Topock Project Executive Abstract

Document Title: First Quarter 2016 Interim Measures Performance Monitoring and Site-Wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles CA Submitting Agency: DTSC Final Document? ☒ Yes ☐ No	Date of Document: April 29, 2016 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? Submittal of this report is a compliance requirement under 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 Surface Water Monitoring Program for the Topock Project. Hydraulic and chemical monitoring data were collected and used to evaluate the IM hydraulic containment system performance based on a set of standards approved by the California Department of 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 on site; (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 the First Quarter 2016. The average pumping rate for the IM extraction system during First Quarter 2016 was 131 gallons per minute, and an estimated 56.3 pounds (25.6 kilograms) of chromium were removed in January and February 2016. To date, the IM extraction system has removed 8,530 pounds (3,870 kilograms) of chromium.

Written by: PG&E

Recommendations:
This report does not present any recommended changes to the sampling program

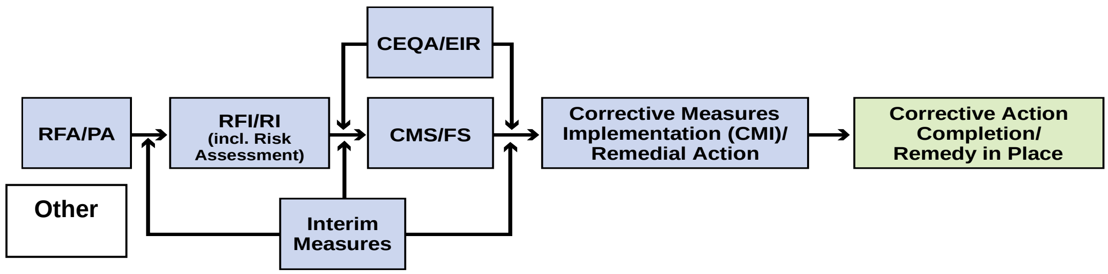
How is this information related to the Final Remedy or Regulatory Requirements:

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

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April 29, 2016

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Subject: *First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California* (PGE20150116A)

Dear Mr. Yue:

Enclosed is the First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California, for Pacific Gas and Electric Company's Interim Measures (IMs) Performance Monitoring Program and the Groundwater Monitoring Program and Surface Water Monitoring Program for the Topock project. This report presents the First Quarter (January through March 2016) performance monitoring results for the IMs hydraulic containment system. This report also presents groundwater and surface water monitoring activities, results, and analyses related to the Groundwater and Surface Water Monitoring Programs for the First Quarter 2016 Reporting Period.

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; July 23, 2010; June 27, 2014; and July 20, 2015.

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

Sincerely,

Yvonne Meeks

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Topock Remediation Project Manager

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Pacific Gas and Electric Company

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT

Topock Compressor Station,
Needles, California

April 29, 2016

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT

PG&E Topock Compressor Station,

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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
ADEQ	Arizona Department of Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPC	contaminant of potential concern
Cr(VI)	hexavalent chromium
DOI	U.S. Department of the Interior
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
ft/ft	foot or feet per foot
GMP	Groundwater Monitoring Program
gpm	gallons per minute
IM	interim measure
IM-3	Interim Measures Number 3
IMCP	Interim Measures Contingency Plan
MCL	maximum contaminant level
mg/L	milligrams per liter
MS/MSD	matrix spike/matrix spike duplicate
ORP	oxidation-reduction potential
PG&E	Pacific Gas and Electric Company
PMP	Performance Monitoring Program
RCRA	Resource Conservation and Recovery Act
RMP	Surface Water Monitoring Program
T22	Title 22
TDS	total dissolved solids
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency
UTL	upper tolerance limit

EXECUTIVE SUMMARY

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 Surface Water Monitoring Program for the Topock Project. Hydraulic and chemical monitoring data were collected and used to evaluate the IM hydraulic containment system performance based on a set of standards approved by the California Department of 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 on site; (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 the First Quarter 2016. The average pumping rate for the IM extraction system during First Quarter 2016 was 131 gallons per minute, and an estimated 56.3 pounds (25.6 kilograms) of chromium were removed in January and February 2016. To date, the IM extraction system has removed 8,530 pounds (3,870 kilograms) of chromium.

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 (the site). 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.

This report presents the monitoring data from three PG&E monitoring programs:

- Site-wide Groundwater Monitoring Program (GMP)
- Site-wide Surface Water Monitoring Program (RMP)
- Interim Measures No. 3 (IM-3) Performance Monitoring Program (PMP)

This report presents the monitoring data collected from PG&E's GMP, RMP, and PMP between January 1 and March 31, 2016 (hereafter referred to as **First Quarter 2016**). Table 1-1 shows the current reporting schedule for these programs.

This report is divided into six sections:

Section 1 introduces the site: the GMP, RMP, and PMP programs; and the regulatory framework.

Section 2 describes the First Quarter 2016 monitoring activities and site operations conducted in support of these programs.

Section 3 presents GMP and RMP monitoring results for the First Quarter 2016 (January through March).

Section 4 presents PMP monitoring results and the IM evaluation for the First Quarter 2016 (January, February, and March) reporting period.

Section 5 describes upcoming monitoring events for the Second Quarter 2016.

Section 6 lists the references cited throughout this report.

This combined GMP (including RMP) and PMP reporting format was approved by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) in May 2009 (DTSC, 2009a).

1.1 Recent Regulatory Communication

- On June 27, 2014, DTSC approved changes to the GMP sampling schedule, sample frequencies, and sampling methods (DTSC, 2014b). This approval was based on recommendations documented in the Fourth Quarter 2013 and Annual edition of the Interim Measures Performance Monitoring and Site-Wide Groundwater and Surface Water Monitoring Report (henceforth referred to as the GMP/PMP Report; CH2M Hill 2014). Starting in Third Quarter 2014, the groundwater sample collection method for most monitoring wells was conditionally switched from the traditional three-volume method to the low-flow (minimal drawdown) method (following the standard operating procedures detailed in the Sampling and Analysis Field Procedures Topock Program Manual, Revision 1, PG&E, Topock Project [CH2M Hill, 2005a] and relevant updates).

- An updated listing of DTSC approved purge methods and sampling frequencies, as well as a revised set of proposed GMP analytical suite modification, was provided in Table 7-1 of the Fourth Quarter 2014 and Annual GMP/PMP Report (CH2M Hill, 2015a). Additional recommendations for updates to the GMP program sampling methods were outlined by PG&E in a letter to DTSC dated August 21, 2015 (PG&E, 2015) and in Section 7 of the Fourth Quarter 2015 and Annual GMP/PMP Report (Arcadis, 2016). Recommendations made by PG&E in these documents are currently under agency review.
- On June 29, 2015, the Arizona Department of Environmental Quality (ADEQ) recommended that PG&E increase the sampling frequency of MW-55-120 from semiannually to quarterly (ADEQ, 2015). This was initiated by PG&E in Third Quarter 2015 and is planned to continue through at least Second Quarter 2016. Results of sampling at this location will be evaluated following the Second Quarter 2016 sampling event and a new sampling frequency will be proposed in the Second Quarter 2016 edition of this report.
- On July 20, 2015, DTSC conditionally approved a proposal to evaluate a modification to the IM-3 pumping regime by allowing PE-01 to be shut off with pumping shifted to TW-03D and TW-02D or TW-02S so long as gradient targets are maintained and contingency is not triggered based on hexavalent chromium [Cr(VI)] concentrations in select floodplain wells (DTSC, 2015). Because PE-01 pumps water with low concentrations of chromium (typically less than 5 micrograms per liter [µg/,L]), shifting the flow from this well to a higher concentration extraction well can increase the rate of chromium removal from the floodplain. After a brief period of testing hydraulic gradients and operating the IM-3 treatment plant with PE-01 off in August and September 2015, PE-01 pumping was resumed in September 2015 and remained on through the end of the year. On February 3, 2016, PE-01 was turned off, with the pumping shifted to TW-03D and supplemented by TW-02D. PE-01 has remained off since this time except for brief periods to support groundwater sample collection.

1.2 History of Groundwater Impact at the Site

1.2.1 Cr(VI) Impacts to Groundwater

The Topock Compressor Station began operations in 1951. Remediation efforts are ongoing to address Cr(VI) in soil and groundwater resulting from the historical water discharge practices. A comprehensive library documenting the history of remediation at the Topock Compressor Station is available on the DTSC website at http://dtsc-topock.com/ (DTSC, 2016).

1.2.2 Background Concentrations of Cr(VI)

Based on a regional study of naturally occurring metals in groundwater and a statistical evaluation of these data (CH2M Hill, 2009a), naturally occurring Cr(VI) in groundwater was calculated to exhibit an upper tolerance limit (UTL) concentration of 32 µg/L. This concentration is used as the background concentration for remedial activities. At the site, the Cr(VI) plume is mostly present within unconsolidated alluvial fan and fluvial deposits (within the alluvial aquifer) and, to a lesser extent, in fractured bedrock. Natural groundwater gradients are generally west-to-east in the majority of the site. The depth to groundwater and the thickness of the saturated sediments vary significantly across the site based on surface topography and the paleo-topography of the top of bedrock surface underneath the site.

1.3 Site-wide Groundwater and Surface Water Monitoring Programs

1.3.1 Basis for GMP and RMP Programs

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 groundwater investigation. The RCRA program is 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 to date have been documented in regular monitoring reports (available on the DTSC website). In addition, data from between July 1997 and October 2007 are summarized in the Revised Final RCRA Facility Investigation/Remedial Investigation Report, Volume 2–Hydrogeologic Characterization and Results of Groundwater and Surface Water Investigation, PG&E, Topock Compressor Station, Needles, California, dated February 11, 2009 (CH2M Hill, 2009a). Additional 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, PG&E, Topock Compressor Station, Needles, California, dated June 29, 2009 (CH2M Hill, 2009b).

In compliance with the requirements for Groundwater and Surface Water Monitoring Program directive of April 2005 (DTSC, 2005a), this report presents the First Quarter 2016 GMP and RMP report for the IM monitoring activities conducted from January 1, 2016 through March 31, 2016.

1.3.2 GMP and RMP Sampling Networks

The GMP monitoring well network and RMP surface water sampling network are shown on Figures 1-2 and 1-3, respectively, and summarized below. The complete GMP network includes more than 100 wells that monitor groundwater in the alluvial aquifer and bedrock, and the RMP includes 16 surface water monitoring locations.

GMP Groundwater Monitoring Wells	RMP Surface Water Monitoring Locations
129 monitoring wells in California, including two normally dry wells	10 river channel locations
8 monitoring wells in Arizona	4 shoreline locations
2 water supply wells	2 other surface water sampling locations (adjacent to the shoreline)
2 IM-3 extraction wells	
5 test wells	

The well construction and sampling methods for wells in the GMP and other monitoring wells at the site are summarized in Appendix A (Table A-1) of the Fourth Quarter 2015 and Annual GMP/PMP report (Arcadis, 2016).

1.4 Interim Measure Performance Monitoring Program

1.4.1 Basis for PMP 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 report presents the First Quarter 2016 PMP evaluation results for the IM monitoring activities from January 1, 2016 through March 31, 2016.

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-02D, TW-03D, TW-02S, and PE-01), conveyance piping, a groundwater treatment plant, and an injection well field for the discharge of the treated groundwater. On February 3, 2016, PE-01 was turned off, with the pumping shifted to TW-03D and supplemented by TW-02D. Extraction well TW-03D operated full time through First Quarter 2016. 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, PG&E, Topock Compressor Station, Needles, California (CH2M Hill, 2005b) 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; July 23, 2010, and June 27, 2014 (DTSC, 2007a; 2008a-b; 2010a; 2014b). On July 20, 2015, DTSC conditionally approved the proposal to modify the IM-3 pumping regime by allowing PE-01 to be shut off and pumping to be shifted to TW-03D and TW-02D or TW-02S so long as gradient targets are maintained (DTSC, 2015). Because PE-01 pumps water with low concentrations of chromium (typically less than 5 µg/L), shifting more pumping to a higher concentration extraction well can increase the rate of chromium removal from the floodplain.

1.4.2 PMP – Aquifer Hydraulics

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.

1.4.3 PMP Monitoring Network

Figure 1-4 shows the locations of wells used for the PMP. The PMP includes data collection for IM groundwater Extraction, IM Hydraulic Monitoring, the IM Contingency Plan (IMCP), and IM Chemical Performance Monitoring. With approval from DTSC, the list of wells included in the PMP programs was modified beginning August 1, 2008 (PG&E, 2008). The PMP wells and monitoring locations are described in the table below.

PMP Wells and Monitoring Networks

IM Extraction Wells (4 Wells)

- TW-02D
- TW-03D
- TW-02S
- PE-01

Hydraulic Monitoring Network – 53 Wells Total (including 17 shallow, 14 intermediate, and 22 deep)

- 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

IMCP Wells (24 Wells)

- 6 Shallow Wells
- 5 Intermediate Wells
- 13 Deep Wells

Chemical Performance Monitoring Locations (11)

- 9 Annual Wells
- 1 River Sampling Location
- 1 Biennial Well

1.4.3.1 IM Extraction Wells

The PMP Program includes four IM extraction wells (Figure 1-4). Three wells (TW-02D, TW-03D, and TW-02S) are located on the MW-20 bench, and one well (PE-01) is located on the floodplain approximately 450 feet east of extraction well TW-03D.

1.4.3.2 IM Hydraulic Monitoring Network

The IM Hydraulic Monitoring Network consists of 53 wells (shown on Figure 1-4) that are used to evaluate the performance of the IM and demonstrate compliance of required hydraulic gradients. Section 4.7 of this report presents a summary of the IM Hydraulic monitoring results for First Quarter 2016.

In addition to the established IM Hydraulic Monitoring Network, groundwater monitoring wells installed on the Arizona side of the Colorado River (not formally part of the PMP) also provide groundwater elevation data and demonstrate hydraulic gradients on the Arizona side of the river (Figure 1-4).

1.4.3.3 IM Contingency Plan (IMCP) Wells

Twenty four IMCP wells have been selected as part of an early detection system to detect any increases in chromium concentrations at areas of interest at the site. Following a sampling event, any sampled IMCP wells are evaluated against their established trigger levels. If any exceedances are observed, a notification process is initiated as outlined in the Revised Contingency Plan Flow Chart (Figure 1; PG&E, 2008). Results of IMCP well evaluations following First Quarter 2016 sampling are presented in Section 4.3 of this report.

1.4.3.4 IM Chemical Performance Monitoring Wells

The well network is sampled annually or biennially for an expanded chemistry suite as part of the IM Chemical Performance Monitoring Network, which was most recently amended in 2008 (PG&E, 2008). Currently, nine wells are sampled annually as part of this program, one well is sampled biennially, and one river location is sampled annually. Results of chemical performance monitoring were last reported in the Fourth Quarter 2015 Annual GMP-PMP Report (Arcadis, 2016). The next scheduled assessment is planned for Fourth Quarter 2016.

1.5 Sustainability

The GMP, RMP, and PMP monitoring programs strive to use sustainable sampling and data collection practices. This section briefly describes some of the sustainability practices now in use.

As approved by the California Regional Water Quality Control Board in 2006, groundwater sampling purge water is disposed via the onsite IM-3 treatment plant and injection process, eliminating offsite transport and disposal of sampling purge water. Additionally, the RMP boat contractor has always been a local Lake Havasu City-based business. Benefits of employing local resources for sampling support are reduced fuel consumption and greenhouse gas emissions, and increased local business support. In 2012, the analytical laboratory services supporting Topock monitoring was changed from a Los Angeles-based lab to the current California-certified Las Vegas-based lab, reducing lab courier travel by more than half. In 2007, DTCS approved the use of USEPA Method 218.6, which has a 28-day holding time in place of USEPA Method SW846 Method 7199 for Cr(VI) analysis, which has a 24-hour holding time. Subsequently, PG&E also adopted the 14-day holding time nitrate method (first used with the CMP) for Topock GMP to replace the previous 48-hour holding time method. These method changes reduced courier travel mileage and increased field efficiency with less frequent sample pickups. The use of the DTSC website and electronic report submittal has reduced the number of report hard copies and conserved natural resources. The number of report hard copies has been reduced over the years from 16 to 10 for the quarterly reports and from 18 to 12 for the annual reports to conserve resources.

To reduce the potential for impacts to floodplain areas with nesting habitat for sensitive avian species, water level data telemetry systems were installed from 2011 through 2012 at the five key gradient compliance well locations. The telemetry systems are still used. The solar-powered data telemetry systems eliminated the need for weekly download visits (reduced mobilizations of offsite technical support resources) and allows for monthly or less frequent visits for key well transducer calibrations and maintenance.

The DTSC approved the provisional use of low-flow sampling on June 27, 2014 (DTSC, 2014b) at most alluvial screened wells. Low-flow sampling reduced the volume of purge water and sampling footprint at most wells. For wells still using the three-volume purge sampling methods (primarily bedrock and long screened wells), pumps and tubing are sized for the optimum purge technique at each monitoring well. Utility vehicles (for example, Polaris Ranger or Kawasaki Mule) and one quiet electric four-wheel drive utility vehicle are used to access wells on the floodplain and in some culturally sensitive areas rather than the full-size pickup truck. These best practices reduce generator use, impacts from well access, and decontamination water volume to further decrease the monitoring footprint.

More recently, DTSC's conditional approval to modify the IM-3 pumping regime by allowing PE-01 to be shut off (with pumping shifted to TW-03D and TW-02D or TW-02S), allows for an increase in the rate of chromium removal from the floodplain, thereby extending the benefit of additional mass removal by the existing system to the overall site cleanup while maintaining hydraulic control of the plume.

2 FIRST QUARTER 2016 MONITORING ACTIVITIES

This section summarizes the monitoring and sampling activities completed during First Quarter 2016 for the GMP, RMP, and PMP.

2.1 Groundwater Monitoring Program

2.1.1 Monthly Sampling

Groundwater was sampled from two of the IM extraction wells (PE-01 and TW-03D) in January, February, and March 2016 and was analyzed for Cr(VI), dissolved chromium, total dissolved solids (TDS), pH, and several additional analytes.

2.1.2 Quarterly Sampling

The First Quarter 2016 GMP groundwater monitoring event was conducted between February 22 and February 25, 2016, and included sampling from 19 groundwater monitoring wells.

Samples from these wells were submitted for laboratory analysis of Cr(VI), dissolved chromium, and specific conductance. Additional field-measured parameters consisted of oxidation-reduction potential (ORP) and pH.

In addition, groundwater samples were collected at selected GMP wells for analysis of:

- Arsenic from a subset of wells screened in fluvial sediments, as directed by DTSC in the Corrective Measures Study review comment No. 186 (DTSC, 2009b)
- Arsenic from bedrock monitoring wells
- Contaminants of potential concern (COPCs), including molybdenum, nitrate/nitrite as nitrogen (referred to as nitrate hereafter), selenium, and potential in situ byproducts (manganese, iron, and arsenic) from a subset of wells (DTSC, 2010b; 2011; 2015).

2.1.3 Well Maintenance

PG&E performs quarterly inspections and takes corrective actions as necessary to ensure that the monitoring wells are in good working condition (DTSC, 2013; CH2M HILL, 2005a-b). Table A-1 in Appendix A summarizes the quarterly inspection log, field observations, and mitigation actions, if any, for well maintenance.

2.1.4 Sampling at Park Moabi

A sampling event was performed April 5, 2016 at the Moabi Regional Park wells (PM-03 and PM-04) to collect total (unfiltered) chromium samples because samples from these wells were inadvertently not collected during the normal (annual) sampling during Fourth Quarter 2015 sampling. Results of this additional sampling are reported in this First Quarter 2016 GMP/PMP Report and are consistent with previous sampling results at these locations. To aid in review of total chromium sampling results at these locations (the only wells in the program sampled for total chromium, because they are drinking water supply wells), a column has been added to Table 3-1 to display the total chromium results.

2.1.5 Implementation of Alternative Sampling Methods

2.1.5.1 Site-wide Implementation of Low-flow Sampling Method

On June 27, 2014, the DTSC approved a change from the traditional three-volume purge sampling method to using a low-flow sampling method (DTSC, 2014b). This approval applied to wells screened in alluvial/fluvial sediments with saturated screen lengths of 20 feet or less. Sample collection using the low-flow method at wells meeting the screen length criterion was initiated during the Third Quarter 2014 sampling event and has continued through First Quarter 2016.

2.1.5.2 Sampling Method Trials at Select Wells

In conformance with the June 27, 2014 email from DTSC (DTSC, 2014b), PG&E began conducting sampling method trials at MW-38S, MW-38D, MW-40S, and MW-40D during Fourth Quarter 2014. An assessment of the method trials was performed following Fourth Quarter 2015 sampling and was included with the Fourth Quarter 2015 Annual GMP/PMP Report (Arcadis, 2016). The annual report presented the results after one year of method trials and made recommendations for updates to the trials (currently under agency review). Method trials were continued through First Quarter 2016 at these wells. The next assessment will be presented in the Fourth Quarter 2016 Annual GMP/PMP Report.

2.2 Surface Water Monitoring Program

Quarterly surface water sampling for the First Quarter 2016 was conducted February 23 and 24, 2016 from the RMP monitoring network. In addition, the First Quarter 2016 period includes an additional “low river” surface water monitoring event, which was conducted on January 26 and 27, 2016. Samples from both events were analyzed for Cr(VI), dissolved 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 (barium and total suspended solids) to develop baseline concentrations for future remedy performance evaluations.

2.3 Performance Monitoring Program

Groundwater samples for the PMP were collected during the First Quarter 2016 GMP sampling event. In addition, PMP pressure transducers, which monitor hydraulic gradients of the alluvial aquifer, were downloaded in the first week of each month (January, February, and March). The transducers in the key monitoring wells (MW-27-085, MW-31-135, MW-33-150, MW-34-100, and MW-45-095; Figure 1-4) are also downloaded via a cellular telemetry system.

In accordance with DTSC conditional approval (DTSC, 2015) PE-01 was shut off February 3, 2016, with the pumping shifted to TW-03D and supplemented by TW-02D. Conditional approval included the requirement that PG&E alert DTSC if chromium from individual floodplain monitoring wells within approximately 800 feet of TW-3D exhibited concentrations greater than the maximum detected chromium concentrations from 2014 (or most recent year if a well was not sampled in 2014) when PE-01 is shut down. No First Quarter 2016 chromium results from floodplain monitoring wells exceeded this new criterion. A further discussion of these results is presented in Section 4.3.1 of this report.

3 RESULTS FOR SITE-WIDE GROUNDWATER MONITORING AND SURFACE WATER SAMPLING

This section presents the analytical results for groundwater and surface water monitoring conducted during First Quarter 2016.

3.1 Groundwater Results for Cr(VI) and Chromium

Table 3-1 presents the First Quarter 2015 through First Quarter 2016 groundwater sample results for Cr(VI) and chromium, among other parameters. The laboratory reports for samples analyzed during First Quarter 2016 are provided in Appendix B.

Figures 3-1a and 3-1b present the First Quarter 2016 Cr(VI) results in plan view for wells monitoring the upper-depth (shallow wells) and lower-depth (deep wells) intervals, respectively, of the alluvial aquifer and bedrock. Figures 3-1a and 3-1b also show the interpreted extent of groundwater Cr(VI) concentrations higher than 32 µg/L for each depth interval. The value of 32 µg/L is based on the calculated natural background UTL for Cr(VI) in groundwater from the background study (CH2M Hill, 2009a).

During First Quarter 2016, the maximum detected Cr(VI) concentration was 37,000 µg/L in well MW-68-180. The maximum detected dissolved chromium concentration was also in MW-68-180 at 42,000 µg/L.

3.2 Other Groundwater Monitoring Results

3.2.1 Contaminants of Potential Concern and In Situ Byproducts

Table 3-2 presents the COPCs and in situ byproducts sampling results for groundwater monitoring well samples collected in First Quarter 2016. The wells where maximum concentrations of these analytes were reported are summarized as follows:

- MW-46-175 with a molybdenum concentration of 190 µg/L
- MW-68-180 with a nitrate concentration of 31 milligrams per liter (mg/L)
- MW-68-180 with a selenium concentration of 16 µg/L
- MW-64BR with a manganese concentration of 1,000 µg/L
- MW-72BR-200 with an arsenic concentration of 16 µg/L

3.2.2 Arsenic Sampling in Monitoring Wells

Select Alluvial Aquifer and bedrock wells were sampled for arsenic during the First Quarter 2016 event. Selected arsenic results are presented with the COPCs and in situ byproducts results in Table 3-2.

Additional arsenic results are presented in Appendix C, Table C-1. Arsenic concentrations were within expected ranges for the wells sampled.

3.3 Surface Water Results for Cr(VI) and Chromium

During the First Quarter 2016 (including both the "low river" event in January and the quarterly event in February), Cr(VI) and dissolved chromium were not detected at concentrations higher than reporting limits at any surface water monitoring locations (Table 3-3).

Table 3-4 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. Arsenic (less than 3 µg/L), barium (less than 155 µg/L), molybdenum (less than 6 µg/L), and selenium (less than 2 µg/L) concentrations were detected at all sampled locations. The nitrate/nitrite as nitrogen results were less than 1.0 mg/L, except at R-19 (1.1 mg/L). The dissolved manganese results were above laboratory reporting limits in samples collected at C-I-3, C-MAR, C-R22a, R-28, and R63 with a maximum detection of 110 µg/L at C-MAR during the quarterly sampling event in February. Dissolved iron detections were observed above laboratory reporting limits at the same sampling locations as manganese, as well as at C-TAZ and R-63, with a maximum detection of 420 µg/L at C-MAR during the quarterly event in February.

The C-MAR sample location is near the east side of the Colorado River at the mouth of the Topock Marsh area as shown on Figure 1-3. This location is out of the main river channel and adjacent to an area of naturally reducing geochemical conditions in groundwater. The RRB location is also located off the main river channel in a small embayment that is partially or completely cut off from the river during low water and where reducing conditions likely exist in nearby shallow groundwater. Elevated manganese and iron concentrations are typical of reduced geochemical environments. Detections of these metals may also occur occasionally in more oxidized environments due to the presence of suspended solids (colloids) in the filtered samples.

3.4 Data Validation and Completeness

Laboratory analytical data from the First Quarter 2016 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 for First Quarter 2016:

- Eighteen 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. No flags were applied.
- Two samples containing detectable levels of dissolved boron were qualified as non-detects, “U” flagged at the measured concentrations.
- Five samples containing detectable levels of boron were qualified as estimated detects, “J” flagged due to an associated calibration verification recovery greater than criteria.
- Boron was recovered at concentrations greater than quality control (QC) limits in the matrix spike (MS), matrix spike duplicate (MSD) and post digestion (PDS) in sample P3-T1Q16A. The associated parent sample was qualified as an estimated detect and flagged “J.”
- Iron was recovered at concentrations lower than QC limits in the MS and/or MSD of samples C-NR3-D-Q116L and R63-D-Q116L. The associated parent samples were qualified as an estimated detects and flagged “J.”
- Dissolved barium was recovered at concentrations lower than QC limits in the MS of sample MW-700-Q116L (R-28-Q116 is the parent sample). The associated parent sample result and field duplicate results were qualified as estimated detects and flagged “J.”
- Dissolved sodium was recovered at concentrations lower than QC limits in the MS, MSD and PDS of sample PE-01-0116. The associated parent sample result was qualified as an estimated detect and flagged “J.”
- Dissolved sodium was recovered at concentrations higher than QC limits in the MS, MSD and PDS of sample PE-01-0316 and in the MS and serial dilution of sample PM-03-0416. The associated parent sample results were qualified as estimated detects and flagged “J.”
- PDS recoveries were not within QC criteria in the following sample/analyses: PM-04-Q116/dissolved magnesium, C-BNS-D-Q116L/dissolved selenium, and PM-03-0416/dissolved selenium. The associated results were qualified as estimated detects and flagged “J.”
- Serial dilution percent differences were not within QC criteria in the following sample/analytes: P2-T1Q16/Boron, MW-65-225-Q116/dissolved chromium, MW-58BR-Q116/dissolved manganese, P3-T1Q16/molybdenum and TW-3D-Q116/dissolved sodium. The associated results were qualified as estimated detects and flagged “J.”
- The percent difference between the sample/lab duplicate pair for TDS exceed QC criteria in sample P3-T1Q16A. The associated result was qualified as an estimated detect and flagged “J.”
- Based on the March 2007 USEPA ruling, and reaffirmed in the May 2012 USEPA ruling, pH has a 15-minute holding time. As a result, all samples analyzed in a certified lab by Method SM4500-HB (pH)

are analyzed outside the USEPA-recommended holding time. Therefore, the pH results for the First Quarter 2016 sampling events analyzed in a certified lab are considered estimated.

- Some samples (initially analyzed within the USEPA-recommended holding times for analysis) were analyzed by a non-ADEQ-approved laboratory. This required that original samples be sent to an ADEQ-approved laboratory for analysis. These additional results from the ADEQ-approved laboratory are shown in the table shaded gray. Some of these analyses were performed outside of the USEPA's recommended holding time. These data are considered estimated because the ADEQ-approved laboratory data confirmed the data analysis performed within the USEPA-recommended holding time by the non-ADEQ-approved laboratory.

No other significant analytical deficiencies were identified in the First Quarter 2016 data. Additional details are provided in the data validation reports kept in the project file and available upon request.

In addition, PG&E identified no “suspect” detections of Cr(VI) in surface water samples or any other “suspect” samples requiring reanalysis at the laboratory; therefore, in conformance with the agencies’ April 4, 2014 direction letter (DTSC, 2014a), no notifications were made to DTSC and the United States Department of the Interior (DOI).

4 FIRST QUARTER INTERIM MEASURES PERFORMANCE MONITORING PROGRAM EVALUATION

This section presents the quarterly PMP evaluation summary.

4.1 Water Quality Results for Performance Monitoring Program Floodplain Wells

The Chemical Performance Monitoring 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.

In July 2008 and June 2014, DTSC approved modifications to the PMP IM chemical performance monitoring parameters (DTSC, 2008b; 2014). For the complete annual general chemistry results, see Table F-1 in Appendix F of the 2015 GMP/PMP Report (Arcadis, 2016). The next round of Chemical Performance Monitoring sampling is planned for Fourth Quarter 2016.

4.2 Cr(VI) Distribution and Trends in Performance Monitoring Program Wells

The First Quarter 2016 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 view on Figure 4-1.[1] Figure 4-2 presents the First Quarter 2016 Cr(VI) results for cross-section B, oriented parallel to the Colorado River. The locations of cross-sections A and B are shown on Figure 4-1.

Analytical results from February 2015 through March 2016 are presented in Table 3-1. Appendix D includes graphs of Cr(VI) concentration vs time in selected monitoring well clusters through March 2016. Figure 4-3 presents graphs of Cr(VI) concentration vs time for the following deep monitoring wells in the floodplain area through March 2016: MW-34-100, MW-36-090, MW-36-100, MW-44-115, MW-44-125, and MW-46-175. The locations of these deep wells selected for performance evaluation are shown on Figure 4-1.

[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.

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 remained at these levels during the First Quarter 2016 period. Cr(VI) concentrations have remained relatively steady with respect to historic trends or have decreased in many wells since IM and PE-01 pumping began in 2004 and 2005, respectively (Figure 4-3 and Appendix D).

Key Cr(VI) concentration trends over the long term for the PMP wells sampled during the First Quarter 2016 include:

- Concentrations at the MW-20 cluster (located near the TW-03D pumping well) indicate generally decreasing concentrations at the shallow well MW-20-070 (since 2011), decreasing concentrations at MW-20-100 (since May 2007), and variable concentrations at MW-20-130 but overall decreasing since 2007 (Figure D-3).
- As shown on Figure 4-3 and Figure D-6, well MW-34-100 has shown a seasonally fluctuating trend in Cr(VI) concentration over the past 8 years; since June 2006, concentrations at this well have shown a general decreasing trend. Landward gradients have been present at this location since IM pumping began; therefore, the seasonal fluctuations in concentration observed at MW-34-100 are not considered an indication of any migration of the plume toward the river.
- Deep well MW-36-100 Cr(VI) concentrations initially increased upon the startup of PE-01 pumping, began to decrease in 2007, and have remained lower than 100 µg/L since late 2008, as shown on Figures 4-3 and D-7.
- Deep well MW-39-100 concentrations steadily declined since the start of IM pumping (Figure D-8).
- Deep well MW-44-115 has shown a downward trend since July 2006, as presented on Figures 4-3 and D-10. Well MW-44-125 has also shown an overall downward trend since November 2008, as presented on Figures 4-3 and D-10.
- Concentrations in deep well MW-46-175 have shown a seasonally fluctuating but overall downward trend since 2007, as presented on Figures 4-3 and D-11.
- Well TW-04, a deeper well, has shown a declining trend since March 2007, as presented on Figure D-19.

4.3 Performance Monitoring Program Contingency Plan Cr(VI) Monitoring

4.3.1 Chromium Concentrations in IMCP Wells

The Topock IMCP was developed to detect and control possible migration of the Cr(VI) plume toward the Colorado River (DTSC, 2005b). Currently, the IMCP consists of 24 wells that activate contingencies per criteria in the IMCP plan if their trigger levels are exceeded. Cr(VI) results for the IMCP wells sampled during the First Quarter 2016 reporting period were all lower than their trigger levels. Appendix D includes Cr(VI) concentration graphs for the IMCP wells and select other site monitoring wells.

4.3.2 Chromium Concentrations in Wells within 800 feet of TW-3D when PE-01 is Not Pumping

As discussed in Section 1.1, extraction well PE-01 has been shut down since February 3, 2016 (except for brief periods to support groundwater sample collection from PE-01). Table D-1 in Appendix D compares Cr(VI) and chromium concentrations to the maximum detected concentrations from 2014 (or 2013 for wells sampled biennially). As shown in Table D-1, wells within 800 feet of TW-03D that were sampled during the reporting period had Cr(VI) and dissolved chromium concentrations below the 2014 (or 2013, as applicable) maximum levels. Thus, no contingency actions were required.

4.4 Extraction Systems Operations

From January 1, 2016 through March 31, 2016, the volume of groundwater extracted and treated by the IM-3 system was 17,163,909 gallons, and an estimated 56.3 pounds (25.6 kilograms) of chromium were removed from the aquifer in January and February 2016 (Table 4-1).

During First Quarter 2016, extraction wells TW-03D, PE-01 (turned off since February 3, except for 1.5 hours on March 2 when the well was turned on for sampling), and TW-02D operated at a combined pumping rate of 131.0 gallons per minute (gpm), including periods of planned and unplanned downtime. The average monthly pumping rates were 133.0 gpm (January 2016), 132.0 gpm (February, 2016), and 128.0 gpm (March 2016) during the First Quarter 2016. Extraction well TW-02S was not operated during First Quarter 2016. Table 4-1 shows the average pumping rate and total volume pumped for the system during First Quarter 2016, as well as monthly average pumping rates and total volumes pumped per extraction well during the quarter.

The operational runtime percentage for the IM extraction system was 96.1 percent during this reporting period. The operations log for the extraction system during First Quarter 2016, including planned and unplanned downtime, is included in Appendix E. Additional IM3 operational data is presented in quarterly IM3 Treatment System Monitoring Reports (e.g., CH2M HILL, 2016a).

The concentrate (i.e., saline water) from the reverse osmosis system was shipped off site as a non-hazardous waste and was transported to Liquid Environmental Solutions in Phoenix, Arizona for treatment and disposal. Nine containers of solids from the IM-3 facility were disposed of at the U.S. Ecology Chemical Waste Management facility in Beatty, Nevada during First Quarter 2016. Daily IM-3 inspections included general facility inspections, flow measurements, and site security monitoring. Daily logs with documentation of inspections are maintained on site.

During the reporting period, Cr(VI) concentrations in TW-03D remained stable, ranging from a maximum value of 790 µg/L in March to a minimum value of 730 µg/L in February, 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-01 on the floodplain during the reporting period ranged from 3.9 µg/L in February (just prior to shut down) to 0.79 µg/L in March, as shown in Table 4-2. TDS concentrations in PE-1 for this reporting period have remained stable.

Groundwater samples are currently collected at extraction wells TW-02S and TW-02D on an annual basis, with the next round of sampling planned at these wells for Fourth Quarter 2016. However, with the increased use of TW-02D during First Quarter 2016, this well is currently being evaluated for an increase in sampling frequency (for implementation during the Second Quarter 2016). Further discussion on this matter will be presented in the Second Quarter 2016 GMP/PMP Report or in separate communication to DTSC.

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 56 wells (excluding five Arizona locations) and two river monitoring stations (I-3 and RRB; Figure 4-4a). The data are typically continuous, with only short interruptions for sampling or maintenance.

Hydraulic gradients were measured during the First Quarter 2016 for well pairs selected for performance monitoring of the two pumping centers (TW-03D and PE-01).Table 4-3 presents the monthly average hydraulic gradients that were measured for each of the gradient well pairs in January, February, and

March 2016 as well as the overall average of all well pairs. Landward gradients exceeding the 0.001 ft/ft requirement were measured each month as shown in Table 4-3. Figure 4-6 presents graphs of the hydraulic gradients, monthly average pumping rates, and river levels for the quarterly period. The overall average gradients for all well pairs were 0.0095, 0.0037, and 0.0034 foot per foot (ft/ft). This is 9.5, 3.7, and 3.4 times greater than the required gradient of 0.001 ft/ft, respectively. The monthly average gradients for the northern well pair were 2.2, 2.7, and 2.8 times the target gradient of 0.001 ft/ft. For the central well pair, the monthly average gradients were 19.4, 6.6, and 6.0 times the target gradient. The southern well pair average gradients were 6.8, 1.9, and 1.4 times the target gradient.

Daily average groundwater and river elevations calculated from the pressure transducer data for the First Quarter 2016 reporting period are summarized in Table F-1 in Appendix F. Groundwater elevations (or total hydraulic heads) are adjusted for temperature and salinity differences between wells (i.e., adjusted to a common freshwater equivalent). The elevation of the Colorado River measured at the I-3 gauge station (location shown on Figure 4-4a) is also shown on the hydrographs in Appendix F.

Average First Quarter 2016 groundwater elevations for the shallow, mid-depth, and deep wells are presented and contoured in plan view on Figures 4-4a, 4-4b, and 4-4c. Average 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 complex vertical gradients present at portions of the Topock site, water levels for some wells are not considered in the contouring in the plan views on Figures 4-4a through 4-4c and in the cross-section on Figure 4-5.

Deep-zone water levels shown on Figure 4-4c indicate that potentiometric levels in monitoring wells in Arizona are higher than those in wells across the river on the California floodplain. This means that the apparent hydraulic gradient on the Arizona side of the river is westward and, as a result, groundwater flow would also be toward the west in that area. This is consistent with the site conceptual model and with the current numerical groundwater flow model.

For the First Quarter 2016 reporting period, transducer data were recorded in wells located on the Arizona side of the Colorado River. The quarterly average groundwater elevations for wells MW-55-120, MW-54-085, MW-54-140, and MW-54-195 are presented on Figure 4-4c, if available, and are used for contouring where appropriate. With the exception of well MW-55-045, all wells in the MW-54 and MW-55 clusters are screened in the deep interval of the alluvial aquifer. Well MW-55-045 is screened across portions of the shallow and middle intervals.

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). Superimposed on 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 the 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. For example, the projected river level for May 2016 is based on the April 2016 USBR projections 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 (last 3 years; plotted on Figure 4-7) are summarized in Table 4-4. The future projections shown on Figure 4-7 (predicted data points and lines are in different color than actual measurements) are based on USBR long-range projections of Davis Dam releases and Lake Havasu levels from April 2015. There is more uncertainty in these projections at longer times in the future because water demand is based on various elements including climatic factors.

Current USBR projections, presented in Table 4-4, show that the average Davis Dam release for April 2016 (15,400 cubic feet per second) will be more than the actual release in March 2016 (15,000 cubic feet per second). Based on April 2016 USBR projections, it is anticipated that the Colorado River level at the I-3 gage location in April 2016 will be approximately 0.3 ft higher compared to the actual levels in March 2016.

4.7 Quarterly Performance Monitoring Program Evaluation Summary

The groundwater elevation and hydraulic gradient data from January, February, and March 2016 performance monitoring indicate that the minimum landward gradient target of 0.001 ft/ft was exceeded each month during the First Quarter 2016. The overall average landward gradients during First Quarter 2016 were 9.5, 3.7, and 3.4 times the required minimum magnitude, respectively, as shown in Table 4-3. The gradient analysis from designated well pairs are an approved line of evidence for assessing hydraulic containment of the Cr(VI) plume created by pumping from extraction wells TW-03D and PE-01. Based on the hydraulic and monitoring data and evaluation presented in this report, the IM performance standard has been met for the First Quarter 2016 reporting period.

A total of 17,163,909 gallons of groundwater was extracted during First Quarter 2016 by the IM-3 treatment facility. The average pumping rate for the IM extraction system during First Quarter 2016, including system downtime, was 131.0 gpm. An estimated 56.3 pounds (25.6 kilograms) of chromium were removed from groundwater during January and February 2016, as presented in Table 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) generally continue to show overall stable or declining Cr(VI) concentrations relative to prior monitoring results, as shown in Appendix D. Presentation and evaluation of the Cr(VI) trends observed in the performance monitoring area during the First Quarter 2016 reporting period are discussed in Section 4.2.

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 Second Quarter 2016 GMP/PMP Report, which will be submitted by August 15, 2016.

5.1 Groundwater Monitoring Program

5.1.1 Quarterly Monitoring

Consistent with the July 23, 2010 DTSC sampling schedule approval (DTSC, 2010a), the Second Quarter 2016 groundwater monitoring event is currently being conducted and is scheduled to run April 25 to May 6, 2016. This event includes groundwater sampling at 99 wells.

5.1.2 Monthly Monitoring

Monthly sampling of TW-03D will continue during the first 2 weeks of each month. PE-01 has been shut down (February 2016); however, monthly sampling will continue in coordination with IM-3 staff.

5.1.3 Well Inspections

Monitoring wells will be inspected 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 Second Quarter 2016 surface water monitoring event will be conducted during the week of April 25, 2016 at 25 locations in the RMP monitoring network.

5.3 Performance Monitoring Program

5.3.1 Extraction

The IM-3 extraction system will continue to be operated in compliance with the conditional approval letter dated July 20, 2015 (DTSC, 2015). Extraction will be primarily from TW-03D. If TW-03D cannot produce the target pumping rate of 135 gpm, then TW-02D and/or TW-02S will be pumped to supplement TW-03D and achieve total flow. PE-01 can also be run as needed to maintain gradient control during low river stages.

5.3.2 PMP Monitoring and Notifications

Quarterly GMP monitoring results from IMCP wells will continue to be compared to their respective Cr(VI) trigger levels. If any exceedances are observed, a notification process will be initiated as outlined in the Revised Contingency Plan Flow Chart (Figure 1, PG&E 2008).

Quarterly GMP monitoring results from wells listed in the July 20, 2015 DTSC approval letter for conditional PE-01 shut-off (DTSC, 2015) will continue to be compared to maximum Cr(VI) and total dissolved chromium concentrations measured in 2014 (or for biennial sampling frequency, the 2013 maximum concentrations), and results that exceed the previous maximum will be reported to DTSC within 40 days after the end of the quarterly GMP sampling event.

The IM Hydraulic Monitoring Network (shown on Figure 1-4) will continue to be used to evaluate the performance of the IM and demonstrate compliance of required hydraulic gradients.

5.3.3 Transducer Downloads

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) and the MW-33 cluster will continue via telemetry at monthly or more frequent intervals, as needed to support IM-3 pumping operations, during Second Quarter 2016. Downloads of the remainder of the transducers will occur monthly on the first week of each month during Second Quarter 2016.

5.3.4 Monthly IM-3 Updates

As requested at the July 2015 CWG meeting, monthly IM-3 hydraulic performance data have been shared with agencies, Tribes, and stakeholders. The February 2016 data snapshot was submitted to DTSC and DOI on March 14, 2016, and the March 2016 data snapshot was submitted on April 15, 2016. The next monthly data snapshot for April 2016 will be submitted by May 20.

6 REFERENCES

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TABLES

Table 1-1

Topock Monitoring Reporting Schedule

First Quarter 2016 Interim Measures Performance Monitoring and
Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Time Period	First Quarter	Second Quarter	Third Quarter	Fourth 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 - February	March - May	June - September	October - December

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity
MW-09	SA	5/12/2015		LF	230	230	---	3,510	-170	7.6	1
MW-09	SA	10/7/2015		LF	200	230	---	3,050	89	7.3	1
MW-09	SA	12/1/2015		LF	190	200	---	3,400	31	7.4	4
MW-10	SA	5/12/2015		LF	280	290	---	3,410	-170	7.4	16
MW-10	SA	10/7/2015		LF	190	210	---	2,610	71	7.4	20
MW-10	SA	12/1/2015		LF	150	170	---	2,950	67	7.4	39
MW-11	SA	5/12/2015		LF	130	130	---	2,570	-140	7.5	2
MW-11	SA	10/7/2015		LF	130	130	---	2,380	75	7.4	17
MW-11	SA	12/2/2015		LF	120	110	---	2,730	77	7.6	3
MW-11	SA	12/2/2015	FD	LF	120	110	---	---	---	---	---
MW-12	SA	5/19/2015		LF	1,900	2,200	---	7,120	-81	7.7	1
MW-12	SA	12/2/2015		LF	2,300	2,300	---	6,600	98	8.0	1
MW-13	SA	12/7/2015		LF	23	22	---	2,220	63	7.3	4
MW-14	SA	5/6/2015		LF	16	18	---	2,240	-110	7.5	6
MW-14	SA	12/7/2015		LF	17	16	---	2,210	31	7.6	106
MW-15	SA	12/9/2015		LF	13	12	---	1,810	69	7.6	4
MW-16	SA	12/8/2015		LF	11	11	---	1,130	63	7.5	9
MW-17	SA	12/9/2015		LF	13	14	---	1,370	150	7.7	2
MW-18	SA	12/7/2015		LF	22	21	---	1,510	29	7.5	2
MW-19	SA	5/14/2015		LF	630	690	---	2,490	-110	7.4	15
MW-19	SA	12/7/2015		LF	450	430	---	1,870	59	7.4	6
MW-20-070	SA	5/19/2015		LF	1,900	2,200	---	2,010	-180	7.3	4
MW-20-070	SA	5/19/2015	FD	LF	1,900	2,200	---	---	---	---	---
MW-20-070	SA	12/8/2015		LF	1,900	1,900	---	1,790	62	7.7	2
MW-20-100	MA	5/19/2015		LF	2,400	2,800	---	2,690	-190	7.2	3
MW-20-100	MA	12/8/2015		LF	1,600	1,700	---	2,360	53	7.3	8
MW-20-130	DA	5/19/2015		LF	7,600	7,900	---	11,800	-250	7.2	2
MW-20-130	DA	12/8/2015		LF	7,700	8,000	---	11,700	59	7.5	20
MW-20-130	DA	12/8/2015	FD	LF	7,700	8,000	---	---	---	---	---

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity
MW-21	SA	5/6/2015		LF	1.5	1.4	---	10,700	-340	7.2	36
MW-21	SA	12/9/2015		LF	1.5	1.4	---	11,600	-18	7.2	2
MW-22	SA	4/22/2015		LF	ND (1)	ND (1)	---	29,800	-390	6.9	5
MW-22	SA	12/3/2015		LF	ND (1)	ND (1)	---	22,000	-80	6.5	9
MW-23-060	BR	4/30/2015		3V	38	34	---	17,300	70	8.9	1
MW-23-060	BR	12/3/2015		3V	36	32	---	17,000	-44	9.8	2
MW-23-080	BR	4/30/2015		3V	3	2.5	---	17,400	-140	10	1
MW-23-080	BR	12/3/2015		3V	1.8	3.2 J	---	16,300	-40	10	1
MW-24A	SA	4/29/2015		LF	0.28	ND (1)	---	2,010	-200	8.3	5
MW-24A	SA	4/29/2015	FD	LF	0.3	ND (1)	---	---	---	---	---
MW-24A	SA	12/1/2015		LF	ND (0.2)	4	---	1,780	-140	8.6	12
MW-24B	DA	4/29/2015		LF	ND (1)	1.8	---	20,200	-280	7.7	3
MW-24B	DA	12/1/2015		LF	32	35	---	18,700	-93	8.1	6
MW-24BR	BR	12/2/2015		3V	ND (1)	ND (1)	---	13,600	-220	7.7	5
MW-25	SA	5/11/2015		LF	91	87	---	2,080	-140	8.0	1
MW-25	SA	12/7/2015		LF	150	140	---	5,890	86	7.9	14
MW-26	SA	5/19/2015		LF	2,400	2,500	---	4,680	-240	7.5	2
MW-26	SA	12/8/2015		LF	2,600	2,700	---	4,080	68	7.3	23
MW-26	SA	12/8/2015	FD	LF	2,600	2,700	---	---	---	---	---
MW-27-020	SA	12/3/2015		LF	ND (0.2)	ND (1)	---	1,090	-40	7.6	2
MW-27-060	MA	12/3/2015		LF	ND (0.2)	ND (1)	---	1,010	-130	7.5	19
MW-27-060	MA	12/3/2015	FD	LF	ND (0.2)	ND (1)	---	---	---	---	---
MW-27-085	DA	4/20/2015		LF	ND (0.2)	ND (1)	---	10,000	-39	7.4	1
MW-27-085	DA	4/20/2015	FD	LF	ND (0.2)	ND (1)	---	---	---	---	---
MW-27-085	DA	12/3/2015		LF	ND (0.2)	ND (1)	---	9,980	-58	7.2	2
MW-28-025	SA	4/21/2015		LF	ND (0.2)	ND (1)	---	968	-280	7.0	1
MW-28-025	SA	12/2/2015		LF	ND (0.2)	ND (1)	---	1,220	76	7.2	1
MW-28-090	DA	4/21/2015		LF	ND (0.2)	ND (1)	---	5,000	-38	7.1	10
MW-28-090	DA	12/2/2015		LF	ND (0.2)	ND (1)	---	4,970	-44	7.1	1

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity
MW-29	SA	4/21/2015		LF	ND (0.2)	ND (1)	---	2,490	-310	7.2	1
MW-29	SA	12/1/2015		LF	0.24	ND (1)	---	2,720	-120	7.2	1
MW-30-030	SA	12/3/2015		LF	ND (0.2)	2.3	---	12,000	-110	7.7	18
MW-30-050	MA	12/3/2015		LF	ND (0.2)	ND (1)	---	1,050	-56	7.4	2
MW-30-050	MA	12/3/2015	FD	LF	ND (0.2)	ND (1)	---	---	---	---	---
MW-31-060	SA	5/13/2015		LF	480	490	---	3,710	-190	7.5	1
MW-31-060	SA	12/7/2015		LF	920	880	---	2,850	-27	7.6	2
MW-31-135	DA	12/7/2015		LF	13	12	---	12,700	-190	7.8	2
MW-32-020	SA	12/3/2015		LF	ND (1)	1.2	---	38,700	-59	6.8	3
MW-32-020	SA	12/3/2015	FD	LF	ND (1)	ND (5)	---	---	---	---	---
MW-32-035	SA	4/20/2015		LF	ND (0.2)	ND (1)	---	11,000	-260	7.5	5
MW-32-035	SA	12/3/2015		LF	ND (1)	ND (1)	---	11,300	-120	7.2	15
MW-33-040	SA	4/27/2015		LF	ND (0.2)	ND (1)	---	7,220	-250	8.0	3
MW-33-040	SA	12/1/2015		LF	ND (1)	ND (1)	---	17,800	71	7.7	5
MW-33-090	MA	4/27/2015		LF	6.8	5.7	---	10,100	-310	7.2	4
MW-33-090	MA	12/1/2015		LF	6.2	5.8	---	10,200	130	7.4	1
MW-33-150	DA	4/27/2015		LF	4	3.2	---	15,700	-250	7.5	4
MW-33-150	DA	12/1/2015		LF	2.9	4.3	---	15,700	110	7.1	2
MW-33-210	DA	4/27/2015		LF	7.9 J	6.4 J	---	20,600	-270	7.3	3
MW-33-210	DA	4/27/2015	FD	LF	7.7 J	6.3 J	---	---	---	---	---
MW-33-210	DA	12/1/2015		LF	14	13	---	20,100	81	7.4	6
MW-34-055	MA	12/3/2015		LF	ND (0.2)	1.4	---	1,010	-42	7.6	1
MW-34-080	DA	4/20/2015		LF	ND (0.2)	ND (1)	---	3,010	-160	7.9	1
MW-34-080	DA	12/3/2015		LF	ND (0.2)	ND (1)	---	5,690	-36	7.2	1
MW-34-100	DA	2/16/2015		LF	230	210	---	14,900	-270	8.0	2
MW-34-100	DA	4/20/2015		LF	7.6 J	5.4 J	---	15,400	-410	7.7	3
MW-34-100	DA	4/20/2015	FD	LF	7.7 J	5.7 J	---	---	---	---	---
MW-34-100	DA	10/6/2015		LF	70	67	---	20,200	10	7.7	1
MW-34-100	DA	12/3/2015		LF	260	260	---	17,500	-91	7.8	2

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters: ORP (mV)	Field pH	Turbidity
MW-34-100	DA	12/3/2015	FD	LF	260	250	---	---	---	---	---
MW-34-100	DA	2/25/2016		LF	41	31	---	14,100	-36	7.7	2
MW-35-060	SA	5/7/2015		LF	24	24	---	6,860	-220	7.3	2
MW-35-060	SA	12/7/2015		LF	22	23	---	7,100	49	7.0	1
MW-35-135	DA	5/7/2015		LF	28	25	---	11,000	---	7.3	4
MW-35-135	DA	12/7/2015		3V	30	28	---	11,500	57	7.3	2
MW-36-020	SA	12/8/2015		LF	ND (0.2)	ND (1)	---	11,600	-140	7.2	2
MW-36-040	SA	12/8/2015		LF	0.42	ND (1)	---	1,140	-150	7.6	1
MW-36-050	MA	12/8/2015		LF	ND (0.2)	ND (1)	---	1,110	-81	7.5	1
MW-36-070	MA	12/8/2015		LF	ND (0.2)	ND (1)	---	985	12	7.6	1
MW-36-090	DA	4/23/2015		LF	ND (0.2)	ND (1)	---	1,020	-360	7.8	2
MW-36-090	DA	12/8/2015		LF	ND (0.2)	2.2	---	10	-49	8.0	1
MW-36-100	DA	4/23/2015		LF	59	51	---	7,150	---	7.3	3
MW-36-100	DA	12/8/2015		LF	63	58	---	7,770	-24	7.2	7
MW-37D	DA	4/27/2015		LF	8.3 J	6.7 J	---	17,500	-220	7.6	4
MW-37D	DA	12/7/2015		LF	6.5	6.3	---	14,000	19	7.6	15
MW-37S	MA	12/8/2015		LF	12	11	---	6,030	31	7.6	15
MW-38D	DA	4/30/2015		3V	16	14	---	21,300	-280	7.9	1
MW-38D	DA	4/30/2015		LF	20	20	---	21,300	-330	7.7	1
MW-38D	DA	12/1/2015		3V	20	23	---	---	---	---	---
MW-38D	DA	12/1/2015		LF	19	19	---	26,000	-73	8.0	13
MW-38S	SA	2/9/2015		3V	ND (0.2)	ND (1)	---	1,750	-230	7.5	2
MW-38S	SA	2/9/2015		LF	0.22	ND (1)	---	1,740	-200	7.4	2
MW-38S	SA	4/30/2015		3V	ND (0.2)	ND (1)	---	1,870	-290	7.6	1
MW-38S	SA	4/30/2015		LF	ND (0.2)	ND (1)	---	1,880	-240	7.2	2
MW-38S	SA	9/28/2015		3V	ND (0.2)	ND (1)	---	1,800	---	7.7	1
MW-38S	SA	9/28/2015		LF	ND (0.2)	ND (1)	---	1,800	---	7.7	1
MW-38S	SA	12/1/2015		3V	ND (0.2)	ND (1)	---	---	---	---	---
MW-38S	SA	12/1/2015		LF	ND (0.2)	ND (1)	---	1,890	-140	7.9	4

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity
MW-38S	SA	2/24/2016		3V	ND (0.2)	ND (1)	---	---	---	---	---
MW-38S	SA	2/24/2016		LF	ND (0.2)	ND (1)	---	1,670	-210	7.8	4
MW-39-040	SA	12/4/2015		LF	ND (0.2)	ND (1)	---	1,300	-120	7.9	2
MW-39-050	MA	12/4/2015		LF	ND (0.2)	ND (1)	---	1,240	-120	7.5	2
MW-39-060	MA	12/4/2015		LF	0.46	ND (1)	---	1,350	66	7.8	1
MW-39-060	MA	12/4/2015	FD	LF	0.38	ND (1)	---	---	---	---	---
MW-39-070	MA	12/4/2015		LF	0.58	ND (1)	---	1,970	-13	7.6	2
MW-39-080	DA	12/4/2015		LF	ND (0.2)	ND (1)	---	2,300	-120	7.7	2
MW-39-100	DA	4/21/2015		LF	7.4 J	5.9 J	---	13,000	-220	7.6	1
MW-39-100	DA	12/4/2015		LF	23	24	---	13,400	-220	6.8	2
MW-40D	DA	5/12/2015		H	ND (1)	ND (1)	---	---	---	---	---
MW-40D	DA	5/12/2015		LF	120	110	---	17,900	-310	7.0	9
MW-40D	DA	12/7/2015		H	82	78	---	---	---	---	---
MW-40D	DA	12/7/2015		LF	98	87	---	16,000	38	7.4	3
MW-40D	DA	12/7/2015	FD	H	97	88	---	---	---	---	---
MW-40S	SA	12/7/2015		H	10	9.1	---	---	---	---	---
MW-40S	SA	12/7/2015		LF	8.1	11	---	2,630	61	7.5	5
MW-41D	DA	5/6/2015		LF	ND (1)	ND (1)	---	22,300	-270	6.9	1
MW-41D	DA	12/7/2015		LF	3	2.8	---	21,000	57	7.2	1
MW-41M	DA	12/7/2015		LF	9.5	15	---	15,400	19	7.2	2
MW-41M	DA	12/7/2015	FD	LF	9.5	14	---	---	---	---	---
MW-41S	SA	12/7/2015		LF	15	14	---	---	---	---	---
MW-42-030	SA	12/3/2015		LF	0.84	ND (1)	---	3,320	-160	7.8	9
MW-42-055	MA	4/20/2015		LF	0.22	1.7	---	1,230	-310	8.3	4
MW-42-055	MA	12/3/2015		LF	0.4	2.1	---	1,230	-77	8.2	3
MW-42-065	MA	4/20/2015		LF	ND (0.2)	ND (1)	---	5,620	-350	7.5	2
MW-42-065	MA	12/3/2015		LF	ND (0.2)	ND (1)	---	5,980	42	7.4	2
MW-43-025	SA	12/8/2015		LF	ND (0.2)	ND (1)	---	1,450	-110	7.2	3
MW-43-075	DA	12/2/2015		LF	ND (0.2)	ND (1)	---	10,200	-59	7.0	2

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity
MW-43-090	DA	12/2/2015		LF	ND (1)	ND (1)	---	16,800	-38	7.1	12
MW-44-070	MA	4/23/2015		LF	ND (0.2)	ND (1)	---	1,910	-340	7.1	3
MW-44-070	MA	12/4/2015		LF	ND (0.2)	ND (1)	---	1,730	39	7.7	6
MW-44-115	DA	2/17/2015		LF	37	31	---	10,500	-200	7.1	8
MW-44-115	DA	2/17/2015	FD	LF	37	31	---	---	---	---	---
MW-44-115	DA	4/23/2015		LF	31	28	---	10,300	-300	6.9	5
MW-44-115	DA	10/6/2015		LF	27	27	---	11,500	55	7.9	8
MW-44-115	DA	10/6/2015	FD	LF	27	26	---	---	---	---	---
MW-44-115	DA	12/4/2015		LF	26	34	---	12,000	39	7.9	4
MW-44-115	DA	2/25/2016		LF	30	28	---	12,300	-110	7.9	2
MW-44-115	DA	2/25/2016	FD	LF	29	27	---	---	---	---	---
MW-44-125	DA	4/23/2015		LF	1.2 J	5.4	---	7,000	-340	7.1	3
MW-44-125	DA	4/23/2015	FD	LF	1.5 J	6.2	---	---	---	---	---
MW-44-125	DA	12/4/2015		LF	0.3	2	---	6,610	-40	7.4	2
MW-44-125	DA	12/4/2015	FD	LF	0.23	2.2	---	---	---	---	---
MW-46-175	DA	2/16/2015		LF	25	21	---	16,700	-270	8.2	2
MW-46-175	DA	4/21/2015		LF	13 J	9.4 J	---	17,400	-310	8.2	1
MW-46-175	DA	10/6/2015		LF	11	11	---	18,800	46	8.3	1
MW-46-175	DA	12/2/2015		LF	23	21	---	19,200	130	8.2	1
MW-46-175	DA	2/25/2016		LF	18	19	---	20,100	77	8.2	1
MW-46-205	DA	4/21/2015		LF	1.4	ND (1)	---	19,900	-280	8.2	1
MW-46-205	DA	12/2/2015		LF	1.6	1.6	---	21,100	96	8.1	1
MW-47-055	SA	5/7/2015		LF	15	15	---	5,250	-170	7.8	2
MW-47-055	SA	12/2/2015		LF	23	21	---	4,920	-120	7.4	2
MW-47-115	DA	5/7/2015		LF	23	22	---	13,900	---	7.2	8
MW-47-115	DA	12/2/2015		LF	19	17	---	14,800	17	7.3	9
MW-48	BR	5/7/2015		3V	ND (1)	ND (1)	---	18,400	-37	6.4	9
MW-48	BR	12/4/2015		LF	ND (1)	ND (1)	---	17,200	130	7.3	10
MW-49-135	DA	12/1/2015		3V	1.8	1.8	---	14,200	-190	7.7	1

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

									Selected Field Parameters		
Location ID	Aquifer Zone	Sample Date		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	ORP (mV)	Field pH	Turbidity
MW-49-275	DA	12/1/2015		LF	ND (1)	4.7	---	25,600	-49	8.1	5
MW-49-365	DA	12/1/2015		LF	ND (1)	ND (1)	---	38,100	-180	8.0	1
MW-49-365	DA	12/1/2015	FD	LF	ND (1)	ND (1)	---	---	---	---	---
MW-50-095	MA	5/6/2015		LF	14	13	---	5,890	-200	7.6	2
MW-50-095	MA	12/8/2015		LF	14	13	---	5,360	35	7.8	9
MW-50-200	DA	5/20/2015		LF	3,800	4,000	---	21,300	-240	6.9	1
MW-50-200	DA	12/7/2015		LF	4,900	5,100	---	17,600	34	7.6	15
MW-51	MA	5/20/2015		LF	4,600	5,100	---	13,000	-270	7.5	1
MW-51	MA	12/8/2015		LF	4,800	4,900	---	12,800	83	7.3	1
MW-52D	DA	4/22/2015		Slant	ND (1)	ND (1)	---	19,800	---	8.0	1
MW-52D	DA	12/2/2015		3V	ND (1)	ND (1)	---	22,200	-81	7.6	1
MW-52M	DA	4/22/2015		Slant	ND (1)	ND (1)	---	15,000	---	7.7	1
MW-52M	DA	12/2/2015		3V	ND (1)	ND (1)	---	18,000	-68	7.3	1
MW-52S	MA	4/22/2015		Slant	ND (0.2)	ND (1)	---	8,670	---	6.9	1
MW-52S	MA	12/2/2015		3V	ND (0.2)	ND (1)	---	10,000	-72	6.9	1
MW-53D	DA	4/22/2015		Slant	ND (1)	ND (1)	---	23,200	-320	8.1	1
MW-53D	DA	12/2/2015		3V	ND (1)	ND (1)	---	27,100	-130	7.9	1
MW-53M	DA	4/22/2015		Slant	ND (1)	ND (1)	---	17,400	-400	7.8	1
MW-53M	DA	12/2/2015		3V	ND (1)	ND (1)	---	17,600	-190	7.8	1
MW-54-085	DA	4/28/2015		LF	---	---	---	8,990	-240	7.5	2
MW-54-085	DA	4/28/2015	(a)	LF	ND (1)	ND (1)	---	---	---	---	---
MW-54-085	DA	12/9/2015		LF	ND (0.2)	ND (1)	---	10,700	-50	7.3	1
MW-54-085	DA	12/9/2015	(a)	LF	ND (0.5 J)	ND (10)	---	---	---	---	---
MW-54-085	DA	12/9/2015	FD	LF	ND (0.2)	ND (1)	---	---	---	---	---
MW-54-140	DA	4/28/2015		LF	---	---	---	13,200	-260	7.5	4
MW-54-140	DA	4/28/2015	(a)	LF	ND (1)	ND (1)	---	---	---	---	---
MW-54-140	DA	12/9/2015		LF	ND (1)	ND (1)	---	13,100	-55	7.6	1
MW-54-140	DA	12/9/2015	(a)	LF	ND (0.5 J)	ND (10)	---	---	---	---	---
MW-54-195	DA	4/28/2015		LF	---	---	---	19,700	-270	8.0	4

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters: ORP (mV)	Field pH	Turbidity
MW-54-195	DA	4/28/2015	(a)	LF	ND (2)	ND (1)	---	---	---	---	---
MW-54-195	DA	12/9/2015		LF	ND (1)	ND (1)	---	19,500	-180	7.9	1
MW-54-195	DA	12/9/2015	(a)	LF	ND (0.5 J)	ND (10)	---	---	---	---	---
MW-55-045	MA	4/29/2015		LF	---	---	---	1,480	-180	7.7	3
MW-55-045	MA	4/29/2015	(a)	LF	ND (0.2)	ND (1)	---	---	---	---	---
MW-55-045	MA	4/29/2015	FD(a)	LF	ND (0.2)	ND (1)	---	---	---	---	---
MW-55-045	MA	12/7/2015		LF	ND (0.2)	ND (1)	---	1,450	-110	7.6	2
MW-55-045	MA	12/7/2015	(a)	LF	ND (0.5 J)	ND (10)	---	---	---	---	---
MW-55-120	DA	4/29/2015		LF	---	---	---	7,980	-150	7.7	9
MW-55-120	DA	4/29/2015	(a)	LF	6.7	7	---	---	---	---	---
MW-55-120	DA	10/21/2015		LF	7.8 J	6.3 J	---	9,460	60	7.9	7
MW-55-120	DA	10/21/2015	(a)	LF	7.58 J	7.04	---	---	---	---	---
MW-55-120	DA	12/7/2015		LF	8	8.2	---	8,450	-26	7.9	3
MW-55-120	DA	12/7/2015	(a)	LF	7.5 J	ND (10)	---	---	---	---	---
MW-55-120	DA	2/24/2016		LF	7.6	8.1	---	9,290	-87	8.0	8
MW-55-120	DA	2/24/2016	(a)	LF	7.2 J	ND (10)	---	---	---	---	---
MW-56D	DA	4/28/2015		Slant	---	---	---	19,900	-280	7.7	3
MW-56D	DA	4/28/2015	(a)	Slant	ND (2)	ND (1)	---	---	---	---	---
MW-56D	DA	12/9/2015		3V	ND (1)	ND (1)	---	20,900	-120	6.9	1
MW-56D	DA	12/9/2015	(a)	3V	ND (0.5 J)	ND (10)	---	---	---	---	---
MW-56M	DA	4/28/2015		Slant	---	---	---	14,000	-240	7.2	2
MW-56M	DA	4/28/2015	(a)	Slant	ND (2)	ND (1)	---	---	---	---	---
MW-56M	DA	12/9/2015		Slant	ND (1)	ND (1)	---	15,000	-150	6.9	1
MW-56M	DA	12/9/2015	(a)	Slant	ND (0.5 J)	ND (10)	---	---	---	---	---
MW-56S	SA	4/28/2015		Slant	---	---	---	5,980	-260	7.0	1
MW-56S	SA	4/28/2015	(a)	Slant	ND (0.2)	ND (1)	---	---	---	---	---
MW-56S	SA	12/9/2015		Slant	ND (0.2)	ND (1)	---	6,540	-140	6.7	1
MW-56S	SA	12/9/2015	(a)	Slant	ND (0.5 J)	ND (10)	---	---	---	---	---
MW-57-070	BR	5/21/2015		3V	410	420	---	2,960	-240	7.2	2

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

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Location ID	Aquifer Zone	Sample Date		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity
MW-57-070	BR	12/4/2015		3V	520	550	---	2,920	-23	7.1	6
MW-57-185	BR	5/11/2015		3V	10	9	---	19,400	-300	9.1	1
MW-57-185	BR	12/4/2015		3V	9.9	8.5	---	18,700	-45	8.3	5
MW-58BR	BR	2/10/2015		LF	3.6	3.5	---	9,620	-220	7.6	1
MW-58BR	BR	5/18/2015		LF	ND (0.2)	ND (1)	---	9,500	-220	7.2	1
MW-58BR	BR	9/30/2015		LF	ND (0.2)	ND (1)	---	8,260	---	7.5	7
MW-58BR	BR	12/7/2015		LF	2.9	2.9	---	9,300	-15	7.5	6
MW-58BR	BR	2/24/2016		LF	4.1	4.5	---	9,140	40	7.4	5
MW-59-100	SA	5/19/2015		LF	3,900	4,300	---	12,900	-120	7.0	2
MW-59-100	SA	12/3/2015		LF	4,500	4,300	---	11,700	62	6.9	6
MW-59-100	SA	12/3/2015	FD	LF	4,400	4,400	---	---	---	---	---
MW-60-125	BR	5/14/2015		3V	1,100	1,200	---	10,100	-170	7.0	4
MW-60-125	BR	12/4/2015		3V	960	840	---	8,360	60	7.4	27
MW-60BR-245	BR	2/10/2015		3V	3.6	5.2	---	18,200	-240	7.9	2
MW-60BR-245	BR	5/14/2015		3V	ND (1)	ND (1)	---	19,300	---	7.4	2
MW-60BR-245	BR	9/29/2015		3V	ND (1)	1.4	---	18,400	---	8.2	4
MW-60BR-245	BR	12/4/2015		3V	61	53	---	16,700	-250	7.9	1
MW-60BR-245	BR	2/23/2016		3V	ND (1)	ND (5)	---	18,900	-81	8.1	2
MW-61-110	BR	5/13/2015		3V	440	500	---	17,300	-140	7.3	2
MW-61-110	BR	12/4/2015		3V	540	530	---	15,700	-34	7.6	6
MW-62-065	BR	2/16/2015		3V	520	510	---	6,850	-30	7.1	2
MW-62-065	BR	2/16/2015	FD	3V	530	510	---	---	---	---	---
MW-62-065	BR	5/13/2015		3V	580	620	---	7,130	-98	7.4	2
MW-62-065	BR	5/13/2015	FD	3V	580	620	---	---	---	---	---
MW-62-065	BR	10/7/2015		3V	560	610	---	6,520	70	7.3	10
MW-62-065	BR	12/3/2015		3V	570	570	---	6,710	63	7.3	10
MW-62-065	BR	2/23/2016		3V	560	620	---	6,700	-34	7.4	5
MW-62-110	BR	2/11/2015		Flute	1,200	1,300	---	9,230	72	7.0	2
MW-62-110	BR	5/19/2015		Flute	1,000	1,100	---	9,830	-120	6.5	2

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

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									Selected Field Parameters		
Location ID	Aquifer Zone	Sample Date		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	ORP (mV)	Field pH	Turbidity
MW-62-110	BR	10/1/2015		Flute	ND (10)	2.6	---	14,300	---	6.6	1
MW-62-110	BR	12/4/2015		3V	0.29	ND (1)	---	8,850	-140	7.7	13
MW-62-110	BR	2/24/2016		3V	ND (1)	ND (1)	---	13,700	-99	7.6	12
MW-62-190	BR	5/19/2015		Flute	ND (0.2)	ND (1)	---	19,200	-280	6.4	2
MW-62-190	BR	12/4/2015		3V	ND (1)	ND (1)	---	18,000	-220	7.7	5
MW-63-065	BR	2/10/2015		3V	1.5	1.9	---	7,310	-70	7.2	6
MW-63-065	BR	4/29/2015		3V	1.4	1.3	---	7,420	-160	7.1	6
MW-63-065	BR	9/28/2015		3V	1.3	1.2	---	8,240	68	7.1	2
MW-63-065	BR	12/4/2015		3V	1.7	7.7	---	6,790	29	7.3	9
MW-63-065	BR	2/23/2016		3V	1.5	2.1	---	7,550	-41	7.1	8
MW-64BR	BR	2/18/2015		LF	ND (1)	1.3	---	14,600	-190	7.3	621
MW-64BR	BR	5/18/2015		LF	ND (5)	11	---	15,400	-170	7.4	1,000 >
MW-64BR	BR	10/1/2015		LF	ND (1)	1.5	---	15,500	---	7.4	23
MW-64BR	BR	12/7/2015		LF	ND (1)	ND (1)	---	14,700	-100	7.3	3
MW-64BR	BR	2/22/2016		LF	ND (1)	ND (1)	---	14,600	-74	7.3	70
MW-65-160	SA	3/24/2015		LF	140	120	---	4,160	-130	7.0	1
MW-65-160	SA	5/11/2015		LF	110	110	---	4,080	-240	8.0	2
MW-65-160	SA	5/11/2015	FD	LF	110	110	---	---	---	---	---
MW-65-160	SA	9/30/2015		LF	140	150	---	4,030	56	7.2	8
MW-65-160	SA	12/2/2015		LF	130	160	---	3,490	28	7.0	31
MW-65-160	SA	2/24/2016		LF	140	150	---	4,040	-25	7.2	29
MW-65-225	DA	2/17/2015		LF	150	140	---	18,400	-140	7.3	9
MW-65-225	DA	5/11/2015		LF	160	140	---	17,700	-140	7.1	6
MW-65-225	DA	9/30/2015		LF	180	210	---	16,400	29	7.4	9
MW-65-225	DA	12/2/2015		LF	250	250	---	14,600	99	7.3	10
MW-65-225	DA	2/24/2016		LF	510	490 J	---	12,900	-71	7.3	10
MW-66-165	SA	5/13/2015		LF	650	760	---	5,010	-180	7.4	8
MW-66-165	SA	12/2/2015		LF	490	540	---	5,050	81	7.4	58
MW-66-230	DA	5/21/2015		LF	6,500	7,000	---	20,400	---	7.0	1

Table 3-1

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Location ID	Aquifer Zone	Sample Date		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity
MW-66-230	DA	12/3/2015		LF	7,700	6,800	---	18,600	38	7.8	5
MW-66BR-270	BR	5/18/2015		3V	ND (0.2)	ND (1)	---	19,800	---	8.4	28
MW-66BR-270	BR	12/9/2015		3V	ND (1)	ND (1)	---	6,080	-310	9.3	22
MW-67-185	SA	5/20/2015		LF	1,800	2,100	---	8,360	-150	7.7	7
MW-67-185	SA	12/2/2015		LF	1,700	1,700	---	8,420	67	7.2	137
MW-67-225	MA	5/20/2015		LF	3,200	3,400	---	8,720	-280	7.4	8
MW-67-225	MA	12/2/2015		LF	3,400	3,300	---	8,610	40	7.6	119
MW-67-260	DA	5/20/2015		LF	700	730	---	20,300	---	8.6	1
MW-67-260	DA	12/2/2015		LF	1,100	1,100	---	21,400	-26	8.4	7
MW-68-180	SA	2/18/2015		LF	31,000	33,000	---	4,670	-54	7.5	4
MW-68-180	SA	5/18/2015		LF	12,000	13,000	---	3,910	-140	7.7	8
MW-68-180	SA	9/30/2015		LF	32,000	44,000	---	5,050	70	7.3	8
MW-68-180	SA	9/30/2015	FD	LF	32,000	44,000	---	---	---	---	---
MW-68-180	SA	12/2/2015		LF	36,000	40,000	---	4,490	130	7.2	18
MW-68-180	SA	2/24/2016		LF	37,000	42,000	---	4,980	2.7	7.4	40
MW-68-240	DA	5/21/2015		LF	2,200	2,500	---	19,600	---	7.1	1
MW-68-240	DA	12/2/2015		LF	2,300	2,200	---	15,800	120	7.1	3
MW-68BR-280	BR	5/27/2015		3V	ND (1)	ND (1)	---	21,900	-370	8.2	4
MW-68BR-280	BR	12/3/2015		LF	ND (1)	ND (1)	---	20,100	-170	8.7	6
MW-69-195	BR	2/17/2015		3V	930	800	---	4,100	-75	7.6	2
MW-69-195	BR	5/14/2015		3V	970	1,100	---	4,120	-110	7.0	1
MW-69-195	BR	5/14/2015	FD	3V	980	1,100	---	---	---	---	---
MW-69-195	BR	10/1/2015		3V	890	940	---	4,190	79	7.3	1
MW-69-195	BR	12/4/2015		3V	830	790	---	3,610	-30	7.4	5
MW-69-195	BR	2/24/2016		3V	620	670	---	3,920	26	7.3	9
MW-69-195	BR	2/24/2016	FD	3V	610	660	---	---	---	---	---
MW-70-105	BR	5/7/2015		3V	150	130	---	4,240	-250	7.7	1
MW-70-105	BR	12/7/2015		3V	150	140	---	3,210	52	7.7	3
MW-70BR-225	BR	5/27/2015		3V	2,300	2,400	---	14,800	---	7.5	1

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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		Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity
MW-70BR-225	BR	12/7/2015		3V	2,000	2,000	---	11,800	83	7.3	3
MW-71-035	SA	5/6/2015		LF	ND (1)	ND (1)	---	13,100	-170	6.9	313
MW-71-035	SA	12/4/2015		LF	1.2	15	---	18,000	140	6.9	287
MW-72-080	BR	2/11/2015		3V	130	110	---	17,100	-150	7.9	5
MW-72-080	BR	5/11/2015		3V	92	85	---	16,500	-210	7.5	2
MW-72-080	BR	9/29/2015		3V	130	120	---	17,300	48	7.7	1
MW-72-080	BR	12/7/2015		3V	140	120	---	17,000	50	7.4	3
MW-72-080	BR	2/23/2016		3V	120	110	---	17,300	-86	7.7	29
MW-72BR-200	BR	2/11/2015		3V	6.5	5.6	---	16,400	-280	8.3	1
MW-72BR-200	BR	5/4/2015		3V	4.3	3.7	---	15,600	-310	8.1	1
MW-72BR-200	BR	9/29/2015		3V	4.2	4.1	---	15,000	25	8.2	1
MW-72BR-200	BR	12/8/2015		3V	6.4	6.2	---	16,300	-110	8.0	1
MW-72BR-200	BR	2/23/2016		3V	6	5.6	---	17,100	-300	8.3	2
MW-73-080	BR	2/10/2015		3V	21	20	---	963	-86	8.2	88
MW-73-080	BR	5/6/2015		3V	42	41	---	7,950	-160	7.6	36
MW-73-080	BR	9/29/2015		3V	51	45	---	11,900	47	7.4	16
MW-73-080	BR	12/8/2015		3V	48	43	---	11,100	85	7.3	45
MW-73-080	BR	2/23/2016		3V	53	49	---	11,800	-29	7.4	11
MW-74-240	BR	5/14/2015		3V	ND (0.2)	1.2	---	987	-390	8.4	84
MW-74-240	BR	12/7/2015		3V	0.31	8.2	---	768	-150	8.6	269
OW-03D	DA	12/7/2015		LF	13	12	---	11,000	-95	7.6	2
OW-03M	MA	12/7/2015		LF	17	18	---	6,490	-140	7.9	5
OW-03S	SA	12/7/2015		3V	25	25	---	1,510	44	7.8	10
OW-03S	SA	12/7/2015	FD	3V	25	24	---	---	---	---	---
PE-01	DA	2/3/2015		Tap	4.7	3.8	---	---	---	---	---
PE-01	DA	3/17/2015		Tap	4	3.4	---	---	---	---	---
PE-01	DA	4/7/2015		Tap	3.6	3.6	---	---	---	---	---
PE-01	DA	5/5/2015		Tap	2.9	2.5	---	---	---	---	---
PE-01	DA	6/2/2015		Tap	3.4	3.1	---	---	---	7.5	---

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

									Selected Field Parameters		
Location ID	**Aquifer Zone**	**Sample Date**		**Sample Method**	**Hexavalent Chromium (ug/L)**	**Dissolved Chromium (ug/L)**	**Total Chromium (ug/L)**	**Specific Conductance (us/Cm)**	**ORP (mV)**	**Field pH**	**Turbidity**
PE-01	DA	7/7/2015		3V	3.2	3.1	---	---	---	---	---
PE-01	DA	8/4/2015		Tap	3.2	2.9	---	---	---	---	---
PE-01	DA	9/1/2015		Tap	0.43	1.4	---	---	---	---	---
PE-01	DA	10/6/2015		Tap	3.2	2.7	---	---	---	---	---
PE-01	DA	10/27/2015		Tap	---	2.7	---	4,420	31	7.8	---
PE-01	DA	11/3/2015		3V	3.4	3.1	---	---	---	---	---
PE-01	DA	11/10/2015		Tap	---	3.5	---	4,420	170	7.6	2
PE-01	DA	12/1/2015		3V	3.6	3.3	---	---	---	---	---
PE-01	DA	12/7/2015		Tap	3.8	---	---	4,440	2.1	8.0	1
PE-01	DA	1/6/2016		Tap	3.8	3.6	---	---	---	---	---
PE-01	DA	2/2/2016		Tap	3.9	3.3	---	4,080	220	7.3	1.91
PE-01	DA	3/2/2016		Tap	0.79	ND (1)	---	4,620	200	7.1	2.02
PGE-07BR	BR	12/2/2015		3V	ND (1)	ND (1)	---	19,900	-300	6.9	19
PGE-08	BR	12/10/2015		3V	ND (1)	ND (1)	---	20,500	-120	8.1	2
PM-03	---	3/17/2015		Tap	9.3	---	8.4	1,450	-42	7.3	0.7
PM-03	---	12/8/2015		Tap	9.3	8.8	---	1,210	-37	7.4	1
PM-03	---	4/5/2016		Tap	9.5	9.2	9.3	1,597	140.6	7.4	1.16
PM-04	---	3/17/2015		Tap	18	---	17	2,110	-46	7.4	0.8
PM-04	---	12/8/2015		Tap	17	17	---	2,090	-26	7.4	1
PM-04	---	4/5/2016		Tap	17	17	17	2,000	112.4	7.8	1.53
TW-01	SA	5/27/2015		3V	2,500	2,600	---	8,060	---	7.1	1
TW-01	SA	12/1/2015		3V	2,400	2,300	---	8,810	64	7.6	1
TW-02D	DA	12/9/2015		Tap	96	88	---	6,810	99	7.8	1
TW-02D	DA	12/9/2015	FD	Tap	97	88	---	---	---	---	---
TW-02S	SA	9/1/2015		Tap	330	330	---	---	---	---	---
TW-02S	SA	12/9/2015		Tap	---	---	---	2,260	190	7.5	1
TW-02S	SA	12/9/2015		Tap	330	330	---	---	---	---	---
TW-03D	DA	2/3/2015		Tap	790	760	---	---	---	---	---
TW-03D	DA	3/17/2015		Tap	740	690	---	---	---	---	---

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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	Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity
TW-03D	DA	4/7/2015	Tap	730	730	---	---	---	---	---
TW-03D	DA	5/5/2015	Tap	700	640	---	---	---	---	---
TW-03D	DA	6/2/2015	Tap	700	650	---	---	---	7.6	---
TW-03D	DA	7/7/2015	3V	710	770	---	---	---	---	---
TW-03D	DA	8/4/2015	Tap	710	670	---	---	---	---	---
TW-03D	DA	9/1/2015	Tap	720	720	---	---	---	---	---
TW-03D	DA	10/6/2015	Tap	700	680	---	---	---	---	---
TW-03D	DA	10/27/2015	Tap	760	---	---	8,220	51	7.4	2
TW-03D	DA	11/3/2015	Tap	740	670	---	---	---	---	---
TW-03D	DA	11/10/2015	Tap	720	740	---	8,240	220	7.3	2
TW-03D	DA	12/1/2015	Tap	730	690	---	---	---	---	---
TW-03D	DA	12/7/2015	Tap	750 J	---	---	8,040	-4.4	7.5	5
TW-03D	DA	1/6/2016	Tap	740	740	---	---	---	---	---
TW-03D	DA	2/2/2016	Tap	730	720	---	7,740	200	7.3	4.33
TW-03D	DA	3/2/2016	Tap	790	840	---	8,660	190	7.2	6.27
TW-04	DA	12/8/2015	3V	6.9	6.4	---	22,800	73	7.7	2
TW-05	DA	12/8/2015	3V	16	14	---	16,300	110	7.7	2

Notes:
(a) = data was analyzed by an Arizona certified laboratory.
--- = data was either not collected, not available or was rejected
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.
RL = reporting limit.
UF = unfiltered.

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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	Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters: ORP (mV)	Field pH	Turbidity

ug/L = micrograms per liter.
uS/cm = microSiemens per centimeter.

Sample results initially analyzed within the EPA recommended holding times for analysis by a non-ADEQ approved laboratory. The values that are shaded in the table are from the ADEQ approved laboratory. Some of these analyses were performed outside of the EPA's recommended holding time. The data are considered estimated since the ADEQ-approved laboratory data supports the data performed within the EPA recommended holding time by the non-ADEQ-approved laboratory.

Sample Methods:
3V = three volume.
Flute = flexible liner underground technologies sampling system.
H = HydraSleeve
LF = Low Flow (minimal drawdown)
Slant = slant (non vertical) wells MW-52, MW-53, MW-56 are sampled from dedicated Barcad screens, using a peristaltic pump.
Tap = sampled from tap or port of extraction or supply well.

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).

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 ug/L due to required sample dilution to accommodate matrix interferences.

Starting in Third Quarter 2014, the groundwater sample collection method was switched from the traditional three-volume

Table 3-1

Groundwater Sampling Results, February 2015 through March 2016

First Quarter 2016 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	Sample Method	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Chromium (ug/L)	Specific Conductance (us/Cm)	Selected Field Parameters ORP (mV)	Field pH	Turbidity

purge method (3V) to the low flow (LF) method at many short screen wells screened in alluvial sediments. The method for purging prior to sample collection is indicated in the sample method column of this table.

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

Table 3-2

Groundwater COPCs and In Situ Byproducts Sampling Results, First Quarter 2016

First Quarter 2016 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		Sample Method	Arsenic Dissolved (ug/L)	Molybdenum Dissolved (ug/L)	Selenium Dissolved (ug/L)	Manganese Dissolved (ug/L)	Nitrate as N (mg/L)
MW-34-100	DA	2/25/2016		LF	1.9	73	ND (2.5)	33	0.13
MW-38S	SA	2/24/2016		3V	14	43	ND (0.5)	230	ND (0.05)
MW-38S	SA	2/24/2016		LF	14	44	ND (0.5)	220	ND (0.05)
MW-44-115	DA	2/25/2016		LF	6.1	95	ND (2.5)	5.5	0.17
MW-44-115	DA	2/25/2016	FD	LF	5.5	91	ND (2.5)	5.3	0.2
MW-46-175	DA	2/25/2016		LF	--	190	ND (2.5)	--	1.2
MW-55-120	DA	2/24/2016		LF	6.4	51	ND (12)	10	1.5
MW-55-120	DA	2/24/2016	(a)	LF	5.8	45	ND (5)	7.8	1.3 J
MW-58BR	BR	2/24/2016		LF	1.5	27	ND (2.5)	390 J	0.16
MW-60BR-245	BR	2/23/2016		3V	6.9	60	ND (12)	19	ND (0.05)
MW-62-065	BR	2/23/2016		3V	1.2	14	4	2.5	4.6
MW-62-110	BR	2/24/2016		3V	4.9	77	ND (2.5)	81	0.1
MW-63-065	BR	2/23/2016		3V	1.7	20	ND (2.5)	1.4	0.92
MW-64BR	BR	2/22/2016		LF	4.1	70	ND (2.5)	1,000	ND (0.05)
MW-65-160	SA	2/24/2016		LF	0.54	34	7.2	8.8	11
MW-65-225	DA	2/24/2016		LF	2.2	36	4.9	28	6.8
MW-68-180	SA	2/24/2016		LF	2.7	58	16	ND (0.5)	31
MW-69-195	BR	2/24/2016		3V	2.4	92	12	2.2	20
MW-69-195	BR	2/24/2016	FD	3V	2.3	94	12	2.1	19
MW-72-080	BR	2/23/2016		3V	12	80	ND (2.5)	31	0.91
MW-72BR-200	BR	2/23/2016		3V	16	81	ND (2.5)	24	0.1
MW-73-080	BR	2/23/2016		3V	1.5	25	ND (12)	17	4.7
PE-01	DA	1/6/2016		Tap	--	--	--	75	ND (0.05)
PE-01	DA	2/2/2016		Tap	--	--	--	72	ND (0.05)
PE-01	DA	3/2/2016		Tap	--	--	--	100	ND (0.05)
PM-03	--	4/5/2016		Tap	1.2	5.9	1.4 J	ND (0.5)	3.1
PM-04	--	4/5/2016		Tap	0.43	6.4	1.1	1.2	2.1

Notes:

(a) = data was analyzed by an Arizona certified laboratory.
--- = data was either not collected, not available or was rejected
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.
ug/L = micrograms per liter.

Sample Methods:
3V = three volume.
Flute = flexible liner underground technologies sampling system.
LF = Low Flow (minimal drawdown)
Slant = slant (non vertical) wells MW-52, MW-53, MW-56 are sampled from dedicated Barcad screens, using a peristaltic pump
Tap = sampled from tap or port of extraction or supply well.

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).

Nitrate samples were analyzed using USEPA Method 4500NO3, except for TW-3D and PE-1, which were analyzed using USEPA Method 300.0. USEPA Method 4500NO3 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 4500NO3 are expected to be essentially the same as previous samples analyzed using USEPA Method 300.0 and reported as nitrate as nitrogen.

Starting in Third Quarter 2014, the groundwater sample collection method was switched from the traditional three-volume purge method (3V) to the low flow (LF) method at many short screen wells screened in alluvial sediments. The method for purging prior to sample collection is indicated in the sample method column of this table.

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.

Table 3-2

Groundwater COPCs and In Situ Byproducts Sampling Results, First Quarter 2016

First Quarter 2016 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	Sample Method	Arsenic Dissolved (ug/L)	Molybdenum Dissolved (ug/L)	Selenium Dissolved (ug/L)	Manganese Dissolved (ug/L)	Nitrate as N (mg/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

Table 3-3

Surface Water Sampling Results, First Quarter 2016

First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Sample Date		Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Specific Conductance (uS/cm)	Lab pH*
In-channel Locations						
C-BNS-D	1/26/2016		ND (0.2)	ND (1)	1,010	8.2
C-BNS-D	2/23/2016		ND (0.2)	ND (1)	1,080	8.2
C-CON-D	1/27/2016		ND (0.2)	ND (1)	1,000	8.0
C-CON-D	2/24/2016		ND (0.2)	ND (1)	1,090	8.1
C-CON-S	1/27/2016		ND (0.2)	ND (1)	1,000	8.1
C-CON-S	2/24/2016		ND (0.2)	ND (1)	1,090	8.2
C-I-3-D	1/26/2016		ND (0.2)	ND (1)	1,010	8.3
C-I-3-D	2/23/2016		ND (0.2)	ND (1)	1,070	8.2
C-I-3-S	1/26/2016		ND (0.2)	ND (1)	1,010	8.3
C-I-3-S	2/23/2016		ND (0.2)	ND (1)	1,080	8.2
C-MAR-D	1/27/2016		ND (0.2)	ND (1)	1,020	8.0
C-MAR-D	2/23/2016		ND (0.2)	ND (1)	1,200	7.8
C-MAR-S	1/27/2016		ND (0.2)	ND (1)	1,020	8.0
C-MAR-S	2/23/2016		ND (0.2)	ND (1)	1,220	7.8
C-NR1-D	1/27/2016		ND (0.2)	ND (1)	1,000	8.1
C-NR1-D	2/24/2016		ND (0.2)	ND (1)	1,090	8.2
C-NR1-S	1/27/2016		ND (0.2)	ND (1)	1,010	8.2
C-NR1-S	1/27/2016	FD	ND (0.2)	ND (1)	--	8.2
C-NR1-S	2/24/2016		ND (0.2)	ND (1)	1,100	8.2
C-NR3-D	1/27/2016		ND (0.2)	ND (1)	1,000	8.2
C-NR3-D	2/24/2016		ND (0.2)	ND (1)	1,100	8.2
C-NR3-S	1/27/2016		ND (0.2)	ND (1)	1,000	8.2
C-NR3-S	2/24/2016		ND (0.2)	ND (1)	1,100	8.2
C-NR4-D	1/27/2016		ND (0.2)	ND (1)	1,000	8.2
C-NR4-D	2/24/2016		ND (0.2)	ND (1)	1,100	8.2
C-NR4-S	1/27/2016		ND (0.2)	ND (1)	1,000	8.2
C-NR4-S	2/24/2016		ND (0.2)	ND (1)	1,100	8.2
C-R22A-D	1/26/2016		ND (0.2)	ND (1)	1,010	8.3
C-R22A-D	2/23/2016		ND (0.2)	ND (1)	1,080	8.2
C-R22A-S	1/26/2016		ND (0.2)	ND (1)	1,020	8.3
C-R22A-S	2/23/2016		ND (0.2)	ND (1)	1,080	8.2
C-R27-D	1/26/2016		ND (0.2)	ND (1)	1,010	8.3
C-R27-D	2/23/2016		ND (0.2)	ND (1)	1,090	8.2
C-R27-S	1/26/2016		ND (0.2)	ND (1)	1,010	8.3
C-R27-S	2/23/2016		ND (0.2)	ND (1)	1,080	8.2
C-TAZ-D	2/5/2016		ND (0.2)	ND (1)	1,050	8.3
C-TAZ-D	2/23/2016		ND (0.2)	ND (1)	1,080	8.2
C-TAZ-S	1/26/2016		ND (0.2)	ND (1)	1,010	8.3
C-TAZ-S	2/23/2016		ND (0.2)	ND (1)	1,080	8.2
Shoreline Samples						
R-19	1/26/2016		ND (0.2)	ND (1)	1,010	8.2
R-19	2/24/2016		ND (0.2)	ND (1)	1,090	8.2
R-28	1/26/2016		ND (0.2)	ND (1)	1,020	8.2

Table 3-3

Surface Water Sampling Results, First Quarter 2016

First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Sample Date		Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Specific Conductance (uS/cm)	Lab pH*
R-28	1/26/2016	FD	ND (0.2)	ND (1)	--	8.3
R-28	2/24/2016		ND (0.2)	ND (1)	1,090	8.2
R63	1/26/2016		ND (0.2)	ND (1)	1,010	8.3
R63	2/23/2016		ND (0.2)	ND (1)	1,080	8.1
RRB	2/24/2016		ND (0.2)	ND (1)	1,090	8.2
SW1	1/27/2016		ND (0.2)	ND (1)	1,160	7.6
SW1	2/23/2016		ND (0.2)	ND (1)	1,180	7.7
SW2	1/27/2016		ND (0.2)	ND (1)	1,050	7.8

Notes:

* Lab pH Values were all J flagged by the lab for being out of holding time.
FD = field duplicate sample.
J = concentration or reporting limit estimated by laboratory or data validation.
ND = not detected at listed reporting limit.
ug/L = micrograms per liter.
uS/cm = microSiemens per centimeter.

Hexavalent chromium analytical Method USEPA 218.6 (reporting limit 0.2 ug/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 3-4

COPCs, In Situ Byproducts, and Geochemical Indicator Parameters in Surface Water Samples, First Quarter 2016

First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Sample Date		Arsenic, Dissolved (ug/L)	Barium, Dissolved (ug/L)	Iron, Total (ug/L)	Iron, Dissolved (ug/L)	Manganese, Dissolved (ug/L)	Molybdenum, Dissolved (ug/L)	Nitrate/Nitrite as Nitrogen (mg/L)	Selenium, Dissolved (ug/L)	Total Suspended Solids (mg/L)
In-channel locations											
C-BNS-D	1/26/2016		2.3	140	93	ND (20)	ND (0.5)	5.6	0.45	1.6 J	ND (10)
C-BNS-D	2/23/2016		2.3	140	140	ND (20)	ND (0.5)	5.4	0.52	1.7	ND (10)
C-CON-D	1/27/2016		2.3	140	130	ND (20)	ND (0.5)	5.2	0.48	1.6	ND (10)
C-CON-D	2/24/2016		2.3	140	150	ND (20)	ND (0.5)	5.8	0.56	1.7	12
C-CON-S	1/27/2016		2.3	130	67	ND (20)	ND (0.5)	5.1	0.48	1.6	ND (10)
C-CON-S	2/24/2016		2.4	140	120	ND (20)	ND (0.5)	5.6	0.51	1.8	ND (10)
C-I-3-D	1/26/2016		2.4	140	170	27	0.63	5.8	0.49	1.8	ND (10)
C-I-3-D	2/23/2016		2.3	140	150	31	ND (0.5)	5.4	0.51	1.7	14
C-I-3-S	1/26/2016		2.3	140	100	29	ND (0.5)	5.8	0.5	1.7	ND (10)
C-I-3-S	2/23/2016		2.4	140	94	ND (20)	ND (0.5)	5.4	0.49	1.8	ND (10)
C-MAR-D	1/27/2016		2.4	140	1,200	86	40	5.5	0.45	1.7	54
C-MAR-D	2/23/2016		2.6	140	3,200	420	110	5.6	0.5	1.6	140
C-MAR-S	1/27/2016		2.3	140	780	ND (20)	70	5.6	0.46	1.7	55
C-MAR-S	2/23/2016		2.4	140	2,200	35	110	5.8	0.5	1.5	120
C-NR1-D	1/27/2016		2.3	130	99	ND (20)	ND (0.5)	5.1	0.45	1.8	ND (10)
C-NR1-D	2/24/2016		2.3	140	160	ND (20)	ND (0.5)	5.4	0.52	1.6	ND (10)
C-NR1-S	1/27/2016		2.3	140	86	ND (20)	ND (0.5)	5.3	0.57	1.8	ND (10)
C-NR1-S	1/27/2016	FD	2.3	130	74	ND (20)	ND (0.5)	5.2	0.47	1.8	ND (10)
C-NR1-S	2/24/2016		2.3	140	91	ND (20)	ND (0.5)	5.3	0.52	1.7	ND (10)
C-NR3-D	1/27/2016		2.3	140	170 J	ND (20)	ND (0.5)	5.2	0.47	1.8	ND (10)
C-NR3-D	2/24/2016		2.5	150	120	ND (20)	ND (0.5)	5.8	0.48	1.9	ND (10)
C-NR3-S	1/27/2016		2.3	130	94	ND (20)	ND (0.5)	5.2	0.46	1.7	ND (10)
C-NR3-S	2/24/2016		2.3	130	92	ND (20)	ND (0.5)	5.1	0.52	1.7	ND (10)
C-NR4-D	1/27/2016		2.4	140	120	ND (20)	ND (0.5)	5.8	0.45	1.8	ND (10)
C-NR4-D	2/24/2016		2.3	140	130	ND (20)	ND (0.5)	5.3	0.52	1.7	ND (10)
C-NR4-S	1/27/2016		2.3	130	94	ND (20)	ND (0.5)	5.2	0.47	1.7	ND (10)
C-NR4-S	2/24/2016		2.4	140	100	ND (20)	ND (0.5)	5.5	0.5	1.7	ND (10)
C-R22A-D	1/26/2016		2.3	140	160	33	0.73	5.7	0.46	1.8	ND (10)
C-R22A-D	2/23/2016		2.4	140	120	ND (20)	ND (0.5)	5.5	0.51	1.6	ND (10)
C-R22A-S	1/26/2016		2.2	140	110	ND (20)	ND (0.5)	5.6	0.45	1.7	ND (10)
C-R22A-S	2/23/2016		2.3	130	120	ND (20)	6.8	5.2	0.51	1.5	ND (10)
C-R27-D	1/26/2016		2.3	140	79	23	ND (0.5)	5.5	0.47	1.6	ND (10)
C-R27-D	2/23/2016		2.4	140	130	29	ND (0.5)	5.4	0.5	1.6	ND (10)
C-R27-S	1/26/2016		2.3	140	93	ND (20)	ND (0.5)	5.7	0.49	1.7	ND (10)
C-R27-S	2/23/2016		2.4	140	100	ND (20)	ND (0.5)	5.5	0.5	1.7	ND (10)
C-TAZ-D	2/5/2016		2.4	140	95	ND (20)	ND (0.5)	5.8	0.47	1.8	ND (10)
C-TAZ-D	2/23/2016		2.3	130	150	ND (20)	ND (0.5)	5.4	0.56	1.7	ND (10)
C-TAZ-S	1/26/2016		2.4	140	83	36	ND (0.5)	5.6	0.46	1.8	ND (10)

Table 3-4

COPCs, In Situ Byproducts, and Geochemical Indicator Parameters in Surface Water Samples, First Quarter 2016

First Quarter 2016 Interim Measures Performance Monitoring and Site-wide
Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Location ID	Sample Date		Arsenic, Dissolved (ug/L)	Barium, Dissolved (ug/L)	Iron, Total (ug/L)	Iron, Dissolved (ug/L)	Manganese, Dissolved (ug/L)	Molybdenum, Dissolved (ug/L)	Nitrate/Nitrite as Nitrogen (mg/L)	Selenium, Dissolved (ug/L)	Total Suspended Solids (mg/L)
C-TAZ-S	2/23/2016		2.2	130	110	ND (20)	ND (0.5)	5.2	0.51	1.6	ND (10)
Shoreline Samples											
R-19	1/26/2016		2.3	140	120	ND (20)	ND (0.5)	5.7	0.52	1.6	ND (10)
R-19	2/24/2016		2.3	140	84	ND (20)	ND (0.5)	5.5	1.1	1.6	ND (10)
R-28	1/26/2016		2.2	140	67	25	ND (0.5)	5.5	0.47	1.7	ND (10)
R-28	1/26/2016	FD	2.3	150 J	120	ND (20)	0.69	5.8	0.46	1.8	ND (10)
R-28	2/24/2016		2.2	140 J	130	ND (20)	ND (0.5)	5.3	0.52	1.6	ND (10)
R63	1/26/2016		2.3	140	310	32	0.96	5.7	0.44	1.7	10
R63	2/23/2016		2.3	140	400 J	ND (20)	0.61	5.3	0.55	1.6	19
RRB	2/24/2016		2.3	140	55	ND (20)	ND (0.5)	5.4	0.53	1.6	ND (10)

Notes:
--- = data was either not collected, not available or was rejected
COPC = contaminants of potential concern (molybdenum, selenium, and nitrate).
mg/L = milligrams per liter.
ND = not detected at listed reporting limit.
TSS = total suspended solids.
ug/L = micrograms per liter.
USEPA = United States Environmental Protection Agency.

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

USEPA Methods:
Alkalinity - SM2320B.
Metals - SW6010B/SW6020A.
Nitrate - SM4500NO3.
Total Suspended Solids - SM2540D.

TABLE 4-1
Pumping Rate and Extracted Volume for IM System, First Quarter 2016
First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Extraction Well ID	January 2016 Average Pumping Rate[a] (gpm)	January 2016 Volume Pumped (gal)	February 2016 Average Pumping Rate[a] (gpm)	February 2016 Volume Pumped (gal)	March 2016 Average Pumping Rate[a] (gpm)	March 2016 Volume Pumped (gal)	First Quarter 2016 Average Pumping Rate[a] (gpm)	First Quarter 2016 Volume Pumped (gal)
TW-02S	0.00	0	0.00	0	0.00	0	0.00	0
TW-02D	0.00	0	22.09	922,573	21.94	979,231	14.68	1,901,804
TW-03D	105.00	4,687,002	107.63	4,494,616	105.92	4,728,262	106.18	13,909,881
PE-01	28.05	1,252,292	2.29	95,681	0.10	4,251	10.15	1,352,224
TOTAL	**133.0**	**5,939,295**	**132.0**	**5,512,871**	**128.0**	**5,711,743**	**131.0**	**17,163,909**

Chromium Removed This Quarter (kg)	25.6
Chromium Removed Project to Date (kg)	3870
Chromium Removed This Quarter (lb)	56.3
Chromium Removed Project to Date (lb)	8530

Notes:
DTSC = Department of Toxic Substances Control.
gal = gallons.
gpm = gallons per minute.
IM = Interim Measures.
kg = kilograms.
lb = pounds.

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

Chromium removed includes the period of January 1, 2016 through February 29, 2016. DTSC approved a revised reporting schedule for this report that included a revised IM-3 sample collection period from January 1, 2016 through February 29, 2016.

Table 4-2

Analytical Results for Extraction Wells, January 2015 through March 2016

First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Location ID	Sample Date	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Dissolved Solids (mg/L)	Lab pH*
PE-01	1/6/2015	5.1	4.2	2,400	7.6
PE-01	2/3/2015	4.7	3.8	2,500	7.7
PE-01	3/17/2015	4	3.4	2,500	7.7
PE-01	4/7/2015	3.6	3.6	2,500	7.6
PE-01	5/5/2015	2.9	2.5	2,500	7.6
PE-01	6/2/2015	3.4	3.1	2,400	--
PE-01	7/7/2015	3.2	3.1	2,500	--
PE-01	8/4/2015	3.2	2.9	2,500	--
PE-01	9/1/2015	0.43	1.4	2,500	--
PE-01	10/6/2015	3.2	2.7	2,500	--
PE-01	11/3/2015	3.4	3.1	2,500	--
PE-01	12/1/2015	3.6	3.3	2,400	--
PE-01	12/7/2015	3.8	--	2,500	7.5
PE-01	1/6/2016	3.8	3.6	2,400	7.6
PE-01	2/2/2016	3.9	3.3	2,600	7.6
PE-01	3/2/2016	0.79	ND (1)	2,500	7.6
TW-02D	12/9/2015	96	88	4,800	--
TW-02D	12/9/2015	97	88	4,800	--
TW-02S	1/13/2015	590	570	--	--
TW-02S	9/1/2015	330	330	1,400	--
TW-02S	12/9/2015	330	330	1,300	--
TW-03D	1/6/2015	790	790	4,800	7.5
TW-03D	2/3/2015	790	760	4,800	7.5
TW-03D	3/17/2015	740	690	4,900	7.7
TW-03D	4/7/2015	730	730	4,700	7.5
TW-03D	5/5/2015	700	640	4,400	7.1
TW-03D	6/2/2015	700	650	4,400	--
TW-03D	7/7/2015	710	770	4,600	--
TW-03D	8/4/2015	710	670	4,600	--
TW-03D	9/1/2015	720	720	4,400	--
TW-03D	10/6/2015	700	680	4,600	--
TW-03D	10/27/2015	760	--	4,600	7.5
TW-03D	11/3/2015	740	670	4,600	--
TW-03D	11/10/2015	720	740	4,600	7.2
TW-03D	12/1/2015	730	690	4,500	--
TW-03D	12/7/2015	750 J	--	4,800 J	7.3
TW-03D	1/6/2016	740	740	4,600	7.4
TW-03D	2/2/2016	730	720	4,700	7.3
TW-03D	3/2/2016	790	840	4,700	7.2

Notes:

Table 4-2

Analytical Results for Extraction Wells, January 2015 through March 2016

First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Location ID	Sample Date	Hexavalent Chromium (ug/L)	Dissolved Chromium (ug/L)	Total Dissolved Solids (mg/L)	Lab pH*

* Lab pH Values were all J flagged by the lab for being out of holding time.
--- = data was either not collected, not available or was rejected
J = concentration or reporting limit estimated by laboratory or data validation.
LF = lab filtered.
mg/L = milligrams per liter.
ug/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, First Quarter 2016

First Quarter 2016 Interim Measures 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	January	0.0095	NA
	February	0.0037	NA
	March	0.0034	NA
Northern Gradient Pair MW-31-135 / MW-33-150	January	0.0022	31
	February	0.0027	29
	March	0.0028	31
Central Gradient Pair MW-45-095[d] / MW-34-100	January	0.0194	31
	February	0.0066	29
	March	0.0060	31
Southern Gradient Pair MW-45-095[d] / MW-27-085	January	0.0068	31
	February	0.0019	29
	March	0.0014	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.
[d] MW-45-095 is also known as MW-45-095a.

Table 4-4

Predicted and Actual Monthly Average Davis Dam Discharge and Colorado River Elevation at I-3

First Quarter 2016 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 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	8,918	782	454.0	453.98	0.0
December 2013	6,400	7,636	-1,236	452.4	452.81	0.4
January 2014	8,300	8,970	-670	452.8	453.27	0.5
February 2014	11,600	11,850	-250	454.3	454.67	0.3
March 2014	16,600	17,473	-873	456.4	456.70	0.3
April 2014	18,200	17,718	482	457.1	457.08	0.0
May 2014	16,700	16,622	78	456.8	456.68	-0.1
June 2014	15,900	15,917	-17	456.6	456.64	0.1
July 2014	15,100	14,640	460	456.3	456.24	0.0
August 2014	12,300	11,336	964	455.2	455.26	0.1
September 2014	13,100	12,211	889	455.3	455.30	0.0
October 2014	10,700	10,434	266	454.3	454.81	0.5
November 2014	10,700	10,575	125	454.3	454.22	-0.1
December 2014	6,400	7,235	-835	452.4	452.93	0.5
January 2015	10,600	10,740	-140	454.3	454.39	0.1
February 2015	10,500	11,252	-752	454.2	454.52	0.3
March 2015	14,900	15,658	-758	455.9	456.29	0.4
April 2015	18,000	17,170	830	457.1	456.82	-0.3
May 2015	16,000	13,890	2110	456.5	456.06	-0.5
June 2015	14,500	13,616	884	456.1	455.94	-0.2
July 2015	13,400	12,411	989	455.6	455.50	-0.1
August 2015	12,100	12,627	-527	455.1	455.45	0.4

Table 4-4

Predicted and Actual Monthly Average Davis Dam Discharge and Colorado River Elevation at I-3

First Quarter 2016 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)
September 2015	13,300	12,734	566	455.4	INC	NA
October 2015	11,300	10,653	647	454.7	454.80	0.1
November 2015	10,000	10,066	-66	454.2	453.87	0.29
December 2015	6,200	8,556	-2356	453.3	453.48	-0.18
January 2016	9,400	9,000	400	453.4	454.05	-0.60
February 2016	11,300	11,700	-400	454.4	454.95	-0.57
March 2016	15,800	15,000	800	455.9	456.51	-0.65
April 2016	15,400			456.8		

NOTES:

cfs = cubic feet per second

ft amsl = feet above mean sea level.

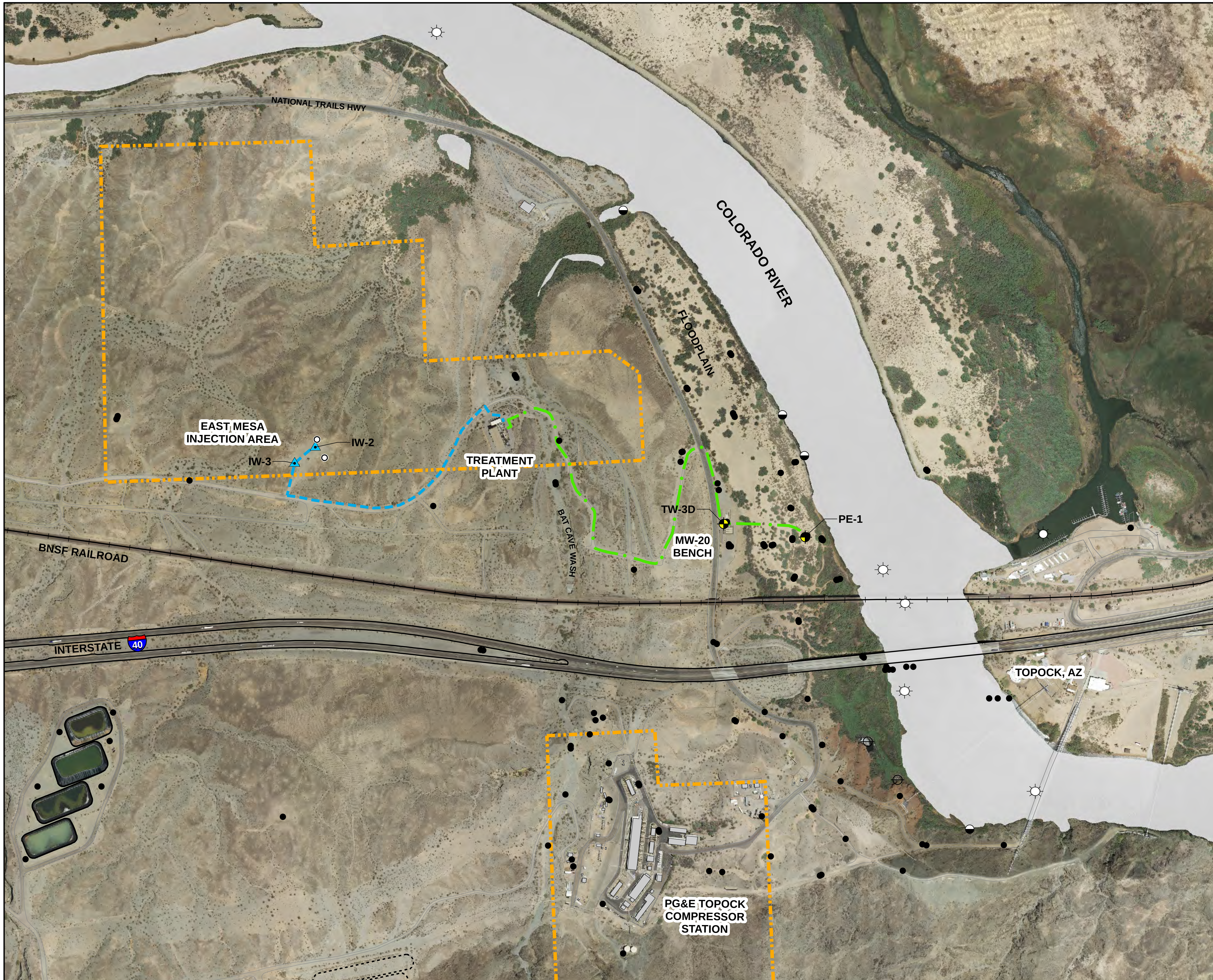
Projected river level for each month in the past is calculated based on the preceding months USBR projections of Davis Dam release and stage in Lake Havasu. Future projections of river level at I-3 are based upon April 2016 USBR projections.

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.

FIGURES



ARCADIS Design & Consultancy for natural and built assets

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

0 300 600
Feet

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, iPC, TomTom

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

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

Created by: CRITIGEN

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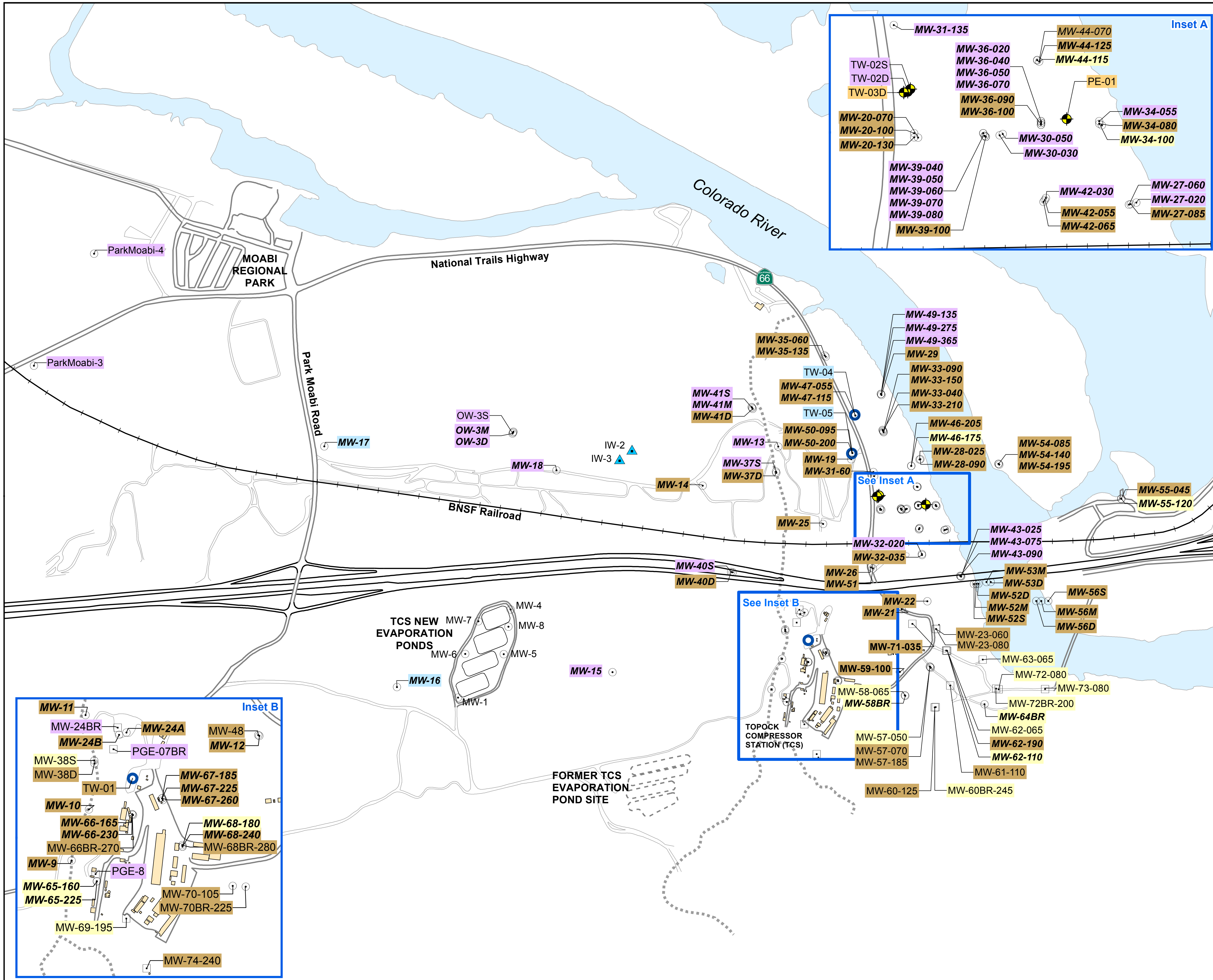


ARCADIS Design & Consultancy for natural and built assets

LEGEND

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

Sampling Frequency for Groundwater Monitoring Program (GMP)

- MW-17 Biennial sampling
- MW-13 Annual sampling
- MW-09 Annual; plus the next quarterly event following any channel-wide flows in Bat Cave Wash with discharge through the highway culverts
- MW-21 Semiannual sampling
- TW-01 Quarterly sampling
- TW-3D Monthly sampling

Notes:
Bold/Italicized labels indicate sample collected using low flow sampling method; otherwise, sample collected using the three-volume purge sampling method.

N

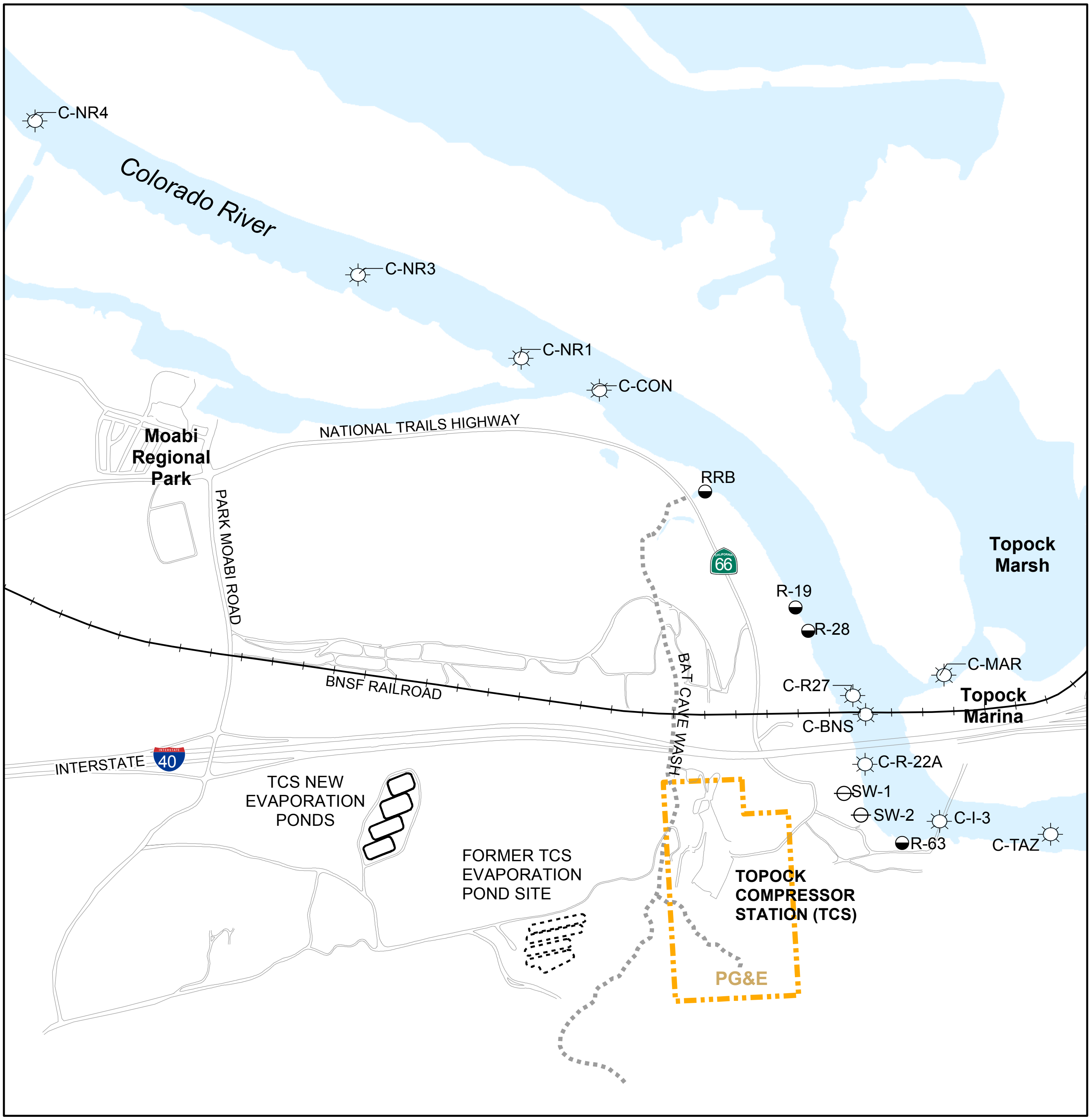
0 500 1,000
Feet

FIGURE 1-2
MONITORING LOCATIONS AND SAMPLING FREQUENCY FOR GMP

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

Created by: CRITIGEN

R:\GIS\TOPOCKGIS\MAPFILES\2016\GMP\2016Q1\FIGURE1-2_GMP_SAMPLING_FREQUENCY_2016Q1_.MXD ECLARK 4/28/2016 9:16:25 AM



LEGEND

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

N

0 800 1,600
Feet

FIGURE 1-3
MONITORING LOCATIONS AND SAMPLING FREQUENCY FOR RMP

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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

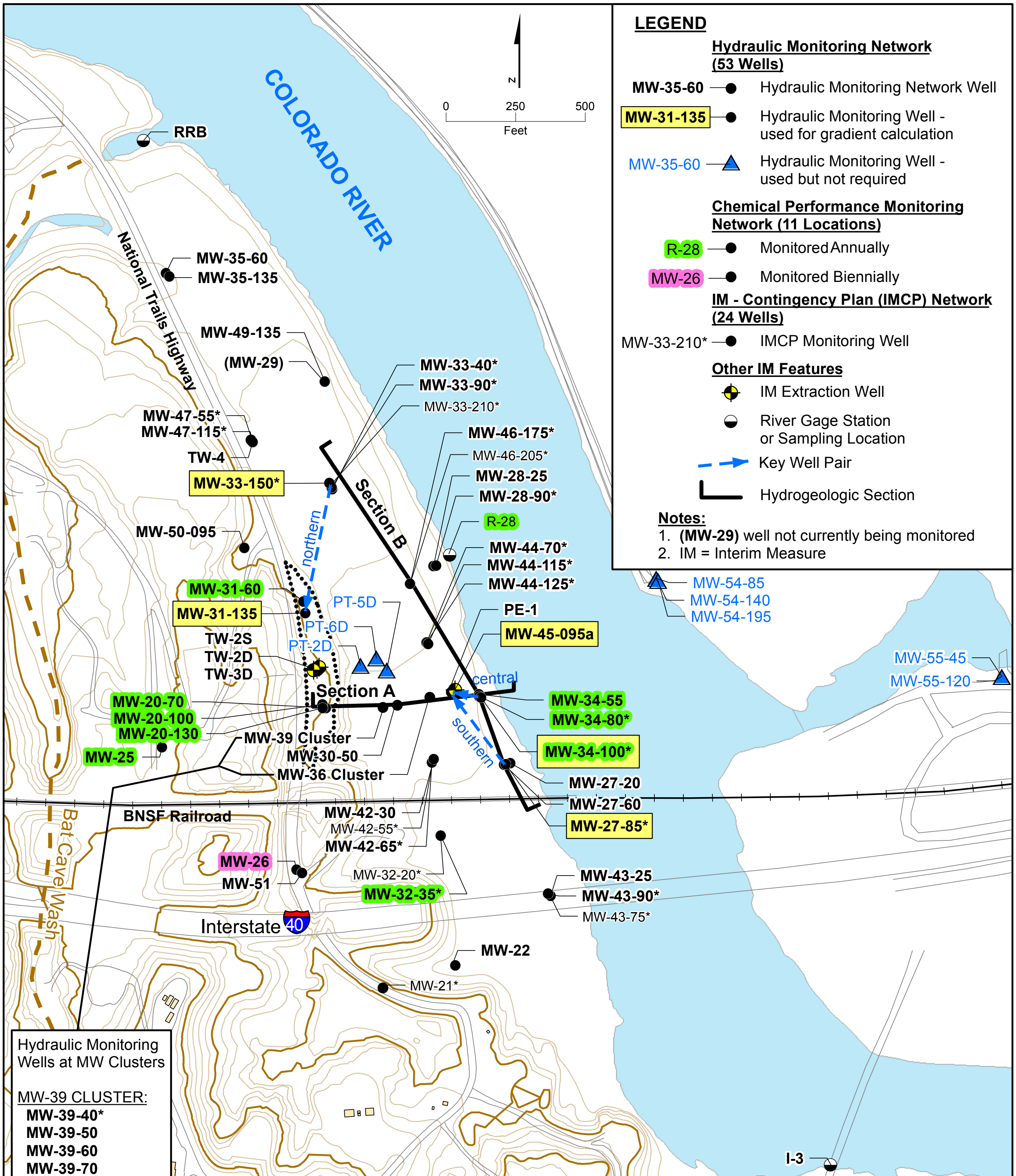
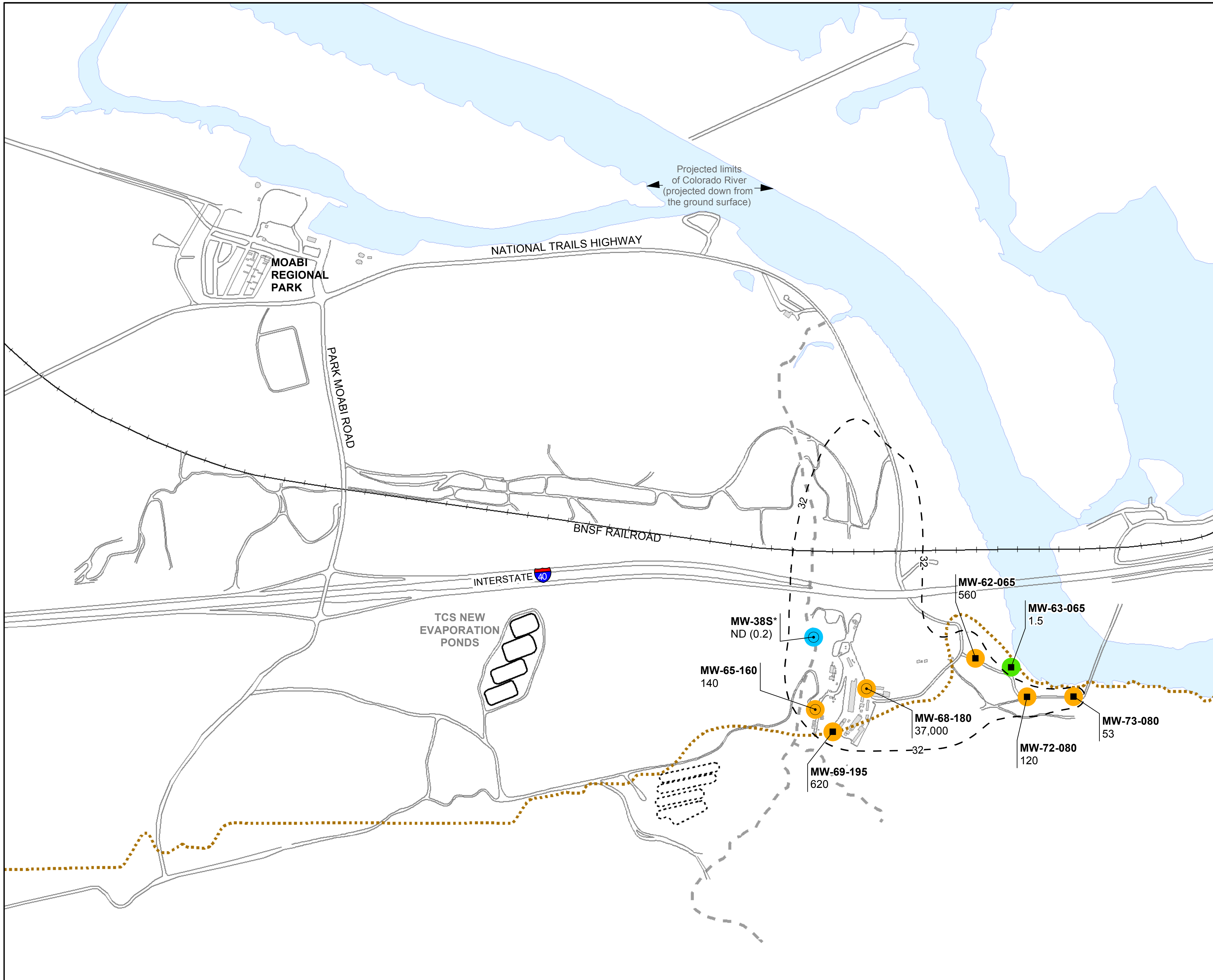


FIGURE 1-4
LOCATIONS OF WELLS AND CROSS SECTIONS USED FOR IM PERFORMANCE MONITORING

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



ARCADIS Design & Consultancy for natural and built assets

LEGEND

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

Cr(VI) Concentrations

- Not detected at analytical reporting limit
- Concentration between reporting limit and 32 µg/L
- Concentration ≥ 32 µg/L
- Approximate outline of "shallow" wells with Cr(VI) concentrations ≥ 32 µg/L
- Approximate bedrock contact at 455 feet above mean sea level.

MW-12-345 — Sampling Location
6.7 — Groundwater Concentration (µg/L)

Notes:
1. "ND" = Cr(VI) not detected at listed reporting limit.
2. "J" = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
3. µg/L = micrograms per liter
4. Cr(VI) = Hexavalent Chromium
5. TCS = Topock Compressor Station
6. * = Wells with sampled values < 32 µg/L shown within footprint of 32 µg/L boundary.
7. Results plotted are maximum concentration from primary and duplicate samples, see Table 3-1 for complete results.
8. The 32 µg/L line for Cr(VI) is estimated based on available groundwater sampling, hydrogeologic and geochemical data.
9. 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 3-1a
Cr(VI) SAMPLING RESULTS, SHALLOW WELLS IN ALLUVIAL AQUIFER AND BEDROCK, FIRST QUARTER 2016

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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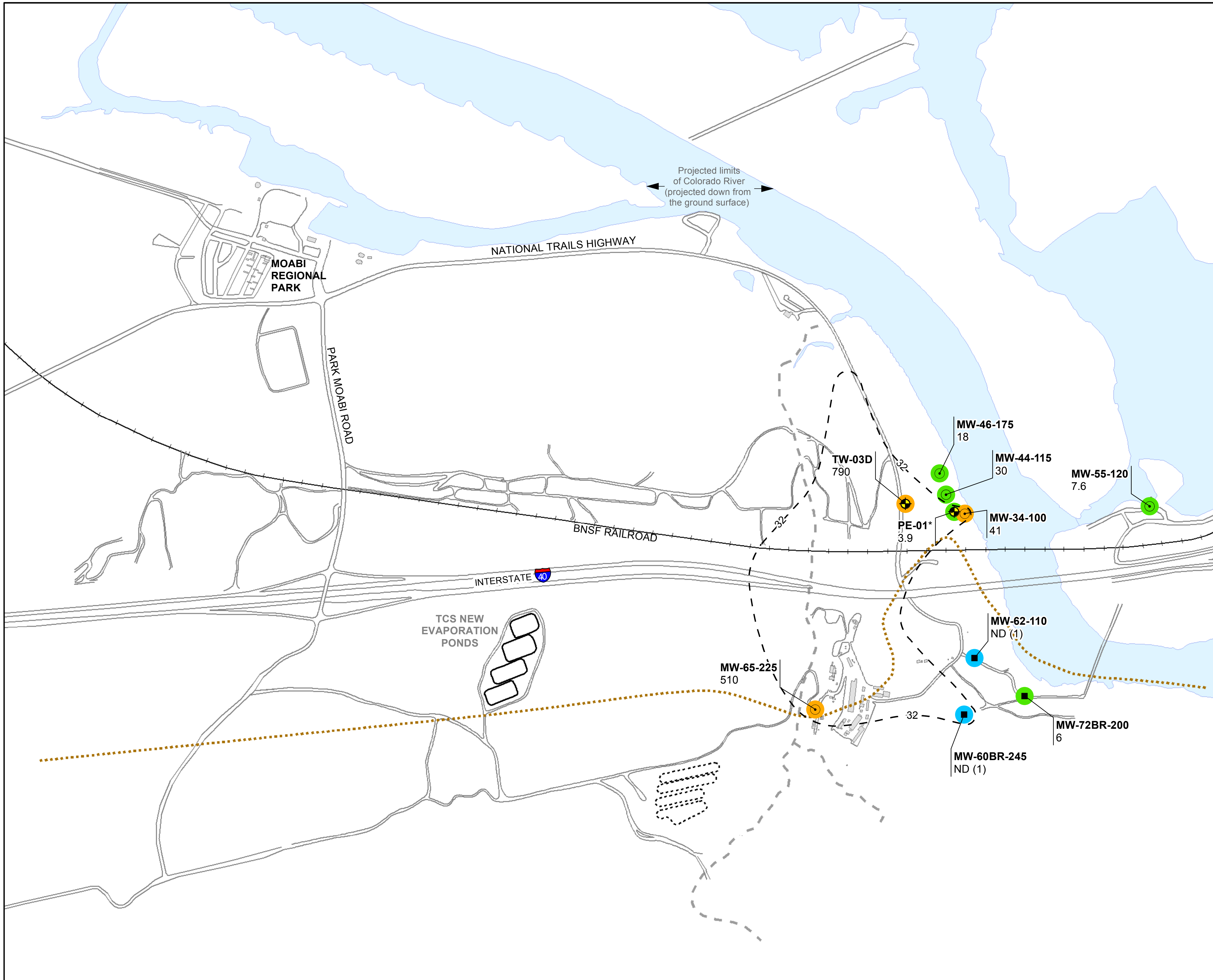

ARCADIS Design & Consultancy for natural and built assets

LEGEND

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

Cr(VI) Concentrations

- Not detected at analytical reporting limit
- Concentration between reporting limit and 32 µg/L
- Concentration ≥ 32 µg/L
- Approximate outline of "deep" wells with Cr(VI) concentrations ≥ 32 µg/L
- Approximate bedrock contact at 395 feet above mean sea level.

MW-12-345 — Sampling Location
6.7 — Groundwater Concentration (µg/L)

Notes:
1. "ND" = Cr(VI) not detected at listed reporting limit.
2. "J" = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
3. µg/L = micrograms per liter
4. Cr(VI) = Hexavalent Chromium
5. * = Wells with sampled values < 32 µg/L shown within footprint of 32 µg/L boundary.
6. Results plotted are maximum concentration from primary and duplicate samples, see Table 3-1 for complete results.
7. The 32 µg/L line for Cr(VI) is estimated based on available groundwater sampling, hydrogeologic and geochemical data. There are no data confirming the existence of Cr(VI) under the Colorado River.
8. 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.
9. TCS = Topock Compressor Station

FIGURE 3-1b
Cr(VI) SAMPLING RESULTS, DEEP WELLS IN ALLUVIAL AQUIFER AND BEDROCK, FIRST QUARTER 2016

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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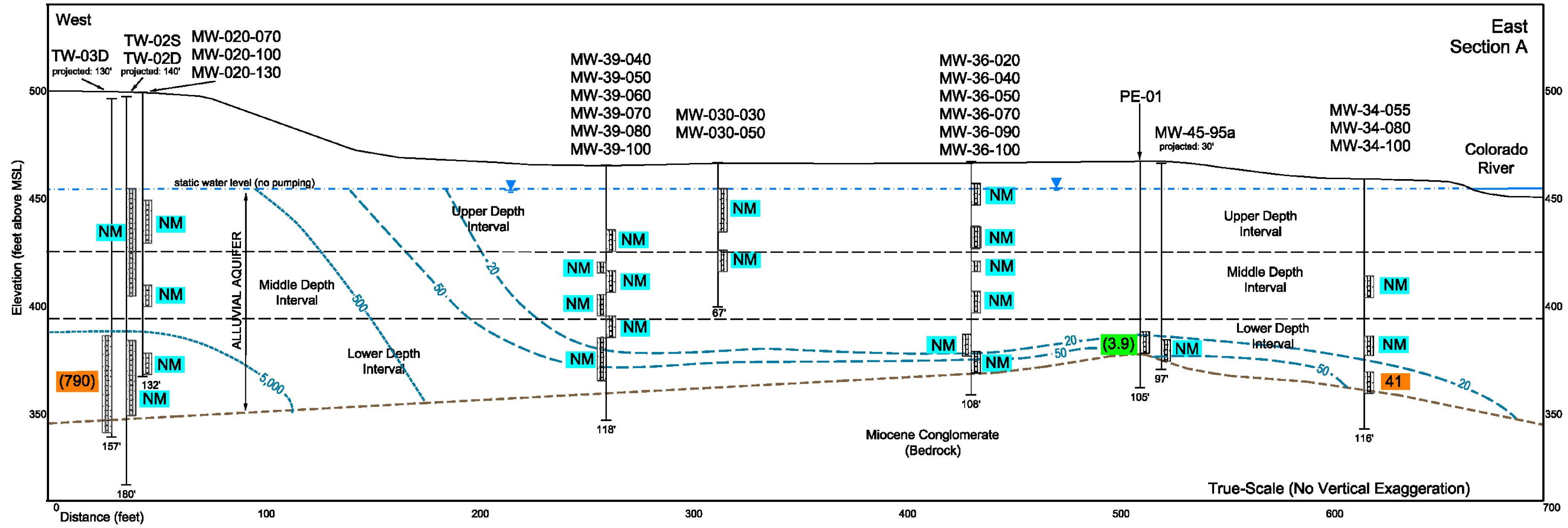
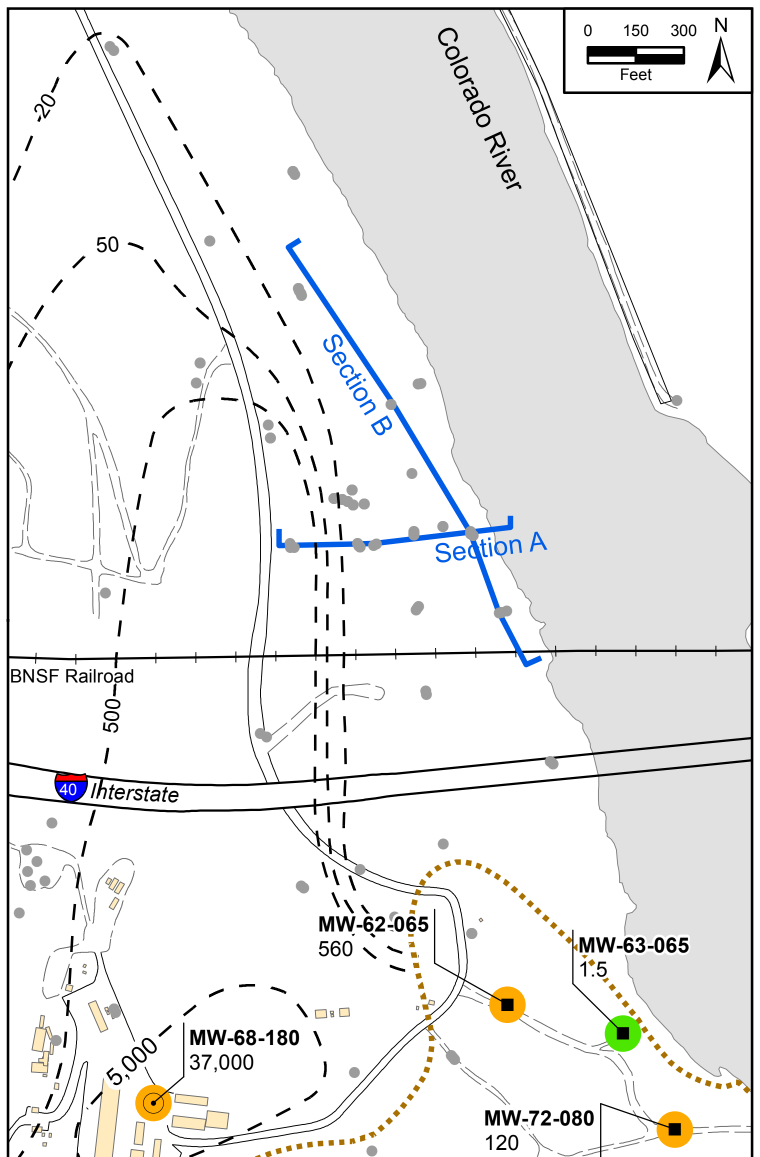
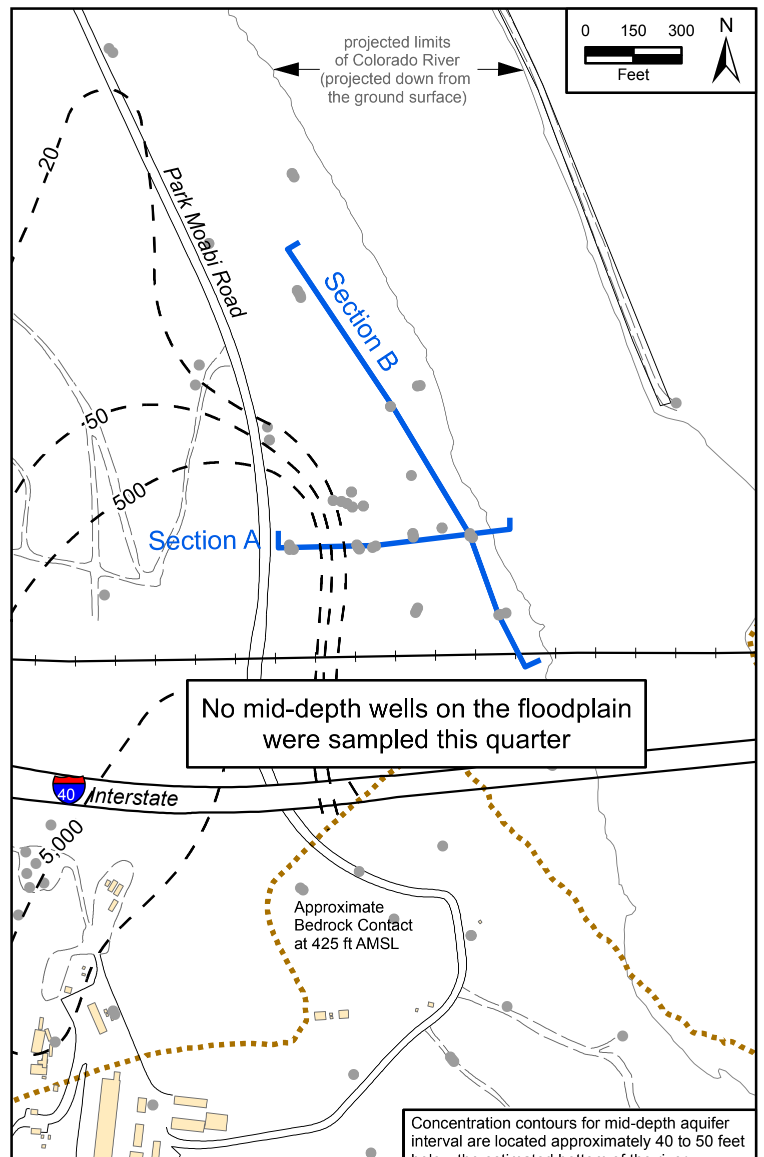
R:\GIS\TOPOCKGIS\MAPFILES\2016\GMP\2016Q1\FIGURE3-1B_CRVI_DEEP_2016Q1.MXD ECLARK 4/19/2016 10:19:56 AM

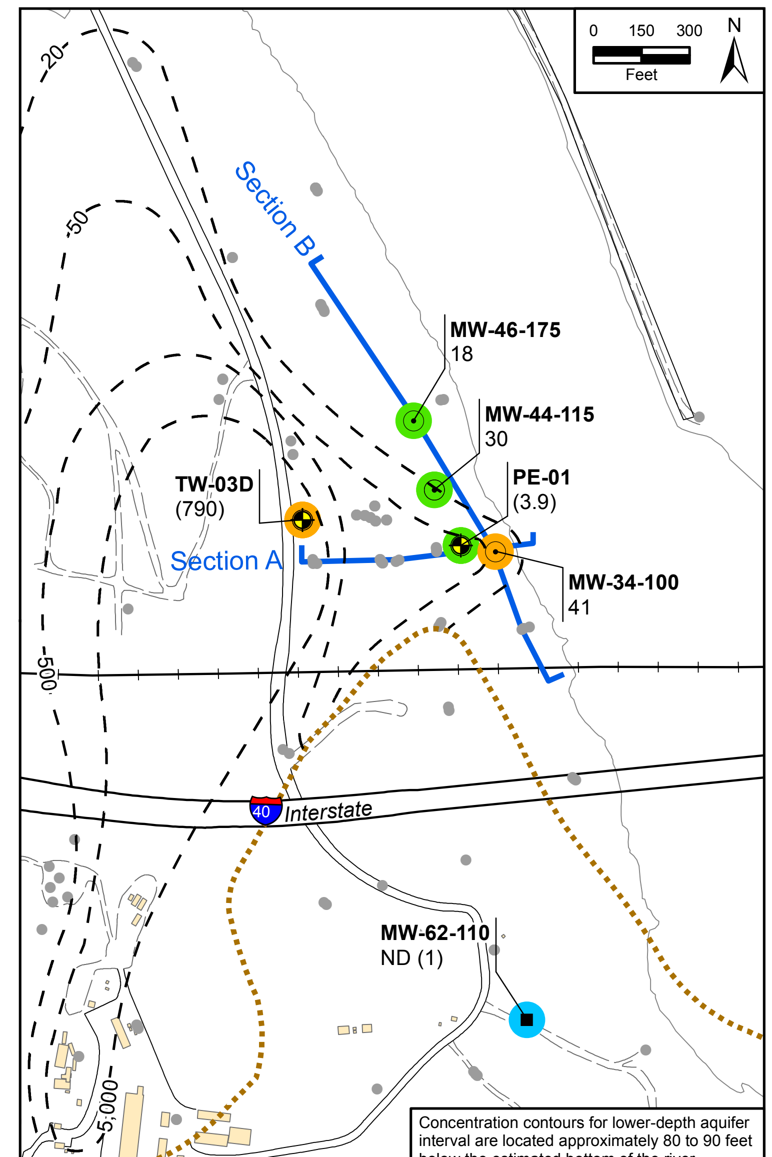




Shallow Wells (Upper Depth Interval)



Mid-Depth Wells (Middle-Depth Interval)



Deep Wells (Lower Depth Interval)

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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

Cr(VI) Concentrations

- Not detected at analytical reporting limit
- Concentration between reporting limit and 32 µg/L
- Concentration ≥ 32 µg/L
- Inferred Cr(VI) concentration contour within Alluvial Aquifer depth interval
- Approximate bedrock contact (per depth interval)
- Hydrogeologic Section

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

MW-31-135 — Sampling Location
6.7 — Groundwater Concentration (µg/L)
(6.7) — Groundwater concentration (µg/L) not used for contouring

Notes:

1. "ND" = Cr(VI) not detected at listed reporting limit.
2. "J" = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
3. " * " = Deep interval "ND" samples screened vertically above detect sample.
4. µg/L = micrograms per liter
5. Cr(VI) = Hexavalent Chromium
6. 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.
7. The 20 and 50 µg/L lines for Cr(VI) are estimated based on available groundwater sampling, hydrogeologic and geochemical data. There are no data confirming the existence of Cr(VI) under the Colorado River.
8. Extraction wells PE-01, TW-02S, TW-02D, and TW-03D are not included in contouring. These wells draw water from a larger area and do not represent Cr(VI) concentrations at their specific locations.
9. 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
CR(VI) CONCENTRATIONS IN ALLUVIAL AQUIFER AND BEDROCK, FIRST QUARTER 2016

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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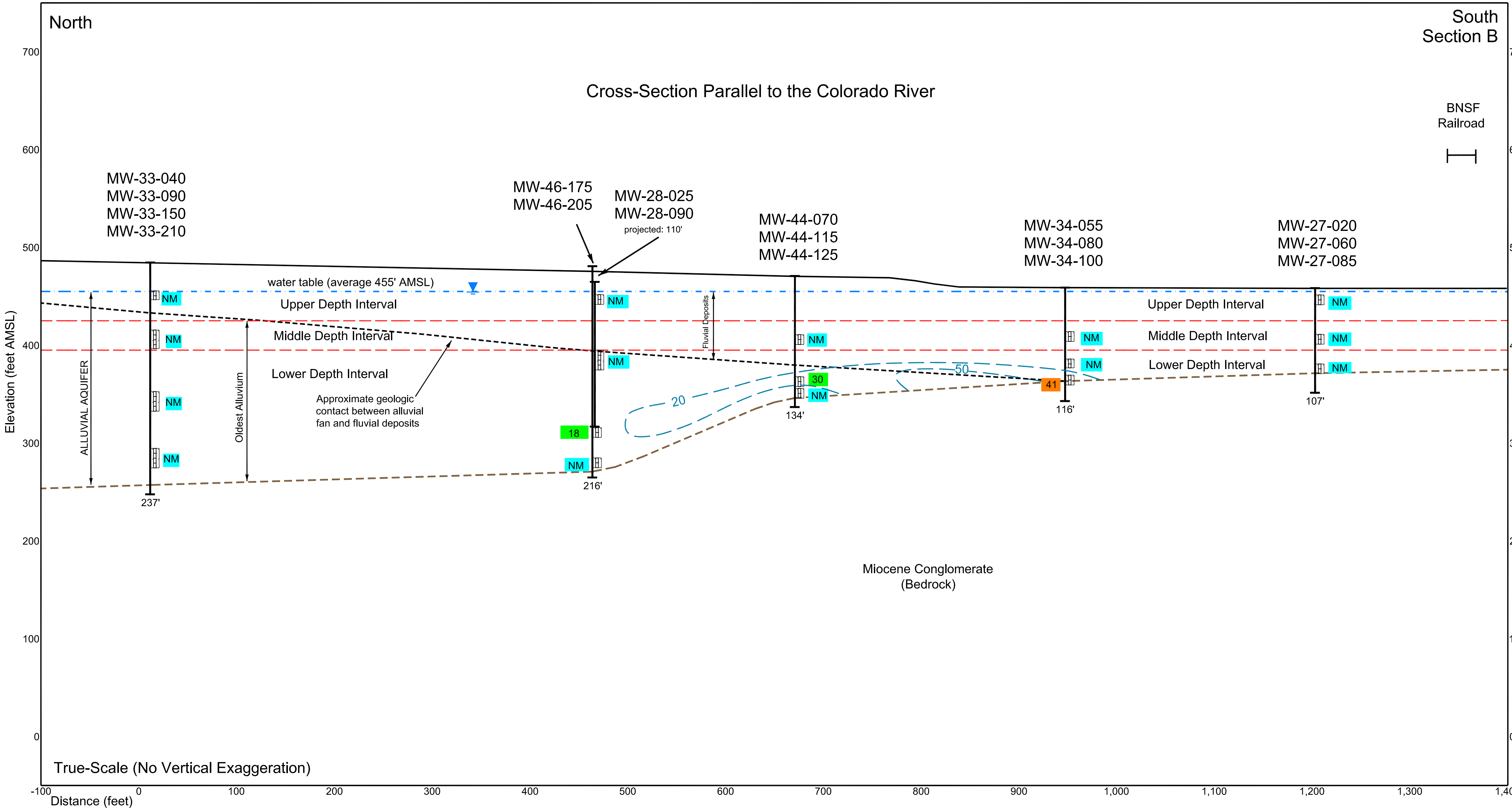
BAO R:\GIS\TOPOCKGIS\MAPFILES\2016\GMP\2016Q1\FIGURE4-1_GMP_CR6_2016Q1_MAX.MXD ECLARK 4/28/2016 9:13:23 AM



Notes:
AMSL = above mean sea level.
NM = not measured.
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.

Legend

water level

well screen 260

boring depth (feet) 103'

— 50 — Inferred hexavalent chromium contours (µg/L) in Alluvial Aquifer.

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

NM Not Measured

14 Concentration between reporting limit and 32 µg/L

260 Concentration greater than or equal to 32 µg/L

FIGURE 4-2
Cr(VI) CONCENTRATIONS FLOODPLAIN CROSS-SECTION B
FIRST QUARTER 2016
FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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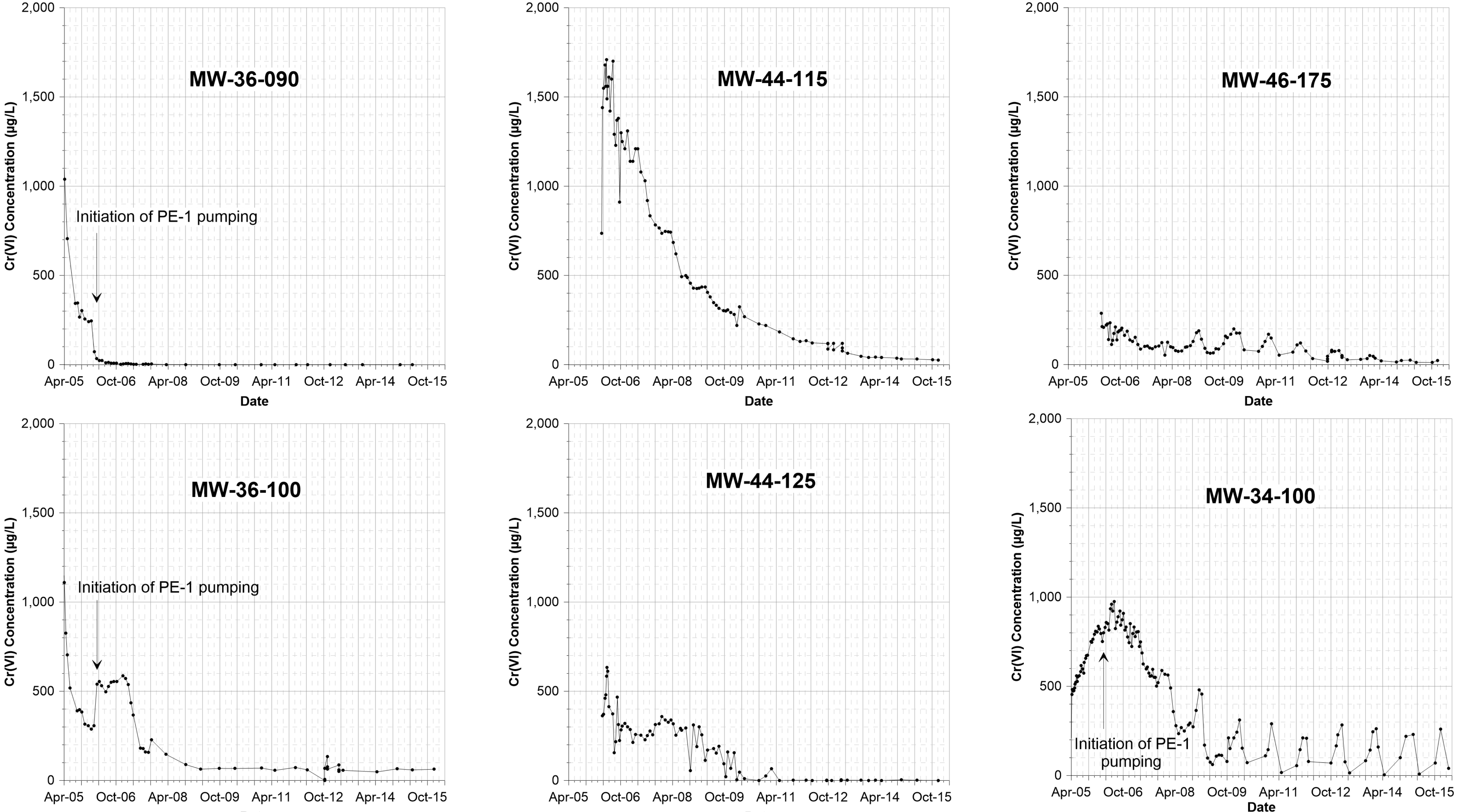

Notes:
1. Hexavalent chromium [Cr(VI)] results in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
2. Results plotted are maximum concentrations from primary and duplicate samples; see Table 3-1 for complete results.
3. MW-36 wells selected to monitor effects of PE-1 pumping on plume west of PE-1. MW-44 wells, MW-46-175, and MW-34-100 selected to monitor concentrations within the plume.
4. Wells MW-36-090, MW-36-100, and MW-44-125 were not sampled during First Quarter 2016.

FIGURE 4-3
Cr(VI) CONCENTRATION TRENDS IN SELECTED PERFORMANCE MONITORING WELLS, APRIL 2005 THROUGH MARCH 2016
FIRST QUARTER 2015 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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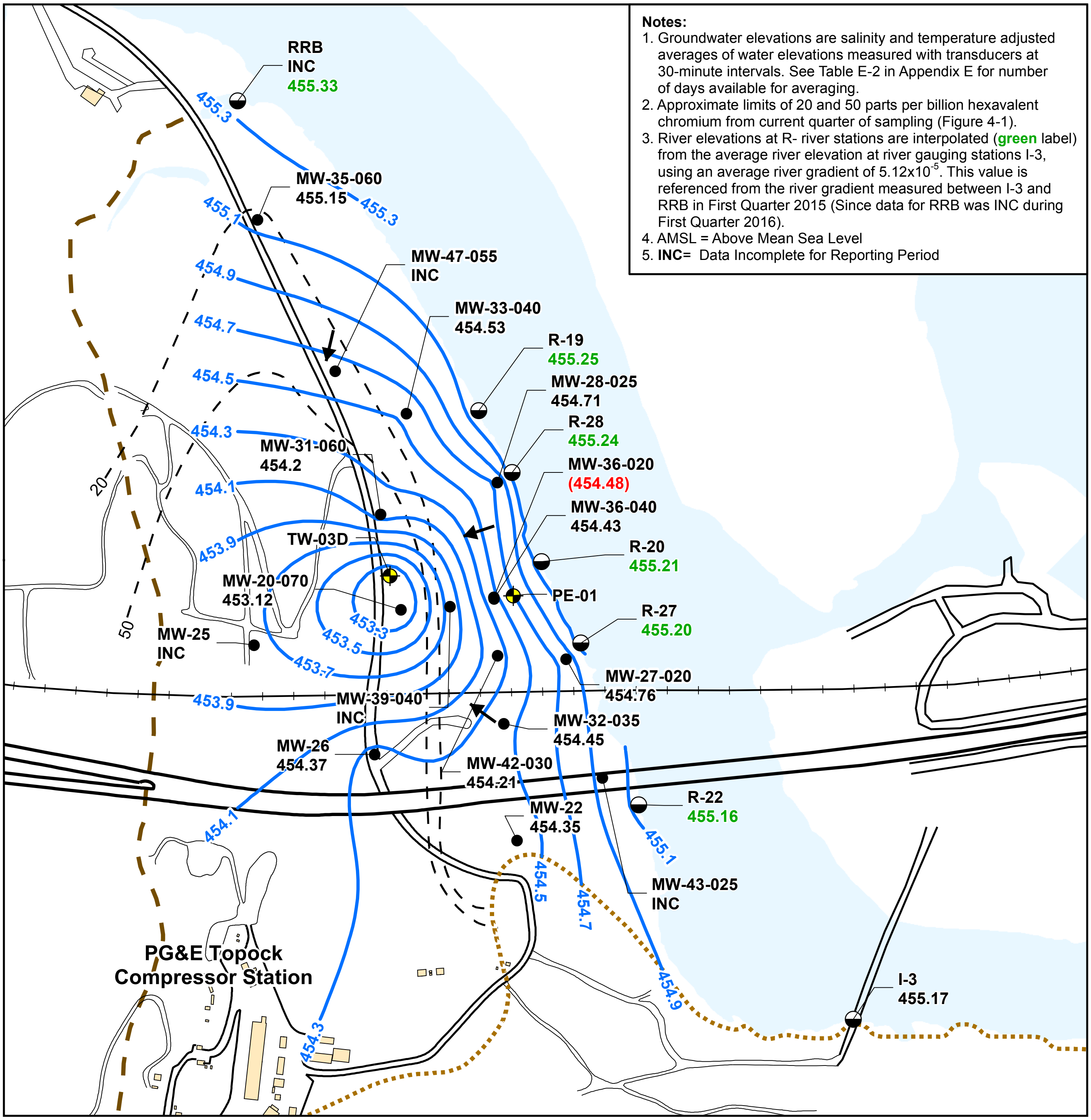

Notes:
1. Groundwater elevations are salinity and temperature adjusted averages of water elevations measured with transducers at 30-minute intervals. See Table E-2 in Appendix E for number of days available for averaging.
2. Approximate limits of 20 and 50 parts per billion hexavalent chromium from current quarter of sampling (Figure 4-1).
3. River elevations at R- river stations are interpolated (**green** label) from the average river elevation at river gauging stations I-3, using an average river gradient of 5.12x10^{-5}. This value is referenced from the river gradient measured between I-3 and RRB in First Quarter 2015 (Since data for RRB was INC during First Quarter 2016).
4. AMSL = Above Mean Sea Level
5. **INC**= Data Incomplete for Reporting Period

LEGEND
- Monitoring Well
- River Station
- Extraction Well
- Bedrock Contact at 455 ft Elevation
- Interpreted Groundwater Flow Direction
- Groundwater Elevation Contour 0.2 ft (dashed where inferred)
- Inferred Cr(VI) Concentration Contour (see note 2)

MW-20-070 Gauging Location
453.11 Average Groundwater Elevation (ft AMSL)
(453.74) Elevation in red parentheses not used for contouring
R-27 River Station (see note 3)
453.79 River Elevation (ft AMSL) Interpolated Average

0 300 600
Feet

N

FIGURE 4-4a
AVERAGE GROUNDWATER ELEVATIONS IN SHALLOW WELLS AND RIVER ELEVATIONS, FIRST QUARTER 2016

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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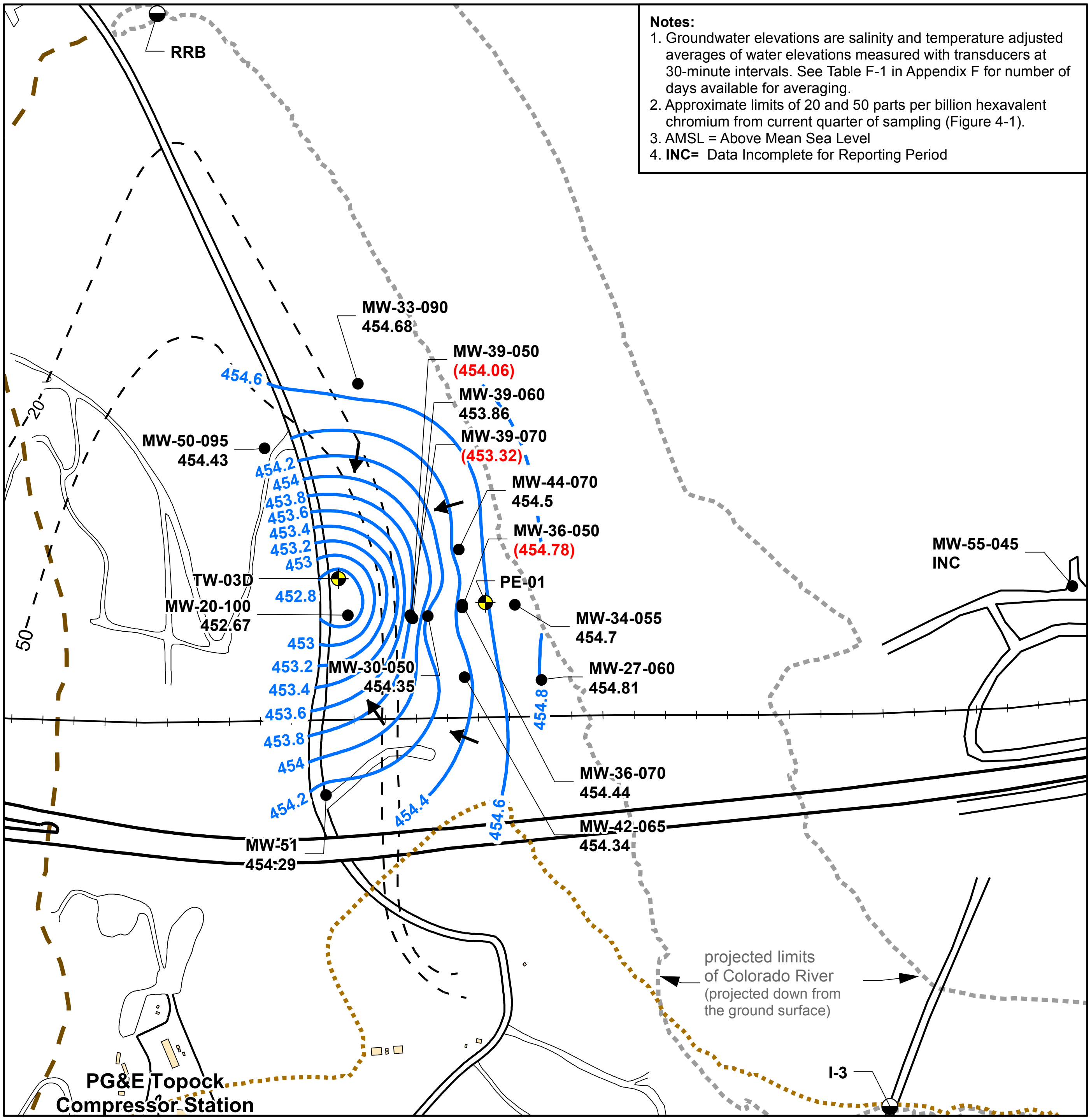


LEGEND

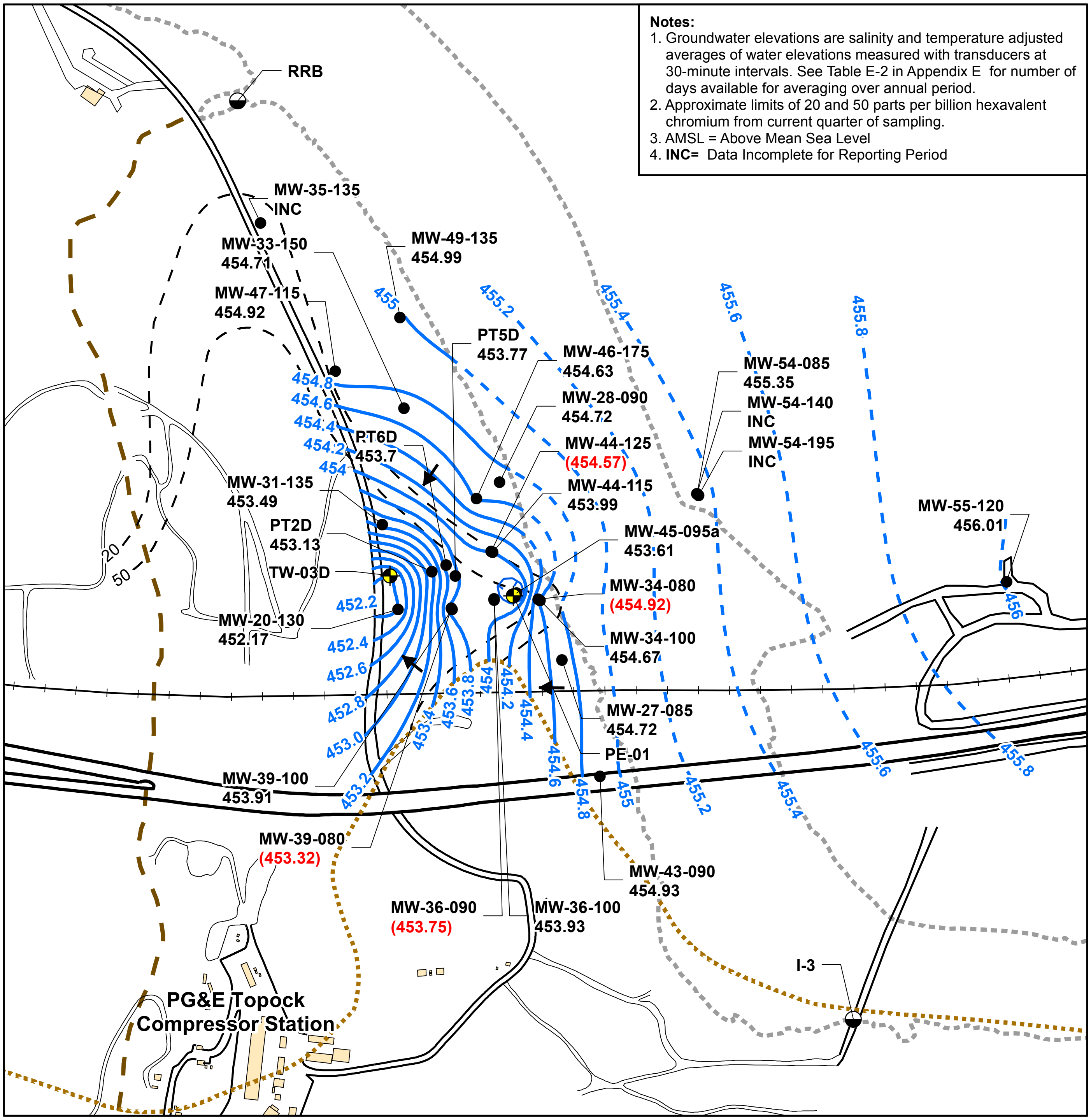
- Monitoring Well
- River Station
- Extraction Well
- Bedrock Contact at 425 ft AMSL Elevation
- Interpreted Groundwater Flow Direction
- Groundwater Elevation Contour 0.2 ft (dashed where inferred)
- Inferred Cr(VI) Concentration Contour (see note 2)

MW-20-070 — Gauging Location
453.11 — Average Groundwater Elevation (ft AMSL)
(453.74) — Elevation in red parentheses not used for contouring

FIGURE 4-4b
AVERAGE GROUNDWATER ELEVATIONS IN MID-DEPTH WELLS, FIRST QUARTER 2016

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

Created by: CRITIGEN



LEGEND

- Deep Zone
- River Station
- Extraction Well
- Bedrock Contact at 396 ft AMSL Elevation
- Interpreted Groundwater Flow Direction
- Groundwater Elevation Contour 0.2 ft (dashed where inferred)
- Inferred Cr(VI) Concentration Contour (see note 2)

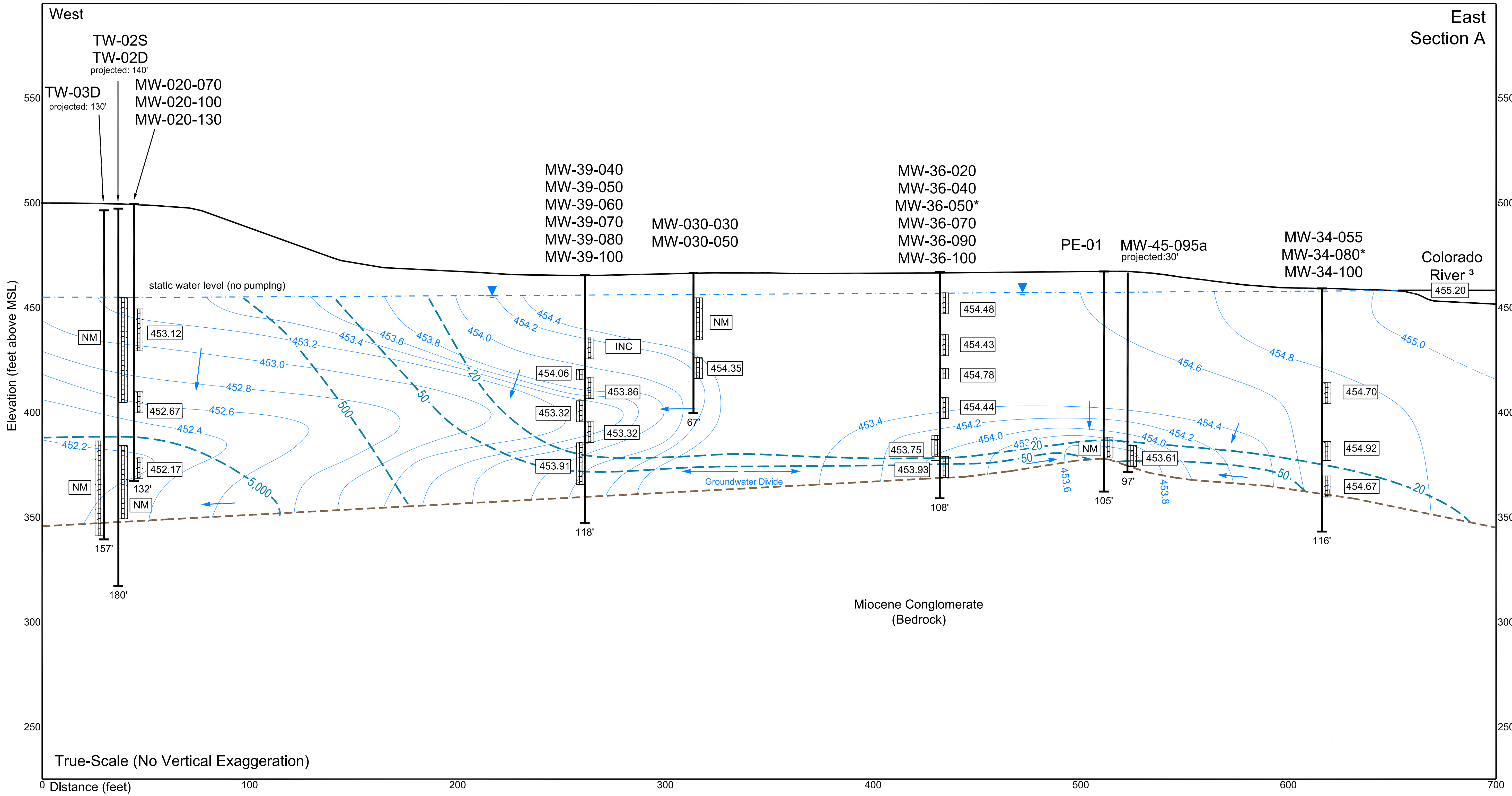
0 300 600 Feet

N

MW-20-070 — Gauging Location
453.11 — Average Groundwater Elevation (ft AMSL)
(453.74) — Elevation in red parentheses not used for contouring

FIGURE 4-4c
AVERAGE GROUNDWATER ELEVATIONS IN DEEP WELLS, FIRST QUARTER 2016

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



Notes:

1. Results show average groundwater elevations for January 2015 through March 2015 measured with transducers at 30 minute intervals.

2. Groundwater elevations adjusted for salinity and temperature. Well MW-36-050* and MW-34-080* are excluded from contouring.

3. Colorado River elevation shown as interpolated quarterly average at R-27.

AMSL = above mean sea level.
NM = well not measured or used in contouring.

Legend

MW-030-050

Inferred water table

well screen

454.83

boring depth (feet)

103

20

Inferred hexavalent chromium contour (ppb) in Alluvial Aquifer.

453.5

Groundwater head contour

453.5

Inferred groundwater head contour

Interpreted groundwater flow direction

Average groundwater head (ft AMSL)

FIGURE 4-5

AVERAGE GROUNDWATER ELEVATIONS FOR WELLS IN FLOODPLAIN CROSS-SECTION A, FIRST QUARTER 2016

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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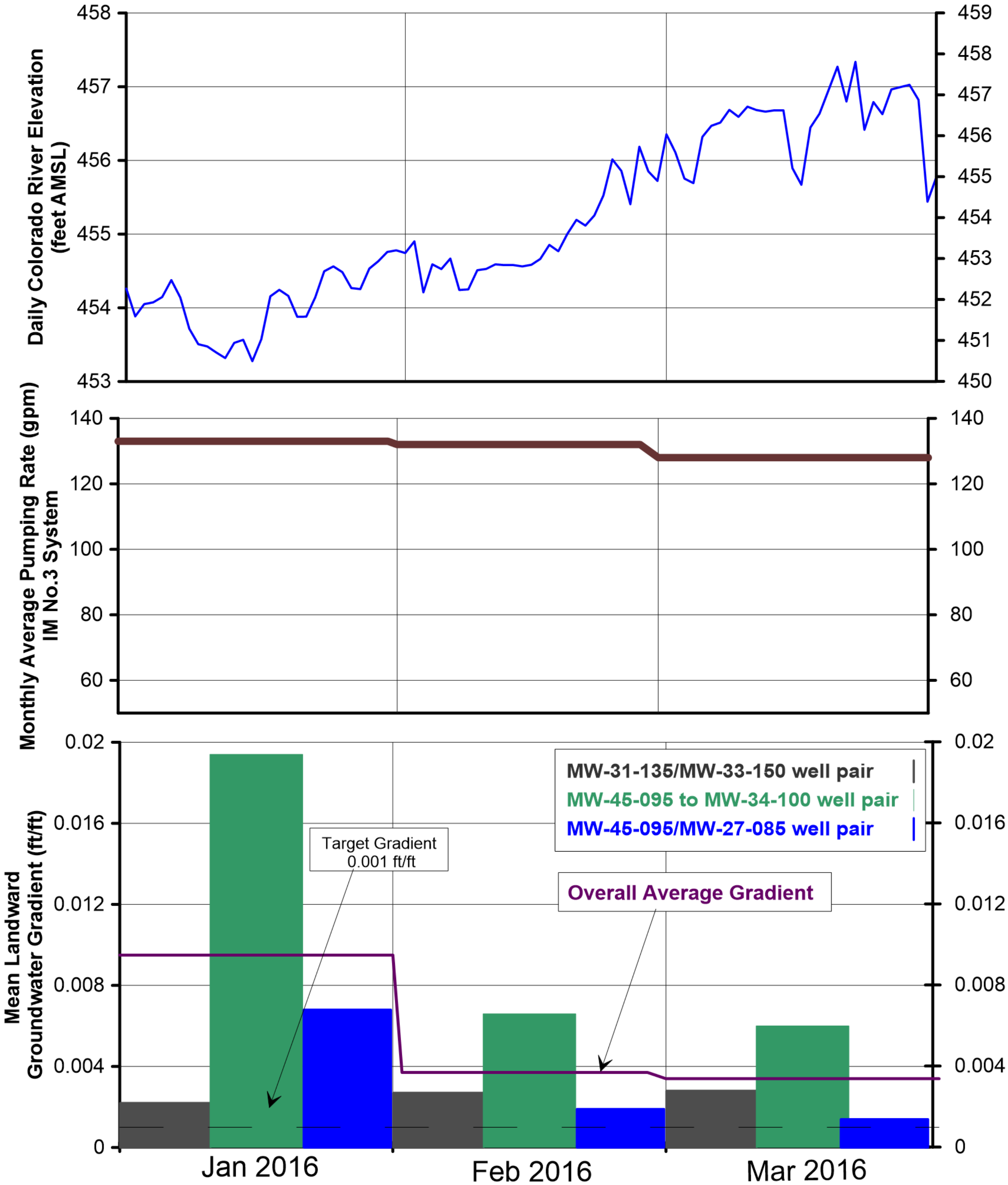

Notes:

1. 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.
5. AMSL = above mean sea level.

FIGURE 4-6
MEASURED HYDRAULIC GRADIENTS, RIVER ELEVATION, AND PUMPING RATE, FIRST QUARTER 2016

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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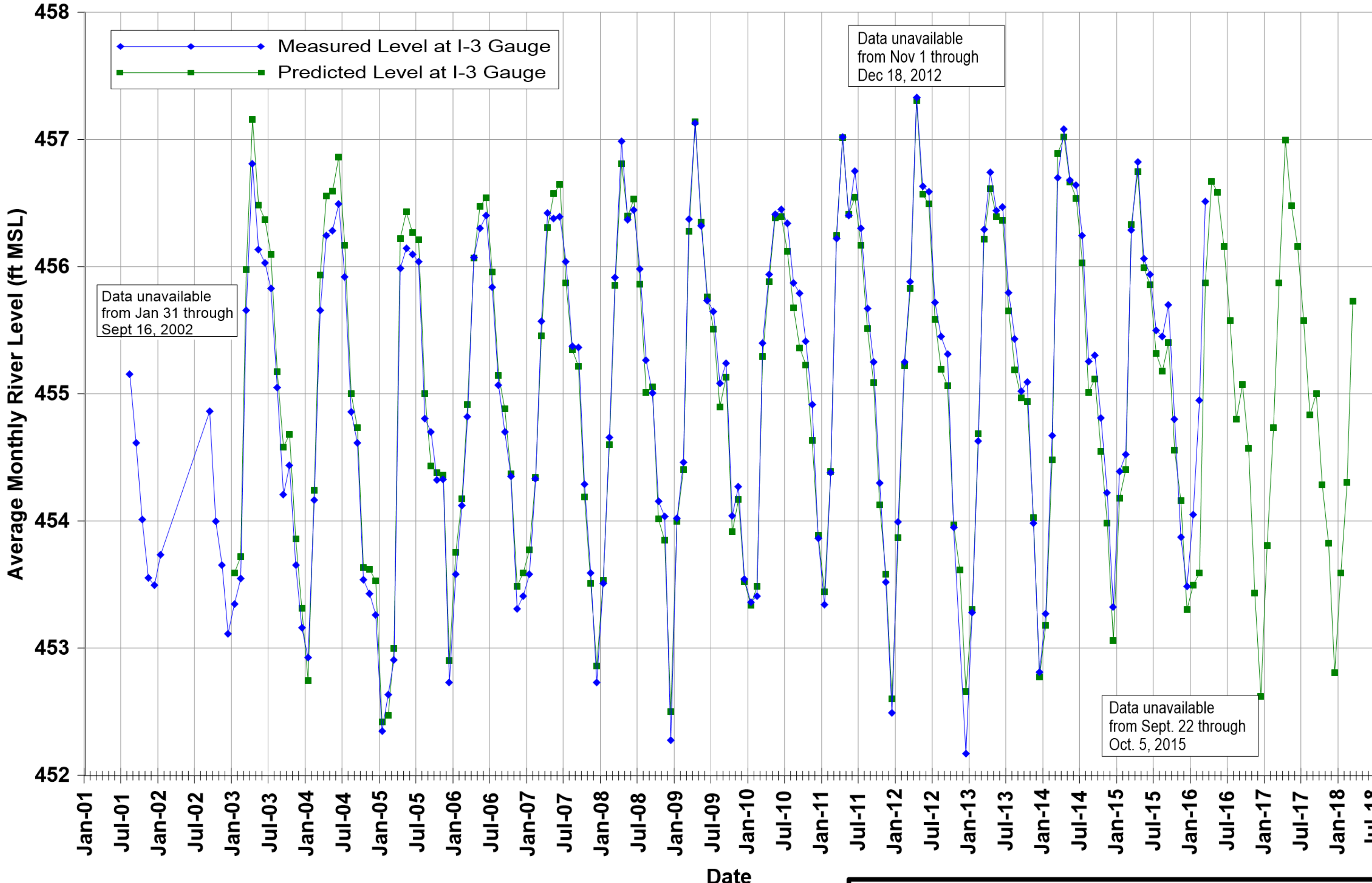

Note:
Projected river level for each month in the past is calculated based on the preceding months USBR projections of Davis Dam release and stage in Lake Havasu. Future projections of river level at I-3 are based upon April 2016 USBR projections. These data are reported monthly by the US Department 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

FIRST QUARTER 2016 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, First Quarter 2016

Table A-1
Well Inspection Log, First Quarter 2016
First Quarter 2016 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 taken this quarter? (Y/N)	Required Actions	Action Completed? (Y/N)	Action Completed Date	Notes
I-3	1/6/2016	Y	NA	NA	N	NA	NA	NA	NA	NA	Y	NA	Y	N		NA		
I-3	3/1/2016	Y	NA	NA	N	N	NA	NA	NA	NA	Y	NA	Y	Y		NA		
MW-12	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-12	3/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-20-070	1/4/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	N		NA		
MW-20-070	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-20-070	3/2/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-20-100	1/4/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	N		NA		
MW-20-100	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-20-100	3/2/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-20-130	1/4/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	N		NA		
MW-20-130	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-20-130	3/2/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-21	1/6/2016	Y	N	NA	N	Y	NA	Y	N	NA	Y	N	Y	N		NA		
MW-21	3/1/2016	Y	N	NA	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-22	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-22	3/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-23-060	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-23-060	3/1/2016	Y	N	NA	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-23-080	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-23-080	3/1/2016	Y	N	NA	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-25	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-25	2/29/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-26	1/6/2016	Y	N	NA	N	N	NA	Y	N	NA	Y	N	Y	N		NA		
MW-26	3/1/2016	Y	N	NA	N	NA	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-27-020	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-27-020	3/2/2016	Y	N	Y	N	Y	NA	NA	N	NA	Y	N	Y	Y		NA		
MW-27-060	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-27-060	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-27-085	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-27-085	2/11/2016	Y	N	Y	N	Y	Y	N	N	Y	Y	N	Y	Y		NA		
MW-27-085	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-28-025	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-28-025	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-28-090	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-28-090	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-30-050	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-30-050	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	N	N	Y	Y		NA		
MW-31-060	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-31-060	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-31-060	2/29/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-31-135	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-31-135	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-31-135	2/11/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y		NA		
MW-31-135	2/29/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-32-035	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-32-035	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-33-040	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-33-040	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-33-090	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-33-090	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-33-150	1/6/2016	Y	N	Y	N	Y	Yes	Y	N	NA	Y	N	Y	N		NA		
MW-33-150	2/11/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y		NA		
MW-33-150	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-34-055	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-34-055	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-34-080	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-34-100	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-34-100	2/11/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y		NA		
MW-34-100	2/23/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-34-100	3/2/2016	Y	N	Y	N	Y	NA	Y	N	Y	Y	N	Y	Y		NA		
MW-35-060	1/4/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-35-060	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-35-060	2/29/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-35-135	1/4/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-35-135	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-35-135	2/29/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	Y		NA		
MW-36-020	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-36-020	1/25/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	N		NA		
MW-36-020	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-36-040	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-36-040	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	N	N	Y	Y		NA		
MW-36-050	1/5/2016	Y	N	Y	N	Y	Y	Y	N	N	Y	N	Y	N		NA		
MW-36-050	1/25/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	N		NA		
MW-36-050	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	N	N	Y	Y		NA		

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 taken this quarter? (Y/N)	Required Actions	Action Completed? (Y/N)	Action Completed Date	Notes
MW-36-070	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-36-070	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	N	N	Y	Y		NA		
MW-36-090	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	No		NA		
MW-36-090	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	N	N	Y	Y		NA		Notes
MW-36-100	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-36-100	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	N	N	Y	Y		NA		
MW-38S	2/24/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-39-040	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-39-040	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	N	N	Y	Y		NA		
MW-39-050	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-39-050	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	N	N	Y	Y		NA		
MW-39-060	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-39-060	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-39-070	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-39-070	3/2/2016	Y	N	Y	N	Y	NA	Y	N	Y	N	N	Y	Y		NA		
MW-39-080	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-39-080	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	N	N	Y	Y		NA		
MW-39-100	1/5/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
MW-39-100	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-42-030	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-42-065	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-43-025	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-43-090	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-44-070	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-44-115	2/25/2016	Y	N	Y	N	Y	NA	Y	N	Y	Y	N	Y	Y		NA		
MW-44-115	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-44-125	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-45-095A	2/11/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y		NA		
MW-45-095A	3/1/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-46-175	2/25/2016	Y	N	Y	N	Y	NA	Y	N	Y	Y	N	Y	Y		NA		
MW-46-175	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-47-055	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-47-115	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-49-135	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	N		NA		well secured by security bolts
MW-50-095	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA	2/1/2016	well secured by security bolts
MW-50-095	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		well secured by security bolts
MW-51	3/3/2016	Y	N	NA	N	Y	NA	Y	N	No	Y	N	Y	Y		NA		
MW-54-085	1/4/2016	Y	N	NA	N	Y	NA	Y	N	NA	Y	N	Y	N		NA		
MW-54-085	3/3/2016	Y	N	Y	N	N	NA	Y	N	NA	Y	N	Y	Y		NA		one bent traffic pole
MW-54-140	1/4/2016	Y	N	NA	N	Y	NA	Y	N	NA	Y	N	Y	N		NA		
MW-54-140	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-54-195	1/4/2016	Y	N	NA	N	Y	NA	Y	N	NA	Y	N	Y	N		NA		
MW-54-195	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-55-045	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-55-120	2/24/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-55-120	3/3/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-57-050	2/22/2016	Y	N	N	N	Y	N	Y	N	No	Y	N	Y	Y		NA		
MW-58-065	2/22/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y		NA		
MW-58BR	2/24/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y		NA		
MW-60BR-245	2/22/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-60BR-245	2/24/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-62-065	2/23/2016	Y	N	N	N	Y	N	N	N	N	Y	N	N	Y		NA		
MW-62-110	2/23/2016	NA	N	NA	N	Y	NA	Y	N	NA	NA	N	Y	Y		NA		
MW-63-065	2/23/2016	Y	N	Y	N	Y	N	N	N	N	Y	N	Y	Y		NA		
MW-64BR	2/22/2016	Y	N	N	Y	Y	N	Y	N	N	Y	N	Y	Y		NA		
MW-65-160	2/24/2016	Y	N	Y	N	Y	NA	Y	N	N	Y	N	Y	Y		NA		
MW-65-225	2/24/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-68-180	2/24/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-69-195	2/24/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
MW-72-080	2/23/2016	Y	N	Y	N	N	N	N	N	N	Y	N	Y	Y		NA		
MW-72BR-200	2/23/2016	N	N	N	N	N	N	N	N	N	Y	N	Y	Y		NA		
MW-73-080	2/22/2016	Y	N	N	Y	Y	N	Y	N	N	Y	N	Y	Y		NA		
MW-73-080	2/24/2016	Y	N	N	Y	Y	N	Y	N	N	Y	N	Y	Y		NA		
OW-01S	1/4/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	N		NA		
OW-01S	2/1/2016	Y	N	Y	N	Y	Yes	Y	N	NA	Y	N	Y	N		NA		
OW-01S	2/29/2016	Y	N	Y	N	Y	N	Y	N	NA	Y	N	Y	Y		NA		
OW-02S	1/4/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	N		NA		
OW-02S	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
OW-02S	2/29/2016	Y	N	Y	N	Y	N	Y	N	NA	Y	N	Y	Y		NA		
OW-05D	1/4/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	N		NA		
OW-05D	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
OW-05D	2/29/2016	Y	N	Y	N	Y	N	Y	N	NA	Y	N	Y	Y		NA		
OW-05M	1/4/2016	Y	N	Y	N	Y	Y	Y	N	Yes	Y	N	Y	N		NA		
OW-05M	2/1/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	NA	N		NA		
OW-05M	2/29/2016	Y	N	Y	N	Y	N	Y	N	NA	Y	N	Y	Y		NA		
OW-05S	1/4/2016	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	N		NA		
OW-05S	2/29/2016	Y	N	Y	N	Y	N	Y	N	NA	Y	N	Y	Y		NA		
PE-01	2/2/2016	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA	NA	N		NA		
PE-1	1/4/2016	NA	NA	Y	N	Y	NA	Y	NA	NA	NA	NA	Y	N		NA		

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 taken this quarter? (Y/N)	Required Actions	Action Completed? (Y/N)	Action Completed Date	Notes
PE-1	3/2/2016	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA	Y	Y		NA		
PT2D	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
PT2D	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
PT5D	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
PT5D	3/2/2016	Y	N	Y	N	Y	NA	Y	N	NA	Y	N	Y	Y		NA		
PT6D	1/6/2016	Y	N	Y	N	Y	Y	Y	N	NA	Y	N	Y	N		NA		
PT6D	3/2/2016	Y	N	Y	N	No	NA	Y	N	NA	Y	N	Y	Y		NA		
RRB	3/3/2016	Y	Y	No	N	No	NA	NA	NA	NA	Y	NA	Y	Y		NA		
TW-03D	3/2/2016	NA	NA	NA	N	Y	NA	Y	NA	NA	NA	NA	Y	Y		NA		
TW-03D	1/6/2016	NA	NA	Y	N	Y	NA	NA	N	NA	NA	NA	Y	N		NA		
TW-03D	2/3/2016	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA	NA	N		NA		

APPENDIX B

Lab Reports, First Quarter 2016 (Provided on CD Only with Hard Coy Submittal)

APPENDIX C

Arsenic Monitoring Results

Table C-1

Arsenic Results in Monitoring Wells, March 2015 through March 2016

First Quarter 2016 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		Sample Method	Dissolved Arsenic (ug/L)
MW-09	SA	5/12/2015		LF	1.7
MW-09	SA	10/7/2015		LF	1.6
MW-09	SA	12/1/2015		LF	1.6
MW-10	SA	10/7/2015		LF	3.4
MW-10	SA	12/1/2015		LF	2.9
MW-11	SA	5/12/2015		LF	1.4
MW-11	SA	10/7/2015		LF	1.4
MW-11	SA	12/2/2015		LF	1.7
MW-11	SA	12/2/2015	FD	LF	1.5
MW-12	SA	12/2/2015		LF	36
MW-13	SA	12/7/2015		LF	1.9
MW-14	SA	5/6/2015		LF	0.88
MW-14	SA	12/7/2015		LF	0.87
MW-20-130	DA	5/19/2015		LF	4.8
MW-20-130	DA	12/8/2015		LF	4.5
MW-20-130	DA	12/8/2015	FD	LF	4.5
MW-22	SA	4/22/2015		LF	12
MW-22	SA	12/3/2015		LF	15
MW-23-060	BR	4/30/2015		3V	3.1
MW-23-060	BR	12/3/2015		3V	4.2
MW-23-080	BR	4/30/2015		3V	3.6
MW-23-080	BR	12/3/2015		3V	4.1
MW-24A	SA	4/29/2015		LF	ND (0.1)
MW-24A	SA	4/29/2015	FD	LF	ND (0.1)
MW-24A	SA	12/1/2015		LF	0.15
MW-24B	DA	4/29/2015		LF	2.3
MW-24B	DA	12/1/2015		LF	2.8
MW-24BR	BR	12/2/2015		3V	0.37
MW-25	SA	5/11/2015		LF	1.1
MW-25	SA	12/7/2015		LF	1.2
MW-26	SA	5/19/2015		LF	1.8
MW-26	SA	12/8/2015		LF	1.9
MW-26	SA	12/8/2015	FD	LF	1.8
MW-27-020	SA	12/3/2015		LF	1.5
MW-27-060	MA	12/3/2015		LF	12
MW-27-060	MA	12/3/2015	FD	LF	13
MW-27-085	DA	4/20/2015		LF	1
MW-27-085	DA	4/20/2015	FD	LF	1
MW-27-085	DA	12/3/2015		LF	1.4
MW-28-025	SA	4/21/2015		LF	1.1

Table C-1

Arsenic Results in Monitoring Wells, March 2015 through March 2016

First Quarter 2016 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		Sample Method	Dissolved Arsenic (ug/L)
MW-28-025	SA	12/2/2015		LF	0.81
MW-28-090	DA	4/21/2015		LF	1.7
MW-28-090	DA	12/2/2015		LF	2.1
MW-29	SA	4/21/2015		LF	6.8
MW-29	SA	12/1/2015		LF	15
MW-30-030	SA	12/3/2015		LF	2.5
MW-30-050	MA	12/3/2015		LF	2.9
MW-30-050	MA	12/3/2015	FD	LF	3
MW-31-060	SA	5/13/2015		LF	1.1
MW-31-060	SA	12/7/2015		LF	1.2
MW-31-135	DA	12/7/2015		LF	3.4
MW-32-020	SA	12/3/2015		LF	3.9
MW-32-020	SA	12/3/2015	FD	LF	4.3
MW-32-035	SA	4/20/2015		LF	2.3
MW-32-035	SA	12/3/2015		LF	17
MW-33-040	SA	4/27/2015		LF	11
MW-33-040	SA	12/1/2015		LF	10
MW-33-090	MA	4/27/2015		LF	0.99
MW-33-090	MA	12/1/2015		LF	1.1
MW-33-150	DA	4/27/2015		LF	1
MW-33-150	DA	12/1/2015		LF	1.1
MW-33-210	DA	4/27/2015		LF	0.92
MW-33-210	DA	4/27/2015	FD	LF	0.88
MW-33-210	DA	12/1/2015		LF	1
MW-34-055	MA	12/3/2015		LF	2.4
MW-34-080	DA	4/20/2015		LF	1.3
MW-34-080	DA	12/3/2015		LF	1.3
MW-34-100	DA	4/20/2015		LF	0.84
MW-34-100	DA	4/20/2015	FD	LF	0.86
MW-34-100	DA	10/6/2015		LF	1.4
MW-34-100	DA	12/3/2015		LF	1.4
MW-34-100	DA	12/3/2015	FD	LF	1.5
MW-34-100	DA	2/25/2016		LF	1.9
MW-35-060	SA	5/7/2015		LF	1.1
MW-35-060	SA	12/7/2015		LF	1
MW-35-135	DA	5/7/2015		LF	0.85
MW-35-135	DA	12/7/2015		3V	0.87
MW-36-020	SA	12/8/2015		LF	1.8
MW-36-040	SA	12/8/2015		LF	4.6
MW-36-050	MA	12/8/2015		LF	3.8

Table C-1

Arsenic Results in Monitoring Wells, March 2015 through March 2016

First Quarter 2016 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		Sample Method	Dissolved Arsenic (ug/L)
MW-36-070	MA	12/8/2015		LF	2.9
MW-36-090	DA	4/23/2015		LF	20
MW-36-090	DA	12/8/2015		LF	21
MW-36-100	DA	4/23/2015		LF	8.3
MW-36-100	DA	12/8/2015		LF	8.5
MW-37S	MA	12/8/2015		LF	1.7
MW-38D	DA	4/30/2015		3V	6.3
MW-38D	DA	4/30/2015		LF	6.8
MW-38D	DA	12/1/2015		3V	7.7
MW-38D	DA	12/1/2015		LF	7.3
MW-38S	SA	4/30/2015		3V	13
MW-38S	SA	4/30/2015		LF	13
MW-38S	SA	9/28/2015		3V	14
MW-38S	SA	9/28/2015		LF	14
MW-38S	SA	12/1/2015		3V	13
MW-38S	SA	12/1/2015		LF	14
MW-38S	SA	2/24/2016		3V	14
MW-38S	SA	2/24/2016		LF	14
MW-39-040	SA	12/4/2015		LF	18
MW-39-050	MA	12/4/2015		LF	2.4
MW-39-060	MA	12/4/2015		LF	4.4
MW-39-060	MA	12/4/2015	FD	LF	4.2
MW-39-100	DA	4/21/2015		LF	4.1
MW-39-100	DA	12/4/2015		LF	3
MW-40D	DA	5/12/2015		H	17
MW-40D	DA	5/12/2015		LF	4.3
MW-40D	DA	12/7/2015		H	4.2
MW-40D	DA	12/7/2015		LF	3.9
MW-40D	DA	12/7/2015	FD	H	3.9
MW-40S	SA	12/7/2015		H	1.7
MW-40S	SA	12/7/2015		LF	1.3
MW-41D	DA	5/6/2015		LF	1.8
MW-41D	DA	12/7/2015		LF	1.7
MW-41M	DA	12/7/2015		LF	2
MW-41M	DA	12/7/2015	FD	LF	2.2
MW-41S	SA	12/7/2015		LF	1.6
MW-42-030	SA	12/3/2015		LF	3.4
MW-42-055	MA	4/20/2015		LF	21
MW-42-055	MA	12/3/2015		LF	27
MW-42-065	MA	4/20/2015		LF	3.2

Table C-1

Arsenic Results in Monitoring Wells, March 2015 through March 2016

First Quarter 2016 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		Sample Method	Dissolved Arsenic (ug/L)
MW-42-065	MA	12/3/2015		LF	4
MW-43-025	SA	12/8/2015		LF	17
MW-43-075	DA	12/2/2015		LF	13
MW-43-090	DA	12/2/2015		LF	1.2
MW-44-070	MA	4/23/2015		LF	3.7
MW-44-070	MA	12/4/2015		LF	6.6
MW-44-115	DA	4/23/2015		LF	5.2
MW-44-115	DA	10/6/2015		LF	5.9
MW-44-115	DA	10/6/2015	FD	LF	5.9
MW-44-115	DA	12/4/2015		LF	5.6
MW-44-115	DA	2/25/2016		LF	6.1
MW-44-115	DA	2/25/2016	FD	LF	5.5
MW-44-125	DA	4/23/2015		LF	3.1
MW-44-125	DA	4/23/2015	FD	LF	3.1
MW-44-125	DA	12/4/2015		LF	4.3
MW-44-125	DA	12/4/2015	FD	LF	4.1
MW-47-055	SA	5/7/2015		LF	1
MW-47-055	SA	12/2/2015		LF	0.74
MW-49-135	DA	12/1/2015		3V	1.9
MW-49-365	DA	12/1/2015		LF	1.6
MW-50-200	DA	12/7/2015		LF	3.2
MW-51	MA	5/20/2015		LF	3.4
MW-51	MA	12/8/2015		LF	3.8
MW-52D	DA	4/22/2015		Slant	2.8
MW-52D	DA	12/2/2015		3V	2.7
MW-52M	DA	4/22/2015		Slant	1.5
MW-52M	DA	12/2/2015		3V	0.81
MW-52S	MA	4/22/2015		Slant	0.12
MW-52S	MA	12/2/2015		3V	0.37
MW-53D	DA	4/22/2015		Slant	3
MW-53D	DA	12/2/2015		3V	2.6
MW-53M	DA	4/22/2015		Slant	0.68
MW-53M	DA	12/2/2015		3V	0.51
MW-54-085	DA	4/28/2015	(a)	LF	4.45
MW-54-085	DA	12/9/2015		LF	2.5
MW-54-085	DA	12/9/2015	(a)	LF	ND (5)
MW-54-085	DA	12/9/2015	FD	LF	2.4
MW-54-140	DA	4/28/2015	(a)	LF	3.09
MW-54-140	DA	12/9/2015		LF	2.4
MW-54-140	DA	12/9/2015	(a)	LF	ND (5)

Table C-1

Arsenic Results in Monitoring Wells, March 2015 through March 2016

First Quarter 2016 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		Sample Method	Dissolved Arsenic (ug/L)
MW-54-195	DA	4/28/2015	(a)	LF	1.09
MW-54-195	DA	12/9/2015		LF	0.94
MW-54-195	DA	12/9/2015	(a)	LF	ND (5)
MW-55-120	DA	2/24/2016		LF	6.4
MW-55-120	DA	2/24/2016	(a)	LF	5.8
MW-57-070	BR	5/21/2015		3V	1.3
MW-57-070	BR	12/4/2015		3V	1.4
MW-57-185	BR	5/11/2015		3V	15
MW-57-185	BR	12/4/2015		3V	13
MW-58BR	BR	5/18/2015		LF	1.2
MW-58BR	BR	9/30/2015		LF	2.9
MW-58BR	BR	12/7/2015		LF	1.5
MW-58BR	BR	2/24/2016		LF	1.5
MW-59-100	SA	5/19/2015		LF	2.2
MW-59-100	SA	12/3/2015		LF	1.9
MW-59-100	SA	12/3/2015	FD	LF	2
MW-60-125	BR	5/14/2015		3V	1.3
MW-60-125	BR	12/4/2015		3V	1.3
MW-60BR-245	BR	5/14/2015		3V	6.7
MW-60BR-245	BR	9/29/2015		3V	5.9
MW-60BR-245	BR	12/4/2015		3V	7
MW-60BR-245	BR	2/23/2016		3V	6.9
MW-61-110	BR	5/13/2015		3V	3.3
MW-61-110	BR	12/4/2015		3V	3.3
MW-62-065	BR	5/13/2015		3V	1.4
MW-62-065	BR	5/13/2015	FD	3V	1.5
MW-62-065	BR	10/7/2015		3V	1.3
MW-62-065	BR	12/3/2015		3V	1.3
MW-62-065	BR	2/23/2016		3V	1.2
MW-62-110	BR	5/19/2015		Flute	7.4
MW-62-110	BR	10/1/2015		Flute	6.8
MW-62-110	BR	12/4/2015		3V	7.7
MW-62-110	BR	2/24/2016		3V	4.9
MW-62-190	BR	5/19/2015		Flute	3.8
MW-62-190	BR	12/4/2015		3V	3.9
MW-63-065	BR	4/29/2015		3V	1.2
MW-63-065	BR	9/28/2015		3V	1.3
MW-63-065	BR	12/4/2015		3V	1.9
MW-63-065	BR	2/23/2016		3V	1.7
MW-64BR	BR	5/18/2015		LF	6

Table C-1

Arsenic Results in Monitoring Wells, March 2015 through March 2016

First Quarter 2016 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		Sample Method	Dissolved Arsenic (ug/L)
MW-64BR	BR	10/1/2015		LF	3.2
MW-64BR	BR	12/7/2015		LF	3.3
MW-64BR	BR	2/22/2016		LF	4.1
MW-65-160	SA	3/24/2015		LF	0.67
MW-65-160	SA	5/11/2015		LF	0.62
MW-65-160	SA	5/11/2015	FD	LF	0.64
MW-65-160	SA	9/30/2015		LF	0.61
MW-65-160	SA	12/2/2015		LF	0.73
MW-65-160	SA	2/24/2016		LF	0.54
MW-65-225	DA	5/11/2015		LF	2.9
MW-65-225	DA	9/30/2015		LF	2.5
MW-65-225	DA	12/2/2015		LF	2.6
MW-65-225	DA	2/24/2016		LF	2.2
MW-66-165	SA	5/13/2015		LF	1.2
MW-66-165	SA	12/2/2015		LF	0.9
MW-66-230	DA	5/21/2015		LF	6.3
MW-66-230	DA	12/3/2015		LF	4.4
MW-66BR-270	BR	5/18/2015		3V	ND (0.1)
MW-66BR-270	BR	12/9/2015		3V	ND (0.5)
MW-67-185	SA	5/20/2015		LF	1.2
MW-67-185	SA	12/2/2015		LF	0.93
MW-67-225	MA	5/20/2015		LF	3.2
MW-67-225	MA	12/2/2015		LF	3.5
MW-67-260	DA	5/20/2015		LF	8.2
MW-67-260	DA	12/2/2015		LF	8.9
MW-68-180	SA	5/18/2015		LF	2.8
MW-68-180	SA	9/30/2015		LF	2.5
MW-68-180	SA	9/30/2015	FD	LF	2.4
MW-68-180	SA	12/2/2015		LF	2.7
MW-68-180	SA	2/24/2016		LF	2.7
MW-68-240	DA	5/21/2015		LF	1.8
MW-68-240	DA	12/2/2015		LF	1.5
MW-68BR-280	BR	5/27/2015		3V	1.3
MW-68BR-280	BR	12/3/2015		LF	1.3
MW-69-195	BR	5/14/2015		3V	2.3
MW-69-195	BR	5/14/2015	FD	3V	2.3
MW-69-195	BR	10/1/2015		3V	2.3
MW-69-195	BR	12/4/2015		3V	2.3
MW-69-195	BR	2/24/2016		3V	2.4
MW-69-195	BR	2/24/2016	FD	3V	2.3

Table C-1

Arsenic Results in Monitoring Wells, March 2015 through March 2016

First Quarter 2016 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	Sample Method	Dissolved Arsenic (ug/L)
MW-70-105	BR	5/7/2015	3V	4.3
MW-70-105	BR	12/7/2015	3V	4.2
MW-70BR-225	BR	5/27/2015	3V	1.9
MW-70BR-225	BR	12/7/2015	3V	1.8
MW-71-035	SA	5/6/2015	LF	10
MW-71-035	SA	12/4/2015	LF	9.5
MW-72-080	BR	5/11/2015	3V	11
MW-72-080	BR	9/29/2015	3V	12
MW-72-080	BR	12/7/2015	3V	10
MW-72-080	BR	2/23/2016	3V	12
MW-72BR-200	BR	5/4/2015	3V	12
MW-72BR-200	BR	9/29/2015	3V	16
MW-72BR-200	BR	12/8/2015	3V	15
MW-72BR-200	BR	2/23/2016	3V	16
MW-73-080	BR	5/6/2015	3V	1.5
MW-73-080	BR	9/29/2015	3V	1.3
MW-73-080	BR	12/8/2015	3V	1.7
MW-73-080	BR	2/23/2016	3V	1.5
MW-74-240	BR	5/14/2015	3V	9.9
MW-74-240	BR	12/7/2015	3V	14
PM-03	---	4/5/2016	Tap	1.2
PM-04	---	4/5/2016	Tap	0.43
TW-02D	DA	12/9/2015	Tap	2.4

Notes:
(a) = data was analyzed by an Arizona certified laboratory.
--- = data was either not collected, not available or was rejected
FD = field duplicate sample.
J = concentration or reporting limit (RL) estimated by laboratory or data validation.
ND = not detected at listed RL.
UF = unfiltered.
ug/L = micrograms per liter.

Sample Methods:
3V = three volume.
Flute = flexible liner underground technologies sampling system.
LF = Low Flow (minimal drawdown)
Slant = slant (non vertical) wells MW-52, MW-53, MW-56 are sampled from dedicated Barcad screens, using a peristaltic pump.

Table C-1

Arsenic Results in Monitoring Wells, March 2015 through March 2016

First Quarter 2016 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	Sample Method	Dissolved Arsenic (ug/L)

Tap = sampled from tap or port of extraction or supply well.

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).

Starting in Third Quarter 2014, the groundwater sample collection method was switched from the traditional three-volume purge method (3V) to the low flow (LF) method at many short screen wells screened in alluvial sediments. The method for purging prior to sample collection is indicated in the sample method column of this table.

The California primary drinking water standard maximum contaminant level (MCL) for Arsenic is 10 ug/L.
The Background Study Upper Tolerance Limit for Arsenic at the site is 24.3 ug/L.

APPENDIX D

Groundwater Monitoring Data for GMP and Interim Measures Monitoring Wells

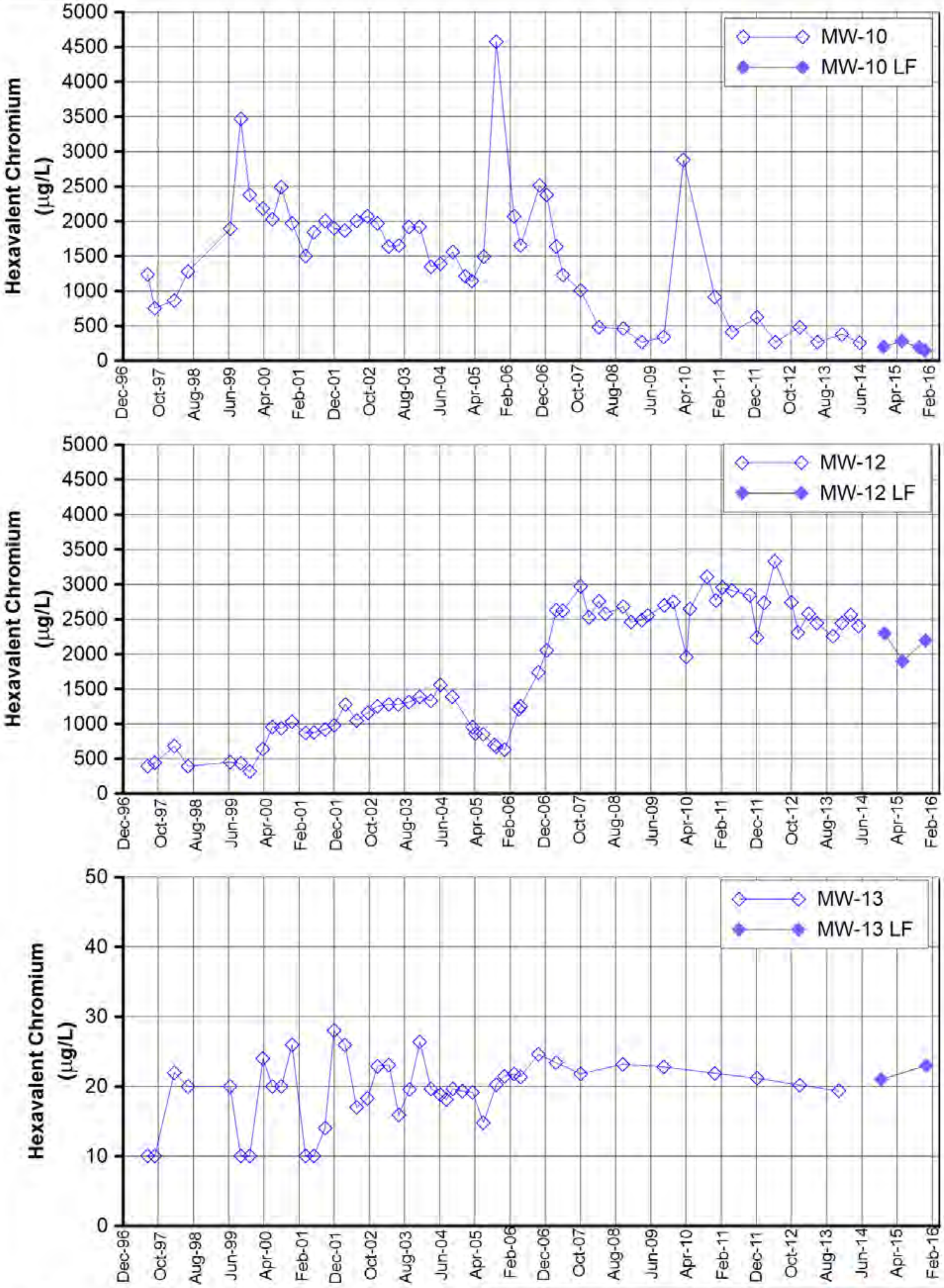
Table D-1
Chromium Concentrations of Wells within Approximately 800 feet of TW-3D Compared to the Maximum Detected Chromium Concentrations from 2014,
First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

	Hexavalent Chromium		Total Dissolved Chromium		
Location ID	**Maximum 2014 Hexavalent Chromium Concentration and New Trigger Levels (ug/L)**	**2016 First Quarter Hexavalent Chromium Result (ug/L)**	**Total Dissolved Chromium Concentration and New Trigger Levels (ug/L)**	**Quarter Total Dissolved Chromium Result (ug/L)**	**Trigger Level Exceeded (Yes if triggered - blank if not)**
Shallow Zone Wells					
MW-20-070	2,200	---	2,400	---	
MW-26	2,400	---	2,300	---	
MW-27-020	ND (0.20)	---	ND (1.0)	---	
MW-28-025	ND (0.20)	---	ND (1.0)	---	
MW-30-030	0.21	---	ND (1.0)	---	
MW-31-060	600	---	660	---	
MW-32-020	ND (1.0)	---	ND (5.0)	---	
MW-32-035	ND (1.0)	---	ND (1.0)	---	
MW-33-040	0.28	---	ND (1.0)	---	
MW-36-020	ND (0.20)	---	ND (1.0)	---	
MW-36-040	0.34	---	ND (1.0)	---	
MW-39-040	ND (0.20)	---	ND (1.0)	---	
MW-42-030	0.54	---	ND (1.0)	---	
MW-47-055	16	---	16	---	
Middle Zone Wells					
MW-20-100	2,900	---	2,900	---	
MW-27-060	ND (0.20)	---	ND (1.0)	---	
MW-30-050	ND (0.20)	---	ND (1.0)	---	
MW-33-090	13.3	---	15.5	---	
MW-34-055	ND (0.20)	---	ND (1.0)	---	
MW-36-050	ND (0.20)	---	ND (1.0)	---	
MW-36-070	ND (0.20)	---	ND (1.0)	---	
MW-39-050	ND (0.20)	---	ND (1.0)	---	
MW-39-060	ND (0.20)	---	ND (1.0)	---	
MW-39-070	ND (0.20)	---	ND (1.0)	---	
MW-42-055	0.35	---	2.8	---	
MW-42-065	ND (0.20)	---	ND (1.0)	---	
MW-44-070	ND (0.20)	---	ND (1.0)	---	
MW-51	4,800	---	4,800	---	
Deep Zone Wells					
MW-20-130	9,100	---	9,000	---	
MW-27-085	ND (1.0)	---	ND (1.0)	---	
MW-28-090	ND (0.20)	---	ND (1.0)	---	
MW-31-135	12	---	12	---	
MW-33-150	12 J	---	10.8	---	
MW-33-210	13	---	13.5	---	
MW-34-080	ND (0.20)	---	ND (1.0)	---	
MW-34-100	263	41	270	31	
MW-36-090	ND (0.20)	---	ND (1.0)	---	
MW-36-100	65	---	62	---	
MW-39-080	ND (0.20)	---	ND (1.0)	---	

Table D-1
Chromium Concentrations of Wells within Approximately 800 feet of TW-3D Compared to the Maximum Detected Chromium Concentrations from 2014,
First Quarter 2016 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

	Hexavalent Chromium		Total Dissolved Chromium		
Location ID	**Maximum 2014 Hexavalent Chromium Concentration and New Trigger Levels (ug/L)**	**2016 First Quarter Hexavalent Chromium Result (ug/L)**	**Total Dissolved Chromium Concentration and New Trigger Levels (ug/L)**	**Quarter Total Dissolved Chromium Result (ug/L)**	**Trigger Level Exceeded (Yes if triggered - blank if not)**
MW-39-100	57	---	49	---	
MW-44-115	41.6	30	42.9	28	
MW-44-125	4.0 J	---	5.9	---	
MW-45-095a	13.7 (a)	---	14.2 (a)	---	
MW-46-175	46.3	18	46.1	19	
MW-46-205	5.5	---	4.8	---	
MW-47-115	24	---	20	---	
PE-01	5.6	3.9	6	3.6	
TW-04	7.4	---	6.5	---	

Notes:
--- = data was either not collected, not available or was rejected
J = concentration or reporting limit estimated by laboratory or data validation.
ug/L = micrograms per liter.
(a) = Result is the maximum from 2013



Notes:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-1
HEXAVALENT CHROMIUM IN MW-10, MW-12, AND MW-13

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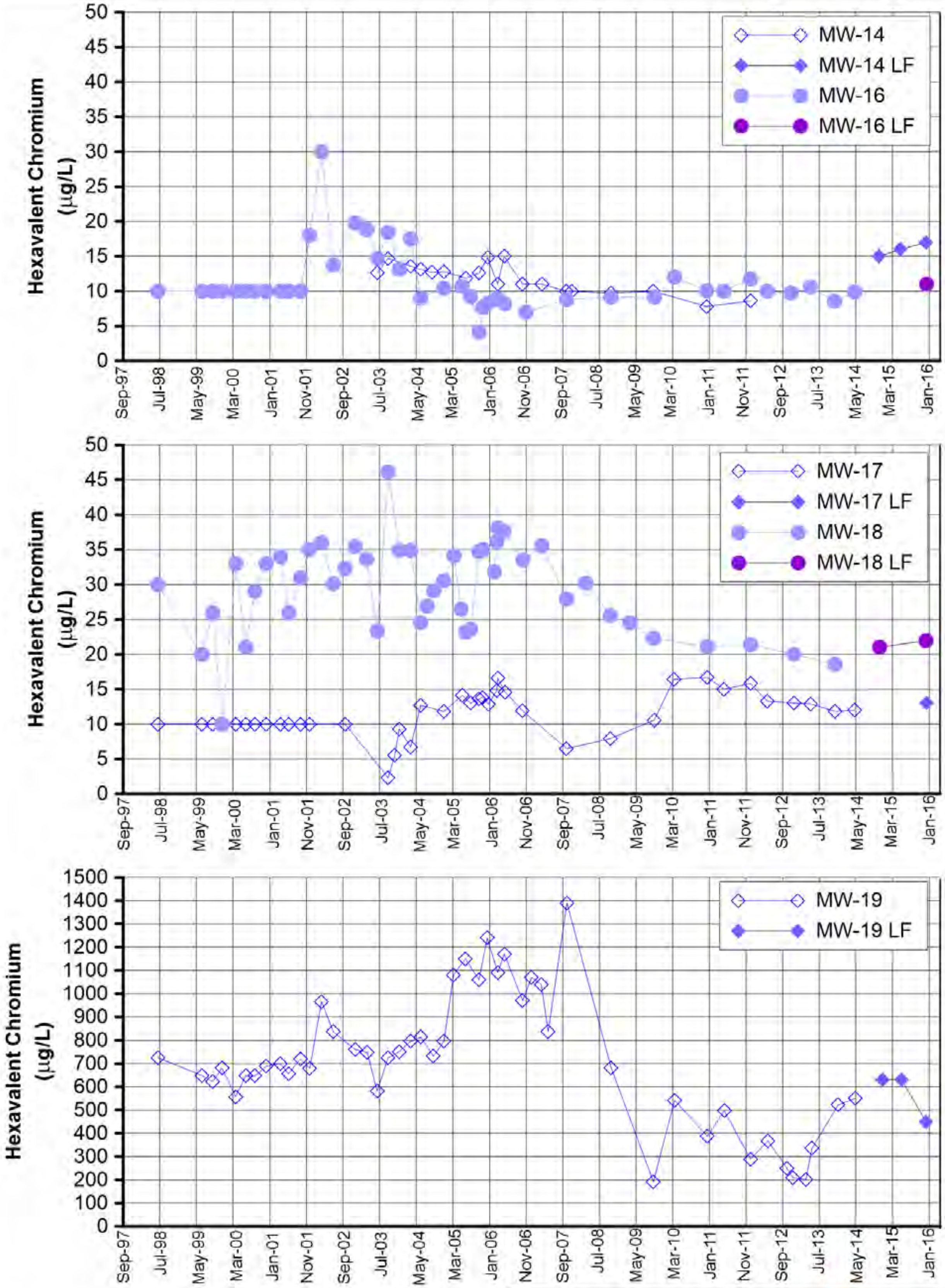

Notes:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-2
HEXAVALENT CHROMIUM IN MW-14, MW-16, MW-17, MW-18, AND MW-19

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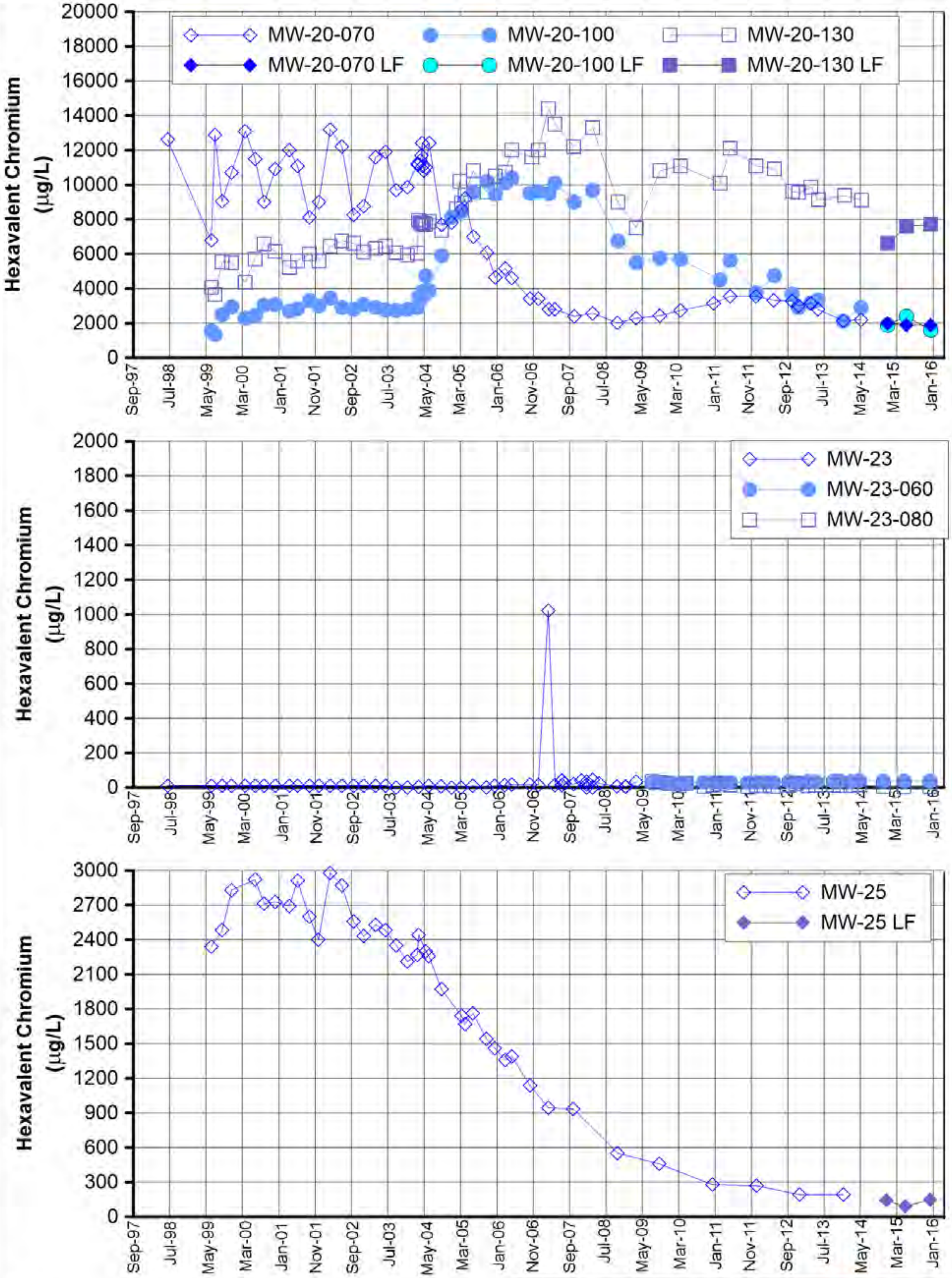

Notes:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-3
HEXAVALENT CHROMIUM IN MW-20 AND MW-23 CLUSTERS AND MW-25

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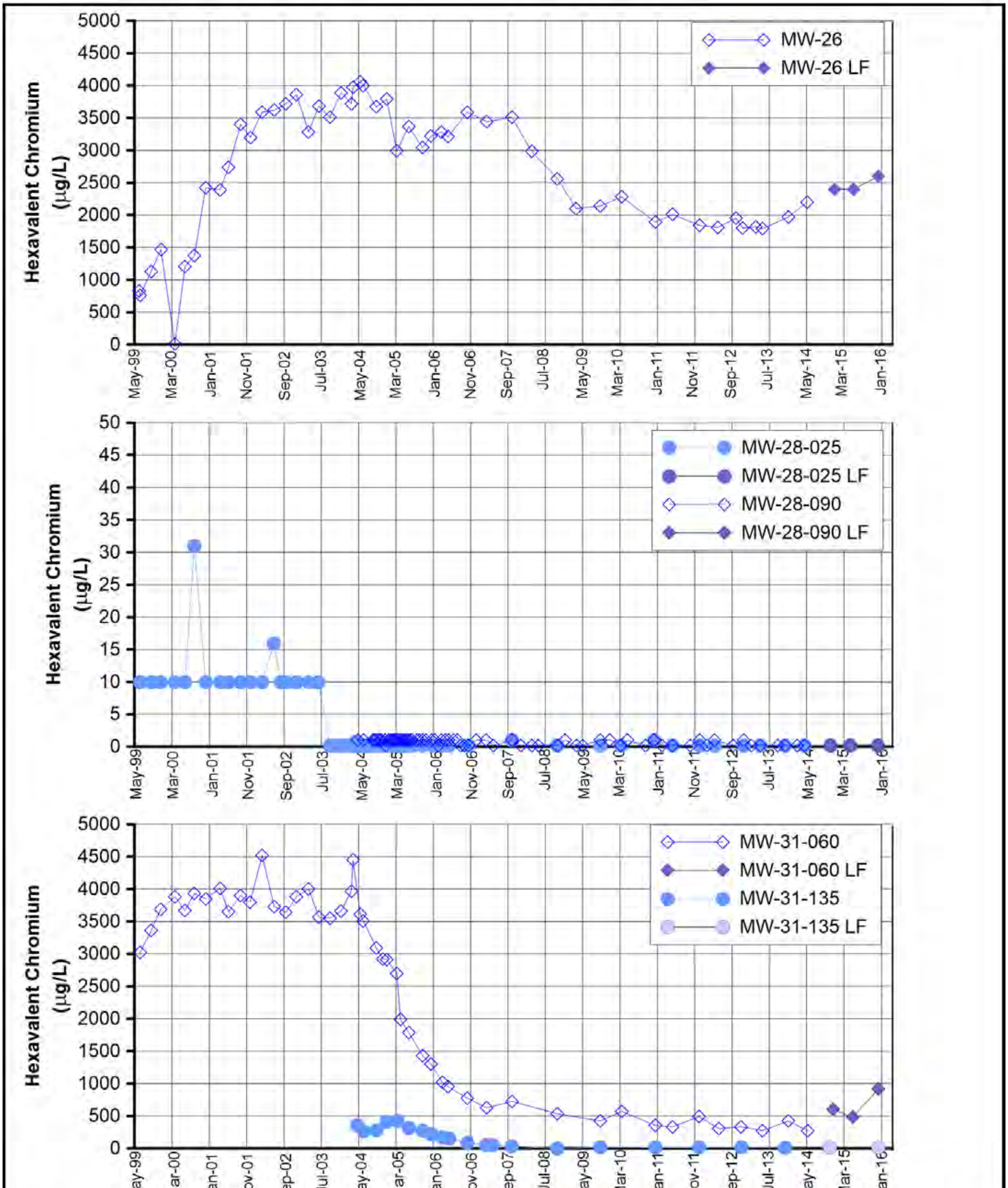

Notes:
1) The IM Contingency Plan and hexavalent chromium [Cr(VI)] trigger levels were updated July 17, 2008 (DTSC, 2008b).
2) The trigger level for MW-28-090 is 20 µg/L.

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-4
HEXAVALENT CHROMIUM IN MW-26, MW-28, AND MW-31 CLUSTERS
FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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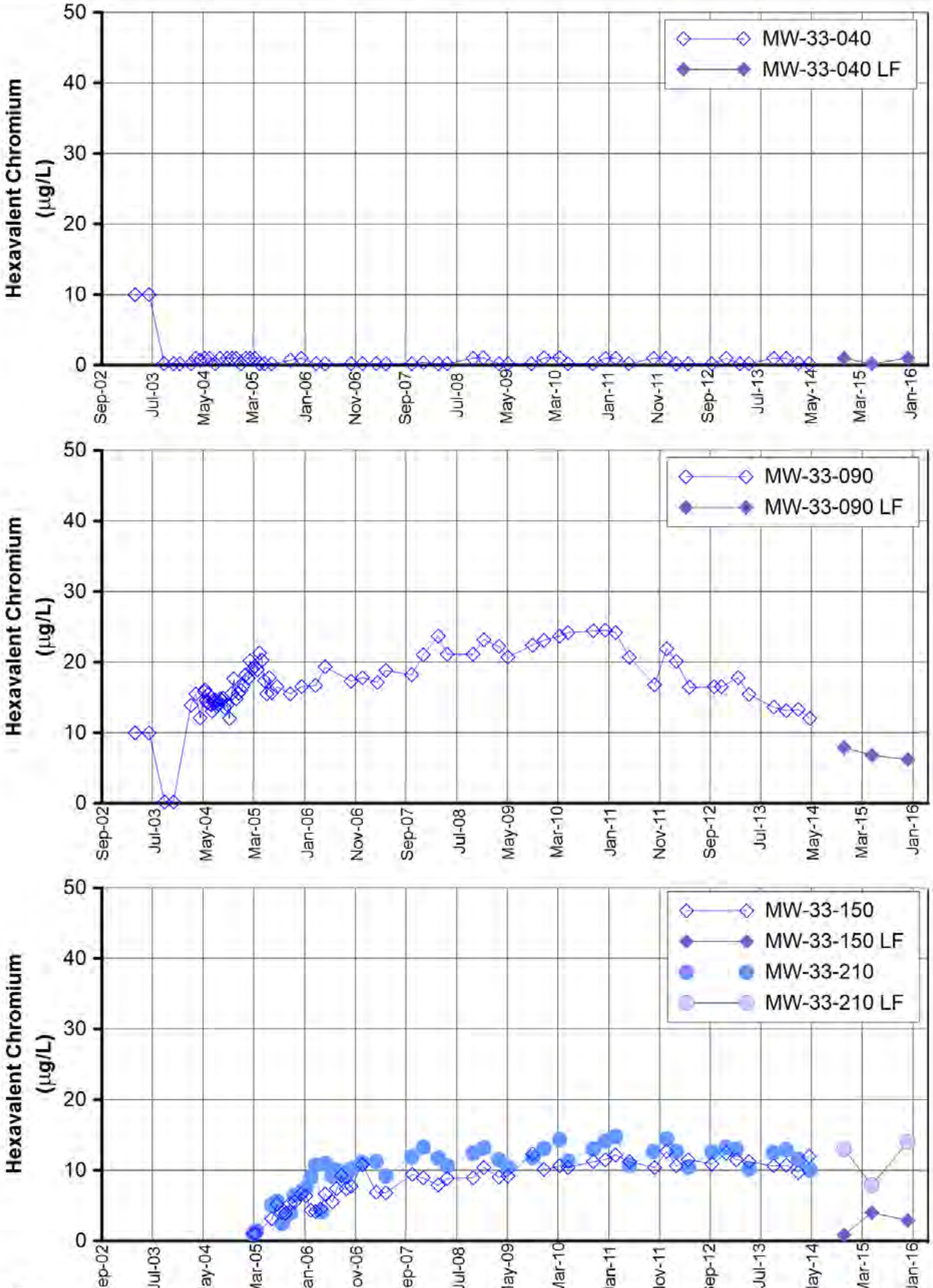

Notes:

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-33-040 is 20 µg/L.
3) The trigger level for MW-33-090 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.

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-5
HEXAVALENT CHROMIUM IN MW-33 CLUSTER

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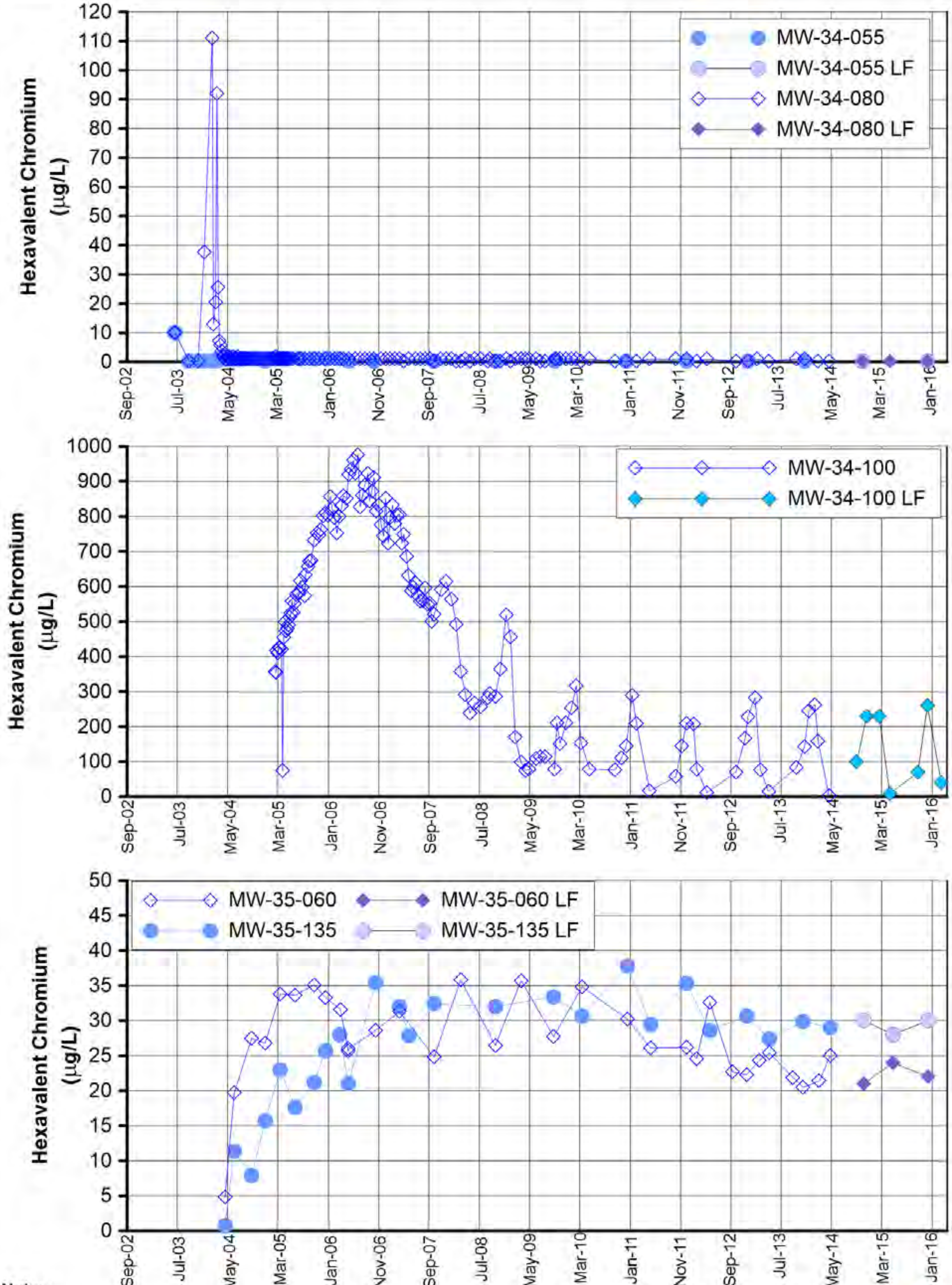

Notes:

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-34-080 is 20 µg/L.
3) The trigger level for MW-34-100 is 750 µg/L.

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-6
HEXAVALENT CHROMIUM IN MW-34 AND MW-35 CLUSTERS

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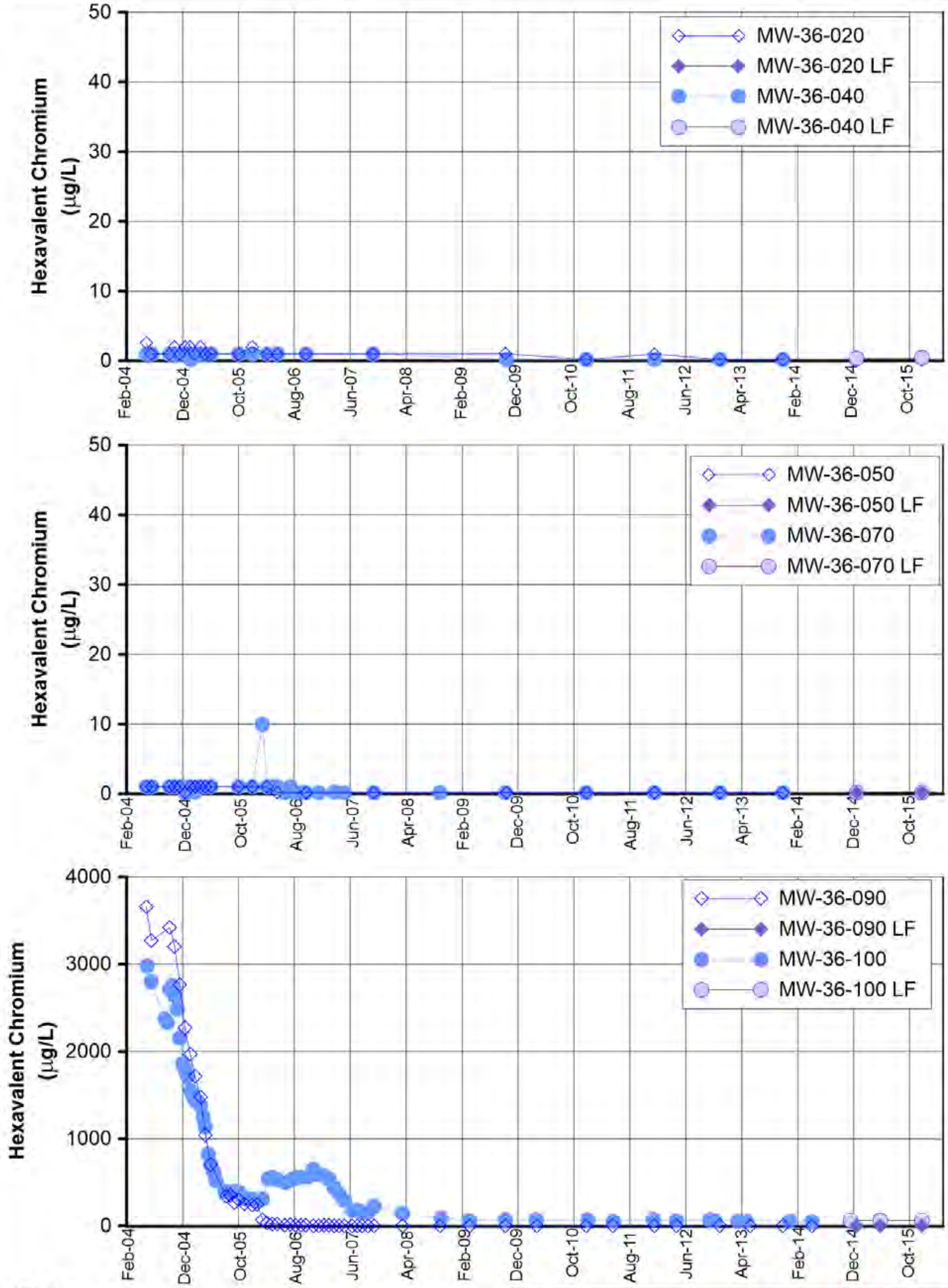

Notes:

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-36-070 is 20 µg/L.

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-7
HEXAVALENT CHROMIUM IN MW-36 CLUSTER

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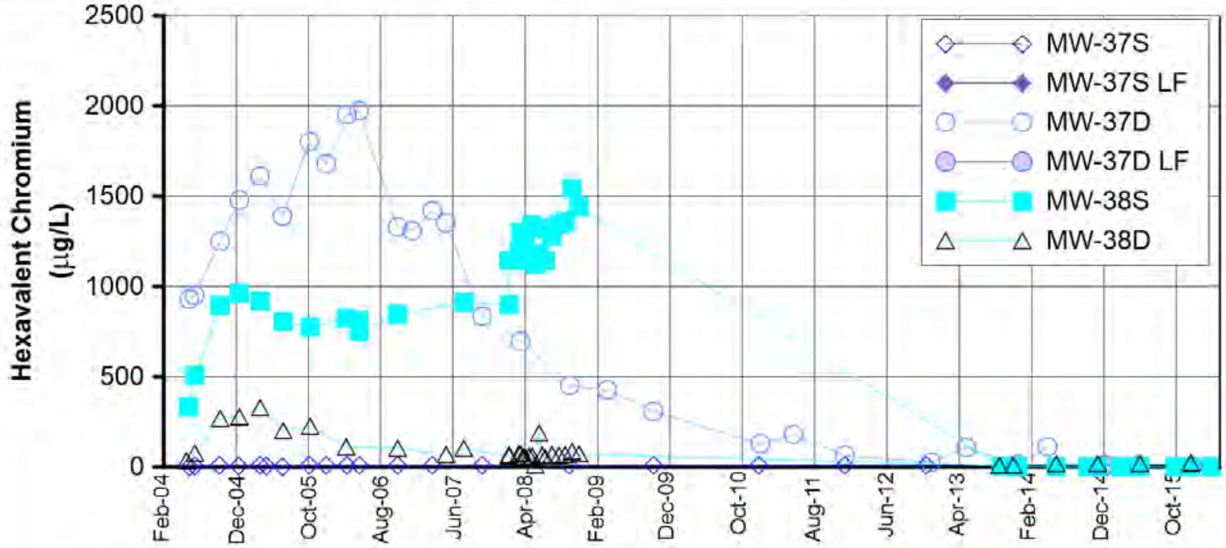

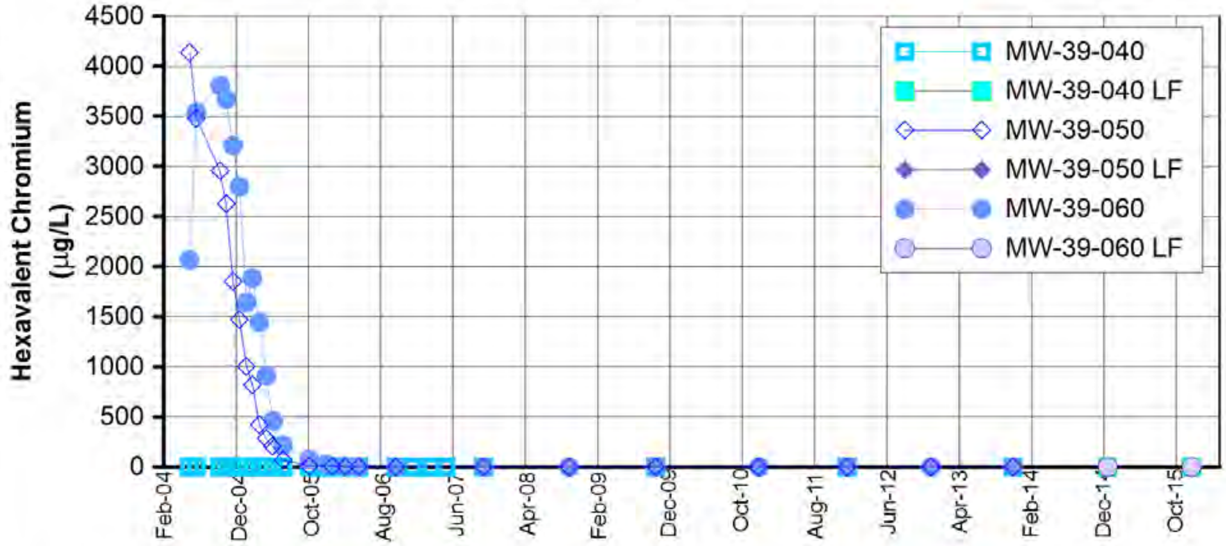

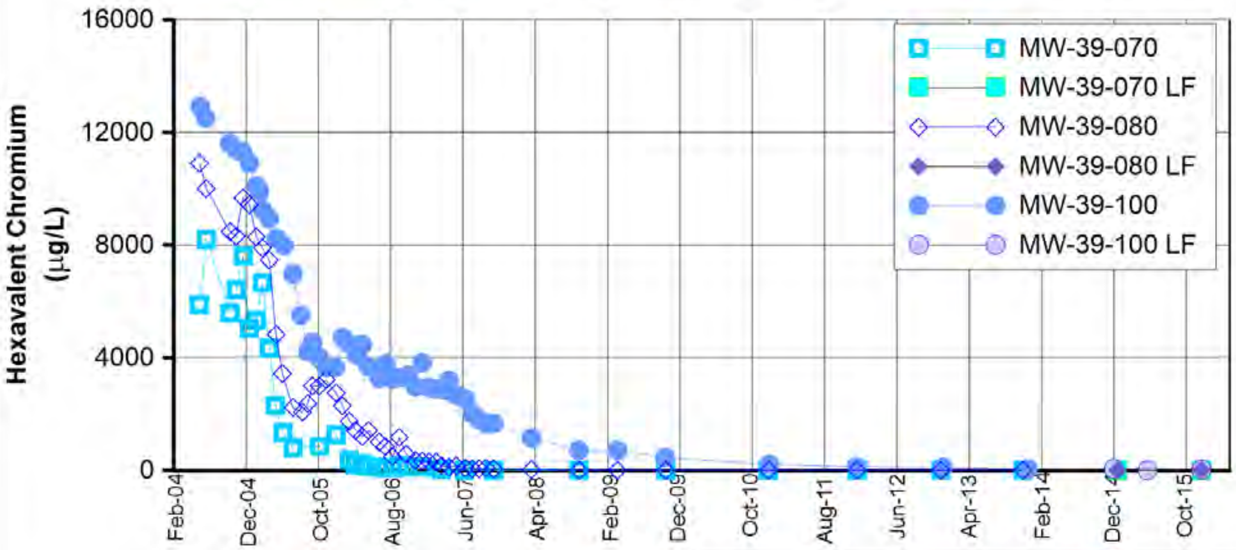

Notes:

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-39-040 is 20 µg/L.

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-8
HEXAVALENT CHROMIUM IN MW-37, MW-38 AND MW-39 CLUSTERS

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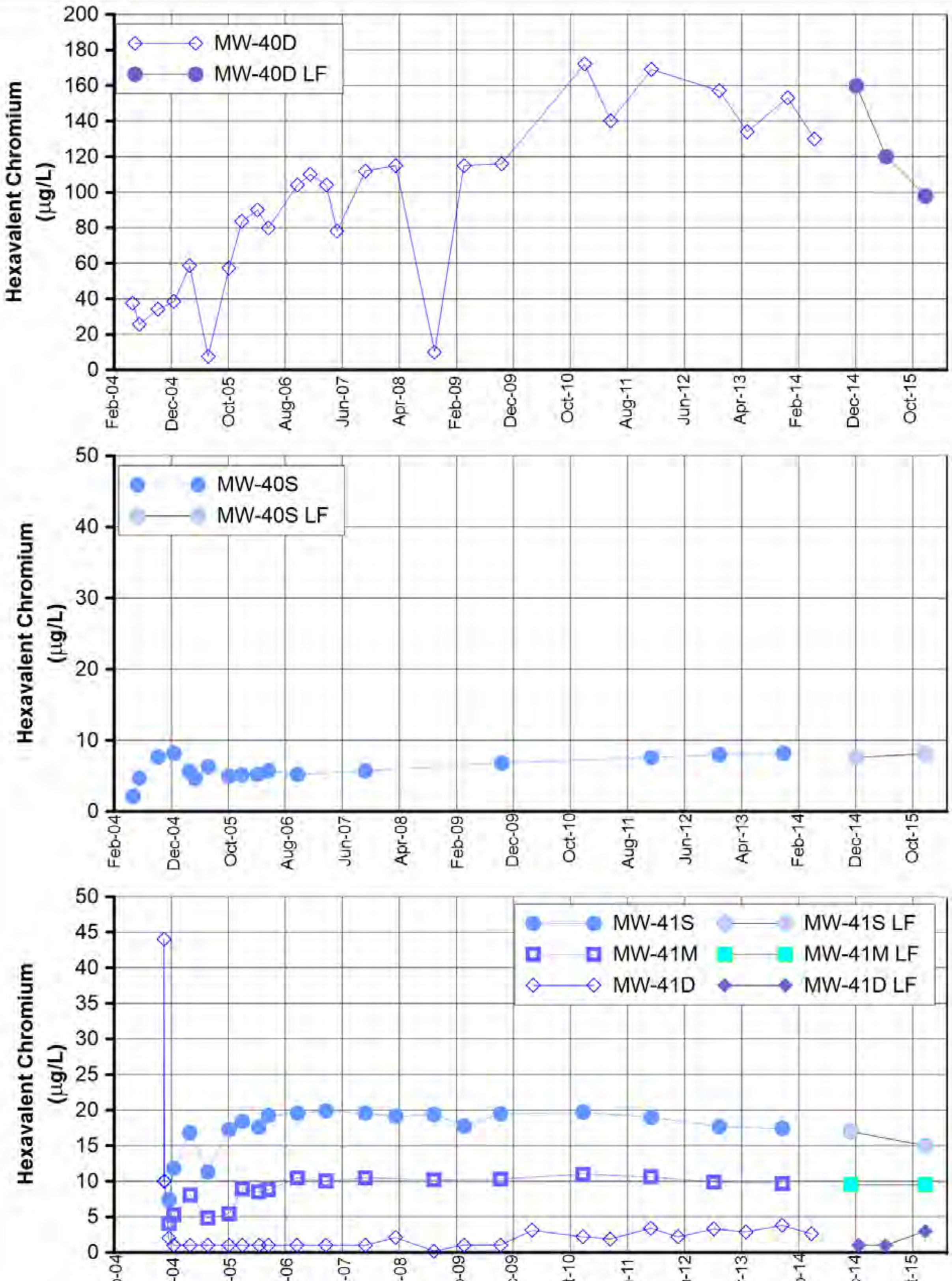

Notes:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-9
HEXAVALENT CHROMIUM IN MW-40 AND MW-41 CLUSTERS

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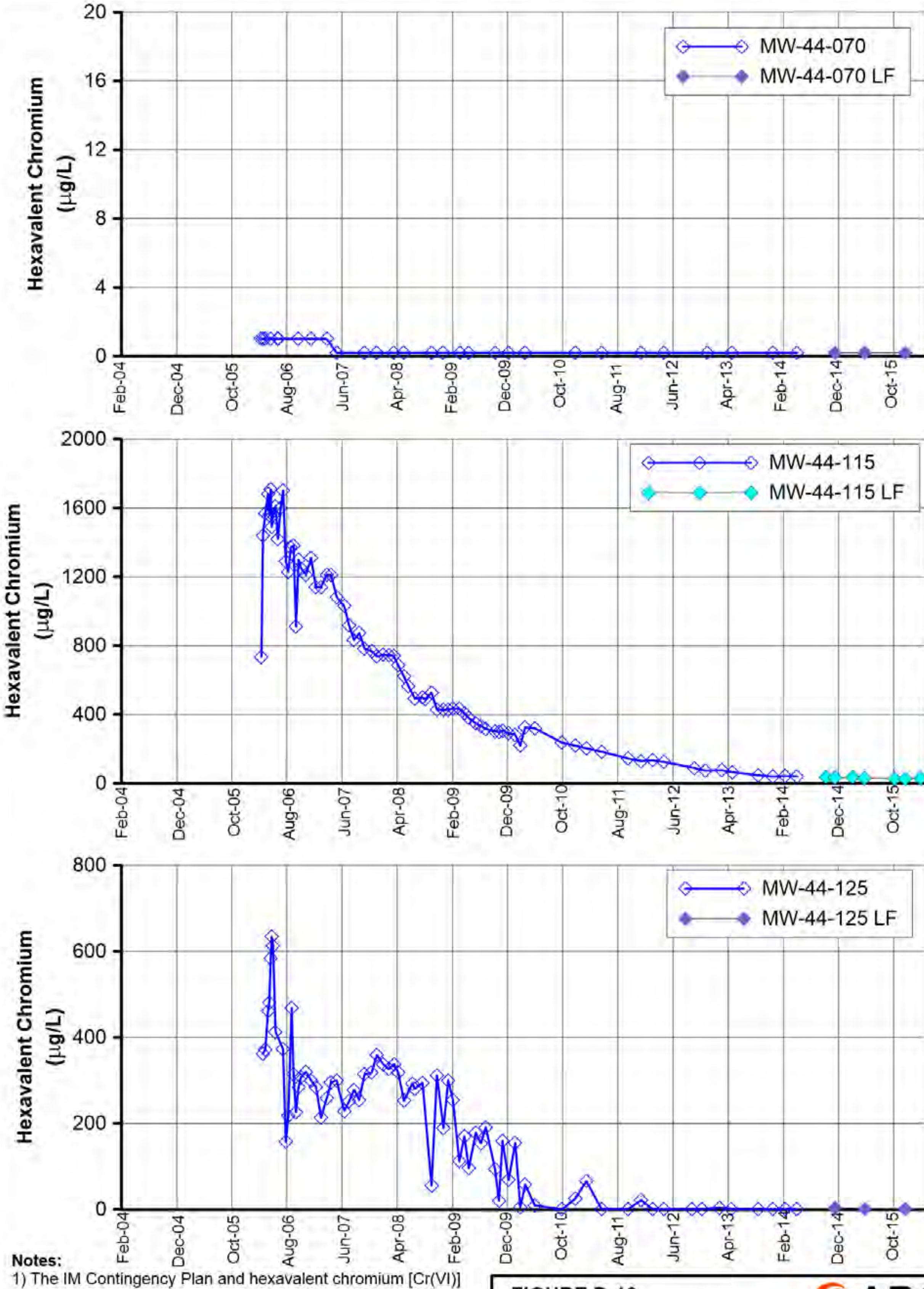

Notes:

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-44-070 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.

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-10
HEXAVALENT CHROMIUM IN MW-44 CLUSTER

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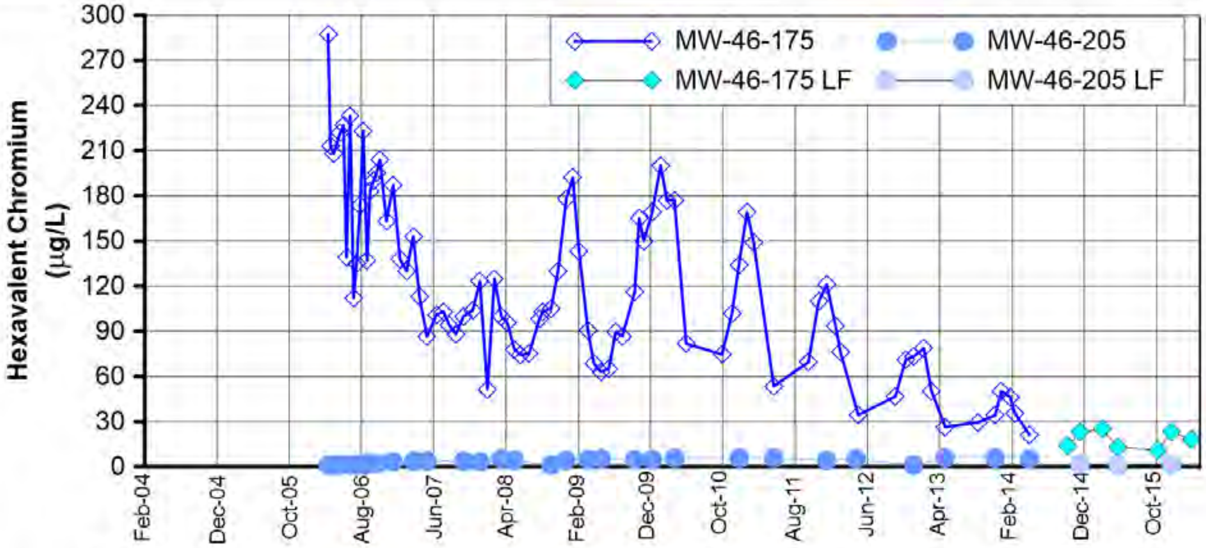

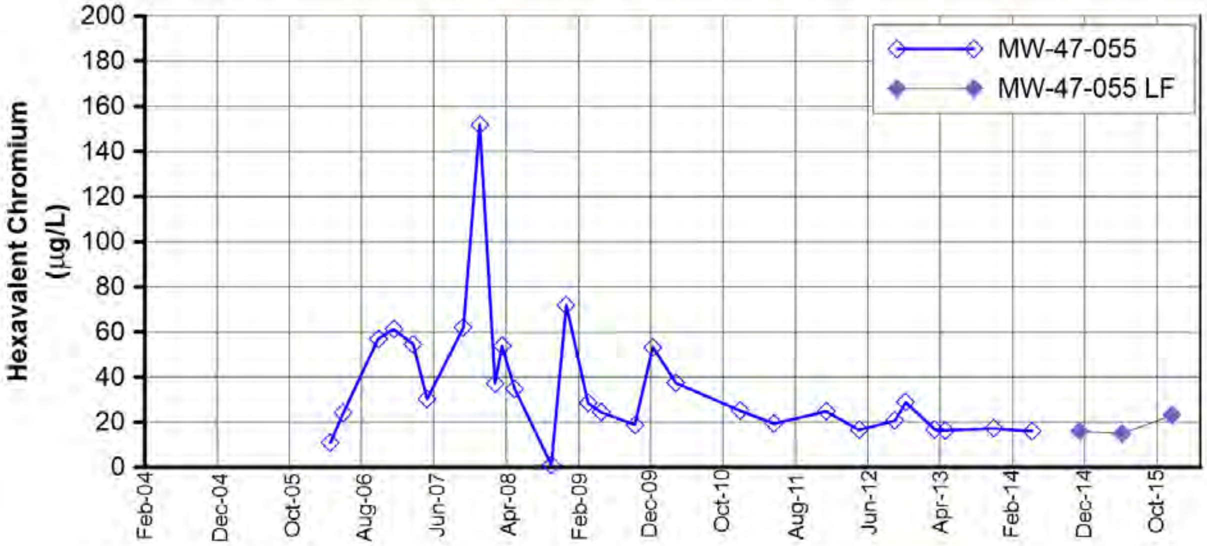

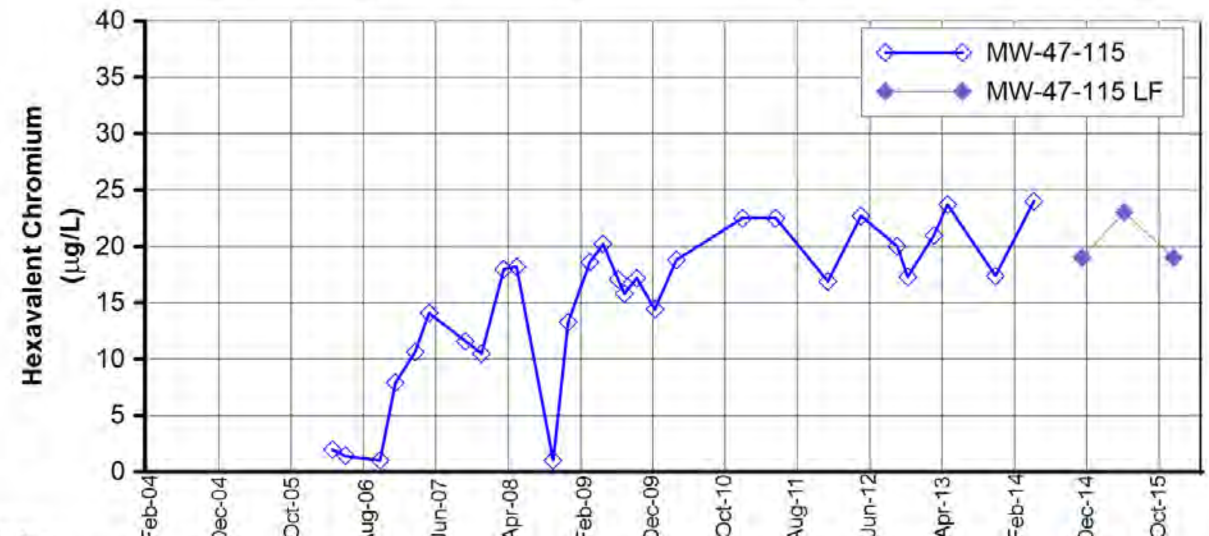

Notes:

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-47-055 is 475 µg/L.
5) The trigger level for MW-47-115 is 31 µg/L.

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-11
HEXAVALENT CHROMIUM IN MW-46 AND MW-47 CLUSTERS

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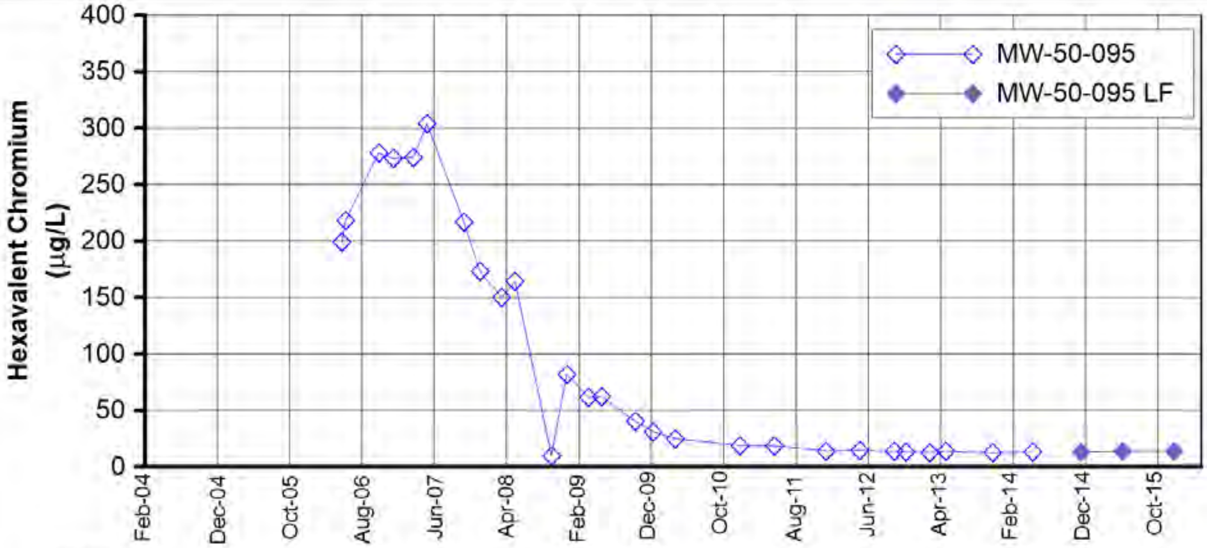

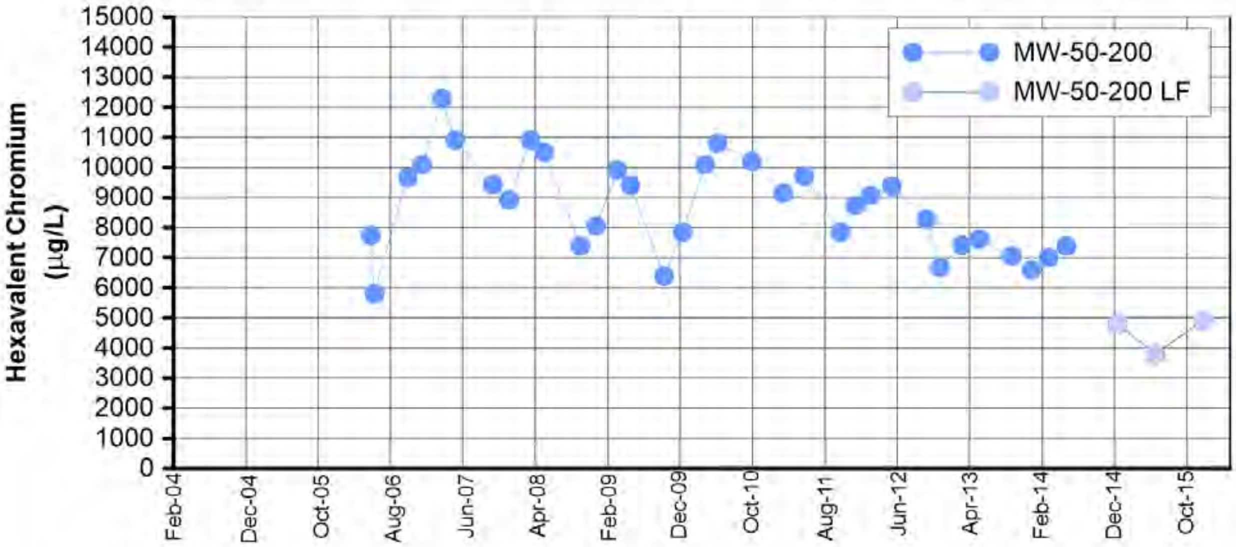

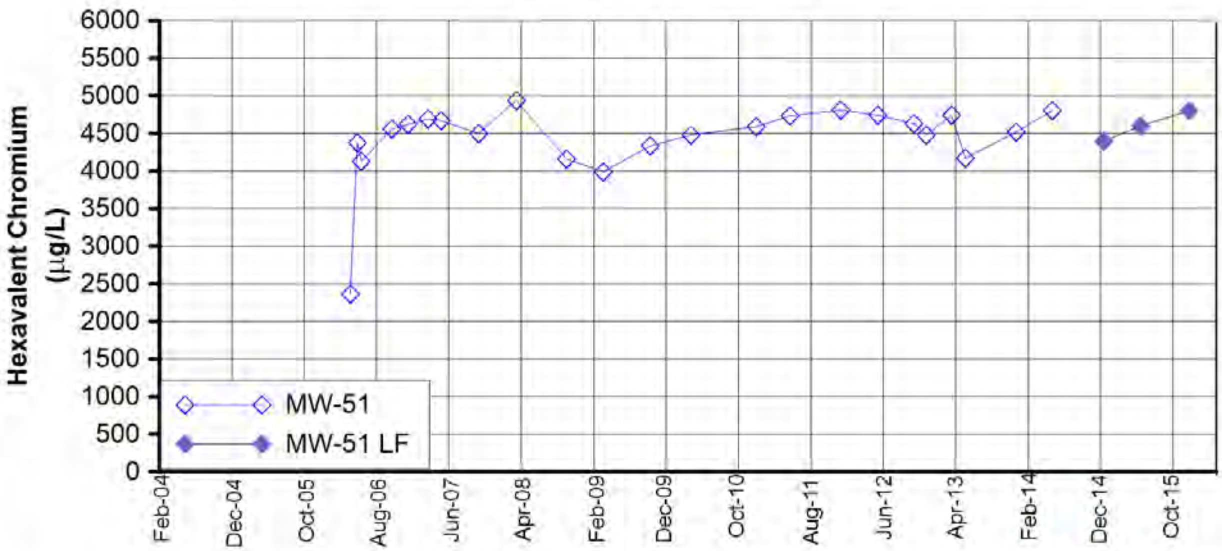

Notes:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-12
HEXAVALENT CHROMIUM IN MW-50 AND MW-51 CLUSTERS

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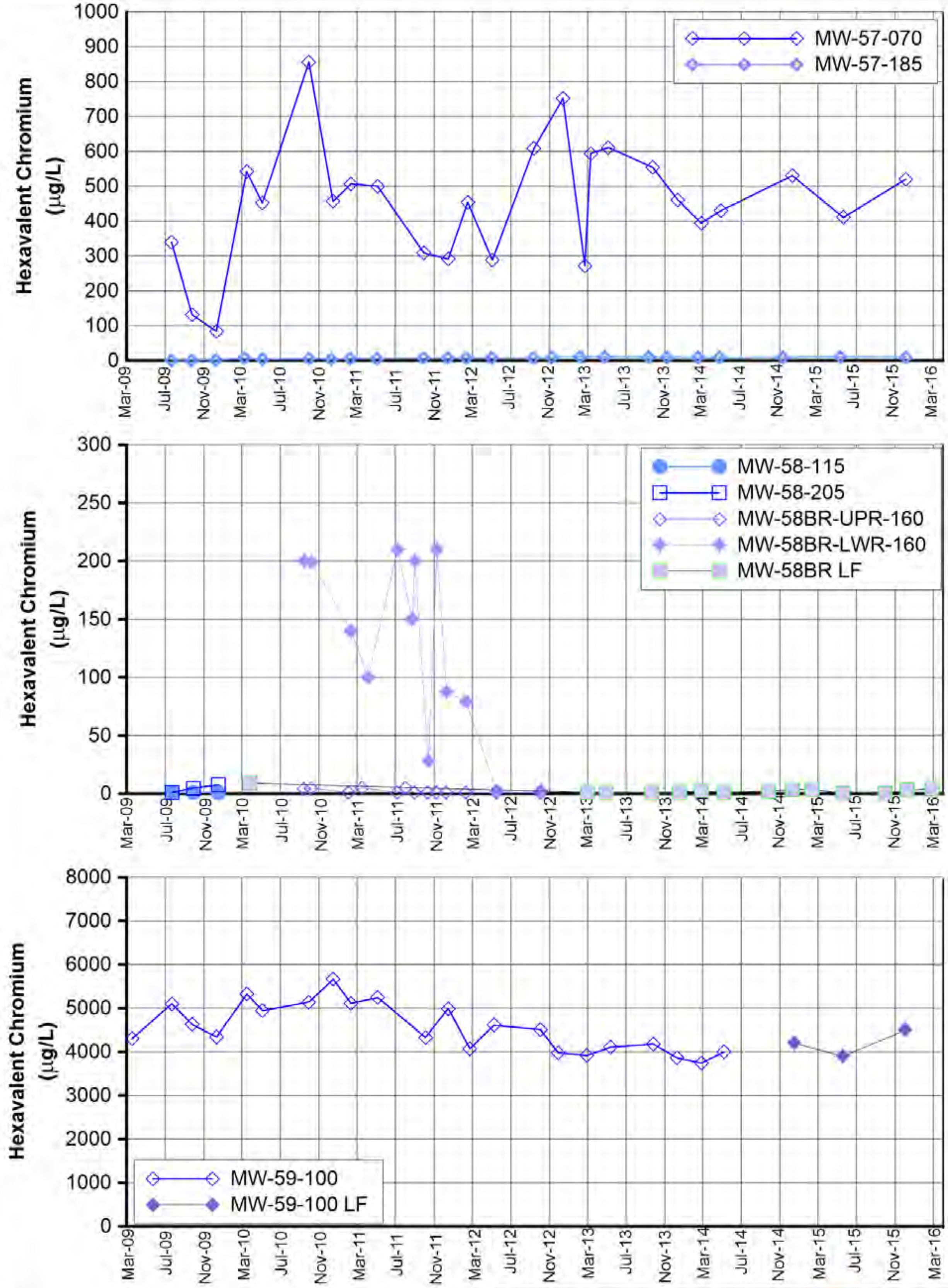

Note:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-13
HEXAVALENT CHROMIUM IN MW-57 CLUSTER, MW-58 CLUSTER AND MW-59-100

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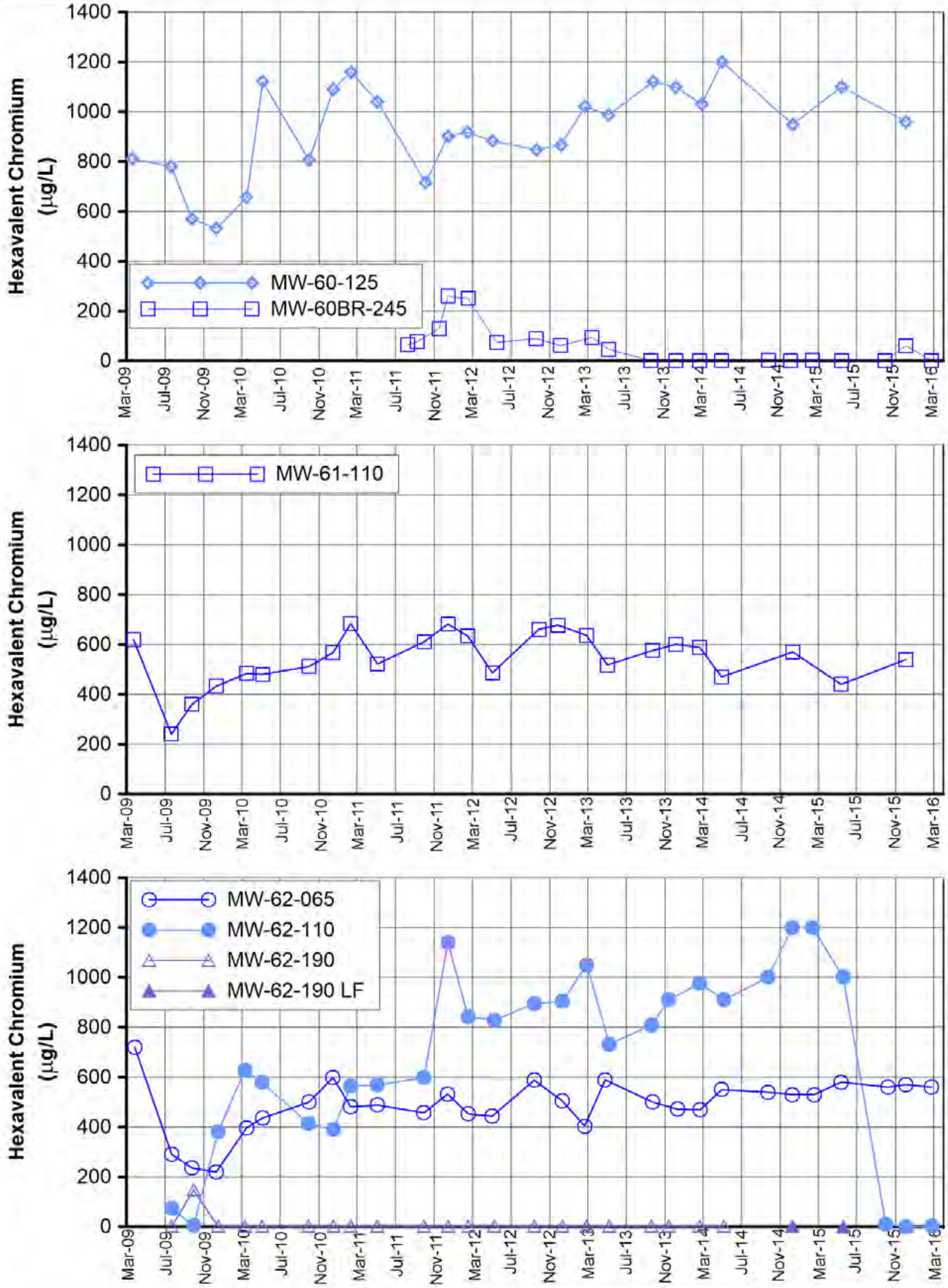

Notes:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-14
HEXAVALENT CHROMIUM IN MW-60 CLUSTER, MW-61-110 AND MW-62 CLUSTER

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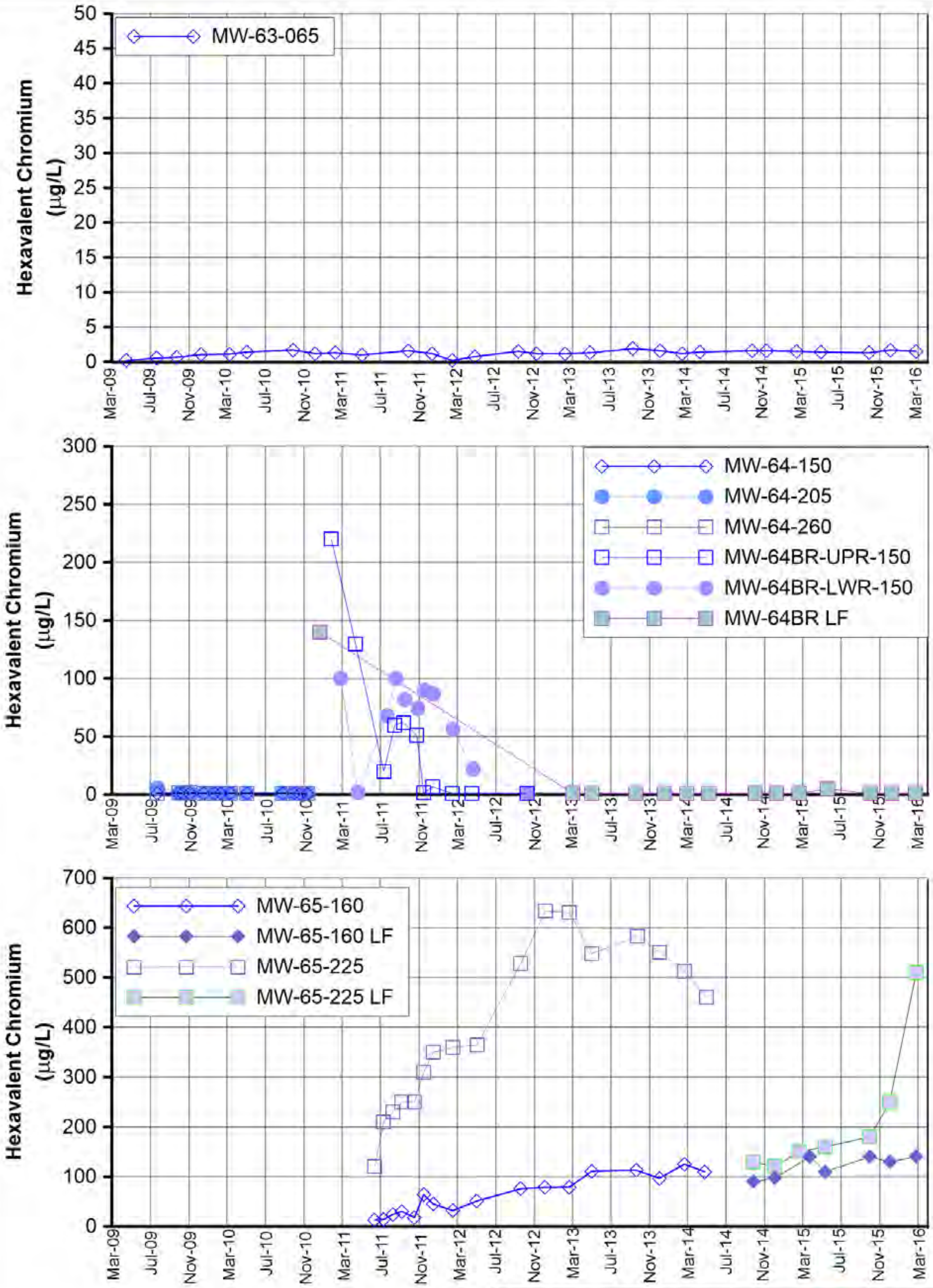

Notes:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-15
HEXAVALENT CHROMIUM IN MW-63-065, MW-64 CLUSTER AND MW-65 CLUSTER

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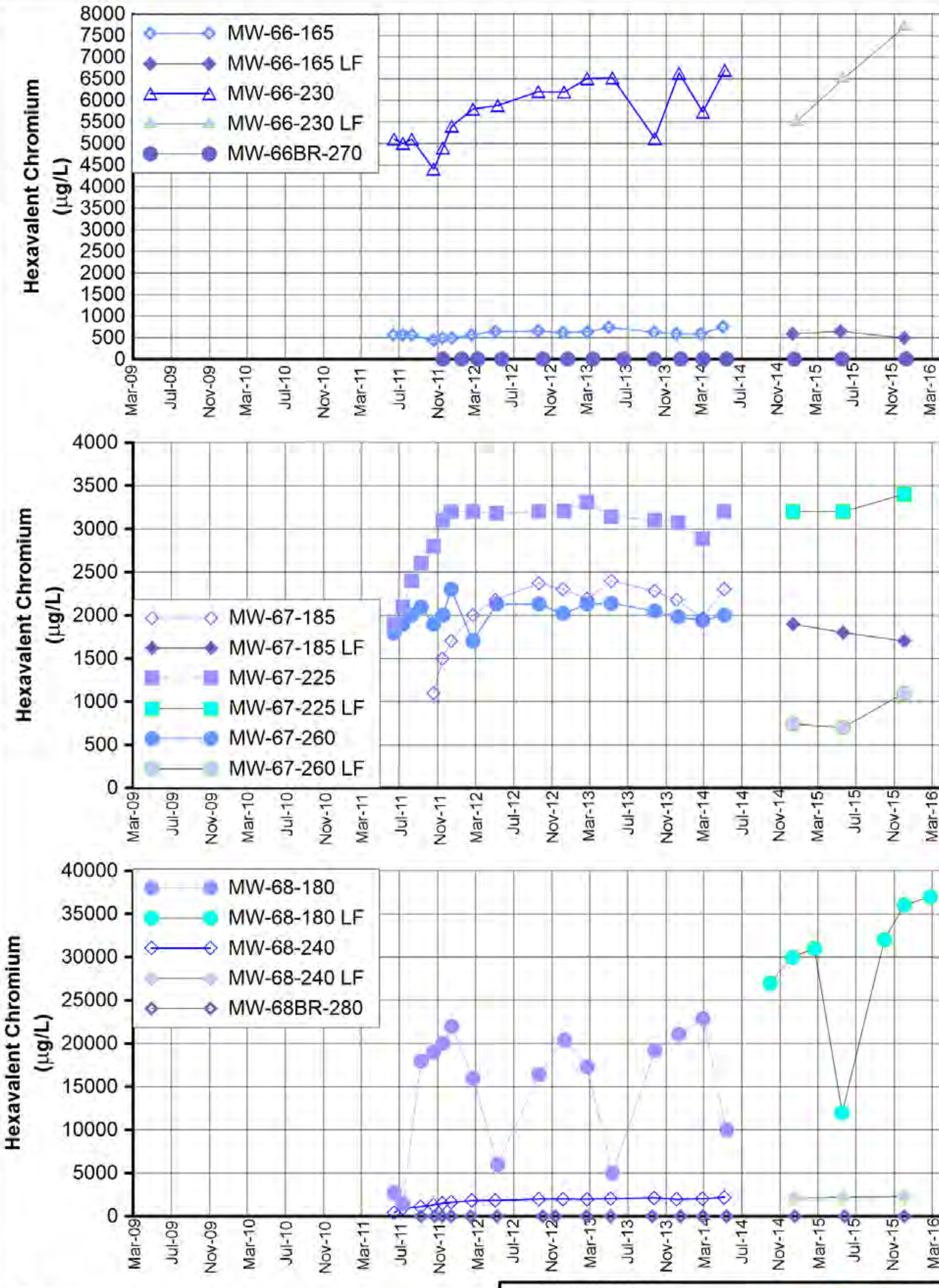

Notes:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-16
HEXAVALENT CHROMIUM IN MW-66, MW-67, AND MW-68 CLUSTERS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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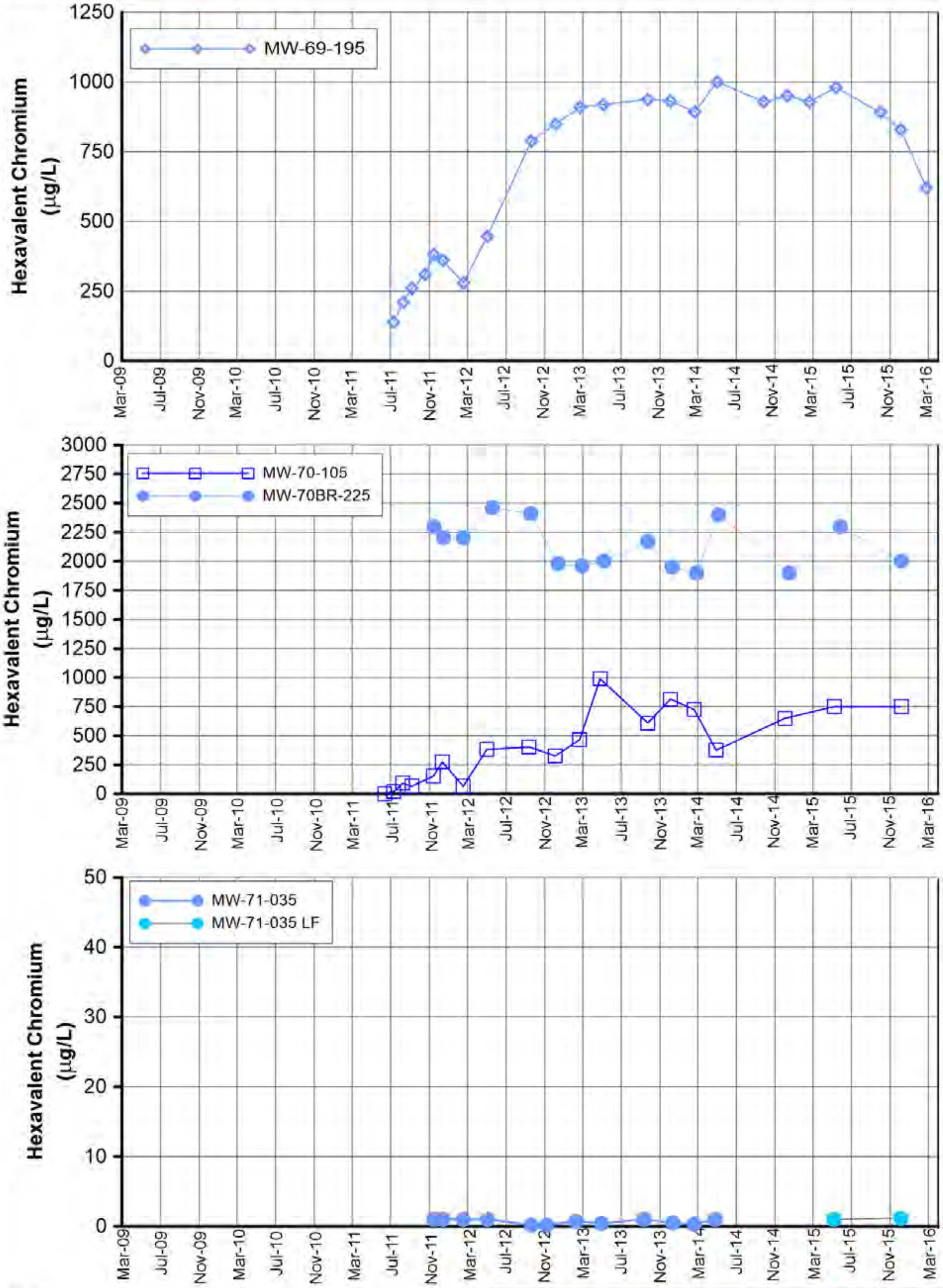

Notes:

LF = low flow, hexavalent chromium sample collected using low flow sampling method. Data not indicated with (LF) was collected using the three-volume purge sampling method.

FIGURE D-17
HEXAVALENT CHROMIUM IN MW-69-195, MW-70 CLUSTER, AND MW-71-035
FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

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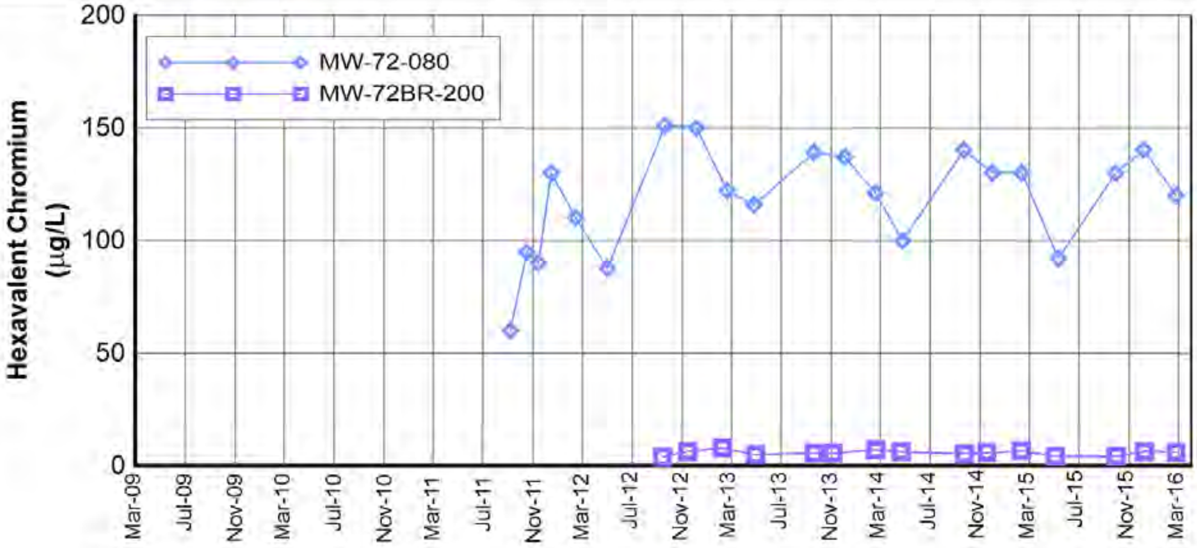

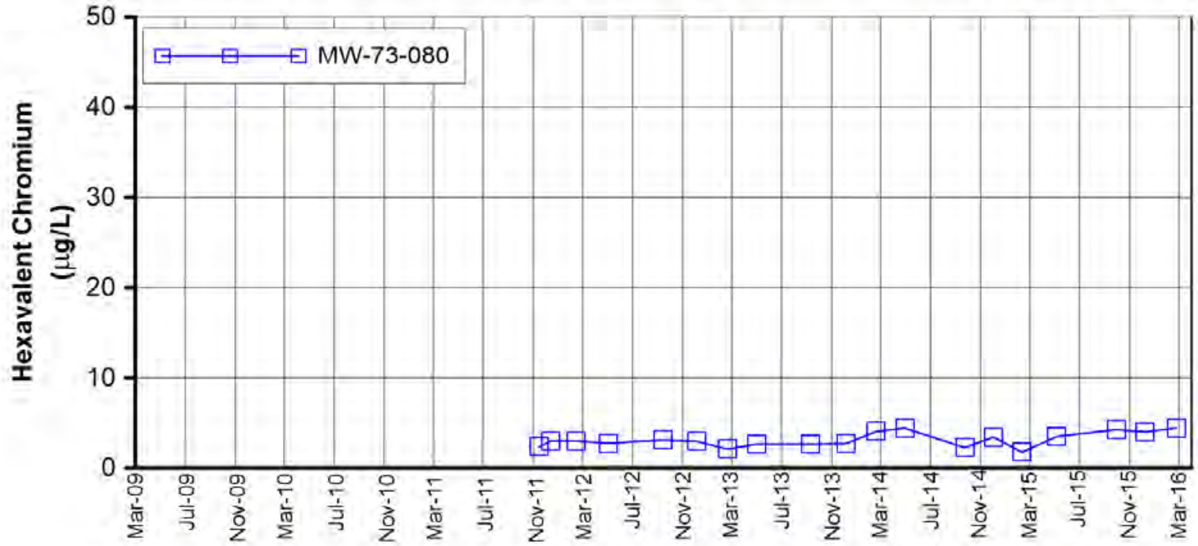

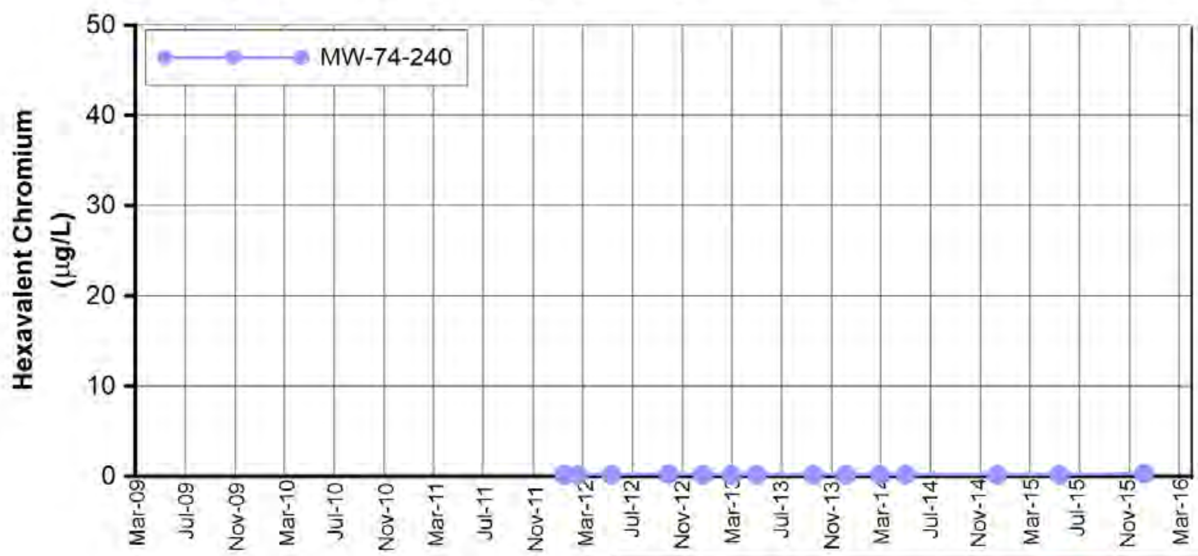

FIGURE D-18
HEXAVALENT CHROMIUM IN MW-72 CLUSTER, MW-73-080, AND MW-74-240

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FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

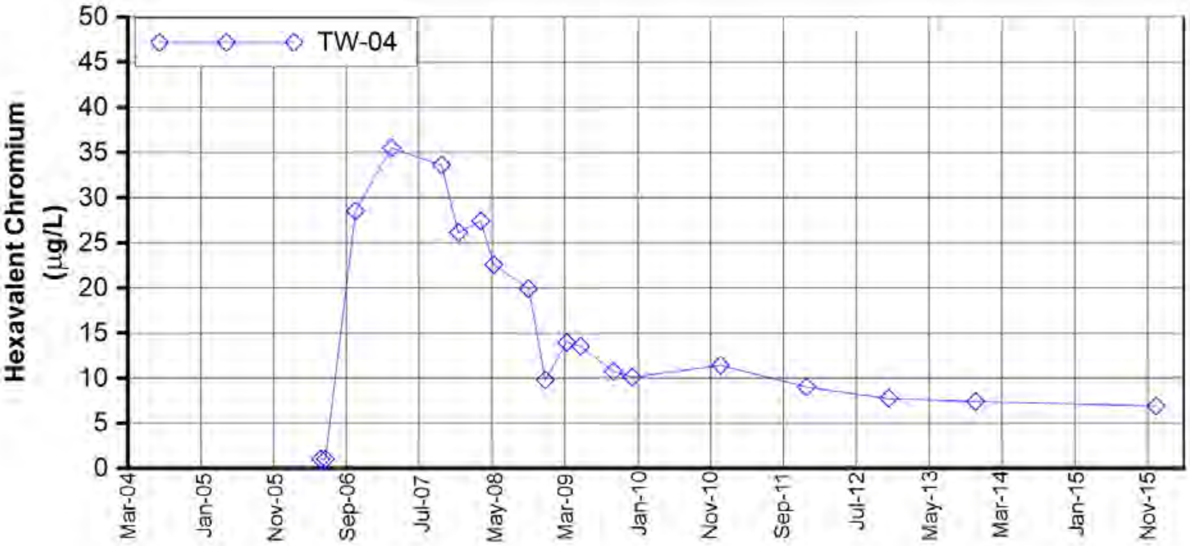


FIGURE D-19
HEXAVALENT CHROMIUM
IN TW-04

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

APPENDIX E

Interim Measures Extraction System Operations Log, First Quarter 2016

APPENDIX E

Interim Measures Extraction System Operations Log, First Quarter 2016, PG&E Topock Performance Monitoring Program

During First Quarter 2016 (March through June), extraction wells PE-1, TW-2D, and TW-3D operated at a target pump rate of at 135 gallons per minute, excluding periods of planned and unplanned downtime. Extraction well TW-2S was not operated during First Quarter 2016. The operational run time for the Interim Measure groundwater extraction system (combined or individual pumping) was approximately 96.1 percent during First Quarter 2016.

The Interim Measure Number 3 (IM-3) facility treated approximately 17,163,909 gallons of extracted groundwater during First Quarter 2016. The IM-3 facility also treated 27,000 gallons of injection well development water and 40 gallons of purge water from site sampling activities. Nine 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 3.9 percent of downtime during First Quarter 2016) 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 January 2016

- **January 6, 2016 (planned):** The extraction well system was offline from 7:00 a.m. to 7:02 a.m., from 7:58 a.m. to 11:00 a.m., from 11:02 a.m. to 12:42 p.m., and from 1:06 p.m. to 1:08 p.m. for plant maintenance including testing of critical alarms and the leak detection system, replacing the RO prefilter, changing out the microfilter modules, and replacing the PE-1 flow meter. Extraction system downtime was 4 hours, 46 minutes.
- **January 30, 2016 (unplanned):** The extraction well system was offline from 6:54 a.m. to 7:22 a.m. due to a high level alarm in Iron Oxidation Reactor 3 (T-301C) due to flow control issues from the clarifier feed pump (P-400). Extraction system downtime was 28 minutes.
- **January 31, 2016 (unplanned):** The extraction well system was offline from 5:32 p.m. to 5:44 p.m. due to loss of power from the City of Needles. Extraction system downtime was 12 minutes.

E.2 February 2016

- **February 1, 2016 (unplanned):** The extraction well system was offline from 1:46 a.m. to 3:40 a.m. due to a failure of the Post Treated RO Permeate Pump (P-605) following return of plant to power from the City of Needles. Extraction system downtime was 1 hour, 54 minutes.
- **February 2, 2016 (planned):** The extraction well system was offline from 10:52 a.m. to 11:04 a.m. to reconfigure the extraction well regime to pump from TW-2D and TW-3D. Extraction system downtime was 12 minutes.
- **February 2, 2016 (unplanned):** The extraction well system was offline from 1:12 p.m. to 1:48 p.m. to make adjustments to TW-3D in the Valve Vault. Extraction system downtime was 36 minutes.
- **February 2, 2016 (unplanned):** The extraction well system was offline from 2:38 p.m. to 3:28 p.m. to replace a system control (CLA) valve. Extraction system downtime was 50 minutes.

- **February 3, 2016 (planned):** The extraction well system was offline from 8:06 a.m. to 8:44 a.m. and 10:08 a.m. to 10:10 a.m. due to testing of critical alarms and the leak detection system. Extraction system downtime was 40 minutes.
- **February 4, 2016 (unplanned):** The extraction well system was offline from 3:06 p.m. to 3:26 p.m. and 5:22 p.m. to 5:28 p.m. due to a loss of connection between the extraction well flow meter and the human-machine interface (HMI) due to a programmable logic controller (PLC) issue. Extraction system downtime was 26 minutes.
- **February 5, 2016 (unplanned):** The extraction well system was offline from 7:34 a.m. to 8:42 a.m. due to a high level alarm in the Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour, 8 minutes.
- **February 6, 2016 (unplanned):** The extraction well system was offline from 11:10 a.m. to 12:32 p.m. due to a high level alarm in the Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour, 22 minutes.
- **February 10, 2016 (unplanned):** The extraction well system was offline from 10:24 a.m. to 11:00 a.m., from 11:22 a.m. to 11:24 a.m., and from 11:34 a.m. to 11:40 a.m. to reprogram a flow control valve in the extraction well vault. Extraction system downtime was 44 minutes.
- **February 16, 2016 (planned):** The extraction well system was offline from 8:46 a.m. to 7:06 p.m. while Helix Electric worked on site to install an inbound phase monitor and make other repairs and improvements. Extraction system downtime was 10 hours, 20 minutes.
- **February 16, 2016 (unplanned):** The extraction well system was offline from 7:48 p.m. to 8:06 p.m. and from 9:10 p.m. to 9:30 p.m. for tank level management. Extraction system downtime was 38 minutes.
- **February 17, 2016 (planned):** The extraction well system was offline from 10:16 a.m. to 1:18 p.m. while Helix Electric worked on site to install an inbound phase monitor and make other repairs and improvements. Extraction system downtime was 3 hours, 2 minutes.
- **February 18, 2016 (planned):** The extraction well system was offline from 8:22 a.m. to 11:16 a.m. while Helix Electric worked on site to install an inbound phase monitor and make other repairs and improvements. Extraction system downtime was 2 hours, 54 minutes.
- **February 24, 2016 (unplanned):** The extraction well system was offline from 8:56 a.m. to 9:48 a.m. to change the impeller in the clarifier feed pump (P-400). Extraction system downtime was 52 minutes.
- **February 26, 2016 (unplanned):** The extraction well system was offline from 4:32 p.m. to 4:46 p.m. due to low ferrous injection rates. Extraction system downtime was 14 minutes.
- **February 27, 2016 (unplanned):** The extraction well system was offline from 6:26 a.m. to 7:32 a.m. due to a high level alarm in the Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour, 6 minutes.

E.3 March 2016

- **March 1, 2016 (unplanned):** The extraction well system was offline from 12:40 p.m. to 2:16 p.m. to replace the Main Plant Influent Flow Meter (FIT-200) for recalibration. Extraction system downtime was 1 hour, 36 minutes.
- **March 2, 2016 (unplanned):** The extraction well system was offline from 7:02 p.m. to 7:24 p.m. to reset the microfilter control system. Extraction system downtime was 22 minutes.
- **March 4, 2016 (planned):** The extraction well system was offline from 9:50 a.m. to 9:52 a.m., 10:22 a.m. to 10:24 a.m., 10:26 a.m. to 10:28 a.m., 11:56 a.m. to 1:20 p.m. and 2:24 p.m. to 2:44 p.m. for plant

maintenance including testing of critical alarms and the leak detection system and changing out the microfilter modules. Extraction system downtime was 1 hour, 50 minutes.

- **March 16-17, 2016 (planned):** The extraction well system was offline from 5:50 p.m. on February 16, 2016 to 5:44 p.m. on February 17, 2016 and from 5:50 p.m. to 5:52 p.m. on February 17, 2016 to collect samples to assess potential biofouling in the extraction wells. Extraction system downtime was 23 hours, 56 minutes.
- **March 18, 2016 (unplanned):** The extraction well system was offline from 9:26 a.m. to 4:18 p.m. due to the shutdown of the Primary RO system because of a variable frequency drive failure. Extraction system downtime was 6 hours, 52 minutes.
- **March 18, 2016 (unplanned):** The extraction well system was offline from 5:30 p.m. to 9:20 p.m. while the plant was in recirculation. Extraction system downtime was 3 hours, 50 minutes.
- **March 21, 2016 (unplanned):** The extraction well system was offline from 10:08 a.m. to 1:48 p.m. to replace the fill valve on the microfilter system. Extraction system downtime was 3 hours, 40 minutes.
- **March 21, 2016 (unplanned):** The extraction well system was offline from 3:18 p.m. to 4:08 p.m. to make adjustments to the ferrous injection system. Extraction system downtime was 50 minutes.
- **March 22, 2016 (unplanned):** The extraction well system was offline from 11:26 p.m. to 11:32 p.m. due to an air compressor malfunction. Extraction system downtime was 6 minutes.
- **March 27, 2016 (unplanned):** The extraction well system was offline from 6:46 p.m. to 8:26 p.m. due to a malfunction in the Microfilter air control valve. Extraction system downtime was 1 hour, 40 minutes.
- **March 27, 2016 (unplanned):** The extraction well system was offline form 8:48 p.m. to 9:30 p.m. for tank level management. Extraction system downtime was 42 minutes.
- **March 27 to 28, 2016 (unplanned):** The extraction well system was offline from 10:54 p.m. on March 27, 2016 to 1:50 a.m. on March 28, 2016 due to a malfunction in the Microfilter air control valve. Extraction system downtime was 2 hours, 56 minutes.
- **March 28, 2016 (unplanned):** The extraction well system was offline from 5:14 a.m. to 6:04 a.m. due to a malfunction of the microfilter control valve. Extraction system downtime was 50 minutes.
- **March 31, 2016 (unplanned):** The extraction well system was offline from 3:20 a.m. to 6:14 a.m. due to low permeate flow in the Primary RO system. Extraction system downtime was 2 hour, 54 minutes.

APPENDIX F

Hydraulic Data for Interim Measures Reporting Period

Table F-1

Average Monthly and Quarterly Groundwater Elevations, First Quarter 2016

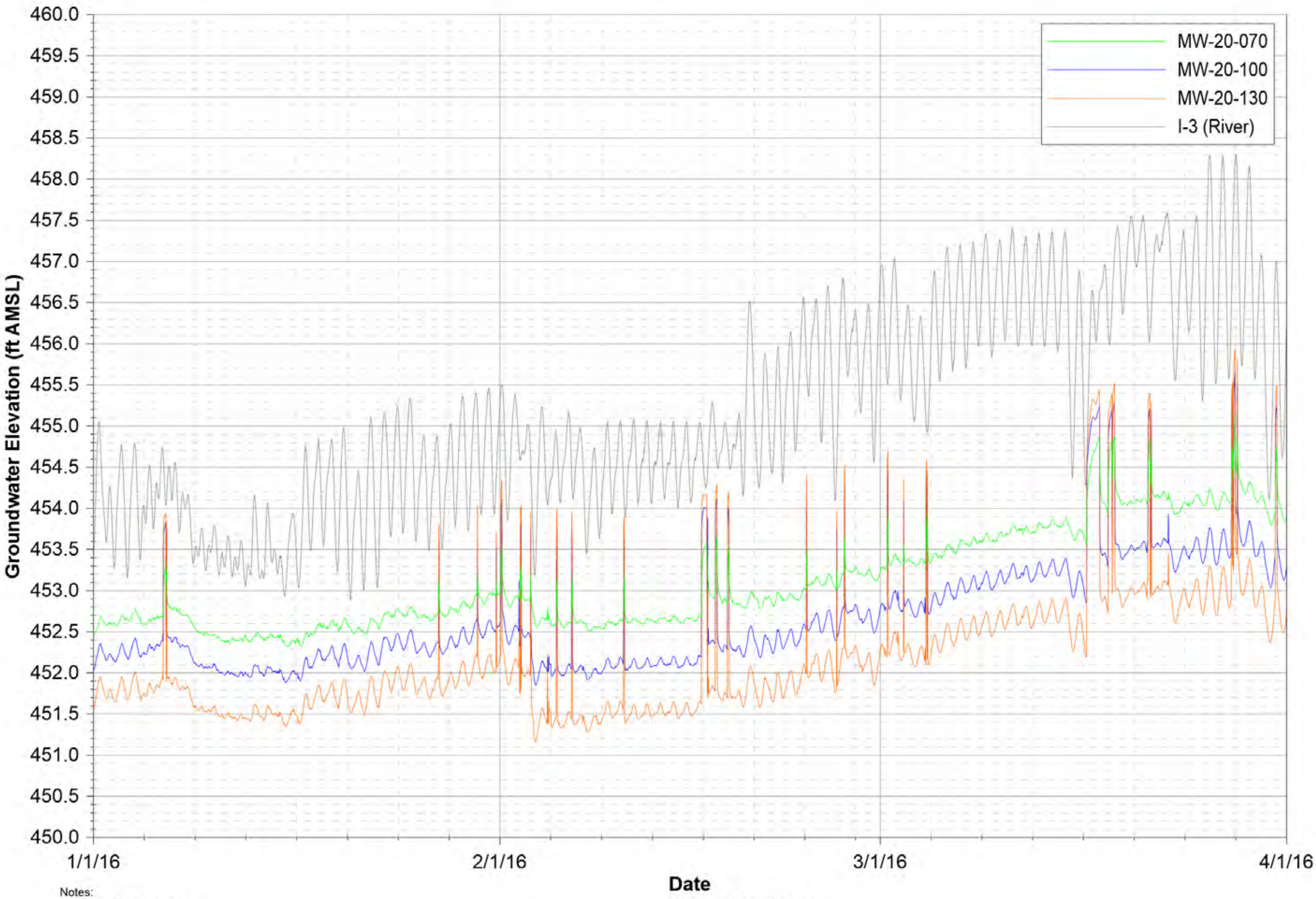
Fourth Quarter 2015 Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California

Well ID	Aquifer Zone	January 2016	February 2016	March 2016	Quarter Average	Days in Quarter Average
I-3	River Station	454.05	454.95	456.51	455.17	91
MW-20-070	Shallow Zone	452.61	452.85	453.88	453.12	91
MW-20-100	Middle Zone	452.24	452.36	453.38	452.67	91
MW-20-130	Deep Zone	451.77	451.83	452.89	452.17	91
MW-22	Shallow Zone	453.87	454.15	455.02	454.35	91
MW-25	Shallow Zone	INC	454.48	455.18	INC	INC
MW-26	Shallow Zone	454.07	454.19	454.84	454.37	91
MW-27-020	Shallow Zone	453.69	454.55	456.03	454.76	91
MW-27-060	Middle Zone	453.75	454.62	456.05	454.81	91
MW-27-085	Deep Zone	453.66	454.54	455.94	454.72	91
MW-28-025	Shallow Zone	453.64	454.51	455.98	454.71	91
MW-28-090	Deep Zone	453.74	454.52	455.88	454.72	91
MW-30-050	Middle Zone	453.36	454.14	455.54	454.35	91
MW-31-060	Shallow Zone	453.57	453.98	455.04	454.20	91
MW-31-135	Deep Zone	452.92	453.23	454.31	453.49	91
MW-32-035	Shallow Zone	453.52	454.25	455.55	454.45	91
MW-33-040	Shallow Zone	453.77	454.34	455.47	454.53	91
MW-33-090	Middle Zone	453.94	454.45	455.62	454.68	91
MW-33-150	Deep Zone	453.97	454.50	455.64	454.71	91
MW-34-055	Middle Zone	453.56	454.55	455.99	454.70	91
MW-34-080	Deep Zone	453.73	454.79	456.23	454.92	91
MW-34-100	Deep Zone	453.38	454.57	456.06	454.67	91
MW-35-060	Shallow Zone	454.22	454.95	456.27	455.15	91
MW-35-135	Deep Zone	INC	INC	456.30	INC	INC
MW-36-020	Shallow Zone	453.57	454.32	455.55	454.48	91
MW-36-040	Shallow Zone	453.41	454.26	455.61	454.43	91
MW-36-050	Middle Zone	INC	454.21	455.67	454.78	INC
MW-36-070	Middle Zone	453.38	454.27	455.65	454.44	91
MW-36-090	Deep Zone	452.58	453.65	455.01	453.75	91
MW-36-100	Deep Zone	452.75	453.85	455.18	453.93	91
MW-39-040	Shallow Zone	453.27	453.99	INC	INC	INC
MW-39-050	Middle Zone	453.17	453.86	455.14	454.06	91
MW-39-060	Middle Zone	453.00	453.64	454.92	453.86	91
MW-39-070	Middle Zone	452.57	453.06	454.30	453.32	91
MW-39-080	Deep Zone	452.66	453.12	454.17	453.32	91
MW-39-100	Deep Zone	453.16	453.69	454.87	453.91	91
MW-42-030	Shallow Zone	453.31	454.05	455.27	454.21	91
MW-42-065	Middle Zone	453.38	454.15	455.48	454.34	91

Well ID	Aquifer Zone	January 2016	February 2016	March 2016	Quarter Average	Days in Quarter Average
MW-43-025	Shallow Zone	453.70	454.56	INC	INC	INC
MW-43-090	Deep Zone	453.85	454.72	456.21	454.93	91
MW-44-070	Middle Zone	453.48	454.31	455.71	454.50	91
MW-44-115	Deep Zone	453.04	453.82	455.11	453.99	91
MW-44-125	Deep Zone	453.64	454.40	455.67	454.57	91
MW-45-095a	Deep Zone	451.46	453.92	455.47	453.61	91
MW-46-175	Deep Zone	453.74	454.40	455.72	454.63	91
MW-47-055	Shallow Zone	454.37	INC	INC	INC	INC
MW-47-115	Deep Zone	454.22	454.68	455.84	454.92	91
MW-49-135	Deep Zone	454.15	454.80	456.00	454.99	91
MW-50-095	Middle Zone	453.88	454.22	455.19	454.43	91
MW-51	Middle Zone	454.00	454.10	454.76	454.29	91
MW-54-085	Deep Zone	454.87	454.80	456.33	455.35	91
MW-54-140	Deep Zone	454.33	454.95	INC	INC	INC
MW-54-195	Deep Zone	INC	INC	456.44	INC	INC
MW-55-045	Middle Zone	INC	455.86	456.72	INC	INC
MW-55-120	Deep Zone	455.52	455.83	456.66	456.01	91
PT2D	Deep Zone	452.43	452.89	454.04	453.13	91
PT5D	Deep Zone	452.96	453.57	454.77	453.77	91
PT6D	Deep Zone	452.98	453.46	454.64	453.70	91
RRB	River Station	INC	INC	456.39	INC	INC

Notes:
Average 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.

 Printed: 4/26/2016



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1A
MW-20 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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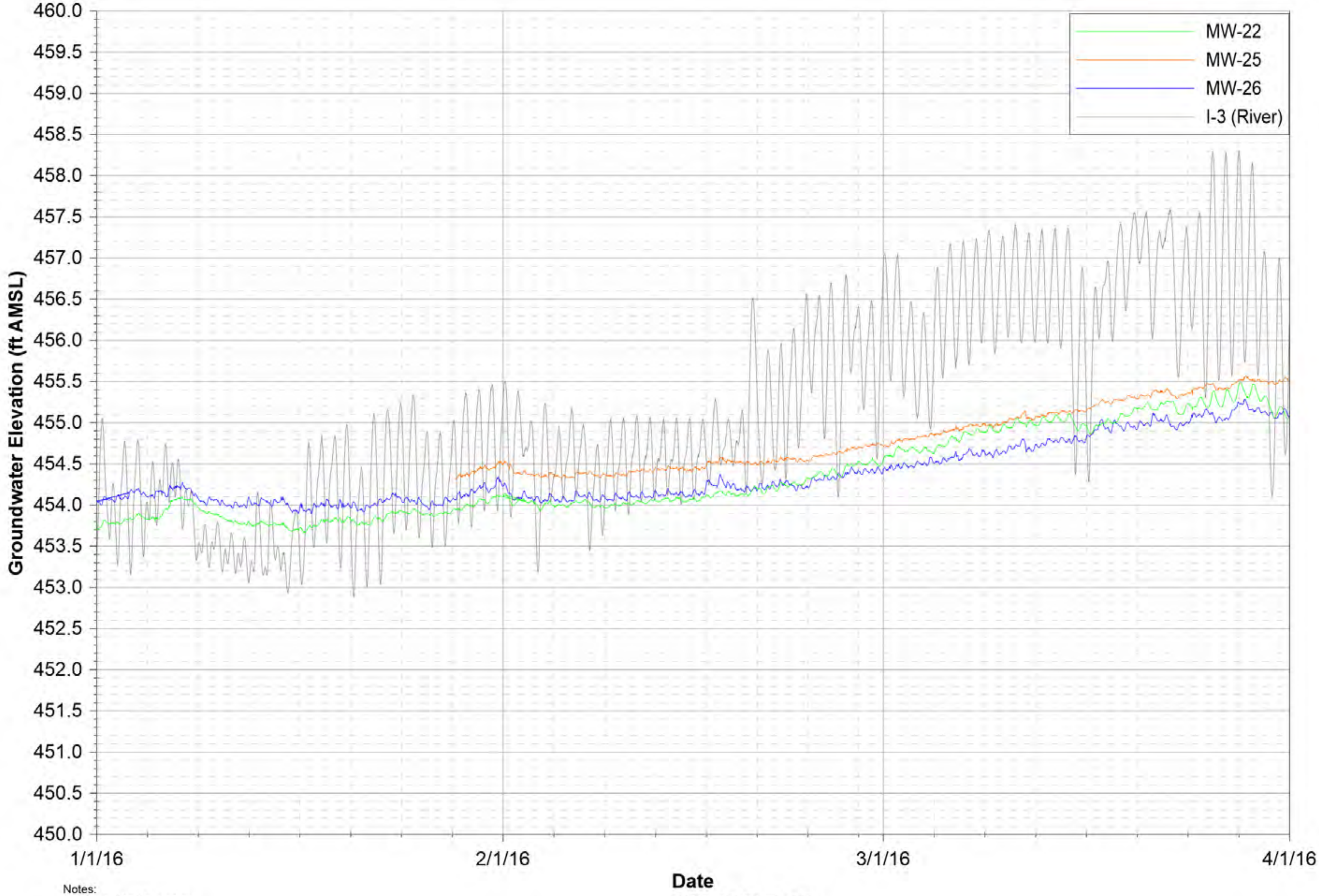


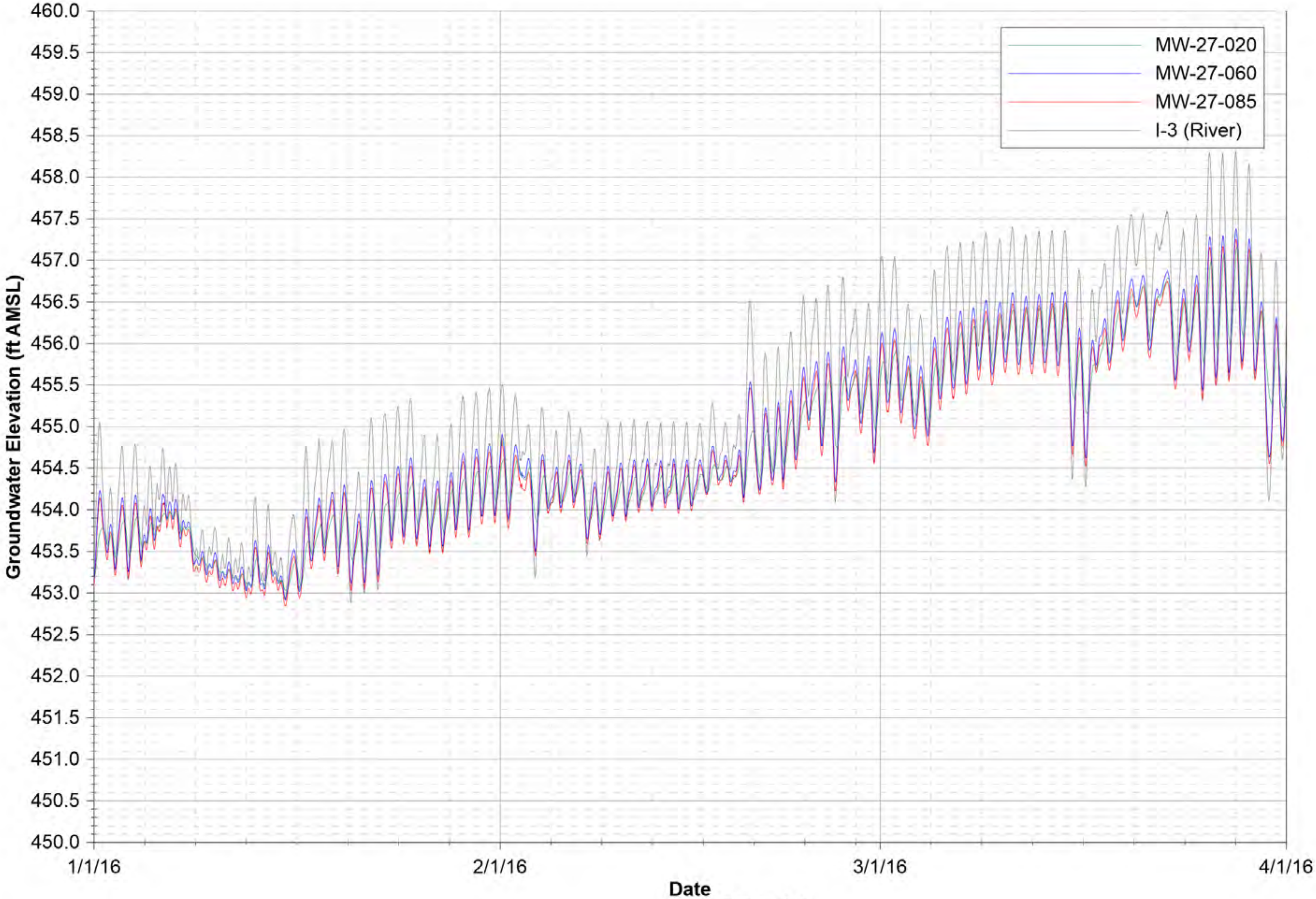
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.
3. MW-25 data unavailable from January 1, 2016 through January 28, 2016 due to transducer malfunction.

FIGURE F-1B

MW-22, MW-25, AND MW-26 HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



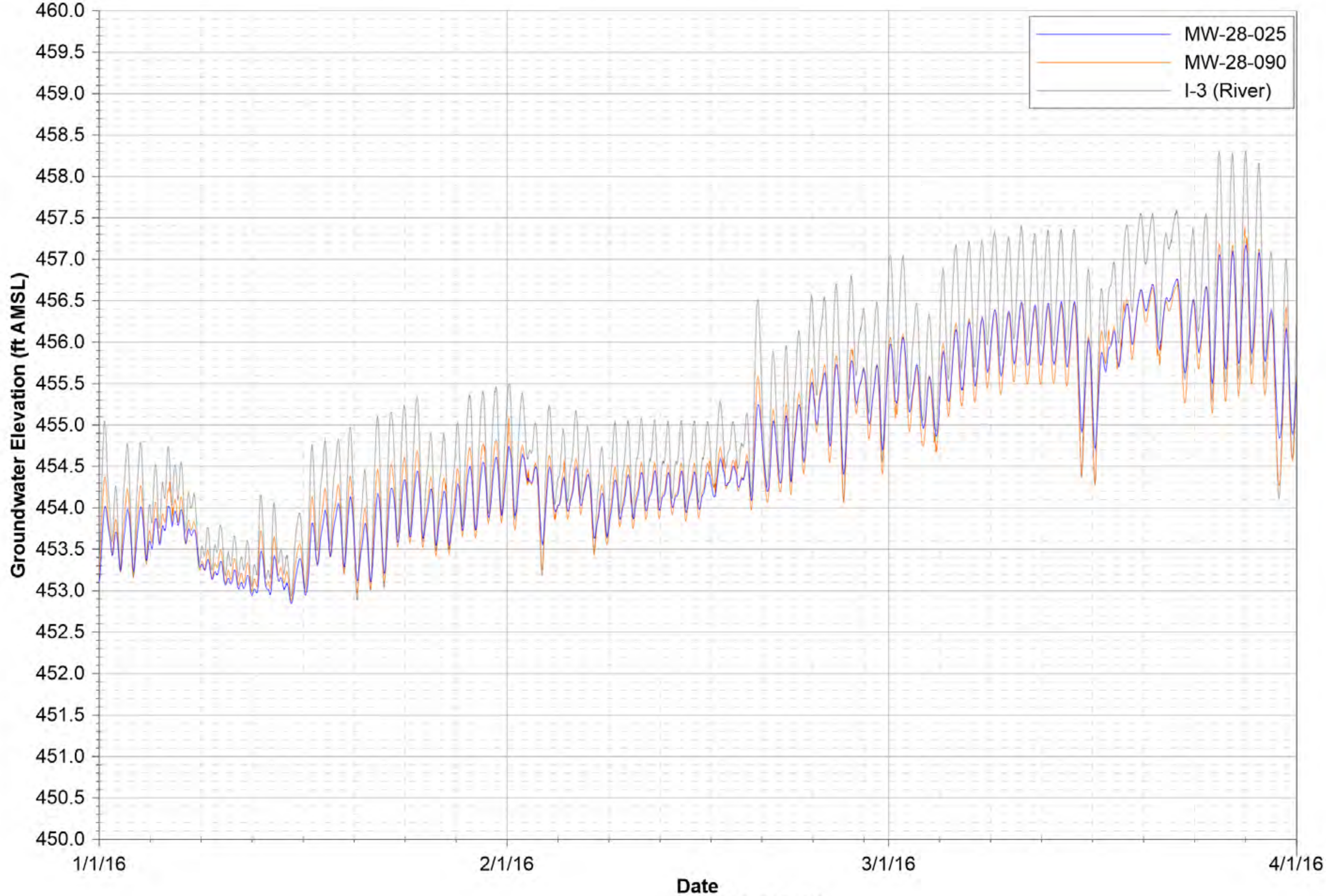
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1C

MW-27 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1D
MW-28 CLUSTER HYDROGRAPHS
FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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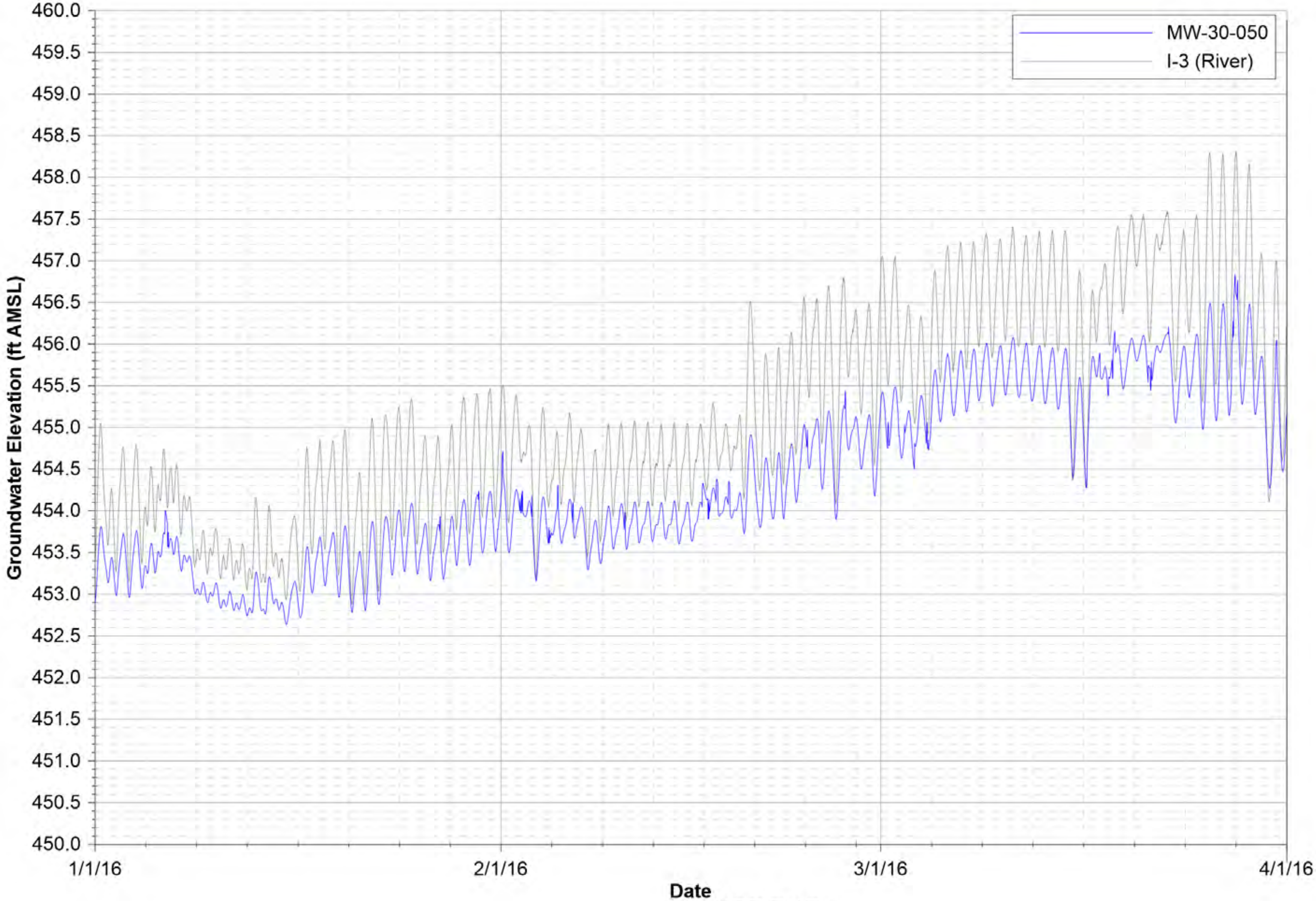
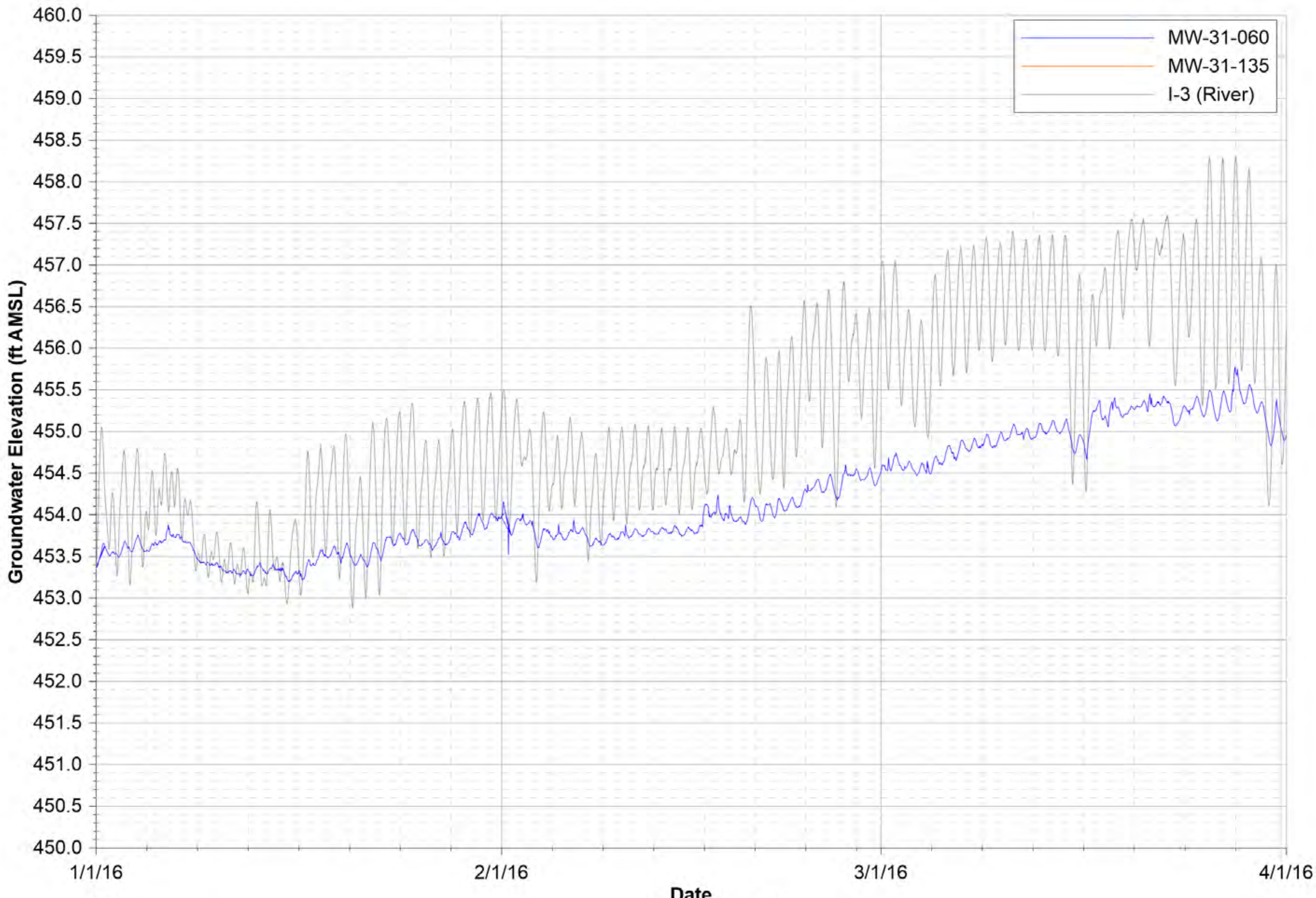


Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1E
MW-30-050 HYDROGRAPH

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



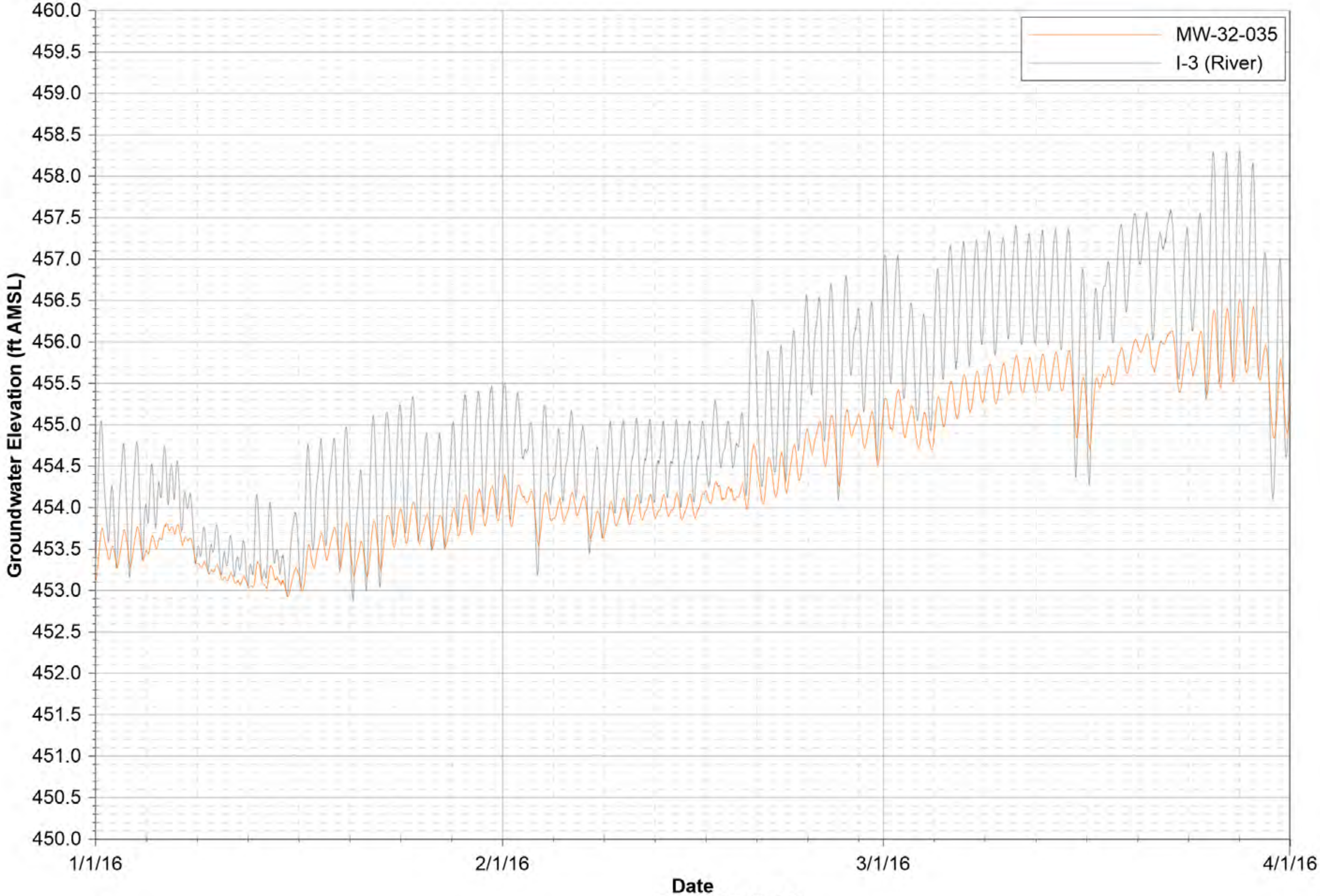
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.
3. MW-31-135 data unavailable from January 1, 2016 through March 31, 2016 due to transducer malfunction.

FIGURE F-1F

MW-31 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1G

MW-32 HYDROGRAPH

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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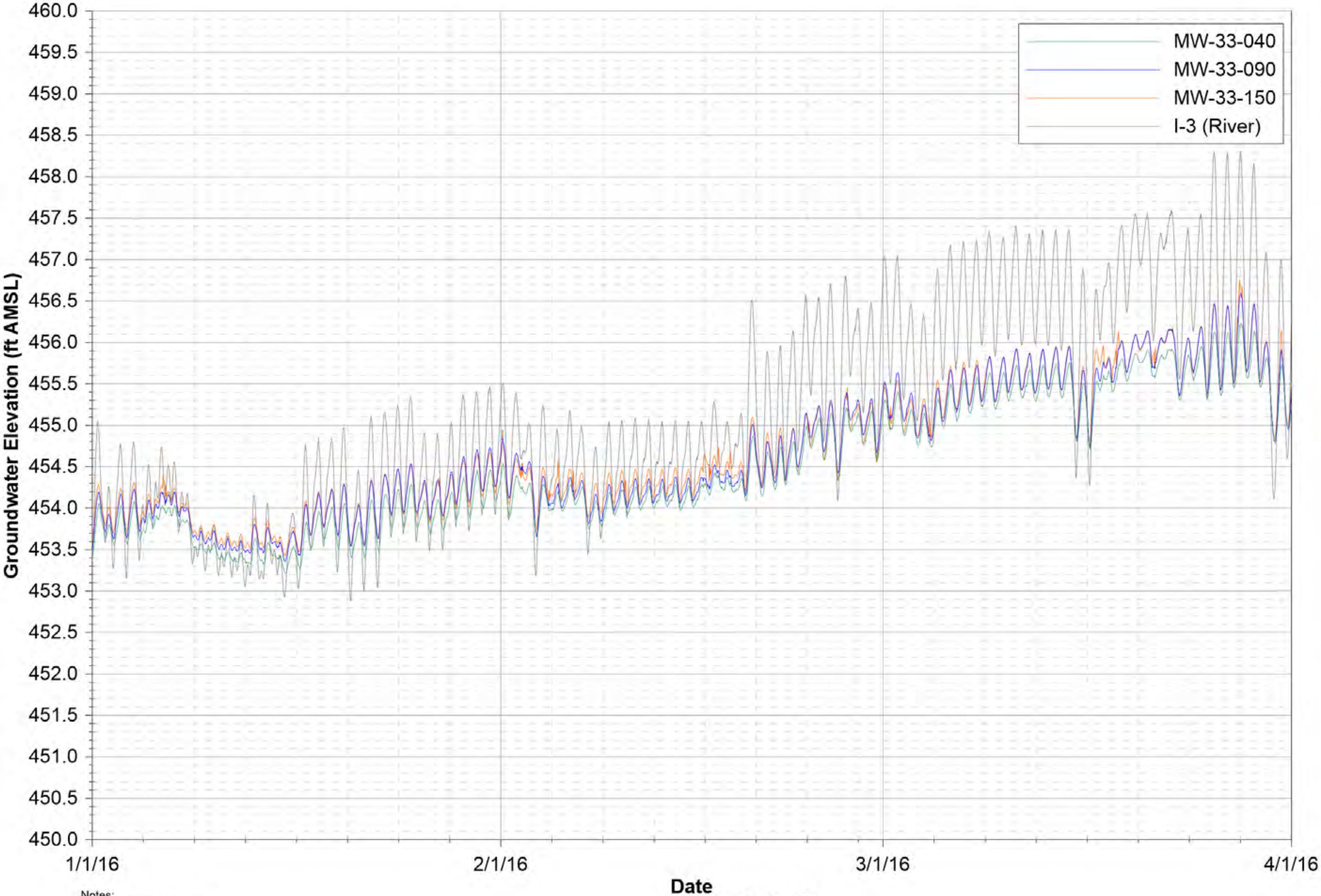
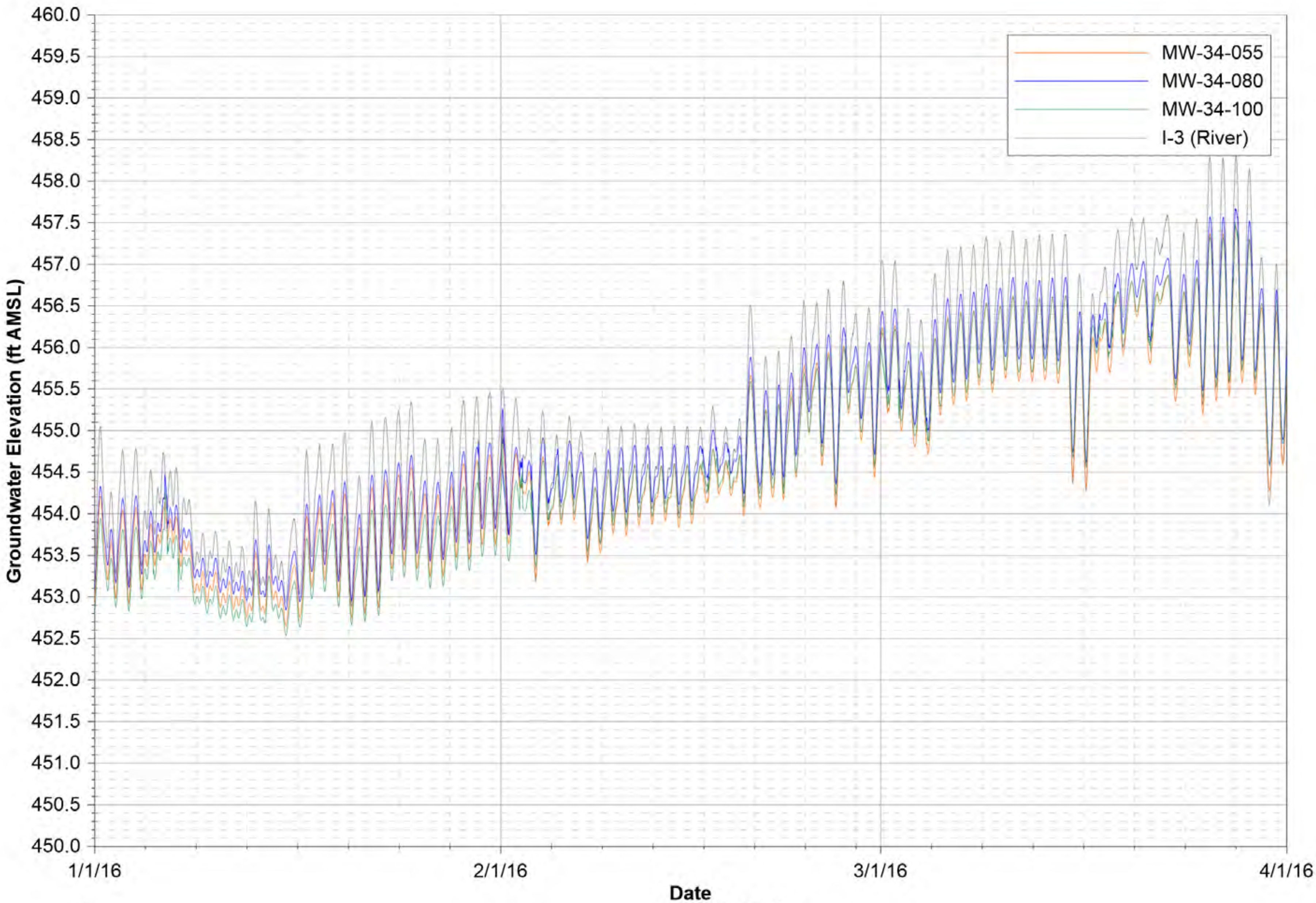


Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1H
MW-33 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1I

MW-34 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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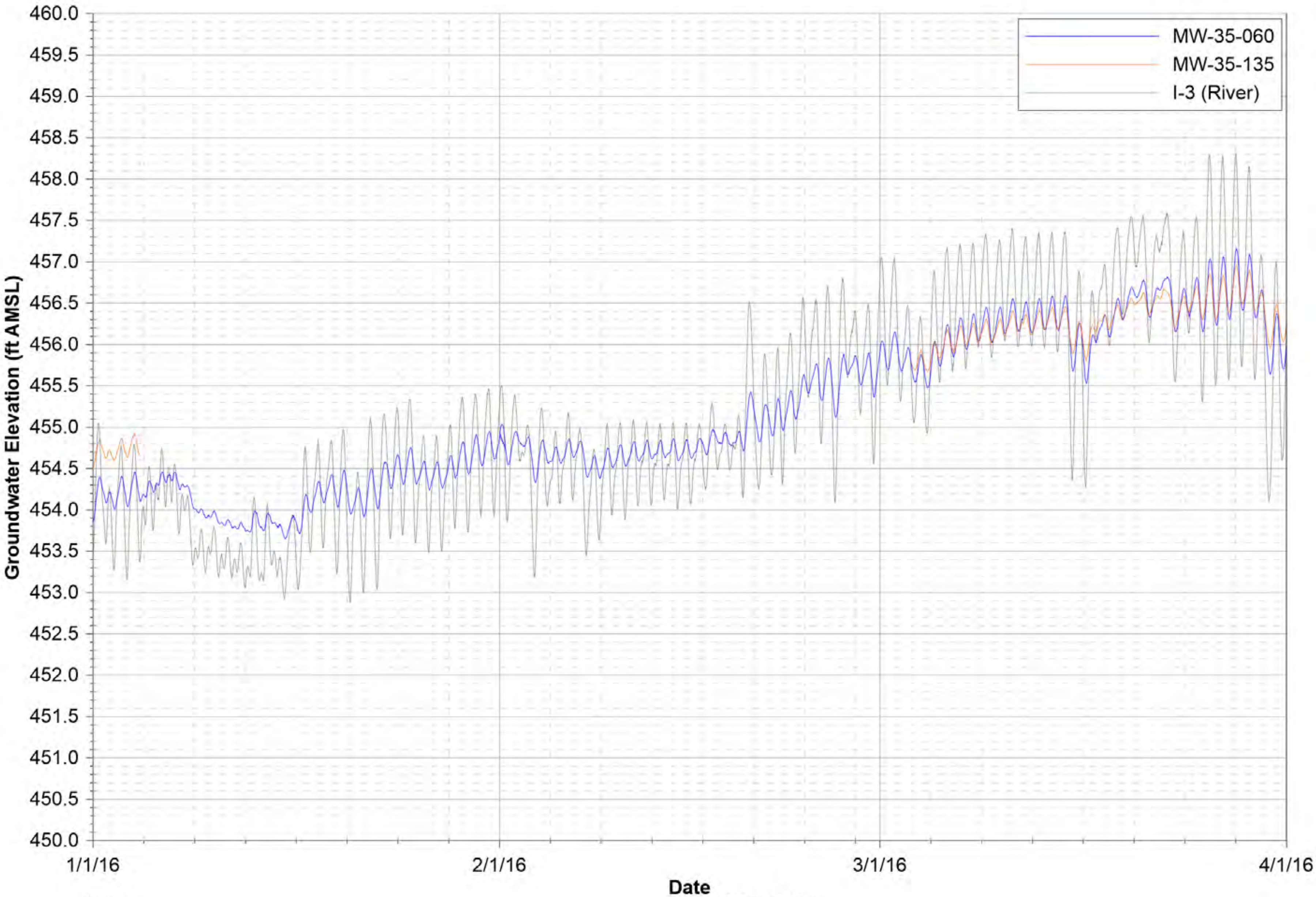
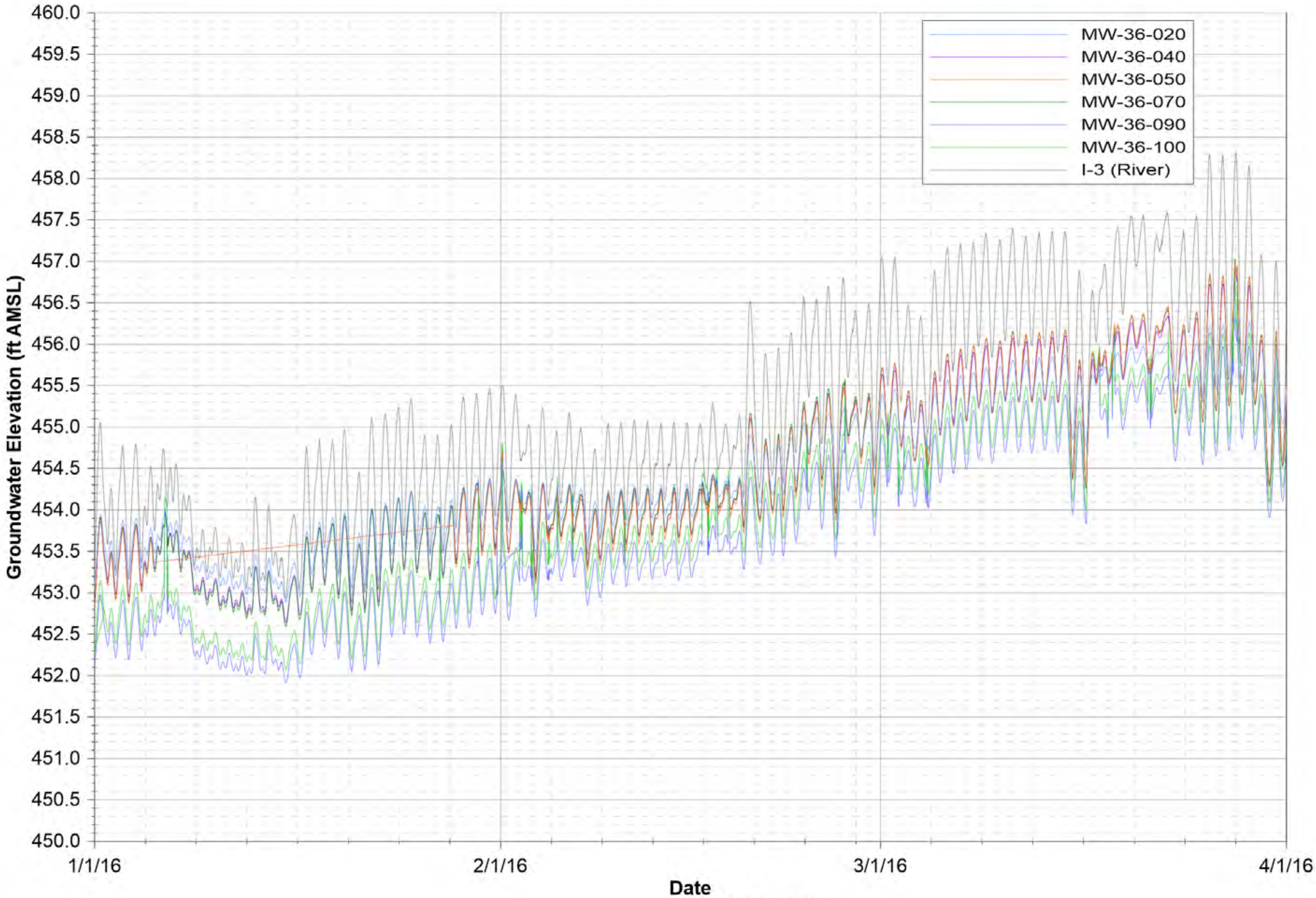


Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.
3. MW-35-135 data unavailable from January 4, 2016 through March 3, 2016 due to transducer malfunction.

FIGURE F-1J
MW-35 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



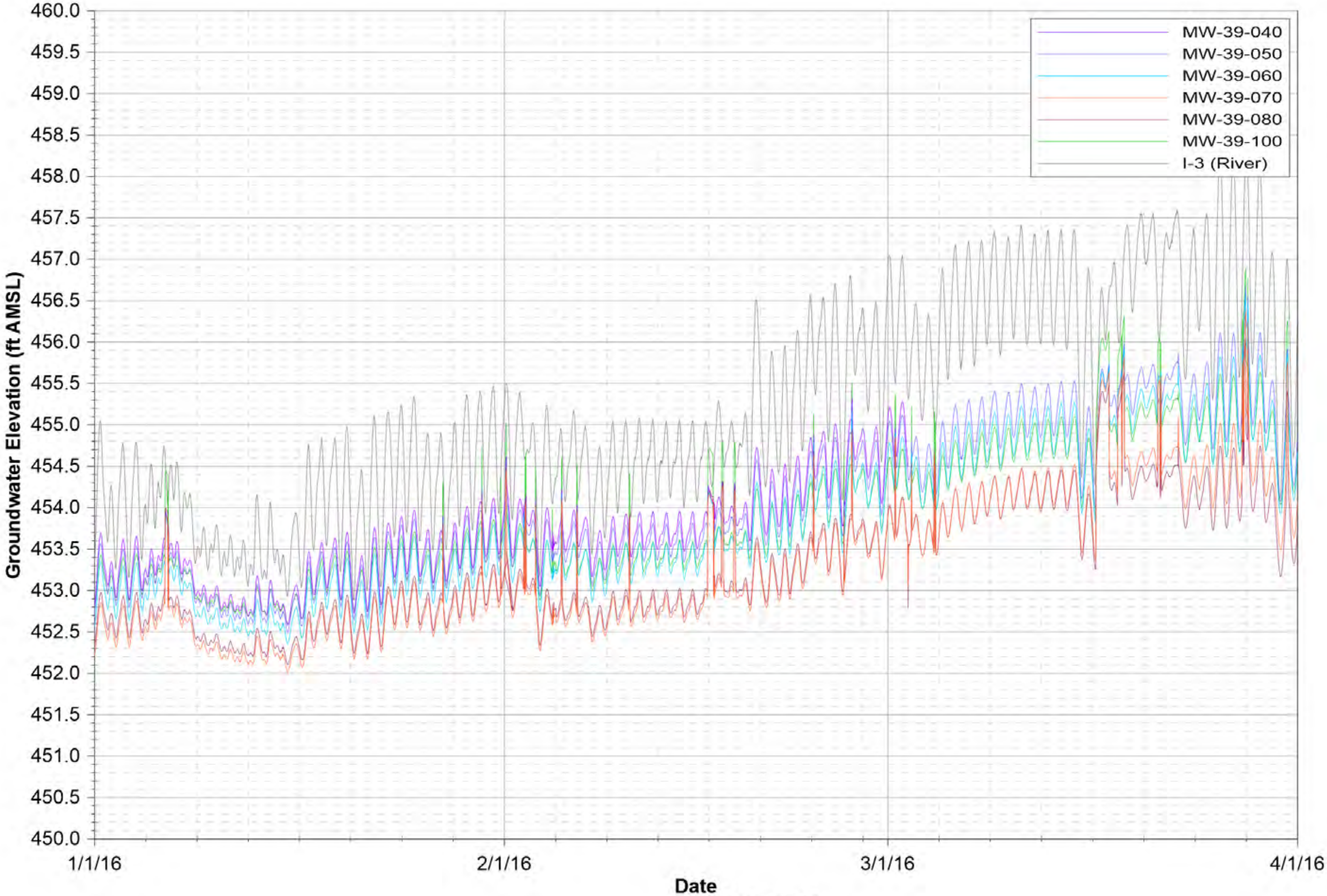
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.
3. MW-36-050 data unavailable from January 5, 2016 through January 28, 2016 due to transducer malfunction.

FIGURE F-1K

MW-36 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



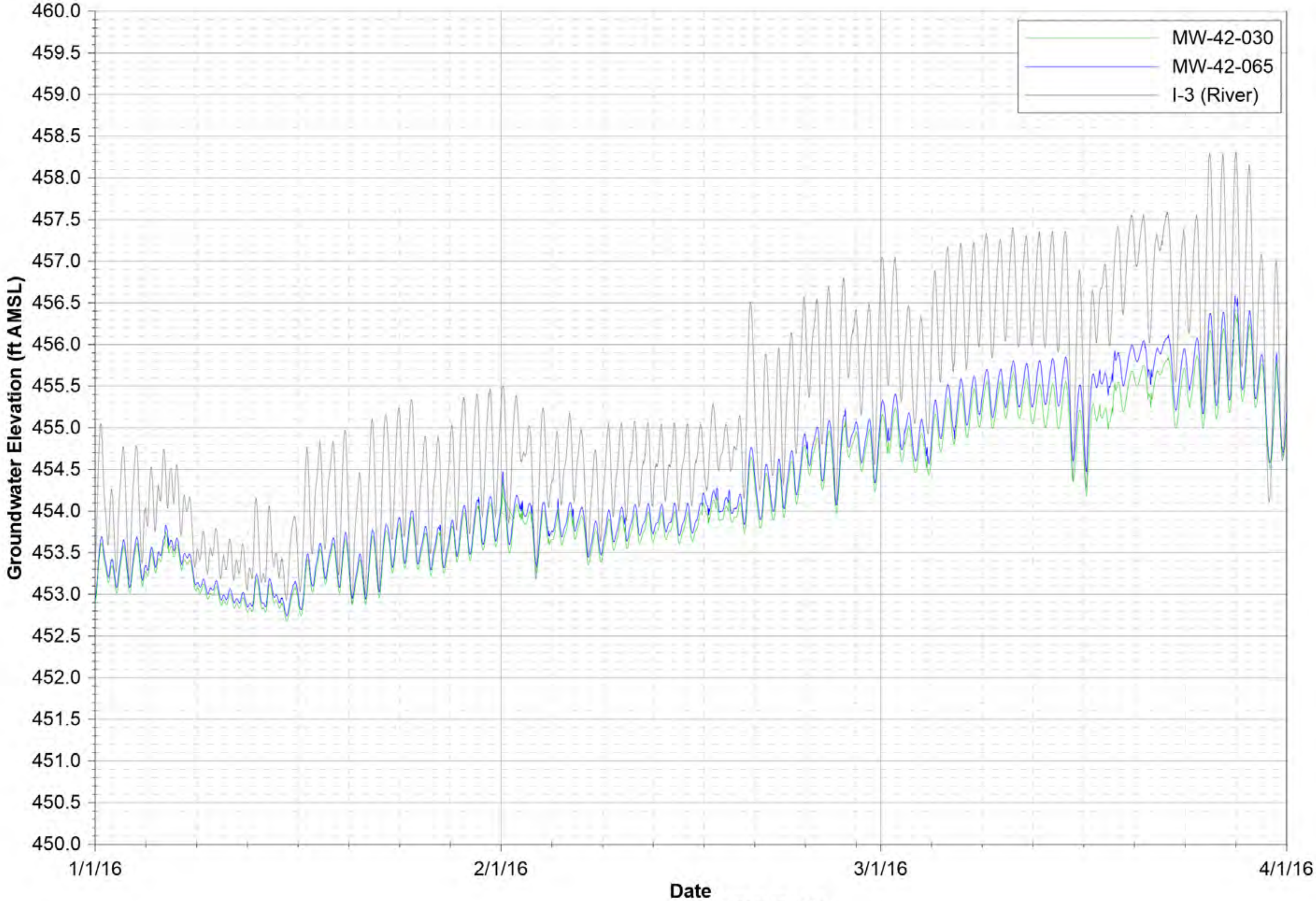
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.
3. MW-39-040 data unavailable from March 3, 2016 through March 31, 2016 due to transducer malfunction.

FIGURE F-1L

MW-39 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



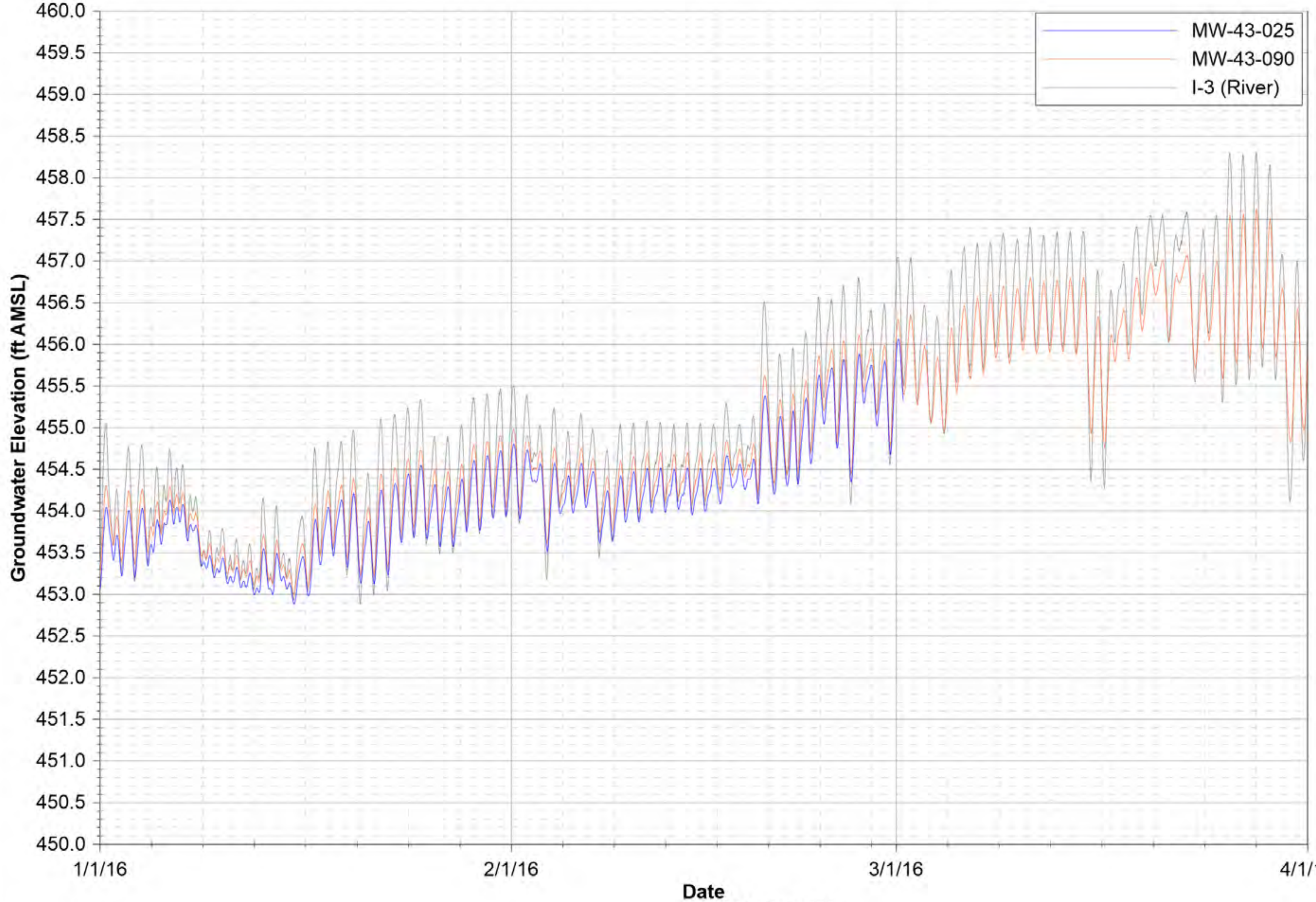
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1M

MW-42 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.
3. MW-43-025 data unavailable from March 2, 2016 through March 31, 2016 due to transducer malfunction.

FIGURE F-1N

MW-43 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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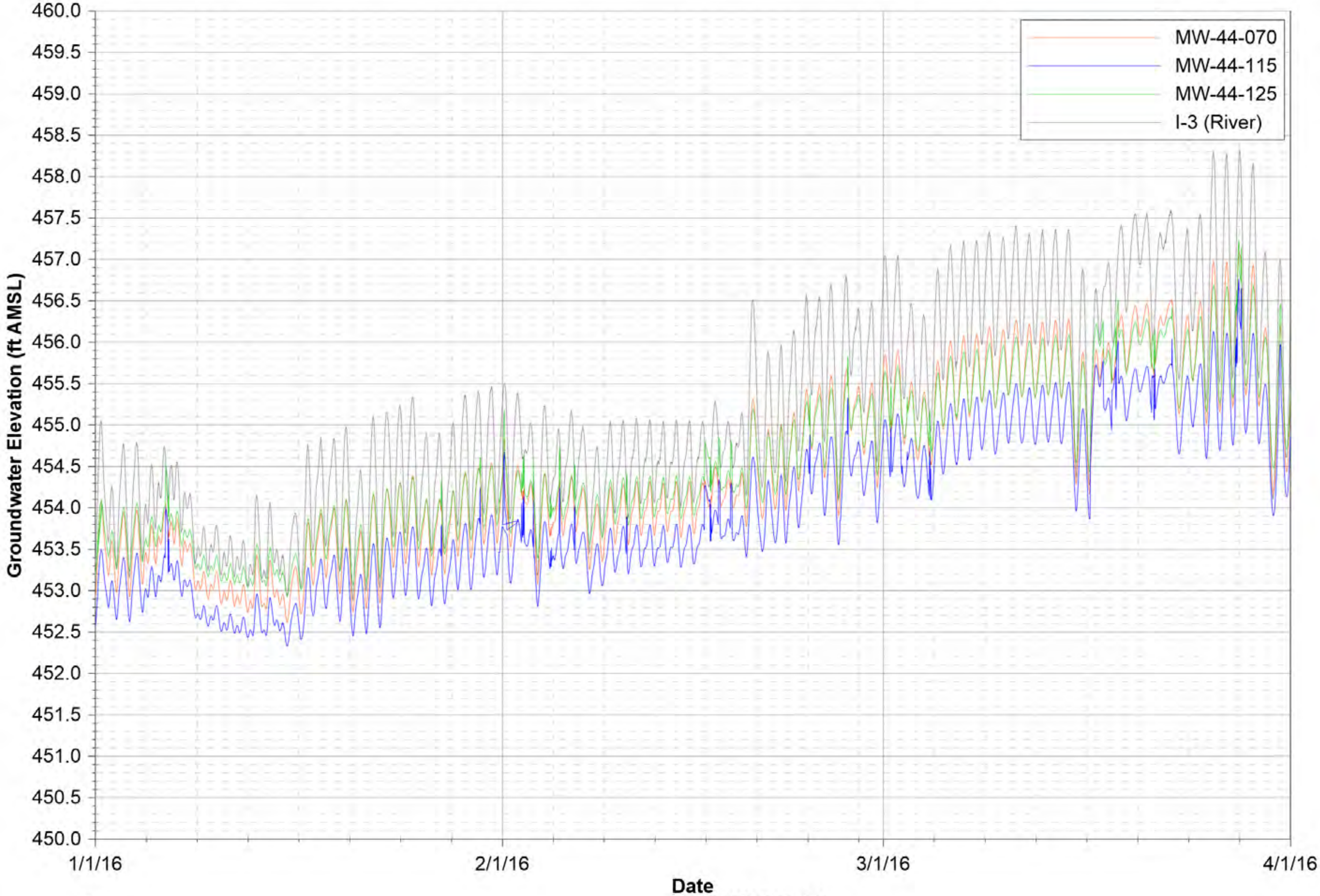
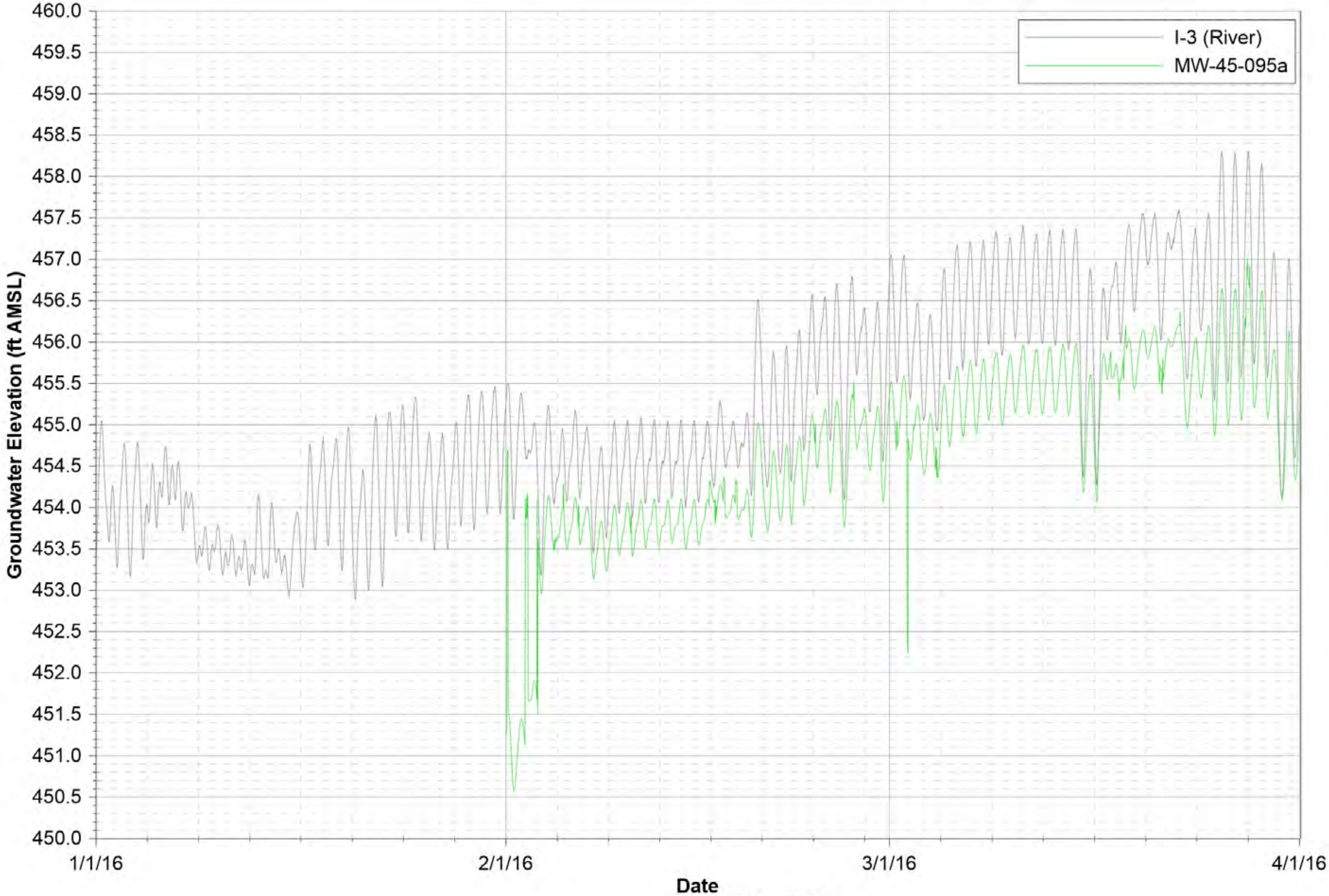


Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1O
MW-44 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.
3. MW-45-095a data unavailable from JAnuary 1, 2016 through February 1, 2016 due to transducer malfunction.

FIGURE F-1P
MW-45-095a HYDROGRAPH
FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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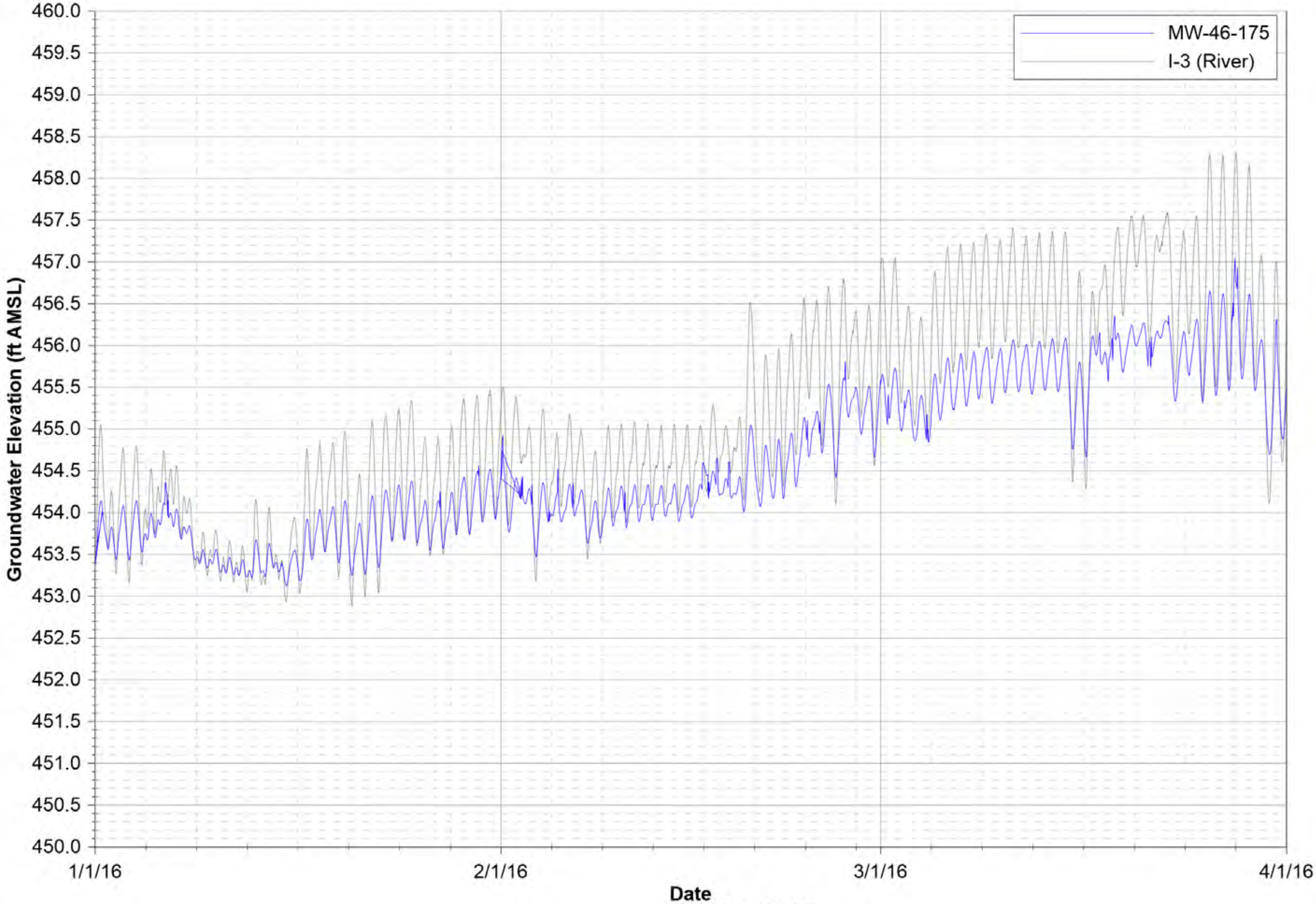


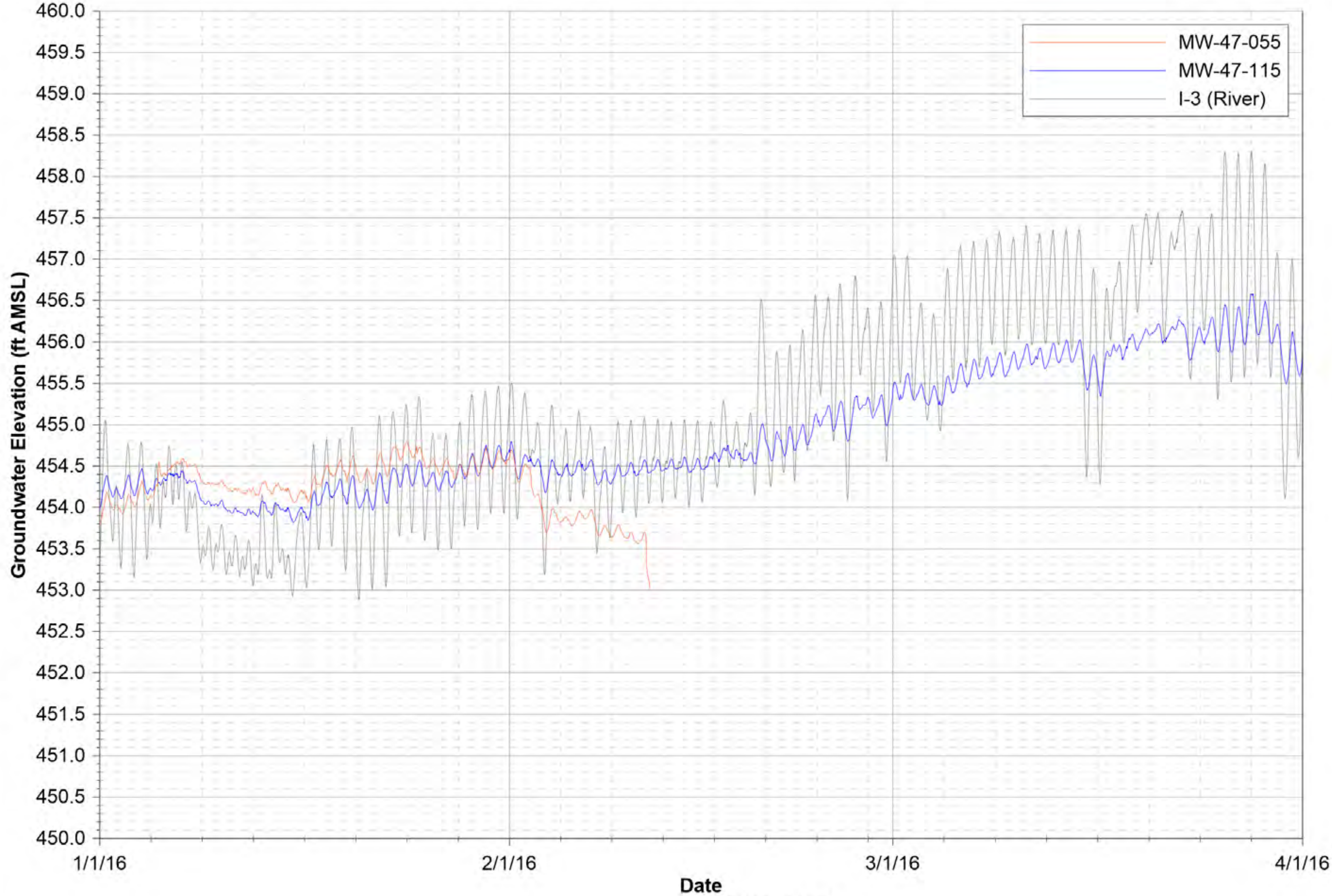
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1Q

MW-46 HYDROGRAPH

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



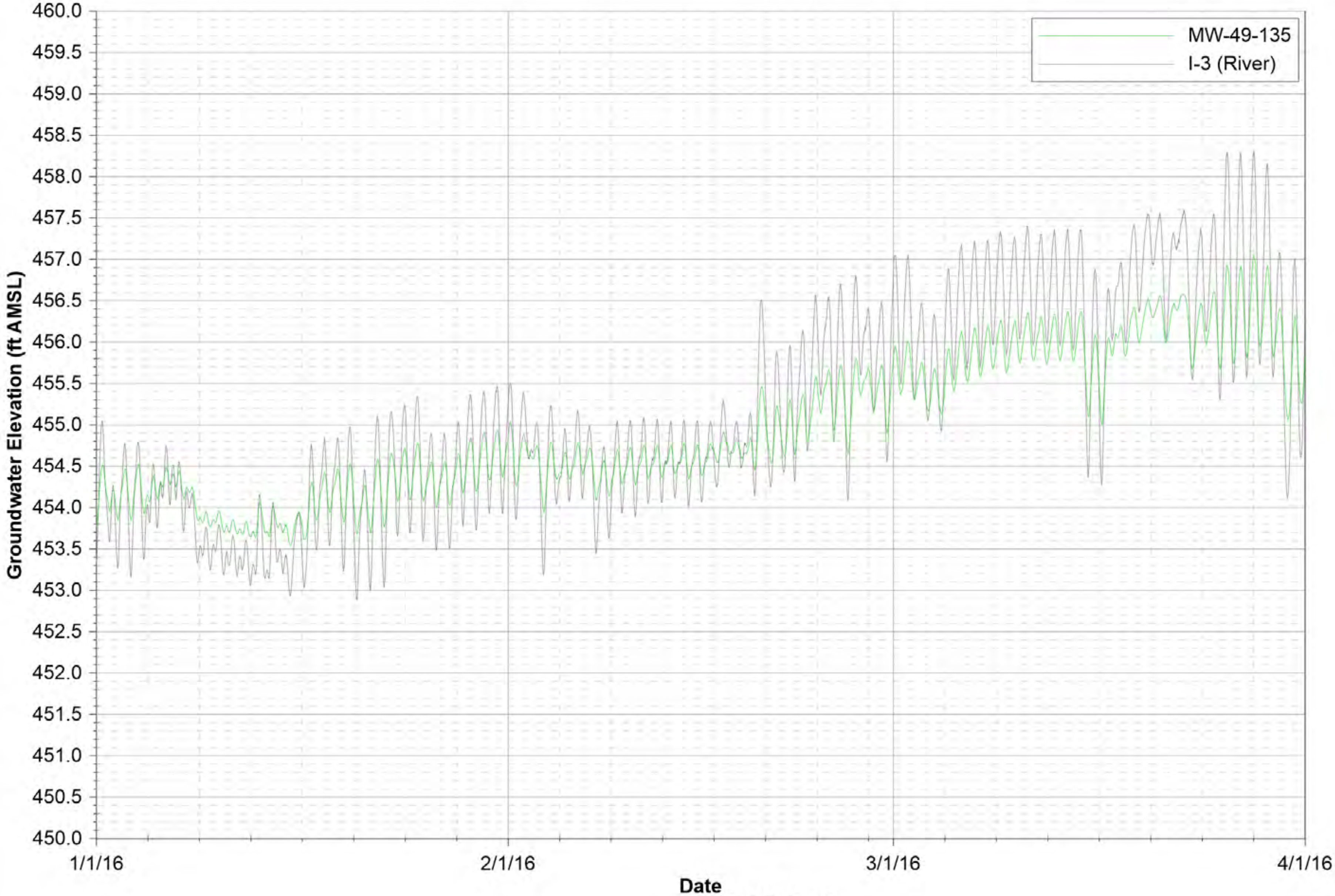
Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.
3. MW-47-055 data unavailable from February 11, 2016 to March 31, 2016 due to transducer malfunction.

FIGURE F-1R

MW-47 CLUSTER HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1S
MW-49 HYDROGRAPH

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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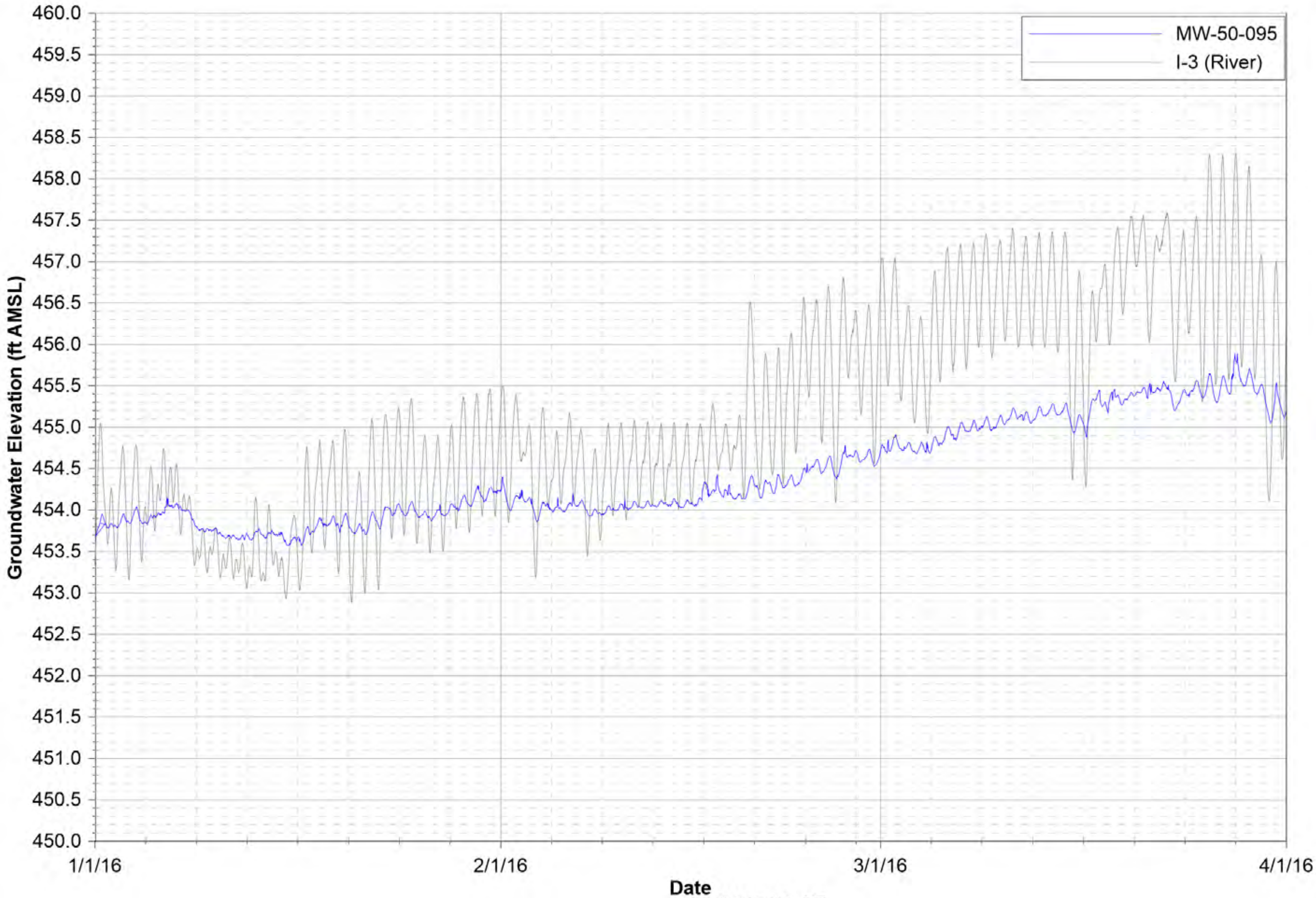

FIGURE F-1T
MW-50 HYDROGRAPH

FIRST QUARTER 2016 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.

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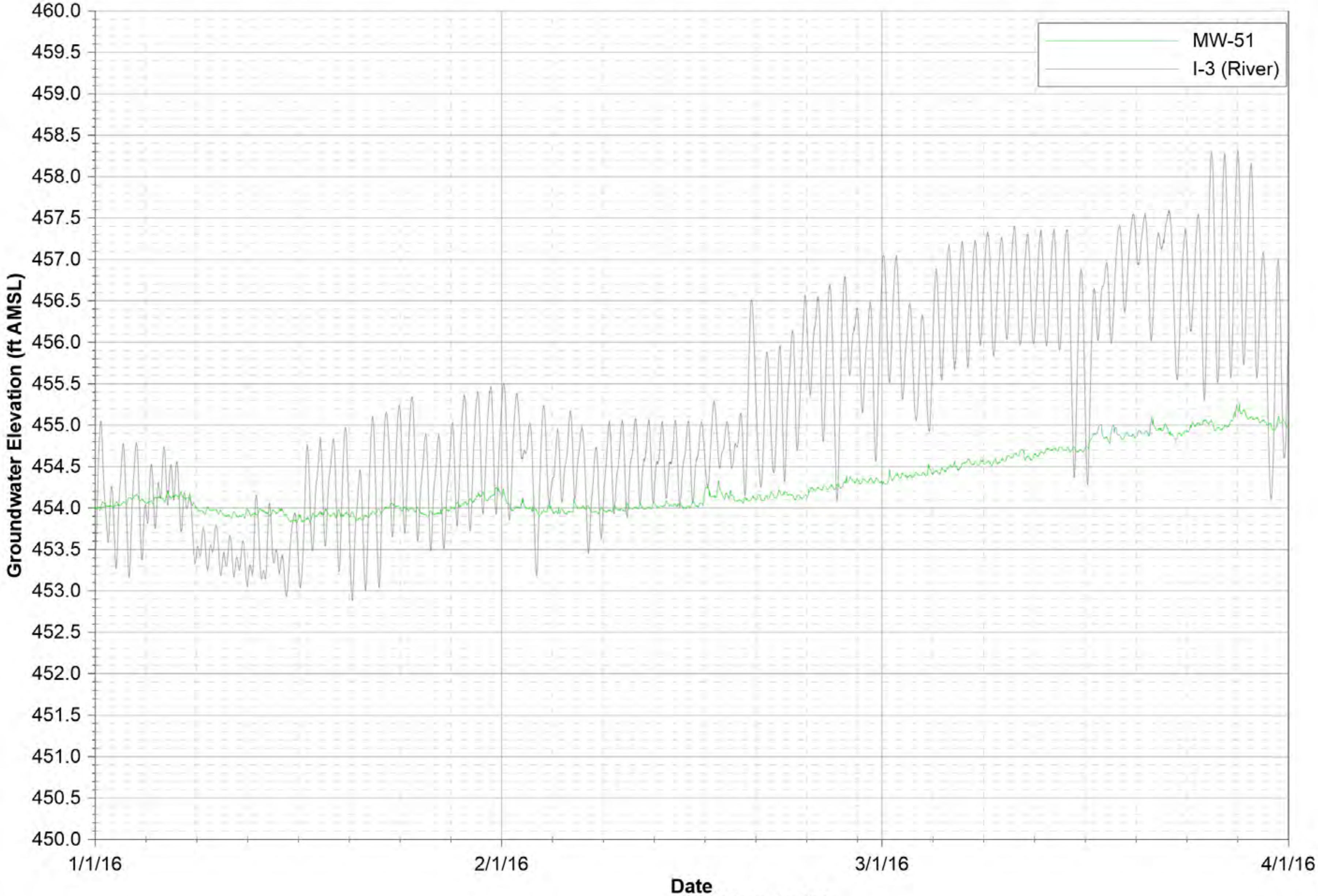
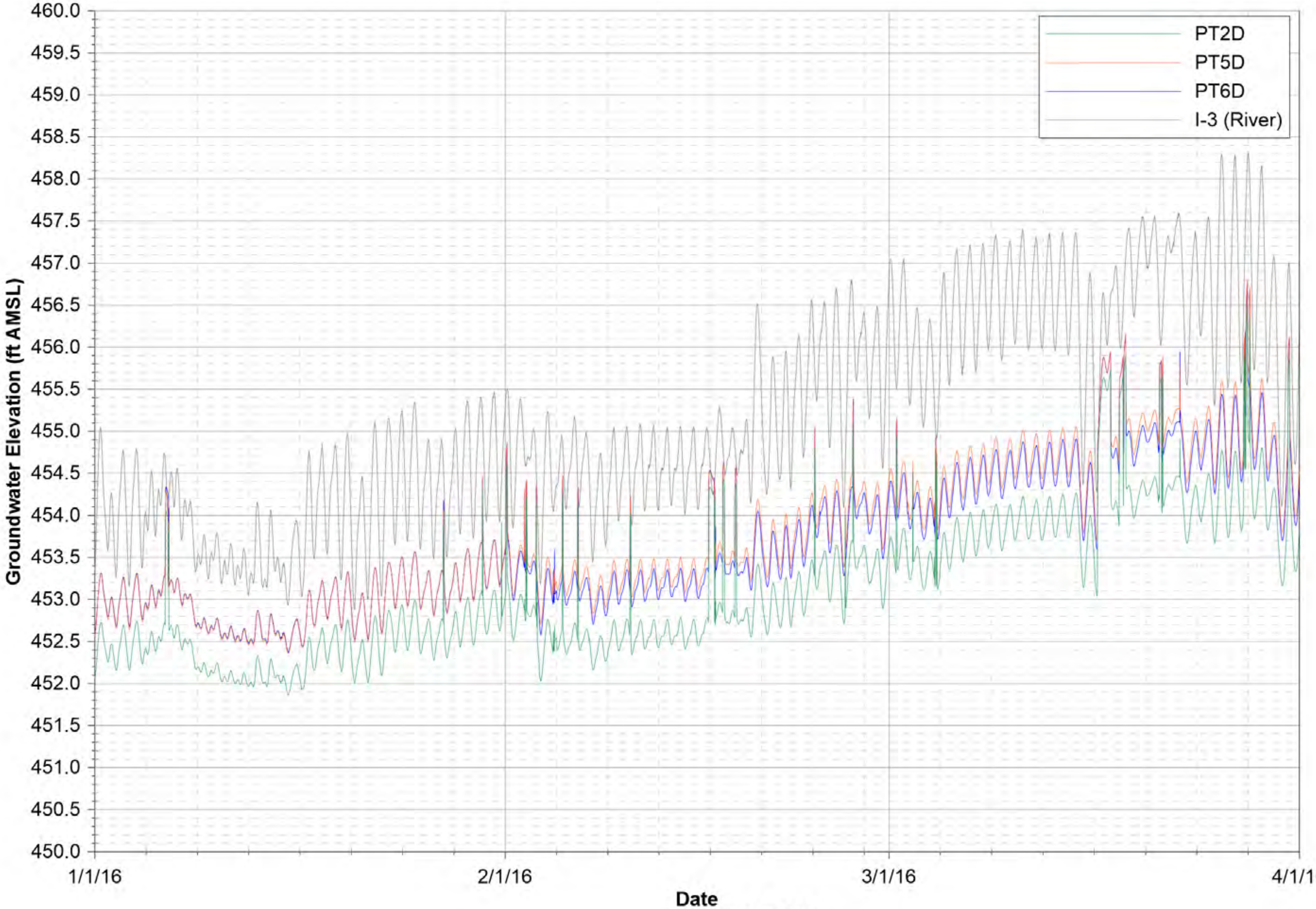


Notes:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1U
MW-51 HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

ARCADIS



Note:
1. Data subject to review.
2. ft amsl = feet above mean sea level.

FIGURE F-1V

INSITU PILOT STUDY WELL HYDROGRAPHS

FIRST QUARTER 2016 INTERIM MEASURES PERFORMANCE MONITORING AND SITE-WIDE GROUNDWATER AND SURFACE WATER MONITORING REPORT,
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

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