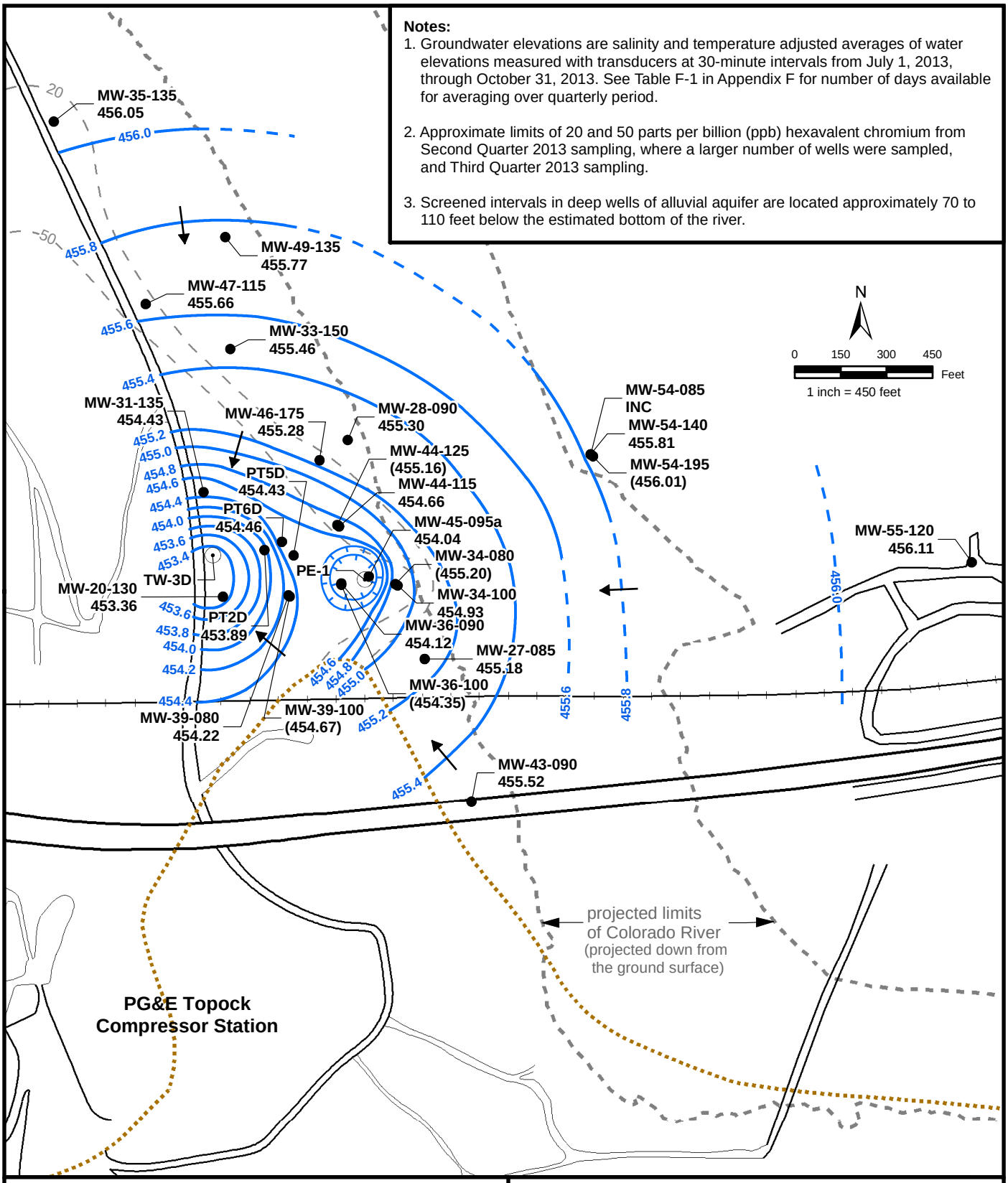

FIGURE 4-4c
AVERAGE GROUNDWATER ELEVATIONS IN DEEP WELLS, THIRD QUARTER 2013

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORIING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

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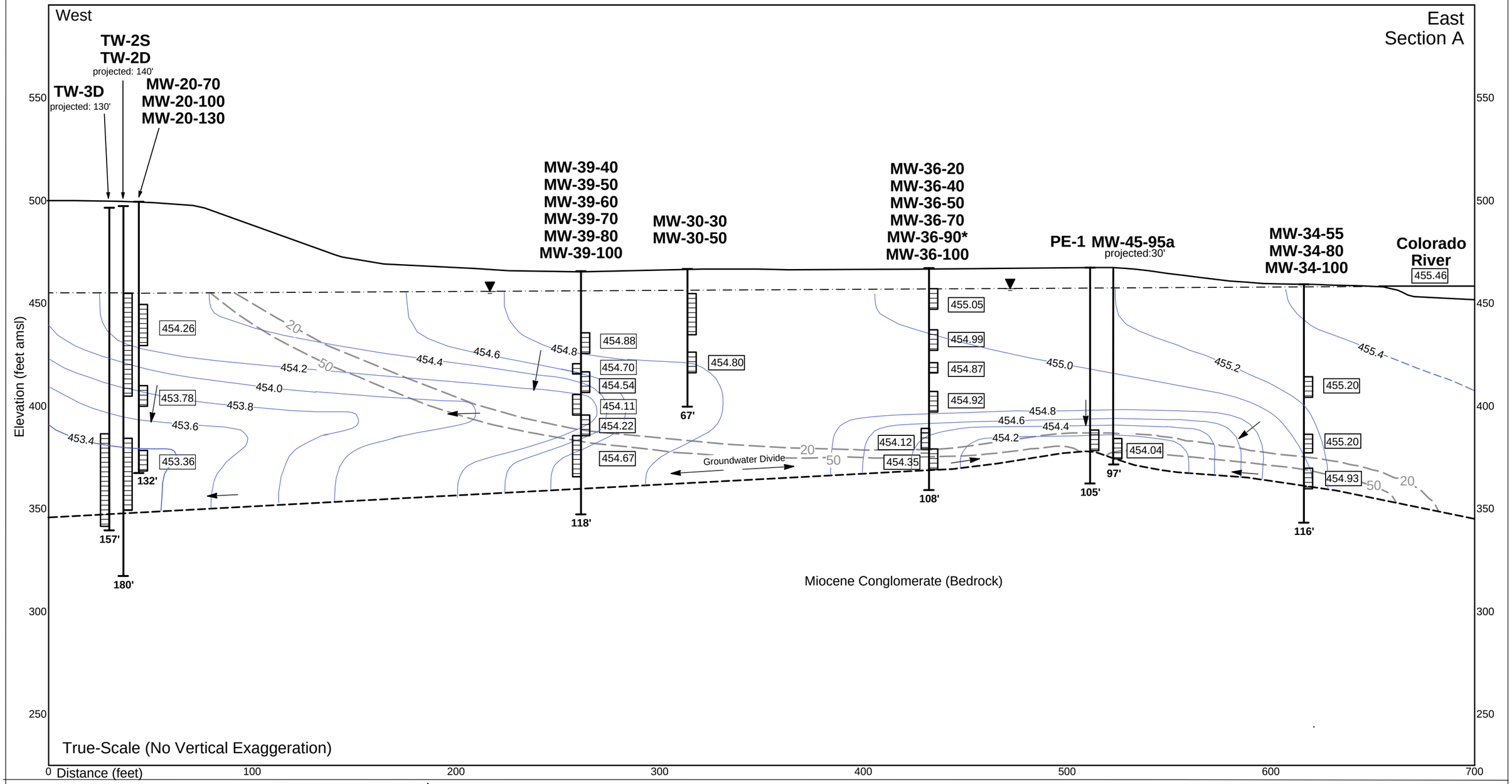

Notes:

1. Results show average groundwater elevations for July 1, 2013, through October 31, 2013, measured with transducers at 30-minute intervals.

2. Groundwater elevations adjusted for salinity and temperature. Well MW-36-90* is excluded from contouring. River elevation (R-27) is the calculated average river level based upon the river gradient between RRB and I-3.

amsl = above mean sea level.

Legend:

MW-30-50
Inferred water table
well screen
455.23
103 boring depth (feet)

20
Inferred hexavalent chromium contour (ppb) in Alluvial Aquifer from Second Quarter 2013, where a larger number of wells were sampled, and Third Quarter 2013.

Average groundwater head (feet amsl)

453.5
Groundwater head contour

453.5
Inferred groundwater head contour

Interpreted groundwater flow direction

FIGURE 4-5
AVERAGE GROUNDWATER ELEVATIONS FOR WELLS IN FLOODPLAIN CROSS-SECTION A, THIRD QUARTER 2013

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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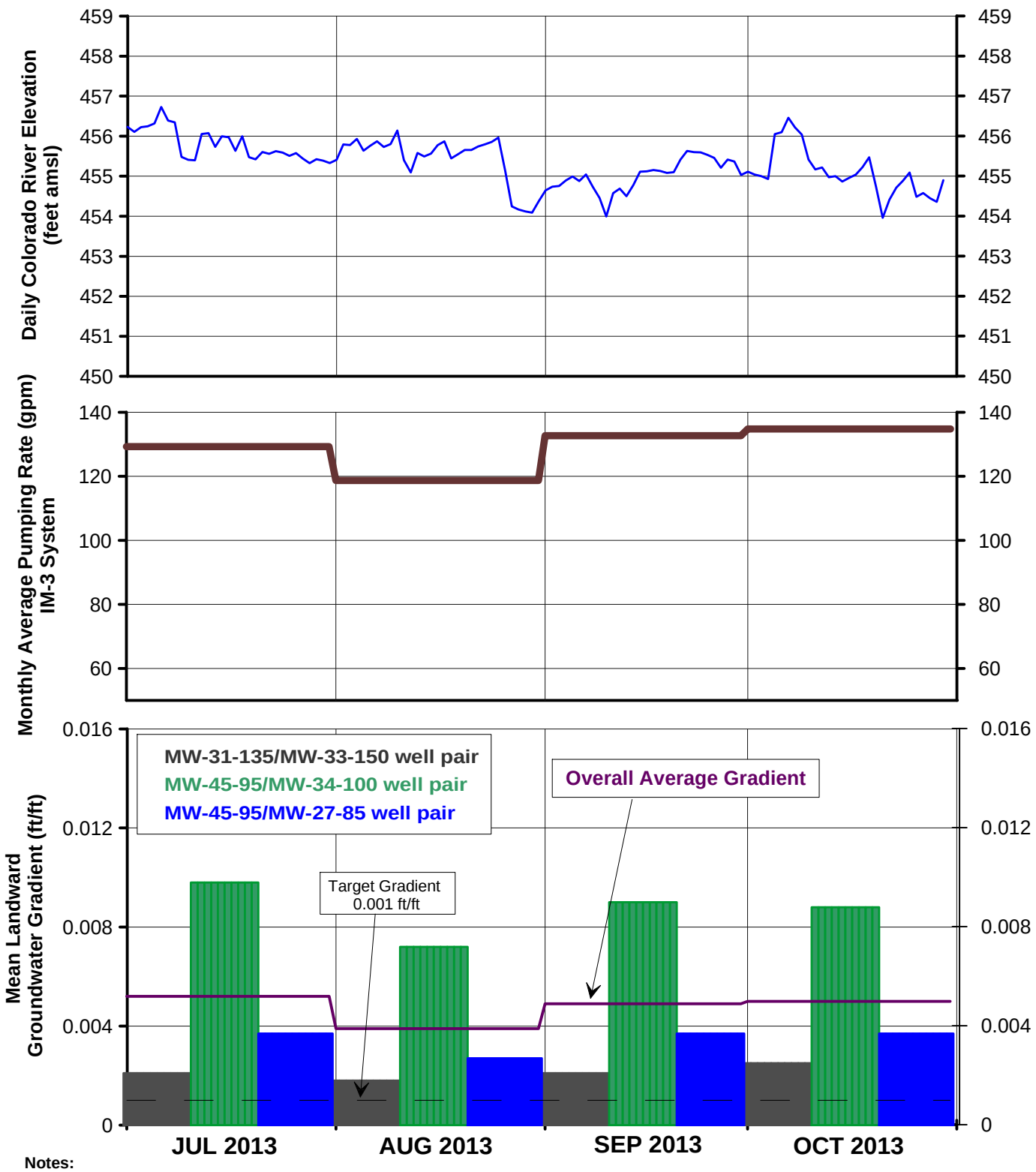
C:\USERS\E2USER\DOCUMENTS\TOPOCK\GINT\2013_3Q\FIGURE_4-5_XSECA_GW.GDW;



Notes:

1. For IM pumping, the target landward gradient for well pairs is 0.001 feet/foot.
2. Refer to Table 4-1 and Section 4.4 for discussion of pumping data.
3. Pumping rate plotted is the combined rate of extraction wells TW-3D and PE-1 in operation each month.
4. Refer to Table 4-3 and Section 4.5 for discussion of gradient data.

amsl = above mean sea level.
ft/ft = feet/foot.
gpm = gallons per minute.

FIGURE 4-6
MEASURED HYDRAULIC GRADIENTS, RIVER ELEVATIONS, AND PUMPING RATE, THIRD QUARTER 2013

THIRD QUARTER 2013 INTERIM MEASURES
PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER
AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

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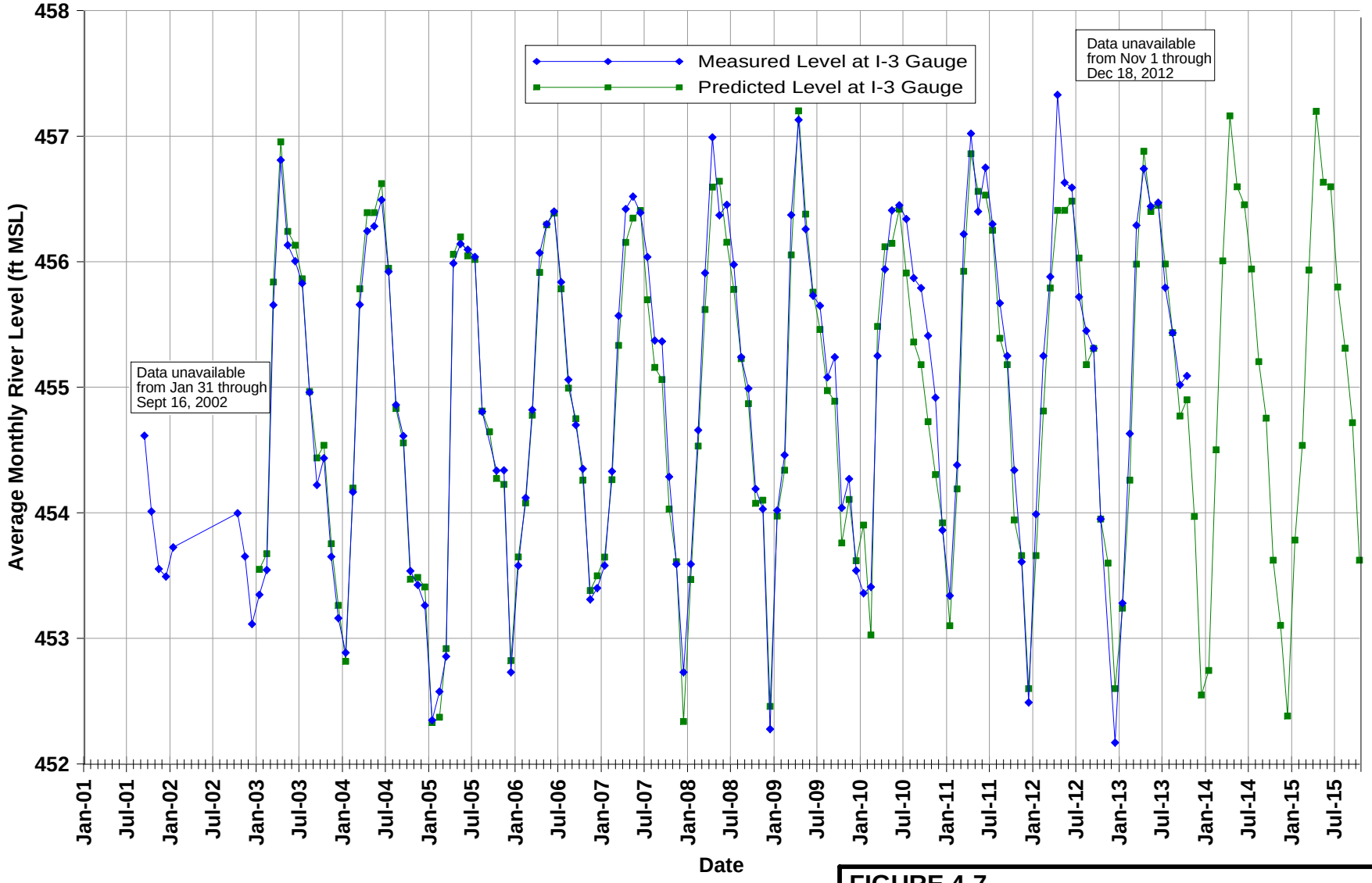

Note:
Projected river level for each month in the past is calculated based on the preceding months USBR projections of Davis Dam release and stage in Lake Havasu. Future projections of river level at I-3 are based upon November 2013 USBR projections. These data are reported monthly by the US Department of Interior, at http://www.usbr.gov/lc/region/g4000/24mo.pdf

FIGURE 4-7
PAST AND PREDICTED FUTURE RIVER LEVELS AT TOPOCK COMPRESSOR STATION

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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Appendix A
Well Inspection and Maintenance Log, Third Quarter 2013

APPENDIX A

Well Inspection and Maintenance Log, Third Quarter 2013, PG&E Topock Groundwater Monitoring Program

In a letter from the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) dated January 28, 2013, Pacific Gas and Electric Company (PG&E) was directed to assess conditions at all existing wells pursuant to PG&E's *Draft Performance Monitoring Plan for Interim Measures in the Floodplain Area, Pacific Gas and Electric Company, Topock Compressor Station, Needles, California* (CH2M HILL, 2005a) and the *Sampling and Analysis Field Procedures Topock Program Manual, Revision 1, Pacific Gas and Electric Company, Topock Project* (CH2M HILL, 2005b) to ensure the wells are in compliance with the California Well Standards. Table A-1 shows the inspection log of wells since the program was revised in February, pursuant to the DTSC above-referenced letter. Table A-1 summarizes well conditions, notes, and completed actions. Where there is a comment about well condition in the "Notes" column of Table A-1 without a "Required Action" listed, the noted condition is being monitored with quarterly inspections to assess whether future actions are needed.

This follows up the January 28 letter from DTSC and a February site visit by Chris Guerre/DTSC to view almost all wells onsite. The revised well maintenance Standard Operating Procedure SOP A-22, including a revised well inspection form, was reviewed with Chris Guerre/DTSC in June 2013. Minor repairs identified in February have already been completed. Current repair status and inspection findings are noted in Table A-1 and will be updated in each future quarterly report as Appendix A and Table A-1. This appendix will become a regular part of GMP report contents.

In this reporting period, a number of actions were completed, including modifying transducer wellhead caps and flush-mounted lids for better seal, repairing damaged or undercut concrete pads, repairing protective cover hinges, adding pea gravel to fill several surface completion stickups that had open annular spaces above their pads, and touching up (darkening) well ID and measuring point markings. Ongoing repairs are listed in Section A.1. Photographs of repairs are shown in Section A.2.

A.1 Upcoming or Ongoing Maintenance

This section presents maintenance items that are planned or ongoing at the time of this report.

- Pad replacement or concrete work at the following wells:
  - MW-32-20
  - MW-32-35
  - MW-33-40
  - MW-33-90
  - MW-40D
  - MW-46-175/MW-46-205 (Nested Wells)
- Record search:
  - P2/MWP-12/PX-2
- Wellhead redesign before replacement:
  - TW-1
  - PGE-7

A.2 Well Maintenance Photographs

This section presents photographs taken during well maintenance activities since receiving the January letter through the quarterly reporting period at the Topock site.



Above is an example photograph of a hinge repair.





Above is an example photograph of a new transducer hanger (left) and replaced well cap (right).




Above is an example photograph of pad replacements of wells in the floodplain (left). The photograph on the right is an example photograph of a repaired flush-mounted well pad, MW-40D, located in the median of I-40. The final step for this repair will be to go back and cut off the cardboard/Sonotube rim after concrete has cured so water can drain properly.




Pre-repair and post-repair photograph of MW-38S and MW-38D. Post-repair photograph is prior to smoothing the soil from the tire tracks and painting the wellhead protective casing.

Table A-1
Well Inspection Log, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well/ Piezometer	Inspection Date	Survey Mark Present? (Y/N)	Standing or Ponded Water? (Y/N)	Lock in Place? (Y/N)	Evidence of Well Subsidence? (Y/N)	Well Labeled on Casing or Pad? (Y/N)	Traffic Poles Intact? (Y/N)	Concrete Pad Intact? (Y/N)	Erosion Around Wellhead? (Y/N)	Steel Casing Intact? (Y/N)	PVC Cap Present? (Y/N)	Standing Water in Annulus? (Y/N)	Well Casing Intact? (Y/N)	Photo on file? (Y/N)	Notes	Required Actions	Action Completed (Y/N)	Action Completed Date
CW-1D	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
CW-1M	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
CW-2D	07/29/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
CW-2M	07/29/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
CW-3D	07/29/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
CW-3M	07/29/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
CW-4D	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
CW-4M	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-01	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-03	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-04	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-05	08/01/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-06	08/01/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-07	08/01/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-08	08/01/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-09	07/22/13	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	One traffic pole is bent over.	Replace with reinforced deeper Sonotube concrete pad recompletion like MW-38 wells.	N	
MW-10	07/31/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.			
MW-11	07/22/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-12	08/07/13	Y	N	Y	N	Y	Y	Unk	N	Y	Y	N	Y	Y	There is deposited soil covering the concrete well pad. Evaluate runoff barrier to prevent new deposition.	Clear away soil to expose pad; coordinate for dig alert.	N	
MW-13	07/25/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-14	07/25/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-15	08/01/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-16	08/01/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				

Table A-1
Well Inspection Log, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well/ Piezometer	Inspection Date	Survey Mark Present? (Y/N)	Standing or Ponded Water? (Y/N)	Lock in Place? (Y/N)	Evidence of Well Subsidence? (Y/N)	Well Labeled on Casing or Pad? (Y/N)	Traffic Poles Intact? (Y/N)	Concrete Pad Intact? (Y/N)	Erosion Around Wellhead? (Y/N)	Steel Casing Intact? (Y/N)	PVC Cap Present? (Y/N)	Standing Water in Annulus? (Y/N)	Well Casing Intact? (Y/N)	Photo on file? (Y/N)	Notes	Required Actions	Action Completed (Y/N)	Action Completed Date
MW-17	07/31/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-18	07/31/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-19	07/25/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-20-070	07/29/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-20-100	07/29/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-20-130	07/31/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-21	08/06/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-22	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-23-060 MW-23-080	07/24/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y	Water entered flush mount	Replace well vault seal.	Y	7/24/2013
MW-24 BR	07/22/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-24A	07/22/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-24B	07/22/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-25	07/25/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-26	08/07/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-27-020	07/29/13	Y	N	Y	N	Y	none	see notes	N	Y	Y	N	Y	Y	Sand covering pad, must be cleared to evaluate whether concrete pad is intact.	Evaluate need for pad repair	N	
MW-27-060	07/29/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-27-085	07/29/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-28-025	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-28-090	08/01/13	Y	N	Y	N	Y	none	Y	z	Y	Y	N	Y	Y				
MW-29	08/01/13	Y	N	Y	N	Y	none	Y	Y	Y	Y	N	Y	Y	Soil erosion under concrete well pad	Replace concrete well pad	Y	Oct. 2013
MW-30-030	07/24/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y	The concrete pad is cracked and steel protective casing is rusty.	Concrete pad repair/replace, outer casing repaint.	N	
MW-30-050	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-31-060	07/23/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y	Corrosion on pump hanger	Plan for custom pump hanger replacement	N	

Table A-1
Well Inspection Log, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well/ Piezometer	Inspection Date	Survey Mark Present? (Y/N)	Standing or Ponded Water? (Y/N)	Lock in Place? (Y/N)	Evidence of Well Subsidence? (Y/N)	Well Labeled on Casing or Pad? (Y/N)	Traffic Poles Intact? (Y/N)	Concrete Pad Intact? (Y/N)	Erosion Around Wellhead? (Y/N)	Steel Casing Intact? (Y/N)	PVC Cap Present? (Y/N)	Standing Water in Annulus? (Y/N)	Well Casing Intact? (Y/N)	Photo on file? (Y/N)	Notes	Required Actions	Action Completed (Y/N)	Action Completed Date
MW-31-135	07/23/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-32-020	07/24/13	Y	N	Y	N	Y	none	Y	N	Rusty	Y	N	Y	Y	Casing rust, concrete pad cracked.	Replace protective casing and concrete pad.	Y	Oct. 2013
MW-32-035	08/05/13	Y	N	Y	N	Y	none	N	N	Rusty	Y	N	Y	Y	Concrete pad is badly cracked.	Replace protective casing and concrete pad.	Y	Oct. 2013
MW-33-150	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-33-210	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-33-40	08/01/13	Y	N	Y	N	Y	none	N	N	Y	Y	N	Y	Y		Replace concrete pad.	Y	Oct. 2013
MW-33-90	08/01/13	Y	N	Y	N	Y	none	N	N	Y	Y	N	Y	Y		Replace concrete pad.	Y	Oct. 2013
MW-34-055	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-34-080	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-34-100	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-35-135	08/01/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-35-60	08/01/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				
MW-36-020 MW-36-070	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-36-090 MW-36-040	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-36-050 MW-36-100	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-37D	07/31/13	Y	N	Y	N	Y	Only 2	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.	Evaluate reinforced recompletion repair like MW-38 wells.	N	
MW-37S	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.	Evaluate reinforced recompletion repair like MW-38 wells.	N	
MW-38S	07/22/13	Y	N	Y	N	Y	NA	Y	N	Y	Y	N	Y	Y	Flood damaged.	repair MW-38S	Y	April-June 2013
MW-38D	07/22/13	Y	N	Y	N	Y	NA	Y	N	Y	Y	N	Y	Y	Flood damaged.	replace MW-38D	Y	April-June 2013
MW-39-040 MW-39-070	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-39-050 MW-39-080	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-39-060 MW-39-100	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-40D	08/07/13	Y	N	N	N	Y	NA	Cracked	N	Y	Y	N	Y	Y	Concrete pad is badly cracked.	Replace concrete pad.	Y	Oct. 2013
MW-40S	08/07/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				

Table A-1
Well Inspection Log, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well/ Piezometer	Inspection Date	Survey Mark Present? (Y/N)	Standing or Ponded Water? (Y/N)	Lock in Place? (Y/N)	Evidence of Well Subsidence? (Y/N)	Well Labeled on Casing or Pad? (Y/N)	Traffic Poles Intact? (Y/N)	Concrete Pad Intact? (Y/N)	Erosion Around Wellhead? (Y/N)	Steel Casing Intact? (Y/N)	PVC Cap Present? (Y/N)	Standing Water in Annulus? (Y/N)	Well Casing Intact? (Y/N)	Photo on file? (Y/N)	Notes	Required Actions	Action Completed (Y/N)	Action Completed Date
MW-41D	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-41M	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-41S	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-42-030	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-42-055	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-42-065	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-43-025	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-43-075	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-43-090	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-44-125 MW-44-070	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-44-115	08/05/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-45-095a MW-45-095b	07/24/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-46-175 MW-46-205	08/01/13	Y	N	Y	N	Y	none	Y	Y	Y	Y	N	Y	Y	Soil erosion under concrete well pad.	Replace concrete pad.	Y	Oct. 2013
MW-47-055 MW-47-115	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-48	07/24/13	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad. Evaluate runoff barrier to prevent new deposition.	Clear away soil to expose pad; coordinate for dig alert.	N	
MW-49-135 MW-49-275 MW-49-365	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-50-095 MW-50-200	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-51	08/07/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-52	08/07/13	NA	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-53	08/07/13	NA	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-54-085 MW-54-140 MW-54-195	08/07/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-55-045 MW-55-120	08/07/13	Y	N	N	N	Y	NA	NA	N	Y	Y	N	Y	Y				
MW-56 D/S/M	08/07/13	NA	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y				

Table A-1
Well Inspection Log, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well/ Piezometer	Inspection Date	Survey Mark Present? (Y/N)	Standing or Ponded Water? (Y/N)	Lock in Place? (Y/N)	Evidence of Well Subsidence? (Y/N)	Well Labeled on Casing or Pad? (Y/N)	Traffic Poles Intact? (Y/N)	Concrete Pad Intact? (Y/N)	Erosion Around Wellhead? (Y/N)	Steel Casing Intact? (Y/N)	PVC Cap Present? (Y/N)	Standing Water in Annulus? (Y/N)	Well Casing Intact? (Y/N)	Photo on file? (Y/N)	Notes	Required Actions	Action Completed (Y/N)	Action Completed Date
MW-57-050	07/23/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.	Replace well vault seal.	Y	7/23/2013
MW-57-070	07/23/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.	Replace well vault seal.	Y	7/23/2013
MW-57-185	07/23/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.	Replace well vault seal.	Y	7/23/2013
MW-58BR	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.			
MW-58-065	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.			
MW-60-125	07/23/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y		Replace well vault seal.	Y	7/23/2013
MW-60BR-245	07/23/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-61-110	07/23/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.			
MW-62-110 MW-62-190	07/24/13	NA	N	N	N	Y	N	Y	N	NA	NA	N	Y	Y	FLUTe wells; pumping connections exposed	Plan and coordinate surface completion modifications with TCS	N	
MW-62-065	07/24/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y		Replace well vault seal.	Y	7/24/2013
MW-63-065	07/24/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y		Replace well vault seal.	Y	7/24/2013
MW-64-BR	07/23/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-65-160 MW-65-225	07/22/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y	Moisture but no standing water in the annulus.	Replace well vault seal.	Y	7/22/2013
MW-66-165 MW-66-230	07/22/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-66BR-270	07/22/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-67-185	07/22/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-67-225 MW-67-260	07/22/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-68BR	07/22/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-68-180 MW-68-290	07/22/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
MW-69-195	07/31/13	Y	N	N	N	Y	NA	Y	Y	Y	Y	N	Y	Y	Slight erosion around wellhead on the west side.			
MW-70BR-225	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-70-105	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MW-71-035	07/24/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				

Table A-1
Well Inspection Log, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well/ Piezometer	Inspection Date	Survey Mark Present? (Y/N)	Standing or Ponded Water? (Y/N)	Lock in Place? (Y/N)	Evidence of Well Subsidence? (Y/N)	Well Labeled on Casing or Pad? (Y/N)	Traffic Poles Intact? (Y/N)	Concrete Pad Intact? (Y/N)	Erosion Around Wellhead? (Y/N)	Steel Casing Intact? (Y/N)	PVC Cap Present? (Y/N)	Standing Water in Annulus? (Y/N)	Well Casing Intact? (Y/N)	Photo on file? (Y/N)	Notes	Required Actions	Action Completed (Y/N)	Action Completed Date
MW-72-080	07/24/13	Y	N	N	N	Y	NA	N	N	Y	Y	N	Y	Y	Concrete pad is cracked. Well completion is slightly below grade.	Replace well vault seal.	Y	7/24/2013
MW-72-200	07/23/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y	Well completion is slightly below grade.			
MW-73-080	07/24/13	Y	N	N	N	Y	NA	Y	N	Y	Y	Y	Y	Y		Remove water from annulus.	Y	7/24/2013
MW-74-240	07/31/13	Y	N	N	N	Y	none	Y	N	Y	Y	N	Y	Y				
MWP-08	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
MWP-10	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-1D	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-1M	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-1S	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-2D	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-2M	07/29/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-2S	07/25/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-3D	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-3M	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-3S	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-5D	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-5M	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
OW-5S	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
P2	09/12/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y	There is a different well labeled P2 on the steel casing at the quarry but PVC case inside says MWP-12. This inspected well is at the new ponds near MW-4. It is labeled PX-2 on the lid and P3 on the steel casing, but shows up as P2 on the map. Since the quarry well is located near the "old ponds" area there is a chance that well is actually an MWP designation well.	Records search for correct designations for these wells.	N	
PG&E-8	09/12/13	Y	N	Y	N	Y	Y	none	N	Y	Y	N	Y	Y	This well has no secure protective casing.	Evaluate and plan repair to add secure new casing, and TCS coordination for any hot work.	N	

Table A-1
Well Inspection Log, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well/ Piezometer	Inspection Date	Survey Mark Present? (Y/N)	Standing or Ponded Water? (Y/N)	Lock in Place? (Y/N)	Evidence of Well Subsidence? (Y/N)	Well Labeled on Casing or Pad? (Y/N)	Traffic Poles Intact? (Y/N)	Concrete Pad Intact? (Y/N)	Erosion Around Wellhead? (Y/N)	Steel Casing Intact? (Y/N)	PVC Cap Present? (Y/N)	Standing Water in Annulus? (Y/N)	Well Casing Intact? (Y/N)	Photo on file? (Y/N)	Notes	Required Actions	Action Completed (Y/N)	Action Completed Date
PGE-7	07/22/13	Y	N	N	N	Y	N	N	N	Y	Y	NA	Y	Y	Concrete pad is cracked. This well has no protective casing and there is a hole in the base of the stickup.	Add protective casing and locking mechanism and patch the hole.	Y	10/30/2013
PT-1 3 WELLS	08/06/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
PT-2 3 WELLS	08/06/13	Y	N	Y	N	Y	none		N	Y	Y	N	Y	Y	Soil deposition on and around concrete well pad.			
PT-3 3 WELLS	08/06/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
PT-4 3 WELLS	08/06/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
PT-5 3 WELLS	08/06/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
PT-6 3 WELLS	08/06/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
PT-7 S/D	08/06/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y	Well has a vented cap.			
PT-7M	08/06/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y		Replaced well vault gasket.	Y	8/6/2013
PT-8 S/D	08/06/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y		Replaced well vault gasket.	Y	8/6/2013
PT-8M	08/06/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y		Replaced well vault gasket.	Y	8/6/2013
PT-9 S/D	08/06/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y				
PT-9M	08/06/13	Y	N	N	N	Y	NA	Y	N	Y	Y	N	Y	Y		Replaced well vault seal.	Y	8/6/2013
PTI-1D	08/06/13	Y	N	Y	N	Y	none	Y	Y	Y	Y	N	Y	Y	Soil erosion under concrete well pad.	Replace concrete pad.	Y	Oct. 2013
PTI-1M	08/06/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
PTI-1S	08/06/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
TW-01	08/06/13	N	N	N	N	Y	NA	Y	N	Y	Steel	N	Y	Y	Heavy, large, spring loaded steel flush mount does not fully close, hard to open and shut.	Needs repaired or replaced flush mount cover or new hinges - coordinate design and hot work with TCS.	N	
TW-04	08/01/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y				
TW-05	07/31/13	Y	N	Y	N	Y	none	Y	N	Y	Y	N	Y	Y	There is deposited soil covering the concrete well pad. Evaluate runoff barrier to prevent new deposition.	Clear away soil to expose pad; coordinate for dig alert.	N	

Notes Key:
1 - RFID tag in place.
2 - Traffic Poles not needed due to well location/construction.
3 - Hinge damaged.
4 - PVC cap not present due to transducer hanger.
5 - PVC cap not present due to dedicated pump tubing/cables in well.

Appendix B
Lab Reports, Third Quarter 2013
(Provided on CD-ROM only with hardcopy submittal)

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

July 16, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-EW-208, GROUNDWATER MONITORING PROJECT, TLI NO.: 808805

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-EW-208 groundwater-monitoring project for Total Dissolved and Hexavalent Chromium, Total Dissolved Solids, pH, and Specific Conductivity. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms 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 July 2, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Samples for Total Dissolved Chromium were analyzed by method EPA 200.8 with the approval of Mr. Shawn Duffy.

Samples for pH analysis by SM 4500-H B were received past the method specified holding time. Mr. Duffy approved the analysis of the samples.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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www.truesdail.com

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: Two (2) Groundwater Samples
Project Name: PG&E Topock Project
Project No.: 456827.01.DM

Laboratory No.: 808805
Date: July 16, 2013
Collected: July 2, 2013
Received: July 2, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 4500-H B	pH	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
EPA 200.8	Metals by ICP/MS	Bita Emami
EPA 218.6	Hexavalent Chromium	Tom Martinez
SM 3500-CrB	Hexavalent Chromium	Jenny Tankunakorn

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

Laboratory No.: 808805
Date Received: July 2, 2013

Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
808805-001	PE-01-208	E120.1	NONE	7/2/2013	13:00	EC	4130	umhos/cm	2.00
808805-001	PE-01-208	E200.8	LABFLT	7/2/2013	13:00	Chromium	5.3	ug/L	1.0
808805-001	PE-01-208	E218.6	LABFLT	7/2/2013	13:00	Chromium, Hexavalent	4.7	ug/L	0.20
808805-001	PE-01-208	SM2540C	NONE	7/2/2013	13:00	Total Dissolved Solids	2620	mg/L	125
808805-001	PE-01-208	SM4500HB	NONE	7/2/2013	13:00	PH	7.45	pH	4.00
808805-002	TW-03D-208	E120.1	NONE	7/2/2013	13:07	EC	7400	umhos/cm	2.00
808805-002	TW-03D-208	E200.8	LABFLT	7/2/2013	13:07	Chromium	828	ug/L	2.0
808805-002	TW-03D-208	SM2540C	NONE	7/2/2013	13:07	Total Dissolved Solids	4920	mg/L	250
808805-002	TW-03D-208	SM3500-CrB	LABFLT	7/2/2013	13:07	Chromium, Hexavalent	934	ug/L	250
808805-002	TW-03D-208	SM4500HB	NONE	7/2/2013	13:07	PH	7.54	pH	4.00

ND: Non Detected (below reporting limit)

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

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

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 808805

Printed 7/16/2013

Samples Received on 7/2/2013 9:30:00 PM

Field ID	Lab ID	Collected	Matrix
PE-01-208	808805-001	07/02/2013 13:00	Water
TW-03D-208	808805-002	07/02/2013 13:07	Water

Specific Conductivity - EPA 120.1

Batch 07EC13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
808805-001 Specific Conductivity	umhos/cm	07/08/2013	1.00	0.606	2.00	4130
808805-002 Specific Conductivity	umhos/cm	07/08/2013	1.00	0.606	2.00	7400

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 808804-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	37900	37900	0	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	670	706	94.9	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	674	706	95.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	903	996	90.7	90 - 110

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project
Project Number: 456827.01.DM

Chrome VI by EPA 218.6

Batch 07CrH13G

Parameter	Unit	Analyzed	DF	MDL	RL	Result
808805-001 Chromium, Hexavalent	ug/L	07/03/2013 10:18	1.00	0.00920	0.20	4.7

Method Blank

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

Duplicate — Lab ID = 808805-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.70	4.70	0.119	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.183	0.200	91.6	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.14	5.00	103	90 - 110

Matrix Spike — Lab ID = 808804-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.36	5.21(5.00)	103	90 - 110

Matrix Spike — Lab ID = 808804-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.24	1.21(1.00)	103	90 - 110

Matrix Spike — Lab ID = 808804-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1340	1380(750)	95.4	90 - 110

Matrix Spike — Lab ID = 808804-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	50.7	51.4(50.0)	98.7	90 - 110

Matrix Spike — Lab ID = 808805-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.62	9.70(5.00)	98.4	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.14	5.00	103	90 - 110

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105

MRCVS - Primary

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

MRCVS - Primary

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

Chromium, Hexavalent by SM 3500-Cr B

Batch 07CrH13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
808805-002 Chromium, Hexavalent	ug/L	07/08/2013 16:23	25.0	110	250	934

Method Blank

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

Duplicate — Lab ID = 808805-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	1140	934	19.8	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	103	100	103	90 - 110

Matrix Spike — Lab ID = 808805-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	3490	3430(2500)	102	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	103	100	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	65.5	60.0	109	90 - 110

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pH by SM 4500-H B

Batch 07PH13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
808805-001 pH	pH	07/03/2013 08:25	1.00	0.0784	4.00	7.45
808805-002 pH	pH	07/03/2013 08:27	1.00	0.0784	4.00	7.54

Duplicate — Lab ID = 808805-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
pH	pH	1.00	7.55	7.54	0.132	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.02	7.00	100	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.06	7.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.05	7.00	101	90 - 110

Total Dissolved Solids by SM 2540 C

Batch 07TDS13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
808805-001 Total Dissolved Solids	mg/L	07/03/2013	1.00	1.76	125	2620
808805-002 Total Dissolved Solids	mg/L	07/03/2013	1.00	1.76	250	4920

Method Blank

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

Duplicate — Lab ID = 808805-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	5140	4920	4.37	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	494	500	98.8	90 - 110

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

Metals by EPA 200.8, Dissolved

Batch 070913A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
808805-001 Chromium	ug/L	07/09/2013 12:21	2.00	0.184	1.0	5.3
808805-002 Chromium	ug/L	07/09/2013 12:27	10.0	0.920	2.0	828

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 808802-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	1.86	1.90	1.91	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.208	0.200	104	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.00	50.1	50.0	100	85 - 115

Matrix Spike — Lab ID = 808802-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	50.4	51.9(50.0)	96.9	75 - 125

Matrix Spike Duplicate — Lab ID = 808802-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	49.8	51.9(50.0)	95.8	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	99.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.2	20.0	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.0	20.0	99.9	90 - 110

MRCVS - Primary

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

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Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.0	20.0	95.0	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.7	20.0	93.6	80 - 120

Serial Dilution Lab ID = 808805-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	50.0	844	828	1.93	0 - 10

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 07TDS13A
Date Analyzed: 7/3/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	77.7772	77.7774	77.7772	0.0002	No	0.0000	0.0	25.0	ND	1
808732	200	111.197	111.1998	111.1998	0.0000	No	0.0028	14.0	12.5	14.0	1
808760-17	50	50.6966	50.7322	50.7318	0.0004	No	0.0352	704.0	50.0	704.0	1
808777-7	100	75.2727	75.3289	75.3287	0.0002	No	0.0560	560.0	25.0	560.0	1
808777-8	100	72.4114	72.4672	72.467	0.0002	No	0.0556	556.0	25.0	556.0	1
808804-1	20	47.5151	47.5916	47.5916	0.0000	No	0.0765	3825.0	125.0	3825.0	1
808804-2	20	49.8206	49.9101	49.9099	0.0002	No	0.0893	4465.0	125.0	4465.0	1
808804-3	5	49.2748	49.4229	49.4228	0.0001	No	0.1480	29600.0	500.0	29600.0	1
808805-1	20	47.9471	47.9999	47.9995	0.0004	No	0.0524	2620.0	125.0	2620.0	1
808805-2	10	47.9415	47.9911	47.9907	0.0004	No	0.0492	4920.0	250.0	4920.0	1
808834-1	100	77.9910	78.019	78.0186	0.0004	No	0.0276	276.0	25.0	276.0	1
808805-2D	10	51.8785	51.9299	51.9299	0.0000	No	0.0514	5140.0	250.0	5140.0	1
LCS	100	66.7027	66.7521	66.7521	0.0000	No	0.0494	494.0	25.0	494.0	1

Calculation as follows:

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

Where:

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

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

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	494	500	98.8%	90-110%	Yes
LCSD					

LCS Recovery

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

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

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
808805-2	0.0492	0.0514	2.2%	≤5%	Yes

Duplicate Determination Difference

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

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

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

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 07TDS13A
Date Analyzed: 7/3/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
808732	24.8	0.56	16.12	0.87
808760-17	1064	0.66	691.6	1.02
808777-7	838	0.67	544.7	1.03
808777-8	839	0.66	545.35	1.02
808804-1	6290	0.61	4088.5	0.94
808804-2	6730	0.66	4374.5	1.02
808804-3	38000	0.78	24700	1.20
808805-1	4140	0.63	2691	0.97
808805-2	7360	0.67	4784	1.03
808834-1	462	0.60	300.3	0.92
808805-2D	7360	0.70	4784	1.07
LCS				

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

CHAIN OF CUSTODY RECORD

[IM3Plant-EW-208]

808 805

TURNAROUND TIME 10 Days
DATE 07/02/13
PAGE 1 OF 1

COMPANY: CH2M HILL /E2
PROJECT NAME: PG&E Topock IM3Plant-EW
PHONE: 530-229-3303 FAX: 530-339-3303
ADDRESS: 155 Grand Ave Ste 1000
Oakland, CA 94612
P.O. NUMBER: 456827.01.DM
SAMPLERS (SIGNATURE: [signature]

	SAMPLE I.D.	DATE	TIME	DESCRIPTION	Dissolved Cr (200.7) Lab filtered	Cr(VI) (3500-Cr B)	pH (150.0) EC (120.1)	TDS (160.1)	Cr(VI) (218.6)										NUMBER OF CONTAINERS	COMMENTS
-1	PE-01-208	07/02/13	1300	Ground water	X		X	X	X										4	pH = 7 } 200.7
-2	TW-03D-208	07/02/13	1307	Ground water	X	X	X	X											4	pH = 7 }
																			8	TOTAL NUMBER OF CONTAINERS

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CHAIN OF CUSTODY SIGNATURE RECORD

Signature	Printed Name	Company/ Agency	Date/ Time
(Relinquished) [signature]	J Aide	E2	7-2-13 1345
(Received) Rafael Davila	Rafael	T.L.I	7-2-13 15:30
(Relinquished) Rafael Davila	Rafael	T.L.I	7-2-13 21:30
(Received) Shakunima	Linda	TLI	7/2/13 21:30
(Relinquished)			
(Received)			

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 3.3 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

044

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
7/3/13	808804-3	7.0	2mL/100mL	9.5	8:05	TM
↓	↓ -5	↓	↓	↓	↓	TM
7/3/13	808805-1	7.0	2mL/100mL	9.5	8:10	TM
↓	↓ -2	↓	↓	↓	↓	TM

TM
7/5/13

07/08/13

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

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Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
808768	<1	<2	7/2/13	DC	yes			
808776	<1	<2	7/3/13	DC	yes			
808778	>1	↓	↓	↓	↓			
808779	<1	↓	↓	↓	↓			
808798(1-2)	<1	>2	7-3-13	BE	NO	14:00		
808783(1-3)	↓	↓	↓	↓	↓			
808784(1-6)	↓	↓	↓	↓	↓			
808804(1-3)	<1	<2	7-8-13	BE	yes			
808804(-2)	↓	>2	↓	↓	↓	7:00		
808805(1-2)	↓	>2	↓	↓	↓	7:00		after Filter
808802	↓	<2	↓	↓	↓	↓		
808810(1-3)	↓	<2	↓	↓	↓	↓		
808863(1-4)	↓	↓	↓	↓	↓	↓		
808837(1-15)	<1	<2	7-8-13	ES	yes	↓		
808853(1-12)	<1	<2	7-9-13	BE	↓	↓		
808855(1-6)	↓	↓	↓	↓	↓	↓		
808854(1-4	↓	↓	↓	↓	↓	↓		
808852(1-10)	↓	↓	↓	↓	↓	↓		
808851(1-5)	↓	↓	↓	↓	↓	↓		
808857-6	<1	>2	7/9/13	DC	NO	12:20		
808892	<1	>2	7-10-13	BE	yes	10:00		
808879(1-2)	<1	>2	↓	↓	NO	12:00		
808878(1-15)	↓	↓	↓	↓	↓	↓		
808806	SLUDGE		7-10-13	ES	yes			
808906	>1	>2	7/10/13	DC	yes			
808807-4	<1	<2	↓	↓	↓			
808826	>1	↓	↓	↓	↓			
808827-4	↓	↓	↓	↓	↓			
808842	<1	↓	↓	↓	↓			
808843	↓	↓	↓	↓	↓			
808869	↓	↓	↓	↓	↓			
808870	↓	↓	↓	↓	↓			
808871	↓	↓	↓	↓	↓			
808872	↓	↓	↓	↓	↓			
808873	↓	↓	↓	↓	↓			
808874	↓	↓	↓	↓	↓			
808886	↓	↓	↓	↓	↓			
808887	↓	↓	↓	↓	↓			
808888	↓	↓	↓	↓	↓			
808889	↓	↓	↓	↓	↓			
808907	<1	>2	7/11/13	ES	NO	10:30		
808908	↓	↓	↓	↓	↓	↓		
808912 (1-3)	↓	↓	↓	↓	↓	9:30		

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 208805

Date Delivered: 07/02/13 **Time:** 21:30 **By:** ☐Mail ☑Field Service ☐Client

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

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15. ***Sample Matrix:*** ☐Liquid ☐Drinking Water ☑Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☐Other_____

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: L. Shabacuca

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www.truesdail.com

August 6, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK 2013-RMP-192, SURFACEWATER MONITORING PROJECT, TLI NO.: 809036

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2013-RMP-192 surfacewater-monitoring project. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data, and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

The samples were received and delivered with the chain of custody on July 16, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Samples for pH analysis by SM 4500-H B were received past the method specified holding time. Mr. Duffy approved the analysis of the samples.

For Total Suspended Solids by SM 2540D, 100 mL of sample was used for analysis resulting in a reporting limit of 25.0 mg/L which exceeded the contract required detection limit of 10 mg/L. All sample results were ND<25.0 mg/L. Mr. Duffy was notified and accepted the results.

Due to the discrepancy between the Total Dissolved Chromium (1.4 ug/L) and Hexavalent Chromium (ND<0.20 ug/L) results for sample C-MAR-D-192, sample from the three Total Dissolved Chromium and three Hexavalent Chromium sample containers were digested and analyzed for Total Dissolved Chromium. The results were all ND<1.0 ug/L. The original Total Dissolved Chromium digestate was re-analyzed for confirmation and also yielded a result of 1.3 ug/L. After discussing the results with Mr. Duffy, the result from the re-digested Total Dissolved Chromium sample was reported, as it was consistent with the results from all re-digested Total Dissolved Chromium and Hexavalent Chromium sample containers.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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Event 2013-RMP-192 Cr by SW 6020, Surfacewater Samples

Samples field filtered unless otherwise noted

Sample ID	Initial pH	pH adjustment needed?	Amount of additional acid needed	Final pH	Comments
C-BNS-D-192	2.00	No			
C-I-3-D-192	2.00	No			
C-I-3-S-192	2.00	No			
C-MAR-D-192	2.00	No			
C-MAR-S-192	2.00	No			
C-R22A-D-192	2.00	No			
C-R22A-S-192	2.00	No			
C-R27-D-192	2.00	No			
C-R27-S-192	2.00	No			
C-TAZ-D-192	2.00	No			
C-TAZ-S-192	2.00	No			
R63-192	2.00	No			

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Event 2013-RMP-192 Cr (VI) by EPA 218.6, Surfacewater Samples

Samples field filtered unless otherwise noted

Sample ID	Initial pH	pH adjustment needed?	Amount of additional buffer needed	Final pH	Comments
C-BNS-D-192	9.50	No			
C-I-3-D-192	9.50	No			
C-I-3-S-192	9.50	No			
C-MAR-D-192	9.50	No			
C-MAR-S-192	9.50	No			
C-MW-80-192	9.50	No			
C-MW-81-192	9.50	No			
C-R22A-D-192	9.50	No			
C-R22A-S-192	9.50	No			
C-R27-D-192	9.50	No			
C-R27-S-192	9.50	No			
C-TAZ-D-192	9.50	No			
C-TAZ-S-192	9.50	No			
R63-192	9.50	No			

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

Laboratory No.: 809036
Date Received: July 16, 2013

Project Name: PG&E Topock Project
Project No.: 423575.MP.02.RM
P.O. No.: 423575.MP.02.RM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809036-001	C-BNS-D-192	E120.1	NONE	7/15/2013	12:55	EC	807	umhos/cm	2.00
809036-001	C-BNS-D-192	E218.6	FLDFLT	7/15/2013	12:55	Chromium, Hexavalent	ND	ug/L	0.20
809036-001	C-BNS-D-192	SM2320B	NONE	7/15/2013	12:55	Alkalinity	123	mg/L	5.00
809036-001	C-BNS-D-192	SM2320B	NONE	7/15/2013	12:55	Alkalinity, Bicarbonate (As CaCO3)	123	mg/L	5.00
809036-001	C-BNS-D-192	SM2320B	NONE	7/15/2013	12:55	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-001	C-BNS-D-192	SM2540D	NONE	7/15/2013	12:55	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-001	C-BNS-D-192	SM4500HB	NONE	7/15/2013	12:55	PH	8.09 J	pH	4.00
809036-001	C-BNS-D-192	SW6010B	NONE	7/15/2013	12:55	Iron	ND	ug/L	20.0
809036-001	C-BNS-D-192	SW6010B	FLDFLT	7/15/2013	12:55	Iron	ND	ug/L	20.0
809036-001	C-BNS-D-192	SW6020	FLDFLT	7/15/2013	12:55	Arsenic	2.7	ug/L	0.50
809036-001	C-BNS-D-192	SW6020	FLDFLT	7/15/2013	12:55	Chromium	ND	ug/L	1.0
809036-001	C-BNS-D-192	SW6020	FLDFLT	7/15/2013	12:55	Manganese	0.80	ug/L	0.50
809036-001	C-BNS-D-192	SW6020	FLDFLT	7/15/2013	12:55	Molybdenum	4.0	ug/L	2.0
809036-001	C-BNS-D-192	SW6020	FLDFLT	7/15/2013	12:55	Selenium	ND	ug/L	5.0
809036-002	C-I-3-D-192	E120.1	NONE	7/15/2013	11:03	EC	790	umhos/cm	2.00
809036-002	C-I-3-D-192	E218.6	FLDFLT	7/15/2013	11:03	Chromium, Hexavalent	ND	ug/L	0.20
809036-002	C-I-3-D-192	SM2320B	NONE	7/15/2013	11:03	Alkalinity	115	mg/L	5.00
809036-002	C-I-3-D-192	SM2320B	NONE	7/15/2013	11:03	Alkalinity, Bicarbonate (As CaCO3)	115	mg/L	5.00
809036-002	C-I-3-D-192	SM2320B	NONE	7/15/2013	11:03	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-002	C-I-3-D-192	SM2540D	NONE	7/15/2013	11:03	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-002	C-I-3-D-192	SM4500HB	NONE	7/15/2013	11:03	PH	8.18 J	pH	4.00
809036-002	C-I-3-D-192	SW6010B	NONE	7/15/2013	11:03	Iron	37.6	ug/L	20.0
809036-002	C-I-3-D-192	SW6010B	FLDFLT	7/15/2013	11:03	Iron	ND	ug/L	20.0
809036-002	C-I-3-D-192	SW6020	FLDFLT	7/15/2013	11:03	Arsenic	2.7	ug/L	0.50
809036-002	C-I-3-D-192	SW6020	FLDFLT	7/15/2013	11:03	Chromium	ND	ug/L	1.0
809036-002	C-I-3-D-192	SW6020	FLDFLT	7/15/2013	11:03	Manganese	0.78	ug/L	0.50
809036-002	C-I-3-D-192	SW6020	FLDFLT	7/15/2013	11:03	Molybdenum	4.0	ug/L	2.0
809036-002	C-I-3-D-192	SW6020	FLDFLT	7/15/2013	11:03	Selenium	ND	ug/L	5.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809036-003	C-I-3-S-192	E120.1	NONE	7/15/2013	11:20	EC	794	umhos/cm	2.00
809036-003	C-I-3-S-192	E218.6	FLDFLT	7/15/2013	11:20	Chromium, Hexavalent	ND	ug/L	0.20
809036-003	C-I-3-S-192	SM2320B	NONE	7/15/2013	11:20	Alkalinity	108	mg/L	5.00
809036-003	C-I-3-S-192	SM2320B	NONE	7/15/2013	11:20	Alkalinity, Bicarbonate (As CaCO3)	108	mg/L	5.00
809036-003	C-I-3-S-192	SM2320B	NONE	7/15/2013	11:20	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-003	C-I-3-S-192	SM2540D	NONE	7/15/2013	11:20	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-003	C-I-3-S-192	SM4500HB	NONE	7/15/2013	11:20	PH	8.21 J	pH	4.00
809036-003	C-I-3-S-192	SW6010B	NONE	7/15/2013	11:20	Iron	33.0	ug/L	20.0
809036-003	C-I-3-S-192	SW6010B	FLDFLT	7/15/2013	11:20	Iron	ND	ug/L	20.0
809036-003	C-I-3-S-192	SW6020	FLDFLT	7/15/2013	11:20	Arsenic	2.8	ug/L	0.50
809036-003	C-I-3-S-192	SW6020	FLDFLT	7/15/2013	11:20	Chromium	ND	ug/L	1.0
809036-003	C-I-3-S-192	SW6020	FLDFLT	7/15/2013	11:20	Manganese	0.76	ug/L	0.50
809036-003	C-I-3-S-192	SW6020	FLDFLT	7/15/2013	11:20	Molybdenum	4.0	ug/L	2.0
809036-003	C-I-3-S-192	SW6020	FLDFLT	7/15/2013	11:20	Selenium	ND	ug/L	5.0
809036-004	C-MAR-D-192	E120.1	NONE	7/15/2013	14:00	EC	859	umhos/cm	2.00
809036-004	C-MAR-D-192	E218.6	FLDFLT	7/15/2013	14:00	Chromium, Hexavalent	ND	ug/L	0.20
809036-004	C-MAR-D-192	SM2320B	NONE	7/15/2013	14:00	Alkalinity	131	mg/L	5.00
809036-004	C-MAR-D-192	SM2320B	NONE	7/15/2013	14:00	Alkalinity, Bicarbonate (As CaCO3)	131	mg/L	5.00
809036-004	C-MAR-D-192	SM2320B	NONE	7/15/2013	14:00	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-004	C-MAR-D-192	SM2540D	NONE	7/15/2013	14:00	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-004	C-MAR-D-192	SM4500HB	NONE	7/15/2013	14:00	PH	7.95 J	pH	4.00
809036-004	C-MAR-D-192	SW6010B	NONE	7/15/2013	14:00	Iron	746	ug/L	20.0
809036-004	C-MAR-D-192	SW6010B	FLDFLT	7/15/2013	14:00	Iron	22.2	ug/L	20.0
809036-004	C-MAR-D-192	SW6020	FLDFLT	7/15/2013	14:00	Arsenic	3.0	ug/L	0.50
809036-004	C-MAR-D-192	SW6020	FLDFLT	7/15/2013	14:00	Chromium	ND	ug/L	1.0
809036-004	C-MAR-D-192	SW6020	FLDFLT	7/15/2013	14:00	Manganese	19.2	ug/L	0.50
809036-004	C-MAR-D-192	SW6020	FLDFLT	7/15/2013	14:00	Molybdenum	4.2	ug/L	2.0
809036-004	C-MAR-D-192	SW6020	FLDFLT	7/15/2013	14:00	Selenium	ND	ug/L	5.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809036-005	C-MAR-S-192	E120.1	NONE	7/15/2013	14:15	EC	858	umhos/cm	2.00
809036-005	C-MAR-S-192	E218.6	FLDFLT	7/15/2013	14:15	Chromium, Hexavalent	ND	ug/L	0.20
809036-005	C-MAR-S-192	SM2320B	NONE	7/15/2013	14:15	Alkalinity	136	mg/L	5.00
809036-005	C-MAR-S-192	SM2320B	NONE	7/15/2013	14:15	Alkalinity, Bicarbonate (As CaCO3)	136	mg/L	5.00
809036-005	C-MAR-S-192	SM2320B	NONE	7/15/2013	14:15	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-005	C-MAR-S-192	SM2540D	NONE	7/15/2013	14:15	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-005	C-MAR-S-192	SM4500HB	NONE	7/15/2013	14:15	PH	7.97 J	pH	4.00
809036-005	C-MAR-S-192	SW6010B	NONE	7/15/2013	14:15	Iron	861	ug/L	20.0
809036-005	C-MAR-S-192	SW6010B	FLDFLT	7/15/2013	14:15	Iron	ND	ug/L	20.0
809036-005	C-MAR-S-192	SW6020	FLDFLT	7/15/2013	14:15	Arsenic	3.1	ug/L	0.50
809036-005	C-MAR-S-192	SW6020	FLDFLT	7/15/2013	14:15	Chromium	ND	ug/L	1.0
809036-005	C-MAR-S-192	SW6020	FLDFLT	7/15/2013	14:15	Manganese	20.5	ug/L	0.50
809036-005	C-MAR-S-192	SW6020	FLDFLT	7/15/2013	14:15	Molybdenum	4.0	ug/L	2.0
809036-005	C-MAR-S-192	SW6020	FLDFLT	7/15/2013	14:15	Selenium	ND	ug/L	5.0
809036-006	C-MW-80-192	E218.6	NONE	7/15/2013	10:50	Chromium, Hexavalent	ND	ug/L	0.20
809036-007	C-MW-81-192	E218.6	NONE	7/15/2013	12:00	Chromium, Hexavalent	ND	ug/L	0.20
809036-008	C-R22A-D-192	E120.1	NONE	7/15/2013	12:10	EC	790	umhos/cm	2.00
809036-008	C-R22A-D-192	E218.6	FLDFLT	7/15/2013	12:10	Chromium, Hexavalent	ND	ug/L	0.20
809036-008	C-R22A-D-192	SM2320B	NONE	7/15/2013	12:10	Alkalinity	127	mg/L	5.00
809036-008	C-R22A-D-192	SM2320B	NONE	7/15/2013	12:10	Alkalinity, Bicarbonate (As CaCO3)	127	mg/L	5.00
809036-008	C-R22A-D-192	SM2320B	NONE	7/15/2013	12:10	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-008	C-R22A-D-192	SM2540D	NONE	7/15/2013	12:10	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-008	C-R22A-D-192	SM4500HB	NONE	7/15/2013	12:10	PH	8.25 J	pH	4.00
809036-008	C-R22A-D-192	SW6010B	NONE	7/15/2013	12:10	Iron	ND	ug/L	20.0
809036-008	C-R22A-D-192	SW6010B	FLDFLT	7/15/2013	12:10	Iron	ND	ug/L	20.0
809036-008	C-R22A-D-192	SW6020	FLDFLT	7/15/2013	12:10	Arsenic	2.6	ug/L	0.50
809036-008	C-R22A-D-192	SW6020	FLDFLT	7/15/2013	12:10	Chromium	ND	ug/L	1.0
809036-008	C-R22A-D-192	SW6020	FLDFLT	7/15/2013	12:10	Manganese	0.96	ug/L	0.50
809036-008	C-R22A-D-192	SW6020	FLDFLT	7/15/2013	12:10	Molybdenum	3.5	ug/L	2.0
809036-008	C-R22A-D-192	SW6020	FLDFLT	7/15/2013	12:10	Selenium	ND	ug/L	5.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809036-009	C-R22A-S-192	E120.1	NONE	7/15/2013	12:25	EC	786	umhos/cm	2.00
809036-009	C-R22A-S-192	E218.6	FLDFLT	7/15/2013	12:25	Chromium, Hexavalent	ND	ug/L	0.20
809036-009	C-R22A-S-192	SM2320B	NONE	7/15/2013	12:25	Alkalinity	125	mg/L	5.00
809036-009	C-R22A-S-192	SM2320B	NONE	7/15/2013	12:25	Alkalinity, Bicarbonate (As CaCO3)	125	mg/L	5.00
809036-009	C-R22A-S-192	SM2320B	NONE	7/15/2013	12:25	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-009	C-R22A-S-192	SM2540D	NONE	7/15/2013	12:25	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-009	C-R22A-S-192	SM4500HB	NONE	7/15/2013	12:25	PH	8.27 J	pH	4.00
809036-009	C-R22A-S-192	SW6010B	NONE	7/15/2013	12:25	Iron	ND	ug/L	20.0
809036-009	C-R22A-S-192	SW6010B	FLDFLT	7/15/2013	12:25	Iron	ND	ug/L	20.0
809036-009	C-R22A-S-192	SW6020	FLDFLT	7/15/2013	12:25	Arsenic	2.8	ug/L	0.50
809036-009	C-R22A-S-192	SW6020	FLDFLT	7/15/2013	12:25	Chromium	ND	ug/L	1.0
809036-009	C-R22A-S-192	SW6020	FLDFLT	7/15/2013	12:25	Manganese	1.3	ug/L	0.50
809036-009	C-R22A-S-192	SW6020	FLDFLT	7/15/2013	12:25	Molybdenum	4.0	ug/L	2.0
809036-009	C-R22A-S-192	SW6020	FLDFLT	7/15/2013	12:25	Selenium	ND	ug/L	5.0
809036-010	C-R27-D-192	E120.1	NONE	7/15/2013	13:17	EC	795	umhos/cm	2.00
809036-010	C-R27-D-192	E218.6	FLDFLT	7/15/2013	13:17	Chromium, Hexavalent	ND	ug/L	0.20
809036-010	C-R27-D-192	SM2320B	NONE	7/15/2013	13:17	Alkalinity	130	mg/L	5.00
809036-010	C-R27-D-192	SM2320B	NONE	7/15/2013	13:17	Alkalinity, Bicarbonate (As CaCO3)	130	mg/L	5.00
809036-010	C-R27-D-192	SM2320B	NONE	7/15/2013	13:17	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-010	C-R27-D-192	SM2540D	NONE	7/15/2013	13:17	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-010	C-R27-D-192	SM4500HB	NONE	7/15/2013	13:17	PH	8.23 J	pH	4.00
809036-010	C-R27-D-192	SW6010B	NONE	7/15/2013	13:17	Iron	ND	ug/L	20.0
809036-010	C-R27-D-192	SW6010B	FLDFLT	7/15/2013	13:17	Iron	ND	ug/L	20.0
809036-010	C-R27-D-192	SW6020	FLDFLT	7/15/2013	13:17	Arsenic	2.8	ug/L	0.50
809036-010	C-R27-D-192	SW6020	FLDFLT	7/15/2013	13:17	Chromium	ND	ug/L	1.0
809036-010	C-R27-D-192	SW6020	FLDFLT	7/15/2013	13:17	Manganese	0.78	ug/L	0.50
809036-010	C-R27-D-192	SW6020	FLDFLT	7/15/2013	13:17	Molybdenum	4.0	ug/L	2.0
809036-010	C-R27-D-192	SW6020	FLDFLT	7/15/2013	13:17	Selenium	ND	ug/L	5.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809036-011	C-R27-S-192	E120.1	NONE	7/15/2013	13:30	EC	790	umhos/cm	2.00
809036-011	C-R27-S-192	E218.6	FLDFLT	7/15/2013	13:30	Chromium, Hexavalent	ND	ug/L	0.20
809036-011	C-R27-S-192	SM2320B	NONE	7/15/2013	13:30	Alkalinity	130	mg/L	5.00
809036-011	C-R27-S-192	SM2320B	NONE	7/15/2013	13:30	Alkalinity, Bicarbonate (As CaCO3)	130	mg/L	5.00
809036-011	C-R27-S-192	SM2320B	NONE	7/15/2013	13:30	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-011	C-R27-S-192	SM2540D	NONE	7/15/2013	13:30	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-011	C-R27-S-192	SM4500HB	NONE	7/15/2013	13:30	PH	8.23 J	pH	4.00
809036-011	C-R27-S-192	SW6010B	NONE	7/15/2013	13:30	Iron	ND	ug/L	20.0
809036-011	C-R27-S-192	SW6010B	FLDFLT	7/15/2013	13:30	Iron	ND	ug/L	20.0
809036-011	C-R27-S-192	SW6020	FLDFLT	7/15/2013	13:30	Arsenic	2.8	ug/L	0.50
809036-011	C-R27-S-192	SW6020	FLDFLT	7/15/2013	13:30	Chromium	ND	ug/L	1.0
809036-011	C-R27-S-192	SW6020	FLDFLT	7/15/2013	13:30	Manganese	0.88	ug/L	0.50
809036-011	C-R27-S-192	SW6020	FLDFLT	7/15/2013	13:30	Molybdenum	4.0	ug/L	2.0
809036-011	C-R27-S-192	SW6020	FLDFLT	7/15/2013	13:30	Selenium	ND	ug/L	5.0
809036-012	C-TAZ-D-192	E120.1	NONE	7/15/2013	10:10	EC	807	umhos/cm	2.00
809036-012	C-TAZ-D-192	E218.6	FLDFLT	7/15/2013	10:10	Chromium, Hexavalent	ND	ug/L	0.20
809036-012	C-TAZ-D-192	SM2320B	NONE	7/15/2013	10:10	Alkalinity	130	mg/L	5.00
809036-012	C-TAZ-D-192	SM2320B	NONE	7/15/2013	10:10	Alkalinity, Bicarbonate (As CaCO3)	130	mg/L	5.00
809036-012	C-TAZ-D-192	SM2320B	NONE	7/15/2013	10:10	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-012	C-TAZ-D-192	SM2540D	NONE	7/15/2013	10:10	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-012	C-TAZ-D-192	SM4500HB	NONE	7/15/2013	10:10	PH	8.23 J	pH	4.00
809036-012	C-TAZ-D-192	SW6010B	NONE	7/15/2013	10:10	Iron	24.7	ug/L	20.0
809036-012	C-TAZ-D-192	SW6010B	FLDFLT	7/15/2013	10:10	Iron	ND	ug/L	20.0
809036-012	C-TAZ-D-192	SW6020	FLDFLT	7/15/2013	10:10	Arsenic	2.7	ug/L	0.50
809036-012	C-TAZ-D-192	SW6020	FLDFLT	7/15/2013	10:10	Chromium	ND	ug/L	1.0
809036-012	C-TAZ-D-192	SW6020	FLDFLT	7/15/2013	10:10	Manganese	0.67	ug/L	0.50
809036-012	C-TAZ-D-192	SW6020	FLDFLT	7/15/2013	10:10	Molybdenum	4.0	ug/L	2.0
809036-012	C-TAZ-D-192	SW6020	FLDFLT	7/15/2013	10:10	Selenium	ND	ug/L	5.0

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809036-013	C-TAZ-S-192	E120.1	NONE	7/15/2013	10:30	EC	797	umhos/cm	2.00
809036-013	C-TAZ-S-192	E218.6	FLDFLT	7/15/2013	10:30	Chromium, Hexavalent	ND	ug/L	0.20
809036-013	C-TAZ-S-192	SM2320B	NONE	7/15/2013	10:30	Alkalinity	126	mg/L	5.00
809036-013	C-TAZ-S-192	SM2320B	NONE	7/15/2013	10:30	Alkalinity, Bicarbonate (As CaCO3)	126	mg/L	5.00
809036-013	C-TAZ-S-192	SM2320B	NONE	7/15/2013	10:30	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-013	C-TAZ-S-192	SM2540D	NONE	7/15/2013	10:30	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-013	C-TAZ-S-192	SM4500HB	NONE	7/15/2013	10:30	PH	8.12 J	pH	4.00
809036-013	C-TAZ-S-192	SW6010B	NONE	7/15/2013	10:30	Iron	20.8	ug/L	20.0
809036-013	C-TAZ-S-192	SW6010B	FLDFLT	7/15/2013	10:30	Iron	ND	ug/L	20.0
809036-013	C-TAZ-S-192	SW6020	FLDFLT	7/15/2013	10:30	Arsenic	2.8	ug/L	0.50
809036-013	C-TAZ-S-192	SW6020	FLDFLT	7/15/2013	10:30	Chromium	ND	ug/L	1.0
809036-013	C-TAZ-S-192	SW6020	FLDFLT	7/15/2013	10:30	Manganese	0.97	ug/L	0.50
809036-013	C-TAZ-S-192	SW6020	FLDFLT	7/15/2013	10:30	Molybdenum	4.0	ug/L	2.0
809036-013	C-TAZ-S-192	SW6020	FLDFLT	7/15/2013	10:30	Selenium	ND	ug/L	5.0
809036-014	R63-192	E120.1	NONE	7/15/2013	11:40	EC	795	umhos/cm	2.00
809036-014	R63-192	E218.6	FLDFLT	7/15/2013	11:40	Chromium, Hexavalent	ND	ug/L	0.20
809036-014	R63-192	SM2320B	NONE	7/15/2013	11:40	Alkalinity	135	mg/L	5.00
809036-014	R63-192	SM2320B	NONE	7/15/2013	11:40	Alkalinity, Bicarbonate (As CaCO3)	135	mg/L	5.00
809036-014	R63-192	SM2320B	NONE	7/15/2013	11:40	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809036-014	R63-192	SM2540D	NONE	7/15/2013	11:40	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809036-014	R63-192	SM4500HB	NONE	7/15/2013	11:40	PH	8.30 J	pH	4.00
809036-014	R63-192	SW6010B	NONE	7/15/2013	11:40	Iron	31.1	ug/L	20.0
809036-014	R63-192	SW6010B	FLDFLT	7/15/2013	11:40	Iron	ND	ug/L	20.0
809036-014	R63-192	SW6020	FLDFLT	7/15/2013	11:40	Arsenic	2.7	ug/L	0.50
809036-014	R63-192	SW6020	FLDFLT	7/15/2013	11:40	Chromium	ND	ug/L	1.0
809036-014	R63-192	SW6020	FLDFLT	7/15/2013	11:40	Manganese	1.6	ug/L	0.50
809036-014	R63-192	SW6020	FLDFLT	7/15/2013	11:40	Molybdenum	4.0	ug/L	2.0
809036-014	R63-192	SW6020	FLDFLT	7/15/2013	11:40	Selenium	ND	ug/L	5.0

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

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

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TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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TUSTIN, CALIFORNIA 92780-7008
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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 423575.MP.02.RM
P.O. Number: 423575.MP.02.RM
Release Number:

Laboratory No. 809036

Printed 8/6/2013

Samples Received on 7/16/2013 7:35:00 PM

Field ID	Lab ID	Collected	Matrix
C-BNS-D-192	809036-001	07/15/2013 12:55	Water
C-I-3-D-192	809036-002	07/15/2013 11:03	Water
C-I-3-S-192	809036-003	07/15/2013 11:20	Water
C-MAR-D-192	809036-004	07/15/2013 14:00	Water
C-MAR-S-192	809036-005	07/15/2013 14:15	Water
C-MW-80-192	809036-006	07/15/2013 10:50	Water
C-MW-81-192	809036-007	07/15/2013 12:00	Water
C-R22A-D-192	809036-008	07/15/2013 12:10	Water
C-R22A-S-192	809036-009	07/15/2013 12:25	Water
C-R27-D-192	809036-010	07/15/2013 13:17	Water
C-R27-S-192	809036-011	07/15/2013 13:30	Water
C-TAZ-D-192	809036-012	07/15/2013 10:10	Water
C-TAZ-S-192	809036-013	07/15/2013 10:30	Water
R63-192	809036-014	07/15/2013 11:40	Water

Alkalinity by SM 2320B

Batch 07ALK13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-001 Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	123
Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	123
Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-002 Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	115
Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	115
Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-003 Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	108
Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	108
Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-004 Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	131
Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	131

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809036-004	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-005	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	136
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	136
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-008	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	127
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	127
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-009	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	125
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	125
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-010	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	130
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	130
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-011	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	130
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	130
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-012	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	130
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	130
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-013	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	126
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	126
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809036-014	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	135
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	135
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND

Method Blank

Parameter	Unit	DF	Result
Alkalinity as CaCO3	mg/L	1.00	ND

Duplicate — Lab ID = 808847-021

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	107	107	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	98.0	100	98.0	90 - 110

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Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	98.0	100	98.0	90 - 110

Matrix Spike Lab ID = 809036-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	225	235(100)	90.0	75 - 125

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Specific Conductivity - EPA 120.1

Batch 07EC13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-001 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	807
809036-002 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	790
809036-003 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	794
809036-004 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	859
809036-005 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	858
809036-008 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	790
809036-009 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	786
809036-010 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	795
809036-011 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	790
809036-012 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	807
809036-013 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	797
809036-014 Specific Conductivity	umhos/cm	07/17/2013	1.00	0.606	2.00	795

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 809036-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	790	790	0	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	726	706	103	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	726	706	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	934	1000	93.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	934	1000	93.4	90 - 110

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Metals by EPA 6010B, Total

Batch 072313A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-001 Iron	ug/L	07/23/2013 14:58	1.00	9.50	20.0	ND
809036-002 Iron	ug/L	07/23/2013 15:31	1.00	9.50	20.0	37.6
809036-003 Iron	ug/L	07/23/2013 15:38	1.00	9.50	20.0	33.0
809036-004 Iron	ug/L	07/23/2013 15:44	1.00	9.50	20.0	746
809036-005 Iron	ug/L	07/23/2013 15:50	1.00	9.50	20.0	861
809036-008 Iron	ug/L	07/23/2013 15:56	1.00	9.50	20.0	ND
809036-009 Iron	ug/L	07/23/2013 16:20	1.00	9.50	20.0	ND
809036-010 Iron	ug/L	07/23/2013 16:26	1.00	9.50	20.0	ND
809036-011 Iron	ug/L	07/23/2013 16:32	1.00	9.50	20.0	ND
809036-012 Iron	ug/L	07/23/2013 16:38	1.00	9.50	20.0	24.7
809036-013 Iron	ug/L	07/23/2013 16:45	1.00	9.50	20.0	20.8
809036-014 Iron	ug/L	07/23/2013 16:51	1.00	9.50	20.0	31.1

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	55.0	50.0	110	85 - 115

Matrix Spike — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	2020	2000(2000)	101	75 - 125

MRCCS - Secondary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5240	5000	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5250	5000	105	90 - 110

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Chrome VI by EPA 218.6

Batch 07CrH13N

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-001 Chromium, Hexavalent	ug/L	07/24/2013 14:10	1.00	0.00920	0.20	ND
809036-002 Chromium, Hexavalent	ug/L	07/24/2013 14:20	1.00	0.00920	0.20	ND
809036-003 Chromium, Hexavalent	ug/L	07/24/2013 14:31	1.00	0.00920	0.20	ND
809036-004 Chromium, Hexavalent	ug/L	07/24/2013 14:41	1.00	0.00920	0.20	ND
809036-005 Chromium, Hexavalent	ug/L	07/24/2013 14:52	1.00	0.00920	0.20	ND
809036-006 Chromium, Hexavalent	ug/L	07/24/2013 15:02	1.00	0.00920	0.20	ND
809036-007 Chromium, Hexavalent	ug/L	07/24/2013 15:33	1.00	0.00920	0.20	ND
809036-008 Chromium, Hexavalent	ug/L	07/24/2013 15:44	1.00	0.00920	0.20	ND
809036-009 Chromium, Hexavalent	ug/L	07/24/2013 15:54	1.00	0.00920	0.20	ND
809036-010 Chromium, Hexavalent	ug/L	07/24/2013 16:04	1.00	0.00920	0.20	ND
809036-011 Chromium, Hexavalent	ug/L	07/24/2013 16:15	1.00	0.00920	0.20	ND
809036-012 Chromium, Hexavalent	ug/L	07/24/2013 16:25	1.00	0.00920	0.20	ND
809036-013 Chromium, Hexavalent	ug/L	07/24/2013 16:36	1.00	0.00920	0.20	ND
809036-014 Chromium, Hexavalent	ug/L	07/24/2013 16:46	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate — Lab ID = 809036-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.0338	0.0353	4.34	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.194	0.200	97.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.79	5.00	95.9	90 - 110

Matrix Spike — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.986	1.03(1.00)	95.5	90 - 110

Matrix Spike — Lab ID = 809036-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.988	1.04(1.00)	95.3	90 - 110

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Matrix Spike — Lab ID = 809036-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.987	1.03(1.00)	95.6	90 - 110

Matrix Spike — Lab ID = 809036-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.967	1.01(1.00)	95.6	90 - 110

Matrix Spike — Lab ID = 809036-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.972	1.02(1.00)	95.6	90 - 110

Matrix Spike — Lab ID = 809036-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.932	1.00(1.00)	93.2	90 - 110

Matrix Spike — Lab ID = 809036-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.933	1.00(1.00)	93.3	90 - 110

Matrix Spike — Lab ID = 809036-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.984	1.03(1.00)	95.4	90 - 110

Matrix Spike — Lab ID = 809036-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.01	1.03(1.00)	98.2	90 - 110

Matrix Spike — Lab ID = 809036-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.979	1.03(1.00)	95.0	90 - 110

Matrix Spike — Lab ID = 809036-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.954	1.03(1.00)	92.2	90 - 110

Matrix Spike — Lab ID = 809036-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.947	1.03(1.00)	91.5	90 - 110

Matrix Spike — Lab ID = 809036-013

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.910	1.03(1.00)	87.8	90 - 110

Matrix Spike — Lab ID = 809036-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.994	1.03(1.00)	96.2	90 - 110

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Metals by EPA 6020A, Dissolved

Batch 072313A-ICPMS-1

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-001 Selenium	ug/L	07/23/2013 11:19	2.00	0.160	5.0	ND
809036-002 Selenium	ug/L	07/23/2013 13:54	2.00	0.160	5.0	ND
809036-003 Selenium	ug/L	07/23/2013 12:23	2.00	0.160	5.0	ND
809036-004 Selenium	ug/L	07/23/2013 12:30	2.00	0.160	5.0	ND
809036-005 Selenium	ug/L	07/23/2013 12:37	2.00	0.160	5.0	ND
809036-008 Selenium	ug/L	07/23/2013 12:44	2.00	0.160	5.0	ND
809036-009 Selenium	ug/L	07/23/2013 12:51	2.00	0.160	5.0	ND
809036-010 Selenium	ug/L	07/23/2013 12:58	2.00	0.160	5.0	ND
809036-011 Selenium	ug/L	07/23/2013 13:05	2.00	0.160	5.0	ND
809036-012 Selenium	ug/L	07/23/2013 13:33	2.00	0.160	5.0	ND
809036-013 Selenium	ug/L	07/23/2013 13:40	2.00	0.160	5.0	ND
809036-014 Selenium	ug/L	07/23/2013 13:47	2.00	0.160	5.0	ND

Method Blank

Parameter	Unit	DF	Result
Selenium	ug/L	1.00	ND

Duplicate — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Selenium	ug/L	2.00	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Selenium	ug/L	1.00	0.215	0.200	108	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Selenium	ug/L	2.00	49.0	50.0	98.1	85 - 115

Matrix Spike — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Selenium	ug/L	2.00	48.5	50.0(50.0)	97.1	75 - 125

Matrix Spike Duplicate — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Selenium	ug/L	2.00	50.0	50.0(50.0)	99.9	75 - 125

MRCCS - Secondary

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

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Metals by EPA 6020A, Dissolved Batch 072413B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-001 Arsenic	ug/L	07/24/2013 21:14	2.00	0.200	0.50	2.7
Chromium	ug/L	07/24/2013 21:14	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 21:14	2.00	0.172	0.50	0.80
Molybdenum	ug/L	07/24/2013 21:14	2.00	0.414	2.0	4.0
809036-002 Arsenic	ug/L	07/24/2013 21:38	2.00	0.200	0.50	2.7
Chromium	ug/L	07/24/2013 21:38	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 21:38	2.00	0.172	0.50	0.78
Molybdenum	ug/L	07/24/2013 21:38	2.00	0.414	2.0	4.0
809036-003 Arsenic	ug/L	07/24/2013 21:57	2.00	0.200	0.50	2.8
Chromium	ug/L	07/24/2013 21:57	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 21:57	2.00	0.172	0.50	0.76
Molybdenum	ug/L	07/24/2013 21:57	2.00	0.414	2.0	4.0
809036-004 Arsenic	ug/L	07/24/2013 22:03	2.00	0.200	0.50	3.0
Manganese	ug/L	07/24/2013 22:03	2.00	0.172	0.50	19.2
Molybdenum	ug/L	07/24/2013 22:03	2.00	0.414	2.0	4.2
809036-005 Arsenic	ug/L	07/24/2013 22:09	2.00	0.200	0.50	3.1
Chromium	ug/L	07/24/2013 22:09	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 22:09	2.00	0.172	0.50	20.5
Molybdenum	ug/L	07/24/2013 22:09	2.00	0.414	2.0	4.0
809036-008 Arsenic	ug/L	07/24/2013 22:15	2.00	0.200	0.50	2.6
Chromium	ug/L	07/24/2013 22:15	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 22:15	2.00	0.172	0.50	0.96
Molybdenum	ug/L	07/24/2013 22:15	2.00	0.414	2.0	3.5
809036-009 Arsenic	ug/L	07/24/2013 22:21	2.00	0.200	0.50	2.8
Chromium	ug/L	07/24/2013 22:21	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 22:21	2.00	0.172	0.50	1.3
Molybdenum	ug/L	07/24/2013 22:21	2.00	0.414	2.0	4.0
809036-010 Arsenic	ug/L	07/24/2013 22:27	2.00	0.200	0.50	2.8
Chromium	ug/L	07/24/2013 22:27	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 22:27	2.00	0.172	0.50	0.78
Molybdenum	ug/L	07/24/2013 22:27	2.00	0.414	2.0	4.0
809036-011 Arsenic	ug/L	07/24/2013 22:33	2.00	0.200	0.50	2.8
Chromium	ug/L	07/24/2013 22:33	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 22:33	2.00	0.172	0.50	0.88

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809036-011 Molybdenum	ug/L	07/24/2013 22:33	2.00	0.414	2.0	4.0
809036-012 Arsenic	ug/L	07/24/2013 22:39	2.00	0.200	0.50	2.7
Chromium	ug/L	07/24/2013 22:39	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 22:39	2.00	0.172	0.50	0.67
Molybdenum	ug/L	07/24/2013 22:39	2.00	0.414	2.0	4.0
809036-013 Arsenic	ug/L	07/24/2013 22:45	2.00	0.200	0.50	2.8
Chromium	ug/L	07/24/2013 22:45	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 22:45	2.00	0.172	0.50	0.97
Molybdenum	ug/L	07/24/2013 22:45	2.00	0.414	2.0	4.0
809036-014 Arsenic	ug/L	07/24/2013 22:51	2.00	0.200	0.50	2.7
Chromium	ug/L	07/24/2013 22:51	2.00	0.184	1.0	ND
Manganese	ug/L	07/24/2013 22:51	2.00	0.172	0.50	1.6
Molybdenum	ug/L	07/24/2013 22:51	2.00	0.414	2.0	4.0

Method Blank

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

Duplicate — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	2.00	2.78	2.72	2.18	0 - 20
Chromium	ug/L	2.00	ND	0	0	0 - 20
Manganese	ug/L	2.00	0.843	0.802	4.98	0 - 20
Molybdenum	ug/L	2.00	4.16	3.97	4.67	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.224	0.200	112	70 - 130
Chromium	ug/L	1.00	0.194	0.200	97.0	70 - 130
Manganese	ug/L	1.00	0.250	0.200	125	70 - 130
Molybdenum	ug/L	1.00	0.511	0.500	102	70 - 130

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Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	2.00	50.3	50.0	100	85 - 115
Chromium	ug/L	2.00	51.1	50.0	102	85 - 115
Manganese	ug/L	2.00	51.1	50.0	102	85 - 115
Molybdenum	ug/L	2.00	51.9	50.0	104	85 - 115

Matrix Spike Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.00	53.1	52.7(50.0)	101	75 - 125
Chromium	ug/L	2.00	50.3	50.0(50.0)	101	75 - 125
Manganese	ug/L	2.00	50.3	50.8(50.0)	99.0	75 - 125
Molybdenum	ug/L	2.00	52.8	54.0(50.0)	97.6	75 - 125

Matrix Spike Duplicate Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.00	53.5	52.7(50.0)	102	75 - 125
Chromium	ug/L	2.00	50.2	50.0(50.0)	100	75 - 125
Manganese	ug/L	2.00	50.8	50.8(50.0)	100	75 - 125
Molybdenum	ug/L	2.00	57.7	54.0(50.0)	107	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.9	20.0	99.6	90 - 110
Chromium	ug/L	1.00	19.8	20.0	99.2	90 - 110
Manganese	ug/L	1.00	19.9	20.0	99.6	90 - 110
Molybdenum	ug/L	1.00	18.8	20.0	93.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.2	20.0	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.8	20.0	99.2	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.2	20.0	101	90 - 110

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Metals by EPA 6020A, Dissolved

Batch 072713A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-004 Chromium	ug/L	07/27/2013 12:26	2.00	0.184	1.0	ND

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 809179-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	4.07	4.19	2.93	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.201	0.200	100	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.00	48.5	50.0	96.9	85 - 115

Matrix Spike — Lab ID = 809179-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	51.3	54.2(50.0)	94.3	75 - 125

Matrix Spike Duplicate — Lab ID = 809179-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	51.8	54.2(50.0)	95.3	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	97.1	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	97.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.5	20.0	97.4	90 - 110

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Metals by EPA 6010B, Dissolved

Batch 072413A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-001 Iron	ug/L	07/24/2013 12:57	1.00	9.50	20.0	ND
809036-002 Iron	ug/L	07/24/2013 13:39	1.00	9.50	20.0	ND
809036-003 Iron	ug/L	07/24/2013 13:45	1.00	9.50	20.0	ND
809036-004 Iron	ug/L	07/24/2013 13:52	1.00	9.50	20.0	22.2
809036-005 Iron	ug/L	07/24/2013 13:58	1.00	9.50	20.0	ND
809036-008 Iron	ug/L	07/24/2013 14:04	1.00	9.50	20.0	ND
809036-009 Iron	ug/L	07/24/2013 14:10	1.00	9.50	20.0	ND
809036-010 Iron	ug/L	07/24/2013 14:17	1.00	9.50	20.0	ND
809036-011 Iron	ug/L	07/24/2013 14:23	1.00	9.50	20.0	ND
809036-012 Iron	ug/L	07/24/2013 14:29	1.00	9.50	20.0	ND
809036-014 Iron	ug/L	07/24/2013 14:56	1.00	9.50	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	56.1	50.0	112	85 - 115

Matrix Spike — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	54.3	50.0(50.0)	109	75 - 125

Matrix Spike Duplicate — Lab ID = 809036-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	54.5	50.0(50.0)	109	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5210	5000	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5400	5000	108	90 - 110

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Metals by EPA 6010B, Dissolved

Batch 073113B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-013 Iron	ug/L	07/31/2013 18:02	1.00	3.57	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate — Lab ID = 809068-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	50.5	50.0	101	85 - 115

Matrix Spike — Lab ID = 809068-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	52.9	50.0(50.0)	106	75 - 125

Matrix Spike Duplicate — Lab ID = 809068-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	52.3	50.0(50.0)	105	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5100	5000	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5020	5000	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4980	5000	99.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5020	5000	100	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2050	2000	103	80 - 120

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Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2140	2000	107	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2050	2000	103	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2110	2000	106	80 - 120

pH by SM 4500-H B Batch 07PH13J

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
809036-001 pH	pH	07/17/2013 14:20	1.00	0.0784	4.00	8.09	J
809036-002 pH	pH	07/17/2013 14:23	1.00	0.0784	4.00	8.18	J
809036-003 pH	pH	07/17/2013 14:26	1.00	0.0784	4.00	8.21	J
809036-004 pH	pH	07/17/2013 14:28	1.00	0.0784	4.00	7.95	J
809036-005 pH	pH	07/17/2013 14:30	1.00	0.0784	4.00	7.97	J
809036-008 pH	pH	07/17/2013 14:34	1.00	0.0784	4.00	8.25	J
809036-009 pH	pH	07/17/2013 14:38	1.00	0.0784	4.00	8.27	J
809036-010 pH	pH	07/17/2013 14:41	1.00	0.0784	4.00	8.23	J
809036-011 pH	pH	07/17/2013 14:44	1.00	0.0784	4.00	8.23	J
809036-012 pH	pH	07/17/2013 14:47	1.00	0.0784	4.00	8.23	J

Duplicate Lab ID = 809036-012

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
pH	pH	1.00	8.22	8.23	0.122	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.09	7.00	101	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.10	7.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.10	7.00	101	90 - 110

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pH by SM 4500-H B Batch 07PH13K

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
809036-013 pH	pH	07/17/2013 14:58	1.00	0.0784	4.00	8.12	J
809036-014 pH	pH	07/17/2013 15:02	1.00	0.0784	4.00	8.30	J

Duplicate — Lab ID = 809037-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
pH	pH	1.00	8.28	8.28	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.08	7.00	101	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.06	7.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.07	7.00	101	90 - 110

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Total Suspended Solids by SM 2540 D

Batch 07TSS13F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809036-001 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-002 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-003 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-004 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-005 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-008 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-009 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-010 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-011 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-012 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-013 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809036-014 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND

Method Blank

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

Duplicate — Lab ID = 809036-014

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Suspended Solids	mg/L	1.00	101	100	101	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Suspended Solids	mg/L	1.00	98.0	100	98.0	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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TRUESDAIL LABORATORIES INC.

Total Suspended Solids by SM 2540 D

Calculations

Batch: 07TSS13F

Date Analyzed: 07/17/13

Dish Number	Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL, ppm	Reported Value, ppm
I101	BLK	1000	1.6546	1.6546	1.6546	0.0000	No	0.0000	0.0	2.5	ND
J20	809036-1	100	1.4475	1.4477	1.4477	0.0000	No	0.0002	2.0	25.0	ND
J21	809036-2	100	1.4466	1.4471	1.4471	0.0000	No	0.0005	5.0	25.0	ND
J22	809036-3	100	1.4421	1.4426	1.4426	0.0000	No	0.0005	5.0	25.0	ND
J35	809036-4	100	1.3858	1.3859	1.3859	0.0000	No	0.0001	1.0	25.0	ND
J24	809036-5	100	1.4432	1.4434	1.4434	0.0000	No	0.0002	2.0	25.0	ND
J25	809036-8	100	1.4539	1.4541	1.4541	0.0000	No	0.0002	2.0	25.0	ND
J26	809036-9	100	1.4391	1.4392	1.4392	0.0000	No	0.0001	1.0	25.0	ND
J31	809036-10	100	1.3953	1.3955	1.3955	0.0000	No	0.0002	2.0	25.0	ND
J32	809036-11	100	1.3905	1.3906	1.3906	0.0000	No	0.0001	1.0	25.0	ND
J33	809036-12	100	1.3963	1.3964	1.3964	0.0000	No	0.0001	1.0	25.0	ND
J34	809036-13	100	1.3860	1.3861	1.3861	0.0000	No	0.0001	1.0	25.0	ND
J23	809036-14	100	1.4472	1.4473	1.4473	0.0000	No	0.0001	1.0	25.0	ND
J36	809036-14D	100	1.3960	1.3961	1.3961	0.0000	No	0.0001	1.0	25.0	ND
J27	LCS-1	100	1.4454	1.4555	1.4555	0.0000	No	0.0101	101.0	25.0	101.0
J28	LCS-2	100	1.4470	1.4568	1.4568	0.0000	No	0.0098	98.0	25.0	98.0

Calculation as follows: Non- Filterable residue (TSS), mg/L = $\left(\frac{A-B}{C}\right) x\ 1\ 0^{6}$

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

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

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	101	100	101.0%	90-110%	Yes
LCSD	98	100	98.0%	90-110%	Yes

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
809036-14	0.0001	0.0001	0.0%	≤5%	Yes

LCS Recovery

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

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

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

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

LUCK
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

TRUESDAIL LABORATORIES, INC.

Alkalinity by SM 2320B
Calculations

Date of Analysis: 7/18/13
Start of Analysis:
Date Sampled:

Analytical Batch: 07ALK13B
Matrix: Water
Date Calculated: 7/18/13

Lab ID	Sample pH	Sample Volume (ml)	N of HCL	Titrant Volume to reach pH 8.3	P Alkalinity as CaCO3	Titrant Volume to reach pH 4.5	Total mL titrant to reach pH 0.3 unit lower	Total Alkalinity as CaCO3	RL, ppm	Total Alkalinity Reported Value	HCO3 Alkalinity as $CaCO_3$ (ppm)	CO3 Alkalinity as $CaCO_3$ (ppm)	OH Alkalinity as $CaCO_3$ (ppm)	Low Alkalinity as $CaCO_3$ (<20ppm)
BLANK	7.04	50	0.02		0.0	0.00		0.0	5	ND	ND	ND	ND	
808847-21	8.22	50	0.02		0.0	5.35		107.0	5	107.0	107.0	ND	ND	
808903-3	8.02	50	0.02		0.0	5.10		102.0	5	102.0	102.0	ND	ND	
808847-21DUP	8.22	50	0.02		0.0	5.35		107.0	5	107.0	107.0	ND	ND	
808852-8	7.82	50	0.02		0.0	6.75		135.0	5	135.0	135.0	ND	ND	
808853-12	7.76	50	0.02		0.0	6.15		123.0	5	123.0	123.0	ND	ND	
808957-7	7.74	50	0.02		0.0	6.30		126.0	5	126.0	126.0	ND	ND	
808957-8	7.64	50	0.02		0.0	6.85		137.0	5	137.0	137.0	ND	ND	
808957-9	7.76	50	0.02		0.0	6.10		122.0	5	122.0	122.0	ND	ND	
809036-1	8.11	50	0.02		0.0	6.15		123.0	5	123.0	123.0	ND	ND	
809036-2	8.13	50	0.02		0.0	5.75		115.0	5	115.0	115.0	ND	ND	
809036-3	8.13	50	0.02		0.0	5.40		108.0	5	108.0	108.0	ND	ND	
809036-4	7.94	50	0.02		0.0	6.55		131.0	5	131.0	131.0	ND	ND	
809036-5	7.95	50	0.02		0.0	6.80		136.0	5	136.0	136.0	ND	ND	
809036-8	8.18	50	0.02		0.0	6.35		127.0	5	127.0	127.0	ND	ND	
809036-9	8.18	50	0.02		0.0	6.25		125.0	5	125.0	125.0	ND	ND	
809036-10	8.16	50	0.02		0.0	6.50		130.0	5	130.0	130.0	ND	ND	
809036-11	8.16	50	0.02		0.0	6.50		130.0	5	130.0	130.0	ND	ND	
809036-12	8.15	50	0.02		0.0	6.50		130.0	5	130.0	130.0	ND	ND	
809036-13	8.17	50	0.02		0.0	6.30		126.0	5	126.0	126.0	ND	ND	
809036-14	8.25	50	0.02		0.0	6.75		135.0	5	135.0	135.0	ND	ND	
809036-14MS	9.48	50	0.02	1.3	26.0	11.25		225.0	5	225.0	173.0	52	ND	
LCS1	10.38	50	0.02	2.3	46.0	4.90		98.0	5	98.0	6.0	92	ND	
LCS2	10.39	50	0.02	2.3	46.0	4.90		98.0	5	98.0	6.0	92	ND	

Calculations as follows:

$$T \text{ or } P = \left(\frac{A \times N \times 50000}{mL \ sample} \right)$$

Low Alkalinity as mg/L CaCO3: $= \frac{(2 \times B - C) \times N \times 50000}{mL \text{ sample}}$

ND: Not Detected (below the reporting limit)
LCS: Laboratory Control Standard
LCSD: Laboratory Control Standard Duplicate
MS: Matrix Spike
MSD: Matrix Spike Duplicate

Where: T = Total Alkalinity, mg CaCO3/L
P = Phenolphthalein Alkalinity, mg CaCO3/L
A = mL standard acid used
N = normality of standard acid

Where: B = mL titrant to first recorded pH
C = total mL titrant to reach pH 0.3 unit lower
N = normality of standard acid

LUCK
Analyst Printed Name

Analyst Signature

Maksim
Reviewer Printed Name

Reviewer Signature

049

Alk_10c7/18/13, by HT

CH2MHILL **CHAIN OF CUSTODY RECORD** 809036 7/16/2013 2:47:33 PM Page 1 OF 3

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.RM
Task Order
Project 2013-RMP-192
Turnaround Time 10 Days
Shipping Date: 7/10/2013
COC Number: TLI-RMP192

	Container:	3X250 ml Poly	250 Poly	500 ml Poly	3x500 ml Poly	3x500 ml Poly	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter			
	Preservatives:	(NH4)2SO4/NH4OH, 4°C	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C			
	Filtered:	Field	NA	NA	Field	Field	NA	NA	NA	NA			
	Holding Time:	28	28	180	180	180	14	14	14	14			
		Cr6 (E218.6 – river) Field Filtered	Field QC Cr6 (E218.6–river)	Metals (6010B) Total Fe	Metals (SW6010B/SW6020Adis) Field Filtered As,Mn,Fe,Se,Mo	Metals (6020A) Field Filtered Chromium	Specific Conductance (E120.1)	Alkalinity (SM2320B)	PH (SM4500HB)	TSS (SM2540)		Number of Containers	COMMENTS
	DATE TIME Matrix												
1	C-BNS-D-192 7/15/2013 12:55 Water	X		X	X	X	X	X	X	X		9	
2	C-I-3-D-192 7/15/2013 11:03 Water	X		X	X	X	X	X	X	X		9	
3	C-I-3-S-192 7/15/2013 11:20 Water	X		X	X	X	X	X	X	X		9	MM=2
4	C-MAR-D-192 7/15/2013 14:00 Water	X		X	X	X	X	X	X	X		9	6020A
5	C-MAR-S-192 7/15/2013 14:15 Water	X		X	X	X	X	X	X	X		9	6010B
6	C-MW-80-192 7/15/2013 10:50 Water		X									1	
7	C-MW-81-192 7/15/2013 12:00 Water		X									1	
8	C-R22A-D-192 7/15/2013 12:10 Water	X		X	X	X	X	X	X	X		9	
9	C-R22A-S-192 7/15/2013 12:25 Water	X		X	X	X	X	X	X	X		9	
10	C-R27-D-192 7/15/2013 13:17 Water	X		X	X	X	X	X	X	X		9	
11	C-R27-S-192 7/15/2013 13:30 Water	X		X	X	X	X	X	X	X		9	MM=2
12	C-TAZ-D-192 7/15/2013 10:10 Water	X		X	X	X	X	X	X	X		9	6020A/
13	C-TAZ-S-192 7/15/2013 10:30 Water	X		X	X	X	X	X	X	X		9	6010B
14	R63-192 7/15/2013 11:40 Water	X		X	X	X	X	X	X	X		9	

Rec'd 07/16/13
809036

For Sample Conditions See Form Attached

ALERT !!
Level III QC

	Signatures	Date/Time
Approved by		7-16-13 1520
Sampled by		
Relinquished by		7.16.13
Received by		
Relinquished by		7/16/13 15:20
Received by		7/16/13 1935

Shipping Details
Method of Shipment: FedEx
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN: Sample Custody

Special Instructions:
July 15-16, 2013

Report Copy to
Shawn Duffy
(530) 229-3303

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
7/17/13	809033-8	9.5	N/A	N/A	N/A	NE
	-9					
	-10					
	809034-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
7/17/13	809035	7.0	2mL/100mL	9.5	9:50	TM
7/17/13	809036-1	9.05	N/A	N/A	N/A	TM TM
	-2	9.5				
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
7/17/13	809037-1	9.5	N/A	N/A	N/A	TM
	-2					

TM
7/26/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
809029 (1-5,7)	<1	<2	7/18/13	DC	yes			
809030 (1,2-11)	↓	↓	↓	↓	↓			
809031 (1-9)								
809032 (1,3-12)								
809033 (1-8,10)								
809034 (1,3-11)		↓						
809035	↓	>2	↓	↓	↓	12:55		
809062 (11-13)	<1	>2	↓	↓	ND	DC ~~16~~ 16:40		
809063		TTLC	7/22/13	ES	Yes			
809111	<1	>2	↓	↓	Yes			
809120	<1	<2	7/23/13	↓	↓			
809121	↓	↓	↓	↓	↓			
809067 (1,3-9)	<1	<2	↓	ES	yes			
809068 (1,3-10)	↓	↓	↓	↓	↓			
809069 (1-9,11-13)								
809113 (1-2,4-9)								
809114	↓	↓	↓	↓	↓			
809132	<1	<2	7/24/13	DC	yes			
809136	↓	↓	↓	↓	↓			
809137								
809138								
809139								
809140	↓	↓	↓	↓	↓			
809144 (1-3)	<1	>2	↓	↓	ND	10:50		
809146	↓	↓	↓	↓	↓	↓		
809151	↓	↓	↓	↓	yes	1200		
809178	DC ~~<1~~ <1	>2	7/25/13	DC	ND	13:10		
809186	>1	>2	↓	↓	yes			
809170	<1	<2	↓	↓	↓			
809187	>1	<2	7/26/13	DC	yes			
809189	↓	↓	↓	↓	↓			
809190	↓	↓	↓	↓	↓			
809179 (1-3,5)	<1	<2	↓	↓	yes			
809188	<1	>2	↓	↓	yes ~~ND~~ DC	14:30		
809036 D,TRTS,5-14)	<1	<2	7/18/13	DC	yes			T.D.S.S
809037 (2-4,6-15,17)	↓	↓	↓	↓				↓

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E 2 **Lab #** 809036

Date Delivered: 07/16/13 **Time:** 19:35 **By:** ☐Mail ☐Field Service ☒Client

1. Was a Chain of Custody received and signed? ☒Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☐No ☒N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☐No ☒N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☒N/A
5. Were all requested analyses understood and acceptable? ☒Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☒Yes ☐No ☐N/A
   Temperature (if yes)? 4.2 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒Yes ☐No ☐N/A
8. Were sample custody seals intact? ☐Yes ☐No ☒N/A
9. Does the number of samples received agree with COC? ☒Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☒Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☒Yes ☐No ☐N/A
    Preserved (if yes) by: ☒Truesdail ☐Client
12. Were samples pH checked? pH = see cover ☒Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☒Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ RUSH ☒ Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water
16. Comments: _____
17. Sample Check-In completed by Truesdail Log-In/Receiving: [signature]

ALERT Level III QC

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

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

August 2, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK 2013-RMP-192, SURFACEWATER MONITORING PROJECT, TLI NO.: 809037

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2013-RMP-192 surfacewater-monitoring project. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data, and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

The samples were received and delivered with the chain of custody on July 16, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Samples for pH analysis by SM 4500-H B were received past the method specified holding time. Mr. Duffy approved the analysis of the samples.

For Total Suspended Solids by SM 2540D, 100 mL of sample was used for analysis resulting in a reporting limit of 25.0 mg/L which exceeded the contract required detection limit of 10 mg/L. All sample results were ND<25.0 mg/L. Mr. Duffy was notified and accepted the results.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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Event 2013-RMP-192 Cr by SW 6020, Surfacewater Samples

Samples field filtered unless otherwise noted

Sample ID	Initial pH	pH adjustment needed?	Amount of additional acid needed	Final pH	Comments
RMP-AB1-192	2.00	No			
SW1-192	2.00	No			
SW2-192	2.00	No			
C-CON-D-192	2.00	No			
C-CON-S-192	2.00	No			
C-MW-82-192	2.00	No			
C-MW-83-192	2.00	No			
C-NR1-D-192	2.00	No			
C-NR1-S-192	2.00	No			
C-NR3-D-192	2.00	No			
C-NR3-S-192	2.00	No			
C-NR4-D-192	2.00	No			
C-NR4-S-192	2.00	No			
R-19-192	2.00	No			
R-28-192	2.00	No			
RMP-AB2-192	2.00	No			
RRB-192	2.00	No			

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Event 2013-RMP-192 Cr (VI) by EPA 218.6, Surfacewater Samples

Samples field filtered unless otherwise noted

Sample ID	Initial pH	pH adjustment needed?	Amount of additional buffer needed	Final pH	Comments
RMP-AB1-192	9.50	No			
SW1-192	9.50	No			
SW2-192	9.50	No			
C-CON-D-192	9.50	No			
C-CON-S-192	9.50	No			
C-MW-82-192	9.50	No			
C-MW-83-192	9.50	No			
C-NR1-D-192	9.50	No			
C-NR1-S-192	9.50	No			
C-NR3-D-192	9.50	No			
C-NR3-S-192	9.50	No			
C-NR4-D-192	9.50	No			
C-NR4-S-192	9.50	No			
R-19-192	9.50	No			
R-28-192	9.50	No			
RMP-AB2-192	9.50	No			
RRB-192	9.50	No			

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

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

Laboratory No.: 809037
Date Received: July 16, 2013

Project Name: PG&E Topock Project
Project No.: 423575.MP.02.RM
P.O. No.: 423575.MP.02.RM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809037-001	RMP-AB1-192	E218.6	NONE	7/15/2013	14:20	Chromium, Hexavalent	ND	ug/L	0.20
809037-002	SW1-192	E120.1	NONE	7/15/2013	8:10	EC	835	umhos/cm	2.00
809037-002	SW1-192	E218.6	FLDFLT	7/15/2013	8:10	Chromium, Hexavalent	ND	ug/L	0.20
809037-002	SW1-192	SM4500HB	NONE	7/15/2013	8:10	PH	7.79 J	pH	4.00
809037-002	SW1-192	SW6020	FLDFLT	7/15/2013	8:10	Chromium	ND	ug/L	1.0
809037-003	SW2-192	E120.1	NONE	7/15/2013	8:30	EC	840	umhos/cm	2.00
809037-003	SW2-192	E218.6	FLDFLT	7/15/2013	8:30	Chromium, Hexavalent	ND	ug/L	0.20
809037-003	SW2-192	SM4500HB	NONE	7/15/2013	8:30	PH	7.85 J	pH	4.00
809037-003	SW2-192	SW6020	FLDFLT	7/15/2013	8:30	Chromium	ND	ug/L	1.0
809037-004	C-CON-D-192	E120.1	NONE	7/16/2013	9:40	EC	825	umhos/cm	2.00
809037-004	C-CON-D-192	E218.6	FLDFLT	7/16/2013	9:40	Chromium, Hexavalent	ND	ug/L	0.20
809037-004	C-CON-D-192	SM2320B	NONE	7/16/2013	9:40	Alkalinity	130	mg/L	5.00
809037-004	C-CON-D-192	SM2320B	NONE	7/16/2013	9:40	Alkalinity, Bicarbonate (As CaCO3)	130	mg/L	5.00
809037-004	C-CON-D-192	SM2320B	NONE	7/16/2013	9:40	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-004	C-CON-D-192	SM2540D	NONE	7/16/2013	9:40	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-004	C-CON-D-192	SM4500HB	NONE	7/16/2013	9:40	PH	8.27 J	pH	4.00
809037-004	C-CON-D-192	SW6010B	NONE	7/16/2013	9:40	Iron	23.5	ug/L	20.0
809037-004	C-CON-D-192	SW6010B	FLDFLT	7/16/2013	9:40	Iron	ND	ug/L	20.0
809037-004	C-CON-D-192	SW6020	FLDFLT	7/16/2013	9:40	Arsenic	2.6	ug/L	0.50
809037-004	C-CON-D-192	SW6020	FLDFLT	7/16/2013	9:40	Chromium	ND	ug/L	1.0
809037-004	C-CON-D-192	SW6020	FLDFLT	7/16/2013	9:40	Manganese	0.68	ug/L	0.50
809037-004	C-CON-D-192	SW6020	FLDFLT	7/16/2013	9:40	Molybdenum	4.0	ug/L	2.0
809037-004	C-CON-D-192	SW6020	FLDFLT	7/16/2013	9:40	Selenium	ND	ug/L	5.0

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

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809037-005	C-CON-S-192	E120.1	NONE	7/16/2013	9:56	EC	826	umhos/cm	2.00
809037-005	C-CON-S-192	E218.6	FLDFLT	7/16/2013	9:56	Chromium, Hexavalent	ND	ug/L	0.20
809037-005	C-CON-S-192	SM2320B	NONE	7/16/2013	9:56	Alkalinity	130	mg/L	5.00
809037-005	C-CON-S-192	SM2320B	NONE	7/16/2013	9:56	Alkalinity, Bicarbonate (As CaCO3)	130	mg/L	5.00
809037-005	C-CON-S-192	SM2320B	NONE	7/16/2013	9:56	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.0
809037-005	C-CON-S-192	SM2540D	NONE	7/16/2013	9:56	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-005	C-CON-S-192	SM4500HB	NONE	7/16/2013	9:56	PH	8.27 J	pH	4.00
809037-005	C-CON-S-192	SW6010B	NONE	7/16/2013	9:56	Iron	ND	ug/L	20.0
809037-005	C-CON-S-192	SW6010B	FLDFLT	7/16/2013	9:56	Iron	ND	ug/L	20.0
809037-005	C-CON-S-192	SW6020	FLDFLT	7/16/2013	9:56	Arsenic	2.7	ug/L	0.50
809037-005	C-CON-S-192	SW6020	FLDFLT	7/16/2013	9:56	Chromium	ND	ug/L	1.0
809037-005	C-CON-S-192	SW6020	FLDFLT	7/16/2013	9:56	Manganese	0.63	ug/L	0.50
809037-005	C-CON-S-192	SW6020	FLDFLT	7/16/2013	9:56	Molybdenum	4.5	ug/L	2.0
809037-005	C-CON-S-192	SW6020	FLDFLT	7/16/2013	9:56	Selenium	ND	ug/L	5.0
809037-006	C-MW-82-192	E218.6	NONE	7/16/2013	8:05	Chromium, Hexavalent	ND	ug/L	0.20
809037-007	C-MW-83-192	E218.6	NONE	7/16/2013	11:48	Chromium, Hexavalent	ND	ug/L	0.20
809037-008	C-NR1-D-192	E120.1	NONE	7/16/2013	10:29	EC	820	umhos/cm	2.00
809037-008	C-NR1-D-192	E218.6	FLDFLT	7/16/2013	10:29	Chromium, Hexavalent	ND	ug/L	0.20
809037-008	C-NR1-D-192	SM2320B	NONE	7/16/2013	10:29	Alkalinity	110	mg/L	5.00
809037-008	C-NR1-D-192	SM2320B	NONE	7/16/2013	10:29	Alkalinity, Bicarbonate (As CaCO3)	110	mg/L	5.00
809037-008	C-NR1-D-192	SM2320B	NONE	7/16/2013	10:29	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-008	C-NR1-D-192	SM2540D	NONE	7/16/2013	10:29	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-008	C-NR1-D-192	SM4500HB	NONE	7/16/2013	10:29	PH	8.27 J	pH	4.00
809037-008	C-NR1-D-192	SW6010B	NONE	7/16/2013	10:29	Iron	24.4	ug/L	20.0
809037-008	C-NR1-D-192	SW6010B	FLDFLT	7/16/2013	10:29	Iron	ND	ug/L	20.0
809037-008	C-NR1-D-192	SW6020	FLDFLT	7/16/2013	10:29	Arsenic	2.6	ug/L	0.50
809037-008	C-NR1-D-192	SW6020	FLDFLT	7/16/2013	10:29	Chromium	ND	ug/L	1.0
809037-008	C-NR1-D-192	SW6020	FLDFLT	7/16/2013	10:29	Manganese	0.67	ug/L	0.50
809037-008	C-NR1-D-192	SW6020	FLDFLT	7/16/2013	10:29	Molybdenum	4.1	ug/L	2.0
809037-008	C-NR1-D-192	SW6020	FLDFLT	7/16/2013	10:29	Selenium	ND	ug/L	5.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809037-009	C-NR1-S-192	E120.1	NONE	7/16/2013	10:48	EC	819	umhos/cm	2.00
809037-009	C-NR1-S-192	E218.6	FLDFLT	7/16/2013	10:48	Chromium, Hexavalent	ND	ug/L	0.20
809037-009	C-NR1-S-192	SM2320B	NONE	7/16/2013	10:48	Alkalinity	124	mg/L	5.00
809037-009	C-NR1-S-192	SM2320B	NONE	7/16/2013	10:48	Alkalinity, Bicarbonate (As CaCO3)	124	mg/L	5.00
809037-009	C-NR1-S-192	SM2320B	NONE	7/16/2013	10:48	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-009	C-NR1-S-192	SM2540D	NONE	7/16/2013	10:48	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-009	C-NR1-S-192	SM4500HB	NONE	7/16/2013	10:48	PH	8.28 J	pH	4.00
809037-009	C-NR1-S-192	SW6010B	NONE	7/16/2013	10:48	Iron	ND	ug/L	20.0
809037-009	C-NR1-S-192	SW6010B	FLDFLT	7/16/2013	10:48	Iron	ND	ug/L	20.0
809037-009	C-NR1-S-192	SW6020	FLDFLT	7/16/2013	10:48	Arsenic	2.8	ug/L	0.50
809037-009	C-NR1-S-192	SW6020	FLDFLT	7/16/2013	10:48	Chromium	ND	ug/L	1.0
809037-009	C-NR1-S-192	SW6020	FLDFLT	7/16/2013	10:48	Manganese	0.70	ug/L	0.50
809037-009	C-NR1-S-192	SW6020	FLDFLT	7/16/2013	10:48	Molybdenum	4.1	ug/L	2.0
809037-009	C-NR1-S-192	SW6020	FLDFLT	7/16/2013	10:48	Selenium	ND	ug/L	5.0
809037-010	C-NR3-D-192	E120.1	NONE	7/16/2013	11:16	EC	827	umhos/cm	2.00
809037-010	C-NR3-D-192	E218.6	FLDFLT	7/16/2013	11:16	Chromium, Hexavalent	ND	ug/L	0.20
809037-010	C-NR3-D-192	SM2320B	NONE	7/16/2013	11:16	Alkalinity	126	mg/L	5.00
809037-010	C-NR3-D-192	SM2320B	NONE	7/16/2013	11:16	Alkalinity, Bicarbonate (As CaCO3)	126	mg/L	5.00
809037-010	C-NR3-D-192	SM2320B	NONE	7/16/2013	11:16	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-010	C-NR3-D-192	SM2540D	NONE	7/16/2013	11:16	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-010	C-NR3-D-192	SM4500HB	NONE	7/16/2013	11:16	PH	8.27 J	pH	4.00
809037-010	C-NR3-D-192	SW6010B	NONE	7/16/2013	11:16	Iron	ND	ug/L	20.0
809037-010	C-NR3-D-192	SW6010B	FLDFLT	7/16/2013	11:16	Iron	ND	ug/L	20.0
809037-010	C-NR3-D-192	SW6020	FLDFLT	7/16/2013	11:16	Arsenic	2.7	ug/L	0.50
809037-010	C-NR3-D-192	SW6020	FLDFLT	7/16/2013	11:16	Chromium	ND	ug/L	1.0
809037-010	C-NR3-D-192	SW6020	FLDFLT	7/16/2013	11:16	Manganese	0.66	ug/L	0.50
809037-010	C-NR3-D-192	SW6020	FLDFLT	7/16/2013	11:16	Molybdenum	4.1	ug/L	2.0
809037-010	C-NR3-D-192	SW6020	FLDFLT	7/16/2013	11:16	Selenium	ND	ug/L	5.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809037-011	C-NR3-S-192	E120.1	NONE	7/16/2013	11:30	EC	828	umhos/cm	2.00
809037-011	C-NR3-S-192	E218.6	FLDFLT	7/16/2013	11:30	Chromium, Hexavalent	ND	ug/L	0.20
809037-011	C-NR3-S-192	SM2320B	NONE	7/16/2013	11:30	Alkalinity	131	mg/L	5.00
809037-011	C-NR3-S-192	SM2320B	NONE	7/16/2013	11:30	Alkalinity, Bicarbonate (As CaCO3)	131	mg/L	5.00
809037-011	C-NR3-S-192	SM2320B	NONE	7/16/2013	11:30	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-011	C-NR3-S-192	SM2540D	NONE	7/16/2013	11:30	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-011	C-NR3-S-192	SM4500HB	NONE	7/16/2013	11:30	PH	8.28 J	pH	4.00
809037-011	C-NR3-S-192	SW6010B	NONE	7/16/2013	11:30	Iron	ND	ug/L	20.0
809037-011	C-NR3-S-192	SW6010B	FLDFLT	7/16/2013	11:30	Iron	ND	ug/L	20.0
809037-011	C-NR3-S-192	SW6020	FLDFLT	7/16/2013	11:30	Arsenic	2.7	ug/L	0.50
809037-011	C-NR3-S-192	SW6020	FLDFLT	7/16/2013	11:30	Chromium	ND	ug/L	1.0
809037-011	C-NR3-S-192	SW6020	FLDFLT	7/16/2013	11:30	Manganese	0.66	ug/L	0.50
809037-011	C-NR3-S-192	SW6020	FLDFLT	7/16/2013	11:30	Molybdenum	4.0	ug/L	2.0
809037-011	C-NR3-S-192	SW6020	FLDFLT	7/16/2013	11:30	Selenium	ND	ug/L	5.0
809037-012	C-NR4-D-192	E120.1	NONE	7/16/2013	12:00	EC	832	umhos/cm	2.00
809037-012	C-NR4-D-192	E218.6	FLDFLT	7/16/2013	12:00	Chromium, Hexavalent	ND	ug/L	0.20
809037-012	C-NR4-D-192	SM2320B	NONE	7/16/2013	12:00	Alkalinity	125	mg/L	5.00
809037-012	C-NR4-D-192	SM2320B	NONE	7/16/2013	12:00	Alkalinity, Bicarbonate (As CaCO3)	125	mg/L	5.00
809037-012	C-NR4-D-192	SM2320B	NONE	7/16/2013	12:00	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-012	C-NR4-D-192	SM2540D	NONE	7/16/2013	12:00	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-012	C-NR4-D-192	SM4500HB	NONE	7/16/2013	12:00	PH	8.11 J	pH	4.00
809037-012	C-NR4-D-192	SW6010B	NONE	7/16/2013	12:00	Iron	ND	ug/L	20.0
809037-012	C-NR4-D-192	SW6010B	FLDFLT	7/16/2013	12:00	Iron	ND	ug/L	20.0
809037-012	C-NR4-D-192	SW6020	FLDFLT	7/16/2013	12:00	Arsenic	2.7	ug/L	0.50
809037-012	C-NR4-D-192	SW6020	FLDFLT	7/16/2013	12:00	Chromium	ND	ug/L	1.0
809037-012	C-NR4-D-192	SW6020	FLDFLT	7/16/2013	12:00	Manganese	0.65	ug/L	0.50
809037-012	C-NR4-D-192	SW6020	FLDFLT	7/16/2013	12:00	Molybdenum	4.0	ug/L	2.0
809037-012	C-NR4-D-192	SW6020	FLDFLT	7/16/2013	12:00	Selenium	ND	ug/L	5.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809037-013	C-NR4-S-192	E120.1	NONE	7/16/2013	12:13	EC	832	umhos/cm	2.00
809037-013	C-NR4-S-192	E218.6	FLDFLT	7/16/2013	12:13	Chromium, Hexavalent	ND	ug/L	0.20
809037-013	C-NR4-S-192	SM2320B	NONE	7/16/2013	12:13	Alkalinity	122	mg/L	5.00
809037-013	C-NR4-S-192	SM2320B	NONE	7/16/2013	12:13	Alkalinity, Bicarbonate (As CaCO3)	122	mg/L	5.00
809037-013	C-NR4-S-192	SM2320B	NONE	7/16/2013	12:13	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-013	C-NR4-S-192	SM2540D	NONE	7/16/2013	12:13	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-013	C-NR4-S-192	SM4500HB	NONE	7/16/2013	12:13	PH	8.19 J	pH	4.00
809037-013	C-NR4-S-192	SW6010B	NONE	7/16/2013	12:13	Iron	ND	ug/L	20.0
809037-013	C-NR4-S-192	SW6010B	FLDFLT	7/16/2013	12:13	Iron	ND	ug/L	20.0
809037-013	C-NR4-S-192	SW6020	FLDFLT	7/16/2013	12:13	Arsenic	2.7	ug/L	0.50
809037-013	C-NR4-S-192	SW6020	FLDFLT	7/16/2013	12:13	Chromium	ND	ug/L	1.0
809037-013	C-NR4-S-192	SW6020	FLDFLT	7/16/2013	12:13	Manganese	0.65	ug/L	0.50
809037-013	C-NR4-S-192	SW6020	FLDFLT	7/16/2013	12:13	Molybdenum	4.1	ug/L	2.0
809037-013	C-NR4-S-192	SW6020	FLDFLT	7/16/2013	12:13	Selenium	ND	ug/L	5.0
809037-014	R-19-192	E120.1	NONE	7/16/2013	8:39	EC	825	umhos/cm	2.00
809037-014	R-19-192	E218.6	FLDFLT	7/16/2013	8:39	Chromium, Hexavalent	ND	ug/L	0.20
809037-014	R-19-192	SM2320B	NONE	7/16/2013	8:39	Alkalinity	123	mg/L	5.00
809037-014	R-19-192	SM2320B	NONE	7/16/2013	8:39	Alkalinity, Bicarbonate (As CaCO3)	123	mg/L	5.00
809037-014	R-19-192	SM2320B	NONE	7/16/2013	8:39	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-014	R-19-192	SM2540D	NONE	7/16/2013	8:39	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-014	R-19-192	SM4500HB	NONE	7/16/2013	8:39	PH	8.29 J	pH	4.00
809037-014	R-19-192	SW6010B	NONE	7/16/2013	8:39	Iron	ND	ug/L	20.0
809037-014	R-19-192	SW6010B	FLDFLT	7/16/2013	8:39	Iron	ND	ug/L	20.0
809037-014	R-19-192	SW6020	FLDFLT	7/16/2013	8:39	Arsenic	2.7	ug/L	0.50
809037-014	R-19-192	SW6020	FLDFLT	7/16/2013	8:39	Chromium	ND	ug/L	1.0
809037-014	R-19-192	SW6020	FLDFLT	7/16/2013	8:39	Manganese	0.78	ug/L	0.50
809037-014	R-19-192	SW6020	FLDFLT	7/16/2013	8:39	Molybdenum	4.1	ug/L	2.0
809037-014	R-19-192	SW6020	FLDFLT	7/16/2013	8:39	Selenium	ND	ug/L	5.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809037-015	R-28-192	E120.1	NONE	7/16/2013	8:22	EC	819	umhos/cm	2.00
809037-015	R-28-192	E218.6	FLDFLT	7/16/2013	8:22	Chromium, Hexavalent	ND	ug/L	0.20
809037-015	R-28-192	SM2320B	NONE	7/16/2013	8:22	Alkalinity	124	mg/L	5.00
809037-015	R-28-192	SM2320B	NONE	7/16/2013	8:22	Alkalinity, Bicarbonate (As CaCO3)	124	mg/L	5.00
809037-015	R-28-192	SM2320B	NONE	7/16/2013	8:22	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-015	R-28-192	SM2540D	NONE	7/16/2013	8:22	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-015	R-28-192	SM4500HB	NONE	7/16/2013	8:22	PH	8.34 J	pH	4.00
809037-015	R-28-192	SW6010B	NONE	7/16/2013	8:22	Iron	ND	ug/L	20.0
809037-015	R-28-192	SW6010B	FLDFLT	7/16/2013	8:22	Iron	ND	ug/L	20.0
809037-015	R-28-192	SW6020	FLDFLT	7/16/2013	8:22	Arsenic	2.9	ug/L	0.50
809037-015	R-28-192	SW6020	FLDFLT	7/16/2013	8:22	Chromium	ND	ug/L	1.0
809037-015	R-28-192	SW6020	FLDFLT	7/16/2013	8:22	Manganese	0.81	ug/L	0.50
809037-015	R-28-192	SW6020	FLDFLT	7/16/2013	8:22	Molybdenum	3.9	ug/L	2.0
809037-015	R-28-192	SW6020	FLDFLT	7/16/2013	8:22	Selenium	ND	ug/L	5.0
809037-016	RMP-AB2-192	E218.6	NONE	7/16/2013	12:15	Chromium, Hexavalent	ND	ug/L	0.20
809037-017	RRB-192	E120.1	NONE	7/16/2013	9:05	EC	823	umhos/cm	2.00
809037-017	RRB-192	E218.6	FLDFLT	7/16/2013	9:05	Chromium, Hexavalent	ND	ug/L	0.20
809037-017	RRB-192	SM2320B	NONE	7/16/2013	9:05	Alkalinity	130	mg/L	5.00
809037-017	RRB-192	SM2320B	NONE	7/16/2013	9:05	Alkalinity, Bicarbonate (As CaCO3)	130	mg/L	5.00
809037-017	RRB-192	SM2320B	NONE	7/16/2013	9:05	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
809037-017	RRB-192	SM2540D	NONE	7/16/2013	9:05	Suspended Solids (Residue, Non-Filterable)	ND	mg/L	25.0
809037-017	RRB-192	SM4500HB	NONE	7/16/2013	9:05	PH	8.18 J	pH	4.00
809037-017	RRB-192	SW6010B	NONE	7/16/2013	9:05	Iron	60.1	ug/L	20.0
809037-017	RRB-192	SW6010B	FLDFLT	7/16/2013	9:05	Iron	ND	ug/L	20.0
809037-017	RRB-192	SW6020	FLDFLT	7/16/2013	9:05	Arsenic	3.0	ug/L	0.50
809037-017	RRB-192	SW6020	FLDFLT	7/16/2013	9:05	Chromium	ND	ug/L	1.0
809037-017	RRB-192	SW6020	FLDFLT	7/16/2013	9:05	Manganese	4.4	ug/L	0.50
809037-017	RRB-192	SW6020	FLDFLT	7/16/2013	9:05	Molybdenum	3.9	ug/L	2.0
809037-017	RRB-192	SW6020	FLDFLT	7/16/2013	9:05	Selenium	ND	ug/L	5.0

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:

Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

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TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 423575.MP.02.RM
P.O. Number: 423575.MP.02.RM
Release Number:

Laboratory No. 809037

Printed 8/2/2013

Samples Received on 7/16/2013 7:35:00 PM

Field ID	Lab ID	Collected	Matrix
RMP-AB1-192	809037-001	07/15/2013 14:20	Water
SW1-192	809037-002	07/15/2013 08:10	Water
SW2-192	809037-003	07/15/2013 08:30	Water
C-CON-D-192	809037-004	07/16/2013 09:40	Water
C-CON-S-192	809037-005	07/16/2013 09:56	Water
C-MW-82-192	809037-006	07/16/2013 08:05	Water
C-MW-83-192	809037-007	07/16/2013 11:48	Water
C-NR1-D-192	809037-008	07/16/2013 10:29	Water
C-NR1-S-192	809037-009	07/16/2013 10:48	Water
C-NR3-D-192	809037-010	07/16/2013 11:16	Water
C-NR3-S-192	809037-011	07/16/2013 11:30	Water
C-NR4-D-192	809037-012	07/16/2013 12:00	Water
C-NR4-S-192	809037-013	07/16/2013 12:13	Water
R-19-192	809037-014	07/16/2013 08:39	Water
R-28-192	809037-015	07/16/2013 08:22	Water
RMP-AB2-192	809037-016	07/16/2013 12:15	Water
RRB-192	809037-017	07/16/2013 09:05	Water

Alkalinity by SM 2320B Batch 07ALK13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-004 Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	130
Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	130
Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809037-005 Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	130
Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	130
Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809037-008 Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	110
Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	110
Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND

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809037-009	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	124
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	124
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809037-010	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	126
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	126
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809037-011	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	131
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	131
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809037-012	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	125
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	125
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809037-013	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	122
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	122
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809037-014	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	123
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	123
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809037-015	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	124
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	124
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND
809037-017	Alkalinity as CaCO3	mg/L	07/18/2013	1.00	1.68	5.00	130
	Bicarbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	130
	Carbonate (Calculated)	mg/L	07/18/2013	1.00	1.68	5.00	ND

Method Blank

Parameter	Unit	DF	Result
Alkalinity as CaCO3	mg/L	1.00	ND

Duplicate — Lab ID = 809037-015

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	130	124	4.72	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	98.0	100	98.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	99.0	100	99.0	90 - 110

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Client: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project Page 3 of 26
Project Number: 423575.MP.02.RM Printed 8/2/2013

Matrix Spike Lab ID = 809037-017

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	220	230(100)	90.0	75 - 125

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Specific Conductivity - EPA 120.1

Batch 07EC13F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-002 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	835
809037-003 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	840
809037-004 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	825
809037-005 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	826
809037-008 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	820
809037-009 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	819
809037-010 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	827
809037-011 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	828
809037-012 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	832
809037-013 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	832
809037-014 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	825
809037-015 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	819
809037-017 Specific Conductivity	umhos/cm	07/19/2013	1.00	0.606	2.00	823

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 809037-013

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	833	832	0.120	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	717	706	102	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	718	706	102	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	933	1000	93.3	90 - 110

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Metals by EPA 6010B, Total

Batch 071913A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-004 Iron	ug/L	07/19/2013 15:26	1.00	9.50	20.0	23.5
809037-005 Iron	ug/L	07/19/2013 16:20	1.00	9.50	20.0	ND
809037-008 Iron	ug/L	07/19/2013 16:26	1.00	9.50	20.0	24.4
809037-009 Iron	ug/L	07/19/2013 16:32	1.00	9.50	20.0	ND
809037-010 Iron	ug/L	07/19/2013 16:38	1.00	9.50	20.0	ND
809037-011 Iron	ug/L	07/19/2013 16:45	1.00	9.50	20.0	ND
809037-012 Iron	ug/L	07/19/2013 16:51	1.00	9.50	20.0	ND
809037-013 Iron	ug/L	07/19/2013 16:57	1.00	9.50	20.0	ND
809037-014 Iron	ug/L	07/19/2013 17:03	1.00	9.50	20.0	ND
809037-015 Iron	ug/L	07/19/2013 17:09	1.00	9.50	20.0	ND
809037-017 Iron	ug/L	07/19/2013 17:16	1.00	9.50	20.0	60.1

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate — Lab ID = 809037-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	24.5	23.5	4.17	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	50.9	50.0	102	85 - 115

Matrix Spike — Lab ID = 809037-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	75.9	73.5(50.0)	105	75 - 125

Matrix Spike Duplicate — Lab ID = 809037-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	82.7	73.5(50.0)	118	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5270	5000	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5460	5000	109	90 - 110

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Chrome VI by EPA 218.6 Batch 07CrH13J

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-001 Chromium, Hexavalent	ug/L	07/22/2013 13:21	1.00	0.00920	0.20	ND
809037-002 Chromium, Hexavalent	ug/L	07/22/2013 13:32	1.00	0.00920	0.20	ND
809037-003 Chromium, Hexavalent	ug/L	07/22/2013 13:42	1.00	0.00920	0.20	ND
809037-004 Chromium, Hexavalent	ug/L	07/22/2013 13:52	1.00	0.00920	0.20	ND
809037-005 Chromium, Hexavalent	ug/L	07/22/2013 14:03	1.00	0.00920	0.20	ND
809037-006 Chromium, Hexavalent	ug/L	07/22/2013 14:13	1.00	0.00920	0.20	ND
809037-007 Chromium, Hexavalent	ug/L	07/22/2013 14:24	1.00	0.00920	0.20	ND
809037-008 Chromium, Hexavalent	ug/L	07/22/2013 14:34	1.00	0.00920	0.20	ND
809037-009 Chromium, Hexavalent	ug/L	07/22/2013 15:05	1.00	0.00920	0.20	ND
809037-010 Chromium, Hexavalent	ug/L	07/22/2013 15:16	1.00	0.00920	0.20	ND
809037-012 Chromium, Hexavalent	ug/L	07/22/2013 15:36	1.00	0.00920	0.20	ND
809037-013 Chromium, Hexavalent	ug/L	07/22/2013 15:47	1.00	0.00920	0.20	ND
809037-014 Chromium, Hexavalent	ug/L	07/22/2013 15:57	1.00	0.00920	0.20	ND
809037-015 Chromium, Hexavalent	ug/L	07/22/2013 16:08	1.00	0.00920	0.20	ND
809037-016 Chromium, Hexavalent	ug/L	07/22/2013 16:18	1.00	0.00920	0.20	ND
809037-017 Chromium, Hexavalent	ug/L	07/22/2013 16:28	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate — Lab ID = 809037-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.0329	0.0305	7.57	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.201	0.200	100	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.85	5.00	97.0	90 - 110

Matrix Spike — Lab ID = 809037-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.956	1.00(1.00)	95.6	90 - 110

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Matrix Spike — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.952	1.02(1.00)	92.9	90 - 110

Matrix Spike — Lab ID = 809037-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.996	1.03(1.00)	97.0	90 - 110

Matrix Spike — Lab ID = 809037-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.00	1.03(1.00)	97.4	90 - 110

Matrix Spike — Lab ID = 809037-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.00	1.04(1.00)	96.4	90 - 110

Matrix Spike — Lab ID = 809037-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.969	1.00(1.00)	96.9	90 - 110

Matrix Spike — Lab ID = 809037-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.04	1.00(1.00)	104	90 - 110

Matrix Spike — Lab ID = 809037-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.987	1.04(1.00)	95.0	90 - 110

Matrix Spike — Lab ID = 809037-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.980	1.03(1.00)	95.0	90 - 110

Matrix Spike — Lab ID = 809037-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.00	1.03(1.00)	97.1	90 - 110

Matrix Spike — Lab ID = 809037-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.08	1.04(1.00)	104	90 - 110

Matrix Spike — Lab ID = 809037-013

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.10	1.03(1.00)	107	90 - 110

Matrix Spike — Lab ID = 809037-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.00	1.03(1.00)	96.9	90 - 110

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Matrix Spike — Lab ID = 809037-015

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.01	1.04(1.00)	97.1	90 - 110

Matrix Spike — Lab ID = 809037-016

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.914	1.00(1.00)	91.4	90 - 110

Matrix Spike — Lab ID = 809037-017

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.01	1.02(1.00)	98.6	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.89	5.00	97.7	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.78	10.0	97.8	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.82	10.0	98.2	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.95	10.0	99.5	95 - 105

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Chrome VI by EPA 218.6 Batch 07CrH13U

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-011 Chromium, Hexavalent	ug/L	07/30/2013 20:11	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate — Lab ID = 809037-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.0329	0.0320	2.77	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.0599	0.0600	99.8	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.184	0.200	92.2	90 - 110

Matrix Spike — Lab ID = 809029-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.466	0.500(0.500)	93.3	90 - 110

Matrix Spike — Lab ID = 809037-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.485	0.532(0.500)	90.5	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.459	0.500	91.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.204	0.200	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.206	0.200	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.197	0.200	98.7	90 - 110

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Metals by EPA 6020A, Dissolved Batch 072513A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-015 Selenium	ug/L	07/25/2013 14:13	2.00	0.160	5.0	ND
809037-017 Selenium	ug/L	07/25/2013 14:19	2.00	0.160	5.0	ND

Method Blank

Parameter	Unit	DF	Result
Selenium	ug/L	1.00	ND

Duplicate — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Selenium	ug/L	2.00	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Selenium	ug/L	1.00	1.02	1.00	102	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Selenium	ug/L	2.00	47.3	50.0	94.6	85 - 115

Matrix Spike — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Selenium	ug/L	2.00	47.2	50.0(50.0)	94.4	75 - 125

Matrix Spike Duplicate — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Selenium	ug/L	2.00	45.9	50.0(50.0)	91.8	75 - 125

MRCCS - Secondary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Selenium	ug/L	1.00	20.1	20.0	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Selenium	ug/L	1.00	20.1	20.0	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Selenium	ug/L	1.00	19.7	20.0	98.4	90 - 110

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Metals by EPA 6020A, Dissolved Batch 072513C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-002 Chromium	ug/L	07/25/2013 22:17	1.00	0.0920	1.0	ND
809037-003 Chromium	ug/L	07/25/2013 22:53	1.00	0.0920	1.0	ND
809037-004 Arsenic	ug/L	07/25/2013 22:59	1.00	0.100	0.50	2.6
Chromium	ug/L	07/25/2013 22:59	1.00	0.0920	1.0	ND
Manganese	ug/L	07/25/2013 22:59	1.00	0.0860	0.50	0.68
Molybdenum	ug/L	07/25/2013 22:59	1.00	0.207	2.0	4.0
Selenium	ug/L	07/25/2013 22:59	1.00	0.0800	5.0	ND
809037-005 Arsenic	ug/L	07/25/2013 23:05	1.00	0.100	0.50	2.7
Chromium	ug/L	07/25/2013 23:05	1.00	0.0920	1.0	ND
Manganese	ug/L	07/25/2013 23:05	1.00	0.0860	0.50	0.63
Molybdenum	ug/L	07/25/2013 23:05	1.00	0.207	2.0	4.5
Selenium	ug/L	07/25/2013 23:05	1.00	0.0800	5.0	ND
809037-008 Arsenic	ug/L	07/25/2013 23:11	1.00	0.100	0.50	2.6
Chromium	ug/L	07/25/2013 23:11	1.00	0.0920	1.0	ND
Manganese	ug/L	07/25/2013 23:11	1.00	0.0860	0.50	0.67
Molybdenum	ug/L	07/25/2013 23:11	1.00	0.207	2.0	4.1
Selenium	ug/L	07/25/2013 23:11	1.00	0.0800	5.0	ND
809037-009 Arsenic	ug/L	07/25/2013 23:17	1.00	0.100	0.50	2.8
Chromium	ug/L	07/25/2013 23:17	1.00	0.0920	1.0	ND
Manganese	ug/L	07/25/2013 23:17	1.00	0.0860	0.50	0.70
Molybdenum	ug/L	07/25/2013 23:17	1.00	0.207	2.0	4.1
Selenium	ug/L	07/25/2013 23:17	1.00	0.0800	5.0	ND
809037-010 Arsenic	ug/L	07/25/2013 23:23	1.00	0.100	0.50	2.7
Chromium	ug/L	07/25/2013 23:23	1.00	0.0920	1.0	ND
Manganese	ug/L	07/25/2013 23:23	1.00	0.0860	0.50	0.66
Molybdenum	ug/L	07/25/2013 23:23	1.00	0.207	2.0	4.1
Selenium	ug/L	07/25/2013 23:23	1.00	0.0800	5.0	ND
809037-011 Arsenic	ug/L	07/25/2013 23:29	1.00	0.100	0.50	2.7
Chromium	ug/L	07/25/2013 23:29	1.00	0.0920	1.0	ND
Manganese	ug/L	07/25/2013 23:29	1.00	0.0860	0.50	0.66
Molybdenum	ug/L	07/25/2013 23:29	1.00	0.207	2.0	4.0
Selenium	ug/L	07/25/2013 23:29	1.00	0.0800	5.0	ND
809037-012 Arsenic	ug/L	07/25/2013 23:35	1.00	0.100	0.50	2.7
Chromium	ug/L	07/25/2013 23:35	1.00	0.0920	1.0	ND

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809037-012	Manganese	ug/L	07/25/2013 23:35	1.00	0.0860	0.50	0.65
	Molybdenum	ug/L	07/25/2013 23:35	1.00	0.207	2.0	4.0
	Selenium	ug/L	07/25/2013 23:35	1.00	0.0800	5.0	ND
809037-013	Arsenic	ug/L	07/25/2013 23:41	1.00	0.100	0.50	2.7
	Chromium	ug/L	07/25/2013 23:41	1.00	0.0920	1.0	ND
	Manganese	ug/L	07/25/2013 23:41	1.00	0.0860	0.50	0.65
	Molybdenum	ug/L	07/25/2013 23:41	1.00	0.207	2.0	4.1
	Selenium	ug/L	07/25/2013 23:41	1.00	0.0800	5.0	ND
809037-014	Arsenic	ug/L	07/25/2013 23:47	1.00	0.100	0.50	2.7
	Chromium	ug/L	07/25/2013 23:47	1.00	0.0920	1.0	ND
	Manganese	ug/L	07/25/2013 23:47	1.00	0.0860	0.50	0.78
	Molybdenum	ug/L	07/25/2013 23:47	1.00	0.207	2.0	4.1
	Selenium	ug/L	07/25/2013 23:47	1.00	0.0800	5.0	ND

Method Blank

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Selenium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

Duplicate — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	1.00	2.78	2.70	3.06	0 - 20
Chromium	ug/L	1.00	ND	0	0	0 - 20
Selenium	ug/L	1.00	ND	1.18	0	0 - 20
Manganese	ug/L	1.00	11.8	11.3	4.02	0 - 20
Molybdenum	ug/L	1.00	4.07	4.10	0.784	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.205	0.200	102	70 - 130
Chromium	ug/L	1.00	0.211	0.200	106	70 - 130
Selenium	ug/L	1.00	1.01	1.00	101	70 - 130
Manganese	ug/L	1.00	0.241	0.200	120	70 - 130
Molybdenum	ug/L	1.00	0.551	0.500	110	70 - 130

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Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	2.00	50.8	50.0	102	85 - 115
Chromium	ug/L	2.00	52.0	50.0	104	85 - 115
Selenium	ug/L	2.00	48.7	50.0	97.5	85 - 115
Manganese	ug/L	2.00	51.9	50.0	104	85 - 115
Molybdenum	ug/L	2.00	51.0	50.0	102	85 - 115

Matrix Spike — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	52.2	52.7(50.0)	98.9	75 - 125
Chromium	ug/L	1.00	50.4	50.0(50.0)	101	75 - 125
Selenium	ug/L	1.00	47.8	51.2(50.0)	93.3	75 - 125
Manganese	ug/L	1.00	61.2	61.3(50.0)	99.8	75 - 125
Molybdenum	ug/L	1.00	54.0	54.1(50.0)	99.7	75 - 125

Matrix Spike Duplicate — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	52.1	52.7(50.0)	98.7	75 - 125
Chromium	ug/L	1.00	50.4	50.0(50.0)	101	75 - 125
Selenium	ug/L	1.00	46.8	51.2(50.0)	91.2	75 - 125
Manganese	ug/L	1.00	60.7	61.3(50.0)	98.9	75 - 125
Molybdenum	ug/L	1.00	55.4	54.1(50.0)	102	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.0	20.0	99.9	90 - 110
Chromium	ug/L	1.00	20.0	20.0	100	90 - 110
Selenium	ug/L	1.00	20.8	20.0	104	90 - 110
Manganese	ug/L	1.00	20.0	20.0	99.9	90 - 110
Molybdenum	ug/L	1.00	19.8	20.0	99.1	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.3	20.0	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.5	20.0	102	90 - 110

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Metals by EPA 6020A, Dissolved

Batch 072613A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-015 Arsenic	ug/L	07/26/2013 19:13	1.00	0.100	0.50	2.9
Chromium	ug/L	07/26/2013 19:13	1.00	0.0920	1.0	ND
Manganese	ug/L	07/26/2013 19:13	1.00	0.0860	0.50	0.81
Molybdenum	ug/L	07/26/2013 19:13	1.00	0.207	2.0	3.9
809037-017 Arsenic	ug/L	07/26/2013 19:19	1.00	0.100	0.50	3.0
Chromium	ug/L	07/26/2013 19:19	1.00	0.0920	1.0	ND
Manganese	ug/L	07/26/2013 19:19	1.00	0.0860	0.50	4.4
Molybdenum	ug/L	07/26/2013 19:19	1.00	0.207	2.0	3.9

Method Blank

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

Duplicate

Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	1.00	2.90	2.68	7.82	0 - 20
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	11.9	11.3	5.52	0 - 20
Molybdenum	ug/L	1.00	3.94	4.05	2.83	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.225	0.200	112	70 - 130
Chromium	ug/L	1.00	0.173	0.200	86.5	70 - 130
Manganese	ug/L	1.00	0.207	0.200	104	70 - 130
Molybdenum	ug/L	1.00	0.490	0.500	98.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	2.00	52.1	50.0	104	85 - 115
Chromium	ug/L	2.00	53.9	50.0	108	85 - 115
Manganese	ug/L	2.00	53.2	50.0	106	85 - 115
Molybdenum	ug/L	2.00	50.7	50.0	101	85 - 115

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Matrix Spike — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	53.8	52.7(50.0)	102	75 - 125
Chromium	ug/L	1.00	52.1	50.0(50.0)	104	75 - 125
Manganese	ug/L	1.00	62.4	61.3(50.0)	102	75 - 125
Molybdenum	ug/L	1.00	52.9	54.0(50.0)	97.6	75 - 125

Matrix Spike Duplicate — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	52.6	52.7(50.0)	99.8	75 - 125
Chromium	ug/L	1.00	51.0	50.0(50.0)	102	75 - 125
Manganese	ug/L	1.00	61.0	61.3(50.0)	99.4	75 - 125
Molybdenum	ug/L	1.00	52.1	54.0(50.0)	96.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.3	20.0	101	90 - 110
Chromium	ug/L	1.00	20.5	20.0	103	90 - 110
Manganese	ug/L	1.00	20.5	20.0	102	90 - 110
Molybdenum	ug/L	1.00	19.2	20.0	95.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.6	20.0	98.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.7	20.0	98.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.1	20.0	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.3	20.0	96.5	90 - 110

MRCVS - Primary

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

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Metals by EPA 6010B, Dissolved Batch 072213A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-004 Iron	ug/L	07/22/2013 15:44	1.00	9.50	20.0	ND
809037-005 Iron	ug/L	07/22/2013 15:51	1.00	9.50	20.0	ND
809037-008 Iron	ug/L	07/22/2013 15:57	1.00	9.50	20.0	ND
809037-009 Iron	ug/L	07/22/2013 16:03	1.00	9.50	20.0	ND
809037-010 Iron	ug/L	07/22/2013 16:09	1.00	9.50	20.0	ND
809037-011 Iron	ug/L	07/22/2013 16:15	1.00	9.50	20.0	ND
809037-012 Iron	ug/L	07/22/2013 16:22	1.00	9.50	20.0	ND
809037-013 Iron	ug/L	07/22/2013 16:28	1.00	9.50	20.0	ND
809037-014 Iron	ug/L	07/22/2013 16:34	1.00	9.50	20.0	ND
809037-015 Iron	ug/L	07/22/2013 16:56	1.00	9.50	20.0	ND
809037-017 Iron	ug/L	07/22/2013 17:03	1.00	9.50	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	54.1	50.0	108	85 - 115

Matrix Spike — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	53.8	50.0(50.0)	108	75 - 125

Matrix Spike Duplicate — Lab ID = 809037-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	53.2	50.0(50.0)	106	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5160	5000	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4600	5000	92.0	90 - 110

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pH by SM 4500-H B Batch 07PH13K

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
809037-002 pH	pH	07/17/2013 15:05	1.00	0.0784	4.00	7.79	J
809037-003 pH	pH	07/17/2013 15:08	1.00	0.0784	4.00	7.85	J
809037-004 pH	pH	07/17/2013 15:12	1.00	0.0784	4.00	8.27	J
809037-005 pH	pH	07/17/2013 15:14	1.00	0.0784	4.00	8.27	J
809037-008 pH	pH	07/17/2013 15:17	1.00	0.0784	4.00	8.27	J
809037-009 pH	pH	07/17/2013 15:20	1.00	0.0784	4.00	8.28	J
809037-010 pH	pH	07/17/2013 15:23	1.00	0.0784	4.00	8.27	J
809037-011 pH	pH	07/17/2013 15:26	1.00	0.0784	4.00	8.28	J
809037-012 pH	pH	07/17/2013 16:17	1.00	0.0784	4.00	8.11	J
809037-013 pH	pH	07/17/2013 16:21	1.00	0.0784	4.00	8.19	J
809037-014 pH	pH	07/17/2013 16:24	1.00	0.0784	4.00	8.29	J
809037-015 pH	pH	07/17/2013 16:27	1.00	0.0784	4.00	8.34	J
809037-017 pH	pH	07/17/2013 16:35	1.00	0.0784	4.00	8.18	J

Duplicate — Lab ID = 809037-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
pH	pH	1.00	8.28	8.28	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.08	7.00	101	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.06	7.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.07	7.00	101	90 - 110

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Total Suspended Solids by SM 2540 D Batch 07TSS13G

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809037-004 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-005 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-008 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-009 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-010 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-011 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-012 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-013 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-014 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-015 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND
809037-017 Total Suspended Solids	mg/L	07/17/2013	1.00	0.349	25.0	ND

Method Blank

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

Duplicate — Lab ID = 809037-017

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Suspended Solids	mg/L	1.00	91.0	100	91.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Suspended Solids	mg/L	1.00	90.0	100	90.0	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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TRUESDAIL LABORATORIES INC.

Total Suspended Solids by SM 2540 D

Calculations

Batch: 07TSS13G

Date Analyzed: 07/17/13

Dish Number	Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference , g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm
J36	BLANK	1000	1.3945	1.3945	1.3945	0.0000	No	0.0000	0.0	2.5	ND
J37	809037-4	100	1.3940	1.3942	1.3942	0.0000	No	0.0002	2.0	25.0	ND
J38	809037-5	100	1.3979	1.3981	1.3981	0.0000	No	0.0002	2.0	25.0	ND
J39	809037-8	100	1.3828	1.3829	1.3829	0.0000	No	0.0001	1.0	25.0	ND
J40	809037-9	100	1.3940	1.3942	1.3942	0.0000	No	0.0002	2.0	25.0	ND
J41	809037-10	100	1.3927	1.3928	1.3928	0.0000	No	0.0001	1.0	25.0	ND
J42	809037-11	100	1.3939	1.3940	1.394	0.0000	No	0.0001	1.0	25.0	ND
J43	809037-12	100	1.3852	1.3854	1.3854	0.0000	No	0.0002	2.0	25.0	ND
J44	809037-13	100	1.4345	1.4348	1.4348	0.0000	No	0.0003	3.0	25.0	ND
J45	809037-14	100	1.4467	1.4469	1.4469	0.0000	No	0.0002	2.0	25.0	ND
J46	809037-15	100	1.4488	1.4489	1.4489	0.0000	No	0.0001	1.0	25.0	ND
J47	809037-17	100	1.4393	1.4395	1.4395	0.0000	No	0.0002	2.0	25.0	ND
J48	809037-17D	100	1.4547	1.4549	1.4549	0.0000	No	0.0002	2.0	25.0	ND
J49	809048	200	1.3883	1.4109	1.4109	0.0000	No	0.0226	113.0	12.5	113.0
J29	LCS-1	100	1.3910	1.4001	1.4001	0.0000	No	0.0091	91.0	25.0	91.0
J30	LCS-2	100	1.3969	1.4059	1.4059	0.0000	No	0.0090	90.0	25.0	90.0

Calculation as follows:

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

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

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

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	91	100	91.0%	90-110%	Yes
LCSD	90	100	90.0%	90-110%	Yes

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
809037-17	0.0002	0.0002	0.0%	≤5%	Yes

LCS Recovery

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

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

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

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

LUCK
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

TRUESDAIL LABORATORIES, INC.

Alkalinity by SM 2320B
Calculations

Date of Analysis: 7/18/13

Analytical Batch: 07ALK13C
Matrix: Water
Date Calculated: 7/18/13

Lab ID	Sample pH	Sample Volume (ml)	N of HCL	Titrant Volume to reach pH 8.3	P Alkalinity as CaCO3	Titrant Volume to reach pH 4.5	Total mL titrant to reach pH 0.3 unit lower	Total Alkalinity as CaCO3	RL, ppm	Total Alkalinity Reported Value	HCO3 Conc. as $CaCO_3$ (ppm)	CO3 Alkalinity as $CaCO_3$ (ppm)	OH Alkalinity as $CaCO_3$ (ppm)	Low Alkalinity as $CaCO_3$ (<20ppm)
BLANK	7.04	50	0.02		0.0	0.00		0.0	5	ND	ND	ND	ND	
809037-4	8.17	50	0.02		0.0	6.50		130.0	5	130.0	130.0	ND	ND	
809037-5	8.20	50	0.02		0.0	6.50		130.0	5	130.0	130.0	ND	ND	
809037-8	8.18	50	0.02		0.0	5.50		110.0	5	110.0	110.0	ND	ND	
809037-9	8.16	50	0.02		0.0	6.20		124.0	5	124.0	124.0	ND	ND	
809037-10	8.18	50	0.02		0.0	6.30		126.0	5	126.0	126.0	ND	ND	
809037-11	8.18	50	0.02		0.0	6.55		131.0	5	131.0	131.0	ND	ND	
809037-12	8.08	50	0.02		0.0	6.25		125.0	5	125.0	125.0	ND	ND	
809037-13	8.16	50	0.02		0.0	6.10		122.0	5	122.0	122.0	ND	ND	
809037-14	8.22	50	0.02		0.0	6.15		123.0	5	123.0	123.0	ND	ND	
809037-15	8.25	50	0.02		0.0	6.20		124.0	5	124.0	124.0	ND	ND	
809037-5DUP	8.18	50	0.02		0.0	6.50		130.0	5	130.0	130.0	ND	ND	
809037-17	8.17	50	0.02		0.0	6.50		130.0	5	130.0	130.0	ND	ND	
808992-21	7.98	50	0.02		0.0	5.15		103.0	5	103.0	103.0	ND	ND	
809037-17MS	9.43	50	0.02	2.2	44.0	11.00		220.0	5	220.0	132.0	88	ND	
LCS	10.38	50	0.02	2.2	44.0	4.90		98.0	5	98.0	10.0	88	ND	
LCS	10.35	50	0.02	2.2	44.0	4.95		99.0	5	99.0	11.0	88	ND	

Calculations as follows:

$$T \text{ or } P = \left(\frac{A \times N \times 50000}{mL \ sample} \right)$$

Where:

T = Total Alkalinity, mg CaCO3/L
P = Phenolphthalein Alkalinity, mg CaCO3/L
A = mL standard acid used
N = normality of standard acid

Low Alkalinity: as mg/L CaCO3 $= \frac{(2 \times B - C) \times N \times 50000}{mL \text{ sample}}$

Where: B = mL titrant to first recorded pH
C = Total mL titrant to reach pH 0.3 unit lower
N = Normality of standard acid

LCS = Laboratory Control Standard/Duplicate
MS/MSD = Matrix Spike/Duplicate
ND = Not Detected (below the reporting limit)

Blank Summary

Reporting Limit, RL	Measured Value, ppm	Accept Limit	QC Within Control?
5 ppm	0	<5	Yes

Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	% Recovery	Accetance Limit	QC Within Control?
LCS	98	100	98.0%	90-110	Yes
LCSD	99	100	99.0%	90-110	Yes

Duplicate Determination Difference Summary

QC Std I.D.	Measured Value, ppm	Dup Value, ppm	RPD	Accetance Limit	QC Within Control?
809037-5	130	130	0.0%	≤20%	Yes

Sample Matrix Spike (MS/MSD) Summary

Lab Number	Conc of Unspk spl	Dil Factor	Added Spk Conc	MS/MSD Amt	Measrd Conc of Spk Spl	Theor Conc of Spk Spl	MS/MSD % Rec	MS Accept Limit	QC Within Control?	RPD	RPD Accept Limit	QC Within Control?
809037-17	103	1	100	100	220	203.00	117%	75-125	Yes			
		1	100	100								

051

Kim
Analyst Printed Name

Analyst Signature

Hope T.
Reviewer Printed Name

Reviewer Signature

Alk_2012

SDG 037

CH2MHILL **CHAIN OF CUSTODY RECORD** *7/16/2013 2:47:34 PM* Page 2 OF 3

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.RM
Task Order
Project 2013-RMP-192
Turnaround Time 10 Days
Shipping Date: 7/10/2013
COC Number: TLI-RMP192

	Container:	3X250 ml Poly	250 Poly	500 ml Poly	3x500 ml Poly	3x500 ml Poly	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter			
	Preservatives:	(NH4)2SO4/NH4OH, 4°C	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C			
	Filtered:	Field	NA	NA	Field	Field	NA	NA	NA	NA			
	Holding Time:	28	28	180	180	180	14	14	14	14			
		Cr6 (E218.6 – river) Field Filtered	Field QC Cr6 (E218.6–river)	Metals (6010B) Total Fe	Metals (SW6010B;SW6020Adis) Field Filtered As,Mn,Fe,Se,Mo	Metals (6020A) Field Filtered Chromium	Specific Conductance (E120.1)	Alkalinity (SM2320B)	PH (SM4500HB)	TSS (SM2540)		Number of Containers	COMMENTS
	DATE TIME Matrix												
1 RMP-AB1-192	7/15/2013 14:20 Water		X									1	
2 SW1-192	7/15/2013 8:10 Water	X				X	X		X			8	
3 SW2-192	7/15/2013 8:30 Water	X				X	X		X			8	
4 C-CON-D-192	7/16/2013 9:40 Water	X		X	X	X	X	X	X	X		9	PM=2 6020A/ 6010B
5 C-CON-S-192	7/16/2013 9:56 Water	X		X	X	X	X	X	X	X		9	
6 C-MW-82-192	7/16/2013 8:05 Water		X									1	
7 C-MW-83-192	7/16/2013 11:48 Water		X									1	
8 C-NR1-D-192	7/16/2013 10:29 Water	X		X	X	X	X	X	X	X		9	
9 C-NR1-S-192	7/16/2013 10:48 Water	X		X	X	X	X	X	X	X		9	
10 C-NR3-D-192	7/16/2013 11:16 Water	X		X	X	X	X	X	X	X		9	
11 C-NR3-S-192	7/16/2013 11:30 Water	X		X	X	X	X	X	X	X		9	PM=2 6020A/ 6010B
12 C-NR4-D-192	7/16/2013 12:00 Water	X		X	X	X	X	X	X	X		9	
13 C-NR4-S-192	7/16/2013 12:13 Water	X		X	X	X	X	X	X	X		9	
14 R-19-192	7/16/2013 8:39 Water	X		X	X	X	X	X	X	X		9	

For Sample Conditions See Form Attached

ALERT !! Level III QC

	Signatures	Date/Time
Approved by		
Sampled by		
Relinquished by		7-16-13 1520
Received by		
Relinquished by		7.16.13 1520 7/16/13
Received by	Michael Brady	7/16/13 1935

Shipping Details
Method of Shipment: FedEx
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN: Sample Custody

Special Instructions:
July 15-16, 2013

Report Copy to
Shawn Duffy
(530) 229-3303

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809037

CH2MHILL **CHAIN OF CUSTODY RECORD** *7/16/2013 2:47:35 PM* Page 3 OF 3

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.RM
Task Order
Project 2013-RMP-192
Turnaround Time 10 Days
Shipping Date: 7/10/2013
COC Number: TLI-RMP192

	Container:	3X250 ml Poly	250 Poly	500 ml Poly	3x500 ml Poly	3x500 ml Poly	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter
	Preservatives:	(NH4)2SO4/NH4OH, 4°C	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C
	Filtered:	Field	NA	NA	Field	Field	NA	NA	NA	NA
	Holding Time:	28	28	180	180	180	14	14	14	14
DATE TIME Matrix		Cr6 (E218.6 – river) Field Filtered	Field QC Cr6 (E218.6–river)	Metals (6010B) Total Fe	Metals (SW6010B/SW6020Adis) Field Filtered As,Mn,Fe,Se,Mo	Metals (6020A) Field Filtered Chromium	Specific Conductance (E120.1)	Alkalinity (SM2320B)	PH (SM4500HB)	TSS (SM2540)
R-28-192 7/16/2013 8:22 Water		X		X	X	X	X	X	X	X
RMP-AB2-192 7/16/2013 12:15 Water			X							
RRB-192 7/16/2013 9:05 Water		X		X	X	X	X	X	X	X

ALERT !!
Level III QC

	Number of Containers	COMMENTS
R-28-192	9	pH=2 6010A/6010B pH=2
RMP-AB2-192	1	
RRB-192	9	
TOTAL NUMBER OF CONTAINERS	229	

For Sample Conditions See Form Attached

	Signatures	Date/Time
Approved by		7-16-13 1520
Sampled by		
Relinquished by		7.16.13 1520
Received by		7/16/13 1935
Relinquished by		
Received by		

Shipping Details
Method of Shipment: FedEx
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN: Sample Custody

Special Instructions:
July 15-16, 2013

Report Copy to
Shawn Duffy
(530) 229-3303

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Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
7/17/13	809033-9	9.5	N/A	N/A	N/A	NE
	-9					
	-10					
	809034-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
7/17/13	809035	7.0	2mL/100mL	9.5	9:50	TM
7/17/13	809036-1	9.05	N/A	N/A	N/A	TM TM
	-2	9.5				
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
7/17/13	809037-1	9.5	N/A	N/A	N/A	TM
	-2					

TM
7-30-13 7/29/13

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
7/17/13	809037-3	9.5	N/A	N/A	N/A	TM
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
	-16					
	-17					
7/18/13	809067-1	9.5	N/A	N/A	N/A	TM
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
7/18/13	809068-1	9.5	N/A	N/A	N/A	TM
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					

1-30-19 TM 7/22/13

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

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
809029 (1-5,7)	<1	<2	7/18/13	DC	yes			
809030 (1,2-11)	↓	↓	↓	↓	↓			
809031 (1-9)	↓	↓	↓	↓	↓			
809032 (1,3-12)	↓	↓	↓	↓	↓			
809033 (1-8,10)	↓	↓	↓	↓	↓			
809034 (1,3-11)	↓	↓	↓	↓	↓			
809035	↓	>2	↓	↓	↓	12:55		
809062 (11-13)	<1	>2	↓	↓	NO	DC ~~14~~ 16:40		
809093		TTLC	7/22/13	ES	Yes			
809111	<1	>2	↓	↓	Yes			
809120	<1	<2	7/22/13	↓	↓			
809121	↓	↓	↓	↓	↓			
809067 (1,3-9)	<1	<2	↓	ES	yes			
809068 (1,3-10)	↓	↓	↓	↓	↓			
809069 (1-9,11-13)	↓	↓	↓	↓	↓			
809113 (1-2,4-9)	↓	↓	↓	↓	↓			
809114	↓	↓	↓	↓	↓			
809132	<1	<2	7/24/13	DC	yes			
809136	↓	↓	↓	↓	↓			
809137	↓	↓	↓	↓	↓			
809138	↓	↓	↓	↓	↓			
809139	↓	↓	↓	↓	↓			
809140	↓	↓	↓	↓	↓			
809144 (1-3)	<1	>2	↓	↓	NO	10:50		
809146	↓	↓	↓	↓	↓	↓		
809151	↓	↓	↓	↓	yes	1200		
809178	DC ~~<1~~ <1	>2	7/25/13	DC	NO	13:10		
809186	>1	>2	↓	↓	yes			
809170	<1	<2	↓	↓	↓			
809187	>1	<2	7/26/13	DC	yes			
809189	↓	↓	↓	↓	↓			
809190	↓	↓	↓	↓	↓			
809179 (1-3,5)	<1	<2	↓	↓	yes			
809188	<1	>2	↓	↓	yes ~~NO~~ DC	14:30		
809036 D,TA-5,8-14)	<1	<2	7/18/13	DC	yes			T.Diss
809037 (2-3,5-15,17)	↓	↓	↓	↓				↓

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 809037

Date Delivered: 07/16/13 **Time:** 19:35 **By:** ☐Mail ☐Field Service ☑Client

1.	Was a Chain of Custody received and signed?	☑Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☑N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☑N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 4.2 °C	☑Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☑N/A
9.	Does the number of samples received agree with COC?	☑Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☑Truesdail ☐Client	☑Yes	☐No	☐N/A
12.	Were samples pH checked? pH = see	☑Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☑ Std	☑Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by Truesdail Log-In/Receiving: Linda

ALERT Level II COC

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

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

August 21, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-EW-209, GROUNDWATER MONITORING PROJECT, TLI NO.: 809355

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-EW-209 groundwater-monitoring project for Total Dissolved and Hexavalent Chromium, Total Dissolved Solids, pH, and Specific Conductivity. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms 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 August 6, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Samples for Total Dissolved Chromium were analyzed by method EPA 200.8 with the approval of Mr. Shawn Duffy.

Samples for pH analysis by SM 4500-H B were received past the method specified holding time. Mr. Duffy approved the analysis of the samples.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: Two (2) Groundwater Samples
Project Name: PG&E Topock Project
Project No.: 456827.01.DM

Laboratory No.: 809355
Date: August 21, 2013
Collected: August 6, 2013
Received: August 6, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 4500-H B	pH	Maksim Gorbunov
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
EPA 200.8	Metals by ICP/MS	Ethel Suico
EPA 218.6	Hexavalent Chromium	Tom Martinez
SM 3500-CrB	Hexavalent Chromium	Jenny Tankunakorn

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

Laboratory No.: 809355
Date Received: August 6, 2013

Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809355-001	PE-01-209	E120.1	NONE	8/6/2013	14:00	EC	4200	umhos/cm	2.00
809355-001	PE-01-209	E200.8	LABFLT	8/6/2013	14:00	Chromium	5.7	ug/L	1.0
809355-001	PE-01-209	E218.6	LABFLT	8/6/2013	14:00	Chromium, Hexavalent	5.0	ug/L	0.20
809355-001	PE-01-209	SM2540C	NONE	8/6/2013	14:00	Total Dissolved Solids	2700	mg/L	125
809355-001	PE-01-209	SM4500HB	NONE	8/6/2013	14:00	PH	7.52	pH	4.00
809355-002	TW-03D-209	E120.1	NONE	8/6/2013	14:00	EC	7530	umhos/cm	2.00
809355-002	TW-03D-209	E200.8	LABFLT	8/6/2013	14:00	Chromium	892	ug/L	2.0
809355-002	TW-03D-209	SM2540C	NONE	8/6/2013	14:00	Total Dissolved Solids	4560	mg/L	250
809355-002	TW-03D-209	SM3500-CrB	LABFLT	8/6/2013	14:00	Chromium, Hexavalent	816	ug/L	250
809355-002	TW-03D-209	SM4500HB	NONE	8/6/2013	14:00	PH	7.51	pH	4.00

ND: Non Detected (below reporting limit)

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

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

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

REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 809355

Printed 8/21/2013

Samples Received on 8/6/2013 8:05:00 PM

Field ID	Lab ID	Collected	Matrix
PE-01-209	809355-001	08/06/2013 14:00	Water
TW-03D-209	809355-002	08/06/2013 14:00	Water

Specific Conductivity - EPA 120.1

Batch 08EC13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809355-001 Specific Conductivity	umhos/cm	08/07/2013	1.00	0.606	2.00	4200
809355-002 Specific Conductivity	umhos/cm	08/07/2013	1.00	0.606	2.00	7530

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 809355-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7540	7530	0.133	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	765	706	108	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	765	706	108	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	950	1000	95.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	955	1000	95.5	90 - 110

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Chrome VI by EPA 218.6

Batch 08CrH13F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809355-001 Chromium, Hexavalent	ug/L	08/07/2013 14:20	1.00	0.00920	0.20	5.0

Method Blank

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

Duplicate — Lab ID = 809354-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	633	638	0.810	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.208	0.200	104	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.83	5.00	96.7	90 - 110

Matrix Spike — Lab ID = 809354-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.09	1.13(1.00)	96.7	90 - 110

Matrix Spike — Lab ID = 809354-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1380	1390(750)	99.2	90 - 110

Matrix Spike — Lab ID = 809355-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.84	10.0(5.00)	96.8	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.84	5.00	96.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105

MRCVS - Primary

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

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.3	10.0	103	95 - 105

MRCVS - Primary

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

Chromium, Hexavalent by SM 3500-Cr B

Batch 08CrH13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809355-002 Chromium, Hexavalent	ug/L	08/15/2013 11:43	25.0	110	250	816

Method Blank

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

Duplicate — Lab ID = 809355-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	787	816	3.64	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	96.0	100	96.0	90 - 110

Matrix Spike — Lab ID = 809355-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	3310	3320(2500)	99.8	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	96.0	100	96.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	56.1	60.0	93.5	90 - 110

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pH by SM 4500-H B

Batch 08PH13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809355-001 pH	pH	08/07/2013	1.00	0.0784	4.00	7.52
809355-002 pH	pH	08/07/2013	1.00	0.0784	4.00	7.51

Duplicate — Lab ID = 809353-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
pH	pH	1.00	6.81	6.78	0.442	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.01	7.00	100	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.05	7.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.05	7.00	101	90 - 110

Total Dissolved Solids by SM 2540 C

Batch 08TDS13D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809355-001 Total Dissolved Solids	mg/L	08/12/2013	1.00	1.76	125	2700
809355-002 Total Dissolved Solids	mg/L	08/12/2013	1.00	1.76	250	4560

Method Blank

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

Duplicate — Lab ID = 809367-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	575	570	0.873	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	499	500	99.8	90 - 110

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Metals by EPA 200.8, Dissolved

Batch 081413B-2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809355-001 Chromium	ug/L	08/15/2013 00:42	1.00	0.0920	1.0	5.7
809355-002 Chromium	ug/L	08/15/2013 00:48	10.0	0.920	2.0	892

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 809354-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	20.0	639	659	3.04	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.215	0.200	108	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	51.1	50.0	102	85 - 115

Matrix Spike — Lab ID = 809354-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	20.0	1640	1660(1000)	97.7	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	98.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	97.9	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	99.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	99.1	90 - 110

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.0	20.0	99.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.9	20.0	99.5	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.3	20.0	96.6	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.5	80 - 120

Serial Dilution — Lab ID = 809354-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	100	674	659	2.26	0 - 10

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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e2

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C 7

Calculations

Batch: 08TDS13D
Date Analyzed: 8/12/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	71.3217	71.322	71.322	0.0000	No	0.0003	3.0	25.0	ND	1
809313-1	100	76.669	76.7149	76.7149	0.0000	No	0.0459	459.0	25.0	459.0	1
809313-2	100	72.0845	72.1327	72.1327	0.0000	No	0.0482	482.0	25.0	482.0	1
809328-17	50	51.8532	51.8921	51.8921	0.0000	No	0.0389	778.0	50.0	778.0	1
809332-13	100	71.3077	71.3638	71.3638	0.0000	No	0.0561	561.0	25.0	561.0	1
809354-1	20	51.2485	51.3311	51.331	0.0001	No	0.0825	4125.0	125.0	4125.0	1
809354-2	20	51.8362	51.9259	51.9257	0.0002	No	0.0895	4475.0	125.0	4475.0	1
809355-1	20	51.457	51.5115	51.5111	0.0004	No	0.0541	2705.0	125.0	2705.0	1
809355-2	10	50.4998	50.5457	50.5454	0.0003	No	0.0456	4560.0	250.0	4560.0	1
809367-1	100	75.0187	75.0723	75.072	0.0003	No	0.0533	533.0	25.0	533.0	1
809367-2	100	68.1224	68.1794	68.1794	0.0000	No	0.0570	570.0	25.0	570.0	1
809367-2D	100	76.5422	76.5997	76.5997	0.0000	No	0.0575	575.0	25.0	575.0	1
LCS	100	74.5999	74.6498	74.6498	0.0000	No	0.0499	499.0	25.0	499.0	1
809367-3	100	68.3708	68.4217	68.4213	0.0004	No	0.0505	505.0	25.0	505.0	1
809367-4	100	78.8052	78.8558	78.8558	0.0000	No	0.0506	506.0	25.0	506.0	1
809382-1	100	73.176	73.2125	73.2125	0.0000	No	0.0365	365.0	25.0	365.0	1
809382-2	100	76.1848	76.2374	76.2374	0.0000	No	0.0526	526.0	25.0	526.0	1
809382-3	100	65.6783	65.7108	65.7104	0.0004	No	0.0321	321.0	25.0	321.0	1
809382-4	100	75.2730	75.3238	75.3238	0.0000	No	0.0508	508.0	25.0	508.0	1
809382-5	100	76.2763	76.3231	76.3231	0.0000	No	0.0468	468.0	25.0	468.0	1
809382-6	100	70.3956	70.4591	70.4591	0.0000	No	0.0635	635.0	25.0	635.0	1
809382-7	100	72.4110	72.4563	72.4563	0.0000	No	0.0453	453.0	25.0	453.0	1
809384-7	100	67.8280	67.8781	67.8781	0.0000	No	0.0501	501.0	25.0	501.0	1
809384-7D	100	78.6154	78.6667	78.6667	0.0000	No	0.0513	513.0	25.0	513.0	1

Calculation as follows:

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

Where:

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

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

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	499	500	99.8%	90-110%	Yes
LCSD					

LCS Recovery

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

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

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
809367-2	0.057	0.0575	0.4%	≤5%	Yes
809384-7	0.0501	0.0513	1.2%	5%	Yes

Duplicate Determination Difference

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

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

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

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

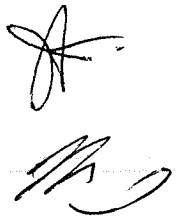
WetChem TDS_2012.xls

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 08TDS13D
Date Analyzed: 8/12/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
809313-1	789	0.58	512.85	0.89
809313-2	751	0.64	488.15	0.99
809328-17	1228	0.63	798.2	0.97
809332-13	844	0.66	548.6	1.02
809354-1	6690	0.62	4348.5	0.95
809354-2	6930	0.65	4504.5	0.99
809355-1	4200	0.64	2730	0.99
809355-2	7530	0.61	4894.5	0.93
809367-1	818	0.65	531.7	1.00
809367-2	925	0.62	601.25	0.95
809367-2D	925	0.62	601.25	0.96
LCS				
809367-3	787	0.64	511.55	0.99
809367-4	770	0.66	500.5	1.01
809382-1	600	0.61	390	0.94
809382-2	823	0.64	534.95	0.98
809382-3	533	0.60	346.45	0.93
809382-4	826	0.62	536.9	0.95
809382-5	778	0.60	505.7	0.93
809382-6	964	0.66	626.6	1.01
809382-7	729	0.62	473.85	0.96
809384-7	749	0.67	486.85	1.03
809384-7D	749	0.68	486.85	1.05



809355

Rec'd 08/06/13
S 809355

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

CHAIN OF CUSTODY RECORD

[IM3Plant-EW-209]

TURNAROUND TIME 10 Days
DATE 08/06/13 PAGE 1 OF 1

COMPANY CH2M HILL /E2
PROJECT NAME PG&E Topock IM3Plant-EW
PHONE 530-229-3303 FAX 530-339-3303
ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612
P.O. NUMBER 456827.01.DM
SAMPLERS (SIGNATURE

	SAMPLE I.D.	DATE	TIME	DESCRIPTION	Dissolved Cr (200.7) Lab filtered	Cr(VI) (3500-Cr B)	pH (150.0) EC (120.1)	TDS (160.1)	Cr(VI) (218.6)	NUMBER OF CONTAINERS	COMMENTS
-1	PE-01-209	08/06/13	1400	Ground water	X		X	X	X	4	pH=7 200.7
-2	TW-03D-209	08/06/13	1400	Ground water	X	X	X	X		4	
										8	TOTAL NUMBER OF CONTAINERS

ALERT II
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

8-6-13

	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	J. HIDE	CH2	1610
Signature (Received)	DAVID CHAN	Truesdail	8/6/13 1615
Signature (Relinquished)	DAVID CHAN	TLI	8/6/13 2026
Signature (Received)	Meredeal Brady	TLI	8/6/13 2005
Signature (Relinquished)			
Signature (Received)			

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 4.2 C

CUSTODY SEALED YES ☑ NO ☐

SPECIAL REQUIREMENTS:

041

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
8/2/13	809283-3	9.5	N/A	N/A	N/A	NE
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	809284-1					
	-2					
	-3					
	-4					
	-5					
8/5/13	809315	1.0	10 Drops 25% NaOH / 100mL	9.5	16:05	TM
8/6/13	809330-1	7.0	2mL / 100mL	9.5	15:45	TM
	-2					
8/7/13	809354-1	7.0	2mL / 100mL	9.5	8:30	NE
	-2					
8/7/13	809355-1	7.0	2mL / 100mL	9.5	8:30	NE
8/7/13	809357	7.0	2mL / 100mL	9.5	11:45	TM
8/7/13	809364-1	4.0	10 drops 25% NaOH / 100mL	9.5	4:10	TM
	-2	7.0	2mL / 100mL		4:15	
	-3	7.0				
	-4	7.0				

TM 8/8/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
809454(1-2)	<1	<2	8/12/13	ES	Yes			Total
-2	<1	>2			Yes	10:00		Diss (Filtered then acidify)
809455(1-2)		↓				↓		↓
809405(1-2,4)		<2						
809406								
809407								
809408(1-3-6)								
809410(1-4,6)	↓	↓	↓	↓	↓			
809426-1,2	>1	<2	8/12/13	DL	yes			
809430	<1							
809416	↓							
809402	>1	↓	↓	↓	↓			
809435	<1	<2	8/13/13	DL	NO			
809432	↓	↓	↓	↓	yes			
809431	↓	↓	↓	↓	↓			
809404	<1	↓	↓	↓	↓			
809435	<1	<2	8/14/13	ES	Yes			
809453								
809454								
809455								
809456								
809457								
809458		↓			↓			
809471(1-3)		>2			NO	4:00	8/16/13 10:00	pH<2
809472		<2			yes			
809473		↓			↓			
809474								
809475(1-2)		>2			NO	4:00	8/16/13 10:00	pH<2
809476	↓	>2	↓	↓	NO	4:00	↓	↓
809488		<2			yes			
809493-1,2	>1	<2	~~8/13/13~~	DL	yes			
809505	↓	↓	↓	↓	↓			
809496(10-12)	<1	<2	8/16/13	ES	NO	11:00		
809524(1-2)								
809508-26								

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

8/16/13

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 809355

Date Delivered: 08/06/13 **Time:** 20:05 **By:** ☐Mail ☐Field Service ☒Client

1.	Was a Chain of Custody received and signed?	☒Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☒N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☒N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☒N/A
5.	Were all requested analyses understood and acceptable?	☒Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 4.2 °C	☒Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ALERT !! Level III QC	☒Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☒Yes	☐No	☐N/A
9.	Does the number of samples received agree with COC?	☒Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☒Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐**Truesdail** ☐Client	☐Yes	☐No	☒N/A
12.	Were samples pH checked? pH = See C.O.C	☒Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☒Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ **RUSH** ☒ Std	☒Yes	☐No	☐N/A

15. ***Sample Matrix:*** ☐Liquid ☐Drinking Water ☒Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☐Other_____

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

September 17, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-EW-210, GROUNDWATER MONITORING PROJECT, TLI NO.: 809778

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-EW-210 groundwater-monitoring project for Total Dissolved and Hexavalent Chromium, Total Dissolved Solids, pH, and Specific Conductivity. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms 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 September 3, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Samples for Total Dissolved Chromium were analyzed by method EPA 200.8 with the approval of Mr. Shawn Duffy.

Samples for pH analysis by SM 4500-H B were received past the method specified holding time. Mr. Duffy approved the analysis of the samples.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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

Laboratory No.: 809778
Date: September 17, 2013
Collected: September 3, 2013
Received: September 3, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 4500-H B	pH	Maksim Gorbunov
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
EPA 200.8	Metals by ICP/MS	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad
SM 3500-CrB	Hexavalent Chromium	Jenny Tankunakorn

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

Laboratory No.: 809778
Date Received: September 3, 2013

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

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809778-001	PE-01-210	E120.1	NONE	9/3/2013	13:45	EC	4330	umhos/cm	2.00
809778-001	PE-01-210	E200.8	LABFLT	9/3/2013	13:45	Chromium	5.4	ug/L	1.0
809778-001	PE-01-210	E218.6	LABFLT	9/3/2013	13:45	Chromium, Hexavalent	5.1	ug/L	0.20
809778-001	PE-01-210	SM2540C	NONE	9/3/2013	13:45	Total Dissolved Solids	2700	mg/L	125
809778-001	PE-01-210	SM4500HB	NONE	9/3/2013	13:45	PH	7.63 J	pH	4.00
809778-002	TW-03D-210	E120.1	NONE	9/3/2013	13:30	EC	7770	umhos/cm	2.00
809778-002	TW-03D-210	E200.8	LABFLT	9/3/2013	13:30	Chromium	832	ug/L	2.0
809778-002	TW-03D-210	SM2540C	NONE	9/3/2013	13:30	Total Dissolved Solids	4630	mg/L	250
809778-002	TW-03D-210	SM3500-CrB	LABFLT	9/3/2013	13:30	Chromium, Hexavalent	728	ug/L	250
809778-002	TW-03D-210	SM4500HB	NONE	9/3/2013	13:30	PH	7.54 J	pH	4.00

ND: Non Detected (below reporting limit)

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

005

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REPORT

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

Laboratory No. 809778

Printed 9/17/2013

Samples Received on 9/3/2013 7:00:00 PM

Field ID	Lab ID	Collected	Matrix
PE-01-210	809778-001	09/03/2013 13:45	Water
TW-03D-210	809778-002	09/03/2013 13:30	Water

Specific Conductivity - EPA 120.1 Batch 09EC13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809778-001 Specific Conductivity	umhos/cm	09/05/2013	1.00	0.606	2.00	4330
809778-002 Specific Conductivity	umhos/cm	09/05/2013	1.00	0.606	2.00	7770

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 809694-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	900	896	0.445	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	734	706	104	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	736	706	104	90 - 110

MRCVS - Primary

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

MRCVS - Primary

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

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

Chrome VI by EPA 218.6

Batch 09CrH13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809778-001 Chromium, Hexavalent	ug/L	09/05/2013 13:09	1.00	0.00920	0.20	5.1

Method Blank

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

Duplicate — Lab ID = 809778-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.18	5.14	0.679	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.198	0.200	99.0	70 - 130

Lab Control Sample

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

Matrix Spike — Lab ID = 809778-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	15.2	15.1(10.0)	101	90 - 110

Matrix Spike — Lab ID = 809779-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.12	1.15(1.00)	97.4	90 - 110

Matrix Spike — Lab ID = 809779-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1350	1400(750)	94.2	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.82	5.00	96.5	90 - 110

MRCVS - Primary

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

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Chromium, Hexavalent by SM 3500-Cr B Batch 09CrH13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809778-002 Chromium, Hexavalent	ug/L	09/04/2013 14:33	25.0	110	250	728

Method Blank

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

Duplicate — Lab ID = 809778-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	787	728	7.76	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	91.3	100	91.3	90 - 110

Matrix Spike — Lab ID = 809778-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	3280	3230(2500)	102	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	91.3	100	91.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	59.7	60.0	99.5	90 - 110

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pH by SM 4500-H B

Batch 09PH13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
809778-001 pH	pH	09/04/2013 08:40	1.00	0.0784	4.00	7.63	J
809778-002 pH	pH	09/04/2013 08:43	1.00	0.0784	4.00	7.54	J

Duplicate — Lab ID = 809776-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
pH	pH	1.00	7.32	7.27	0.685	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.01	7.00	100	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.04	7.00	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.06	7.00	101	90 - 110

Total Dissolved Solids by SM 2540 C

Batch 09TDS13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809778-001 Total Dissolved Solids	mg/L	09/05/2013	1.00	1.76	125	2700
809778-002 Total Dissolved Solids	mg/L	09/05/2013	1.00	1.76	250	4630

Method Blank

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

Duplicate — Lab ID = 809799-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	524	520	0.766	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	495	500	99.0	90 - 110

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Metals by EPA 200.8, Dissolved

Batch 090613A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809778-001 Chromium	ug/L	09/06/2013 13:54	2.00	0.184	1.0	5.4
809778-002 Chromium	ug/L	09/06/2013 14:24	10.0	0.920	2.0	832

Method Blank

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

Duplicate

Lab ID = 809778-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	5.38	5.39	0.167	0 - 20
Manganese	ug/L	2.00	53.7	53.7	0.0149	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.255	0.200	128	70 - 130
Manganese	ug/L	1.00	0.565	0.500	113	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.3	50.0	96.6	85 - 115
Manganese	ug/L	1.00	47.7	50.0	95.5	85 - 115

Matrix Spike

Lab ID = 809778-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	52.6	55.4(50.0)	94.4	75 - 125
Manganese	ug/L	2.00	102	104(50.0)	95.8	75 - 125

Matrix Spike Duplicate

Lab ID = 809778-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	50.5	55.4(50.0)	90.2	75 - 125
Manganese	ug/L	2.00	97.8	104(50.0)	88.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.2	20.0	96.0	90 - 110
Manganese	ug/L	1.00	19.1	20.0	95.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	96.9	90 - 110

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Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.9	20.0	94.6	80 - 120

Serial Dilution Lab ID = 809778-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	50.0	811	832	2.53	0 - 10

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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e2

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 09TDS13A
Date Analyzed: 9/5/13

Laboratory Number	Sample volume, ml	Initial weight,g	1st Final weight,g	2nd Final weight,g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight,g	Filterable residue, ppm	RL , ppm	Reported Value, ppm	DF
Blank	100	69.2056	69.2056	69.2056	0.0000	No	0.0000	0.0	25.0	ND	1
809767-14	100	73.1754	73.233	73.2329	0.0001	No	0.0575	575.0	25.0	575.0	1
809776-1	100	74.7083	74.7514	74.7514	0.0000	No	0.0431	431.0	25.0	431.0	1
809776-2	100	74.5998	74.6441	74.6439	0.0002	No	0.0441	441.0	25.0	441.0	1
809778-1	20	51.0342	51.0885	51.0883	0.0002	No	0.0541	2705.0	125.0	2705.0	1
809778-2	10	50.9342	50.9805	50.9805	0.0000	No	0.0463	4630.0	250.0	4630.0	1
809779-1	10	49.2718	49.3180	49.3178	0.0002	No	0.0460	4600.0	250.0	4600.0	1
809779-2	10	51.8288	51.8746	51.8744	0.0002	No	0.0456	4560.0	250.0	4560.0	1
809781-2	200	110.3607	110.3778	110.3774	0.0004	No	0.0167	83.5	12.5	83.5	1
809781-4	100	78.6128	78.6453	78.645	0.0003	No	0.0322	322.0	25.0	322.0	1
809783-7	100	78.8036	78.854	78.8536	0.0004	No	0.0500	500.0	25.0	500.0	1
809783-7D	100	70.3937	70.4443	70.4443	0.0000	No	0.0506	506.0	25.0	506.0	1
LCS	100	75.2744	75.324	75.3239	0.0001	No	0.0495	495.0	25.0	495.0	1
809802-1	100	72.3726	72.4163	72.4163	0.0000	No	0.0437	437.0	25.0	437.0	1
809802-2	100	70.8834	70.9283	70.9283	0.0000	No	0.0449	449.0	25.0	449.0	1
809799-1	100	75.0157	75.0681	75.0681	0.0000	No	0.0524	524.0	25.0	524.0	1
809799-2	100	68.1174	68.1692	68.1692	0.0000	No	0.0518	518.0	25.0	518.0	1
809799-3	100	72.0845	72.1364	72.1364	0.0000	No	0.0519	519.0	25.0	519.0	1
809799-4	100	75.2716	75.3236	75.3236	0.0000	No	0.0520	520.0	25.0	520.0	1
809799-4D	100	76.2767	76.3291	76.3291	0.0000	No	0.0524	524.0	25.0	524.0	1

Calculation as follows:

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

Where:

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

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

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	495	500	99.0%	90-110%	Yes
LCSD					

LCS Recovery

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

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

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
809783-7	0.05	0.0506	0.6%	≤5%	Yes
809799-4	0.052	0.0524	0.4%	5%	Yes

Duplicate Determination Difference

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

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

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

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 09TDS13A
Date Analyzed: 9/5/13

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
809767-14	872	0.66	566.8	1.01
809776-1	777	0.55	505.05	0.85
809776-2	750	0.59	487.5	0.90
809778-1	4330	0.62	2814.5	0.96
809778-2	7770	0.60	5050.5	0.92
809779-1	7290	0.63	4738.5	0.97
809779-2	7260	0.63	4719	0.97
809781-2	132	0.63	85.8	0.97
809781-4	511	0.63	332.15	0.97
809783-7	792	0.63	514.8	0.97
809783-7D	792	0.64	514.8	0.98
LCS				
809802-1	738	0.59	479.7	0.91
809802-2	687	0.65	446.55	1.01
809799-1	780	0.67	507	1.03
809799-2	775	0.67	503.75	1.03
809799-3	774	0.67	503.1	1.03
809799-4	777	0.67	505.05	1.03
809799-4D	777	0.67	505.05	1.04

809778

Rec'd 09/03/13

~~S20~~ 809778

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

CHAIN OF CUSTODY RECORD

[IM3Plant-EW-210]

TURNAROUND TIME 10 Days

DATE 09/03/13 PAGE 1 OF 1

COMPANY CH2M HILL /E2

PROJECT NAME PG&E Topock IM3Plant-EW

PHONE 530-229-3303 FAX 530-339-3303

ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612

P.O. NUMBER

SAMPLERS (SIGNATURE

	SAMPLE I.D.	DATE	TIME	DESCRIPTION	Dissolved Cr (200.7) Lab filtered	Cr(VI) (3500-Cr B)	pH (150.0) EC (120.1)	TDS (160.1)	Cr(VI) (218.6)	NUMBER OF CONTAINERS	COMMENTS
-1	PE-01-210	09/03/13	13:45	Ground water	X		X	X	X	4	pH=7 } 200.7
-2	TW-03D-210	09/03/13	1330	Ground water	X	X	X	X		4	pH=7 }
										8	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Ryan Phelps	CH2MHILL	9-3-13 14:55
Signature (Received)	Thanh Ngo	TLI	05 PM
Signature (Relinquished)	Thanh Ngo	TLI	19 PM
Signature (Received)	Marchea Kyle	TLI	19:00 9/3/13
Signature (Relinquished)			
Signature (Received)			

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 4.2 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

043

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
8/27/13	809657-5	9.5	N/A	N/A	N/A	NE
↓	↓ -6	↓	↓	↓	↓	↓
8/27/13	809658-1	9.5	N/A	N/A	N/A	NE
↓	↓ -2	↓	↓	↓	↓	↓
8/27/13	809659-1	9.5	N/A	N/A	N/A	NE
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
8/27/13	809662-1	7.0	2mL/100mL	9.5	7:40	NE
↓	↓ -2	↓	↓	↓	↓	TM
8/28/13	809639	7.0	2mL/100mL	9.5	7:20	NE
9/4/13	809778-1	7.0	2mL/100mL	9.5	8:25	TM
↓	↓ -2	↓	↓	↓	↓	↓
9/4/13	809779-1	7.0	2mL/100mL	9.5	9:30	TM
↓	↓ -2	↓	↓	↓	↓	↓

NE 9/6/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
809776-1,12	71	<2	9/4/13	DL	yes			
809771	<1	72	↓	↓	NO	1200		
809773 1-3	↓	↓	↓	↓	↓	↓		
809783-4,5,6	↓	72	9/4/13	DL	NO	14:10		
809689	<1	72	9/4/13	ES	Yes	11:00		pH <2
809726(1-3)	↓	<2	↓	↓	↓			
809778 (1-2)		72				11:00		filtered then acidify pH<2
809779 (-2)		↓				↓		↓
809779(1-2)	↓	<2	↓	↓	↓			TO TAL
809785	71	↓	9/4/13	DL	yes			
809796-1→4	71	<2	9/5/13	DL	yes			
DL 9/5/13 ~~809720-2~~	~~<1~~	~~72~~	~~↓~~	~~↓~~	~~NO~~	~~10:30~~		
809757	<1	<2	9/5/13	ES	Yes			
ES 9/5/13 ~~809769~~	↓	~~72~~			↓			
809759(10-12)	↓	72			NO	4:30	9/9/13 10:00	pH <2
809790(1-2)	72	<2			yes			
809800	<2	<2			↓			
809801	↓	↓						
809802(1-2)								
809803								
809814	↓	↓	↓	↓	↓			
809824	<1	<2	9/6/13	DL	yes			
809817-17,24	↓	72	↓	↓	NO	10:45		
809818	↓	↓	↓	↓	↓	↓		
809834	<1	<2	9/6/13	ES	yes			
809835	↓	↓	↓	↓	↓			
809837	<1	72	9/6/13	DL	NO	14:40	9/9/13 10:00	pH <2
809856-6	<1	72	9/10/13	DL	NO	9:50		
809844	<1	<2	9/10/13	ES	Yes			
809845	↓	↓	↓	↓	↓			
809857								
809852(1-2)	↓	↓	↓	↓	↓			
809811 (1-3)	<1	<2	9/10/13	ES	Yes			
809860(1-2,4)	<1	72	9/11/13	ES	NO	2:00		
809864	<1	~~<2~~	↓	↓	Yes			
809865	↓	↓			↓			
809866								
809867								
809868								
809869		↓			↓			
809875		72			NO	2:00		
809883(1-2)	↓	↓			↓	↓		
809885	71	<2			Yes			
809886	↓	↓	↓	↓	↓			

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 809778

Date Delivered: 9/3/13 **Time:** 19:00 **By:** ☐Mail ☐Field Service ☒Client

1.	Was a Chain of Custody received and signed?	☑Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☑N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☑N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 4.2 °C	☑Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☑N/A
9.	Does the number of samples received agree with COC?	☑Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐**Truesdail** ☒Client	☑Yes	☐No	☐N/A
12.	Were samples pH checked? pH = see c.o.c.	☑Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ **RUSH** ☑Std	☑Yes	☐No	☐N/A

ALERT Level III QC

15. ***Sample Matrix:*** ☐Liquid ☐Drinking Water ☑Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☐Other_____

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

September 23, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK 2013-GMP-193-Q3, GROUNDWATER MONITORING PROJECT, TLI NO.: 809879

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2013-GMP-193-Q3 groundwater-monitoring project for Hexavalent and Total Dissolved Chromium. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data, and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

The samples were received and delivered with the chain of custody September 23, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Due to the discrepancy between the Total Dissolved Chromium (1.5 ug/L) and Hexavalent Chromium (ND<1.0 ug/L) results for sample MW-21-193, sample from the Total Dissolved Chromium and Hexavalent Chromium sample containers were digested and analyzed for Total Dissolved Chromium. The results were 1.5 ug/L and 1.2 ug/L, respectively. The original Total Dissolved Chromium digestate was re-analyzed for confirmation and yielded a result of 1.5 ug/L. The original results were reported.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

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

Project Name: PG&E Topock Project
Project No.: 423575.MP.02.GM.03
P.O. No.: 423575.MP.02.GM.03

Laboratory No.: 809879
Date Received: September 23, 2013

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
809879-001	MW-21-193-EB	E218.6	FLDFLT	9/9/2013	13:42	Chromium, Hexavalent	ND	ug/L	0.20
809879-001	MW-21-193-EB	SW6020	FLDFLT	9/9/2013	13:42	Chromium	ND	ug/L	1.0
809879-002	MW-63-065-193	E218.6	FLDFLT	9/9/2013	15:11	Chromium, Hexavalent	1.9	ug/L	1.0
809879-002	MW-63-065-193	SW6020	FLDFLT	9/9/2013	15:11	Chromium	1.8	ug/L	1.0
809879-003	MW-200-193	E218.6	FLDFLT	9/10/2013	6:40	Chromium, Hexavalent	ND	ug/L	0.20
809879-004	MW-201-193	E218.6	FLDFLT	9/10/2013	6:45	Chromium, Hexavalent	ND	ug/L	0.20
809879-005	MW-21-193	E218.6	FLDFLT	9/10/2013	12:19	Chromium, Hexavalent	ND	ug/L	1.0
809879-005	MW-21-193	SW6020	FLDFLT	9/10/2013	12:19	Chromium	1.5	ug/L	1.0
809879-006	MW-24BR-193	E218.6	FLDFLT	9/10/2013	7:53	Chromium, Hexavalent	ND	ug/L	1.0
809879-006	MW-24BR-193	SW6020	FLDFLT	9/10/2013	7:53	Chromium	ND	ug/L	1.0
809879-007	MW-71-035-193	E218.6	FLDFLT	9/10/2013	12:45	Chromium, Hexavalent	ND	ug/L	1.0
809879-007	MW-71-035-193	SW6020	FLDFLT	9/10/2013	12:45	Chromium	ND	ug/L	1.0

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

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www.truesdail.com

REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 423575.MP.02.GM.03
P.O. Number: 423575.MP.02.GM.03
Release Number:

Laboratory No. 809879

Printed 9/23/2013

Samples Received on 9/10/2013 7:30:00 PM

Field ID	Lab ID	Collected	Matrix
MW-21-193-EB	809879-001	09/09/2013 13:42	Water
MW-63-065-193	809879-002	09/09/2013 15:11	Water
MW-200-193	809879-003	09/10/2013 06:40	Water
MW-201-193	809879-004	09/10/2013 06:45	Water
MW-21-193	809879-005	09/10/2013 12:19	Water
MW-24BR-193	809879-006	09/10/2013 07:53	Water
MW-71-035-193	809879-007	09/10/2013 12:45	Water

Chrome VI by EPA 218.6 Batch 09CrH13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809879-001 Chromium, Hexavalent	ug/L	09/11/2013 08:25	1.00	0.00920	0.20	ND
809879-002 Chromium, Hexavalent	ug/L	09/11/2013 10:39	5.00	0.0460	1.0	1.9
809879-003 Chromium, Hexavalent	ug/L	09/11/2013 08:36	1.00	0.00920	0.20	ND
809879-004 Chromium, Hexavalent	ug/L	09/11/2013 08:57	1.00	0.00920	0.20	ND
809879-005 Chromium, Hexavalent	ug/L	09/11/2013 09:26	5.00	0.0460	1.0	ND
809879-006 Chromium, Hexavalent	ug/L	09/11/2013 14:04	5.00	0.0460	1.0	ND
809879-007 Chromium, Hexavalent	ug/L	09/11/2013 10:29	5.00	0.0460	1.0	ND

Method Blank

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

Duplicate — Lab ID = 809878-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.274	0.251	8.94	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.195	0.200	97.6	70 - 130

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Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.89	5.00	97.8	90 - 110

Matrix Spike — Lab ID = 809878-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.25	1.27(1.00)	97.7	90 - 110

Matrix Spike — Lab ID = 809878-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.25	5.25(5.00)	100	90 - 110

Matrix Spike — Lab ID = 809879-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.02	1.00(1.00)	102	90 - 110

Matrix Spike — Lab ID = 809879-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	6.79	6.94(5.00)	97.0	90 - 110

Matrix Spike — Lab ID = 809879-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.94	6.96(5.00)	99.5	90 - 110

Matrix Spike — Lab ID = 809879-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.987	1.00(1.00)	98.7	90 - 110

Matrix Spike — Lab ID = 809879-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.956	1.00(1.00)	95.6	90 - 110

Matrix Spike — Lab ID = 809879-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.42	5.68(5.00)	94.7	90 - 110

Matrix Spike — Lab ID = 809879-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.68	1.69(1.00)	99.1	90 - 110

Matrix Spike — Lab ID = 809879-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.985	1.00(1.00)	98.5	90 - 110

Matrix Spike — Lab ID = 809879-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.74	5.00(5.00)	94.8	90 - 110

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Matrix Spike — Lab ID = 809879-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.51	1.55(1.00)	95.6	90 - 110

Matrix Spike — Lab ID = 809879-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.27	5.56(5.00)	94.2	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.89	5.00	97.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.52	10.0	95.2	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.62	10.0	96.2	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.80	10.0	98.0	95 - 105

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Metals by EPA 6020A, Dissolved

Batch 091213B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
809879-001 Chromium	ug/L	09/13/2013 06:31	2.00	0.184	1.0	ND
809879-002 Chromium	ug/L	09/13/2013 06:55	2.00	0.184	1.0	1.8
809879-005 Chromium	ug/L	09/13/2013 07:01	2.00	0.184	1.0	1.5
809879-006 Chromium	ug/L	09/13/2013 07:07	2.00	0.184	1.0	ND
809879-007 Chromium	ug/L	09/13/2013 07:13	2.00	0.184	1.0	ND

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate

Lab ID = 809879-001

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.185	0.200	92.5	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.9	50.0	97.8	85 - 115

Matrix Spike

Lab ID = 809879-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	49.0	50.0(50.0)	97.9	75 - 125

Matrix Spike Duplicate

Lab ID = 809879-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	49.0	50.0(50.0)	98.0	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.1	20.0	95.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.0	20.0	94.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.6	20.0	93.1	90 - 110

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.6	20.0	93.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.1	20.0	95.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.9	20.0	94.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.8	20.0	94.2	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.9	20.0	104	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.3	20.0	101	80 - 120

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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809879

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/10/2013
COC Number: 2

Rec'd 09/10/13
~~S21b~~ 809879

ALERT !!
Level III QC

	DATE	TIME	Matrix	Container:	250 ml Poly	2x250 ml Poly	500 ml Poly	2x500 ml Poly	Number of Containers	COMMENTS
				Preservatives:	(NH4)2SO4/NH4OH, 4°C	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C		
				Filtered:	Field	Field	Field	Field		
				Holding Time:	28	28	180	180		
					Cr6 (E218.6) FF	Cr6 (E218.6R) FF	Metals (6020A) FF Chromium	Metals (6020A-R) FF Chromium		
1	MW-21-193-EB	9/9/2013	13:42	Water	X		X		2	pH<2
2	MW-63-065-193	9/9/2013	15:11	Water	X		X		2	pH<2
3	MW-200-193	9/10/2013	6:40	Water	X				1	
4	MW-201-193	9/10/2013	6:45	Water	X				1	
5	MW-21-193	9/10/2013	12:19	Water		X		X	4	pH<2
6	MW-24BR-193	9/10/2013	7:53	Water	X		X		2	pH<2
7	MW-71-035-193	9/10/2013	12:45	Water	X		X		2	pH<2
								TOTAL NUMBER OF CONTAINERS	14	

pH for 6020A

For Sample Conditions
See Form Attached

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

	Signatures	Date/Time
Approved by		
Sampled by		9-10-13 1505
Relinquished by		9-10-13 1505
Received by		
Relinquished by		9-10-13 1930
Received by		9/10/13

Shipping Details
Method of Shipment: courier
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
8/27/13	809657-5	9.5	N/A	N/A	N/A	NE
↓	↓ -6	↓	↓	↓	↓	↓
8/27/13	809658-1	9.5	N/A	N/A	N/A	NE
↓	↓ -2	↓	↓	↓	↓	↓
8/27/13	809659-1	9.5	N/A	N/A	N/A	NE
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
8/27/13	809662-1	7.0	2mL/100mL	9.5	7:40	NE
↓	↓ -2	↓	↓	↓	↓	TM
8/28/13	809689	7.0	2mL/100mL	9.5	7:20	NE
9/4/13	809778-1	7.0	2mL/100mL	9.5	8:25	TM
↓	↓ -2	↓	↓	↓	↓	↓
9/4/13	809779-1	7.0	2mL/100mL	9.5	8:30	TM
↓	↓ -2	↓	↓	↓	↓	↓
9/11/13	809878	7.0	2mL/100mL	9.5	8:05	TM
↓	809879-1	9.5	N/A	N/A	N/A	NE
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
↓	↓ -4	↓	↓	↓	↓	↓
↓	↓ -5	↓	↓	↓	↓	↓
↓	↓ -6	↓	↓	↓	↓	↓
↓	↓ -7	↓	↓	↓	↓	↓
9/12/13	809924-1	9.5	N/A	N/A	N/A	NE
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
9/12/13	809925-1	9.5	N/A	N/A	N/A	NE
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
↓	↓ -4	↓	↓	↓	↓	↓
↓	↓ -5	↓	↓	↓	↓	↓
↓	↓ -6	↓	↓	↓	↓	↓

NE 9/13/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
809887	71	<2	9/11/13	ES	yes			
809888	↓	↓	↓	↓	↓			
809878	<1	72	9/11/13	ES	yes	2:00		pH <2
809879(1-2,5-7)	<1	<2	↓	↓	↓			
809925(1-6)	<1	<2	9/11/13	ES	yes			
809926(1-6)	↓	↓	↓	↓	↓			
809909	<1	~~<2~~	9/13/13	ES	ND	~~10:00~~	ES 9/13/13	
809921(1-2,4)	1	72	↓	↓	↓	10:00		pH <2
809923(10-12)	↓	↓				↓		↓
809931(1-20								
809932(1-2)	↓	<2	↓	↓	yes			
809956	71	<2	9/13/13	DL	yes			
809957	↓	↓	↓	↓	↓			
809960-1,2	<1	72	↓	↓	ND	12:00		
809961	↓	↓	↓	↓	↓	↓		
809950-173	↓	↓	↓	↓	↓			
809936(1-3)	<1	<2	9/13/13	ES	yes			
809958-2	↓	↓	↓	↓	↓			
809959(1-5)								T/D
809973	<1	<2	9/13/13	DL	yes			
809972	↓	↓	↓	↓	↓			
809966-174	↓	>2	↓	↓	ND	15:20		
809905-177	—	TTC	9/16/13	DL	yes			
809985-1720	<1	<2	9/17/13	DL	ND			
809986-1,2	71	<2			yes			
809987-1,2	<1	<2	↓	↓	↓			
809989	<1	<2						
809990	<1	<2						

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 809879

Date Delivered: 9 / 10 / 13 **Time:** 19:30 **By:** ☐Mail ☐Field Service ☒Client

1.	Was a Chain of Custody received and signed?	☒Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☒N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☒N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☒N/A
5.	Were all requested analyses understood and acceptable?	☒Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 4.2 °C	☒Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☒Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☒N/A
9.	Does the number of samples received agree with COC?	☒Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☒Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☒Truesdail ☐Client	☒Yes	☐No	☐N/A
12.	Were samples pH checked? pH = see COC	☒Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☒Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☒ Std	☒Yes	☐No	☐N/A

ALERT!! Level III QC

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

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TUSTIN, CALIFORNIA 92780-7008
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www.truesdail.com

September 30, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK 2013-GMP-193-Q3, GROUNDWATER MONITORING PROJECT, TLI NO.: 810013

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2013-GMP-193-Q3 groundwater-monitoring project for Hexavalent and Total Dissolved Chromium. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data, and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

The samples were received and delivered with the chain of custody September 17, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Due to the discrepancy between the Total Dissolved Chromium (2.8 ug/L) and Hexavalent Chromium (ND<0.20 ug/L) results for sample MW-42-055-193, sample from the Total Dissolved Chromium and Hexavalent Chromium sample containers were digested and analyzed for Total Dissolved Chromium. The results were both 2.9 ug/L. The original Total Dissolved Chromium digestate was re-analyzed for confirmation and yielded a result of 2.8 ug/L. After discussing the results with Mr. Duffy, the original results were reported.

Due to the discrepancy between the Total Dissolved Chromium (4.7 ug/L) and Hexavalent Chromium (ND<0.20 ug/L) results for sample MW-121-193, sample from the Total Dissolved Chromium and Hexavalent Chromium sample containers were digested and analyzed for Total Dissolved Chromium. The results were 4.8 ug/L and 4.1 ug/L, respectively. The original Total Dissolved Chromium digestate was re-analyzed for confirmation and yielded a result of 4.9 ug/L. After discussing the results with Mr. Duffy, the original results were reported.

Due to the discrepancy between the Total Dissolved Chromium (4.9 ug/L) and Hexavalent Chromium (ND<1.0 ug/L) results for sample MW-44-125-193, sample from the Total Dissolved Chromium and Hexavalent Chromium sample containers were digested and analyzed for Total Dissolved Chromium. The results were 5.4 ug/L and 4.1 ug/L, respectively. The original Total Dissolved Chromium digestate was re-analyzed for confirmation and yielded a result of 5.3 ug/L. After discussing the results with Mr. Duffy, the original results were reported.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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

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

Project Name: PG&E Topock Project
Project No.: 423575.MP.02.GM.03
P.O. No.: 423575.MP.02.GM.03

Laboratory No.: 810013
Date Received: September 17, 2013

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810013-001	MW-35-060-193	E218.6	FLDFLT	9/10/2013	14:00	Chromium, Hexavalent	21.9	ug/L	0.20
810013-001	MW-35-060-193	SW6020	FLDFLT	9/10/2013	14:00	Chromium	21.2	ug/L	1.0
810013-002	MW-57-185-193	E218.6	FLDFLT	9/10/2013	11:09	Chromium, Hexavalent	10.1	ug/L	1.0
810013-002	MW-57-185-193	SW6020	FLDFLT	9/10/2013	11:09	Chromium	10.1	ug/L	1.0
810013-003	MW-202-193	E218.6	FLDFLT	9/11/2013	6:45	Chromium, Hexavalent	ND	ug/L	0.20
810013-004	MW-203-193	E218.6	FLDFLT	9/11/2013	6:48	Chromium, Hexavalent	ND	ug/L	0.20
810013-005	MW-28-090-193	E218.6	FLDFLT	9/11/2013	8:24	Chromium, Hexavalent	ND	ug/L	0.20
810013-005	MW-28-090-193	SW6020	FLDFLT	9/11/2013	8:24	Chromium	ND	ug/L	1.0
810013-006	MW-42-055-193	E218.6	FLDFLT	9/11/2013	9:56	Chromium, Hexavalent	ND	ug/L	0.20
810013-006	MW-42-055-193	SW6020	FLDFLT	9/11/2013	9:56	Chromium	2.8	ug/L	1.0
810013-007	MW-42-065-193	E218.6	FLDFLT	9/11/2013	10:42	Chromium, Hexavalent	ND	ug/L	0.20
810013-007	MW-42-065-193	SW6020	FLDFLT	9/11/2013	10:42	Chromium	ND	ug/L	1.0
810013-008	MW-46-175-193	E218.6	FLDFLT	9/11/2013	14:19	Chromium, Hexavalent	29.5	ug/L	1.0
810013-008	MW-46-175-193	SW6020	FLDFLT	9/11/2013	14:19	Chromium	29.6	ug/L	1.0
810013-009	MW-48-193	E218.6	FLDFLT	9/11/2013	7:07	Chromium, Hexavalent	ND	ug/L	1.0
810013-009	MW-48-193	SW6020	FLDFLT	9/11/2013	7:07	Chromium	ND	ug/L	1.0
810013-010	MW-73-080-193	E218.6	FLDFLT	9/11/2013	11:50	Chromium, Hexavalent	31.6	ug/L	1.0
810013-010	MW-73-080-193	SW6020	FLDFLT	9/11/2013	11:50	Chromium	30.9	ug/L	1.0
810013-011	MW-121-193	E218.6	FLDFLT	9/12/2013	7:05	Chromium, Hexavalent	ND	ug/L	0.20
810013-011	MW-121-193	SW6020	FLDFLT	9/12/2013	7:05	Chromium	4.7	ug/L	1.0
810013-012	MW-204-193	E218.6	FLDFLT	9/12/2013	7:00	Chromium, Hexavalent	ND	ug/L	0.20
810013-013	MW-205-193	E218.6	FLDFLT	9/12/2013	7:05	Chromium, Hexavalent	ND	ug/L	0.20

005

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810013-014	MW-33-210-193	E218.6	FLDFLT	9/12/2013	14:42	Chromium, Hexavalent	12.5	ug/L	1.0
810013-014	MW-33-210-193	SW6020	FLDFLT	9/12/2013	14:42	Chromium	13.0	ug/L	1.0
810013-015	MW-44-115-193	E218.6	FLDFLT	9/12/2013	9:21	Chromium, Hexavalent	47.1	ug/L	1.0
810013-015	MW-44-115-193	SW6020	FLDFLT	9/12/2013	9:21	Chromium	46.0	ug/L	1.0
810013-016	MW-44-125-193	E218.6	FLDFLT	9/12/2013	11:28	Chromium, Hexavalent	ND	ug/L	1.0
810013-016	MW-44-125-193	SW6020	FLDFLT	9/12/2013	11:28	Chromium	4.9	ug/L	1.0
810013-017	MW-206-193	E218.6	FLDFLT	9/16/2013	6:45	Chromium, Hexavalent	ND	ug/L	0.20
810013-018	MW-207-193	E218.6	FLDFLT	9/16/2013	6:40	Chromium, Hexavalent	ND	ug/L	0.20
810013-019	MW-208-193	E218.6	FLDFLT	9/16/2013	6:42	Chromium, Hexavalent	ND	ug/L	0.20
810013-020	MW-33-040-193	E218.6	FLDFLT	9/16/2013	9:19	Chromium, Hexavalent	ND	ug/L	1.0
810013-020	MW-33-040-193	SW6020	FLDFLT	9/16/2013	9:19	Chromium	ND	ug/L	1.0
810013-021	MW-33-090-193	E218.6	FLDFLT	9/16/2013	10:02	Chromium, Hexavalent	13.6	ug/L	0.20
810013-021	MW-33-090-193	SW6020	FLDFLT	9/16/2013	10:02	Chromium	13.6	ug/L	1.0
810013-022	MW-33-150-193	E218.6	FLDFLT	9/16/2013	11:15	Chromium, Hexavalent	10.6	ug/L	2.0
810013-022	MW-33-150-193	SW6020	FLDFLT	9/16/2013	11:15	Chromium	10.9	ug/L	1.0
810013-023	MW-209-193	E218.6	FLDFLT	9/17/2013	6:45	Chromium, Hexavalent	ND	ug/L	0.20
810013-024	MW-210-193	E218.6	FLDFLT	9/17/2013	6:40	Chromium, Hexavalent	ND	ug/L	0.20

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:

Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 423575.MP.02.GM.03
P.O. Number: 423575.MP.02.GM.03
Release Number:

Laboratory No. 810013

Printed 9/30/2013

Samples Received on 9/17/2013 8:10:00 PM

Field ID	Lab ID	Collected	Matrix
MW-35-060-193	810013-001	09/10/2013 14:00	Water
MW-57-185-193	810013-002	09/10/2013 11:09	Water
MW-202-193	810013-003	09/11/2013 06:45	Water
MW-203-193	810013-004	09/11/2013 06:48	Water
MW-28-090-193	810013-005	09/11/2013 08:24	Water
MW-42-055-193	810013-006	09/11/2013 09:56	Water
MW-42-065-193	810013-007	09/11/2013 10:42	Water
MW-46-175-193	810013-008	09/11/2013 14:19	Water
MW-48-193	810013-009	09/11/2013 07:07	Water
MW-73-080-193	810013-010	09/11/2013 11:50	Water
MW-121-193	810013-011	09/12/2013 07:05	Water
MW-204-193	810013-012	09/12/2013 07:00	Water
MW-205-193	810013-013	09/12/2013 07:05	Water
MW-33-210-193	810013-014	09/12/2013 14:42	Water
MW-44-115-193	810013-015	09/12/2013 09:21	Water
MW-44-125-193	810013-016	09/12/2013 11:28	Water
MW-206-193	810013-017	09/16/2013 06:45	Water
MW-207-193	810013-018	09/16/2013 06:40	Water
MW-208-193	810013-019	09/16/2013 06:42	Water
MW-33-040-193	810013-020	09/16/2013 09:19	Water
MW-33-090-193	810013-021	09/16/2013 10:02	Water
MW-33-150-193	810013-022	09/16/2013 11:15	Water
MW-209-193	810013-023	09/17/2013 06:45	Water
MW-210-193	810013-024	09/17/2013 06:40	Water

Chrome VI by EPA 218.6 Batch 09CrH13F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810013-001 Chromium, Hexavalent	ug/L	09/18/2013 12:43	1.00	0.00920	0.20	21.9
810013-002 Chromium, Hexavalent	ug/L	09/18/2013 14:06	5.00	0.0460	1.0	10.1
810013-003 Chromium, Hexavalent	ug/L	09/18/2013 13:14	1.00	0.00920	0.20	ND

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810013-004 Chromium, Hexavalent	ug/L	09/18/2013 13:35	1.00	0.00920	0.20	ND
810013-005 Chromium, Hexavalent	ug/L	09/18/2013 13:45	1.00	0.00920	0.20	ND
810013-006 Chromium, Hexavalent	ug/L	09/18/2013 14:16	1.00	0.00920	0.20	ND
810013-007 Chromium, Hexavalent	ug/L	09/18/2013 14:48	1.00	0.00920	0.20	ND
810013-008 Chromium, Hexavalent	ug/L	09/18/2013 15:59	5.00	0.0460	1.0	29.5
810013-009 Chromium, Hexavalent	ug/L	09/18/2013 15:50	5.00	0.0460	1.0	ND
810013-010 Chromium, Hexavalent	ug/L	09/18/2013 15:40	5.00	0.0460	1.0	31.6
810013-011 Chromium, Hexavalent	ug/L	09/18/2013 16:40	1.00	0.00920	0.20	ND
810013-012 Chromium, Hexavalent	ug/L	09/18/2013 16:11	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate — Lab ID = 810013-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.0	9.96	0.519	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.188	0.200	94.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.89	5.00	97.9	90 - 110

Matrix Spike — Lab ID = 810012-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.18	1.12(1.00)	106	90 - 110

Matrix Spike — Lab ID = 810013-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	45.0	46.9(25.0)	92.5	90 - 110

Matrix Spike — Lab ID = 810013-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	19.7	20.0(10.0)	97.0	90 - 110

Matrix Spike — Lab ID = 810013-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	34.9	35.1(25.0)	99.1	90 - 110

Matrix Spike — Lab ID = 810013-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.05	1.00(1.00)	105	90 - 110

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Matrix Spike — Lab ID = 810013-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.02	1.00(1.00)	102	90 - 110

Matrix Spike — Lab ID = 810013-005

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

Matrix Spike — Lab ID = 810013-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.17	1.14(1.00)	103	90 - 110

Matrix Spike — Lab ID = 810013-007

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

Matrix Spike — Lab ID = 810013-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	78.9	79.5(50.0)	98.8	90 - 110

Matrix Spike — Lab ID = 810013-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.28	1.31(1.00)	97.0	90 - 110

Matrix Spike — Lab ID = 810013-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.28	5.32(5.00)	99.2	90 - 110

Matrix Spike — Lab ID = 810013-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	78.8	81.5(50.0)	94.7	90 - 110

Matrix Spike — Lab ID = 810013-011

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

Matrix Spike — Lab ID = 810013-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.02	1.00(1.00)	102	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.89	5.00	97.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.54	10.0	95.4	95 - 105

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Chrome VI by EPA 218.6 Batch 09CrH13G

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810013-013 Chromium, Hexavalent	ug/L	09/18/2013 12:08	1.00	0.00920	0.20	ND
810013-014 Chromium, Hexavalent	ug/L	09/18/2013 12:39	5.00	0.0460	1.0	12.5
810013-015 Chromium, Hexavalent	ug/L	09/18/2013 12:49	5.00	0.0460	1.0	47.1
810013-016 Chromium, Hexavalent	ug/L	09/18/2013 18:45	5.00	0.0460	1.0	ND
810013-017 Chromium, Hexavalent	ug/L	09/18/2013 13:10	1.00	0.00920	0.20	ND
810013-018 Chromium, Hexavalent	ug/L	09/18/2013 13:20	1.00	0.00920	0.20	ND
810013-019 Chromium, Hexavalent	ug/L	09/18/2013 14:04	1.00	0.00920	0.20	ND
810013-020 Chromium, Hexavalent	ug/L	09/18/2013 14:36	5.00	0.0460	1.0	ND
810013-021 Chromium, Hexavalent	ug/L	09/18/2013 17:53	1.00	0.00920	0.20	13.6
810013-022 Chromium, Hexavalent	ug/L	09/18/2013 16:07	10.0	0.0920	2.0	10.6
810013-023 Chromium, Hexavalent	ug/L	09/18/2013 14:56	1.00	0.00920	0.20	ND
810013-024 Chromium, Hexavalent	ug/L	09/18/2013 15:17	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate — Lab ID = 810013-015

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	46.8	47.6	1.78	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.182	0.200	91.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.86	5.00	97.3	90 - 110

Matrix Spike — Lab ID = 810013-013

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.989	1.00(1.00)	98.9	90 - 110

Matrix Spike — Lab ID = 810013-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	36.5	37.5(25.0)	96.1	90 - 110

Matrix Spike — Lab ID = 810013-015

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	93.1	97.6(50.0)	91.0	90 - 110

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Matrix Spike — Lab ID = 810013-016

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.93	5.00(5.00)	98.6	90 - 110

Matrix Spike — Lab ID = 810013-016

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.980	1.00(1.00)	98.0	90 - 110

Matrix Spike — Lab ID = 810013-017

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.926	1.00(1.00)	92.6	90 - 110

Matrix Spike — Lab ID = 810013-018

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.962	1.00(1.00)	96.2	90 - 110

Matrix Spike — Lab ID = 810013-019

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.988	1.00(1.00)	98.8	90 - 110

Matrix Spike — Lab ID = 810013-020

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.21	1.25(1.00)	96.6	90 - 110

Matrix Spike — Lab ID = 810013-020

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.08	5.20(5.00)	97.6	90 - 110

Matrix Spike — Lab ID = 810013-021

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	28.0	28.5(15.0)	96.9	90 - 110

Matrix Spike — Lab ID = 810013-021

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	38.3	38.6(25.0)	98.6	90 - 110

Matrix Spike — Lab ID = 810013-022

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	25.1	25.9(15.0)	94.7	90 - 110

Matrix Spike — Lab ID = 810013-022

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	33.6	35.8(25.0)	91.0	90 - 110

Matrix Spike — Lab ID = 810013-022

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	60.3	60.8(50.0)	99.0	90 - 110

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Matrix Spike Lab ID = 810013-023

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.07	1.00(1.00)	107	90 - 110

Matrix Spike Lab ID = 810013-024

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.02	1.00(1.00)	102	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.88	5.00	97.5	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.65	10.0	96.5	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.80	10.0	98.0	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.70	10.0	97.0	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.94	10.0	99.4	95 - 105

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Metals by EPA 6020A, Dissolved Batch 091913A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810013-001 Chromium	ug/L	09/19/2013 14:23	2.00	0.142	1.0	21.2
810013-002 Chromium	ug/L	09/19/2013 15:06	2.00	0.142	1.0	10.1
810013-005 Chromium	ug/L	09/19/2013 15:12	2.00	0.142	1.0	ND
810013-006 Chromium	ug/L	09/19/2013 15:18	2.00	0.142	1.0	2.8
810013-007 Chromium	ug/L	09/19/2013 15:24	2.00	0.142	1.0	ND
810013-008 Chromium	ug/L	09/19/2013 15:30	2.00	0.142	1.0	29.6
810013-009 Chromium	ug/L	09/19/2013 15:42	2.00	0.142	1.0	ND
810013-010 Chromium	ug/L	09/19/2013 15:48	2.00	0.142	1.0	30.9
810013-011 Chromium	ug/L	09/19/2013 15:54	2.00	0.142	1.0	4.7
810013-014 Chromium	ug/L	09/19/2013 16:00	2.00	0.142	1.0	13.0
810013-015 Chromium	ug/L	09/19/2013 16:25	2.00	0.142	1.0	46.0
810013-016 Chromium	ug/L	09/19/2013 16:31	2.00	0.142	1.0	4.9
810013-020 Chromium	ug/L	09/19/2013 16:37	2.00	0.142	1.0	ND
810013-021 Chromium	ug/L	09/19/2013 16:43	2.00	0.142	1.0	13.6
810013-022 Chromium	ug/L	09/19/2013 16:49	2.00	0.142	1.0	10.9

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 810013-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	21.3	21.2	0.611	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.198	0.200	99.0	70 - 130

Lab Control Sample

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

Matrix Spike — Lab ID = 810013-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	68.3	71.2(50.0)	94.2	75 - 125

Matrix Spike Duplicate — Lab ID = 810013-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	67.2	71.2(50.0)	92.0	75 - 125

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MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.4	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.8	20.0	94.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.0	20.0	95.2	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.9	20.0	94.3	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	97.3	80 - 120

Serial Dilution — Lab ID = 810013-008

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	10.0	29.6	29.6	0.0135	0 - 10

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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CH2MHILL **CHAIN OF CUSTODY RECORD** 810013 Page 1 OF 2

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/17/2013
COC Number: 4

	DATE	TIME	Matrix	Container:	250 ml Poly	2x250 ml Poly	500 ml Poly	2x500 ml Poly		Number of Containers	COMMENTS
				Preservatives:	(NH4)2SO4/NH4OH, 4°C	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C			
				Filtered:	Field	Field	Field	Field			
				Holding Time:	28	28	180	180			
					Cr6 (E218.6) FF	Cr6 (E218.6R) FF	Metals (6020A) FF Chromium	Metals (6020A-R) FF Chromium			
1	MW-35-060-193	9/10/2013	14:00	Water	X		X			2	pH=2
2	MW-57-185-193	9/10/2013	11:09	Water	X		X			2	
3	MW-202-193	9/11/2013	6:45	Water	X					1	
4	MW-203-193	9/11/2013	6:48	Water	X					1	
5	MW-28-090-193	9/11/2013	8:24	Water		X		X		4	pH=2
	MW-28-090-193-EB	9/11/2013	7:41	Water	X		X			2	
6	MW-42-055-193	9/11/2013	9:56	Water		X		X		4	pH=2
	MW-42-055-193-EB	9/11/2013	9:17	Water	X		X			2	
7	MW-42-065-193	9/11/2013	10:42	Water		X		X		4	pH=2
	MW-42-065-193-EB	9/11/2013	10:05	Water	X		X			2	
8	MW-46-175-193	9/11/2013	14:19	Water	X		X			2	
9	MW-48-193	9/11/2013	7:07	Water	X		X			2	pH=2
10	MW-73-080-193	9/11/2013	11:50	Water	X		X			2	
11	MW-121-193	9/12/2013	7:05	Water	X		X			2	

ALERT !!
Level III QC

pH for 6020A

For Sample Conditions
See Form Attached

	Signatures	Date/Time
Approved by		
Sampled by		9-17-13 1520
Relinquished by		
Received by		
Relinquished by		
Received by		

Shipping Details
Method of Shipment: courier
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

5588

CH2MHILL

CHAIN OF CUSTODY RECORD

810013

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/17/2013
COC Number: 4

	DATE	TIME	Matrix	Container: 250 ml Poly	2x250 ml Poly	500 ml Poly	2x500 ml Poly		Number of Containers	COMMENTS
				Preservatives: (NH4)2SO4/NH4OH, 4°C	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C			
				Filtered: Field	Field	Field	Field			
				Holding Time: 28	28	180	180			
				Cr6 (E218.6) FF	Cr6 (E218.6R) FF	Metals (6020A) FF Chromium	Metals (6020A-R) FF Chromium			
12	MW-204-193	9/12/2013	7:00	Water	X				1	
13	MW-205-193	9/12/2013	7:05	Water	X				1	
14	MW-33-210-193	9/12/2013	14:42	Water	X		X		2	}
15	MW-44-115-193	9/12/2013	9:21	Water	X		X		2	} pH=2
16	MW-44-125-193	9/12/2013	11:28	Water	X		X		2	}
17	MW-206-193	9/16/2013	6:45	Water	X				1	
18	MW-207-193	9/16/2013	6:40	Water	X				1	
19	MW-208-193	9/16/2013	6:42	Water	X				1	
20	MW-33-040-193	9/16/2013	9:19	Water		X		X	4	pH=2
	MW-33-040-193-EB	9/16/2013	7:38	Water	X		X		2	
21	MW-33-090-193	9/16/2013	10:02	Water	X		X		2	} pH=2
22	MW-33-150-193	9/16/2013	11:15	Water	X		X		2	}
23	MW-209-193	9/17/2013	6:45	Water	X				1	
24	MW-210-193	9/17/2013	6:40	Water	X				1	

ALERT !!
Level III QC

PH for 6020A

	Signatures	Date/Time
Approved by		
Sampled by		9-17-13 1520
Relinquished by	Shawn Duffy	9-17-13 1520
Received by	Shawn Duffy	9-17-13 2010
Relinquished by		
Received by	Laura Brad	9/17/13 2010

Shipping Details
Method of Shipment: courier
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
9/12/13	809925-7	9.5	N/A	N/A	N/A	NE
	809926-1					
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
9/13/13	809958-2	9.5	N/A	N/A	N/A	NE
	809959-1					
	-2					
	-3					
	-4					
	-5					
9/18/13	810012	7.0	2 mL/100 mL	9.5	8:00	NE
	810013-1	9.5	N/A	N/A	N/A	NE
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
	-16					

9/18/13 JN

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
9/18/13	810013-17	9.5	N/A	N/A	N/A	NE
↓	-18	↓	↓	↓	↓	↓
↓	-19	↓	↓	↓	↓	↓
↓	-20	↓	↓	↓	↓	↓
↓	-21	↓	↓	↓	↓	↓
↓	-22	↓	↓	↓	↓	↓
↓	-23	↓	↓	↓	↓	↓
↓	↓ -24	↓	↓	↓	↓	↓

NE 9/19/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
809887	71	<2	9/11/13	ES	Yes			
809888	↓	↓	↓	↓	↓			
809878	<1	72	9/11/13	ES	Yes	2:00		pH <2
809879(1-2,5-7)	<1	<2	↓	↓	↓			
809925(1-6)	<1	<2	9/11/13	ES	Yes			
809926(1-6)	↓	↓	↓	↓	↓			
809909	<1	~~<2~~	9/13/13	ES	NO	~~10:00~~	ES 9/19/13	
809921(1-2,4)	↓	72	↓	↓	↓	10:00		pH <2
809923(10-12)	↓	↓	↓	↓	↓	↓		↓
809931(1-20	↓	↓	↓	↓	↓	↓		↓
809932(1-2)	↓	<2	↓	↓	Yes			
809956	71	<2	9/13/13	DL	yes			
809957	↓	↓	↓	↓	↓			
809960-1,2	<1	72	↓	↓	NO	12:00		
809961	↓	↓	↓	↓	↓	↓		
809950-173	↓	↓	↓	↓	↓	↓		
809936(1-3)	<1	<2	9/13/13	ES	Yes			
809958-2	↓	↓	↓	↓	↓			
809959(1-5)	↓	↓	↓	↓	↓			T/D
809973	<1	<2	9/13/13	DL	yes			
809972	↓	↓	↓	↓	↓			
809966-174	↓	>2	↓	↓	NO	15:20		
809905-177	—	TTLC	9/16/13	DL	yes			
809985-1-720	<1	<2	9/17/13	DL	NO			
809986-1,2	71	<2	↓	↓	yes			
809987-1,2	<1	<2	↓	↓	↓			
809989	<1	<2	↓	↓	↓			
809990	<1	<2	↓	↓	↓			
809995	~~<1~~	<2	↓	↓	yes			
810001	71	<2	9/18/13	DL	yes			
810003	↓	↓	↓	↓	↓			
810007-1,2,5,6	<1	72	↓	↓	NO	12:00		
809998-1,2,4	↓	↓	↓	↓	↓	↓		
810009-173	↓	↓	↓	↓	↓	↓		
810012	<1	72	9/18/13	ES	Yes	10:00		pH <2
810013(1-2,5-11,14-16, 20-22)	↓	<2	↓	↓	↓			
810025	71	<2	9/19/13	DL	yes			
810026-10,12,13	<1	72	↓	↓	NO	13:30		
810040	<1	<2	↓	↓	yes			
810037-1,2	<1	<2	↓	↓	↓			
810028	71	<2	↓	↓	↓			
810064	71	<2	↓	↓	yes			
810043(1-2)	<1	<2	9/20/13	ES	Yes			

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 8100/3

Date Delivered: 9/17/13 **Time:** 2010 **By:** ☐ **Mail** ☐ **Field Service** ☒ **Client**

1.	*Was a Chain of Custody received and signed?*	☑ *Yes*	☐ *No*	☐ *N/A*
2.	*Does Customer require an acknowledgement of the COC?*	☐ *Yes*	☐ *No*	☑ *N/A*
3.	*Are there any special requirements or notes on the COC?*	☐ *Yes*	☐ *No*	☑ *N/A*
4.	*If a letter was sent with the COC, does it match the COC?*	☐ *Yes*	☐ *No*	☑ *N/A*
5.	*Were all requested analyses understood and acceptable?*	☑ *Yes*	☐ *No*	☐ *N/A*
6.	*Were samples received in a chilled condition?* Temperature (if yes)? 3.8 °C	☑ *Yes*	☐ *No*	☐ *N/A*
7.	*Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?*	☑ *Yes*	☐ *No*	☐ *N/A*
8.	*Were sample custody seals intact?*	☐ *Yes*	☐ *No*	☑ *N/A*
9.	*Does the number of samples received agree with COC?*	☑ *Yes*	☐ *No*	☐ *N/A*
10.	*Did sample labels correspond with the client ID's?*	☑ *Yes*	☐ *No*	☐ *N/A*
11.	*Did sample labels indicate proper preservation?* Preserved (if yes) by: ☒ **Truesdail** ☐ *Client*	☒ *Yes*	☐ *No*	☐ *N/A*
12.	*Were samples pH checked?* pH = See C.O.C	☐ *Yes*	☐ *No*	☐ *N/A*
13.	*Were all analyses within holding time at time of receipt?* If not, notify Project Manager.	☑ *Yes*	☐ *No*	☐ *N/A*
14.	*Have Project due dates been checked and accepted?* Turn Around Time (TAT): ☐ **RUSH** ☑ *Std*	☑ *Yes*	☐ *No*	☐ *N/A*

ALERT !! Level III QC

15. ***Sample Matrix:*** ☐ *Liquid* ☐ *Drinking Water* ☐ *Ground Water* ☐ *Waste Water* ☐ *Sludge* ☐ *Soil* ☐ *Wipe* ☐ *Paint* ☐ *Solid* ☒ *Other* Water

16. *Comments:* _____

17. *Sample Check-In completed by* **Truesdail** *Log-In/Receiving:* Linda

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www.truesdail.com

October 8, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK 2013-GMP-193-Q3, GROUNDWATER MONITORING PROJECT, TLI NO.: 810111

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2013-GMP-193-Q3 groundwater-monitoring project for Hexavalent and Total Dissolved Chromium. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data, and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

The samples were received and delivered with the chain of custody September 24, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Due to the discrepancy between the Total Dissolved Chromium (2.6 ug/L) and Hexavalent Chromium (ND<1.0 ug/L) results for sample MW-60BR-245-193, sample from the Total Dissolved Chromium and Hexavalent Chromium sample containers were digested and analyzed for Total Dissolved Chromium. The results were both 2.6 ug/L. The original Total Dissolved Chromium digestate was re-analyzed for confirmation and also yielded a result of 2.6 ug/L. After discussing the results with Mr. Duffy, the original results were reported.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

fo – Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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

Project Name: PG&E Topock Project
Project No.: 423575.MP.02.GM.03
P.O. No.: 423575.MP.02.GM.03

Laboratory No.: 810111
Date Received: September 24, 2013

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810111-001	MW-23-060-193	E218.6	FLDFLT	9/17/2013	9:45	Chromium, Hexavalent	36.9	ug/L	1.0
810111-001	MW-23-060-193	SW6020	FLDFLT	9/17/2013	9:45	Chromium	38.4	ug/L	1.0
810111-002	MW-23-080-193	E218.6	FLDFLT	9/17/2013	11:25	Chromium, Hexavalent	13.7	ug/L	1.0
810111-002	MW-23-080-193	SW6020	FLDFLT	9/17/2013	11:25	Chromium	14.3	ug/L	1.0
810111-003	MW-38D-193	E218.6	FLDFLT	9/17/2013	15:44	Chromium, Hexavalent	7.5	ug/L	1.0
810111-003	MW-38D-193	SW6020	FLDFLT	9/17/2013	15:44	Chromium	8.1	ug/L	1.0
810111-004	MW-60BR-245-193	E218.6	FLDFLT	9/17/2013	14:17	Chromium, Hexavalent	ND	ug/L	1.0
810111-004	MW-60BR-245-193	SW6020	FLDFLT	9/17/2013	14:17	Chromium	2.6	ug/L	1.0
810111-005	MW-64BR-193	E218.6	FLDFLT	9/17/2013	12:00	Chromium, Hexavalent	ND	ug/L	1.0
810111-005	MW-64BR-193	SW6020	FLDFLT	9/17/2013	12:00	Chromium	ND	ug/L	1.0
810111-006	MW-211-193	E218.6	FLDFLT	9/18/2013	8:00	Chromium, Hexavalent	ND	ug/L	0.20
810111-007	MW-212-193	E218.6	FLDFLT	9/18/2013	7:55	Chromium, Hexavalent	ND	ug/L	0.20
810111-008	MW-213-193	E218.6	FLDFLT	9/18/2013	8:05	Chromium, Hexavalent	ND	ug/L	0.20
810111-009	MW-62-110-193	E218.6	FLDFLT	9/18/2013	14:10	Chromium, Hexavalent	808	ug/L	10.0
810111-009	MW-62-110-193	SW6020	FLDFLT	9/18/2013	14:10	Chromium	857	ug/L	2.0
810111-010	MW-62-190-193	E218.6	FLDFLT	9/18/2013	14:22	Chromium, Hexavalent	ND	ug/L	1.0
810111-010	MW-62-190-193	SW6020	FLDFLT	9/18/2013	14:22	Chromium	ND	ug/L	1.0
810111-011	MW-68BR-280-193	E218.6	FLDFLT	9/18/2013	11:25	Chromium, Hexavalent	ND	ug/L	1.0
810111-011	MW-68BR-280-193	SW6020	FLDFLT	9/18/2013	11:25	Chromium	ND	ug/L	1.0
810111-012	MW-74-240-193	E218.6	FLDFLT	9/18/2013	13:14	Chromium, Hexavalent	ND	ug/L	0.20
810111-012	MW-74-240-193	SW6020	FLDFLT	9/18/2013	13:14	Chromium	ND	ug/L	1.0
810111-013	MW-125-193	E218.6	FLDFLT	9/19/2013	7:00	Chromium, Hexavalent	138	ug/L	2.0
810111-013	MW-125-193	SW6020	FLDFLT	9/19/2013	7:00	Chromium	140	ug/L	1.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810111-014	MW-214-193	E218.6	FLDFLT	9/19/2013	6:32	Chromium, Hexavalent	ND	ug/L	0.20
810111-015	MW-58BR-193	E218.6	FLDFLT	9/19/2013	8:36	Chromium, Hexavalent	0.73	ug/L	0.20
810111-015	MW-58BR-193	SW6020	FLDFLT	9/19/2013	8:36	Chromium	ND	ug/L	1.0
810111-016	MW-65-160-193	E218.6	FLDFLT	9/19/2013	15:04	Chromium, Hexavalent	113	ug/L	1.0
810111-016	MW-65-160-193	SW6020	FLDFLT	9/19/2013	15:04	Chromium	115	ug/L	1.0
810111-017	MW-72-080-193	E218.6	FLDFLT	9/19/2013	10:30	Chromium, Hexavalent	139	ug/L	2.0
810111-017	MW-72-080-193	SW6020	FLDFLT	9/19/2013	10:30	Chromium	141	ug/L	1.0
810111-018	MW-72BR-200-193	E218.6	FLDFLT	9/19/2013	13:53	Chromium, Hexavalent	5.7	ug/L	1.0
810111-018	MW-72BR-200-193	SW6020	FLDFLT	9/19/2013	13:53	Chromium	6.2	ug/L	1.0
810111-019	MW-123-193	E218.6	FLDFLT	9/23/2013	10:43	Chromium, Hexavalent	579	ug/L	5.0
810111-019	MW-123-193	SW6020	FLDFLT	9/23/2013	10:43	Chromium	580	ug/L	2.0
810111-020	MW-215-193	E218.6	FLDFLT	9/23/2013	6:48	Chromium, Hexavalent	ND	ug/L	0.20
810111-021	MW-216-193	E218.6	FLDFLT	9/23/2013	6:50	Chromium, Hexavalent	ND	ug/L	0.20
810111-022	MW-57-070-193	E218.6	FLDFLT	9/23/2013	13:48	Chromium, Hexavalent	554	ug/L	5.0
810111-022	MW-57-070-193	SW6020	FLDFLT	9/23/2013	13:48	Chromium	561	ug/L	2.0
810111-023	MW-61-110-193	E218.6	FLDFLT	9/23/2013	9:37	Chromium, Hexavalent	576	ug/L	5.0
810111-023	MW-61-110-193	SW6020	FLDFLT	9/23/2013	9:37	Chromium	616	ug/L	2.0
810111-024	MW-62-065-193	E218.6	FLDFLT	9/23/2013	12:36	Chromium, Hexavalent	500	ug/L	5.0
810111-024	MW-62-065-193	SW6020	FLDFLT	9/23/2013	12:36	Chromium	518	ug/L	2.0
810111-025	MW-65-225-193	E218.6	FLDFLT	9/23/2013	10:44	Chromium, Hexavalent	583	ug/L	5.0
810111-025	MW-65-225-193	SW6020	FLDFLT	9/23/2013	10:44	Chromium	613	ug/L	2.0
810111-026	MW-66-165-193	E218.6	FLDFLT	9/23/2013	14:54	Chromium, Hexavalent	631	ug/L	10.0
810111-026	MW-66-165-193	SW6020	FLDFLT	9/23/2013	14:54	Chromium	694	ug/L	2.0
810111-027	MW-66BR-270-193	E218.6	FLDFLT	9/23/2013	15:06	Chromium, Hexavalent	ND	ug/L	1.0
810111-027	MW-66BR-270-193	SW6020	FLDFLT	9/23/2013	15:06	Chromium	ND	ug/L	1.0
810111-028	MW-70-105-193	E218.6	FLDFLT	9/23/2013	8:20	Chromium, Hexavalent	122	ug/L	1.0
810111-028	MW-70-105-193	SW6020	FLDFLT	9/23/2013	8:20	Chromium	123	ug/L	1.0
810111-029	MW-217-193	E218.6	FLDFLT	9/24/2013	7:15	Chromium, Hexavalent	ND	ug/L	0.20
810111-030	MW-218-193	E218.6	FLDFLT	9/24/2013	7:00	Chromium, Hexavalent	ND	ug/L	0.20

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:

Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 423575.MP.02.GM.03
P.O. Number: 423575.MP.02.GM.03
Release Number:

Laboratory No. 810111

Printed 10/8/2013

Samples Received on 9/24/2013 7:55:00 PM

Field ID	Lab ID	Collected	Matrix
MW-23-060-193	810111-001	09/17/2013 09:45	Water
MW-23-080-193	810111-002	09/17/2013 11:25	Water
MW-38D-193	810111-003	09/17/2013 15:44	Water
MW-60BR-245-193	810111-004	09/17/2013 14:17	Water
MW-64BR-193	810111-005	09/17/2013 12:00	Water
MW-211-193	810111-006	09/18/2013 08:00	Water
MW-212-193	810111-007	09/18/2013 07:55	Water
MW-213-193	810111-008	09/18/2013 08:05	Water
MW-62-110-193	810111-009	09/18/2013 14:10	Water
MW-62-190-193	810111-010	09/18/2013 14:22	Water
MW-68BR-280-193	810111-011	09/18/2013 11:25	Water
MW-74-240-193	810111-012	09/18/2013 13:14	Water
MW-125-193	810111-013	09/19/2013 07:00	Water
MW-214-193	810111-014	09/19/2013 06:32	Water
MW-58BR-193	810111-015	09/19/2013 08:36	Water
MW-65-160-193	810111-016	09/19/2013 15:04	Water
MW-72-080-193	810111-017	09/19/2013 10:30	Water
MW-72BR-200-193	810111-018	09/19/2013 13:53	Water
MW-123-193	810111-019	09/23/2013 10:43	Water
MW-215-193	810111-020	09/23/2013 06:48	Water
MW-216-193	810111-021	09/23/2013 06:50	Water
MW-57-070-193	810111-022	09/23/2013 13:48	Water
MW-61-110-193	810111-023	09/23/2013 09:37	Water
MW-62-065-193	810111-024	09/23/2013 12:36	Water
MW-65-225-193	810111-025	09/23/2013 10:44	Water
MW-66-165-193	810111-026	09/23/2013 14:54	Water
MW-66BR-270-193	810111-027	09/23/2013 15:06	Water
MW-70-105-193	810111-028	09/23/2013 08:20	Water
MW-217-193	810111-029	09/24/2013 07:15	Water
MW-218-193	810111-030	09/24/2013 07:00	Water

Chrome VI by EPA 218.6 Batch 09CrH13H

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Parameter	Unit	Analyzed	DF	MDL	RL	Result
810111-001 Chromium, Hexavalent	ug/L	09/25/2013 11:18	5.00	0.0300	1.0	36.9
810111-002 Chromium, Hexavalent	ug/L	09/25/2013 11:52	5.00	0.0300	1.0	13.7
810111-003 Chromium, Hexavalent	ug/L	09/25/2013 12:39	5.00	0.0300	1.0	7.5
810111-004 Chromium, Hexavalent	ug/L	09/25/2013 13:34	5.00	0.0300	1.0	ND
810111-005 Chromium, Hexavalent	ug/L	09/25/2013 13:36	5.00	0.0300	1.0	ND
810111-006 Chromium, Hexavalent	ug/L	09/25/2013 13:26	1.00	0.00600	0.20	ND
810111-007 Chromium, Hexavalent	ug/L	09/25/2013 13:47	1.00	0.00600	0.20	ND
810111-008 Chromium, Hexavalent	ug/L	09/25/2013 13:57	1.00	0.00600	0.20	ND
810111-010 Chromium, Hexavalent	ug/L	09/25/2013 14:45	5.00	0.0300	1.0	ND
810111-011 Chromium, Hexavalent	ug/L	09/25/2013 15:17	5.00	0.0300	1.0	ND
810111-012 Chromium, Hexavalent	ug/L	09/25/2013 15:27	1.00	0.00600	0.20	ND
810111-013 Chromium, Hexavalent	ug/L	09/25/2013 15:58	10.0	0.0600	2.0	138

Method Blank

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

Duplicate — Lab ID = 810110-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.131	0.124	5.64	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.197	0.200	98.4	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.87	5.00	97.3	90 - 110

Matrix Spike — Lab ID = 810110-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.14	1.12(1.00)	102	90 - 110

Matrix Spike — Lab ID = 810111-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	85.5	86.8(50.0)	97.3	90 - 110

Matrix Spike — Lab ID = 810111-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	38.3	38.9(25.0)	97.7	90 - 110

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Matrix Spike — Lab ID = 810111-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	31.7	32.5(25.0)	96.7	90 - 110

Matrix Spike — Lab ID = 810111-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.98	5.00(5.00)	99.6	90 - 110

Matrix Spike — Lab ID = 810111-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.08	1.00(1.00)	108	90 - 110

Matrix Spike — Lab ID = 810111-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.984	1.00(1.00)	98.4	90 - 110

Matrix Spike — Lab ID = 810111-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.92	5.00(5.00)	98.4	90 - 110

Matrix Spike — Lab ID = 810111-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.06	1.00(1.00)	106	90 - 110

Matrix Spike — Lab ID = 810111-007

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

Matrix Spike — Lab ID = 810111-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.06	1.00(1.00)	106	90 - 110

Matrix Spike — Lab ID = 810111-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.981	1.00(1.00)	98.1	90 - 110

Matrix Spike — Lab ID = 810111-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.95	5.00(5.00)	99.0	90 - 110

Matrix Spike — Lab ID = 810111-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.97	5.00(5.00)	99.4	90 - 110

Matrix Spike — Lab ID = 810111-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0	1.00(1.00)	0	90 - 110

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Matrix Spike — Lab ID = 810111-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.73	5.00(5.00)	94.6	90 - 110

Matrix Spike — Lab ID = 810111-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.03	1.00(1.00)	103	90 - 110

Matrix Spike — Lab ID = 810111-013

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	295	288(150)	105	90 - 110

Matrix Spike — Lab ID = 810111-013

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	155	156(15.0)	90.8	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.90	5.00	98.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.80	10.0	98.0	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.74	10.0	97.4	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.95	10.0	99.5	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.78	10.0	97.8	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.85	10.0	98.5	95 - 105

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Chrome VI by EPA 218.6 Batch 09CrH13I

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810111-009 Chromium, Hexavalent	ug/L	09/26/2013 12:56	50.0	0.300	10.0	808
810111-014 Chromium, Hexavalent	ug/L	09/26/2013 13:06	1.00	0.00600	0.20	ND

Method Blank

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

Duplicate — Lab ID = 810144-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	20.7	20.8	0.310	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.197	0.200	98.5	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.90	5.00	98.0	90 - 110

Matrix Spike — Lab ID = 810111-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1800	1810(1000)	99.0	90 - 110

Matrix Spike — Lab ID = 810111-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.03	1.00(1.00)	103	90 - 110

Matrix Spike — Lab ID = 810143-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.09	1.13(1.00)	95.9	90 - 110

Matrix Spike — Lab ID = 810143-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.41	8.59(5.00)	96.4	90 - 110

Matrix Spike — Lab ID = 810143-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.09	8.16(5.00)	98.6	90 - 110

Matrix Spike — Lab ID = 810143-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.977	1.00(1.00)	97.7	90 - 110

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Chrome VI by EPA 218.6

Batch 09CrH13K

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810111-015 Chromium, Hexavalent	ug/L	09/30/2013 13:40	1.00	0.00600	0.20	0.73
810111-016 Chromium, Hexavalent	ug/L	09/30/2013 15:16	5.00	0.0300	1.0	113
810111-017 Chromium, Hexavalent	ug/L	09/30/2013 15:26	10.0	0.0600	2.0	139
810111-018 Chromium, Hexavalent	ug/L	09/30/2013 15:36	5.00	0.0300	1.0	5.7
810111-019 Chromium, Hexavalent	ug/L	09/30/2013 15:47	25.0	0.150	5.0	579
810111-020 Chromium, Hexavalent	ug/L	09/30/2013 15:57	1.00	0.00600	0.20	ND
810111-021 Chromium, Hexavalent	ug/L	09/30/2013 16:28	1.00	0.00600	0.20	ND
810111-022 Chromium, Hexavalent	ug/L	09/30/2013 16:39	25.0	0.150	5.0	554
810111-023 Chromium, Hexavalent	ug/L	09/30/2013 16:49	25.0	0.150	5.0	576
810111-024 Chromium, Hexavalent	ug/L	09/30/2013 17:00	25.0	0.150	5.0	500
810111-025 Chromium, Hexavalent	ug/L	09/30/2013 17:10	25.0	0.150	5.0	583
810111-026 Chromium, Hexavalent	ug/L	09/30/2013 12:38	50.0	0.300	10.0	631
810111-027 Chromium, Hexavalent	ug/L	09/30/2013 12:48	5.00	0.0300	1.0	ND
810111-028 Chromium, Hexavalent	ug/L	09/30/2013 13:19	5.00	0.0300	1.0	122

Method Blank

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

Duplicate — Lab ID = 810111-019

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	580	579	0.193	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.195	0.200	97.4	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.85	5.00	96.9	90 - 110

Matrix Spike — Lab ID = 810111-015

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.73	5.73(5.00)	100	90 - 110

Matrix Spike — Lab ID = 810111-015

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.75	1.74(1.00)	101	90 - 110

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Matrix Spike — Lab ID = 810111-016

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	234	238(125)	97.2	90 - 110

Matrix Spike — Lab ID = 810111-017

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	292	289(150)	102	90 - 110

Matrix Spike — Lab ID = 810111-018

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	30.2	30.7(25.0)	98.0	90 - 110

Matrix Spike — Lab ID = 810111-019

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	1210	1200(625)	100	90 - 110

Matrix Spike — Lab ID = 810111-020

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.05	1.00(1.00)	105	90 - 110

Matrix Spike — Lab ID = 810111-021

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.05	1.00(1.00)	105	90 - 110

Matrix Spike — Lab ID = 810111-022

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	1200	1180(625)	104	90 - 110

Matrix Spike — Lab ID = 810111-023

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	1210	1200(625)	102	90 - 110

Matrix Spike — Lab ID = 810111-024

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	1000	1000(500)	101	90 - 110

Matrix Spike — Lab ID = 810111-025

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	1210	1210(625)	101	90 - 110

Matrix Spike — Lab ID = 810111-026

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1380	1380(750)	99.8	90 - 110

Matrix Spike — Lab ID = 810111-027

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

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Matrix Spike — Lab ID = 810111-027

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.02	1.00(1.00)	102	90 - 110

Matrix Spike — Lab ID = 810111-028

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	248	247(125)	101	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.84	5.00	96.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.82	10.0	98.2	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.88	10.0	98.8	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.73	10.0	97.3	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.62	10.0	96.2	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.75	10.0	97.5	95 - 105

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Chrome VI by EPA 218.6 Batch 10CrH13L

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810111-029 Chromium, Hexavalent	ug/L	10/01/2013 15:54	1.00	0.00600	0.20	ND
810111-030 Chromium, Hexavalent	ug/L	10/01/2013 16:04	1.00	0.00600	0.20	ND

Method Blank

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

Duplicate — Lab ID = 810191-008

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	20.8	21.0	1.17	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.196	0.200	98.2	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.90	5.00	97.9	90 - 110

Matrix Spike — Lab ID = 810111-029

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.05	1.04(1.00)	101	90 - 110

Matrix Spike — Lab ID = 810111-030

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.05	1.02(1.00)	103	90 - 110

Matrix Spike — Lab ID = 810191-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.956	1.00(1.00)	95.6	90 - 110

Matrix Spike — Lab ID = 810191-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.28	6.51(5.00)	95.3	90 - 110

Matrix Spike — Lab ID = 810191-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.00	7.26(5.00)	94.7	90 - 110

Matrix Spike — Lab ID = 810191-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.44	8.74(5.00)	94.0	90 - 110

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Metals by EPA 6020A, Dissolved Batch 092513A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810111-027 Chromium	ug/L	09/25/2013 15:30	2.00	0.142	1.0	ND
810111-028 Chromium	ug/L	09/25/2013 15:54	2.00	0.142	1.0	123

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 810111-027

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.213	0.200	106	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.3	50.0	98.6	85 - 115

Matrix Spike — Lab ID = 810111-027

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	46.9	50.0(50.0)	93.9	75 - 125

Matrix Spike Duplicate — Lab ID = 810111-027

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

MRCCS - Secondary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.1	20.0	95.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.2	20.0	96.2	90 - 110

Interference Check Standard A

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

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Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.6	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.0	20.0	100	80 - 120

Serial Dilution Lab ID = 810111-028

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	10.0	126	123	2.62	0 - 10

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Metals by EPA 6020A, Dissolved Batch 092613A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810111-001 Chromium	ug/L	09/26/2013 17:32	2.00	0.142	1.0	38.4
810111-002 Chromium	ug/L	09/26/2013 18:20	2.00	0.142	1.0	14.3
810111-003 Chromium	ug/L	09/26/2013 18:26	2.00	0.142	1.0	8.1
810111-004 Chromium	ug/L	09/26/2013 18:33	2.00	0.142	1.0	2.6
810111-005 Chromium	ug/L	09/26/2013 18:39	2.00	0.142	1.0	ND
810111-009 Chromium	ug/L	09/26/2013 18:45	10.0	0.710	2.0	857
810111-010 Chromium	ug/L	09/26/2013 18:51	2.00	0.142	1.0	ND
810111-011 Chromium	ug/L	09/26/2013 18:57	2.00	0.142	1.0	ND
810111-012 Chromium	ug/L	09/26/2013 19:03	2.00	0.142	1.0	ND
810111-013 Chromium	ug/L	09/26/2013 19:09	2.00	0.142	1.0	140
810111-015 Chromium	ug/L	09/26/2013 19:33	2.00	0.142	1.0	ND
810111-016 Chromium	ug/L	09/26/2013 19:39	2.00	0.142	1.0	115
810111-017 Chromium	ug/L	09/26/2013 19:45	2.00	0.142	1.0	141
810111-018 Chromium	ug/L	09/26/2013 19:51	2.00	0.142	1.0	6.2
810111-022 Chromium	ug/L	09/26/2013 20:03	10.0	0.710	2.0	561
810111-023 Chromium	ug/L	09/26/2013 20:09	10.0	0.710	2.0	616
810111-024 Chromium	ug/L	09/26/2013 20:15	10.0	0.710	2.0	518
810111-025 Chromium	ug/L	09/26/2013 20:21	10.0	0.710	2.0	613
810111-026 Chromium	ug/L	09/26/2013 20:27	10.0	0.710	2.0	694

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 810111-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	38.6	38.4	0.457	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.221	0.200	110	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	52.1	50.0	104	85 - 115

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Matrix Spike — Lab ID = 810111-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	88.9	88.4(50.0)	101	75 - 125

Matrix Spike Duplicate — Lab ID = 810111-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	89.0	88.4(50.0)	101	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	97.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.9	20.0	99.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	99.2	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	98.8	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.1	20.0	101	80 - 120

Serial Dilution — Lab ID = 810111-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	10.0	38.4	38.4	0.0443	0 - 10

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Metals by EPA 6020A, Dissolved Batch 100713A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810111-019 Chromium	ug/L	10/07/2013 14:08	10.0	0.710	2.0	580

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 810111-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	34.4	35.1	2.16	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.220	0.200	110	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.8	50.0	99.6	85 - 115

Matrix Spike — Lab ID = 810111-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	83.4	85.1(50.0)	96.6	75 - 125

Matrix Spike Duplicate — Lab ID = 810111-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	85.2	85.1(50.0)	100	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	97.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	96.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.3	20.0	96.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.3	90 - 110

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.3	20.0	96.5	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.3	20.0	96.7	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	97.8	80 - 120

Serial Dilution Lab ID = 810111-019

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	50.0	577	580	0.588	0 - 10

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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

CH2MHILL

CHAIN OF CUSTODY RECORD 810111

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/24/2013
COC Number: 9

	Container:	250 ml Poly	500 ml Poly				
	Preservatives:	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C				
	Filtered:	Field	Field				
	Holding Time:	28	180				
		Cr6 (E218.6) FF	Metals (6020A) FF Chromium			Number of Containers	COMMENTS
	DATE TIME Matrix						
1	MW-23-060-193 9/17/2013 9:45 Water	x	x			2	
2	MW-23-080-193 9/17/2013 11:25 Water	x	x			2	
3	MW-38D-193 9/17/2013 15:44 Water	x	x			2	pH=2 6020A
4	MW-60BR-245-193 9/17/2013 14:17 Water	x	x			2	
5	MW-64BR-193 9/17/2013 12:00 Water	x	x			2	
6	MW-211-193 9/18/2013 8:00 Water	x				1	
7	MW-212-193 9/18/2013 7:55 Water	x				1	
8	MW-213-193 9/18/2013 8:05 Water	x				1	
9	MW-62-110-193 9/18/2013 14:10 Water	x	x			2	
10	MW-62-190-193 9/18/2013 14:22 Water	x	x			2	
11	MW-68BR-280-193 9/18/2013 11:25 Water	x	x			2	pH=2 6020A
12	MW-74-240-193 9/18/2013 13:14 Water	x	x			2	
13	MW-125-193 9/19/2013 7:00 Water	x	x			2	
14	MW-214-193 9/19/2013 6:32 Water	x				1	

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

	Signatures	Date/Time
Approved by		
Sampled by		
Relinquished by		9-24-13 1530
Received by	Shawn Ngo	9-24-13 1530
Relinquished by	Shawn Ngo	9-24-13 1955
Received by	Gardner Dunn	9/24/13 1955

Shipping Details
Method of Shipment: courier
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

CH2MHILL **CHAIN OF CUSTODY RECORD** 810111 Page 2 OF 3

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/24/2013
COC Number: 9

	DATE	TIME	Matrix	Container: 250 ml Poly; Preservatives: (NH4)2SO4/NH4OH, 4°C; Filtered: Field; Holding Time: 28; Cr6 (E218.6) FF	Container: 500 ml Poly; Preservatives: HNO3, 4°C; Filtered: Field; Holding Time: 180; Metals (6020A) FF Chromium	Number of Containers	COMMENTS
13	MW-58BR-193	9/19/2013	8:36	Water	X	X	2	
16	MW-65-160-193	9/19/2013	15:04	Water	X	X	2	
14	MW-72-080-193	9/19/2013	10:30	Water	X	X	2	DH-2
18	MW-72BR-200-193	9/19/2013	13:53	Water	X	X	2	60204
19	MW-123-193	9/23/2013	10:43	Water	X	X	2	
20	MW-215-193	9/23/2013	6:48	Water	X		1	
21	MW-216-193	9/23/2013	6:50	Water	X		1	
22	MW-57-070-193	9/23/2013	13:48	Water	X	X	2	
23	MW-61-110-193	9/23/2013	9:37	Water	X	X	2	
24	MW-62-065-193	9/23/2013	12:36	Water	X	X	2	
25	MW-65-225-193	9/23/2013	10:44	Water	X	X	2	DH-2
26	MW-66-165-193	9/23/2013	14:54	Water	X	X	2	60204
27	MW-66BR-270-193	9/23/2013	15:06	Water	X	X	2	
28	MW-70-105-193	9/23/2013	8:20	Water	X	X	2	

ALERT !!
Level III QC

	Signatures	Date/Time
Approved by		
Sampled by		
Relinquished by	Ekash Ngo	9-24-13 1530
Received by	Ekash Ngo	9-24-13 1530
Relinquished by	Rachel Bn	9-24-13 1955
Received by		9/24/13 1955

Shipping Details
Method of Shipment: courier
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN: Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

CH2MHILL **CHAIN OF CUSTODY RECORD** 810111 Page 3 OF 3

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/24/2013
COC Number: 9

	DATE	TIME	Matrix	Container: 250 ml Poly; Preservatives: (NH4)2SO4/NH4OH, 4°C; Filtered: Field; Holding Time: 28; Cr6 (E218.6) FF	Container: 500 ml Poly; Preservatives: HNO3, 4°C; Filtered: Field; Holding Time: 180; Metals (6020A) FF Chromium		Number of Containers	COMMENTS
29	MW-217-193	9/24/2013	7:15	Water	X			1	
30	MW-218-193	9/24/2013	7:00	Water	X			1	
						TOTAL NUMBER OF CONTAINERS			

ALERT !!
Level III QC

	Signatures	Date/Time
Approved by		
Sampled by		9-24-13 1530
Relinquished by		9-24-13 15-30
Received by		9-24-13 19-55
Relinquished by		9/24/13 1955
Received by		

Shipping Details
Method of Shipment: courier
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

94

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
9/18/13	810013-17	9.5	N/A	N/A	N/A	NE
↓	-18	↓	↓	↓	↓	↓
↓	-19	↓	↓	↓	↓	↓
↓	-20	↓	↓	↓	↓	↓
↓	-21	↓	↓	↓	↓	↓
↓	-22	↓	↓	↓	↓	↓
↓	-23	↓	↓	↓	↓	↓
↓	-24	↓	↓	↓	↓	↓
9/25/13	810110	7.0	2 mL/100 mL	9.5	8:50	NE
TM 9/25/13 9/25/13	810111-1	~~9.0~~ 9.5	2 N/A	N/A	N/A	TM
↓	-2	↓	↓	↓	↓	↓
↓	-3	↓	↓	↓	↓	↓
↓	-4	↓	↓	↓	↓	↓
↓	-5	↓	↓	↓	↓	↓
↓	-6	↓	↓	↓	↓	↓
↓	-7	↓	↓	↓	↓	↓
↓	-8	↓	↓	↓	↓	↓
↓	-9	↓	↓	↓	↓	↓
↓	-10	↓	↓	↓	↓	↓
↓	-11	↓	↓	↓	↓	↓
↓	-12	↓	↓	↓	↓	↓
↓	-13	↓	↓	↓	↓	↓
↓	-14	↓	↓	↓	↓	↓
↓	-15	↓	↓	↓	↓	↓
↓	-16	↓	↓	↓	↓	↓
↓	-17	↓	↓	↓	↓	↓
↓	-18	↓	↓	↓	↓	↓
↓	-19	↓	↓	↓	↓	↓
↓	-20	↓	↓	↓	↓	↓
↓	-21	↓	↓	↓	↓	↓
↓	-22	↓	↓	↓	↓	↓

JM 9/26/13

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
9/25/13	810111 -23	9.5	N/A	N/A	N/A	TM
	-24					
	-25					
	-26					
	-27					
	-28					
	-29					
	-30					
9/26/13	810143-1	9.5	N/A	N/A	N/A	NE
	-2					
	-3					
	-4					
	810144-1					
	-2					
	-3					

NE 9/26/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810077	<1	<2	9/23/13	DL	yes			
810088	<1	<2	9/24/13	ES	Yes			
810090 (1-2)	↓	↓	↓	↓	↓			
810094	<1	<2 ~~>2~~	9/24/13	DL	yes			
810095	↓	↓	↓	↓	↓			
810096								
810097								
810098	↓	↓	↓	↓	↓			
810113	<1	<2	9/25/13	DL	yes			
810116-1,2	↓	>2	↓	DL	NO	8:40	9/26/13 10:00	pH <2
810110	<1	72	9/25/13	ES	Yes	10:00		pH <2
810111 (1-5, 9-13, 15-19, 22-24)	<1 ↓	<2 ↓	↓	↓	↓			
810126	~~<1~~ >1 9/25/13	<2	9/25/13	DL	yes			
810114 (1-5)	<1	72	9/25/13	ES	NO	2:00	9/26/13 10:00	pH <2
810132-1-3	<1	>2	9/25/13	DL	NO	15:35	↓	
810143-1-3	<1	<2	9/26/13	DL	yes			
810144-1,3	↓	↓	↓	↓	↓			-3 NTU>1
810137-10,11,12	<1	>2	9/26/13	DL	NO	9:00		
810145	<1	<2	9/27/13	DL	yes			
810138-1,2	>1	<2	↓	↓	↓			
810139	>1	<2	↓	↓	↓			
810144-3	>1	>2	9/26/13	ES	Yes	10:00		Filtered from a
810159-2-8	<1	<2	9/27/13	DL	yes			
810147-1,2,3	<1	<2	↓	↓	↓			
810167-1-10	<1	>2	9/27/13	DL	NO	12:10	9/30/13 10:00	pH <2
810159-2,4,7,10 19-21, 27	<1 ↓	>2 ↓	↓	↓	↓	↓		
810171	<1	<2	9/27/13	DL	yes			
810176	<1	<2	9/30/13	ES	Yes			
810178 (1-4)	<1	<2	↓	↓	↓			-3,4 NTU>1
810182 (1-2,4)	<1	>2	↓	↓	NO	4:00		
810191 (2-8)	<1	<2	10/1/13	ES	Yes			
810192 (1,3-7)	↓	↓	↓	↓	↓			
810194-1,2	<1	<2	10/1/13	DL	yes			
810188								
810189	↓	↓	↓	↓	↓			
810192-7	>1	>2	10/2/13	ES	Yes	10:00		Filtered from acidify
810204 (1-2)	<1	>2	10/2/13	ES	Yes	10:00		↓
810207 (1, ~~4~~ 15, 19-21)	<1	<2	↓	↓	↓			
810202	>1	<2	10/2/13	ES	yes			
810216 (1-2)	<1	>2	↓	↓	NO	1:00		
810225 (1-3)	<1	>2	10/2/13	ES	Yes	1:00		
810184	SOLID (TTLC)		10/2/13	ES	↓			

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810111

Date Delivered: 9 / 24 / 13 **Time:** 19:55 **By:** ☐Mail ☐Field Service ☑Client

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

ALERT !! Level II QC

15. ***Sample Matrix:*** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

October 17, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-EW-211, GROUNDWATER MONITORING PROJECT, TLI NO.: 810204

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-EW-211 groundwater-monitoring project for Total Dissolved and Hexavalent Chromium, Total Dissolved Solids, pH, and Specific Conductivity. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms 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 October 1, 2013, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Samples for Total Dissolved Chromium were analyzed by method EPA 200.8 with the approval of Mr. Shawn Duffy.

Samples for pH analysis by SM 4500-H B were received past the method specified holding time. Mr. Duffy approved the analysis of the samples.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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

Laboratory No.: 810204
Date: October 17, 2013
Collected: October 1, 2013
Received: October 1, 2013

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Maksim Gorbunov
SM 4500-H B	pH	Naheed Eidinejad / Maksim Gorbunov
SM 2540C	Total Dissolved Solids	Maksim Gorbunov
EPA 200.8	Metals by ICP/MS	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad
SM 3500-CrB	Hexavalent Chromium	Jenny Tankunakorn

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

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

Laboratory No.: 810204
Date Received: October 1, 2013

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

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810204-001	PE-01-211	E120.1	NONE	10/1/2013	13:14	EC	4160	umhos/cm	2.00
810204-001	PE-01-211	E200.8	LABFLT	10/1/2013	13:14	Chromium	5.1	ug/L	1.0
810204-001	PE-01-211	E218.6	LABFLT	10/1/2013	13:14	Chromium, Hexavalent	5.2	ug/L	0.20
810204-001	PE-01-211	SM2540C	NONE	10/1/2013	13:14	Total Dissolved Solids	2600	mg/L	125
810204-001	PE-01-211	SM4500HB	NONE	10/1/2013	13:14	PH	7.59 J	pH	4.00
810204-002	TW-03D-211	E120.1	NONE	10/1/2013	13:30	EC	7620	umhos/cm	2.00
810204-002	TW-03D-211	E200.8	LABFLT	10/1/2013	13:30	Chromium	720	ug/L	2.0
810204-002	TW-03D-211	SM2540C	NONE	10/1/2013	13:30	Total Dissolved Solids	5010	mg/L	250
810204-002	TW-03D-211	SM3500-CrB	LABFLT	10/1/2013	13:30	Chromium, Hexavalent	846	ug/L	250
810204-002	TW-03D-211	SM4500HB	NONE	10/1/2013	13:30	PH	7.51 J	pH	4.00

ND: Non Detected (below reporting limit)

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

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

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REPORT

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

Laboratory No. 810204

Printed 10/17/2013

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

Field ID	Lab ID	Collected	Matrix
PE-01-211	810204-001	10/01/2013 13:14	Water
TW-03D-211	810204-002	10/01/2013 13:30	Water

Specific Conductivity - EPA 120.1 Batch 10EC13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810204-001 Specific Conductivity	umhos/cm	10/08/2013	1.00	0.606	2.00	4160
810204-002 Specific Conductivity	umhos/cm	10/08/2013	1.00	0.606	2.00	7620

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 810237-002

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

Lab Control Sample

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

MRCCS - Secondary

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

MRCVS - Primary

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

MRCVS - Primary

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

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Chrome VI by EPA 218.6 Batch 10CrH13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810204-001 Chromium, Hexavalent	ug/L	10/02/2013 11:55	1.00	0.00600	0.20	5.2

Method Blank

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

Duplicate — Lab ID = 810204-001

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

Low Level Calibration Verification

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

Lab Control Sample

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

Matrix Spike — Lab ID = 810204-001

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

Matrix Spike — Lab ID = 810206-001

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

Matrix Spike — Lab ID = 810206-002

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

Matrix Spike — Lab ID = 810206-003

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

Matrix Spike — Lab ID = 810207-001

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

Matrix Spike — Lab ID = 810207-002

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

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Chromium, Hexavalent by SM 3500-Cr B Batch 10CrH13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810204-002 Chromium, Hexavalent	ug/L	10/15/2013 15:58	25.0	110	250	846

Method Blank

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

Duplicate — Lab ID = 810204-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	846	846	0.0355	0 - 20

Lab Control Sample

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

Matrix Spike — Lab ID = 810204-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	3240	3350(2500)	95.7	85 - 115

MRCCS - Secondary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	58.6	60.0	97.7	90 - 110

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pH by SM 4500-H B Batch 10PH13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
810204-001 pH	pH	10/02/2013 11:15	1.00	0.0784	4.00	7.59	J
810204-002 pH	pH	10/02/2013 11:23	1.00	0.0784	4.00	7.51	J

Duplicate — Lab ID = 810204-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
pH	pH	1.00	7.57	7.59	0.264	0 - 20

Duplicate — Lab ID = 810208-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
pH	pH	1.00	8.00	8.03	0.374	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.00	7.00	100	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.01	7.00	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
pH	pH	1.00	7.02	7.00	100	90 - 110

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Total Dissolved Solids by SM 2540 C Batch 10TDS13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810204-001 Total Dissolved Solids	mg/L	10/07/2013	1.00	1.76	125	2600
810204-002 Total Dissolved Solids	mg/L	10/07/2013	1.00	1.76	250	5010

Method Blank

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

Duplicate — Lab ID = 810200-015

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

Duplicate — Lab ID = 810223-001

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

Lab Control Sample

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

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Metals by EPA 200.8, Dissolved

Batch 100313A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810204-001 Chromium	ug/L	10/03/2013 13:14	2.00	0.142	1.0	5.1
810204-002 Chromium	ug/L	10/03/2013 13:20	10.0	0.710	2.0	720

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 810192-007

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	8.86	8.53	3.82	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.226	0.200	113	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.4	50.0	101	85 - 115

Matrix Spike — Lab ID = 810192-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	52.8	58.5(50.0)	88.5	75 - 125

Matrix Spike Duplicate — Lab ID = 810192-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	55.7	58.5(50.0)	94.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.1	20.0	100	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.1	20.0	95.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	97.1	90 - 110

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	99.2	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.0	20.0	100	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.4	80 - 120

Serial Dilution Lab ID = 810207-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	100	1080	1020	5.44	0 - 10

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

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

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

Calculation as follows:

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

Where:

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

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

Laboratory Control Sample (LCS) Summary

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

LCS Recovery

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

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

Duplicate Determinations Difference Summary

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

Duplicate Determination Difference

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

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

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

Maksim G.
Analyst Printed Name

Analyst Signature

Katia K.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

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

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

810204

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

CHAIN OF CUSTODY RECORD

[IM3Plant-EW-211]

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

COMPANY CH2M HILL /E2
PROJECT NAME PG&E Topock IM3Plant-EW
PHONE 530-229-3303 FAX 530-339-3303
ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612
P.O. NUMBER 428648.IM.CS.EX.AC
SAMPLERS (SIGNATURE)

810204
Rec'd 10/01/13
CH2M

	SAMPLE I.D.	DATE	TIME	DESCRIPTION	Dissolved Cr (200.7) Lab filtered	Cr(VI) (3500-Cr B)	pH (150.0) EC (120.1)	TDS (160.1)	Cr(VI) (218.6)	NUMBER OF CONTAINERS	COMMENTS
-1	PE-01-211	10/01/13	13:14 13:32	Ground water	X		X	X	X	4	pH=7 (200.7)
-2	TW-03D-211	10/01/13	13:30	Ground water	X	X	X	X		4	pH=7 (200.7)
										8	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)		Ryan Phelps	CH2MHill	10-1-13 15:40
Signature (Received)				10-1-13 15:40
Signature (Relinquished)				10-1-13 2PM
Signature (Received)		Marchea Bro	TLI	10/1/13 2000
Signature (Relinquished)				
Signature (Received)				

SAMPLE CONDITIONS
RECEIVED COOL ☒ WARM ☐ 4.3°C
CUSTODY SEALED YES ☐ NO ☒

SPECIAL REQUIREMENTS:

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

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

NE 10/3/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810077	<1	<2	9/23/13	DL	yes			
810088	<1	<2	9/24/13	ES	Yes			
810090 (1-2)	↓	↓	↓	↓	↓			
810094	<1	pH 9/24/13 <2 ~~72~~	9/24/13	DL	yes			
810095	↓	↓	↓	↓	↓			
810096								
810097								
810098								
810113	<1	<2	9/25/13	DL	yes			
810116-1,2	↓	>2	↓	DL	NO	8:40	9/26/13 10:00	pH <2
810110	<1	72	9/25/13	ES	yes	10:00		pH <2
810111 (1-5, 9-13, 15-19, 22-24)	<1 ↓	<2 ↓	↓	↓	↓			
810126	~~<1~~	pH 9/25/13 <2	9/25/13	DL	yes			
810114 (1-5)	<1	72	9/25/13	ES	NO	2:00	9/26/13 10:00	pH <2
810132-173	<1	>2	9/25/13	DL	NO	15:35	↓	
810143-173	<1	<2	9/26/13	DL	yes			
810144-1,3	↓	↓	↓	↓	↓			-3 NTU>1
810137-10,11,12	<1	>2	9/26/13	DL	NO	9:00		
810145	<1	<2	9/27/13	DL	yes			
810138-1,2	>1	<2	↓	↓	↓			
810139	>1	<2	↓	↓	↓			
810144-3	>1	>2	9/26/13	ES	yes	10:00		Filtered from a
810159-2-78	<1	<2	9/27/13	DL	yes			
810147-1,2,3	<1	<2	↓	↓	↓			
810167-1-10	<1	>2	9/27/13	DL	NO	12:10	9/30/13 10:00	pH<2
810159-2,4,7,10 19-21, 27	<1 ↓	>2 ↓	↓	↓	↓	↓		
810171	<1	<2	9/27/13	DL	yes			
810176	<1	<2	9/30/13	ES	Yes			
810178 (1-4)	<1	<2	↓	↓	↓			-3,4 NTU>1
810182 (1-2,4)	<1	>2	↓	↓	NO	4:00		
810191 (2-8)	<1	<2	10/1/13	ES	Yes			
810192 (1,3-7)	↓	↓	↓	↓	↓			
810194-1,2	<1	<2	10/1/13	DL	yes			
810188								
810189	↓	↓	↓	↓	↓			
810192-7	>1	>2	10/2/13	ES	Yes	10:00		Filtered then acidify
810204 (1-2)	<1	>2	10/2/13	ES	Yes	10:00		↓
810207 (1, ~~#~~ 15, 19-21)	<1	<2	↓	↓	↓			
810202	>1	<2	10/2/13	ES	yes			
810216 (1-2)	<1	>2	↓	↓	NO	1:00		
810225 (1-3)	<1	>2	10/2/13	ES	yes	1:00		
810184	SOLID (TTLC)		10/2/13	ES	↓			

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810204

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

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

15. ***Sample Matrix:*** ☐Liquid ☐Drinking Water ☑Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☐Other_____

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: MMG

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Level III QC

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
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October 15, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK 2013-GMP-193-Q3, GROUNDWATER MONITORING PROJECT, TLI NO.: 810207

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2013-GMP-193-Q3 groundwater-monitoring project for Hexavalent and Total Dissolved Chromium. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data, and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

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

Samples MW-12-193, MW-50-200-193, and TW-01-193 for Hexavalent Chromium by SM 3500B were analyzed by EPA 218.6 with Mr. Duffy's approval.

Due to the discrepancy between the Total Dissolved Chromium (6.8 ug/L) and Hexavalent Chromium (3.2 ug/L) results for sample MW-38S-193, sample from the Total Dissolved Chromium and Hexavalent Chromium sample containers were digested and analyzed for Total Dissolved Chromium. The results were 7.9 ug/L and 7.1 ug/L, respectively. The original Total Dissolved Chromium digestate was re-analyzed for confirmation and also yielded a result of 8.7 ug/L. After discussing the results with Mr. Duffy, the original results were reported.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING
Established 1931
14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

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

Laboratory No.: 810207
Date Received: October 1, 2013

Project Name: PG&E Topock Project
Project No.: 423575.MP.02.GM.03
P.O. No.: 423575.MP.02.GM.03

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810207-001	MW-122-193	E218.6	FLDFLT	9/24/2013	11:17	Chromium, Hexavalent	1100	ug/L	10.0
810207-001	MW-122-193	SW6020	FLDFLT	9/24/2013	11:17	Chromium	1020	ug/L	4.0
810207-002	MW-219-193	E218.6	FLDFLT	9/24/2013	6:45	Chromium, Hexavalent	ND	ug/L	0.20
810207-003	MW-220-193	E218.6	FLDFLT	9/24/2013	6:40	Chromium, Hexavalent	ND	ug/L	0.20
810207-004	MW-38S-193	E218.6	FLDFLT	9/24/2013	8:19	Chromium, Hexavalent	3.2	ug/L	0.20
810207-004	MW-38S-193	SW6020	FLDFLT	9/24/2013	8:19	Chromium	6.8	ug/L	1.0
810207-005	MW-60-125-193	E218.6	FLDFLT	9/24/2013	11:16	Chromium, Hexavalent	1120	ug/L	10.0
810207-005	MW-60-125-193	SW6020	FLDFLT	9/24/2013	11:16	Chromium	1050	ug/L	5.0
810207-006	MW-68-240-193	E218.6	FLDFLT	9/24/2013	15:44	Chromium, Hexavalent	2120	ug/L	20.0
810207-006	MW-68-240-193	SW6020	FLDFLT	9/24/2013	15:44	Chromium	1920	ug/L	5.0
810207-007	MW-69-195-193	E218.6	FLDFLT	9/24/2013	9:17	Chromium, Hexavalent	938	ug/L	10.0
810207-007	MW-69-195-193	SW6020	FLDFLT	9/24/2013	9:17	Chromium	963	ug/L	5.0
810207-008	MW-70BR-225-193	E218.6	FLDFLT	9/24/2013	14:25	Chromium, Hexavalent	2170	ug/L	20.0
810207-008	MW-70BR-225-193	SW6020	FLDFLT	9/24/2013	14:25	Chromium	2040	ug/L	5.0
810207-009	MW-12-193	E218.6	FLDFLT	9/25/2013	9:38	Chromium, Hexavalent	2260	ug/L	50.0
810207-009	MW-12-193	SW6020	FLDFLT	9/25/2013	9:38	Chromium	2590	ug/L	20.0
810207-010	MW-124-193	E218.6	FLDFLT	9/25/2013	7:49	Chromium, Hexavalent	2050	ug/L	20.0
810207-010	MW-124-193	SW6020	FLDFLT	9/25/2013	7:49	Chromium	1920	ug/L	20.0
810207-011	MW-59-100-193	E218.6	FLDFLT	9/25/2013	12:37	Chromium, Hexavalent	4180	ug/L	50.0
810207-011	MW-59-100-193	SW6020	FLDFLT	9/25/2013	12:37	Chromium	4120	ug/L	40.0
810207-012	MW-66-230-193	E218.6	FLDFLT	9/25/2013	14:29	Chromium, Hexavalent	5120	ug/L	50.0
810207-012	MW-66-230-193	SW6020	FLDFLT	9/25/2013	14:29	Chromium	6030	ug/L	20.0

004

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810207-013	MW-67-185-193	E218.6	FLDFLT	9/25/2013	8:41	Chromium, Hexavalent	2280	ug/L	20.0
810207-013	MW-67-185-193	SW6020	FLDFLT	9/25/2013	8:41	Chromium	2220	ug/L	10.0
810207-014	MW-67-225-193	E218.6	FLDFLT	9/25/2013	11:38	Chromium, Hexavalent	3100	ug/L	50.0
810207-014	MW-67-225-193	SW6020	FLDFLT	9/25/2013	11:38	Chromium	2920	ug/L	10.0
810207-015	MW-67-260-193	E218.6	FLDFLT	9/25/2013	7:47	Chromium, Hexavalent	2040	ug/L	20.0
810207-015	MW-67-260-193	SW6020	FLDFLT	9/25/2013	7:47	Chromium	1980	ug/L	20.0
810207-016	MW-221-193	E218.6	FLDFLT	9/26/2013	7:30	Chromium, Hexavalent	ND	ug/L	0.20
810207-017	MW-222-193	E218.6	FLDFLT	9/26/2013	7:25	Chromium, Hexavalent	0.35	ug/L	0.20
810207-018	MW-223-193	E218.6	FLDFLT	9/26/2013	14:30	Chromium, Hexavalent	1.7	ug/L	0.20
810207-019	MW-50-200-193	E218.6	FLDFLT	9/26/2013	10:35	Chromium, Hexavalent	7060	ug/L	100
810207-019	MW-50-200-193	SW6020	FLDFLT	9/26/2013	10:35	Chromium	6760	ug/L	40.0
810207-020	MW-68-180-193	E218.6	FLDFLT	9/26/2013	12:12	Chromium, Hexavalent	19200	ug/L	200
810207-020	MW-68-180-193	SW6020	FLDFLT	9/26/2013	12:12	Chromium	20700	ug/L	100
810207-021	TW-01-193	E218.6	FLDFLT	9/26/2013	9:10	Chromium, Hexavalent	2770	ug/L	50.0
810207-021	TW-01-193	SW6020	FLDFLT	9/26/2013	9:10	Chromium	2600	ug/L	10.0

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:

Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 423575.MP.02.GM.03
P.O. Number: 423575.MP.02.GM.03
Release Number:

Laboratory No. 810207

Printed 10/15/2013

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

Field ID	Lab ID	Collected	Matrix
MW-122-193	810207-001	09/24/2013 11:17	Water
MW-219-193	810207-002	09/24/2013 06:45	Water
MW-220-193	810207-003	09/24/2013 06:40	Water
MW-38S-193	810207-004	09/24/2013 08:19	Water
MW-60-125-193	810207-005	09/24/2013 11:16	Water
MW-68-240-193	810207-006	09/24/2013 15:44	Water
MW-69-195-193	810207-007	09/24/2013 09:17	Water
MW-70BR-225-193	810207-008	09/24/2013 14:25	Water
MW-12-193	810207-009	09/25/2013 09:38	Water
MW-124-193	810207-010	09/25/2013 07:49	Water
MW-59-100-193	810207-011	09/25/2013 12:37	Water
MW-66-230-193	810207-012	09/25/2013 14:29	Water
MW-67-185-193	810207-013	09/25/2013 08:41	Water
MW-67-225-193	810207-014	09/25/2013 11:38	Water
MW-67-260-193	810207-015	09/25/2013 07:47	Water
MW-221-193	810207-016	09/26/2013 07:30	Water
MW-222-193	810207-017	09/26/2013 07:25	Water
MW-223-193	810207-018	09/26/2013 14:30	Water
MW-50-200-193	810207-019	09/26/2013 10:35	Water
MW-68-180-193	810207-020	09/26/2013 12:12	Water
TW-01-193	810207-021	09/26/2013 09:10	Water

Chrome VI by EPA 218.6 Batch 10CrH13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810207-001 Chromium, Hexavalent	ug/L	10/02/2013 13:29	50.0	0.300	10.0	1100
810207-002 Chromium, Hexavalent	ug/L	10/02/2013 13:50	1.00	0.00600	0.20	ND
810207-003 Chromium, Hexavalent	ug/L	10/02/2013 14:00	1.00	0.00600	0.20	ND
810207-004 Chromium, Hexavalent	ug/L	10/02/2013 14:32	1.00	0.00600	0.20	3.2
810207-005 Chromium, Hexavalent	ug/L	10/02/2013 14:42	50.0	0.300	10.0	1120
810207-006 Chromium, Hexavalent	ug/L	10/03/2013 08:42	100	0.600	20.0	2120

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810207-007 Chromium, Hexavalent	ug/L	10/02/2013 15:25	50.0	0.300	10.0	938
810207-008 Chromium, Hexavalent	ug/L	10/03/2013 08:52	100	0.600	20.0	2170

Method Blank

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

Duplicate — Lab ID = 810204-001

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

Low Level Calibration Verification

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

Lab Control Sample

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

Matrix Spike — Lab ID = 810204-001

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

Matrix Spike — Lab ID = 810206-001

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

Matrix Spike — Lab ID = 810206-002

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

Matrix Spike — Lab ID = 810206-003

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

Matrix Spike — Lab ID = 810207-001

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

Matrix Spike — Lab ID = 810207-002

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

Matrix Spike — Lab ID = 810207-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.01	1.04(1.00)	97.6	90 - 110

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Matrix Spike — Lab ID = 810207-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.05	8.16(5.00)	97.9	90 - 110

Matrix Spike — Lab ID = 810207-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	2330	2370(1250)	97.0	90 - 110

Matrix Spike — Lab ID = 810207-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	100	4610	4620(2500)	99.6	90 - 110

Matrix Spike — Lab ID = 810207-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1900	1940(1000)	95.7	90 - 110

Matrix Spike — Lab ID = 810207-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	100	4630	4670(2500)	98.3	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.87	5.00	97.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.72	10.0	97.2	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.69	10.0	96.9	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.91	10.0	99.1	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.63	10.0	96.3	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.98	10.0	99.8	95 - 105

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Chrome VI by EPA 218.6 Batch 10CrH13D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810207-016 Chromium, Hexavalent	ug/L	10/03/2013 12:51	1.00	0.00600	0.20	ND
810207-017 Chromium, Hexavalent	ug/L	10/03/2013 13:01	1.00	0.00600	0.20	0.35
810207-018 Chromium, Hexavalent	ug/L	10/03/2013 13:11	1.00	0.00600	0.20	1.7
810207-019 Chromium, Hexavalent	ug/L	10/03/2013 13:22	500	3.00	100	7060
810207-020 Chromium, Hexavalent	ug/L	10/03/2013 13:59	1000	6.00	200	19200
810207-021 Chromium, Hexavalent	ug/L	10/03/2013 14:24	250	1.50	50.0	2770

Method Blank

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

Duplicate — Lab ID = 810207-017

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.350	0.354	1.02	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.190	0.200	95.2	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.86	5.00	97.3	90 - 110

Matrix Spike — Lab ID = 810207-016

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

Matrix Spike — Lab ID = 810207-017

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.36	1.35(1.00)	101	90 - 110

Matrix Spike — Lab ID = 810207-018

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.75	6.71(5.00)	101	90 - 110

Matrix Spike — Lab ID = 810207-019

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	500	14600	14600(7500)	99.9	90 - 110

Matrix Spike — Lab ID = 810207-020

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1000	38700	39200(20000)	97.3	90 - 110

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Matrix Spike — Lab ID = 810207-021

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	250	6690	6520(3750)	104	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.89	5.00	97.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.78	10.0	97.8	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.79	10.0	97.9	95 - 105

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Chrome VI by EPA 218.6 Batch 10CrH13C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810207-009 Chromium, Hexavalent	ug/L	10/03/2013 13:05	250	1.50	50.0	2260
810207-010 Chromium, Hexavalent	ug/L	10/03/2013 12:02	100	0.600	20.0	2050
810207-011 Chromium, Hexavalent	ug/L	10/03/2013 12:12	250	1.50	50.0	4180
810207-012 Chromium, Hexavalent	ug/L	10/03/2013 12:23	250	1.50	50.0	5120
810207-013 Chromium, Hexavalent	ug/L	10/03/2013 12:33	100	0.600	20.0	2280
810207-014 Chromium, Hexavalent	ug/L	10/03/2013 12:44	250	1.50	50.0	3100
810207-015 Chromium, Hexavalent	ug/L	10/03/2013 12:54	100	0.600	20.0	2040

Method Blank

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

Duplicate — Lab ID = 810207-010

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	2040	2050	0.369	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.198	0.200	98.8	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.85	5.00	96.9	90 - 110

Matrix Spike — Lab ID = 810207-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	100	4980	4760(2500)	109	90 - 110

Matrix Spike — Lab ID = 810207-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	100	4460	4550(2500)	96.4	90 - 110

Matrix Spike — Lab ID = 810207-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	250	8840	9180(5000)	93.3	90 - 110

Matrix Spike — Lab ID = 810207-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	250	11100	11400(6250)	95.8	90 - 110

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Matrix Spike — Lab ID = 810207-013

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	100	4760	4780(2500)	99.1	90 - 110

Matrix Spike — Lab ID = 810207-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	250	6670	6850(3750)	95.2	90 - 110

Matrix Spike — Lab ID = 810207-015

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	100	4400	4540(2500)	94.3	90 - 110

MRCCS - Secondary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.72	10.0	97.2	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.76	10.0	97.6	95 - 105

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Metals by EPA 6020A, Dissolved

Batch 100313A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810207-001 Chromium	ug/L	10/03/2013 13:26	20.0	1.42	4.0	1020
810207-004 Chromium	ug/L	10/03/2013 13:38	2.00	0.142	1.0	6.8
810207-005 Chromium	ug/L	10/03/2013 13:44	25.0	1.78	5.0	1050
810207-006 Chromium	ug/L	10/03/2013 13:50	25.0	1.78	5.0	1920
810207-007 Chromium	ug/L	10/03/2013 13:56	25.0	1.78	5.0	963
810207-008 Chromium	ug/L	10/03/2013 14:02	25.0	1.78	5.0	2040
810207-009 Chromium	ug/L	10/03/2013 16:03	100	7.10	20.0	2590
810207-010 Chromium	ug/L	10/03/2013 16:09	100	7.10	20.0	1920
810207-011 Chromium	ug/L	10/03/2013 16:15	200	14.2	40.0	4120
810207-012 Chromium	ug/L	10/03/2013 15:03	100	7.10	20.0	6030
810207-013 Chromium	ug/L	10/03/2013 15:09	50.0	3.55	10.0	2220
810207-014 Chromium	ug/L	10/03/2013 15:15	50.0	3.55	10.0	2920
810207-015 Chromium	ug/L	10/03/2013 16:21	100	7.10	20.0	1980
810207-019 Chromium	ug/L	10/03/2013 15:27	200	14.2	40.0	6760
810207-020 Chromium	ug/L	10/03/2013 15:51	500	35.5	100	20700
810207-021 Chromium	ug/L	10/03/2013 15:57	50.0	3.55	10.0	2600

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 810192-007

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	8.86	8.53	3.82	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.226	0.200	113	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.4	50.0	101	85 - 115

Matrix Spike — Lab ID = 810192-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	52.8	58.5(50.0)	88.5	75 - 125

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Matrix Spike Duplicate — Lab ID = 810192-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	55.7	58.5(50.0)	94.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.1	20.0	100	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.1	20.0	95.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	97.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	99.2	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.0	20.0	100	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.4	80 - 120

Serial Dilution — Lab ID = 810207-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	100	1080	1020	5.44	0 - 10

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Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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810207

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 10/1/2013
COC Number: 14

810207
Rec'd 10/01/13
CH2M

	DATE	TIME	Matrix	Container:	250 ml Poly	250 ml Poly	500 ml Poly		Number of Containers	COMMENTS
				Preservatives:	(NH4)2SO4/NH4OH, 4°C	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C			
				Filtered:	Field	Field	Field			
				Holding Time:	28	28	180			
					Cr6 (E218.6) FF	Cr6 (SM3500B) FF	Metals (6020A) FF Chromium			
1	MW-122-193	9/24/2013	11:17	Water	X		X		2	pH=2
2	MW-219-193	9/24/2013	6:45	Water	X				1	6020A
3	MW-220-193	9/24/2013	6:40	Water	X				1	
4	MW-38S-193	9/24/2013	8:19	Water	X		X		2	
5	MW-60-125-193	9/24/2013	11:16	Water	X		X		2	
6	MW-68-240-193	9/24/2013	15:44	Water	X		X		2	
7	MW-69-195-193	9/24/2013	9:17	Water	X		X		2	
8	MW-70BR-225-193	9/24/2013	14:25	Water	X		X		2	pH=2
9	MW-12-193	9/25/2013	9:38	Water		X	X		2	6020A
10	MW-124-193	9/25/2013	7:49	Water	X		X		2	
11	MW-59-100-193	9/25/2013	12:37	Water	X		X		2	
12	MW-66-230-193	9/25/2013	14:29	Water	X		X		2	
13	MW-67-185-193	9/25/2013	8:41	Water	X		X		2	
14	MW-67-225-193	9/25/2013	11:38	Water	X		X		2	

ALERT !!
Level III QC

	Signatures	Date/Time
Approved by		
Sampled by		10-1-13 1515
Relinquished by		
Received by		10-1-13 1515
Relinquished by		10.1.13 2000
Received by		

Shipping Details
Method of Shipment: courier
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

810207

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 10/1/2013
COC Number: 14

	DATE	TIME	Matrix	Container:	250 ml Poly	250 ml Poly	500 ml Poly	Number of Containers	COMMENTS
				Preservatives:	(NH4)2SO4/NH4OH, 4°C	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C		
				Filtered:	Field	Field	Field		
				Holding Time:	28	28	180		
					Cr6 (E218.6) FF	Cr6 (SM3500B) FF	Metals (6020A) FF Chromium		
15	MW-67-260-193	9/25/2013	7:47	Water	X		X	2	DH-2
16	MW-221-193	9/26/2013	7:30	Water	X			1	6020A
17	MW-222-193	9/26/2013	7:25	Water	X			1	
18	MW-223-193	9/26/2013	14:30	Water	X			1	
19	MW-50-200-193	9/26/2013	10:35	Water		X	X	2	
20	MW-68-180-193	9/26/2013	12:12	Water	X		X	2	DH-2
21	TW-01-193	9/26/2013	9:10	Water		X	X	2	6020A
							TOTAL NUMBER OF CONTAINERS		

ALERT !!
Level III QC

	Signatures	Date/Time
Approved by		10-1-13 1575
Sampled by		
Relinquished by		
Received by	Shawn Duffy	10-1-13 1515
Relinquished by	Shawn Duffy	10-1-13 - 20 p
Received by	Marcia Brown	2000

Shipping Details
Method of Shipment: courier
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

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

NE 10/3/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
810077	<1	<2	9/23/13	DL	yes			
810088	<1	<2	9/24/13	ES	Yes			
810090 (1-2)	↓	↓	↓	↓	↓			
810094	<1	pH 9/24/13 <2 ~~>2~~	9/24/13	DL	yes			
810095	↓	↓	↓	↓	↓			
810096								
810097								
810098								
810113	<1	<2	9/25/13	DL	yes			
810116-1,2	↓	>2	↓	DL	NO	8:40	9/26/13 10:00	pH <2
810110	<1	72	9/25/13	ES	Yes	10:00		pH <2
810111 (1-5, 9-13, 15-19, 22-24)	<1 ↓	<2 ↓	↓	↓	↓			
810126	>1 <1	pH 9/25/13 <2	9/25/13	DL	yes			
810114 (1-5)	<1	72	9/25/13	ES	NO	2:00	9/26/13 10:00	pH <2
810132-173	<1	>2	9/25/13	DL	NO	15:35	↓	
810143-173	<1	<2	9/26/13	DL	yes			
810144-1,3	↓	↓	↓	↓	↓			-3 NTU >1
810137-10,11,12	<1	>2	9/26/13	DL	NO	9:00		
810145	<1	<2	9/27/13	DL	yes			
810138-1,2	>1	<2	↓	↓	↓			
810139	>1	<2	↓	↓	↓			
810144-3	>1	>2	9/26/13	ES	Yes	10:00		Filtered from a
810159-2-78	<1	<2	9/27/13	DL	yes			
810147-1,2,3	<1	<2	↓	↓	↓			
810167-1-10	<1	>2	9/27/13	DL	NO	12:10	9/30/13 10:00	pH <2
810159-2,4,7,10 19-21, 27	<1 ↓	>2 ↓	↓	↓	↓	↓		
810171	<1	<2	9/27/13	DL	yes			
810176	<1	<2	9/30/13	ES	Yes			
810178 (1-4)	<1	<2	↓	↓	↓			-3,4 NTU >1
810182 (1-2,4)	<1	>2	↓	↓	NO	4:00		
810191 (2-8)	<1	<2	10/1/13	ES	Yes			
810192 (1,3-7)	↓	↓	↓	↓	↓			
810194-1,2	<1	<2	10/1/13	DL	yes			
810188								
810189	↓	↓	↓	↓	↓			
810192-7	>1	>2	10/2/13	ES	Yes	10:00		Filtered then acidify
810204 (1-2)	<1	>2	10/2/13	ES	Yes	10:00		↓
810207 (1, 4-15, 19-21)	<1	<2	↓	↓	↓			
810202	>1	<2	10/2/13	ES	Yes			
810216 (1-2)	<1	>2	↓	↓	NO	1:00		
810225 (1-3)	<1	>2	10/2/13	ES	Yes	1:00		
810184	SOLID (TTLC)		10/2/13	ES	↓			

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810207

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

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

ALERT !! Level III QC

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☑Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

October 21, 2013

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK 2013-GMP-193-Q3, GROUNDWATER MONITORING PROJECT, TLI NO.: 810320

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2013-GMP-193-Q3 groundwater-monitoring project for Hexavalent and Total Dissolved Chromium. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data, and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

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

No violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

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

Laboratory No.: 810320
Date Received: October 8, 2013
Revision 1; October 21, 2013

Project Name: PG&E Topock Project
Project No.: 423575.MP.02.GM.03
P.O. No.: 423575.MP.02.GM.03

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
810320-001	MW-120-193	E218.6	FLDFLT	10/2/2013	7:00	Chromium, Hexavalent	81.5	ug/L	1.0
810320-001	MW-120-193	SW6020	FLDFLT	10/2/2013	7:00	Chromium	84.5	ug/L	1.0
810320-002	MW-27-060-193	E218.6	FLDFLT	10/2/2013	9:11	Chromium, Hexavalent	ND	ug/L	0.20
810320-002	MW-27-060-193	SW6020	FLDFLT	10/2/2013	9:11	Chromium	ND	ug/L	1.0
810320-003	MW-27-085-193	E218.6	FLDFLT	10/2/2013	10:14	Chromium, Hexavalent	ND	ug/L	1.0
810320-003	MW-27-085-193	SW6020	FLDFLT	10/2/2013	10:14	Chromium	ND	ug/L	1.0
810320-004	MW-34-080-193	E218.6	FLDFLT	10/2/2013	13:28	Chromium, Hexavalent	ND	ug/L	1.0
810320-004	MW-34-080-193	SW6020	FLDFLT	10/2/2013	13:28	Chromium	ND	ug/L	1.0
810320-005	MW-34-100-193	E218.6	FLDFLT	10/2/2013	15:12	Chromium, Hexavalent	82.6	ug/L	1.0
810320-005	MW-34-100-193	SW6020	FLDFLT	10/2/2013	15:12	Chromium	79.5	ug/L	1.0
810320-006	MW-224-193	E218.6	FLDFLT	10/3/2013	8:05	Chromium, Hexavalent	ND	ug/L	0.20
810320-007	MW-225-193	E218.6	FLDFLT	10/3/2013	8:00	Chromium, Hexavalent	ND	ug/L	0.20

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

004

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TRUESDAIL LABORATORIES, INC.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 423575.MP.02.GM.03
P.O. Number: 423575.MP.02.GM.03
Release Number:

Laboratory No. 810320

Printed 10/21/2013
Revised

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

Field ID	Lab ID	Collected	Matrix
MW-120-193	810320-001	10/02/2013 07:00	Water
MW-27-060-193	810320-002	10/02/2013 09:11	Water
MW-27-085-193	810320-003	10/02/2013 10:14	Water
MW-34-080-193	810320-004	10/02/2013 13:28	Water
MW-34-100-193	810320-005	10/02/2013 15:12	Water
MW-224-193	810320-006	10/03/2013 08:05	Water
MW-225-193	810320-007	10/03/2013 08:00	Water

Chrome VI by EPA 218.6

Batch 10CrH13E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810320-001 Chromium, Hexavalent	ug/L	10/09/2013 17:14	5.00	0.0300	1.0	81.5
810320-003 Chromium, Hexavalent	ug/L	10/09/2013 16:22	5.00	0.0300	1.0	ND
810320-004 Chromium, Hexavalent	ug/L	10/09/2013 17:24	5.00	0.0300	1.0	ND
810320-005 Chromium, Hexavalent	ug/L	10/09/2013 17:35	5.00	0.0300	1.0	82.6
810320-006 Chromium, Hexavalent	ug/L	10/09/2013 16:53	1.00	0.00600	0.20	ND
810320-007 Chromium, Hexavalent	ug/L	10/09/2013 17:04	1.00	0.00600	0.20	ND

Method Blank

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

Duplicate

Lab ID = 810317-005

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

Low Level Calibration Verification

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

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Lab Control Sample

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

Matrix Spike — Lab ID = 810317-001

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

Matrix Spike — Lab ID = 810317-004

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

Matrix Spike — Lab ID = 810317-005

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

Matrix Spike — Lab ID = 810317-006

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

Matrix Spike — Lab ID = 810317-007

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

Matrix Spike — Lab ID = 810318-001

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

Matrix Spike — Lab ID = 810318-002

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

Matrix Spike — Lab ID = 810318-003

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

Matrix Spike — Lab ID = 810318-004

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

Matrix Spike — Lab ID = 810318-005

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

Matrix Spike — Lab ID = 810318-006

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

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Matrix Spike — Lab ID = 810319-001

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

Matrix Spike — Lab ID = 810320-001

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

Matrix Spike — Lab ID = 810320-003

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

Matrix Spike — Lab ID = 810320-003

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

Matrix Spike — Lab ID = 810320-004

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

Matrix Spike — Lab ID = 810320-004

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

Matrix Spike — Lab ID = 810320-005

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

Matrix Spike — Lab ID = 810320-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.981	1.06(1.00)	91.9	90 - 110

Matrix Spike — Lab ID = 810320-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.01	1.04(1.00)	97.0	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.83	5.00	96.6	90 - 110

MRCVS - Primary

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

MRCVS - Primary

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

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Chrome VI by EPA 218.6

Batch 10CrH13G

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810320-002 Chromium, Hexavalent	ug/L	10/10/2013 11:58	1.00	0.00600	0.20	ND

Method Blank

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

Duplicate — Lab ID = 810352-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	28.0	28.0	0.0922	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.189	0.200	94.3	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.69	5.00	93.8	90 - 110

Matrix Spike — Lab ID = 810318-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.971	1.00(1.00)	97.1	90 - 110

Matrix Spike — Lab ID = 810320-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.953	1.00(1.00)	95.3	90 - 110

Matrix Spike — Lab ID = 810352-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.71	1.76(1.00)	95.3	90 - 110

Matrix Spike — Lab ID = 810352-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.60	1.67(1.00)	93.8	90 - 110

Matrix Spike — Lab ID = 810352-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.953	1.00(1.00)	95.3	90 - 110

Matrix Spike — Lab ID = 810352-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.85	8.07(5.00)	95.6	90 - 110

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Metals by EPA 6020A, Dissolved

Batch 100913A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810320-002 Chromium	ug/L	10/09/2013 19:53	2.00	0.142	1.0	ND
810320-003 Chromium	ug/L	10/09/2013 19:59	2.00	0.142	1.0	ND
810320-004 Chromium	ug/L	10/09/2013 20:05	2.00	0.142	1.0	ND

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.205	0.200	102	70 - 130

Lab Control Sample

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

Matrix Spike — Lab ID = 810318-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	49.4	51.6(50.0)	95.6	75 - 125

Matrix Spike Duplicate — Lab ID = 810318-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	47.4	51.6(50.0)	91.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.7	20.0	93.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.4	20.0	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	97.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.2	20.0	96.2	90 - 110

Interference Check Standard A

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

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Metals by EPA 6020A, Dissolved

Batch 101013A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
810320-001 Chromium	ug/L	10/10/2013 13:27	2.00	0.142	1.0	84.5
810320-005 Chromium	ug/L	10/10/2013 13:39	2.00	0.142	1.0	79.5

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 810318-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.00	1.58	1.63	3.30	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.176	0.200	88.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	51.3	50.0	103	85 - 115

Matrix Spike — Lab ID = 810318-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	47.9	51.6(50.0)	92.5	75 - 125

Matrix Spike Duplicate — Lab ID = 810318-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	47.6	51.6(50.0)	92.0	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.1	20.0	95.3	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.7	20.0	93.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	98.1	90 - 110

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.2	20.0	95.8	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	96.9	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.5	20.0	97.5	80 - 120

Serial Dilution Lab ID = 810320-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	10.0	85.6	84.5	1.26	0 - 10

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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810320

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy

Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 10/8/2013
COC Number: 19

Rec'd 10/08/13
S 810320

	DATE	TIME	Matrix	Cr6 (E218.6) FF	Cr6 (E218.6R) FF	Metals (6020A) FF Chromium	Metals (6020A-R) FF Chromium	Number of Containers	COMMENTS
Container:				250 ml Poly	2x250 ml Poly	500 ml Poly	2x500 ml Poly		
Preservatives:				(NH4)2SO4/NH4OH, 4°C	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C		
Filtered:				Field	Field	Field	Field		
Holding Time:				28	28	180	180		
1 MW-120-193	10/2/2013	7:00	Water	X		X		2	
2 MW-27-060-193	10/2/2013	9:11	Water		X		X	4	
MW-27-060-193-EB	10/2/2013	8:30	Water	X		X		2	
3 MW-27-085-193	10/2/2013	10:14	Water		X		X	4	
MW-27-085-193-EB	10/2/2013	9:29	Water	X		X		2	pH=2
4 MW-34-080-193	10/2/2013	13:28	Water		X		X	4	6020A
MW-34-080-193-EB	10/2/2013	12:00	Water	X		X		2	
5 MW-34-100-193	10/2/2013	15:12	Water	X		X		2	
6 MW-224-193	10/3/2013	8:05	Water	X				1	
7 MW-225-193	10/3/2013	8:00	Water	X				1	
TOTAL NUMBER OF CONTAINERS								24	

ALERT !!
Level III QC

	Signatures	Date/Time
Approved by		10-8-13
Sampled by		1515
Relinquished by		10-8-13
Received by	Shawn Duffy	1540
Relinquished by	Shawn Duffy	10-8-13 2000
Received by	Marchal Brown	10/8/13 2010

Shipping Details

Method of Shipment: courier
On Ice: yes / no
Airbill No:
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
10/9/13	810317-4	7.0	2mL/100mL	9.5	8:40	TM
	-5					
	-6					
	-7					
10/9/13	810318-1	9.5	N/A	N/A	N/A	TM
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
10/9/13	810320-1	9.5	N/A	N/A	N/A	TM
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
10/9/13	810321-1	9.5	N/A	N/A	N/A	TM
	-2					
	-3					
	-4					
	-5					
	-6					
10/10/13	810350-1	9.5	N/A	N/A	N/A	NE
	-2					
	-3					
	-4					
10/10/13	810351-1	7.0	2mL/100mL	9.5	8:30	NE
	-2					
	-3					

10/18/13

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

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

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 810320

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

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

15. **Sample Matrix:** ☐ Liquid ☐ Drinking Water ☐ Ground Water ☐ Waste Water ☐ Sludge ☐ Soil ☐ Wipe ☐ Paint ☐ Solid ☒ Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

ALERT !! Level III QC

ANALYTICAL REPORT

For:

PGE Topock - 2013-RMP-192

ASL Report #: M2304

Project ID: 423575.MP.02.RM

Attn: Jay Piper

cc:
Data Center/RDD
Shawn Duffy/RDD

Authorized and Released By:

Kathy McKinley

Laboratory Project Manager
Kathy McKinley
(541) 758-0235 ext.23144
July 26, 2013

This data package meets standards requested by client and is not intended or implied to meet any other standard.

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
M230401	C-BNS-D-192	07/15/13 12:55	07/19/13
M230402	C-I-3-D-192	07/15/13 11:03	07/19/13
M230403	C-I-3-S-192	07/15/13 11:20	07/19/13
M230404	C-MAR-D-192	07/15/13 14:00	07/19/13
M230405	C-MAR-S-192	07/15/13 14:15	07/19/13
M230406	C-R22A-D-192	07/15/13 12:10	07/19/13
M230407	C-R22A-S-192	07/15/13 12:25	07/19/13
M230408	C-R27-D-192	07/15/13 13:17	07/19/13
M230409	C-R27-S-192	07/15/13 13:30	07/19/13
M230410	C-TAZ-D-192	07/15/13 10:10	07/19/13
M230411	C-TAZ-S-192	07/15/13 10:30	07/19/13
M230412	R63-192	07/15/13 11:40	07/19/13
M230413	C-CON-D-192	07/16/13 09:40	07/19/13
M230414	C-CON-S-192	07/16/13 09:56	07/19/13
M230415	C-NR1-D-192	07/16/13 10:29	07/19/13
M230416	C-NR1-S-192	07/16/13 10:48	07/19/13
M230417	C-NR3-D-192	07/16/13 11:16	07/19/13
M230418	C-NR3-S-192	07/16/13 11:30	07/19/13
M230419	C-NR4-D-192	07/16/13 12:00	07/19/13
M230420	C-NR4-S-192	07/16/13 12:13	07/19/13
M230421	R-19-192	07/16/13 08:39	07/19/13
M230422	R-28-192	07/16/13 08:22	07/19/13
M230423	RRB-192	07/16/13 09:05	07/19/13

CH2MHILL
Applied Sciences Laboratory (ASL)

1100 NE Circle Blvd., Suite 300
Corvallis, OR 97330
Tel 541-768-3120 Fax 541-752-0276

CASE NARRATIVE
GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M HILL ASL **ASL SDG#:** M2304

Project: PGE Topock **Project #:** 423575.MP.02.RM

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

Method(s):
E353.2

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-BNS-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230401

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-I-3-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230402

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-I-3-S-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230403

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-MAR-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230404

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-MAR-S-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230405

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-R22A-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230406

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-R22A-S-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230407

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-R27-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230408

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-R27-S-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230409

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-TAZ-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230410

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-TAZ-S-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230411

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID: **R63-192**

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230412

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-CON-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230413

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-CON-S-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230414

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-NR1-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230415

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-NR1-S-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230416

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-NR3-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230417

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-NR3-S-192

SDG No.: M2304

Matrix: WATER

Lab Name: CH2M HILL ASL

Lab Sample ID: M230418

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-NR4-D-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230419

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

C-NR4-S-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230420

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

R-19-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230421

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

FORM I GEN CHEM

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

R-28-192

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230422

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID: **RRB-192**

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M230423

Date Received: 07/19/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB7-072213

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB7-072213

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB8-072213

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB8-072213

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID: **WB9-072213**

SDG No.: M2304

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB9-072213

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.500	0.500	U	mg/L	1	3 ML	E353.2	07/22/13

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2304 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS4W0722

Initial Calibration ID: 061313NO32SMcal Date Analyzed: 07/22/13

Matrix: (Soil/Water) WATER Time Analyzed: 1723

Instrument: SMARTCHEM Concentration Units: mg/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.500	106	85-115	

* Values outside of QC limits

Comments:

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2304 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS5W0722

Initial Calibration ID: 061313NO32SMcal Date Analyzed: 07/22/13

Matrix: (Soil/Water) WATER Time Analyzed: 1800

Instrument: SMARTCHEM Concentration Units: mg/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.500	102	85-115	

* Values outside of QC limits

Comments:

M2304

CH2MHILL **CHAIN OF CUSTODY RECORD** *7/16/2013 2:52:58 PM* Page 1 OF 2

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.RM
Task Order
Project 2013-RMP-192
Turnaround Time 10 Days
Shipping Date: 7/10/2013
COC Number: CHMC-RMP192

				Container:	Preservatives:	Filtered:	Holding Time:			
				125 ml Poly	H2SO4, pH<2, 4°C	NA	28			
	DATE	TIME	Matrix	Nitrate/Nitrite (SM4500NO3) Nitrate				Number of Containers	COMMENTS
C-BNS-D-192	7/15/2013	12:55	Water	X				1	1
C-I-3-D-192	7/15/2013	11:03	Water	X				1	2
C-I-3-S-192	7/15/2013	11:20	Water	X				1	3
C-MAR-D-192	7/15/2013	14:00	Water	X				1	4
C-MAR-S-192	7/15/2013	14:15	Water	X				1	5
C-R22A-D-192	7/15/2013	12:10	Water	X				1	6
C-R22A-S-192	7/15/2013	12:25	Water	X				1	7
C-R27-D-192	7/15/2013	13:17	Water	X				1	8
C-R27-S-192	7/15/2013	13:30	Water	X				1	9
C-TAZ-D-192	7/15/2013	10:10	Water	X				1	16
C-TAZ-S-192	7/15/2013	10:30	Water	X				1	11
R63-192	7/15/2013	11:40	Water	X				1	12
C-CON-D-192	7/16/2013	9:40	Water	X				1	13
C-CON-S-192	7/16/2013	9:56	Water	X				1	14

4.1 °C

	Signatures	Date/Time
Approved by		
Sampled by		
Relinquished by		7-18-13 1030
Received by		
Relinquished by		
Received by	[illegible]	1/19/13 15:30

Shipping Details
Method of Shipment: [illegible]
On Ice: yes / no
Airbill No:
Lab Name: [illegible]
Lab Phone:

ATTN: [illegible]
Sample Custody
[illegible]

Special Instructions
[illegible]

Report Copy to
[illegible]

MR3041

CH2MHILL **CHAIN OF CUSTODY RECORD** 7/16/2013 2:52:58 PM Page 2 OF 2

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.RM
Task Order
Project 2013-RMP-192
Turnaround Time 10 Days
Shipping Date: 7/10/2013
COC Number: CHMC-RMP192

Container:	125 ml Poly
Preservatives:	H2SO4, pH<2, 4°C
Filtered:	NA
Holding Time:	28

	DATE	TIME	Matrix	Nitrate/Nitrite (SM4500NO3) Nitrate		Number of Containers	COMMENTS
C-NR1-D-192	7/16/2013	10:29	Water	x		1	15
C-NR1-S-192	7/16/2013	10:48	Water	x		1	16
C-NR3-D-192	7/16/2013	11:16	Water	x		1	17
C-NR3-S-192	7/16/2013	11:30	Water	x		1	18
C-NR4-D-192	7/16/2013	12:00	Water	x		1	19
C-NR4-S-192	7/16/2013	12:13	Water	x		1	20
R-19-192	7/16/2013	8:39	Water	x		1	21
R-28-192	7/16/2013	8:22	Water	x		1	22
RRB-192	7/16/2013	9:05	Water	x		1	23
					TOTAL NUMBER OF CONTAINERS	23	

	Signatures	Date/Time
Approved by		7-18-13
Sampled by		1030
Relinquished by	[signature]	
Received by		
Relinquished by		
Received by	[signature]	7/19/1[illegible]

Shipping Details
Method of Shipment: [illegible]
On Ice: yes / no
Airbill No:
Lab Name: [illegible]
Lab Phone

ATTN:
Sample Custody
[illegible]
[illegible]

Special Instructions:
[illegible]

Report Copy to
Shawn Duffy

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Record

SDG ID: M2304 Date Received: 7/19/13

Client/Project: Topock Checked By: CS

Packing Material: (Ice) Blue Ice Box Bubble Wrap HD (circle all that apply) Checked By: _____

Shipping ID: _____ -- or -- (On File) COC HD USPS (circle one)

VERIFICATION OF SAMPLE CONDITIONS (verify all items), HD = Client Hand delivered Samples	NA	YES	NO
Were custody seals intact and on the outside of the cooler?		✓	
Radiological Screening for DoD	✓		
Temp OK? (<6C) Therm ID TH173 Exp. 8/13 4.1 °C		✓	
Was a Chain of Custody (CoC) Provided?		✓	
Was the CoC correctly filled out (If No, document in the SRER)		✓	
Did sample labels agree with COC? No, document in SRER		✓	
Did the CoC list a correct bottle count and the preservative types (Y=OK, N=Corrected on CoC)		✓	
Were the sample containers in good condition (broken or leaking)?		✓	
Was enough sample volume provided for analysis? No, document in SRER		✓	
Containers supplied by ASL?		✓	
Any sample with < 1/2 holding time remaining? If so contact LPM			✓
Samples have multi-phase? If yes, document on SRER			✓
All VOCs free of air bubbles? No, document on SRER	✓		
pH of all samples met criteria on receipt? If "No", preserve and document below or on SRER		✓	
Dissolved/Soluble metals filtered in the field?	✓		
Dissolved/Soluble metals have sediment in bottom of container? Document in SRER	✓		

Sample ID	Reagent	Reagent Lot Number	Volume Added	Initials

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Exception Report

Sample Batch Number: M2304 **Client/Project** Topock

The following exceptions were noted:		Comments (write number of exception description and the impacted sample numbers)
	1. No custody seal as required by project	requested method SM4500 Nitrate/nitrite will report E353.2.
	2. No chain-of-custody provided	
	3. Analysis, description, date of collection not provided	
	4. Samples broken or leaking on receipt.	
	5. Temperature of samples inappropriate for analysis requested	
	6. Container inappropriate for analysis requested	
	7. Inadequate sample volume.	
	8. Preservation inappropriate for analysis requested	
	9. Samples received out of holding time for analysis requested	
	10. Discrepancies between COC form and container labels.	
	11. Other.	

ACTION TAKEN:

Originator: Carmen Bell Date: 1650

Client was notified on: (Date/Time) Client Contact:

Client Services:

ANALYTICAL REPORT

For:

PGE Topock - 2013-GMP-193-Q3

ASL Report #: M2767

Project ID: 423575.MP.02.GM.03

Attn: Jay Piper

cc:
Data Center/RDD
Shawn Duffy/RDD

Authorized and Released By:

Kathy McKinley

Laboratory Project Manager
Kathy McKinley
(541) 758-0235 ext.23144
October 03, 2013

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.

Accredited in accordance with NELAP:
Oregon (100022)
Arizona (0771)
Louisiana (05031)

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
M276701	MW-28-090-193	09/11/13 08:24	09/17/13
M276702	MW-46-175-193	09/11/13 14:19	09/17/13
M276703	MW-73-080-193	09/11/13 11:50	09/17/13
M276704	MW-121-193	09/12/13 07:05	09/17/13
M276705	MW-33-210-193	09/12/13 14:42	09/17/13
M276706	MW-44-115-193	09/12/13 09:21	09/17/13
M276707	MW-44-125-193	09/12/13 11:28	09/17/13
M276708	MW-63-065-193	09/09/13 15:11	09/17/13
M276709	MW-35-060-193	09/10/13 14:00	09/17/13
M276710	MW-57-185-193	09/10/13 11:09	09/17/13
M276711	MW-71-035-193	09/10/13 12:45	09/17/13

CH2MHILL
Applied Sciences Laboratory (ASL)

1100 NE Circle Blvd., Suite 300
Corvallis, OR 97330
Tel 541-768-3120 Fax 541-752-0276

CASE NARRATIVE
GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M HILL ASL **ASL SDG#:** M2767

Project: PGE Topock **Project #:** 423575.MP.02.GM.03

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

Method(s):
E353.2

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-28-090-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276701

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.35		MG/L	5	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-46-175-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276702

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.90		MG/L	5	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-73-080-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276703

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-121-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276704

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.97		MG/L	5	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-33-210-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276705

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0123		MG/L	1	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-44-115-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276706

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	1.11		MG/L	4	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-44-125-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276707

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	4.86		MG/L	5	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-63-065-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276708

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.246		MG/L	1	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-35-060-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276709

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.51		MG/L	5	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-57-185-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276710

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.206		MG/L	1	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-71-035-193

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M276711

Date Received: 09/17/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.247		MG/L	1	3 ML	E353.2	09/24/13

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB5-092413

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB5-092413

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	09/24/13

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB6-092413

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB6-092413

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	09/24/13

EB131001-13:38-M2767-W

FORM I GEN CHEM

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB7-092413

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB7-092413

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB8-092413

SDG No.: M2767

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB8-092413

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	09/24/13

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2767 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS3W0924

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 09/24/13

Matrix: (Soil/Water) WATER Time Analyzed: 1655

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.441	106	90-110	

* Values outside of QC limits

Comments:

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2767 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS4W0924

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 09/24/13

Matrix: (Soil/Water) WATER Time Analyzed: 1720

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.444	107	90-110	

* Values outside of QC limits

Comments:

M2767

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy

Container: 125 ml Poly
Preservatives: H2SO4, pH<2, 4°C
Filtered: NA
Holding Time: 28

Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/12/2013
COC Number: 5

2.1 °C

	DATE	TIME	Matrix	Nitrate/Nitrite (SM4500NO3) Nitrate		Number of Containers	COMMENTS
MW-28-090-193	9/11/2013	8:24	Water	X		1	
MW-46-175-193	9/11/2013	14:19	Water	X		1	
MW-73-080-193	9/11/2013	11:50	Water	X		1	
MW-121-193	9/12/2013	7:05	Water	X		1	
MW-33-210-193	9/12/2013	14:42	Water	X		1	
MW-44-115-193	9/12/2013	9:21	Water	X		1	
MW-44-125-193	9/12/2013	11:28	Water	X		1	
					TOTAL NUMBER OF CONTAINERS	7	

	Signatures	Date/Time
Approved by		9-12-13
Sampled by		1535
Relinquished by		
Received by		12 SEPT 13 1535
Relinquished by		12 SEPT 13 1737
Received by		12 SEPT 13 1737

Shipping Details
Method of Shipment
On Ice: yes / no 2.6 IR2
Airbill No:
Lab Name:
Lab Phone

ATTN:

Special Instructions:

Report Copy to

Carmen Call 9/12/13 1000

M2767

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/10/2013
COC Number: 3

	Container:	Preservatives:	Filtered:	Holding Time:					
	125 ml Poly	H2SO4, pH<2, 4°C	NA	28				Number of Containers	COMMENTS
				Nitrate/Nitrite (SM4500NO3) Nitrate					
DATE	TIME	Matrix							
MW-63-065-193	9/9/2013	15:11	Water	X				1	
MW-35-060-193	9/10/2013	14:00	Water	X				1	
MW-57-185-193	9/10/2013	11:09	Water	X				1	
MW-71-035-193	9/10/2013	12:45	Water	X				1	
							TOTAL NUMBER OF CONTAINERS		

	Signatures	Date/Time
Approved by		
Sampled by		9-10-13 1525
Relinquished by		
Received by		10SEP13 1525
Relinquished by		
Received by		

Shipping Details
Method of Shipment:
On Ice: yes / no
Airbill No:
Lab Name:
Lab Phone

ATTN.

Special Instructions

Report Copy to

Page 4 of 18

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Record

SDG ID: m2767 Date Received: 9/17/13

Client/Project: Topaz Checked By: CC

Packing Material: (Ice) Blue Ice Box Bubble Wrap HD (circle all that apply) Checked By: _____

Shipping ID: _____ -- or -- (On File) COC HD USPS (circle one)

VERIFICATION OF SAMPLE CONDITIONS (verify all items), HD = Client Hand delivered Samples	NA	YES	NO
Were custody seals intact and on the outside of the cooler?		✓	
Radiological Screening for DoD	✓		
Temp OK? (<6C) Therm ID TH173 Exp. 11/13 2.1 °C		✓	
Was a Chain of Custody (CoC) Provided?		✓	
Was the CoC correctly filled out (If No, document in the SRER)		✓	
Did sample labels agree with COC? No, document in SRER		✓	
Did the CoC list a correct bottle count and the preservative types (Y=OK, N=Corrected on CoC)		✓	
Were the sample containers in good condition (broken or leaking)?		✓	
Was enough sample volume provided for analysis? No, document in SRER		✓	
Containers supplied by ASL?		✓	
Any sample with < 1/2 holding time remaining? If so contact LPM			✓
Samples have multi-phase? If yes, document on SRER			✓
All VOCs free of air bubbles? No, document on SRER	✓		
pH of all samples met criteria on receipt? If "No", preserve and document below or on SRER		✓	
Dissolved/Soluble metals filtered in the field?	✓		
Dissolved/Soluble metals have sediment in bottom of container? Document in SRER	✓		

Sample ID	Reagent	Reagent Lot Number	Volume Added	Initials

ANALYTICAL REPORT

For:

PGE Topock - GMP-193-Q3

ASL Report #: M2831

Project ID: 423575.MP.02.GM.03

Attn: Jay Piper

cc:
Data Center/RDD
Shawn Duffy/RDD

Authorized and Released By:

Kathy McKinley

Laboratory Project Manager
Kathy McKinley
(541) 758-0235 ext.23144
October 08, 2013

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.

Accredited in accordance with NELAP:
Oregon (100022)
Arizona (0771)
Louisiana (05031)

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
M283101	MW-33-040-193	09/16/13 09:19	09/25/13
M283102	MW-33-090-193	09/16/13 10:02	09/25/13
M283103	MW-33-150-193	09/16/13 11:15	09/25/13
M283104	MW-38D-193	09/17/13 15:44	09/25/13
M283105	MW-60BR-245-193	09/17/13 14:17	09/25/13
M283106	MW-62-110-193	09/18/13 14:10	09/25/13
M283107	MW-62-190-193	09/18/13 14:22	09/25/13
M283108	MW-68BR-280-193	09/18/13 11:25	09/25/13
M283109	MW-74-240-193	09/18/13 13:14	09/25/13
M283110	MW-125-193	09/19/13 07:00	09/25/13
M283111	MW-65-160-193	09/19/13 15:04	09/25/13
M283112	MW-72-080-193	09/19/13 10:30	09/25/13
M283113	MW-72BR-200-193	09/19/13 13:53	09/25/13

CH2MHILL
Applied Sciences Laboratory (ASL)

1100 NE Circle Blvd., Suite 300
Corvallis, OR 97330
Tel 541-768-3120 Fax 541-752-0276

CASE NARRATIVE
GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M HILL ASL **ASL SDG#:** M2831

Project: PGE Topock **Project #:** 423575.MP.02.GM.03

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

Method(s):
E353.2

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-33-040-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283101

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.232		MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-33-090-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283102

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.40		MG/L	5	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-33-150-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283103

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.48		MG/L	5	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-38D-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283104

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0693		MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-60BR-245-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283105

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.207		MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-62-110-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283106

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	3.38		MG/L	5	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-62-190-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283107

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0192		MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-68BR-280-193

SDG No.: M2831

Matrix: WATER

Lab Name: CH2M HILL ASL

Lab Sample ID: M283108

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0101		MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-74-240-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283109

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.558		MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-125-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283110

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.35		MG/L	5	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-65-160-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283111

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0560	0.200	11.2		MG/L	20	3 ML	E353.2	09/26/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-72-080-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283112

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.35		MG/L	5	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-72BR-200-193

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M283113

Date Received: 09/25/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.109		MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB1-092513

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB1-092513

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID: **WB1-092613**

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB1-092613

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	09/26/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB2-092513

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB2-092513

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB6-092513

SDG No.: M2831

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB6-092513

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	09/25/13

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2831 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS1W0925

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 09/25/13

Matrix: (Soil/Water) WATER Time Analyzed: 1623

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.413	99	90-110	

* Values outside of QC limits

Comments:

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2831 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS2W0925

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 09/25/13

Matrix: (Soil/Water) WATER Time Analyzed: 1647

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.417	100	90-110	

* Values outside of QC limits

Comments:

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2831 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS6W0925

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 09/25/13

Matrix: (Soil/Water) WATER Time Analyzed: 1809

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.427	103	90-110	

* Values outside of QC limits

Comments:

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2831 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS1W0926

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 09/26/13

Matrix: (Soil/Water) WATER Time Analyzed: 1221

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.403	97	90-110	

* Values outside of QC limits

Comments:

M2831

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/17/2013
COC Number: 7

	Container:	Preservatives:	Filtered:	Holding Time:	
	125 ml Poly	H_2SO_4, pH<2, 4°C	NA	28	

1.7.

	DATE	TIME	Matrix	Nitrate/Nitrite (SM4500NO3) Nitrate		Number of Containers	COMMENTS
MW-33-040-193	9/16/2013	9:19	Water	X		1	1
MW-33-090-193	9/16/2013	10:02	Water	X		1	2
MW-33-150-193	9/16/2013	11:15	Water	X		1	3
MW-38D-193	9/17/2013	15:44	Water	X		1	4
MW-60BR-245-193	9/17/2013	14:17	Water	X		1	5
					TOTAL NUMBER OF CONTAINERS	5	

	Signatures	Date/Time
Approved by		
Sampled by		9-17-13 1600
Relinquished by		9/17/13 1600
Received by		9/17/13
Relinquished by		9/17/13 1720
Received by		

RELINQUISHED BY: [illegible] 23SEPT13 1510

Shipping Details

Method of Shipment: courier
On Ice: ~~yes~~ no 1.3°C IR#2
Airbill No:
Lab Name: CH2M HILL Applied Sciences Lab
Lab Phone: (541) 752-4271

ATTN:
Sample Custody
and
Kathy McKinley

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Carmen Cole 9/25/13 1020

M2831

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/19/2013
COC Number: 10

				Container:	125 ml Poly		Number of Containers	
				Preservatives:	H2SO4, pH<2, 4°C			
				Filtered:	NA			
				Holding Time:	28			
	DATE	TIME	Matrix	Nitrate/Nitrite (SM4500NO3) Nitrate				COMMENTS
MW-62-110-193	9/18/2013	14:10	Water	X			1	6
MW-62-190-193	9/18/2013	14:22	Water	X			1	7
MW-68BR-280-193	9/18/2013	11:25	Water	X			1	8
MW-74-240-193	9/18/2013	13:14	Water	X			1	9
MW-125-193	9/19/2013	7:00	Water	X			1	10
MW-65-160-193	9/19/2013	15:04	Water	X			1	11
MW-72-080-193	9/19/2013	10:30	Water	X			1	12
MW-72BR-200-193	9/19/2013	13:53	Water	X			1	13
						TOTAL NUMBER OF CONTAINERS		

	Signatures	Date/Time
Approved by		9-19-13 1540
Sampled by		
Relinquished by		9/11/13 1540
Received by		9/19/13 1577
Relinquished by		9/19/13 1577
Received by		23SEP13 0510

RELINQUISHED BY: [redacted]

Shipping Details
Method of Shipment: courier
On Ice: ~~yes~~ / no 2-3°C
Airbill No: HC#2
Lab Name: CH2M HILL Applied Sciences Lab
Lab Phone: (541) 752-4271

Carmen Cole 9/25/13 1020

ATTN:
Sample Custody
and
Kathy McKinley

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Record

SDG ID: M2831 Date Received: 9/25/13

Client/Project: TOPOCK Checked By: CC

Packing Material: (Ice) Blue Ice Box Bubble Wrap HD (circle all that apply) Checked By: _____

Shipping ID: _____ -- or -- (On File) COC HD USPS (circle one)

VERIFICATION OF SAMPLE CONDITIONS (verify all items), HD = Client Hand delivered Samples	NA	YES	NO
Were custody seals intact and on the outside of the cooler?		✓	
Radiological Screening for DoD	✓		
Temp OK? (<6C) Therm ID TH173 Exp. 11/13 1.7 °C		✓	
Was a Chain of Custody (CoC) Provided?		✓	
Was the CoC correctly filled out (If No, document in the SRER)		✓	
Did sample labels agree with COC? No, document in SRER		✓	
Did the CoC list a correct bottle count and the preservative types (Y=OK, N=Corrected on CoC)		✓	
Were the sample containers in good condition (broken or leaking)?		✓	
Was enough sample volume provided for analysis? No, document in SRER		✓	
Containers supplied by ASL?		✓	
Any sample with < 1/2 holding time remaining? If so contact LPM			✓
Samples have multi-phase? If yes, document on SRER			✓
All VOCs free of air bubbles? No, document on SRER	✓		
pH of all samples met criteria on receipt? If "No", preserve and document below or on SRER		✓	
Dissolved/Soluble metals filtered in the field?	✓		
Dissolved/Soluble metals have sediment in bottom of container? Document in SRER	✓		

Sample ID	Reagent	Reagent Lot Number	Volume Added	Initials

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Exception Report

Sample Batch Number: M2831 **Client/Project Topock**

The following exceptions were noted:		
		Comments (write number of exception description and the impacted sample numbers)
	1. No custody seal as required by project	Client requested method SM4500 ASL will report by method E353.2
	2. No chain-of-custody provided	
	3. Analysis, description, date of collection not provided	
	4. Samples broken or leaking on receipt.	
	5. Temperature of samples inappropriate for analysis requested	
	6. Container inappropriate for analysis requested	
	7. Inadequate sample volume.	
	8. Preservation inappropriate for analysis requested	
	9. Samples received out of holding time for analysis requested	
	10. Discrepancies between COC form and container labels.	
	11. Other.	

ACTION TAKEN:

Originator: Carmen Cole Date: 09/25/2013

Client was notified on: (Date/Time) Client Contact:

Client Services:

ANALYTICAL REPORT

For:
PGE Topock

ASL Report #: M2893

Project ID: 423575.MP.02.GM.03

Attn: Jay Piper/LAS

cc:
Data Center/RDD
Shawn Duffy/RDD

Authorized and Released By:

Kathy McKinley

Laboratory Project Manager
Kathy McKinley
(541) 758-0235 ext.23144
October 16, 2013

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.

Accredited in accordance with NELAP:
Oregon (100022)
Arizona (0771)
Louisiana (05031)

ASL Report #: M2893

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
M289301	MW-123-193	09/23/13 10:43	10/01/13
M289302	MW-61-110-193	09/23/13 09:37	10/01/13
M289303	MW-65-225-193	09/23/13 10:44	10/01/13
M289304	MW-66-165-193	09/23/13 14:54	10/01/13
M289305	MW-66BR-270-193	09/23/13 15:06	10/01/13
M289306	MW-70-105-193	09/23/13 08:20	10/01/13
M289307	MW-122-193	09/24/13 11:17	10/01/13
M289308	MW-38S-193	09/24/13 08:19	10/01/13
M289309	MW-60-125-193	09/24/13 11:16	10/01/13
M289310	MW-68-240-193	09/24/13 15:44	10/01/13
M289311	MW-69-195-193	09/24/13 09:17	10/01/13
M289312	MW-70BR-225-193	09/24/13 14:25	10/01/13
M289313	MW-12-193	09/25/13 09:38	10/01/13
M289314	MW-124-193	09/25/13 07:49	10/01/13
M289315	MW-59-100-193	09/25/13 12:37	10/01/13
M289316	MW-66-230-193	09/25/13 14:29	10/01/13
M289317	MW-67-185-193	09/25/13 08:41	10/01/13
M289318	MW-67-225-193	09/25/13 11:38	10/01/13
M289319	MW-67-260-193	09/25/13 07:47	10/01/13
M289320	MW-68-180-193	09/26/13 12:12	10/01/13
M289321	TW-01-193	09/26/13 09:10	10/01/13

CH2MHILL
Applied Sciences Laboratory (ASL)

1100 NE Circle Blvd., Suite 300
Corvallis, OR 97330
Tel 541-768-3120 Fax 541-752-0276

CASE NARRATIVE
GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M HILL ASL **ASL SDG#:** M2893

Project: PGE Topock **Project #:** 423575.MP.02.GM.03

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

Method(s):
E353.2

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-123-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289301

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0560	0.200	8.74		MG/L	20	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-61-110-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289302

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.868		MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-65-225-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289303

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0560	0.200	8.85		MG/L	20	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-66-165-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289304

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.140	0.500	31.8		MG/L	50	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-66BR-270-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289305

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.114		MG/L	1	3 ML	E353.2	10/08/13

FORM I GEN CHEM

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-70-105-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289306

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0280	0.100	3.17		MG/L	10	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-122-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289307

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0280	0.100	4.31		MG/L	10	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-38S-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289308

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.317		MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-60-125-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289309

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0280	0.100	4.21		MG/L	10	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-68-240-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289310

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0280	0.100	4.43		MG/L	10	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-69-195-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289311

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0560	0.200	17.8		MG/L	20	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-70BR-225-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289312

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0280	0.100	3.83		MG/L	10	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-12-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289313

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0560	0.200	12.2		MG/L	20	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-124-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289314

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.34		MG/L	5	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-59-100-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289315

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0280	0.100	3.38		MG/L	10	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-66-230-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289316

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.140	0.500	14.7		MG/L	50	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-67-185-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289317

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.140	0.500	31.8		MG/L	50	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-67-225-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289318

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.140	0.500	20.9		MG/L	50	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-67-260-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289319

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0140	0.0500	1.36		MG/L	5	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-68-180-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289320

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.140	0.500	26.3		MG/L	50	3 ML	E353.2	10/08/13

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

TW-01-193

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M289321

Date Received: 10/01/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.140	0.500	21.0		MG/L	50	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB1-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB1-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB11-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB11-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB12-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB12-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB13-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB13-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB14-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB14-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB15-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB15-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB16-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB16-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB2-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB2-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB3-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB3-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB4-100813

SDG No.: M2893

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB4-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2893 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS1W1008

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 10/08/13

Matrix: (Soil/Water) WATER Time Analyzed: 1132

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.408	98	90-110	

* Values outside of QC limits

Comments:

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2893 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS2W1008

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 10/08/13

Matrix: (Soil/Water) WATER Time Analyzed: 1202

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.408	98	90-110	

* Values outside of QC limits

Comments:

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2893 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS6W1008

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 10/08/13

Matrix: (Soil/Water) WATER Time Analyzed: 1354

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.428	103	90-110	

* Values outside of QC limits

Comments:

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2893 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS7W1008

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 10/08/13

Matrix: (Soil/Water) WATER Time Analyzed: 1424

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.441	106	90-110	

* Values outside of QC limits

Comments:

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2893 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS9W1008

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 10/08/13

Matrix: (Soil/Water) WATER Time Analyzed: 1508

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.438	105	90-110	

* Values outside of QC limits

Comments:

2.8°C ice

CH2MHILL

CHAIN OF CUSTODY RECORD

M2893

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/24/2013
COC Number: 12

	Container:	Preservatives:	Filtered:	Holding Time:
Nitrate/Nitrite (SM4500NO3) Nitrate	125 ml Poly	H2SO4, pH<2, 4°C	NA	28

	DATE	TIME	Matrix			Number of Containers	COMMENTS
MW-123-193	9/23/2013	10:43	Water	x	1	1	
MW-61-110-193	9/23/2013	9:37	Water	x	2	1	
MW-65-225-193	9/23/2013	10:44	Water	x	3	1	
MW-66-165-193	9/23/2013	14:54	Water	x	4	1	
MW-66BR-270-193	9/23/2013	15:06	Water	x	5	1	
MW-70-105-193	9/23/2013	8:20	Water	x	6	1	
MW-122-193	9/24/2013	11:17	Water	x	7	1	
MW-38S-193	9/24/2013	8:19	Water	x	8	1	
MW-60-125-193	9/24/2013	11:16	Water	x	9	1	
MW-68-240-193	9/24/2013	15:44	Water	x	10	1	
MW-69-195-193	9/24/2013	9:17	Water	x	11	1	
MW-70BR-225-193	9/24/2013	14:25	Water	x	12	1	
					TOTAL NUMBER OF CONTAINERS		

	Signatures	Date/Time
Approved by		9-24-13 1615
Sampled by		
Relinquished by		9-24-13 1615
Received by		9-24-13 1817
Relinquished by		9-24-13 1817
Received by		9-24-13 1535
RELINQUISHED BY:		

Shipping Details
Method of Shipment: courier
On Ice: (yes) / no 4.1 | 2.2
Airbill No:
Lab Name: CH2M HILL Applied Sciences Lab
Lab Phone: (541) 752-4271

ATTN:
Sample Custody
and
Kathy McKinley

Kathy McKinley 10/1/13 1430

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

2.8°C ice

CH2MHILL

CHAIN OF CUSTODY RECORD

M2893

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/26/2013
COC Number: 15

	Container:	Preservatives:	Filtered:	Holding Time:
Nitrate/Nitrite (SM4500NO3) Nitrate	125 ml Poly	H2SO4, pH<2, 4°C	NA	28

	DATE	TIME	Matrix			Number of Containers	COMMENTS
MW-12-193	9/25/2013	9:38	Water	x	13	1	
MW-124-193	9/25/2013	7:49	Water	x	14	1	
MW-59-100-193	9/25/2013	12:37	Water	x	15	1	
MW-66-230-193	9/25/2013	14:29	Water	x	16	1	
MW-67-185-193	9/25/2013	8:41	Water	x	17	1	
MW-67-225-193	9/25/2013	11:38	Water	x	18	1	
MW-67-260-193	9/25/2013	7:47	Water	x	19	1	
MW-68-180-193	9/26/2013	12:12	Water	x	20	1	
TW-01-193	9/26/2013	9:10	Water	x	21	1	
					TOTAL NUMBER OF CONTAINERS		

	Signatures	Date/Time
Approved by		9-26-13
Sampled by		
Relinquished by		9/26/13 1600
Received by		9/26/13 1720
Relinquished by		9/26/13
Received by		7/26/13
RELINQUISHED BY		30SEPT13 1535

Shipping Details
Method of Shipment: courier
On Ice: ~~yes~~ no 1.7°C IR#2
Airbill No:
Lab Name: CH2M HILL Applied Sciences Lab
Lab Phone: (541) 752-4271

ATTN:
Sample Custody
and
Kathy McKinley

Kathy McKinley 10/1/13 1430

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Page 1 of 1

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Record

SDG ID: M 28913 Date Received: 10/1/13

Client/Project: KOR Topock Checked By: KM

Packing Material: Ice Blue Ice Box Bubble Wrap HD (circle all that apply) Checked By: _____

Shipping ID: 8037 1902 2676 -- or -- On File COC HD USPS (circle one)

VERIFICATION OF SAMPLE CONDITIONS (verify all items), HD = Client Hand delivered Samples	NA	YES	NO
Were custody seals intact and on the outside of the cooler?		X	
Radiological Screening for DoD	X		
Temp OK? (<6C) Therm ID TH173 Exp. 11/13 2.8 °C			
Was a Chain of Custody (CoC) Provided?		X	
Was the CoC correctly filled out (If No, document in the SRER)		X	
Did sample labels agree with COC? No, document in SRER		X	
Did the CoC list a correct bottle count and the preservative types (Y=OK, N=Corrected on CoC)		X	
Were the sample containers in good condition (broken or leaking)?		X	
Was enough sample volume provided for analysis? No, document in SRER		X	
Containers supplied by ASL?		X	
Any sample with < 1/2 holding time remaining? If so contact LPM			X
Samples have multi-phase? If yes, document on SRER			X
All VOCs free of air bubbles? No, document on SRER	X		
pH of all samples met criteria on receipt? If "No", preserve and document below or on SRER		X	
Dissolved/Soluble metals filtered in the field?	X		
Dissolved/Soluble metals have sediment in bottom of container? Document in SRER	X		

Sample ID	Reagent	Reagent Lot Number	Volume Added	Initials

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Exception Report

Sample Batch Number: M2893 **Client/Project** PGE Topock

The following exceptions were noted:

		Comments (write number of exception description and the impacted sample numbers)
	1. No custody seal as required by project	11) COC requested NO3/NO2 by SM4500, ASL performs by E353.2
	2. No chain-of-custody provided	
	3. Analysis, description, date of collection not provided	
	4. Samples broken or leaking on receipt.	
	5. Temperature of samples inappropriate for analysis requested	
	6. Container inappropriate for analysis requested	
	7. Inadequate sample volume.	
	8. Preservation inappropriate for analysis requested	
	9. Samples received out of holding time for analysis requested	
	10. Discrepancies between COC form and container labels.	
X	11. Other.	

ACTION TAKEN:

Originator: Kathy McKinley Date: 10/2/2013

Client was notified on: (Date/Time) Client Contact:

Client Services:

ANALYTICAL REPORT

For:

PGE Topock - 2013-GMP-193-Q3

ASL Report #: M2919

Project ID: 423575.MP.02.GM.03

Attn: Jay Piper/LAS

cc:
Data Center/RDD
Shawn Duffy/RDD

Authorized and Released By:

Kathy McKinley

Laboratory Project Manager
Kathy McKinley
(541) 758-0235 ext.23144
October 16, 2013

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.

Accredited in accordance with NELAP:
Oregon (100022)
Arizona (0771)
Louisiana (05031)

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
M291901	MW-27-060-193	10/02/13 09:11	10/04/13
M291902	MW-27-085-193	10/02/13 10:14	10/04/13

CH2MHILL
Applied Sciences Laboratory (ASL)

1100 NE Circle Blvd., Suite 300
Corvallis, OR 97330
Tel 541-768-3120 Fax 541-752-0276

CASE NARRATIVE
GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M HILL ASL **ASL SDG#:** M2919

Project: PGE Topock **Project #:** 423575.MP.02.GM.03

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

Method(s):
E353.2

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-27-060-193

SDG No.: M2919

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M291901

Date Received: 10/04/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

MW-27-085-193

SDG No.: M2919

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: M291902

Date Received: 10/04/13

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB5-100813

SDG No.: M2919

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB5-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

WB6-100813

SDG No.: M2919

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB6-100813

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	10/08/13

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: M2919 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS3W1008

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 10/08/13

Matrix: (Soil/Water) WATER Time Analyzed: 1232

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.416	0.409	98	90-110	

* Values outside of QC limits

Comments:

1.6°C, Ice

M 2919

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy

Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 10/2/2013
COC Number: 17

	DATE	TIME	Matrix	Nitrate/Nitrite (SM4500NO3) Nitrate	Number of Containers	COMMENTS
Container:				125 ml Poly		
Preservatives:				H2SO4, pH<2, 4°C		
Filtered:				NA		
Holding Time:				28		
MW-27-060-193	10/2/2013	9:11	Water	X	1	1
MW-27-085-193	10/2/2013	10:14	Water	X	1	2
				TOTAL NUMBER OF CONTAINERS		

	Signatures	Date/Time
Approved by		10-2-13
Sampled by		1625
Relinquished by		
Received by		10 2 13 1625
Relinquished by		10-2-13 1625
Received by		

Shipping Details

Method of Shipment:
On Ice: yes / no 4.2 R 2
Airbill No.
Lab Name:
Lab Phone:

ATTN:

Sample Custody

Special Instructions:

Report Copy to

Shawn Duffy

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Record

SDG ID: M2414 Date Received: 10/04/13

Client/Project: TOPOCK Checked By: CT

Packing Material: (Ice) Blue Ice Box Bubble Wrap HD (circle all that apply) Checked By: _____

Shipping ID: _____ -- or -- (On File) COC HD USPS (circle one)

VERIFICATION OF SAMPLE CONDITIONS (verify all items), HD = Client Hand delivered Samples	NA	YES	NO
Were custody seals intact and on the outside of the cooler?		✓	
Radiological Screening for DoD	✓		
Temp OK? (<6C) Therm ID TH173 Exp. 11/13 1.6 °C		✓	
Was a Chain of Custody (CoC) Provided?		✓	
Was the CoC correctly filled out (If No, document in the SRER)		✓	
Did sample labels agree with COC? No, document in SRER		✓	
Did the CoC list a correct bottle count and the preservative types (Y=OK, N=Corrected on CoC)		✓	
Were the sample containers in good condition (broken or leaking)?		✓	
Was enough sample volume provided for analysis? No, document in SRER		✓	
Containers supplied by ASL?		✓	

Any sample with < 1/2 holding time remaining? If so contact LPM			✓
Samples have multi-phase? If yes, document on SRER			✓
All VOCs free of air bubbles? No, document on SRER	✓		
pH of all samples met criteria on receipt? If "No", preserve and document below or on SRER		✓	
Dissolved/Soluble metals filtered in the field?	✓		
Dissolved/Soluble metals have sediment in bottom of container? Document in SRER	✓		

Sample ID	Reagent	Reagent Lot Number	Volume Added	Initials

September 27, 2013

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

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

CA-ELAP No.: 2676
NV Cert. No.: NV-009222007A

Workorder No.: N010983

RE: PG&E Topock, 423575.MP.02.GM.03

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on September 10, 2013 by Advanced Technology Laboratories, Inc. . 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,

for Nancy Lubcas

Jose Tenorio Jr.
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.

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N010983

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 6020_Dissolved:

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

Dilution was necessary on sample N010983-005 due to failed internal standards when sample was analyzed at no dilution.

Advanced Technology Laboratories, Inc.

Date: *27-Sep-13*

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N010983
Contract No: 2013-GMP-193-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N010983-001A	MW-63-065-193	Water	9/9/2013 3:11:00 PM	9/10/2013	9/27/2013
N010983-001B	MW-63-065-193	Water	9/9/2013 3:11:00 PM	9/10/2013	9/27/2013
N010983-002A	MW-21-193	Water	9/10/2013 12:19:00 PM	9/10/2013	9/27/2013
N010983-003A	MW-24BR-193	Water	9/10/2013 7:53:00 AM	9/10/2013	9/27/2013
N010983-004A	MW-35-060-193	Water	9/10/2013 2:00:00 PM	9/10/2013	9/27/2013
N010983-004B	MW-35-060-193	Water	9/10/2013 2:00:00 PM	9/10/2013	9/27/2013
N010983-005A	MW-57-185-193	Water	9/10/2013 11:09:00 AM	9/10/2013	9/27/2013
N010983-005B	MW-57-185-193	Water	9/10/2013 11:09:00 AM	9/10/2013	9/27/2013
N010983-006A	MW-71-035-193	Water	9/10/2013 12:45:00 PM	9/10/2013	9/27/2013
N010983-006B	MW-71-035-193	Water	9/10/2013 12:45:00 PM	9/10/2013	9/27/2013

CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-001

Client Sample ID: MW-63-065-193
Collection Date: 9/9/2013 3:11:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130911A**	QC Batch: **R90257**			PrepDate:			Analyst: **LCC**
Specific Conductance	7000	0.10	0.10		umhos/cm	1	9/11/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-002

Client Sample ID: MW-21-193
Collection Date: 9/10/2013 12:19:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130911A**	QC Batch: **R90257**			PrepDate:			Analyst: **LCC**
Specific Conductance	10000	0.10	0.10		umhos/cm	1	9/11/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-003

Client Sample ID: MW-24BR-193
Collection Date: 9/10/2013 7:53:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130911A**	QC Batch: **R90257**			PrepDate:			Analyst: **LCC**
Specific Conductance	14000	0.10	0.10		umhos/cm	1	9/11/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-004

Client Sample ID: MW-35-060-193
Collection Date: 9/10/2013 2:00:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130911A**	QC Batch: **R90257**			PrepDate:			Analyst: **LCC**
Specific Conductance	7000	0.10	0.10		umhos/cm	1	9/11/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-005

Client Sample ID: MW-57-185-193
Collection Date: 9/10/2013 11:09:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130911A**	QC Batch: **R90257**			PrepDate:			Analyst: **LCC**
Specific Conductance	18000	0.10	0.10		umhos/cm	1	9/11/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-006

Client Sample ID: MW-71-035-193
Collection Date: 9/10/2013 12:45:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130911A**	QC Batch: **R90257**			PrepDate:			Analyst: **LCC**
Specific Conductance	7900	0.10	0.10		umhos/cm	1	9/11/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: CH2M HILL
Work Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID: **N010983-001B-DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **90257**
Client ID: **ZZZZZZ** Batch ID: **R90257** TestNo: **EPA 120.1** Analysis Date: **9/11/2013** SeqNo: **1644335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	7040.000	0.10						7030	0.142	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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CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-001

Client Sample ID: MW-63-065-193
Collection Date: 9/9/2013 3:11:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130923A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	1.5	0.035	0.10		µg/L	1	9/23/2013 06:54 PM
Manganese	ND	0.16	0.50		µg/L	1	9/23/2013 06:54 PM
Molybdenum	18	0.074	0.50		µg/L	1	9/23/2013 06:54 PM
Selenium	1.1	0.084	0.50		µg/L	1	9/23/2013 06:54 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		

Advanced Technology Laboratories, Inc.

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CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-004

Client Sample ID: MW-35-060-193
Collection Date: 9/10/2013 2:00:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130923A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	0.93	0.035	0.10		µg/L	1	9/23/2013 07:32 PM
Manganese	ND	0.16	0.50		µg/L	1	9/23/2013 07:32 PM
Molybdenum	8.7	0.37	2.5		µg/L	5	9/24/2013 10:46 AM
Selenium	0.80	0.084	0.50		µg/L	1	9/23/2013 07:32 PM

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-005

Client Sample ID: MW-57-185-193
Collection Date: 9/10/2013 11:09:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130924A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	15	0.17	0.50		µg/L	5	9/24/2013 10:52 AM
Manganese	280	0.80	2.5		µg/L	5	9/24/2013 10:52 AM
Molybdenum	89	0.37	2.5		µg/L	5	9/24/2013 10:52 AM
Selenium	ND	0.42	2.5		µg/L	5	9/24/2013 10:52 AM

Qualifiers:

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

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: CH2M HILL
Lab Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N010983-006

Client Sample ID: MW-71-035-193
Collection Date: 9/10/2013 12:45:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130923A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	1.3	0.035	0.10		µg/L	1	9/23/2013 07:48 PM
Manganese	5.6	0.16	0.50		µg/L	1	9/23/2013 07:48 PM
Molybdenum	63	0.37	2.5		µg/L	5	9/24/2013 10:57 AM
Selenium	1.9	0.084	0.50		µg/L	1	9/23/2013 07:48 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

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: CH2M HILL
Work Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **MB-43880**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90421**
Client ID: **PBW**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/23/2013**	SeqNo: **1649335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID: **LCS-43880**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90421**
Client ID: **LCSW**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/23/2013**	SeqNo: **1649336**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.099	0.10	10.00	0	91.0	85	115				
Manganese	97.774	0.50	100.0	0	97.8	85	115				
Molybdenum	10.208	0.50	10.00	0	102	85	115				
Selenium	8.567	0.50	10.00	0	85.7	85	115				

Sample ID: **N010983-001A-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90421**
Client ID: **ZZZZZZ**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/23/2013**	SeqNo: **1649340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.068	0.10	10.00	1.475	95.9	75	125				
Manganese	60.399	0.50	100.0	0	60.4	75	125				S
Selenium	9.738	0.50	10.00	1.118	86.2	75	125				

Sample ID: **N010983-001A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90421**
Client ID: **ZZZZZZ**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/23/2013**	SeqNo: **1649341**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.240	0.10	10.00	1.475	97.6	75	125	11.07	1.54	20	
Manganese	59.429	0.50	100.0	0	59.4	75	125	60.40	1.62	20	S

Qualifiers:

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

CLIENT: CH2M HILL
Work Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N010983-001A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90421**
Client ID: **ZZZZZZ**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/23/2013**	SeqNo: **1649341**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	9.564	0.50	10.00	1.118	84.5	75	125	9.738	1.80	20	

Sample ID: **N010983-001A-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90422**
Client ID: **ZZZZZZ**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/24/2013**	SeqNo: **1649389**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	26.327	0.50	10.00	18.00	83.3	75	125				

Sample ID: **N010983-001A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90422**
Client ID: **ZZZZZZ**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/24/2013**	SeqNo: **1649390**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	25.539	0.50	10.00	18.00	75.4	75	125	26.33	3.04	20	

Qualifiers:

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

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/10/2013
COC Number: 1

				Container:	500 ml Poly	500 ml Poly	1 Liter Poly		
				Preservatives:	HNO3, 4°C	HNO3, 4°C	4°C		
				Filtered:	Field	Field	NA		
				Holding Time:	180	180	14		
	DATE	TIME	Matrix		Arsenic (6020A) FF	Metals (6020A) FF Mo,Se,Mn	Specific Conductance (E120.1)	Number of Containers	COMMENTS
MW-63-065-193	9/9/2013	15:11	Water		X	X	X	3	
MW-21-193	9/10/2013	12:19	Water				X	1	
MW-24BR-193	9/10/2013	7:53	Water				X	1	
MW-35-060-193	9/10/2013	14:00	Water		X		X	2	
MW-57-185-193	9/10/2013	11:09	Water		X	X	X	3	
MW-71-035-193	9/10/2013	12:45	Water		X	X	X	3	
							TOTAL NUMBER OF CONTAINERS	10	

NO10983-1
-2
-3
-4
-5
-6

	Signatures	Date/Time
Approved by		
Sampled by		9-10-13 1525
Relinquished by		
Received by		10SEPT13 1525
Relinquished by		10 SEPT13 1809
Received by		10 SEPT13 1809

Shipping Details
Method of Shipment: courier
On Ice: (yes) / no 4.4 IR2
Airbill No:
Lab Name: ADVANCED TECHNOLOGY LABORATO
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Marlon

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/10/2013
COC Number: 1

Please add Mo,Se, and Mn to the 6020A analysis of sample MW-35-060-193.

Shawn P. Duffy 09-17-2013

N010983

	DATE	TIME	Matrix	Container:	500 ml Poly	500 ml Poly	1 Liter Poly	Number of Containers	COMMENTS
				Preservatives:	HNO3, 4°C	HNO3, 4°C	4°C		
				Filtered:	Field	Field	NA		
				Holding Time:	180	180	14		
					Arsenic (6020A) FF	Metals (6020A) FF Mo,Se,Mn	Specific Conductance (E120.1)		
MW-63-065-193	9/9/2013	15:11	Water		X	X	X	2	
MW-21-193	9/10/2013	12:19	Water				X	1	
MW-24BR-193	9/10/2013	7:53	Water			SPD	X	1	
MW-35-060-193	9/10/2013	14:00	Water		X	X	X	2	
MW-57-185-193	9/10/2013	11:09	Water		X	X	X	2	
MW-71-035-193	9/10/2013	12:45	Water		X	X	X	2	
							TOTAL NUMBER OF CONTAINERS	10	

	Signatures	Date/Time
Approved by		9-10-13 1525
Sampled by		
Relinquished by		10SEPT13 1525
Received by		10 SEPT13 1809
Relinquished by		10 SEPT13 1809
Received by		

Shipping Details

Method of Shipment: courier
On Ice: (yes) / no 4.4 1R2
Airbill No:
Lab Name: ADVANCED TECHNOLOGY LABORATO
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Marlon

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Sample Control

From: Glen Gesmundo [glen@atl-labs.com]
Sent: Tuesday, September 17, 2013 1:09 PM
To: Sample Control
Subject: FW: Topock N010983 revised COC
Attachments: N010983-COC-2013-GMP-193-Q3-Topock_09-17-2013spd.pdf

Kindly revise login.

From: Erlene.Contreras@CH2M.com [mailto:Erlene.Contreras@CH2M.com]
Sent: Tuesday, September 17, 2013 12:31 PM
To: glen@atl-labs.com
Cc: Shawn.Duffy@CH2M.com; Priya.Kumar@CH2M.com; Aurora.Abbott@ch2m.com; vito.daurora@critigen.com
Subject: Topock N010983 revised COC

Hi Glen,

Please add Mo, Se, and Mn to the 6020A analysis of sample MW-35-060-193. See revised COC.

Thank you,
Erlene

Erlene Contreras
Project Assistant 6

CH2M HILL
2525 Airpark Drive
Redding, CA 96001-2443
Direct 530.229.3247
Fax 530.399.3247
Erlene.Contreras@ch2m.com

Advanced Technology Laboratories, Inc.

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:	9/10/2013	Workorder:	N010983
Rep sample Temp (Deg C):	4.4	IR Gun ID:	2
Temp Blank:	☐ Yes ☑ No		
Carrier name:	ATL		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

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

Comments:

Checklist Completed By: MBC MBC 9/11/2013

Reviewed By:

Sample Calculation

METHOD: EPA 6020
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Aqueous

FORMULA:

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

Arsenic, ug/L = A * DF * PF

where:

A = ug/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N010983-004A**, the concentration in ug/L is calculated as follows:

Arsenic, ug/L = 0.19591800318 * 5 * (25/25)

= 0.9795900159

Reporting results in two significant figures,

Arsenic, ug/L = 0.98

9/26/2013

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N010983
Test Method: EPA 6020
Analysis Date: ~~9/20/2013 &~~ 9/23/2013

Matrix: Water
Batch No.: 43880

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

Comments:

Analyzed By: Jojo Tenorio

Dilution test is not applicable to As, Mn and Se. The calculated value is <25X RL. PS @2X passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N010983-001B-DT 5X	Arsenic	µg/L	1.600361	NA	1.475334	NA	10
N010983-001B-DT 5X	Manganese	µg/L	0	NA	0	NA	10
N010983-001B-DT 5X	Molybdenum	µg/L	17.76067	PASSED	17.99643	1.31%	10
N010983-001B-DT 5X	Selenium	µg/L	1.118523	NA	1.117582	NA	10

Note: NA - Not applicable

Nancy 9/27/2013

Advanced Technology Laboratories, Inc.

Date: *27-Sep-13*

CLIENT: CH2M HILL
Work Order: N010983
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N010983-001A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90421**
Client ID: **ZZZZZZ** Batch ID: **43880** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/23/2013** SeqNo: **1649339**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.406	0.20	20.00	1.475	99.7	75	125				
Manganese	156.577	1.0	200.0	0	78.3	75	125				
Molybdenum	41.819	1.0	20.00	18.00	119	75	125				
Selenium	19.151	1.0	20.00	1.118	90.2	75	125				

Qualifiers:

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

October 22, 2013

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

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

CA-ELAP No.: 2676
NV Cert. No.: NV-009222007A

Workorder No.: N011003

RE: PG&E Topock, 423575.MP.02.GM.03

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on September 12, 2013 by Advanced Technology Laboratories, Inc. . 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,

Jose Tenorio Jr.
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.

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011003

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 300.0:

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

Dilution was necessary on samples N011003-001& N011003-008 due to matrix.

Analytical Comments for EPA 6020_Dissolved:

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

Dilution was necessary on samples N011003-004, N011003-008, N011003-009 & N011003-010 due to failed internal standards when samples were analyzed at no dilution.

Advanced Technology Laboratories, Inc.

Date: *27-Sep-13*

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011003
Contract No: 2013-GMP-193-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N011003-001A	MW-28-090-193	Water	9/11/2013 8:24:00 AM	9/12/2013	9/27/2013
N011003-001B	MW-28-090-193	Water	9/11/2013 8:24:00 AM	9/12/2013	9/27/2013
N011003-002A	MW-42-055-193	Water	9/11/2013 9:56:00 AM	9/12/2013	9/27/2013
N011003-002B	MW-42-055-193	Water	9/11/2013 9:56:00 AM	9/12/2013	9/27/2013
N011003-003A	MW-42-065-193	Water	9/11/2013 10:42:00 AM	9/12/2013	9/27/2013
N011003-003B	MW-42-065-193	Water	9/11/2013 10:42:00 AM	9/12/2013	9/27/2013
N011003-004A	MW-46-175-193	Water	9/11/2013 2:19:00 PM	9/12/2013	9/27/2013
N011003-004B	MW-46-175-193	Water	9/11/2013 2:19:00 PM	9/12/2013	9/27/2013
N011003-005A	MW-48-193	Water	9/11/2013 7:07:00 AM	9/12/2013	9/27/2013
N011003-006A	MW-73-080-193	Water	9/11/2013 11:50:00 AM	9/12/2013	9/27/2013
N011003-006B	MW-73-080-193	Water	9/11/2013 11:50:00 AM	9/12/2013	9/27/2013
N011003-007A	MW-121-193	Water	9/12/2013 7:05:00 AM	9/12/2013	9/27/2013
N011003-007B	MW-121-193	Water	9/12/2013 7:05:00 AM	9/12/2013	9/27/2013
N011003-008A	MW-33-210-193	Water	9/12/2013 2:42:00 PM	9/12/2013	9/27/2013
N011003-008B	MW-33-210-193	Water	9/12/2013 2:42:00 PM	9/12/2013	9/27/2013
N011003-009A	MW-44-115-193	Water	9/12/2013 9:21:00 AM	9/12/2013	9/27/2013
N011003-009B	MW-44-115-193	Water	9/12/2013 9:21:00 AM	9/12/2013	9/27/2013
N011003-010A	MW-44-125-193	Water	9/12/2013 11:28:00 AM	9/12/2013	9/27/2013
N011003-010B	MW-44-125-193	Water	9/12/2013 11:28:00 AM	9/12/2013	9/27/2013

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-28-090-193
Lab Order:	N011003	**Collection Date:**	9/11/2013 8:24:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	6600	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-42-055-193
Lab Order:	N011003	**Collection Date:**	9/11/2013 9:56:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	1700	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-42-065-193
Lab Order:	N011003	**Collection Date:**	9/11/2013 10:42:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	6800	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-46-175-193
Lab Order:	N011003	**Collection Date:**	9/11/2013 2:19:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	17000	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-48-193
Lab Order:	N011003	**Collection Date:**	9/11/2013 7:07:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	16000	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-73-080-193
Lab Order:	N011003	**Collection Date:**	9/11/2013 11:50:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	9700	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-121-193
Lab Order:	N011003	**Collection Date:**	9/12/2013 7:05:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	8600	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-33-210-193
Lab Order:	N011003	**Collection Date:**	9/12/2013 2:42:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	17000	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-44-115-193
Lab Order:	N011003	**Collection Date:**	9/12/2013 9:21:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	10000	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-010

Client Sample ID: MW-44-125-193
Collection Date: 9/12/2013 11:28:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130913B**	QC Batch: **R90292**			PrepDate:			Analyst: **LCC**
Specific Conductance	8600	0.10	0.10		umhos/cm	1	9/13/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT: CH2M HILL
Work Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID: **N011003-001B-DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **90292**
Client ID: **ZZZZZZ** Batch ID: **R90292** TestNo: **EPA 120.1** Analysis Date: **9/13/2013** SeqNo: **1645890**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6610.000	0.10						6590	0.303	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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ANALYTICAL RESULTS

Print Date: *22-Oct-13*

CLIENT: CH2M HILL
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-001

Client Sample ID: MW-28-090-193
Collection Date: 9/11/2013 8:24:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_130917A**	QC Batch: **R90326**			PrepDate:			Analyst: **PN**
Fluoride	3.8	0.068	1.0		mg/L	10	9/17/2013 12:19 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		

Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: *22-Oct-13*

CLIENT: CH2M HILL
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-008

Client Sample ID: MW-33-210-193
Collection Date: 9/12/2013 2:42:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_130917A**	QC Batch: **R90326**			PrepDate:			Analyst: **PN**
Fluoride	ND	0.24	2.0		mg/L	20	9/17/2013 12:32 PM

Qualifiers:

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

Advanced Technology Laboratories, Inc.

Date: *22-Oct-13*

CLIENT: CH2M HILL
Work Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID: **MB-R90326** SampType: **MBLK** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90326**
Client ID: **PBW** Batch ID: **R90326** TestNo: **EPA 300.0** Analysis Date: **9/17/2013** SeqNo: **1646631**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.10									

Sample ID: **LCS-R90326** SampType: **LCS** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90326**
Client ID: **LCSW** Batch ID: **R90326** TestNo: **EPA 300.0** Analysis Date: **9/17/2013** SeqNo: **1646632**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.540	0.10	2.500	0	102	90	110				

Sample ID: **N011003-008BMS** SampType: **MS** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90326**
Client ID: **ZZZZZZ** Batch ID: **R90326** TestNo: **EPA 300.0** Analysis Date: **9/17/2013** SeqNo: **1646634**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	61.040	2.0	50.00	0	122	80	120				S

Sample ID: **N011003-008BMSD** SampType: **MSD** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90326**
Client ID: **ZZZZZZ** Batch ID: **R90326** TestNo: **EPA 300.0** Analysis Date: **9/17/2013** SeqNo: **1646635**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	62.120	2.0	50.00	0	124	80	120	61.04	1.75	20	S

Sample ID: **N011003-001BDUP** SampType: **DUP** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90326**
Client ID: **ZZZZZZ** Batch ID: **R90326** TestNo: **EPA 300.0** Analysis Date: **9/17/2013** SeqNo: **1668627**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	3.610	1.0						3.750	3.80	20	

Qualifiers:

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

Intentionally Blank

CLIENT: CH2M HILL
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-001

Client Sample ID: MW-28-090-193
Collection Date: 9/11/2013 8:24:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130923A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	1.7	0.035	0.10		µg/L	1	9/23/2013 07:53 PM
Manganese	110	0.16	0.50		µg/L	1	9/23/2013 07:53 PM
Molybdenum	21	0.37	2.5		µg/L	5	9/24/2013 11:03 AM
Selenium	ND	0.084	0.50		µg/L	1	9/23/2013 07:53 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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-42-055-193
Lab Order:	N011003	**Collection Date:**	9/11/2013 9:56:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011003-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130923A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	11	0.035	0.10		µg/L	1	9/23/2013 07:59 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
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-003

Client Sample ID: MW-42-065-193
Collection Date: 9/11/2013 10:42:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130923A**	QC Batch: **43880**			PrepDate:		**9/16/2013**	Analyst: **CEI**
Arsenic	2.6	0.035	0.10		µg/L	1	9/23/2013 08:04 PM
Manganese	910	0.80	2.5		µg/L	5	9/24/2013 11:08 AM

Qualifiers:

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

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CLIENT: CH2M HILL
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-004

Client Sample ID: MW-46-175-193
Collection Date: 9/11/2013 2:19:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130924A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Molybdenum	170	0.37	2.5		µg/L	5	9/24/2013 11:14 AM
Selenium	ND	0.42	2.5		µg/L	5	9/24/2013 11:14 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
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-006

Client Sample ID: MW-73-080-193
Collection Date: 9/11/2013 11:50:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130923A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	1.4	0.035	0.10		µg/L	1	9/23/2013 08:15 PM
Manganese	ND	0.16	0.50		µg/L	1	9/23/2013 08:15 PM
Molybdenum	22	0.37	2.5		µg/L	5	9/24/2013 11:19 AM
Selenium	4.8	0.42	2.5		µg/L	5	9/26/2013 04:56 PM

Qualifiers:

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

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CLIENT: CH2M HILL
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-007

Client Sample ID: MW-121-193
Collection Date: 9/12/2013 7:05:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130923A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	3.1	0.035	0.10		µg/L	1	9/23/2013 08:21 PM
Manganese	550	0.80	2.5		µg/L	5	9/24/2013 11:25 AM
Molybdenum	120	0.37	2.5		µg/L	5	9/24/2013 11:25 AM
Selenium	ND	0.084	0.50		µg/L	1	9/23/2013 08:21 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		

CLIENT: CH2M HILL
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-008

Client Sample ID: MW-33-210-193
Collection Date: 9/12/2013 2:42:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130924A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	1.2	0.17	0.50		µg/L	5	9/24/2013 11:41 AM
Manganese	ND	0.80	2.5		µg/L	5	9/24/2013 11:41 AM
Molybdenum	18	0.37	2.5		µg/L	5	9/24/2013 11:41 AM
Selenium	ND	0.42	2.5		µg/L	5	9/24/2013 11:41 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
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-009

Client Sample ID: MW-44-115-193
Collection Date: 9/12/2013 9:21:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130924A**	QC Batch: **43880**			PrepDate:		**9/16/2013**	Analyst: **CEI**
Arsenic	6.0	0.17	0.50		µg/L	5	9/24/2013 11:47 AM
Manganese	ND	0.16	0.50		µg/L	1	9/23/2013 08:43 PM
Molybdenum	82	0.37	2.5		µg/L	5	9/24/2013 11:47 AM
Selenium	ND	0.42	2.5		µg/L	5	9/24/2013 11:47 AM

Qualifiers:

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

Advanced Technology Laboratories, Inc.
3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: CH2M HILL
Lab Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011003-010

Client Sample ID: MW-44-125-193
Collection Date: 9/12/2013 11:28:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130924A**	QC Batch: **43880**			PrepDate:	**9/16/2013**		Analyst: **CEI**
Arsenic	3.6	0.17	0.50		µg/L	5	9/24/2013 11:52 AM
Manganese	530	0.80	2.5		µg/L	5	9/24/2013 11:52 AM
Molybdenum	120	0.37	2.5		µg/L	5	9/24/2013 11:52 AM
Selenium	ND	0.42	2.5		µg/L	5	9/24/2013 11:52 AM

Qualifiers:

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

Advanced Technology Laboratories, Inc.
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CLIENT: CH2M HILL
Work Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **MB-43880** SampType: **MBLK** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/16/2013** RunNo: **90421**
Client ID: **PBW** Batch ID: **43880** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/23/2013** SeqNo: **1649335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID: **LCS-43880** SampType: **LCS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/16/2013** RunNo: **90421**
Client ID: **LCSW** Batch ID: **43880** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/23/2013** SeqNo: **1649336**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.099	0.10	10.00	0	91.0	85	115				
Manganese	97.774	0.50	100.0	0	97.8	85	115				
Molybdenum	10.208	0.50	10.00	0	102	85	115				
Selenium	8.567	0.50	10.00	0	85.7	85	115				

Sample ID: **N010983-001A-MS** SampType: **MS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/16/2013** RunNo: **90421**
Client ID: **ZZZZZZ** Batch ID: **43880** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/23/2013** SeqNo: **1649340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.068	0.10	10.00	1.475	95.9	75	125				
Manganese	60.399	0.50	100.0	0	60.4	75	125				S
Selenium	9.738	0.50	10.00	1.118	86.2	75	125				

Sample ID: **N010983-001A-MSD** SampType: **MSD** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/16/2013** RunNo: **90421**
Client ID: **ZZZZZZ** Batch ID: **43880** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/23/2013** SeqNo: **1649341**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.240	0.10	10.00	1.475	97.6	75	125	11.07	1.54	20	
Manganese	59.429	0.50	100.0	0	59.4	75	125	60.40	1.62	20	S

Qualifiers:

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

CLIENT: CH2M HILL
Work Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N010983-001A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90421**
Client ID: **ZZZZZZ**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/23/2013**	SeqNo: **1649341**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	9.564	0.50	10.00	1.118	84.5	75	125	9.738	1.80	20	

Sample ID: **N010983-001A-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90422**
Client ID: **ZZZZZZ**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/24/2013**	SeqNo: **1649389**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	26.327	0.50	10.00	18.00	83.3	75	125				

Sample ID: **N010983-001A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/16/2013**	RunNo: **90422**
Client ID: **ZZZZZZ**	Batch ID: **43880**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/24/2013**	SeqNo: **1649390**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	25.539	0.50	10.00	18.00	75.4	75	125	26.33	3.04	20	

Qualifiers:

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

Advanced Technology Laboratories, Inc.
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CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/12/2013
COC Number: 6

	Container:	500 ml Poly	500 ml Poly	500 ml Poly	500 ml Poly	1 Liter Poly	1 Liter Poly			
	Preservatives:	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C			
	Filtered:	Field	Field	Field	Field	NA	NA			
	Holding Time:	180	180	180	180	14	14			
DATE	TIME	Matrix	Arsenic (6020A) FF	Metals (6020A) FF Mn	Metals (6020A) FF Mo.Se	Metals (6020A) FF Mo.Se.Mn	Specific Conductance (E120.1)	Anions (E300.0) Fluoride		Number of Containers	COMMENTS
MW-28-090-193	9/11/2013	8:24	Water	X			X	X	X	N91003 - 1	~~4~~ 2	2
MW-42-055-193	9/11/2013	9:56	Water	X				X		-2	2	
MW-42-065-193	9/11/2013	10:42	Water	X	X			X		-3	~~3~~ 2	2
MW-46-175-193	9/11/2013	14:19	Water			X		X		-4	2	
MW-48-193	9/11/2013	7:07	Water					X		-5	1	
MW-73-080-193	9/11/2013	11:50	Water	X			X	X		-6	~~3~~ 2	2
MW-121-193	9/12/2013	7:05	Water	X			X	X		-7	~~3~~ 2	2
MW-33-210-193	9/12/2013	14:42	Water	X			X	X	X	-8	~~4~~ 2	2 BZ
MW-44-115-193	9/12/2013	9:21	Water	X			X	X		-9	~~3~~ 2	2
MW-44-125-193	9/12/2013	11:28	Water	X			X	X		-10	~~3~~ 2	2
									TOTAL NUMBER OF CONTAINERS		19	

	Signatures	Date/Time
Approved by		9-12-13 1535
Sampled by		
Relinquished by		
Received by		12SEP13 1535
Relinquished by		12SEP13 1737
Received by		12SEP13 1737

Shipping Details
Method of Shipment: courier
On Ice: (yes) / no 3.3 IR2
Airbill No:
Lab Name: ADVANCED TECHNOLOGY LABORATO
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Marion

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Advanced Technology Laboratories, Inc.

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:	9/12/2013	Workorder:	N011003
Rep sample Temp (Deg C):	3.3	IR Gun ID:	2
Temp Blank:	☐ Yes ☑ No		
Carrier name:	ATL		
Last 4 digits of Tracking No.:	N/A	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

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

Comments:

Checklist Completed By MBC for

Reviewed By:

Sample Calculation

METHOD: EPA 300
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: WATER

FORMULA:

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

Fluoride , mg/L = A * DF

where:

A = mg/L, IC calculated concentration
DF = dilution factor

For **N011003-001B**, concentration in mg/L are calculated as follows:

Fluoride , mg/L = 0.124 * 50

= 6.200

Reporting **N011003-001B** results in two significant figures,

Fluoride , mg/L = 6.2

But since PQL of Fluoride, mg/L = 25 mg/L,

Fluoride , mg/L = ND

Nancy 9/27/2013

Sample Calculation

METHOD: EPA 6020
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Aqueous

FORMULA:

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

Arsenic, ug/L = A * DF * PF

where:

A = ug/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N011003-001A**, the concentration in ug/L is calculated as follows:

Arsenic, ug/L = 1.6607365365 * 1 * (25/25)

= 1.6607365365

Reporting results in two significant figures,

Arsenic, ug/L = 1.7

Nancy 9/27/2013

Advanced Technology Laboratories, Inc.

ICP-Metals in Water N011003

Dilution Test Summary

Work Order No.: ~~N010983~~
Test Method: EPA 6020
Analysis Date: ~~9/20/2013~~ & 9/23/2013

Matrix: Water
Batch No.: 43880

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

Comments:

Analyzed By: Jojo Tenorio

Dilution test is not applicable to As, Mn and Se. The calculated value is <25X RL. PS @2X passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N010983-001B-DT 5X	Arsenic	µg/L	1.600361	NA	1.475334	NA	10
N010983-001B-DT 5X	Manganese	µg/L	0	NA	0	NA	10
N010983-001B-DT 5X	Molybdenum	µg/L	17.76067	PASSED	17.99643	1.31%	10
N010983-001B-DT 5X	Selenium	µg/L	1.118523	NA	1.117582	NA	10

Note: NA - Not applicable

9/27/2013

CLIENT: CH2M HILL
Work Order: N011003
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N010983-001A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90421**
Client ID: **ZZZZZZ** Batch ID: **43880** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/23/2013** SeqNo: **1649339**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.406	0.20	20.00	1.475	99.7	75	125				
Manganese	156.577	1.0	200.0	0	78.3	75	125				
Molybdenum	41.819	1.0	20.00	18.00	119	75	125				
Selenium	19.151	1.0	20.00	1.118	90.2	75	125				

Qualifiers:

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

October 02, 2013

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

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

CA-ELAP No.: 2676
NV Cert. No.: NV-009222007A

Workorder No.: N011039

RE: PG&E Topock, 423575.MP.02.GM.03

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on September 17, 2013 by Advanced Technology Laboratories, Inc. . 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,

Jose Tenorio Jr.
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.

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011039

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 6020:

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

Dilution was necessary on samples N011039-003, N011039-004, N011039-006, N011039-007 & N011039-008 due to failed Internal Standard when samples were analyzed at no dilution.

Analytical Comments for EPA 300.0:

Dilution was necessary on samples N011039-001, N011039-002 & N011039-003 due to matrix.

Advanced Technology Laboratories, Inc.

Date: *02-Oct-13*

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011039
Contract No: 2013-GMP-193-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N011039-001A	MW-33-040-193	Water	9/16/2013 9:19:00 AM	9/17/2013	10/2/2013
N011039-001B	MW-33-040-193	Water	9/16/2013 9:19:00 AM	9/17/2013	10/2/2013
N011039-002A	MW-33-090-193	Water	9/16/2013 10:02:00 AM	9/17/2013	10/2/2013
N011039-002B	MW-33-090-193	Water	9/16/2013 10:02:00 AM	9/17/2013	10/2/2013
N011039-003A	MW-33-150-193	Water	9/16/2013 11:15:00 AM	9/17/2013	10/2/2013
N011039-003B	MW-33-150-193	Water	9/16/2013 11:15:00 AM	9/17/2013	10/2/2013
N011039-004A	MW-23-060-193	Water	9/17/2013 9:45:00 AM	9/17/2013	10/2/2013
N011039-004B	MW-23-060-193	Water	9/17/2013 9:45:00 AM	9/17/2013	10/2/2013
N011039-005A	MW-23-080-193	Water	9/17/2013 11:25:00 AM	9/17/2013	10/2/2013
N011039-005B	MW-23-080-193	Water	9/17/2013 11:25:00 AM	9/17/2013	10/2/2013
N011039-006A	MW-38D-193	Water	9/17/2013 3:44:00 PM	9/17/2013	10/2/2013
N011039-006B	MW-38D-193	Water	9/17/2013 3:44:00 PM	9/17/2013	10/2/2013
N011039-007A	MW-60BR-245-193	Water	9/17/2013 2:17:00 PM	9/17/2013	10/2/2013
N011039-007B	MW-60BR-245-193	Water	9/17/2013 2:17:00 PM	9/17/2013	10/2/2013
N011039-008A	MW-64BR-193	Water	9/17/2013 12:00:00 PM	9/17/2013	10/2/2013
N011039-008B	MW-64BR-193	Water	9/17/2013 12:00:00 PM	9/17/2013	10/2/2013

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-33-040-193
Lab Order:	N011039	**Collection Date:**	9/16/2013 9:19:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130918A**	QC Batch: **R90325**			PrepDate:			Analyst: **LCC**
Specific Conductance	10000	0.10	0.10		umhos/cm	1	9/18/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-33-090-193
Lab Order:	N011039	**Collection Date:**	9/16/2013 10:02:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130918A**	QC Batch: **R90325**			PrepDate:			Analyst: **LCC**
Specific Conductance	8800	0.10	0.10		umhos/cm	1	9/18/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-33-150-193
Lab Order:	N011039	**Collection Date:**	9/16/2013 11:15:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130918A**	QC Batch: **R90325**			PrepDate:			Analyst: **LCC**
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/18/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-23-060-193
Lab Order:	N011039	**Collection Date:**	9/17/2013 9:45:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130918A**	QC Batch: **R90325**			PrepDate:			Analyst: **LCC**
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/18/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-23-080-193
Lab Order:	N011039	**Collection Date:**	9/17/2013 11:25:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130918A**	QC Batch: **R90325**			PrepDate:			Analyst: **LCC**
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/18/2013

Qualifiers:

B	Analyte detected in 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
Lab Order: N011039
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011039-006

Client Sample ID: MW-38D-193
Collection Date: 9/17/2013 3:44:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130918A**	QC Batch: **R90325**			PrepDate:			Analyst: **LCC**
Specific Conductance	20000	0.10	0.10		umhos/cm	1	9/18/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-60BR-245-193
Lab Order:	N011039	**Collection Date:**	9/17/2013 2:17:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130918A**	QC Batch: **R90325**			PrepDate:			Analyst: **LCC**
Specific Conductance	16000	0.10	0.10		umhos/cm	1	9/18/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-64BR-193
Lab Order:	N011039	**Collection Date:**	9/17/2013 12:00:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130918A**	QC Batch: **R90325**			PrepDate:			Analyst: **LCC**
Specific Conductance	13000	0.10	0.10		umhos/cm	1	9/18/2013

Qualifiers:

B	Analyte detected in 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: N011039
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID: **N011039-001B-DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **90325**
Client ID: **ZZZZZZ** Batch ID: **R90325** TestNo: **EPA 120.1** Analysis Date: **9/18/2013** SeqNo: **1646619**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	10150.000	0.10						10130	0.197	10	

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-33-040-193
Lab Order:	N011039	**Collection Date:**	9/16/2013 9:19:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_130918A**	QC Batch: **R90362**			PrepDate:			Analyst: **PN**
Fluoride	15	0.12	5.0		mg/L	10	9/18/2013 02:25 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	**Client Sample ID:**	MW-33-090-193
Lab Order:	N011039	**Collection Date:**	9/16/2013 10:02:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_130918A**	QC Batch: **R90362**			PrepDate:			Analyst: **PN**
Fluoride	5.5	0.12	5.0		mg/L	10	9/18/2013 03:03 PM

Qualifiers:

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

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ANALYTICAL RESULTS

Print Date: *02-Oct-13*

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-33-150-193
Lab Order:	N011039	**Collection Date:**	9/16/2013 11:15:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_130918A**	QC Batch: **R90362**			PrepDate:			Analyst: **PN**
Fluoride	ND	0.060	2.5		mg/L	5	9/18/2013 10:50 AM

Qualifiers:

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

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CLIENT: CH2M HILL
Work Order: N011039
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID: **MB-R90362_F** SampType: **MBLK** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90362**
Client ID: **PBW** Batch ID: **R90362** TestNo: **EPA 300.0** Analysis Date: **9/18/2013** SeqNo: **1647808**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.50									

Sample ID: **LCS-R90362_F** SampType: **LCS** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90362**
Client ID: **LCSW** Batch ID: **R90362** TestNo: **EPA 300.0** Analysis Date: **9/18/2013** SeqNo: **1647809**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.515	0.50	2.500	0	101	90	110				

Sample ID: **N011039-001BDUP** SampType: **DUP** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90362**
Client ID: **ZZZZZZ** Batch ID: **R90362** TestNo: **EPA 300.0** Analysis Date: **9/18/2013** SeqNo: **1647817**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	15.130	5.0						15.07	0.397	20	

Sample ID: **N011039-001BMS** SampType: **MS** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90362**
Client ID: **ZZZZZZ** Batch ID: **R90362** TestNo: **EPA 300.0** Analysis Date: **9/18/2013** SeqNo: **1647818**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	41.460	5.0	25.00	15.07	106	80	120				

Sample ID: **N011039-001BMSD** SampType: **MSD** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90362**
Client ID: **ZZZZZZ** Batch ID: **R90362** TestNo: **EPA 300.0** Analysis Date: **9/18/2013** SeqNo: **1647819**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	40.820	5.0	25.00	15.07	103	80	120	41.46	1.56	20	

Qualifiers:

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

CLIENT: CH2M HILL
Work Order: N011039
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID: **N011039-002BMS** SampType: **MS** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90362**
Client ID: **ZZZZZZ** Batch ID: **R90362** TestNo: **EPA 300.0** Analysis Date: **9/18/2013** SeqNo: **1647820**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	11.100	5.0	5.000	5.460	113	80	120				

Qualifiers:

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

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CLIENT: CH2M HILL
Lab Order: N011039
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011039-001

Client Sample ID: MW-33-040-193
Collection Date: 9/16/2013 9:19:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130927A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	11	0.035	0.10		µg/L	1	9/27/2013 12:04 PM
Manganese	ND	0.16	0.50		µg/L	1	9/27/2013 12:04 PM
Molybdenum	290	0.37	2.5		µg/L	5	9/27/2013 12:10 PM
Selenium	1.0	0.084	0.50		µg/L	1	9/27/2013 12:04 PM

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N011039
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011039-002

Client Sample ID: MW-33-090-193
Collection Date: 9/16/2013 10:02:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130927A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	1.4	0.035	0.10		µg/L	1	9/27/2013 01:17 PM
Manganese	ND	0.16	0.50		µg/L	1	9/27/2013 01:17 PM
Molybdenum	17	0.37	2.5		µg/L	5	9/27/2013 01:22 PM
Selenium	ND	0.084	0.50		µg/L	1	9/27/2013 01:17 PM

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N011039
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011039-003

Client Sample ID: MW-33-150-193
Collection Date: 9/16/2013 11:15:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130927A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	1.8	0.17	0.50		µg/L	5	9/27/2013 01:33 PM
Manganese	ND	0.80	2.5		µg/L	5	9/27/2013 01:33 PM
Molybdenum	37	0.37	2.5		µg/L	5	9/27/2013 01:33 PM
Selenium	ND	0.42	2.5		µg/L	5	9/27/2013 01:33 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	**Client Sample ID:**	MW-23-060-193
Lab Order:	N011039	**Collection Date:**	9/17/2013 9:45:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130927A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	4.0	0.35	1.0		µg/L	10	9/27/2013 02:50 PM
Manganese	ND	0.80	2.5		µg/L	5	9/27/2013 01:44 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-23-080-193
Lab Order:	N011039	**Collection Date:**	9/17/2013 11:25:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130927A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	2.4	0.035	0.10		µg/L	1	9/27/2013 01:50 PM
Manganese	ND	0.16	0.50		µg/L	1	9/27/2013 01:50 PM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-38D-193
Lab Order:	N011039	**Collection Date:**	9/17/2013 3:44:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130927A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	6.5	0.17	0.50		µg/L	5	9/27/2013 02:06 PM
Manganese	560	0.80	2.5		µg/L	5	9/27/2013 02:06 PM
Molybdenum	83	0.37	2.5		µg/L	5	9/27/2013 02:06 PM
Selenium	ND	0.42	2.5		µg/L	5	9/27/2013 02:06 PM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-60BR-245-193
Lab Order:	N011039	**Collection Date:**	9/17/2013 2:17:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-007		

DISSOLVED METALS BY ICP-MS

EPA 3010A **EPA 6020**

RunID: **ICP7_130927A** QC Batch: **43934** PrepDate: **9/23/2013** Analyst: **CEI**

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
Arsenic	6.4	0.17	0.50		µg/L	5	9/27/2013 02:28 PM
Manganese	ND	0.80	2.5		µg/L	5	9/27/2013 02:28 PM
Molybdenum	55	0.37	2.5		µg/L	5	9/27/2013 02:28 PM
Selenium	3.0	0.42	2.5		µg/L	5	9/27/2013 02:28 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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-64BR-193
Lab Order:	N011039	**Collection Date:**	9/17/2013 12:00:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011039-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130927A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	3.5	0.17	0.50		µg/L	5	9/27/2013 02:39 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		

CLIENT: CH2M HILL
Work Order: N011039
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **MB-43934** SampType: **MBLK** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/23/2013** RunNo: **90504**
Client ID: **PBW** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651981**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID: **LCS-43934** SampType: **LCS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/23/2013** RunNo: **90504**
Client ID: **LCSW** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.908	0.10	10.00	0	99.1	85	115				
Manganese	99.510	0.50	100.0	0	99.5	85	115				
Molybdenum	10.465	0.50	10.00	0	105	85	115				
Selenium	9.121	0.50	10.00	0	91.2	85	115				

Sample ID: **N011039-001A-MS** SampType: **MS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/23/2013** RunNo: **90504**
Client ID: **ZZZZZZ** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651987**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	22.345	0.10	10.00	11.43	109	75	125				
Manganese	77.562	0.50	100.0	0	77.6	75	125				
Selenium	11.332	0.50	10.00	1.026	103	75	125				

Sample ID: **N011039-001A-MSD** SampType: **MSD** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/23/2013** RunNo: **90504**
Client ID: **ZZZZZZ** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651988**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.514	0.10	10.00	11.43	101	75	125	22.34	3.79	20	
Manganese	75.119	0.50	100.0	0	75.1	75	125	77.56	3.20	20	

Qualifiers:

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

Advanced Technology Laboratories, Inc.
3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: CH2M HILL
Work Order: N011039
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011039-001A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/23/2013**	RunNo: **90504**
Client ID: **ZZZZZZ**	Batch ID: **43934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/27/2013**	SeqNo: **1651988**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	11.243	0.50	10.00	1.026	102	75	125	11.33	0.788	20	

Sample ID: **N011039-001A-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/23/2013**	RunNo: **90504**
Client ID: **ZZZZZZ**	Batch ID: **43934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/27/2013**	SeqNo: **1651989**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	300.748	2.5	10.00	294.9	58.9	75	125				S

Sample ID: **N011039-001A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/23/2013**	RunNo: **90504**
Client ID: **ZZZZZZ**	Batch ID: **43934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/27/2013**	SeqNo: **1651990**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	298.152	2.5	10.00	294.9	33.0	75	125	300.7	0.867	20	S

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

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

Advanced Technology Laboratories, Inc.
3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/17/2013
COC Number: 8

			Container:	500 ml Poly	500 ml Poly	500 ml Poly	1 Liter Poly	1 Liter Poly				
			Preservatives:	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C				
			Filtered:	Field	Field	Field	NA	NA				
			Holding Time:	180	180	180	14	14				
	DATE	TIME	Matrix	Arsenic (6020A) FF	Metals (6020A) FF Mn	Metals (6020A) FF Mo,Se,Mn	Specific Conductance (E120.1)	Anions (E300.0) Fluoride		Number of Containers	COMMENTS	
MW-33-040-193	9/16/2013	9:19	Water	X		X	X	X	N011039-1	4	2	
MW-33-090-193	9/16/2013	10:02	Water	X		X	X	X	-2	4	2	VE
MW-33-150-193	9/16/2013	11:15	Water	X		X	X	X	-3	4	2	
MW-23-060-193	9/17/2013	9:45	Water	X	X		X		-4	3	2	
MW-23-080-193	9/17/2013	11:25	Water	X	X		X		-5	3	2	
MW-38D-193	9/17/2013	15:44	Water	X		X	X		-6	3	2	
MW-60BR-245-193	9/17/2013	14:17	Water	X		X	X		-7	3	2	
MW-64BR-193	9/17/2013	12:00	Water	X			X		-8	2		
									TOTAL NUMBER OF CONTAINERS	16		

	Signatures	Date/Time
Approved by		9-17-13 1600
Sampled by		
Relinquished by		
Received by		9/17/13 1608
Relinquished by		9/17/13 1720
Received by		9/17/13

Shipping Details
Method of Shipment: courier
On Ice: ~~yes~~ no 1.3°C
Airbill No: 1R#2
Lab Name: ADVANCED TECHNOLOGY LABORATO
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Marion

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Advanced Technology Laboratories, Inc.

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:	9/17/2013	Workorder:	N011039
Rep sample Temp (Deg C):	1.3	IR Gun ID:	2
Temp Blank:	☐ Yes ☑ No		
Carrier name:	ATL		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

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

Comments:

Checklist Completed By: MBC MBC 9/18/2013

Reviewed By:

Sample Calculation

METHOD: EPA 300
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: WATER

FORMULA:

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

Fluoride , mg/L = A * DF

where:

A = mg/L, IC calculated concentration
DF = dilution factor

For **N011039-001B**, concentration in mg/L are calculated as follows:

Fluoride , mg/L = 1.507 * 10

= 15.07

Reporting **N011039-001B** results in two significant figures,

Fluoride , mg/L = 15

9/25/2013

10/2/2013

Sample Calculation

METHOD: EPA 6020
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Aqueous

FORMULA:

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

Arsenic, ug/L = A * DF * PF

where:

A = ug/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N011039-001A**, the concentration in ug/L is calculated as follows:

Arsenic, ug/L = 11.4314053018054 * 1 * (25/25)

= 11.4314053018054

Reporting results in two significant figures,

Arsenic, ug/L = 11

10/2/2013

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N011039
Test Method: EPA 6020
Analysis Date: 09/27/13

Matrix: Water
Batch No.: 43934

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mn and Se. The calculated values are <25X RL. PS @2X passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N011039-001A-DT 5X	Arsenic	µg/L	11.41755989	PASSED	11.4314053	0.12%	10
N011039-001A-DT 5X	Manganese	µg/L	0	NA	0		10
N011039-001A-DT 5X	Selenium	µg/L	0.967549706	NA	1.02612873	5.71%	10
N011039-001A-DT 25X	Molybdenum	µg/L	301.943149	PASSED	294.8537478	2.40%	10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N011039
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011039-001A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90504**
Client ID: **ZZZZZZ** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651986**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	32.680	0.20	20.00	11.43	106	75	125				
Manganese	162.824	1.0	200.0	0	81.4	75	125				
Selenium	21.638	1.0	20.00	1.026	103	75	125				

Sample ID: **N011039-001A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90504**
Client ID: **ZZZZZZ** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651993**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	339.039	2.5	50.00	294.9	88.4	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		

October 03, 2013

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

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

CA-ELAP No.: 2676
NV Cert. No.: NV-009222007A

Workorder No.: N011053

RE: PG&E Topock, 423575.MP.02.GM.03

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on September 19, 2013 by Advanced Technology Laboratories, Inc. . 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,

Jose Tenorio Jr.
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.

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011053

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 6020_Dissolved:

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

Dilution was necessary on samples N011053-001, N011053-002, N011053-003, N011053-005, N011053-007, N011053-008 & N011053-009 due to failed Internal Standard when samples were analyzed at no dilution.

Advanced Technology Laboratories, Inc.

Date: *03-Oct-13*

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011053
Contract No: 2013-GMP-193-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N011053-001A	MW-62-110-193	Water	9/18/2013 2:10:00 PM	9/19/2013	10/3/2013
N011053-001B	MW-62-110-193	Water	9/18/2013 2:10:00 PM	9/19/2013	10/3/2013
N011053-002A	MW-62-190-193	Water	9/18/2013 2:22:00 PM	9/19/2013	10/3/2013
N011053-002B	MW-62-190-193	Water	9/18/2013 2:22:00 PM	9/19/2013	10/3/2013
N011053-003A	MW-68BR-280-193	Water	9/18/2013 11:25:00 AM	9/19/2013	10/3/2013
N011053-003B	MW-68BR-280-193	Water	9/18/2013 11:25:00 AM	9/19/2013	10/3/2013
N011053-004A	MW-74-240-193	Water	9/18/2013 1:14:00 PM	9/19/2013	10/3/2013
N011053-004B	MW-74-240-193	Water	9/18/2013 1:14:00 PM	9/19/2013	10/3/2013
N011053-005A	MW-125-193	Water	9/19/2013 7:00:00 AM	9/19/2013	10/3/2013
N011053-005B	MW-125-193	Water	9/19/2013 7:00:00 AM	9/19/2013	10/3/2013
N011053-006A	MW-58BR-193	Water	9/19/2013 8:36:00 AM	9/19/2013	10/3/2013
N011053-006B	MW-58BR-193	Water	9/19/2013 8:36:00 AM	9/19/2013	10/3/2013
N011053-007A	MW-65-160-193	Water	9/19/2013 3:04:00 PM	9/19/2013	10/3/2013
N011053-007B	MW-65-160-193	Water	9/19/2013 3:04:00 PM	9/19/2013	10/3/2013
N011053-008A	MW-72-080-193	Water	9/19/2013 10:30:00 AM	9/19/2013	10/3/2013
N011053-008B	MW-72-080-193	Water	9/19/2013 10:30:00 AM	9/19/2013	10/3/2013
N011053-009A	MW-72BR-200-193	Water	9/19/2013 1:53:00 PM	9/19/2013	10/3/2013
N011053-009B	MW-72BR-200-193	Water	9/19/2013 1:53:00 PM	9/19/2013	10/3/2013

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-62-110-193
Lab Order:	N011053	**Collection Date:**	9/18/2013 2:10:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130920A**	QC Batch: **R90369**			PrepDate:			Analyst: **LCC**
Specific Conductance	8100	0.10	0.10		umhos/cm	1	9/20/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-62-190-193
Lab Order:	N011053	**Collection Date:**	9/18/2013 2:22:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130920A**	QC Batch: **R90369**			PrepDate:			Analyst: **LCC**
Specific Conductance	16000	0.10	0.10		umhos/cm	1	9/20/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-68BR-280-193
Lab Order:	N011053	**Collection Date:**	9/18/2013 11:25:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130920A**	QC Batch: **R90369**			PrepDate:			Analyst: **LCC**
Specific Conductance	19000	0.10	0.10		umhos/cm	1	9/20/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-74-240-193
Lab Order:	N011053	**Collection Date:**	9/18/2013 1:14:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130920A**	QC Batch: **R90369**			PrepDate:			Analyst: **LCC**
Specific Conductance	780	0.10	0.10		umhos/cm	1	9/20/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-125-193
Lab Order:	N011053	**Collection Date:**	9/19/2013 7:00:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130920A**	QC Batch: **R90369**			PrepDate:			Analyst: **LCC**
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/20/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-58BR-193
Lab Order:	N011053	**Collection Date:**	9/19/2013 8:36:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130920A**	QC Batch: **R90369**			PrepDate:			Analyst: **LCC**
Specific Conductance	8400	0.10	0.10		umhos/cm	1	9/20/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-65-160-193
Lab Order:	N011053	**Collection Date:**	9/19/2013 3:04:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130920A**	QC Batch: **R90369**			PrepDate:			Analyst: **LCC**
Specific Conductance	3800	0.10	0.10		umhos/cm	1	9/20/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-72-080-193
Lab Order:	N011053	**Collection Date:**	9/19/2013 10:30:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130920A**	QC Batch: **R90369**			PrepDate:			Analyst: **LCC**
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/20/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-72BR-200-193
Lab Order:	N011053	**Collection Date:**	9/19/2013 1:53:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130920A**	QC Batch: **R90369**			PrepDate:			Analyst: **LCC**
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/20/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT: CH2M HILL
Work Order: N011053
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID: **N011053-001B-DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **90369**
Client ID: **ZZZZZZ** Batch ID: **R90369** TestNo: **EPA 120.1** Analysis Date: **9/20/2013** SeqNo: **1647834**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	8180.000	0.10						8120	0.736	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		

CLIENT: CH2M HILL
Lab Order: N011053
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011053-001

Client Sample ID: MW-62-110-193
Collection Date: 9/18/2013 2:10:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130927A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	8.2	0.17	0.50		µg/L	5	9/27/2013 03:01 PM
Manganese	80	0.16	0.50		µg/L	1	9/27/2013 02:55 PM
Molybdenum	41	0.37	2.5		µg/L	5	9/27/2013 03:01 PM
Selenium	2.9	0.084	0.50		µg/L	1	9/27/2013 02:55 PM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-62-190-193
Lab Order:	N011053	**Collection Date:**	9/18/2013 2:22:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130927A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	5.0	0.17	0.50		µg/L	5	9/27/2013 03:12 PM
Manganese	590	0.80	2.5		µg/L	5	9/27/2013 03:12 PM
Molybdenum	71	0.37	2.5		µg/L	5	9/27/2013 03:12 PM
Selenium	ND	0.42	2.5		µg/L	5	9/27/2013 03:12 PM

Qualifiers:

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

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CLIENT: CH2M HILL
Lab Order: N011053
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011053-003

Client Sample ID: MW-68BR-280-193
Collection Date: 9/18/2013 11:25:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131002A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	2.0	0.17	0.50		µg/L	5	10/2/2013 01:16 PM
Manganese	130	0.80	2.5		µg/L	5	10/2/2013 01:16 PM
Molybdenum	79	0.37	2.5		µg/L	5	10/2/2013 01:16 PM
Selenium	ND	0.42	2.5		µg/L	5	10/2/2013 01:16 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
Lab Order: N011053
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011053-004

Client Sample ID: MW-74-240-193
Collection Date: 9/18/2013 1:14:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131002A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	13	0.035	0.10		µg/L	1	10/2/2013 01:33 PM
Manganese	ND	0.16	0.50		µg/L	1	10/2/2013 01:33 PM
Molybdenum	77	0.074	0.50		µg/L	1	10/2/2013 01:33 PM
Selenium	0.75	0.084	0.50		µg/L	1	10/2/2013 01:33 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-125-193
Lab Order:	N011053	**Collection Date:**	9/19/2013 7:00:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131002A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	12	0.035	0.10		µg/L	1	10/2/2013 01:44 PM
Manganese	ND	0.16	0.50		µg/L	1	10/2/2013 01:44 PM
Molybdenum	73	0.37	2.5		µg/L	5	10/2/2013 01:38 PM
Selenium	ND	0.42	2.5		µg/L	5	10/2/2013 01:38 PM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-58BR-193
Lab Order:	N011053	**Collection Date:**	9/19/2013 8:36:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011053-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131002A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	1.0	0.035	0.10		µg/L	1	10/2/2013 01:55 PM

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N011053
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011053-007

Client Sample ID: MW-65-160-193
Collection Date: 9/19/2013 3:04:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131002A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	0.85	0.035	0.10		µg/L	1	10/2/2013 02:28 PM
Manganese	5.0	0.16	0.50		µg/L	1	10/2/2013 02:28 PM
Molybdenum	24	0.074	0.50		µg/L	1	10/2/2013 02:28 PM
Selenium	7.7	0.42	2.5		µg/L	5	10/2/2013 02:33 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
Lab Order: N011053
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011053-008

Client Sample ID: MW-72-080-193
Collection Date: 9/19/2013 10:30:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131002A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	11	0.035	0.10		µg/L	1	10/2/2013 02:39 PM
Manganese	ND	0.16	0.50		µg/L	1	10/2/2013 02:39 PM
Molybdenum	74	0.37	2.5		µg/L	5	10/2/2013 02:06 PM
Selenium	ND	0.42	2.5		µg/L	5	10/2/2013 02:06 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
Lab Order: N011053
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011053-009

Client Sample ID: MW-72BR-200-193
Collection Date: 9/19/2013 1:53:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131002A**	QC Batch: **43934**			PrepDate:	**9/23/2013**		Analyst: **CEI**
Arsenic	16	0.035	0.10		µg/L	1	10/2/2013 02:50 PM
Manganese	ND	0.16	0.50		µg/L	1	10/2/2013 02:50 PM
Molybdenum	77	0.37	2.5		µg/L	5	10/2/2013 02:44 PM
Selenium	ND	0.42	2.5		µg/L	5	10/2/2013 02:44 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: N011053
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **MB-43934** SampType: **MBLK** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/23/2013** RunNo: **90504**
Client ID: **PBW** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651981**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID: **LCS-43934** SampType: **LCS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/23/2013** RunNo: **90504**
Client ID: **LCSW** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.908	0.10	10.00	0	99.1	85	115				
Manganese	99.510	0.50	100.0	0	99.5	85	115				
Molybdenum	10.465	0.50	10.00	0	105	85	115				
Selenium	9.121	0.50	10.00	0	91.2	85	115				

Sample ID: **N011039-001A-MS** SampType: **MS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/23/2013** RunNo: **90504**
Client ID: **ZZZZZZ** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651987**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	22.345	0.10	10.00	11.43	109	75	125				
Manganese	77.562	0.50	100.0	0	77.6	75	125				
Selenium	11.332	0.50	10.00	1.026	103	75	125				

Sample ID: **N011039-001A-MSD** SampType: **MSD** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/23/2013** RunNo: **90504**
Client ID: **ZZZZZZ** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651988**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.514	0.10	10.00	11.43	101	75	125	22.34	3.79	20	
Manganese	75.119	0.50	100.0	0	75.1	75	125	77.56	3.20	20	

Qualifiers:

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

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CLIENT: CH2M HILL
Work Order: N011053
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011039-001A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/23/2013**	RunNo: **90504**
Client ID: **ZZZZZZ**	Batch ID: **43934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/27/2013**	SeqNo: **1651988**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	11.243	0.50	10.00	1.026	102	75	125	11.33	0.788	20	

Sample ID: **N011039-001A-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/23/2013**	RunNo: **90504**
Client ID: **ZZZZZZ**	Batch ID: **43934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/27/2013**	SeqNo: **1651989**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	300.748	2.5	10.00	294.9	58.9	75	125				S

Sample ID: **N011039-001A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/23/2013**	RunNo: **90504**
Client ID: **ZZZZZZ**	Batch ID: **43934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/27/2013**	SeqNo: **1651990**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	298.152	2.5	10.00	294.9	33.0	75	125	300.7	0.867	20	S

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

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

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CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/19/2013
COC Number: 11

	Container:	500 ml Poly	500 ml Poly	1 Liter Poly			
	Preservatives:	HNO3, 4°C	HNO3, 4°C	4°C			
	Filtered:	Field	Field	NA			
	Holding Time:	180	180	14			
		Arsenic (6020A) FF	Metals (6020A) FF Mo,Se,Mn	Specific Conductance (E120.1)		Number of Containers	COMMENTS
MW-62-110-193	9/18/2013 14:10 Water	X	X	X	NQ1053-1	~~2~~	2
MW-62-190-193	9/18/2013 14:22 Water	X	X	X	-2	~~2~~	2
MW-68BR-280-193	9/18/2013 11:25 Water	X	X	X	-3	~~2~~	2 BK
MW-74-240-193	9/18/2013 13:14 Water	X	X	X	-4	~~2~~	2
MW-125-193	9/19/2013 7:00 Water	X	X	X	-5	~~2~~	2
MW-58BR-193	9/19/2013 8:36 Water	X		X	-6	2	
MW-65-160-193	9/19/2013 15:04 Water	X	X	X	-7	~~2~~	2
MW-72-080-193	9/19/2013 10:30 Water	X	X	X	-8	~~2~~	2 BK
MW-72BR-200-193	9/19/2013 13:53 Water	X	X	X	-9	~~2~~	2
					TOTAL NUMBER OF CONTAINERS	18	

	Signatures	Date/Time
Approved by		9-19-13 1540
Sampled by		
Relinquished by		
Received by		9/19/13 1540
Relinquished by		9/19/13 1817
Received by		9/19/13 1817

Shipping Details
Method of Shipment: courier
On Ice: ~~yes~~ / no 2-3°C IR#2
Airbill No:
Lab Name: ADVANCED TECHNOLOGY LABORATO
Lab Phone: (702) 307-2659

ATTN:
Sample Custody and Marlon

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Advanced Technology Laboratories, Inc.

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:	9/19/2013	Workorder:	N011053
Rep sample Temp (Deg C):	2.3	IR Gun ID:	2
Temp Blank:	☐ Yes ☑ No		
Carrier name:	ATL		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

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

Comments:

Checklist Completed By: MBC MBC 9/20/2013

Reviewed By: J. Arellano

Sample Calculation

METHOD: EPA 6020
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Aqueous

FORMULA:

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

Arsenic, ug/L = A * DF * PF

where:

A = ug/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N011053-004A**, the concentration in ug/L is calculated as follows:

Arsenic, ug/L = 12.861691804 * 1 * (25/25)

= 12.861691804

Reporting results in two significant figures,

Arsenic, ug/L = 13

Nancy 10/3/2013

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N011053
Test Method: EPA 6020
Analysis Date: 09/27/13

Matrix: Water
Batch No.: 43934

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mn and Se. The calculated values are <25X RL. PS @2X passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N011039-001A-DT 5X	Arsenic	µg/L	11.41755989	PASSED	11.4314053	0.12%	10
N011039-001A-DT 5X	Manganese	µg/L	0	NA	0		10
N011039-001A-DT 5X	Selenium	µg/L	0.967549706	NA	1.02612873	5.71%	10
N011039-001A-DT 25X	Molybdenum	µg/L	301.943149	PASSED	294.8537478	2.40%	10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N011053
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011039-001A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90504**
Client ID: **ZZZZZZ** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651986**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	32.680	0.20	20.00	11.43	106	75	125				
Manganese	162.824	1.0	200.0	0	81.4	75	125				
Selenium	21.638	1.0	20.00	1.026	103	75	125				

Sample ID: **N011039-001A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90504**
Client ID: **ZZZZZZ** Batch ID: **43934** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/27/2013** SeqNo: **1651993**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	339.039	2.5	50.00	294.9	88.4	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		

October 09, 2013

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

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

CA-ELAP No.: 2676
NV Cert. No.: NV-009222007A

Workorder No.: N011082

RE: PG&E Topock, 423575.MP.02.GM.03

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on September 24, 2013 by Advanced Technology Laboratories, Inc. . 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,

Jose Tenorio Jr.
Laboratory Director

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CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011082

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 6020_Dissolved:

Matrix Spike (MS) is outside recovery criteria for Molybdenum possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Dilution was necessary on samples N011082-003, N011082-005, N011082-007, N011082-011, N011082-012 & N011082-014 due to failed Internal Standard when samples were analyzed at no dilution.

Advanced Technology Laboratories, Inc.

Date: *09-Oct-13*

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011082
Contract No: 2013-GMP-193-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N011082-001A	MW-123-193	Water	9/23/2013 10:43:00 AM	9/24/2013	10/9/2013
N011082-001B	MW-123-193	Water	9/23/2013 10:43:00 AM	9/24/2013	10/9/2013
N011082-002A	MW-57-070-193	Water	9/23/2013 1:48:00 PM	9/24/2013	10/9/2013
N011082-003A	MW-61-110-193	Water	9/23/2013 9:37:00 AM	9/24/2013	10/9/2013
N011082-003B	MW-61-110-193	Water	9/23/2013 9:37:00 AM	9/24/2013	10/9/2013
N011082-004A	MW-62-065-193	Water	9/23/2013 12:36:00 PM	9/24/2013	10/9/2013
N011082-005A	MW-65-225-193	Water	9/23/2013 10:44:00 AM	9/24/2013	10/9/2013
N011082-005B	MW-65-225-193	Water	9/23/2013 10:44:00 AM	9/24/2013	10/9/2013
N011082-006A	MW-66-165-193	Water	9/23/2013 2:54:00 PM	9/24/2013	10/9/2013
N011082-006B	MW-66-165-193	Water	9/23/2013 2:54:00 PM	9/24/2013	10/9/2013
N011082-007A	MW-66BR-270-193	Water	9/23/2013 3:06:00 PM	9/24/2013	10/9/2013
N011082-007B	MW-66BR-270-193	Water	9/23/2013 3:06:00 PM	9/24/2013	10/9/2013
N011082-008A	MW-70-105-193	Water	9/23/2013 8:20:00 AM	9/24/2013	10/9/2013
N011082-008B	MW-70-105-193	Water	9/23/2013 8:20:00 AM	9/24/2013	10/9/2013
N011082-009A	MW-122-193	Water	9/24/2013 11:17:00 AM	9/24/2013	10/9/2013
N011082-009B	MW-122-193	Water	9/24/2013 11:17:00 AM	9/24/2013	10/9/2013
N011082-010A	MW-38S-193	Water	9/24/2013 8:19:00 AM	9/24/2013	10/9/2013
N011082-010B	MW-38S-193	Water	9/24/2013 8:19:00 AM	9/24/2013	10/9/2013
N011082-011A	MW-60-125-193	Water	9/24/2013 11:16:00 AM	9/24/2013	10/9/2013
N011082-011B	MW-60-125-193	Water	9/24/2013 11:16:00 AM	9/24/2013	10/9/2013
N011082-012A	MW-68-240-193	Water	9/24/2013 3:44:00 PM	9/24/2013	10/9/2013
N011082-012B	MW-68-240-193	Water	9/24/2013 3:44:00 PM	9/24/2013	10/9/2013
N011082-013A	MW-69-195-193	Water	9/24/2013 9:17:00 AM	9/24/2013	10/9/2013
N011082-013B	MW-69-195-193	Water	9/24/2013 9:17:00 AM	9/24/2013	10/9/2013
N011082-014A	MW-70BR-225-193	Water	9/24/2013 2:25:00 PM	9/24/2013	10/9/2013
N011082-014B	MW-70BR-225-193	Water	9/24/2013 2:25:00 PM	9/24/2013	10/9/2013

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-123-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 10:43:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	9600	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT: CH2M HILL
Lab Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011082-002

Client Sample ID: MW-57-070-193
Collection Date: 9/23/2013 1:48:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	2000	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-61-110-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 9:37:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	14000	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-62-065-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 12:36:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	5800	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT: CH2M HILL
Lab Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011082-005

Client Sample ID: MW-65-225-193
Collection Date: 9/23/2013 10:44:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	9800	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-66-165-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 2:54:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	4200	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-66BR-270-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 3:06:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	16000	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-70-105-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 8:20:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	3300	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-122-193
Lab Order:	N011082	**Collection Date:**	9/24/2013 11:17:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	8400	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-38S-193
Lab Order:	N011082	**Collection Date:**	9/24/2013 8:19:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-010		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	1700	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-60-125-193
Lab Order:	N011082	**Collection Date:**	9/24/2013 11:16:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-011		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	8600	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-68-240-193
Lab Order:	N011082	**Collection Date:**	9/24/2013 3:44:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-012		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-69-195-193
Lab Order:	N011082	**Collection Date:**	9/24/2013 9:17:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-013		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	3500	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-70BR-225-193
Lab Order:	N011082	**Collection Date:**	9/24/2013 2:25:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-014		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130925C**	QC Batch: **R90444**			PrepDate:			Analyst: **LCC**
Specific Conductance	13000	0.10	0.10		umhos/cm	1	9/25/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: CH2M HILL
Work Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID: **N011082-010B-DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **90444**
Client ID: **ZZZZZZ** Batch ID: **R90444** TestNo: **EPA 120.1** Analysis Date: **9/25/2013** SeqNo: **1649798**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	1663.000	0.10						1665	0.120	10	

Sample ID: **N011082-014B-DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **90444**
Client ID: **ZZZZZZ** Batch ID: **R90444** TestNo: **EPA 120.1** Analysis Date: **9/25/2013** SeqNo: **1649803**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	12730.000	0.10						12700	0.236	10	

Qualifiers:

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

Advanced Technology Laboratories, Inc.
3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-123-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 10:43:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	2.4	0.035	0.10		µg/L	1	9/30/2013 02:48 PM
Manganese	ND	0.16	0.50		µg/L	1	9/30/2013 02:48 PM
Molybdenum	34	0.074	0.50		µg/L	1	9/30/2013 02:48 PM
Selenium	7.2	0.084	0.50		µg/L	1	9/30/2013 02:48 PM

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011082-003

Client Sample ID: MW-61-110-193
Collection Date: 9/23/2013 9:37:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	3.3	0.035	0.10		µg/L	1	9/30/2013 02:59 PM
Manganese	84	0.16	0.50		µg/L	1	9/30/2013 02:59 PM
Molybdenum	22	0.37	2.5		µg/L	5	9/30/2013 02:54 PM
Selenium	1.4	0.084	0.50		µg/L	1	9/30/2013 02:59 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	**Client Sample ID:**	MW-65-225-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 10:44:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	2.4	0.035	0.10		µg/L	1	9/30/2013 03:10 PM
Manganese	ND	0.16	0.50		µg/L	1	9/30/2013 03:10 PM
Molybdenum	35	0.37	2.5		µg/L	5	9/30/2013 03:05 PM
Selenium	6.7	0.084	0.50		µg/L	1	9/30/2013 03:10 PM

Qualifiers:

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

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-66-165-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 2:54:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	1.2	0.035	0.10		µg/L	1	9/30/2013 03:21 PM
Manganese	ND	0.16	0.50		µg/L	1	9/30/2013 03:21 PM
Molybdenum	5.5	0.074	0.50		µg/L	1	9/30/2013 03:21 PM
Selenium	34	0.084	0.50		µg/L	1	9/30/2013 03:21 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-66BR-270-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 3:06:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	ND	0.17	0.50		µg/L	5	9/30/2013 03:28 PM
Manganese	ND	0.16	0.50		µg/L	1	9/30/2013 03:51 PM
Molybdenum	17	0.37	2.5		µg/L	5	9/30/2013 03:28 PM
Selenium	ND	0.42	2.5		µg/L	5	9/30/2013 03:28 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-70-105-193
Lab Order:	N011082	**Collection Date:**	9/23/2013 8:20:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	5.2	0.035	0.10		µg/L	1	9/30/2013 04:02 PM
Manganese	190	0.80	2.5		µg/L	5	9/30/2013 03:57 PM
Molybdenum	94	0.074	0.50		µg/L	1	9/30/2013 04:02 PM
Selenium	3.1	0.084	0.50		µg/L	1	9/30/2013 04:02 PM

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011082-009

Client Sample ID: MW-122-193
Collection Date: 9/24/2013 11:17:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	1.4	0.035	0.10		µg/L	1	9/30/2013 04:13 PM
Manganese	ND	0.16	0.50		µg/L	1	9/30/2013 04:13 PM
Molybdenum	16	0.074	0.50		µg/L	1	9/30/2013 04:13 PM
Selenium	5.8	0.084	0.50		µg/L	1	9/30/2013 04:13 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		

CLIENT: CH2M HILL
Lab Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011082-010

Client Sample ID: MW-38S-193
Collection Date: 9/24/2013 8:19:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	13	0.035	0.10		µg/L	1	9/30/2013 01:41 PM
Manganese	190	0.80	2.5		µg/L	5	9/30/2013 01:47 PM
Molybdenum	42	0.074	0.50		µg/L	1	9/30/2013 01:41 PM
Selenium	ND	0.084	0.50		µg/L	1	9/30/2013 01:41 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
Lab Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011082-011

Client Sample ID: MW-60-125-193
Collection Date: 9/24/2013 11:16:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	1.4	0.035	0.10		µg/L	1	9/30/2013 04:24 PM
Manganese	ND	0.16	0.50		µg/L	1	9/30/2013 04:24 PM
Molybdenum	17	0.37	2.5		µg/L	5	9/30/2013 04:19 PM
Selenium	6.2	0.084	0.50		µg/L	1	9/30/2013 04:24 PM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-68-240-193
Lab Order:	N011082	**Collection Date:**	9/24/2013 3:44:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-012		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	2.0	0.17	0.50		µg/L	5	9/30/2013 04:30 PM
Manganese	ND	0.16	0.50		µg/L	1	9/30/2013 04:35 PM
Molybdenum	20	0.37	2.5		µg/L	5	9/30/2013 04:30 PM
Selenium	4.9	0.42	2.5		µg/L	5	9/30/2013 04:30 PM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-69-195-193
Lab Order:	N011082	**Collection Date:**	9/24/2013 9:17:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011082-013		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	2.4	0.035	0.10		µg/L	1	9/30/2013 04:57 PM
Manganese	ND	0.16	0.50		µg/L	1	9/30/2013 04:57 PM
Molybdenum	71	0.074	0.50		µg/L	1	9/30/2013 04:57 PM
Selenium	11	0.084	0.50		µg/L	1	9/30/2013 04:57 PM

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011082-014

Client Sample ID: MW-70BR-225-193
Collection Date: 9/24/2013 2:25:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_130930B**	QC Batch: **43957**			PrepDate:	**9/26/2013**		Analyst: **CEI**
Arsenic	1.9	0.17	0.50		µg/L	5	9/30/2013 05:03 PM
Manganese	ND	0.80	2.5		µg/L	5	9/30/2013 05:03 PM
Molybdenum	17	0.37	2.5		µg/L	5	9/30/2013 05:03 PM
Selenium	ND	0.42	2.5		µg/L	5	9/30/2013 05:03 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: N011082
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **MB-43957** SampType: **MBLK** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/26/2013** RunNo: **90523**
Client ID: **PBW** Batch ID: **43957** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/30/2013** SeqNo: **1652779**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID: **LCS-43957** SampType: **LCS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/26/2013** RunNo: **90523**
Client ID: **LCSW** Batch ID: **43957** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/30/2013** SeqNo: **1652780**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.785	0.10	10.00	0	97.8	85	115				
Manganese	103.953	0.50	100.0	0	104	85	115				
Molybdenum	9.854	0.50	10.00	0	98.5	85	115				
Selenium	10.083	0.50	10.00	0	101	85	115				

Sample ID: **N011082-010A-MS** SampType: **MS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/26/2013** RunNo: **90523**
Client ID: **ZZZZZZ** Batch ID: **43957** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/30/2013** SeqNo: **1652784**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	23.543	0.10	10.00	12.88	107	75	125				
Molybdenum	55.157	0.50	10.00	41.54	136	75	125				S
Selenium	9.251	0.50	10.00	0.2664	89.8	75	125				

Sample ID: **N011082-010A-MSD** SampType: **MSD** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **9/26/2013** RunNo: **90523**
Client ID: **ZZZZZZ** Batch ID: **43957** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/30/2013** SeqNo: **1652785**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	23.513	0.10	10.00	12.88	106	75	125	23.54	0.130	20	
Molybdenum	53.376	0.50	10.00	41.54	118	75	125	55.16	3.28	20	

Qualifiers:

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

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CLIENT: CH2M HILL
Work Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011082-010A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/26/2013**	RunNo: **90523**
Client ID: **ZZZZZZ**	Batch ID: **43957**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/30/2013**	SeqNo: **1652785**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	9.858	0.50	10.00	0.2664	95.9	75	125	9.251	6.35	20	

Sample ID: **N011082-010A-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/26/2013**	RunNo: **90523**
Client ID: **ZZZZZZ**	Batch ID: **43957**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/30/2013**	SeqNo: **1652788**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	288.783	2.5	100.0	187.0	102	75	125				

Sample ID: **N011082-010A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/26/2013**	RunNo: **90523**
Client ID: **ZZZZZZ**	Batch ID: **43957**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/30/2013**	SeqNo: **1652791**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	286.429	2.5	100.0	187.0	99.5	75	125	288.8	0.818	20	

Qualifiers:

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

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CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/24/2013
COC Number: 13

				Container:	500 ml Poly	500 ml Poly	1 Liter Poly		
				Preservatives:	HNO3, 4°C	HNO3, 4°C	4°C		
				Filtered:	Field	Field	NA		
				Holding Time:	180	180	14		
					Arsenic (6020A) FF	Metals (6020A) FF Mo,Se,Mn	Specific Conductance (E120.1)	N011082	Number of Containers	COMMENTS
	DATE	TIME	Matrix							
MW-123-193	9/23/2013	10:43	Water		X	X	X		~~2~~ 2	
MW-57-070-193	9/23/2013	13:48	Water				X		1	
MW-61-110-193	9/23/2013	9:37	Water		X	X	X		~~2~~ 2	
MW-62-065-193	9/23/2013	12:36	Water				X		1	
MW-65-225-193	9/23/2013	10:44	Water		X	X	X		~~3~~ 2	
MW-66-165-193	9/23/2013	14:54	Water		X	X	X		~~2~~ 2	
MW-66BR-270-193	9/23/2013	15:06	Water		X	X	X		~~2~~ 2	
MW-70-105-193	9/23/2013	8:20	Water		X	X	X		~~2~~ 2	pH
MW-122-193	9/24/2013	11:17	Water		X	X	X		~~3~~ 2	
MW-38S-193	9/24/2013	8:19	Water		X	X	X		~~2~~ 2	
MW-60-125-193	9/24/2013	11:16	Water		X	X	X		~~2~~ 2	
MW-68-240-193	9/24/2013	15:44	Water		X	X	X		~~2~~ 2	
MW-69-195-193	9/24/2013	9:17	Water		X	X	X		~~2~~ 2	
MW-70BR-225-193	9/24/2013	14:25	Water		X	X	X		~~2~~ 2	

	Signatures	Date/Time
Approved by		9-24-13 1615
Sampled by		
Relinquished by		9-24-13 1615
Received by		9-24-13 1817
Relinquished by		9-24-13 1817
Received by		

Shipping Details
Method of Shipment: courier
On Ice: (yes) no 4.1 IR2
Airbill No:
Lab Name: ADVANCED TECHNOLOGY LABORATO
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Marlon

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Advanced Technology Laboratories, Inc.

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:	9/24/2013	Workorder:	N011082
Rep sample Temp (Deg C):	4.1	IR Gun ID:	2
Temp Blank:	☐ Yes ☑ No		
Carrier name:	ATL		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

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

Comments:

Checklist Completed By: MBC MBC 9/25/2013

Reviewed By:

Sample Calculation

METHOD: EPA 6020
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Aqueous

FORMULA:

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

Arsenic, ug/L = A * DF * PF

where:

A = ug/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N011082-010A**, the concentration in ug/L is calculated as follows:

Arsenic, ug/L = 12.88447728 * 1 * (25/25)

= 12.88447728

Reporting results in two significant figures,

Arsenic, ug/L = 13

10/9/2013

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N011082
Test Method: EPA 6020
Analysis Date: 09/30/13

Matrix: Water
Batch No.: 43957

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Se. The calculated value is <25X RL. PS @2X passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N011082-010A-DT 5X	Arsenic	µg/L	13.42181683	PASSED	12.88447728	4.17%	10
N011082-010A-DT 5X	Molybdenum	µg/L	42.287333	PASSED	41.53582851	1.81%	10
N011082-010A-DT 5X	Selenium	µg/L	0	NA	0.266408786	100.00%	10

Note: NA - Not applicable

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N011082
Test Method: EPA 6020
Analysis Date: 10/03/13

Matrix: Water
Batch No.: 43957

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

Comments:

Analyzed By: Mary Claire Ignacio

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N011082-010A-DT 25X	Manganese	µg/L	196.974121	PASSED	186.9708768	5.35%	10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N011082
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011082-010A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90523**
Client ID: **ZZZZZZ** Batch ID: **43957** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/30/2013** SeqNo: **1652783**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	33.557	0.20	20.00	12.88	103	75	125				
Molybdenum	63.905	1.0	20.00	41.54	112	75	125				
Selenium	19.723	1.0	20.00	0.2664	97.3	75	125				

Sample ID: **N011082-010A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90523**
Client ID: **ZZZZZZ** Batch ID: **43957** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **9/30/2013** SeqNo: **1652787**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	692.420	2.5	500.0	187.0	101	75	125				

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

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

October 11, 2013

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

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

CA-ELAP No.: 2676
NV Cert. No.: NV-009222007A

Workorder No.: N011110

RE: PG&E Topock, 423575.MP.02.GM.03

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on September 26, 2013 by Advanced Technology Laboratories, Inc. . 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,

Jose Tenorio Jr.
Laboratory Director

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CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011110

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 6010B_Dissolved:

Matrix Spike (MS) is outside recovery criteria for Beryllium possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Laboratory Control Sample (LCS) recovery biased high for Copper. Sample result was non-detect (ND) for this analyte therefore reanalysis was not necessary.

Analytical Comments for EPA 6020_Dissolved:

Dilution was necessary on samples due to failed Internal Standard when samples were analyzed at no dilution.

Advanced Technology Laboratories, Inc.

Date: *11-Oct-13*

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011110
Contract No: 2013-GMP-193-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N011110-001A	MW-12-193	Water	9/25/2013 9:38:00 AM	9/26/2013	10/11/2013
N011110-001B	MW-12-193	Water	9/25/2013 9:38:00 AM	9/26/2013	10/11/2013
N011110-002A	MW-124-193	Water	9/25/2013 7:49:00 AM	9/26/2013	10/11/2013
N011110-002B	MW-124-193	Water	9/25/2013 7:49:00 AM	9/26/2013	10/11/2013
N011110-003A	MW-59-100-193	Water	9/25/2013 12:37:00 PM	9/26/2013	10/11/2013
N011110-003B	MW-59-100-193	Water	9/25/2013 12:37:00 PM	9/26/2013	10/11/2013
N011110-004A	MW-66-230-193	Water	9/25/2013 2:29:00 PM	9/26/2013	10/11/2013
N011110-004B	MW-66-230-193	Water	9/25/2013 2:29:00 PM	9/26/2013	10/11/2013
N011110-005A	MW-67-185-193	Water	9/25/2013 8:41:00 AM	9/26/2013	10/11/2013
N011110-005B	MW-67-185-193	Water	9/25/2013 8:41:00 AM	9/26/2013	10/11/2013
N011110-006A	MW-67-225-193	Water	9/25/2013 11:38:00 AM	9/26/2013	10/11/2013
N011110-006B	MW-67-225-193	Water	9/25/2013 11:38:00 AM	9/26/2013	10/11/2013
N011110-007A	MW-67-260-193	Water	9/25/2013 7:47:00 AM	9/26/2013	10/11/2013
N011110-007B	MW-67-260-193	Water	9/25/2013 7:47:00 AM	9/26/2013	10/11/2013
N011110-008A	MW-50-200-193	Water	9/26/2013 10:35:00 AM	9/26/2013	10/11/2013
N011110-009A	MW-68-180-193	Water	9/26/2013 12:12:00 PM	9/26/2013	10/11/2013
N011110-009B	MW-68-180-193	Water	9/26/2013 12:12:00 PM	9/26/2013	10/11/2013
N011110-010A	TW-01-193	Water	9/26/2013 9:10:00 AM	9/26/2013	10/11/2013
N011110-010B	TW-01-193	Water	9/26/2013 9:10:00 AM	9/26/2013	10/11/2013

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-12-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 9:38:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	6700	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-124-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 7:49:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	16000	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-59-100-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 12:37:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	9800	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-66-230-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 2:29:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	17000	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-67-185-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 8:41:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	5000	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-67-225-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 11:38:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	6800	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-67-260-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 7:47:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	16000	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	MW-50-200-193
Lab Order:	N011110	**Collection Date:**	9/26/2013 10:35:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	19000	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-68-180-193
Lab Order:	N011110	**Collection Date:**	9/26/2013 12:12:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	3800	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT:	CH2M HILL	**Client Sample ID:**	TW-01-193
Lab Order:	N011110	**Collection Date:**	9/26/2013 9:10:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-010		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_130927A**	QC Batch: **R90475**			PrepDate:			Analyst: **LCC**
Specific Conductance	6900	0.10	0.10		umhos/cm	1	9/27/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

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CLIENT: CH2M HILL
Work Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID: **N011110-010B-DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **90475**
Client ID: **ZZZZZZ** Batch ID: **R90475** TestNo: **EPA 120.1** Analysis Date: **9/27/2013** SeqNo: **1651176**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6880.000	0.10						6900	0.290	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		

CLIENT: CH2M HILL
Lab Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011110-001

Client Sample ID: MW-12-193
Collection Date: 9/25/2013 9:38:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_131003E**	QC Batch: **44006**			PrepDate:	**10/2/2013**		Analyst: **CEI**
Barium	62	0.36	3.0		ug/L	1	10/3/2013 01:33 PM
Beryllium	ND	0.12	1.0		ug/L	1	10/3/2013 01:33 PM
Cadmium	ND	0.37	3.0		ug/L	1	10/3/2013 01:33 PM
Cobalt	ND	0.37	3.0		ug/L	1	10/3/2013 01:33 PM
Copper	ND	2.2	5.0		ug/L	1	10/10/2013 03:24 PM
Lead	ND	1.6	10		ug/L	1	10/3/2013 01:33 PM
Nickel	ND	0.70	5.0		ug/L	1	10/3/2013 01:33 PM
Silver	ND	0.39	3.0		ug/L	1	10/3/2013 01:33 PM
Zinc	ND	1.4	10		ug/L	1	10/3/2013 01:33 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

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: CH2M HILL
Work Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID: **MB-44006** SampType: **MBLK** TestCode: **6010_WDPGE** Units: **ug/L** Prep Date: **10/2/2013** RunNo: **90663**
Client ID: **PBW** Batch ID: **44006** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **10/3/2013** SeqNo: **1657171**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	3.0									
Beryllium	ND	1.0									
Cadmium	0.950	3.0									
Cobalt	ND	3.0									
Lead	ND	10									
Nickel	ND	5.0									
Silver	ND	3.0									
Zinc	2.860	10									

Sample ID: **LCS-44006** SampType: **LCS** TestCode: **6010_WDPGE** Units: **ug/L** Prep Date: **10/2/2013** RunNo: **90663**
Client ID: **LCSW** Batch ID: **44006** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **10/3/2013** SeqNo: **1657172**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	53.457	3.0	50.00	0	107	85	115				
Beryllium	10.060	1.0	10.00	0	101	85	115				
Cadmium	10.390	3.0	10.00	0	104	85	115				
Cobalt	9.891	3.0	10.00	0	98.9	85	115				
Lead	51.207	10	50.00	0	102	85	115				
Nickel	50.021	5.0	50.00	0	100	85	115				
Silver	49.516	3.0	50.00	0	99.0	85	115				
Zinc	54.839	10	50.00	0	110	85	115				

Sample ID: **N011110-001A-MS** SampType: **MS** TestCode: **6010_WDPGE** Units: **ug/L** Prep Date: **10/2/2013** RunNo: **90663**
Client ID: **ZZZZZZ** Batch ID: **44006** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **10/3/2013** SeqNo: **1657176**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	7.396	1.0	10.00	0	74.0	75	125				S
Silver	52.333	3.0	50.00	0.6094	103	75	125				

Qualifiers:

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

Advanced Technology Laboratories, Inc.
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CLIENT: CH2M HILL
Work Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID: **N011110-001A-MS** SampType: **MS** TestCode: **6010_WDPGE** Units: **ug/L** Prep Date: **10/2/2013** RunNo: **90663**
Client ID: **ZZZZZZ** Batch ID: **44006** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **10/3/2013** SeqNo: **1657176**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	54.829	10	50.00	3.843	102	75	125				

Sample ID: **N011110-001A-MSD** SampType: **MSD** TestCode: **6010_WDPGE** Units: **ug/L** Prep Date: **10/2/2013** RunNo: **90663**
Client ID: **ZZZZZZ** Batch ID: **44006** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **10/3/2013** SeqNo: **1657177**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	7.513	1.0	10.00	0	75.1	75	125	7.396	1.58	20	
Silver	53.125	3.0	50.00	0.6094	105	75	125	52.33	1.50	20	
Zinc	54.768	10	50.00	3.843	102	75	125	54.83	0.111	20	

Sample ID: **N011110-001A-MS** SampType: **MS** TestCode: **6010_WDPGE** Units: **ug/L** Prep Date: **10/2/2013** RunNo: **90680**
Client ID: **ZZZZZZ** Batch ID: **44006** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **10/10/2013** SeqNo: **1657738**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	102.868	3.0	50.00	62.29	81.2	75	125				
Cadmium	8.881	3.0	10.00	0	88.8	75	125				
Cobalt	10.787	3.0	10.00	0	108	75	125				
Lead	45.385	10	50.00	0	90.8	75	125				
Nickel	52.064	5.0	50.00	0	104	75	125				

Sample ID: **N011110-001A-MSD** SampType: **MSD** TestCode: **6010_WDPGE** Units: **ug/L** Prep Date: **10/2/2013** RunNo: **90680**
Client ID: **ZZZZZZ** Batch ID: **44006** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **10/10/2013** SeqNo: **1657739**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	101.466	3.0	50.00	62.29	78.3	75	125	102.9	1.37	20	
Cadmium	8.681	3.0	10.00	0	86.8	75	125	8.881	2.28	20	
Cobalt	10.661	3.0	10.00	0	107	75	125	10.79	1.18	20	
Lead	44.754	10	50.00	0	89.5	75	125	45.38	1.40	20	
Nickel	51.488	5.0	50.00	0	103	75	125	52.06	1.11	20	

Qualifiers:

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

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CLIENT: CH2M HILL
Work Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID: **MB-44093**	SampType: **MBLK**	TestCode: **6010_WDPGE**	Units: **ug/L**	Prep Date: **10/10/2013**	RunNo: **90678**
Client ID: **PBW**	Batch ID: **44093**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **10/10/2013**	SeqNo: **1657660**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	1.286	5.0									

Sample ID: **LCS-44093**	SampType: **LCS**	TestCode: **6010_WDPGE**	Units: **ug/L**	Prep Date: **10/10/2013**	RunNo: **90678**
Client ID: **LCSW**	Batch ID: **44093**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **10/10/2013**	SeqNo: **1657661**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	15.014	5.0	10.00	0	150	85	115				S

Sample ID: **N011110-001A-MS**	SampType: **MS**	TestCode: **6010_WDPGE**	Units: **ug/L**	Prep Date: **10/10/2013**	RunNo: **90678**
Client ID: **ZZZZZZ**	Batch ID: **44093**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **10/10/2013**	SeqNo: **1657665**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	15.690	5.0	10.00	3.933	118	75	125				

Sample ID: **N011110-001A-MSD**	SampType: **MSD**	TestCode: **6010_WDPGE**	Units: **ug/L**	Prep Date: **10/10/2013**	RunNo: **90678**
Client ID: **ZZZZZZ**	Batch ID: **44093**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **10/10/2013**	SeqNo: **1657666**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	15.249	5.0	10.00	3.933	113	75	125	15.69	2.85	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

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

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CLIENT: CH2M HILL
Lab Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011110-001

Client Sample ID: MW-12-193
Collection Date: 9/25/2013 9:38:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131008B**	QC Batch: **43981**			PrepDate:	**9/30/2013**		Analyst: **CEI**
Antimony	ND	0.42	2.5		µg/L	5	10/8/2013 11:47 AM
Arsenic	40	0.17	0.50		µg/L	5	10/8/2013 11:47 AM
Molybdenum	12	0.37	2.5		µg/L	5	10/8/2013 11:47 AM
Selenium	14	0.42	2.5		µg/L	5	10/8/2013 11:47 AM
Thallium	ND	0.38	2.5		µg/L	5	10/8/2013 11:47 AM
Vanadium	19	1.3	5.0		µg/L	5	10/8/2013 11:47 AM

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011110-002

Client Sample ID: MW-124-193
Collection Date: 9/25/2013 7:49:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
EPA 3010A			**EPA 6020**				
RunID: **ICP7_131008B**	QC Batch: **43981**			PrepDate:	**9/30/2013**		Analyst: **CEI**
Arsenic	12	0.17	0.50		µg/L	5	10/8/2013 11:58 AM
Manganese	84	0.80	2.5		µg/L	5	10/8/2013 11:58 AM
Molybdenum	84	1.8	12		µg/L	25	10/8/2013 12:09 PM
Selenium	ND	2.1	12		µg/L	25	10/8/2013 12:09 PM

Qualifiers:

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

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-59-100-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 12:37:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131008B**	QC Batch: **43981**			PrepDate:	**9/30/2013**		Analyst: **CEI**
Arsenic	2.5	0.17	0.50		µg/L	5	10/8/2013 12:15 PM
Manganese	ND	0.80	2.5		µg/L	5	10/8/2013 12:15 PM
Molybdenum	6.0	0.37	2.5		µg/L	5	10/8/2013 12:15 PM
Selenium	3.8	0.42	2.5		µg/L	5	10/8/2013 12:15 PM

Qualifiers:

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

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-66-230-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 2:29:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131008B**	QC Batch: **43981**			PrepDate:	**9/30/2013**		Analyst: **CEI**
Arsenic	8.1	0.17	0.50		µg/L	5	10/8/2013 12:26 PM
Manganese	ND	0.80	2.5		µg/L	5	10/8/2013 12:26 PM
Molybdenum	89	1.8	12		µg/L	25	10/8/2013 12:31 PM
Selenium	ND	2.1	12		µg/L	25	10/8/2013 12:31 PM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-67-185-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 8:41:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131008B**	QC Batch: **43981**			PrepDate:	**9/30/2013**		Analyst: **CEI**
Arsenic	1.7	0.17	0.50		µg/L	5	10/8/2013 12:54 PM
Manganese	ND	0.16	0.50		µg/L	1	10/8/2013 12:59 PM
Molybdenum	9.7	0.37	2.5		µg/L	5	10/8/2013 12:54 PM
Selenium	170	0.42	2.5		µg/L	5	10/8/2013 12:54 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-67-225-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 11:38:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131008B**	QC Batch: **43981**			PrepDate:	**9/30/2013**		Analyst: **CEI**
Arsenic	3.3	0.17	0.50		µg/L	5	10/8/2013 01:05 PM
Manganese	3.2	0.80	2.5		µg/L	5	10/8/2013 01:05 PM
Molybdenum	36	0.37	2.5		µg/L	5	10/8/2013 01:05 PM
Selenium	69	0.42	2.5		µg/L	5	10/8/2013 01:05 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
Lab Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011110-007

Client Sample ID: MW-67-260-193
Collection Date: 9/25/2013 7:47:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131008B**	QC Batch: **43981**			PrepDate:	**9/30/2013**		Analyst: **CEI**
Arsenic	12	0.86	2.5		µg/L	25	10/8/2013 01:27 PM
Manganese	80	0.80	2.5		µg/L	5	10/8/2013 01:16 PM
Molybdenum	80	1.8	12		µg/L	25	10/8/2013 01:27 PM
Selenium	ND	2.1	12		µg/L	25	10/8/2013 01:27 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	**Client Sample ID:**	MW-68-180-193
Lab Order:	N011110	**Collection Date:**	9/26/2013 12:12:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131008B**	QC Batch: **43981**			PrepDate:	**9/30/2013**		Analyst: **CEI**
Arsenic	2.7	0.17	0.50		µg/L	5	10/8/2013 10:49 AM
Manganese	3.6	0.16	0.50		µg/L	1	10/8/2013 10:44 AM
Molybdenum	45	0.37	2.5		µg/L	5	10/8/2013 10:49 AM
Selenium	15	0.42	2.5		µg/L	5	10/8/2013 10:49 AM

Qualifiers:

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

CLIENT: CH2M HILL
Lab Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03
Lab ID: N011110-010

Client Sample ID: TW-01-193
Collection Date: 9/26/2013 9:10:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131008B**	QC Batch: **43981**			PrepDate:	**9/30/2013**		Analyst: **CEI**
Molybdenum	15	0.37	2.5		µg/L	5	10/8/2013 01:33 PM
Selenium	19	0.42	2.5		µg/L	5	10/8/2013 01:33 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: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **MB-43981**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/30/2013**	RunNo: **90644**
Client ID: **PBW**	Batch ID: **43981**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/8/2013**	SeqNo: **1656524**

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									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									
Thallium	ND	0.50									
Vanadium	ND	1.0									

Sample ID: **LCS-43981**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/30/2013**	RunNo: **90644**
Client ID: **LCSW**	Batch ID: **43981**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/8/2013**	SeqNo: **1656525**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.287	0.50	10.00	0	103	85	115				
Arsenic	10.099	0.10	10.00	0	101	85	115				
Manganese	97.291	0.50	100.0	0	97.3	85	115				
Molybdenum	9.935	0.50	10.00	0	99.3	85	115				
Selenium	9.694	0.50	10.00	0	96.9	85	115				
Thallium	9.809	0.50	10.00	0	98.1	85	115				
Vanadium	10.594	1.0	10.00	0	106	85	115				

Sample ID: **N011110-009A-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/30/2013**	RunNo: **90644**
Client ID: **ZZZZZZ**	Batch ID: **43981**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/8/2013**	SeqNo: **1656531**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	90.668	0.50	100.0	3.626	87.0	75	125				
Vanadium	15.189	1.0	10.00	5.246	99.4	75	125				

Qualifiers:

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

CLIENT: CH2M HILL
Work Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011110-009A-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/30/2013**	RunNo: **90644**
Client ID: **ZZZZZZ**	Batch ID: **43981**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/8/2013**	SeqNo: **1656532**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	11.034	2.5	10.00	0	110	75	125				
Arsenic	12.697	0.50	10.00	2.685	100	75	125				
Molybdenum	55.229	2.5	10.00	44.62	106	75	125				
Selenium	24.920	2.5	10.00	14.86	101	75	125				
Thallium	11.001	2.5	10.00	0	110	75	125				

Sample ID: **N011110-009A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/30/2013**	RunNo: **90644**
Client ID: **ZZZZZZ**	Batch ID: **43981**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/8/2013**	SeqNo: **1656533**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	11.005	2.5	10.00	0	110	75	125	11.03	0.264	20	
Arsenic	13.057	0.50	10.00	2.685	104	75	125	12.70	2.79	20	
Molybdenum	55.612	2.5	10.00	44.62	110	75	125	55.23	0.692	20	
Selenium	25.131	2.5	10.00	14.86	103	75	125	24.92	0.844	20	
Thallium	10.927	2.5	10.00	0	109	75	125	11.00	0.680	20	

Sample ID: **N011110-009A-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/30/2013**	RunNo: **90644**
Client ID: **ZZZZZZ**	Batch ID: **43981**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/8/2013**	SeqNo: **1656536**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	90.437	0.50	100.0	3.626	86.8	75	125	90.67	0.255	20	
Vanadium	15.123	1.0	10.00	5.246	98.8	75	125	15.19	0.436	20	

Qualifiers:

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

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-12-193
Lab Order:	N011110	**Collection Date:**	9/25/2013 9:38:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011110-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED MERCURY BY COLD VAPOR TECHNIQUE							
			EPA 7470A				
RunID: **AA1_130930D**	QC Batch: **43969**			PrepDate:	**9/27/2013**		Analyst: **LCC**
Mercury	ND	0.038	0.20		µg/L	1	9/30/2013

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

Advanced Technology Laboratories, Inc.

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CLIENT: CH2M HILL
Work Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 7470_W_DISSPGE

Sample ID: **LCS-43969**	SampType: **LCS**	TestCode: **7470_W_DIS**	Units: **µg/L**	Prep Date: **9/27/2013**	RunNo: **90497**
Client ID: **LCSW**	Batch ID: **43969**	TestNo: **EPA 7470A**		Analysis Date: **9/30/2013**	SeqNo: **1651712**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.588	0.20	5.000	0	112	85	115				

Sample ID: **MB-43969**	SampType: **MBLK**	TestCode: **7470_W_DIS**	Units: **µg/L**	Prep Date: **9/27/2013**	RunNo: **90497**
Client ID: **PBW**	Batch ID: **43969**	TestNo: **EPA 7470A**		Analysis Date: **9/30/2013**	SeqNo: **1651716**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.20									

Sample ID: **N011110-001A-MS**	SampType: **MS**	TestCode: **7470_W_DIS**	Units: **µg/L**	Prep Date: **9/27/2013**	RunNo: **90497**
Client ID: **ZZZZZZ**	Batch ID: **43969**	TestNo: **EPA 7470A**		Analysis Date: **9/30/2013**	SeqNo: **1651722**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.534	0.20	5.000	0	111	75	125				

Sample ID: **N011110-001A-MSD**	SampType: **MSD**	TestCode: **7470_W_DIS**	Units: **µg/L**	Prep Date: **9/27/2013**	RunNo: **90497**
Client ID: **ZZZZZZ**	Batch ID: **43969**	TestNo: **EPA 7470A**		Analysis Date: **9/30/2013**	SeqNo: **1651723**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.494	0.20	5.000	0	110	75	125	5.534	0.730	20	

Qualifiers:

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

Advanced Technology Laboratories, Inc.
3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 9/26/2013
COC Number: 16

			Container:	500 ml Poly	500 ml Poly	500 ml Poly	500 ml Poly	1 Liter Poly				
			Preservatives:	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C				
			Filtered:	Field	Field	Field	Field	NA				
			Holding Time:	180	180	180	180	14				
	DATE	TIME	Matrix	Arsenic (6020A) FF	Title22(SbBaBeCdCoCuPbHgMoNiSeAgAsTlVZn) FF	Metals (6010B/6020A/7470Adis) FF	Metals (6020A) FF Mo,Se	Metals (6020A) FF Mo,Se,Mn	Specific Conductance (E120.1)		Number of Containers	COMMENTS
MW-12-193	9/25/2013	9:38	Water		X			X	410111O-1		2	
MW-124-193	9/25/2013	7:49	Water	X			X	X	-2		~~2~~	2
MW-59-100-193	9/25/2013	12:37	Water	X			X	X	-3		~~2~~	2
MW-66-230-193	9/25/2013	14:29	Water	X			X	X	-4		~~2~~	2
MW-67-185-193	9/25/2013	8:41	Water	X			X	X	-5		~~2~~	2 pgc
MW-67-225-193	9/25/2013	11:38	Water	X			X	X	-6		~~2~~	2 pgc
MW-67-260-193	9/25/2013	7:47	Water	X			X	X	-7		~~2~~	2
MW-50-200-193	9/26/2013	10:35	Water					X	-8		1	
MW-68-180-193	9/26/2013	12:12	Water	X			X	X	-9		~~2~~	2
TW-01-193	9/26/2013	9:10	Water			X		X	-10		2	
										TOTAL NUMBER OF CONTAINERS		

	Signatures	Date/Time
Approved by		
Sampled by		9-26-13 1010
Relinquished by		
Received by		9/26/13 1610
Relinquished by		9/26/13 1820
Received by		9/26/13 1820

Shipping Details
Method of Shipment: courier
On Ice: ~~yes~~ no 1.2°C IR#2
Airbill No:
Lab Name: ADVANCED TECHNOLOGY LABORATO
Lab Phone: (702) 307-2659

ATTN:
Sample Custody and Marlon

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Advanced Technology Laboratories, Inc.

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:	9/26/2013	Workorder:	N011110
Rep sample Temp (Deg C):	1.2	IR Gun ID:	2
Temp Blank:	☐ Yes ☑ No		
Carrier name:	ATL		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

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

Comments:

Checklist Completed By: MBC MBC 9/27/2013

Reviewed By:

Sample Control

From: Shawn.Duffy@CH2M.com
Sent: Friday, September 27, 2013 10:22 AM
To: marlon@atl-labs.com
Cc: samplecontrol@atl-labs.com
Subject: RE: MW-12-193

Hi Marlon,

No, the list included should be the title 22 list with the Cr removed. Cr and Cr6 are being analyzed at TLI. So we don't want duplicate results.

Shawn

From: Marlon B. Cartin [mailto:marlon@atl-labs.com]
Sent: Friday, September 27, 2013 10:21 AM
To: Duffy, Shawn/RDD
Cc: Sample Control
Subject: MW-12-193

Hi Shawn!

For the attached COC, do you need Cr for sample MW-12?

We don't report Cr for this sample for the last 2 qtrs.

Thanks,

Marlon B. Cartin

Advanced Technology Laboratories, Inc.

3151 W. Post Road

Las Vegas, NV 89118

Phone: 702-307-2659 ext 410

Mobile: 702-439-0421

www.atl-labs.com

Advanced Technology Laboratories, Inc. is a full-service environmental lab providing organic and inorganic analyses of soil, water, wastewater, storm water and hazardous waste samples. ATL is accredited by the State of California, NELAP and State of Nevada and holds various SBE, DBE and MBE certificates and a USDA soil permit. ATL takes pride in providing our customers with quick turnaround time, excellent customer service and defensible data while offering very competitive rates. Advanced Technology Labs, Inc. - Your Partner for Quality Environmental Testing

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<<SKMBT_60113092710100.pdf>>

Sample Calculation

METHOD: EPA 6010
TEST NAME: Heavy Metals by ICP
MATRIX: Water

FORMULA:

Calculate the Barium concentration, in µg/L, in the original sample as follows:

Barium, µg/L = A * DF * PF * CF

where:

A = mg/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Amt. of Sample mL
CF = Conversion Factor

For Sample **N011110-001A**, the concentration in µg/L is calculated as follows:

Barium, µg/L = 0.06229078093 * 1 * (25/25) * 1000

= 62.29078093

Reporting results in two significant figures,

Barium, µg/L = 62

Nancy 10/11/2013

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N011110
Test Method: EPA 6010
Analysis Date: 10/03/13

Matrix: Water
Batch No.: 44006

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution Test is not applicable for all analytes. The calculated concentrations were < 25X the RL. However the PS @2X passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N011110-001A-DT 5X	Barium	ug/L	63.82884065	NA	62.29078093	2.47%	10
N011110-001A-DT 5X	Beryllium	ug/L	0	NA	0	0.00%	10
N011110-001A-DT 5X	Cadmium	ug/L	0	NA	0	0.00%	10
N011110-001A-DT 5X	Cobalt	ug/L	0	NA	0	0.00%	10
N011110-001A-DT 5X	Lead	ug/L	0	NA	0	0.00%	10
N011110-001A-DT 5X	Nickel	ug/L	0	NA	0	0.00%	10
N011110-001A-DT 5X	Silver	ug/L	0	NA	0.6093920278	0.00%	10
N011110-001A-DT 5X	Zinc	ug/L	0	NA	3.84321129	0.00%	10

Note: NA - Not Applicable

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N011110
Test Method: EPA 6010
Analysis Date: 10/03/13

Matrix: Water
Batch No.: 44093

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution Test is not applicable for Cu. The calculated concentrations was < 25X the RL. However the PS @2X passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N011110-001A-DT 5X	Copper	ug/L	0	NA	3.93257142	100.00%	10

Note: NA - Not Applicable

CLIENT: CH2M HILL
Work Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID: **N011110-001A-PS** SampType: **PS** TestCode: **6010_WDPGE** Units: **ug/L** Prep Date: RunNo: **90663**
Client ID: **ZZZZZZ** Batch ID: **44006** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **10/3/2013** SeqNo: **1657175**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	315.349	6.0	250.0	62.29	101	80	120				
Beryllium	244.477	2.0	250.0	0	97.8	80	120				
Cadmium	260.052	6.0	250.0	0	104	80	120				
Cobalt	264.107	6.0	250.0	0	106	80	120				
Lead	248.202	20	250.0	0	99.3	80	120				
Nickel	260.076	10	250.0	0	104	80	120				
Silver	255.477	6.0	250.0	0.6094	102	80	120				
Zinc	272.385	20	250.0	3.843	107	80	120				

Qualifiers:

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

CLIENT: CH2M HILL
Work Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID: **N011110-001A-PS** SampType: **PS** TestCode: **6010_WDPGE** Units: **ug/L** Prep Date: RunNo: **90678**
Client ID: **ZZZZZZ** Batch ID: **44093** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **10/10/2013** SeqNo: **1657664**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	302.103	10	250.0	3.933	119	80	120				

Qualifiers:

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

Sample Calculation

METHOD: EPA 6020
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Aqueous

FORMULA:

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

Manganese, ug/L = A * DF * PF

where:

A = ug/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N011110-009A**, the concentration in ug/L is calculated as follows:

Manganese, ug/L = 3.62618169223438 * 1 * (25/25)

= 3.62618169223438

Reporting results in two significant figures,

Manganese, ug/L = 3.6

10/10/2013

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N011110
Test Method: EPA 6020
Analysis Date: 10/08/13

Matrix: Water
Batch No.: 43981

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mn, V, Sb, As, and Tl. The calculated values are <25X RL. PS @2X and @5X passed criteria.
~~Dilution test is not applicable to Mo and Se~~. The calculated values are <25X RL.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N011110-009A-DT 5X	Manganese	µg/L	4.617189354	NA	3.626181692	27.33%	10
N011110-009A-DT 5X	Vanadium	µg/L	5.376859356	NA	5.245802077	2.50%	10
N011110-009A-DT 25X	Antimony	µg/L	0	NA	0		10
N011110-009A-DT 25X	Arsenic	µg/L	2.790240448	NA	2.684759228	3.93%	10
N011110-009A-DT 25X	Molybdenum	µg/L	43.84733165	NA	44.62387111	1.74%	10
N011110-009A-DT 25X	Selenium	µg/L	16.89610524	NA	14.85991587	13.70%	10
N011110-009A-DT 25X	Thallium	µg/L	0	NA	0		10

Note: NA - Not applicable



10/10/2013

CLIENT: CH2M HILL
Work Order: N011110
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011110-009A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90644**
Client ID: **ZZZZZZ** Batch ID: **43981** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **10/8/2013** SeqNo: **1656529**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	185.968	1.0	200.0	3.626	91.2	80	120				
Vanadium	28.621	2.0	20.00	5.246	117	80	120				

Sample ID: **N011110-009A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90644**
Client ID: **ZZZZZZ** Batch ID: **43981** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **10/8/2013** SeqNo: **1656530**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	42.631	2.5	50.00	0	85.3	80	120				
Arsenic	42.845	0.50	50.00	2.685	80.3	80	120				
Molybdenum	81.025	2.5	50.00	44.62	72.8	80	120				S
Selenium	50.383	2.5	50.00	14.86	71.0	80	120				S
Thallium	41.609	2.5	50.00	0	83.2	80	120				

MS/MSD of Mo Se are within criteria

10/10/2013

Qualifiers:

B	Analyte detected in 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		

October 16, 2013

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

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

CA-ELAP No.: 2676
NV Cert. No.: NV-009222007A

Workorder No.: N011175

RE: PG&E Topock, 423575.MP.02.GM.03

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on October 02, 2013 by Advanced Technology Laboratories, Inc. . 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,

Jose Tenorio Jr.
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.

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011175

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.

Advanced Technology Laboratories, Inc.

Date: *16-Oct-13*

CLIENT: CH2M HILL
Project: PG&E Topock, 423575.MP.02.GM.03
Lab Order: N011175
Contract No: 2013-GMP-193-

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N011175-001A	MW-120-193	Water	10/2/2013 7:00:00 AM	10/2/2013	10/16/2013
N011175-001B	MW-120-193	Water	10/2/2013 7:00:00 AM	10/2/2013	10/16/2013
N011175-002A	MW-27-060-193	Water	10/2/2013 9:11:00 AM	10/2/2013	10/16/2013
N011175-002B	MW-27-060-193	Water	10/2/2013 9:11:00 AM	10/2/2013	10/16/2013
N011175-003A	MW-27-085-193	Water	10/2/2013 10:14:00 AM	10/2/2013	10/16/2013
N011175-003B	MW-27-085-193	Water	10/2/2013 10:14:00 AM	10/2/2013	10/16/2013
N011175-004A	MW-34-080-193	Water	10/2/2013 1:28:00 PM	10/2/2013	10/16/2013
N011175-004B	MW-34-080-193	Water	10/2/2013 1:28:00 PM	10/2/2013	10/16/2013
N011175-005A	MW-34-100-193	Water	10/2/2013 3:12:00 PM	10/2/2013	10/16/2013
N011175-005B	MW-34-100-193	Water	10/2/2013 3:12:00 PM	10/2/2013	10/16/2013

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-120-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 7:00:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_131003B**	QC Batch: **R90551**			PrepDate:			Analyst: **LCC**
Specific Conductance	15000	0.10	0.10		umhos/cm	1	10/3/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-27-060-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 9:11:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_131003B**	QC Batch: **R90551**			PrepDate:			Analyst: **LCC**
Specific Conductance	760	0.10	0.10		umhos/cm	1	10/3/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-27-085-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 10:14:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_131003B**	QC Batch: **R90551**			PrepDate:			Analyst: **LCC**
Specific Conductance	9000	0.10	0.10		umhos/cm	1	10/3/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-34-080-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 1:28:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_131003B**	QC Batch: **R90551**			PrepDate:			Analyst: **LCC**
Specific Conductance	6600	0.10	0.10		umhos/cm	1	10/3/2013

Qualifiers:

B	Analyte detected in 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		

Advanced Technology Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-34-100-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 3:12:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_131003B**	QC Batch: **R90551**			PrepDate:			Analyst: **LCC**
Specific Conductance	15000	0.10	0.10		umhos/cm	1	10/3/2013

Qualifiers:

B	Analyte detected in 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: N011175
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID: **N011175-005B-DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **90551**
Client ID: **ZZZZZZ** Batch ID: **R90551** TestNo: **EPA 120.1** Analysis Date: **10/3/2013** SeqNo: **1652988**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	15520.000	0.10						15490	0.193	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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-27-060-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 9:11:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_131004A**	QC Batch: **R90593**			PrepDate:			Analyst: **PN**
Fluoride	0.56	0.0068	0.50		mg/L	1	10/4/2013 01:33 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		

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-27-085-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 10:14:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_131004A**	QC Batch: **R90593**			PrepDate:			Analyst: **PN**
Fluoride	2.7	0.034	2.5		mg/L	5	10/4/2013 01:45 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: N011175
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID: **MB-R90593_F** SampType: **MBLK** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90593**
Client ID: **PBW** Batch ID: **R90593** TestNo: **EPA 300.0** Analysis Date: **10/4/2013** SeqNo: **1655766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.50									

Sample ID: **LCS-R90593_F** SampType: **LCS** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90593**
Client ID: **LCSW** Batch ID: **R90593** TestNo: **EPA 300.0** Analysis Date: **10/4/2013** SeqNo: **1655767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.539	0.50	2.500	0	102	90	110				

Sample ID: **N011175-002BDUP** SampType: **DUP** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90593**
Client ID: **ZZZZZZ** Batch ID: **R90593** TestNo: **EPA 300.0** Analysis Date: **10/4/2013** SeqNo: **1655774**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.545	0.50						0.5630	3.25	20	

Sample ID: **N011175-002BMS** SampType: **MS** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90593**
Client ID: **ZZZZZZ** Batch ID: **R90593** TestNo: **EPA 300.0** Analysis Date: **10/4/2013** SeqNo: **1655775**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.872	0.50	2.500	0.5630	92.4	80	120				

Sample ID: **N011175-002BMSD** SampType: **MSD** TestCode: **300_W_FPGE** Units: **mg/L** Prep Date: RunNo: **90593**
Client ID: **ZZZZZZ** Batch ID: **R90593** TestNo: **EPA 300.0** Analysis Date: **10/4/2013** SeqNo: **1655776**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.830	0.50	2.500	0.5630	90.7	80	120	2.872	1.47	20	

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-120-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 7:00:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131012A**	QC Batch: **44029**			PrepDate:		**10/4/2013**	Analyst: **CEI**
Arsenic	1.3	0.035	0.10		µg/L	1	10/12/2013 09:47 AM

Qualifiers:

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

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CLIENT:	CH2M HILL	**Client Sample ID:**	MW-27-060-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 9:11:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131012A**	QC Batch: **44029**			PrepDate:	**10/4/2013**		Analyst: **CEI**
Arsenic	6.4	0.035	0.10		µg/L	1	10/12/2013 10:15 AM
Manganese	190	0.80	2.5		µg/L	5	10/12/2013 10:20 AM
Molybdenum	4.0	0.074	0.50		µg/L	1	10/12/2013 10:15 AM
Selenium	ND	0.084	0.50		µg/L	1	10/12/2013 10:15 AM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-27-085-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 10:14:00 AM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131012A**	QC Batch: **44029**			PrepDate:	**10/4/2013**		Analyst: **CEI**
Arsenic	1.4	0.035	0.10		µg/L	1	10/12/2013 10:26 AM
Manganese	23	0.16	0.50		µg/L	1	10/12/2013 10:26 AM
Molybdenum	22	0.074	0.50		µg/L	1	10/12/2013 10:26 AM
Selenium	ND	0.084	0.50		µg/L	1	10/12/2013 10:26 AM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-34-080-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 1:28:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131012A**	QC Batch: **44029**			PrepDate:	**10/4/2013**		Analyst: **CEI**
Arsenic	1.3	0.035	0.10		µg/L	1	10/12/2013 10:37 AM

Qualifiers:

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

CLIENT:	CH2M HILL	**Client Sample ID:**	MW-34-100-193
Lab Order:	N011175	**Collection Date:**	10/2/2013 3:12:00 PM
Project:	PG&E Topock, 423575.MP.02.GM.03	**Matrix:**	WATER
Lab ID:	N011175-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_131012A**	QC Batch: **44029**			PrepDate:	**10/4/2013**		Analyst: **CEI**
Arsenic	1.2	0.035	0.10		µg/L	1	10/12/2013 10:48 AM

Qualifiers:

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

CLIENT: CH2M HILL
Work Order: N011175
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **MB-44029** SampType: **MBLK** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **10/4/2013** RunNo: **90725**
Client ID: **PBW** Batch ID: **44029** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **10/12/2013** SeqNo: **1661124**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID: **LCS-44029** SampType: **LCS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **10/4/2013** RunNo: **90725**
Client ID: **LCSW** Batch ID: **44029** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **10/12/2013** SeqNo: **1661125**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.206	0.10	10.00	0	102	85	115				
Manganese	100.135	0.50	100.0	0	100	85	115				
Molybdenum	10.158	0.50	10.00	0	102	85	115				
Selenium	9.977	0.50	10.00	0	99.8	85	115				

Sample ID: **N011182-001A-MS** SampType: **MS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **10/4/2013** RunNo: **90725**
Client ID: **ZZZZZZ** Batch ID: **44029** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **10/12/2013** SeqNo: **1661133**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	14.910	0.10	10.00	5.353	95.6	75	125				
Manganese	166.197	0.50	100.0	73.25	93.0	75	125				
Molybdenum	26.855	0.50	10.00	16.28	106	75	125				
Selenium	9.214	0.50	10.00	0	92.1	75	125				

Sample ID: **N011182-001A-MSD** SampType: **MSD** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **10/4/2013** RunNo: **90725**
Client ID: **ZZZZZZ** Batch ID: **44029** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **10/12/2013** SeqNo: **1661135**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	14.991	0.10	10.00	5.353	96.4	75	125	14.91	0.542	20	

Qualifiers:

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

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CLIENT: CH2M HILL
Work Order: N011175
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011182-001A-MSD** SampType: **MSD** TestCode: **6020_DIS** Units: **µg/L** Prep Date: **10/4/2013** RunNo: **90725**
Client ID: **ZZZZZZ** Batch ID: **44029** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **10/12/2013** SeqNo: **1661135**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	162.979	0.50	100.0	73.25	89.7	75	125	166.2	1.95	20	
Molybdenum	26.646	0.50	10.00	16.28	104	75	125	26.86	0.785	20	
Selenium	9.146	0.50	10.00	0	91.5	75	125	9.214	0.732	20	

Qualifiers:

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

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CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.GM.03
Task Order
Project 2013-GMP-193-Q3
Turnaround Time 10 Days
Shipping Date: 10/2/2013
COC Number: 18

			Container:	500 ml Poly	500 ml Poly	1 Liter Poly	1 Liter Poly				
			Preservatives:	HNO3, 4°C	HNO3, 4°C	4°C	4°C				
			Filtered:	Field	Field	NA	NA				
			Holding Time:	180	180	14	14				
	DATE	TIME	Matrix	Arsenic (6020A) FF	Metals (6020A) FF Mo,Se,Mn	Specific Conductance (E120.1)	Anions (E300.0) Fluoride		Number of Containers	COMMENTS
MW-120-193	10/2/2013	7:00	Water	X		X		N0111 75 - 1	2	
MW-27-060-193	10/2/2013	9:11	Water	X	X	X	X	2	~~4~~ 2	~~2~~ BK
MW-27-085-193	10/2/2013	10:14	Water	X	X	X	X	3	~~4~~ 2	~~2~~
MW-34-080-193	10/2/2013	13:28	Water	X		X		4	2	
MW-34-100-193	10/2/2013	15:12	Water	X		X		5	2	
								TOTAL NUMBER OF CONTAINERS	10	

	Signatures	Date/Time
Approved by		10-2-13 1625
Sampled by		
Relinquished by		
Received by		10-2-13 1625
Relinquished by		10-2-13 1825
Received by		10-2-13 1825

Shipping Details
Method of Shipment: courier
On Ice: (yes) / no 4.2 1R2
Airbill No:
Lab Name: ADVANCED TECHNOLOGY LABORATO
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Marlon

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

Advanced Technology Laboratories, Inc.

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

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

Cooler Received/Opened On:	10/2/2013	Workorder:	N011175
Rep sample Temp (Deg C):	4.2	IR Gun ID:	2
Temp Blank:	☐ Yes ☑ No		
Carrier name:	ATL		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

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

Comments:

Checklist Completed By: MBC for: 10/2/2013

Reviewed By:

Sample Calculation

METHOD: EPA 300
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: WATER

FORMULA:

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

Fluoride, mg/L = A * DF

where:

A = mg/L, IC calculated concentration
DF = dilution factor

For **N011175-002B**, concentration in mg/L are calculated as follows:

Fluoride, mg/L = 0.563 * 1

= 0.563

Reporting **N011175-002B** results in two significant figures,

Fluoride, mg/L = 0.56

10/15/2013

10/16/2013

Sample Calculation

METHOD: EPA 6020
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Aqueous

FORMULA:

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

Arsenic, ug/L = A * DF * PF

where:

A = ug/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N011175-001A**, the concentration in ug/L is calculated as follows:

Arsenic, ug/L = 1.2936575025759 * 1 * (25/25)

= 1.2936575025759

Reporting results in two significant figures,

Arsenic, ug/L = 1.3

10/16/2013

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N011175
Test Method: EPA 6020
Analysis Date: 10/12/13

Matrix: Water
Batch No.: 44029

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Se. The calculated value is <25X RL. PS @2X passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N011182-001A-DT 5X	Arsenic	µg/L	5.75015372	PASSED	5.353109572	7.42%	10
N011182-001A-DT 5X	Manganese	µg/L	79.31912083	PASSED	73.2465117	8.29%	10
N011182-001A-DT 5X	Molybdenum	µg/L	17.07117874	PASSED	16.27554199	4.89%	10
N011182-001A-DT 5X	Selenium	µg/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N011175
Project: PG&E Topock, 423575.MP.02.GM.03

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N011182-001A-PS** SampType: **PS** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **90725**
Client ID: **ZZZZZZ** Batch ID: **44029** TestNo: **EPA 6020** **EPA 3010A** Analysis Date: **10/12/2013** SeqNo: **1661131**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	25.057	0.20	20.00	5.353	98.5	80	120				
Manganese	264.286	1.0	200.0	73.25	95.5	80	120				
Molybdenum	38.006	1.0	20.00	16.28	109	80	120				
Selenium	18.542	1.0	20.00	0	92.7	80	120				

Qualifiers:

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

Appendix C
Other Groundwater Monitoring Results

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date		Dissolved Arsenic (µg/L)
MW-10	SA	10-Dec-12		5.4
MW-12	SA	02-Oct-12		42.4
		27-Nov-12		38.5
		26-Feb-13		46.5
		26-Feb-13	FD	45.9
		09-May-13		33.0
		25-Sep-13		40.0
MW-13	SA	11-Dec-12		2.0
MW-16	SA	08-Nov-12		11.0
		24-Apr-13		9.7
MW-17	SA	03-Dec-12		1.4
		24-Apr-13		1.6
MW-19	SA	04-Oct-12		0.83
		26-Nov-12		1.0
		12-Mar-13		1.0
MW-20-70	SA	04-Oct-12		2.6
		27-Nov-12		1.9
		12-Mar-13		2.4
MW-20-100	MA	04-Oct-12		1.7
		29-Nov-12		2.9
		13-Mar-13		2.0
MW-20-130	DA	09-Oct-12		5.6
		29-Nov-12		5.3 J
		29-Nov-12	FD	1.3 J
		14-Mar-13		5.2
		14-May-13		4.6
MW-22	SA	10-Dec-12		16.0
		15-May-13		13.0
MW-23-060	BR	08-Nov-12		5.3
		18-Feb-13		5.5
		23-Apr-13		4.3
		17-Sep-13		4.0
MW-23-080	BR	08-Nov-12		2.7
		18-Feb-13		3.1
		23-Apr-13		3.6
		17-Sep-13		2.4

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date		Dissolved Arsenic (µg/L)
MW-25	SA	11-Dec-12		1.3
MW-26	SA	04-Oct-12		1.7
		27-Nov-12		1.7
		12-Mar-13		1.7
		07-May-13		2.2
MW-27-20	SA	03-Dec-12		2.4
		15-Apr-13		1.6
MW-27-60	MA	01-Oct-12		7.4
		03-Dec-12		7.6
		04-Feb-13		7.2
		04-Feb-13	FD	7.3
		15-Apr-13		6.8
		02-Oct-13		6.4
MW-27-85	DA	01-Oct-12		1.5
		03-Dec-12		1.8
		04-Feb-13		1.4
		15-Apr-13		1.3
		15-Apr-13	FD	1.4
		02-Oct-13		1.4
MW-28-25	SA	05-Dec-12		1.5
		18-Apr-13		1.7
MW-28-90	DA	05-Dec-12		2.0
		05-Feb-13		1.6
		18-Apr-13		1.7
		11-Sep-13		1.7
MW-29	SA	05-Dec-12		19.0 J
		05-Dec-12	FD	14.0 J
		18-Apr-13		4.1
MW-30-30	SA	03-Dec-12		2.0
MW-30-50	MA	03-Dec-12		3.8
MW-31-60	SA	13-Nov-12		1.2
MW-31-135	DA	15-Nov-12		3.7
MW-32-20	SA	05-Dec-12		3.4
MW-32-35	SA	05-Dec-12		28.0
		17-Apr-13		27.0
		17-Apr-13	FD	26.0

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date		Dissolved Arsenic (µg/L)
MW-33-40	SA	05-Dec-12		14.0
		05-Dec-12	FD	14.0
		25-Feb-13		14.0
		22-Apr-13		15.0
		16-Sep-13		11.0
MW-33-90	MA	08-Nov-12		1.1
		14-Feb-13		1.4
		14-Feb-13	FD	1.6
		22-Apr-13		1.7
		16-Sep-13		1.4
MW-33-150	DA	06-Dec-12		2.0
		05-Feb-13		1.8
		22-Apr-13		2.2
		16-Sep-13		1.8
MW-33-210	DA	06-Dec-12		1.4
		05-Feb-13		1.1
		23-Apr-13		1.6
		12-Sep-13		1.2
MW-34-55	MA	12-Dec-12		3.0
MW-34-80	DA	01-Oct-12		1.7
		12-Dec-12		1.4
		12-Dec-12	FD	1.5
		05-Feb-13		1.3
		16-Apr-13		1.3
		02-Oct-13		1.3
MW-34-100	DA	01-Oct-12		1.5
		01-Oct-12	FD	1.6
		26-Nov-12		1.8
		26-Nov-12	FD	1.9
		12-Dec-12		1.5
		24-Jan-13		1.7
		26-Feb-13		1.6
		26-Feb-13	FD	1.5
		16-Apr-13		1.3
		16-Apr-13	FD	1.3
		02-Oct-13		1.2
		02-Oct-13	FD	1.3

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date	Dissolved Arsenic (µg/L)
MW-35-60	SA	04-Dec-12	1.1
		19-Feb-13	1.0
		23-Apr-13	1.4
		10-Sep-13	0.93
MW-35-135	DA	04-Dec-12	1.0
MW-36-20	SA	04-Dec-12	1.9
		04-Dec-12 FD	1.8
MW-36-40	SA	04-Dec-12	4.8
MW-36-50	MA	04-Dec-12	4.2
MW-36-70	MA	04-Dec-12	5.1
MW-36-90	DA	04-Dec-12	22.0
		15-May-13	17.0
MW-36-100	DA	10-Oct-12	7.7
		08-Nov-12	6.2
		11-Mar-13	7.3
		24-Apr-13	7.8
MW-37S	MA	14-Nov-12	1.9
MW-38D	DA	17-Sep-13	6.5
MW-38S	SA	24-Sep-13	13.0
MW-39-50	MA	03-Dec-12	7.0
MW-39-60	MA	03-Dec-12	7.6
MW-39-100	DA	13-Dec-12	2.2
MW-40D	DA	03-Dec-12	4.7
		01-May-13	4.4
MW-40S	SA	03-Dec-12	1.4
MW-41D	DA	05-Nov-12	2.9
MW-41M	DA	05-Nov-12	2.5
MW-41S	SA	03-Dec-12	2.1
MW-42-55	MA	06-Dec-12	13.0
		04-Feb-13	12.0
		16-Apr-13	11.0
		11-Sep-13	11.0
MW-42-65	MA	06-Dec-12	2.6
		04-Feb-13	2.3
		04-Feb-13 FD	2.4

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date		Dissolved Arsenic (µg/L)
MW-42-65	MA	17-Apr-13		2.5
		11-Sep-13		2.6
MW-43-25	SA	10-Dec-12		23.0
		17-Apr-13		19.0
MW-43-75	DA	10-Dec-12		13.0
MW-43-90	DA	10-Dec-12		3.4
		17-Apr-13		3.2
MW-44-70	MA	06-Dec-12		4.5
		22-Apr-13		4.0
MW-44-115	DA	26-Nov-12		5.4
		26-Feb-13		5.9
		24-Apr-13		6.3
		12-Sep-13		6.0
MW-44-125	DA	06-Nov-12		3.6
		06-Nov-12	FD	3.4
		13-Feb-13		4.1
		13-Feb-13	FD	3.9
		18-Apr-13		3.2
		18-Apr-13	FD	3.3
		12-Sep-13		3.6
		12-Sep-13	FD	3.1
MW-45-095a	DA	13-Dec-12		3.7
MW-46-175	DA	09-Nov-12		2.0
		25-Feb-13		2.4
MW-47-55	SA	07-Nov-12		1.1
		11-Mar-13		1.2
MW-47-115	DA	07-Nov-12		1.7
		27-Feb-13		2.3
MW-49-135	DA	11-Dec-12		4.6
MW-50-095	MA	05-Nov-12		2.3
		14-Feb-13		2.7
MW-50-200	DA	03-Oct-12		3.8
		03-Oct-12	FD	3.4
		29-Nov-12		3.8
		27-Feb-13		4.1
MW-51	MA	09-Oct-12		4.3

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date		Dissolved Arsenic (µg/L)
MW-51	MA	28-Nov-12		4.9
		14-Mar-13		4.1
		13-May-13		3.6
MW-52D	DA	05-Dec-12		3.7
		16-May-13		3.2
MW-52M	DA	05-Dec-12		1.7
		16-May-13		1.3
MW-52S	MA	05-Dec-12		0.25
		16-May-13		0.21
MW-53D	DA	06-Dec-12		3.0
		16-May-13		2.8
MW-53M	DA	05-Dec-12		1.0
		05-Dec-12	FD	1.1
		16-May-13		0.8
MW-54-85	DA	12-Dec-12		3.3
		25-Apr-13		2.6
MW-54-140	DA	12-Dec-12		2.9
		25-Apr-13		1.4 J
MW-54-195	DA	12-Dec-12		ND (5.0)
		25-Apr-13		ND (0.2)
		25-Apr-13	FD	ND (0.2)
MW-57-070	BR	13-Dec-12		1.4
		13-Dec-12	FD	1.4
MW-57-185	BR	08-Nov-12		13.0
		06-Feb-13		13.0
		23-Apr-13		13.0
		10-Sep-13		15.0
MW-58BR	BR	28-Feb-13		1.1
		30-Apr-13		1.4
		19-Sep-13		1.0
MW-58BR-LWR-160	BR	04-Oct-12		0.71
MW-58BR-UPR-160	BR	03-Oct-12		0.49
MW-59-100	SA	02-Oct-12		2.9
		28-Nov-12		4.4
		27-Feb-13		2.6
		13-May-13		1.9

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date		Dissolved Arsenic (µg/L)
MW-59-100	SA	25-Sep-13		2.5
MW-60-125	BR	06-Dec-12		1.8
		20-Feb-13		1.6
		06-May-13		2.0
		24-Sep-13		1.4
		24-Sep-13	FD	1.4
MW-60BR-245	BR	05-Dec-12		8.1
		14-Mar-13		7.5
		14-Mar-13	FD	7.1
		07-May-13		7.7
		17-Sep-13		6.4
MW-61-110	BR	27-Nov-12		3.2
		27-Nov-12	FD	3.1
		25-Feb-13		3.4
		02-May-13		3.3
		23-Sep-13		3.3
MW-62-065	BR	10-Dec-12		1.4
MW-62-110	BR	11-Dec-12		12.0
		26-Feb-13		10.0
		08-May-13		8.5
		18-Sep-13		8.2
MW-62-190	BR	11-Dec-12		5.8
		26-Feb-13		5.9
		08-May-13		4.1
		18-Sep-13		5.0
MW-63-065	BR	07-Nov-12		1.5
		06-Feb-13		1.6
		25-Apr-13		1.9
		09-Sep-13		1.5
MW-64BR	BR	01-Mar-13		2.9
		01-May-13		3.4
		17-Sep-13		3.5
MW-64BR-LWR-150	BR	10-Oct-12		1.7
MW-64BR-UPR-150	BR	08-Oct-12		7.4
MW-65-160	SA	04-Dec-12		0.88
		19-Feb-13		0.83

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date		Dissolved Arsenic (µg/L)
MW-65-160	SA	01-May-13		1.1
		19-Sep-13		0.85
MW-65-225	DA	05-Dec-12		2.3
		19-Feb-13		2.4
		02-May-13		2.5
		02-May-13	FD	2.6
		23-Sep-13		2.4
		23-Sep-13	FD	2.4
MW-66-165	SA	06-Dec-12		1.3
		20-Feb-13		1.3
		02-May-13		1.6
		23-Sep-13		1.2
MW-66-230	DA	10-Dec-12		6.3
		21-Feb-13		6.6
		13-May-13		5.6
		25-Sep-13		8.1
MW-66BR-270	BR	02-Oct-12		0.32
		20-Dec-12		0.24
		12-Mar-13		0.32
		18-Jun-13		0.24
		23-Sep-13		ND (0.5)
MW-67-185	SA	06-Dec-12		1.8
		21-Feb-13		1.7
		21-Feb-13	FD	1.6
		09-May-13		1.9
		25-Sep-13		1.7
MW-67-225	MA	10-Dec-12		3.2
		21-Feb-13		3.2
		09-May-13		2.8
		25-Sep-13		3.3
MW-67-260	DA	06-Dec-12		12.0
		21-Feb-13		11.0
		09-May-13		11.0
		09-May-13	FD	11.0
		25-Sep-13		12.0
		25-Sep-13	FD	12.0
MW-68-180	SA	11-Dec-12		2.7

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date		Dissolved Arsenic (µg/L)
MW-68-180	SA	11-Dec-12	FD	2.8
		21-Feb-13		2.5
		13-May-13		2.5
		26-Sep-13		2.7
MW-68-240	DA	06-Dec-12		2.0
		20-Feb-13		1.9
		08-May-13		1.9
		24-Sep-13		2.0
MW-68BR-280	BR	03-Oct-12		2.5
		12-Nov-12		2.1
		18-Feb-13		2.3
		08-May-13		1.6
		18-Sep-13		2.0
MW-69-195	BR	05-Dec-12		2.1
		20-Feb-13		2.2
		06-May-13		2.6
		24-Sep-13		2.4
MW-70-105	BR	04-Dec-12		5.2
		19-Feb-13		5.8
		25-Apr-13		5.9
		23-Sep-13		5.2
MW-70BR-225	BR	13-Dec-12		1.9
		26-Feb-13		1.9
		07-May-13		3.1
		24-Sep-13		1.9
MW-71-035	SA	08-Nov-12		1.4
		07-Feb-13		1.5
		30-Apr-13		1.8
		10-Sep-13		1.3
MW-72-080	BR	05-Dec-12		11.0
		19-Feb-13		11.0
		25-Apr-13		12.0
		19-Sep-13		11.0
		19-Sep-13	FD	12.0
MW-72BR-200	BR	14-Nov-12		15.0
		07-Feb-13		14.0
		29-Apr-13		14.0

Table C-1
Arsenic Results in Monitoring Wells, October 2012 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	Sample Date		Dissolved Arsenic (µg/L)
MW-72BR-200	BR	19-Sep-13		16.0
MW-73-080	BR	05-Dec-12		1.5
		19-Feb-13		2.1
		01-May-13		1.6
		11-Sep-13		1.4
MW-74-240	BR	20-Dec-12		15.0
		20-Dec-12	FD	16.0
		01-Mar-13		8.8
		02-May-13		11.0
		18-Sep-13		13.0
OW-3D	DA	13-Nov-12		2.6

Notes:

FD = field duplicate.
J = concentration or reporting limit estimated by laboratory or data validation.
µg/L = micrograms per liter.

The California primary drinking water standard maximum contaminant level (MCL) for arsenic is 10 µg/L.
The Background Study Upper Tolerance Limit for arsenic at the site is 24.3 µg/L.

Wells are assigned to separate Aquifer zones for results reporting:
SA = shallow interval of Alluvial Aquifer.
MA = mid-depth interval of Alluvial Aquifer.
DA = deep interval of Alluvial Aquifer.
BR = well completed in bedrock (Miocene Conglomerate or pre-Tertiary crystalline rock).

For additional information on the East Ravine-Topock Compressor Station wells installed in 2009 through 2012, please see:

CH2M HILL. 2012d. Technical Memorandum. Addendum to the Summary of Findings Associated with the East Ravine Groundwater Investigation, Pacific Gas and Electronic Company, Topock Compressor Station, Needles, California. November 15.

Appendix D
Groundwater Monitoring Data for GMP and Interim Measures Monitoring Wells

Table D-1

Chemical Performance Monitoring Analytical Results, March 2005 through October 2013

Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location	Sample Date	Total Dissolved Solids (mg/L)	Oxygen-18 (0/00)	Deuterium (0/00)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Bromide (mg/L)	Alkalinity (total) (mg/L)	Dissolved Metals (mg/L)				
										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-20-70	10-Mar-05	1940	-7.1	-59.0	740	378	9.98	ND (1.0)	81.7	198	55.4	9.89	431	0.412
	15-Jun-05	1980	-7.0	-60.0	749	388	9.79	ND (1.0)	73.8	189	55.4	10.5	433	0.414
	15-Jun-05 FD	2050	-8.3	-57.0	760	392	9.81	ND (1.0)	71.3	204	60.7	11.4	468	0.445
	11-Oct-05	1950	-7.2	-57.0	737	359	9.48	0.641	69.9	198	49.9	14.6	323	0.402
	15-Dec-05	1830	-7.1	-49.0	645	326	9.90	ND (1.0)	77.8	138	42.3	14.5	267	0.441
	10-Mar-06	1940	-7.2	-54.0	679	358	10.5	ND (0.5)	82.2	161	48.6	9.22	424	0.427
	05-May-06	1750	-8.2	-55.9	696	376	9.86	0.574	74.5	162	49.2	9.55	461	0.476
	03-Oct-06	1890	-8.1	-60.4	677	357	13.0	ND (5.0)	85.0	158	47.6	9.82	472	0.535
	03-Oct-06 FD	1840	-8.1	-60.5	669	352	12.9	ND (5.0)	80.0	154	45.9	9.51	466	0.515
	13-Dec-06	1910	-7.6	-61.2	678	352	12.7	0.699	77.5	149	44.3	9.09	458	0.459
	14-Mar-07	1740	-8.5	-64.3	689	358	13.7	0.641	80.0	139	42.2	8.83	451	0.503
	03-May-07	1750	-8.4	-66.7	697	344	25.1	ND (1.0)	77.5	139	41.2	8.65	390	0.477
	11-Oct-07	1820	-8.2	-63.9	699	367	15.6	ND (1.0)	80.0	130	39.1	11.0	600	0.54
	12-Mar-08	1790	-7.6	-65.2	695	360	22.1	ND (1.0)	77.0	139	41.2	10.7	403	0.51
	07-Oct-08	1900	-8.5	-64.4	650	360	15.0	0.61	83.0	136	37.9	10.5	400	0.608
	12-Mar-09	1900	-7.74	-60.8	670	330	17.0	ND (1.0)	79.0	128	40.2	9.95	496	0.549
	25-Sep-09	1700	-8.7	-66.4	700	310	16.0	ND (2.5)	74.0	130	33.0	9.70	390	0.42
	16-Dec-10	1700	-7.5	-62.3	680	320	16.0	0.51	79.0	130	33.0	12.0	400	0.51
	07-Dec-11	1400	-7.9	-61.9	540	330	11.0	ND (0.5)	71.0	100	25.0	---	380	---
	04-Oct-12	---	---	---	430	290	8.40	---	---	76.2	22.9	---	346	---
	27-Nov-12	1400	-7.8	-62.6	450	290	10.6 *	ND (0.5)	89.0	79.2	22.2	8.07	350	0.484
	12-Mar-13	---	---	---	440	290	8.60 *	---	87.0	82.8	22.3	---	358	---
MW-20-100 [a]	10-Mar-05	2490	-5.2	-49.0	466	511	9.98	ND (1.0)	84.2	133	19.8	8.98	712	0.859
	15-Jun-05	2500	-4.7	-46.0	921	506	9.02	ND (1.0)	84.0	137	21.3	9.06	592	0.713
	11-Oct-05	2400	-5.3	-48.0	887	484	8.87	0.731	82.3	170	23.7	15.2	500	0.718

Table D-1

Chemical Performance Monitoring Analytical Results, March 2005 through October 2013

Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location	Sample Date	Total Dissolved Solids (mg/L)	Oxygen-18 (0/00)	Deuterium (0/00)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Bromide (mg/L)	Alkalinity (total) (mg/L)	Dissolved Metals (mg/L)				
										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-20-100 [a]	15-Dec-05	2340	-5.4	-40.0	813	404	9.65	ND (1.0)	82.7	136	21.4	14.8	406	0.709
	10-Mar-06	2500	-5.6	-50.3	861	475	9.94	ND (0.5)	92.5	171	27.0	7.75	597	0.803
	05-May-06	2260	-5.1	-46.4	927	522	9.99	ND (1.0)	82.5	193	32.0	10.8	577	0.716
	03-Oct-06	2320	-5.8	-51.5	863	456	13.4	ND (5.0)	90.0	202	34.4	10.9 J	568	0.874
	13-Dec-06	1960	-6.2	-54.4	861	459	12.3	0.83	97.5	205	32.2	11.4	579	0.889
	13-Dec-06 FD	2200	-6.2	-54.5	874	457	12.2	0.851	92.5	205	32.2	9.55	575	0.881
	14-Mar-07	2180	-6.8	-57.8	847	477	14.2	0.785	87.5	194	31.7	9.90	521	0.715
	03-May-07	2300	-7.3	-59.2	879	493	23.2	ND (1.0)	87.5	209	36.0	12.0 J	559	0.699
	03-May-07 FD	2330	-6.7	-59.3	888	484	19.7	ND (1.0)	87.5	208	34.6	9.63 J	532	0.686
	10-Oct-07	2160	-7.2	-57.2	858	468	3.25	ND (1.0)	92.0	190	32.0	15.0	560	0.81
	12-Mar-08	2470	-6.9	-58.3	827	442	19.2	ND (1.0)	870	218	35.4	11.9	469	0.702
	08-Oct-08	2200	-7.9	-60.2	760	420	16.0	ND (1.0)	90.0	215	36.8	10.3	453	0.669
	13-Mar-09	2200	-7.08	-58.2	770	420	16.0	ND (1.0)	97.0	213	36.4	11.6	543	0.89
	25-Sep-09	2000	-7.67	-62.8	750	400	16.0	ND (2.5)	89.0	200	30.0	12.0	430	0.70
	10-Feb-11	1800	-7.0	-58.8	610	380	15.0	0.57	120	180	28.0	14.0	400	0.81
	08-Dec-11	1700	-6.7	-55.6	580	380	13.0	ND (0.5)	120	170	25.0	---	390	---
	04-Oct-12	---	---	---	570	390	12.0	---	---	157	27.8	---	400	---
	29-Nov-12	1700	-7.0	-56.6	570	350	12.9 *	ND (0.5)	110	149	30.6	9.64	376	0.952
	13-Mar-13	---	---	---	560	370	6.27 *	---	120	164	27.8	---	388	---
MW-20-130 [a]	09-Mar-05	5520	-5.8	-56.0	3120	1080	10.9	ND (1.0)	68.9	219	12.1	24.7	2250	1.90
	09-Mar-05 FD	6200	-5.4	-51.0	3080	1080	10.9	ND (1.0)	68.9	231	12.8	25.4	2390	1.99
	15-Jun-05	7790	-5.0	-48.0	3410	1230	11.1	ND (1.0)	68.7	352	23.2	31.3	2980	2.75
	07-Oct-05	7330	-5.0	-47.0	3010	1210	10.9	1.04 J	72.4	349	13.9	38.4	2070	2.41
	16-Dec-05	7860	-5.8	-43.0	3260	1000	10.7	ND (2.5)	63.2	324	16.3	44.4	1780	1.98
	10-Mar-06	8610	-5.5	-48.8	3370	1250	10.6	ND (0.5)	74.5	312	18.9	27.7	2730	2.03

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Location	Sample Date	Total Dissolved Solids (mg/L)	Oxygen-18 (0/00)	Deuterium (0/00)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Bromide (mg/L)	Alkalinity (total) (mg/L)	Dissolved Metals (mg/L)				
										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-20-130 [a]	05-May-06	7700	-5.3	-47.2	3900	1280	8.95	ND (1.0)	69.2	349	20.3	27.7	2810	2.40
	18-Oct-06	8450	-6.3	-51.4	3680	1100	11.5	ND (5.0)	70.0	358	20.9	28.0	2870	2.28
	13-Dec-06	7890	-6.0	-54.9	3970	1250	10.6	0.896	72.5	335	19.7	27.6	2900	2.31
	13-Dec-06 FD	8250	-5.9	-54.4	3950	1260	10.5	1.09	72.5	328	19.1	27.3	2830	2.24
	08-Mar-07	8450	-6.5	-57.7	3930	1240	11.3	1.08	70.0	353	21.3	27.0	2760	2.24
	08-Mar-07 FD	8510	-6.6	-57.4	3900	1210	11.3	1.06	72.5	351	21.3	26.8	2750	2.19
	03-May-07	8150	-7.7	-60.0	4020	1310	9.80 J	ND (1.0)	75.0	338	22.5	27.8	2550	2.49
	03-May-07 FD	8100	-6.9	-60.1	3950	1290	20.4 J	ND (1.0)	72.5	338	21.9	27.3	2550	2.47
	05-Oct-07	7980	-7.0	-57.5	3670	1070	11.6	ND (1.0)	77.0	310	19.0	31.0	2900	2.40
	12-Mar-08	8460	-6.2	-58.7	3690	1220	14.3	ND (1.0)	75.0	342	23.4	47.0	2260	2.07
	08-Oct-08	7800	-7.3	-59.6	3500	1200	12.0	ND (2.5)	81.0	329	22.0	40.1	1990	2.23
	13-Mar-09	8100	-6.58	-56.4	3600	1100	11.0	ND (2.5)	79.0	350	22.7	41.4	2550	2.16
	25-Sep-09	6500	-7.59	-61.7	3500	1100	13.0	ND (2.5)	76.0	280	17.0	33.0	2400	2.00
	10-Feb-11	5900	-6.6	-59.0	3100	1100	13.0	1.00	80.0	310	18.0	50.0	2100	2.20
	09-Dec-11	6200	-6.6	-57.2	3300	1200	12.0	ND (2.5)	74.0	340	22.0	33.0	2400	2.40
	09-Oct-12	---	---	---	3200	1100	12.0	---	79.0	283	19.1	---	2140	---
	29-Nov-12	7400	-6.6	-59.5	3300	1100	14.1 *	ND (2.5)	80.0	286	24.0	32.7	2310	2.13
	29-Nov-12 FD	7400	-6.6	-60.4	3400	1100	14.1 *	ND (2.5)	79.0	284	24.2	32.9	2410	2.06
	14-Mar-13	---	---	---	3400	1100	6.32 *	---	76.0	311	21.7	---	2260	---
MW-25	09-Mar-05	877	-8.4	-62.0	247	169	3.64	ND (0.5)	158	77.6	16.1	6.24	211	0.441
	14-Jun-05	942	-8.6	-61.0	289	183	3.89	ND (0.5)	137	93.5	20.0	8.91	253	0.464
	14-Jun-05 FD	980	-7.2	-59.0	294	185	3.94	ND (0.5)	137	100	20.9	9.06	268	0.475
	04-Oct-05	950	-8.2	-68.0	252	171	3.77	ND (0.5)	141	83.3	14.9	9.93	164	0.362
	04-Oct-05 FD	910	-8.3	-60.0	251	171	3.75	ND (0.5)	146	94.6	15.3	10.2	185	0.371
	14-Dec-05	838	-8.4	-55.0	224	158	3.74	ND (0.5)	153	75.5	14.5	9.80	143	0.396

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										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-25	14-Dec-05 FD	896	-8.4	-50.0	219	155	3.75	ND (0.5)	156	73.0	14.1	9.71	151	0.382
	09-Mar-06	910	-8.4	-64.1	245	164	3.83	ND (0.5)	170	76.4	15.6	6.97	210	0.39
	03-May-06	907	-9.0	-59.4	272	172	3.95	ND (0.5)	150	78.0	17.3	7.38	222	0.418
	03-May-06 FD	924	-9.0	-61.0	274	173	3.94	ND (0.5)	155	79.7	17.8	7.53	245	0.431
	03-Oct-06	892	-8.9	-62.7	222	158	4.09	ND (0.5)	163	73.3	15.0	7.25	206	0.466
	06-Mar-07	843	-9.0	-66.9	221	164	3.95	ND (0.5)	160	72.9	14.4	6.85	203	0.459
	02-Oct-07	796	-9.0	-65.8	189	155	4.58	ND (1.0)	180	66.0	14.0	7.90	200	0.49
	02-Oct-07 FD	758	-9.0	-65.7	195	157	4.40	ND (1.0)	190	63.0	13.0	7.70	220	0.46
	07-Oct-08	740	-9.9	-68.5	170	150	4.30	ND (0.5)	200	59.2	12.9	9.89	143	0.559
	07-Oct-08 FD	730	-10.1	-69.1	170	150	4.40	ND (0.5)	210	58.4	12.9	10.2	144	0.559
	21-Sep-09	660	-8.91	-69.9	180	130	4.30	ND (0.5)	200	64.0	12.0	7.20	180	0.46
	21-Sep-09 FD	650	-8.87	-69.5	180	130	4.30	ND (0.5)	200	64.0	12.0	7.90	190	0.47
	07-Dec-10	780	-9.4	-68.9	220	120	4.80	ND (1.0)	180	74.0	15.0	10.0	180	0.43
	15-Dec-11	860	-9.2	-68.6	270	120	5.90	ND (1.0)	170	89.0	19.0	8.50	210	0.49
	15-Dec-11 FD	890	-8.9	-66.7	280	120	6.00	ND (0.5)	170	91.0	19.0	8.00	220	0.50
	11-Dec-12	970	-9.1	-67.6	340	140	7.25 *	ND (0.5)	160	90.0	19.0	7.90	200	0.38
MW-26	08-Mar-05	1840	-8.8	-70.0	756	370	4.48	ND (0.5)	98.7	166	41.6	10.7	439	0.557
	08-Mar-05 FD	1800	-8.7	-70.0	708	338	4.45	ND (0.5)	96.1	166	40.9	11.4	438	0.559
	13-Jun-05	2130	-8.2	-65.0	847	371	4.90	ND (0.5)	103	178	44.6	14.0	511	0.663
	04-Oct-05	2120	-7.8	-68.0	779	372	4.88	0.601	109	166	40.4	19.8	352	0.526
	12-Dec-05	2610	-8.5	-55.0	788	372	4.88	0.546	99.7	162	39.9	20.3	349	0.613
	08-Mar-06	2070	-8.6	-60.4	772	324	4.90	ND (0.5)	121	155	38.1	11.7	434 J	0.621
	01-May-06	2130	-8.9	-62.7	927	382	4.87	ND (0.5)	121	165	42.0	12.8	555	0.723
	03-Oct-06	2220	-8.8	-63.0	894	370	6.22	ND (2.5)	105	170	43.9	12.8	510	0.692
	12-Mar-07	2280	-9.0	-67.0	917	387	6.02	0.646	90.0	163	41.6	12.9	621	0.622

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										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-26	02-Oct-07	2180	-8.6	-66.3	945	391	7.84	ND (1.0)	100	170	42.0	15.0	620	0.66
	12-Mar-08	2500	-8.1	-67.2	908	398	10.7 J	ND (1.0)	103	176	44.1 J	16.2 J	498	0.589
	12-Mar-08 FD	2420	-8.9	-68.2	905	398	7.61 J	ND (1.0)	102	160	32.8 J	12.7 J	462	0.601
	08-Oct-08	2400	-8.7	-66.5	930	440	10.0	ND (1.0)	110	183	45.8	14.6	555	0.591
	10-Mar-09	2300	-8.41	-65.3	870	440 J	9.80	1.40	100	172	47.9	14.8	585	0.604
	10-Mar-09 FD	2300	-8.68	-65.8	860	440 J	9.70	1.50	100	174	46.2	15.6	631	0.65
	22-Sep-09	2200	-9.04	-68.3	870	450	10.0	ND (1.0)	100	170	39.0	14.0	550	0.59
	15-Dec-10	---	---	---	900	480	12.0	---	100	180	40.0	---	560	---
	09-Dec-11	2300	-8.1	-65.2	930	530	14.0	1.20	94.0	210	47.0	15.0	690	0.89
	04-Oct-12	---	---	---	920	520	14.0	---	---	178	46.2	---	637	---
	27-Nov-12	---	---	---	930	520	15.6 *	---	100	168	45.0	---	564	---
	12-Mar-13	---	---	---	930	530	9.51 *	---	100	186	48.7	---	662	---
MW-27-20	08-Mar-05	1250	-12	-102.0	190	432	ND (0.5)	ND (0.5)	215	137	56.6	4.89	195	ND (0.2)
	18-Jul-05	---	-11.9	-98.0	81.9	228	ND (0.5)	ND (0.5)	160	96.1	30.1	4.27	94.8	ND (0.2)
	05-Oct-05	742	-11.8	-102.0	91.1	252	ND (0.5)	ND (0.5)	175	88.6	31.4	5.48	81.0	ND (0.2)
	14-Dec-05	1020	-11.7	-91.0	118	347	ND (0.5)	ND (0.5)	216	116	41.8	6.96	116	ND (0.2)
	06-Mar-06	664	-12.1	-90.9	89.7	231	ND (0.2)	ND (0.2)	385	89.1	28.8	4.90	103	ND (0.2)
	14-Jun-06	730	-12	-89.8	98.3	272	ND (0.5)	ND (0.5)	195	91.1	28.5	2.79 J	96.9	ND (0.2)
	03-Oct-06	600	-13.1	-96.6	90.8	261	ND (0.5)	ND (0.5)	160	102	34.5	6.45	113	ND (0.2)
	02-Oct-07	802	-12.5	-96.3	102	320	ND (1.0)	ND (1.0)	170	97.0	34.0	5.30	150	0.22
	03-Oct-08	---	---	---	94.0	240	ND (0.5)	---	---	87.9	29.5	---	110	---
	01-Oct-09	---	---	---	88.0	230	ND (0.5)	---	130	84.0	25.0	---	87.0	---
	07-Dec-10	---	---	---	86.0	220	ND (0.5)	---	200	87.0	29.0	---	93.0	---
	05-Dec-11	---	---	---	83.0	220	ND (0.5)	---	150	83.0	25.0	---	83.0	---
	03-Dec-12	---	---	---	76.0	210	ND (0.01) *	---	150	76.0	24.0	---	76.0	---

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										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-28-25	10-Mar-05	880	-12.2	-95.0	112	302	ND (0.5)	ND (0.5)	204	129	36.3	3.50	122	ND (0.2)
	15-Jun-05	974	-11.6	-91.0	108	359	ND (0.5)	ND (0.5)	221	133	38.9	6.54	117	ND (0.2)
	06-Oct-05	884	-11.7	-95.0	99.8	300	ND (0.5)	ND (0.5)	197	123	37.0	6.61	88.7	ND (0.2)
	16-Dec-05	1010	-11.4	-90.0	128	348	ND (0.5)	ND (0.5)	212	134	41.5	6.46	107	ND (0.2)
	09-Mar-06	746	-11.5	-93.9	84.4	225	ND (0.5)	ND (0.5)	244	98.5	27.5	4.15 J	88.5	ND (0.2)
	05-May-06	741	-11.4	-90.3	110	302	ND (0.5)	ND (0.5)	216	117	35.7	5.77	118	ND (0.2)
	11-Oct-06	1050	-12.2	-95.0	86.3	247	ND (0.5)	ND (0.5)	225	133	40.8	5.47	132	ND (0.2)
	04-Oct-07	812	-12.1	-98.7	110	307	ND (1.0)	ND (1.0)	230	120	37.0 J	4.80	150	0.26 J
	08-Oct-08	---	---	---	100	280	ND (0.5)	---	220	109	34.7	---	102	---
	24-Sep-09	---	---	---	94.0	240	ND (0.5)	---	200	100	27.0	---	100 J	---
	08-Dec-10	---	---	---	90.0	230	ND (0.5)	---	190	110	31.0	---	95.0	---
	12-Dec-11	---	---	---	97.0	260	ND (0.5)	---	200	110	33.0	---	96.0	---
	05-Dec-12	---	---	---	87.0	240	0.0128 *	---	200	93.0	29.0	---	86.0	---
MW-30-30	10-Mar-05	38800	-9.8	-79.0	16000	4270	ND (5.0)	7.91	421	1590	1600	95.4	13600	4.97
	07-Oct-05	36400	-8.5	-75.0	17600	4000	ND (0.5)	ND (10)	521	1020	842	93.6	7650	5.20
	15-Dec-05	35700	-8.7	-59.0	19700	4070	ND (1.0)	3.13	504	1060	894	110	8540	6.14
	13-Mar-06	39700 J	-8.8	-70.5	18600	4530	ND (0.5)	ND (50)	650	1050	892	77.2	11300	4.62
	02-May-06	32400	-10.3	-70.7	15400	3300	ND (0.5)	ND (5.0)	756	882	828	59.4	10300	3.95
	10-Oct-06	29400	-9.4	-68.7	17800	4400	ND (2.5)	ND (2.5)	550	729	653	55.0	10200	4.32
	08-Oct-07	27400	-9.0	-73.9	13700	3370	ND (1.0)	3.88	800	650	540	56.0	9600	4.50
	24-Sep-09	---	---	---	5800	1700	ND (5.0)	---	550	280	220	---	3800	---
	07-Dec-10	---	---	---	7200	1900	ND (1.0)	---	790	390	290	---	4800	---
	07-Dec-11	---	---	---	10000	3200	ND (5.0)	---	910	340	290	---	6300	---
	03-Dec-12	---	---	---	8700	3400	0.0269 *	---	1500	300	260	---	7000	---
MW-30-50	10-Mar-05	6470 J	-8.3	-68.0	4660	672	ND (0.5)	1.03	324	335	107	16.5	2040	1.15

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										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-30-50	07-Oct-05	6860	-9.4	-79.0	3060	857	ND (0.5)	0.899 J	252	438	101	37.0	1780	1.27
	16-Dec-05	5850	-10.5	-65.0	2360	578	ND (0.5)	0.645	212	265	77.9	32.9	1260	1.19
	09-Mar-06	5380	-9.8	-83.5	2420	651	ND (0.5)	ND (0.5)	275	226	66.2	14.6	1640	1.18
	02-May-06	5420	-10.4	-73.6	2380	612	ND (0.5)	3.41	261	243	70.3	16.4	1750	1.22
	11-Oct-06	4170	-10.7	-82.2	1980	468	ND (0.5)	ND (0.5)	290	171	48.5	14.0	1370	1.11
	11-Oct-06 FD	3930	-11	-82.6	1810	462	ND (0.5)	ND (0.5)	298	163	46.1	14.1	1340	1.08
	24-Sep-09	---	---	---	---	---	---	---	220	19.0	4.80	---	270	---
	07-Dec-10	---	-12.2	-97.5	140	220	ND (0.5)	---	200	15.0	4.20	---	260	---
	08-Dec-11	---	-12.3	-98.2	130	210	ND (0.5)	---	200	34.0	9.40	---	240	---
	03-Dec-12	---	-12.5	-103.0	110	200	ND (0.01) *	---	190	46.0	13.0	---	170	---
MW-31-60	09-Mar-05	1540	-8.6	-63.0	649	210	4.94	ND (0.5)	76.6	108	17.3	5.97	424	0.401
	13-Jun-05	1660	-8.2	-65.0	745	207	4.12	ND (0.5)	70.0	121	18.9	6.57	403	0.388
	06-Oct-05	1660	-8.6	-65.0	691	206	4.01	ND (0.5)	77.3	109	16.5	9.75	308	0.462
	13-Dec-05	1620	-8.7	-54.0	669	199	4.14	ND (0.5)	73.0	87.0	15.4	9.32	275	0.359
	15-Mar-06	1560 J	-8.6	-65.6	661	191	4.37	ND (0.5)	89.3	106	17.5	7.30	403	0.393
	15-Mar-06 FD	1640 J	-8.6	-64.9	662	192	4.34	ND (0.5)	81.9	101	16.8	6.94	391	0.383
	01-May-06	1630	-9.6	-63.2	691	209	4.58	ND (0.5)	79.6	118	20.1	7.78	467	0.449
	05-Oct-06	1620	-9.4	-66.3	687	205	5.00	ND (0.5)	80.0	113	20.6	9.60 J	325	0.464
	12-Mar-07	1750	-9.3	-69.0	757	222	4.93	ND (0.5)	72.5	116	20.3	6.05	454	0.402 J
	04-Oct-07	1720	-9.4	-69.6	799	208	5.15	ND (1.0)	80.0	150	26.0	7.30	580	0.64
	06-Oct-08	2000	-10.2	-72.2	810	240	4.20	ND (1.0)	81.0	150	26.0	9.39	460	0.399
	21-Sep-09	1800	-9.23	-72.1	870	220	3.70	ND (1.0)	75.0	160	26.0	9.60	480	0.43
	15-Dec-10	2000	-9.0	-69.3	840	210	3.50	ND (0.5)	78.0	170	27.0	12.0	440	0.43
	06-Dec-11	1800	-8.8	-67.9	790	200	3.40	ND (1.0)	76.0	150	24.0	7.60	450	0.54
	13-Nov-12	1900	-9.2	-71.8	890	200	3.30 *	ND (0.5)	78.0	150	24.0	7.10	470	0.44

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PG&E Topock Compressor Station, Needles, California

Location	Sample Date	Total Dissolved Solids (mg/L)	Oxygen-18 (0/00)	Deuterium (0/00)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Bromide (mg/L)	Alkalinity (total) (mg/L)	Dissolved Metals (mg/L)				
										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-32-20	09-Mar-05	12500	-7.2	-65.0	6930	1660	ND (0.5)	3.51	123	838	302	36.9	4000	2.76
	17-Jun-05	10200	-9.0	-67.0	4810	690	ND (0.5)	ND (2.5)	676	566	231	23.3	2620	1.75
	04-Oct-05	28800	-7.8	-65.0	14200	2420	ND (5.0)	6.19	733	1380 J	613 J	91.1 J	5400 J	4.75 J
	16-Dec-05	24600	-7.8	-61.0	12200	2140	ND (1.0)	3.48	861	1470	552	90.4	4950	4.16
	10-Mar-06	20900	-8.3	-65.5	10600	1970	ND (0.5)	ND (0.5)	432	1350	530	56.1	6440	3.54
	04-May-06	16900	-8.1	-64.9	9430	1380	ND (0.5)	2.35	218	937	445	46.0	4780	2.87
	02-Oct-06	46200 J	-8.6	-67.1	20200	3190	ND (2.5)	7.30	660	1870	1070	87.0	11300	6.34
	11-Dec-06	37900	-8.0	-67.0	17900	3020	ND (5.0)	7.67	825	1530	785	81.7	8420	4.98
	06-Mar-07	27600	-8.7	-72.7	16200	2210	0.925	5.93	765	1460	635	64.4	7110	3.92
	30-Apr-07	17700	-9.6	-78.1	9820	1310	ND (0.2)	3.78	770	965	484	51.4	5520	3.02
	01-Oct-07	37200	-8.3	-70.1	20600	3160	ND (1.0)	6.44	700	1800	1100	93.0	9900	5.70
	10-Mar-08	26000	-9.4	-72.6	15800	2280	ND (1.0)	5.66	800	1190	710	67.4	11600	2.31
	03-Oct-08	---	---	---	21000	3500	ND (5.0)	---	640	1700	1080	---	9550	---
	10-Mar-09	29000	-8.91	-70.5	15000	2100 J	ND (5.0)	15.0	750	1620	970	96.6	7020	3.53
	22-Sep-09	---	---	---	20000	3600	ND (5.0)	---	730	1800	740	---	9300	---
	08-Dec-10	---	---	---	17000	4100	ND (5.0)	---	830	1600	720	---	11000	---
	08-Dec-11	---	---	---	17000	4400	ND (5.0)	---	1000	1400	670	---	11000	---
	05-Dec-12	---	---	---	15000	6000	1.16 *	---	---	900	500	---	9800	---
MW-32-35	09-Mar-05	3560	-8.2	-68.0	1770	465	ND (0.5)	0.845	260	312	85.5	13.0	944	1.07
	17-Jun-05	7550	-9.5	-72.0	3520	787	ND (0.5)	ND (2.5)	223	506	120	14.8	2110	1.18
	04-Oct-05	8340	-8.3	-70.0	3840	765	ND (0.5)	ND (5.0)	208	567	134	29.3	1530	1.26
	16-Dec-05	7660	-8.8	-63.0	3510	710	ND (1.0)	1.02	219	606	128	30.0	1580	1.25
	10-Mar-06	9230	-8.6	-74.0	4210	1010	ND (0.5)	ND (0.5)	234	654	129	19.2	2360	1.13
	04-May-06	9840	-9.1	-67.8	4960	1130	ND (0.5)	ND (0.5)	218	693	148	19.5	2800	1.38
	02-Oct-06	11200	-9.4	-71.4	5430	1050	ND (2.5)	ND (2.5)	290	839	165	23.9	3260	1.48

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										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-32-35	11-Dec-06	10400	-9.0	-70.4	5090	1000	ND (0.5)	1.90	338	845	173	22.5	2620	1.43
	06-Mar-07	12600	-10.2	-75.4	6070	1200	ND (0.5)	2.65	360	1080	209	23.5	2910	1.35
	30-Apr-07	12100	-9.9	-78.7	6610	1280	ND (0.2)	2.60	475	1250	273	26.2	3280	1.35
	01-Oct-07	13700	-8.9	-72.7	6830	1120	ND (1.0)	2.62	490	1000	390	29.0	4000	1.70
	03-Oct-08	15000	-9.8	-73.1	7600	1300	ND (2.5)	3.10	550	829	150	52.3	3490	1.49
	22-Sep-09	13000	-9.32	-75.2	6900	1400	ND (2.5)	2.80	530	880	400	53.0	3100	1.70
	09-Dec-10	11000	-10.2	-84.2	5500	1600	ND (2.5)	ND (2.5)	590	750	390 J	51.0 J	3000	1.70 J
	09-Dec-11	8500	-10.8	-84.2	5000	1700	ND (2.5)	ND (2.5)	640	680	310	34.0	3100	1.70
	05-Dec-12	10000	-11	-89.0	4300	1700	0.0274 *	ND (5.0)	630	460	240	31.0	2700	1.30
MW-34-55	10-Mar-05	6230	-10.8	-82.0	2620	739	ND (0.5)	0.654	240	366	71.3	29.1	1900	1.19
	15-Jul-05	---	-10.3	-84.0	2250	607	ND (0.5)	ND (0.5)	242	247	52.0	16.5	1420	1.02
	05-Oct-05	5150	-10.6	-88.0	2170	619	ND (0.5)	ND (0.5)	232	272	59.1	25.8	1230	1.20
	14-Dec-05	5100	-10.8	-74.0	2150	552	ND (0.5)	0.588	236	217	45.0	27.2	965	0.937
	08-Mar-06	4850	-10.8	-86.8	2080	593	ND (0.5)	ND (0.5)	272	256	54.2	13.5	1640	0.956
	03-May-06	4320	-11.5	-84.3	2070	500	ND (0.5)	ND (0.5)	302	198	44.8	11.1	1360	0.846
	04-Oct-06	1680 J	-12.2	-94.8	443	230	ND (0.5)	ND (0.5)	368	37.6	8.08	4.59	536	0.54
	03-Oct-07	730	-11.3	-96.6	109	266	ND (1.0)	ND (1.0)	190	15.0	3.30	3.30	290	0.26
	07-Oct-08	700	-13	-100.0	100	250	ND (0.5)	---	170	72.4	16.9	5.26	192	0.248
	30-Sep-09	700	-12.3	-101.0	---	---	---	---	160	77.0	17.0	4.40	120	0.15
	07-Dec-10	590	-12.1	-98.8	87.0	230	ND (0.5)	ND (0.5)	140	81.0	19.0	5.10	100	0.10
	06-Dec-11	630	-12.3	-101.0	83.0	220	ND (0.5)	ND (0.5)	160	81.0	19.0	4.60	100	0.19
	12-Dec-12	630	-12.7	-105.0	78.0	210	ND (0.01) *	ND (0.5)	140	75.0	20.0	3.70	100	0.15
MW-34-80	08-Mar-05	6940	-10.4	-83.0	4180	1040	ND (0.5)	1.01	304	439	68.1	28.0	2750	1.65
	15-Mar-05	8980	---	---	3920	ND (5.0)	ND (1.0)	---	288	445	65.7	29.7	2990	---
	30-Jun-05	7840	-8.4	-82.0	3910	979	ND (0.5)	ND (0.5)	302	497	76.5	27.7	2670	1.66

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Location	Sample Date	Total Dissolved Solids (mg/L)	Oxygen-18 (0/00)	Deuterium (0/00)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Bromide (mg/L)	Alkalinity (total) (mg/L)	Dissolved Metals (mg/L)				
										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-34-80	05-Oct-05	10200	-10.1	-85.0	3880	1060	ND (0.5)	ND (0.5)	302	429	72.5	47.4	1660	1.57
	14-Dec-05	8800	-10.2	-71.0	3700	880	ND (0.5)	0.854	297	432	68.3	54.9	1710	1.54
	09-Mar-06	7830	-9.9	-86.8	3520	986	ND (0.5)	ND (0.5)	313	383	65.8	24.0	2420	1.49
	03-May-06	7950	-11.7	-77.6	3700	921	ND (0.5)	ND (0.5)	297	425	70.3	23.9	2480	1.38
	04-Oct-06	7080	-11.3	-81.8	3210	786	ND (0.5)	0.737	268	341	65.4	21.1	2170	1.31
	12-Dec-06	6510	-10.5	-80.9	3190	789	ND (0.5)	0.742	288	298	62.9	18.9	2040	1.26
	05-Mar-07	6360 J	-11.5	-85.8	3300	783	ND (0.5)	0.72	205	315	68.3	19.4	2020	1.29
	30-Apr-07	6390	-11.5	-88.9	3320 J	889 J	ND (0.2)	ND (1.0)	245	282	57.0	18.6	2080	1.33
	03-Oct-07	5490	-11.3	-87.8	2630	696	ND (1.0)	ND (1.0)	240	220	53.0	21.0	2000	1.20
	13-Dec-07	5420	-10.9	-88.6	2380	698	ND (1.0)	ND (1.0)	264	193	49.1	25.4	1450	1.09
	12-Mar-08	5500	-11.4	-87.3	2510	739	ND (1.0)	ND (1.0)	238	237	52.6	19.2	2030	1.14
	06-May-08	5820	-11.4	-87.3	2460	753	ND (0.2)	0.525	216	230	49.0	30.0	1600	1.20
	07-Oct-08	5300	-11.8	-87.6	2400	720	ND (2.0)	ND (2.0)	250	223	46.3	22.0	1220	0.765
	10-Dec-08	5300	-11	-93.1	2190	698	ND (1.0)	ND (1.0)	253	147	45.2	20.6	3880	1.11
	10-Mar-09	5100	-10.9	-84.8	2300	700 J	ND (2.5)	ND (2.5)	240	219	46.3	22.2	1480	1.08
	30-Apr-09	5830	-11.5	-85.8	2340	768	ND (1.0)	ND (1.0)	237	219	50.0	24.6	1510	1.11
	30-Sep-09	4000	-10.8	-88.9	2300	710	ND (1.0)	ND (1.0)	230	240	46.0	22.0	1500	0.98
	10-Mar-10	4900	-12.1	-91.6	2100	660	ND (1.0)	ND (1.0)	240	220 J	41.0	28.0	1400 J	0.93
	07-Dec-10	4600	-11.1	-87.3	2300	700	ND (1.0)	ND (1.0)	220	240	47.0	24.0	1300	1.00
	06-Dec-11	3900	-11.1	-88.1	1900	640	ND (1.0)	ND (1.0)	230	220	43.0	16.0	1300	1.10
	12-Dec-12	4300	-11.2	-90.2	1800	630	ND (0.01) *	ND (1.0)	250	220	51.0	17.0	1300	1.00
	12-Dec-12 FD	---	-11.1	-89.3	1800	630	ND (0.01) *	---	250	210	48.0	---	1300	---
MW-34-100	14-Mar-05	10800	---	---	5010	1210	ND (1.0)	---	175	221	17.4	34.1	3600	---
	21-Jun-05	11300	-9.7	-75.0	5350	1270	1.05	ND (0.5)	179	229	17.4	27.1	3510	2.22
	21-Jun-05 FD	10900 J	-9.5	-77.0	4920	1180	1.03	ND (0.5)	179	243	18.2	32.1	3740	2.36

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										Calcium	Magnesium	Potassium	Sodium	Boron
Monitoring Wells														
MW-34-100	05-Oct-05	10400	-9.9	-83.0	4530	1150	1.20	ND (0.5)	172	171	13.8	55.2	2450	2.57
	05-Oct-05 FD	10400	-9.9	-83.0	4680	1200	1.21	ND (0.5)	172	228	14.1	50.9	2730	2.57
	14-Dec-05	---	---	---	---	---	---	---	---	226	14.9	62.9	2530	2.32
	14-Dec-05 FD	---	---	---	---	---	---	---	---	220	15.1	64.2	2530	2.40
	08-Mar-06	10000	-11.4	-75.5 J	4720	1180	1.39	---	152	179	12.1	32.5	3580	2.41
	08-Mar-06 FD	10100	-10.1	-102 J	4920	1220	1.39	---	159	182	11.9	36.5	3530	2.46
	30-Apr-07	10600	-10.9	-80.7	5920	1040	1.38	---	123	186	12.0	31.5	3840	2.39
	30-Apr-07 FD	11900	-11.2	-82.1	5880	1050	1.37	---	123	189	12.0	32.1	3920	2.40
	03-Oct-07	10700	-10.2	-78.2	5350	970	1.19	ND (1.0)	120	170	11.0	44.0	4300	2.50
	03-Oct-07 FD	10500	-10.6	-78.4	5360	953	1.03	ND (1.0)	120	160	10.0	43.0	4300	2.40
	07-Oct-08	11000	-10.9	-80.8	5400	1200	ND (2.5)	ND (2.5)	140	158	10.6	54.5	2970 J	2.35
	07-Oct-08 FD	11000	-11	-81.3	5600	1200	ND (2.5)	ND (2.5)	140	184	11.5	56.7	3880 J	2.59
	30-Sep-09	---	---	---	5500	1300	ND (5.0)	---	170	200	11.0	73.0	3800	2.30
	08-Dec-10	10000	-9.8	-79.5	5800	1300	ND (2.5)	ND (2.5)	140 J	190	9.60	52.0 J	4100	2.60
	08-Dec-10 FD	9900	-10	-80.4	5700	1200	ND (1.0)	ND (1.0)	89.0 J	180	9.80	60.0 J	4000	2.50
	06-Dec-11	10000	-10.1	-79.2	5700	1300	ND (2.5)	ND (2.5)	120	170	7.60	43.0	4000	2.70
	06-Dec-11 FD	9400	-10	-79.5	5600	1200	ND (2.5)	ND (2.5)	120	160	7.40	43.0 J	3900	2.70
	26-Nov-12	11000	-10.1	-80.5	5900	1200	0.444 *	ND (2.5)	120	150	8.60	47.0	3100	2.60
	26-Nov-12 FD	11000	-10.2	-80.9	5900	1200	0.421 *	ND (2.5)	130	150	8.20	47.0	3200	2.60
Surface Water Stations														
R-27	07-Mar-05	669	-12.3	-102.0	92.7	244	ND (0.5)	ND (0.5)	136	82.8	31.3	4.72	108	ND (0.2)
	14-Jun-05	686	-11.4	-92.0	90.9	266	ND (0.5)	ND (0.5)	127	81.9	29.8	6.04	98.9	ND (0.2)
	05-Oct-05	678	-11.6	-94.0	85.1	255	ND (0.5)	ND (0.5)	130	101	36.2	6.56	91.2	ND (0.2)
	16-Dec-05	718	-11.7	-87.0	87.9	253	ND (0.5)	ND (0.5)	126	85.5	29.5	5.99	75.6	ND (0.2)
	06-Mar-06	656	-11.8	-92.1	90.6	268	ND (0.5)	ND (0.5)	144	83.5	29.4	5.44 J	101	ND (0.2)

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										Calcium	Magnesium	Potassium	Sodium	Boron
Surface Water Stations														
R-27	03-May-06	567	-12.8	-93.9	93.1	267	ND (0.5)	ND (0.5)	139	87.0	31.1	3.12 J	106	ND (0.2)
	04-Oct-06	752 J	-12.2	-94.9	91.5	261	ND (0.5)	ND (0.5)	128	82.9	31.5	6.24 J	98.1	ND (0.2)
	20-Dec-06	680	-12.7	-98.1	94.5	266	ND (0.5)	ND (0.5)	138	83.2	30.9	3.64	106	ND (0.2)
	13-Mar-07	750 J	-13	-99.5	96.5	267	0.537	ND (0.5)	130	86.9	31.3	4.73	106	ND (0.2)
	08-May-07	715 J	-12.9	-104.0	92.6	269	ND (0.5)	ND (0.5)	143	84.3	29.8	5.55	100	ND (0.2)
	11-Sep-07	650	-12.5	-101.0	89.4	253	0.336	ND (0.2)	132	74.2	28.9	5.47	86.5	ND (0.2)
	05-Dec-07	---	-11.7	-99.0	94.7	256	ND (1.0)	ND (0.2)	137	89.8	31.7	6.60	93.4	0.157
	02-Apr-08	---	---	---	93.0	267	ND (1.0)	ND (1.0)	136	80.2	30.7	5.50	106	0.432
	17-Jun-08	682	-13	-101.0	91.6	254	ND (1.0)	ND (1.0)	134	76.2	31.8	6.69	89.7	ND (0.2)
R-28	08-Mar-05	651	-12.5	-102.0	90.4	231	ND (13)	ND (0.5)	132	83.7	31.4	5.02	107	ND (0.2)
	14-Jun-05	680	-11.6	-95.0	91.2	268	ND (0.5)	ND (0.5)	127	78.5	28.5	5.08	94.5	ND (0.2)
	05-Oct-05	672	-11.6	-94.0	85.5	255	ND (0.5)	ND (0.5)	122	85.7	30.4	6.30	77.0	ND (0.2)
	16-Dec-05	710	-11.5	-83.0	88.1	254	ND (0.5)	ND (0.5)	126	87.2	29.8	6.11	76.8	ND (0.2)
	06-Mar-06	675	-12.3	-93.4	91.0	270	ND (0.5)	ND (0.5)	146	76.6	26.6	5.22 J	91.5	ND (0.2)
	03-May-06	586	-13	-92.1	93.4	270	ND (0.5)	ND (0.5)	136	88.1	31.4	4.04 J	107	ND (0.2)
	04-Oct-06	644 J	-12.6	-95.3	90.9	259	ND (0.5)	ND (0.5)	133	84.2	32.1	6.17 J	96.5	ND (0.2)
	20-Dec-06	615	-12.4	-99.6	93.3	262	ND (0.5)	ND (0.5)	143	85.7	32.0	4.66	108	ND (0.2)
	14-Mar-07	710	-12.8	-100.0	96.7	268	0.534	ND (0.5)	133	87.9	31.0	5.71	105	ND (0.2)
	09-May-07	690	-13	-102.0	95.8	271	ND (0.5)	ND (0.5)	143	86.1	30.5	5.92	103	ND (0.2)
	12-Sep-07	682	-12.4	-99.4	106	296	0.372	ND (0.2)	122	73.8	29.9	6.36	89.2	ND (0.2)
	06-Dec-07	---	-11.7	-98.6	96.5	258	0.345	ND (0.2)	139	75.7	30.4	6.62	79.4	ND (0.2)
	02-Apr-08	---	---	---	92.5	309	ND (1.0)	ND (1.0)	137	84.7	31.4	5.58	108	0.467
	18-Jun-08	672	-13.2	-102.0	89.4	248	ND (1.0)	ND (1.0)	132	43.3	31.1	6.95	93.9	ND (0.2)
	17-Sep-08	640	---	---	91.4	256	ND (0.5)	ND (0.5)	132	83.4	31.2	6.48	78.0	ND (0.2)
	04-Dec-08	649	-11.9	-97.0	97.4	260	ND (1.0)	ND (1.0)	135	81.7	30.0	5.95	114	0.262

Table D-1
Chemical Performance Monitoring Analytical Results, March 2005 through October 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location	Sample Date	Total Dissolved Solids (mg/L)	Oxygen-18 (0/00)	Deuterium (0/00)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Bromide (mg/L)	Alkalinity (total) (mg/L)	Dissolved Metals (mg/L)				
										Calcium	Magnesium	Potassium	Sodium	Boron
Surface Water Stations														
R-28	21-Jan-09	652	-12	-96.7	91.5	253	ND (0.5)	ND (0.5)	134	79.2	27.8	6.01	91.7	ND (0.2)
	09-Apr-09	643	-12.4	-97.8	92.7	250	ND (1.0)	ND (0.5)	138	79.6	28.8	5.44	97.0	ND (0.2)
	08-Jul-09	632	-12.8	-98.6	84.5	239	ND (0.5)	ND (0.5)	131	79.6	27.3	6.17	86.9	ND (0.2)
	09-Sep-09	640	-12.5	-99.1	86.0	236	ND (1.0)	ND (1.0)	131	74.8	26.2	6.01	78.7	ND (0.2)
	14-Dec-09	612	-13	-98.3	89.7	244	ND (1.0)	ND (1.0)	131	73.5	26.7	4.98	88.2	ND (0.2)
	21-Dec-10	602	-12.1	-102.0	91.0	223	ND (0.5)	ND (0.5)	133	69.1	24.8	4.75	87.8	ND (0.2)
	11-Jan-12	---	---	---	80.5	218	ND (0.5)	ND (0.5)	127	70.2	27.4	4.76	83.7	ND (0.2)
	01-Nov-12	499	-12.6	-102.0	75.4	212	ND (0.5)	ND (0.5)	132	71.3	27.5	4.12	79.3	ND (0.2)

Notes:

(---) = data not collected or available.
0/00 = differences from global standards in parts per thousand.
FD = field duplicate sample.
J = concentration or reporting limit estimated by laboratory or data validation.
mg/L = milligrams per liter.
ND =parameter not detected at the listed reporting limit.

Alkalinity (total) reported as calcium carbonate. Nitrate reported as nitrogen (N).

* Nitrate as nitrogen was not requested. Nitrate/nitrite as nitrogen is shown.

[a] Data collected February 2011 due to field logistical issues.

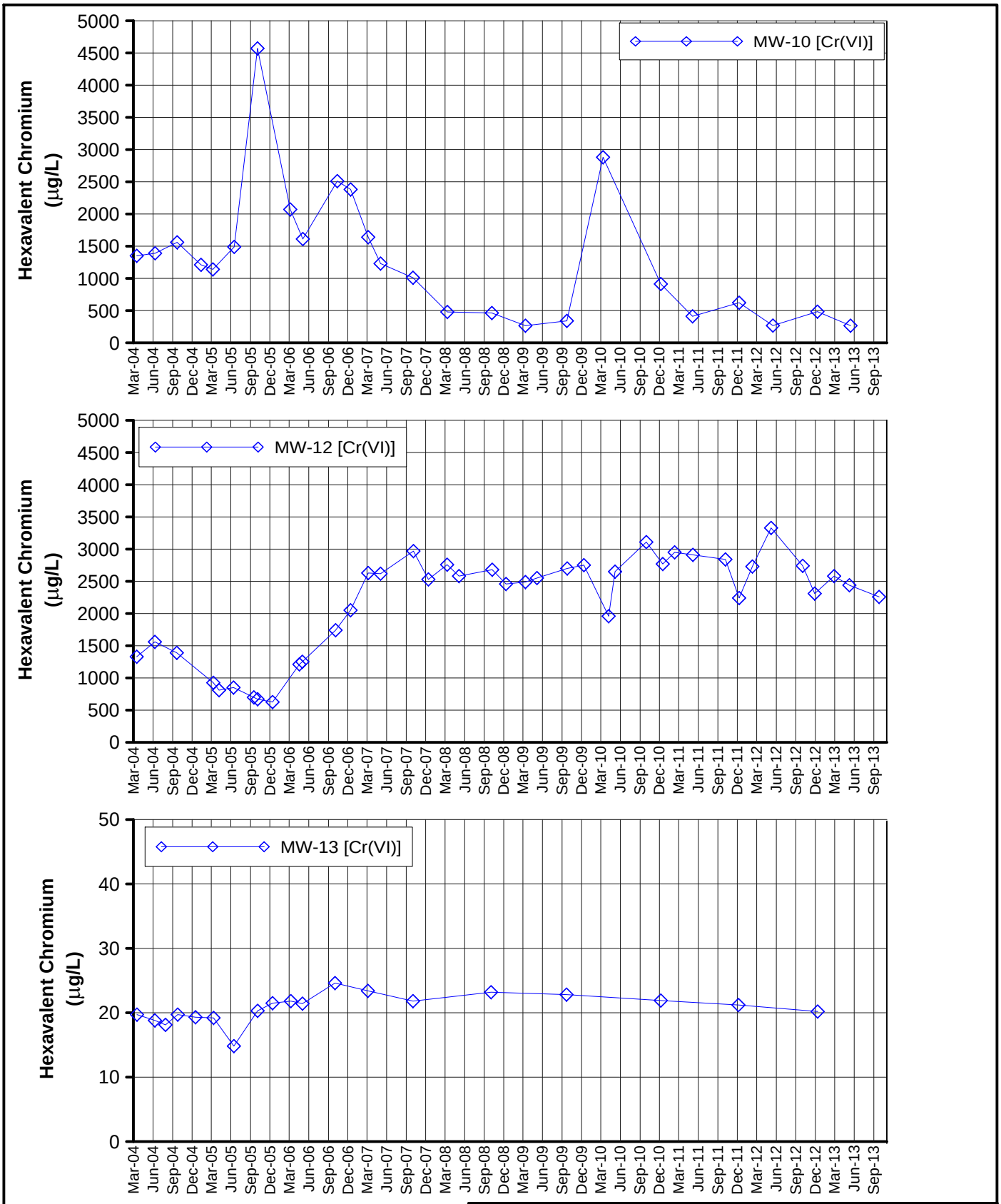
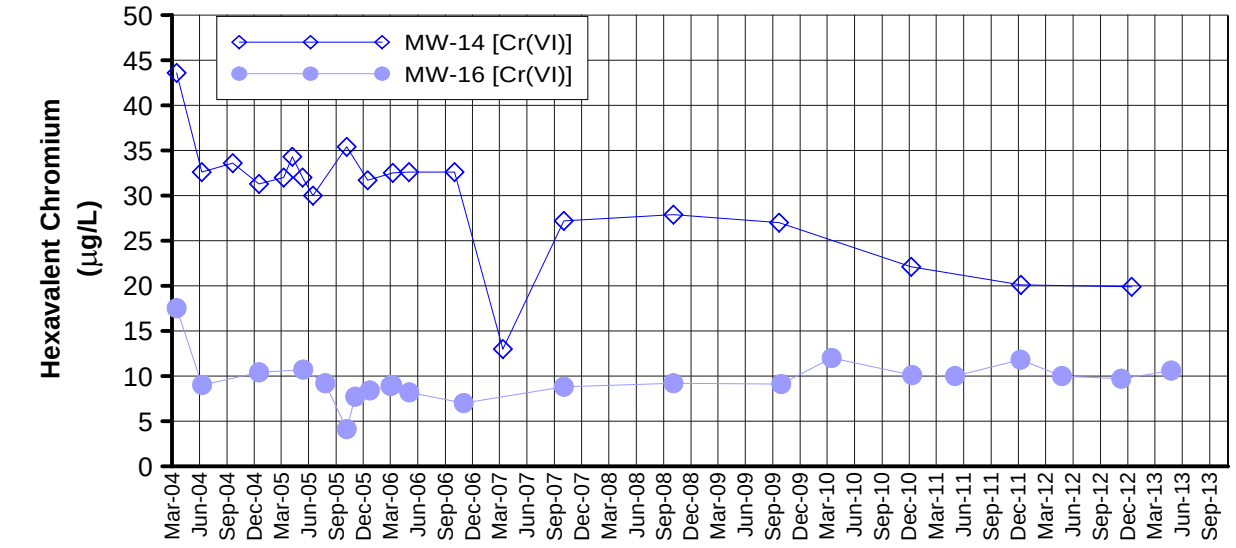
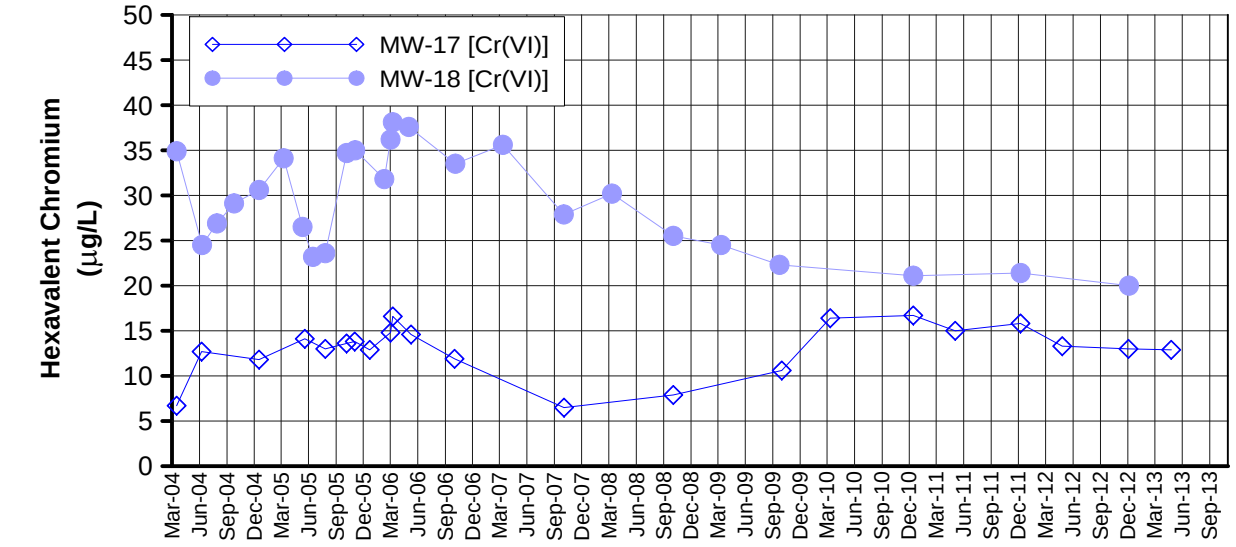


FIGURE D-1
HEXAVALENT CHROMIUM
IN MW-10, MW-12 AND MW-13
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL





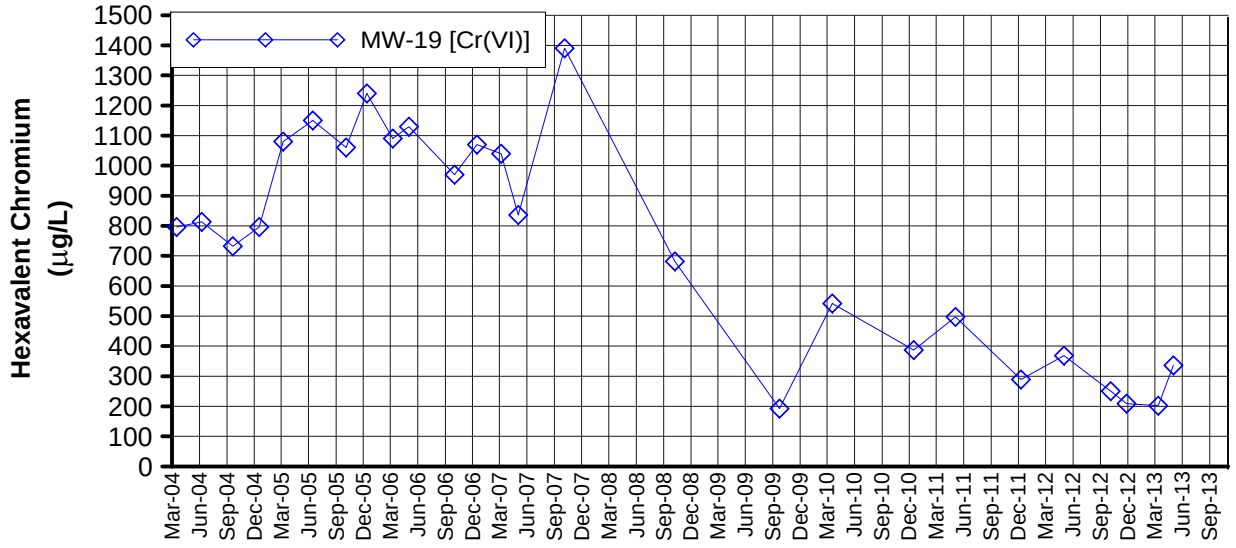


FIGURE D-2
HEXAVALENT CHROMIUM
IN MW-14, MW-16, MW-17, MW-18 AND MW-19
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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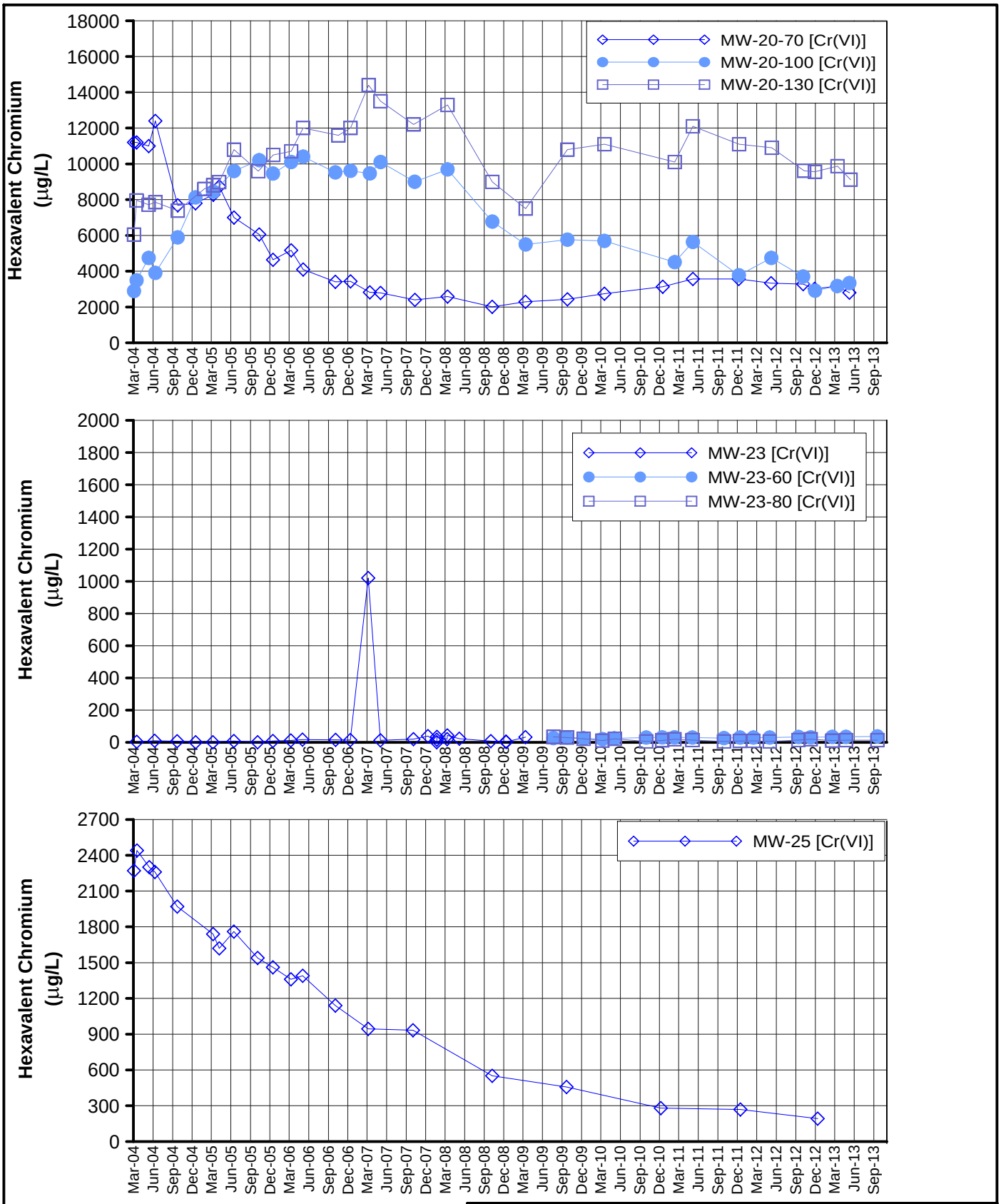
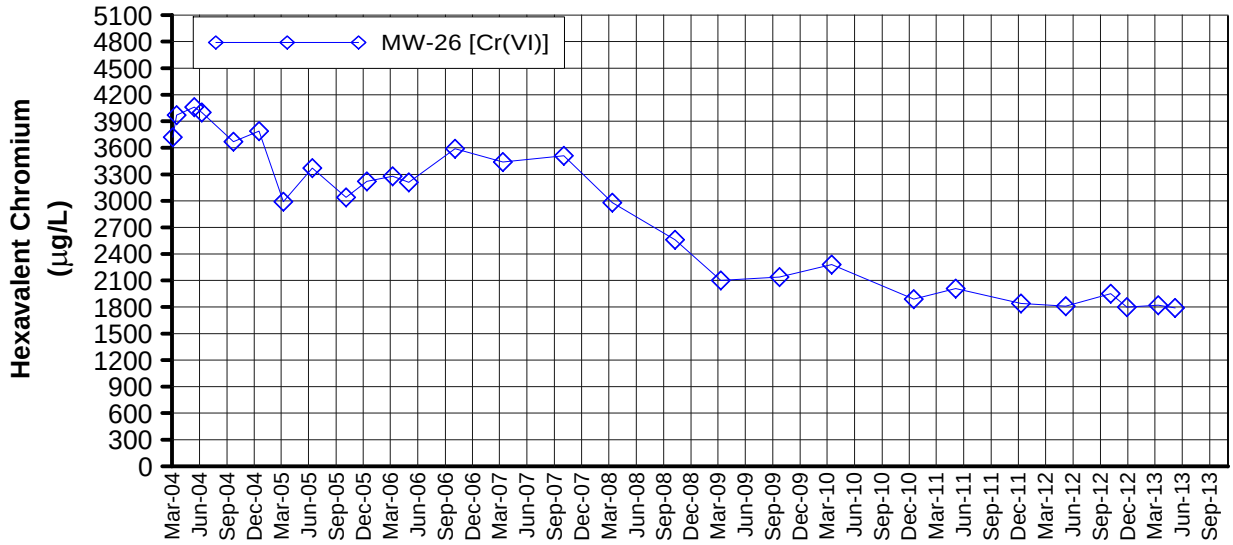
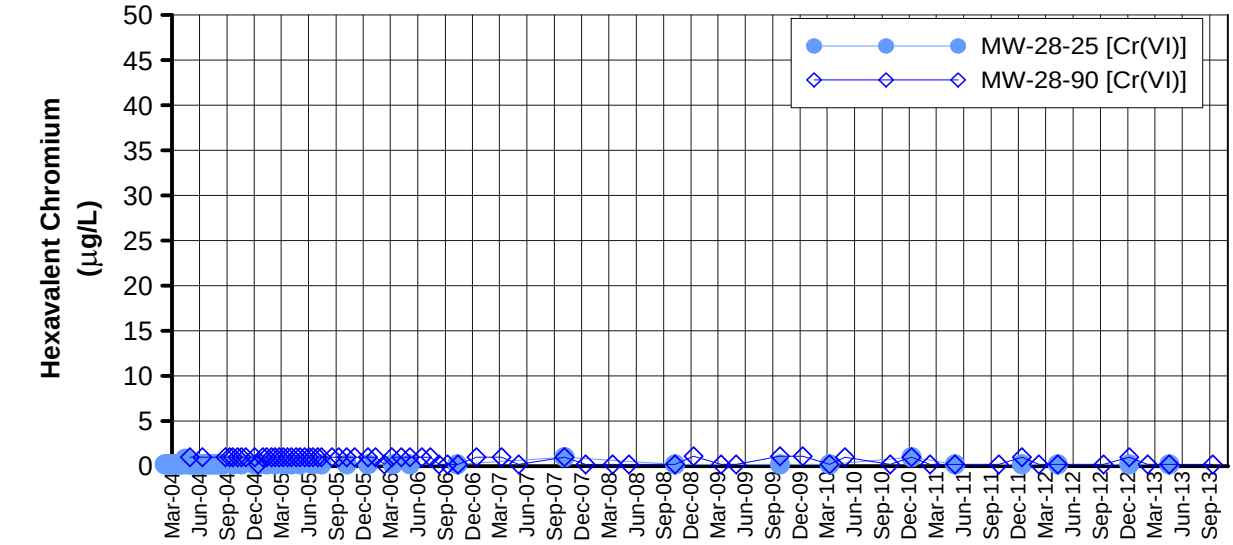


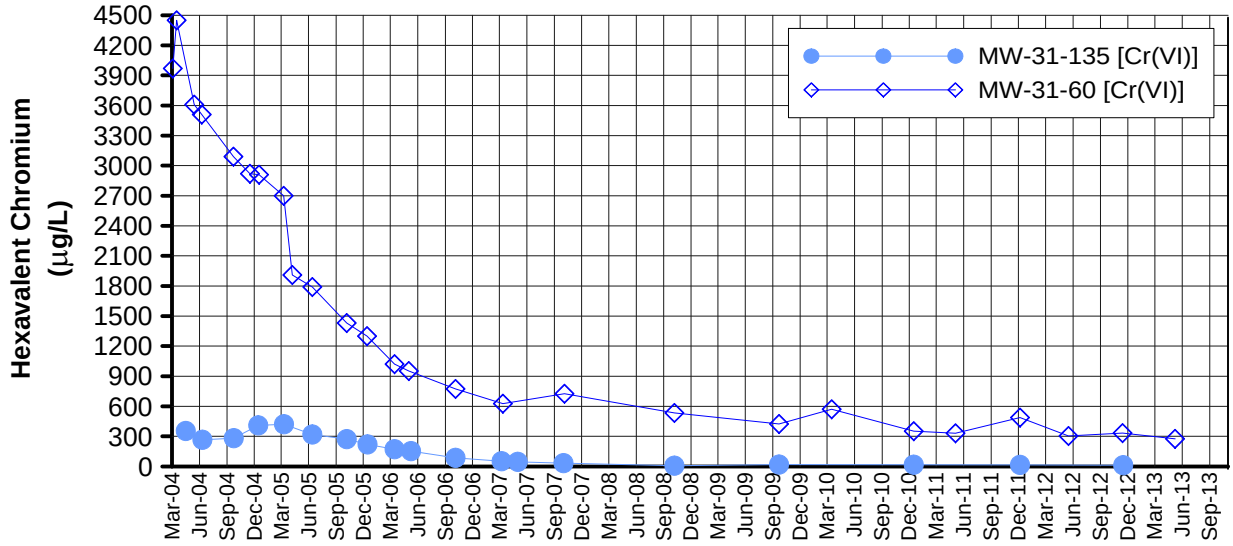
Notes:
1. Fourth Quarter 2010 data for MW-20-100 and MW-20-130 collected in February 2011 due to logistical issues.

FIGURE D-3
HEXAVALENT CHROMIUM
IN MW-20 CLUSTER, MW-23 CLUSTER AND MW-25
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL







Notes:

1. The IM Contingency Plan and hexavalent chromium [Cr(VI)] trigger levels were updated July 17, 2008 (DTSC, 2008b).
2. The trigger level for MW-28-90 is 20 µg/L.

FIGURE D-4
HEXAVALENT CHROMIUM
IN MW-26, MW-28 CLUSTER AND MW-31 CLUSTER
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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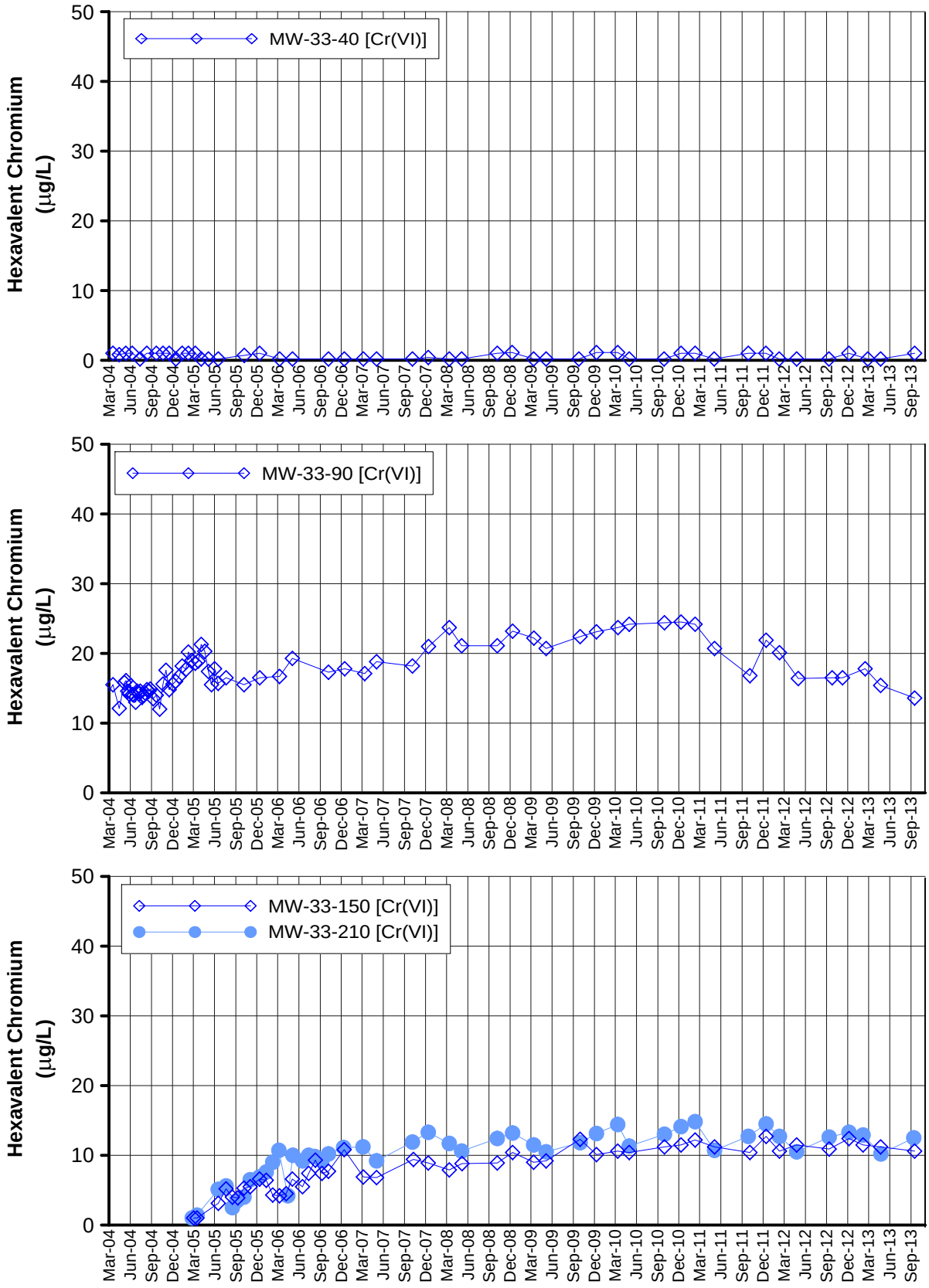

Notes:

1. The IM Contingency Plan and hexavalent chromium [Cr(VI)] trigger levels were updated July 17, 2008 (DTSC, 2008b).
2. The trigger level for MW-33-40 is 20 µg/L.
3. The trigger level for MW-33-90 is 25 µg/L.
4. The trigger level for MW-33-150 is 20 µg/L.
5. The trigger level for MW-33-210 is 20 µg/L.

FIGURE D-5
HEXAVALENT CHROMIUM
IN MW-33 CLUSTER
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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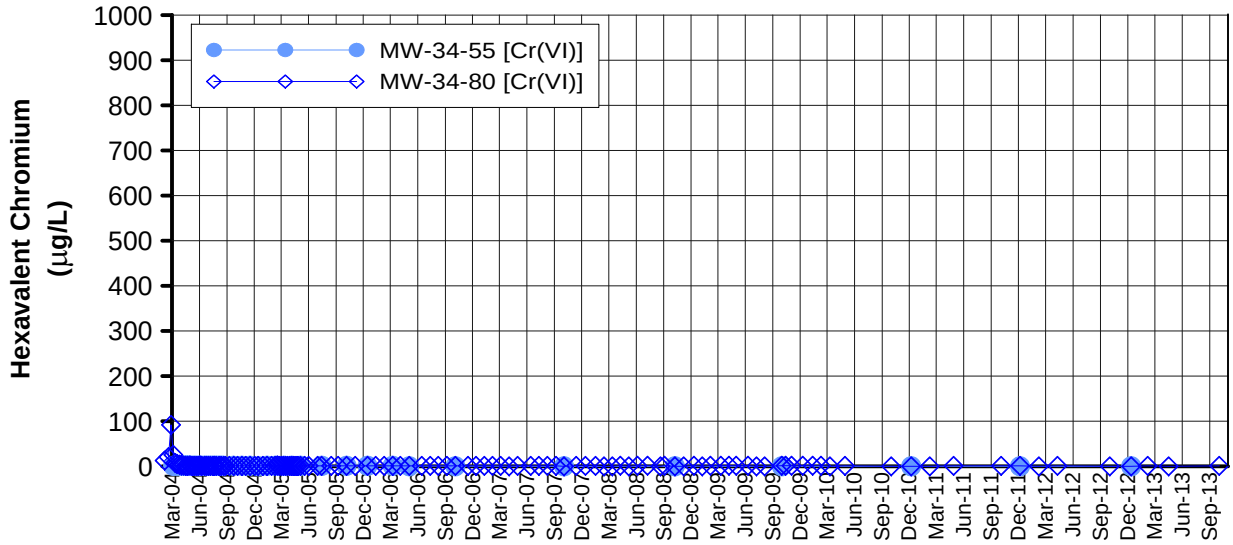

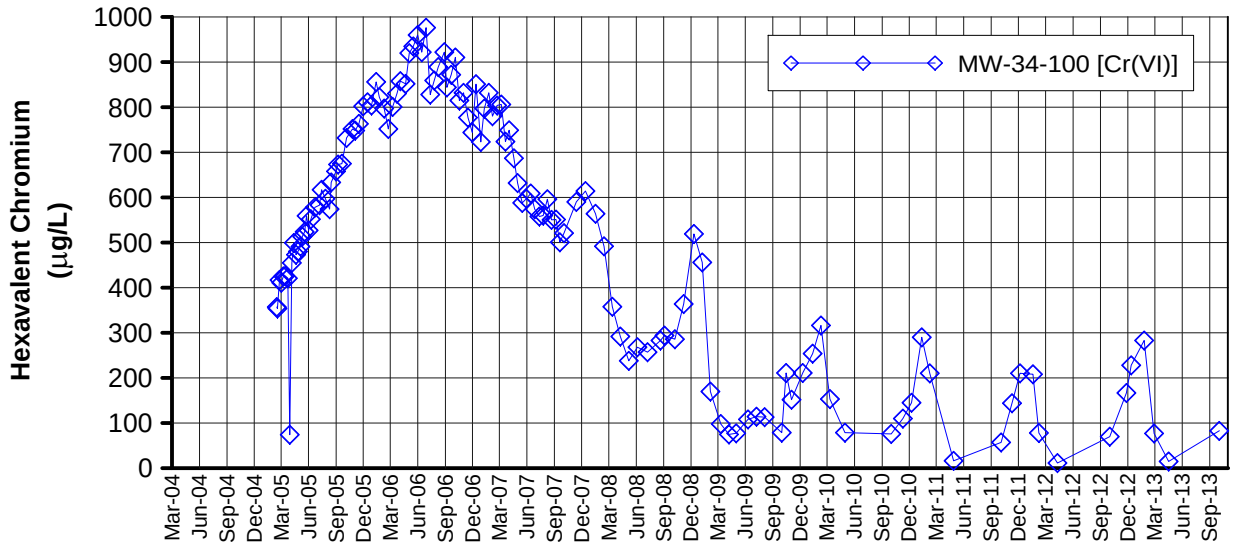

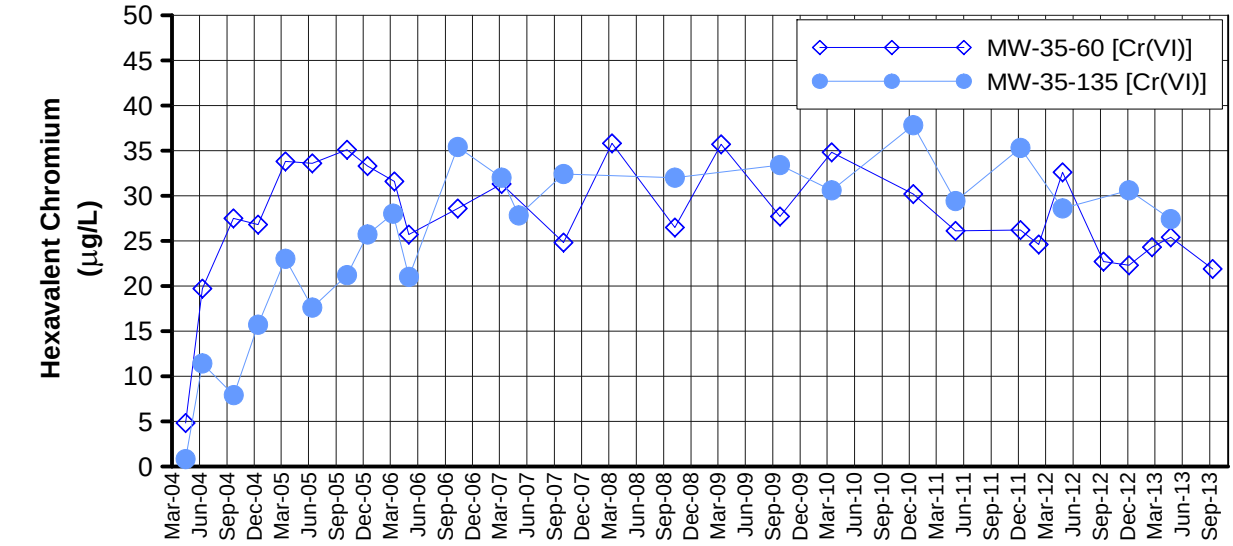

Notes:

1. The IM Contingency Plan and hexavalent chromium [Cr(VI)] trigger levels were updated July 17, 2008 (DTSC, 2008b).
2. The trigger level for MW-34-80 is 20 µg/L.
3. The trigger level for MW-34-100 is 750 µg/L.

FIGURE D-6
HEXAVALENT CHROMIUM
IN MW-34 AND MW-35 CLUSTERS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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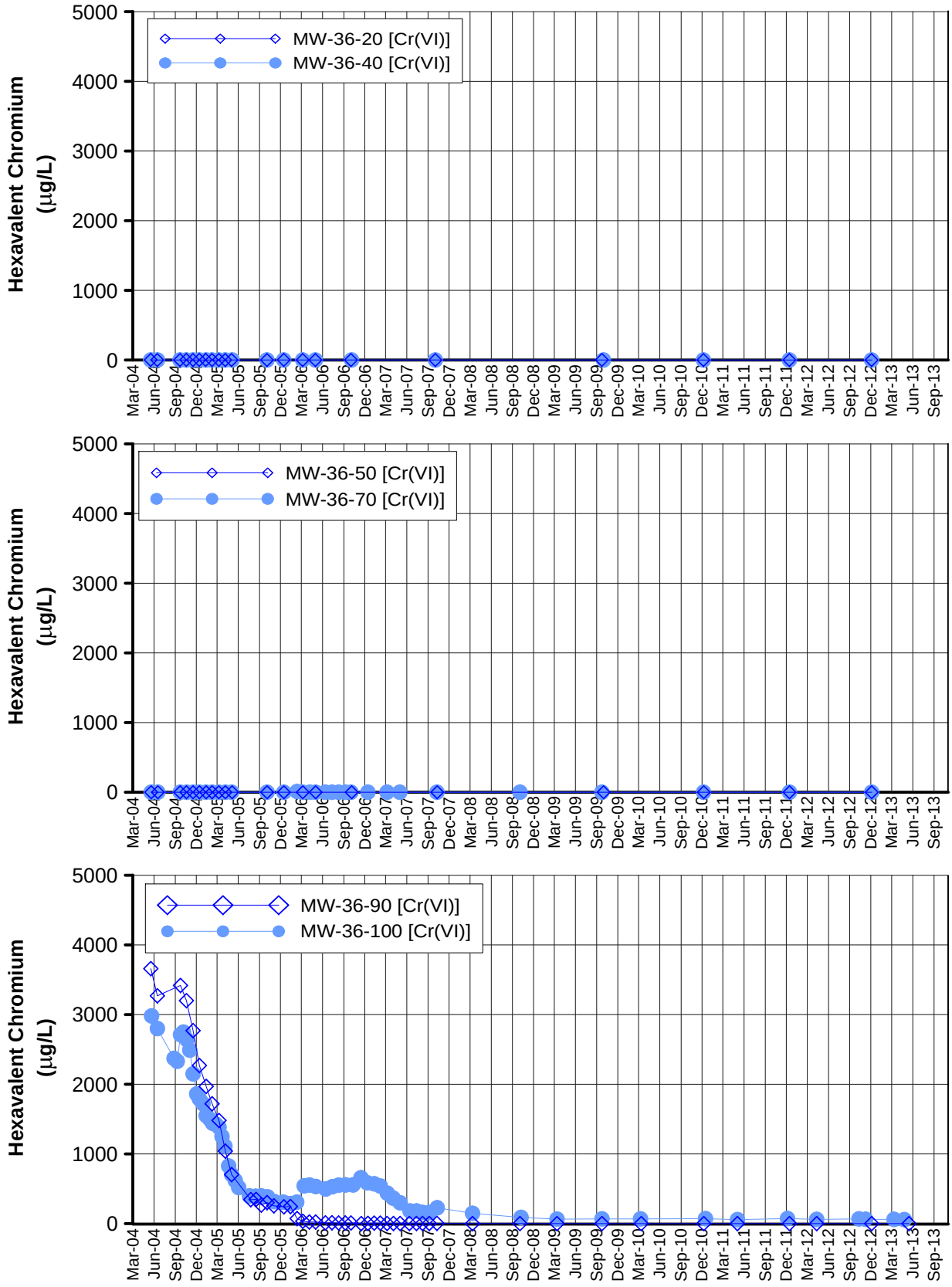
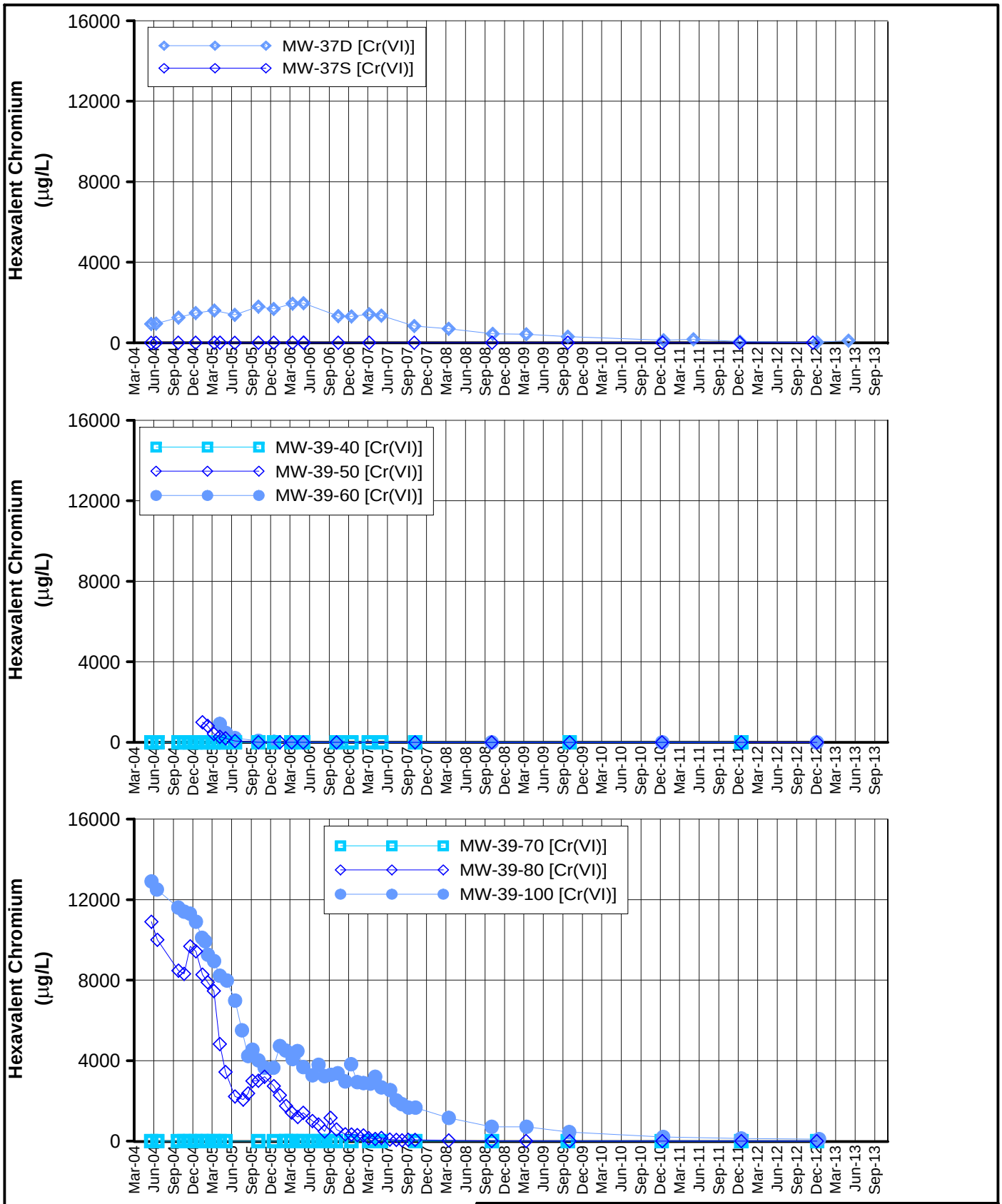


Notes:

1. The IM Contingency Plan and hexavalent chromium [Cr(VI)] trigger levels were updated July 17, 2008 (DTSC, 2008b).
2. The trigger level for MW-36-70 is 20 µg/L.

FIGURE D-7
HEXAVALENT CHROMIUM
IN MW-36 CLUSTER
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL



Notes:

1. The IM Contingency Plan and hexavalent chromium [Cr(VI)] trigger levels were updated July 17, 2008 (DTSC, 2008b).
2. The trigger level for MW-39-40 is 20 µg/L.

FIGURE D-8
HEXAVALENT CHROMIUM
IN MW-37 AND MW-39 CLUSTERS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

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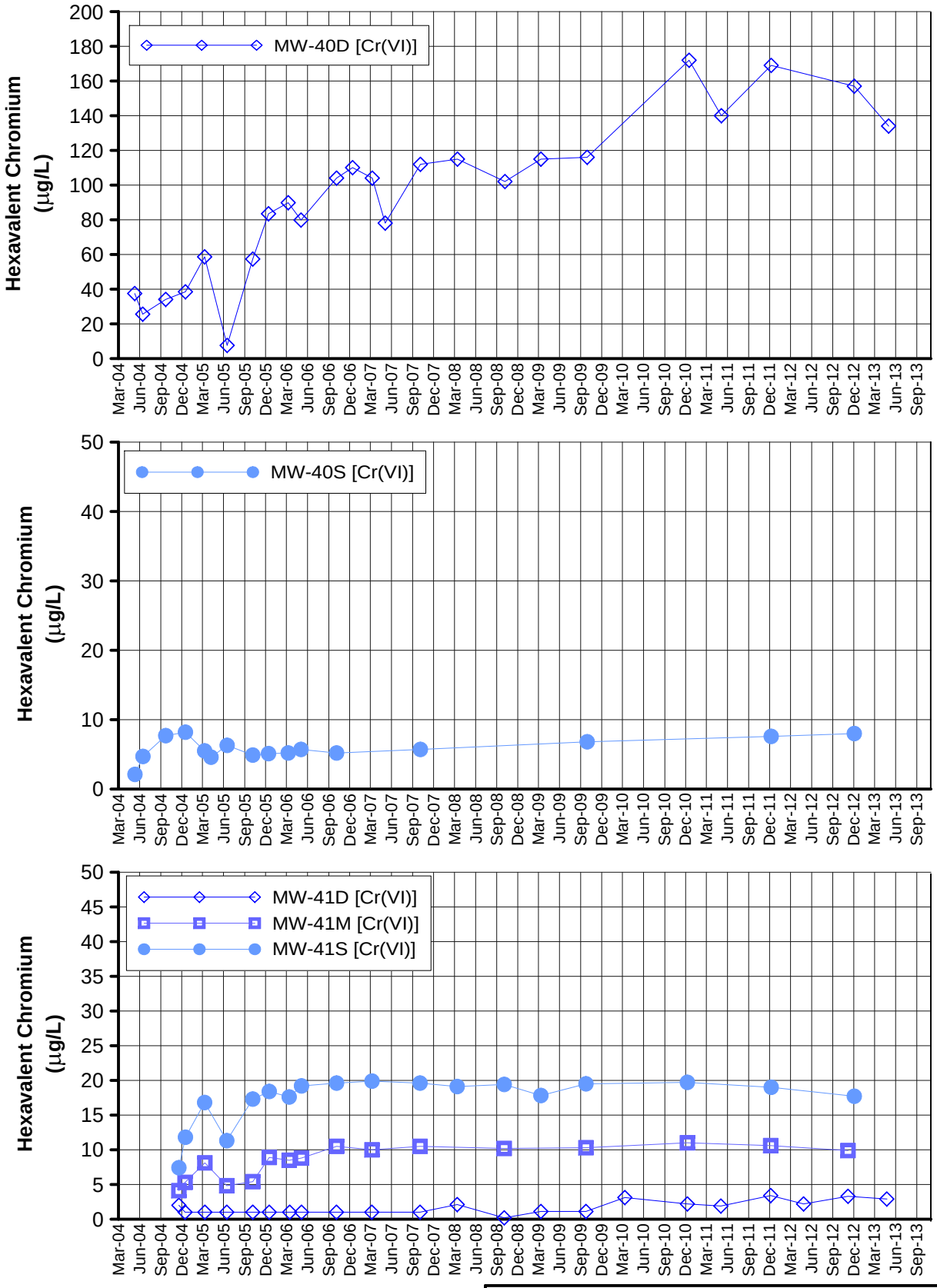

FIGURE D-9
HEXAVALENT CHROMIUM
IN MW-40 AND MW-41 CLUSTERS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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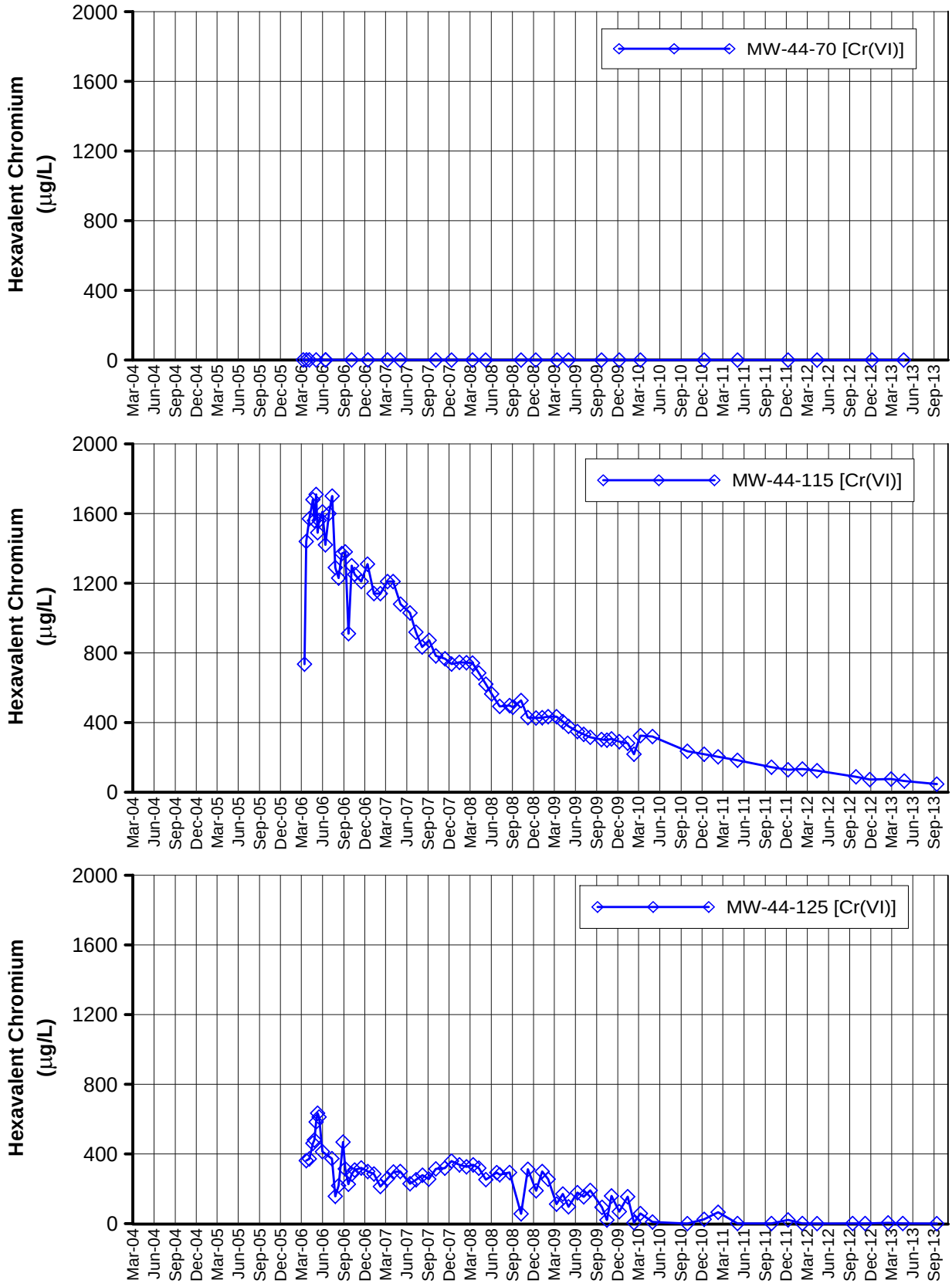

Notes:

1. The IM Contingency Plan and hexavalent chromium [Cr(VI)] trigger levels were updated July 17, 2008 (DTSC, 2008b).
2. The trigger level for MW-44-70 is 20 µg/L.
3. The trigger level for MW-44-115 is 1,200 µg/L.
4. The trigger level for MW-44-125 is 475 µg/L.

FIGURE D-10
HEXAVALENT CHROMIUM
IN MW-44 CLUSTER
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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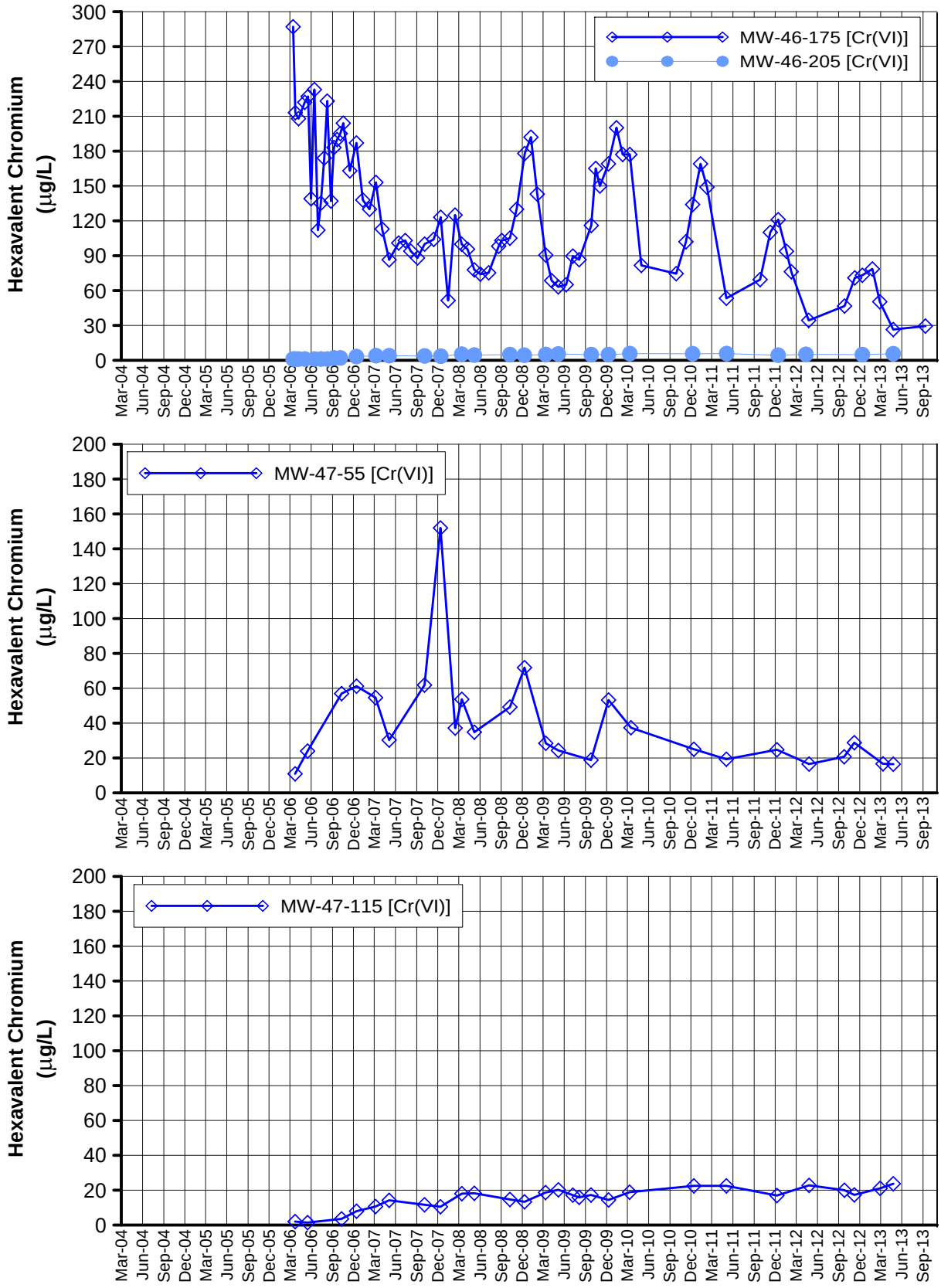

Notes:

1. The IM Contingency Plan and hexavalent chromium [Cr(VI)] trigger levels were updated July 17, 2008 (DTSC, 2008b).
2. The trigger level for MW-46-175 is 225 µg/L.
3. The trigger level for MW-46-205 is 20 µg/L.
4. The trigger level for MW-47-55 is 475 µg/L.
5. The trigger level for MW-47-115 is 31 µg/L.

FIGURE D-11
HEXAVALENT CHROMIUM
IN MW-46 AND MW-47 CLUSTERS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

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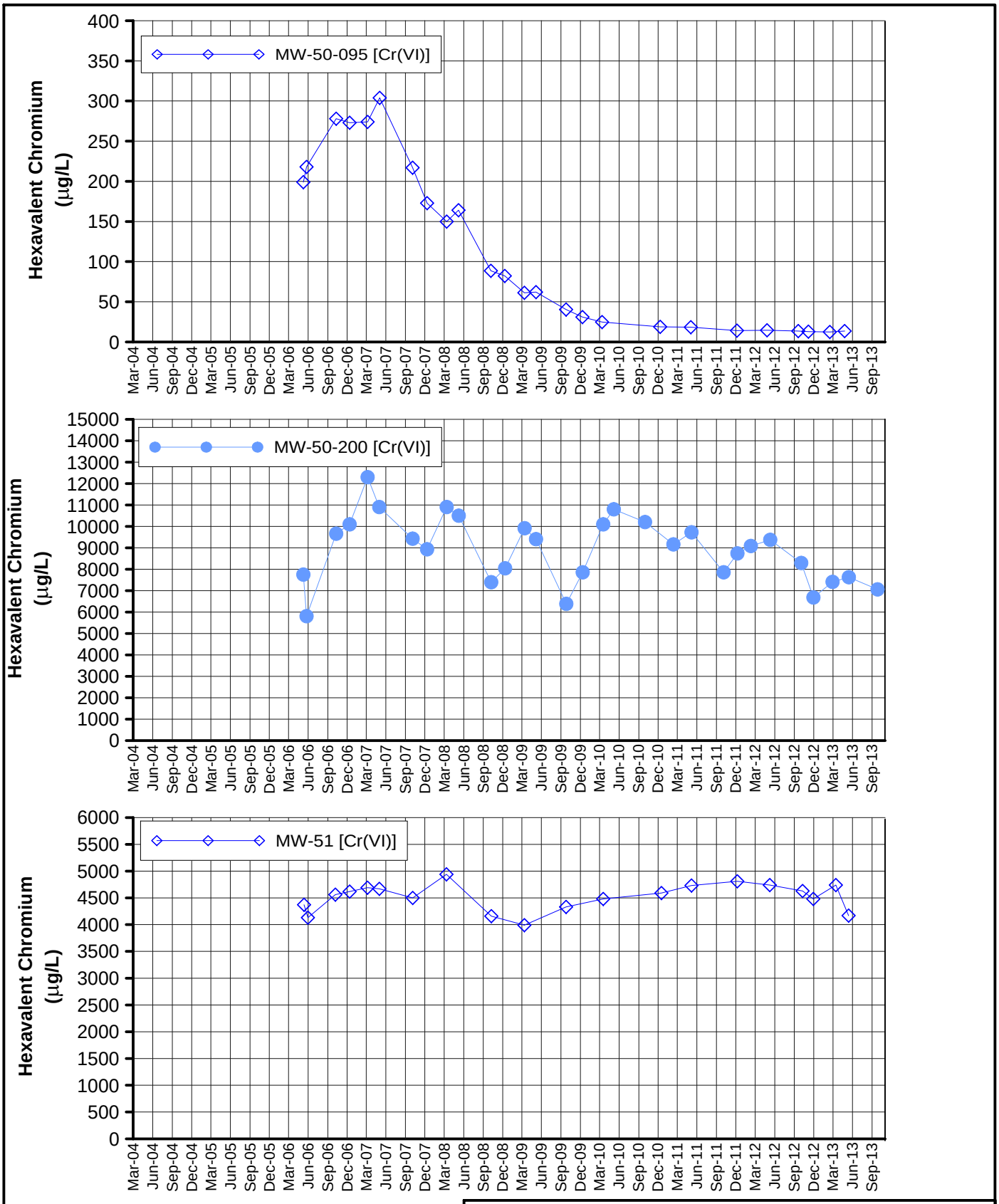

Notes:
1. Fourth Quarter 2010 data for MW-50-200 collected in February 2011 due to logistical issues.

FIGURE D-12
HEXAVALENT CHROMIUM
IN MW-50 CLUSTER AND MW-51
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

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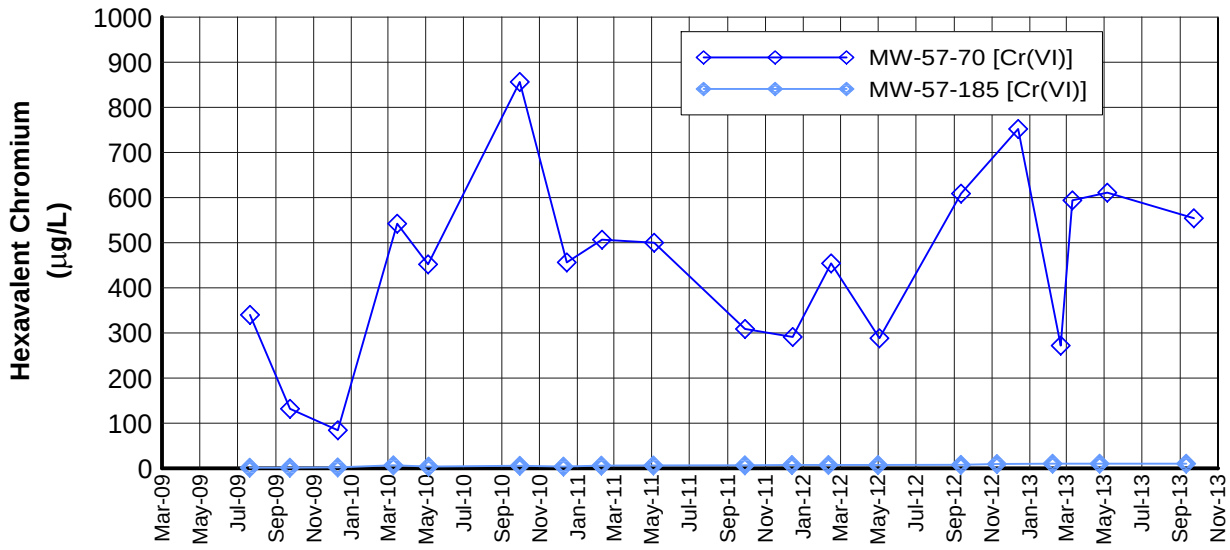
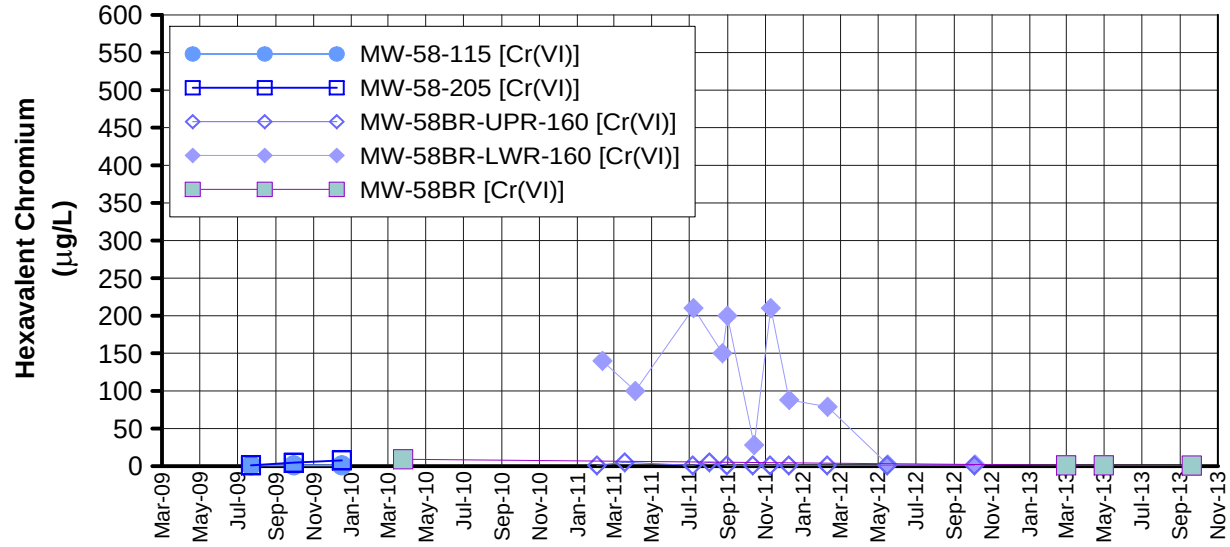
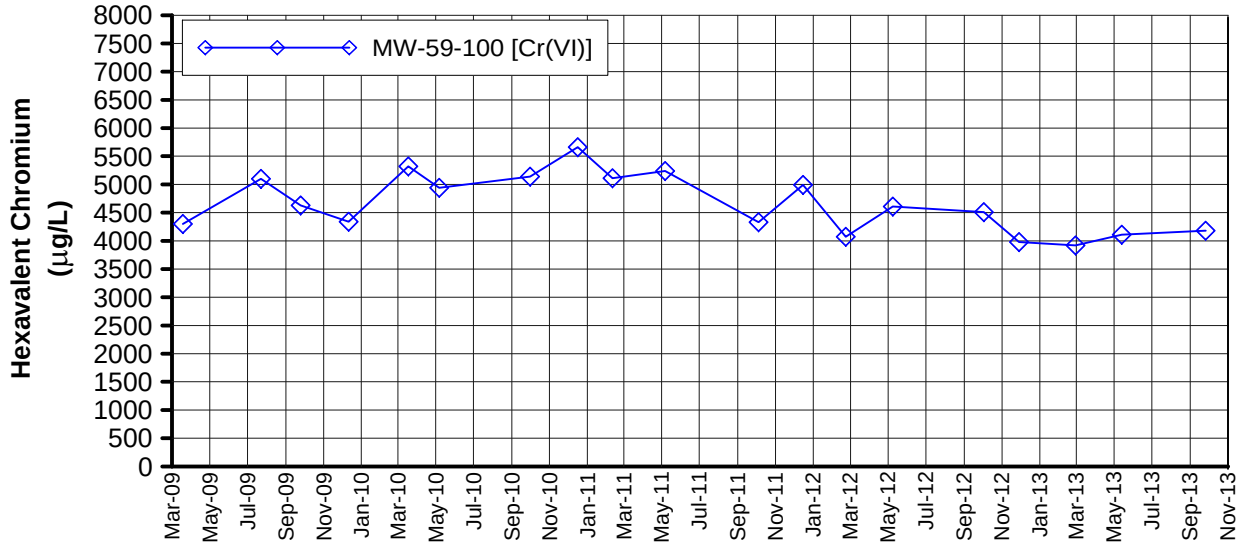


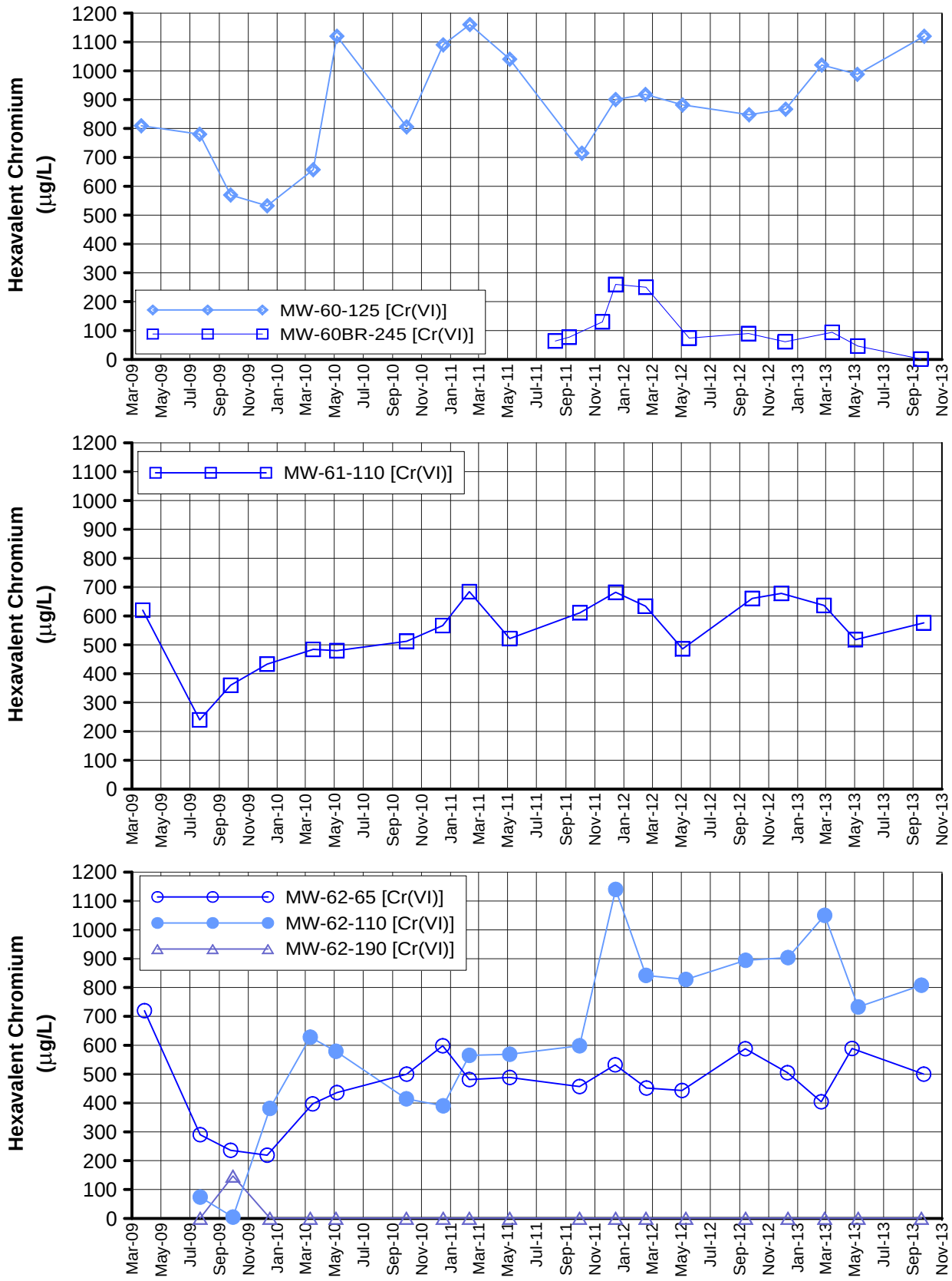




Note:

FIGURE D-13
HEXAVALENT CHROMIUM
IN MW-57 CLUSTER, MW-58 CLUSTER AND MW-59-100
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

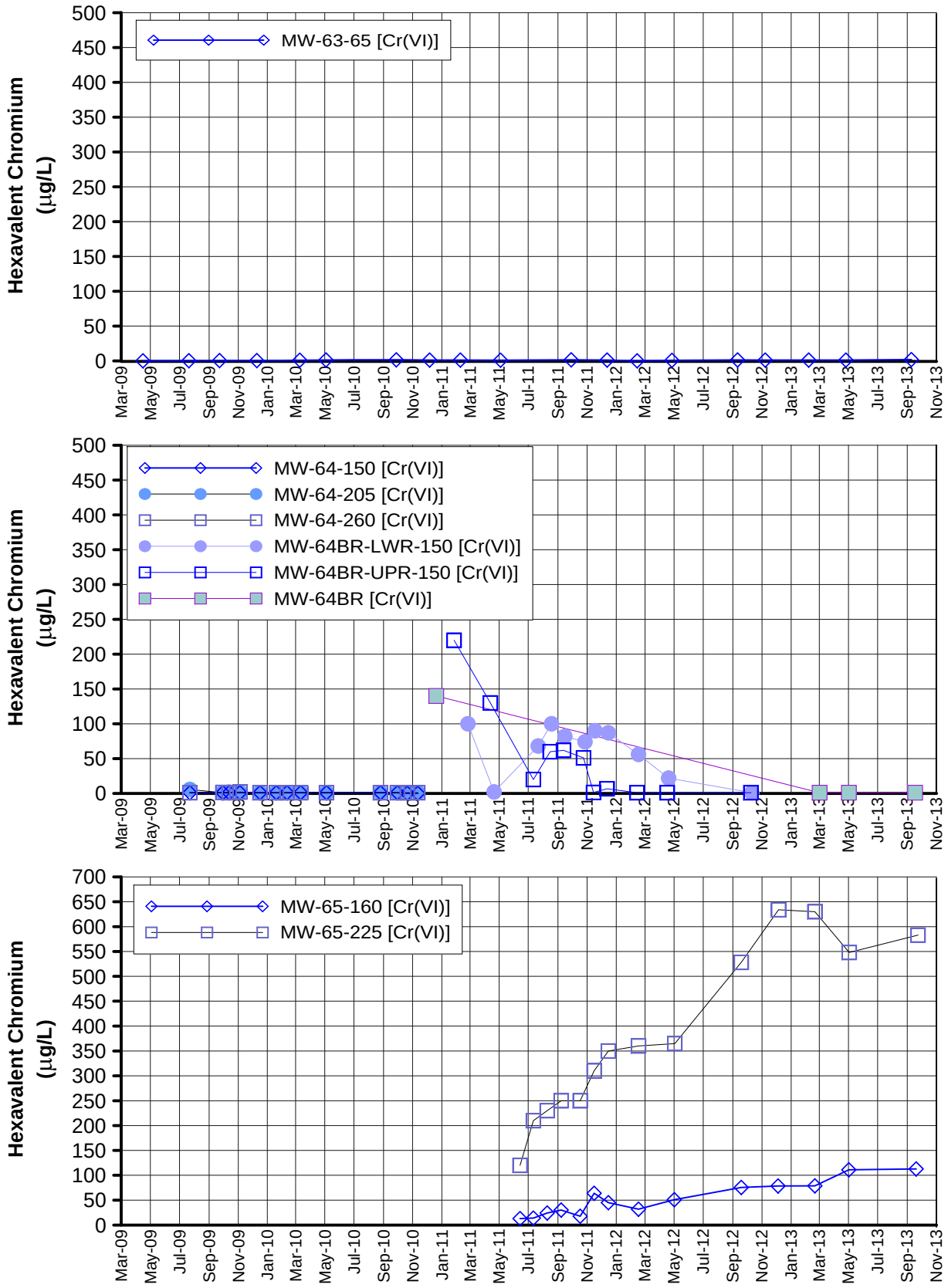
CH2MHILL



Note:

FIGURE D-14
HEXAVALENT CHROMIUM
IN MW-60 CLUSTER, MW-61-110 AND MW-62 CLUSTER
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE
MONITORING AND SITE-WIDE GROUNDWATER
AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

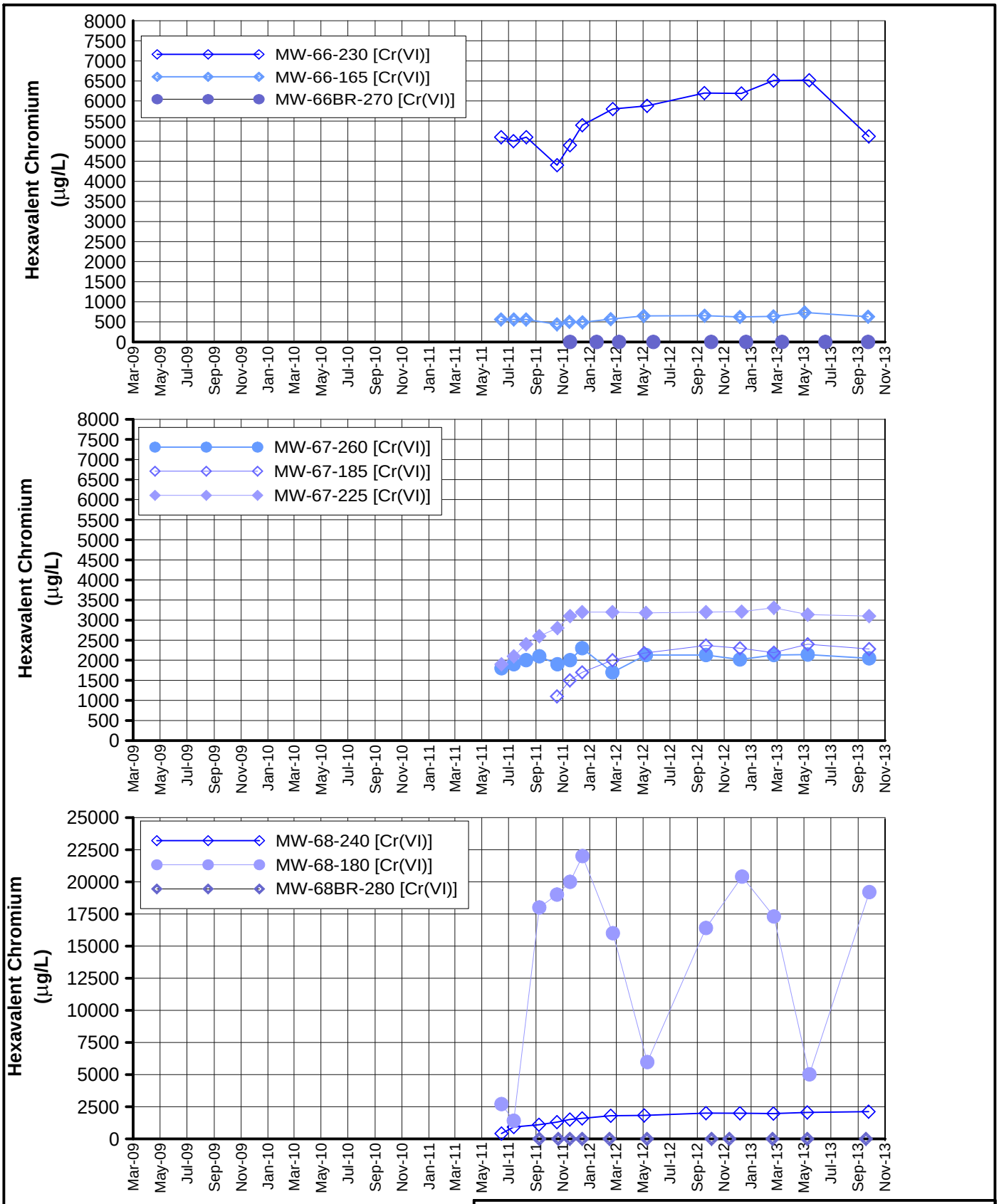
CH2MHILL



Note:

FIGURE D-15
HEXAVALENT CHROMIUM
IN MW-63-65, MW-64 CLUSTER AND MW-65 CLUSTER
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

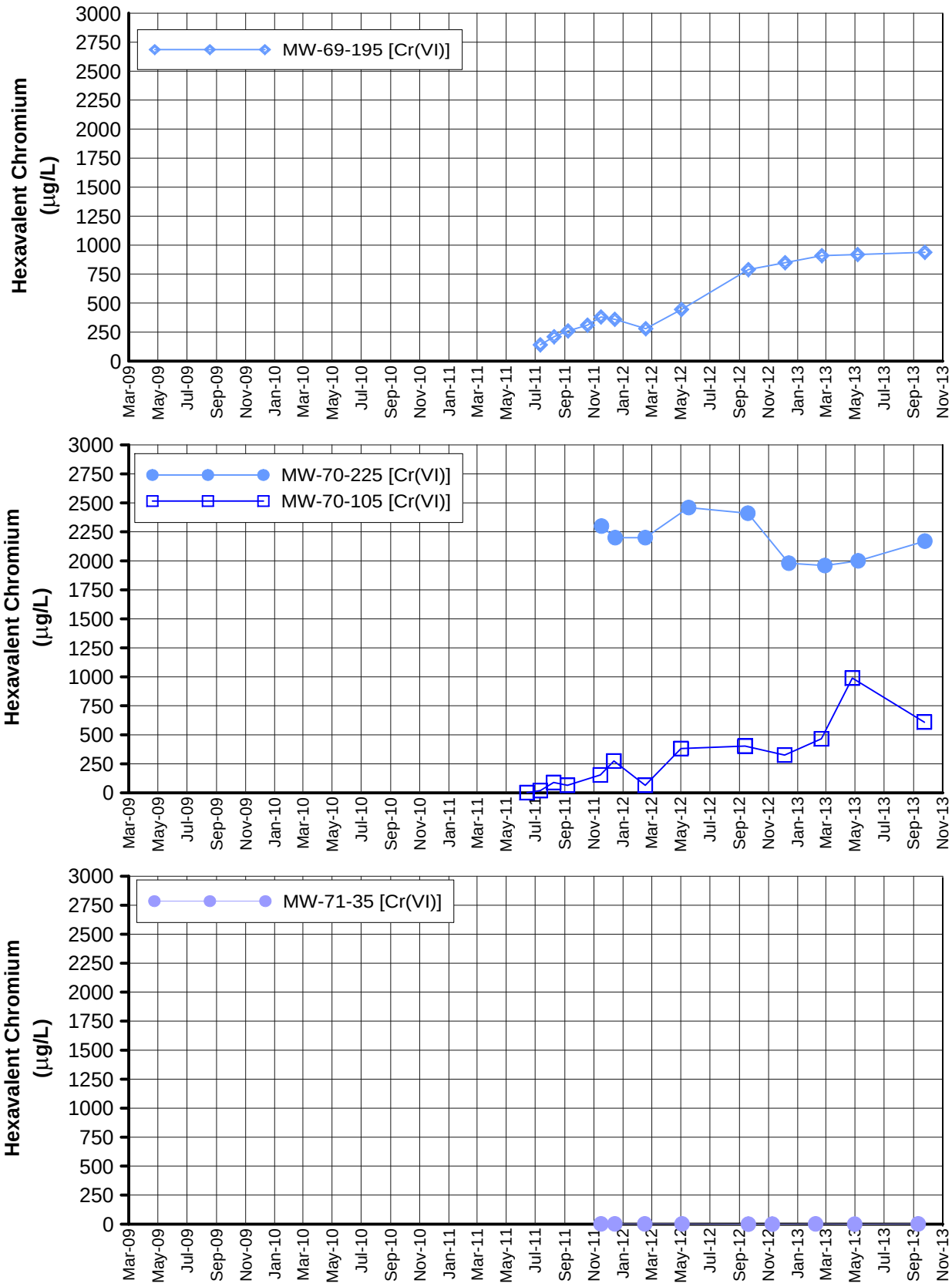
CH2MHILL



Note:

FIGURE D-16
HEXAVALENT CHROMIUM
IN MW-66, MW-67 AND MW-68 CLUSTERS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

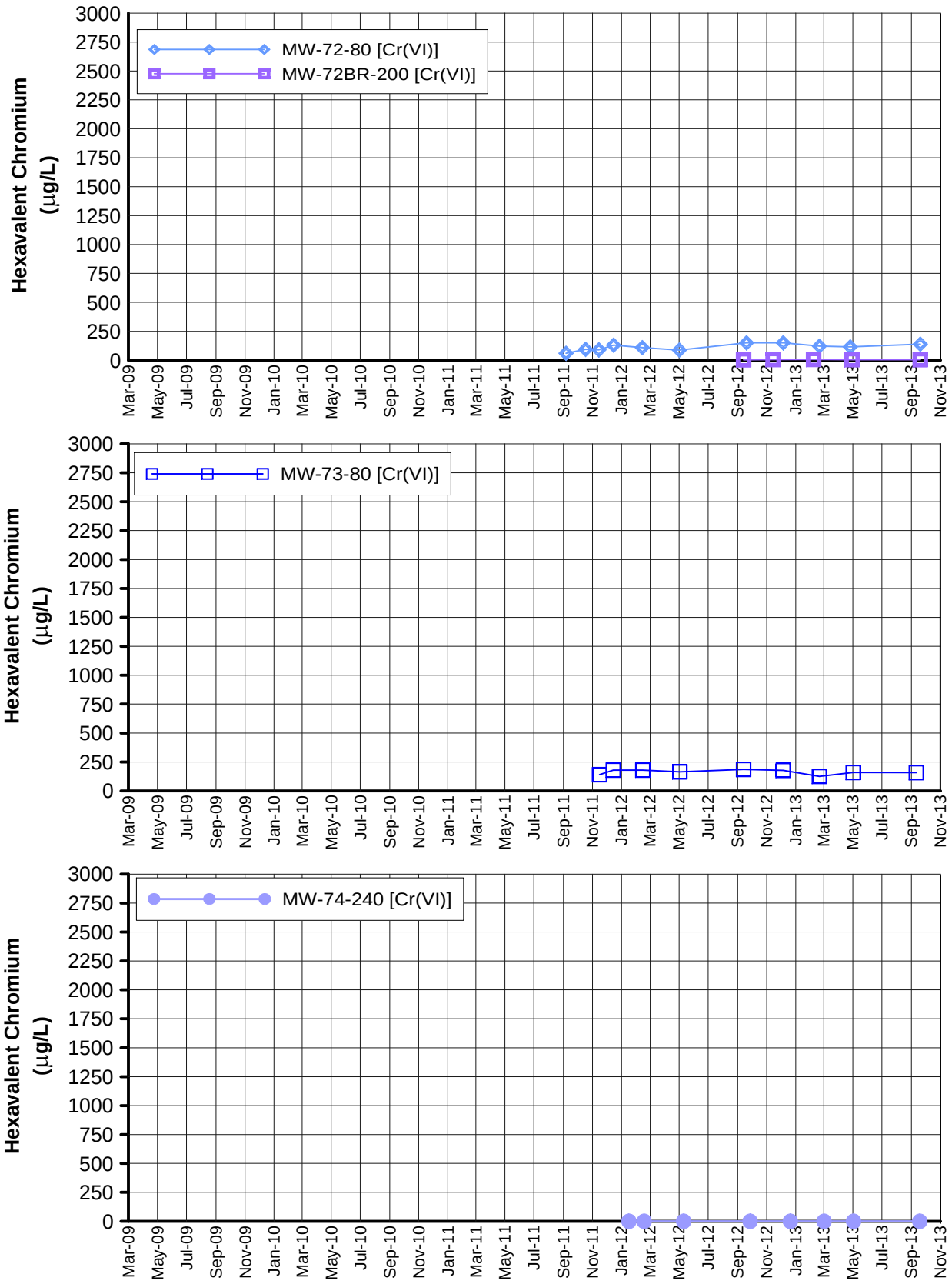
CH2MHILL



Note:

FIGURE D-17
HEXAVALENT CHROMIUM
IN MW-69-195, MW-70 CLUSTER AND MW-71-35
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL



Note:

FIGURE D-18
HEXAVALENT CHROMIUM
IN MW-72 CLUSTER, MW-73-80 AND MW-74-240
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

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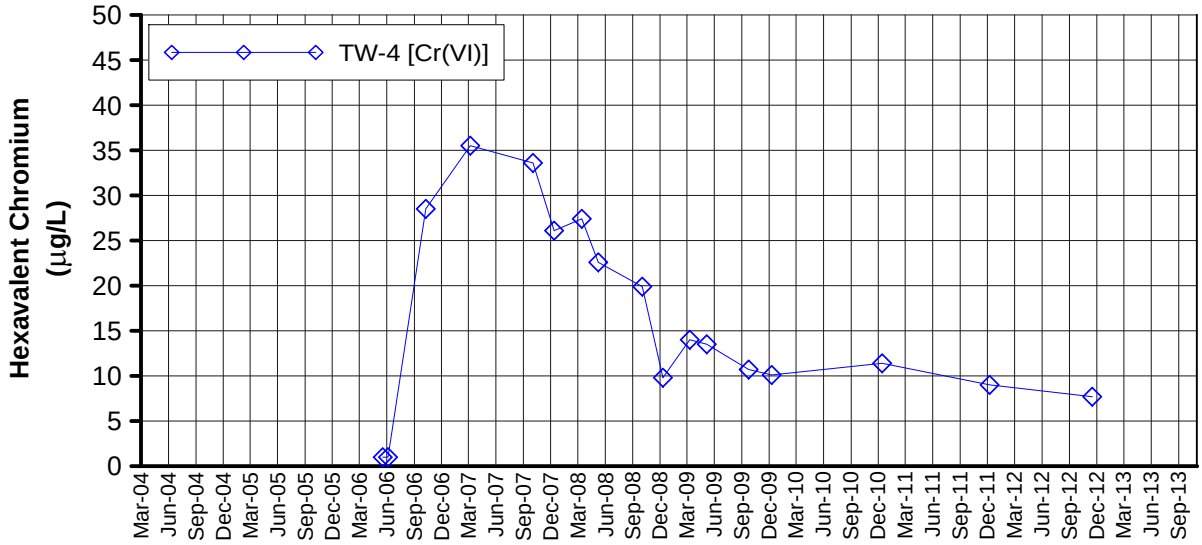

FIGURE D-19
HEXAVALENT CHROMIUM
IN TW-4
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

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Appendix E
Interim Measures Extraction System Operations Log, Third Quarter 2013

APPENDIX E

Interim Measures Extraction System Operations Log, Third Quarter 2013, PG&E Topock Performance Monitoring Program

During August 2013, a series of lightning strikes at the Interim Measures No. 3 (IM-3) treatment facility and to the City of Needles power system caused significant damage to electrical components at the treatment facility. On August 18, 2013, around 9:38 p.m., the lightning strikes caused the flow meters at TW-3D and PE-01 to fail. The extraction pumps continued to operate following the lightning strikes without operable flow meters because replacement flow meters were not readily available. Due to the meter failures, flow data from a flow meter for PE-01 were unavailable between August 18 and August 28, 2013, and flow data from a flow meter for TW-03D were unavailable from August 18 through September 4, 2013.

During Third Quarter 2013 (July through October), extraction wells TW-3D and PE-1 operated at a target pump rate of at 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during Third Quarter 2013. The operational recorded run time for the Interim Measure groundwater extraction system (combined or individual pumping) was approximately 95.0 percent during Third Quarter 2013.

Because the extraction wells' flow meters were not operable for the a portion of the months of August and September, the monthly extraction rate and volume was calculated by subtracting the average input flow from the Process Drain Tank (T-900) from the raw water storage tank (T-100) output flow. The input from the process drain tank and the extraction wells TW-3D and PE-01 are the only contributors into the raw water storage tank. This calculation process was used for the entire month of August due to the data loss that resulted from flow meter failures. However, this process was only used to calculate September extraction flow rate data from September 1 through September 4, 2013. The September calculation was combined with flow meter readings for the remainder of the month to estimate the total September extraction volume and rate. Using this information, the calculated extraction rate for wells TW-3D and PE-1 was 135 gpm, excluding periods of planned and unplanned downtime. The calculated volume of extracted groundwater treated by IM-3 facility during Third Quarter 2013 was approximately 22,788,145 gallons. The IM-3 facility also treated approximately 4,720 gallons of water generated from the groundwater monitoring program and 16,200 gallons of water from IM-3 well backwashing. Eight containers of solids from the IM-3 facility were transported offsite during the reporting period.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 5.0 percent of downtime during Third Quarter 2013) are summarized below. The times shown are in Pacific Standard Time to be consistent with other data collected (for example, water level data) at the site.

E.1 July 2013

- **July 1, 2013 (unplanned):** The extraction well system was offline from 12:18 a.m. to 12:52 a.m. due to a loss of power from the City of Needles power. Extraction system downtime was 34 minutes.
- **July 3, 2013 (planned):** The extraction well system was offline from 7:32 a.m. to 8:06 a.m. from 8:10 a.m. to 8:12 a.m., from 8:14 a.m. to 8:16 a.m., and from 8:20 a.m. to 8:22 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 40 minutes.
- **July 3, 2013 (planned):** The extraction well system was offline from 9:24 a.m. to 12:58 p.m. due to testing of the injection well injectivity. Extraction system downtime was 3 hours, 34 minutes.

- **July 7, 2013 (unplanned):** The extraction well system was offline from 3:50 p.m. to 3:52 p.m., from 4:24 p.m. to 4:32 p.m., and from 4:38 p.m. to 4:42 p.m. due to a loss of power from the City of Needles power. Extraction system downtime was 14 minutes.
- **July 7, 2013 (unplanned):** The extraction well system was offline from 6:18 p.m. to 8:04 p.m., from 8:06 p.m. to 8:16 p.m., and from 10:56 p.m. to 11:14 p.m. due to high level alarm in T-100. Extraction system downtime was 2 hours, 14 minutes
- **July 8, 2013 (unplanned**): The extraction system was offline from 2:32 p.m. to 2:38 p.m. due to loss of power from the City of Needles power. Extraction system downtime was 6 minutes.
- **July 9, 2013 (unplanned):** The extraction well system was offline from 2:18 a.m. to 8:00 a.m. due to a polymer feed line malfunction. Extraction system downtime was 5 hours, 42 minutes.
- **July 10, 2013 (planned):** The extraction well system was offline from 4:18 a.m. to 8:22 a.m. for repair of the injection line system. Extraction system downtime was 4 hours, 4 minutes.
- **July 11, 2013 (unplanned):** The extraction well system was offline from 7:38 a.m. to 8:00 a.m., from 8:06 a.m. to 8:44 a.m., from 11:38 a.m. to 11:46 a.m., and from 1:14 p.m. to 1:18 p.m. due to loss of power from the City of Needles power. Extraction system downtime was 1 hour, 12 minutes.
- **July 16, 2013 (unplanned):** The extraction well system was offline from 3:42 a.m. to 4:22 a.m. due to reduced ferrous flow. Extraction system downtime was 40 minutes.
- **July 28, 2013 (unplanned):** The extraction well system was offline from 2:54 p.m. to 3:00 p.m. due to a loss of power from the City of Needles power due to a nearby storm system. Extraction system downtime was 6 minutes.
- **July 28-29, 2013 (unplanned):** The extraction well system was offline from 10:06 p.m. on July 28 through 8:36 a.m. on July 29 and from 9:46 a.m. to 9:54 a.m. on July 29 due to a lightning strike on the City of Needles power system. Extraction system downtime was 10 hours, 38 minutes.
- **July 30, 2013 (unplanned):** The extraction well system was offline from 8:46 a.m. to 9:42 a.m. to replace the surge protector damaged in the lightning strike on July 28, 2013. Extraction system downtime was 56 minutes.

E.2 August 2013

- **August 5, 2013 (unplanned):** The extraction well system was offline from 5:42 a.m. to 7:06 a.m. due to a polymer feed line malfunction. Extraction system downtime was 1 hour, 24 minutes.
- **August 7, 2013 (unplanned):** The extraction well system was offline from 11:30 a.m. to 11:32 a.m. due to a loss of power from the City of Needles power. Extraction system downtime was 2 minutes.
- **August 8, 2013 (unplanned):** The extraction well system was offline from 8:06 p.m. to 9:58 p.m. to replace the main flow control valve (FCV-200). Extraction system downtime was 1 hour, 52 minutes.
- **August 12-16, 2013 (planned):** The extraction well system was offline from 7:20 a.m. on August 12 to 1:52 p.m. on August 15, from 3:28 p.m. August 15 to 6:44 a.m. August 16, and from 7:26 a.m. to 9:48 a.m. on August 16 for semiannual scheduled maintenance. Extraction system downtime was 4 days and 10 minutes.
- **August 18, 2013 (unplanned):** The extraction well system was offline from 8:04 p.m. to 8:08 p.m. due to a loss of power from the City of Needles caused by strong thunderstorms in the area. Extraction system downtime was 4 minutes.

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

E.3 September 2013

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

E.3 October 2013

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

Appendix F
Hydraulic Data for Interim Measures Reporting Period

Table F-1
Average Monthly and Quarterly Groundwater Elevations, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	July 2013	August 2013	September 2013	October 2013	Quarter Average	Days in Quarter Average
I-3	River Station	455.79	455.43	455.02	455.10	455.34	122
MW-20-070	Shallow Zone	454.65	454.51	453.92	453.94	454.26	122
MW-20-100	Middle Zone	454.19	454.10	453.41	453.40	453.78	122
MW-20-130	Deep Zone	453.76	453.74	452.96	452.93	453.36	122
MW-22	Shallow Zone	455.40	455.24	454.85	454.92	INC	90
MW-25	Shallow Zone	456.21	455.98	455.57	455.52	455.82	122
MW-26	Shallow Zone	455.86	455.65	455.23	455.18	455.48	122
MW-27-020	Shallow Zone	455.70	455.37	454.81	455.02	455.24	119
MW-27-060	Middle Zone	455.67	455.33	454.81	454.98	455.21	119
MW-27-085	Deep Zone	455.63	455.33	454.83	454.91	455.18	123
MW-28-025	Shallow Zone	455.69	455.33	454.82	454.99	455.21	119
MW-28-090	Deep Zone	455.77	455.44	454.92	455.03	455.30	119
MW-30-050	Middle Zone	455.28	454.84	454.45	454.61	454.80	120
MW-31-060	Shallow Zone	455.53	455.26	454.76	454.80	455.09	122
MW-31-135	Deep Zone	454.86	454.70	454.05	454.08	454.43	123
MW-32-035	Shallow Zone	455.46	455.17	454.67	454.84	455.04	120
MW-33-040	Shallow Zone	455.75	455.43	454.96	455.17	455.33	122
MW-33-090	Middle Zone	455.76	455.43	454.95	455.30	455.36	123
MW-33-150	Deep Zone	455.85	455.55	455.04	455.28	455.46	114
MW-34-055	Middle Zone	455.65	455.31	454.82	454.98	455.20	119
MW-34-080	Deep Zone	455.64	455.34	454.83	454.98	455.20	119
MW-34-100	Deep Zone	455.43	455.17	454.53	454.59	454.93	123
MW-35-060	Shallow Zone	456.12	455.79	455.28	455.45	455.67	122
MW-35-135	Deep Zone	456.49	456.16	455.73	455.82	456.05	122
MW-36-020	Shallow Zone	455.49	455.18	454.68	454.83	455.05	120
MW-36-040	Shallow Zone	455.42	455.12	454.61	454.75	454.99	120
MW-36-050	Middle Zone	455.32	455.00	454.50	454.64	454.87	120
MW-36-070	Middle Zone	455.35	455.05	454.55	454.69	454.92	120
MW-36-090	Deep Zone	454.53	454.34	453.72	453.83	454.12	120
MW-36-100	Deep Zone	454.75	454.57	453.96	454.07	454.35	120
MW-39-040	Shallow Zone	455.31	455.04	454.51	454.64	454.88	120
MW-39-050	Middle Zone	455.12	454.86	454.32	454.44	454.70	120
MW-39-060	Middle Zone	454.95	454.73	454.17	454.26	454.54	120
MW-39-070	Middle Zone	454.51	454.35	453.73	453.80	454.11	120
MW-39-080	Deep Zone	454.63	454.46	453.83	453.91	454.22	120
MW-39-100	Deep Zone	455.07	454.91	454.30	454.38	454.67	120
MW-42-030	Shallow Zone	455.17	454.89	454.39	454.54	454.76	120
MW-42-065	Middle Zone	455.28	454.99	454.47	454.64	454.85	120
MW-43-025	Shallow Zone	455.65	455.31	454.78	455.01	455.20	120
MW-43-090	Deep Zone	455.95	455.66	455.11	455.34	455.52	120
MW-44-070	Middle Zone	455.55	455.23	454.74	454.88	455.11	120
MW-44-115	Deep Zone	455.07	454.82	454.30	454.41	454.66	120
MW-44-125	Deep Zone	455.60	455.34	454.75	454.92	455.16	120
MW-45-095a	Deep Zone	454.42	454.43	453.60	453.68	454.04	123
MW-46-175	Deep Zone	455.74	455.46	454.91	454.97	455.28	119
MW-47-055	Shallow Zone	456.06	455.73	455.26	455.40	455.62	119
MW-47-115	Deep Zone	456.08	455.78	455.32	455.43	455.66	119
MW-49-135	Deep Zone	456.21	455.88	455.44	455.52	455.77	119

Table F-1
Average Monthly and Quarterly Groundwater Elevations, Third Quarter 2013
Third Quarter 2013 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

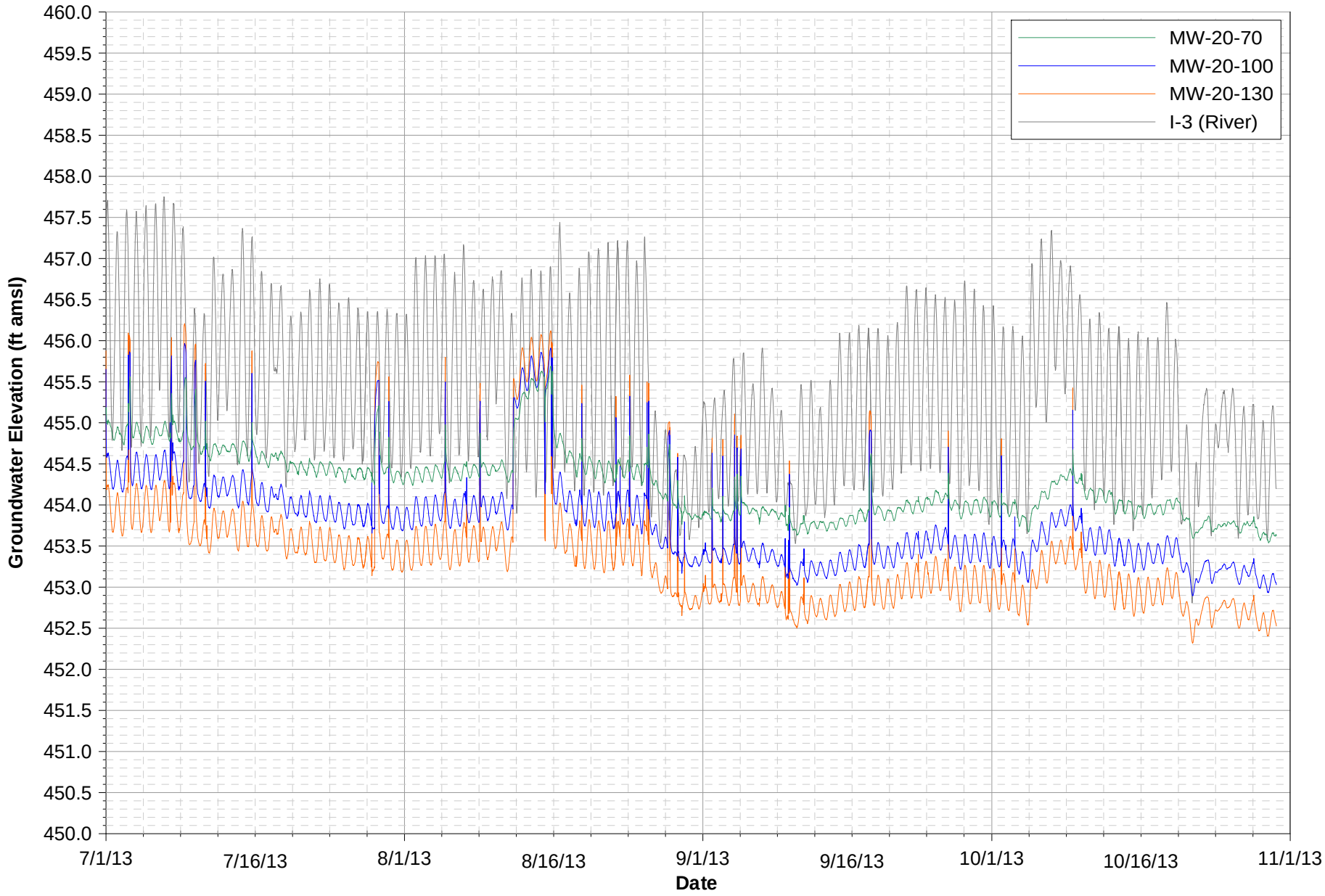
Well ID	Aquifer Zone	July 2013	August 2013	September 2013	October 2013	Quarter Average	Days in Quarter Average
MW-50-095	Middle Zone	455.76	455.47	454.98	455.03	455.31	122
MW-51	Middle Zone	455.84	455.62	455.16	455.11	455.44	122
MW-54-085	Deep Zone	456.49	455.63	455.28	455.42	INC	86
MW-54-140	Deep Zone	456.17	455.87	455.54	455.65	455.81	121
MW-54-195	Deep Zone	456.37	456.06	455.73	455.84	456.01	121
MW-55-045	Middle Zone	456.42	456.16	455.94	456.03	456.14	120
MW-55-120	Deep Zone	456.37	456.12	455.94	456.01	456.11	120
PT2D	Deep Zone	454.30	454.16	453.50	453.57	453.89	120
PT5D	Deep Zone	454.85	454.66	454.05	454.13	454.43	120
PT6D	Deep Zone	454.86	454.69	454.08	454.16	454.46	120
RRB	River Station	456.13	455.70	455.25	455.38	455.62	122

NOTES:

Averages reported in ft AMSL (feet above mean sea level).

Quarterly Average = average of daily averages over reporting period.

INC = Data incomplete, less than 75% of data available over reporting period due to rejection or field equipment malfunction.



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1A
MW-20 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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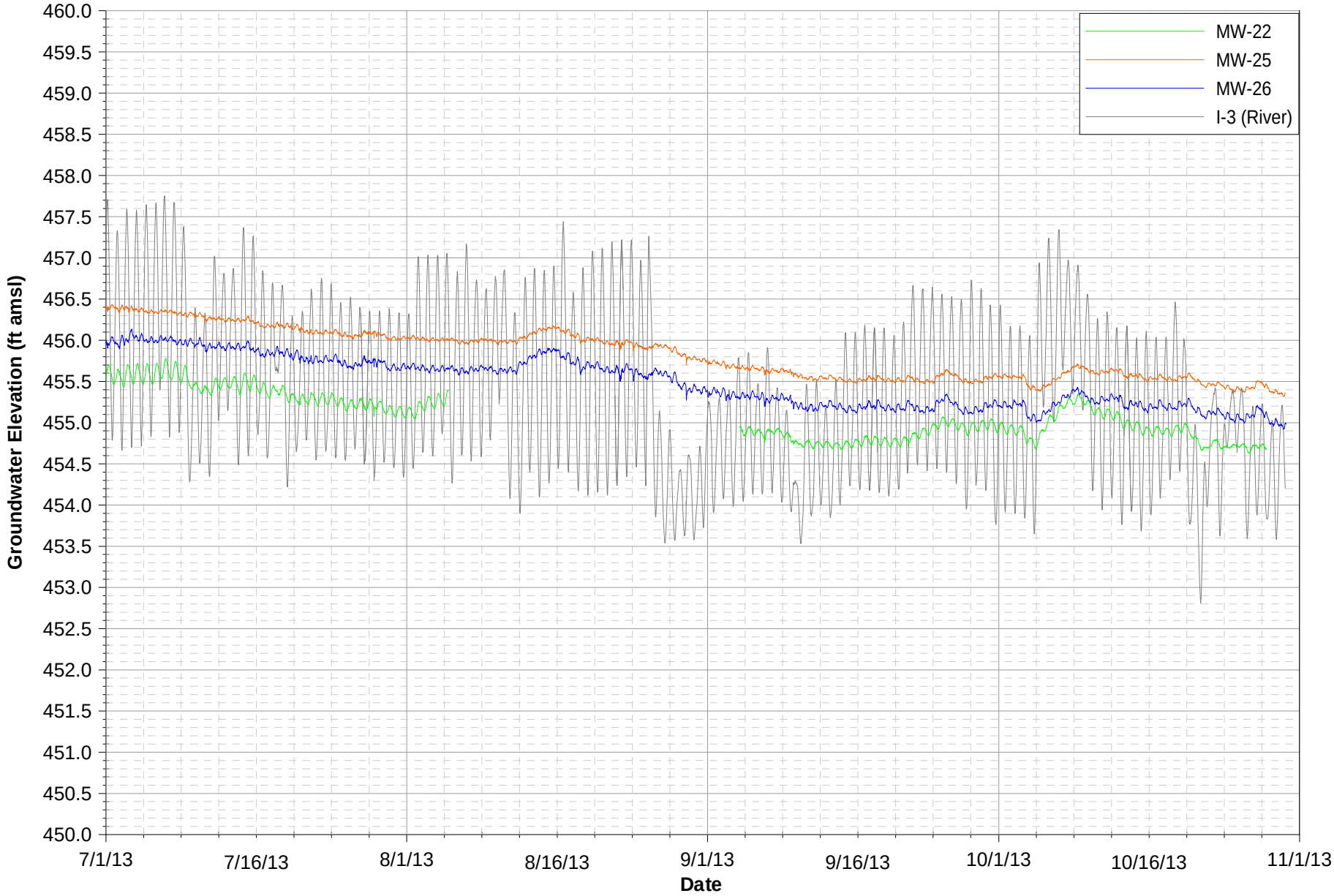

Notes:
1. Data subject to review.
2. MW-22 data unavailable from August 5, 2013 through September 4, 2013 due to transducer malfuction.
3. ft amsl = feet above mean sea level.

FIGURE F-1B
MW-22, MW-25, AND MW-26 HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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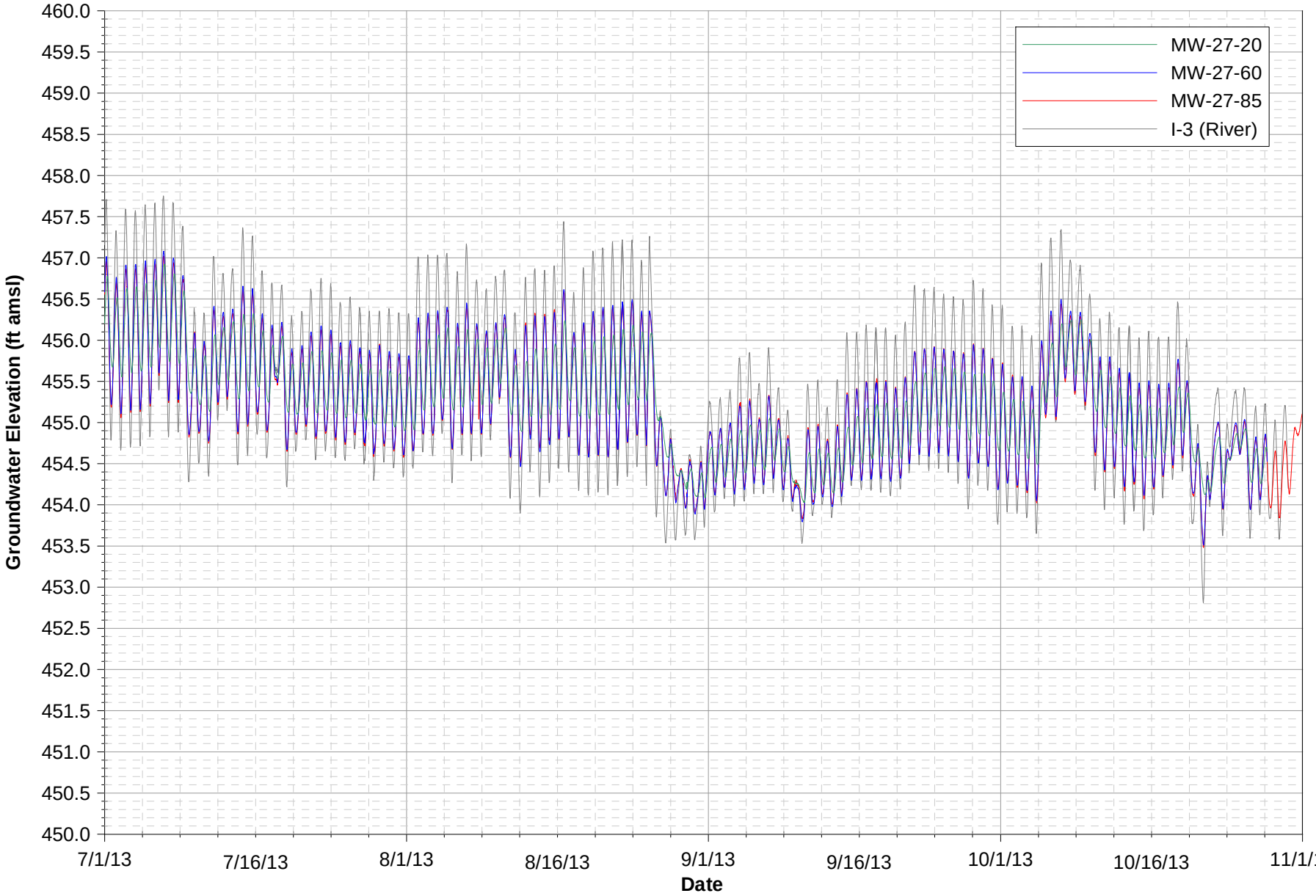

Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1C
MW-27 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING
AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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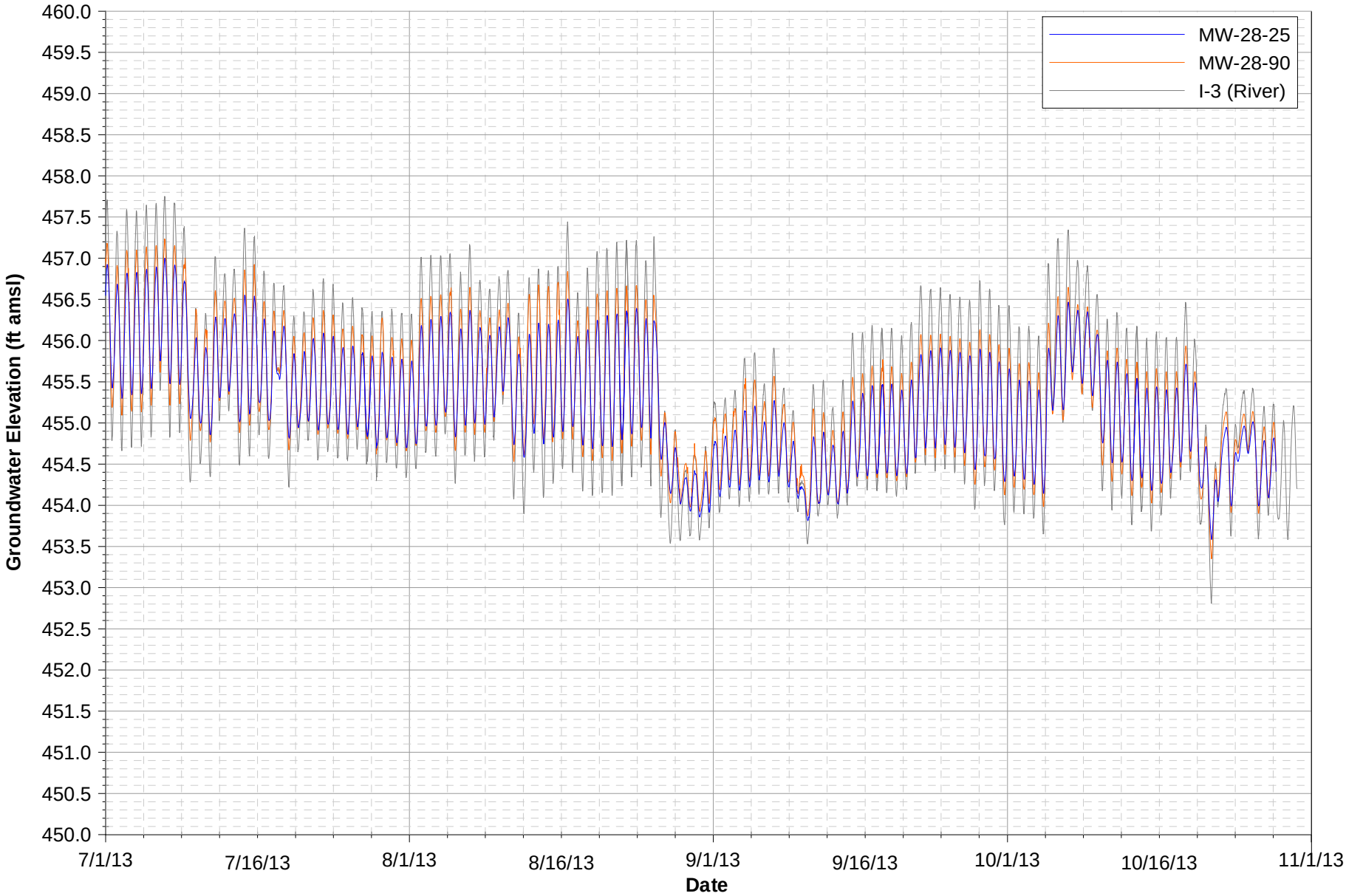
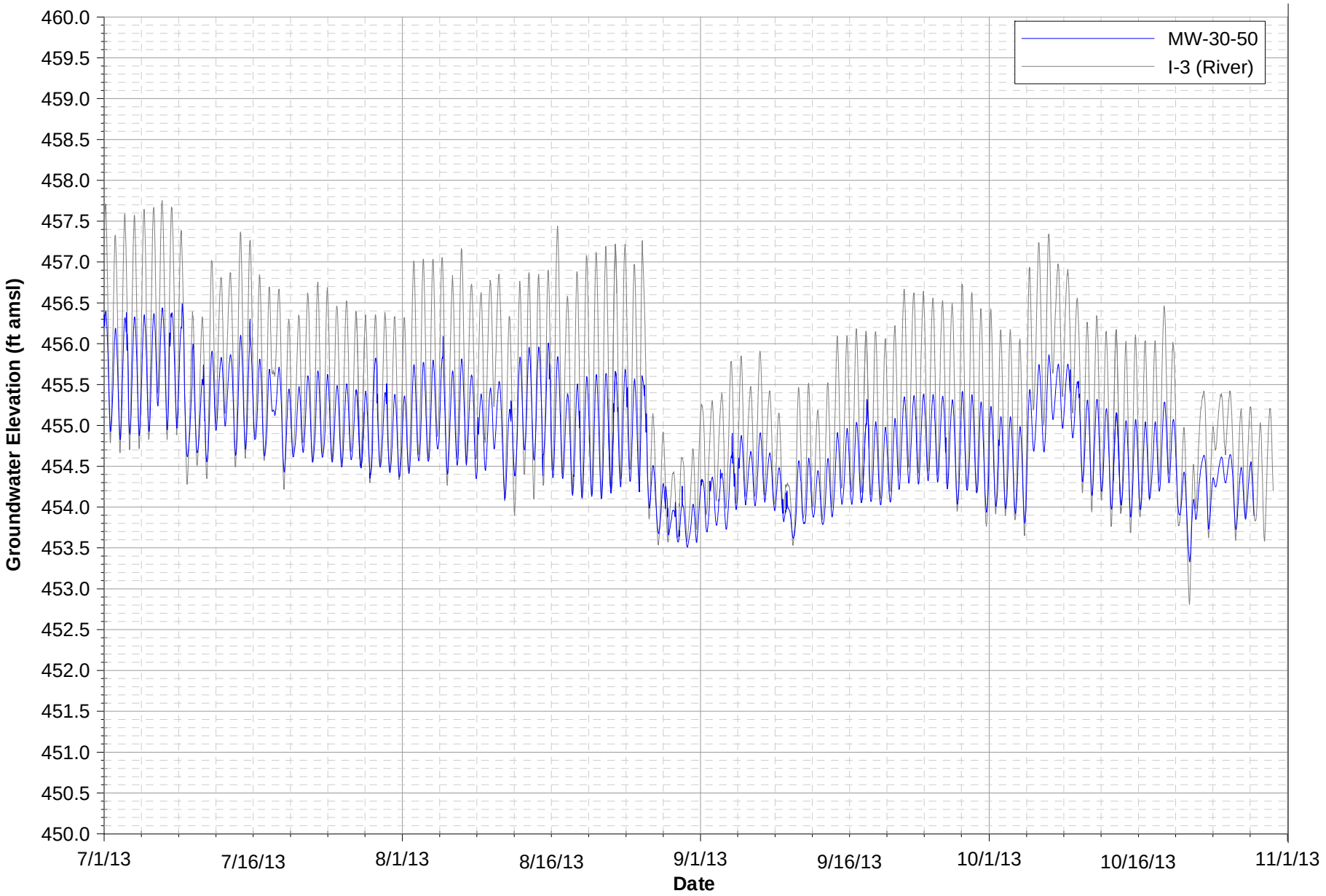


Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1D
MW-28 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING
AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1E
MW-30-50 HYDROGRAPH
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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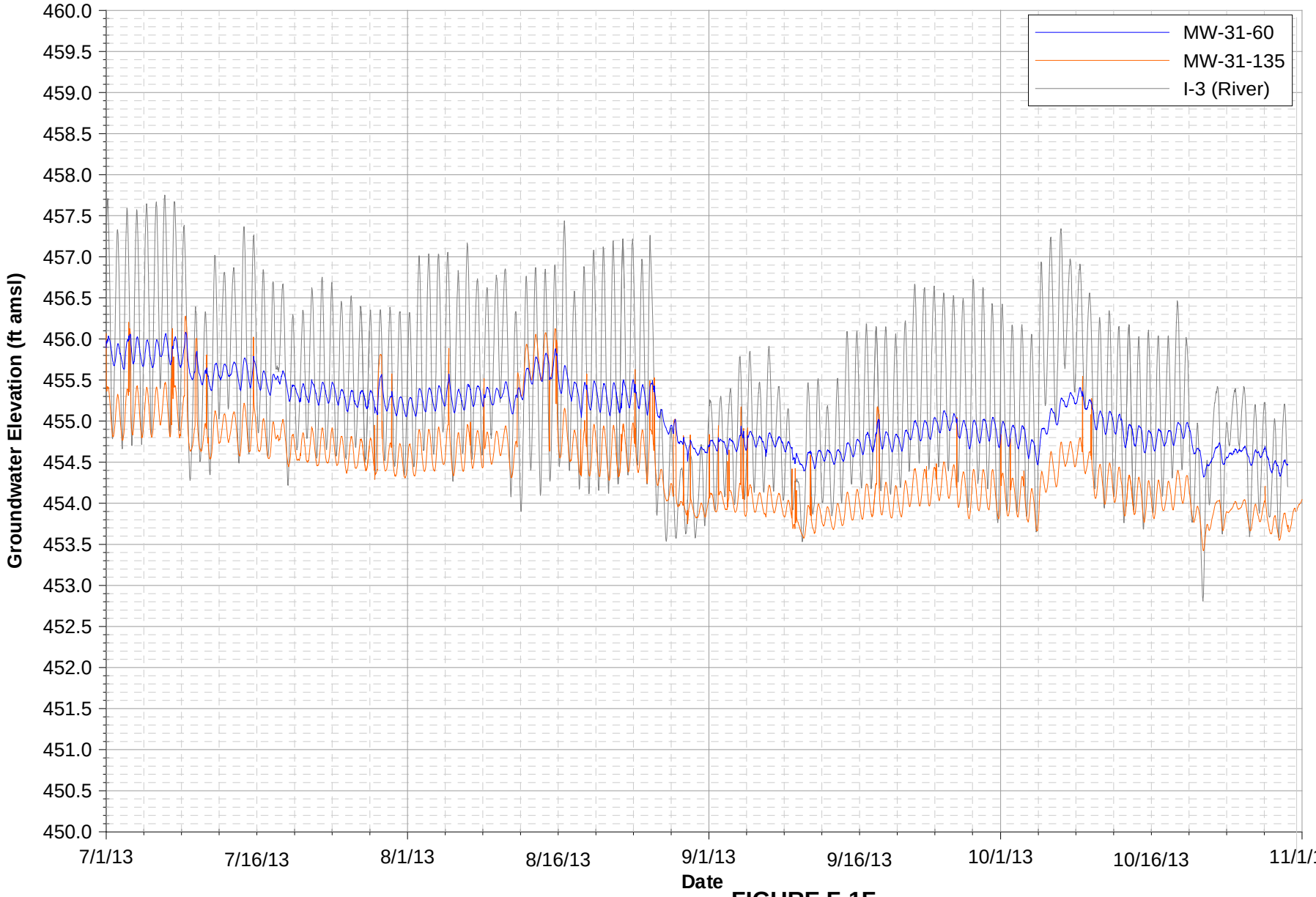

Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1F
MW-31 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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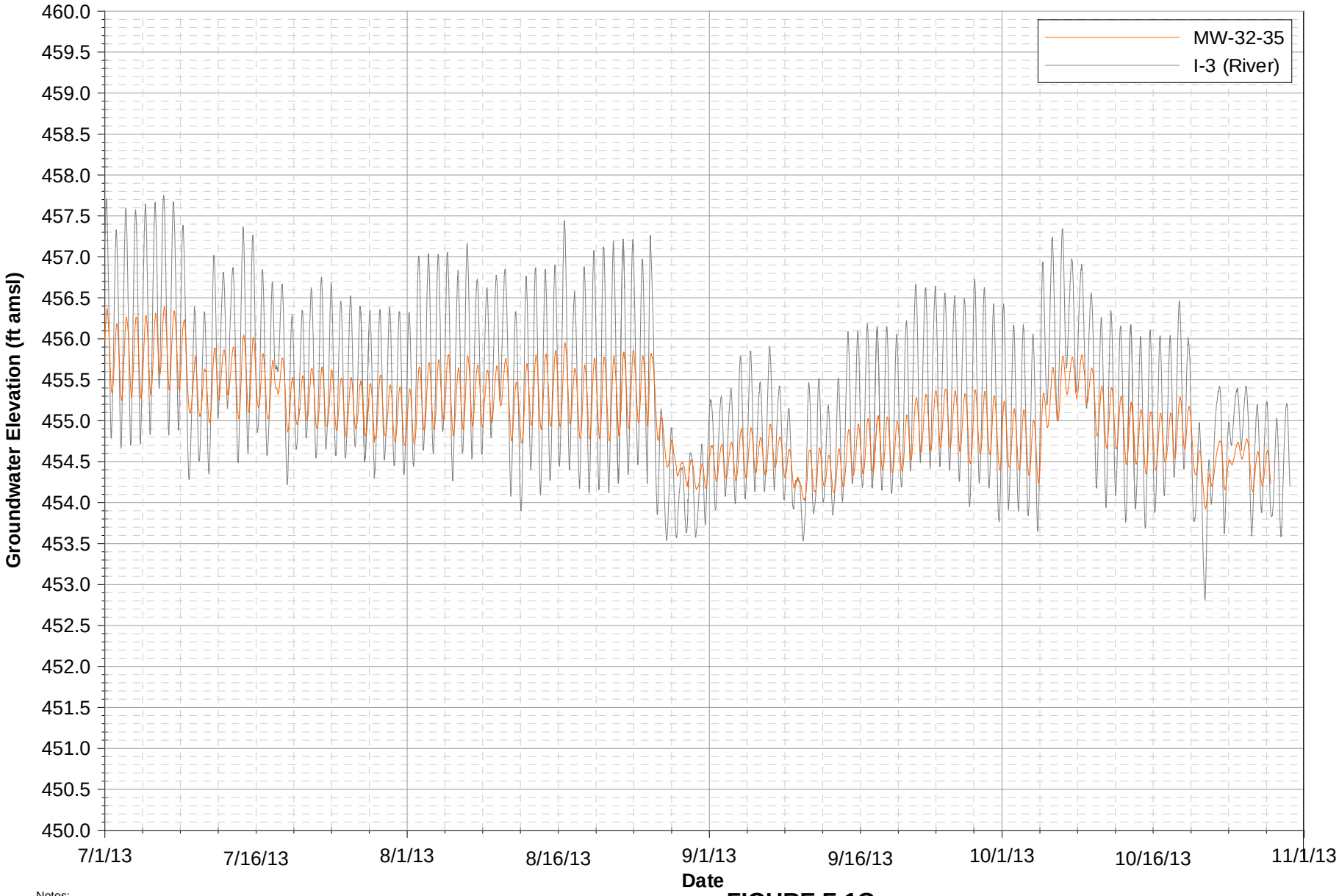
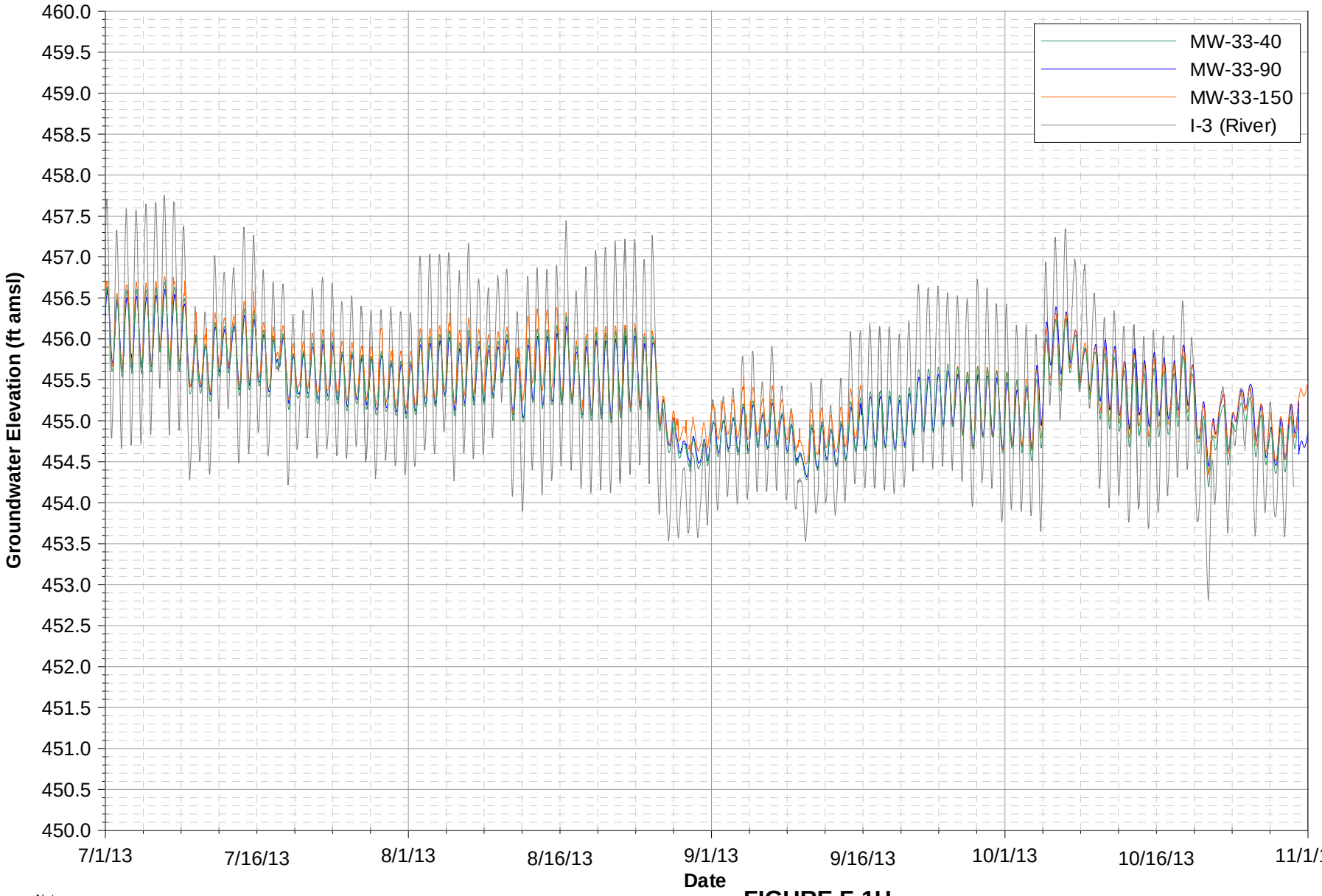


Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

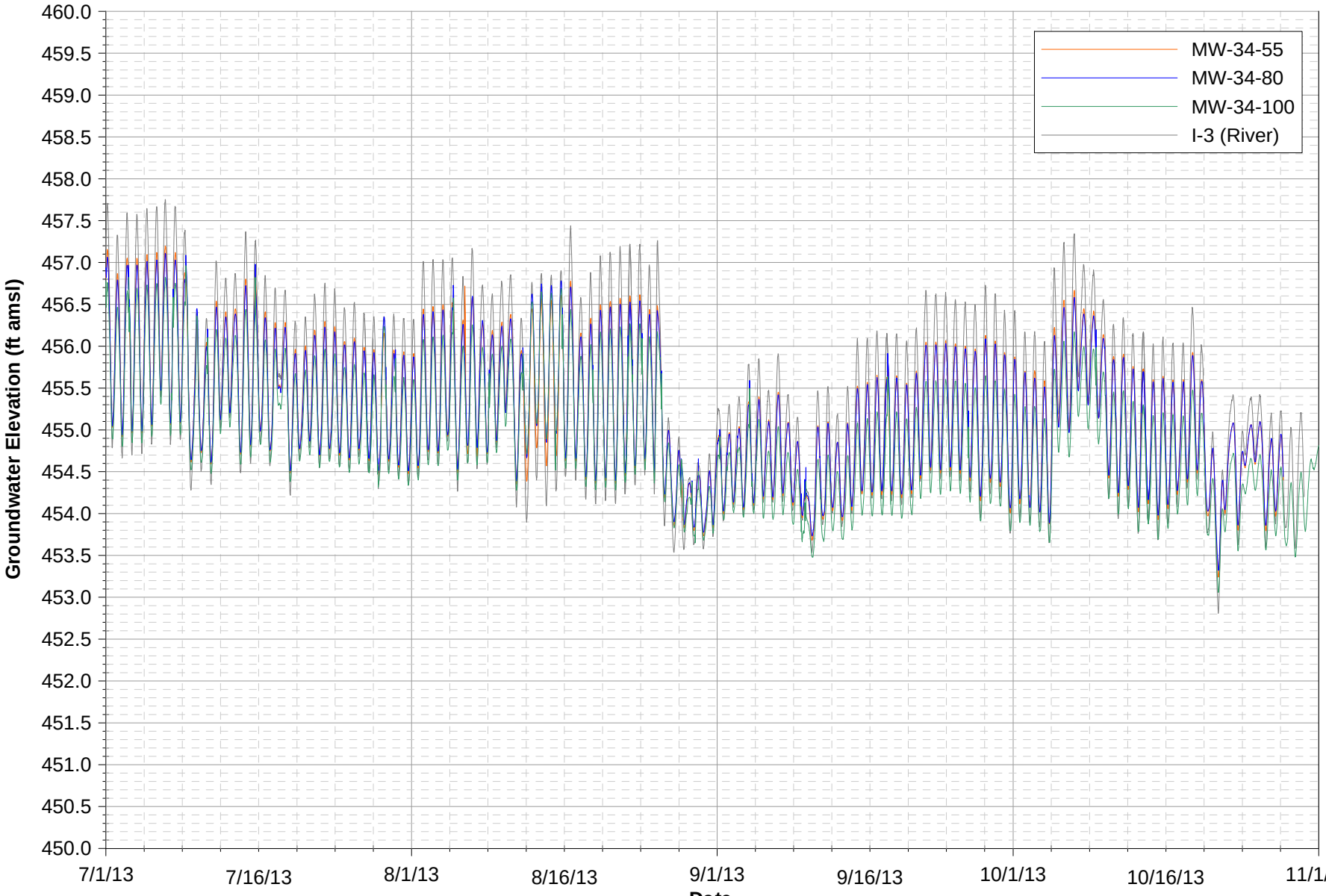
FIGURE F-1G
MW-32 HYDROGRAPH
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.
3. MW-33-150 data unavailable from September 16, 2013 through September 25, 2013 due to multiple transducer malfunctions.

FIGURE F-1H
MW-33 CLUSTER HYDROGRAPHS

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



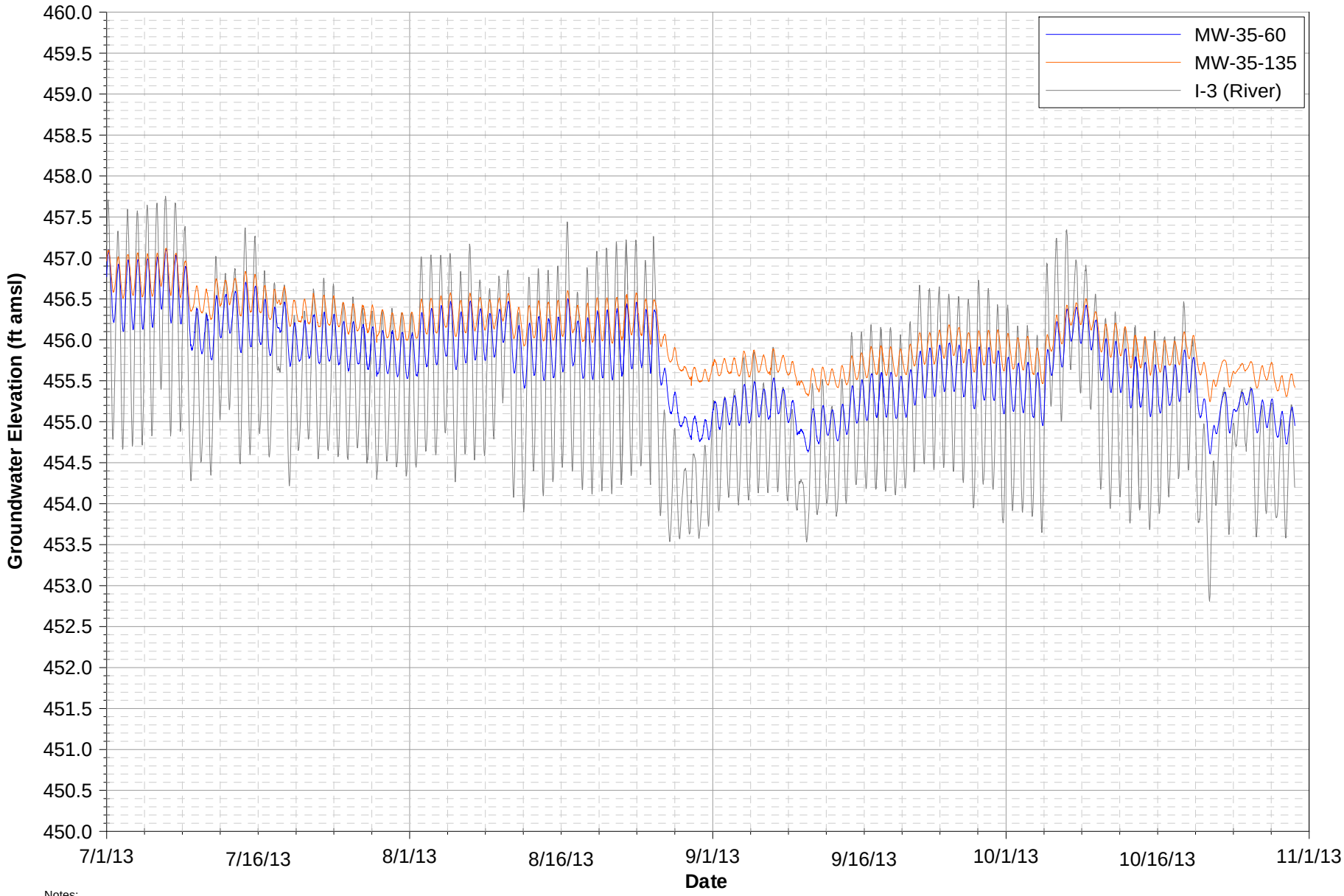
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1I

MW-34 CLUSTER HYDROGRAPHS

THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

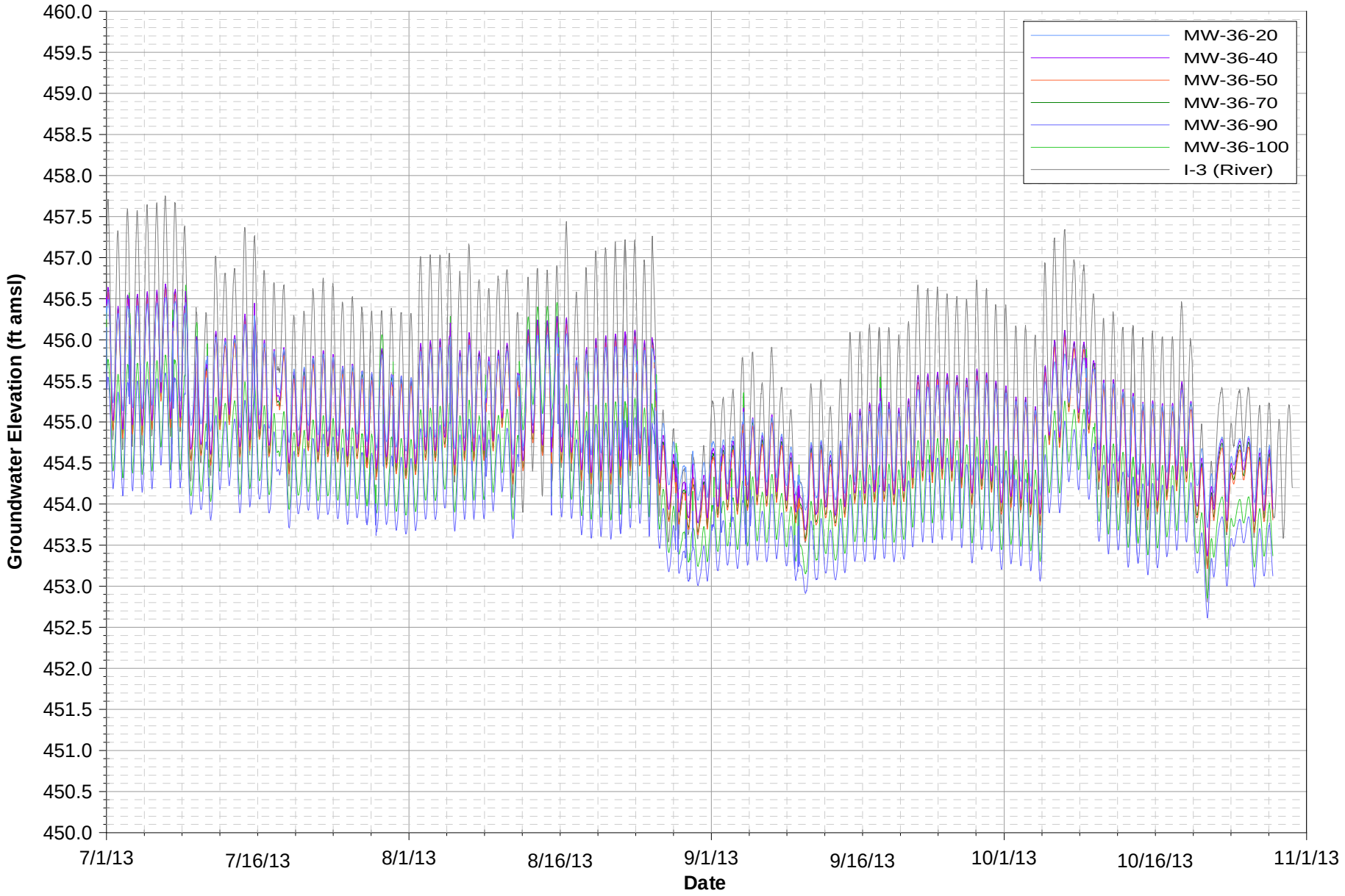
CH2MHILL



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1J
MW-35 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

CH2MHILL



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1K
MW-36 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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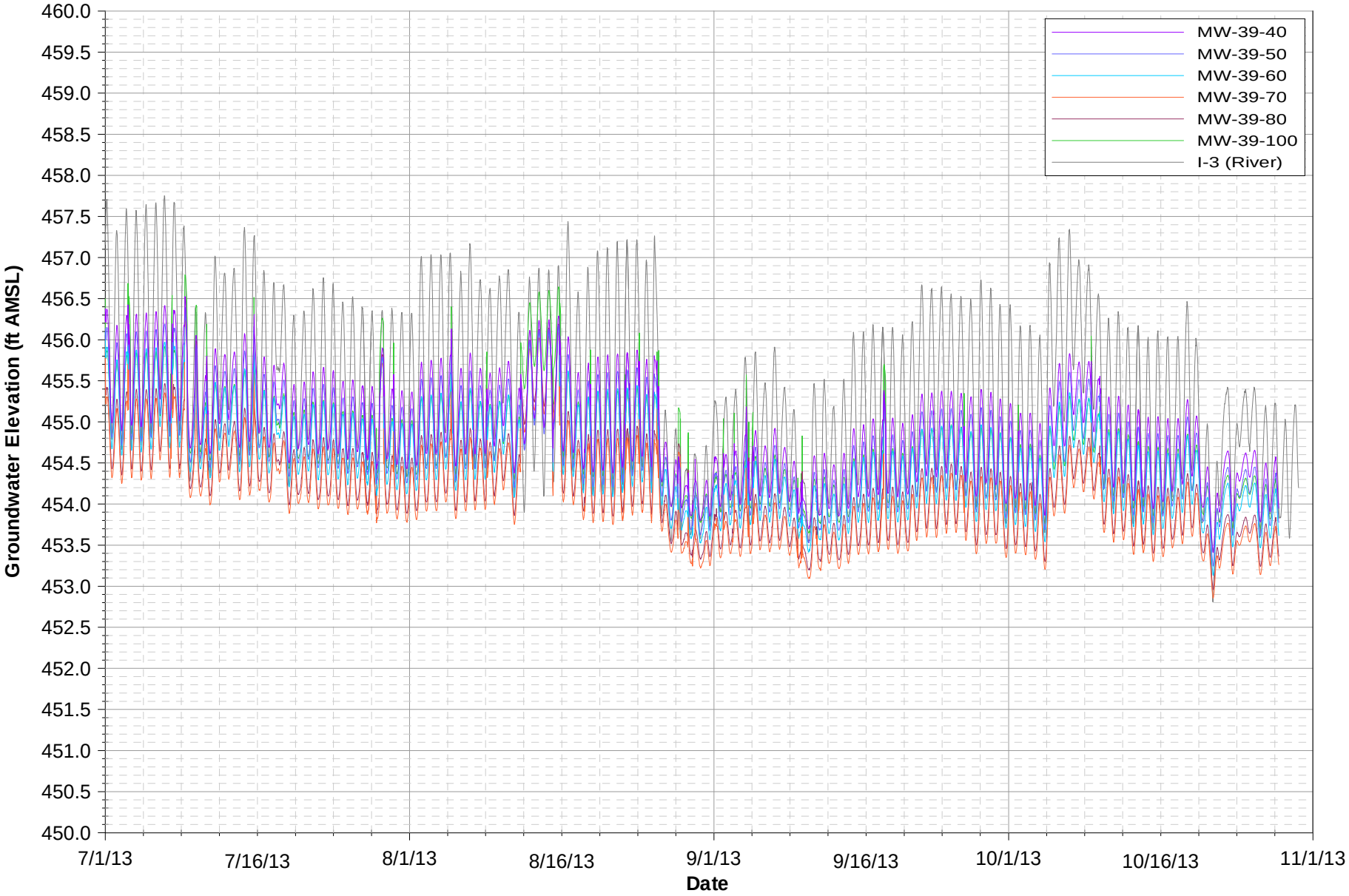
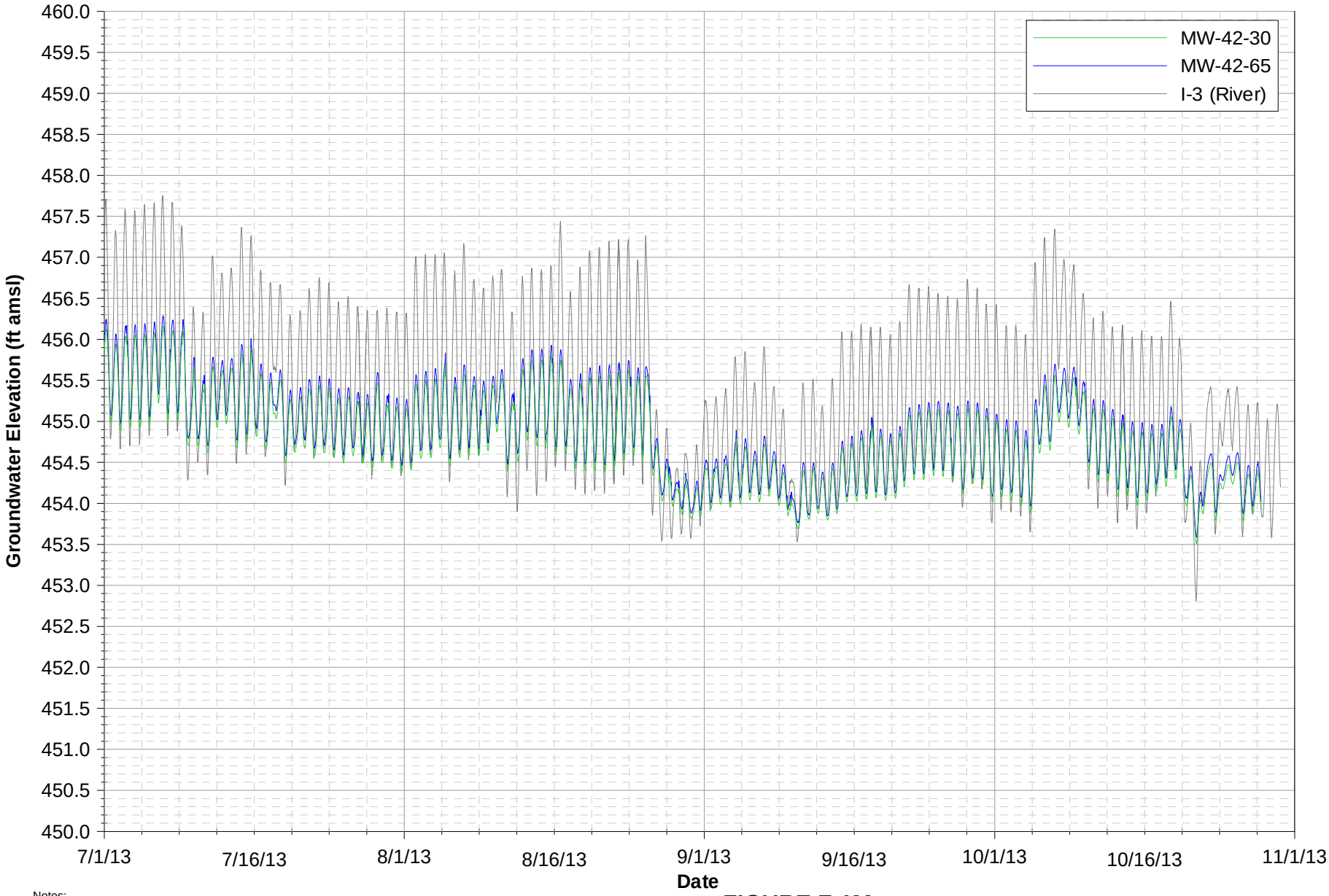


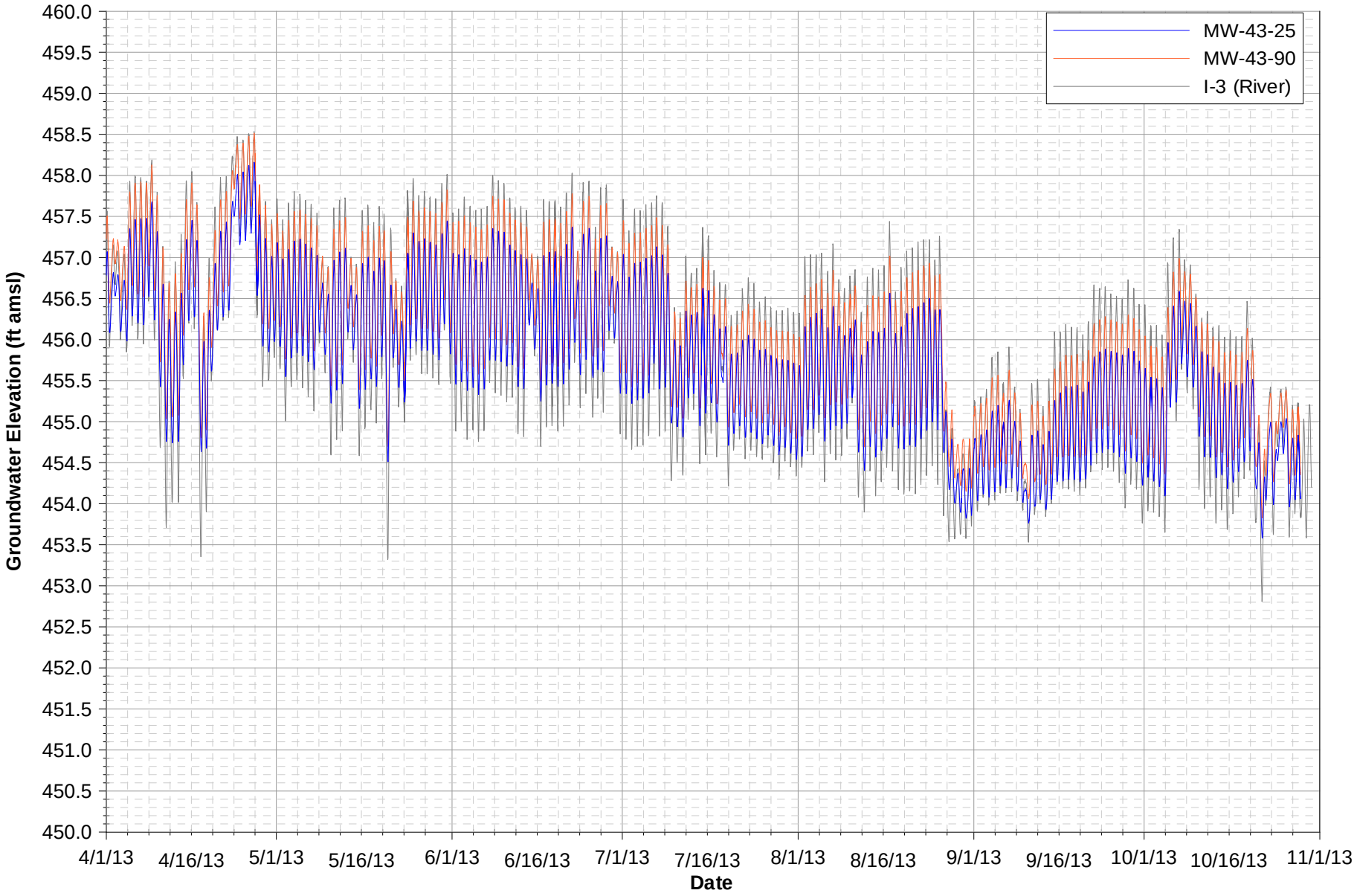
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1L
MW-39 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



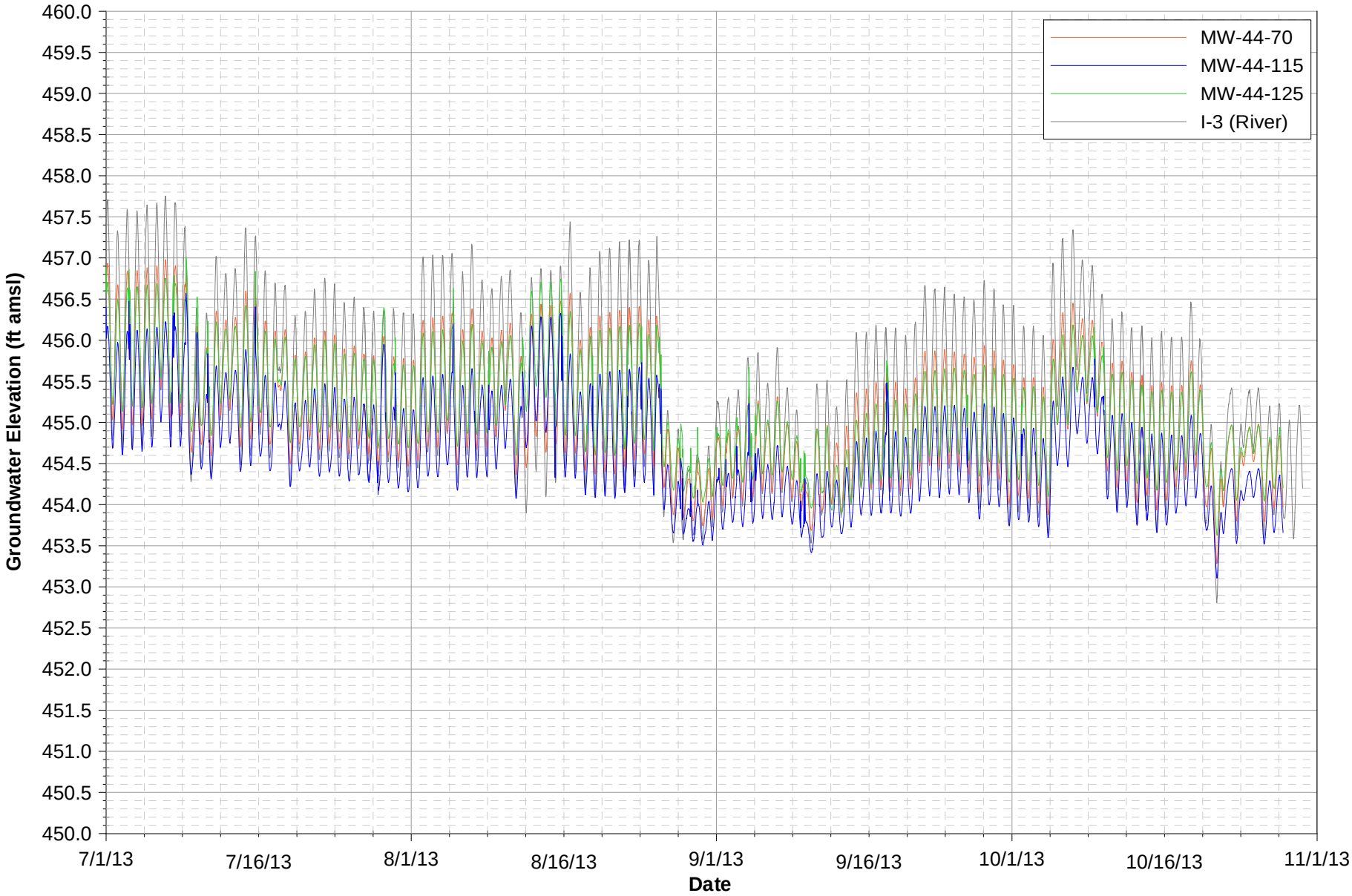
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1M
MW-42 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

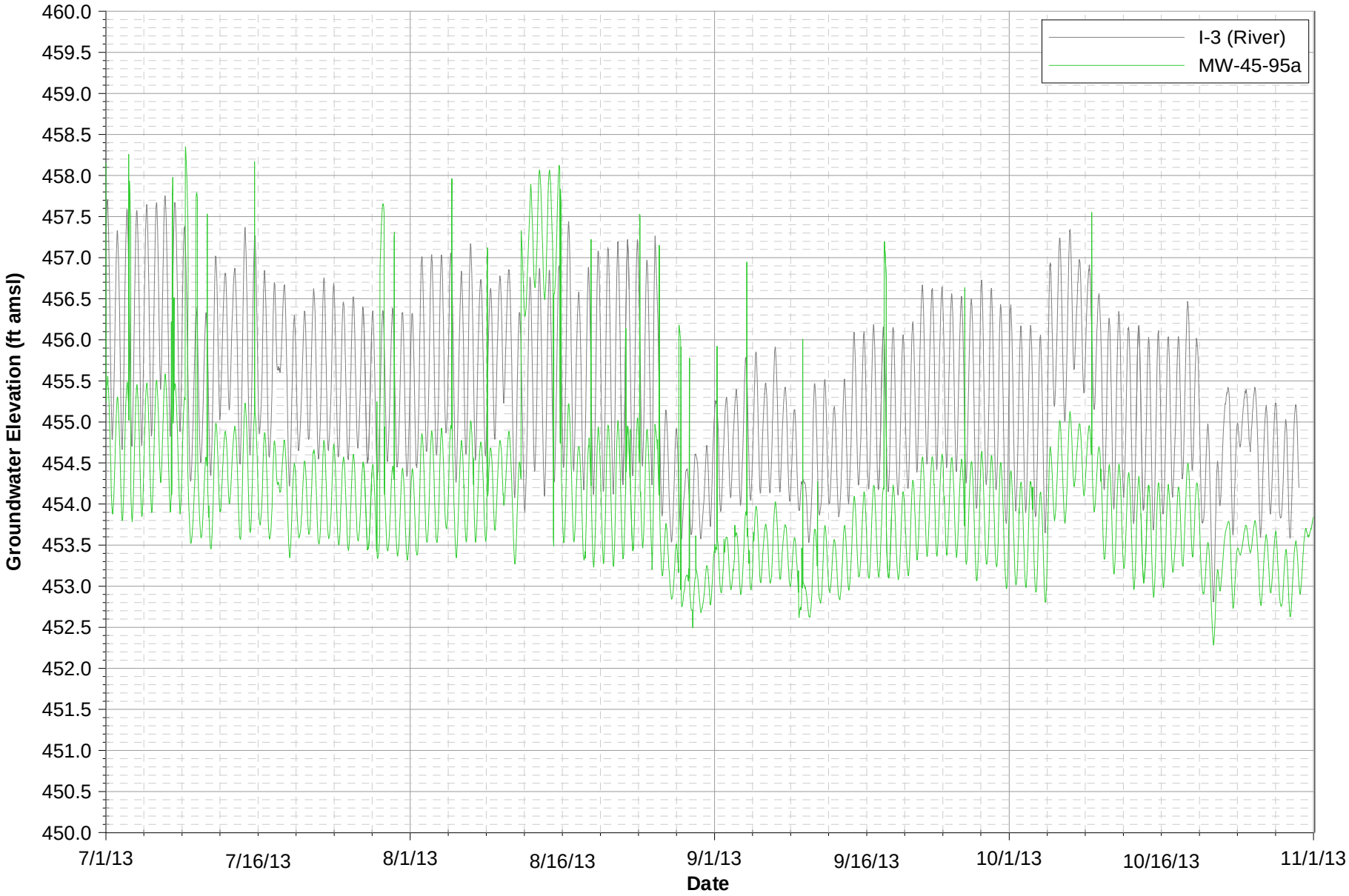
FIGURE F-1N
MW-43 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1O
MW-44 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

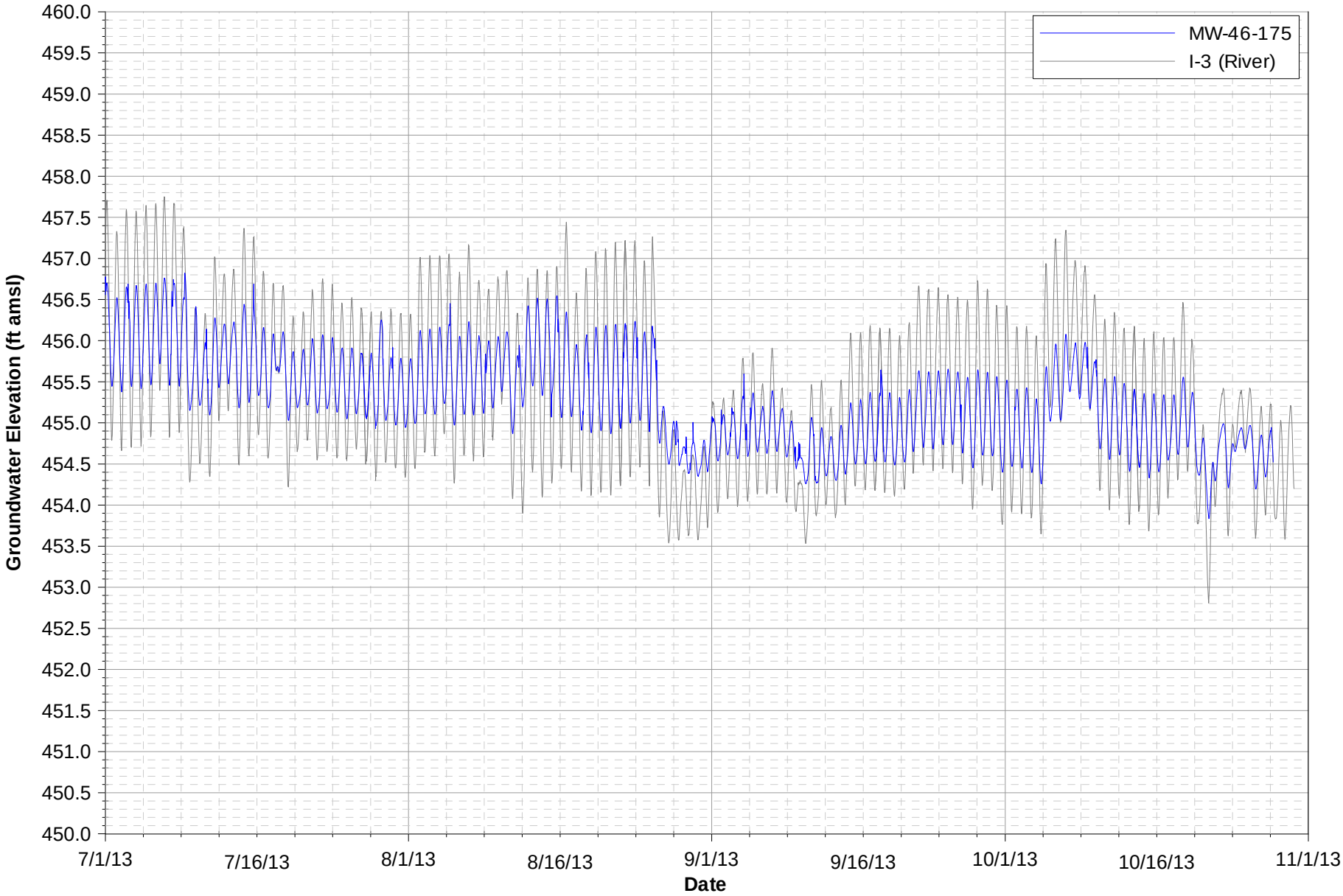
CH2MHILL



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1P
MW-45-95a HYDROGRAPH
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

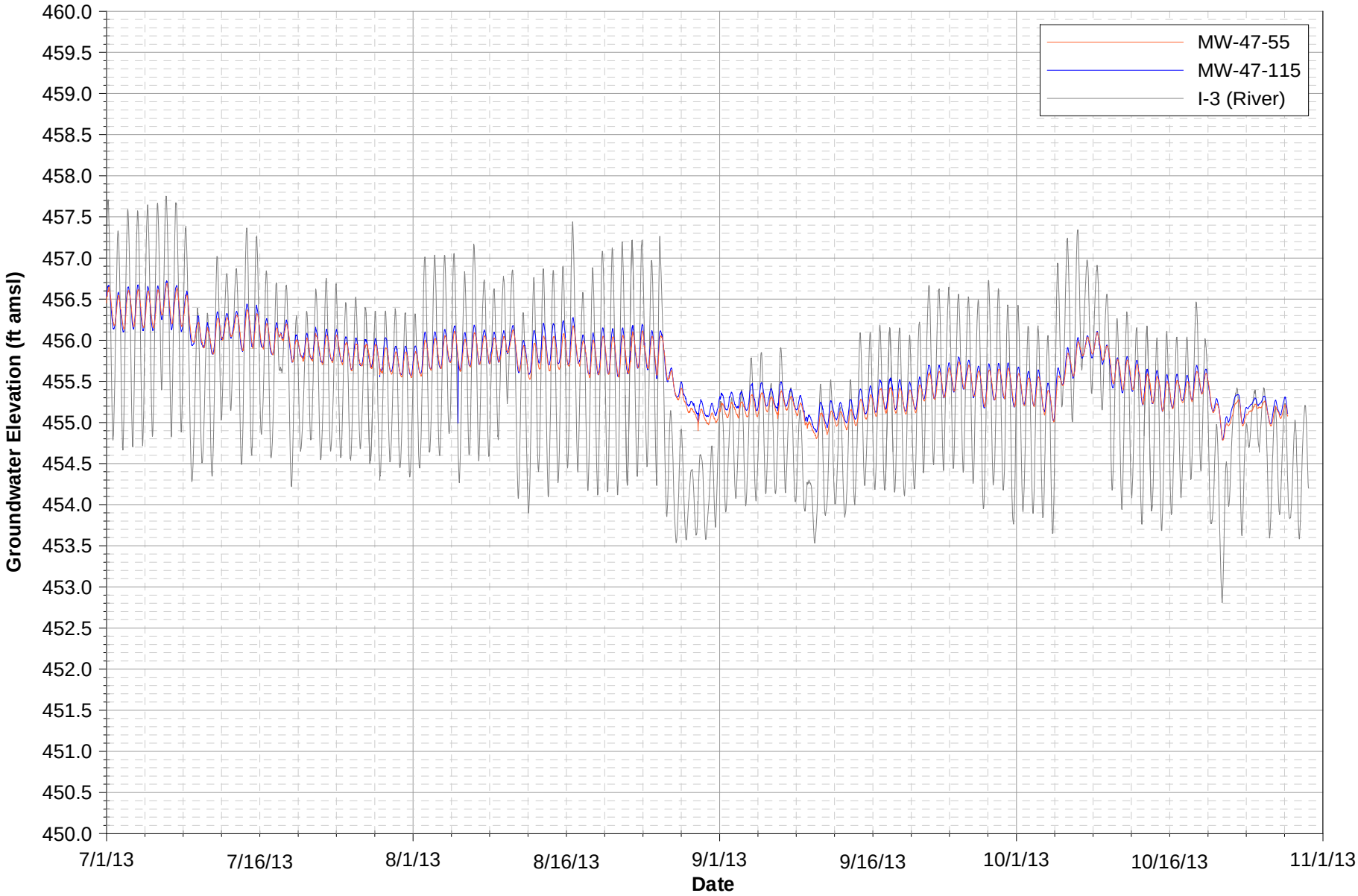
CH2MHILL



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1Q
MW-46 HYDROGRAPH
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

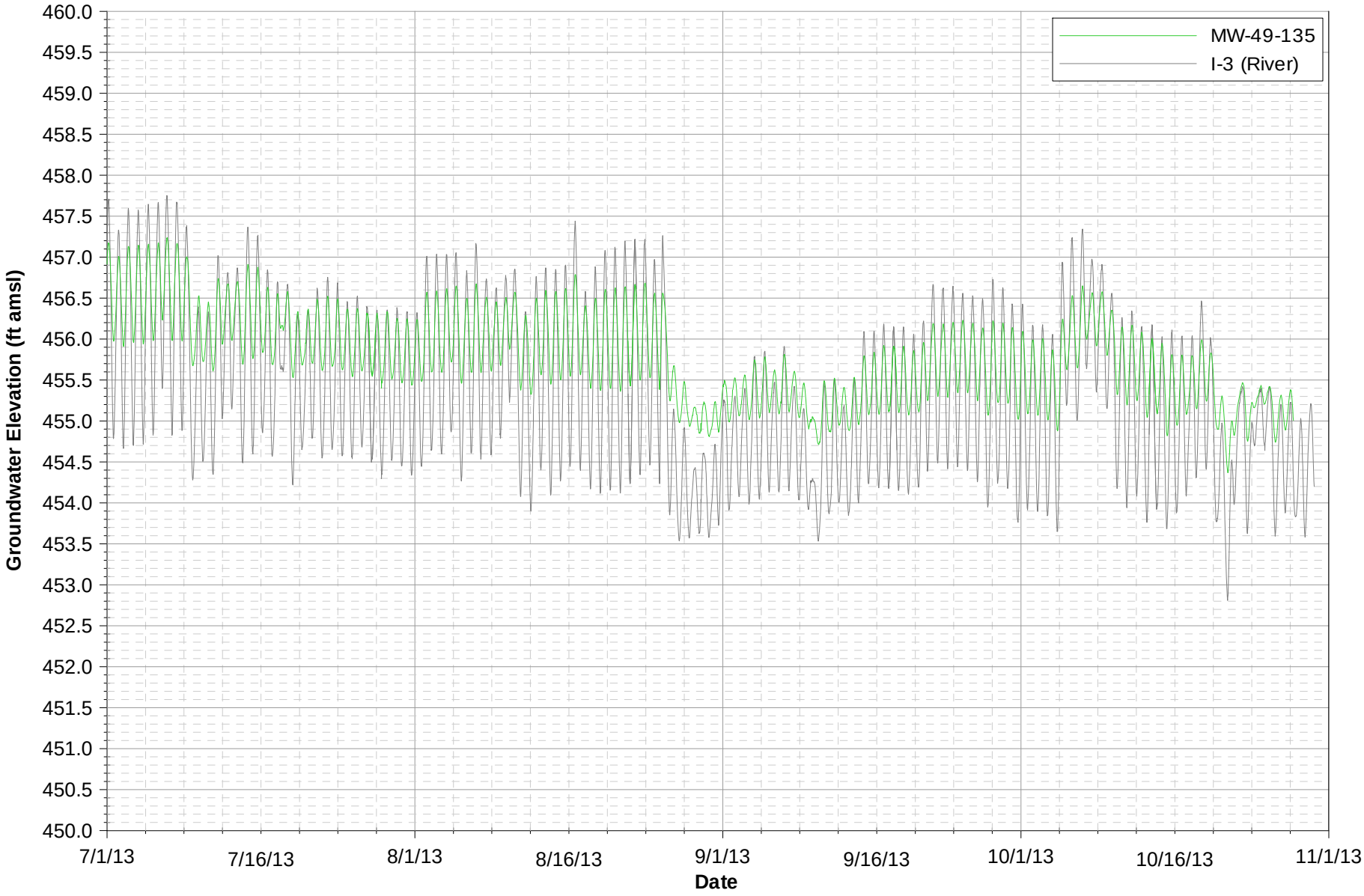
CH2MHILL



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

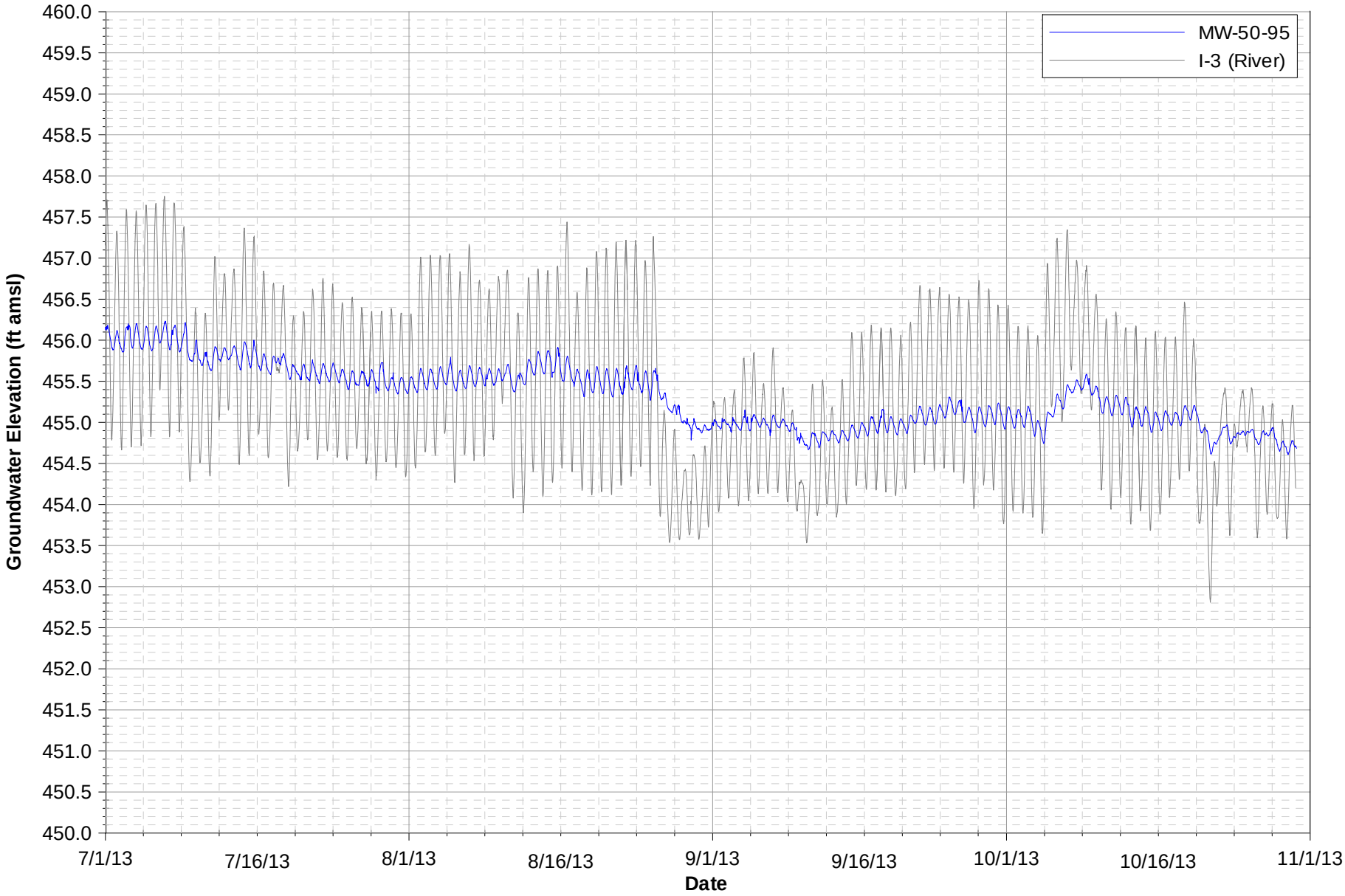
FIGURE F-1R
MW-47 CLUSTER HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

CH2MHILL



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

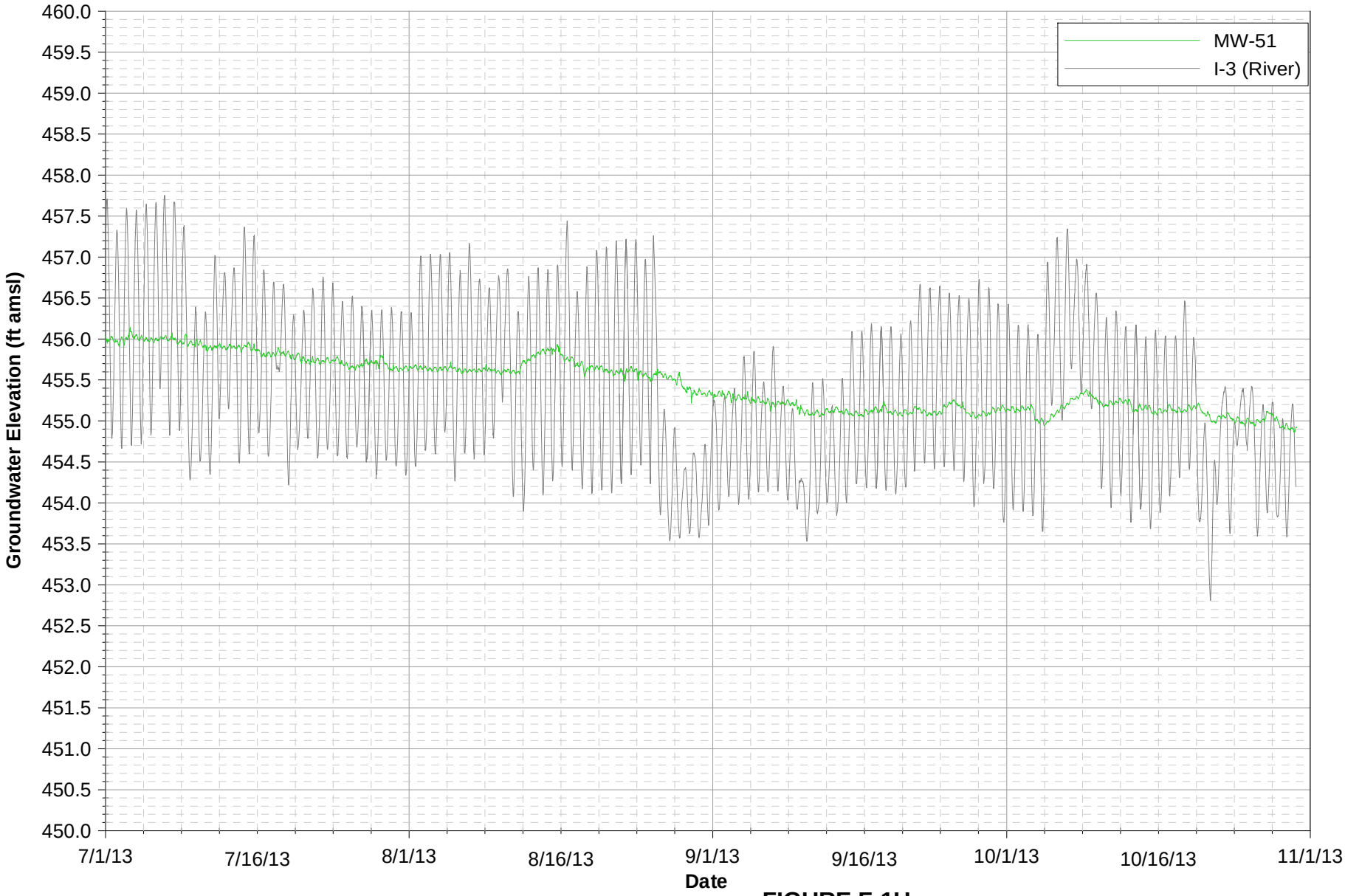
FIGURE F-1S
MW-49 HYDROGRAPH
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1T
MW-50 HYDROGRAPH
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

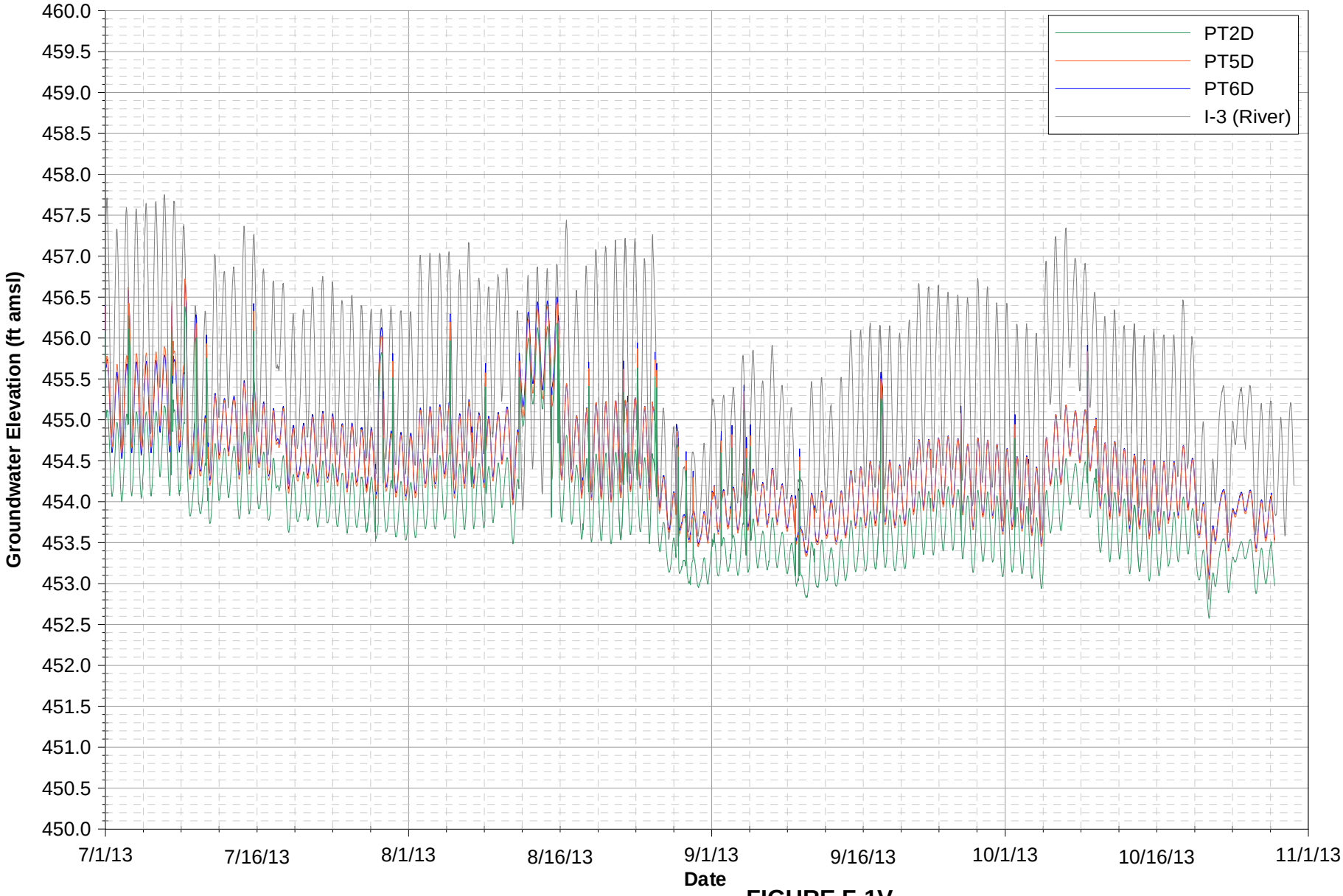
CH2MHILL



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1U
MW-26 & MW-51 HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

CH2MHILL



Note:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1V
INSITU PILOT STUDY WELL HYDROGRAPHS
THIRD QUARTER 2013 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

CH2MHILL