



**Pacific Gas and  
Electric Company®**

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February 15, 2006

Norman Shopay  
Project Manager  
California Department of Toxic Substances Control  
Geology and Corrective Action Branch  
700 Heinz Avenue  
Berkeley, California 94710

Subject: Performance Monitoring Report for January 2006  
Interim Measures Performance Monitoring Program  
PG&E Topock Compressor Station, Needles, California

Dear Mr. Shopay:

Enclosed is the *Performance Monitoring Report for January 2006* for the Interim Measure Performance Monitoring Program at the PG&E Topock Compressor Station. This monitoring report documents the performance monitoring results for January 1 through 31, 2006, and has been prepared in conformance with DTSC's letter dated February 14, 2005.

Please contact me at (805) 546-5243 if you have any questions on the performance monitoring program.

Sincerely,

*Terri Henson  
for Yvonne Meeks*

Enclosure

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**Performance Monitoring Report  
for January 2006  
Interim Measures Performance  
Monitoring Program  
PG&E Topock Compressor Station  
Needles, California**

Prepared for  
**California Department of Toxic Substances Control**

on behalf of  
**Pacific Gas and Electric Company**

February 15, 2006

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**Performance Monitoring Report  
for January 2006**

**Interim Measures Performance Monitoring Program**

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

**Prepared for  
California Department of Toxic Substances Control**

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Pacific Gas and Electric Company**

**February 15, 2006**

**This report was prepared under the supervision of a  
California Certified Engineering Geologist**

*Paul Bertucci*

**Paul Bertucci, C.E.G. No. 1977  
Project Hydrogeologist**



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# Acronyms and Abbreviations

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cfs	cubic feet per second
Cr(T)	total chromium
Cr(VI)	hexavalent chromium
DTSC	Department of Toxic Substances Control
gpm	gallons per minute
IM	Interim Measure
PG&E	Pacific Gas and Electric Company
PMP	Performance Monitoring Program
µg/L	micrograms per liter
USBR	United States Bureau of Reclamation

# 1.0 Introduction

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Pacific Gas and Electric Company (PG&E) is implementing an Interim Measure (IM) to address chromium concentrations in groundwater at the Topock Compressor Station near Needles, California. The IM consists of groundwater extraction for hydraulic control of the plume boundaries in the Colorado River floodplain and management of extracted groundwater. The groundwater extraction, treatment, and injection systems, collectively, are referred to as Interim Measure Number 3 (IM No. 3). Currently, the IM No. 3 facilities include a groundwater extraction system (four extraction wells TW-2D, TW-3D, TW-2S, and PE-1), conveyance piping, a groundwater treatment plant, and an injection well field for the discharge of the treated groundwater. Figure 1-1 shows the location of the IM No. 3 extraction, conveyance, treatment, and injection facilities.

In a letter dated February 14, 2005, the California Department of Toxic Substances Control (DTSC) established the criteria for evaluating the performance of the IM. 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” (Enclosure A of the DTSC February 14, 2005 letter). The DTSC directive also defined the monitoring and reporting requirements for the IM. A draft *Performance Monitoring Plan for Interim Measures in the Floodplain Area* was submitted to DTSC on April 15, 2005 (herein referred to as the Performance Monitoring Plan). The site monitoring, data evaluation, reporting, and response actions required under the February 2005 DTSC directive are collectively referred to as the IM Performance Monitoring Program (PMP) for the floodplain area.

This monthly report has been prepared in compliance with DTSC’s requirements and documents the monitoring activities and performance evaluation of the IM hydraulic containment system for the period from January 1 through 31, 2006. The next monthly report for the February 2006 period will be submitted on March 15, 2006. The next quarterly report for the November, December, and January reporting period will be submitted in conjunction with the first annual report also by March 15, 2006.

Figure 1-2 shows the locations of wells used for the IM extraction, performance monitoring, and hydraulic gradient calculation. The performance monitoring wells are defined as:

- **Floodplain Wells** (monitoring wells on the Colorado River floodplain): MW-22, MW-27 cluster (3), MW-28 cluster (2), MW-29, MW-30 cluster (2), MW-32 cluster (2), MW-33 cluster (4), MW-34 cluster (3), MW-36 cluster (6), MW-39 cluster (6), MW-42 cluster (3), and MW-43 cluster (3).
- **Intermediate Wells** (monitoring wells located immediately north, west, and southwest of the floodplain): MW-12, MW-19, MW-20 cluster (3), MW-21, MW-26, MW-31 cluster (2), MW-35 cluster (2).
- **Interior Wells** (monitoring wells located upgradient of IM pumping): MW-10, MW-25.

Three extraction wells (TW-2D, TW-3D and TW-2S) are located on the MW-20 bench (Figure 1-1). In March 2005, extraction well PE-1 was installed on the floodplain approximately 450 feet east of extraction well TW-2D (Figure 1-1). Construction of the conveyance piping and power supply to PE-1 was completed in January. Testing and commissioning of PE-1 began on January 25, 2006, with full-time operation of the well beginning on January 26, 2006.

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 – designated upper, middle, and lower – are based on grouping the monitoring wells screened at common elevations and do not represent distinct hydrostratigraphic units or separate aquifer zones. The subdivision of the aquifer into three depth intervals is an appropriate construct for presenting and evaluating 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. It should be noted, however, that these divisions do not correspond to any distinct lithostratigraphic layers within the aquifer. The floodplain aquifer is considered to be hydraulically undivided.



## 2.0 Extraction System Operations

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Pumping data for the IM groundwater extraction system for the period January 1 through January 31, 2006 are shown in Table 2-1. From January 1 to 25, extraction well TW-2D and TW-3D operated at a combined target pump rate of 135 gallons per minute (gpm), the treatment capacity of the IM No. 3 treatment plant. Commissioning of extraction well PE-1 began on January 25, 2006. Initial pumping rates were approximately 37 gpm. From January 25 through 31, extraction wells TW-3D and PE-1 operated at a combined target pump rate of 135 gpm. PG&E will continue to operate TW-3D and PE-1 at a combined target pump rate of 135 gpm, except for periods of planned and unplanned downtime.

The January 2006 monthly average pumping rate was 124 gpm. A total of 5,548,327 gallons of groundwater were extracted and treated by the IM No. 3 treatment plant during January 2006. The operational run time for the IM extraction system was approximately 93 percent during this reporting period. An operations log for the extraction system during January 2006, including downtime, is included in Appendix A.

The concentrate (i.e., brine) from the reverse osmosis system was shipped offsite under manifest as a Resource Conservation and Recovery Act non-hazardous waste and transported to United States Filter Corporation in Los Angeles, California for treatment and disposal. One container of solids (approximately 14 cubic yards) from the IM No. 3 facility was disposed of at the Chemical Waste Management at the Kettleman Hills facility during January 2006.

Daily inspections included general facility inspections, flow measurements, and site security monitoring. Daily logs with documentation of inspections are maintained onsite.

Table 2-2 summarizes the analytical results of groundwater samples collected from extraction wells TW-2D and TW-3D during the January reporting period and prior months. Future monitoring of the extraction well(s) water quality will be completed at the frequency required by the Waste Discharge Requirements issued for the IM No. 3 treatment facility.

## 3.0 Chromium Sampling Results

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The groundwater monitoring wells in the floodplain area are currently sampled for Cr(VI), total chromium [Cr(T)], and field water quality parameters under quarterly, monthly, and biweekly schedules, in accordance with the approved groundwater monitoring plan and DTSC directives. On July 20, 2005, DTSC approved a modified sampling schedule for groundwater monitoring in the floodplain that specified monthly sampling of 12 selected monitoring wells, biweekly sampling of one well (MW-34-100), and quarterly sampling of the other monitoring wells in the PMP area. Table B-1 in Appendix B presents the groundwater sampling results for Cr(VI) and Cr(T), as well as groundwater elevation and selected field water quality parameters for monitoring wells in the floodplain area during January 2006 and the previous months. Table B-2 in Appendix B presents the groundwater sampling data for the other wells monitored in the PMP area during the evaluation period.

Groundwater samples were collected from MW-39-50 and MW-39-80 during January 2006 to clarify the anomalous Cr(VI) and Cr(T) concentrations from samples collected during December 2005. The January 2006 sample from MW-39-50 showed no detections above the analytical reporting limits for Cr(VI) and Cr(T) (see Table B-1). The January sample from MW-39-80 matched historical concentrations for Cr(VI) and Cr(T). Wells MW-39-50 and MW-39-80 are 1-inch-diameter nested wells installed in the same well cluster borehole and monument. It appears that the sample bottle assigned to MW-39-50 in December was filled with water from MW-39-80 instead. The sampling crew recalls that the sample tubing, which extends several feet from the well head, became disconnected from the sampling pump shortly before the sample was collected in MW-39-50. Although the well heads are clearly labeled, the ends of the sample tubing were not. It appears that the sampling crew attached the wrong tubing to the sampling pump after the tubing became disconnected at the end of the purge. Thus, the field parameters obtained during purging reflected the typical water quality of MW-39-50, but the sample for laboratory analyses was actually collected from MW-39-80. To prevent future recurrences of this problem, the ends of the sample tubing have been clearly labeled with the well identifications. Based on the non-detect results for the January resampling, the December 2005 chromium sample results from MW-39-50 have been rejected as erroneous and will be excluded from future PMP and other project reporting.

Figure 3-1 presents the Cr(VI) results distribution for January 2006 in plan view for the groundwater wells monitoring the upper, middle, and lower depth intervals of the Alluvial Aquifer in the floodplain area. Figure 3-1 also shows the approximate locations of the 20 µg/L and 50 µg/L Cr(VI) contour lines in groundwater within each depth interval. The California drinking water standard for Cr(T) is 50 µg/L.

The Cr(VI) sampling results from the January 2006 monthly sampling event are shown on Figure 3-2, a vertical cross-section extending east-west across the floodplain. Figure 3-3 presents the January 2006 Cr(VI) results for additional floodplain monitoring wells on a cross-section oriented parallel to the Colorado River (see Figure 1-2 for locations of the cross-sections). For ongoing IM performance evaluation, Cr(VI) concentration trend graphs

and hydrographs for key floodplain monitoring wells are presented on Figures B-1 (well MW-33-90), B-2 (MW-34-100), and B-3 (MW-36-100) in Appendix B.

## 4.0 Hydraulic Gradient Results

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During the reporting period, water levels were recorded at intervals of 30 minutes with pressure transducers in 48 wells and two river monitoring stations (I-3 and RRB). The data are typically continuous, with only short interruptions for sampling or maintenance. The location of the wells monitored are shown on Figure 1-2 and listed in Section 1.0.

The monthly average and the minimum and maximum daily average groundwater and river elevations have been calculated from the pressure transducer data for the January reporting period (January 1 through January 24, 2006) and are summarized in Appendix C, Table C-1. Because well PE-1 began pumping on January 25, affecting groundwater levels in nearby wells, the groundwater levels for the last week of January are not included in the January average. The water levels for the period from January 25 through January 31 will be included in the average gradients for February.

Reported groundwater elevations (or hydraulic heads) are adjusted for temperature and for salinity differences between wells (i.e., adjusted to a common freshwater equivalent), as described in the Performance Monitoring Plan. Groundwater elevation hydrographs (for January 2006) for all wells with transducers are included in Appendix C. The elevation of the Colorado River measured at the river gauge (I-3, Figure 1-2) during January 2006 is also shown on the hydrographs.

The January 2006 hydraulic data and groundwater gradient maps for the upper, middle, and lower depth intervals are shown on Figures 4-1, 4-2, and 4-3, respectively. The groundwater elevations for all depth intervals of the Alluvial Aquifer indicate strong landward hydraulic gradients throughout the floodplain. To the west of the TW-2D and TW-3D pumping area, the hydraulic gradient in the upper depth interval is easterly and consistent with the regional gradient outside of the floodplain area. The landward gradients measured during January 2006 were greater than in December 2005. This was the result of increased net extraction rate (from 112 gpm in December to 124 gpm in January) and rising Colorado River levels during this period. The average monthly groundwater elevations are also presented and contoured in cross-section on Figure 4-4 (cross-section location shown on Figure 1-2).

Table 4-1 summarizes the estimated and actual dam discharges and river elevations since April 2004. The actual Davis Dam January 2006 average discharge of (9,166 cubic feet per second [cfs]) was greater than the United States Bureau of Reclamation (USBR) projected discharge of 8,400 cfs for the month of January. Consequently, the actual Colorado River elevation at I-3 (monthly average) was greater (0.6 foot) than that predicted by using the multiple regression method with USBR projections for the January reporting period.

Gradients were measured between the three designated well pairs (MW-31-135/MW-33-150 MW-20-130/MW-34-80, and MW-20-130/MW-42-65) during January 2006. Commissioning of pumping from extraction well PE-1 began in the afternoon of January 25, 2006, so monthly well pair gradients were calculated for January 1 through 24, 2006. As shown in Table 4-2, the average gradients in the three well pairs were landward at magnitudes that

were between 2 to greater than 4 times the target value of 0.0010 feet per foot (0.0024, 0.0043, 0.0043, respectively). These gradients were greater than the average gradients measured in December 2005.

## 5.0 Status of Operation and Monitoring

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Reporting of the IM extraction and monitoring activities will continue as described in the Performance Monitoring Plan. The next status report will be a monthly performance monitoring report submitted on March 15, 2006 covering the February 2006 reporting period. The first annual report, summarizing IM system operations and performance monitoring data and evaluation during the annual operations period February 2005 through January 2006, will also be submitted by March 15, 2006.

As per DTSC direction, PG&E will continue to operate both TW-3D and PE-1 at a target combined pumping rate of 135 gpm, except for periods when planned and unplanned downtime occur during February 2006. Treated groundwater will be discharged into the IM No. 3 injection wells in accordance with Waste Discharge Requirements Order No. R7-2004-0103. Brine generated as a byproduct of the treatment process will continue to be transported offsite to U.S. Filter Corporation in Los Angeles for treatment and disposal.

PG&E will balance the pumping rates between TW-3D and PE-1 to maintain the target pumping rate and maintain appropriate hydraulic gradients across the Alluvial Aquifer. Transducers will be downloaded after the first 2 weeks of operation of PE-1 and again at the end of February 2006 to confirm that the gradients induced by PE-1 pumping are consistent with model projections. The first month's performance of PE-1 will be documented in the February monitoring report. If, at any time, hydraulic data indicate that PE-1 pumping has the potential to draw high concentrations of chromium away from the capture zone of TW-3D, PG&E will request authorization from DTSC to increase the pumping rate at TW-3D and decrease the rate at PE-1. TW-2D will serve as a backup extraction well to TW-3D and PE-1.

Current USBR projections show that the average Davis Dam release for February 2006 (10,100 cfs) will be greater than in January 2006 (9,166 cfs). Based on February 13, 2006 USBR projections, it is anticipated that the Colorado River level at the I-3 gage location in February 2006 will increase (0.1 feet) compared to levels in January 2006. Future adjustments in pumping rates from the IM extraction system will be proposed based on expected river levels, observed groundwater gradients, potential system modifications, and other relevant factors.



TABLE 2-1

Pumping Rate and Extracted Volume for IM System through January 2006  
*Interim Measures Performance Monitoring*  
*PG&E Topock Compressor Station*

Extraction Well	January 2006 Period <sup>a</sup>		Project To Date <sup>b</sup>
	Average Monthly Pumping Rate <sup>c</sup> (gpm)	Volume Pumped (gal)	Cumulative Volume Pumped (gal)
TW-2S <sup>a</sup>	0	0	994,438
TW-2D	42.5	1,895,680	52,875,356
TW-3D	74.2	3,310,767	5,297,928
PE-1	7.7	341,880	341,880
<b>Total</b>	124.3	5,548,327	59,509,602
Volume Pumped from the MW-20 Well Cluster			1,527,724
Total Volume Pumped (gal)			61,037,326
Total Volume Pumped (ac-ft)			187.3

gpm: gallons per minute.

gal: gallons.

ac-ft: acre-feet.

<sup>a</sup> Pumping results during the monthly period are based on readings collected between January 1, 2006 at 12:00 a.m. and January 31, 2006 at 11:59 p.m. (31 days).

<sup>b</sup> Interim Measure groundwater extraction at the Topock site was initiated in March 2004.

<sup>c</sup> The "Average Pumping Rate" is the overall average during the reporting period, including system downtime based on flow meter readings.



TABLE 2-2

Analytical Results for Extraction Wells, August 2005 through January 2006  
Interim Measures Performance Monitoring  
PG&E Topock Compressor Station

Well ID	Sample Date	Unfiltered Total Chromium mg/L	Hexavalent Chromium mg/L	Total Dissolved Solids mg/L
SC-100B	08-Aug-05	4.06	4.27	5980 J
SC-100B	11-Aug-05	4.83	4.21 J	6060
SC-100B	16-Aug-05	4.75	4.22	6170
SC-100B	18-Aug-05	3.96	3.88	5950
SC-100B	22-Aug-05	4.11	4.10	6000
SC-100B	25-Aug-05	3.74	4.27	6200
SC-100B	16-Sep-05	3.91	3.92	6090 J
SC-100B	21-Sep-05	4.15	3.99	6360
SC-100B	28-Sep-05	5.57	4.02	6250
SC-100B	05-Oct-05	3.79	3.96	6040
SC-100B	12-Oct-05	4.24	3.60	5950
SC-100B	19-Oct-05	3.68	3.79	6080
SC-100B	25-Oct-05	3.27	3.90	5880
SC-100B	02-Nov-05	3.63	3.75	5950
SC-100B	07-Dec-05	3.67	3.60	5840
TW-03D	18-Jan-06	4.72 LF	4.33	5090
TW-02D	18-Jan-06	1.98 LF	2.18	6930

**Notes:**

mg/L = concentration in milligrams per liter (mg/L)

LF = lab filtered

J = concentration or reporting limit estimated by laboratory or data validation.

(---) = data not collected.

Analytical results from inactive extraction wells are presented in Table B-2.

The analytical results after August 1, 2005 were obtained from a sample point (SC-100B) on the influent conveyance system at the IM3 treatment system.

**TABLE 4-1**

Predicted and Actual Monthly Average Davis Dam Discharge and Colorado River Elevation at I-3  
*Interim Measures Performance Monitoring*  
*PG&E Topock Compressor Station*

Month	Davis Dam Release			Colorado River Elevation at I-3		
	Projected (cfs)	Actual (cfs)	Difference (cfs)	Predicted (ft AMSL)	Actual (ft AMSL)	Difference (feet)
April 2004	17,400	17,354	-46	456.4	456.2	-0.2
May 2004	17,100	16,788	-312	456.3	456.3	-0.1
June 2004	15,800	16,869	1,069	455.8	456.6	0.7
July 2004	14,000	14,951	951	455.2	455.9	0.7
August 2004	12,100	12,000	-100	454.5	454.9	0.4
September 2004	11,200	10,979	-221	454.2	454.6	0.4
October 2004	8,600	7,538	-1,062	453.2	453.5	0.3
November 2004	9,500	8,075	-1,425	453.6	453.4	-0.2
December 2004	6,200	8,090	1,890	452.4	453.3	0.9
January 2005	8,800	4,900	-3,900	453.4	452.4	-1.0
February 2005	8,000	4,820	-3,180	453.1	452.6	-0.5
March 2005	15,600	7,110	-8,490	455.8	452.9	-2.9
April 2005	16,700	16,306	-394	455.9	456.0	0.1
May 2005	16,700	15,579	-1,121	456.2	456.1	-0.1
June 2005	14,600	15,223	623	455.8	456.1	0.3
July 2005	15,400	15,612	212	456.0	456.0	0.0
August 2005	11,700	11,544	-156	454.6	454.8	0.2
September 2005	12,400	12,335	-65	454.6	NA	NA
October 2005	12,300	11,201	-1,099	454.5	454.3	-0.2
November 2005	10,900	10,216	-684	454.3	454.3	0
December 2005	6,900	6,745	-155	452.8	452.7	-0.1
January 2006	8,400	9,166	766	453.0	453.6	0.6
February 2006	10,100	----	----	453.7	----	----

**NOTES:**

NA = I-3 transducer data unavailable for month of September 2005 due to damage by debris.

Projected Davis Dam releases, updated monthly, are reported by the US Department of Interior, Bureau of Reclamation at <http://www.usbr.gov/lc/region/g4000/24mo.pdf>; listed projections for April 2004 through July 2004 are from April 2004, and the remainder were from the beginning of each respective month.

Colorado River levels at I-3 are predicted from a linear regression between historical dam releases and measured river levels at I-3 (updated monthly).

cfs = cubic feet per second; ft AMSL = feet above mean sea level

**TABLE 4-2**

Average Hydraulic Gradients Measured at Well Pairs, January 2006

*Interim Measures Performance Monitoring**PG&E Topock Compressor Station*

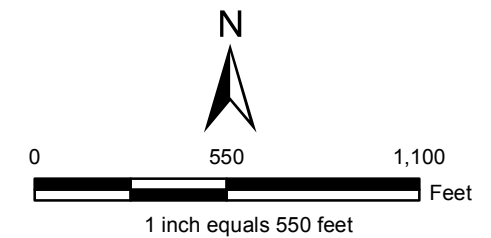
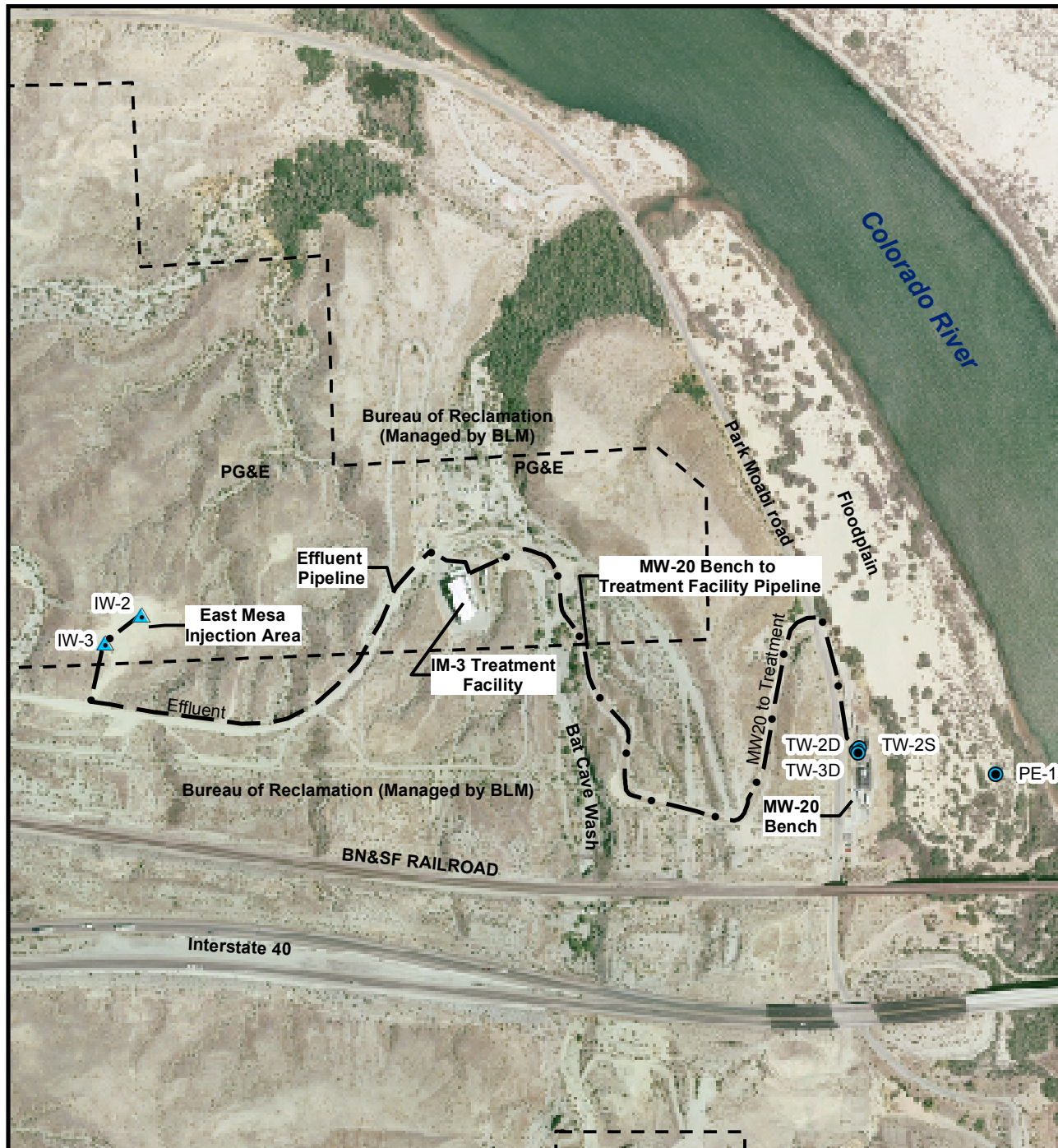
Well Pair	Mean Landward Hydraulic Gradient (feet/foot)	Measurement Dates 2006
Northern Gradient Pair MW-31-135 / MW-33-150	0.0024	January-1 through January-24
Central Gradient Pair MW-20-130 / MW-34-80	0.0043	January-1 through January-24
Southern Gradient Pair MW-20-130 / MW-42-65	0.0043	January-1 through January-24

**Notes:**

- 1) Refer to Figure 1-2 for location of well pairs
- 2) For IM pumping, the target landward gradient for the selected well pairs is 0.001 feet/foot
- 3) Commissioning of extraction well PE-1 began on 1/25/06, data for gradient calculations were not used after 1/24/06.

## Figures

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#### LEGEND



PG&E Property Line



Existing IM Extraction Well



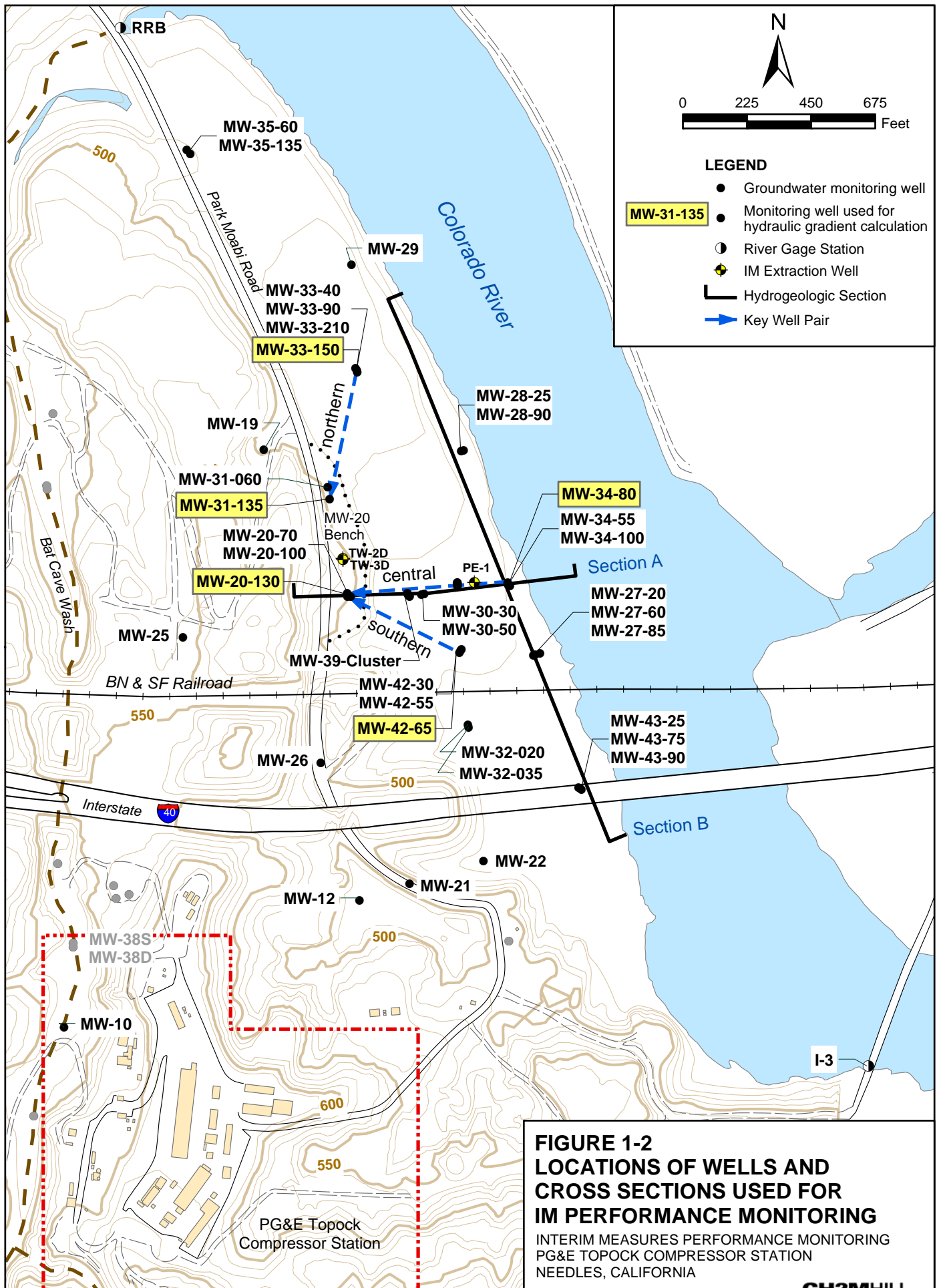
Existing IM Injection Well

**Notes:** Location map shows Interim Measures No.3 (IM-3) wells as of November 2005. Aerial photography taken May 2005.

### FIGURE 1-1 LOCATIONS OF IM-3 GROUNDWATER EXTRACTION, CONVEYANCE, AND TREATMENT FACILITIES

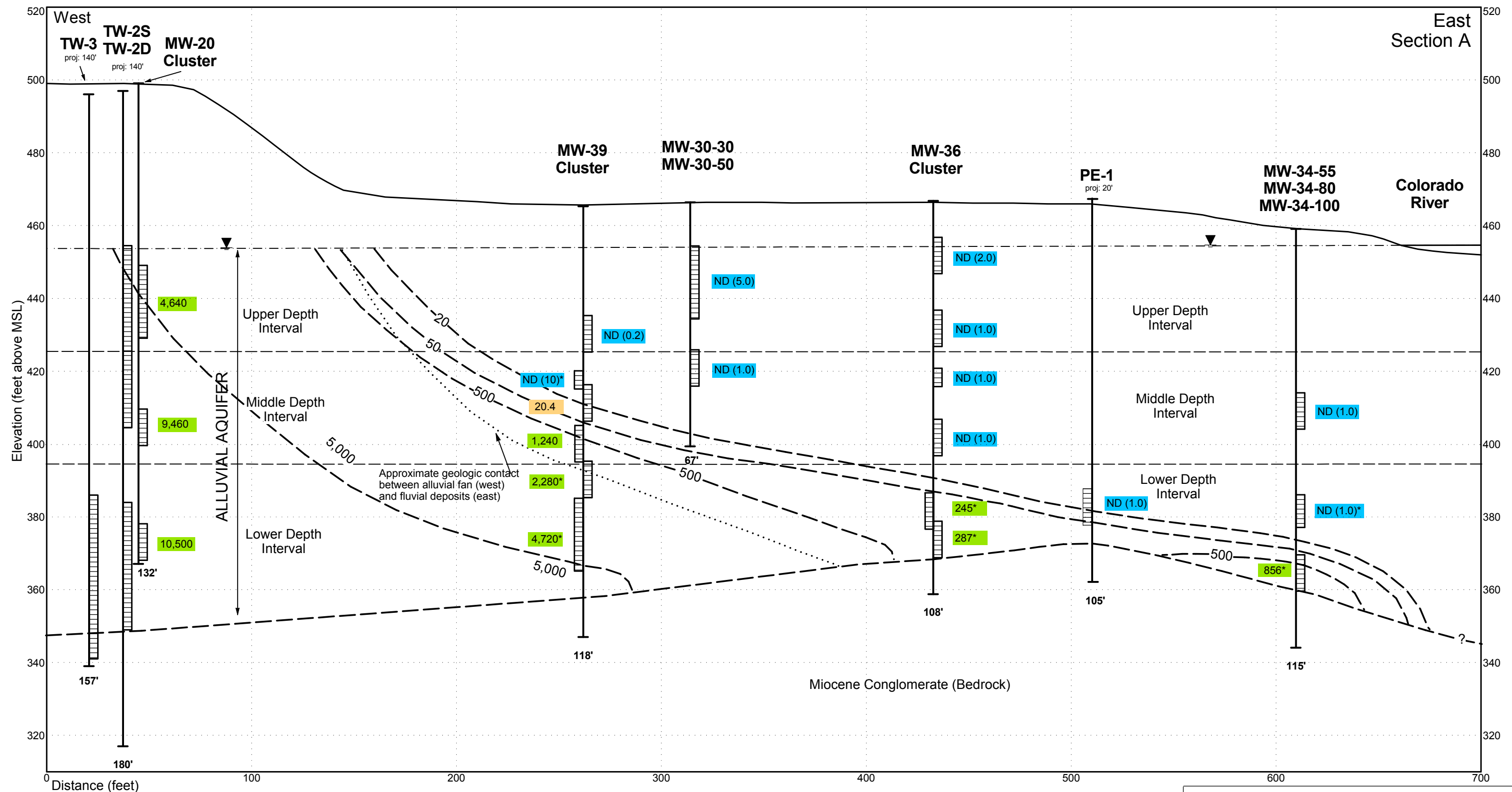
INTERIM MEASURES PERFORMANCE MONITORING  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

**CH2MHILL**

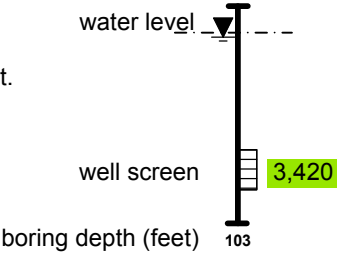








Notes:  
 Results marked \* are from the January 2006 monthly sampling event.  
 All other data is from the December 2005 quarterly sampling event.  
 See Tables B-1 and B-2 for data and dates of sampling.



--- 50 ---  
 Inferred Hexavalent Chromium concentration contour

Hexavalent Chromium concentration in micrograms per liter (ug/L) equivalent to parts per billion (ppb)

ND (1) Not detected at listed reporting limit (ppb)

42 Less than 50 ppb

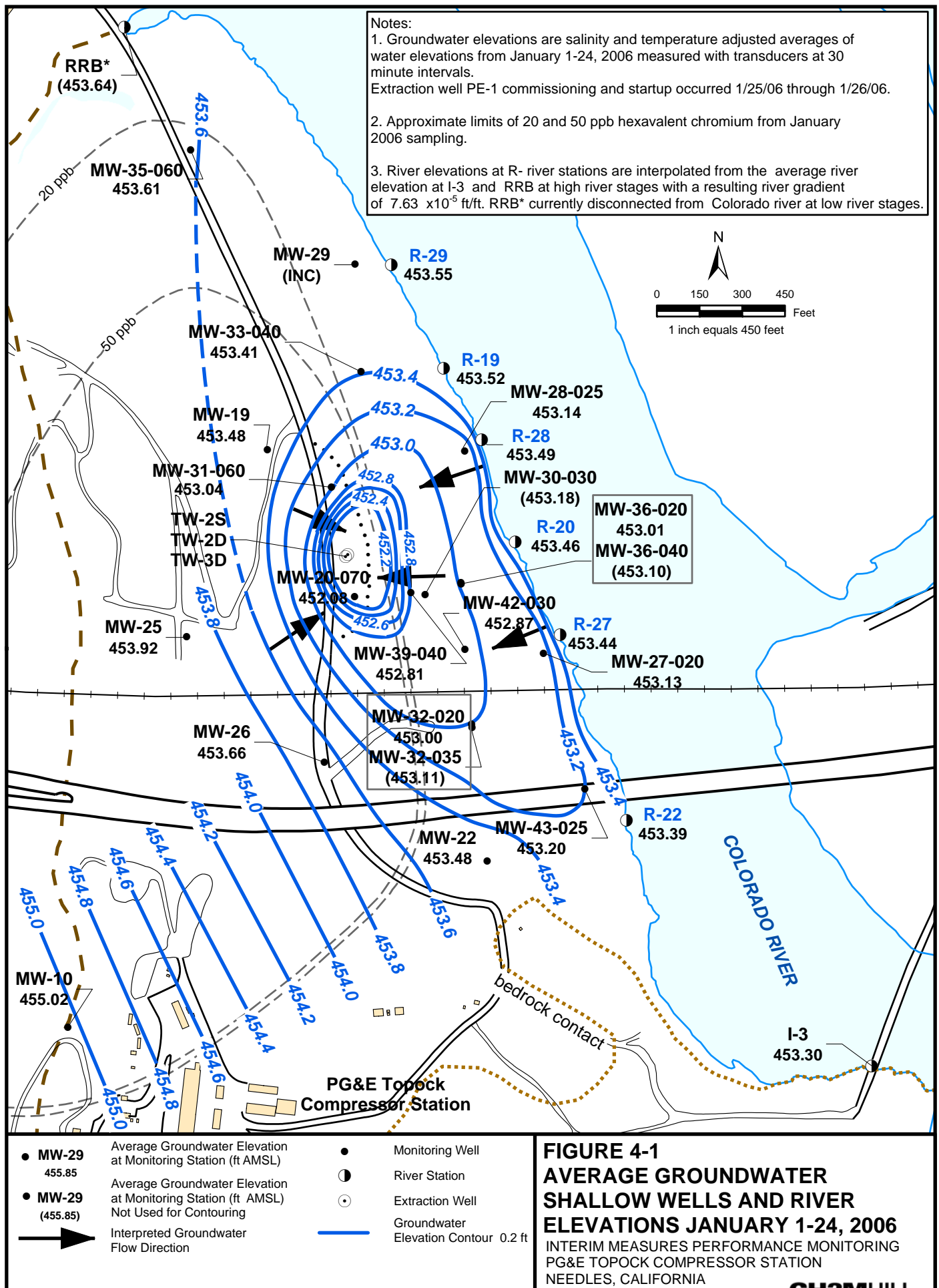
3,810 Greater than 50 ppb

**FIGURE 3-2  
 CR(VI) CONCENTRATIONS  
 FLOODPLAIN CROSS-SECTION A  
 JANUARY 2006**

INTERIM MEASURES PERFORMANCE MONITORING  
 PG&E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA





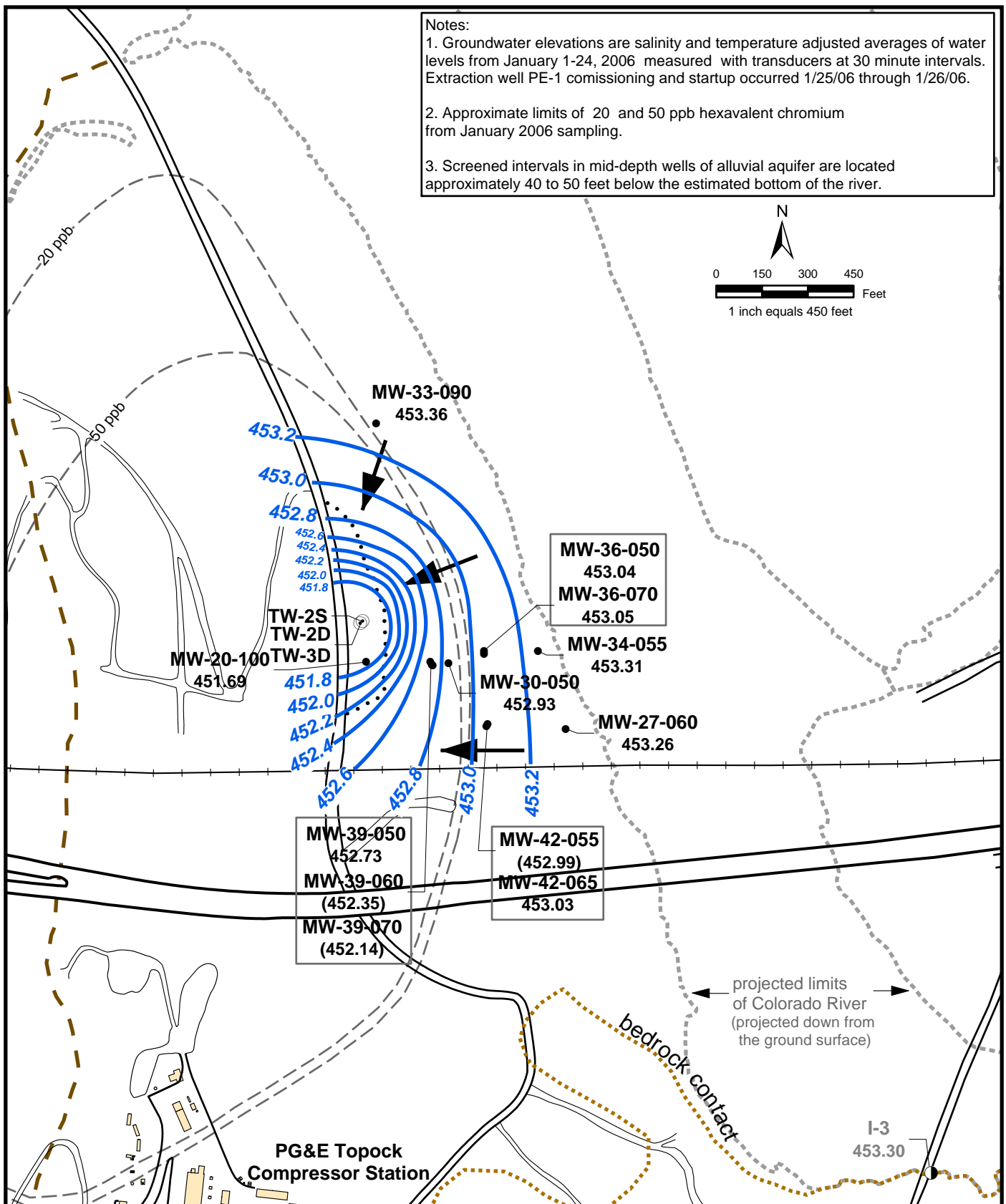
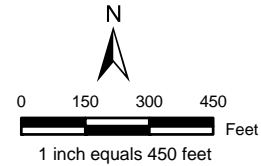


**Notes:**

1. Groundwater elevations are salinity and temperature adjusted averages of water levels from January 1-24, 2006 measured with transducers at 30 minute intervals. Extraction well PE-1 commissioning and startup occurred 1/25/06 through 1/26/06.

2. Approximate limits of 20 and 50 ppb hexavalent chromium from January 2006 sampling.

3. Screened intervals in mid-depth wells of alluvial aquifer are located approximately 40 to 50 feet below the estimated bottom of the river.



- MW-29 455.85 Average Groundwater Elevation at Monitoring Station (ft AMSL)
- MW-29 (455.85) Average Groundwater Elevation at Monitoring Station (ft AMSL) Not Used for Contouring

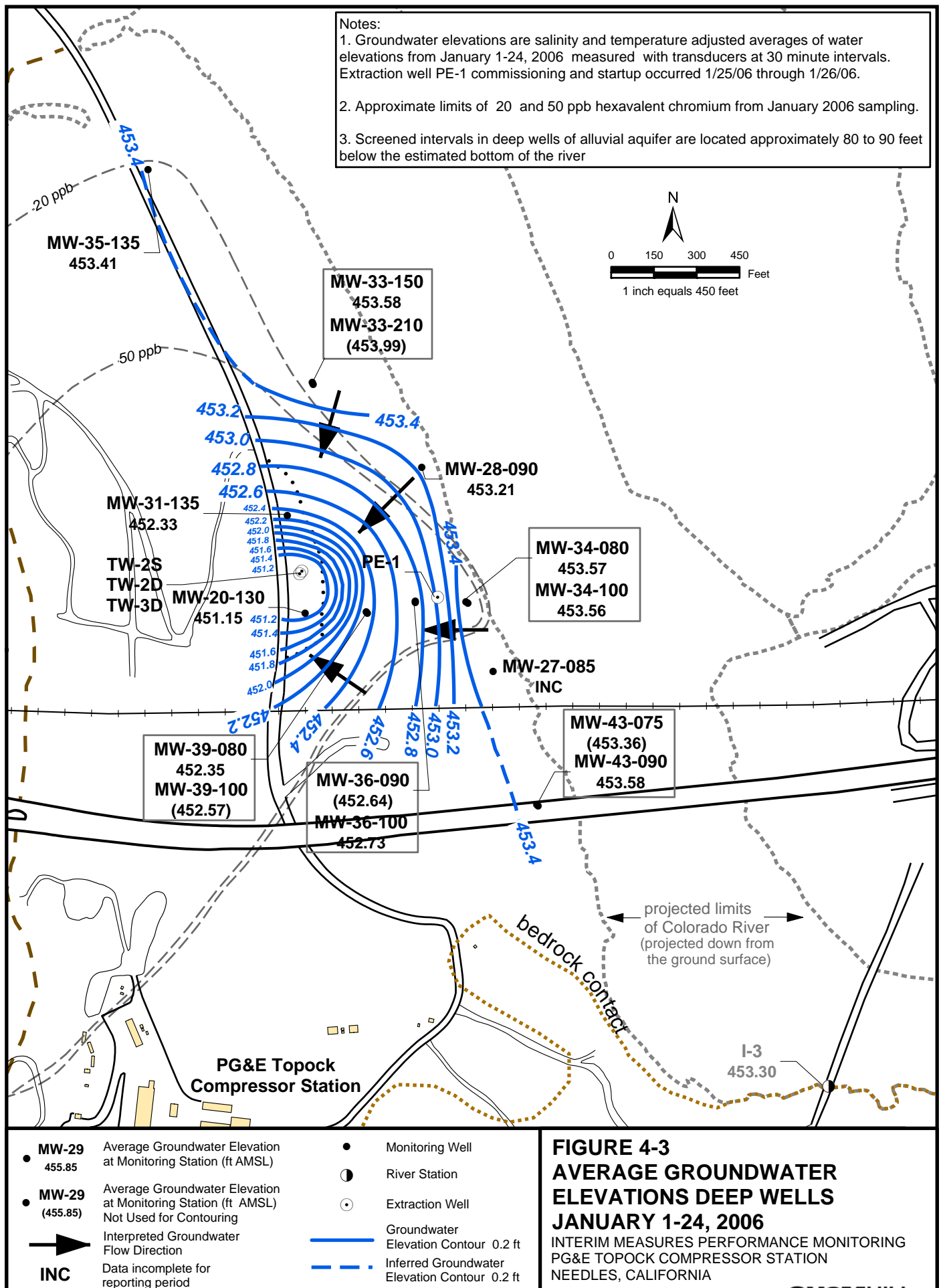
➔ Interpreted Groundwater Flow Direction

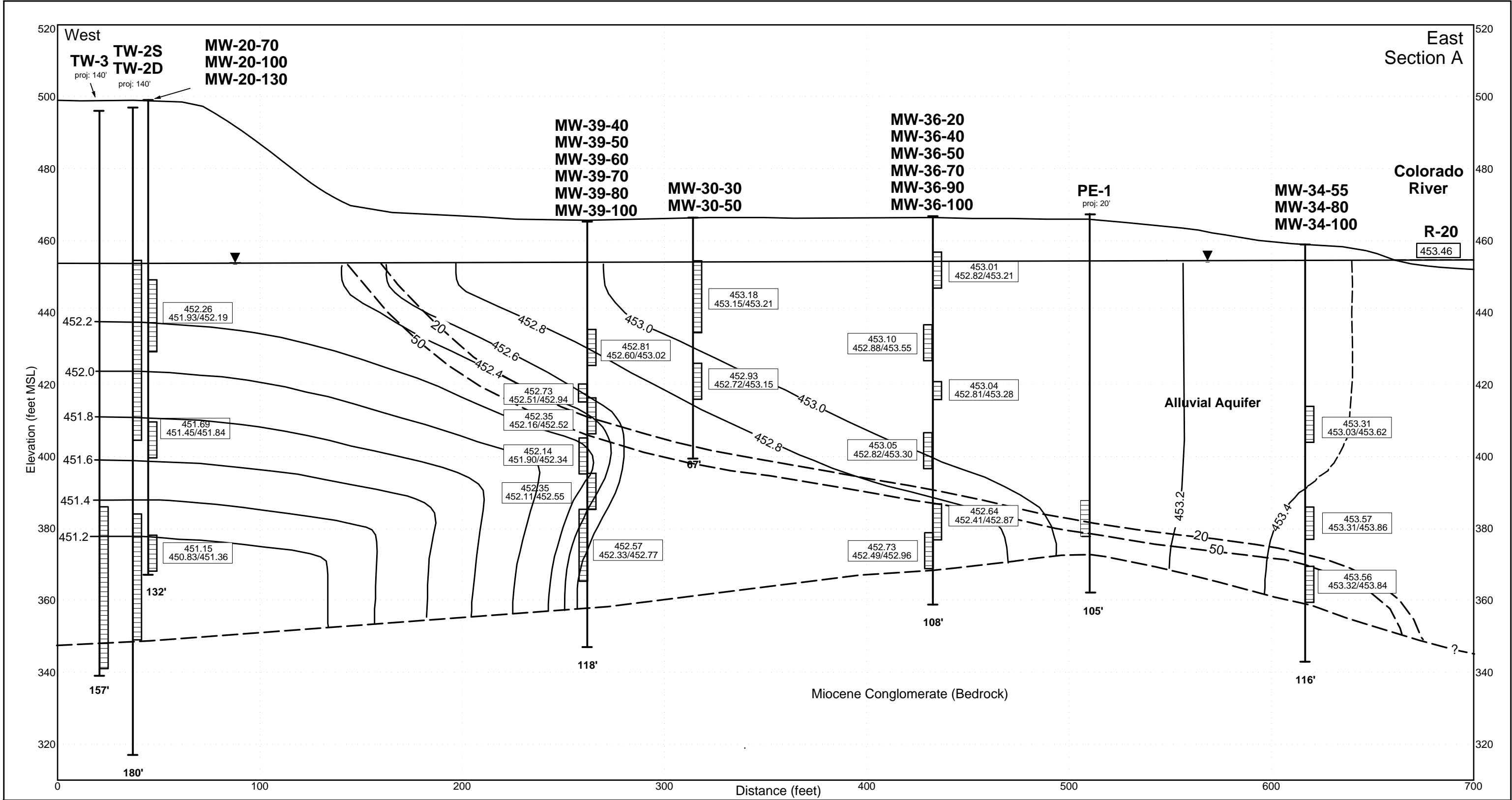
- Monitoring Well
- River Station
- Extraction Well
- Groundwater Elevation Contour 0.2 ft

## FIGURE 4-2 AVERAGE GROUNDWATER ELEVATIONS MID-DEPTH WELLS JANUARY 1-24, 2006

INTERIM MEASURES PERFORMANCE MONITORING  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

**CH2MHILL**

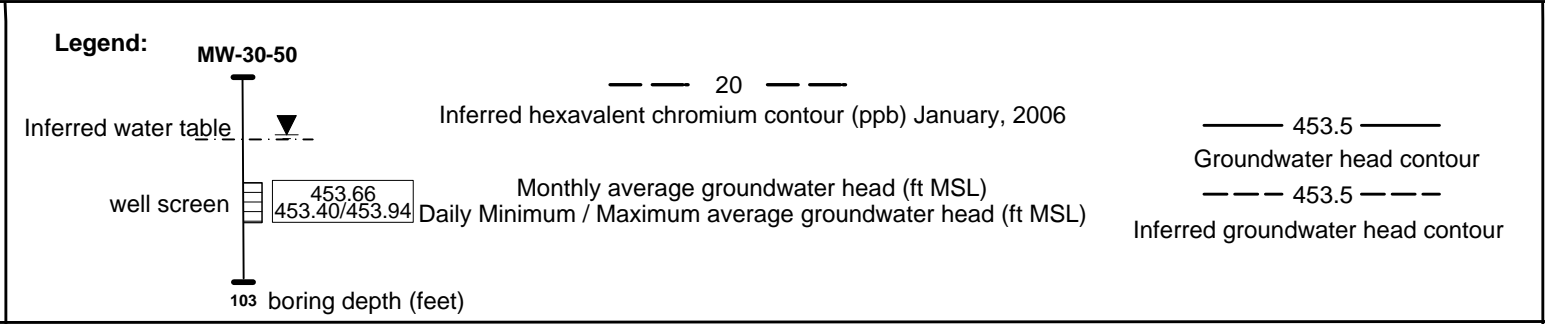




Notes:  
Results show average groundwater elevations for January 1-24, 2006 measured with transducers at 30 minute intervals. Groundwater elevations adjusted for salinity and temperature.

PE-1 commissioning and pumping began on 1/25/06.  
MW-39-40 missing data 1-1 through 1-4-2006.

River elevation (R-20) is the calculated monthly average river level based upon the river gradient between RRB and I-3.  
Data subject to review.



**FIGURE 4-4**  
**AVERAGE GROUNDWATER ELEVATIONS**  
**FLOODPLAIN CROSS-SECTION A**  
**JANUARY 1-24, 2006**

INTERIM MEASURES PERFORMANCE MONITORING  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

**CH2MHILL**

**Appendix A**  
**Extraction System Operations Log for January**  
**2006**

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## Appendix A

### Extraction System Operations Log for January 2006

#### PG&E Topock Interim Measures Performance Monitoring Program

During January 2006, the operational run time for the IM groundwater extraction system was approximately 93 percent. From January 1 through January 25, extraction wells TW-2D and TW-3D were operated at a target pump rate of at 135 gallons per minute (gpm). Commissioning of extraction well PE-1 began on January 25, 2006 at an initial pumping rate of approximately 37 gpm. Between January 25 and 31, 2006, extraction wells TW-3D and PE-1 were operated at the target pumping rate of 135 gpm, and well TW-2D was taken offline.

Periods of extraction system downtime (i.e. no extraction wells operating) during January 2006 are summarized below.

- **January 17, 2006:** A scheduled shutdown of the extraction well system was conducted to complete the PE-1 pipeline construction tie-ins to the IM-3 facility. Additional IM-3 maintenance was completed concurrent with the construction tie-ins. The extraction well system was shut down at 8:08 am. The extraction system was re-started at 8:00 pm, at reduced pumping rates. The pumping rate was increased to approximately 135 gpm by 8:30 am on January 18. Extraction system downtime was approximately 11 hours 52 minutes.
- **January 21 and 22, 2006:** The IM-3 extraction well system was shut-off at 12:26 am on Saturday, January 21. A hose ruptured during a clean-in-place of the spare microfilter modules, resulting in approximately 200 gallons of citric acid solution draining into the process drain tank (T-900), and being introduced back into the system. The citric acid affected the iron oxidation process and solids removal in the clarifier. The system operated in a re-circulation mode until plant conditions returned to normal. The extraction well system was re-started on Sunday, January 22, at a flow rate of 78 gpm at 12:31 pm and increased to 135 gpm at 7:05 pm. No non-compliant water was discharged into the injection wells during this event. Extraction system downtime was approximately 36 hours 5 minutes.

**Appendix B**  
**Chromium Sampling Results for Monitoring**  
**Wells in Floodplain Area**

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TABLE B-1

Groundwater Sampling Results for Floodplain Monitoring Wells, August 2005 through January 2006  
Interim Measures Performance Monitoring  
PG&E Topock Compressor Station

Sample Date		Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters			Groundwater and River Elevations at Sampling Time	
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm	Groundwater Elevation salinity-adjusted feet MSL	River Elevation Downstream I-3 Station
Shallow Wells								
MW-27-020	05-Oct-05	ND (0.21)	ND (1.0)	-158	1.8	1,170	454.7	454.4
	14-Dec-05	ND (0.2)	ND (1.0)	-171	2.2	1,120	453.2	452.5
MW-28-025	06-Oct-05	ND (0.2)	ND (1.0)	-35	2.0	1,300	454.9	454.6
	16-Dec-05	ND (0.2)	ND (1.0)	-69	2.5	1,390	453.3	453.1
MW-29	04-Oct-05	ND (0.2)	ND (1.0)	-110	3.2	5,240	455.1	452.9
	12-Dec-05	ND (0.2)	ND (1.0)	-40	5.5	4,280	454.0	453.1
MW-30-030	07-Oct-05	ND (0.2)	ND (1.0)	-146	2.5	45,000	453.7	454.2
	15-Dec-05	ND (5.0)	ND (1.0)	-100	3.0	38,900	453.6	452.2
MW-32-020	04-Oct-05	ND (2.0)	ND (1.0) J	-115	2.3	36,000	454.4	452.9
	16-Dec-05	ND (2.0)	ND (1.0)	-107	2.7	33,900	453.3	452.7
MW-32-035	04-Oct-05	ND (1.0)	ND (1.0)	-159	2.1	11,600	454.4	452.9
	16-Dec-05	ND (1.0)	ND (1.0)	-141	2.4	11,200	453.1	452.7
MW-33-040	07-Oct-05	0.68	ND (1.0)	---	---	---	454.9	454.1
	12-Dec-05	ND (1.0)	1.70	45	4.8	14,500	453.6	452.7
MW-36-020	03-Oct-05	ND (1.0)	ND (1.0)	-165	3.0	13,000	454.3	M
	15-Dec-05	ND (2.0)	ND (1.0)	-112	2.4	---	452.7	452.3
MW-36-040	03-Oct-05	ND (1.0)	ND (1.0)	-162	3.8	10,800	454.6	M
	15-Dec-05	ND (1.0)	ND (1.0)	-190	2.7	15,400	452.7	452.5
MW-39-040	04-Oct-05	ND (0.2)	ND (1.0)	-203	2.9	5,640	454.5	452.9
	16-Dec-05	ND (0.2)	ND (1.0)	-177	2.1	5,680	452.7	453.1
MW-42-030	07-Oct-05	ND (1.0)	ND (1.0)	-139	2.9	16,700	454.6	454.7
	15-Dec-05	ND (1.0)	ND (1.0)	-129	2.4	14,500	452.6	452.3
MW-43-025	04-Oct-05	ND (0.2)	ND (1.0)	-159	2.0	1,220	454.6	452.9
	16-Dec-05	ND (0.2)	ND (1.0)	-184	2.5	1,420	453.0	452.7
Middle-Depth Wells								
MW-27-060	05-Oct-05	ND (1.0)	ND (1.0)	-97	3.2	13,200	454.9	454.6
	15-Dec-05	ND (1.0)	ND (1.0)	-134	2.9	10,000	452.8	452.4
MW-30-050	07-Oct-05	ND (1.0)	ND (1.0)	-236	2.8	12,300	454.5	454.3
	16-Dec-05	ND (1.0)	ND (1.0)	-263	2.5	8,840	453.1	453.0
MW-33-090	06-Oct-05	15.5	13.0	-33	1.9	9,210	454.7	454.0
	13-Dec-05	16.4	21.8 J	-43	2.3	9,310	453.7	452.9
	13-Dec-05 FD	16.5	14.0 J	FD	FD	FD	FD	FD
MW-34-055	05-Oct-05	ND (1.0)	ND (1.0)	-93	1.7	8,610	454.2	453.5
	14-Dec-05	ND (1.0)	ND (1.0)	-124	2.1	6,610	453.2	452.7
MW-36-050	03-Oct-05	ND (1.0)	ND (1.0)	-133	2.9	7,500	454.6	M
	15-Dec-05	ND (1.0)	ND (1.0)	-136	2.8	13,700	452.6	452.5
MW-36-070	03-Oct-05	ND (1.0)	ND (1.0)	-112	2.5	7,680	454.5	M
	15-Dec-05	ND (1.0)	ND (1.0)	-108	2.3	9,310	452.7	452.3
MW-39-050	04-Oct-05	ND (10)	4.70	-78	2.6	13,600	454.2	452.9
	12-Jan-06	ND (10)	ND (1.0)	-9	2.8	18,300	453.0	453.9

Refer to table footnotes for data qualifier explanation.

TABLE B-1

Groundwater Sampling Results for Floodplain Monitoring Wells, August 2005 through January 2006  
Interim Measures Performance Monitoring  
PG&E Topock Compressor Station

Sample Date		Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters			Groundwater and River Elevations at Sampling Time	
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm	Groundwater Elevation salinity-adjusted feet MSL	River Elevation Downstream I-3 Station
Middle-Depth Wells								
MW-39-060	04-Oct-05	72.3	79.6 J	-20	2.2	14,100	454.0	452.9
	16-Dec-05	20.4	20.4	-40	2.3	11,200	452.7	453.2
MW-39-070	04-Oct-05	840	754	31	2.7	13,800	454.0	452.9
	16-Dec-05	1240	1080	22	2.2	10,000	452.4	453.0
MW-42-055	07-Oct-05	ND (1.0)	ND (1.0)	-126	5.6	18,100	454.8	454.7
	15-Dec-05	ND (1.0)	ND (1.0)	-143	2.4	11,100	452.8	452.3
MW-42-065	07-Oct-05	ND (1.0)	ND (1.0)	-121	2.8	17,300	454.9	455.0
	15-Dec-05	ND (1.0)	ND (1.0)	-78	2.5	13,200	452.9	452.3
Deep Wells								
MW-27-085	16-Aug-05	ND (1.0)	ND (2.6)	-156	1.3	13,700	455.5	455.8
	08-Sep-05	ND (1.0)	ND (1.0)	-158	1.7	20,500	455.3	M
	05-Oct-05	ND (1.0)	ND (1.0)	-82	2.1	18,100	454.8	454.5
	03-Nov-05	ND (2.0) J	ND (1.0)	-150	1.1	23,100	454.5	454.2
	15-Dec-05	1.20 J	6.60	-124	2.8	14,300	452.9	452.5
	12-Jan-06	ND (1.0)	ND (1.0)	-91	2.8	22,600	453.4	453.3
MW-28-090	18-Aug-05	ND (1.0)	1.10	-178	1.1	9,740	455.9	455.9
	09-Sep-05	ND (1.0)	ND (1.0)	-190	1.7	8,190	455.6	M
	06-Oct-05	ND (1.0)	ND (1.0)	-138	2.0	9,070	454.9	454.7
	02-Nov-05	ND (1.0)	ND (1.0)	-183	1.4	9,720	454.0	453.7
	16-Dec-05	ND (1.0)	ND (1.0)	-176	2.5	8,430	453.3	453.2
	10-Jan-06	ND (1.0)	ND (1.0)	-140	3.3	11,000	453.6	453.8
MW-33-150	17-Aug-05	4.00	6.10	-72	1.3	17,000	455.6	455.3
	09-Sep-05	3.90	2.80	-108	1.7	17,000	455.7	M
	06-Oct-05	4.50	3.90	-41	2.0	15,800	454.6	453.5
	06-Oct-05 FD	5.30	4.90	FD	FD	FD	FD	FD
	02-Nov-05	5.50	4.70	-81	1.4	20,800	454.4	453.7
	12-Dec-05	6.60	5.70	21	3.9	19,200	453.7	452.8
	10-Jan-06	6.40	5.00	27	3.7	21,800	453.7	453.6
MW-33-210	17-Aug-05	2.50	8.00	-88	1.2	19,900	456.0	455.5
	06-Sep-05	3.50	2.90	-109	1.7	22,600	455.7	M
	06-Oct-05	4.00	4.20	-30	1.8	18,800	454.8	453.7
	02-Nov-05	6.50	5.40	-73	1.4	24,900	454.7	453.8
	12-Dec-05	6.90	5.60	40	3.6	21,900	454.1	452.9
	10-Jan-06	7.60	5.20	13	3.2	24,200	454.0	453.3
MW-34-080	15-Aug-05	ND (1.0)	2.40	-137	1.5	14,600	455.4	454.7
	07-Sep-05	ND (1.0)	ND (1.0)	-148	1.5	17,100	455.9	M
	05-Oct-05	ND (1.0)	ND (1.0)	-58	2.2	13,800	454.4	453.1
	03-Nov-05	ND (1.0)	ND (1.0)	-117	1.1	16,300	454.9	454.4
	14-Dec-05	ND (1.0)	ND (1.0)	-88	2.3	10,400	453.6	453.2
	11-Jan-06	ND (1.0)	ND (1.0)	-38	3.1	18,100	453.7	453.3
MW-34-100	10-Aug-05	574	589	-83	1.4	19,700	455.7	455.5
	10-Aug-05 FD	571	597	FD	FD	FD	FD	FD

Refer to table footnotes for data qualifier explanation.

TABLE B-1

Groundwater Sampling Results for Floodplain Monitoring Wells, August 2005 through January 2006  
Interim Measures Performance Monitoring  
PG&E Topock Compressor Station

Sample Date		Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters			Groundwater and River Elevations at Sampling Time	
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm	Groundwater Elevation salinity-adjusted feet MSL	River Elevation Downstream I-3 Station
Deep Wells								
MW-34-100	15-Aug-05	633	660	-17	1.2	16,600	455.3	455.0
	31-Aug-05	649	693	-42	1.9	16,900	455.7	455.4
	31-Aug-05 FD	658	604	FD	FD	FD	FD	FD
	07-Sep-05	673	868	-60	1.5	19,500	455.5	M
	20-Sep-05	675	891	-28	2.0	14,000	455.9	M
	05-Oct-05	732	732	-13	1.9	15,900	454.6	453.7
	05-Oct-05 FD	708	703	FD	FD	FD	FD	FD
	25-Oct-05	752	628	-29	1.4	20,100	454.2	453.7
	25-Oct-05 FD	752	650	FD	FD	FD	FD	FD
	03-Nov-05	748 J	897	-49	1.1	19,900	454.8	454.3
	16-Nov-05	759	762	-2	4.6	16,100	---	M
	16-Nov-05 FD	763	725	FD	FD	FD	FD	FD
	30-Nov-05	791	797	-55	2.6	19,900	454.3	453.8
	30-Nov-05 FD	802	721	FD	FD	FD	FD	FD
	14-Dec-05	808	751	-26	2.3	12,400	453.3	452.6
	14-Dec-05 FD	811	791	FD	FD	FD	FD	FD
	28-Dec-05	804	824	-28	2.4	19,300	452.7	452.3
	12-Jan-06	837	771	104	3.2	21,000	453.9	454.0
	12-Jan-06 FD	856	764	FD	FD	FD	FD	FD
23-Jan-06	822	716	136	2.6	23,300	454.0	453.8	
MW-36-090	17-Aug-05	346	336	152	1.3	16,600	455.3	455.7
	08-Sep-05	267	301	49	1.6	17,500	455.3	M
	03-Oct-05	302	286	174	3.4	12,700	460.7	M
	02-Nov-05	256	247	69	1.4	19,300	453.8	453.9
	15-Dec-05	240	219	34	2.5	18,000	452.5	452.4
	12-Jan-06	245	223	13	2.8	19,500	452.8	453.4
MW-36-100	15-Aug-05	391	410	-15	1.6	16,800	455.2	454.6
	15-Aug-05 FD	390	392	FD	FD	FD	FD	FD
	08-Sep-05	396 J	380	21	1.7	18,300	455.4	M
	08-Sep-05 FD	397	454	FD	FD	FD	FD	FD
	05-Oct-05	383	370	4	2.8	16,500	454.7	454.2
	03-Nov-05	315	368	-19	1.3	21,100	454.6	454.0
	13-Dec-05	306	333	5	2.2	16,500	453.0	452.8
	12-Jan-06	287	288	28	2.9	21,600	452.8	453.3
MW-39-080	17-Aug-05	2370	2460	164	1.3	15,600	454.9	455.8
	06-Sep-05	2990	4880	149	2.0	17,700	454.8	M
	04-Oct-05	3000	2770	76	2.7	15,900	454.0	452.9
	02-Nov-05	3200	3020	148	1.4	17,600	453.7	454.2
	15-Dec-05	2740	2570	78	2.2	15,400	452.5	452.2
	12-Jan-06	2280	2060	58	2.9	18,200	452.4	453.7
MW-39-100	17-Aug-05	4230	4050	170	1.5	18,600	455.3	455.9
	06-Sep-05	4540	6480	134	2.2	21,000	455.1	M
	04-Oct-05	4010	3950	73	2.3	15,900	453.7	452.9
	02-Nov-05	3580	3480	168	1.7	23,000	453.9	454.4

Refer to table footnotes for data qualifier explanation.

TABLE B-1

Groundwater Sampling Results for Floodplain Monitoring Wells, August 2005 through January 2006  
Interim Measures Performance Monitoring  
PG&E Topock Compressor Station

Sample Date		Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters			Groundwater and River Elevations at Sampling Time	
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm	Groundwater Elevation salinity-adjusted feet MSL	River Elevation Downstream I-3 Station
Deep Wells								
MW-39-100	02-Nov-05 FD	3650	3410	FD	FD	FD	FD	FD
	13-Dec-05	3640	3440	139	3.0	20,100	452.9	452.8
	12-Jan-06	4720	4280	121	3.6	22,900	452.6	453.7
MW-43-075	16-Aug-05	ND (1.0)	5.40	-168	1.3	13,800	455.6	455.5
	08-Sep-05	ND (1.0)	ND (1.0)	-176	1.7	16,400	455.0	M
	04-Oct-05	ND (1.0)	ND (1.0) J	-126	2.3	12,900	454.8	452.9
	03-Nov-05	ND (2.0)	ND (1.0)	-168	1.4	16,700	454.3	453.9
	16-Dec-05	ND (1.0)	ND (1.0)	-179	2.4	15,900	453.1	452.7
	11-Jan-06	ND (1.0)	ND (1.0)	-134	3.2	18,400	453.7	453.7
MW-43-090	16-Aug-05	ND (2.0)	ND (5.2)	-136	1.3	19,400	455.7	455.3
	08-Sep-05	ND (1.0)	ND (1.0)	-152	1.7	23,100	455.3	M
	04-Oct-05	ND (1.0)	ND (1.0)	-78	4.8	18,400	454.9	452.9
	03-Nov-05	ND (2.0)	ND (1.0)	-127	1.1	27,700	454.3	453.8
	16-Dec-05	ND (1.0)	ND (1.0)	-127	2.5	22,300	453.2	452.7
	11-Jan-06	ND (1.0)	ND (1.0)	-89	3.3	26,500	454.1	453.8

**NOTES:**

ND = not detected at listed reporting limit (RL)

FD = field duplicate

J = concentration or RL estimated by laboratory or data validation

T = data from the downhole transducers to fill groundwater elevation data gaps at some locations

MSL = mean sea level

(---) = data not collected, available, rejected, or field instrumentation malfunctioned

µg/L = micrograms per liter

mV = oxidation-reduction potential (ORP)

µS/cm = microSiemens per centimeter

M = I-3 Transducer damaged

Beginning in July 2005, samples analyzed for total chromium by EPA Method 6010B or 6020 were filtered and preserved in the field after sample collection, as per DTSC's June 30, 2005 letter.

The RLs for certain hexavalent chromium results from Method 7199 analyses have been elevated above the standard RL of 0.2 µg/L due to required sample dilution to accommodate matrix interferences.

Groundwater and river elevations in feet above mean sea level (MSL) rounded to 0.1 foot. River elevations from pressure transducer record at I-3.

TABLE B-2

Groundwater Sampling Results for Other Monitoring Wells in PMP Area, August 2005 through January 2006  
Interim Measures Performance Monitoring  
PG&E Topock Compressor Station

Well ID	Sample Date	Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters		
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm
Shallow Wells						
MW-12	16-Sep-05	698	618	---	6.58	3290
	04-Oct-05	660	644	55.0	6.13	3040
	04-Oct-05 FD	670	613	FD	FD	FD
	13-Dec-05	626	602	97.0	6.99	3260
MW-19	04-Oct-05	1060	996	30.0	6.87	2150
	12-Dec-05	1240	1270	153	7.68	2140
MW-20-070	11-Oct-05	6060	5930	151	6.90	3330
	15-Dec-05	4640	4310	149	7.97	3210
MW-21	05-Oct-05	ND (1.0) J	ND (1.0) J	-149	2.42	11400
	14-Dec-05	ND (1.0)	ND (1.0)	-90	5.35	12100
MW-22	04-Oct-05	ND (2.0)	ND (1.0) J	-86	2.51	35500
	16-Dec-05	ND (2.0)	ND (1.0)	-90	2.31	31200
MW-24A	03-Oct-05	3120	2930	157	3.26	3040
	03-Oct-05 FD	3040	2630	FD	FD	FD
MW-26	04-Oct-05	3040	2990	45.0	8.79	3380
	12-Dec-05	3220	3160	161	9.93	3440
MW-31-060	06-Oct-05	1430	1470	54.0	6.36	2990
	13-Dec-05	1300	1250	119	6.75	2870
MW-35-060	07-Oct-05	32.5	28.0	-1.0	1.90	7560
	07-Oct-05 FD	35.1 J	32.0	FD	FD	FD
	14-Dec-05	32.5	32.5	95.0	3.97	5800
	14-Dec-05 FD	33.3	28.6	FD	FD	FD
TW-02S	07-Oct-05	3360	3340	204	8.57	3320
Middle-Depth Wells						
MW-20-100	11-Oct-05	10200	9430	157	1.54	4140
	15-Dec-05	9460	9010	140	3.03	3980
Deep Wells						
MW-20-130	07-Oct-05	9590	10700	53.0	2.46	12300
	16-Dec-05	10500	9340	123	3.32	11700
MW-24B	03-Oct-05	5240	4930	153	3.19	14000
MW-31-135	06-Oct-05	271	251	-4.0	2.02	10100
	14-Dec-05	221	198	124	4.13	7980
MW-35-135	07-Oct-05	21.2	17.8	-55	1.29	10800
	14-Dec-05	25.7	22.8	38.0	3.17	8480
PE-01	03-Oct-05	ND (1.0)	ND (1.0)	-202	0.77	11600
	13-Dec-05	ND (1.0)	---	-148	2.19	12400

TABLE B-2

Groundwater Sampling Results for Other Monitoring Wells in PMP Area, August 2005 through January 2006  
Interim Measures Performance Monitoring  
PG&E Topock Compressor Station

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**NOTES:**

Analytical results are validated.

ND = not detected at listed reporting limit (RL)

FD = field duplicate

J = concentration or RL estimated by laboratory or data validation

(---) = data not collected, available, or field instrumentation malfunctioned

µg/L = micrograms per liter

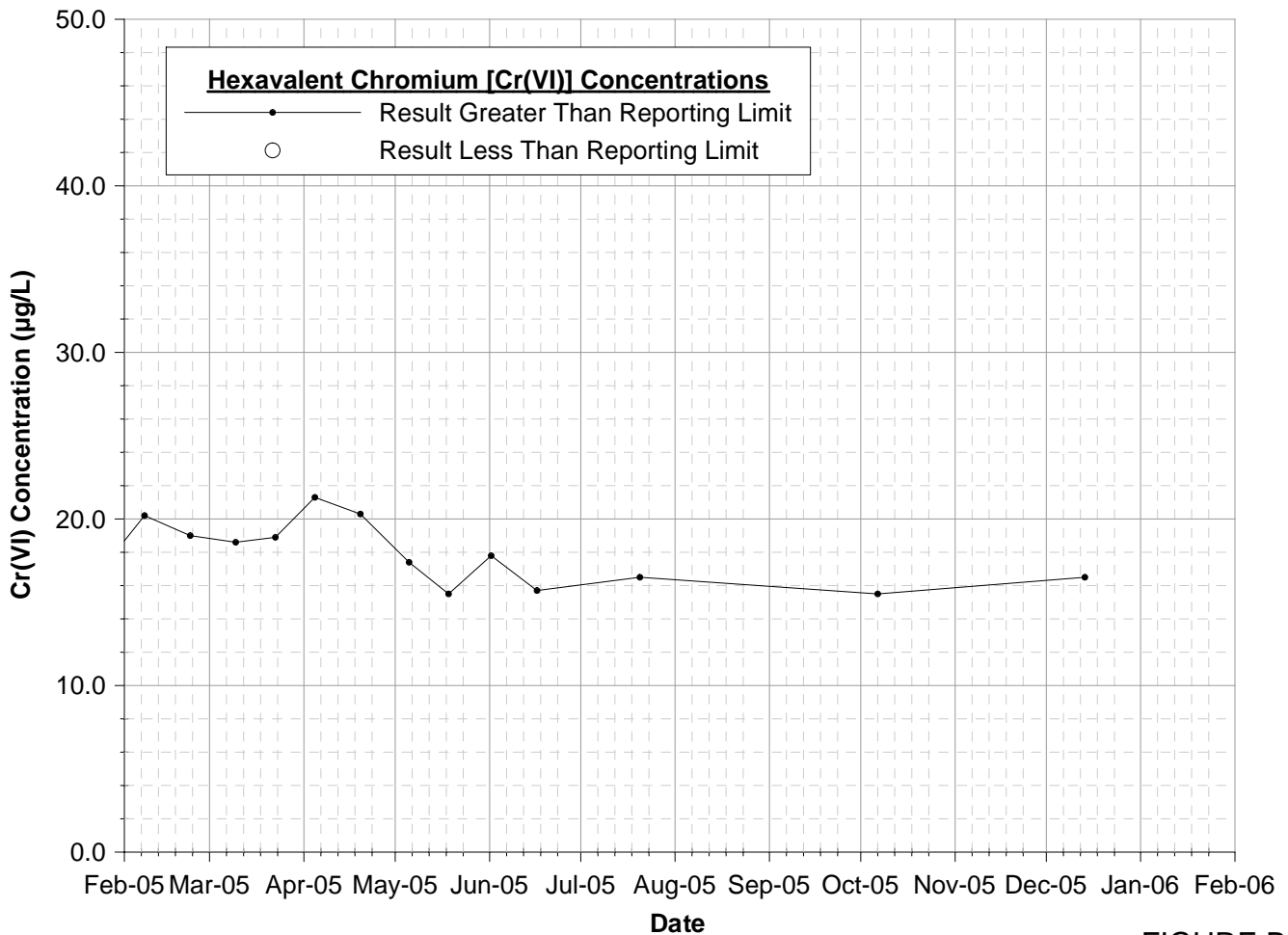
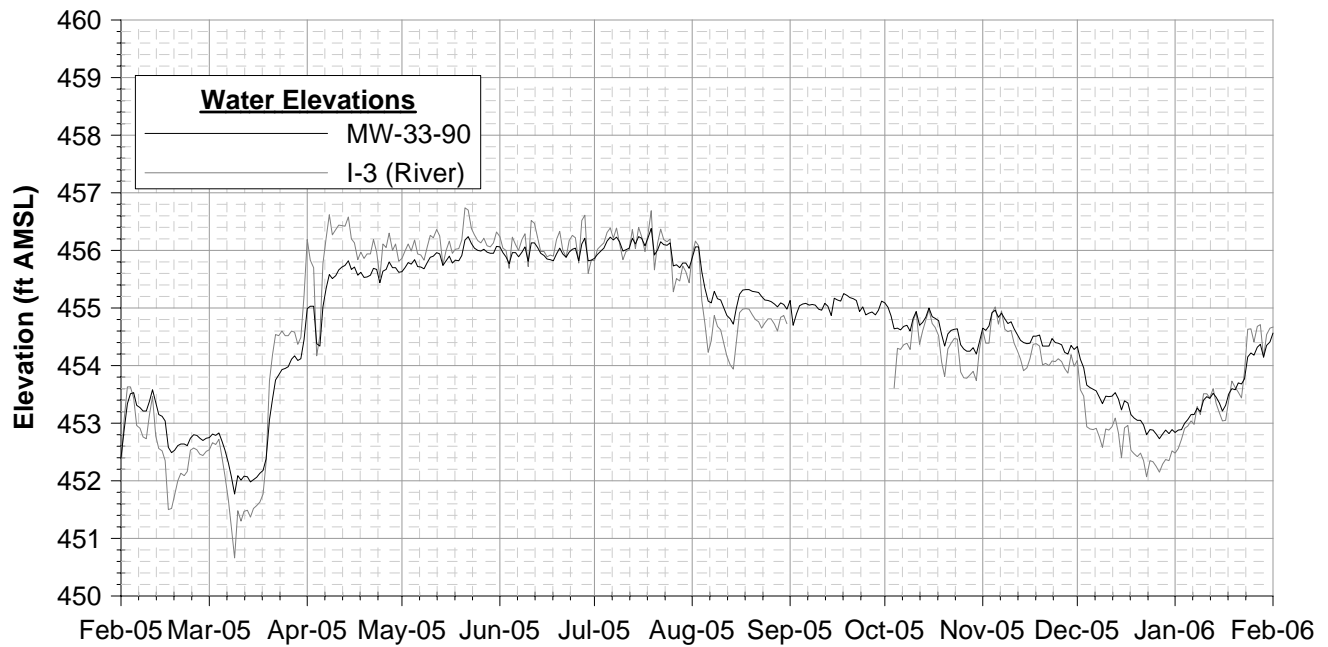
mg/L = milligrams per liter

mV = oxidation-reduction potential (ORP)

µS/cm = microSiemens per centimeter

PMP = Interim Measure Performance Monitoring Program

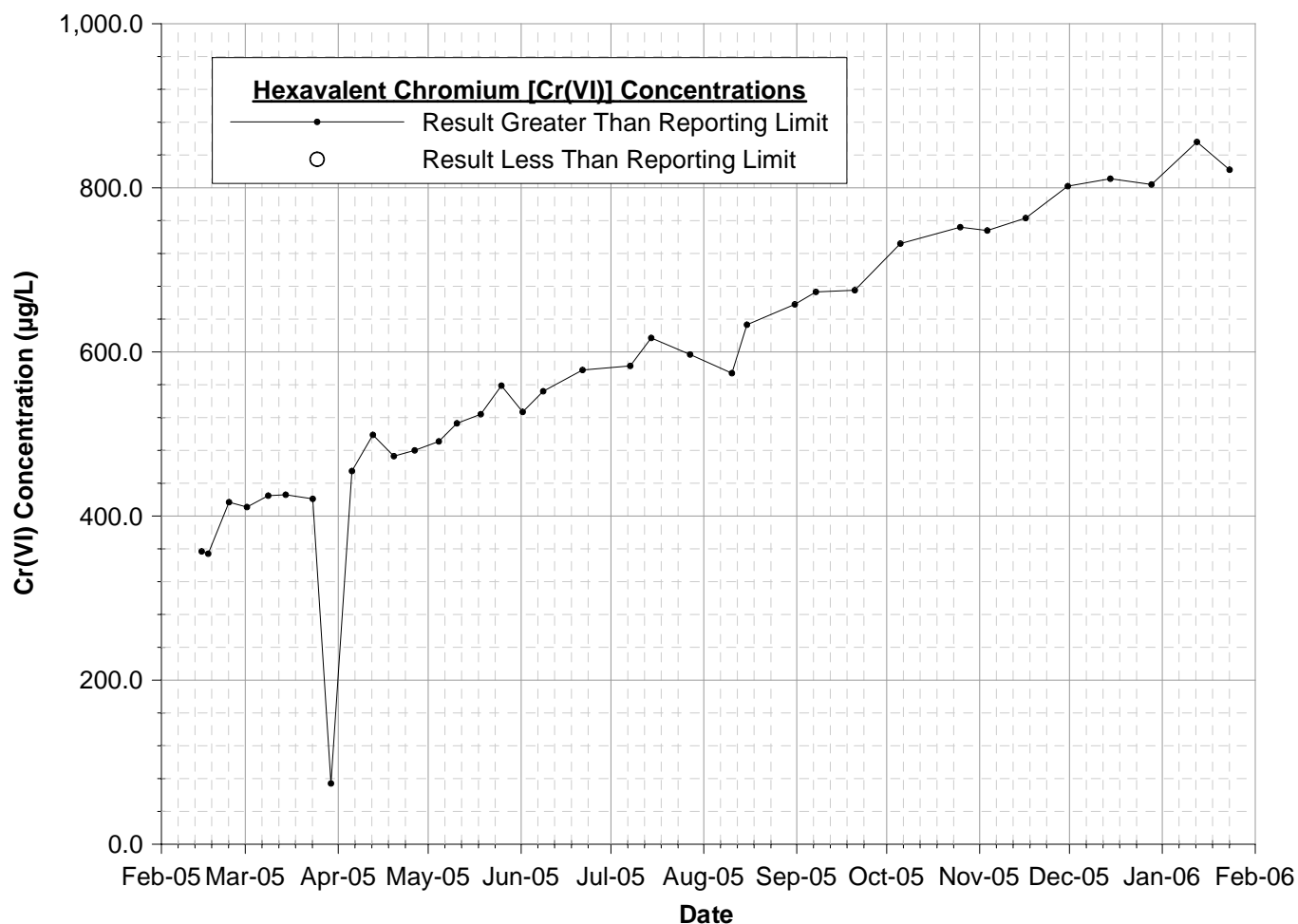
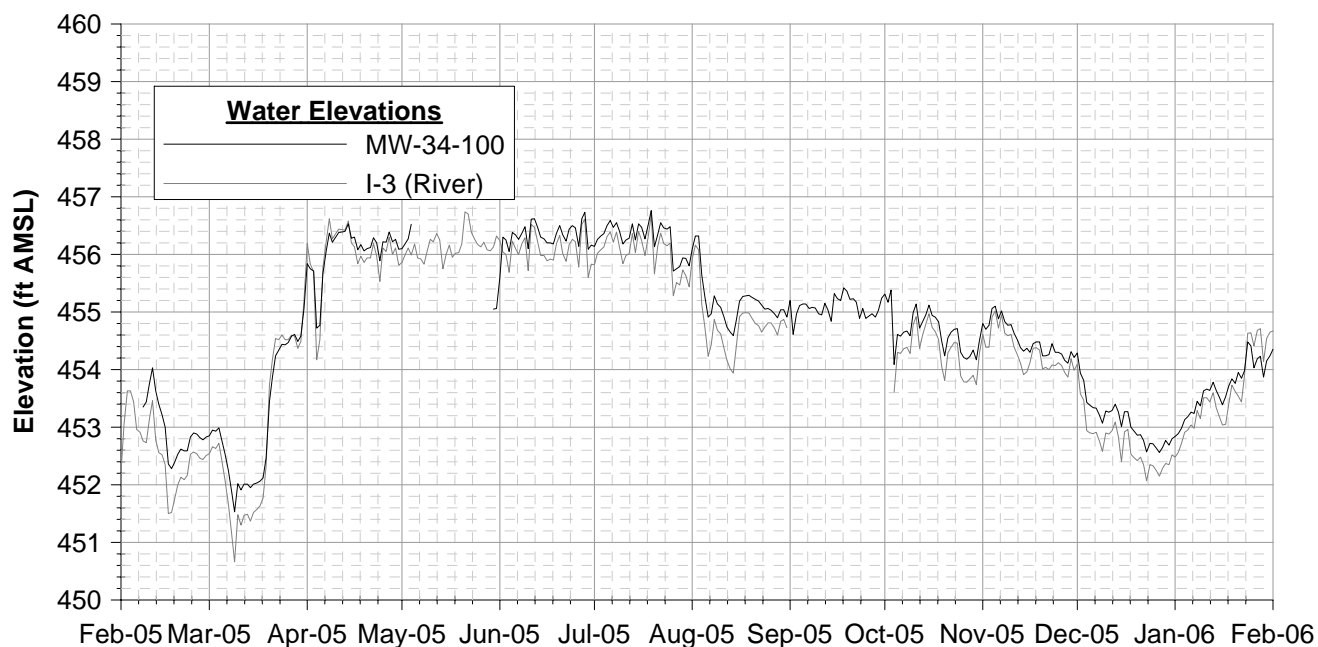
Samples analyzed for total chromium by EPA Method 6010B or 6020 were filtered and preserved in the field after sample collection, as per DTSC's June 30, 2005 letter.



**FIGURE B-1**  
**MW-33-90 CR(VI) CONCENTRATION &**  
**HYDROGRAPH - THROUGH 12/13/05**  
 INTERIM MEASURES PERFORMANCE MONITORING  
 PG&E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA

**Notes**

1. Chromium results in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
2. Data subject to review.
3. Results plotted are maximum concentrations from primary and duplicate samples; see Table B-1 for complete results.
4. I-3 data unavailable 9/1/05 through 10/4/05 due to river damage.

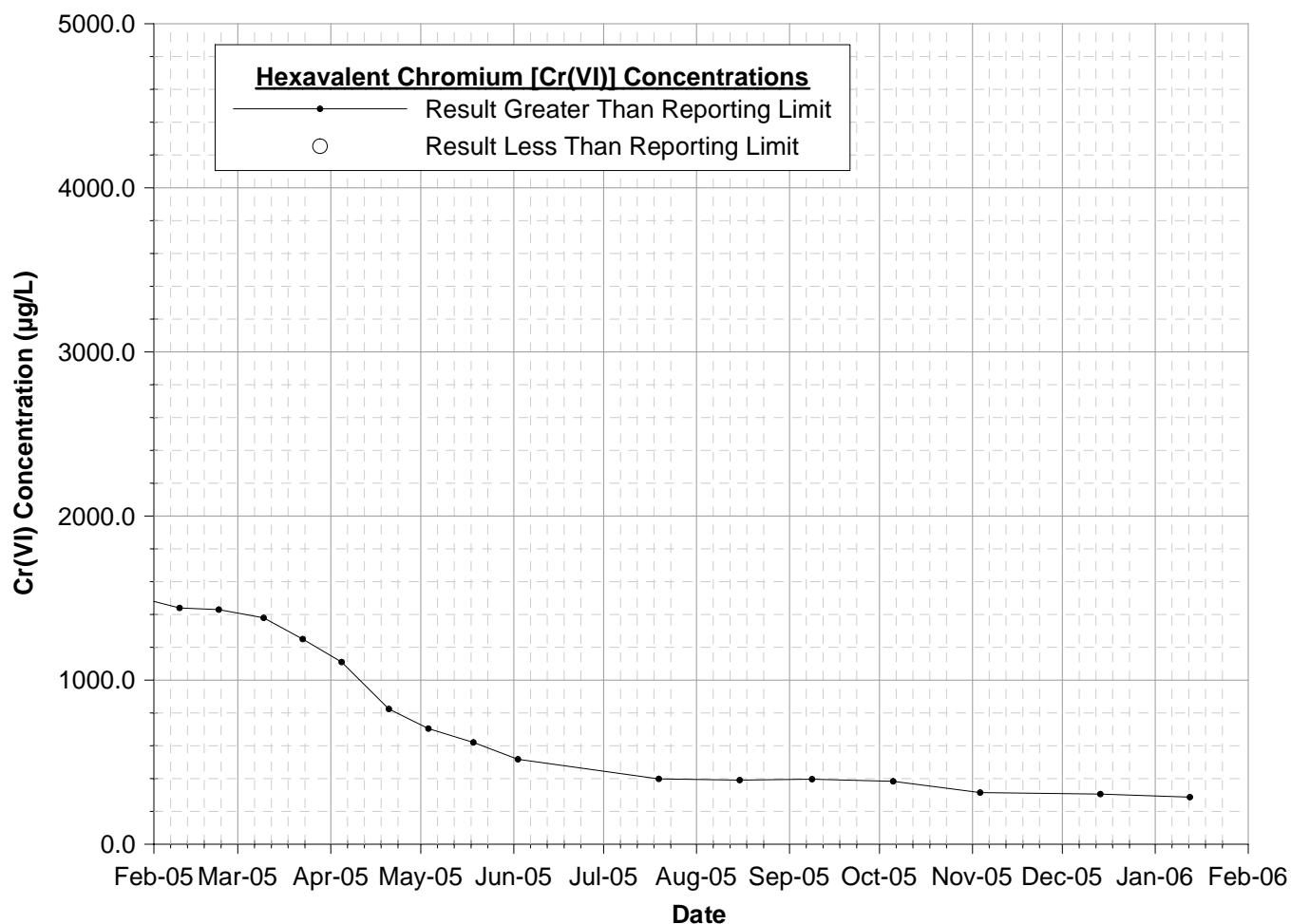
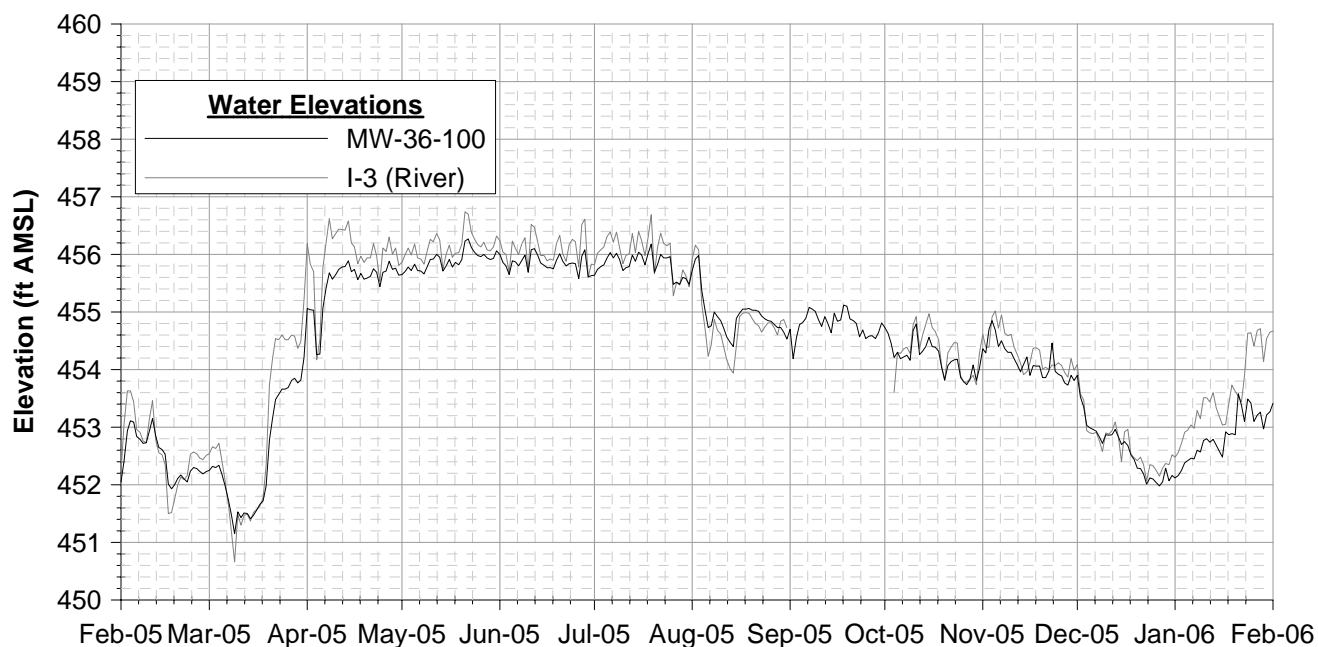


**FIGURE B-2**  
**MW-34-100 CR(VI) CONCENTRATION &**  
**HYDROGRAPH - THROUGH 1/23/06**  
 INTERIM MEASURES PERFORMANCE MONITORING  
 PG&E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA

**Notes**

1. Chromium results in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
2. No groundwater elevation data available during May 2005 due to transducer malfunction.
3. Data subject to review.
4. Results plotted are maximum concentrations from primary and duplicate samples; see Table B-1 for complete results.
5. I-3 data unavailable 9/1/05 through 10/4/05 due to river damage.





**FIGURE B-3**  
**MW-36-100 CR(VI) CONCENTRATION &**  
**HYDROGRAPH - THROUGH 1/12/06**  
 INTERIM MEASURES PERFORMANCE MONITORING  
 PG&E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA

**Notes**

1. Chromium results in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
2. Data subject to review.
3. Results plotted are maximum concentrations from primary and duplicate samples; see Table B-1 for complete results.
4. I-3 data unavailable 9/1/05 through 10/4/05 due to river damage.

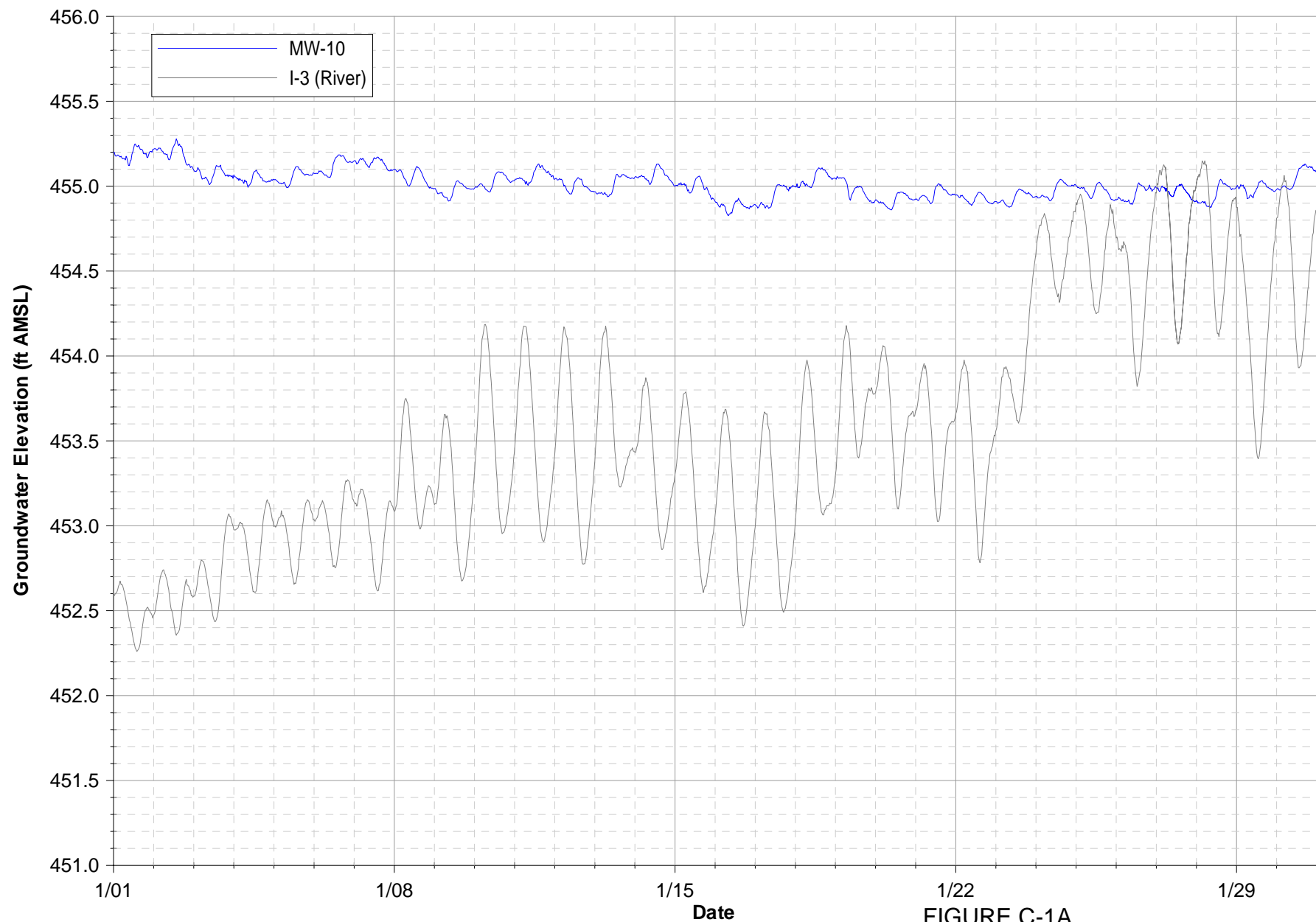
**Appendix C**  
**Hydraulic Monitoring Data for Reporting Period**

**TABLE C-1**

*Monthly Average, Minimum, and Maximum Groundwater Elevations, January 1-24, 2006*  
*Interim Measures Performance Monitoring*  
*PG&E Topock Compressor Station*

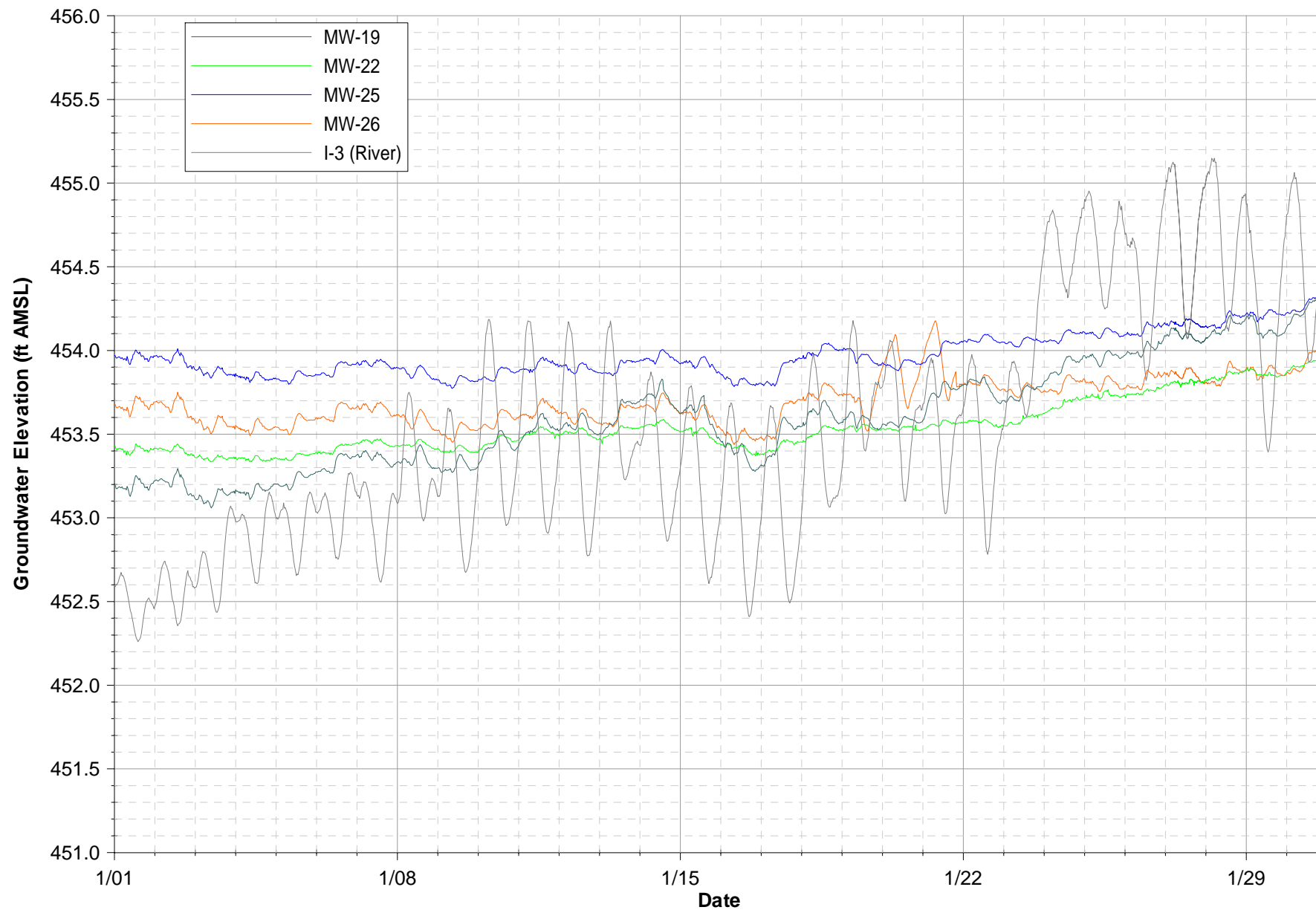
Well	Average (ft AMSL)	Minimum (ft AMSL)	Maximum (ft AMSL)	Aquifer Depth
I-3	453.30	452.86	453.75	River Station
RRB	453.64	453.31	454.07	River Station
MW-10	455.02	454.96	455.08	Upper
MW-19	453.48	453.40	453.55	Upper
MW-20-070	452.08	451.93	452.19	Upper
MW-22	453.48	453.44	453.51	Upper
MW-25	453.92	453.88	453.97	Upper
MW-26	453.66	453.58	453.74	Upper
MW-27-020	453.13	452.98	453.24	Upper
MW-28-025	453.14	452.93	453.36	Upper
MW-29	INC	INC	INC	Upper
MW-30-030	453.18	453.15	453.21	Upper
MW-31-060	453.04	452.95	453.12	Upper
MW-32-020	453.00	452.95	453.05	Upper
MW-32-035	453.11	452.98	453.23	Upper
MW-33-040	453.41	453.27	453.54	Upper
MW-35-060	453.61	453.49	453.72	Upper
MW-36-020	453.01	452.82	453.21	Upper
MW-36-040	453.10	452.88	453.35	Upper
MW-39-040	452.81	452.60	453.02	Upper
MW-42-030	452.87	452.72	453.02	Upper
MW-43-025	453.20	452.97	453.43	Upper
MW-20-100	451.69	451.45	451.84	Middle
MW-27-060	453.26	453.04	453.50	Middle
MW-30-050	452.93	452.72	453.15	Middle
MW-33-090	453.36	453.22	453.52	Middle
MW-34-055	453.31	453.03	453.62	Middle
MW-36-050	453.04	452.81	453.28	Middle
MW-36-070	453.05	452.82	453.30	Middle
MW-39-050	452.73	452.51	452.94	Middle
MW-39-060	452.35	452.16	452.52	Middle
MW-39-070	452.14	451.90	452.34	Middle
MW-42-055	452.99	452.83	453.15	Middle
MW-42-065	453.03	452.87	453.19	Middle
MW-20-130	451.15	450.83	451.36	Lower
MW-27-085	INC	INC	INC	Lower
MW-28-090	453.21	452.94	453.52	Lower
MW-31-135	452.33	452.11	452.48	Lower
MW-33-150	453.58	453.43	453.75	Lower
MW-33-210	453.99	453.84	454.14	Lower
MW-34-080	453.57	453.31	453.86	Lower
MW-34-100	453.56	453.32	453.84	Lower
MW-35-135	453.41	453.33	453.49	Lower
MW-36-090	452.64	452.41	452.87	Lower
MW-36-100	452.73	452.49	452.96	Lower
MW-39-080	452.35	452.11	452.55	Lower
MW-39-100	452.57	452.33	452.77	Lower
MW-43-075	453.36	453.12	453.61	Lower
MW-43-090	453.58	453.34	453.83	Lower

**Notes:** INC = Incomplete for reporting period



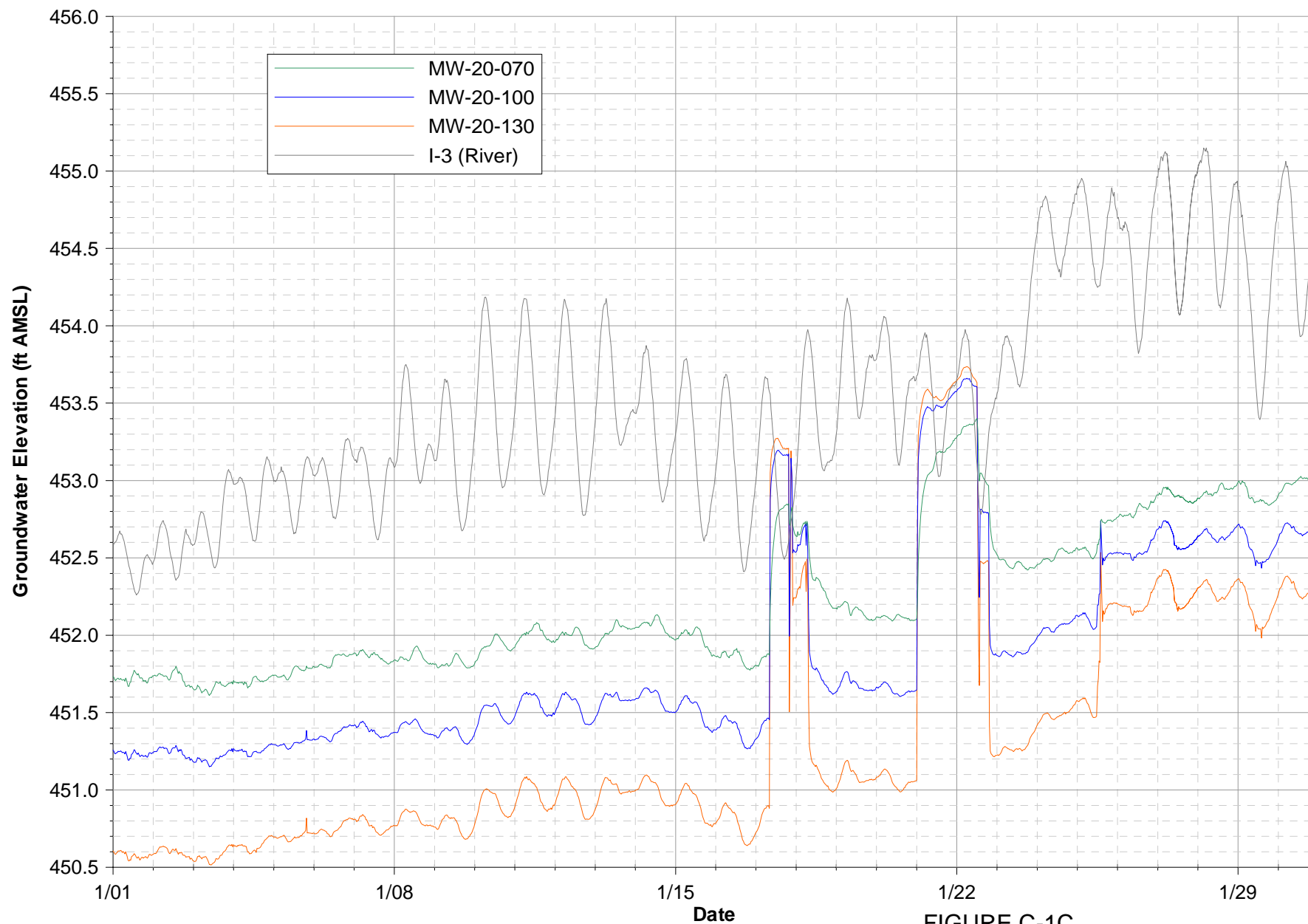
Note: Data subject to review.

**FIGURE C-1A**  
**MW-10 HYDROGRAPH**  
INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA



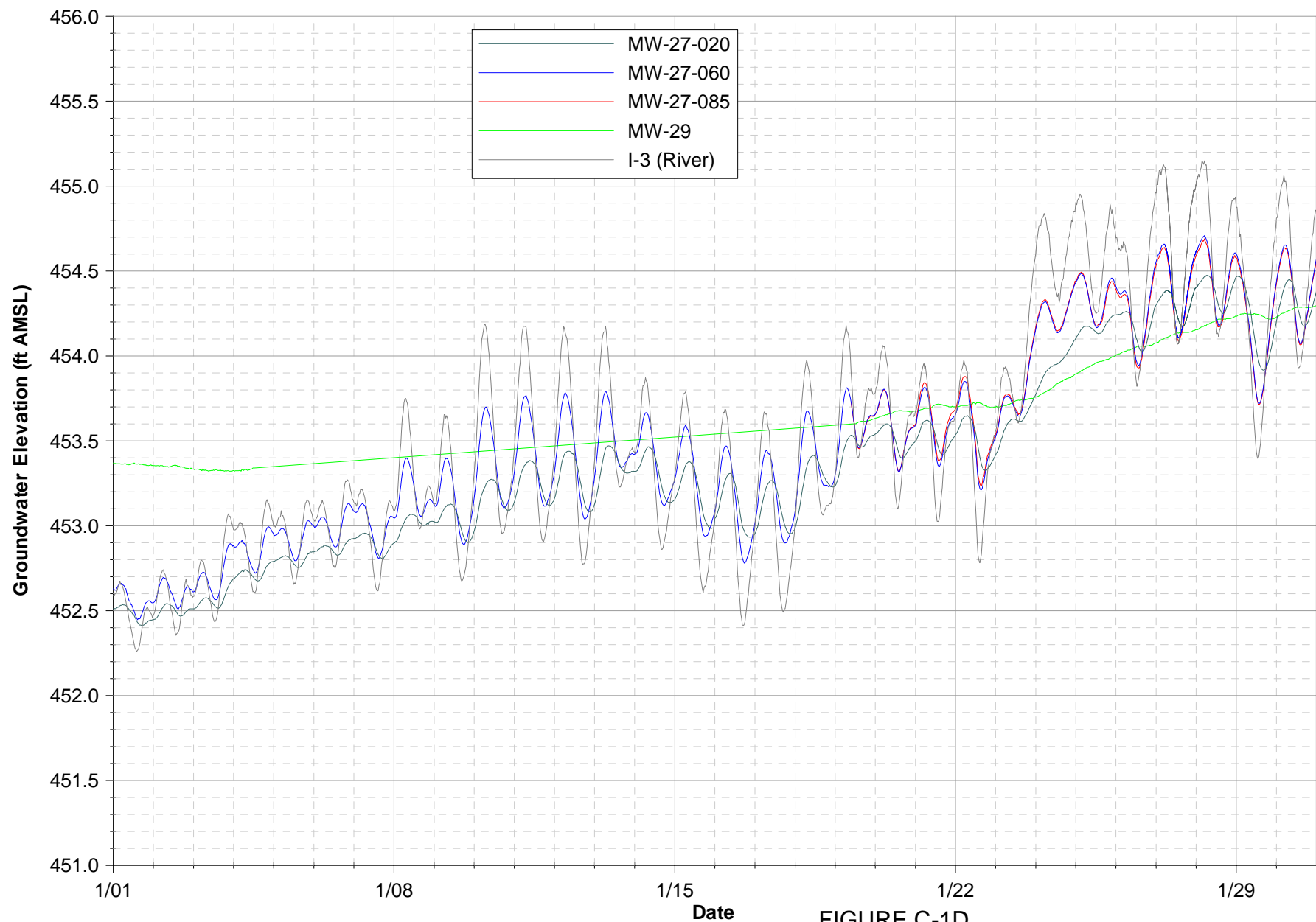
Note: Data subject to review.

**FIGURE C-1B**  
MW-19, MW-22, MW-25, AND MW-26 HYDROGRAPHS  
INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA



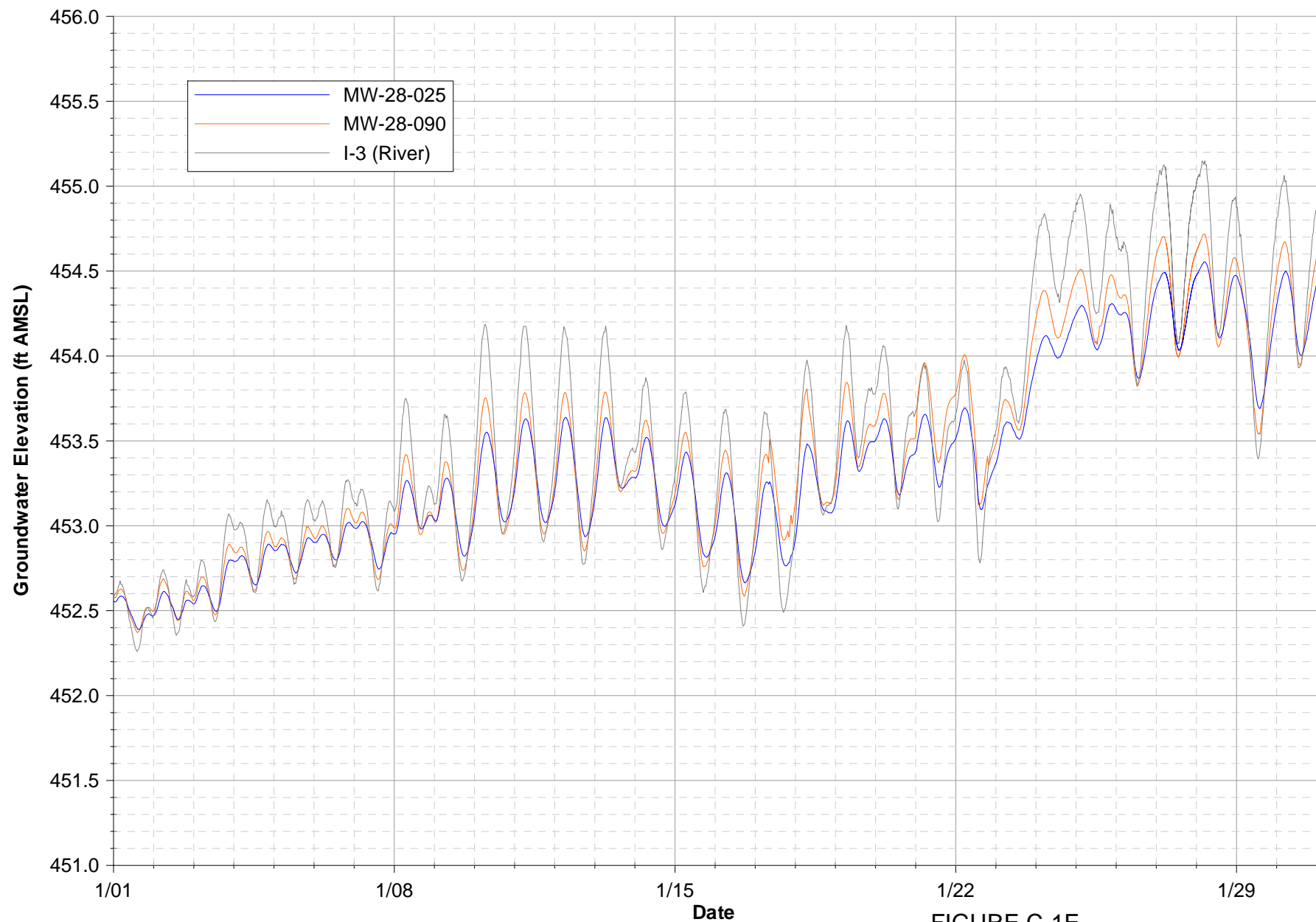
Note: Data subject to review.

**FIGURE C-1C**  
**MW-20 CLUSTER HYDROGRAPHS**  
 INTERIM MEASURES PERFORMANCE MONITORING  
 PG & E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA



Note: Data subject to review.  
MW-27-85 data unavailable from 1/1/06 through 1/19/06.

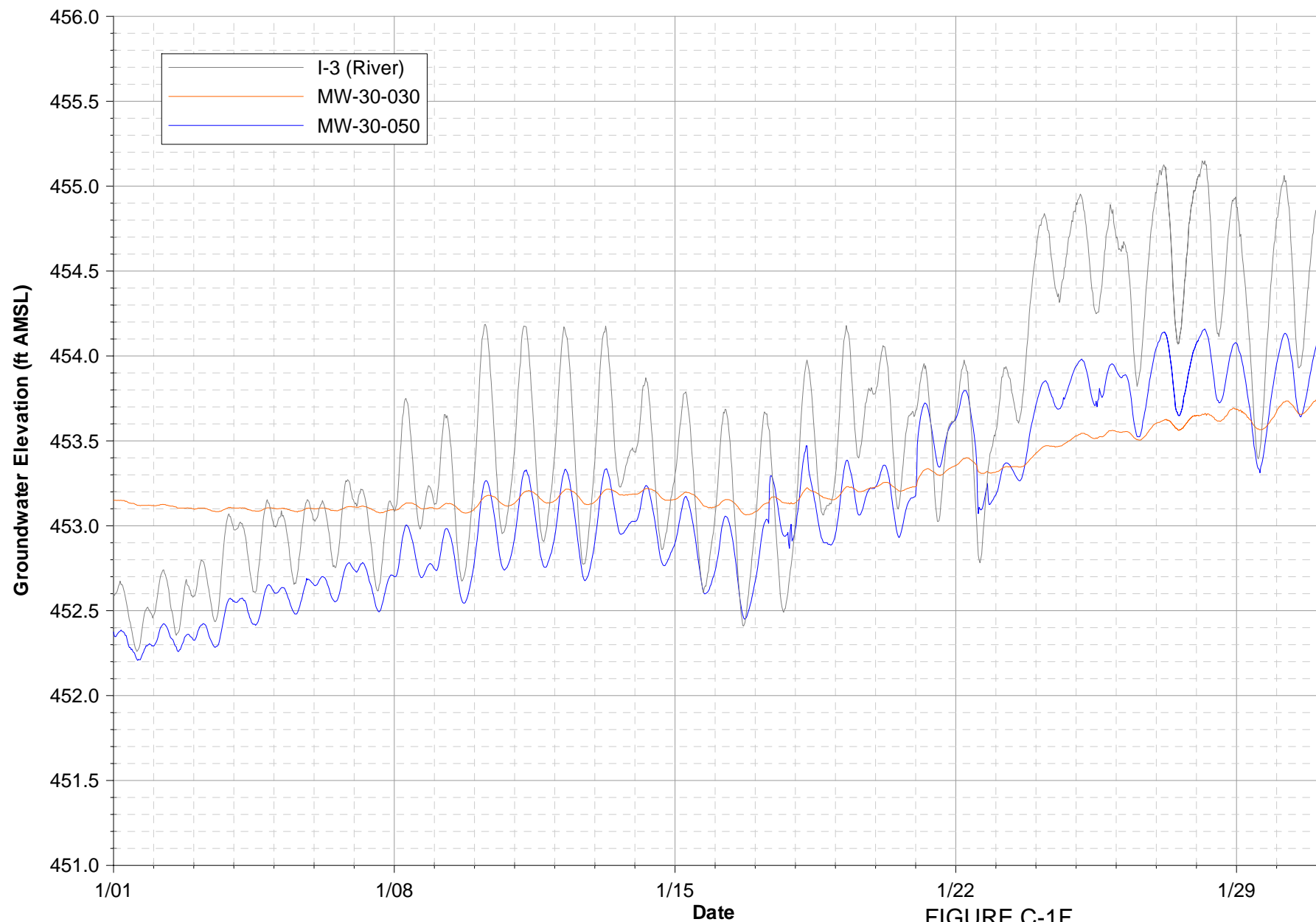
**FIGURE C-1D**  
**MW-27 CLUSTER AND MW-29 HYDROGRAPHS**  
 INTERIM MEASURES PERFORMANCE MONITORING  
 PG & E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA



Note: Data subject to review.

**FIGURE C-1E**  
**MW-28 WELL HYDROGRAPHS**  
INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA



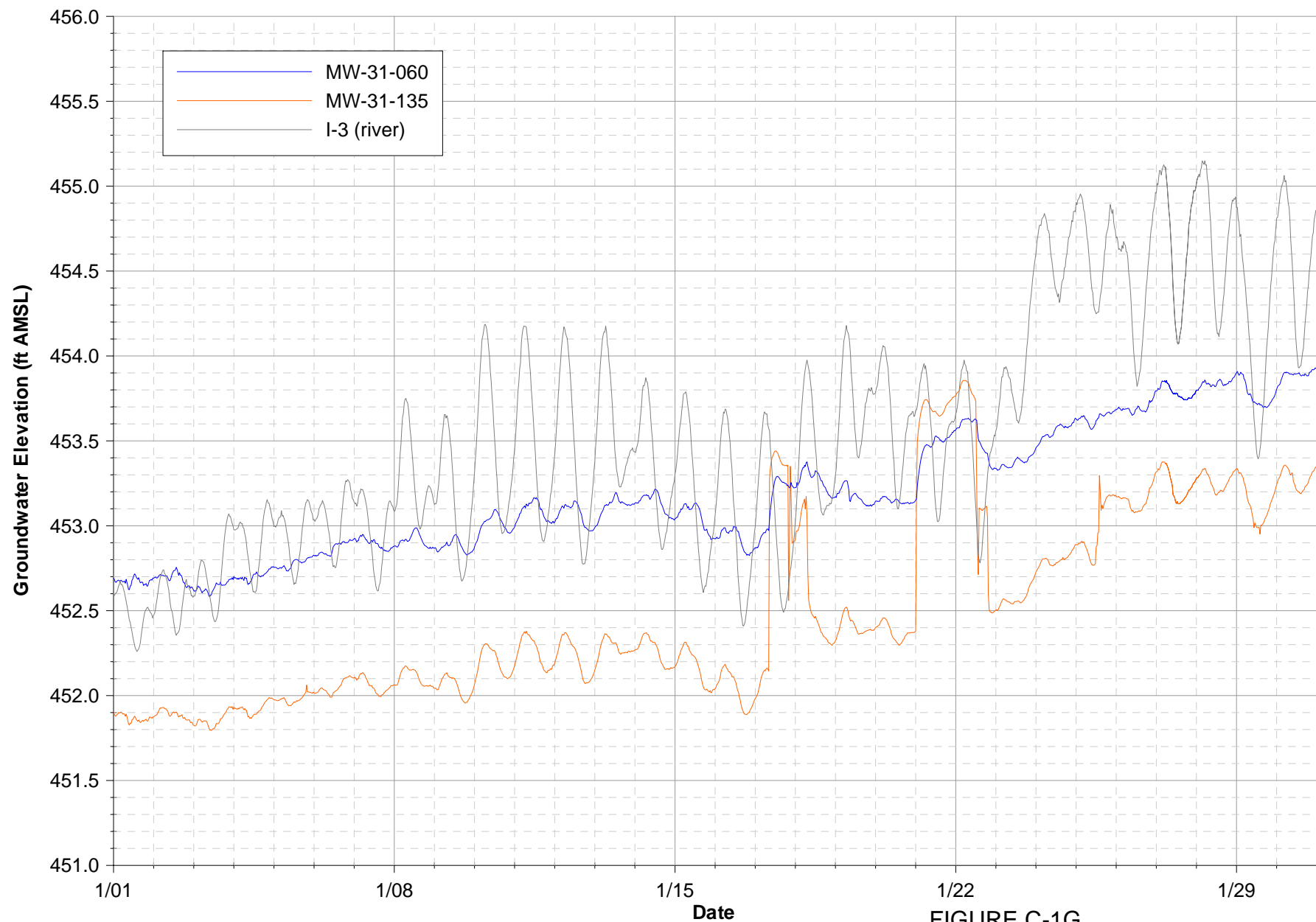


Note: Data subject to review.

FIGURE C-1F

MW-30 WELL HYDROGRAPHS

INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

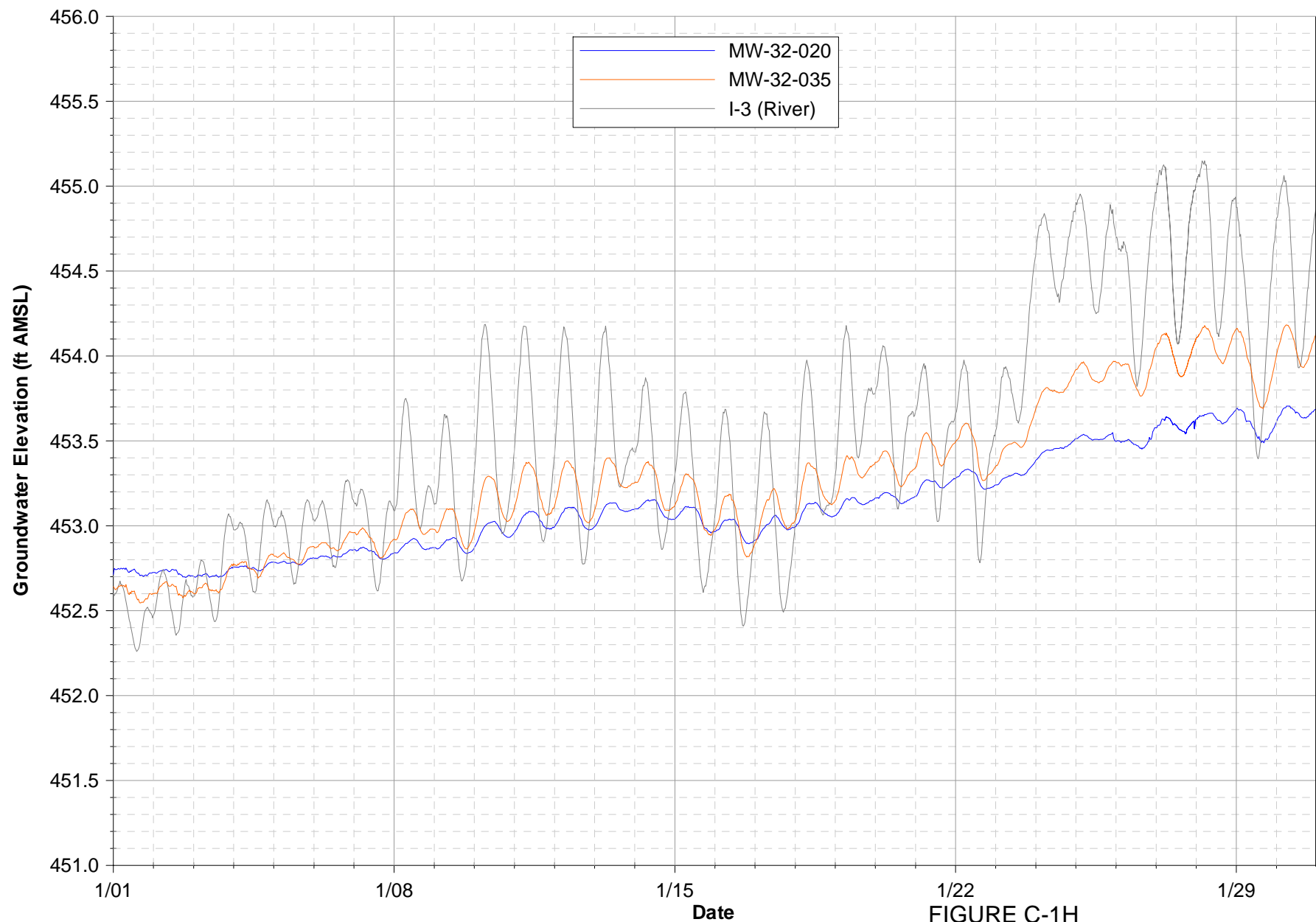


Note: Data subject to review.

FIGURE C-1G

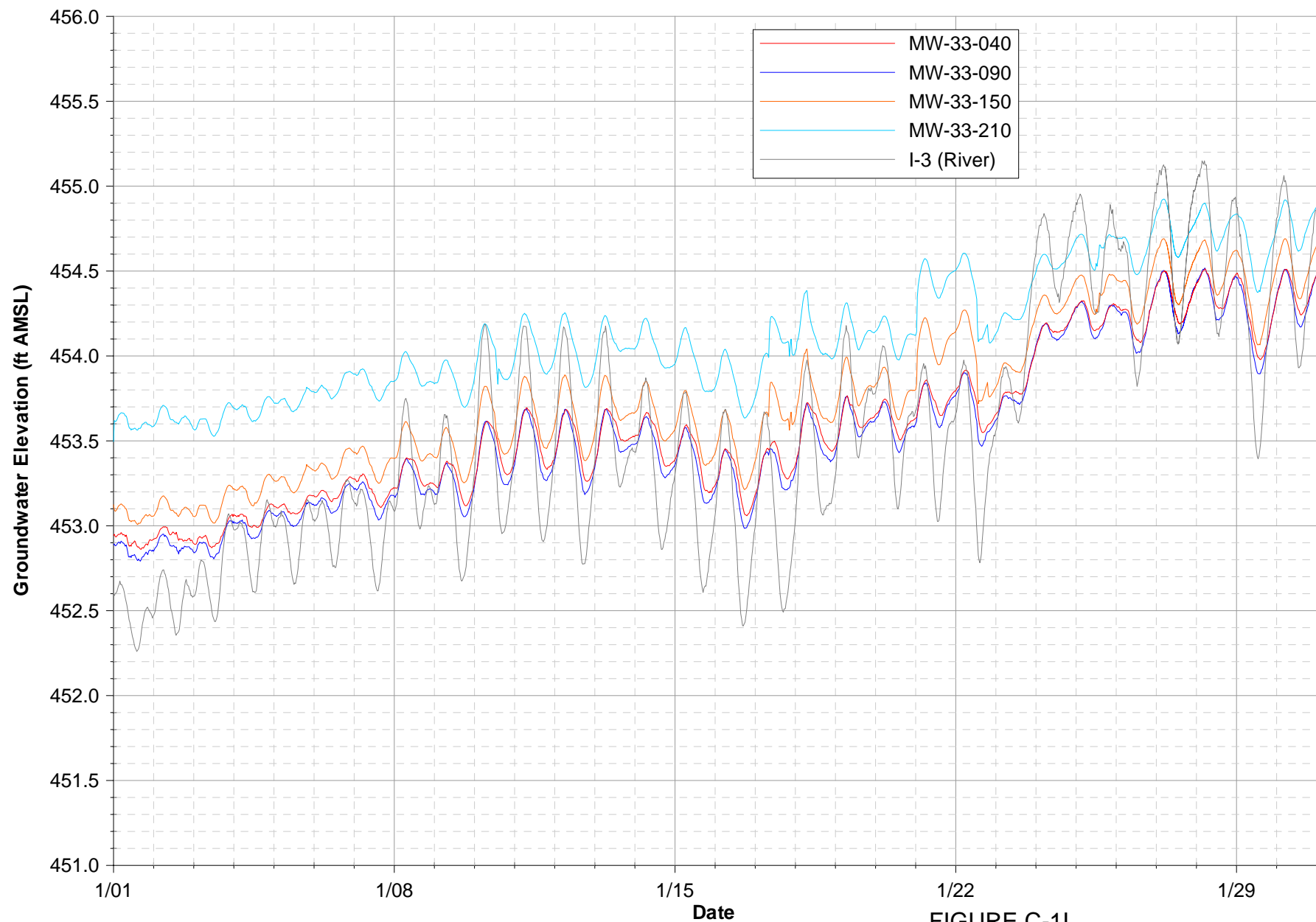
MW-31 WELL HYDROGRAPHS

INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA



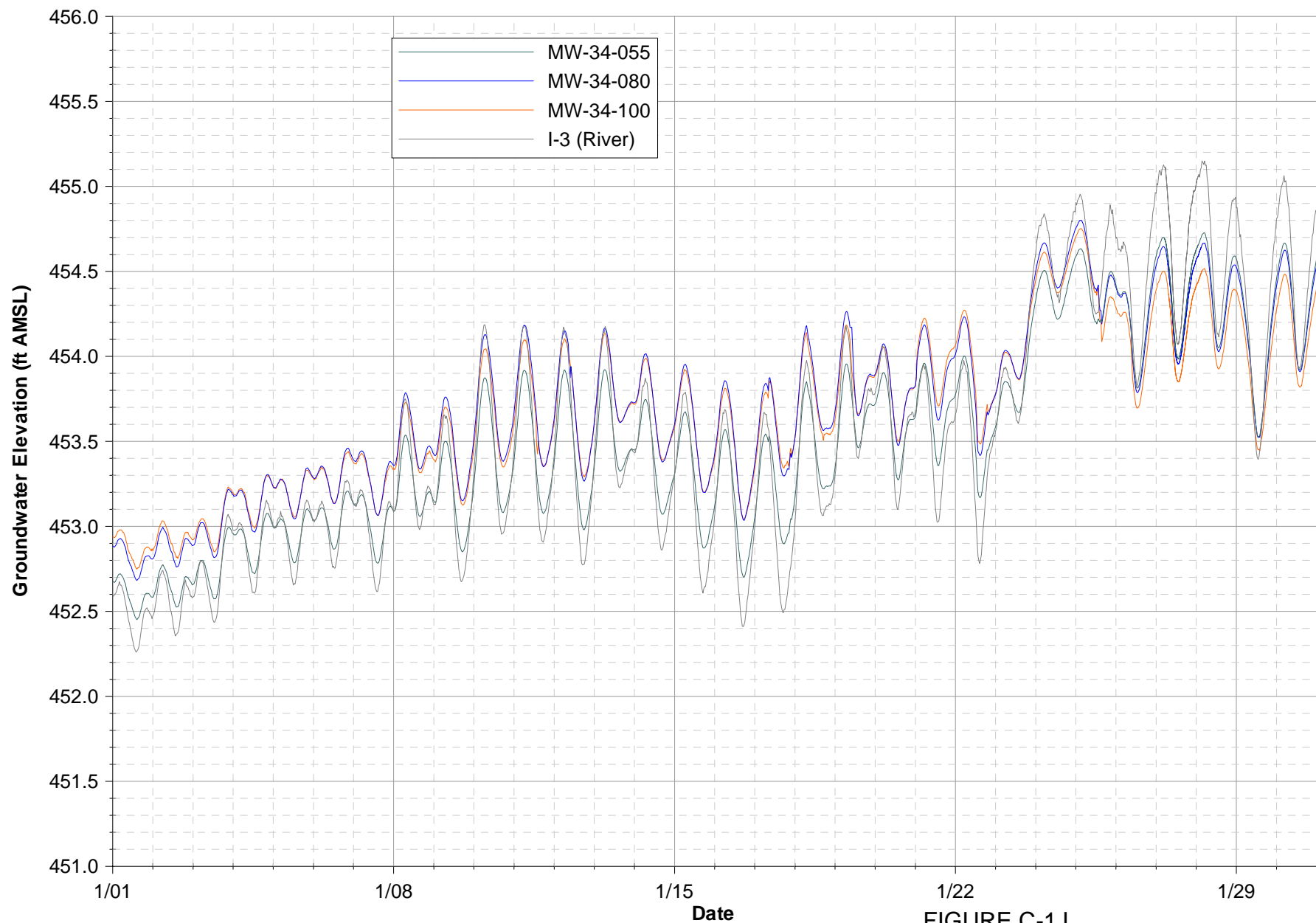
Note: Data subject to review.

**FIGURE C-1H**  
**MW-32 WELL HYDROGRAPHS**  
INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA



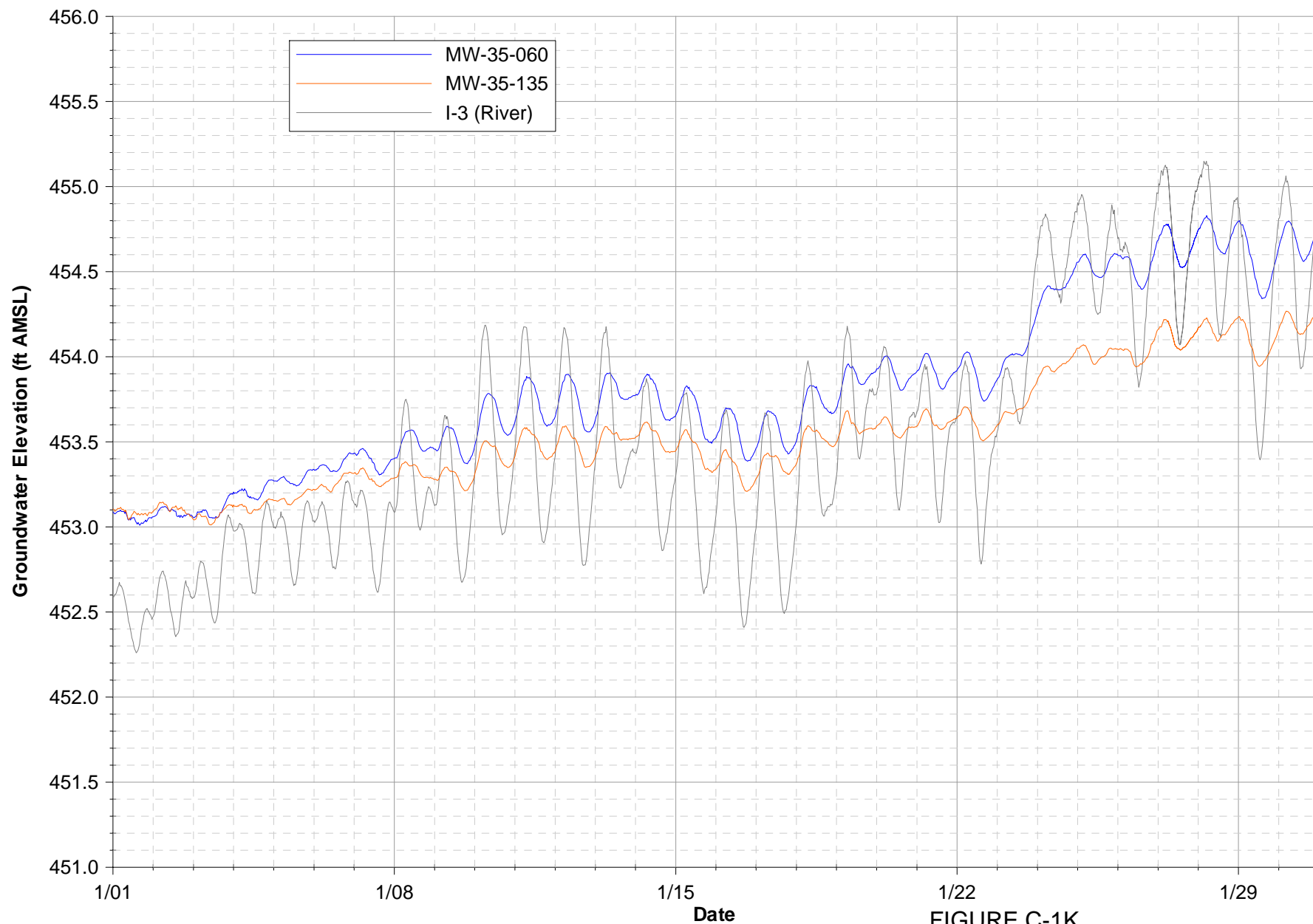
Note: Data subject to review.

**FIGURE C-11**  
**MW-33 CLUSTER HYDROGRAPHS**  
 INTERIM MEASURES PERFORMANCE MONITORING  
 PG & E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA



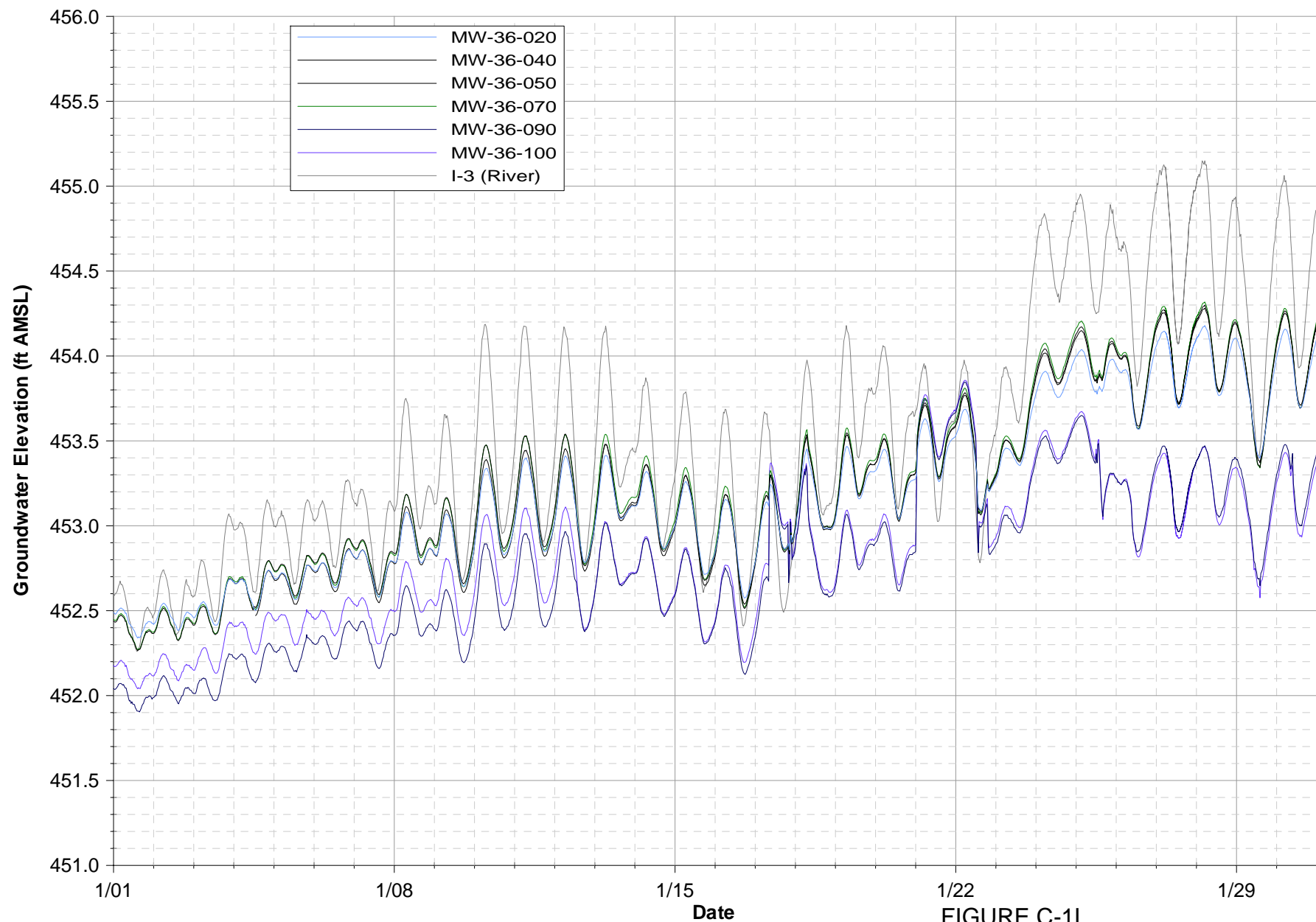
Note: Data subject to review.

**FIGURE C-1J**  
**MW-34 CLUSTER HYDROGRAPHS**  
INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA



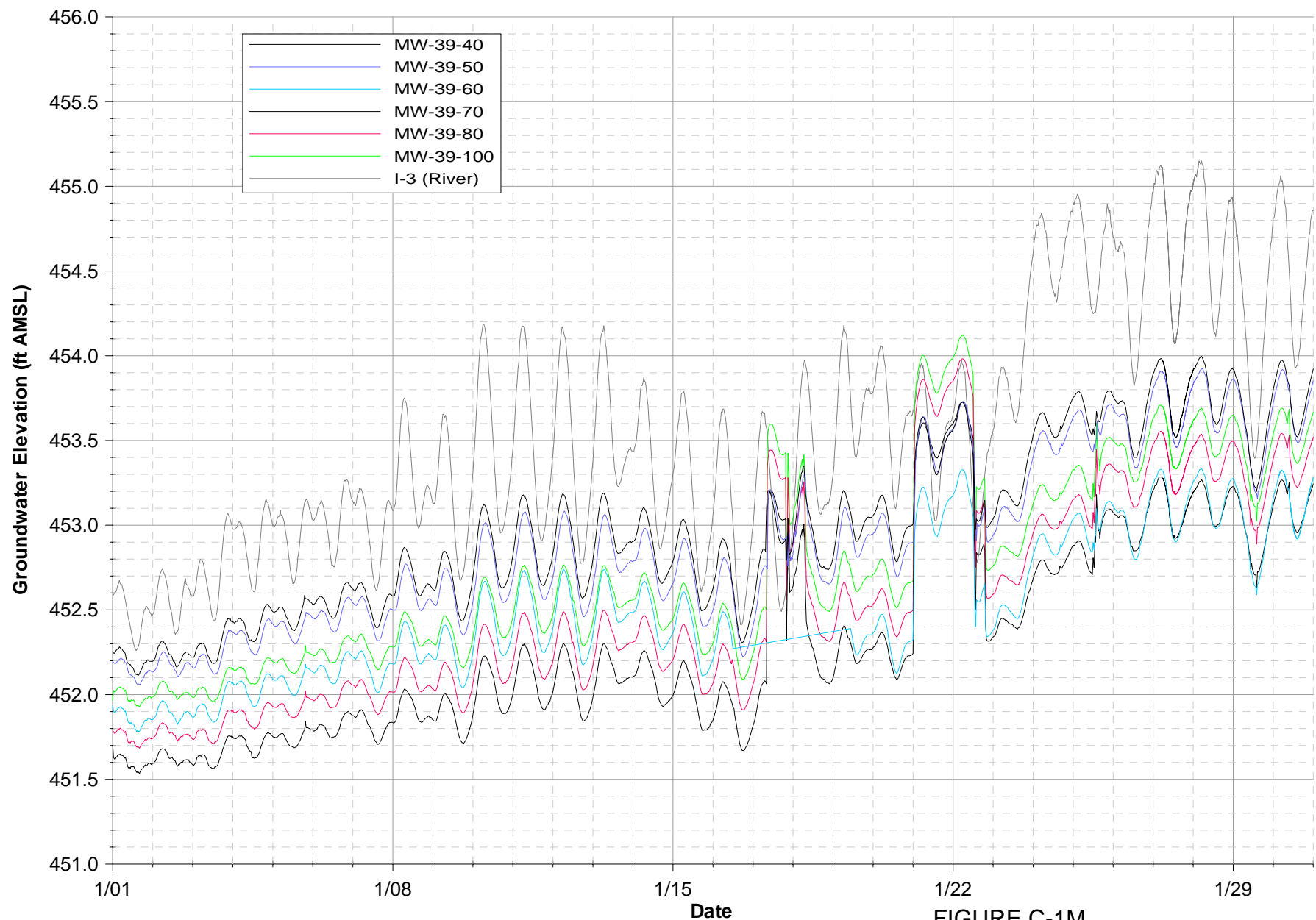
Note: Data subject to review.

**FIGURE C-1K**  
**MW-35 WELL HYDROGRAPHS**  
INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA



Note: Data subject to review.

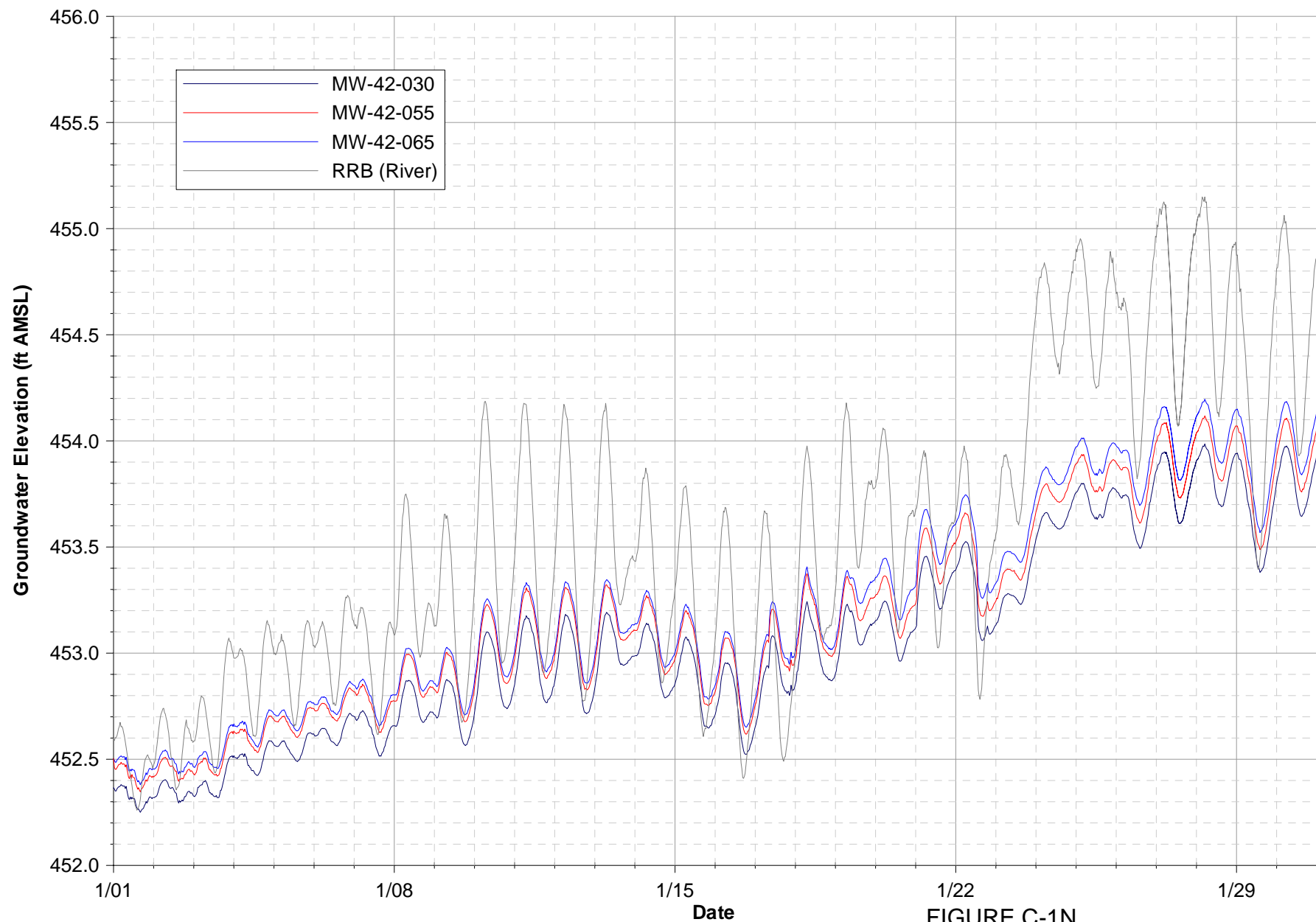
**FIGURE C-1L**  
**MW-36 CLUSTER HYDROGRAPHS**  
 INTERIM MEASURES PERFORMANCE MONITORING  
 PG & E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA



Note: Data subject to review.  
MW-39-60 data missing from 1/16/06 through 1/19/06.

**FIGURE C-1M**  
**MW-39 CLUSTER HYDROGRAPHS**  
INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

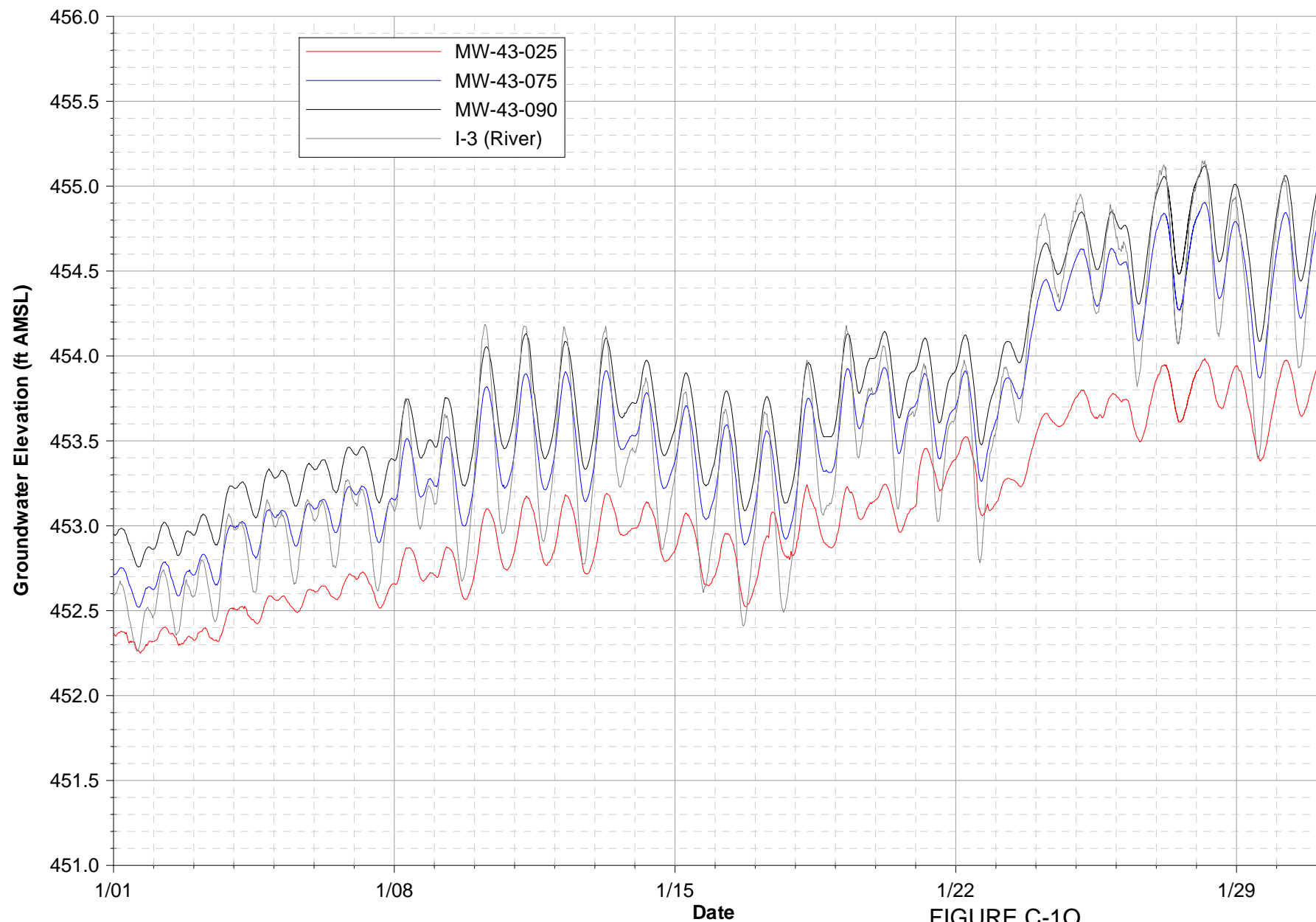




Note: Data subject to review.

**FIGURE C-1N**

**MW-42 CLUSTER HYDROGRAPHS**  
 INTERIM MEASURES PERFORMANCE MONITORING  
 PG & E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA



Note: Data subject to review.

**FIGURE C-10**  
**MW-43 CLUSTER HYDROGRAPHS**  
INTERIM MEASURES PERFORMANCE MONITORING  
PG & E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA