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March 5, 2007

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**Subject: Board Order R7-2006-0008 and R7-2007-0014
PG&E Topock Compressor Station, Needles, California
Floodplain Reductive Zone In Situ Pilot Test
Final Completion Report**

Dear Mr. Perdue:

Enclosed is the Board Order R7-2006-0008 Final Completion Report for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station, floodplain reductive zone in situ pilot test. This report is being submitted in compliance with the Waste Discharge Requirements (WDRs) issued by the Colorado River Basin Regional Water Quality Control Board (Water Board) under Board Order R7-2006-0008 and R7-2007-0014. WDRs under Board Order R7-2006-0008 and R7-2007-0014 apply to the floodplain reductive zone in situ pilot test only.

If you have any questions regarding this report, please call me at (805) 546-5243.

Sincerely,

Yvonne Meeks
Topock Project Manager

Enclosures:

Board Order R7-2006-0008 Final Completion Report for the Floodplain Reductive Zone
In Situ Pilot Test.

cc: Abdi Haile, Water Board
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Aaron Yue, DTSC (2 copies)

Pacific Gas and Electric Company

**Floodplain Reductive Zone
In-Situ Pilot Test**

Final Completion Report

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R7-2007-0014
PG&E Topock Compressor Station
San Bernardino County, California

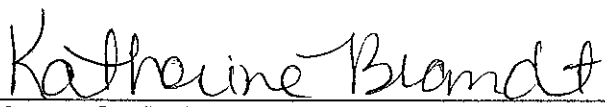
5 March 2008

ARCADIS

This report was prepared under the supervision of a California
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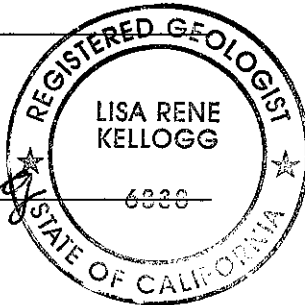
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**Floodplain Reductive Zone
In-Situ Pilot Test Completion
Report**

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor San
Bernardino County, California

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1. Introduction	1
2. In-Situ Pilot Test Sampling Locations	2
3. Description of Activities	3
3.1 Well Installation	3
3.2 Baseline Groundwater Sampling	3
3.3 Injection Activities	4
3.4 Post-Injection Groundwater Sampling Activities	5
4. Sampling and Analytical Procedures	7
5. In-situ Pilot Test Results	8
5.1 Hydrology	8
5.1.1 Water Level Monitoring	8
5.1.2 Groundwater Flow Pattern	9
5.1.3 Groundwater Velocity Distribution	10
5.2 Biogeochemistry	12
5.2.1 Chromium Reduction	13
5.2.1.1 Successful Cr(VI) Reduction	13
5.2.1.2 Precipitation of Cr(III)	13
5.2.1.3 Distribution of TOC and Extent of Cr(VI) Reduction	14
5.2.1.4 Sustained Reduction of Cr(VI) Between Injections	14
5.2.2 Lactate Distribution and Degradation Rates	15
5.2.3 Formation of Reducing Conditions and Residual Cr(VI)-Reducing Capacity	16
5.2.3.1 Expansion of Naturally Occurring Reducing Conditions	17
5.2.3.2 Residual Cr(VI)- Reducing Capacity	18
5.2.4 Secondary Byproducts	19
6. Future Groundwater Sampling and Reporting Plan	22
7. Data Gaps	23

8. Potential Full Scale Applications of In-Situ Cr(VI) Treatment Technology	24
8.1 TOC Distribution	24
8.2 Longevity of a Reductive Zone	24
8.3 Floodplain Full Scale In Situ Treatment Options	25
8.3.1 Direct Injection	27
8.3.2 Recirculation	28
9. Conclusions	30
10. References	32
11. Certification	33

Tables

1	Boring and Well Construction Detail Summary
2	Injection Detail Summary
3	Hexavalent Chromium Reduction in Select Wells
4	History of Groundwater Extraction (in gallons)
5	Estimated Darcy Velocities
6	Mobile Porosity Estimates
7	Estimated Average Pore Water Velocity from Tracer Breakthrough Curves
8	Summary of Field Parameters
9	Summary of Primary Analytical Parameters
10	Summary of Secondary Analytical Parameters
11	Lactate Half-Life Estimates

Figures

1	Site Plan
2	Sample Location Map
3	Time Lag Between Peak River Stage and Groundwater Elevation
4	Monthly Hydrographs for Shallow, Medium and Deep Wells

5	Potentiometric Surface Map for Shallow Zone Wells
6	Potentiometric Surface Map for Middle Zone Wells
7	Potentiometric Surface Map for Deep Zone Wells
8	Performance Monitoring Data for PT-1D
9	Performance Monitoring Data for PT-2D
10	Performance Monitoring Data for PT-3D
11	Performance Monitoring Data for PT-4D
12	Performance Monitoring Data for PT-5D
13	Performance Monitoring Data for PT-6D
14	Performance Monitoring Data for PTI-1D
15	Performance Monitoring Data for TW-2D
16	Performance Monitoring Data for TW-3D
17	Cross Section of Reducing Conditions, Baseline
18	Cross Section of Reducing Conditions, Post-Fourth Injection
19	Cross Section of Reducing Conditions, Post- Sixth Injection
20	Potential Floodplain Full Scale In Situ Alignments
21	Cross Section of Saturated Zone Along East IRZ Line
22	Cross Section of Saturated Zone Along Mid-Floodplain IRZ Line

bgs	Below ground surface
CBD	Citrate bicarbonate dithionite
Cr(III)	Trivalent chromium
Cr(VI)	Hexavalent chromium
Cr(T)	Total dissolved chromium
EMAX	EMAX Laboratories, Inc.
Fe	Iron
Fe(II)	Ferrous iron
Fe(III)	Ferric iron
FeS	Iron sulfide
Fe ₃ O ₄	Magnetite
ft/day	Feet per day
ft/ft	feet per foot
IM-3	Interim Measure Number 3
ISPT	In-Situ Pilot Test
IRZ	In-Situ Reactive Zone
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
mg N/L	Milligrams of Nitrogen per liter
MRP	Monitoring and Reporting Program

Ozark	Ozark Underground Laboratory
PG&E	Pacific Gas and Electric Company
PT	Pilot Test
Redox	Reduction-oxidation
ROI	Radius of influence
RWQCB	California Regional Water Quality Control Board, Colorado River Basin Region
SAFPM	<i>Sampling, Analysis, and Field Procedures Manual, PG&E Topock Program, Revision 1</i>
STL	Severn Trent Laboratories, Inc.
TOC	Total Organic Carbon
Truesdail	Truesdail Laboratories
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
µg/L	Micrograms per liter
Work Plan	<i>In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (August 2005)</i>
Work Plan Addendum	<i>Final Addendum to the In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (December 5, 2005)</i>
Work Plan Addendum 2	<i>Addendum 2 to the In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (April 14, 2006)</i>

Work Plan Addendum 3 *Addendum 3 to the In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (November 30, 2006)*

1. Introduction

Pacific Gas and Electric (PG&E) has implemented a floodplain reductive zone in-situ pilot test (ISPT) to address chromium concentrations in groundwater at the Topock Compressor Station near Needles, California. The purpose of the floodplain ISPT was to evaluate the efficacy of using a food-grade reagent mixture to reduce hexavalent chromium [Cr(VI)] in groundwater to form stable, insoluble trivalent chromium [Cr(III)]. The floodplain ISPT consisted of injecting a reagent mixture into the well cluster (PTI-1S/M/D) and monitoring the results in six three-level well nests (PT-1 through PT-6). Figure 1 provides a map of the PG&E Topock Compressor Station and floodplain ISPT area. A separate upland in situ pilot test is scheduled to begin in early 2008 as shown on Figure 1.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

California Regional Water Quality Control Board, Colorado River Basin Region (RWQCB), Order No. R7-2006-0008 authorized PG&E to inject 6,000 gallons of blended groundwater and reagent mixture into each well of injection well cluster PTI-1S/M/D located in the Colorado River floodplain, one to four times during a 6-month period. RWQCB Order No. R7-2007-0014 revised Order No. R7-2006-0008 to allow two additional injections of 18,000 gallons of reagent mixture into the PTI-1 injection well cluster. A total of six injections have occurred during the ISPT on the following dates: May 3 through 6, 2006, August 11, 2006, September 7, 2006, November 1, 2006, May 7 and 8, 2007, and July 17 and 18, 2007.

The Monitoring and Reporting Program (MRP) under Order No. R7-2006-0008 (Revision 1) requires a final report to be submitted within 90 days of the completion of the ISPT. This report completes the ISPT and summarizes the activities and results related to the floodplain ISPT from January 2006 through December 4, 2007. As described in Section 6 of this report, while no more injections are planned, ongoing post-test monitoring of the test area will continue on a quarterly basis in 2008 to monitor the long-term effectiveness of the test. These results will be reported in future quarterly monitoring reports.

2. In-Situ Pilot Test Sampling Locations

Table 1 summarizes the well construction details of the injection well cluster (PTI-1S/M/D) and monitoring well nests (PT-1 through PT-6). Figure 2 provides a map of the sampling locations, including extraction wells TW-2D, TW-3D, and PE-1.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

3. Description of Activities

The procedures and the refinements to the floodplain ISPT are outlined in the following documents:

- In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (Work Plan; MWH 2005);
- Final Addendum to the In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (Work Plan Addendum; ARCADIS 2005);
- Addendum 2 to the In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (Work Plan Addendum 2; ARCADIS 2006a); and
- Addendum 3 to the In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (Work Plan Addendum 3; ARCADIS 2006b).

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

3.1 Well Installation

From January 24 to 28, 2006, Prosonic Corporation of Mesa, Arizona installed one injection well cluster (PTI-1S/M/D) and six three-level monitoring well nests (PT-1 through PT-6). Each level was designated with S for the shallow screen interval, M for the middle screen interval or D for the deep screen interval. The subdivision of the aquifer into three depth intervals is an appropriate construct for presenting and evaluating groundwater data in the floodplain. The wells were constructed and developed in accordance with the Work Plan and Work Plan Addendum. PG&E, under the supervision of a California-licensed land surveyor, surveyed the longitude, latitude, top-of-casing, and ground surface elevation of each injection and monitoring well on March 2, 2006. Table 1 summarizes well construction details.

3.2 Baseline Groundwater Sampling

Prior to injection activities, two baseline sampling events were conducted. The baseline monitoring events were performed at the injection wells (PTI-1S/M/D), the monitoring wells (PT-1 S/M/D through PT-6 S/M/D), and three extraction wells (TW-2D, TW-3D, and PE-1) between March 13 and March 18, 2006 and between April 3 and April 7, 2006, respectively.

Groundwater samples from each well were analyzed for hexavalent chromium (United States Environmental Protection Agency [USEPA] Method 7199) by Truesdail Laboratories (Truesdail); fluorescein (in-house method) by Ozark Underground Laboratory (Ozark); iodide (USEPA Method 300) by Severn Trent Laboratories, Inc. (STL); chromium, dissolved and total iron, manganese, calcium, magnesium, arsenic, potassium, sodium (USEPA Method 6010B); nitrate, nitrite, sulfate, carbonate, bicarbonate alkalinity, chloride, bromide, phosphorous (USEPA Method 300); total organic carbon (TOC) (USEPA Method 415.5); and sulfide (USEPA Method 376.1) by EMAX Laboratories, Inc. (EMAX). EMAX also analyzed samples for total dissolved solids (USEPA 160.1) for consistency with other groundwater monitoring programs at Topock. Samples were collected, labeled, and packaged according to the Sampling, Analysis, and Field Procedures Manual, PG&E Topock Program, Revision 1 (SAFPM; CH2M Hill 2005).

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

3.3 Injection Activities

Six injections were conducted as part of the floodplain ISPT from May 2006 through July 2007. The injections were performed in accordance with the Work Plan and the Work Plan Addenda documents and the RWQCB Order Nos. R7-2006-0008 and R7-2007-0014. The first injection event was completed in the injection well cluster (PTI-1S, PTI-1M and PTI-1D). Because the shallow and middle well intervals did not have a detectable concentration of Cr(VI) in the baseline sampling event results, injection events two through six were completed in injection well PTI-1D only. Over time, the volume and carbon concentration were gradually increased to gain an understanding of the effect of various injection parameters. The following paragraphs summarize the injection events and the solutions used in each event.

The first injection event began on May 3, 2006. The injections were completed in wells PTI-1S, PTI-1M, and PTI-1D on May 4, May 5, and May 6, 2006, respectively. Each well was injected with 6,000 gallons of solution, which consisted of 50 pounds of a 60 percent lactate solution 14 pounds of yeast extract, and tracer compounds (0.33 pounds of fluorescein in PTI-1S, 129 pounds of sodium bromide in PT-1M, and 131 pounds of potassium iodide in PTI-1D).

The second injection event was completed on August 11, 2006. After the first injection, the carbon concentrate was increased with the permission of the RWQCB. The 6,000 gallon injection solution consisted of 100 pounds of a 60 percent lactate solution, 14 pounds of yeast extract, and 0.33 pounds of fluorescein. As stated above, the second injection (and subsequent injections) occurred in the deep zone (PTI-1D) only

because the shallow and middle well intervals did not have a detectable concentration of Cr(VI) in the baseline sampling event results.

The third injection event was completed on September 7, 2006. The 6,000 gallon injection solution consisted of 100 pounds of a 60 percent lactate solution 14 pounds of yeast extract, and 100 pounds of potassium iodide.

The fourth injection event was completed on November 1, 2006. Again, the carbon concentrate was increased with the permission of the RWQCB. The 6,000 gallon injection solution consisted of 200 pounds of a 60 percent lactate solution, 14 pounds of yeast extract, and 0.33 pounds of fluorescein.

The fifth injection event was completed on May 7 and 8, 2007. The carbon concentrate as well as the solution amount were increased with the permission of the RWQCB (Order No. R7-2007-0014) and the 18,000 gallon injection solution consisted of 1,500 pounds of a 60 percent lactate solution, 14 pounds of yeast extract, and 100 pounds of potassium iodide.

The sixth injection event was completed on July 17 and 18, 2007. The 18,000 gallon injection solution consisted of 1,500 pounds of sodium lactate (at 60 percent solution), 14 pounds of yeast extract, and 0.33 pounds of fluorescein.

Table 2 summarizes the injection activities.

3.4 Post-Injection Groundwater Sampling Activities

ARCADIS completed 32 weekly post-injection sampling events and 18 monthly post-injection sampling events. Associated field activities were performed in accordance with the above documents and the applicable procedures contained within the SAFPM (CH2M Hill 2005). The MRP incorporated by reference into RWQCB Order No. R7-2006-0008 was revised on October 1, 2007 (Revision 1) to refine the sampling parameters and sampling locations for the remainder of the pilot test.

Groundwater samples for the weekly post injection events were analyzed for fluorescein (in-house method) by Ozark, iodide (USEPA Method 300), and TOC (USEPA Method 415.5) by EMAX. Cr(VI) was analyzed in the field (HACH Method 1560).

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Groundwater samples for months 1 through 16 were analyzed for Cr(VI) (USEPA Method 7199) by Truesdail; fluorescein (in-house method) by Ozark; chromium, dissolved and total iron, manganese, calcium, magnesium, arsenic, potassium, sodium (USEPA Method 6010B), nitrate, nitrite, sulfate, carbonate, bicarbonate alkalinity, chloride, bromide, phosphorous, iodide (USEPA Method 300), TOC (USEPA Method 415.5); and sulfide (USEPA Method 376.1) by EMAX.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Groundwater samples from monthly events 17 and 18 were analyzed for Cr(VI) (USEPA Method 7199) by Truesdail; fluorescein (in-house method) by Ozark; and chromium, dissolved and total iron, manganese, arsenic, nitrate, nitrite, sulfate, carbonate, bicarbonate alkalinity, iodide (USEPA Method 300), TOC (USEPA Method 5310), and sulfide (USEPA Method 4500-S²⁻) by EMAX.

As summarized in Section 4.0, samples were collected, labeled, and packaged according to the SAFPM. All calibration logs, groundwater sampling logs, and laboratory data were submitted to the RWQCB in the required monthly monitoring reports.

4. Sampling and Analytical Procedures

Groundwater sampling and associated tasks were performed in accordance with the applicable procedures contained in the SAFPM (CH2M Hill, 2005) and as summarized below.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Prior to groundwater sampling, the depth to water was recorded for each well. These data were used to evaluate the volume of standing water in the well. The monitoring wells were purged using an Enviro-Tech ES-60 Whaler pump or a WaTerra® purge pump with dedicated polyethylene tubing. Purging continued until three casing volumes had been removed. The field parameters, such as pH, specific conductance, and temperature were recorded. After completion of purging, the groundwater samples were collected into the appropriate containers. Extraction well (PE-1, TW-2D, TW-3D) samples were collected from a dedicated sampling port. Water was purged from the sample port prior to sampling the extraction well, to remove any stagnant water from the port.

The samples were stored in coolers at 4 degrees Celsius and transported to Truesdail, EMAX, and Ozark via a courier service under chain-of-custody documentation. Truesdail and EMAX are certified by the California Department of Health Services (Certification #1247 and #02116CA, respectively) under the State of California's Environmental Laboratory Accreditation Program.

Analyses were performed in accordance with the latest edition of the Guidelines Establishing Test Procedures for Analysis of Pollutants (40 CFR Part 136), or equivalent methods promulgated by the USEPA.

Post-injection sampling was conducted in accordance with the sampling frequency required by the MRP or the MRP Revision 1 (revised October 1, 2007).

5. In-situ Pilot Test Results

The results of the floodplain ISPT show the successful creation of an in situ reactive zone (IRZ) and demonstrated the reduction of Cr(VI) and its removal from groundwater by the injection of lactate. The ISPT achieved reduction of Cr(VI) from milligram per liter [mg/L] concentrations to concentrations of less than a fraction of a microgram per liter [μ g/L] in PT-1D, PT-2D, and PTI-1D (Table 3). This section expands upon the analysis presented in monthly monitoring reports and includes an analysis of Cr(VI) reduction during and post injection, the generation and attenuation of secondary byproducts, and an evaluation of site-specific remediation variables.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

5.1 Hydrology

The groundwater in the pilot test area is found in unconsolidated alluvial and fluvial deposits, referred to collectively as the alluvial aquifer. As described in Section 5.2, the mineralogy of the two types of deposits differs. However, hydraulically, they serve as a single aquifer without an intervening confining unit. The thickness of the alluvial aquifer ranges from 30 to 180 feet. The screen intervals (i.e., shallow [35 to 45 feet below ground surface {bgs}], middle [60 to 70 feet bgs], and deep [95 to 105 feet bgs]) of the aquifer 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 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.

This section describes groundwater flow paths and velocity distribution at the pilot test scale from water level monitoring data and tracer breakthrough curves.

5.1.1 Water Level Monitoring

The Colorado River is the principal source of groundwater at the ISPT site. As part of the interim measure number 3 (IM-3), extraction wells were installed in the floodplain area. These wells act as the principal locations of groundwater discharge in the immediate vicinity of the test area. Fluctuations in Colorado River stage show a unique pattern. The monthly average elevation stage as measured at United States Geological Survey (USGS) river gauge station (USGS 09423000 Colorado River, below Davis Dam, Arizona-Nevada) peaks in summer and reaches its low point in the winter. Daily fluctuations in river stage are on the order of several feet. These fluctuations propagate

throughout the floodplain aquifer, and combined with hydraulic-conductivity variations, these fluctuations produce localized patterns of groundwater flow. Pressure transducer data for monitoring wells in the vicinity of the pilot test provide a basis for the hydrologic analysis of trends in flow direction and hydraulic gradient. The groundwater level fluctuations match with the river stage fluctuations with a slight time lag just after peak river stage. Figure 3 demonstrates the propagation of river stage variation with groundwater elevation. Monitoring well MW-20, which is located approximately 650 feet from the river, shows greater time lag as compared to MW-34, which is located approximately 75 feet from the river.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Table 4 presents the available pumping data and the total water pumped to date as summarized from monthly monitoring reports prepared by CH2M Hill. Water is mainly extracted from TW-3D and PE-1, and there is little extraction from TW-2D. Well PE-1 is located between the pilot test area and the river and was installed prior to implementing the pilot test. From the pilot test location, PE-1 is an upgradient well that causes a localized capture zone that extends near, but not within the ISPT area. As a result of its proximity to the ISPT area and relatively high extraction rate, pumping from TW-3D is the dominant control on groundwater migration in the ISPT area.

The analyses of the water-level records demonstrate that variation in flow directions was not significant over the period of the ISPT. To evaluate temporal changes in flow directions, potentiometric surfaces at the pilot-test scale derived from average monthly water levels were compared. The monthly potentiometric maps for shallow, medium, and deep wells are reported in monthly monitoring reports submitted to the regulatory agencies. Flow directions and hydraulic gradients inferred from these surfaces in the vicinity of the pilot test wells show little to no change from month to month. Within-month variability in hydraulic gradients also was evaluated by comparing water-level hydrographs at monitoring wells (Figure 4). Although water levels in individual wells rise and fall in response to changes in river stage, differences in water levels between wells remain relatively constant and suggest that hydraulic gradients do not vary significantly with time.

5.1.2 Groundwater Flow Pattern

The general groundwater flow direction at the ISPT is towards extraction wells TW-2D and TW-3D as shown in potentiometric maps for shallow, medium, and deep zones in Figure 5, 6, and 7 respectively. This was the result of continued high extraction rates for the IM-3 system during the ISPT period. Water-level measurements obtained with pressure transducers placed in monitoring wells provide a quantitative description of

hydraulic gradients and flow paths. As described in the previous section, temporal changes in flow direction and hydraulic gradient were small during the pilot testing period. Therefore, flow paths and hydraulic gradients inferred from potentiometric surfaces presented in Figures 5 through 7 are considered to be representative of pilot-test conditions throughout the ISPT period.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

The horizontal hydraulic gradient is towards the extraction wells (TW-2D and TW-3D) and increases with increasing depth. The hydraulic gradient is 0.001 feet per foot (ft/ft) in the shallow interval between PTI-1S and PT-2S, 0.0025 ft/ft in the medium interval between PTI-M and PT-2M, and 0.001 ft/ft between PTI-D and PT-2D. Horizontal gradients increase closer to the extraction wells, with a gradient of 0.008 ft/ft adjacent to the extraction wells.

There is apparent hydraulic communication between the shallow, medium, and deep zones. The vertical hydraulic gradient in between shallow and deep zones near the ISPT wells is 0.008 ft/ft whereas near the extraction wells a much steeper gradient of 0.03 ft/ft is found. The vertical gradient in between medium and deep zones is around 0.006 ft/ft near the ISPT wells and is 0.04 ft/ft near the extraction wells. The gradient is vertically downward both near extraction wells and near ISPT wells.

All groundwater within the Floodplain ISPT test area shown on the potentiometric maps (Figures 5, 6, and 7) is captured by extraction wells. This is demonstrated by the distribution of groundwater flow paths illustrated on the maps. The injection wells and other monitoring wells are within this capture zone. However, only a small portion of the total water extracted at TW-2D and TW-3D is derived from water treated by injections at the injection wells. Normalized tracer data for the extraction wells are presented later in this report to support and partially quantify this conclusion.

Location of the PT-3 wells (cross-gradient to the flow path), PT-4 and PT-6 wells (upgradient of the flow path) are sufficiently close to the injection well for observation of tracer during injections of large volumes of substrate, as occurred in injection events 5 and 6 (presented in the following section with the radius of influence calculations). The PT-5 wells are further upgradient of the injection well area and were not affected by injections at the injection wells.

5.1.3 Groundwater Velocity Distribution

An understanding of groundwater flow rates and velocity distribution is important to understand solute transport. This has been developed from descriptions of flow paths

and gradients in combination with estimates of hydraulic conductivity (CH2M HILL, August 2006) and migratory or mobile porosity. Estimates of flow rates and water velocities are presented for shallow, medium and deep aquifer zones. The hydraulic gradients were measured directly from potentiometric maps.

An average/superficial Darcy velocity between injection wells, each pilot test (PT) monitoring wells and extraction wells (TW-2D and TW-3D) varies from 0.01 feet per day (ft/day) to 0.37 ft/day (Table 5). Darcy velocity is calculated using the equation

$$q \equiv -K \nabla h, \text{ where}$$

q is Darcy velocity, ∇h is the change in head per unit length in the direction of flow and K is hydraulic conductivity.

Average Darcy's velocity between ISPT injection wells and the extraction wells (TW-2D and TW-3D) is 0.37 ft/day (Table 5). As expected, higher velocities are present near the TW-3D and TW-2D extraction wells.

Conservative tracer transport during the ISPT occurred in response to two separate sets of conditions. During tracer injection, transport occurred primarily by displacement of the tracer solution away from the injection well screen. As an approximation, radial transport away from the injection well over the length of the screened interval was assumed. As a result, tracer observed in nearby monitoring wells during an injection period can be used to estimate the mobile-phase effective porosity of the aquifer. After tracer injection, flow directions and gradients returned to ambient conditions and the tracer moved at the prevailing average pore water velocity. Therefore, tracer trends observed in monitoring wells after the injection period can be used to estimate the average pore water velocity. As a check, the ratio of Darcy's velocity to average pore water velocity provides another estimate of the mobile-phase effective porosity.

Tracer data indicate that breakthrough was observed during injection periods at PT-1D (Figure 8) for the fifth and sixth injections and PT-3D (Figure 10) for all six injections. The estimated mobile-phase effective porosity values for these wells are shown in Table 6. In contrast, tracer data at PT-2D (Figure 9) indicate breakthrough occurred a period of time after the injection period for all six injections. Average pore water velocity was estimated from data for iodide, fluorescein, and bromide when breakthrough was observed. In all situations, the average pore water velocities are calculated from times between injection and peak concentrations of tracer breakthrough data. Because tracer breakthrough curves had long tails, peak concentrations provide the appropriate

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

estimate of the groundwater travel time between injection and monitoring wells¹. The data indicates that in the immediate area of the pilot test, the average pore water velocities are approximately 2 ft/day (Table 7).

The values of Darcy velocities and average pore water velocities give estimates of mobile-phase effective porosity for PT-2D and PT-2M wells which are generally less than the estimates obtained from radius of influence calculations (Table 6). The ROI estimates provide a more direct measure of mobile-phase effective porosity than the “Ratio of Velocity” method and are considered to be more accurate.

Mobile-phase effective porosity was estimated from tracer data based on the injected volume at time of breakthrough. The radius of influence (ROI) was observed based on the injected volume and on measured tracer concentration in the wells. The data indicate that the ROI for the first four injections was approximately 15 feet and for the last two injections, was approximately 25 feet.

5.2 Biogeochemistry

This section presents the ISPT biogeochemistry results and evaluates the reduction of Cr(VI), the distribution and degradation rates of lactate, the extent of naturally occurring reducing conditions into the deep alluvial zone, the formation of a sustained capacity for Cr(VI) reduction post-treatment, and the generation and attenuation of secondary byproducts. Summaries of field parameters, primary analytical parameters, and secondary analytical parameters are presented in Tables 8, 9, and 10, respectively. Concentration trends for each deep zone well are presented in Figures 8 through 16.

¹ Tracer data in Figures 8 through 16 are normalized with respect to injection concentration as reported by laboratory analysis and therefore range from 0 to 1. Normalized fluorescein concentration for one sample following the July 2007 injection event exceeds 1.0 (as shown on Figure 8). In this case, the laboratory-determined fluorescence concentration for this injection was approximately 25 percent less than concentration estimated on the bases of mass and volume used to create the injection solution. Nevertheless, the laboratory-reported concentration was used to normalize tracer breakthrough data. Any errors of 25 percent in this value would have negligible impact on calculations of travel time and mobile-phase effective porosity.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

5.2.1 Chromium Reduction

The ISPT Cr(VI) and total dissolved chromium (Cr[T]) concentration trends demonstrated that:

- 1) Cr(VI) was successfully reduced to less than 0.2 µg/L by lactate injection,
- 2) Cr(III) formed by the reduction of Cr(VI) was removed from groundwater to less than 1 µg/L, likely by precipitation and filtration by the aquifer of the Cr(III) precipitates,
- 3) The extent of Cr(VI) reduction depended upon the distribution of organic carbon, i.e. Cr(VI) was reduced below 0.2 µg/L in monitoring wells only where sufficient TOC was delivered, and
- 4) The reduction of Cr(VI) was sustained in between injections, in the absence of residual injected organic carbon, when sufficiently high concentrations of organic carbon were initially delivered.

Because Cr(VI) was less than 1 µg/L in the shallow and middle zones prior to the ISPT, further discussion of these points in the following sections focuses on the deep zone.

5.2.1.1 Successful Cr(VI) Reduction

The reduction of Cr(VI) by lactate injections was demonstrated by decreasing trends in Cr(VI) concentrations. The injection solution was injected into PTI-1D and traveled to downgradient monitoring wells PT-1D and PT-2D, as indicated by the breakthrough of tracers and lactate, measured as TOC (Section 5.2.2), at these locations (Figures 8 and 9). In PTI-1D, PT-1D, and PT-2D, Cr(VI) concentrations declined from baseline concentrations ranging from 2,310 to 3,350 µg/L (April 2006) to less than 0.2 µg/L (November 2007). Reduction also occurred in PT-3D with concentrations declining from 4,440 µg/L in April 2006 to less than 0.2 µg/L on August 8, 2007. In contrast, Cr(VI) concentrations remained above 3,000 µg/L in upgradient wells PT-4D and PT-5D and above 450 µg/L in PT-6D, respectively, throughout the ISPT.

5.2.1.2 Precipitation of Cr(III)

In addition to achieving reduction of Cr(VI) to Cr(III), the ISPT demonstrated the successful precipitation of Cr(III). Following the fifth and sixth injections from June to

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

November 2007, the Cr(T) concentrations were below 3.5 µg/L in PT-1D and PT-2D and were below the reporting limit (1 µg/L) in many instances. The low concentrations of Cr(T) achieved demonstrate the low solubility of the Cr(III) minerals formed. Cr(III) was removed from the mobile phase of the aquifer by filtration within the aquifer, and the Cr(III) precipitates becoming part of the aquifer solid phase. As a result of Cr(III) formation, transport of any form of chromium, Cr(VI) or Cr(III), above detectable levels effectively ceased.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

5.2.1.3 Distribution of TOC and Extent of Cr(VI) Reduction

Delivery of a sufficient amount of TOC was important for achieving complete Cr(VI) reduction to below the reporting limit of 0.2 µg/L. Reductions of this magnitude occurred only in locations where sufficient TOC was delivered, as indicated by sustained TOC concentrations above 100 mg/L for at least a few weeks. The delivery of sufficient TOC was limited to the injection well during the first three injections. Cr(VI) concentrations following these injections dropped below the reporting limit only in PTI-1D, where TOC concentrations of up to 204 mg/L were observed. In contrast, the decrease in Cr(VI) levels in downgradient wells as a result of the first three injections was notable but not as extensive. Cr(VI) concentrations remained above 450 µg/L in PT-1D and PT-2D, where less TOC was delivered and maximum TOC concentrations reached less than 100 mg/L (the maximum TOC concentrations were 58.4 and 26.9 mg/L, respectively).

As the mass of lactate and volume of injection solution increased in the last three injections, a greater TOC distribution was achieved, exceeding 100 mg/L TOC by the fourth injection in PT-1D (up to 150 mg/L), and by the fifth injection in PT-2D, where concentrations of TOC were up to 466 mg/L. The complete reduction of Cr(VI) coincided with the distribution of TOC with Cr(VI) dropping below the reporting limit in PT-1D and PT-2D following the fourth and fifth injections, respectively. In cross gradient well PT-3D, distribution of TOC above 100 mg/L was achieved by the larger injection volumes used in the fifth and sixth injections, and Cr(VI) concentrations declined below the reporting limit in this well following the sixth injection.

5.2.1.4 Sustained Reduction of Cr(VI) Between Injections

The reduction of Cr(VI) was sustained between injections in the absence of injected tracer and TOC. The continued reduction of Cr(VI) between injections is advantageous because it alleviates the need for continuous injection activities and minimizes the amount of site disturbance that would be required to operate IRZs.

Between the first and second injections (July and August 2006), TOC and iodide concentrations in PTI-1D, PT-1D, and PT-2D returned toward baseline concentrations. Cr(VI) concentrations remained below baseline in PTI-1D and in PT-1D during this period, indicating that Cr(VI) in traveling to these locations from upgradient continued to be reduced groundwater in the absence of injected TOC. In PTI-1D and PT-1D (Figures 14 and 8, respectively), between 46 and 66 percent Cr(VI) reduction was sustained in between the first and second injections in July and August 2006. This trend suggests that the injections created a reservoir of residual reducing capacity in the IRZ that continued to be effective in the absence of TOC.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

This sustained Cr(VI) reduction grew stronger with additional injections, indicating that the injections created a greater capacity for residual Cr(VI) reduction with increasing concentrations of lactate. Between the fourth and fifth injections, complete Cr(VI) reduction was sustained for a period of 5 months in PTI-1D and PT-1D after TOC concentrations returned to baseline (January to May 1, 2007). The duration of sustained reduction may have extended for longer but was masked by the beginning of the fifth injection. In PT-2D, Cr(VI) concentrations declined from 171 µg/L (January 3, 2007) to 87.2 µg/L (May 2, 2007).

Based on the observed data trends to date, it is expected that sustained reduction of Cr(VI) will be maintained in some monitoring wells for an extended period after the sixth injection. The November 2007 data showed sustained Cr(VI) reduction in several wells while TOC concentrations returned towards baseline. Quantification of the duration of this effect will be achieved by the post-test monitoring currently in progress.

5.2.2 Lactate Distribution and Degradation Rates

Lactate is biodegraded (metabolized) by microorganisms along a pathway that includes the organic acids pyruvate and acetate. During this test, TOC was measured because this measurement includes both lactate and its intermediate degradation products. When lactate and the degradation intermediates are fully degraded, inorganic carbon (carbon dioxide and bicarbonate) is the final end product. The degradation of lactate releases electrons which are then available for the reduction of various electron acceptors, including Cr(VI), oxygen, nitrate, ferric iron(Fe[III]), and sulfate.

Site-specific lactate degradation rates, reported as half-life values, were evaluated from ISPT data. The site-specific degradation rates can be used to predict organic carbon

distributions and assess optimal design parameters (e.g., well spacing, organic carbon injection concentration) for full scale IRZ design.

The half-life values were based on a first order rate assumption for lactate degradation and were calculated by comparing the observed temporal changes in TOC concentrations measured at ISPT wells to the observed temporal changes in tracer concentrations. This analysis assumed that the difference in observed transport behavior between lactate and tracer is attributable to the biodegradation of lactate. The effect of dilution on TOC concentration was accounted for by comparison to the conservative tracer. The differences in the effects of advective, dispersive, diffusive, and sorptive transport processes for lactate (as TOC) and tracer were assumed to be negligible. The half-life values calculated from this analysis are presented in Table 11.

For the first injection, the best estimate of lactate half-life was 17 days. The best estimate of half-life decreased for the second through fourth injections and ranged from 4.6 to 8.9 days. The more rapid degradation of lactate in the second through fourth injections may reflect the microbial growth that occurred in response to the initial ISPT injections. The best estimate of half-life increased in the fifth injection to 18 days. The increase likely reflects a lower amount of microbial biomass in the aquifer at the time of injection potentially due to decay in the 6 month period in between the fourth and fifth injections. Lactate degradation was more rapid during the sixth than the fifth injection, as microbial biomass grew in response to the fifth and sixth injections.

5.2.3 Formation of Reducing Conditions and Residual Cr(VI)-Reducing Capacity

In addition to reducing Cr(VI), the reducing equivalents provided from lactate injections are also consumed by various electron acceptors available in the aquifer, including oxygen, nitrate, iron (Fe) oxides, and sulfate. Reducing equivalents are also consumed by the growth of bacteria and the generation of microbial biomass. The formation of reducing conditions and the distribution of reducing equivalents among the various electron acceptors affects Cr(VI) reduction because 1) competing electron acceptors consume reducing equivalents otherwise available for Cr(VI) reduction, and 2) reducing equivalents may be stored in reduced minerals (ferrous iron [Fe(II)]-bearing minerals, iron sulfide [FeS], or elemental sulfur) and microbial biomass that can mediate Cr(VI) reduction for long periods of time after the residual Cr(VI)-reducing capacity has been formed. This section details the expansion of naturally occurring reducing conditions by the six ISPT injection events and the residual Cr(VI)-reducing capacity. Concentration trends of reduction-oxidation (redox) indicators (nitrate,

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

dissolved metals, and sulfate) in PT wells and downgradient wells TW-2D and TW-3D are presented in Figures 8 through 16.

5.2.3.1 *Expansion of Naturally Occurring Reducing Conditions*

Nitrate-, metal-, and sulfate-reducing conditions naturally exist in the shallow to middle depth fluvial deposits of the aquifer within the pilot test area. The inferred extent of naturally occurring nitrate- and metal-reducing conditions are illustrated in a cross section of selected wells in Figure 17. In the baseline sampling events (March and April 2006), evidence of nitrate- and Cr(VI)-reducing conditions were observed at the shallow and middle pilot test zones. Nitrate and Cr(VI) concentrations were below the respective reporting limits (0.5 mg/L and 1 µg/L) in all shallow and middle zone ISPT wells in March and April 2006. In the shallow wells, dissolved Fe concentrations ranged from 713 to 8,350 µg/L, while dissolved Fe in middle and deep zone monitoring wells were generally below the reporting limit (500 µg/L), indicating that Fe reducing conditions naturally exist in the shallow zone. Additional baseline indications of naturally occurring reducing conditions in the shallow and middle zones were the elevated concentrations of dissolved manganese (up to 9,260 µg/L) and dissolved arsenic (up to 15.2 µg/L) compared to non-detect (less than 5 µg/L) concentrations in the deep zone wells, and relatively lower concentrations of sulfate (8.91 to 672 mg/L) in shallow and middle zone ISPT wells compared to deep zone PT wells (403 to 1,110 mg/L). Evidence of naturally occurring reducing conditions continued to be demonstrated during the test in the upgradient shallow and middle zone monitoring wells that were not affected by ISPT injections, with concentrations of dissolved manganese up to 4,400 µg/L, dissolved Fe up to 30,000 µg/L, and dissolved arsenic up to 49.4 µg/L.

Due to the six ISPT injections (Figures 18 and 19), nitrate-, metal-, and sulfate-reducing conditions were extended beyond what naturally occurs in the shallow and middle zones into the deep zone, where Cr(VI) existed prior to treatment. Nitrate was reduced below the reporting limit (0.5 milligrams of nitrogen per liter [mg N/L]) following the first and second injections, and remained below the reporting limit through November 2007 even when TOC concentrations returned to non-detectable levels. Indications of the expansion of metal-reducing conditions included declining Cr(VI) concentrations in PT-1D, PT-2D, and PTI-1D (discussed above) and localized increases in dissolved manganese (up to 10,600 µg/L) and dissolved arsenic (up to 20.8 µg/L) above baseline concentrations for these wells. Dissolved Fe concentrations did not increase above the reporting limit (500 µg/L) in PT-1D or PT-2D following the first four injections. However, Fe reduction may still have been occurring and Fe(II)

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

generated may have been present in Fe(II)-bearing minerals, sorbed to minerals within the aquifer, or may have immediately been oxidized by Cr(VI), oxygen, nitrate, or manganese oxides. Following the fifth and sixth injections, dissolved Fe concentrations increased above the reporting limit in PT-1D and PT-2D, indicating that the amount of Fe reduction increased and overwhelmed the mechanisms which limited the solubilization of Fe(II) in the first four injections (Figures 8 and 9).

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Sulfate concentrations declined slightly during the first and second injections, but not beyond what was accounted for by dilution with the injection solution, indicating that sulfate reducing conditions were not achieved. Sulfate reducing conditions were achieved by the third injection. Sulfate concentrations declined below what was accounted for by dilution to 480 mg/L following the third injection in PT-1D in October 2006 and decreased further to 355, 285, and 123 mg/L in PT-1D following the fourth, fifth, and sixth injections, respectively.

5.2.3.2 Residual Cr(VI)- Reducing Capacity

As progressively stronger reducing conditions were established over the course of the first four injections, more residual Cr(VI)-reducing capacity was stored within the aquifer and the extent of Cr(VI) reduction in between injections was increased.

Following the first injection, between 46 and 66 percent Cr(VI) reduction was sustained in PTI-1D and PT-1D. The increase in Cr(VI) concentrations to 1,360 and 1,820 $\mu\text{g/L}$ in PTI-1D in July and August 2006 compared to 3,350 $\mu\text{g/L}$ at baseline suggests that some of the residual reducing capacity generated in the immediate vicinity of the injection well was being exhausted by the influx of upgradient electron acceptors (oxygen, Cr(VI), and nitrate) and solid phase electron accepters such as Fe and manganese oxides, within this timeframe. Complete Cr(VI) reduction was maintained for six months following the fourth injection in PTI-1D and PT-1D. The greater extent of sustained Cr(VI) reduction following the fourth injection compared to following the first injection coincided with the onset of sulfate reducing conditions in the third and fourth injections.

The increased longevity of Cr(VI) reduction suggests that more residual reducing capacity was generated by 1) injecting more reducing equivalents (i.e., higher concentrations of lactate and therefore increase in biomass) cumulatively over the second, third, and fourth injections; 2) the establishment of sulfate reducing conditions in the second through fourth injections and the production of a solid phase sulfide mineral that maintained reactivity toward Cr(VI); and 3) that the formation of a reduced

Fe solid phase, other than FeS (for example, magnetite [Fe₃O₄], an iron mineral that contains reduced iron [Fe(II)]) can be created in the IRZ.

The fifth and sixth injections were conducted to further load the aquifer with reducing capacity and test the resulting longevity of Cr(VI) reduction. The amount of sulfate reduction and the inferred amount of sulfide production increased following the fifth and sixth injections, as indicated by the lower sulfate concentrations at PT-1D and PT-2D in June through August 2007 than following the fourth injection in November through December 2006. The inferred increase in sulfide produced potentially provides an increased residual reducing capacity. Assuming a steady input rate of oxidants (Cr(VI), oxygen, and nitrate) into the reduced zone, calculations indicate that the reducing capacity stored in the form of FeS minerals has the theoretical potential to sustain reduction of incoming oxidants for up to 10 years. These calculations are based upon the entire mass of FeS being reactive, rather than just the surface of the mineral. It is possible that the Fe(II)-bearing minerals and biomass that are inferred to have been formed will enhance this longevity of the reduced zone. This timeframe assumes uniform flow and complete reactivity, so a shorter timeframe is likely for some higher permeability zones that may experience higher groundwater flow and thus higher exposure to the oxidants that would consume the stored reduced minerals. Post-pilot monitoring will be conducted in the PT monitoring wells to observe continued reduction of Cr(VI) at PTI-1D, PT-1, and PT-2 to assess the consumption of the residual Cr(VI)-reducing capacity along that flowpath. Specifics of the ongoing monitoring program are discussed in Section 6.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

5.2.4 Secondary Byproducts

With the use of in-situ technology, the creation of the desired reducing environment may cause temporary dissolution and mobilization of reducible metals that naturally reside in the aquifer matrix, such as manganese, Fe, and arsenic. Once the reduction-oxidation conditions return to ambient conditions, these soluble metals typically re-oxidize, precipitate and once again bind back on the aquifer matrix. As reducing conditions were extended from the shallow and middle zones into the deep zone over the course of the six lactate injections, dissolved manganese, dissolved arsenic, and dissolved Fe were generated within the reductive zone and attenuated to baseline concentrations as groundwater returned to ambient conditions downgradient of the reductive zone.

Prior to injection, dissolved manganese concentrations in the deep zone ISPT wells and downgradient wells TW-2D and TW-3D generally ranged from less than 5 µg/L to

361 µg/L. Following injections, the highest dissolved manganese concentrations were observed in the first downgradient monitoring well, PT-1D, reaching a maximum of 10,600 µg/L (March 2007) following the fourth injection. After reaching the maximum, manganese concentrations decreased in PT-1D prior to the fifth injection, demonstrating that the generation of manganese was temporary. Dissolved manganese concentrations did not increase above baseline in PT-5D or PT-6D following ISPT the injections, indicating that the footprint of dissolved manganese was limited to the zone directly affected by the lactate injection.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Elevated levels of manganese were also detected at the 60 foot downgradient monitoring well, PT-2D, but the maximum concentration of 5,150 µg/L (March 2007) observed following the fourth injection was much lower than the maximum concentration in PT-1D. Manganese concentrations did not increase in the furthest downgradient monitoring well, TW-2D. The decline in manganese concentrations with distance from the reductive zone demonstrates that manganese attenuated as groundwater returned to ambient conditions.

Dissolved manganese concentrations remained elevated in PT-1D and PT-2D in September through November 2007. However, manganese concentrations continue to decrease along the flow path from the injection well PTI-1D and remain below detection in the extraction wells. Increasing manganese concentrations are expected to be temporary, as was observed following the fourth injection. Post-pilot monitoring will be conducted to observe the attenuation of manganese, as discussed in Section 6.

Dissolved Fe concentrations were below the reporting limit (500 µg/L) in all of the deep zone PT monitoring wells and TW-2D and TW-3D prior to ISPT injections (with the exception of 2,200 µg/L measured in PT-5D in April 2006) and did not begin to increase in PT-1D and PT-2D until the fifth injection. In PT-1D, dissolved Fe reached a maximum concentration of 1,540 µg/L in August 2007 following the sixth injection. In PT-2D, dissolved Fe concentrations increased from June to November 2007 following the fifth and sixth injections and reached a maximum concentration of 2,260 µg/L in November 2007. Fe(III) reduced during the first four injections may not have increased above the reporting limit for dissolved Fe, because Fe(II)-bearing minerals were formed or because the dissolved Fe(II) that was generated in the IRZ immediately reacted with oxidants (e.g. oxygen, Cr(VI)), sorbed to aquifer minerals, or precipitated (e.g. as FeS). The appearance of dissolved Fe following the fifth and sixth injections may represent the generation of more Fe(II) than was consumed immediately by oxidation, sorption or precipitation.

Dissolved arsenic concentrations were below or just above the reporting limit (5 µg/L) in all deep zone monitoring wells and TW-2D and TW-3D prior to ISPT injections, with the exception of PT-5D in April 2006 (11.5 µg/L). Arsenic concentrations in PT-1D increased following the ISPT injections, reaching a maximum of 11.2 µg/L following the fourth injection and a maximum of 18.3 µg/L following the sixth injection before declining to 13.8 µg/L. Despite increasing concentrations of up to 11.2 µg/L at PT-1D following the first through fourth injections, dissolved arsenic was only detected slightly above baseline in two samples from PT-2D from May 2006 through May 2007, demonstrating the attenuation of arsenic with distance downgradient of the reducing zone. Dissolved arsenic concentrations increased in PT-2D following the fifth and sixth injections (reaching a maximum of 20.8 µg/L) as the length of the reducing zone increased downgradient of PTI-1D due to the larger injection volumes and increased lactate concentrations in the fifth and sixth injections. The decline in dissolved arsenic concentrations after reaching the maximum in PT-1D and PT-2D demonstrated that the dissolution of arsenic due to ISPT injections was temporary. Dissolved arsenic was not detected above the reporting limit during the ISPT at downgradient wells TW-2D and TW-3D.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Although dissolved manganese, Fe, and arsenic increased due to ISPT injections, the maximum concentrations (10,600 µg/L, 1,970 µg/L, and 20.8 µg/L, respectively) were below or comparable to the maximum concentrations observed in upgradient wells PT-4S/M, PT-5S/M, and PT-6S/M (9,260 µg/L, 30,000 µg/L, and 49.4 µg/L, respectively) in the naturally reducing shallow and middle zone fluvial sediments. The development of reducing conditions and the associated generation of secondary byproducts in the deep zone alluvial sediments of the aquifer extended the reductive zone that naturally occurred in the shallow fluvial sediments, expanding the naturally occurring Cr(VI) reductive zone.

Dissolved manganese, dissolved Fe, and dissolved arsenic concentrations were comparable to baseline in PT-5D and PT-6D for the duration of the pilot test. The width of the footprint of secondary byproduct generation was therefore limited and was within the capture zone of TW-3D.

6. Future Groundwater Sampling and Reporting Plan

The ISPT, including six injection events and subsequent monitoring, was deemed complete on December 4, 2007. Monitoring was conducted throughout the pilot test as outlined in the original MRP and Revision 1 to the MRP of Board Order R7-2006-0008 (as described in Section 3). As such, the sampling requirements specified in the MRP and the Revised MRP have been fulfilled; however, quarterly sampling events began in December 2007. Subsequent monitoring reports will be submitted on a quarterly basis in 2008, as required in Revision 1 to the MRP.

The post-pilot study monitoring will be conducted on a quarterly basis to assess 1) the longevity of Cr(VI) reduction sustained by reducing capacity generated by the fifth and sixth ISPT injections and 2) the attenuation of secondary byproducts generated by ISPT injections. To assess the longevity of Cr(VI) reducing conditions, samples will be collected for Cr(VI) and Cr(T) analysis. To monitor the attenuation of secondary byproducts, samples will be collected for dissolved manganese, dissolved Fe, and dissolved arsenic.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

7. Data Gaps

There were no data gaps, deficiencies, or redundancies in the monitoring system or reporting program.

No operational and maintenance issues or interruptions to remedial systems occurred during the reporting period. The field variances that occurred during the test are listed below.

Sample holding time exceedances for Cr(VI) were minor and no significant loss of target analyte is expected to have occurred. In fact, recent changes in USEPA's Method Update Rule, effective April 11 2007 now allow a 28-day holding time for Cr(VI). The results are considered usable for assessing groundwater concentrations for the purposes of the pilot test. These variances were reported in the required monthly monitoring reports.

- In May 2006, thirty-four samples collected for Cr(VI) analysis at an off-site laboratory were analyzed outside the USEPA-recommended 24-hour holding time.
- In May 2006, six samples were collected for Cr(VI) to be analyzed on-site at the IM-3 laboratory; however due to the large number of samples and IM-3 operational demands, these samples were not analyzed.
- In June 2006, one sample collected for Cr(VI) analysis at an off-site laboratory was analyzed outside the USEPA-recommended 24-hour holding time.
- In July 2006, one sample collected for Cr(VI) analysis at an off-site laboratory was analyzed outside the USEPA-recommended 24-hour holding time.
- In August 2006, four samples collected for Cr(VI) analysis at an off-site laboratory were analyzed outside the USEPA-recommended 24-hour holding time
- In November 2006, samples from injection wells PTI-1S/M/D were not sent to Truesdail for laboratory analysis for Cr(VI); however the injection wells were sampled and analyzed for Cr(VI) in the IM-3 laboratory.
- In October 2007, two samples collected for Cr(VI) analysis at an off-site laboratory were analyzed outside the USEPA-recommended 24-hour holding time.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
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San Bernardino County,
California

8. Potential Full Scale Applications of In-Situ Cr(VI) Treatment Technology

The floodplain pilot test has demonstrated that Cr(VI) in the aquifer can be successfully reduced in-situ at the field-scale level. The test has also provided basic engineering data in terms of required volumes and TOC dosing to achieve these results. The following section discusses possible scale-up of these pilot test results.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Based on the results of this test, the necessary technical data to support implementation of a full-scale in situ treatment program for Cr(VI) on the floodplain at the Topock site is available.

8.1 TOC Distribution

The pilot test clearly demonstrated that effective distribution of TOC is the key criteria to achieve reduction of Cr(VI). The distribution of TOC during the ISPT was a function of the injection volumes, injected TOC load, the resultant injection ROI (between approximately 15 and 25 feet initial ROI's around the injection well for the 6,000 and 18,000 gallon injected volumes, respectively) and then the subsequent advective transport of the TOC in groundwater beyond the initial injection area. The injected TOC was transported toward the extraction wells TW-3D and TW-2D during the pilot test at a rate of 1 to 3 ft/day; the TOC degraded with a half-life range of 5 to 18 days. A larger area of influence of the injected organic carbon could be achieved from a single well by injecting larger volumes, using a different transportable carbon source with a longer half-life than lactate, or by creating a more rapid groundwater flow to cause transport of injected organic carbon. The distance which an injected organic carbon compound can be transported from an injection well is controlled by the half-life of the organic carbon compound and the ambient groundwater flow.

8.2 Longevity of a Reductive Zone

Another key issue is the ability to sustain a reducing environment in the aquifer that will continue to treat Cr(VI) without continued injection of the carbon source. The test showed that Cr(VI) reducing conditions could be sustained for a minimum of several months and perhaps much longer. The existing Fe and sulfate content of the aquifer is sufficient to allow creation of tenths of a percent FeS or reduced Fe oxides within the aquifer (this statement is based on the measured citrate-bicarbonate-dithionite extraction (CBD)-reducible Fe in the 1,000+ milligram per kilogram (mg/kg) range and sulfate in the 300+ mg/L range at the site). The longevity of a given reduced zone is defined by the mass of the reduced minerals and biomass generated in response to

the lactate injections – the more reduced minerals are generated, the longer a given reduced zone would be sustained. Considering only the reactive minerals, an aquifer containing 1,000 mg/kg reduced Fe minerals with a reduced zone length of 100 feet (50 feet ROI around the injection wells) could receive potentially tens to hundreds of pore volumes prior to requiring recharge of the reduced FeS minerals, depending on the Cr(VI), nitrate, and oxygen in the upgradient water entering the reduced zone.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

8.3 Floodplain Full Scale In Situ Treatment Options

The floodplain pilot test showed that direct injection of organic carbon into the alluvial aquifer materials created a sustained reductive zone that continued to remove Cr(VI) after the injection phase was completed. This section identifies potential conceptual approaches to expanding the reductive zone throughout the floodplain aquifer.

The objectives of a full scale floodplain treatment would be two-fold:

1. Treatment of the existing Cr(VI) presently in the alluvial zone of the aquifer on the floodplain so all the Cr(VI) on the floodplain has been completely addressed at the end of the injection period. This objective would be recognized as successful when the floodplain monitoring well network demonstrates Cr(VI) concentrations at or below background.
2. Transformation of the iron and sulfate in the aquifer into their reduced mineral forms that would then continue to react with and treat Cr(VI) that could transport in groundwater onto the floodplain. This residual reactive zone would be similar in composition to the fluvial aquifer zone, where reduced iron and sulfide provide a sustaining reductive reaction zone that currently reduces Cr(VI) that contacts these materials. Achievement of this objective would be demonstrated by transformations of iron, sulfate, and secondarily other groundwater constituents such as nitrate and dissolved oxygen measured in monitoring wells, so that the entire floodplain aquifer in the area of the existing plume is a reductive zone where Cr(VI) treatment is sustained without continued injection.

Two potential conceptual approaches are considered for injection of organic carbon: direct injection and recirculation. Both approaches would require the installation of additional injection wells on the floodplain. The direct injection approach could utilize treated water from the IM-3 treatment plant, or an alternate clean water supply. The treated IM-3 water would be piped down to the MW-20 bench area, amended with

organic carbon on the MW-20 bench and then distributed in a main header pipe along the side of National Trails Highway. Temporary piping or hoses would carry injection solution from the header pipeline across the floodplain to each injection well. The location of the wells would be along two transects on the floodplain (Figure 20), one next to the Colorado River (the East IRZ line) and one in the middle of the floodplain (the Mid-Floodplain IRZ line). The length of the injection period for each well is discussed below, but is assumed to be a period of 1 month up to 1 year.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

The recirculation approach would include wells located on the floodplain in locations similar to the direct injection approach. Floodplain groundwater would be extracted from one well, amended with organic carbon at the surface, and then reinjected into an adjacent well. The paired extraction and injection wells would create a recirculation pattern around the pair of wells which would provide efficient distribution of the organic carbon amendment. By changing the pairing of wells from injection to extraction wells and vice versa, coverage in each direction can be enhanced. The period of time for recirculation of each well pair is assumed to be at least 1 month, but less than 1 year. Multiple well pairs could be run at one time, allowing the entire treatment process to be completed in as little as one year or as long as a few years.

In both the direct injection and the recirculation approaches, the organic carbon dosing rate would be adjusted to transform the iron and sulfate in the aquifer to their reduced forms and to develop residual biomass on the soil particles, so that the potential reductive capacity of the aquifer would be maximized. At the end of the injection period, the combined reductive capacity of the floodplain aquifer would be capable of treating the Cr(VI) currently in the plume. A monitoring well network would be utilized to monitor the continued reactivity of the floodplain aquifer, and if a loss of reactivity were observed, follow up injections could be used to restore reactivity.

The extent of the proposed treatment zone and the sequencing of the installation of the treatment zone have been considered to maintain containment of the plume during the installation of the floodplain treatment (Figure 20). Treatment would progress in two steps:

1. Injection beyond the edge of the 50 µg/L Cr(VI) plume would occur first in order to create a treatment zone that would provide a protective reductive zone outside of the existing plume footprint. This first treatment zone would extend slightly beyond the present plume edges. (East IRZ line on Figure 21).

2. The second step in treatment would focus on the inner portions of the plume area while maintaining the first treatment zone in order to prevent any spreading of the plume (Mid-floodplain IRZ line on Figure 22). All of the treatment zone would be within the capture zone maintained by IM-3.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

8.3.1 Direct Injection

There are numerous potential arrangements of wells and injection programs that could be used in a full-scale treatment program. They include direct injection programs (discussed in this section) and recirculation well systems (discussed in the following section). The following is a conceptual-level description of a full-scale floodplain treatment program using direct injection well design.

An important design parameter is the radius of influence of an injection well. The larger the radius of influence that can be achieved, the fewer wells would be needed to treat a given area. Key parameters that affect the ROI of an injection include:

- The intrinsic capacity of the aquifer to receive injected water, which limits the potential rate of the injection.
- The thickness of the screen interval, which would be designed to be equivalent to the thickness of the plume in the particular location on the floodplain (Figures 21 and 22).
- The injection rate selected (the range considered in this analysis was from 10 to 30 gallons per minute).
- The mobile porosity, which was determined in the pilot test to be 0.12.
- The variable hydraulic conductivity of the aquifer in the area affected by the injection, which limits the extent and affects the direction of flow from the injection well, causing some directional variability in coverage.
- The duration of injection.

Preliminary calculations show that the continuous injection of water into a well on the floodplain for a 25 day injection period would create an injection-affected area ranging from 40 to over 100 feet in radius around the injection well. Extending the duration of water injection out to 100 days expands the coverage of the injection zone, but not

linearly. In general, radius of influence approximately doubles between 25 days of injection and 100 days of injection.

The current extraction of groundwater on the floodplain provides a key control of groundwater transport from injection wells. In its current configuration, TW-3D provides control of groundwater migration on the floodplain, and PE-1 provides an enhanced capture near the Colorado River. When considering potential locations of injection wells, PE-1 most strongly affects injected solutions in both injection lines considered on the floodplain. In general, wells located close to PE-1 short-circuit injected water directly to PE-1, making uniform application of in situ treatment in the floodplain aquifer near PE-1 difficult with the continued operation of this extraction well during the injection period. Therefore, for the short period of injection in the floodplain, well PE-1 would be turned off and all of the IM-3 extraction would continue from TW-2D and TW-3D wells, or other wells along National Trails Highway.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

If injection were sustained for 100 days, spacing of wells along the transects shown in Figure 20 could range from 150 to 200 feet apart. Injection for periods much longer than 100 days may not be feasible due to loss of permeability around injection wells, and a diminishing coverage of carbon. (Degradation of organic carbon injected at the injection wells along the flowpath from the well to the edge of the radius of influence causes the edges of the injection zone to run out of organic carbon. The practical limit of coverage of organic carbon from a single well is probably in the range of 100 days of groundwater travel time.) At this spacing, four to six injection wells could achieve coverage along the East IRZ line, and six to ten injection wells could achieve coverage along the Mid-Floodplain IRZ line.

8.3.2 Recirculation

The following is a conceptual level description of a full-scale floodplain treatment program utilizing a recirculation well design. Preliminary calculations show that recirculation wells can be operated at a spacing of approximately 200 feet apart and achieve efficient distribution of injected organic carbon solutions across the floodplain. Similar factors that control the coverage of solutions using direct-injection wells apply to recirculation wells: hydraulic conductivity of the aquifer, the screen interval, the recirculation rate and the transport porosity.

Similar to direct-injection wells, spacing of recirculation wells is intrinsically limited by the degradation of the organic carbon along its transport path from the injection well toward the extraction well. In a recirculation approach, a similar number of wells would

be installed as with the direct-injection approach, with the key difference being that additional infrastructure would be required in the floodplain to enable recirculation between wells. (Note that the in-well recirculation approach being tested in the upland is not an appropriate approach for the floodplain, because the plume is relatively thin in the floodplain, and the in-well recirculation approach is only feasible for plume thicknesses over 30 to 40 feet thick.)

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Infrastructure required to enable recirculation between wells includes:

- Power to the extraction wells to power a submersible pump in the well.
- A recirculation pipe between injection and extraction wells.
- Organic carbon supply line to be mixed into the recirculation line between the injection and extraction well. A supply tank could be located at each well, or at a common location on the floodplain, or a common location on the MW-20 bench.
- Control structures to control pumping and organic carbon dosing rates.

Either approach to the full-scale floodplain treatment program would be designed to be a one-time treatment. Were a subsequent treatment required to regenerate the reductive capacity on the floodplain, it would be required on the upland side where Cr(VI), oxygen, or nitrate enter the reduced zone on the floodplain. Such a regeneration zone could be located adjacent to National Trails Highway (National Trails Highway IRZ line on Figure 20), and would not require permanent infrastructure on the floodplain other than monitoring wells. After the initial floodplain treatment is complete, any infrastructure associated with the treatment on the floodplain would be removed.

In any floodplain treatment the existing monitoring wells would be used to demonstrate completeness of treatment. The wells would also be used to evaluate the degradation of the injected organic carbon and the attenuation of secondary byproducts formed as a result of the reducing conditions in the aquifer. Several additional wells may be required to demonstrate the completeness of treatment and to evaluate the permanence of the reduced zone. The additional monitoring wells would likely be located between National Trails Highway and the Mid-Floodplain IRZ line.

9. Conclusions

This report summarizes the results of the Floodplain ISPT, and serves as the primary evaluation of the effectiveness of the pilot study as required by the WDRs.

The results of the floodplain ISPT successfully demonstrated that lactate injections reduced dissolved chromium concentrations by precipitating chromium. The solubility of the Cr(III) precipitate that formed was low, resulting in Cr(VI) concentrations below 0.2 µg/L and Cr(T) concentrations below 1 µg/L. In addition, reducing capacity was stored within the IRZ that sustained Cr(VI)-reduction without continuous injection of lactate for a minimum of 6 months.

The footprint of secondary byproducts generation associated with the establishment of reducing conditions by ISPT injections was limited. Secondary byproducts were not detected at downgradient wells TW-2D and TW-3D, demonstrating the attenuation of secondary byproducts downgradient of the reductive zone.

The site-specific parameters, including lactate utilization stoichiometry, reaction rates of reagent consumption (lactate half-life values), and aquifer characteristics (mobile porosity and groundwater velocity) were evaluated from floodplain ISPT results. These site-specific parameters will serve at the design basis for potential full-scale IRZs for Cr(VI) remediation at the Topock site. Based on the results of this test, all necessary technical data to support implementation of a full-scale in situ treatment program for Cr(VI) at the Topock site is available.

No operational and maintenance issues or interruptions to remedial systems occurred during the reporting period. Several field variances occurred during the pilot test (Section 7); however, the variances were minor and had no effect on the pilot test.

A future supplemental report will be prepared as part of the corrective measures process at the site. That report will review subsequent data obtained as a part of post-test monitoring.

The floodplain pilot test provided design information that allows for conceptualization of full scale floodplain application of in situ Cr(VI) treatment technology at Topock. In one possible conceptual approach, in situ treatment could be used to first remediate the floodplain area, and then used in a barrier system along National Trails Highway to prevent further migration of Cr(VI) onto the floodplain. The combined National Trails Highway IRZ line, the clean reduced buffer zone on the floodplain, and the natural

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

reducing fluvial sediments around the River would provide a stable protective system for the Colorado River. The protection provided by this system could potentially be coupled with a range of remedial alternatives to be considered in the upland plume area.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

10. References

ARCADIS, 2005. Final Addendum to the In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (Work Plan Addendum), Waste Discharge Requirements, Order No. R7-2006-0008, PG&E Topock Compressor Station, San Bernardino County, California, December 5.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

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MWH, 2005. In-Situ Hexavalent Chromium Reduction Plan, Floodplain Reductive Zone Enhancement (Work Plan), Waste Discharge Requirements, Order No. R7-2006-0008, PG&E Topock Compressor Station, San Bernardino County, California, August 8.

11. Certification

PG&E submitted a signature delegation letter to the RWQCB on July 5, 2006. The letter delegated PG&E's signature authority to Mr. Curt Russell and Ms. Yvonne Meeks.

Waste Discharge Requirements
Order No. R7-2006-0008 and
Order No. R7-2007-0014
PG&E Topock Compressor
Station
San Bernardino County,
California

Certification Statement:

I declare under the penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations.

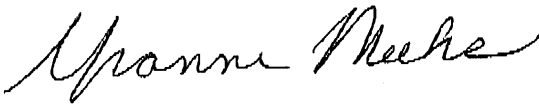
Signature: 
Name: Yvonne Meeks
Company: PG&E
Title: Project Manager
Date: March 5, 2008

Table 1
Boring and Well Construction Detail Summary
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Well or Boring Designation	Date Completed	Aquifer Zone	Ground Elevation*	TOC Elevation**	Total Depth of Boring	Casing Diameter	Boring Diameter	Well Completion Depth	Well Completion Elevation	Screen Depth Interval	Screen Elevation Interval	Sand Pack Depth Interval	Sand Pack Elevation Interval	Bentonite Depth Interval	Bentonite Elevation Interval	Well Permit Number	Distance From PTI-1	Latitude	Longitude
			(feet msl)	(feet msl)	(feet bgs)	(inches)	(inches)	(feet bgs)	(feet msl)	(feet bgs)	(feet msl)	(feet bgs)	(feet msl)	(feet bgs)	(feet msl)		(feet)		
PT-1S	31-Jan-06	S	472.239	474.644	125	2	10	45	430	35-45	440-430	32-47	443-428	28-32	447-443	2006010013	20	34° 43' 10.3"	114° 29' 25.8"
PT-1M	31-Jan-06	M	472.239	474.622	125	2	10	70	405	60-70	415-405	57-72	428-403	46-57	429-418	2006010013	23	34° 43' 10.3"	114° 29' 25.8"
PT-1D	31-Jan-06	D	472.239	474.627	125	2	10	105	370	95-105	380-370	92-125	383-350	72-92	403-383	2006010013	24	34° 43' 10.3"	114° 29' 25.8"
PT-2S	8-Feb-06	S	471.627	473.487	127	2	10	45	428	35-45	438-428	32-47	441-426	28-32	445-441	2006010012	45	34° 43' 10.3"	114° 29' 26.1"
PT-2M	8-Feb-06	M	471.627	473.587	127	2	10	70	404	60-70	414-404	57-72	423-402	46-57	428-417	2006010012	47	34° 43' 10.3 "	114° 29' 26.1"
PT-2D	8-Feb-06	D	471.627	473.522	127	2	10	105	369	95-105	379-369	92-127	382-347	72-92	402-382	2006010012	49	34° 43' 10.3"	114° 29' 26.1"
PT-3S	14-Feb-06	S	471.698	473.584	129	2	10	45	429	35-45	439-429	32-47	442-427	28-32	446-442	2006010011	12	34° 43' 10.2"	114° 29' 25.6"
PT-3M	14-Feb-06	M	471.698	473.520	129	2	10	70	404	60-70	414-404	57-72	427-402	46-57	428-417	2006010011	15	34° 43' 10.2"	114° 29' 25.6"
PT-3D	14-Feb-06	D	471.698	473.525	129	2	10	105	369	95-105	379-369	92-127	382-347	72-92	402-382	2006010011	13	34° 43' 10.2"	114° 29' 25.6"
PT-4S	12-Feb-06	S	471.79	474.430	127	2	10	45	429	35-45	439-429	32-47	442-427	28-32	446-442	2006010010	27	34° 43' 10.1"	114° 29' 25.4"
PT-4M	12-Feb-06	M	471.79	474.331	127	2	10	70	404	60-70	414-404	57-72	423-403	46-57	428-417	2006010010	29	34° 43' 10.1"	114° 29' 25.4"
PT-4D	12-Feb-06	D	471.79	474.299	127	2	10	105	369	95-105	379-369	92-127	382-347	72-92	402-382	2006010010	24	34° 43' 10.1"	114° 29' 25.4"
PT-5S	10-Feb-06	S	471.262	473.611	127	2	10	45	429	35-45	439-429	32-47	442-427	28-32	446-442	2006010009	54	34° 43' 10.1"	114° 29' 25.0"
PT-5M	10-Feb-06	M	471.262	473.630	127	2	10	70	404	60-70	414-404	57-72	427-402	46-57	428-417	2006010009	53	34° 43' 10.2"	114° 29' 25.0"
PT-5D	10-Feb-06	D	471.262	473.625	127	2	10	105	369	95-105	379-369	92-127	382-347	72-92	402-382	2006010009	49	34° 43' 10.2"	114° 29' 25.0"
PT-6S	28-Jan-06	S	474.441	475.981	137	2	10	45	431	35-45	441-431	32-47	444-429	28-32	448-444	2006010008	27	34° 43' 10.6"	114° 29' 25.4"
PT-6M	28-Jan-06	M	474.441	476.025	137	2	10	70	406	60-70	416-406	57-72	425-404	46-57	430-419	2006010008	23	34° 43' 10.6"	114° 29' 25.4"
PT-6D	28-Jan-06	D	474.441	476.013	137	2	10	105	371	95-105	381-381	92-137	384-339	72-92	444-384	2006010008	25	34° 43' 10.6"	114° 29' 25.4"
PTI-1S	28-Jan-06	S	472.751	475.035	47	4	10	45	430	35-45	440-430	32-47	443-428	28-32	447-443	2006010006	0	34° 43' 10.4"	114° 29' 25.5"
PTI-1M	26-Jan-06	M	472.938	475.087	77	4	10	70	405	60-70	415-405	57-72	428-403	46-57	429-418	2006010007	0	34° 43' 10.4"	114° 29' 25.6"
PTI-1D	26-Jan-06	D	472.573	474.762	137	4	10	105	370	95-105	380-370	92-137	383-338	72-92	403-383	2006010005	0	34° 43' 10.4"	114° 29' 25.6"
TW-2D	1-Apr-04	D	496.932	496.932	180	6	12	153	344	113-148	384-349	108-153	389-344	153-180, 101-108	344-317, 396-394	-	205	34° 43' 10.3"	114° 29' 28.0"
TW-3D	24-Oct-05	D	497.415	497.415	157	6	10	153	344	111-156	386-341	105-157	392-340	50-105	447-392	-	217	34° 43' 10.2"	114° 29' 28.1"
PE-1	2-Mar-05	D	466.879	496.549	105	6	10	110	387	79-89	418-408	76-99	421-398	99-105, 72-76	398-425, 392-421	2005101057	296	34° 43' 9.3"	114° 29' 22.2"

Notes:

feet bgs	Feet below ground surface
feet msl	Feet mean sea level
PTI-	Pilot test injection well
PT-	Pilot test monitoring well
S	Shallow
M	Middle
D	Deep
TOC	Top of casing
*	Elevations are in feet, North American Vertical Datum of 1988 (NAVD 88), NGS data sheet EU0763.
**	Reference elevation
-	Not available

Table 2
Injection Detail Summary

PG&E Topock

Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Well	Date	Solution (gallons)	Lactate amount (pounds)	Yeast amount (pounds)	Tracer Type	Tracer Amount (pounds)	Approximate Tracer Amount (mg/L)	Approximate Solution TDS	Injection Rate (gpm)	Injection Pressure (psi)
PTI-1S	3-May-06	6,000	50	14	Fluorescein	0.33	5	1,000	23	2 to 4
PTI-1M	4-May-06	6,000	50	14	Sodium Bromide	129	2,000	1,000	52	9
PTI-1D	5-May-06	6,000	50	14	Potassium Iodide	131	2,000	1,000	52	2
	11-Aug-06	6,000	100	14	Fluorescein	0.33	5	1,000	65	4 to 10
	7-Sep-06	6,000	100	14	Potassium Iodide	100	1,900	1,000	65	4 to 10
	1-Nov-06	6,000	200	14	Fluorescein	0.33	5	1,000	65	4 to 10
	7-May-07, 8-May-07	18,000	1,500	14	Fluorescein	0.33	1.6	1,000	49	7
	17-Jul-07, 18-Jul-07	18,000	1,500	14	Potassium Iodide	100	633	1,000	50	20

Notes

Injection solution water provided by IM-3. Lactate is in 60% solution.

PTI pilot test injection well
TDS total dissolved solids
mg/L milligrams per liter
gpm gallons per minute
psi pressure per square inch
S shallow
M middle
D deep

Table 3
Hexavalent Chromium Reduction in Select Wells

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Pre- Pilot Study		Post- Pilot Study	
	Sample Date	Hexavalent Chromium (µg/L)	Sample Date	Hexavalent Chromium (µg/L)
PT-1D	17-Mar-06	2,470	06-Nov-07	<0.2
	06-Apr-06	3,080		
PT-2D	17-Mar-06	1,660	06-Nov-07	<0.2
	06-Apr-06	2,310		
PT-3D	18-Mar-06	4,390	07-Nov-07	721
	05-Apr-06	4,440		
PTI-1D	15-Mar-06	1,620	06-Nov-07	<0.2
	03-Apr-06	3,350		

Notes:

µg/L Micrograms per liter
< limit as noted

Table 4
History of Groundwater Extraction (in Gallons)

PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Month	TW-2S	TW-2D	TW-3D	PE-1
Prior	594,358	34,461,584	0	0
August 2005	147,455	2,939,314	0	0
September 2005	151,704	3,160,171	0	0
October 2005	100,921	3,934,469	0	0
November 2005	0	3,495,002	0	0
December 2005	0	2,989,136	1,987,161	0
January 2006	0	1,895,680	3,310,767	341,880
February 2006	0	0	3,945,567	1,460,265
March 2006	0	0	4,377,424	1,559,939
April 2006	0	0	4,103,740	1,455,527
May 2006	0	0	4,311,499	1,492,985
June 2006	0	0	4,128,962	1,483,362
July 2006	0	0	4,366,058	1,573,154
August 2006	0	75,549	4,299,628	1,583,501
September 2006	0	0	4,179,985	1,513,702
October 2006	0	64,096	4,416,804	1,426,923
November 2006	0	0	4,253,217	1,494,064
December 2006	0	0	4,446,113	1,494,533
January 2007	0	0	4,428,337	1,470,282
February 2007	0	0	4,085,607	1,329,440
March 2007	0	0	4,401,973	1,468,489
April 2007	0	0	3,370,364	1,122,608
May 2007	0	0	4,572,112	1,479,560
June 2007	0	0	4,490,440	1,401,282
July 2007	0	0	4,472,504	1,429,508
August 2007	0	2,164	4,469,536	1,419,770
September 2007	0	1,810	4,432,824	1,363,426
October 2007	531	2,942	4,636,776	1,421,656
November 2007	0	0	4,636,776	1,333,096

Table 5
Estimated Darcy Velocities
 PG&E Topock
 Needles, California
 Floodplain Reductive Zone In-Situ Pilot Test: Final Completion Report

Well Pairs	Hydraulic Gradient (feet per foot)*	Hydraulic Conductivity (feet per day)	Darcy's Velocity (feet per day)
PTI-1S and PT-1S	0.001	22	0.02
PTI-1S and PT-2S	0.001	22	0.02
PTI-1S and PT-3S	0.001	22	0.02
PTI-1M and PT-1M	0.0025	5	0.01
PTI-1M and PT-2M	0.0025	5	0.01
PTI-1M and PT-3M	0.0025	5	0.01
PTI-1D and PT-1D	0.001	46	0.05
PTI-1D and PT-2D	0.001	46	0.05
PTI-1D and PT-3D	0.001	46	0.05
PTI-1D and TW-2D	0.008	46	0.37
PTI-1D and TW-3D	0.008	46	0.37

*Source of hydraulic conductivity is the Groundwater Model Report, Topock Compressor Station, Needles, California. CH2M Hill, August 2006.

Table 6
Mobile Porosity Estimates

PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Well #	Mobile Porosity	Method used for Estimate
PT-1D	0.12	ROI calculation
PT-3D	0.12	ROI calculation
PT-4D	0.12	ROI calculation
PT-2D	0.02	Ratio of velocities
PT-2M	0.005	Ratio of velocities

ROI: Radius of Influence

Table 7
Estimated Average Pore Water velocity from Tracer Breakthrough Curves
 PG&E Topock
 Needles, California
 Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Well	Radial Distance from PTI (days)	Breakthrough Time (days)			Velocity (feet per day)		
		Bromide	Iodide	Fluorescein	Bromide	Iodide	Fluorescein
1st Injection							
PT-2D	44.7		30			1.49	
PT-2M	44.7	20			2.24		
2nd Injection							
PT-2D	44.7			47			0.95
3rd Injection							
PT-2D	44.7		40			1.12	
4th Injection							
PT-2D	44.7			20			2.24
5th Injection							
PT-2D	44.7		23			1.94	
6th Injection							
PT-2D	44.7			21			2.13
Best Estimates of Velocity (feet per day)							
PT-2M	2.24						
PT-2D	1.64						

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-1S	17-Mar-06	N	35-45	-150.7	7.05	6,565	26.62	<10
	06-Apr-06	N		-173	7.06	6,892	26.92	<10
	04-May-06	N		-100.6	8.06	8,889	25.64	<10
	05-May-06	N		-107.2	7.55	7,457	26.82	<10
	06-May-06	N		-88.4	7.09	7,318	26.45	<10
	07-May-06	N		-98.6	7.31	7,097	26.59	10
	08-May-06	N		-82.7	7.35	6,976	26.65	<10
	09-May-06	N		-30.7	7.12	7,550	26.63	<10
	10-May-06	N		-102.2	7.15	6,735	26.72	<10
	11-May-06	N		-97.7	7.22	6,369	26.72	<10
	12-May-06	N		-73	7.08	6,594	26.72	<10
	13-May-06	N		-47.2	7.18	5,961	26.61	---
	23-May-06	N		14.1	7.34	5,830	27.01	<10
	01-Jun-06	N		567.9	7.03	3,636	26.54	<10
	06-Jun-06	N		-173.5	7.39	6,546	26.88	<10
	18-Jul-06	N		-133.4	7.25	6,461	26.6	<10
	08-Aug-06	N		-139.1	6.96	7,412	26.43	10
	06-Sep-06	N		-175.9	7.44	6,555	26.87	13
	04-Oct-06	N		-151.8	7.33	6,939	26.97	18
	08-Nov-06	N		-138.6	6.78	9,980	26.04	38
	05-Dec-06	N		-132.4	6.57	10,303	22.97	63
	03-Jan-07	N		-131.6	6.87	9,494	24.91	18
	07-Feb-07	N		-140.5	7.49	7,834	24.72	<10
	07-Mar-07	N		-120.6	7.21	6,381	25.51	<10
	05-Apr-07	N		-133.4	7.26	6,538	25.94	<10
	02-May-07	N		-128.7	7.04	6,515	25.65	<10
	06-Jun-07	N		-119.6	7.1	6,256	25.44	<10
	11-Jul-07	N		-99.2	7.04	6,745	25.98	<10
	08-Aug-07	N		-113.4	7.14	8,112	25.99	22
	06-Sep-07	N		-125.8	6.98	7,618	26.31	<10

Table 8
Summary of Field Parameters
 PG&E Topock
 Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-1M	17-Mar-06	N	60-70	-211	7.46	7,000	26.21	<10
	06-Apr-06	N		-211.1	9	7,506	26.54	<10
	04-May-06	N		-88.7	8.45	6,824	25.1	<10
	06-May-06	N		-93.1	7.48	7,221	25.8	---
	07-May-06	N		-98.2	7.62	7,202	26.1	38
	08-May-06	N		-77.6	7.07	4,593	26.16	42
	09-May-06	N		-19.6	7.62	7,273	26.23	<10
	10-May-06	N		-118.8	7.69	6,657	26.55	15
	11-May-06	N		-92.1	7.61	6,539	26.29	11
	12-May-06	N		-77.3	7.54	6,877	26.3	<10
	13-May-06	N		-39.2	7.47	5,933	26.26	---
	24-May-06	N		-16.2	7.67	5,837	26.24	<10
	31-May-06	N		-59.6	7.36	4,549	27.59	<10
	06-Jun-06	N		-176.9	7.62	7,071	26.27	<10
	18-Jul-06	N		-139.6	7.51	6,927	26.3	<10
	08-Aug-06	N		-183.5	7.21	6,826	25.66	<10
	06-Sep-06	N		-233.4	7.88	6,750	26.3	17
	04-Oct-06	N		-132.1	7.51	6,823	28.81	12
	08-Nov-06	N		-146	7.14	6,743	25.36	10
	05-Dec-06	N		-133.1	6.87	6,503	23.29	83
	03-Jan-07	N		-100.2	7.26	6,511	24.62	<10
	07-Feb-07	N		-142.4	7.73	6,473	24.06	<10
	06-Mar-07	N		-160.7	7.45	5,959	25.38	<10
	05-Apr-07	N		-110.9	7.63	5,970	25.41	<10
	02-May-07	N		-101.3	7.29	5,693	24.82	<10
	15-May-07	N		-136.4	7.5	5,872	25.28	<10
	22-May-07	N		-134.9	7.13	5,783	25.07	<10
	30-May-07	N		-122.9	7.3	5,873	25.02	<10
	06-Jun-07	N		-176.3	7.49	5,526	24.78	<10
	11-Jul-07	N		-35.6	7.32	5,857	25.20	<10
	24-Jul-07	N		-107.6	7.29	5,891	25.20	<10
	31-Jul-07	N		-76.1	7.5	5,967	25.36	<10
	08-Aug-07	N		-103.8	7.53	5,958	25.04	<10
	14-Aug-07	N		-112.1	7.31	5,928	26.26	<10
	06-Sep-07	N		-94.4	7.2	6,130	25.21	<10

Table 8
Summary of Field Parameters
 PG&E Topock
 Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-1D	17-Mar-06	N	95-105	-129.5	7.36	13,149	26.06	1,900
	06-Apr-06	N		112	6.66	14,027	26	3,040
	05-May-06	N		47.6	7.86	12,918	26.03	---
	06-May-06	N		69.3	7.36	14,048	26.18	4,660
	07-May-06	N		79.3	7.62	13,536	26.07	3,680
	08-May-06	N		85.6	7.71	12,334	26.14	4,980
	09-May-06	N		-145.2	7.59	12,058	26.18	2,960
	10-May-06	N		5.7	7.54	11,794	26.19	2,840
	11-May-06	N		-7.1	7.71	10,586	26.1	1,740
	12-May-06	N		-6	7.56	10,653	26.5	2,260
	13-May-06	N		41.9	7.6	9,215	25.9	---
	24-May-06	N		90.2	6.6	10,570	26.25	1,420
	31-May-06	N		358.1	5.89	5,935	29.21	980
	05-Jun-06	N		403.4	8.41	10,776	27.13	840
	17-Jul-06	N		201.6	7.39	11,498	26.29	840
	08-Aug-06	N		-163.8	7.17	11,662	25.83	1,240
	14-Aug-06	N		-22.9	8.1	9,762	27.52	820
	17-Aug-06	N		-154.6	8.16	10,189	26.46	580
	22-Aug-06	N		-109.3	8.31	9,846	26.68	540
	24-Aug-06	N		-2.1	8.03	9,779	26.62	580
	29-Aug-06	N		-42.1	8.12	9,308	26.56	480
	05-Sep-06	N		-94.7	8.33	9,402	27.92	371
	12-Sep-06	N		-174.1	7.95	9,129	26.76	180
	19-Sep-06	N		-361.1	8.32	8,445	26.49	320
	28-Sep-06	N		-155.8	7.74	8,889	26.58	118
	04-Oct-06	N		-173.9	7.82	9,298	26.73	103
	17-Oct-06	N		-186	7.57	9,869	26.5	40
	31-Oct-06	N		117.6	7.58	10,534	25.8	171
	08-Nov-06	N		-252.4	7.38	9,572	25.69	<10
	14-Nov-06	N		-124.7	6.91	9,798	25.69	41
	21-Nov-06	N		-130.4	7.02	9,382	24.85	12
	28-Nov-06	N		-202.9	7.6	8,884	25.27	17
	05-Dec-06	N		-242.7	7.16	9,548	23.52	36
	18-Dec-06	N		-231.2	8.27	10,087	23.62	44
	03-Jan-07	N		-64.9	7.39	11,107	24.79	10
	15-Jan-07	N		-216.8	7.69	11,036	23.05	88
	29-Jan-07	N		-229.6	7.45	10,905	24.18	<10
	07-Feb-07	N		-143.0	7.89	11,830	23.96	11

Table 8
Summary of Field Parameters
 PG&E Topock
 Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-1D (cont)	06-Mar-07	N		-108.6	7.48	11,562	25.31	<10
	05-Apr-07	N		-108.8	7.68	11,728	25.29	<10
	02-May-07	N		-115.4	7.48	11,209	25.18	<10
	15-May-07	N		-242.2	7.22	9,393	25.84	<10
	22-May-07	N		-251.3	6.79	8,630	25.89	<10
	30-May-07	N		-212.9	7.03	8,824	26.73	<10
	06-Jun-07	N		-285.4	7.21	8,436	25.5	<10
	11-Jun-07	N		-222.6	7.29	9,204	26.43	53
	26-Jun-07	N		-268.0	7.70	9,555	26.41	<10
	11-Jul-07	N		-189.7	7.43	9,604	25.89	15
	24-Jul-07	N		-206.9	7.18	8,057	26.3	<10
	31-Jul-07	N		-174.3	7.41	8,040	26.45	<10
	08-Aug-07	N		-167.3	7.41	8,721	26.53	<10
	14-Aug-07	N		-211.6	7.39	8,861	27.78	<10
	28-Aug-07	N		-192.0	7.27	8,811	26.85	<10
	06-Sep-07	N		-291.7	7.44	9,368	26.5	<10
	02-Oct-07	N		-164.9	7.25	9,721	25.78	<10
	06-Nov-07	N		-32.4	7.34	9,532	25.51	21
PT-2S	17-Mar-06	N	35-45	-204	7.27	6,273	26.87	<10
	06-Apr-06	N		-175.9	6.14	6,867	26.79	<10
	24-May-06	N		-6.5	7.57	5,405	27.13	10
	01-Jun-06	N		-88.7	7.25	6,678	26.74	10
	07-Jun-06	N		-168.6	7.57	6,268	26.37	<10
	18-Jul-06	N		-203.8	7.28	6,492	27.51	<10
	08-Aug-06	N		-74.6	7.54	6,892	26.96	19
	06-Sep-06	N		-205.1	7.69	6,563	28.21	17
	04-Oct-06	N		-152.2	7.4	6,548	26.53	24
	08-Nov-06	N		-152	7.1	7,712	26.23	18
	05-Dec-06	N		-140.7	6.89	7,515	25.04	12
	03-Jan-07	N		-166.2	7.58	7,024	25.19	<10
	08-Feb-07	N		-141.7	7.26	6,868	25.85	<10
	07-Mar-07	N		-153.7	7.37	6,727	26.11	<10
	05-Apr-07	N		-151.2	7.43	6,780	26.54	<10
	02-May-07	N		-124.9	7.84	6,728	26.42	16
	06-Jun-07	N		-99.4	7.21	6,657	25.88	<10
	11-Jul-07	N		-123.9	7.4	6,456	26.47	13
	08-Aug-07	N		-122.4	7.49	7,170	26.45	<10
	06-Sep-07	N		-131.6	7.21	7,045	26.6	14

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-2M	17-Mar-06	N	60-70	-170.9	7.29	7,304	26.3	<10
	06-Apr-06	N		-173.8	8.01	7,752	26.9	<10
	24-May-06	N		44.3	7.61	5,902	26.47	<10
	31-May-06	N		-65	7.14	7,271	25.94	<10
	07-Jun-06	N		-99.7	7.62	6,825	26.71	<10
	18-Jul-06	N		-173.1	7.16	6,849	27.25	<10
	08-Aug-06	N		-27.6	7.44	6,797	26.39	<10
	06-Sep-06	N		-227.6	7.66	6,610	27.04	19
	04-Oct-06	N		-82.9	7.33	6,592	25.85	18
	08-Nov-06	N		-20.1	6.9	6,813	25.86	<10
	05-Dec-06	N		-62.8	6.73	6,639	23.53	22
	03-Jan-07	N		-160.3	7.47	6,298	24.71	12
	07-Feb-07	N		-69.5	7.09	6,221	24.82	12
	07-Mar-07	N		-192.1	7.37	5,955	25.43	<10
	05-Apr-07	N		-81.1	7.4	5,813	26.07	<10
	02-May-07	N		-90.7	7.86	5,751	26.68	<10
	15-May-07	N		-86.9	7.38	5,881	26.08	<10
	22-May-07	N		-138	7.19	5,731	25.21	<10
	30-May-07	N		-93.7	7.12	5,824	25.54	<10
	06-Jun-07	N		-46.8	7.22	5,679	24.88	<10
	11-Jul-07	N		-86.4	7.3	5,529	26.07	<10
	24-Jul-07	N		-84.5	7.23	5,783	25.35	<10
	31-Jul-07	N		-79.6	7.45	5,821	25.28	<10
	08-Aug-07	N		-64.6	7.53	5,887	25.84	<10
	14-Aug-07	N		-104.4	7.23	5,719	25.66	<10
	06-Sep-07	N		-61.4	7.18	5,995	25.9	<10

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-2D	17-Mar-06	N	95-105	-100.5	7.21	12,626	26.17	1,600
	06-Apr-06	N		-71.3	7.04	13,924	26.03	2,300
	24-May-06	N		180.9	7.39	9,229	26.45	1,640
	31-May-06	N		-51.2	7.39	11,157	25.95	1,160
	07-Jun-06	N		403.3	7.61	10,386	26.21	840
	17-Jul-06	N		426.4	7.46	11,231	26.63	500
	07-Aug-06	N		-134.6	7.43	11,647	26.8	660
	14-Aug-06	N		3.5	7.95	11,541	26.64	620
	17-Aug-06	N		-157.2	7.93	11,608	26.61	560
	21-Aug-06	N		-177.7	8.26	11,140	26.52	500
	24-Aug-06	N		-73.9	8.01	10,924	26.45	580
	29-Aug-06	N		-72	8.01	10,433	26.39	680
	05-Sep-06	N		-234.6	7.82	10,660	27.33	520
	12-Sep-06	N		-87	7.74	10,774	26.5	520
	19-Sep-06	N		-245.7	7.65	9,754	26.57	500
	28-Sep-06	N		-146.9	7.68	9,443	26.41	258
	04-Oct-06	N		91	7.58	9,240	25.85	4220*
	17-Oct-06	N		378.7	7.42	9,445	25.45	76
	31-Oct-06	N		393.3	7.53	10,065	25.69	282
	08-Nov-06	N		212	7.31	10,769	25.98	225
	14-Nov-06	N		395.4	7.46	10,256	25.4	279
	21-Nov-06	N		12.2	7.48	10,695	25.42	253
	28-Nov-06	N		22.1	7.38	10,417	23.83	214
	05-Dec-06	N		-106.9	7.04	10,124	24.67	205
	18-Dec-06	N		-95.5	8	10,285	24.75	158
	03-Jan-07	N		61.2	7.67	10,700	23.92	151
	15-Jan-07	N		-149.5	7.69	11,205	23.90	170
	29-Jan-07	N		-240.6	7.49	11,398	24.65	151
	08-Feb-07	N		-17.7	7.39	12,399	23.77	109
	07-Mar-07	N		-141.2	7.53	12,397	25.49	90
	05-Apr-07	N		-61.1	7.57	12,290	26.11	103
	02-May-07	N		-80.7	7.52	11,973	26.11	104
	15-May-07	N		-165.9	7.38	11,772	25.84	<10
	22-May-07	N		-118.4	7.03	10,362	25.43	<10
	30-May-07	N		-231.8	7.31	9,711	25.84	<10
	06-Jun-07	N		-124.4	7.26	9,050	25.57	<10
	11-Jun-07	N		-232.9	7.41	9,097	26.16	49
	26-Jun-07	N		-297.6	7.71	8,797	26.92	<10
	11-Jul-07	N		-237.0	7.81	8,760	26.49	<10
	24-Jul-07	N		-251.2	7.36	9,459	26.3	<10
	31-Jul-07	N		-263.6	7.51	9,295	25.88	<10
	08-Aug-07	N		-279.9	7.67	9,012	25.93	<10
	14-Aug-07	N		-241.6	7.33	8,559	26.62	<10
	28-Aug-07	N		-159.2	7.34	8,469	26.31	<10
	06-Sep-07	N		-186.4	7.36	9,306	26.1	<10
	02-Oct-07	N		-161.9	7.22	9,412	26.12	<10
	06-Nov-07	N		-55.3	7.27	9,678	25.57	<10

Table 8
Summary of Field Parameters
 PG&E Topock
 Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-3S	16-Mar-06	N	35-45	-218.9	7.14	6,353	26.67	<10
	03-Apr-06	N		-238.1	7.38	6,846	26.68	<10
	04-May-06	N		-119.3	8.1	6,380	27.1	<10
	05-May-06	N		-130.6	7.44	6,690	26.46	<10
	06-May-06	N		-130.7	7.1	6,363	26.6	<10
	07-May-06	N		-115.2	7.25	6,846	26.56	<10
	09-May-06	N		-43.9	7.27	6,976	26.55	<10
	10-May-06	N		-135.7	7.35	6,419	26.81	11
	11-May-06	N		-20.1	7.39	6,218	26.77	<10
	12-May-06	N		-92.7	7.14	6,169	26.69	<10
	13-May-06	N		-90.5	7.28	6,358	26.7	---
	23-May-06	N		1.37	7.13	5,944	26.82	<10
	30-May-06	N		-162.7	12.28	5,971	27.5	13
	06-Jun-06	N		-177.7	7.57	5,295	26.72	12
	19-Jul-06	N		-166.3	7.27	5,771	26.64	<10
	08-Aug-06	N		-120.1	7.04	6,105	27.83	<10
	06-Sep-06	N		-98	7.52	6,205	26.68	23
	04-Oct-06	N		-156.2	7.32	6,249	26.31	20
	07-Nov-06	N		-155.4	7.43	6,586	26.4	20
	05-Dec-06	N		-146.3	6.85	6,377	24.46	32
	03-Jan-07	N		-141.2	7.55	6,391	24.52	<10
	07-Feb-07	N		-154.4	7.70	6,706	24.84	<10
	07-Mar-07	N		-151.2	7.37	6,350	25.35	<10
	05-Apr-07	N		-157.6	7.42	6,468	25.21	12
	02-May-07	N		-139.7	7.80	6,286	25.47	<10
	06-Jun-07	N		-156.7	7.32	5,999	25.3	18
	11-Jul-07	N		-121.7	7.02	6,043	26.60	<10
	08-Aug-07	N		-146.7	7.41	6,213	25.76	20
	06-Sep-07	N		-141.7	7.43	6,107	25.69	<10

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-3M	18-Mar-06	N	60-70	-249.1	7.96	7,232	26.19	<10
	07-Apr-06	N		-218.3	7.33	8,041	26.06	---
	04-May-06	N		-101.8	8.68	7,193	24.31	---
	05-May-06	N		-106	7.99	7,665	26.05	<10
	06-May-06	N		-96.6	7.53	7,613	25.83	<10
	07-May-06	N		-82	7.64	7,681	26.23	<10
	09-May-06	N		-8.4	7.58	7,718	25.98	<10
	10-May-06	N		-103	7.61	7,176	26.41	14
	11-May-06	N		-86.4	7.7	6,879	26.32	<10
	12-May-06	N		-71.8	7.54	6,927	26.27	13
	13-May-06	N		6.9	7.49	7,130	26.12	---
	23-May-06	N		42.8	7.38	7,475	26.13	<10
	30-May-06	N		-70.3	12.31	7,977	26.69	16
	06-Jun-06	N		-112.8	7.68	7,026	25.75	<10
	19-Jul-06	N		-156.3	7.33	6,911	25.7	<10
	08-Aug-06	N		-92.5	7.52	7,048	26.72	10
	06-Sep-06	N		-39.3	7.68	6,777	25.84	14
	04-Oct-06	N		-126.1	7.49	6,566	25.36	19
	07-Nov-06	N		-150	7.38	6,571	26.48	19
	05-Dec-06	N		-108.9	7.04	6,219	24.26	60
	03-Jan-07	N		-149.1	7.68	6,098	24.48	13
	07-Feb-07	N		-147.7	7.87	6,074	24.43	<10
	06-Mar-07	N		-113.4	7.48	5,693	25.12	<10
	04-Apr-07	N		-110.3	7.42	5,699	24.8	<10
	02-May-07	N		-97.1	7.77	5,556	25.04	<10
	16-May-07	N		-131.1	7.46	5,800	24.97	<10
	23-May-07	N		-112.1	7.69	5,817	24.17	<10
	31-May-07	N		-118.4	7.48	5,691	24.58	<10
	06-Jun-07	N		-101.9	7.4	5,509	25.3	<10
	11-Jul-07	N		-90.0	7.23	5,629	25.72	<10
	25-Jul-07	N		-100.8	7.33	5,652	24.63	10
	01-Aug-07	N		-119.8	7.42	5,564	24.52	<10
	08-Aug-07	N		-111.7	7.43	5,617	25.34	<10
	15-Aug-07	N		-105.0	7.39	5,650	25.94	<10
	06-Sep-07	N		-93.9	7.4	5,199	24.54	<10

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-3D	18-Mar-06	N	95-105	-54.4	7.38	13,782	25.98	4,620
	05-Apr-06	N		51.8	7.51	14,347	26.71	7,760
	05-May-06	N		66.7	7.87	13,263	25.96	3,140
	06-May-06	N		71.7	7.54	11,437	26.03	3,440
	07-May-06	N		76.8	7.81	9,027	26.14	4,200
	09-May-06	N		168.5	7.62	12,715	26.08	3,960
	10-May-06	N		2.6	6.66	10,771	26.33	3,960
	11-May-06	N		-11.9	7.86	11,767	26.28	3,780
	12-May-06	N		-6.1	7.65	12,290	26.18	3,720
	13-May-06	N		144.5	7.72	12,139	26.33	---
	23-May-06	N		129.1	7.31	13,111	27.37	3,900
	30-May-06	N		30.7	12.4	13,907	27.29	3,800
	06-Jun-06	N		12.6	7.71	12,310	25.82	3,380
	17-Jul-06	N		-246.7	7.51	12,277	26.17	1,920
	08-Aug-06	N		-66.9	8.62	13,045	29.12	4,100
	14-Aug-06	N		-24.3	8.46	10,984	26.95	3,140
	17-Aug-06	N		-176.1	8.34	11,853	26.29	3,600
	21-Aug-06	N		-163.9	8.54	12,168	26.73	3,860
	24-Aug-06	N		-95.2	8.31	12,213	26.3	3,520
	29-Aug-06	N		-124.4	8.34	12,065	26.68	3,340
	05-Sep-06	N		-61.2	8.41	12,130	26.55	3,200
	12-Sep-06	N		-144.8	8.01	12,434	26.47	2,880
	19-Sep-06	N		-231.4	7.66	12,884	26.31	3,100
	28-Sep-06	N		-115.5	7.75	12,579	25.98	3,800
	04-Oct-06	N		-69.8	7.84	12,638	26.11	3,520
	17-Oct-06	N		-115.2	7.61	13,181	26.85	700
	31-Oct-06	N		-74.9	7.77	13,265	25.45	3,440
	07-Nov-06	N		-140.8	7.94	13,517	26.23	2,640
	14-Nov-06	N		-186.7	7.69	11,694	25.13	680
	21-Nov-06	N		-80.4	7.7	13,544	25.1	2,960
	28-Nov-06	N		-118.6	7.61	13,654	23.36	2,880
	05-Dec-06	N		-24.5	7.19	13,171	24.79	3,100
	18-Dec-06	N		-192.5	8.34	13,619	23.5	4,120
	03-Jan-07	N		-159.2	7.75	13,761	25.26	3,400
	15-Jan-07	N		-168.4	8.06	13,540	23.46	3,200
	29-Jan-07	N		-211.6	7.6	13,155	24.1	3,060
	07-Feb-07	N		-139.1	8.07	14,021	24.7	3,280

Table 8
Summary of Field Parameters
 PG&E Topock
 Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-3D (cont)	06-Mar-07	N		-44.9	7.66	13,494	25.75	3,480
	05-Apr-07	N		18.3	7.68	13,102	24.57	2,880
	02-May-07	N		31.4	7.69	12,715	26.27	2,780
	16-May-07	N		-178.1	7.3	11,901	25.85	2,450
	23-May-07	N		-187.3	8.17	12,024	25.16	141
	31-May-07	N		-169.3	7.66	11,476	26.07	221
	06-Jun-07	N		-141.7	7.59	10,941	25.3	709
	11-Jun-07	N		-171.3	7.65	11,867	26.04	718
	26-Jun-07	N		-195.6	7.77	11,501	25.8	701
	11-Jul-07	N		-189.7	7.39	11,241	26.29	775
	25-Jul-07	N		-223.3	7.11	10,643	26.75	<10
	01-Aug-07	N		-181.6	7.34	11,379	26.38	<10
	08-Aug-07	N		-285.1	7.52	11,190	28.12	<10
	15-Aug-07	N		-250.9	7.48	11,245	26.78	<10
	28-Aug-07	N		-192.5	7.53	11,180	26.51	<10
	06-Sep-07	N		-227.5	7.62	11,607	25.92	103
	03-Oct-07	N		-134.0	7.46	12,195	24.82	562
	07-Nov-07	N		-25.1	7.49	11,524	24.45	601
PT-4S	15-Mar-06	N	35-45	-257	7.32	7,072	26.16	<10
	06-Apr-06	N		-159.9	7.8	7,783	26.11	<10
	04-May-06	N		-117	8.33	6,585	25.39	<10
	05-May-06	N		-126.6	7.7	7,325	25.82	<10
	09-May-06	N		-93.5	7.21	7,752	25.75	<10
	10-May-06	N		-119.8	7.41	4,939	26.33	<10
	11-May-06	N		6.2	7.62	7,180	27.26	<10
	12-May-06	N		-71.2	7.35	6,997	26.08	14
	13-May-06	N		-68.7	7.6	7,305	26.09	---
	23-May-06	N		20.4	7.53	6,411	27.13	<10
	30-May-06	N		-121.7	7.1	7,504	25.93	<10
	06-Jun-06	N		-230.2	7.78	7,377	27.56	<10
	19-Jul-06	N		-137.8	7.33	7,106	26.16	11
	08-Aug-06	N		-151.6	7.2	7,174	26.05	11
	06-Sep-06	N		-126.1	7.73	7,212	26.7	<10
	04-Oct-06	N		-130	7.62	7,314	26.67	11
	08-Nov-06	N		-135.2	7.88	7,478	24.89	13
	05-Dec-06	N		-145.3	6.97	7,165	24.14	65
	03-Jan-07	N		-125	7.39	7,329	25.09	<10
	07-Feb-07	N		-149.5	7.48	7,186	24.24	<10
	07-Mar-07	N		-140.2	7.44	6,470	25.14	<10
	05-Apr-07	N		-129.7	7.61	6,371	25.28	<10
	02-May-07	N		-143.6	7.51	6,285	25.65	<10
	06-Jun-07	N		-98.7	7.56	6,272	24.23	<10
	11-Jul-07	N		-84.3	7.56	6,261	25.50	<10
	08-Aug-07	N		-139.7	7.59	6,380	25.88	14
	06-Sep-07	N		-132.4	7.46	6,106	26.07	<10

Table 8
Summary of Field Parameters
 PG&E Topock
 Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-4M	15-Mar-06	N	60-70	-246.1	7.9	6,784	25.99	<10
	07-Apr-06	N		-210.5	7.48	7,566	26.28	---
	04-May-06	N		-119.6	8.74	7,031	24.95	<10
	08-May-06	N		-113.4	7.97	7,384	26.14	11
	09-May-06	N		-58.9	7.74	7,588	25.84	<10
	10-May-06	N		-134	7.73	7,022	26.24	<10
	11-May-06	N		-115.2	7.92	6,991	26.21	<10
	12-May-06	N		-95.1	7.73	7,084	25.79	<10
	13-May-06	N		-68.6	7.85	6,265	25.93	---
	23-May-06	N		25.9	7.81	6,267	26.82	<10
	30-May-06	N		-113.1	7.48	7,467	25.61	11
	06-Jun-06	N		-211.3	7.89	7,258	26.68	<10
	19-Jul-06	N		-146.4	7.44	6,939	26.19	<10
	08-Aug-06	N		-160.5	7.29	6,976	25.76	10
	06-Sep-06	N		-110.5	7.77	6,825	26.08	<10
	04-Oct-06	N		-123.5	7.6	6,918	26.34	18
	08-Nov-06	N		-178.6	7.82	6,623	25.25	17
	05-Dec-06	N		-128.9	7.01	6,042	24.18	28
	03-Jan-07	N		-100.1	7.42	6,177	24.9	<10
	07-Feb-07	N		-120.8	7.52	5,790	24.07	<10
	07-Mar-07	N		-120.2	7.45	5,392	24.64	<10
	04-Apr-07	N		-117.3	7.66	5,143	24.48	<10
	02-May-07	N		-126.5	7.51	5,095	24.52	<10
	06-Jun-07	N		-78.9	7.53	5,250	24.69	<10
	11-Jul-07	N		56.4	7.62	15,056	25.65	3420*
	08-Aug-07	N		-135.2	7.41	5,358	24.57	<10
	06-Sep-07	N		-83.7	7.4	5,277	26.39	<10

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-4D	15-Mar-06	N	95-105	-98.4	7.4	15,180	26.02	5,800
	05-Apr-06	N		-30	7.58	162,310	26.61	5,840
	08-May-06	N		62.7	7.93	14,947	26.1	5,920
	09-May-06	N		48.3	7.45	14,719	25.92	6,520
	10-May-06	N		42.1	7.68	14,351	26.14	6,160
	11-May-06	N		-10.2	7.84	13,923	26.15	5,920
	12-May-06	N		-4.5	7.72	14,580	25.97	7,480
	13-May-06	N		28.1	7.69	12,744	26	---
	23-May-06	N		50	7.91	13,640	31.2	4,840
	30-May-06	N		-81.3	7.43	15,116	25.97	5,800
	06-Jun-06	N		-174.3	7.81	15,010	26.65	4,780
	19-Jul-06	N		-76.3	7.49	14,389	25.97	5,960
	08-Aug-06	N		-135.9	7.32	14,160	25.09	6,220
	06-Sep-06	N		46.8	7.79	14,720	26.1	5,020
	04-Oct-06	N		-99.4	7.7	14,992	27.04	5,280
	08-Nov-06	N		11.4	7.72	15,619	24.91	5,640
	05-Dec-06	N		-5.4	7.19	15,149	24.11	5,660
	03-Jan-07	N		15.5	7.64	16,119	24.81	5,580
	07-Feb-07	N		-99.3	7.68	15,975	25.17	5,300
	07-Mar-07	N		-41.9	7.65	15,324	25.8	5,100
	05-Apr-07	N		167.7	7.71	15,396	25.21	4,780
	02-May-07	N		-43.5	7.6	15,129	25.9	4,760
	16-May-06	N		-14	7.77	15,613	25.61	4,300
	23-May-07	N		-56.7	7.73	15,734	24.53	4,520
	31-May-07	N		-89.1	7.55	15,357	25.3	3,280
	06-Jun-07	N		-38.3	7.57	15,267	25.18	3,700
	11-Jun-07	N		-60.2	7.68	15,759	25.6	2,450
	26-Jun-07	N		-157.6	7.79	15,394	25.87	4,280
	11-Jul-07	N		38.0	7.60	15,404	25.55	3,640
	25-Jul-07	N		-82.5	7.65	15,117	25.44	3,980
	01-Aug-07	N		-25.4	7.64	15,743	25.34	3,900
	08-Aug-07	N		-39.3	7.65	15,443	27.86	4,060
	15-Aug-07	N		-53.5	7.65	15,477	26.22	3,920
	28-Aug-07	N		-40.6	7.42	15,289	25.94	3,920
	06-Sep-07	N		-58.7	7.67	15,402	26.18	3,980
	03-Oct-07	N		-43.8	7.52	16,026	25.51	4,600
	07-Nov-07	N		89.0	7.55	14,593	24.91	3,380

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-5S	16-Mar-06	N	35-45	-204.9	7.33	7,714	25.81	<10
	07-Apr-06	N		-177.3	7	8,640	25.75	---
	01-Jun-06	N		-88.9	7.17	8,682	25.46	<10
	19-Jul-06	N		-134.5	7.23	8,660	25.53	<10
	09-Aug-06	N		-172.2	7.37	8,902	25.2	<10
	08-Sep-06	N		-209.6	7.32	8,742	25.63	26
	05-Oct-06	N		-133.7	7.32	8,975	25.91	12
	09-Nov-06	N		-108.7	7.33	9,205	22.15	18
	06-Dec-06	N		-136.8	7.33	9,454	23.91	25
	04-Jan-07	N		121.7	7.37	10,029	22.51	12
	08-Feb-07	N		-124.1	7.19	9,907	22.69	<10
	03-Mar-07	N		-127.7	7.21	9,417	24.46	<10
	06-Apr-07	N		-138.6	7.38	9,293	24.85	<10
	03-May-07	N		-136.9	7.23	9,209	23.49	<10
	07-Jun-07	N		-23.5	7.22	9,473	23.62	<10
	12-Jul-07	N		-92.0	7.34	9,299	24.65	<10
	09-Aug-07	N		-132.1	7.32	9,165	24.62	<10
	07-Sep-07	N		-95.3	7.2	8,398	25.07	<10
PT-5M	16-Mar-06	N	60-70	-184.6	7.29	6,989	25.48	<10
	07-Apr-06	N		-183.5	6.97	8,609	25.8	---
	01-Jun-06	N		-49.9	7.05	6,191	24.82	<10
	19-Jul-06	N		-113.4	7.26	5,091	25.32	<10
	09-Aug-06	N		-171.5	7.46	4,740	24.81	<10
	08-Sep-06	N		-184.3	7.58	4,666	25.16	<10
	05-Oct-06	N		-113.8	7.53	4,606	24.89	10
	09-Nov-06	N		-61.7	7.57	4,571	22.25	<10
	06-Dec-06	N		-69.3	7.55	4,807	23.06	38
	04-Jan-07	N		-69.1	7.62	5,397	23.65	<10
	08-Feb-07	N		-55.9	7.39	5,583	23.26	<10
	07-Mar-07	N		-174.7	7.42	5,361	23.97	<10
	06-Apr-07	N		91	7.5	5,291	23.56	<10
	03-May-07	N		-61.7	7.41	5,082	23.31	<10
	07-Jun-07	N		35.9	7.4	4,281	23.76	<10
	12-Jul-07	N		-13.2	7.65	3,814	23.74	<10
	09-Aug-07	N		-77.2	7.69	3,573	25.02	<10
	07-Sep-07	N		-75.4	7.43	3,126	23.61	<10

Table 8
Summary of Field Parameters
 PG&E Topock
 Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-5D	16-Mar-06	N	95-105	-191.1	7.71	8,304	25.85	6,200
	07-Apr-06	N		-181.1	7.05	8,561	25.78	---
	12-May-06	N		-1.2	7.7	13,620	26.62	5,240
	01-Jun-06	N		-45.5	7.47	14,037	25.5	3,660
	17-Jul-06	N		-208.6	7.55	13,286	25.97	3,940
	09-Aug-06	N		-128.2	7.41	13,646	25.65	4,380
	08-Sep-06	N		-168	7.65	13,954	25.45	4,600
	05-Oct-06	N		-78.9	7.66	14,067	26.14	4,100
	09-Nov-06	N		-46.2	7.82	15,243	23.18	4,980
	06-Dec-06	N		18.8	7.77	14,972	24.06	4,720
	04-Jan-07	N		28.4	7.79	16,363	23.39	4,840
	08-Feb-07	N		19.2	7.49	16,006	23.64	4,120
	08-Mar-07	N		-85.6	7.43	15,662	24.81	3,600
	05-Apr-07	N		-54.6	7.62	14,325	26.02	3,640
	03-May-07	N		17.5	7.44	13,679	24.93	3,420
	07-Jun-07	N		58.3	7.44	14,053	24.55	2,740
	12-Jun-07	N		65.9	7.57	13,840	25.37	3,200
	09-Aug-07	N		-3.8	7.67	13,987	25.63	3,700
	07-Sep-07	N		38.7	7.58	12,341	24.87	3,560
	03-Oct-07	N		-45.3	7.74	14,735	24.68	4,040
	07-Nov-07	N		82.3	7.6	14,006	23.98	3,740
PT-6S	18-Mar-06	N	35-45	-91.7	6.99	10,053	25.49	<10
	04-Apr-06	N		-187.9	7.22	10,379	26.56	<10
	13-May-06	N		-48.4	7.31	7,353	26.62	---
	22-May-06	N		-14	7.21	7,476	26.59	<10
	01-Jun-06	N		556.8	6.52	4,423	27.56	<10
	06-Jun-06	N		-164.1	7.65	8,564	26.25	14
	19-Jul-06	N		-161.6	6.97	8,271	22.57	12
	09-Aug-06	N		-107.7	6.88	9,196	26.87	52
	08-Sep-06	N		-143.6	7.78	9,508	26.05	45
	05-Oct-06	N		-139.1	7.09	9,579	25.84	20
	09-Nov-06	N		-138.6	7.04	10,797	25.75	25
	06-Dec-06	N		-136.9	6.81	11,708	23.92	62
	04-Jan-07	N		-140.1	7.13	11,955	22.67	22
	08-Feb-07	N		-135.7	7.44	12,120	23.88	<10
	08-Mar-07	N		-146.2	6.98	9,707	25.6	<10
	06-Apr-07	N		-146.9	7.1	8,395	24.88	30
	03-May-07	N		-130.3	7.43	7,997	25.26	<10
	07-Jun-07	N		-137.4	7.0	8,027	24.98	11
	12-Jul-07	N		-141.6	7.17	8,177	26.09	<10
	09-Aug-07	N		-128.7	7.10	8,999	25.65	37
	07-Sep-07	N		-135.4	6.90	9,175	25.39	32

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-6M	16-Mar-06	N	60-70	-120.1	7.25	7,221	26.13	<10
	04-Apr-06	N		-114.1	7.45	7,761	26.18	<10
	13-May-06	N		22.6	7.46	6,212	26.22	---
	23-May-06	N		85.6	7.57	5,988	26.51	<10
	01-Jun-06	N		675.3	6.84	3,952	27.04	<10
	06-Jun-06	N		-197.1	7.98	6,832	2,610	<10
	19-Jul-06	N		-168.5	7.28	6,528	26.7	<10
	09-Aug-06	N		-38.9	7.2	6,396	26.43	<10
	08-Sep-06	N		-38.6	8.12	6,168	25.81	28
	05-Oct-06	N		-21.2	7.61	6,166	25.52	<10
	09-Nov-06	N		20	7.52	6,076	25.21	<10
	06-Dec-06	N		-45.2	7.28	6,198	24.57	29
	04-Jan-07	N		-135.1	7.6	5,966	24.06	<10
	08-Feb-07	N		-96.1	7.79	6,398	23.75	<10
	07-Mar-07	N		-74.2	7.36	5,975	24.97	<10
	06-Apr-07	N		-14	7.39	6,113	24.4	<10
	03-May-07	N		-92.8	7.6	6,193	25.07	<10
	16-May-07	N		-154.2	7.52	6,385	25.51	<10
	23-May-07	N		-94	7.68	6,307	24.59	<10
	31-May-07	N		-103.8	7.45	6,132	25.0	<10
	07-Jun-07	N		16.4	7.36	6,099	24.31	<10
	12-Jul-07	N		-58.0	7.49	5,578	25.31	<10
	25-Jul-07	N		-82.7	7.42	5,754	24.99	<10
	01-Aug-07	N		-77.5	7.42	5,756	24.87	<10
	09-Aug-07	N		-69.0	7.67	5,732	24.98	<10
	15-Aug-07	N		-123.7	7.45	5,879	26.06	<10
	07-Sep-07	N		-12.5	7.41	5,720	25.1	<10

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PT-6D	16-Mar-06	N	95-105	-118.9	7.73	13,489	25.9	3,380
	04-Apr-06	N		-91.1	7.72	12,784	26.95	2,580
	13-May-06	N		28.7	7.77	9,829	25.87	---
	22-May-06	N		79.4	7.9	9,631	26.37	2,040
	01-Jun-06	N		692.8	7.08	6,017	26.42	1,360
	06-Jun-06	N		-170.6	8	10,470	25.84	1,000
	17-Jul-06	N		-681.6	7.62	10,365	26.49	920
	09-Aug-06	N		-43.8	7.5	10,793	26.84	1,600
	08-Sep-06	N		14.3	8.26	11,809	25.89	1,780
	05-Oct-06	N		-12.7	7.76	10,885	25.36	1,080
	09-Nov-06	N		131.7	7.68	11,006	25.01	1,400
	06-Dec-06	N		-31.7	7.45	11,056	24.15	1,280
	04-Jan-07	N		-171.3	7.75	11,078	24.07	1,620
	08-Feb-07	N		-97.2	8.02	12,060	24.53	1,220
	08-Mar-07	N		-44.9	7.54	11,502	25.31	820
	05-Apr-07	N		-41.2	7.78	10,753	25.45	740
	03-May-07	N		-63.7	7.81	10,222	24.95	519
	16-May-07	N		-152.7	7.71	10,529	25.2	595
	23-May-07	N		-99.1	7.9	10,562	24.46	594
	31-May-07	N		-103.7	7.59	10,224	25.09	559
	07-Jun-07	N		178.1	7.54	10,944	24.33	742
	11-Jun-07	N		-29.1	7.63	10,620	26.01	637
	26-Jun-07	N		-146.7	7.79	10,642	26.10	569
	12-Jul-07	N		-26.0	7.69	9,682	25.07	581
	25-Jul-07	N		-74.4	7.63	10,284	25.31	637
	01-Aug-07	N		-49.2	7.65	10,830	24.98	623
	09-Aug-07	N		-20.0	7.89	10,570	25.05	656
	15-Aug-07	N		-80.1	7.63	10,474	25.82	618
	28-Aug-07	N		28.2	7.54	10,982	25.44	600
	07-Sep-07	N		-3.4	7.58	11,020	25.07	629
	03-Oct-07	N		-35.6	7.55	11,288	24.47	535
	07-Nov-07	N		81.2	7.65	10,603	24.61	512

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PTI-1S	15-Mar-06	N	35-45	-203.1	7.1	6,390	26.83	<10
	05-Apr-06	N		-184	7.28	6,964	27.06	<10
	06-May-06	N		---	---	---	---	620
	07-May-06	N		-137.8	6.73	4,936	33.59	600
	09-May-06	N		-54.8	6.57	5,627	32.39	---
	10-May-06	N		-155.1	6.29	5,313	25.6	290
	11-May-06	N		-156.5	6.27	5,326	28.93	20
	12-May-06	N		-71.9	6.8	4,457	28.07	70
	13-May-06	N		-132.8	6.58	4,582	28.42	---
	23-May-06	N		-21.3	6.66	4,262	27.04	<10
	31-May-06	N		-146	6.93	4,313	28.09	28
	05-Jun-06	N		-240.5	7.88	4,144	27.51	<10
	18-Jul-06	N		-164.1	7.28	6,399	26.77	80
	07-Aug-06	N		-124.1	7.22	6,771	26.43	<10
	07-Sep-06	N		-98.6	7.54	6,865	26.62	14
	03-Oct-06	N		-171.7	7.35	6,861	26.74	<10
	07-Nov-06	N		-178.4	6.86	7,209	26.03	14
	04-Dec-06	N		-172	6.84	7,347	24.37	13
	02-Jan-07	N		-153.2	7.15	7,219	24.25	<10
	06-Feb-07	N		-143.5	7.83	6,890	25.7	<10
	06-Mar-07	N		-157.9	7.3	6,820	24.97	<10
	04-Apr-07	N		-155.3	7.23	6,870	25.92	13
	01-May-07	N		-153.7	7.25	6,519	25.6	<10
	05-Jun-07	N		-147.6	7.34	6,531	26.24	<10
	10-Jul-07	N		-139.6	7.36	6,675	26.22	<10
	07-Aug-07	N		-166.9	7.34	6,699	25.71	10
	05-Sep-07	N		-133.5	7.09	6,301	26	<10

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PTI-1M	15-Mar-06	N	60-70	-220.1	7.38	7,338	26.17	14
	04-Apr-06	N		-173.8	7.71	7,919	27.06	10
	06-May-06	N		-6.8	6.82	6,623	29.31	74
	07-May-06	N		-17.2	7.08	6,244	28.96	55
	09-May-06	N		-2.3	7.22	7,559	28.03	430
	10-May-06	N		57	7.26	6,179	29.4	28
	11-May-06	N		-149.5	7.02	7,325	27.56	27
	12-May-06	N		-72.4	7.52	6,066	27.05	29
	13-May-06	N		-229	7.45	6,745	27.13	---
	23-May-06	N		-231.7	6.66	6,204	27.57	11
	31-May-06	N		-120.2	7.2	6,824	26.76	57
	05-Jun-06	N		-254	8.13	7,092	26.94	<10
	18-Jul-06	N		-180.1	7.56	6,990	26.62	<10
	07-Aug-06	N		-150.3	7.45	6,940	27.24	<10
	07-Sep-06	N		-78.2	7.87	6,923	26.86	16
	03-Oct-06	N		-112.8	7.27	6,621	26.15	<10
	07-Nov-06	N		-160.2	6.47	6,610	25.58	<10
	04-Dec-06	N		-64.1	7.00	6,278	24.51	32
	02-Jan-07	N		-75.6	7.29	6,291	23.45	18
	06-Feb-07	N		-130.1	7.88	5,871	24.63	<10
	06-Mar-07	N		-126.8	7.40	5,718	24.25	<10
	04-Apr-07	N		-102	7.34	5,778	25.49	<10
	01-May-07	N		-94.1	7.32	5,573	25.05	<10
	05-Jun-07	N		-111.7	7.36	5,738	26.21	<10
	10-Jul-07	N		15.4	7.33	5,912	26.07	<10
	07-Aug-07	N		-179.8	7.32	5,949	25.42	<10
	05-Sep-07	N		-65.8	7.07	5,684	26.57	<10

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PTI-1D	15-Mar-06	N	95-105	-89.9	7.37	13,018	26.04	1,780
	03-Apr-06	N		-87	7.68	13,811	26.07	3,520
	07-May-06	N		43.5	6.99	6,659	27.75	61
	09-May-06	N		124.5	7.25	6,880	29.05	870
	10-May-06	N		181	7.68	13,066	29.78	3,320
	11-May-06	N		159.9	8.13	11,442	27.48	1,140
	12-May-06	N		47.8	6.43	4,888	28.17	122
	13-May-06	N		-6.4	7.35	6,626	26.74	---
	22-May-06	N		154.7	8.08	15,136	27.57	980
	31-May-06	N		-198.3	7.92	12,156	26.32	1,160
	05-Jun-06	N		-210.4	8.51	11,989	28.74	920
	18-Jul-06	N		-138.6	7.94	11,582	26.93	1,700
	07-Aug-06	N		-157.4	7.75	11,815	27.14	1,720
	15-Aug-06	N		-52.8	8.35	7,441	29.07	100
	17-Aug-06	N		-204.8	8.53	8,988	29.38	140
	22-Aug-06	N		-66	8.61	10,398	28.19	160
	24-Aug-06	N		-20.2	8.38	10,670	28.31	220
	29-Aug-06	N		-58.8	8.49	11,102	27.95	186
	05-Sep-06	N		-84.6	8.47	11,337	27.51	240
	12-Sep-06	N		-227.1	7.79	8,409	28.97	74
	19-Sep-06	N		-343.4	8.45	10,698	27.31	30
	28-Sep-06	N		-152.3	7.98	11,585	26.35	<10
	03-Oct-06	N		-170.2	8.02	11,933	26.63	13
	17-Oct-06	N		-173.8	8.01	12,274	27.14	28
	31-Oct-06	N		-142.4	8.03	12,402	25.97	175
	07-Nov-06	N		-293.8	7.26	8,689	26.44	10
	14-Nov-06	N		-225.2	7.61	10,502	26.11	<10
	21-Nov-06	N		-222.2	7.54	11,328	24.75	26
	28-Nov-06	N		-206.1	7.54	12,071	23.86	28
	04-Dec-06	N		-148.6	7.55	12,362	25.68	16
	18-Dec-06	N		-243.3	8.4	12,556	22.72	21
	02-Jan-07	N		-158.5	7.73	13,064	23.65	36
	15-Jan-07	N		-239.6	8.12	12,405	23.35	77
	29-Jan-07	N		-221.7	7.64	12,285	24.06	78
	06-Feb-07	N		-188.4	8.40	12,792	24.75	166
	06-Mar-07	N		-152.5	7.88	12,194	25.07	193
	04-Apr-07	N		-151	7.82	12,290	26.15	227
	01-May-07	N		-187.9	7.77	11,572	26.6	219
	15-May-07	N		-223.1	7.08	7,896	29.25	<10
	22-May-07	N		-218.5	6.92	8,967	26.91	<10
	30-May-07	N		-158.9	7.16	16,498	25.57	<10
	05-Jun-07	N		-224.1	7.48	10,185	27.48	<10
	11-Jun-07	N		-235.2	7.49	10,689	26.91	44
	26-Jun-07	N		-235.9	7.63	10,594	26.25	<10
	10-Jul-07	N		-111.9	7.53	10,837	26.75	<10

Table 8
Summary of Field Parameters
 PG&E Topock
 Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
PTI-1D (cont)	24-Jul-07	N		-179.2	6.97	7,274	30.17	<10
	31-Jul-07	N		-144.2	7.14	8,421	28.54	<10
	07-Aug-07	N		-212.9	7.07	8,912	27.25	<10
	14-Aug-07	N		-210.2	7.13	9,482	28.88	<10
	28-Aug-07	N		-101.7	7.19	9,974	27.09	<10
	05-Sep-07	N		-128.3	7.05	10,298	26.74	<10
	02-Oct-07	N		-112.5	7.20	10,809	25.8	<10
	06-Nov-07	N		-8.3	7.26	10,577	25.68	<10
PE-1	17-Mar-06	N	79-89	---	---	---	---	115
	05-Apr-06	N		---	---	---	---	144
	01-Jun-06	N		---	---	---	---	116
	17-Jul-06	N		---	---	---	---	59
	07-Aug-06	N		-29.4	6.53	9,401	22.9	99
	06-Sep-06	N		2.2	7.56	9,443	24.78	94
	03-Oct-06	N		160.6	7.5	9,190	27.03	109
	07-Nov-06	N		-94	7.06	9,235	25.01	100
	06-Dec-06	N		-7.5	7.2	9,111	20.16	63
	02-Jan-07	N		209.6	7.31	9,264	20.93	77
	06-Feb-07	N		51.4	7.1	8871	19.31	65
	06-Mar-07	N		-63.5	7.6	8560	25.4	85
	04-Apr-07	N		55.4	7.25	8471	22.6	57
	01-May-07	N		-41.5	7.4	7972	27.48	65
	05-Jun-07	N		150.1	7.52	7853	29.71	60
	10-Jul-07	N		-9.6	7.41	7598	32.74	45
	07-Aug-07	N		-117	7.77	7796	36.49	56
	05-Sep-07	N		3.1	7.68	8107	35.12	58

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
TW-2D	17-Mar-06	N	113-148	---	---	---	---	1,620
	05-Apr-06	N		---	---	---	---	1,620
	19-Jul-06	N		---	---	---	---	940
	07-Aug-06	N		-35.5	7.18	7,991	28.1	900
	14-Aug-06	N		54.8	7.45	7,793	30.1	880
	17-Aug-06	N		-202.6	7.72	7,053	30.28	1,480
	22-Aug-06	N		63.1	7.2	7,364	30.14	1,040
	24-Aug-06	N		95.2	7.73	6,605	32.22	1,580
	29-Aug-06	N		163	7.39	7,387	30.71	900
	06-Sep-06	N		16.6	7.49	7,964	28.02	920
	12-Sep-06	N		79.1	7.46	5,675	29.6	1,720
	19-Sep-06	N		81.9	7.09	6,967	29.67	920
	28-Sep-06	N		36.4	7.66	5,605	26.94	1,200
	04-Oct-06	N		-73.6	7.58	8,257	31.39	1,430
	17-Oct-06	N		337	7.5	10,003	27.19	380
	31-Oct-06	N		144.9	7.54	6,974	24.18	1,280
	08-Nov-06	N		61.7	6.97	6,041	24.89	700
	14-Nov-06	N		-59.4	7.36	7,633	24.72	740
	21-Nov-06	N		-86.8	7.5	6,492	25.51	2,980
	28-Nov-06	N		217	7.3	6,917	23.42	700
	06-Dec-06	N		-12.3	7.14	6,871	19.51	436
	18-Dec-06	N		-21.8	7.58	7,189	19.62	429
	02-Jan-07	N		-77.6	7.43	8,060	17.02	640
	15-Jan-07	N		-90.4	7.53	7,340	13.98	580
	29-Jan-07	N		-70.9	7.38	5,637	61.2	620
	06-Feb-07	N		41.5	7.47	7,916	19.91	560
	06-Mar-07	N		-57.9	7.41	8,388	25.9	480
	05-Apr-07	N		2.9	7.52	7,032	29.47	358
	01-May-07	N		15.2	7.49	8,941	27.87	350
	16-May-07	N		-16.7	7.27	7,448	33.94	430
	22-May-07	N		27.6	7.09	7,889	30.73	322
	30-May-07	N		-133	7.18	8,123	35.66	436
	05-Jun-07	N		-12.6	7.31	7,074	30.2	283
	11-Jun-07	N		-18.4	7.42	8,110	35.91	50
	26-Jun-07	N		-126.7	7.50	4,701	29.77	133
	10-Jul-07	N		5.2	7.43	7,330	36.55	232
	25-Jul-07	N		-18.6	7.42	7,085	34.38	278
	31-Jul-07	N		-116.2	7.57	8,560	33.02	219
	07-Aug-07	N		-79.1	7.41	7,130	33.7	214
	14-Aug-07	N		-78.3	7.32	7,387	34.88	172
	28-Aug-07	N		-60.4	7.68	6,172	34.06	285
	05-Sep-07	N		-36.8	7.12	6,827	29.71	205
	03-Oct-07	N		24.4	7.38	8,009	29.1	237
	06-Nov-07	N		215.9	6.75	7,139	24.74	189

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
TW-3D	17-Mar-06	N	111-156	---	---	---	---	3,660
	05-Apr-06	N		---	---	---	---	3,460
	19-Jul-06	N		---	---	---	---	2,760
	07-Aug-06	N		-45.9	7.45	9,325	28.1	2,300
	14-Aug-06	N		52.1	7.82	9,071	30.04	2,880
	17-Aug-06	N		-195.4	7.69	9,016	30.2	2,740
	22-Aug-06	N		32.9	8.03	8,856	31.02	2,760
	24-Aug-06	N		101.8	7.8	8,663	30.83	2,840
	29-Aug-06	N		199.4	6.88	8,476	30.78	2,800
	06-Sep-06	N		4.9	7.45	8,959	28.64	2,840
	12-Sep-06	N		87	7.48	9,435	29.96	2,820
	19-Sep-06	N		73.4	7.13	8,913	29.35	2,740
	28-Sep-06	N		-86.7	7.27	8,899	30.27	2,780
	04-Oct-06	N		-62.4	7.47	8,411	30.8	3,320
	17-Oct-06	N		350.4	7.31	9,043	26.31	720
	31-Oct-06	N		134.7	7.4	8,896	25.16	2,860
	08-Nov-06	N		65.3	7.11	9,172	25.2	2,740
	14-Nov-06	N		-13.3	7.5	8,843	24.72	2,740
	21-Nov-06	N		-67.6	7.39	9,051	25.92	2,920
	28-Nov-06	N		179.9	7.26	9,038	26.4	2,700
	06-Dec-06	N		-4.3	7.1	8,937	21.78	2,120
	18-Dec-06	N		-27.7	7.69	9,064	20.63	3,260
	02-Jan-07	N		-55	7.45	9,465	16.94	2,580
	15-Jan-07	N		-43.9	7.49	9,131	19.22	2,580
	29-Jan-07	N		-27.8	7.47	8,892	15.82	2,660
	06-Feb-07	N		48.5	7.44	9,153	20.17	2,580
	06-Mar-07	N		-48.3	7.4	9,229	26.7	2,560
	05-Apr-07	N		1.1	7.39	9,325	28.26	2,420
	01-May-07	N		5.2	7.41	8,732	27.85	2,260
	15-May-07	N		16.7	7.11	8,873	30.2	2,420
	22-May-07	N		9.3	7.1	8,775	29.03	2,340
	30-May-07	N		98.4	6.7	8,926	24.13	2,240
	05-Jun-07	N		185	7.34	8,831	31.49	1,900
	11-Jun-07	N		-11.6	7.32	9,182	29.24	1,380
	26-Jun-07	N		-118.6	7.57	8,962	30.45	2,200
	10-Jul-07	N		24.2	7.20	8,930	29.50	1,760
	24-Jul-07	N		-59	7.36	8,952	29.94	2,160
	31-Jul-07	N		-152.8	7.24	9,524	29.86	2,180
	07-Aug-07	N		-65.6	7.58	9,093	33.43	2,200
	14-Aug-07	N		-76.4	7.50	8,908	35.74	2,180
	28-Aug-07	N		-23	7.39	8,627	31.71	2,160
	05-Sep-07	N		3.5	7.38	9,844	34.89	2,320
	02-Oct-07	N		-39.0	7.21	8,913	30.25	2,560
	06-Nov-07	N		201.9	7.10	8,644	25.75	1,920

Table 8
Summary of Field Parameters
PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Sample Type	Screen Interval (ft bgs)	ORP (mV)	pH	Specific Conductance (µS/cm)	Temperature (C°)	Hexavalent Chromium Field (µg/L)
INJ_SOLUTION_01	05-May-06	N	NA	---	---	---	---	<10
INJ_SOLUTION_03	06-May-06	N	NA	---	---	---	---	174

Notes:

Injections occurred on May 3 through May 6, 2006, August 11, 2006, September 7, 2006, November 1, 2007, May 7 and 8, 2007 and July 17 and 18, 2007.

ft bgs Feet below ground surface

mV Millivolts

µS/cm Microsiemens per centimeter

C° Degrees Celsius

µg/L Micrograms per liter

ORP Oxidation Reduction Potential

< Symbol indicates not detected at or above the estimated reporting limit as noted.

N Normal

NA Not applicable

* Possible anomaly

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-1S	17-Mar-06		N	35-45	<1	1.3	<1	<.5	ND	<.5	<.1	3,050	1,930	1,320	198	2.98
	06-Apr-06		N		<0.2	<1	<1	<.5	ND	<.5	<.5	1,910	1,860	779	181	3.04
	04-May-06	a	N		<1 J/HD	---	<1	<1	ND	---	---	---	---	---	---	---
	05-May-06		N		<1	---	<1	<1	ND	---	---	---	---	---	---	---
	06-May-06		N		<1	<1	<1	<.5	ND	<.5	<.1	5,560	2,960	947	90.1	6.66
	07-May-06		N		<1	---	<1	<1	ND	---	---	---	---	---	---	---
	08-May-06		N		<0.2	---	<1	<1	ND	---	---	---	---	---	---	---
	09-May-06		N		<1	<1	<1	0.846	ND	<.5	<.1	2,360	4,770	1,070	144	4.16
	10-May-06		N		<0.2	---	<1	<2.5	ND	---	---	---	---	---	---	---
	11-May-06		N		<1	---	<1	<2.5	ND	---	---	---	---	---	---	---
	12-May-06		N		<1 J/HD	---	<1	<1	ND	---	---	---	---	---	---	---
	13-May-06		N		<1 J/HD	4.48	<1	<1	ND	<1	<.2	3,900	3,220	800	122	4.58
	23-May-06		N		<1	<1	<1	<.5	ND	<.5	<.5	117,000	826	790	157	4.53
	01-Jun-06		N		<1	<1	<1	<.5	ND	<.5	<.1	89,600	2,570	911	126	5.11
	06-Jun-06		N		<1	<1	<1	<.5	ND	<.5	<.5	43,400	3,020	857	125	5.77
	18-Jul-06		N		<0.2	<1	<1	1.96	ND	<.5	<.1	28,400	4,610	679	114	6.98
	08-Aug-06		N		<0.2	<1	<.5	2.26	ND	<.5	<.1	42,300	5,870	1,140	79.7	9.38
	06-Sep-06		N		2.2	42.3	<.5	0.627	0.239	<.5	<.1	6,460	34,300	1,560	109	6.61
	04-Oct-06		N		6	<1	<.5	0.933	0.068	<.5	<.1	30,500	3,890	951	101	9.61
	08-Nov-06		N		<0.2	<1	<.5	1.61	0.395	<.5	<.1	33,600	16,600	2,250	33.4	55
	05-Dec-06		N		<0.2	<1	<2.5	<2.5	0.262	<2.5	<.5	36,400	31,700	2,620	7.19	67.9
	03-Jan-07		N		<0.2	<1	<2.5	<2.5	ND	<2.5	<.5	39,300	21,500	1,840	45.9	12.2
	07-Feb-07		N		<0.2	<1	<.5	1.08	ND	<.5	<.1	25,500	12,600	1,040	149	7.97
	07-Mar-07		N		<0.2	1.38	<.5	0.685	ND	<.5	<.1	12,400	2,950	457	198	4
	05-Apr-07		N		<0.2	1.93	<.5	0.67	ND	<.5	<.1	20,900	4,800	402	205	4.38
	02-May-07		N		<0.2	<1	<.5	0.882	ND	<.5	<.2	18,800	5,270	442	142	5.16
	06-Jun-07		N		<0.2	<1	<.5	0.719	ND	<.5	<.2	14,400	3,910	413	168	4.89
	11-Jul-07		N		<0.2	<1	<.5	0.998	0.07	<.5	<.1	17,200	6,800	425	101	6.87
	08-Aug-07		N		<0.2	<1	<.5	1.33	ND	<.5	<.1	19,200	12,700	790	60.3	11.5
	06-Sep-07		N		<0.2	<1	<.5	1.15	ND	<.5	<.1	16,200	7,530	624	71	7.94

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-1M	17-Mar-06		N	60-70	<1	<1	<1	<.5	ND	<.5	<.1	<500	<500	1,330	411	1.14
	06-Apr-06		N		<1	1	<1	<.5	ND	<.5	<.5	591	557	1,350	446	1.1
	04-May-06		N		<1 J/HD	---	<1	<.5	ND	---	---	---	---	---	---	---
	06-May-06		N		<40	<1	<1	258	0.452	<.5	<.1	554	535	1,230	397	27.9
	07-May-06		N		<1	---	<1	390	0.466	---	---	---	---	---	---	---
	08-May-06		N		<1	---	<1	377	0.429	---	---	---	---	---	---	---
	09-May-06		N		<1	<1	<1	341	0.232	<.5	<.1	543	550	2,430	391	25.4
	10-May-06		N		<1	---	<1	296	0.458	---	---	---	---	---	---	---
	11-May-06		N		<1	---	<1	273	0.433	---	---	---	---	---	---	---
	12-May-06		N		<1 J/HD	---	<1	245	0.423	---	---	---	---	---	---	---
	13-May-06		N		<1 J/HD	3.69	<1	216	0.354	<.5	<.1	696	668	4,390	451	5.39
	24-May-06		N		<1	10.8	<1	96	0.16	<.5	<.5	673	6,900	3,560	425	2.02
	31-May-06		N		<1 J/HD	3.29	<1	48.9	0.101	<.5	<.5	7,360	577	3,950	430	2.4
	06-Jun-06		N		<1	<1	<1	36.7	0.083	<.5	<.5	5,230	637	3,450	501	1.82
	18-Jul-06		N		<0.2	<1	<1	13.4	0.039	<.5	<.1	3,430	871	2,810	405	2.47
	08-Aug-06		N		<0.2	<1	<.5	5.36	ND	<.5	<.1	5,280	744	2,330	452	3.92
	06-Sep-06		N		<0.2	<1	<.5	2.55	0.162	<.5	<.1	<500	579	2,240	481	2.29
	04-Oct-06		N		<0.2	<1	<.5	1.62	ND	<.5	<.1	4,810	628	1,820	412	6.06
	08-Nov-06		N		<0.2	<1	<.5	0.82	ND	<.5	<.1	1,470	682	1,630	390	12.1
	05-Dec-06		N		<0.2	<1	<.5	0.663	0.24	<.5	<.1	1,350	824	1,250	389	13.7
	03-Jan-07		N		<0.2	<1	<.5	0.66	0.486	<.5	<.1	13,400	<500	1,240	420	1.66
	03-Jan-07		FD		<0.2	<1	<.5	0.661	0.051	<.5	<.1	12,300	<500	1,280	418	1.67
	07-Feb-07		N		<0.2	<1	<.5	0.549	0.032	<.5	<.1	2,550	697	1,180	448	1.17
	06-Mar-07		N		<0.2	<1	<.5	0.535	0.043	<.5	<.1	1,820	<500	1,090	412	1.37
	05-Apr-07		N		<0.2	5	<.5	<.5	ND	<.5	<.1	2,500	584	1,030	431	1.04
	02-May-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.2	1,820	606	1,070	428	1.35
	15-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.13
	22-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.99
	30-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.37
	30-May-07		FD		---	---	<.5	---	0.039	---	---	---	---	---	---	1.05
	06-Jun-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.2	1,720	550	1,020	389	1.44
	11-Jul-07		N		<0.2	<1	<.5	0.518	ND	<.5	<.1	1,380	520	902	420	1.4
	24-Jul-07		N		---	---	<.5	---	0.063	---	---	---	---	---	---	1.26
	31-Jul-07		N		---	---	<.5	---	1.34	---	---	---	---	---	---	1.62
	31-Jul-07		FD		---	---	<.5	---	1.28	---	---	---	---	---	---	1.5
	08-Aug-07		N		<0.2	<1	<.5	0.572	ND	<.5	<.1	890	555	873	408	1.74
	14-Aug-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.23
	14-Aug-07		FD		---	---	<.5	---	ND	---	---	---	---	---	---	1.61
	06-Sep-07		N		<0.2	<1	<.5	0.544	ND	<.5	<.1	1,200	528	807	406	1.28

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-1D	17-Mar-06		N	95-105	2,470	2,270	<1	0.581	ND	1.84	<.5	<500	<500	88.2	943	1.07
	17-Mar-06		FD		2,460	2,230	<1	<.5	ND	1.84	<.5	<500	<500	85.7	941	1.18
	06-Apr-06		N		3,080	2,770	5.45	<.5	ND	2.27	<.5	<500	<500	51	978	1.09
	06-Apr-06		FD		2,960	2,690	6.15	<.5	ND	2.26	<.5	<500	<500	54.8	963	1.1
	06-May-06		N		4,140	4,350	<1	<.5	ND	2.64	<.1	<500	<500	26.7	930	1.24
	07-May-06		N		3,560	---	50.9	<1	ND	---	---	---	---	---	---	---
	08-May-06		N		3,190	---	252	1.26	ND	---	---	---	---	---	---	---
	09-May-06		N		2,870	2,780	441	2.63	0.023	1.18	<.2	<500	<500	48.9	846	37.5
	10-May-06		N		2,670	---	464	2.92	0.029	---	---	---	---	---	---	---
	11-May-06		N		2,660	---	528	2.87	0.016	---	---	---	---	---	---	---
	12-May-06		N		2,520	---	578	3.01	0.022	---	---	---	---	---	---	---
	13-May-06		N		2,380 J/HD	2,390	613	3	0.016	<1	<.2	<500	<500	60.1	529	58.4
	24-May-06		N		1,320	1,330	488	2.61	0.164	<.5	<.5	<500	<500	507	653	30.7
	31-May-06		N		970 J/HD	896	373	1.86	ND	<.5	<.5	<500	<500	992	665	16
	05-Jun-06		N		931	859	371	1.71	ND	<.5	<.5	<500	<500	1,270	730	10.1
	17-Jul-06		N		998	1,000	30.4	1.37	ND	0.939	0.869	<500	<500	1,160	731	3.68
	08-Aug-06		N		1,100	1,120	9.79	0.597	ND	1.15	<.1	<500	<500	1,030	748	3.21
	14-Aug-06		N		---	---	16.7	---	703	---	---	---	---	---	---	52.7
	17-Aug-06		N		---	---	<2.5	---	1,180	---	---	---	---	---	---	50
	21-Aug-06		N		---	---	5.79	---	1,420	---	---	---	---	---	---	36.2
	21-Aug-06		FD		---	---	14.5	---	1,440	---	---	---	---	---	---	36.3
	24-Aug-06		N		---	---	11.3	---	1,360	---	---	---	---	---	---	31.8
	24-Aug-06		FD		---	---	13.3	---	1,450	---	---	---	---	---	---	32.6
	29-Aug-06		N		---	---	8.58	---	1,210	---	---	---	---	---	---	16.3
	05-Sep-06		N		320	363	5.79	<1	1,250	<1	0.359	<500	<500	2,790	671	5.9
	12-Sep-06		N		---	---	333	---	845	---	---	---	---	---	---	46.3
	19-Sep-06		N		---	---	462	---	549	---	---	---	---	---	---	35.2
	19-Sep-06		FD		---	---	462	---	558	---	---	---	---	---	---	33.5
	28-Sep-06		N		---	---	447	---	251	---	---	---	---	---	---	16.4
	04-Oct-06		N		58.7	117	454	0.539	136	<.5	<.1	<500	<500	5,790	480	10.3
	17-Oct-06		N		---	---	303	---	84.3	---	---	---	---	---	---	4.91
	31-Oct-06		N		---	---	170	---	40.6	---	---	---	---	---	---	9.23
	08-Nov-06		N		<0.2	60.6	144	<5	1,300	<5	<1	<500	<500	5,390	365	150
	14-Nov-06		N		---	---	<2.5	---	0.546	---	---	---	---	---	---	49.9

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-1D (cont)	21-Nov-06		N		---	---	<0.50	---	0.492	---	---	---	---	---	---	31.2
	28-Nov-06		N		---	---	59	---	958	---	---	---	---	---	---	41.9
	05-Dec-06		N		<0.2	28.5	52	<2.5	1,460	<2.5	<.5	<500	<500	4,440	355	49.3
	18-Dec-06		N		---	---	31.4	---	514	---	---	---	---	---	---	3.29
	03-Jan-07		N		<0.2	12.1	22	<1	260	<1	<.2	1,470	<500	8,120	567	1.55
	15-Jan-07		N		---	---	13.9	---	169	---	---	---	---	---	---	1.36
	29-Jan-07		N		---	---	9.87	---	104	---	---	---	---	---	---	1.56
	07-Feb-07		N		2.6	25.5	8.96	<.5	70.3	<.5	<.1	<500	<500	10,000	689	1.1
	06-Mar-07		N		<0.2	3.17	3.65	0.624	32.6	<.5	<.1	<500	<500	10,600	678	1.2
	05-Apr-07		N		<0.2	8.44	1.83	0.615	13	<.5	<.1	<500	<500	9,260	745	1.01
	02-May-07		N		<2	13.8	1.06	0.74	5.82	<.5	<.2	<500	<500	8,970	723	1.02
	15-May-07		N		---	---	282	---	ND	---	---	---	---	---	---	804
	22-May-07		N		---	---	209	---	8.22	---	---	---	---	---	---	609
	30-May-07		N		---	---	166	---	7.35	---	---	---	---	---	---	434
	06-Jun-07		N		<0.2	1.61	135	<.5	5.07	<.5	<.2	2,020	1,100	6,900	285	332
	11-Jun-07		N		---	---	129	---	4.73	---	---	---	---	---	---	264
	26-Jun-07		N		---	---	117	---	3.45	---	---	---	---	---	---	149
	11-Jul-07		N		<0.2	1.1	89.5	0.673	3.15	<.5	<.1	963	<500	6,880	357	64.8
	24-Jul-07		N		---	---	55.1	---	1,120	---	---	---	---	---	---	835
	31-Jul-07		N		---	---	47.3	---	1,490	---	---	---	---	---	---	666
	08-Aug-07		N		<0.2	<1	51	<2.5	927	<2.5	<.5	2,340	1,540	4,350	123	333
	14-Aug-07		N		---	---	57.6	---	792	---	---	---	---	---	---	170
	28-Aug-07		N		---	---	53.1	---	641	---	---	---	---	---	---	55.2
	06-Sep-07		N		<0.2	<1	41.5	0.693	670	<.5	<.1	1,840	1,250	5,400	297	29
	02-Oct-07		N		<0.2	1.34	24.9	---	448	<.5	<.1	2,070	683	7,520	387	7.25
	06-Nov-07		N		<0.2	<1	15.1	---	396	<.5	<.1	2,270	1,530	6,870	484	6.69

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-2S	17-Mar-06		N	35-45	<1	<1	<1	0.563	ND	<.5	<.1	34,300	976	1,170	11.7	7.42
	06-Apr-06		N		<0.2	<1	<1	<.5	ND	<.5	<.5	30,200	1,850	1,240	8.91	8.57
	24-May-06		N		<1	<1	<1	<.5	ND	<.5	<.5	164,000	<500	1,160	3.02	11
	01-Jun-06		N		<1	<1	<1	<.5	ND	<.5	<.1	91,900	934	1,300	3.06	9.65
	07-Jun-06		N		<1	<1	<1	<.5	ND	<.5	<.5	42,300	950	1,280	2.77	10.8
	18-Jul-06		N		<0.2	<1	<1	1.47	ND	<.5	<.1	38,300	2,690	1,330	6.83	12.1
	08-Aug-06		N		<0.2	1.14	<.5	1.63	ND	<.5	<.1	61,300	1,400	1,430	54.1	10.7
	06-Sep-06		N		0.26	<1	<.5	0.805	ND	<.5	<.1	48,400	889	1,460	30.4	10.6
	04-Oct-06		N		<0.2	<1	<.5	1.02	ND	<.5	<.1	25,600	1,750	1,400	12.8	13
	08-Nov-06		N		<0.2	<1	<.5	1.21	ND	<.5	<.1	10,600	1,470	1,770	56	63.6
	05-Dec-06		N		0.5	7.62	<.5	0.689	0.086	<.5	<.1	1,500	<500	226	328	3.88
	03-Jan-07		N		<0.2	<1	<1	1.31	ND	<.1	<.2	5,420	1,310	1,380	24.7	11
	07-Feb-07		N		<0.2	<1	<.5	1.1	ND	<.5	<.1	10,800	1,490	1,430	5.19	11.1
	07-Mar-07		N		<0.2	<1	0.57	1.15	ND	<.5	<.1	10,800	1,400	1,410	3.42	12.8
	05-Apr-07		N		<0.2	1.23	<.5	1.1	ND	<.5	<.1	32,700	2,130	1,440	4.46	12.4
	02-May-07		N		<0.2	<1	<.5	1.16	ND	<.5	<.2	22,100	2,480	1,510	5.9	12.3
	06-Jun-07		N		<0.2	<1	<.5	0.891	ND	<.5	<.2	29,300	2,850	1,600	6.75	14.3
	11-Jul-07		N		<0.2	<1	<.5	1.2	ND	<.5	<.1	8,160	2,320	1,460	9.28	12.6
	08-Aug-07		N		<0.2	<1	<.5	1.28	ND	<.5	<.1	7,690	2,140	1,590	16.7	13.7
	06-Sep-07		N		<0.2	<1	<.5	1.22	ND	<.5	<.1	7,610	2,490	1,530	8.96	10.8

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-2M	17-Mar-06		N	60-70	<1	8.19	<1	<.5	ND	<.5	<.5	<500	<500	547	474	<1
	06-Apr-06		N		<0.2	7.58	<1	<.5	ND	<.5	<.1	<500	<500	380	471	<1
	24-May-06		N		<1	<1	<1	40	0.114	<.5	<.5	20,000	<500	431	423	1.76
	31-May-06		N		<1	<1	<1	12.1	0.033	<.5	<.5	3,430	<500	363	438	2.21
	31-May-06		FD		<1/J	<1	<1	12	0.038	<.5	<.5	4,150	<500	371	429	2.28
	07-Jun-06		N		<1	<1	<1	5.29	0.024	<.5	<.5	1,220	<500	353	487	1.85
	18-Jul-06		N		<0.2	1.06	<1	0.988	5.65	<.5	<.1	1,990	<500	228	377	3.1
	08-Aug-06		N		<0.2	<1	<.5	0.638	ND	<.5	<.1	1,040	<500	233	412	9.06
	06-Sep-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	811	<500	228	415	2.41
	04-Oct-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	958	<500	203	374	7.88
	08-Nov-06		N		<0.2	2.79	6.89	<.5	ND	<.5	<.1	<500	<500	212	354	23.1
	05-Dec-06		N		0.66	8.58	<.5	0.644	0.167	<.5	<.1	1,120	<500	211	351	14
	03-Jan-07		N		3.4	74.4	<.5	0.611	0.269	<.5	<.1	757	<500	1,570	366	1.64
	07-Feb-07		N		0.35	6.66	<.5	0.519	ND	<.5	<.1	<500	<500	339	401	1.58
	07-Mar-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	166	432	1.47
	05-Apr-07		N		<0.2	<1	<.5	<.5	0.039	<.5	<.1	1,830	<500	179	390	1.39
	02-May-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.2	508	<500	161	418	1.3
	15-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.09
	22-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.2
	30-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	6.81
	06-Jun-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.2	<500	<500	216	379	1.41
	11-Jul-07	a	N		<0.2	<1	1.26	0.527	ND	<.5	<.1	2,050	<500	607	378	15.6
	11-Jul-07		FD		<0.2	<1	<.5	0.528	ND	<.5	<.1	<500	<500	168	387	1.37
	24-Jul-07		N		---	---	<.5	---	0.061	---	---	---	---	---	---	1.34
	31-Jul-07		N		---	---	<.5	---	0.131	---	---	---	---	---	---	1.4
	08-Aug-07		N		<0.2	<1	<.5	0.603	ND	<.5	<.1	<500	<500	183	362	2.3
	14-Aug-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.64
	06-Sep-07		N		<0.2	<1	<.5	0.679	ND	<.5	<.1	555	<500	<5	302	1.42

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-2D	17-Mar-06		N	95-105	1,660	1,580	<1	<.5	ND	1.23	<.5	<500	<500	154	931	1.09
	17-Mar-06		FD		1,670	1,570	<1	<.5	ND	1.26	<.5	<500	<500	161	924	1.24
	06-Apr-06		N		2,310	2,160	4.44	<.5	ND	1.68	<.5	<500	<500	79.7	924	1.02
	06-Apr-06		FD		2,290	2,170	4.1	<.5	ND	1.84	<.5	<500	<500	78.3	946	<1
	24-May-06		N		1,800	1,760	374	2.11	ND	<.5	<.5	507	<500	173	691	26.9
	31-May-06		N		1,180	1,170	388	1.85	ND	<.5	<.5	1,400	<500	320	689	17.6
	07-Jun-06		N		951	930	390	1.99	ND	<.5	<.5	<500	<500	423	724	14.4
	17-Jul-06		N		466	438	110	1.76	ND	<.5	0.885	<500	<500	622	745	3.98
	07-Aug-06		N		568	495	34	0.687	ND	0.607	<.1	4,350	<500	597	953	7.94
	14-Aug-06		N		---	---	27.1	---	ND	---	---	---	---	---	---	7.23
	14-Aug-06		FD		---	---	28.9	---	ND	---	---	---	---	---	---	4.8
	17-Aug-06		N		---	---	24.3	---	47	---	---	---	---	---	---	5.1
	17-Aug-06		FD		---	---	23.6	---	49.5	---	---	---	---	---	---	4.34
	21-Aug-06		N		---	---	17.3	---	405	---	---	---	---	---	---	16.2
	24-Aug-06		N		---	---	16.8	---	636	---	---	---	---	---	---	21.8
	29-Aug-06		N		---	---	14.7	---	792	---	---	---	---	---	---	12.6
	06-Sep-06		N		432	512	10.2	<1	905	<1	<.2	<500	<500	1,270	699	4.54
	12-Sep-06		N		---	---	18.1	---	954	---	---	---	---	---	---	7.24
	19-Sep-06		N		---	---	120	---	1,050	---	---	---	---	---	---	10.3
	28-Sep-06		N		---	---	229	---	610	---	---	---	---	---	---	6.92
	04-Oct-06		N		292	234	303	<2.5	307	<2.5	<.5	3,090	<500	1,420	455	4
	17-Oct-06		N		---	---	394	---	ND	---	---	---	---	---	---	7.26
	31-Oct-06		N		---	---	367	---	ND	---	---	---	---	---	---	8.51
	31-Oct-06		FD		---	---	366	---	ND	---	---	---	---	---	---	10.1
	08-Nov-06		N		281	229	299	<2.5	ND	<2.5	<.5	<500	<500	1,710	508	24.3
	14-Nov-06		N		---	---	251	---	106	---	---	---	---	---	---	31.7
	21-Nov-06		N		---	---	218	---	163	---	---	---	---	---	---	22.4
	28-Nov-06		N		---	---	153	---	507	---	---	---	---	---	---	16.2
	05-Dec-06		N		186	183	46.7	<2.5	258	<2.5	<.5	<500	<500	1,380	292	15
	18-Dec-06		N		---	---	65.3	---	332	---	---	---	---	---	---	1.59

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-2D (cont)	03-Jan-07		N		171	167	31.9	0.722	258	<.5	<.1	<500	<500	3,380	490	1.57
	15-Jan-07		N		---	---	19.3	---	260	---	---	---	---	---	---	1.48
	29-Jan-07		N		---	---	9.45	---	162	---	---	---	---	---	---	1.35
	07-Feb-07		N		146	112	7.36	0.736	86.5	<.5	<.1	<500	<500	4,780	661	1.28
	07-Mar-07		N		91.8	86.7	1.41	0.683	21.4	<.5	<.1	<500	<500	5,150	787	<1
	05-Apr-07		N		85.6	88.5	0.702	0.612	7.02	<.5	<.1	<500	<500	4,660	779	<1
	02-May-07		N		87.2	94.2	<.5	0.74	3.34	<.5	<.2	<500	<500	4,580	785	1.03
	15-May-07		N		---	---	73.4	---	4.87	---	---	---	---	---	---	200
	22-May-07		N		---	---	157	---	4.39	---	---	---	---	---	---	466
	30-May-07		N		---	---	176	---	5.2	---	---	---	---	---	---	409
	06-Jun-07		N		<0.2	<1	164	<.5	4.32	<.5	<.2	992	672	5,180	184	313
	11-Jun-07		N		---	---	154	---	5.9	---	---	---	---	---	---	287
	26-Jun-07		N		---	---	141	---	2.67	---	---	---	---	---	---	231
	11-Jul-07		N		<0.2	<1	114	0.665	1.92	<.5	<.1	1,100	593	5,840	236	122
	24-Jul-07		N		---	---	87.3	---	209	---	---	---	---	---	---	162
	24-Jul-07		FD		---	---	84.7	---	173	---	---	---	---	---	---	161
	31-Jul-07		N		---	---	79.8	---	572	---	---	---	---	---	---	312
	08-Aug-07		N		<0.2	<1	68.9	<1	740	<1	<.2	1,990	1,120	4,480	31.8	353
	08-Aug-07		FD		<0.2	<1	68.9	<2.5	788	<2.5	<.5	2,030	1,250	4,630	31	359
	14-Aug-07		N		---	---	68	---	730	---	---	---	---	---	---	248
	28-Aug-07		N		---	---	63	---	554	---	---	---	---	---	---	87.6
	06-Sep-07		N		<0.2	<1	46.3	0.685	531	<.5	<.1	2,230	1,420	4,260	131	59
	06-Sep-07		FD		<0.2	3.18	47.2	0.683	552	<.5	<.1	2,110	1,420	4,470	142	57.3
	02-Oct-07		N		<0.2	<1	20.7	---	553	<.5	<.1	2,410	1,970	5,490	304	10.1
	06-Nov-07		N		<0.2	<1	8.98	---	574	<.5	<.1	5,480	2,260	6,620	396	2.85
	06-Nov-07		FD		<0.2	<1	9.81	---	543	<.5	<.1	3,360	2,230	6,600	400	2.7

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-3S	16-Mar-06		N	35-45	<1	40.3	<1	<.5	ND	<.5	<.1	6,370	4,860	1,160	217	4.27
	03-Apr-06		N		<1	1.48	<1	<.5	ND	<.5	<.5	5,510	4,990	988	221	4.66
	04-May-06		N		<0.2 J/HD	---	<1	<1	ND	---	---	---	---	---	---	---
	05-May-06		N		<0.2	---	<1	<1	ND	---	---	---	---	---	---	---
	06-May-06		N		<1	1.46	<1	<.5	ND	<.5	<.1	7,370	5,660	968	80.2	5.05
	06-May-06		FD		<1	1.01	<1	<.5	ND	<.5	<.1	6,500	5,820	950	80.4	5.26
	07-May-06		N		<0.2	---	<1	<1	ND	---	---	---	---	---	---	---
	09-May-06		N		<0.2 J/HD	1.54	<1	<1	9.61	<1	<.2	7,850	6,280	973	112	5.83
	10-May-06		N		<1	---	<1	19	34.4	---	---	---	---	---	---	---
	11-May-06		N		<1	---	<1	1.07	5.49	---	---	---	---	---	---	---
	12-May-06		N		<0.2	---	<1	64.6	42.3	---	---	---	---	---	---	---
	13-May-06		N		<1 J/HD	2.38	<1	93.7	56	<1	<.2	6,710	5,890	872	112	14.6
	23-May-06		N		<1	<1	<1	68.1	1,060	<1	<.5	130,000	1,750	830	30.5	49.9
	30-May-06		N		<1	1.36	<1	470	1,510	<2.5	<.5	27,600	695	762	24.4	93.5
	06-Jun-06		N		<1 J/HD	<1	<1	749	1,220	<2.5	<.5	21,900	3,220	750	23.2	119
	19-Jul-06		N		<0.2	<1	<1	212	751	<.5	<.5	23,400	4,680	652	12.9	16.4
	08-Aug-06		N		<0.2	<1	<.5	75.6	578	<.5	<.1	38,500	3,000	749	16.3	6.28
	06-Sep-06		N		<0.2	<1	<.5	35.2	344	<.5	<.1	12,900	3,700	883	34.2	6.66
	04-Oct-06		N		<0.2	<1	<2.5	25.1	206	<2.5	<.5	12,600	4,310	886	36.9	10.7
	08-Nov-06		N		<0.2	<1	<.5	16.6	53.1	<.5	<.1	13,100	3,720	914	36.9	33.9
	05-Dec-06		N		<0.2	<1	<.5	15	60.8	<.5	<.1	6,120	4,470	836	32.3	28.2
	03-Jan-07		N		<0.2	<1	<1	13.3	45.7	<1	<.2	7,700	4,870	798	25.8	6.45
	07-Feb-07		N		<0.2	<1	<.5	11.2	46.2	<.5	<.1	7,340	3,580	797	26.9	6.82
	07-Mar-07		N		<0.2	<1	<.5	9.4	18.2	<.5	<.1	9,340	3,770	727	26.4	6.78
	07-Mar-07		FD		<0.2	<1	<.5	9.26	18.7	<.5	<.1	7,000	5,820	768	29.4	6.82
	05-Apr-07		N		<0.2	<1	<.5	6.95	11	<.5	<.1	8,150	2,700	659	52.8	6.2
	02-May-07		N		<0.2	<1	<.5	5.69	62.3	<.5	<.2	8,400	3,070	669	35.2	6.61
	06-Jun-07		N		<0.2	<1	<.5	4.22	33.9	<.5	<.2	6,690	3,300	719	21.6	7.08
	11-Jul-07		N		<0.2	<1	<.5	3.39	9.09	<.5	<.1	5,610	2,650	656	27	6.56
	08-Aug-07		N		<0.2	<1	<.5	3.16	16.9	<.5	<.1	5,290	723	681	26.2	7.43
	06-Sep-07		N		<0.2	<1	<.5	2.66	9.73	<.5	<.1	5,070	2,210	634	32.9	6.68

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-3M	18-Mar-06		N	60-70	<1	<1	<1	<.5	ND	<.5	<.5	<500	<500	1,670	571	1.33
	07-Apr-06		N		<1	<1	<1	<.5	ND	<.5	<.5	<500	<500	2,020	672	1.01
	04-May-06		N		<1 J/HD	---	<1	<.5	ND	---	---	---	---	---	---	---
	05-May-06		N		<1	---	<1	<.5	ND	---	---	---	---	---	---	---
	06-May-06		N		<1 J/HD	<1	<1	<.5	ND	<.5	<.1	508	<500	1,720	597	1.11
	07-May-06		N		<1	---	<1	2.32	0.025	---	---	---	---	---	---	---
	09-May-06		N		<0.2 J/HD	<1	<1	28.8	0.075	<.5	<.1	518	<500	1,350	559	2.94
	10-May-06		N		<1	---	<1	60.2	0.148	---	---	---	---	---	---	---
	11-May-06		N		<1	---	<1	75.8	0.2	---	---	---	---	---	---	---
	12-May-06		N		<1 J/HD	---	<1	87.1	0.223	---	---	---	---	---	---	---
	13-May-06		N		<1 J/HD	2.46	<1	72.9	0.135	<.5	<.1	620	597	1,250	530	3.22
	13-May-06		FD		<0.2	9.68	<1	73.3	0.18	<.5	<.1	620	589	1,270	517	3.89
	23-May-06		N		<1	<1	<1	27.4	0.104	<.5	<.5	12,000	<500	1,550	573	1.59
	30-May-06		N		<1	3.09	<1	9.74	0.043	<.5	<.5	33,100	<500	1,260	533	1.94
	06-Jun-06		N		<1	<1	<1	4.86	0.031	<.5	<.5	5,140	<500	1,100	583	1.77
	06-Jun-06		FD		<1	1.61	<1	4.5	0.034	<.5	<.5	24,400	<500	1,130	575	2.41
	19-Jul-06		N		<1 J/HD	<1	<1	1.21	ND	<.5	<.5	14,500	588	936	544	4.05
	08-Aug-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	11,800	<500	888	514	2.39
	06-Sep-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	4,070	<500	821	590	2.2
	04-Oct-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	3,570	<500	732	479	1.84
	08-Nov-06		N		<0.2	1.57	<.5	15.2	78.5	<.5	<.1	6,980	4,230	872	82	33.1
	05-Dec-06		N		5.5	7.24	3.44	0.712	13	1.67	<.1	1,070	<500	677	627	9.96
	03-Jan-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	13,400	<500	582	481	1.32
	07-Feb-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	3,030	<500	506	496	1.18
	06-Mar-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	2,860	<500	432	455	1.41
	04-Apr-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	3,210	<500	349	437	<1
	02-May-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.2	2,480	<500	373	456	1.23
	16-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.05
	23-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.09
	31-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.22
	06-Jun-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.2	2,830	<500	409	425	1.22
	11-Jul-07		N		<0.2	<1	1.31	<.5	ND	<.5	<.1	2,850	<500	418	436	6.27
	25-Jul-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.32
	01-Aug-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.26
	08-Aug-07		N		<0.2	<1	<.5	0.516	ND	<.5	<.1	2,460	<500	435	435	1.89
	15-Aug-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.11
	06-Sep-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	2,850	<500	<5	436	1.24

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-3D	18-Mar-06		N	95-105	4,390	4,370	<1	<.5	ND	3.33	<.5	<500	<500	16.7	984	<1
	05-Apr-06		N		4,440	4,680	8.87	<.5	ND	3.28	<.5	<500	<500	10.2	966	<1
	05-May-06		N		3,980	---	<1	<1	ND	---	---	---	---	---	---	---
	06-May-06		N		3,090 J/HD	3,420	666	2.93	0.031	1.73	<.1	<500	<500	28.4	699	80.3
	07-May-06		N		4,140	---	515	3.15	0.023	---	---	---	---	---	---	---
	09-May-06		N		3,900 J/HD	3,920	268	2.1	0.02	2.02	<.2	<500	<500	42	853	36
	10-May-06		N		3,680	---	199	<2.5	0.013	---	---	---	---	---	---	---
	11-May-06		N		3,700	---	159	---	ND	---	---	---	---	---	---	---
	12-May-06		N		1,940	---	127	<2.5	ND	---	---	---	---	---	---	---
	13-May-06		N		3,550 J/HD	3,630	96.8	3.07	0.151	2.1	<.2	<500	<500	309	909	9.41
	23-May-06		N		4,380	3,940	21.7	<.5	ND	2.73	<.5	671	<500	113	854	2.39
	30-May-06		N		3,880	4,030	<1	<1	ND	2.82	<.5	<500	<500	83.8	843	2.23
	06-Jun-06		N		3,730	3,770	2.92	<.5	ND	2.82	<.5	1,630	<500	67.5	985	1.31
	17-Jul-06		N		3,830	3,920	1.15	0.893	ND	2.92	0.722	<500	<500	22.4	690	3.31
	17-Jul-06		FD		3,730	3,820	<1	1.13	ND	2.93	0.723	<500	<500	22.2	885	3.14
	08-Aug-06		N		3,260	4,180	8.34	0.861	0.123	3.28	<.1	6,760	<500	27.7	875	2.99
	14-Aug-06		N		---	---	8.97	---	1,190	---	---	---	---	---	---	58
	17-Aug-06		N		---	---	9.65	---	387	---	---	---	---	---	---	10.5
	21-Aug-06		N		---	---	8.24	---	209	---	---	---	---	---	---	3.86
	24-Aug-06		N		---	---	7.09	---	181	---	---	---	---	---	---	8.53
	29-Aug-06		N		---	---	7.51	---	114	---	---	---	---	---	---	2.25
	29-Aug-06		FD		---	---	7.5	---	108	---	---	---	---	---	---	2.35
	05-Sep-06		N		2,930	2,940	8.37	<10	49.9	<10	<2	<500	<500	1,660	801	2.33
	12-Sep-06		N		---	---	270	---	40.9	---	---	---	---	---	---	32.8
	12-Sep-06		FD		---	---	265	---	45.5	---	---	---	---	---	---	31.3
	19-Sep-06		N		---	---	60.8	---	18.6	---	---	---	---	---	---	6.91
	28-Sep-06		N		---	---	25.3	---	7.85	---	---	---	---	---	---	6.16
	04-Oct-06		N		3,100	2,960	25.5	<1	7.04	2.65	<.2	<500	<500	2,630	741	7.61
	17-Oct-06		N		---	---	4.16	---	2.09	---	---	---	---	---	---	7.08
	17-Oct-06		FD		---	---	4.89	---	ND	---	---	---	---	---	---	8.91
	31-Oct-06		N		---	---	7.27	---	0.597	---	---	---	---	---	---	8.65
	08-Nov-06		N		2,430	2,330	<5	<5	423	<5	<1	<500	<500	3,940	694	43.9
	14-Nov-06		N		---	---	187	---	108	---	---	---	---	---	---	16.7
	21-Nov-06		N		---	---	10	---	88.4	---	---	---	---	---	---	4.15

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-3D (cont)	28-Nov-06		N		---	---	10	---	62	---	---	---	---	---	---	3.5
	05-Dec-06		N		5,240	4,800	8.25	<1	ND	2.44	<.2	<500	<500	767	756	2.46
	18-Dec-06		N		---	---	7.1	---	22.7	---	---	---	---	---	---	<1
	03-Jan-07		N		3,190	3,160	7.77	0.829	13.3	2.94	<.1	<500	<500	2,340	799	1.05
	15-Jan-07		N		---	---	7.03	---	6.28	---	---	---	---	---	---	<1
	29-Jan-07		N		---	---	2.89	---	3.86	---	---	---	---	---	---	<1
	07-Feb-07		N		3,030	3,030	8.4	0.793	4.23	3.29	<.1	<500	<500	1,820	849	<1
	06-Mar-07		N		3,160	2,930	7.95	0.685	0.99	3.12	<.1	<500	<500	1,320	798	<1
	05-Apr-07		N		2,480	2,680	6.67	0.668	0.305	2.45	<.1	<500	<500	1,150	769	<1
	02-May-07		N		2,650	2,380	6.19	0.781	0.143	2.61	<.2	<500	<500	981	798	<1
	16-May-07		N		---	---	107	---	2.56	---	---	---	---	---	---	252
	23-May-07		N		---	---	62.5	---	1.33	---	---	---	---	---	---	133
	31-May-07		N		---	---	31.5	---	0.985	---	---	---	---	---	---	69.1
	06-Jun-07		N		509	780	24.8	0.688	0.562	0.782	<.2	<500	<500	6,470	614	50
	06-Jun-07		FD		693	757	26.4	0.672	0.404	0.757	<.5	<500	<500	6,630	638	49.1
	11-Jun-07		N		---	---	23.9	---	0.515	---	---	---	---	---	---	38.7
	11-Jun-07		FD		---	---	24	---	0.515	---	---	---	---	---	---	37.9
	26-Jun-07		N		---	---	16.5	---	0.413	---	---	---	---	---	---	15.4
	26-Jun-07		FD		---	---	19.3	---	0.513	---	---	---	---	---	---	16.6
	11-Jul-07		N		832	1,060	11.7	0.726	1.09	1.25	<.2	<500	<500	4,480	664	7.56
	25-Jul-07		N		---	---	9.83	---	571	---	---	---	---	---	---	326
	01-Aug-07		N		---	---	7.07	---	287	---	---	---	---	---	---	113
	08-Aug-07		N		<0.2	66.3	3.56	0.818	198	0.529	<.1	954	<500	6,800	562	67
	15-Aug-07		N		---	---	<.5	---	163	---	---	---	---	---	---	42.3
	28-Aug-07		N		---	---	2.62	---	93.1	---	---	---	---	---	---	12.9
	06-Sep-07		N		177	279	1.71	0.823	55.1	0.8	<.1	590	<500	6,170	692	7.13
	03-Oct-07		N		481 J/HD	531	0.582	---	49.5	1.05	<.1	<500	<500	4,950	709	1.93
	07-Nov-07		N		721	643	2.26	---	25.2	1.16	<.1	<500	<500	4,180	731	1.05

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-4S	15-Mar-06		N	35-45	<1	3.83	0.714 J	<.5	ND	<.5	<.1	4,060	713	919	474	1.69
	06-Apr-06		N		<1	5.84	<1	<.5	ND	<.5	<.5	2,510	1,350	707	450	1.69
	04-May-06		N		<1	---	<1	<1	ND	---	---	---	---	---	---	---
	05-May-06		N		<1	---	<1	<1	ND	---	---	---	---	---	---	---
	09-May-06		N		<0.2 J/HD	<1	<1	<.5	ND	<.5	<.1	10,800	1,490	657	472	2.4
	10-May-06		N		<40	---	<1	<2.5	ND	---	---	---	---	---	---	---
	11-May-06		N		<1	---	<1	<.5	ND	---	---	---	---	---	---	---
	12-May-06		N		<1	---	<1	<1	ND	---	---	---	---	---	---	---
	13-May-06		N		<1 J/HD	3.18	<1	<1	ND	<1	<.2	2,320	1,940	673	415	2.02
	23-May-06		N		<1	<1	<1	<.5	ND	<.5	<.5	18,600	<500	683	436	2.29
	30-May-06		N		<1	1.15	<1	<.5	ND	<.5	<.5	20,000	<500	650	426	2.72
	06-Jun-06		N		<1 J/HD	<1	<1	<.5	0.073	<.5	<.5	8,530	1,340	610	492	2.56
	19-Jul-06		N		<0.2	<1	<1	<.5	ND	<.5	<.5	4,710	1,670	545	445	4.86
	08-Aug-06		N		<0.2	<1	<.5	<.5	0.165	<.5	<.1	4,270	1,710	617	431	4.21
	06-Sep-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	4,440	1,260	614	499	3.46
	06-Sep-06		FD		<0.2	<1	<.5	<.5	ND	<.5	<.1	3,780	1,360	634	461	3.16
	04-Oct-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	4,050	1,600	576	401	5.38
	08-Nov-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	3,460	1,530	616	405	17.2
	05-Dec-06		N		<0.2	1.21	<.5	<.5	ND	<.5	<.1	4,470	2,100	562	347	15.3
	03-Jan-07		N		<0.2	1.29	<.5	<.5	ND	<.5	<.1	6,190	1,330	492	396	2.57
	07-Feb-07		N		<0.2	1.3	<.5	0.512	ND	<.5	<.1	4,150	1,640	483	431	2.46
	07-Mar-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	2,560	1,040	397	442	2.46
	05-Apr-07		N		<0.2	2.67	<.5	<.5	ND	<.5	<.1	2,720	1,040	350	445	2.19
	02-May-07		N		<0.2	<1	<.5	0.515	ND	<.5	<.2	2,090	899	354	420	2.4
	06-Jun-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.2	2,390	1,060	370	381	2.71
	11-Jul-07		N		<0.2	<1	<.5	0.514	ND	<.5	<.1	1,990	910	344	422	2.41
	08-Aug-07		N		<0.2	<1	<.5	0.571	ND	<.5	<.1	2,060	1,260	435	402	3.01
	06-Sep-07		N		<0.2	<1	<.5	0.551	ND	<.5	<.1	1,830	1,250	<5	402	2.61

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-4M	15-Mar-06		N	60-70	<1	<1	0.75 J	<.5	ND	<.5	<.1	<500	<500	966	609	<1
	07-Apr-06		N		<1	1.63	<1	<.5	ND	<.5	<.5	<500	<500	766	722	1.05
	04-May-06		N		<1 J/HD	---	<1	<.5	ND	---	---	---	---	---	---	---
	08-May-06		N		<1	---	<1	<.5	ND	---	---	---	---	---	---	---
	09-May-06		N		<0.21 J/HD	<1	<1	<.5	ND	<.5	<.1	723	700	686	504	1.12
	10-May-06		N		<1	---	<1	<.5	ND	---	---	---	---	---	---	---
	11-May-06		N		<1 J/HD	---	<1	<.5	ND	---	---	---	---	---	---	---
	12-May-06		N		<1	---	<1	<.5	ND	---	---	---	---	---	---	---
	13-May-06		N		<1 J/HD	2.05	<1	<.5	ND	<.5	<.1	988	899	612	529	1.22
	23-May-06		N		<1	<1	<1	<.5	ND	<.5	<.5	3,700	<500	613	565	1.58
	30-May-06		N		<1	229	<1	<.5	ND	<.5	<.5	929	<500	492	534	2.05
	06-Jun-06		N		<1 J/HD	2.24	<1	<.5	ND	<.5	<.5	1,330	<500	523	570	1.31
	19-Jul-06		N		<0.2	<1	<1	<.5	ND	<.5	<.5	1,270	892	492	518	5.5
	08-Aug-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	1,960	724	535	528	3.22
	06-Sep-06		N		0.29	<1	<.5	<.5	ND	<.5	<.1	4,780	526	565	565	2.22
	04-Oct-06		N		<0.20	1.73	<.5	<.5	ND	<.5	<.1	5,070	<500	569	496	2.38
	08-Nov-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	2,150	<500	470	464	14.4
	05-Dec-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	2,130	775	466	445	9.54
	03-Jan-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	5,940	842	402	465	1.46
	07-Feb-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	456	502	1.19
	07-Mar-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	809	1,080	397	495	1.4
	04-Apr-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	4,840	<500	361	438	1.05
	02-May-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.2	3,920	<500	384	448	1.24
	06-Jun-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.2	4,360	<500	386	394	1.23
	11-Jul-07	a	N		3,800	3,850	<.5	1.03	ND	3.57	<.5	<500	<500	5.29	938	1.16
	08-Aug-07		N		<0.2	3.39	<.5	0.515	ND	<.5	<.1	1,290	961	419	404	1.84
	06-Sep-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	1,100	796	<5	422	1.56

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-4D	15-Mar-06		N	95-105	5,670	5,510	<1	1.32	ND	4.28	<.5	<500	<500	8.27	1,080	<1
	05-Apr-06		N		5,960	5,480	12.9	<.5	ND	4.7	<.5	<500	<500	<5	1,110	1.05
	08-May-06		N		5,870	---	<1	<1	ND	---	---	---	---	---	---	---
	09-May-06		N		5,900 J/HD	5,900	<1	<2.5	ND	4.6	<.5	<500	<500	<5	1,110	1.16
	10-May-06		N		5,830	---	<1	<2.5	ND	---	---	---	---	---	---	---
	11-May-06		N		5,790	---	<1	<1	ND	---	---	---	---	---	---	---
	12-May-06		N		5,810	---	<1	<1	ND	---	---	---	---	---	---	---
	13-May-06		N		5,710 J/HD	5,900	<1	<1	ND	4.36	<.2	<500	<500	<5	1,050	1.21
	23-May-06		N		5,750	5,880	<1	<.5	ND	4.91	<.5	<500	<500	<5	1,010	1.6
	23-May-06		FD		---	5,970	<1	<.5	ND	4.89	<.5	<500	<500	<5	1,010	1.87
	30-May-06		N		5,730	5,740	<1	<1	ND	4.75	<.5	2,390	<500	21	989	2.32
	06-Jun-06		N		5,800 J/HD	5,560	<1	<.5	0.078	4.7	<.5	<500	<500	<5	1,130	1.44
	19-Jul-06		N		5,360	5,830	<1	0.989	ND	4.5	<.5	<500	<500	<5	957	7.78
	08-Aug-06		N		5,080	5,800	10.1	0.914	0.024	4.31	<.1	<500	<500	13.2	989	2.99
	06-Sep-06		N		5,750	5,720	3.57	0.647	ND	4.76	<.2	<500	<500	<5	1,030	2.18
	04-Oct-06		N		5,800	5,710	13	<2.5	ND	4.62	<.5	<500	<500	11.9	882	1.76
	04-Oct-06		FD		5,530	6,000	13.3	<2.5	ND	4.78	<.5	<500	<500	15.2	869	8.18
	08-Nov-06		N		5,680	5,440	13.6	<2.5	ND	4.68	<.5	<500	<500	<5	869	8.3
	05-Dec-06		N		6,130	5,560	13.5	<2.5	ND	4.85	<.5	<500	<500	<5	875	2.03
	03-Jan-07		N		5,360	5,320	13.4	<2.5	ND	4.54	<.5	3,060	<500	<5	916	1.02
	07-Feb-07		N		5,170	5,090	13.1	0.876	ND	4.99	<.1	9,350	<500	<5	950	1.04
	07-Mar-07		N		5,050	4,630	12.4	0.563	ND	4.79	<.1	<500	<500	9.76	977	<1
	05-Apr-07		N		4,150	4,370	9	0.846	ND	3.93	<.1	<500	<500	<5	975	<1
	02-May-07		N		4,050	4,360	10.3	1.05	ND	3.92	<.2	<500	<500	170	1,040	1.1
	16-May-07		N		---	---	10.4	---	0.042	---	---	---	---	---	---	2.13
	16-May-07		FD		---	---	10.8	---	0.042	---	---	---	---	---	---	1.63
	23-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.26
	31-May-07		N		---	---	9.3	---	ND	---	---	---	---	---	---	1.2
	06-Jun-07		N		3,810	4,210	9.22	0.809	ND	3.77	<.5	<500	<500	14.2	927	1.1
	11-Jun-07		N		---	---	9.35	---	ND	---	---	---	---	---	---	1.01
	26-Jun-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.09
	11-Jul-07		N		3,970	3,910	<.5	1.05	ND	3.72	<.5	<500	<500	5.41	953	1.27
	25-Jul-07		N		---	---	<.5	---	5.18	---	---	---	---	---	---	2.56
	01-Aug-07		N		---	---	<.5	---	2.38	---	---	---	---	---	---	1.3
	08-Aug-07		N		3,760	3,500	<.5	1.13	1.1	3.74	<.1	<500	<500	124	956	1.82
	15-Aug-07		N		---	---	<.5	---	0.467	---	---	---	---	---	---	1.52
	28-Aug-07		N		---	---	<.5	---	0.137	---	---	---	---	---	---	1.21
	06-Sep-07		N		3,970	3,287	<.5	1.11	0.057	3.65	<.1	<500	<500	<5	916	1.34
	03-Oct-07		N		3,460	3,310	<.5	---	0.03	3.57	<.1	<500	<500	<500	943	1.08
	07-Nov-07		N		3,450	3,270	8.76	---	ND	3.32	<.1	<500	<500	<500	941	1.15

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-5S	16-Mar-06		N	35-45	<1	2.71	<1	<.5	ND	<.5	<.1	949	971	2,440	401	3.2
	07-Apr-06		N		<1	<1	<1	<.5	ND	<.5	<.5	995	1,030	1,850	490	2.76
	01-Jun-06		N		<1	<1	<1	<.5	ND	<.5	<.1	4,250	1,870	1,530	372	4.14
	19-Jul-06		N		<1	<1	<1	<.5	ND	<.5	<.5	3,530	2,470	1,400	351	12.7
	09-Aug-06		N		<0.2	<1	<.5	2.26	ND	<.5	<.1	3,220	2,410	1,350	375	8.3
	08-Sep-06		N		<0.2	<1	<.5	0.586	ND	<.5	3.7	4,070	2,840	1,410	340	6.95
	05-Oct-06		N		<0.2	1.05	<.5	0.938	ND	<.5	<.1	3,410	2,680	1,280	316	8.13
	09-Nov-06		N		<0.2	<1	<.5	0.717	ND	<.5	<.1	3,480	2,710	1,190	315	14.3
	06-Dec-06		N		<0.2	32.7	<.5	1.04	ND	<.5	<.1	4,250	3,250	1,280	307	40.7
	06-Dec-06		FD		<0.2	<1.0	<10	1.04	ND	<.5	<.1	4,170	3,440	1,330	308	38
	04-Jan-07		N		<0.2	<1	<.5	1.05	ND	<.5	<.1	7,100	3,640	1,250	339	6.36
	08-Feb-07		N		<0.2	<1	<.5	0.986	ND	<.5	<.1	4,810	3,420	1,120	330	6.05
	08-Mar-07		N		<0.2	<1	<.5	1.02	ND	<.5	<.1	4,340	3,240	1,060	401	6.59
	06-Apr-07		N		<0.2	<1	2.04	0.909	ND	<.5	<.1	3,760	3,640	961	398	5.61
	03-May-07		N		<0.2	<1	<.5	0.969	ND	<.5	<.1	3,870	3,250	1,010	414	6.12
	07-Jun-07		N		<0.2	<1	<0.5	<0.5	ND	<0.5	<0.5	4,620	3,770	1,130	433	5.8
	12-Jul-07		N		<0.2	<1	<.5	0.938	ND	<.5	<.5	4,100	3,590	1,030	451	5.28
	09-Aug-07		N		<0.2	<1	<.5	1.03	ND	<.5	<.1	4,440	3,620	1,080	454	5.05
	07-Sep-07		N		<0.2	<1	<.5	0.994	ND	<.5	<.1	4,500	4,090	1,050	498	5.7
PT-5M	16-Mar-06		N	60-70	<1	<1	<1	<.5	ND	<.5	<.1	<500	<500	707	463	1.04
	07-Apr-06		N		<1	<1	<1	<.5	ND	<.5	<.5	1,850	1,820	1,770	443	3.31
	01-Jun-06		N		<1 J/HD	<1	<1	<.5	ND	<.5	<.1	4,570	<500	168	437	1.62
	19-Jul-06		N		<0.2	<1	<1	<.5	ND	<.5	<.5	2,240	<500	109	404	6.53
	09-Aug-06		N		<0.2 J/HD	<1	<.5	<.5	ND	<.5	<.1	3,770	<500	83.5	372	3.75
	08-Sep-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	9,570	<500	82.3	404	2.77
	05-Oct-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	2,980	<500	65.4	343	5.79
	09-Nov-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	790	<500	59.1	348	18.5
	06-Dec-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	958	<500	61.3	353	22.1
	04-Jan-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	4,110	<500	62.2	391	1.68
	08-Feb-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	692	<500	56.4	414	1.35
	07-Mar-07		N		<0.2	2.15	<.5	<.5	ND	<.5	<.1	1,020	<500	84.8	441	1.84
	06-Apr-07		N		<0.2	5.7	<.5	<.5	ND	<.5	<.1	6,040	<500	44.4	422	1.44
	03-May-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	45	425	1.67
	07-Jun-07		N		<0.2	<1	<0.5	<0.5	ND	<0.5	<0.1	543	<500	32.9	371	1.86
	12-Jul-07		N		<0.2	1.2	<.5	<.5	ND	<.5	<.1	<500	<500	29.2	344	1.7
	09-Aug-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	26.4	353	1.85
	07-Sep-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	354	1.92

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-5D	16-Mar-06		N	95-105	6,150	5,650	<1	<.5	ND	4.86	0.258	<500	<500	355	1,080	<1
	07-Apr-06		N		<0.2	<1	<1	<.5	ND	<.5	<.5	2,280	2,200	1,700	403	3.49
	12-May-06		N		4,250	4,680	<1	1.17	0.02	3.58	<1	<500	<500	209	1,020	1.34
	01-Jun-06		N		3,900	3,930	<1	<.5	ND	3.18	<.1	3,550	<500	132	919	1.27
	17-Jul-06		N		3,640	3,890	<1	1.01	ND	2.98	0.613	<500	<500	90.8	882	3.73
	09-Aug-06		N		4,470 J/HD	3,880	6.85	<1	ND	3.12	<.2	<500	<500	55.8	933	1.74
	08-Sep-06		N		4,420	4,930	9.71	<1	ND	3.61	<.2	<500	<500	40	923	2.33
	05-Oct-06		N		3,740	3,920	8.72	<1	ND	3.13	<.2	<500	<500	62.3	860	8.05
	09-Nov-06		N		4,510	4,400	11.6	<2.5	ND	4.01	<.5	<500	<500	36.6	839	3.59
	06-Dec-06		N		4,700	4,480	11	0.704	ND	3.99	<.1	<500	<500	33.5	852	4.9
	04-Jan-07		N		4,050	4,690	10.7	1.09	ND	3.95	<.2	24,100	<500	14.4	876	1.22
	08-Feb-07		N		3,950	3,750	9.95	0.97	ND	3.78	<.1	<500	<500	27.6	1,000	1.02
	08-Mar-07		N		3,640	3,500	8.8	0.879	ND	3.3	<.1	<500	<500	31.3	1,020	1.58
	05-Apr-07		N		3,230	3,420	8.45	0.813	ND	2.85	<.1	523	<500	28.4	978	1.02
	03-May-07		N		3,090	3,140	7.31	0.925	ND	2.81	<.1	<500	<500	26.4	944	1.21
	07-Jun-07		N		3,370	3,110	9.14	1.07	ND	3.17	<0.2	<500	<500	27.1	888	1.27
	12-Jul-07		N		3,300	3,240	<.5	0.68	ND	3.02	<.5	<500	<500	17.6	884	1.2
	09-Aug-07		N		3,250	3,440	<.5	1.05	ND	3.56	<.1	1,040	<500	12.9	892	1.05
	07-Sep-07		N		3,430	3,390	<.5	1.03	ND	3.4	<.1	<500	<500	<5	994	1.18
	03-Oct-07		N		3,560	3,480	<.5	---	ND	3.51	<.1	<500	<500	<500	869	1.01
	07-Nov-07		N		3,590	3,420	9.18	---	ND	3.4	<.1	<500	<500	<500	906	<1
PT-6S	16-Mar-06		N	35-45	<1	---	---	---	---	---	---	---	---	---	---	---
	18-Mar-06		N		---	4.6	<1	1.18	ND	<.5	<1	4,560	3,530	9,260	60	13.4
	04-Apr-06		N		<1	<1	<1	1.3	ND	<.5	<.5	11,600	6,310	7,650	57.8	14.2
	13-May-06		N		<1 J/HD	2.83	<1	<1	ND	<1	<.2	33,000	13,400	4,400	3.03	13
	22-May-06		N		<1 J/HD	26	<1	<.5	ND	<.5	<.5	22,600	1,180	3,710	5.91	13.9
	01-Jun-06		N		<1 J/HD	1.38	<1	<.5	ND	<.5	<.1	17,000	12,600	3,710	6.96	13.4
	06-Jun-06		N		<1 J/HD	1.44	<1	<2.5	ND	<2.5	<.5	19,000	17,100	3,250	4.57	14.8
	19-Jul-06		N		1.1	17.2	<1	2.72	ND	<.5	<.5	19,900	17,200	2,970	2.56	16.9
	09-Aug-06		N		<0.2	1.41	<.5	2.9	ND	<.5	<.1	23,700	16,500	3,170	76.2	16.1
	08-Sep-06		N		<0.2	2.56	<1	<1	ND	<1	<.2	22,900	15,800	2,810	4.46	16.4
	05-Oct-06		N		<0.2	<1	<2.5	<2.5	ND	<2.5	<.5	26,400	19,100	2,610	4.66	20.2
	09-Nov-06		N		<0.2	3.65	<.5	1.7	ND	<.5	<.1	27,800	20,000	2,550	6.07	62.2
	06-Dec-06		N		<0.2	<1.0	<.5	1.9	ND	<.5	<.1	36,500	27,700	2,530	9.65	76
	04-Jan-07		N		<0.2	1.23	<1	2.12	ND	<1	<.2	35,400	30,000	2,220	9.68	20.9
	08-Feb-07		N		<0.2	1.92	<.5	1.83	ND	<.5	<.1	30,300	25,900	1,770	8.25	19.9
	08-Mar-07		N		<0.2	<50	<.5	1.45	ND	<.5	<.1	26,400	20,500	1,540	11.8	16
	06-Apr-07		N		<0.2	<1	<.5	1.22	ND	<.5	<.1	23,400	12,900	1,050	8.43	13
	03-May-07		N		<0.2	1.36	<.5	1.26	ND	<.5	<.1	22,300	16,600	1,250	2.95	14.4
	07-Jun-07		N		<0.2	2.01	<0.5	1.1	ND	<0.5	<0.2	3,360	19,000	1,230	1.45	14.8
	12-Jul-07		N		<0.2	<1	<.5	1.43	ND	<.5	<.5	30,200	22,700	1,090	1.52	15.3
	09-Aug-07		N		<0.2	1.88	<.5	1.64	ND	<.5	<.1	33,100	17,800	1,250	0.931	16.4
	07-Sep-07		N		<0.2	<1	<1	1.67	ND	<1	<.2	38,900	24,900	1,130	1.5	16.1

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-6M	16-Mar-06		N	60-70	<1	<1	<1	<.5	ND	<.5	<.1	<500	<500	56.1	486	<1
	04-Apr-06		N		<1	<1	<1	<.5	ND	<.5	<.5	<500	<500	55.2	498	1.22
	13-May-06		N		<1 J/HD	4.53	<1	<.5	ND	<.5	<.1	<500	<500	71.2	509	1.7
	23-May-06		N		<1	<1	<1	<.5	ND	<.5	<.5	1,690	<500	71.2	476	1.11
	01-Jun-06		N		<1	1.24	<1	<.5	ND	<.5	<.1	1,150	<500	77.6	479	1.4
	06-Jun-06		N		<1 J/HD	1.66	<1	<.5	ND	<.5	<.5	1,650	<500	76.4	528	3.14
	19-Jul-06		N		<0.2	2.53	<1	<.5	ND	<.5	<.5	641	<500	89.2	471	4.28
	09-Aug-06		N		<0.2 J/HD	<1	<.5	<.5	ND	<.5	<.1	<500	<500	94.1	465	5.44
	08-Sep-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	2,790	<500	108	452	2.97
	05-Oct-06		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	1,120	<500	104	405	8.61
	09-Nov-06		N		<0.2	1.15	<.5	<.5	ND	<.5	<.1	1,990	<500	114	389	12.9
	06-Dec-06		N		<0.2	1.13	<.5	<.5	ND	<.5	<.1	<500	<500	116	388	17.1
	04-Jan-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	1,510	<500	119	391	1.91
	08-Feb-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	2,180	<500	124	441	1.73
	07-Mar-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	704	<500	141	433	2.23
	06-Apr-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	156	406	1.35
	03-May-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	168	442	1.72
	16-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.39
	23-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.49
	31-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.49
	07-Jun-07		N		<0.2	1.72	<0.5	<0.5	ND	<0.5	<0.1	<500	<500	200	435	1.82
	12-Jul-07		N		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	177	421	1.65
	25-Jul-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.67
	01-Aug-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	1.9
	09-Aug-07		N		<0.2	<1	<.5	0.559	ND	<.5	<.1	<500	<500	194	427	1.81
	15-Aug-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	2.41
	07-Sep-07		N		<0.2	<1	<.5	0.515	ND	<.5	<.1	<500	<500	<5	427	1.95

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PT-6D	16-Mar-06		N	95-105	3,310	3,140	<1	<.5	ND	2.5	0.218	<500	<500	361	844	<1
	04-Apr-06		N		2,270	2,180	4.23	<.5	ND	1.73	<.5	<500	<500	258	750	<1
	13-May-06		N		1,760 J/HD	1,720	<1	<1	ND	1.49	<.2	1,320	<500	169	810	1.16
	22-May-06		N		1,610 J/HD	1,970	<1	<.5	ND	1.42	<.5	2,520	<500	168	719	1.96
	01-Jun-06		N		1,440	1,420	<1	<.5	ND	1.2	<.1	764	<500	152	711	1.08
	06-Jun-06		N		1,340 J/HD	1,290	<1	1.85	0.105	1.38	<.5	1,130	<500	134	750	2.45
	17-Jul-06		N		1,220	1,120	<1	<.5	ND	0.994	0.917	<500	<500	112	670	3.54
	09-Aug-06		N		1,320 J/HD	1,440	3.34	0.94	ND	1.27	<.1	<500	<500	77.2	684	2.67
	08-Sep-06		N		1,540	1,520	3.54	<.5	ND	1.55	<.1	<500	<500	70.6	726	2.17
	05-Oct-06		N		1,060	1,000	2.44	0.55	ND	1.05	<.1	612	<500	34.1	667	2.9
	09-Nov-06		N		1,300	1,160	3.25	0.561	ND	1.36	<.1	<500	<500	28.8	620	4.61
	09-Nov-06		FD		1,500	1,130	4.63	0.614	ND	1.75	<.1	<500	<500	29	617	4.2
	06-Dec-06		N		1,100	1,270	2.97	0.637	ND	1.33	<.1	<500	<500	25.2	672	7.01
	04-Jan-07		N		1,320	1,490	3.58	0.724	0.036	1.75	<.1	1,260	<500	116	634	1.36
	08-Feb-07		N		1,020	926	2.74	0.62	ND	1.42	<.1	<500	<500	17.2	711	1.14
	08-Mar-07		N		781	796	1.87	0.606	ND	1.04	<.1	<500	<500	71.8	731	1.31
	05-Apr-07		N		659	735	<.5	0.619	ND	1.09	<.1	<500	<500	28.8	684	<1
	03-May-07		N		583	564	1.44	0.615	ND	0.805	<.1	<500	<500	20.4	630	<1
	16-May-07		N		---	---	1.54	---	ND	---	---	---	---	---	---	<1
	23-May-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	31-May-07		N		---	---	1.31	---	ND	---	---	---	---	---	---	<1
	07-Jun-07		N		640	847	<0.5	0.623	ND	0.892	<0.2	<500	<500	23.5	650	1.15
	11-Jun-07		N		---	---	1.42	---	ND	---	---	---	---	---	---	<1
	26-Jun-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	12-Jul-07		N		571	537	<.5	0.672	ND	0.817	<.2	<500	<500	20.2	608	<1
	25-Jul-07		N		---	---	<.5	---	0.129	---	---	---	---	---	---	<1
	01-Aug-07		N		---	---	<.5	---	0.026	---	---	---	---	---	---	1.06
	09-Aug-07		N		671	661	<.5	0.758	ND	0.998	<.1	<500	<500	28.6	641	1.08
	15-Aug-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	28-Aug-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	07-Sep-07		N		618	576	<.5	0.695	ND	0.904	<.1	<500	<500	<5	681	1.08
	03-Oct-07		N		484	513	<.5	---	ND	0.806	<.1	<500	<500	<500	641	<1
	03-Oct-07		FD		560 J/HD	522	<.5	---	0.193	1.11	<.1	<500	<500	<500	615	<1
	07-Nov-07		N		601	532	1.47	---	ND	0.951	<.1	<500	<500	<500	637	<1

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PTI-1S	15-Mar-06		N	35-45	<1	19.8	0.708 J	<.5	ND	<.5	<.1	7,360	8,350	717	122	4.55
	05-Apr-06		N		<1	<1	<1	<.5	ND	<.5	<.5	7,730	3,320	606	120	4.84
	06-May-06		N		<1 J/HD	4.15	<1	1,130	1,950	<2.5	<.5	21,500	19,900	980	15	588
	07-May-06		N		<1 J/HD	---	<1	449	3,820	---	---	---	---	---	---	452
	09-May-06		N		<1	---	<1	360	3,820	---	---	---	---	---	---	474
	09-May-06		FD		<0.2	---	<1	360	3,770	---	---	---	---	---	---	467
	10-May-06		N		<1	---	<1	362	3,560	---	---	---	---	---	---	506
	11-May-06		N		<1	---	<1	316	3,760	---	---	---	---	---	---	543
	12-May-06		N		<1	---	<1	284	3,710	---	---	---	---	---	---	558
	13-May-06		N		---	---	<1	288	3,730	---	---	---	---	---	---	525
	23-May-06		N		---	---	<1	213	3,810	---	---	---	---	---	---	214
	31-May-06		N		---	---	<1	56.4	4,090	---	---	---	---	---	---	188
	05-Jun-06		N		---	---	<1	28.7	3,750	---	---	---	---	---	---	136
	18-Jul-06		N		<0.2	---	<1	3.05	647	---	---	---	---	---	---	9.33
	07-Aug-06		N		<0.2	---	<.5	<.5	196	---	---	---	---	---	---	11.4
	07-Sep-06		N		<1	---	<1	<1	73.4	---	---	---	---	---	---	8.1
	03-Oct-06		N		<0.2	---	<2.5	<2.5	46	---	---	---	---	---	---	10.8
	07-Nov-06		N		---	---	<.5	1.03	30.7	---	---	---	---	---	---	26.3
	05-Dec-06		N		---	---	<.5	0.884	21.6	<.5	<.1	---	---	---	4.37	45.4
	02-Jan-07		N		<0.2	---	<.5	0.974	17.1	---	---	---	---	---	---	7.41
	06-Feb-07		N		<0.2	---	<.5	0.928	13.9	---	---	---	---	---	---	7.31
	06-Mar-07		N		<0.2	---	<.5	0.91	11.5	---	---	---	---	---	---	7.31
	04-Apr-07		N		<0.2	---	<.5	0.806	8.09	---	---	---	---	---	---	7.18
	01-May-07		N		<0.2	---	<.5	0.968	6.44	---	---	---	---	---	---	7.32
	05-Jun-07		N		<0.2	---	<.5	0.766	4.44	---	---	---	---	---	---	7.42
	10-Jul-07		N		<0.2	---	<.5	0.925	3.57	---	---	---	---	---	---	7.09
	07-Aug-07		N		<0.2	---	<.5	0.984	3.71	---	---	---	---	---	---	7.79
	05-Sep-07		N		<0.2	---	<.5	0.742	3.28	---	---	---	---	---	---	6.92

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PTI-1M	15-Mar-06		N	60-70	3.9	8.2	0.718 J	<.5	ND	<.5	<.1	<500	<500	141	510	<1
	04-Apr-06		N		3.3	11.1	<1	<.5	ND	<.5	<.5	<500	<500	99.5	529	<1
	06-May-06		N		<1 J/HD	<1	<1	1,430	0.853	<.5	<.1	<500	<500	1,770	18.7	210
	07-May-06		N		<1 J/HD	---	<1	1,510	0.728	---	---	---	---	---	---	215
	09-May-06		N		<1	---	---	621	0.272	---	---	---	---	---	---	83.4
	10-May-06		N		<1	---	<1	1,080	0.746	---	---	---	---	---	---	111
	11-May-06		N		<1	---	<1	1,130	0.79	---	---	---	---	---	---	101
	12-May-06		N		<1	---	<1	1,090	0.934	---	---	---	---	---	---	77.6
	13-May-06		N		---	---	<1	1,060	1.04	---	---	---	---	---	---	67.6
	23-May-06		N		---	---	<1	1,490	1.58	---	---	---	---	---	---	77.8
	31-May-06		N		---	---	<1	169	0.298	---	---	---	---	---	---	3.56
	05-Jun-06		N		---	---	<1	125	0.281	---	---	---	---	---	---	2.18
	18-Jul-06		N		<1	---	<1	28.4	0.1	---	---	---	---	---	---	3.12
	07-Aug-06		N		<0.2	---	<.5	18.1	1.57	---	---	---	---	---	---	6.07
	07-Sep-06		N		<0.2	---	<.5	5.66	0.047	---	---	---	---	---	---	2.42
	03-Oct-06		N		<0.2	---	<0.5	1.96	0.029	---	---	---	---	---	---	7.75
	07-Nov-06		N		---	---	<.5	0.95	0.079	---	---	---	---	---	---	14.3
	05-Dec-06		N		---	---	<.5	0.75	ND	<.5	<.1	---	---	---	431	19.7
	02-Jan-07		N		<0.2	---	<.5	0.647	ND	---	---	---	---	---	---	1.51
	06-Feb-07		N		<0.2	---	<.5	0.512	ND	---	---	---	---	---	---	1.22
	06-Mar-07		N		<0.2	---	<.5	<.5	ND	---	---	---	---	---	---	1.37
	04-Apr-07		N		<0.2	---	<.5	<.5	ND	---	---	---	---	---	---	1.07
	01-May-07		N		<0.2	---	<.5	<.5	ND	---	---	---	---	---	---	1.29
	05-Jun-07		N		<0.2	---	<.5	<.5	ND	---	---	---	---	---	---	1.39
	10-Jul-07		N		<0.2	---	<.5	<.5	ND	---	---	---	---	---	---	1.24
	07-Aug-07		N		<0.2	---	<.5	0.564	ND	---	---	---	---	---	---	1.44
	05-Sep-07		N		<0.2	---	<.5	<.5	ND	---	---	---	---	---	---	1.59

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PTI-1D	15-Mar-06		N	95-105	1,620	1,580	<1	2.63	ND	<.5	<.5	<500	<500	1,070	907	1.3
	03-Apr-06		N		3,350	3,370	6.42	<.5	ND	2.59	<.5	<500	<500	140	912	<1
	07-May-06		N		<1 J/HD	---	1,640	8.27	0.153	---	---	---	---	---	---	195
	09-May-06		N		<1	---	1,950	19.2	0.794	---	---	---	---	---	---	204
	10-May-06		N		937	---	672	4.56	0.087	---	---	---	---	---	---	46.4
	11-May-06		N		1,050	---	613	3.76	0.059	---	---	---	---	---	---	31.9
	12-May-06		N		<1 J/HD	---	2,400	12.6	0.603	---	---	---	---	---	---	215
	13-May-06		N		---	---	1,760	8.24	0.145	---	---	---	---	---	---	206
	22-May-06		N		---	---	57.9	0.942	ND	---	---	---	---	---	---	2.34
	31-May-06		N		---	---	<1	<.5	ND	---	---	---	---	---	---	3.26
	05-Jun-06		N		---	---	20	<.5	ND	---	---	---	---	---	---	2.45
	18-Jul-06		N		1,360	---	1.65	0.512	ND	---	---	---	---	---	---	3.42
	07-Aug-06		N		1,820	---	4.65	<.5	ND	---	---	---	---	---	---	7.28
	15-Aug-06		N		---	---	<5	---	2,850	---	---	---	---	---	---	117
	17-Aug-06		N		---	---	14.3	---	1,830	---	---	---	---	---	---	53.7
	22-Aug-06		N		---	---	1.5	---	849	---	---	---	---	---	---	13.1
	24-Aug-06		N		---	---	<1	---	629	---	---	---	---	---	---	6.76
	29-Aug-06		N		---	---	<1	---	285	---	---	---	---	---	---	3.53
	05-Sep-06		N		231	---	<.5	<.5	168	---	---	---	---	---	---	3.76
	12-Sep-06		N		---	---	873	---	30.4	---	---	---	---	---	---	110
	19-Sep-06		N		---	---	260	---	30	---	---	---	---	---	---	11
	28-Sep-06		N		---	---	80.9	---	15.4	---	---	---	---	---	---	6.94
	28-Sep-06		FD		---	---	80.5	---	15.4	---	---	---	---	---	---	7.51
	03-Oct-06		N		<0.2	---	51.8	0.648	12.3	---	---	---	---	---	---	5.91
	17-Oct-06		N		---	---	20.5	---	6.1	---	---	---	---	---	---	6.7
	31-Oct-06		N		---	---	11.9	---	3.43	---	---	---	---	---	---	9.12
	07-Nov-06		N		---	---	10.7	<5	2,010	---	---	---	---	---	---	206
	14-Nov-06		N		---	---	<5	---	757	---	---	---	---	---	---	35.6
	14-Nov-06		FD		---	---	<5	---	761	---	---	---	---	---	---	35.4
	21-Nov-06		N		---	---	<5.00	---	362	---	---	---	---	---	---	12.1
	21-Nov-06		FD		---	---	<5.00	---	351	---	---	---	---	---	---	8.66
	28-Nov-06		N		---	---	0.99	---	185	---	---	---	---	---	---	7.09
	28-Nov-06		FD		---	---	1.02	---	183	---	---	---	---	---	---	6.64

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PTI-1D (cont)	05-Dec-06		N		---	---	0.577	0.694	70.9	0.61	<.1	---	---	---	728	8.83
	18-Dec-06		N		---	---	0.571	---	56.7	---	---	---	---	---	---	3.84
	18-Dec-06		FD		---	---	0.568	---	56	---	---	---	---	---	---	3.89
	02-Jan-07		N		29.8	---	1.23	0.761	25	---	---	---	---	---	---	1.86
	15-Jan-07		N		---	---	1.31	---	14.2	---	---	---	---	---	---	1.74
	29-Jan-07		N		---	---	<.5	---	10.4	---	---	---	---	---	---	2.52
	29-Jan-07		FD		---	---	<.5	---	10.8	---	---	---	---	---	---	1.96
	06-Feb-07		N		138	---	<.5	0.741	6.51	---	---	---	---	---	---	1.02
	06-Mar-07		N		164	---	<.5	0.592	2.67	---	---	---	---	---	---	1.08
	04-Apr-07		N		168	---	<.5	---	2.52	---	---	---	---	---	---	<1
	01-May-07		N		84	---	<.5	0.712	2.63	---	---	---	---	---	---	1.05
	15-May-07		N		---	---	306	---	ND	---	---	---	---	---	---	776
	22-May-07		N		---	---	128	---	2.89	---	---	---	---	---	---	227
	30-May-07		N		---	---	73.4	---	1.85	---	---	---	---	---	---	72.3
	05-Jun-07		N		<0.2	---	38.7	<.5	1.03	---	---	---	---	---	---	38.8
	11-Jun-07		N		---	---	29.9	---	0.845	---	---	---	---	---	---	19.8
	26-Jun-07		N		---	---	17.4	---	0.459	---	---	---	---	---	---	3.71
	10-Jul-07		N		<0.2	---	10.1	<.5	0.334	---	---	---	---	---	---	1.62
	24-Jul-07		N		---	---	<2.5	---	1,570	---	---	---	---	---	---	756
	31-Jul-07		N		---	---	<2.5	---	1,070	---	---	---	---	---	---	262
	07-Aug-07		N		<0.2	---	<1	<1	621	---	---	---	---	---	---	81
	14-Aug-07		N		---	---	1.27	---	470	---	---	---	---	---	---	27.1
	28-Aug-07		N		---	---	1.9	---	215	---	---	---	---	---	---	2.87
	05-Sep-07		N		<0.2	---	0.791	0.54	155	---	---	---	---	---	---	2.04
	02-Oct-07		N		<0.2	---	0.765	0.629	80.5	---	---	---	---	---	---	1.78
	06-Nov-07		N		<0.2	---	<.5	---	31.1	---	---	---	---	---	---	1.01

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
PE-1	17-Mar-06		N	79 - 89	148	138	<1	<.5	ND	<.5	<.5	<500	<500	12.7	900	2.14
	05-Apr-06		N		140	136	<1	<.5	ND	<.5	<.5	<500	<500	12.3	939	1.99
	01-Jun-06		N		114	111	<1	<.5	ND	<.5	<.1	<500	<500	12.5	773	2.34
	17-Jul-06		N		97	96.2	<1	1.11	ND	<.5	1.11	<500	<500	10.7	772	4.16
	07-Aug-06		N		100	98.6	<.5	<.5	ND	<.5	<.1	<500	<500	10.5	699	8.83
	07-Aug-06		FD		104	100	<.5	0.868	ND	<.5	<.1	<500	<500	10.7	692	4.58
	06-Sep-06		N		94.5	102	<.5	<.5	ND	<.5	<.1	<500	<500	11	751	3.23
	03-Oct-06		N		90.2	93.6	<0.5	0.624	ND	<0.5	<0.1	<500	<5000	11.6	683	8.57
	03-Oct-06		FD		95.8	96.2	<0.5	0.615	ND	<0.5	<0.1	<500	<5000	11.4	717	6.28
	07-Nov-06		N		96.6	87.8	<.5	<.5	ND	<.5	<.1	<500	<500	10.6	709	11.6
	06-Dec-06		N		99.9	101	<.5	0.658	ND	<.5	<.1	<500	<500	10.4	651	22.7
	02-Jan-07		N		85.8	91.2	<.5	0.707	ND	<.5	<.1	<500	<500	8.94	681	2.34
	06-Feb-07		N		82.1	94.3	<.5	<.5	ND	<.5	<.1	<500	<500	7.43	722	2.11
	06-Feb-07		FD		79.8	94.5	<.5	<.5	ND	<.5	<.1	<500	<500	7.49	718	2.1
	06-Mar-07		N		78.9	74.1	<.5	0.621	ND	<.5	<.1	<500	<500	5.62	725	2.4
	04-Apr-07		N		64.4	63.9	<.5	0.602	ND	<.5	<.1	<500	<500	5.68	660	2.06
	04-Apr-07		FD		67.7	62.6	<.5	0.597	ND	<.5	<.1	<500	<500	5.53	657	2.15
	01-May-07		N		60.6	60.7	<.5	0.65	ND	<.5	<.1	<500	<500	5.87	700	2.23
	05-Jun-07		N		67.1	51.8	<.5	0.57	ND	<.5	<.5	<500	<500	<5	637	2.27
	10-Jul-07		N		48.4	48.7	<.5	0.683	ND	<.5	<.1	<500	<500	<5	640	2.35
	07-Aug-07		N		49.4	55.9	<.5	0.672	ND	<.5	<.1	<500	<500	<5	587	2.47
	05-Sep-07		N		55.6	47.3	<.5	0.636	ND	<.5	<.1	<500	<500	<5	680	2.18

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
TW-2D	17-Mar-06		N	113 - 148	1,430	1,530	<1	<.5	ND	1.67	<.5	<500	<500	<5	501	<1
	05-Apr-06		N		1,350	1,240	2.55	<.5	ND	1.51	<.5	<500	<500	<5	509	<1
	19-Jul-06		N		802	785	7.09	0.55	ND	1.34	<.5	<500	<500	<5	483	2.88
	07-Aug-06		N		943	797	2.51	0.791	ND	1.79	<.1	<500	<500	<5	433	6.62
	14-Aug-06		N		---	---	5.29	---	ND	---	---	---	---	---	---	6.29
	17-Aug-06		N		---	---	3.9	---	ND	---	---	---	---	---	---	1.27
	22-Aug-06		N		---	---	4.56	---	ND	---	---	---	---	---	---	1.2
	24-Aug-06		N		---	---	3.88	---	ND	---	---	---	---	---	---	8.17
	29-Aug-06		N		---	---	4.02	---	ND	---	---	---	---	---	---	1.94
	06-Sep-06		N		780	813	2.83	<.5	ND	2.34	<.1	<500	<500	<5	398	1.81
	12-Sep-06		N		---	---	1.76	---	ND	---	---	---	---	---	---	2.13
	19-Sep-06		N		---	---	2.56	---	0.114	---	---	---	---	---	---	5.42
	28-Sep-06		N		---	---	2.56	---	ND	---	---	---	---	---	---	3.12
	04-Oct-06		N		733	738	1.41	0.921	ND	1.21	<.1	<500	<500	<5	491	2.41
	17-Oct-06		N		---	---	<.5	---	0.058	---	---	---	---	---	---	6.48
	31-Oct-06		N		---	---	2.57	---	0.093	---	---	---	---	---	---	4.46
	08-Nov-06		N		619	605	7.12	1.19	ND	1.23	<.1	<500	<500	<5	487	4.72
	14-Nov-06		N		---	---	6.42	---	ND	---	---	---	---	---	---	6.77
	21-Nov-06		N		---	---	2.53	---	0.011	---	---	---	---	---	---	3.44
	28-Nov-06		N		---	---	2.48	---	0.783	---	---	---	---	---	---	3.75
	06-Dec-06		N		739	900	6.3	1.12	ND	1.38	<.1	<500	<500	<5.0	411	12.4
	18-Dec-06		N		---	---	1.65	---	ND	---	---	---	---	---	---	<1
	02-Jan-07		N		629	513	1.6	0.663	---	2.59	<.1	<500	<500	<5	315	1.02
	15-Jan-07		N		---	---	1.72	---	0.531	---	---	---	---	---	---	1.11
	15-Jan-07		FD		---	---	2.01	---	0.534	---	---	---	---	---	---	<1
	29-Jan-07		N		---	---	2.08	---	0.351	---	---	---	---	---	---	1.08
	06-Feb-07		N		467	441	1.77	1.23	0.356	2.27	<.1	<500	<500	<5	388	<1
	06-Mar-07		N		412	405	1.21	0.93	0.054	1.06	<.1	<500	<500	<5	520	1.19
	05-Apr-07		N		428	320	1.32	0.756	0.217	1.69	<.1	<500	<500	<5	342	<1
	01-May-07		N		328	323	0.865	0.769	0.236	0.84	<.2	<500	<500	<5	529	<1
	16-May-07		N		---	---	1.28	---	0.186	---	---	---	---	---	---	<1
	22-May-07		N		---	---	<.5	---	0.261	---	---	---	---	---	---	2.24
	30-May-07		N		---	---	<.5	---	0.259	---	---	---	---	---	---	<1
	05-Jun-07		N		290	267	1.07	0.532	0.043	2.21	<.5	<500	<500	<5	277	1.02
	11-Jun-07		N		---	---	<0.5	---	ND	---	---	---	---	---	---	2.17
	26-Jun-07		N		---	---	<.5	---	0.18	---	---	---	---	---	---	<1
	10-Jul-07		N		278	224	<.5	0.773	0.029	1.22	<.1	<500	<500	<5	408	1.02
	25-Jul-07		N		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	31-Jul-07		N		---	---	4.67	---	ND	---	---	---	---	---	---	1.16
	07-Aug-07		N		227	230	<.5	0.756	ND	1.18	<.1	<500	<500	<5	429	1.05
	14-Aug-07		N		---	---	3.03	---	ND	---	---	---	---	---	---	<1
	28-Aug-07		N		---	---	<.5	---	0.472	---	---	---	---	---	---	<1

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
TW-2D (cont)	28-Aug-07		FD		---	---	<.5	---	0.124	---	---	---	---	---	---	1.29
	05-Sep-07		N		226	186	0.624	0.707	0.402	1.08	<.1	<500	<500	<5	518	<1
	03-Oct-07		N		178	204	0.504	---	1.21	0.717	<.1	<500	<500	<500	442	1.06
	06-Nov-07		N		161	150	<.5	---	1.69	0.784	<.1	<500	<500	<500	453	<1
TW-3D	17-Mar-06		N	111 - 156	3,350	3,070	<1	<.5	ND	4.87	<.2	<500	<500	<5	613	1.04
	05-Apr-06		N		3,140	2,980	6.12	<.5	ND	4.61	<.5	<500	<500	<5	645	<1
	19-Jul-06		N		2,440	2,360	<1	1	ND	3.89	<.5	<500	<500	<5	637	3
	07-Aug-06		N		2,600	2,580	5.86	0.849	ND	4.08	<.1	<500	<500	<5	599	5.26
	14-Aug-06		N		---	---	6.23	---	ND	---	---	---	---	---	---	3.31
	17-Aug-06		N		---	---	6.31	---	ND	---	---	---	---	---	---	1.41
	22-Aug-06		N		---	---	6.43	---	ND	---	---	---	---	---	---	1.4
	24-Aug-06		N		---	---	6.21	---	0.288	---	---	---	---	---	---	8.22
	29-Aug-06		N		---	---	6.33	---	0.085	---	---	---	---	---	---	2.08
	06-Sep-06		N		2,570	2,620	6.1	<1	ND	3.94	<.2	<500	<500	<5	656	2.05
	12-Sep-06		N		---	---	5.19	---	ND	---	---	---	---	---	---	2.43
	19-Sep-06		N		---	---	5.57	---	0.179	---	---	---	---	---	---	4.88
	28-Sep-06		N		---	---	5.8	---	ND	---	---	---	---	---	---	5.07
	04-Oct-06		N		2,350	2,920	6.86	<1	ND	5.21	<.2	<500	<500	<5	577	3.67
	17-Oct-06		N		---	---	<1.0	---	ND	---	---	---	---	---	---	6.18
	31-Oct-06		N		---	---	8.01	---	ND	---	---	---	---	---	---	10.4
	08-Nov-06		N		2,600	2,330	7.08	0.882	ND	4.24	<.1	<500	<500	<5	629	4.11
	14-Nov-06		N		---	---	7.52	---	ND	---	---	---	---	---	---	6.34
	21-Nov-06		N		---	---	7.02	---	ND	---	---	---	---	---	---	2.54
	28-Nov-06		N		---	---	7.12	---	0.029	---	---	---	---	---	---	3.48
	06-Dec-06		N		2,690	2,570	7.01	0.853	ND	4.29	<.1	<500	<500	<5.0	582	8.43
	18-Dec-06		N		---	---	7.18	---	ND	---	---	---	---	---	---	1.47
	02-Jan-07		N		2,480	2,450	6.44	0.915	0.024	4.37	<.1	<500	<500	<5	601	1.15
	15-Jan-07		N		---	---	6.25	---	0.018	---	---	---	---	---	---	1.12
	29-Jan-07		N		---	---	6.69	---	0.037	---	---	---	---	---	---	1.29
	06-Feb-07		N		2,410	2,560	6.5	0.849	0.057	4.79	<.1	<500	<500	<5	666	<1
	06-Mar-07		N		2,470	2,260	6.21	0.825	0.05	4.66	<.1	<500	<500	<5	669	1.23
	05-Apr-07		N		2,110	2,090	5.73	0.712	0.078	4.1	<.1	<500	<500	<5	651	<1
	01-May-07		N		1,610	2,060	5.11	0.795	0.074	4.11	<.2	<500	<500	<5	654	1.11
	01-May-07		FD		2,120	2,020	5.07	0.795	0.08	4.12	<.2	<500	<500	<5	651	1.13
	15-May-07		N		---	---	5.2	---	4.1	---	---	---	---	---	---	1.12
	22-May-07		N		---	---	5.22	---	0.059	---	---	---	---	---	---	<1
	22-May-07		FD		---	---	<.5	---	0.068	---	---	---	---	---	---	1.08
	30-May-07		N		---	---	<.5	---	0.077	---	---	---	---	---	---	<1
	05-Jun-07		N		2,040	1,960	4.57	0.694	0.062	3.94	<.5	<500	<500	<5	596	1.21
	11-Jun-07		N		---	---	4.74	---	0.054	---	---	---	---	---	---	1.14
	26-Jun-07		N		---	---	<.5	---	0.07	---	---	---	---	---	---	1
	10-Jul-07		N		1,970	2,050	<.5	0.753	0.072	3.93	<.1	<500	<500	<5	605	1.1
	24-Jul-07		N		---	---	<.5	---	0.053	---	---	---	---	---	---	1.23

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
TW-3D (cont)	31-Jul-07		N		---	---	<.5	---	0.203	---	---	---	---	---	---	1.62
	07-Aug-07		N		1,950	2,130	<.5	0.87	0.071	4.1	<.1	<500	<500	<5	577	1.09
	14-Aug-07		N		---	---	<.5	---	0.068	---	---	---	---	---	---	1.12
	28-Aug-07		N		---	---	<.5	---	0.146	---	---	---	---	---	---	1.2
	05-Sep-07		N		1,990	1,820	<.5	0.702	0.16	4.39	<.1	<500	<500	<5	697	1.02
	02-Oct-07		N		1,720	1,790	<.5	---	0.416	4.2	<.1	<500	<500	<500	579	<1
	06-Nov-07		N		1,940	1,780	<.5	---	0.334	4.22	<.1	<500	<500	<500	577	1.16
INJ_SOLUTION_01	04-May-06		N		---	---	---	---	5,620	---	---	---	---	---	---	265
	05-May-06		N		---	---	---	<5	---	---	---	---	---	---	---	---
INJ_SOLUTION_02	05-May-06		N		---	---	---	1,790	---	---	---	---	---	---	---	276
INJ_SOLUTION_03	06-May-06		N		---	---	1,960	---	---	---	---	---	---	---	---	258
	11-Aug-06		N		---	---	<5	---	5,140	---	---	---	---	---	---	459
	07-Sep-06		N		<0.2	---	1,670	---	---	---	---	---	---	---	---	466
	01-Nov-06		N		<0.2	---	---	---	4,440	---	---	---	---	---	---	---
	08-May-07		N		<0.2	---	580	---	0.341	---	---	---	---	---	---	1,980
	17-Jul-07		N		<0.2	---	1.64	---	1,240	---	---	---	---	---	---	1,200
Make_Up_Water	05-May-06		N		---	---	<1	<.5	---	---	---	---	---	---	---	---
Equipment Blank	17-Mar-06		EB		<0.2	2.91	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	07-Apr-06		EB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	09-May-06		FB		<0.2 J/HD	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	13-May-06		EB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	1.33
	24-May-06		EB		0.23	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	2.47	1.17
	01-Jun-06		EB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	05-Jun-06		EB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	1.03
	17-Jul-06		EB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	2.95
	07-Aug-06		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	0.539	3.84
	14-Aug-06		EB		---	---	<.5	---	ND	---	---	---	---	---	---	4.45
	21-Aug-06		EB		---	---	<.5	---	ND	---	---	---	---	---	---	1.11
	29-Aug-06		EB		---	---	<.5	---	ND	---	---	---	---	---	---	1.57
	06-Sep-06		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	4.11	<1
	12-Sep-06		EB		---	---	<.5	---	ND	---	---	---	---	---	---	2.03
	19-Sep-06		EB		---	---	<.5	---	---	---	---	---	---	---	---	4.38
	28-Sep-06		EB		---	---	<.5	---	ND	---	---	---	---	---	---	4.95
	04-Oct-06		EB		<0.2	7.26	<.5	<.5	ND	<.5	<.1	<500	<500	<5	2.39	2.24
	17-Oct-06		EB		---	---	<.5	---	---	---	---	---	---	---	---	3.2
	31-Oct-06		EB		---	---	<.5	---	ND	---	---	---	---	---	---	7.47
	07-Nov-06		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	14-Nov-06		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	21-Nov-06		EB		---	---	<0.50	---	ND	---	---	---	---	---	---	<1.00
	28-Nov-06		EB		---	---	<.5	---	0.016	---	---	---	---	---	---	<1

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
Equipment Blank (cont)	06-Dec-06		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	7.14
	18-Dec-06		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	03-Jan-07		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	15-Jan-07		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	29-Jan-07		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	06-Feb-07		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	0.683	<1
	06-Mar-07		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	04-Apr-07		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	01-May-07		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	15-May-07		EB		---	---	<.5	---	0.074	---	---	---	---	---	---	<1
	22-May-07		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	30-May-07		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	05-Jun-07		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	11-Jun-07		EB		---	---	<0.5	---	ND	---	---	---	---	---	---	<1
	26-Jun-07		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	10-Jul-07		EB		<0.2	<1	<.5	<.5	ND	0.814	<.1	<500	<500	<5	20.6	<1
	25-Jul-07		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	31-Jul-07		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	07-Aug-07		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	14-Aug-07		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	28-Aug-07		EB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	05-Sep-07		EB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	03-Oct-07		EB		0.4	<1	<.5	---	ND	<.5	<.1	<500	<500	<500	0.547	<1
	06-Nov-07		EB		0.45	<1	<.5	---	ND	<.5	<.1	<500	<500	<500	<.5	<1

Table 9
Summary of Primary Analytical Parameters
PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
Field Blank	17-Mar-06		FB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	04-Apr-06		FB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	09-May-06		EB		<0.2 J/HD	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	13-May-06		FB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	24-May-06		FB		0.25	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	2.45	1.53
	01-Jun-06		FB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	21.4
	05-Jun-06		FB		<0.2	<1	<1	<.5	0.027	<.5	<.1	<500	<500	<5	<.5	<1
	17-Jul-06		FB		<0.2	<1	<1	<.5	ND	<.5	<.1	<500	<500	<5	<.5	2.51
	07-Aug-06		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	5.16
	14-Aug-06		FB		---	---	<.5	---	ND	---	---	---	---	---	---	4.04
	21-Aug-06		FB		---	---	<.5	---	0.033	---	---	---	---	---	---	1.08
	29-Aug-06		FB		---	---	<.5	---	ND	---	---	---	---	---	---	1.49
	06-Sep-06		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	4.47	1.85
	12-Sep-06		FB		---	---	<.5	---	ND	---	---	---	---	---	---	1.69
	19-Sep-06		FB		---	---	<.5	---	ND	---	---	---	---	---	---	4.04
	28-Sep-06		FB		---	---	<.5	---	ND	---	---	---	---	---	---	5.13
	03-Oct-06		FB		<0.2	<1	<0.5	<0.5	ND	<0.5	<0.1	<500	<500	<5	<0.5	7.03
	17-Oct-06		FB		---	---	<.5	---	ND	---	---	---	---	---	---	4.51
	31-Oct-06		FB		---	---	<.5	---	0.298	---	---	---	---	---	---	7.78
	07-Nov-06		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	14-Nov-06		FB		---	---	<.5	---	ND	---	---	---	---	---	---	1.05
	21-Nov-06		FB		---	---	<0.50	---	ND	---	---	---	---	---	---	<1.00
	28-Nov-06		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	05-Dec-06		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<0.500	<1
	18-Dec-06		FB		---	---	<.5	---	ND	---	---	---	---	---	---	1.06

Table 9
Summary of Primary Analytical Parameters

PG&E Topock
Needles, California

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval (ft bgs)	Hexavalent Chromium (µg/L)	Dissolved Chromium (µg/L)	Iodide (mg/L)	Bromide (mg/L)	Fluorescein (ppb)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Iron-Total (µg/L)	Dissolved Iron (µg/L)	Manganese (µg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)
Field Blank (cont)	03-Jan-07		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	15-Jan-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	29-Jan-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	06-Feb-07		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	0.784	<1
	06-Mar-07		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	04-Apr-07		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	01-May-07		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	15-May-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	22-May-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	30-May-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	1.28
	05-Jun-07		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	11-Jun-07		FB		---	---	<0.5	---	ND	---	---	---	---	---	---	<1
	26-Jun-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	10-Jul-07		FB		<0.2	<1	<.5	<.5	ND	0.821	<.1	<500	<500	<5	19.8	1.27
	25-Jul-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	31-Jul-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	07-Aug-07		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	14-Aug-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	28-Aug-07		FB		---	---	<.5	---	ND	---	---	---	---	---	---	<1
	05-Sep-07		FB		<0.2	<1	<.5	<.5	ND	<.5	<.1	<500	<500	<5	<.5	<1
	02-Oct-07		FB		<0.2	<1	<.5	---	ND	<.5	<.1	<500	<500	<500	1.28	<1
	06-Nov-07		FB		0.46	<1	<.5	---	ND	<.5	<.1	<500	<500	<500	<.5	<1

Notes:

Injectons occurred on May 3 through May 6, 2006, August 11, 2006, September 7, 2006, November 1, 2007, May 7 and 8, 2007 and July 17 and 18, 2007.

ft bgs	Feet below ground surface
mg/L	Milligrams per liter
µg/L	Micrograms per liter
ppb	Parts per billion
<	Symbol indicates not detected at or above laboratory detection limit as
N	Normal
EB	Equipment blank
FB	Field blank
FD	Field duplicate
J	Reported value is estimated
J/HD	Sample analyzed beyond USEPA-recommended holding time. Results may still be used for their intended purpose.
NA	Not applicable
ND	Not detected
Nitrate-N	Nitrate as Nitrogen
Nitrite-N	Nitrite as Nitrogen
---	Not analyzed/Not available
USEPA	United States Environmental Protection Agency
a	Results are anomalous

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-1S	17-Mar-06		N	35-45	262,000	74,700	<5	15,400	1,040,000	367	<5	1,710	<.5	<2	---
	06-Apr-06		N		267,000	70,500	<5	14,400	1,090,000	368	<5	1,740	<.5	<2	3,860
	06-May-06		N		287,000	83,200	<5	14,800	1,110,000	437	<5	2,180	<.5	<2	4,680
	09-May-06		N		298,000	89,100	<5	14,500	1,110,000	405	<5	1,910	<.5	<2	---
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	4,340
	13-May-06		N		260,000	79,100	<5	13,900	1,080,000	423	<5	2,140	<1	<2	---
	23-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	01-Jun-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		278,000	83,600	10.4	14,600	1,060,000	461	<5	1,960	<.5	<2	---
	18-Jul-06		N		277,000	76,700	7.51	14,000	1,080,000	424	<5	1,570	<.5	<2	4,000
	08-Aug-06		N		328,000	107,000	9.3	16,300	1,190,000	464	<5	2,170	<.5	<2	4,430
	06-Sep-06		N		312,000	80,400	18.2	16,700	1,030,000	475	<5	1,990	<.5	<2	3,830
	04-Oct-06		N		327,000	92,900	9.27	15,300	1,210,000	445	<5	2,110	<.5	<2	4,080
	08-Nov-06		N		396,000	152,000	12.2	17,300	1,410,000	515	<5	2,960	<.5	<2	5,170
	05-Dec-06		N		432,000	181,000	14.6	17,500	1,530,000	570	<5	3,120	<2.5	<2.0	5,410
	03-Jan-07		N		381,000	151,000	12.3	15,400	1,350,000	485	<5	2,830	<2.5	<2	5,260
	07-Feb-07		N		297,000	114,000	12.6	13,900	1,060,000	410	<5	2,260	<.5	<2	4,110
	07-Mar-07		N		265,000	76,200	8.28	12,600	1,010,000	350	<5	1,920	<.5	3.2	3,450
	05-Apr-07		N		261,000	81,400	12.3	13,100	1,030,000	360	<5	1,890	<.5	<2	3,680
	02-May-07		N		253,000	88,000	14.2	12,400	1,070,000	428	<5	2,030	<.5	<2	3,550
	06-Jun-07		N		280,000	79,700	13.1	13,000	1,160,000	415	<5	1,880	<.5	2	3,740
	11-Jul-07		N		268,000	91,200	17.3	12,600	1,073,000	460	<5	1,990	<.5	<2	3,790
	08-Aug-07		N		336,000	123,000	16.2	14,300	1,230,000	505	<5	2,740	<.5	<2	4,380
	06-Sep-07		N		311,000	115,000	17.1	13,200	1,190,000	500	<5	2,290	<.5	<2	4,070

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-1M	17-Mar-06		N	60-70	229,000	40,100	<5	15,700	1,230,000	145	<5	1,790	<.5	<2	---
	06-Apr-06		N		242,000	40,600	<5	15,000	1,290,000	144	<5	1,840	<.5	<2	4,250
	06-May-06		N		233,000	36,600	<5	13,200	1,370,000	168	<5	1,820	<.5	<2	4,340
	09-May-06		N		214,000	34,700	6.56	12,800	1,280,000	125	<5	1,790	<.5	<2	---
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	3,470
	13-May-06		N		207,000	35,800	9.84	12,500	1,380,000	192	<5	1,880	<.5	<2	---
	24-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	31-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		221,000	38,900	7.14	12,700	1,290,000	191	<5	2,140	<.5	<2	---
	18-Jul-06		N		235,000	38,700	5.53	12,600	1,350,000	197	<5	1,730	<.5	<2	4,130
	08-Aug-06		N		218,000	37,900	5.49	12,100	1,230,000	209	<5	1,870	<.5	<2	4,120
	06-Sep-06		N		230,000	40,200	5.96	13,300	1,320,000	239	<5	1,840	<.5	<2	3,920
	04-Oct-06		N		215,000	33,400	6.06	12,700	1,330,000	205	<5	1,890	<.5	<2	3,940
	08-Nov-06		N		203,000	34,800	5.9	11,800	1,220,000	225	<5	1,740	<.5	<2	3,810
	05-Dec-06		N		205,000	35,400	5.13	11,500	1,170,000	233	<5	1,760	<.5	<2.0	3,740
	03-Jan-07		N		187,000	32,600	5.07	11,100	1,170,000	230	<5	1,740	<.5	<2	3,680
	03-Jan-07		FD		190,000	33,500	5.21	11,100	1,190,000	230	<5	1,750	<.5	<2	3,660
	07-Feb-07		N		177,000	32,500	<5	10,500	996,000	233	<5	1,690	<.5	<2	3,580
	06-Mar-07		N		178,000	30,400	<5	10,600	1,110,000	245	<5	1,320	<.5	<2	3,430
	05-Apr-07		N		170,000	29,900	<5	11,000	1,110,000	228	<5	1,650	<.5	<2	3,570
	02-May-07		N		158,000	30,700	<5	9,780	1,070,000	235	<5	1,660	<.5	<2	3,320
	06-Jun-07		N		180,000	29,000	<5	10,500	1,190,000	230	<5	1,560	<.5	<2	3,360
	11-Jul-07		N		170,000	29,700	<5	10,500	1,090,000	235	<5	1,560	<.5	<2	3,430
	08-Aug-07		N		183,000	30,100	<5	10,600	1,120,000	215	<5	1,630	<.5	<2	3,480
	06-Sep-07		N		176,000	32,200	<5	10,200	1,090,000	220	<5	1,680	<.5	<2	3,490

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-1D	17-Mar-06		N	95-105	321,000	24,900	<5	24,600	2,540,000	107	<5	3,650	<.5	<2	---
	17-Mar-06		FD		316,000	24,900	<5	24,800	2,550,000	110	<5	3,610	<.5	<2	---
	06-Apr-06		N		332,000	24,000	<5	25,300	2,680,000	101	<5	3,780	<.5	<2	8,070
	06-Apr-06		FD		334,000	23,600	<5	25,100	2,700,000	98.1	<5	3,700	<.5	<2	8,260
	06-May-06		N		357,000	24,300	<5	25,300	2,930,000	85.2	<5	4,230	<.5	<2	8,260
	09-May-06		N		260,000	17,700	<5	20,800	2,360,000	130	<5	3,170	<1	<2	6,960
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	7,070
	13-May-06		N		223,000	16,600	<5	20,700	2,340,000	160	<5	2,170	<1	<2	---
	24-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	31-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	05-Jun-06		N		220,000	17,400	5.38	26,300	2,160,000	127	<5	3,210	<.5	<2	---
	17-Jul-06		N		287,000	21,500	<5	36,200	2,500,000	109	<5	3,160	<.5	<2	7,010
	08-Aug-06		N		264,000	21,000	<5	36,700	2,410,000	110	<5	3,350	<.5	<2	6,860
	05-Sep-06		N		178,000	14,600	6.23	28,900	2,180,000	126	<5	2,810	<1	<2	5,540
	04-Oct-06		N		153,000	13,700	8.99	28,700	1,980,000	110	<5	2,670	<.5	<2	5,710
	08-Nov-06		N		145,000	13,600	10.5	34,100	1,920,000	338	<5	2,770	<.5	<2	5,580
	05-Dec-06		N		130,000	12,300	11.2	32,300	1,910,000	163	<5	2,870	<2.5	<2.0	5,060
	03-Jan-07		N		168,000	17,500	5.91	39,700	2,180,000	90	<5	3,210	<1	<2	6,130
	07-Feb-07		N		191,000	21,200	5.76	43,100	2,100,000	97.5	<5	3,500	<.5	<2	6,750
	06-Mar-07		N		220,000	27,300	5.52	47,000	2,350,000	115	<5	2,960	<.5	<2	6,630
	05-Apr-07		N		218,000	22,700	5.66	52,400	2,470,000	92.5	<5	3,470	<.5	<2	6,760
	02-May-07		N		194,000	21,500	5.55	45,000	2,370,000	100	<5	3,520	<.5	<2	6,900
	06-Jun-07		N		115,000	12,200	12.5	35,100	2,080,000	620	<5	2,540	<.5	<2	5,870
	11-Jul-07		N		105,000	12,000	15.8	35,800	1,990,000	233	<5	2,940	<.5	<2	5,590
	08-Aug-07		N		85,400	9,580	15.9	30,100	1,940,000	745	<5	2,350	<2.5	<2	5,330
	06-Sep-07		N		87,500	11,300	18.3	26,700	2,050,000	385	<5	2,740	<.5	<2	5,120
	02-Oct-07		N		---	---	13.8	---	---	285	<5	---	---	<2	5,390
	06-Nov-07		N		---	---	14.2	---	---	225	<5	---	---	<2	---

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-2S	17-Mar-06		N	35-45	273,000	92,700	<5	12,500	929,000	613	<5	1,630	<.5	<2	---
	06-Apr-06		N		300,000	99,800	<5	12,100	1,030,000	635	<5	1,670	<.5	<2	3,810
	24-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	01-Jun-06		N		---	---	---	---	---	---	---	---	---	<2	---
	07-Jun-06		N		324,000	105,000	5.77	11,600	1,000,000	691	<5	1,900	<.5	<2	---
	18-Jul-06		N		336,000	103,000	6.66	10,500	1,040,000	646	<5	1,740	<.5	<2	4,230
	08-Aug-06		N		353,000	110,000	8.48	10,900	1,040,000	574	<5	1,960	<.5	<2	4,170
	06-Sep-06		N		335,000	113,000	7.21	11,500	1,060,000	667	<5	1,940	<.5	<2	4,020
	04-Oct-06		N		360,000	102,000	5.97	11,400	1,050,000	610	<5	1,890	<.5	<2	3,770
	08-Nov-06		N		418,000	131,000	<5	11,700	1,100,000	640	<5	2,200	<.5	<2	4,430
	05-Dec-06		N		268,000	50,700	<5	13,000	1,220,000	265	<5	1,930	<.5	<2.0	3,660
	03-Jan-07		N		368,000	116,000	<5	10,800	1,050,000	660	<5	1,970	<1	<2	3,900
	07-Feb-07		N		361,000	121,000	<5	10,500	890,000	605	<5	1,970	<.5	<2	3,900
	07-Mar-07		N		357,000	116,000	<5	10,300	941,000	650	<5	2,060	<.5	<2	3,660
	05-Apr-07		N		394,000	124,000	5.5	11,300	959,000	700	<5	2,020	<.5	<2	3,820
	02-May-07		N		370,000	133,000	<5	10,400	956,000	710	<5	1,980	<.5	<2	3,700
	06-Jun-07		N		374,000	115,000	<5	10,900	1,040,000	695	<5	1,950	<.5	16	4,160
	11-Jul-07		N		330,000	111,000	<5	10,200	902,000	660	<5	1,910	<.5	<2	3,750
	08-Aug-07		N		400,000	126,000	5.18	11,200	954,000	620	<5	2,040	<.5	<2	4,180
	06-Sep-07		N		360,000	129,000	<5	10,600	958,000	675	<5	2,050	<.5	<2	3,900
PT-2M	17-Mar-06		N	60-70	227,000	35,600	<5	14,700	1,340,000	264	<5	1,880	<.5	<2	---
	06-Apr-06		N		232,000	35,600	<5	13,400	1,400,000	204	<5	1,920	<.5	<2	4,430
	24-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	31-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	31-May-06		FD		---	---	---	---	---	---	---	---	---	<2	---
	07-Jun-06		N		220,000	36,500	<5	12,600	1,360,000	212	<5	2,020	<.5	<2	---
	18-Jul-06		N		221,000	35,900	<5	11,900	1,320,000	237	<5	1,870	<.5	<2	4,050
	08-Aug-06		N		218,000	36,200	<5	11,900	1,280,000	228	<5	1,810	<.5	<2	3,920
	06-Sep-06		N		225,000	38,400	<5	13,200	1,280,000	241	<5	1,810	<.5	<2	3,820
	04-Oct-06		N		231,000	36,600	<5	12,900	1,270,000	225	<5	1,850	<.5	<2	3,090
	08-Nov-06		N		232,000	42,500	<5	12,000	1,210,000	248	<5	1,830	<.5	<2	3,740
	05-Dec-06		N		263,000	50,400	<5	12,500	1,130,000	248	<5	1,850	<.5	<2.0	3,850
	03-Jan-07		N		209,000	31,900	<5	18,300	1,630,000	245	<5	1,740	<.5	<2	3,730
	07-Feb-07		N		204,000	39,900	<5	11,900	1,060,000	230	<5	1,720	<.5	<2	3,470
	07-Mar-07		N		186,000	33,900	<5	10,300	1,060,000	210	<5	1,730	<.5	<2	3,380
	05-Apr-07		N		182,000	34,200	<5	10,900	1,100,000	248	<5	1,650	<.5	<2	3,390
	02-May-07		N		161,000	32,400	<5	10,000	1,080,000	255	<5	1,620	<.5	<2	3,290
	06-Jun-07		N		168,000	29,200	<5	10,500	1,200,000	235	<5	1,540	<.5	2	3,280
	11-Jul-07		N		165,000	35,300	<5	10,400	1,030,000	233	<5	1,540	<.5	<2	3,400
	11-Jul-07		FD		162,000	29,700	<5	9,770	1,010,000	270	<5	1,540	<.5	<2	3,360
	08-Aug-07		N		187,000	31,900	<5	10,800	1,090,000	240	<5	1,540	<.5	<2	3,320
	06-Sep-07		N		184,000	35,800	<5	10,600	1,090,000	305	<5	1,720	<.5	<2	3,610

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-2D	17-Mar-06		N	95-105	314,000	25,700	<5	24,900	2,530,000	125	<5	3,530	<.5	<2	---
	17-Mar-06		FD		315,000	26,300	<5	25,200	2,560,000	112	<5	3,560	<.5	<2	---
	06-Apr-06		N		338,000	25,600	<5	25,100	2,640,000	109	<5	3,550	<.5	<2	8,120
	06-Apr-06		FD		338,000	25,800	<5	25,300	2,650,000	109	<5	3,660	<.5	<2	8,040
	24-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	31-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	07-Jun-06		N		231,000	18,100	5.36	21,700	2,310,000	154	<5	3,120	<.5	<2	---
	17-Jul-06		N		261,000	20,300	<5	22,800	2,320,000	102	<5	3,300	<.5	<2	7,090
	07-Aug-06		N		266,000	21,600	<5	23,600	2,460,000	99.2	<5	3,550	<.5	<2	7,190
	06-Sep-06		N		227,000	18,900	5.34	24,300	2,300,000	134	<5	2,980	<1	<2	6,000
	04-Oct-06		N		157,000	11,700	<5	21,000	2,010,000	150	<5	2,730	<2.5	<2	5,600
	08-Nov-06		N		186,000	15,500	<5	23,500	2,150,000	115	<5	3,080	<2.5	<2	6,090
	05-Dec-06		N		174,000	14,000	<5	22,400	2,160,000	258	<5	2,710	<2.5	<2.0	5,760
	03-Jan-07		N		179,000	16,300	<5	23,900	2,150,000	100	<5	3,250	<.5	<2	6,290
	07-Feb-07		N		236,000	23,700	<5	29,900	2,350,000	65	<5	3,830	<.5	<2	6,900
	07-Mar-07		N		256,000	23,800	<5	32,800	2,500,000	72.5	<5	4,040	<.5	<2	7,230
	05-Apr-07		N		262,000	24,800	<5	36,000	2,570,000	72.5	<5	4,050	<.5	<2	7,410
	02-May-07		N		223,000	24,200	<5	32,200	2,440,000	85	<5	3,850	<.5	<2	6,370
	06-Jun-07		N		121,000	13,600	12.8	26,400	2,200,000	715	<5	2,600	<.5	<2	5,970
	11-Jul-07		N		78,900	11,700	14	21,100	1,870,000	373	<5	2,650	<.5	<2	5,130
	08-Aug-07		N		85,600	12,300	18.2	21,700	1,960,000	880	<5	2,360	<1	<2	5,560
	08-Aug-07		FD		95,600	15,200	20.8	24,700	2,060,000	810	<5	2,410	<2.5	<2	5,380
	06-Sep-07		N		78,900	13,000	16.1	20,600	1,920,000	480	<5	2,840	<.5	<2	5,300
	06-Sep-07		FD		81,100	13,300	17	21,400	2,070,000	480	<5	2,690	<.5	<2	5,080
	02-Oct-07		N		---	---	18.6	---	---	390	<5	---	---	1.60 J	5,280
	06-Nov-07		N		---	---	16.3	---	---	328	<5	---	---	<2	---
	06-Nov-07		FD		---	---	16.3	---	---	305	<5	---	---	<2	---

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-3S	16-Mar-06		N	35-45	244,000	85,600	<5	10,000	942,000	334	<5	1,740	<.5	<2	---
	03-Apr-06		N		236,000	80,600	5.08	10,300	930,000	369	<5	1,800	<.5	<2	4,080
	06-May-06		N		270,000	86,300	6.06	10,100	1,080,000	378	<5	1,900	<.5	<2	3,770
	06-May-06		FD		265,000	85,100	5.96	10,100	1,060,000	367	<5	1,860	<.5	<2	3,610
	09-May-06		N		281,000	93,100	6.28	11,100	1,150,000	367	<5	1,850	<1	<2	4,030
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	3,950
	13-May-06		N		238,000	79,500	6.32	9,840	1,050,000	365	<5	1,820	<1	<2	---
	23-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	30-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		189,000	63,000	8.17	9,260	9,170,000	505	<5	1,250	<2.5	<2	---
	19-Jul-06		N		181,000	59,300	8.6	12,100	1,010,000	507	<5	1,530	<.5	<2	3,470
	08-Aug-06		N		203,000	64,100	8.97	14,100	1,040,000	477	<5	1,620	<.5	<2	3,560
	06-Sep-06		N		227,000	71,600	8.21	17,700	1,080,000	480	<5	1,750	<.5	<2	3,430
	04-Oct-06		N		232,000	64,600	7.91	17,800	1,120,000	410	<5	1,710	<2.5	<2	3,470
	08-Nov-06		N		230,000	72,100	7.24	16,200	1,070,000	423	<5	1,860	<.5	<2	3,620
	05-Dec-06		N		225,000	67,100	7.07	15,900	1,070,000	473	<5	1,810	<.5	<2.0	3,610
	03-Jan-07		N		235,000	73,200	7	15,600	1,050,000	463	<5	1,890	<1	<2	3,530
	07-Feb-07		N		236,000	76,600	6.65	14,500	975,000	430	<5	1,950	<.5	<2	3,570
	07-Mar-07		N		239,000	69,400	6.53	13,900	1,010,000	460	<5	1,980	<.5	3.2	3,410
	07-Mar-07		FD		242,000	70,500	7.26	14,100	1,020,000	460	<5	1,990	<.5	3.2	3,480
	05-Apr-07		N		227,000	69,600	5.76	13,600	1,020,000	473	<5	1,900	<.5	<2	3,510
	02-May-07		N		223,000	73,200	6.63	12,500	1,040,000	510	<5	1,820	<.5	<2	3,510
	06-Jun-07		N		257,000	68,800	6	13,700	1,150,000	525	<5	1,820	<.5	2	3,590
	11-Jul-07		N		222,000	65,300	5.69	11,800	989,000	508	<5	1,790	<.5	<2	3,570
	08-Aug-07		N		274,000	81,500	5.27	13,600	1,080,000	533	<5	1,840	<.5	<2	3,450
	06-Sep-07		N		237,000	72,900	5.57	12,100	1,020,000	495	<5	1,920	<.5	<2	3,500

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-3M	18-Mar-06		N	60-70	162,000	32,600	<5	19,900	1,360,000	112	<5	1,830	<.5	<2	---
	07-Apr-06		N		184,000	30,500	<5	18,300	1,510,000	131	<5	1,910	<.5	<2	4,420
	06-May-06		N		194,000	28,900	<5	15,100	1,490,000	157	<5	2,050	<.5	<2	4,120
	09-May-06		N		186,000	28,800	<5	14,100	1,440,000	170	<5	2,020	<.5	<2	4,410
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	4,370
	13-May-06		N		193,000	28,300	<5	13,800	1,500,000	176	<5	2,040	<.5	<2	---
	13-May-06		FD		193,000	28,300	<5	13,700	1,490,000	184	<5	1,970	<.5	<2	---
	23-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	30-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		184,000	27,100	<5	12,900	1,360,000	172	<5	2,170	<.5	<2	---
	06-Jun-06		FD		189,000	27,900	<5	13,400	1,410,000	196	<5	2,160	<.5	<2	---
	19-Jul-06		N		177,000	26,400	<5	12,600	1,370,000	180	<5	1,930	<.5	<2	4,230
	08-Aug-06		N		182,000	26,400	<5	13,100	1,430,000	193	<5	1,770	<.5	<2	4,190
	06-Sep-06		N		178,000	26,100	<5	13,200	1,400,000	209	<5	1,860	<.5	<2	3,970
	04-Oct-06		N		170,000	22,300	<5	12,900	1,470,000	203	<5	1,820	<.5	<2	3,830
	08-Nov-06		N		226,000	70,100	6.97	16,000	1,040,000	438	<5	1,950	<.5	<2	3,610
	05-Dec-06		N		149,000	20,900	<5	11,100	1,310,000	143	<5	3,430	<.5	<2.0	5,890
	03-Jan-07		N		139,000	20,800	<5	10,600	1,190,000	213	<5	1,630	<.5	<2	3,510
	07-Feb-07		N		134,000	20,400	<5	10,300	1,090,000	190	<5	1,580	<.5	<2	3,380
	06-Mar-07		N		131,000	18,400	<5	10,000	1,150,000	228	<5	1,630	<.5	<2	3,240
	04-Apr-07		N		126,000	19,000	<5	10,100	1,130,000	225	<5	1,470	<.5	<2	3,450
	02-May-07		N		122,000	18,600	<5	9,560	1,110,000	230	<5	1,530	<.5	<2	3,270
	06-Jun-07		N		139,000	18,700	<5	10,200	1,230,000	230	<5	1,530	<.5	<2	3,480
	11-Jul-07		N		128,000	18,000	<5	9,460	1,060,000	255	<5	1,470	<.5	<2	3,140
	08-Aug-07		N		152,000	21,800	<5	10,700	1,180,000	210	<5	1,460	<.5	<2	3,320
	06-Sep-07		N		133,000	19,800	<5	9,870	1,120,000	220	<5	1,510	<.5	<2	3,250

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-3D	18-Mar-06		N	95-105	273,000	19,200	<5	22,900	2,570,000	104	<5	3,920	<.5	<2	---
	05-Apr-06		N		277,000	18,200	<5	22,200	2,720,000	87.2	<5	3,760	<.5	<2	8,130
	06-May-06		N		218,000	13,400	<5	19,500	2,300,000	117	<5	3,080	<.5	<2	6,950
	09-May-06		N		243,000	16,000	<5	21,200	2,620,000	114	<5	3,330	<1	<2	7,500
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	7,070
	13-May-06		N		234,000	16,700	5.06	20,700	2,590,000	112	<5	3,660	<1	<2	---
	23-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	30-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		249,000	17,100	<5	22,000	2,670,000	98.1	<5	3,990	<.5	<2	---
	17-Jul-06		N		258,000	16,500	5.03	22,200	2,740,000	99.3	<5	2,550	<.5	<2	7,550
	17-Jul-06		FD		256,000	16,200	<5	22,000	2,690,000	99.3	<5	3,480	<.5	<2	7,400
	08-Aug-06		N		241,000	16,200	<5	21,500	2,700,000	93.8	<5	3,510	<.5	<2	7,240
	05-Sep-06		N		236,000	16,800	5.66	22,600	2,890,000	100	<5	3,460	<10	<2	7,290
	04-Oct-06		N		237,000	14,500	5.45	22,400	2,800,000	97.5	<5	3,820	<1	<2	7,580
	08-Nov-06		N		204,000	14,700	8.8	19,800	2,720,000	138	<5	3,910	<5	<2	7,220
	05-Dec-06		N		251,000	14,000	6.05	23,200	3,360,000	67.5	<5	4,110	<1	<2.0	8,650
	03-Jan-07		N		242,000	16,000	6.82	22,300	2,950,000	70	<5	4,200	<.5	<2	8,040
	07-Feb-07		N		234,000	16,200	6.2	21,200	2,730,000	27.5	<5	4,400	<.5	<2	7,690
	06-Mar-07		N		244,000	16,000	5.52	21,200	2,800,000	85	<5	4,360	<.5	<2	8,270
	05-Apr-07		N		242,000	16,200	5.79	21,200	2,760,000	87.5	<5	4,060	<.5	<2	7,940
	02-May-07		N		211,000	15,200	5.72	19,000	2,580,000	87.5	<5	4,180	<.5	<2	7,540
	06-Jun-07		N		200,000	13,100	8.25	18,900	2,660,000	155	<5	3,420	<.5	<2	6,920
	06-Jun-07		FD		201,000	13,300	8.22	19,200	2,690,000	160	<5	3,510	<.5	<2	6,890
	11-Jul-07		N		177,000	12,500	6.46	17,200	2,340,000	110	<5	3,590	<.5	<2	6,750
	08-Aug-07		N		191,000	13,300	11.2	18,800	2,460,000	188	<5	3,450	<.5	<2	7,020
	06-Sep-07		N		183,000	14,600	6.43	17,700	2,470,000	118	<5	3,740	<.5	<2	6,510
	03-Oct-07		N		---	---	5.61	---	---	113	<5	---	---	2	6,730
	07-Nov-07		N		---	---	5.46	---	---	92.5	<5	---	---	<2	7,350

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-4S	15-Mar-06		N	35-45	261,000	64,300	6.22	14,100	1,180,000	184	<5	1,800	1.35	<2	---
	06-Apr-06		N		282,000	61,800	6.56	13,400	1,300,000	188	<5	2,020	<.5	<2	4,470
	09-May-06		N		276,000	61,500	7.84	12,100	1,270,000	197	<5	2,110	<.5	<2	4,580
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	4,510
	13-May-06		N		267,000	61,100	7.59	12,300	1,300,000	181	<5	2,210	<1	<2	---
	23-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	30-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		263,000	60,200	8.38	12,000	1,200,000	211	<5	2,270	<.5	<2	---
	19-Jul-06		N		260,000	59,100	8.44	12,300	1,250,000	208	<5	1,970	<.5	<2	4,600
	08-Aug-06		N		264,000	60,800	9.45	11,900	1,260,000	201	<5	1,960	<.5	<2	4,240
	06-Sep-06		N		269,000	61,700	8.91	13,100	1,300,000	222	<5	2,080	<.5	<2	4,260
	06-Sep-06		FD		275,000	63,600	9.67	13,400	1,320,000	207	<5	2,120	<.5	<2	4,370
	04-Oct-06		N		267,000	55,300	9.38	12,700	1,370,000	220	<5	2,110	<.5	<2	4,280
	08-Nov-06		N		265,000	60,200	9.64	11,600	1,280,000	215	<5	2,260	<.5	<2	4,420
	05-Dec-06		N		244,000	53,600	9.43	11,000	1,250,000	238	<5	1,980	<.5	<2.0	3,880
	03-Jan-07		N		242,000	53,200	9.19	10,900	1,240,000	230	<5	1,960	<.5	<2	4,220
	07-Feb-07		N		233,000	53,800	9.12	10,900	1,230,000	225	<5	2,000	<.5	<2	4,070
	07-Mar-07		N		221,000	45,500	6.88	10,200	1,160,000	118	<5	1,950	<.5	<2	3,740
	05-Apr-07		N		208,000	44,300	6.94	10,400	1,163,000	245	<5	1,930	<.5	<2	3,750
	02-May-07		N		189,000	40,800	7.45	9,450	1,130,000	280	<5	1,820	<.5	<2	3,570
	06-Jun-07		N		209,000	38,600	7.29	10,200	1,240,000	265	<5	1,710	<.5	<2	3,840
	11-Jul-07		N		185,000	37,200	7.48	9,490	1,110,000	245	<5	1,720	<.5	<2	3,770
	08-Aug-07		N		251,000	51,100	9.75	11,600	1,230,000	265	<5	1,740	<.5	<2	3,700
	06-Sep-07		N		191,000	41,100	8.17	9,710	1,160,000	253	<5	1,810	<.5	<2	3,700

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-4M	15-Mar-06		N	60-70	148,000	25,700	<5	18,700	1,370,000	144	<5	1,800	<.5	<2	---
	07-Apr-06		N		155,000	28,900	<5	20,400	1,480,000	117	<5	1,800	<.5	<2	4,190
	09-May-06		N		176,000	27,200	<5	15,400	1,490,000	168	<5	2,020	<.5	<2	4,250
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	3,870
	13-May-06		N		174,000	25,700	<5	14,000	1,460,000	178	<5	2,010	<.5	<2	---
	23-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	30-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		176,000	25,900	<5	13,400	1,380,000	184	<5	2,170	<.5	<2	---
	19-Jul-06		N		170,000	26,700	<5	13,300	1,370,000	188	<5	1,870	<.5	<2	4,290
	08-Aug-06		N		166,000	25,000	<5	13,200	1,390,000	188	<5	1,830	<.5	<2	4,100
	06-Sep-06		N		176,000	27,100	<5	14,300	1,440,000	207	<5	1,940	<.5	<2	3,900
	04-Oct-06		N		162,000	22,700	<5	13,600	1,400,000	210	<5	1,800	<.5	<2	3,980
	08-Nov-06		N		137,000	21,300	<5	10,800	1,280,000	215	<5	1,660	<.5	<2	3,700
	05-Dec-06		N		133,000	19,300	<5	11,200	1,210,000	233	<5	1,560	<.5	<2.0	9,360
	03-Jan-07		N		123,000	18,500	<5	10,600	1,130,000	240	<5	1,530	<.5	<2	3,490
	07-Feb-07		N		119,000	19,700	<5	10,400	1,080,000	230	<5	1,480	<.5	<2	3,310
	07-Mar-07		N		114,000	17,000	<5	9,590	1,050,000	250	<5	1,440	<.5	<2	3,060
	04-Apr-07		N		105,000	16,800	<5	9,620	1,060,000	238	<5	1,330	<.5	<2	3,010
	02-May-07		N		101,000	16,600	<5	9,010	1,020,000	230	<5	1,380	<.5	<2	2,940
	06-Jun-07		N		116,000	16,200	<5	10,200	1,170,000	230	<5	1,340	<.5	2	3,170
PT-4D	11-Jul-07		N	95-105	308,000	17,800	5.05	23,200	3,090,000	80	<5	4,660	<.5	<2	9,030
	08-Aug-07		N		137,000	20,300	<5	10,700	1,120,000	223	<5	1,430	<.5	<2	3,150
	06-Sep-07		N		114,000	17,400	<5	9,520	1,070,000	225	<5	1,400	<.5	<2	2,950
	15-Mar-06		N		334,000	20,700	5.13	24,800	3,150,000	79.4	<5	4,350	<.5	<2	---
	05-Apr-06		N		339,000	21,100	<5	24,000	3,060,000	68.1	<5	4,450	<.5	<2	9,150
	09-May-06		N		339,000	21,100	5.36	24,300	3,200,000	69.2	<5	4,500	<2.5	<2	9,040
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	9,290
	13-May-06		N		339,000	21,000	5.19	24,500	3,200,000	69.2	<5	4,380	<1	<2	---
	23-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	23-May-06		FD		---	---	---	---	---	---	---	---	---	<2	---
	30-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		325,000	20,200	5.27	24,200	2,970,000	66.2	<5	4,850	<.5	<2	---
	19-Jul-06		N		341,000	20,800	5.44	25,800	3,230,000	71	<5	4,000	<.5	<2	8,770
	08-Aug-06		N		340,000	20,500	5.07	24,000	3,560,000	67	<5	4,230	<.5	<2	9,060
	06-Sep-06		N		336,000	19,600	5.41	25,600	3,130,000	63.8	<5	4,610	<.5	<2	8,710
	04-Oct-06		N		341,000	16,800	5.29	26,300	3,270,000	62.5	<5	4,630	<2.5	<2	8,770
	04-Oct-06		FD		353,000	17,500	5.66	26,900	3,560,000	65	<5	4,560	<2.5	<2	8,680
	08-Nov-06		N		311,000	18,700	5.44	24,100	3,080,000	57.5	<5	4,630	<2.5	<2	8,900
	05-Dec-06		N		299,000	16,600	5.33	24,700	3,560,000	50	<5	4,910	<2.5	<2.0	3,340
	03-Jan-07		N		340,000	17,800	5.91	24,800	3,380,000	52.5	<5	4,820	<2.5	<2	9,030
	07-Feb-07		N		328,000	19,200	5.48	24,400	3,230,000	55	<5	4,850	<.5	<2	9,070
	07-Mar-07		N		342,000	19,700	<5	24,900	3,230,000	75	<5	5,130	<.5	<2	8,990
	05-Apr-07		N		351,000	20,300	<5	25,100	3,322,000	62.5	<5	4,920	<.5	<2	9,120
	02-May-07		N		309,000	21,100	<5	23,300	3,160,000	72.5	<5	4,970	<.5	<2	9,090

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-4D (cont)	06-Jun-07		N		373,000	20,500	<5	26,100	3,640,000	62.5	<5	4,850	<.5	<2	9,220
	11-Jul-07		N		310,000	18,000	5.05	23,100	3,070,000	70	<5	4,910	<.5	<2	9,110
	08-Aug-07		N		395,000	22,100	5.56	27,300	3,350,000	60	<5	5,210	<.5	<2	9,650
	06-Sep-07		N		327,000	20,300	5.17	24,500	3,220,000	60	<5	5,140	<.5	<2	9,140
	03-Oct-07		N		---	---	<5	---	---	57.5	<5	---	---	<2	9,550
	07-Nov-07		N		---	---	5.17	---	---	62.5	<5	---	---	<2	9,870
PT-5S	16-Mar-06		N	35-45	315,000	72,300	8.86	14,200	1,320,000	279	<5	2,050	<.5	<2	---
	07-Apr-06		N		323,000	65,700	9.36	13,800	1,460,000	237	<5	2,170	<.5	<2	5,080
	01-Jun-06		N		---	---	---	---	---	---	---	---	---	<2	---
	19-Jul-06		N		386,000	84,300	12.7	13,800	1,450,000	375	<5	2,580	<.5	<2	5,460
	09-Aug-06		N		399,000	87,500	13.4	14,100	1,470,000	393	<5	2,670	<.5	<2	5,490
	08-Sep-06		N		427,000	99,100	14.3	15,600	1,540,000	421	<5	2,610	<.5	<2	5,090
	05-Oct-06		N		417,000	87,100	14.5	14,500	1,580,000	398	<5	2,880	<.5	<2	5,380
	09-Nov-06		N		392,000	85,100	15.3	13,300	1,440,000	395	<5	2,760	<.5	<2	5,680
	06-Dec-06		N		413,000	100,000	15.7	13,500	1,540,000	425	<5	2,700	<.5	<2	5,480
	06-Dec-06		FD		432,000	104,000	15.8	14,100	1,590,000	443	<5	2,720	<.5	<2	5,510
	04-Jan-07		N		430,000	111,000	17.1	14,900	1,540,000	433	<5	2,840	<.5	<2	5,500
	08-Feb-07		N		427,000	98,300	15.4	14,400	1,500,000	405	<5	2,760	<.5	<2	5,340
	08-Mar-07		N		397,000	85,900	15.3	13,400	1,500,000	418	<5	2,930	<.5	<2	5,490
	06-Apr-07		N		423,000	86,800	15.1	14,500	1,540,000	410	<5	2,740	<.5	<2	5,150
	03-May-07		N		385,000	88,900	14.6	13,700	1,520,000	408	<5	2,760	<.5	<2	5,690
	07-Jun-07		N		428,000	89,700	16	14,200	1,660,000	385	<5	2,800	<0.5	<2	5,410
	12-Jul-07		N		393,000	90,100	16.7	14,100	1,570,000	398	<5	2,730	<.5	<2	5,620
	09-Aug-07		N		424,000	90,900	18.8	14,400	1,670,000	370	<5	2,870	<.5	<2	5,620
	07-Sep-07		N		400,000	91,600	18.1	14,300	1,730,000	353	<5	3,010	<.5	<2	5,640
PT-5M	16-Mar-06		N	60-70	196,000	33,000	<5	11,000	1,220,000	237	<5	1,740	<.5	<2	---
	07-Apr-06		N		332,000	72,200	11.1	14,500	1,420,000	270	<5	2,210	<.5	<2	5,050
	01-Jun-06		N		---	---	---	---	---	---	---	---	---	<2	---
	19-Jul-06		N		132,000	21,900	<5	9,330	1,030,000	276	<5	1,290	<.5	<2	2,940
	09-Aug-06		N		109,000	18,800	<5	8,700	905,000	266	<5	1,150	<.5	<2	2,830
	08-Sep-06		N		119,000	20,800	<5	9,720	995,000	311	<5	1,180	<.5	<2	2,780
	05-Oct-06		N		110,000	17,700	<5	9,030	9,590,000	265	<5	1,100	<.5	<2	2,660
	09-Nov-06		N		99,900	16,600	<5	8,170	870,000	255	<5	1,090	<.5	<2	2,620
	06-Dec-06		N		122,000	20,700	<.50	8,370	947,000	270	<5	1,160	<.5	<2	2,660
	04-Jan-07		N		143,000	24,400	<5	9,230	980,000	230	<5	1,270	<.5	<2	3,080
	08-Feb-07		N		148,000	25,100	<5	9,790	997,000	255	<5	1,430	<.5	<2	3,210
	07-Mar-07		N		157,000	25,600	<5	9,400	981,000	200	<5	1,500	<.5	<2	3,150
	06-Apr-07		N		155,000	25,900	<5	10,200	1,050,000	245	<5	1,410	<.5	<2	3,240
	03-May-07		N		151,000	25,500	<5	9,110	958,000	248	<5	1,300	<.5	<2	2,990
	07-Jun-07		N		113,000	18,200	<5	7,600	836,000	263	<5	1,000	<0.5	2	2,510
	12-Jul-07		N		94,700	15,800	<5	7,080	773,000	275	<5	867	<.5	<2	2,230
	09-Aug-07		N		86,800	14,200	<5	6,740	739,000	265	<5	867	<.5	<2	2,120
	07-Sep-07		N		87,800	15,300	<5	6,920	769,000	235	<5	864	<.5	<2	2,140

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Summary of Secondary Analytical Parameters

PG&E Topock
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Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-5D	16-Mar-06		N	95-105	317,000	21,000	<5	24,500	3,150,000	62.3	<5	4,460	<.5	<2	---
	07-Apr-06		N		337,000	73,200	11.5	14,500	1,400,000	289	<5	2,190	<.5	<2	5,030
	12-May-06		N		298,000	20,900	<5	24,400	3,300,000	93.2	<5	4,160	<.5	<2	---
	01-Jun-06		N		---	---	---	---	---	---	---	---	---	<2	---
	17-Jul-06		N		283,000	17,900	<5	23,100	2,980,000	96.7	<5	4,030	<.5	<2	8,150
	09-Aug-06		N		249,000	17,600	<5	22,100	2,690,000	82.7	<5	3,880	<1	<2	8,230
	08-Sep-06		N		275,000	18,600	<5	24,700	3,110,000	68.6	<5	4,300	<1	<2	8,580
	05-Oct-06		N		277,000	17,300	<5	24,000	3,040,000	87.5	<5	4,570	<1	<2	8,250
	09-Nov-06		N		262,000	16,600	5.46	22,700	2,970,000	70	<5	4,320	<2.5	<2	8,600
	06-Dec-06		N		296,000	15,700	<5	22,300	3,300,000	67.5	<5	4,500	<.5	<2	8,480
	04-Jan-07		N		324,000	20,700	5.14	24,300	3,400,000	75	<5	4,890	<1	<2	9,030
	08-Feb-07		N		319,000	17,700	<5	24,800	309,000	82.5	<5	4,740	<.5	<2	8,710
	08-Mar-07		N		344,000	21,600	<5	24,700	3,230,000	110	<5	4,810	<.5	<2	8,650
	05-Apr-07		N		333,000	20,600	<5	23,900	3,190,000	97.5	<5	4,540	<.5	<2	8,100
	03-May-07		N		307,000	21,700	<5	23,500	3,000,000	103	<5	4,170	<.5	<2	8,680
	07-Jun-07		N		290,000	19,800	<5	23,700	2,960,000	92.5	<5	4,560	<0.5	<2	8,420
	12-Jul-07		N		268,000	17,500	<5	21,900	2,860,000	90	<5	4,320	<.5	<2	8,090
	09-Aug-07		N		279,000	17,300	<5	22,600	308,000	80	<5	4,790	<.5	<2	8,880
	07-Sep-07		N		288,000	17,700	<5	22,500	3,150,000	82.5	<5	4,450	<.5	<2	8,630
	03-Oct-07		N		---	---	<5	---	---	82.5	<5	---	---	<2	8,710
	07-Nov-07		N		---	---	<5	---	---	77.5	<5	---	---	<2	8,930
PT-6S	18-Mar-06		N	35-45	269,000	157,000	12.6	21,400	1,490,000	501	<5	2,870	<.5	<2	---
	04-Apr-06		N		296,000	153,000	15.2	20,300	1,540,000	451	<5	2,900	<.5	<2	5,940
	13-May-06		N		297,000	147,000	25.5	16,600	1,500,000	538	<5	2,740	<1	<2	---
	22-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	01-Jun-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		310,400	148,000	29.9	16,400	1,360,000	505	<5	2,820	<2.5	<2	---
	19-Jul-06		N		311,000	148,000	30.9	16,700	1,380,000	507	<5	2,520	<.5	<2	5,480
	09-Aug-06		N		318,000	165,000	27.6	17,400	1,440,000	474	<5	2,680	<.5	<2	5,500
	08-Sep-06		N		323,000	156,000	25.5	18,000	1,600,000	573	<5	2,940	<1	<2	5,560
	05-Oct-06		N		322,000	147,000	33.9	16,500	1,550,000	550	<5	2,890	<2.5	<2	5,170
	09-Nov-06		N		337,000	170,000	34	16,700	1,620,000	565	<5	3,200	<.5	2	6,200
	06-Dec-06		N		372,000	214,000	37	16,900	1,840,000	575	<5	<.5	<.5	<2	6,330
	04-Jan-07		N		382,000	206,000	39.6	17,900	1,900,000	575	<5	3,720	<1	<2	6,920
	08-Feb-07		N		353,000	192,000	36.1	17,300	1,700,000	585	<5	3,700	<.5	<2	7,090
	08-Mar-07		N		324,000	159,000	37.1	15,800	1,560,000	485	<5	3,040	<.5	<2	5,510
	06-Apr-07		N		279,000	118,000	29.2	14,100	1,280,000	500	<5	2,490	<.5	<2	4,560
	03-May-07		N		282,000	137,000	39.2	14,400	1,310,000	560	<5	2,570	<.5	<2	4,540
	07-Jun-07		N		285,000	138,000	42.4	14,500	1,370,000	550	<5	2,550	<0.5	<2	4,540
	12-Jul-07		N		294,000	139,000	46.5	14,500	1,330,000	515	<5	2,620	<.5	<2	4,750
	09-Aug-07		N		328,000	151,000	38.2	16,100	1,510,000	560	<5	2,880	<.5	<2	4,770
	07-Sep-07		N		320,000	150,000	49.4	15,400	1,540,000	710	<5	2,930	<1	3.2	5,000

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-6M	16-Mar-06		N	60-70	230,000	39,700	<5	11,800	1,300,000	227	<5	1,840	<.5	<2	---
	04-Apr-06		N		238,000	43,400	<5	12,800	1,392,000	227	<5	1,980	<.5	<2	4,340
	13-May-06		N		224,000	39,100	<5	12,300	1,390,000	210	<5	2,030	<.5	<2	---
	23-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	01-Jun-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		228,000	38,700	<5	12,400	1,300,000	226	<5	2,080	<.5	<2	---
	19-Jul-06		N		212,000	36,800	<5	12,300	1,290,000	241	<5	1,730	<.5	<2	4,020
	09-Aug-06		N		188,000	35,300	<5	11,800	1,190,000	237	<5	1,660	<.5	<2	3,940
	08-Sep-06		N		192,000	36,400	<5	12,300	1,230,000	264	<5	1,670	<.5	<2	3,630
	05-Oct-06		N		186,000	31,000	<5	11,200	1,210,000	243	<5	1,660	<.5	<2	3,780
	09-Nov-06		N		173,000	31,300	<5	10,800	1,090,000	248	<5	1,610	<.5	<2	3,620
	06-Dec-06		N		192,000	35,700	<5.0	10,600	1,190,000	240	<5	1,610	<.5	<2	3,510
	04-Jan-07		N		189,000	35,200	<5	10,800	1,140,000	250	<5	1,630	<.5	<2	3,650
	08-Feb-07		N		180,000	33,200	<5	10,900	1,100,000	235	<5	1,700	<.5	<2	3,530
	07-Mar-07		N		185,000	31,400	<5	10,500	1,100,000	238	<5	1,740	<.5	<2	3,450
	06-Apr-07		N		206,000	34,000	<5	11,500	1,180,000	240	<5	1,650	<.5	<2	3,440
	03-May-07		N		198,000	35,800	<5	11,000	1,120,000	238	<5	1,720	<.5	<2	3,740
	07-Jun-07		N		198,000	35,200	<5	10,900	1,190,000	255	<5	1,670	<0.5	<2	3,520
	12-Jul-07		N		173,000	30,900	<5	9,960	1,050,000	265	<5	1,520	<.5	<2	3,580
	09-Aug-07		N		191,000	32,600	<5	10,600	1,150,000	245	<5	1,660	<.5	<2	3,320
	07-Sep-07		N		184,000	33,500	<5	10,500	1,140,000	248	<5	1,550	<.5	<2	3,320

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PT-6D	16-Mar-06		N	95-105	245,000	16,200	<5	19,900	2,600,000	102	<5	3,630	<.5	<2	---
	04-Apr-06		N		239,000	17,500	<5	19,800	2,620,000	97.3	<5	3,420	<.5	<2	7,140
	13-May-06		N		216,000	14,900	<5	19,100	2,590,000	104	<5	3,310	<1	<2	---
	22-May-06		N		---	---	---	---	---	---	---	---	---	<2	---
	01-Jun-06		N		---	---	---	---	---	---	---	---	---	<2	---
	06-Jun-06		N		187,000	13,200	<5	17,300	2,210,000	118	<5	3,380	<.5	<2	---
	17-Jul-06		N		188,000	12,100	<5	17,000	2,220,000	120	<5	2,790	<.5	<2	6,210
	09-Aug-06		N		184,000	13,300	<5	18,200	2,240,000	116	<5	3,050	<.5	<2	6,480
	08-Sep-06		N		234,000	16,500	<5	21,000	2,580,000	90.6	<5	3,600	<.5	<2	7,040
	05-Oct-06		N		199,000	12,400	<5	19,300	2,470,000	110	<5	3,350	<.5	<2	6,330
	09-Nov-06		N		189,000	12,400	<5	18,100	2,250,000	110	<5	3,260	<.5	<2	6,470
	09-Nov-06	FD	N		190,000	12,400	<5	18,100	2,290,000	108	<5	3,480	<.5	<2	6,650
	06-Dec-06		N		208,000	13,800	<5.0	17,300	2,410,000	108	<5	3,570	<.5	<2	6,620
	04-Jan-07		N		245,000	22,000	<5	19,700	2,580,000	108	<5	3,590	<.5	<2	7,170
	08-Feb-07		N		203,000	11,700	<5	18,900	2,370,000	105	<5	3,540	<.5	<2	6,630
	08-Mar-07		N		200,000	16,600	<5	17,600	2,310,000	110	<5	3,400	<.5	<2	6,220
	05-Apr-07		N		189,000	12,400	<5	18,000	2,340,000	123	<5	3,260	<.5	<2	5,960
	03-May-07		N		162,000	11,000	<5	16,000	2,120,000	135	<5	2,930	<.5	<2	5,930
	07-Jun-07		N		181,000	12,000	<5	17,600	2,360,000	125	<5	3,100	<0.5	<2	6,080
	12-Jul-07		N		152,000	10,000	<5	15,500	2,090,000	165	<5	2,980	<.5	<2	6,020
	09-Aug-07		N		169,000	10,700	<5	17,000	2,350,000	120	<5	3,250	<.5	<2	6,100
	07-Sep-07		N		171,000	10,700	<5	16,800	2,360,000	130	<5	3,300	<.5	<2	6,370
	03-Oct-07		N		---	---	<5	---	---	143	<5	---	---	<2	5,910
	03-Oct-07	FD	N		---	---	<5	---	---	125	<5	---	---	<2	6,430
	07-Nov-07		N		---	---	<5	---	---	123	<5	---	---	<2	6,480
PTI-1S	15-Mar-06		N	35-45	266,000	88,200	13.2	11,600	980,000	375	<5	1,730	<.5	<2	---
	05-Apr-06		N		266,000	88,200	7.18	11,200	996,000	357	<5	1,760	<.5	<2	3,810
	06-May-06		N		155,000	14,100	<5	30,900	992,000	602	<5	798	<2.5	<2	3,930
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	3,040
	18-Jul-06		N		---	---	---	---	---	---	---	---	---	---	3,770
	07-Aug-06		N		---	---	---	---	---	---	---	---	---	---	4,080
	07-Sep-06		N		---	---	---	---	---	---	---	---	---	---	3,940
	03-Oct-06		N		---	---	---	---	---	---	---	---	---	---	3,830
	07-Nov-06		N		---	---	---	---	---	---	---	---	---	---	4,120
	05-Dec-06		N		---	---	---	---	---	500	<5	2,050	<.5	---	3,890
	02-Jan-07		N		---	---	---	---	---	---	---	---	---	---	3,740
	06-Feb-07		N		---	---	---	---	---	---	---	---	---	---	3,890
	06-Mar-07		N		---	---	---	---	---	---	---	---	<.5	---	3,870
	04-Apr-07		N		---	---	---	---	---	---	---	---	---	---	3,590
	01-May-07		N		---	---	---	---	---	---	---	---	---	---	3,860
	05-Jun-07		N		---	---	---	---	---	---	---	---	---	---	3,740
	10-Jul-07		N		---	---	---	---	---	---	---	---	---	---	3,610
	07-Aug-07		N		---	---	---	---	---	---	---	---	---	---	3,910
	05-Sep-07		N		---	---	---	---	---	---	---	---	---	---	3,590

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PTI-1M	15-Mar-06		N	60-70	223,000	33,200	<5	12,200	1,360,000	179	<5	1,910	<.5	<2	---
	04-Apr-06		N		226,000	37,700	<5	12,800	1,480,000	180	<5	2,050	<.5	<2	4,450
	06-May-06		N		130,000	17,700	26.5	20,400	1,320,000	383	<5	1,080	<.5	<2	4,450
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	4,480
	18-Jul-06		N		---	---	---	---	---	---	---	---	---	---	4,160
	07-Aug-06		N		---	---	---	---	---	---	---	---	---	---	4,190
	07-Sep-06		N		---	---	---	---	---	---	---	---	---	---	3,980
	03-Oct-06		N		---	---	---	---	---	---	---	---	---	---	3,860
	07-Nov-06		N		---	---	---	---	---	---	---	---	---	---	3,670
	05-Dec-06		N		---	---	---	---	---	225	<5	1,670	<.5	---	3,650
	02-Jan-07		N		---	---	---	---	---	---	---	---	---	---	3,490
	06-Feb-07		N		---	---	---	---	---	---	---	---	---	---	3,300
	06-Mar-07		N		---	---	---	---	---	---	---	---	<.5	---	3,250
	04-Apr-07		N		---	---	---	---	---	---	---	---	---	---	3,240
	01-May-07		N		---	---	---	---	---	---	---	---	---	---	3,320
	05-Jun-07		N		---	---	---	---	---	---	---	---	---	---	3,420
	10-Jul-07		N		---	---	---	---	---	---	---	---	---	---	3,330
PTI-1D	07-Aug-07		N	95-105	---	---	---	---	---	---	---	---	---	---	3,240
	05-Sep-07		N		---	---	---	---	---	---	---	---	---	---	3,200
	15-Mar-06		N		289,000	21,500	<5	23,600	2,470,000	134	<5	3,420	<.5	<2	---
	03-Apr-06		N		267,000	18,000	<5	21,700	2,600,000	99.7	<5	3,620	<.5	<2	8,080
	10-May-06		N		---	---	---	---	---	---	---	---	---	---	7,530
	18-Jul-06		N		---	---	---	---	---	---	---	---	---	---	6,730
	07-Aug-06		N		---	---	---	---	---	---	---	---	---	---	7,300
	05-Sep-06		N		---	---	---	---	---	---	---	---	---	---	6,790
	03-Oct-06		N		---	---	---	---	---	---	---	---	---	---	7,310
	07-Nov-06		N		---	---	---	---	---	---	---	---	---	---	4,840
	05-Dec-06		N		---	---	---	---	---	72.5	<5	4,580	<.5	---	8,710
	02-Jan-07		N		---	---	---	---	---	---	---	---	---	---	7,200
	06-Feb-07		N		---	---	---	---	---	---	---	---	---	---	7,370
	06-Mar-07		N		---	---	---	---	---	---	---	---	<.5	---	7,170
	04-Apr-07		N		---	---	---	---	---	---	---	---	---	---	6,960
	01-May-07		N		---	---	---	---	---	---	---	---	---	---	6,830
	05-Jun-07		N		---	---	---	---	---	---	---	---	---	---	5,870
	10-Jul-07		N		---	---	---	---	---	---	---	---	---	---	6,190
	07-Aug-07		N		---	---	---	---	---	---	---	---	---	---	5,030
	05-Sep-07		N		---	---	---	---	---	---	---	---	---	---	5,620
	02-Oct-07		N		---	---	---	---	---	---	---	---	---	---	5,920
	06-Nov-07		N		---	---	---	---	---	---	---	---	---	---	6,660
					---	---	---	---	---	---	---	---	---	---	

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
PE-01	17-Mar-06		N	79 - 89	261,000	37,400	<5	19,700	2,200,000	277	<5	2,990	<.5	<2	---
	05-Apr-06		N		263,000	36,400	<5	19,600	2,090,000	256	<5	3,110	<.5	<2	6,580
	01-Jun-06		N		---	---	---	---	---	---	---	---	---	<2	---
	17-Jul-06		N		252,000	35,200	<5	18,300	2,020,000	267	<5	2,710	<.5	<2	5,910
	07-Aug-06		N		230,000	34,800	<5	18,100	1,970,000	255	<5	2,570	<.5	<2	5,910
	07-Aug-06		FD		235,000	35,600	<5	17,900	2,000,000	274	<5	2,550	<.5	<2	5,960
	06-Sep-06		N		227,000	34,700	<5	18,400	1,930,000	268	<5	2,670	<.5	<2	5,370
	03-Oct-06		N		234,000	32,800	<50	18,400	1,860,000	268	<5	2,630	<0.5	<2	5,710
	03-Oct-06		FD		242,000	34,000	<50	18,900	1,920,000	263	<5	2,750	<0.5	<2	5,580
	07-Nov-06		N		204,000	30,300	<5	16,200	1,790,000	263	<5	2,750	<.5	<2	3,180
	06-Dec-06		N		225,000	35,200	<5.0	16,200	1,860,000	275	<5	2,400	<.5	<2	5,340
	02-Jan-07		N		211,000	32,800	<5	16,300	1,800,000	275	<5	2,430	<.5	<2	5,370
	06-Feb-07		N		212,000	34,400	<5	16,300	1,670,000	270	<5	2,550	<.5	<2	5,200
	06-Feb-07		FD		211,000	34,600	<5	16,500	1,670,000	265	<5	2,550	<.5	<2	5,210
	06-Mar-07		N		208,000	32,700	<5	15,800	1,730,000	260	<5	2,540	<.5	<2	5,220
	04-Apr-07		N		204,000	34,300	<5	15,800	1,710,000	260	<5	2,310	<.5	<2	5,070
	04-Apr-07		FD		200,000	33,600	<5	15,500	1,710,000	255	<5	2,320	<.5	<2	4,700
	01-May-07		N		197,000	32,300	<5	15,200	1,690,000	278	<5	2,260	<.5	<2	4,810
	05-Jun-07		N		193,000	30,200	<5	14,800	1,670,000	278	<5	2,170	<.5	<2	4,640
	10-Jul-07		N		164,000	26,700	<5	13,500	1,440,000	265	<5	2,070	<.5	<2	4,370
TW-2D	07-Aug-07		N	113 - 148	185,000	29,500	5.53	15,300	1,620,000	273	<5	2,010	<.5	<2	4,390
	05-Sep-07		N		159,000	25,200	<5	13,300	149,000	270	<5	2,020	<.5	<2	4,190
	17-Mar-06		N		207,000	23,600	<5	13,200	1,240,000	110	<5	1,920	<.5	<2	---
	05-Apr-06		N		231,000	25,800	<5	14,700	1,400,000	112	<5	2,070	<.5	<2	4,390
	19-Jul-06		N		241,000	29,900	<5	15,000	1,460,000	119	<5	1,980	<.5	<2	4,580
	07-Aug-06		N		242,000	29,700	<5	14,600	1,450,000	102	<5	1,690	<.5	<2	3,900
	06-Sep-06		N		262,000	32,500	<5	16,400	1,580,000	122	<5	1,470	<.5	<2	4,420
	04-Oct-06		N		261,000	27,600	<5	16,100	1,720,000	115	<5	2,480	<.5	<2	4,900
	08-Nov-06		N		243,000	30,000	<5	14,300	1,500,000	110	<5	2,190	<.5	<2	3,850
	06-Dec-06		N		258,000	41,300	<5.0	11,700	954,000	110	<5	1,950	<.5	<2	290
	02-Jan-07		N		248,000	33,300	<5	14,100	1,450,000	97.5	<5	1,370	<.5	<2	3,480
	06-Feb-07		N		261,000	36,100	<5	14,100	1,320,000	110	<5	1,630	<.5	<2	4,220
	06-Mar-07		N		280,000	37,600	<5	15,100	1,590,000	130	<5	2,500	<.5	<2	4,790
	05-Apr-07		N		260,000	36,200	<5	14,700	1,460,000	115	<5	1,700	<.5	<2	4,320
	01-May-07		N		250,000	31,200	<5	14,000	1,510,000	138	<5	2,250	<.5	<2	4,730
	05-Jun-07		N		242,000	31,900	<5	13,600	1,460,000	133	<5	1,390	<.5	<2	3,930
	10-Jul-07		N		203,000	27,600	<5	13,100	1,310,000	150	<5	1,750	<.5	<2	3,850
	07-Aug-07		N		246,000	31,700	<5	15,000	1,390,000	140	<5	1,870	<.5	<2	3,990
	05-Sep-07		N		212,000	28,300	<5	13,400	140,000	133	<5	1,970	<.5	<2	3,860
	03-Oct-07		N		---	---	<5	---	---	153	<5	---	---	<2	4,470
	06-Nov-07		N		---	---	<5	---	---	138	<5	---	---	<2	---

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
TW-3D	17-Mar-06		N	111 - 156	254,000	27,700	<5	15,900	1,540,000	97.3	<5	2,190	<.5	<2	---
	05-Apr-06		N		283,000	28,800	<5	17,900	1,740,000	89.9	<5	2,580	<.5	<2	5,580
	19-Jul-06		N		265,000	29,100	<5	17,200	1,720,000	98.9	<5	2,610	<.5	<2	5,410
	07-Aug-06		N		272,000	28,800	<5	16,900	1,790,000	96.5	<5	2,480	<.5	<2	5,490
	06-Sep-06		N		274,000	29,400	<5	18,400	1,800,000	102	<5	2,670	<1	<2	5,240
	04-Oct-06		N		272,000	26,800	<5	18,100	1,700,000	175	<5	2,430	<1	<2	4,880
	08-Nov-06		N		257,000	26,900	<5	16,500	1,690,000	92.5	<5	2,790	<.5	<2	5,280
	06-Dec-06		N		277,000	30,000	<5	16,400	1,760,000	97.5	<5	2,470	<.5	<2	5,220
	02-Jan-07		N		269,000	29,700	<5	16,800	1,690,000	95	<5	2,580	<.5	<2	5,210
	06-Feb-07		N		277,000	31,500	<5	17,100	1,610,000	105	<5	2,740	<.5	<2	5,370
	06-Mar-07		N		280,000	32,100	<5	16,700	1,740,000	100	<5	2,840	<.5	<2	5,660
	05-Apr-07		N		279,000	31,900	<5	17,500	1,750,000	110	<5	2,740	<.5	<2	5,400
	01-May-07		N		269,000	29,100	<5	16,500	1,720,000	108	<5	2,630	<.5	<2	5,320
	01-May-07		FD		261,000	28,000	<5	16,100	1,660,000	113	<5	2,640	<.5	<2	5,120
	05-Jun-07		N		269,000	29,100	<5	16,500	1,760,000	115	<5	2,630	<.5	<2	5,300
	10-Jul-07		N		266,000	29,400	<5	17,200	1,710,000	115	<5	2,610	<.5	<2	5,120
	07-Aug-07		N		308,000	32,500	<5	18,800	1,750,000	115	<5	2,590	<.5	<2	5,140
	05-Sep-07		N		267,000	29,000	<5	17,000	177,000	110	<5	2,710	<.5	<2	4,960
	02-Oct-07		N		---	---	<5	---	---	115	<5	---	---	<2	5,040
	06-Nov-07		N		---	---	<5	---	---	115	<5	---	---	<2	---
INJ_SOLUTION_01	04-May-06		N		---	---	---	---	---	---	---	---	---	---	2,240
INJ_SOLUTION_02	05-May-06		N		---	---	---	---	---	---	---	---	---	---	4,650
INJ_SOLUTION_03	06-May-06		N		---	---	---	---	---	---	---	---	---	---	4,460
	11-Aug-06		N		---	---	---	---	---	---	---	---	---	---	<10
	07-Sep-06		N		---	---	---	---	---	---	---	---	---	---	4,950
	08-May-07		N		---	---	---	---	---	---	---	---	---	---	7,780
	17-Jul-07		N		---	---	---	---	---	---	---	---	---	---	5,460

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
Equipment Blank	17-Mar-06		EB		<1000	<1000	<5	<1000	5,360	<5	<5	<.5	<.5	<2	---
	07-Apr-06		EB		<1000	<1000	<5	<1000	1,500	<5	<5	<.5	<.5	<2	<10
	09-May-06		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	---
	13-May-06		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	---
	24-May-06		EB		---	---	---	---	---	---	---	---	---	<2	---
	01-Jun-06		EB		---	---	---	---	---	---	---	---	---	<2	---
	05-Jun-06		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	---
	17-Jul-06		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	15
	07-Aug-06		EB		3,700	1,100	<5	<1000	1,370	12.9	<5	0.832	<.5	<2	20
	06-Sep-06		EB		2,860	<1000	<5	<1000	7,800	7.79	<5	9.62	<.5	<2	<10
	04-Oct-06		EB		9,340	<1000	<5	<1000	5,440	<5	<5	14.9	<.5	<2	35
	07-Nov-06		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	---
	06-Dec-06		EB		<1000	<1000	<5	<1000	38,800	75	<5	5.84	<.5	<2	120
	03-Jan-07		EB		<1000	<1000	<5	<1000	1,860	<5	<5	0.772	<.5	<2	35
	06-Feb-07		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	10
	06-Mar-07		EB		<1000	<1000	<5	<1000	1,490	<5	<5	<.5	<.5	<2	10
	04-Apr-07		EB		<1000	<1000	<5	<1000	1,660	<5	<5	<.5	<.5	<2	<10
	01-May-07		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	<10
	05-Jun-07		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	<10
	10-Jul-07		EB		<1000	<1000	<5	<1000	<1000	80	<5	13	<.5	<2	<10
	07-Aug-07		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	<10
	05-Sep-07		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	<10
	03-Oct-07		EB		---	---	<5	---	---	<5	<5	---	---	<2	<10
	06-Nov-07		EB		---	---	<5	---	---	<5	<5	---	---	<2	---

Table 10
Summary of Secondary Analytical Parameters

PG&E Topock
Needles, CA

Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Location Name	Sample Date	Notes	Sample Type	Screen Interval	Dissolved Calcium (µg/L)	Dissolved Magnesium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Potassium (µg/L)	Dissolved Sodium (µg/L)	Alkalinity bicarbonate (mg/L)	Alkalinity carbonate (mg/L)	Chloride-Cl (mg/L)	Ortho phosphate-P (mg/L)	Sulfide (mg/L)	Total Dissolved Solids (mg/L)
Field Blank	17-Mar-06		FB		<1000	<1000	<5	<1000	2,040	<5	<5	<.5	<.5	<2	---
	04-Apr-06		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	<10
	09-May-06		EB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	---
	13-May-06		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	---
	24-May-06		FB		---	---	---	---	---	---	---	---	---	<2	---
	01-Jun-06		FB		---	---	---	---	---	---	---	---	---	<2	---
	05-Jun-06		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	---
	17-Jul-06		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	10
	07-Aug-06		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	25
	06-Sep-06		FB		2,930	<1000	<5	<1000	7,980	8.28	<5	10.4	<.5	<2	15
	03-Oct-06		FB		<1000	<1000	<5	<1000	2,440	<5	<5	<0.5	<0.5	<2	30
	07-Nov-06		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	---
	05-Dec-06		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2.0	25
	03-Jan-07		FB		<1000	<1000	<5	<1000	2,340	<5	<5	0.789	<.5	<2	50
	06-Feb-07		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	<10
	06-Mar-07		FB		<1000	<1000	<5	<1000	1,480	<5	<5	<.5	<.5	<2	10
	04-Apr-07		FB		<1000	<1000	<5	<1000	1,040	<5	<5	<.5	<.5	<2	<10
	01-May-07		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	<10
	05-Jun-07		FB		<1000	<1000	<5	<1000	<1000	<5	<5	0.837	<.5	<2	<10
	10-Jul-07		FB		<1000	<1000	<5	<1000	<1000	75	<5	12.4	<.5	<2	<10
	07-Aug-07		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	<10
	05-Sep-07		FB		<1000	<1000	<5	<1000	<1000	<5	<5	<.5	<.5	<2	<10
	02-Oct-07		FB		---	---	<5	---	---	1.50 J	<5	---	---	<2	39
	06-Nov-07		FB		---	---	<5	---	---	<5	<5	---	---	<2	---

Notes:
Injections occurred on May 3 through May 6, 2006, August 11, 2006, September 7, 2006, November 1, 2007, May 7 and 8, 2007 and July 17 and 18, 2007.

ft bgs Feet below ground surface
mg/L Milligrams per liter
µg/L Micrograms per liter
< Symbol indicates not detected at or above laboratory detection limit as noted.
EB Equipment blank
FB Field blank
FD Field duplicate
J Reported Value is estimated.
N Normal
NA Not applicable
Dissolved Samples were field filtered with a 0.45 micron filter.
--- Not analyzed/not sampled

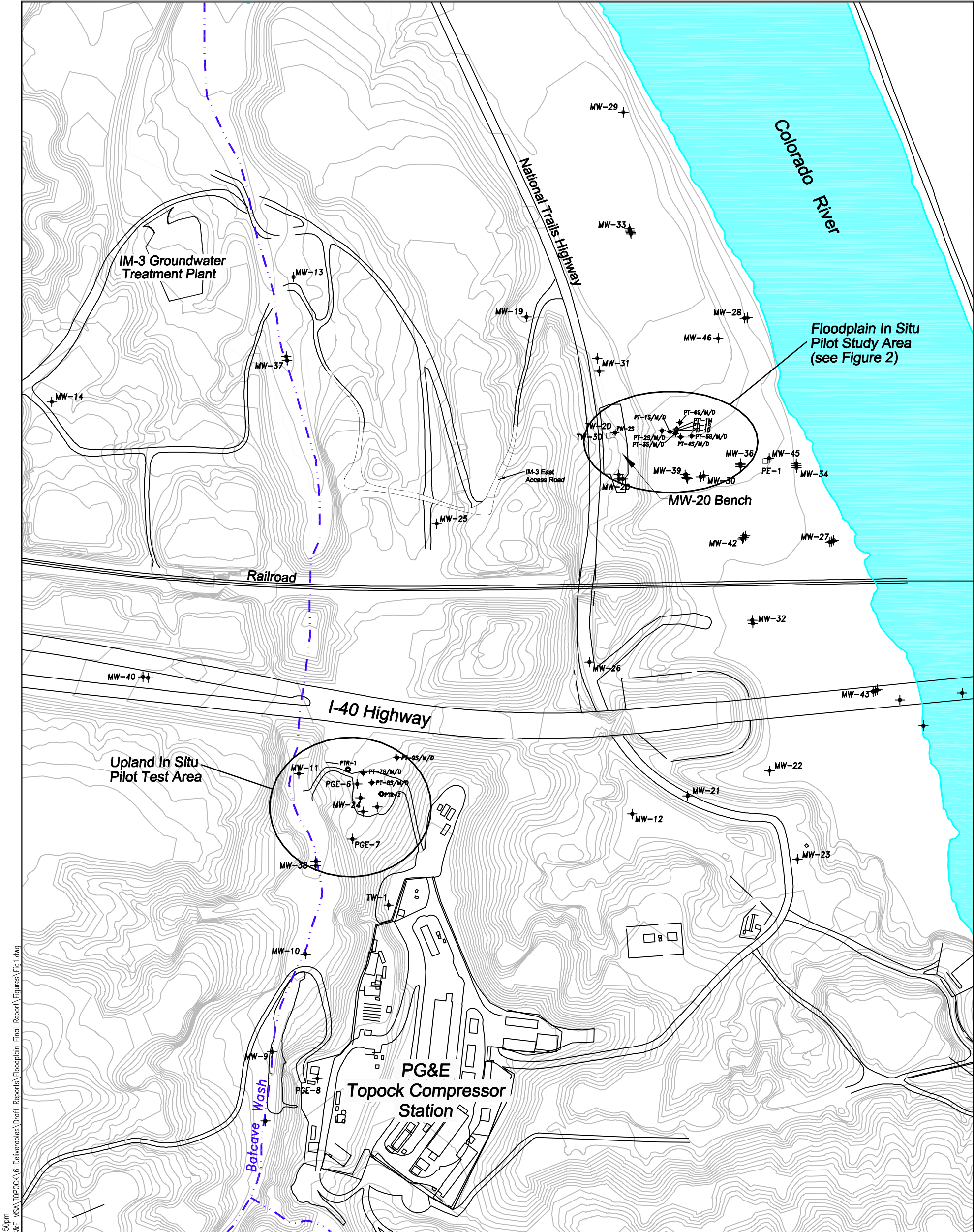
Table 11
Lactate Half-Life Estimates

PG&E Topock
Needles, California
Floodplain Reductive Zone In-Situ Pilot Test Final Completion Report

Well	Half-Life Estimate (day)
First Injection Event	
PT-1M	18
PT-1D	12
PT-3M	22
PT-3D	17
PT-2M	15
PTI-1M	10
PTI-1D	11
Best Estimate	17
Second Injection Event	
PT-1D	31.4
PT-2D	20.9
PT-3D	12.9
PTI-1D	4.8
Best Estimate	8.9
Third Injection Event	
PT-1D	19.5
PT-2D	12.2
PT-3D	5.2
PTI-1D	3.9
Best Estimate	4.6
Fourth Injection Event	
PT-3D	8.1
PTI-1D	5.8
Best Estimate	7
Fifth Injection Event	
PT-1D	32
PT-3D	17
PTI-1D	8
Best Estimate	18
Sixth Injection Event	
PT-1D	13
PT-3D	19
PTI-1D	7
Best Estimate	15

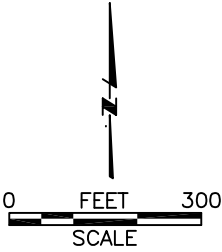
Notes:

Lower reliability due to weaker tracer signal half-life estimates in italics.

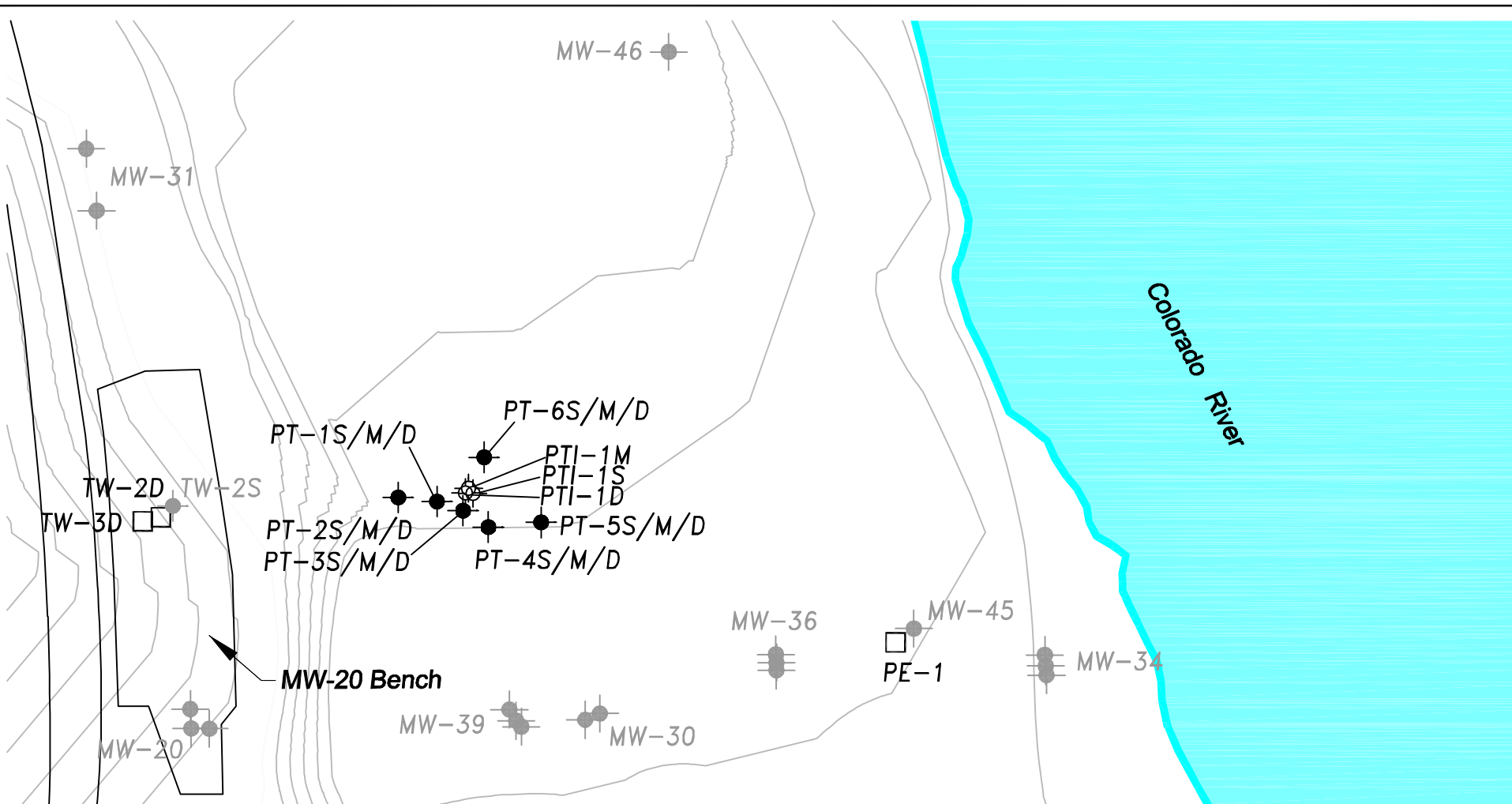


Legend




- Monitoring Well Locations
- Extraction Well Locations
- Injection Well Locations
- Recirculation Well Locations



Project Director	L. KELLOGG	Area Manager	J. PETERS
Task Manager	J. ELY	Technical Review	J. GILLOW
Drawing Date	4 MAR 08	Drawn By	M. CHIU



Legend

-  Monitoring Well Locations
-  Extraction Well Locations
-  Injection Well Locations

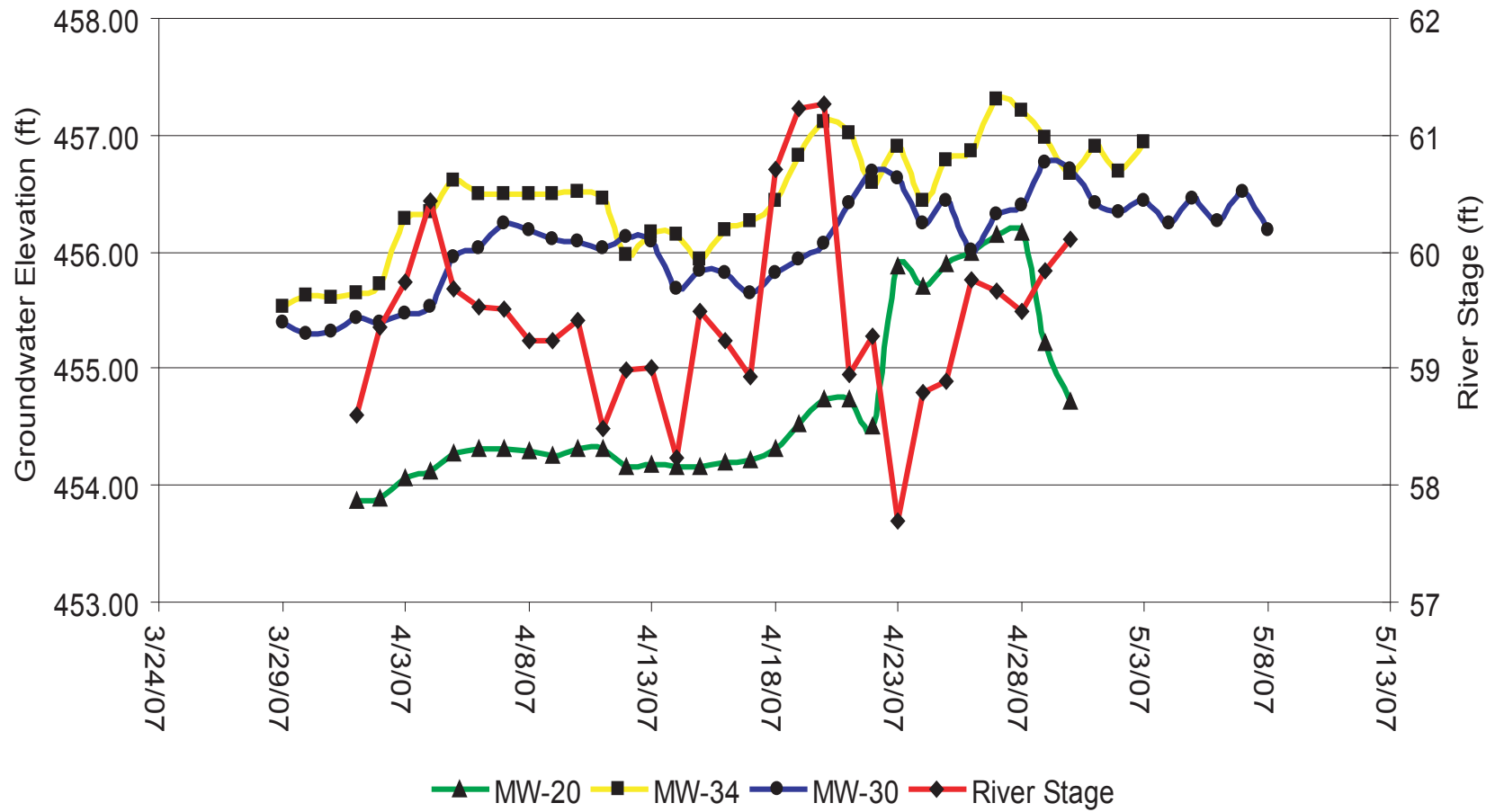
Project Director	Area Manager
L. KELLOGG	J. PETERS
Task Manager	Technical Review
J. ELY	J. GILLOW
Drawing Date	Drawn By
3 MAR 08	M. CHIU




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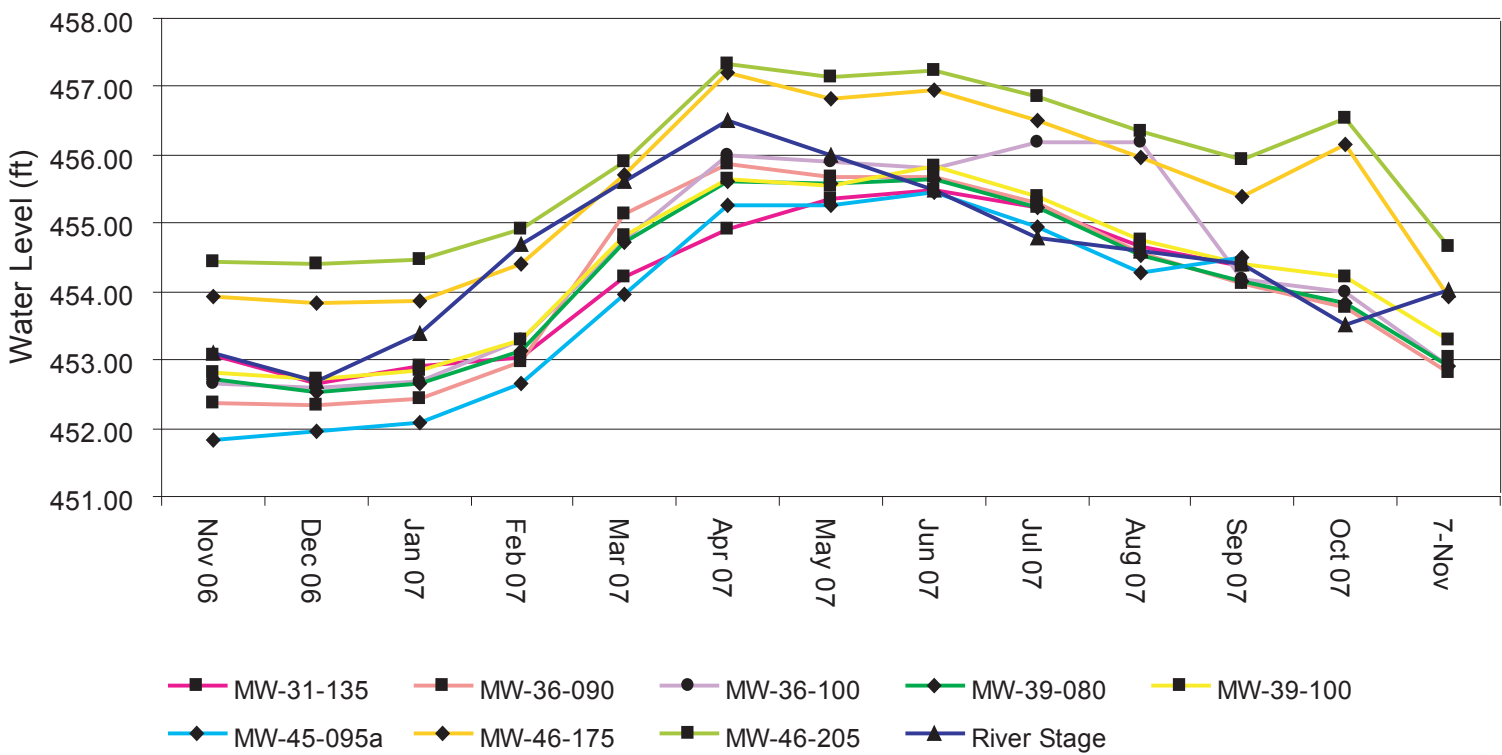
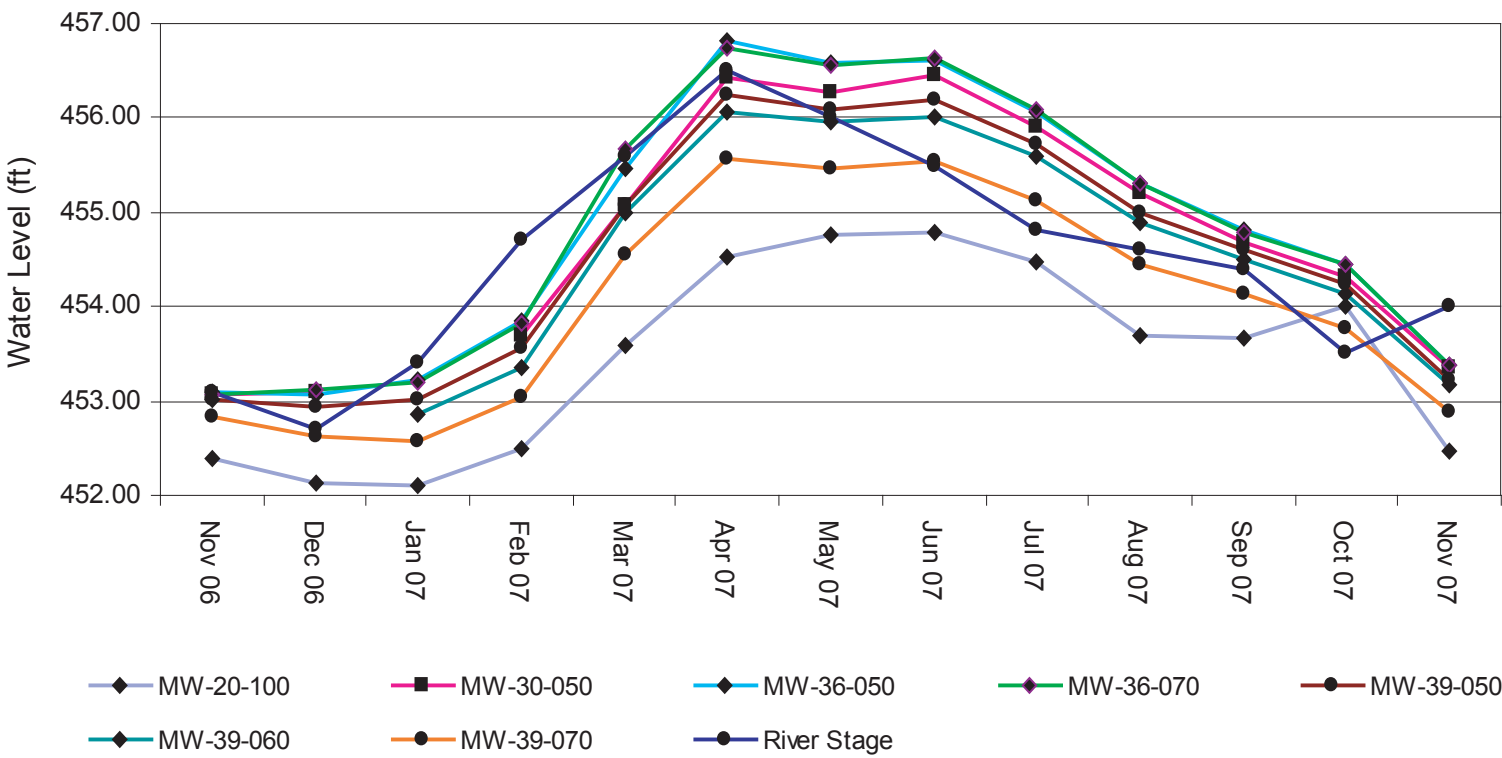
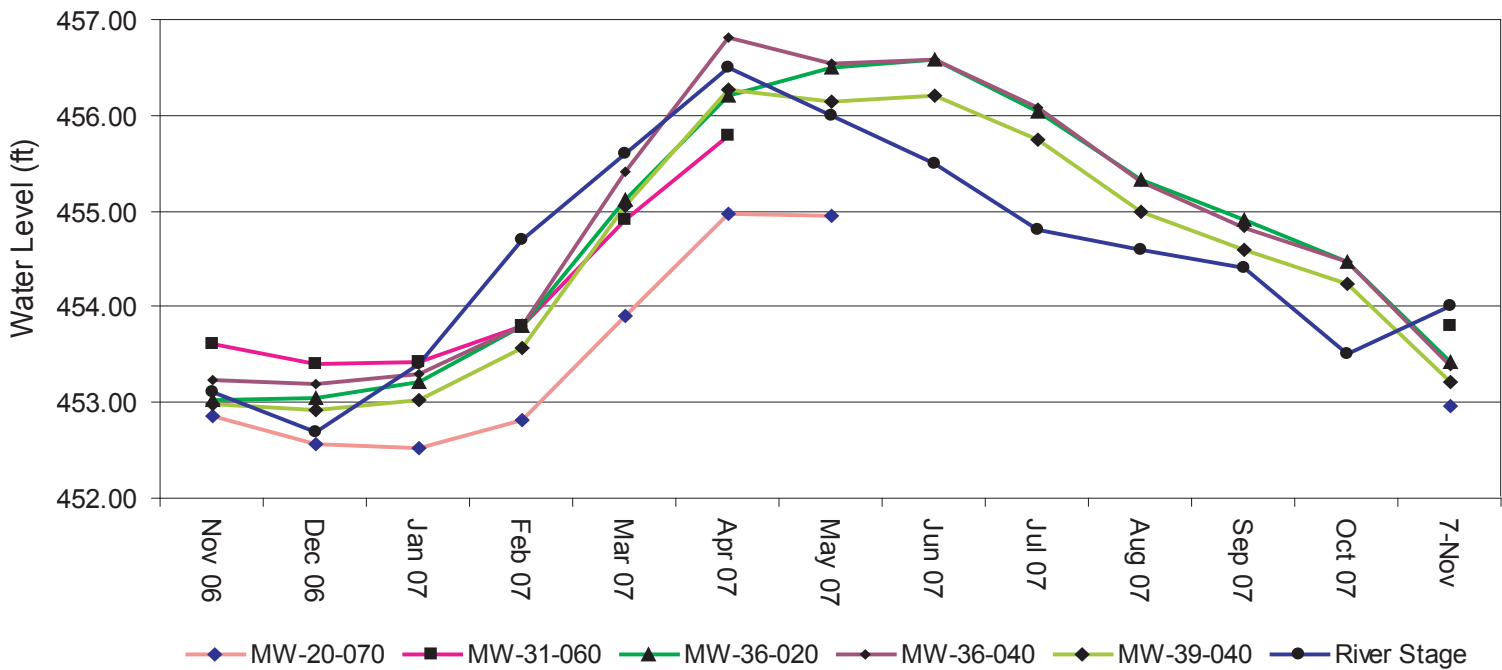
SAMPLE LOCATION MAP FLOODPLAIN REDUCTIVE IN-SITU PILOT TEST FINAL COMPLETION REPORT PG&E TOPOCK FACILITY NEEDLES, CALIFORNIA

Project Number
RC000689.0001
Figure
2

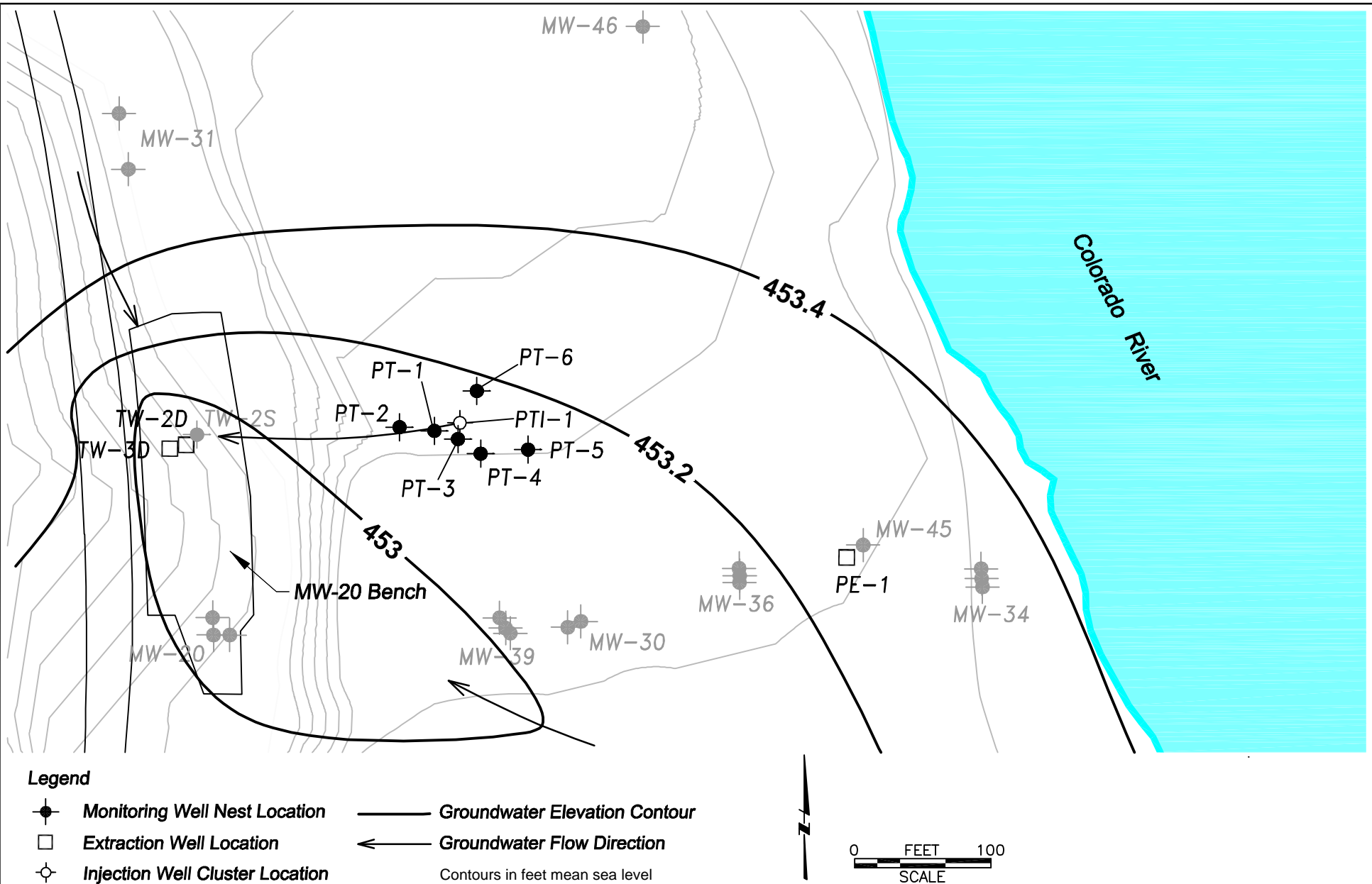


Monthly average data provided by CH₂M Hill.

© 2008 ARCADIS U.S., Inc. Project Director L. KELLOGG Task Manager J. ELY Drawing Date 4 MAR 08	Area Manager J. PETERS Technical Review J. GILLOW Drawn By M. CHIU	 ARCADIS, Inc. 1050 Marina Way South Richmond, CA 94804 Tel: 510-233-3200 Fax: 510-233-3204 www.arcadis-us.com	TIME LAG BETWEEN PEAK RIVER STAGE AND GROUNDWATER ELEVATION FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST FINAL COMPLETION REPORT PG&E TOPOCK FACILITY NEEDLES, CALIFORNIA	Project Number RC000689.0001
				Figure 3



Monthly average data provided by CH2M Hill.

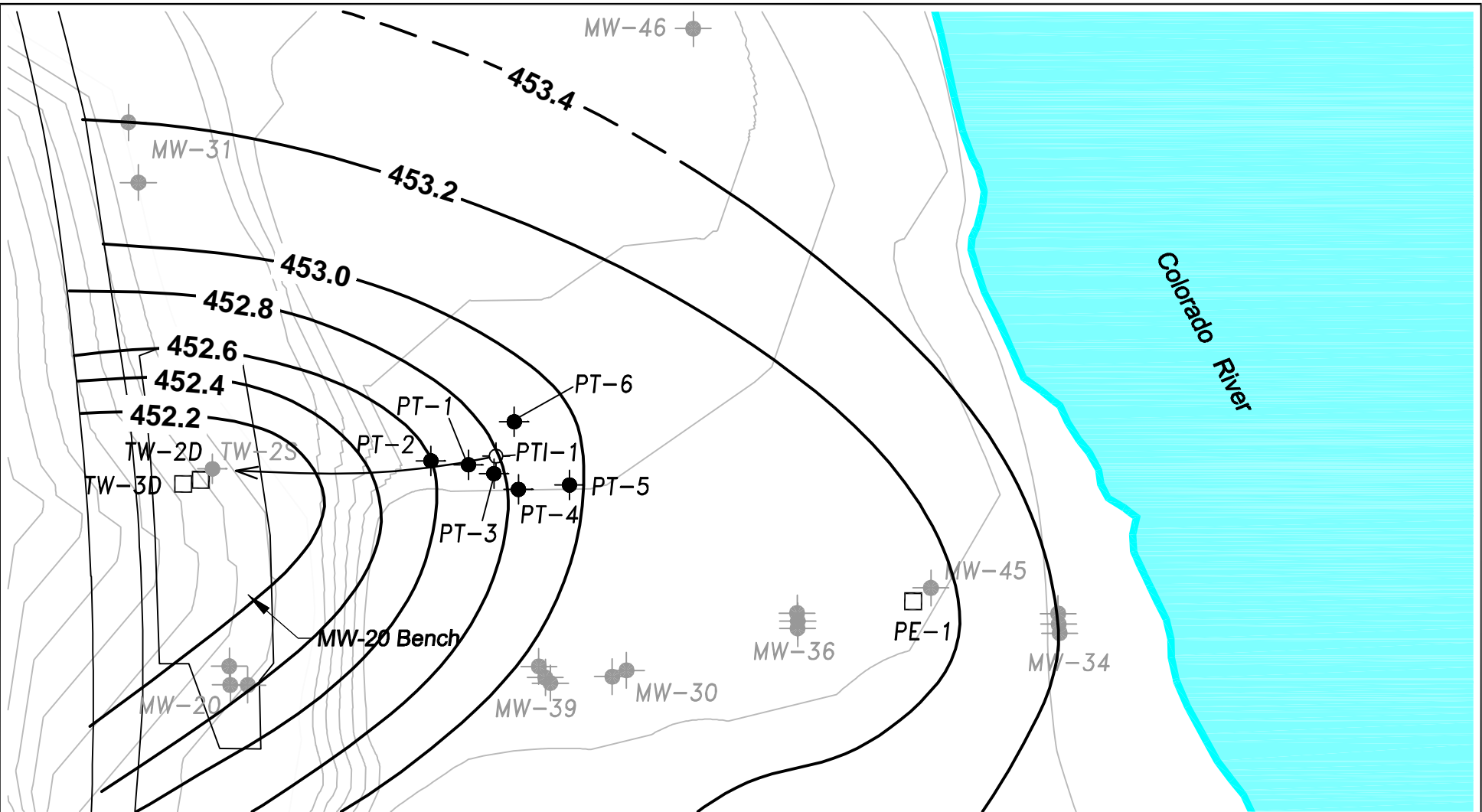


Project Manager	Area Manager
L. KELLOGG	J. PETERS
Task Manager	Technical Review
J. ELY	J. GILLOW
Drawing Date	Drawn By
4 MAR 08	M. CHIU



POTENTIOMETRIC SURFACE MAP FOR SHALLOW ZONE WELLS
FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST
FINAL COMPLETION REPORT
PG&E TOPOCK FACILITY
NEEDLES, CALIFORNIA

Project Number
RC000689.0001
Figure
5



Legend

- Monitoring Well Nest Location
- Extraction Well Location
- Injection Well Cluster Location
- Groundwater Elevation Contour
- Groundwater Flow Direction
- Contours in feet mean sea level



0 FEET 100
SCALE

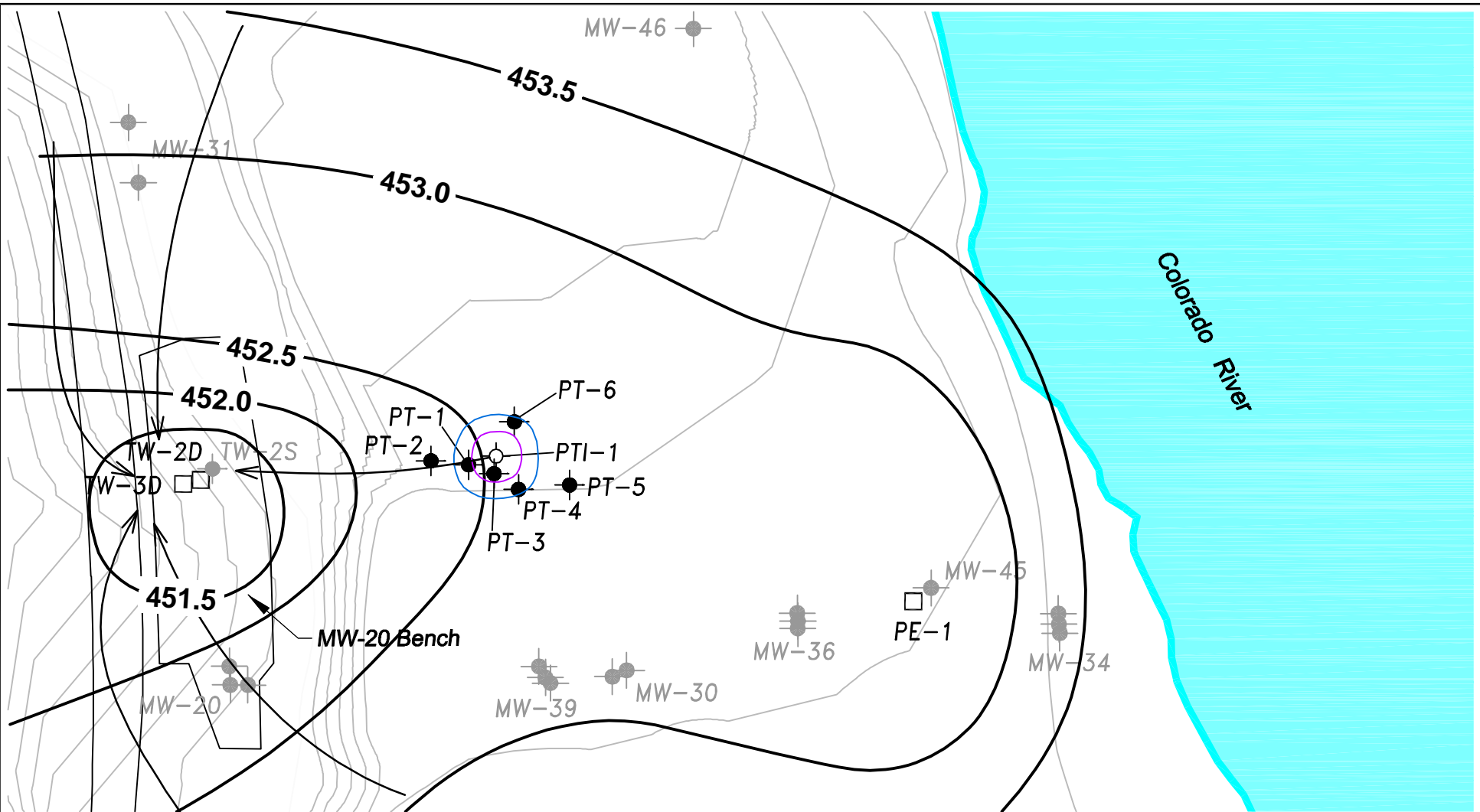
Project Manager	Area Manager
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Drawing Date	Drawn By
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POTENTIOMETRIC SURFACE MAP FOR MIDDLE ZONE WELLS FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST FINAL COMPLETION REPORT PG&E TOPOCK FACILITY NEEDLES, CALIFORNIA

Project Number
RC000689.0001
Figure
6



Legend

- Monitoring Well Nest Location
- Extraction Well Location
- Injection Well Cluster Location

- Groundwater Elevation Contour
- Groundwater Flow Direction
- Contours in feet mean sea level

- Inferred Radius of Injection Influence Due to Injection #1,2,3,4
- Inferred Radius of Injection Influence Due to Injection #5 & 6



0 FEET 100
SCALE

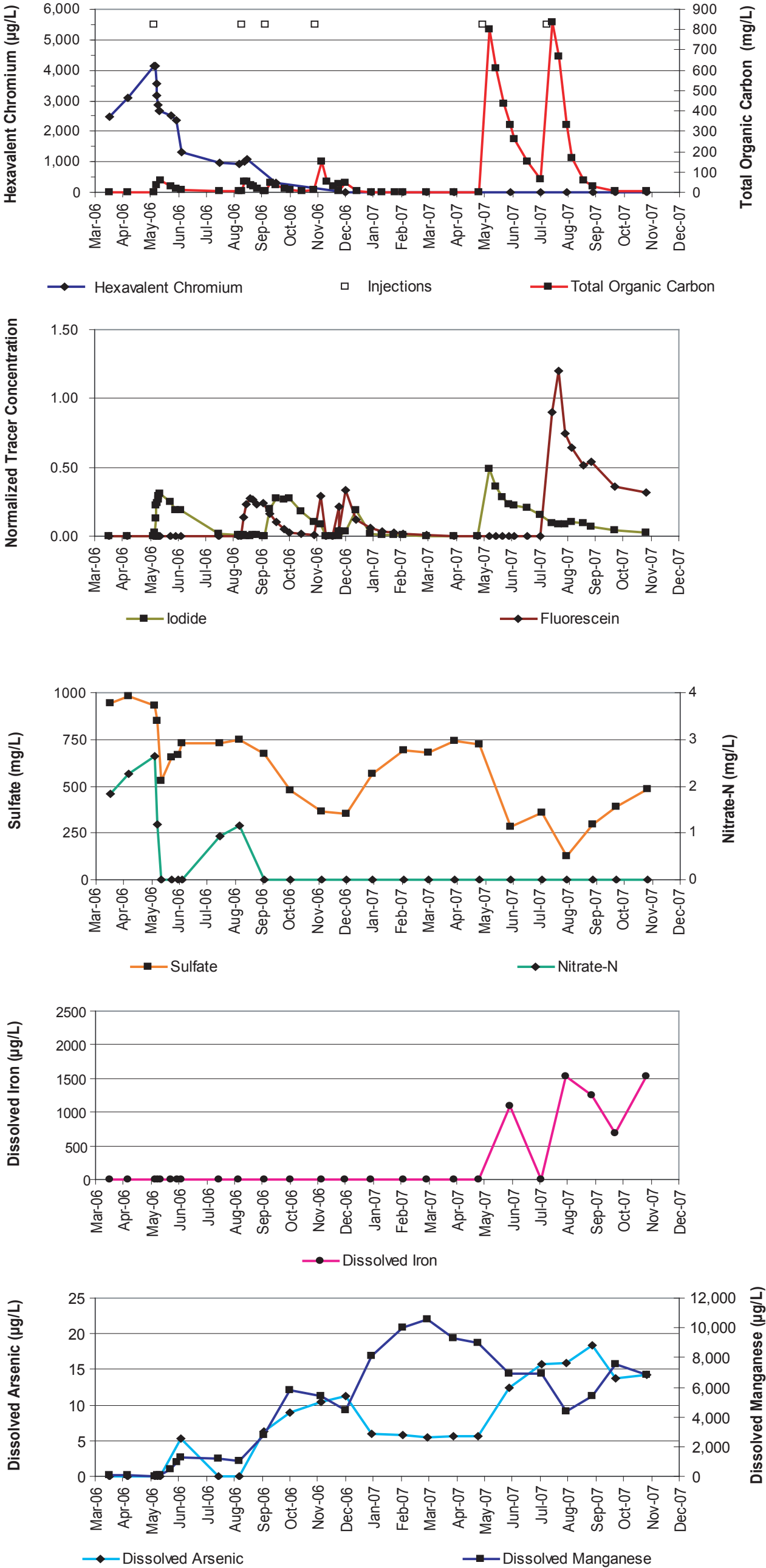
Project Manager	Area Manager
L. KELLOGG	J. PETERS
Task Manager	Technical Review
J. ELY	J. GILLOW
Drawing Date	Drawn By
4 MAR 08	M. CHIU



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POTENTIOMETRIC SURFACE MAP FOR DEEP ZONE WELLS FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST FINAL COMPLETION REPORT PG&E TOPOCK FACILITY NEEDLES, CALIFORNIA

Project Number
RC000689.0001
Figure
7



Notes: mg/L Milligrams per liter
µg/L Micrograms per liter
Nitrate-N Nitrate as Nitrogen
Normalized Tracer Concentration= Concentration/(Concentration in Injection Solution)
TOC Total Organic Carbon

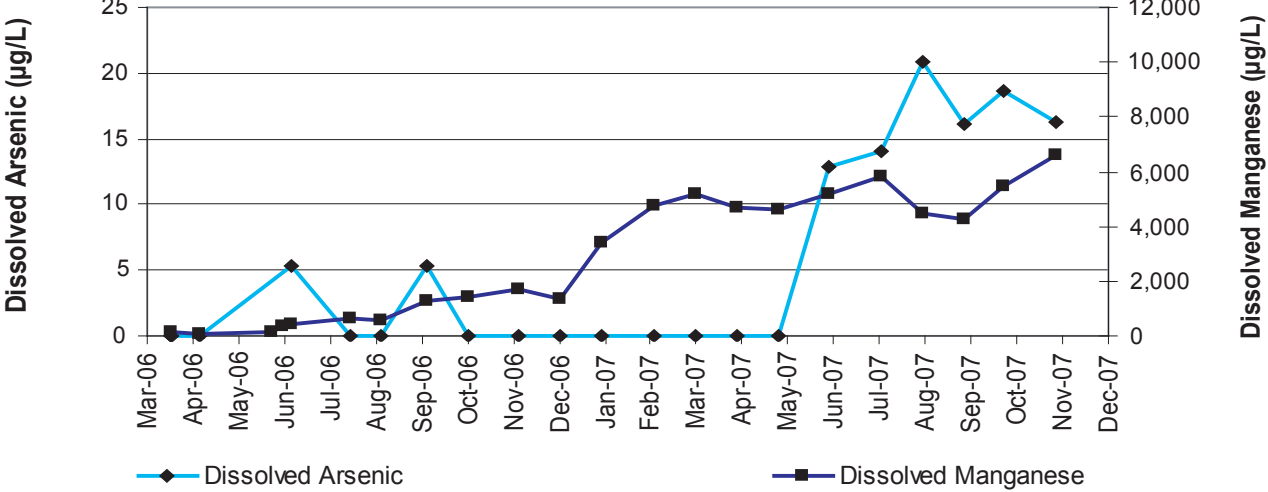
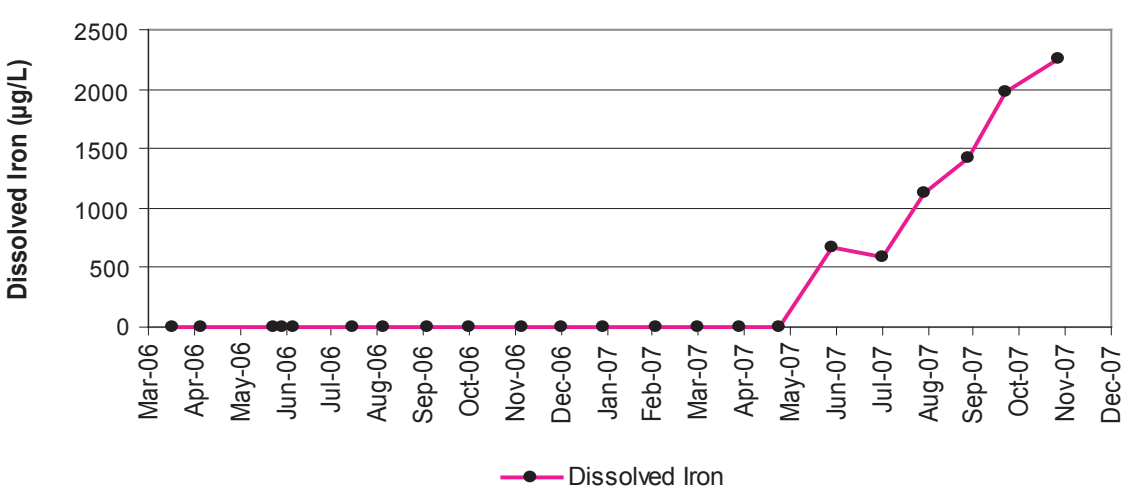
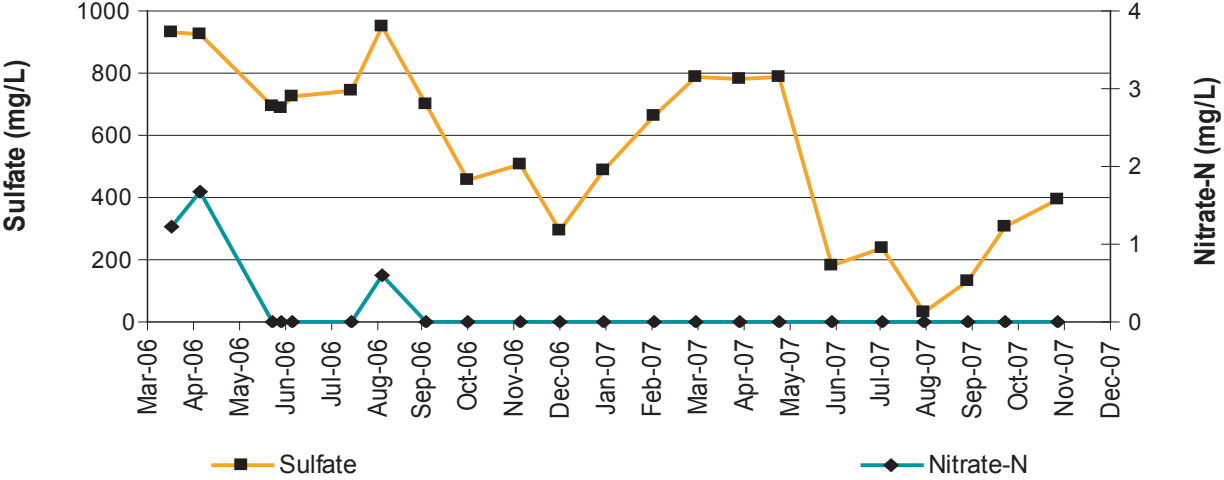
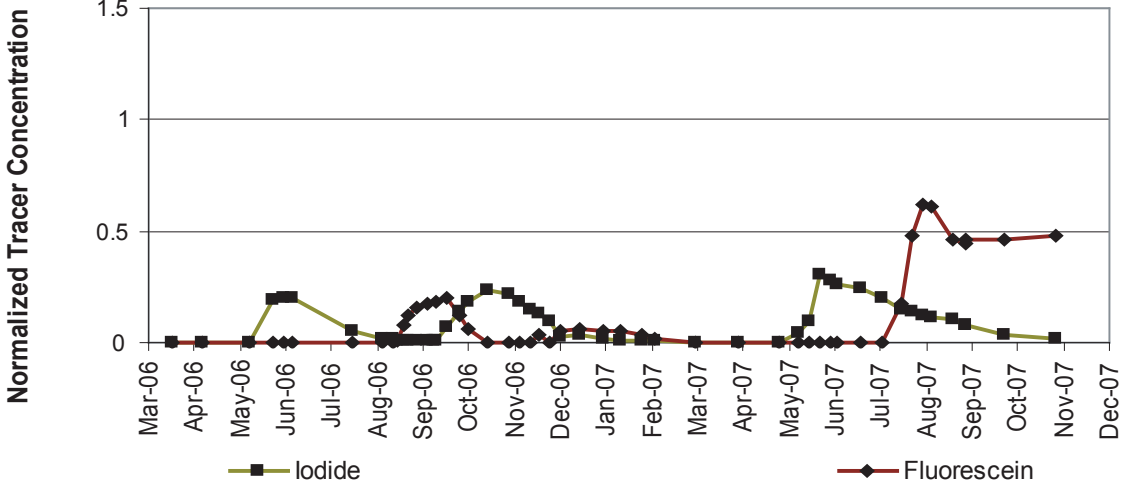
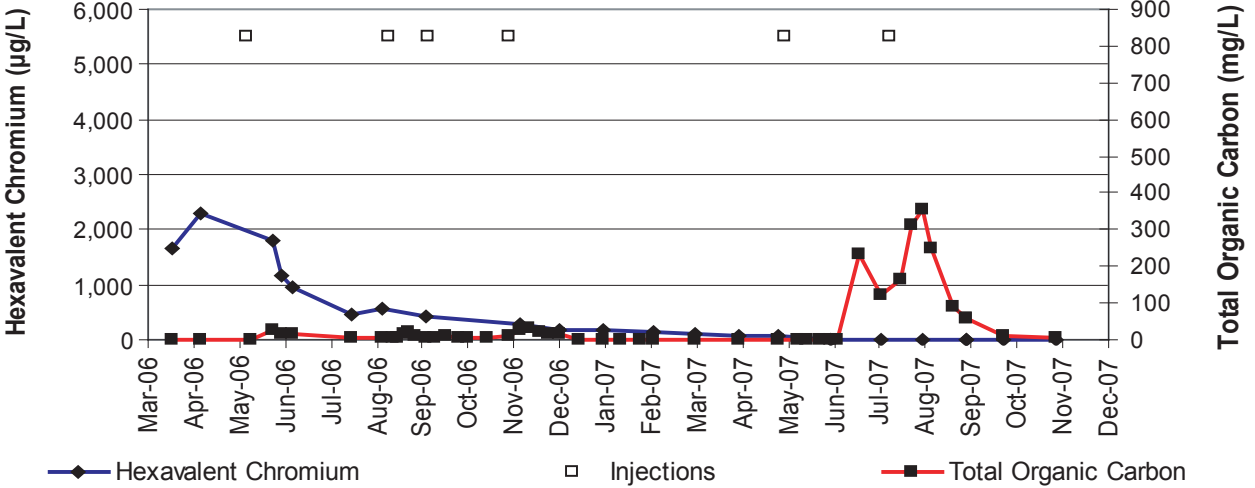
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PERFORMANCE MONITORING DATA FOR PT-1D
FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST
FINAL COMPLETION REPORT
PG&E TOPOCK FACILITY
NEEDLES, CALIFORNIA

Project Number RC000689.0001
Figure 8



Notes: mg/L Milligrams per liter
µg/L Micrograms per liter
Nitrate-N Nitrate as Nitrogen
Normalized Tracer Concentration= Concentration/(Concentration in Injection Solution)
TOC Total Organic Carbon

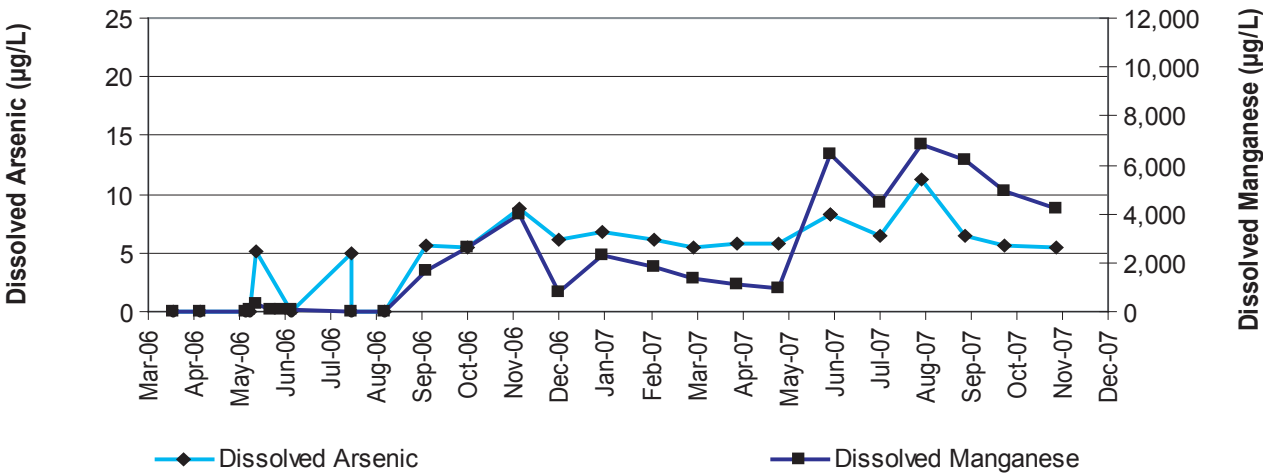
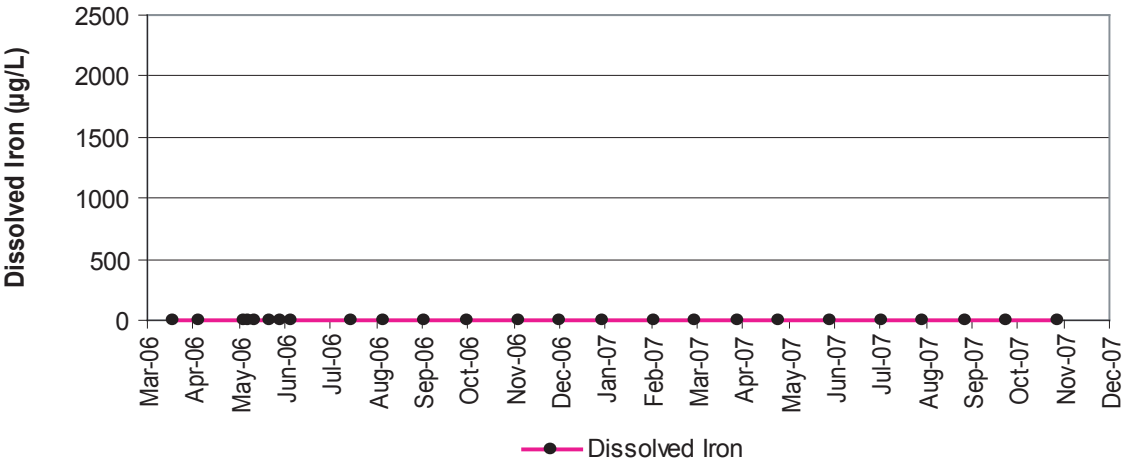
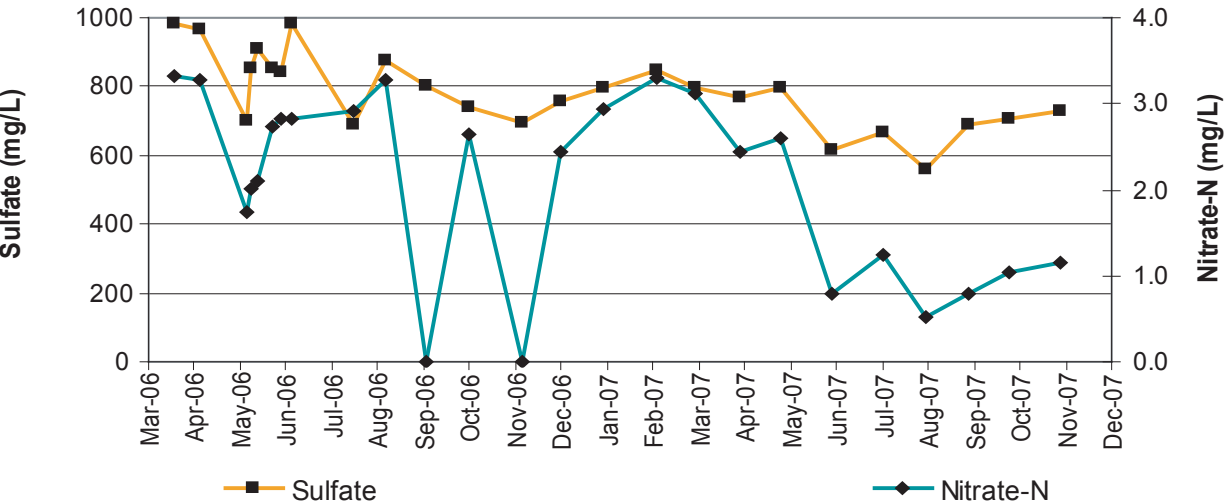
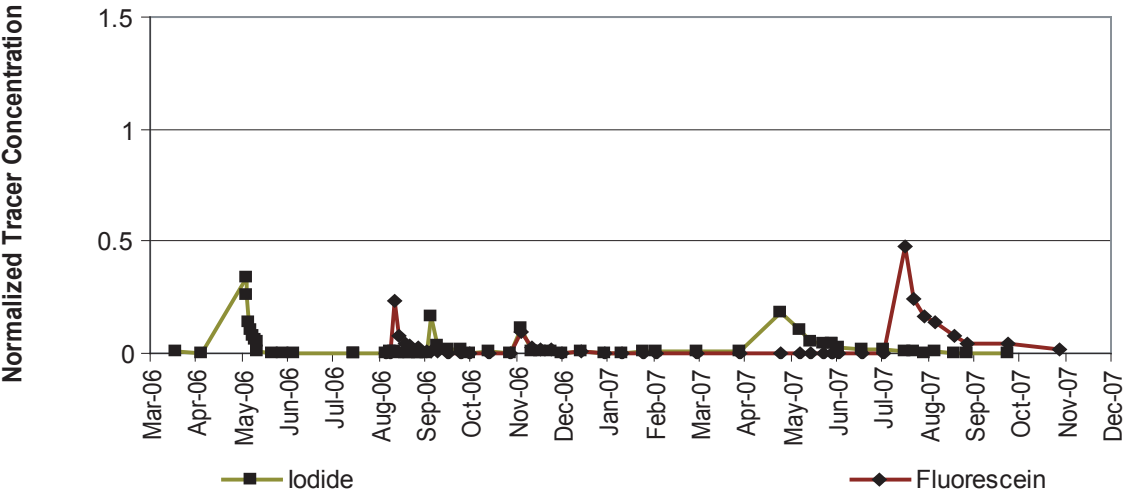
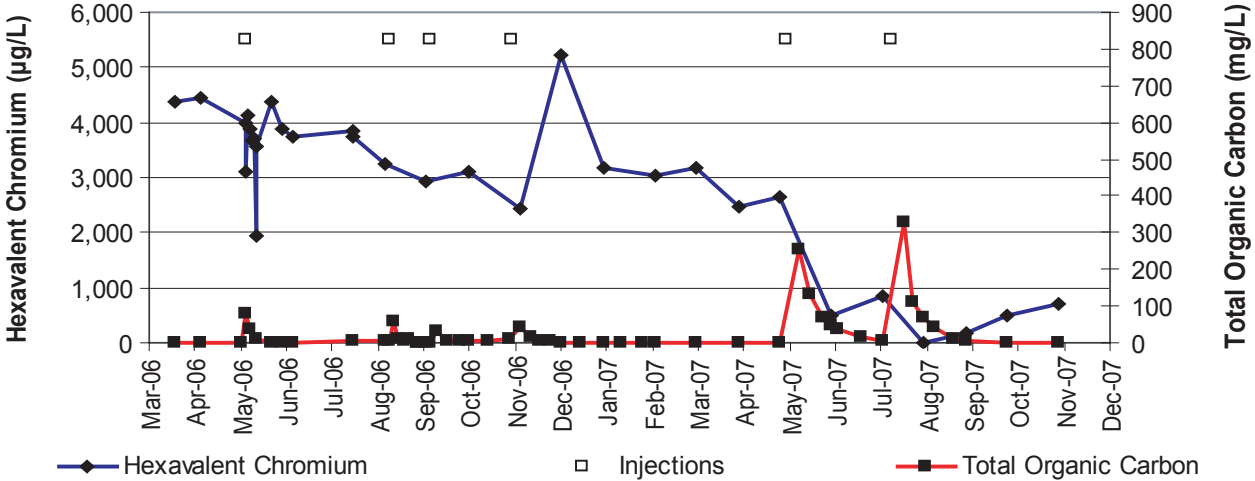
Project Manager	Area Manager
A. JONES	J. PETERS
Task Manager	Technical Review
J. ELY	J. GILLOW
Drawing Date	Drawn By
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PERFORMANCE MONITORING DATA FOR PT-2D
FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST
FINAL COMPLETION REPORT
PG&E TOPOCK FACILITY
NEEDLES, CALIFORNIA

Project Number
RC000689.0001



Notes:

mg/L Milligrams per liter
µg/L Micrograms per liter
Nitrate-N Nitrate as Nitrogen
Normalized Tracer Concentration= Concentration/(Concentration in Injection Solution)
TOC Total Organic Carbon

Project Manager	Area Manager
A. JONES	J. PETERS
Task Manager	Technical Review
J. ELY	J. GILLOW
Drawing Date	Drawn By
13 FEB 08	M. CHIU



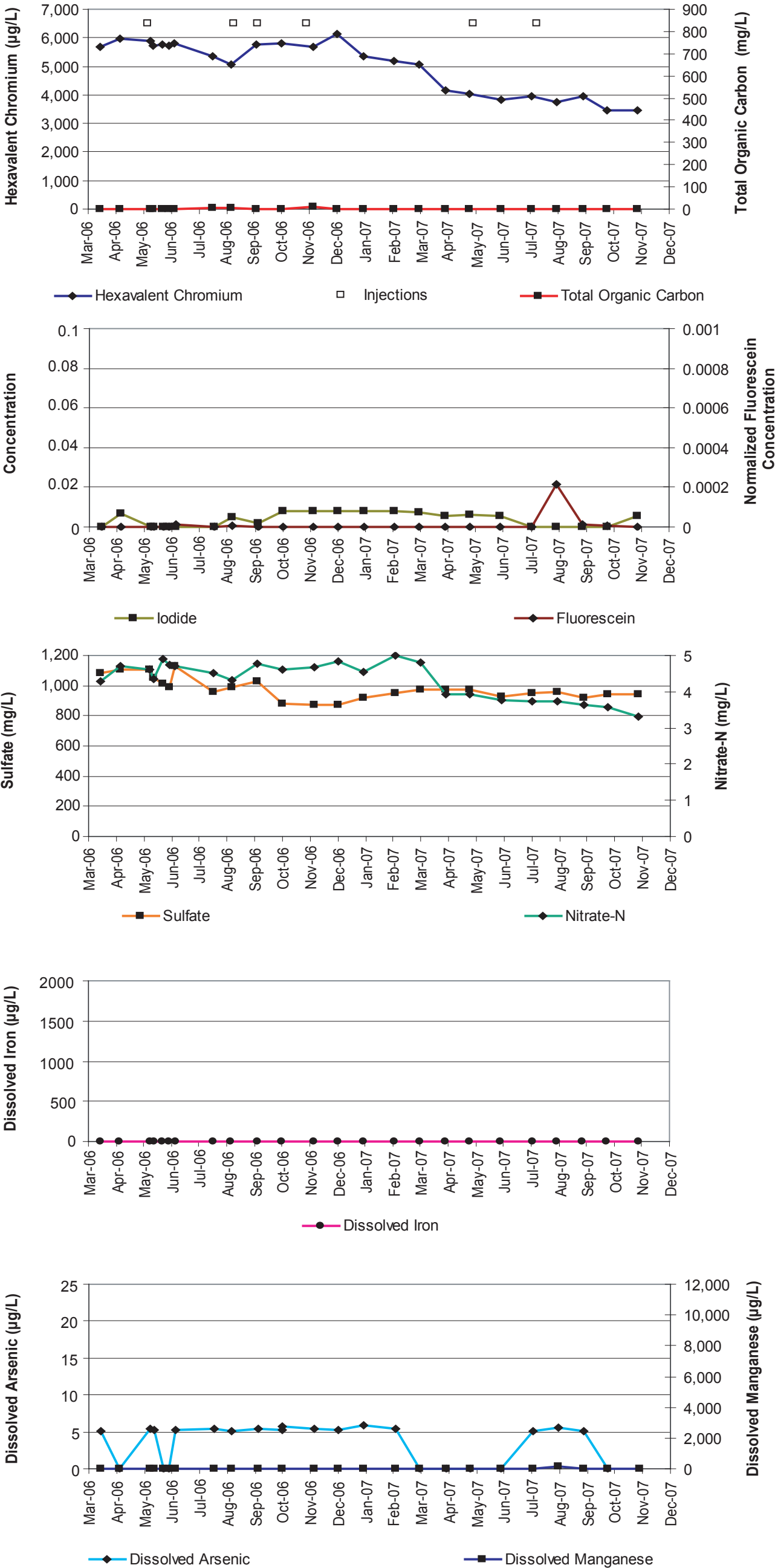
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PERFORMANCE MONITORING DATA FOR PT-3D
FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST
FINAL COMPLETION REPORT
PG&E TOPOCK FACILITY
NEEDLES, CALIFORNIA

Project Number
RC000689.0001

Figure
10

Notes: mg/L Milligrams per liter
µg/L Micrograms per liter
Nitrate-N Nitrate as Nitrogen
Normalized Tracer Concentration= Concentration/(Concentration in Injection Solution)
TOC Total Organic Carbon



Project Manager	Area Manager
A. JONES	J. PETERS
Task Manager	Technical Review
J. ELY	J. GILLOW
Drawing Date	Drawn By
13 FEB 08	M. CHIU

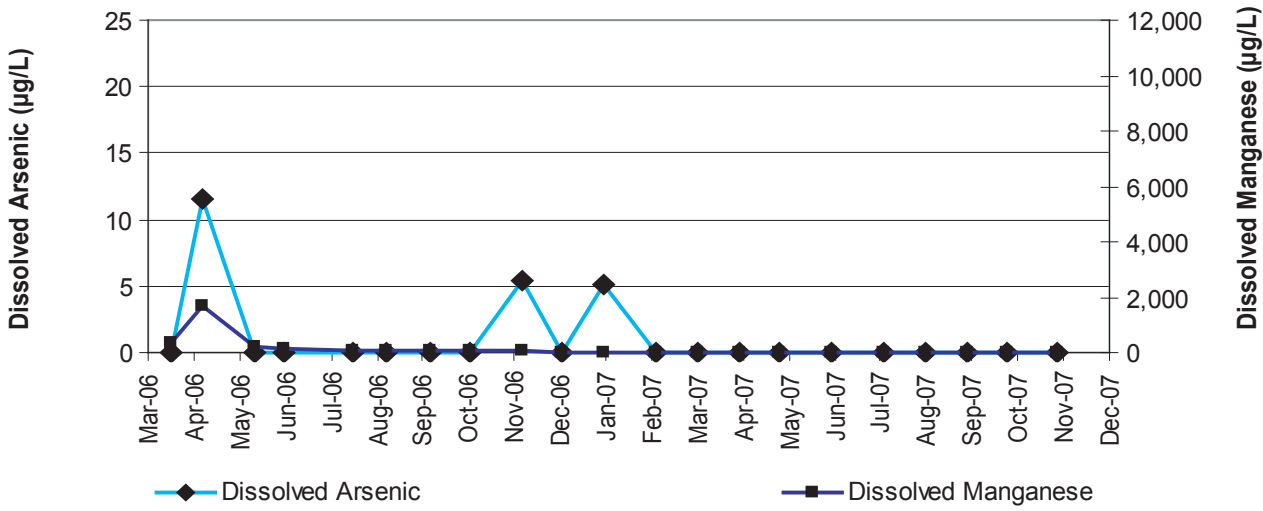
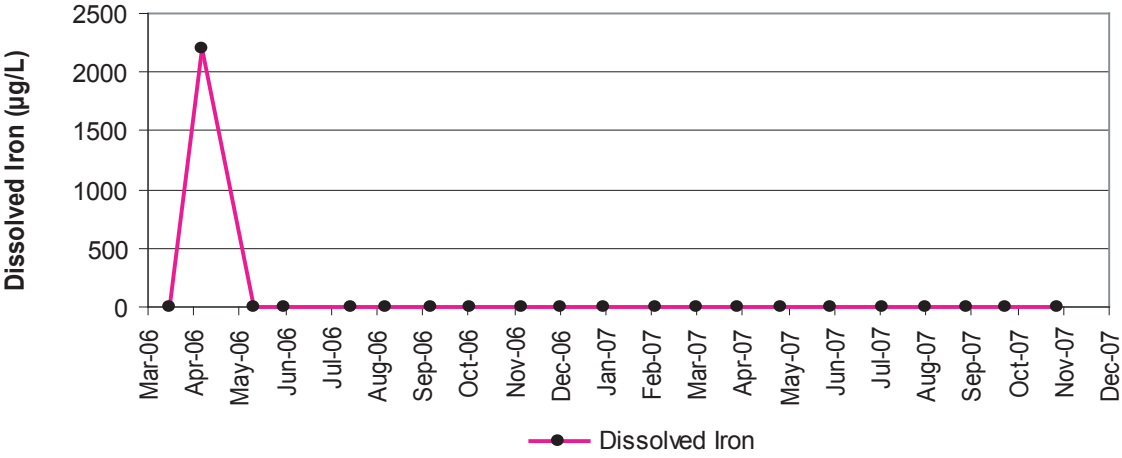
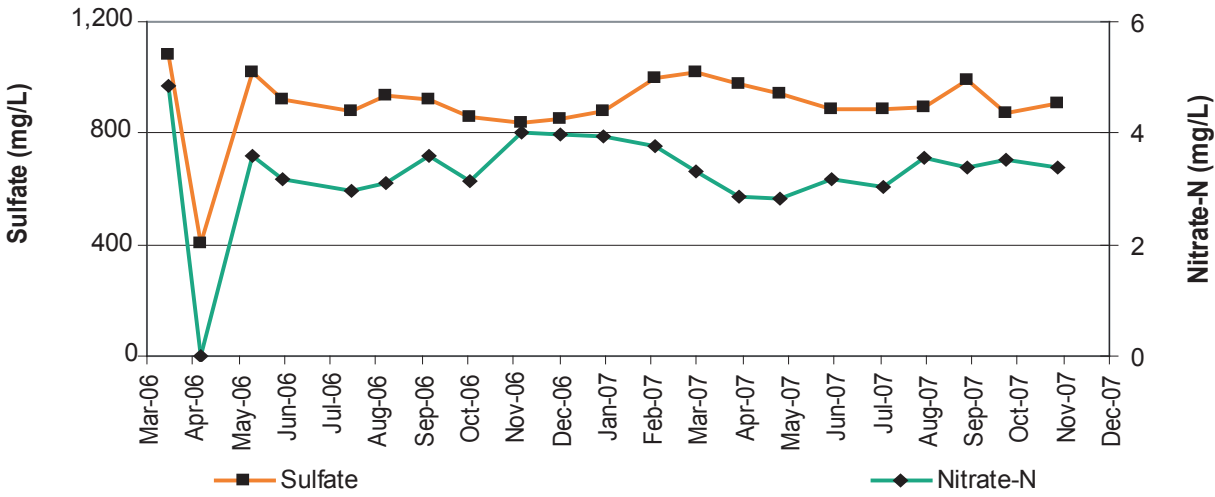
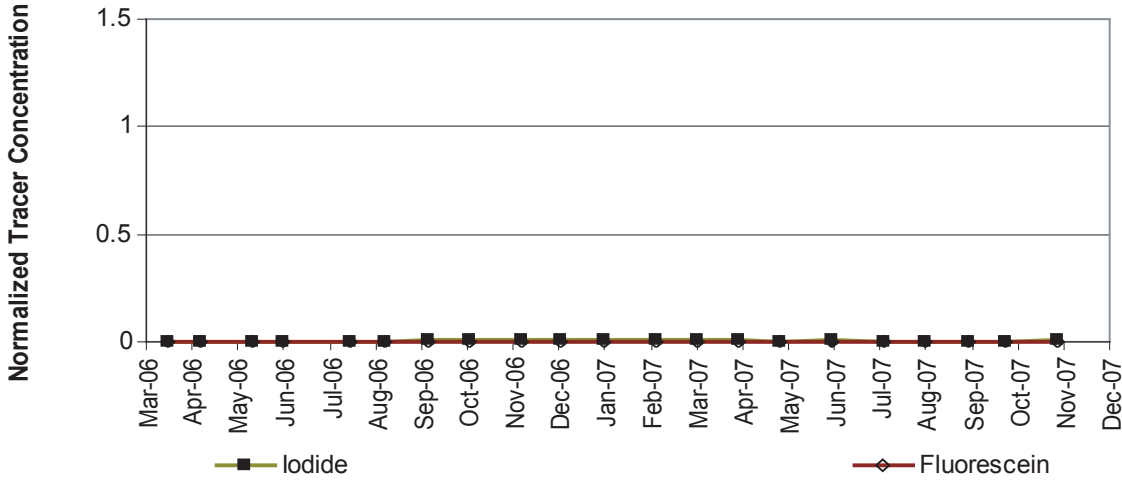
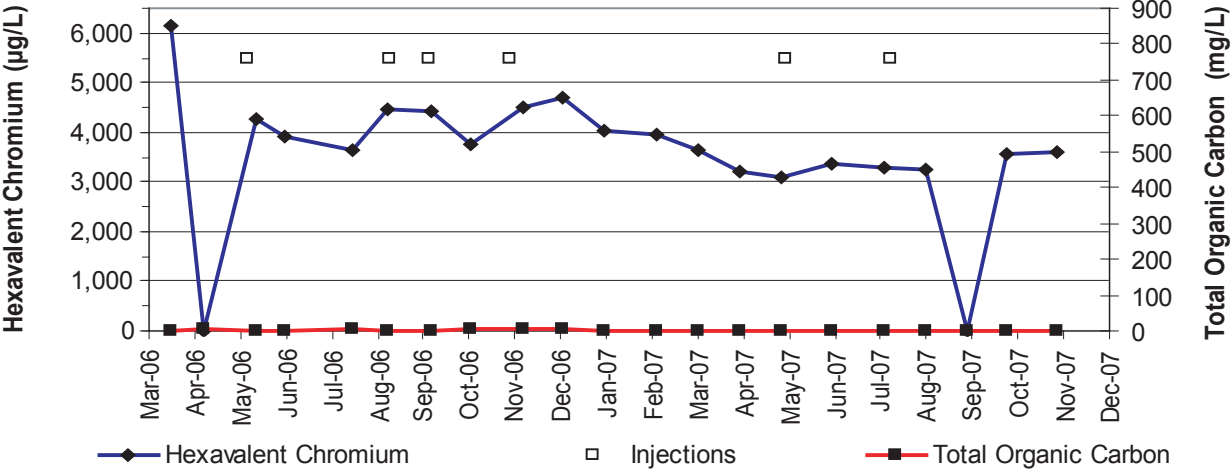


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PERFORMANCE MONITORING DATA FOR PT-4D
FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST
FINAL COMPLETION REPORT
PG&E TOPOCK FACILITY
NEEDLES, CALIFORNIA

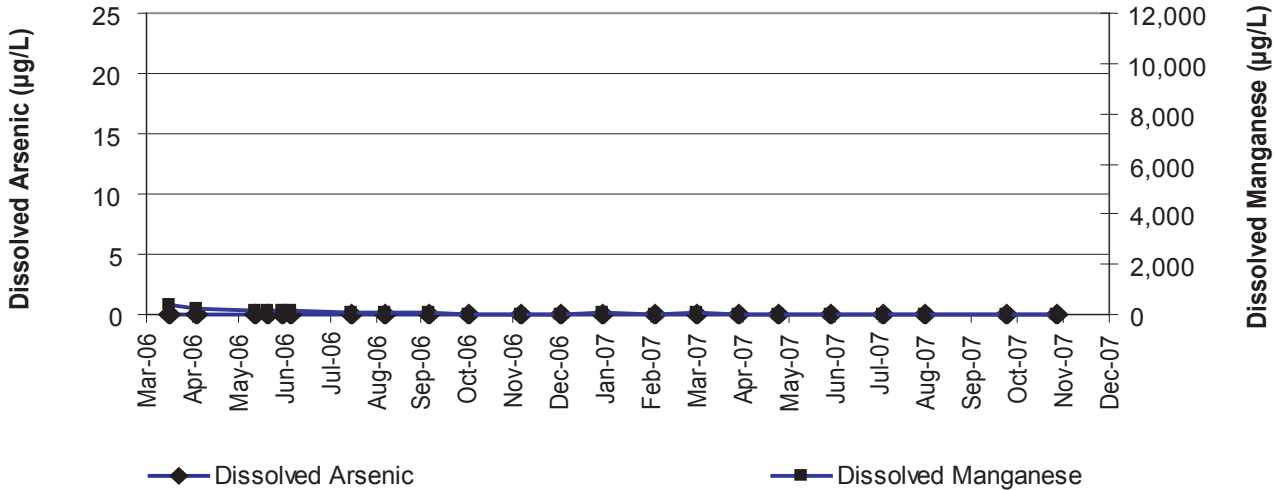
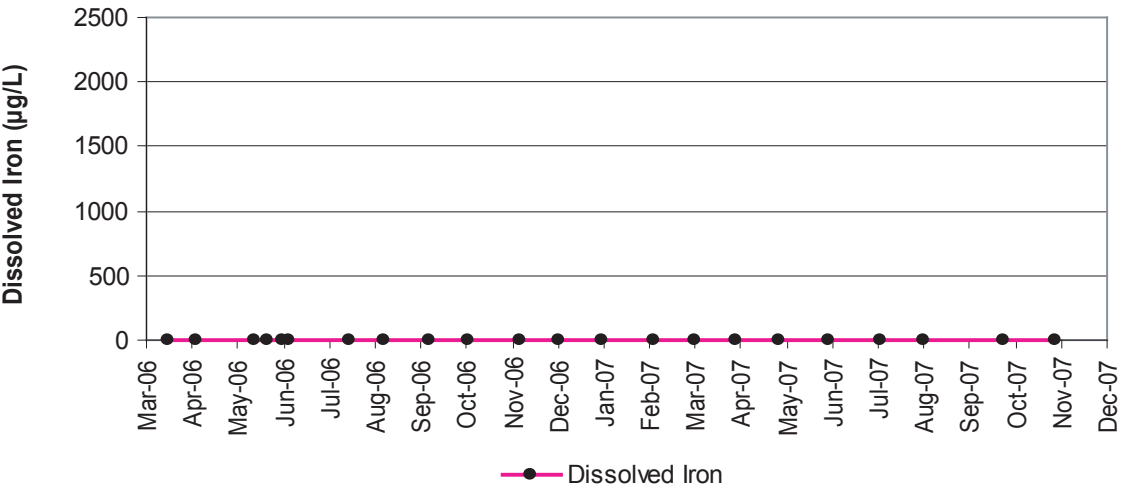
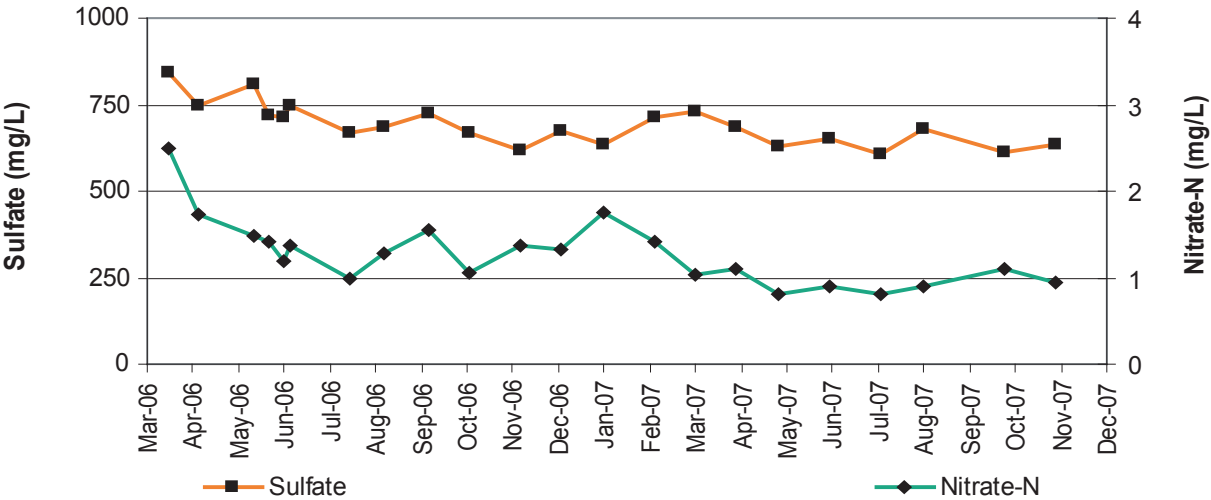
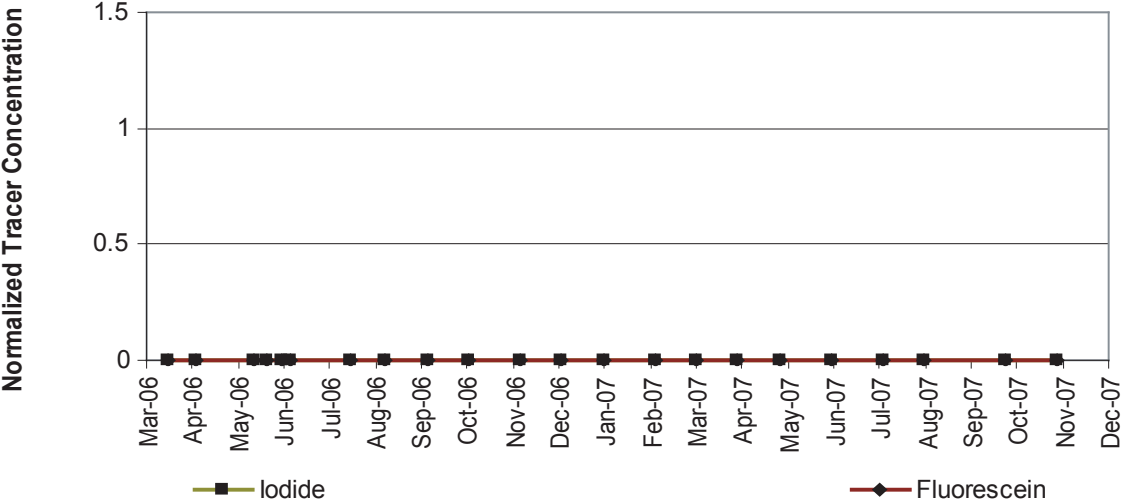
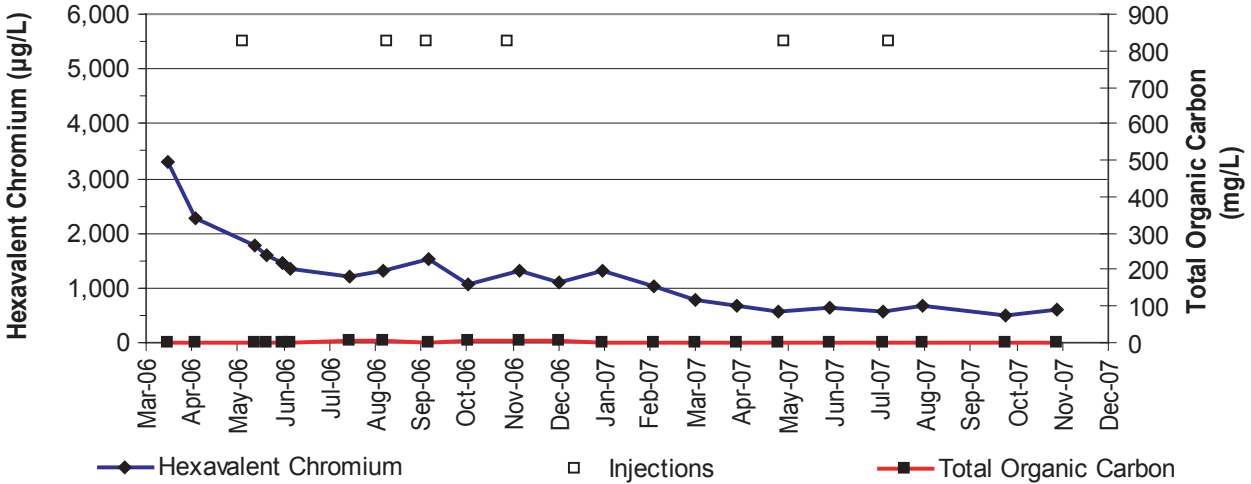
Project Number
RC000689.0001

Figure
11



Notes: mg/L Milligrams per liter
µg/L Micrograms per liter
Nitrate-N Nitrate as Nitrogen
Normalized Tracer Concentration= Concentration/(Concentration in Injection Solution)
TOC Total Organic Carbon

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	Task Manager J. ELY	Technical Review J. GILLOW			Figure
	Drawing Date 13 FEB 08	Drawn By M. CHIU			12



Notes: mg/L Milligrams per liter
µg/L Micrograms per liter
Nitrate-N Nitrate as Nitrogen
Normalized Tracer Concentration= Concentration/(Concentration in Injection Solution)
TOC Total Organic Carbon

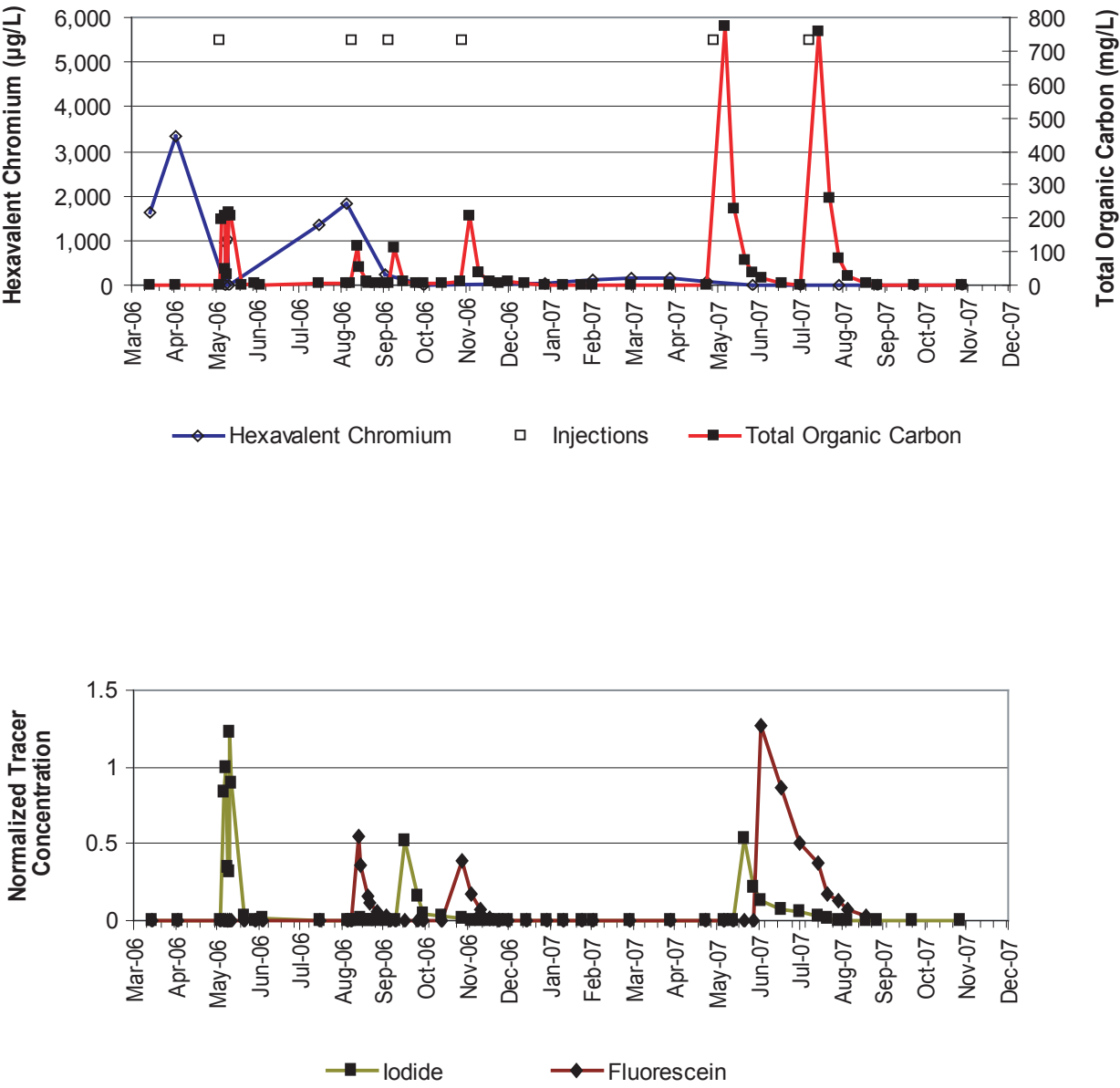
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	Task Manager J. ELY	Technical Review J. GILLOW
	Drawing Date 13 FEB 08	Drawn By M. CHIU



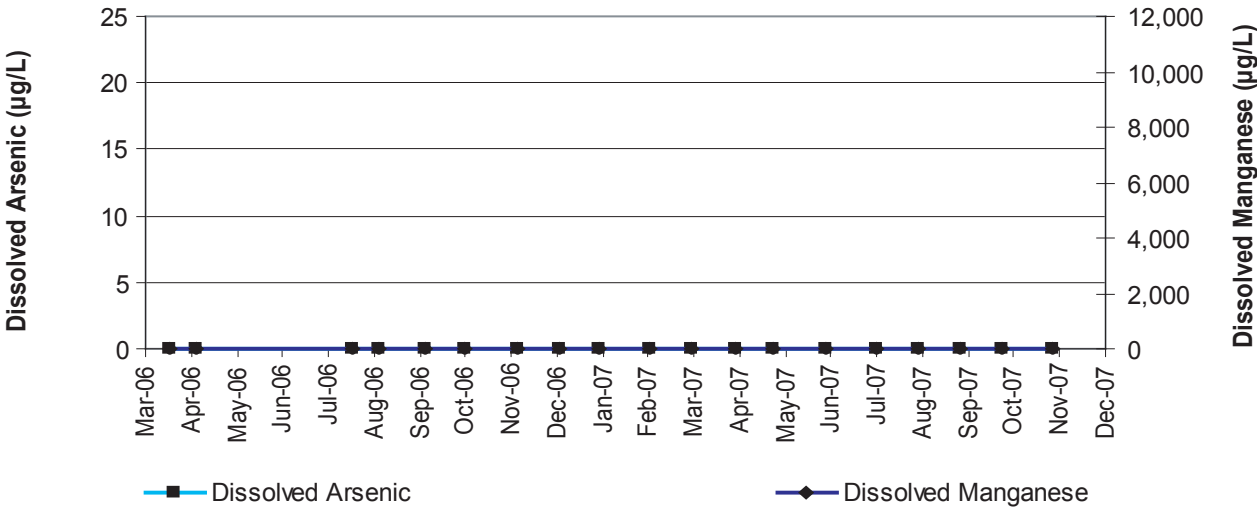
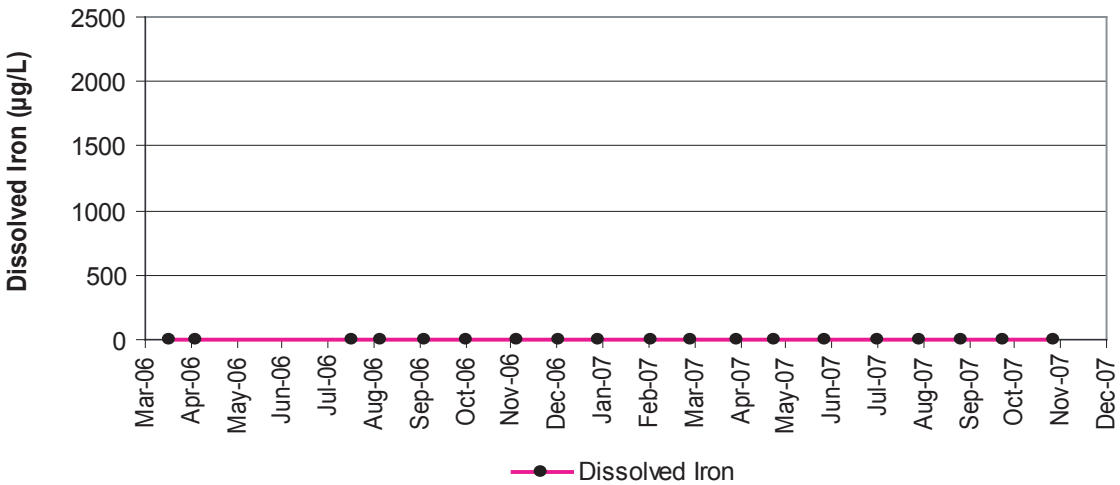
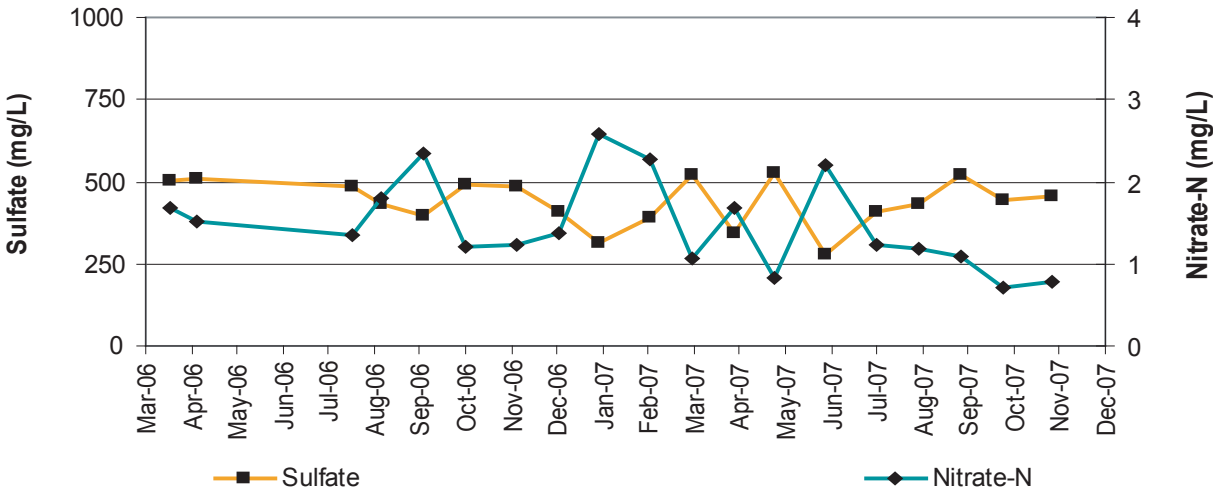
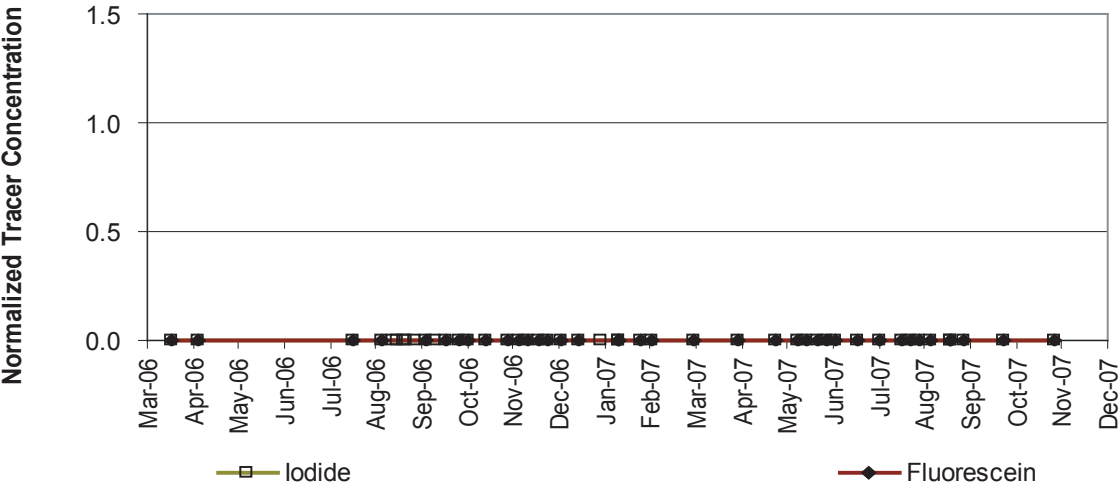
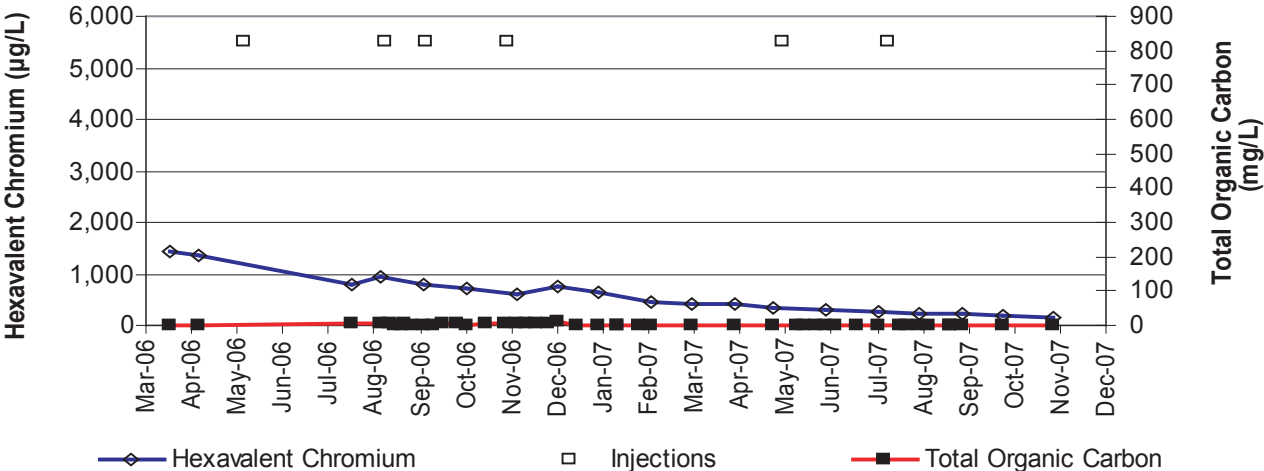
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PERFORMANCE MONITORING DATA FOR PT-6D
FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST
FINAL COMPLETION REPORT
PG&E TOPOCK FACILITY
NEEDLES, CALIFORNIA

Project Number RC000689.0001
Figure 13



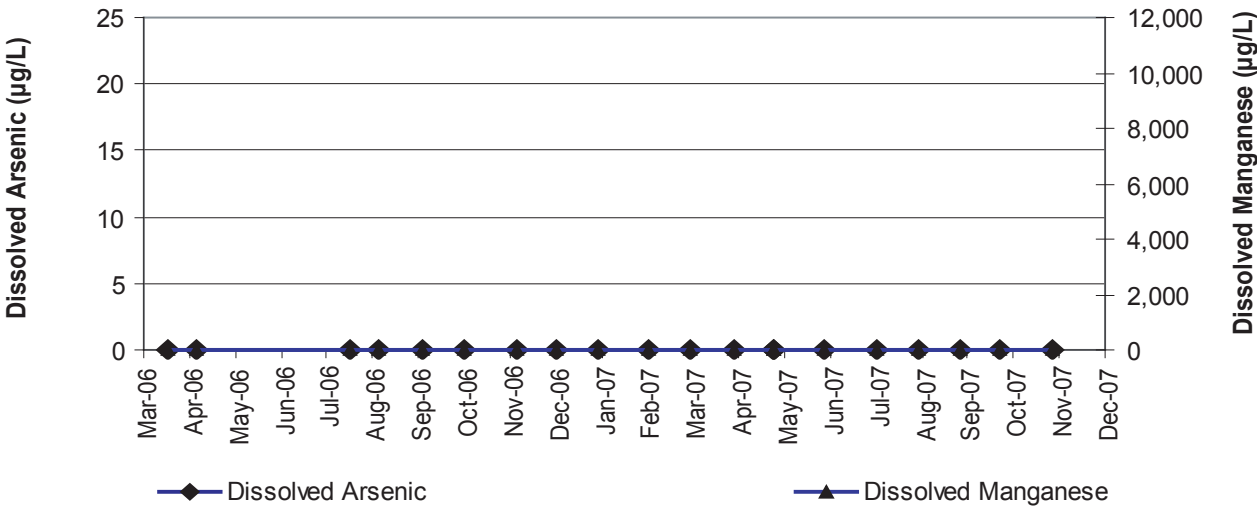
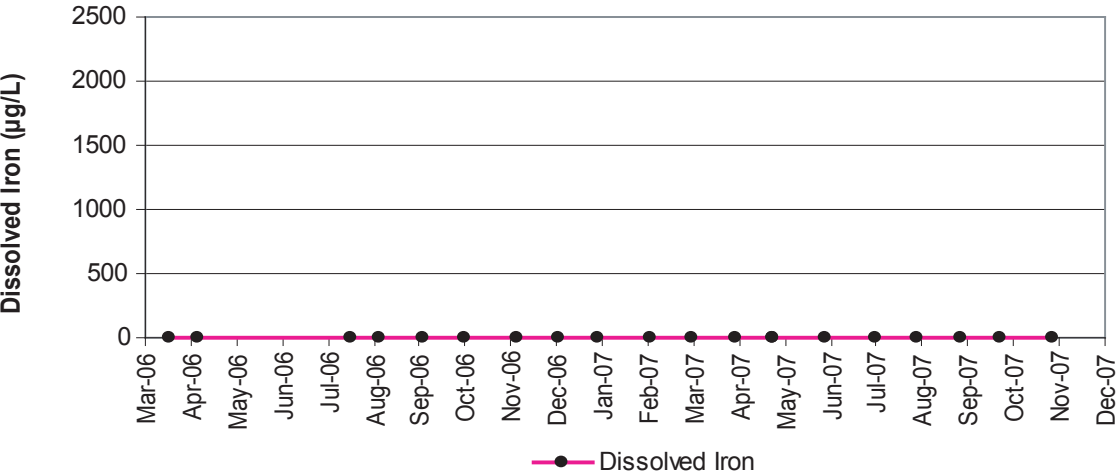
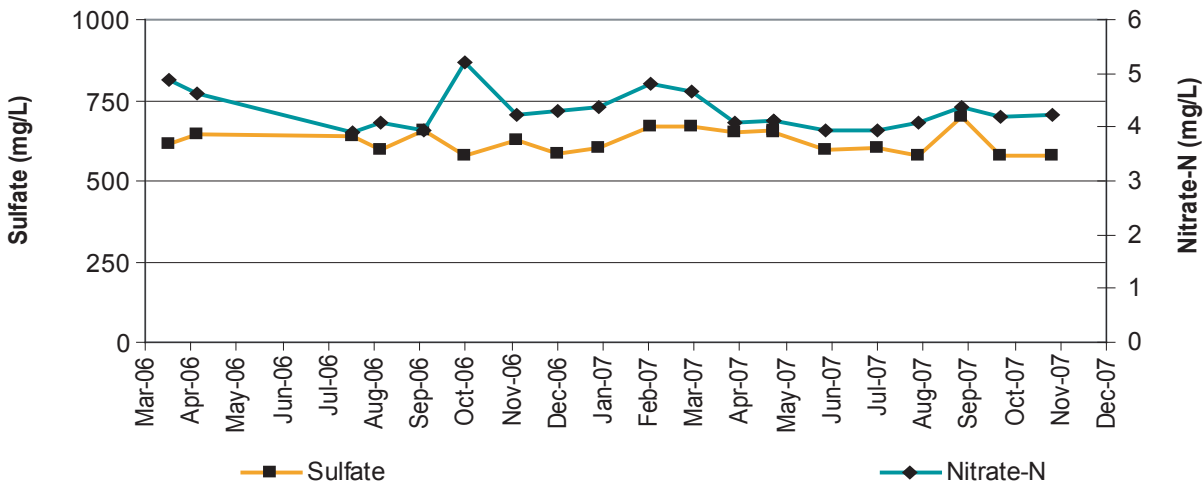
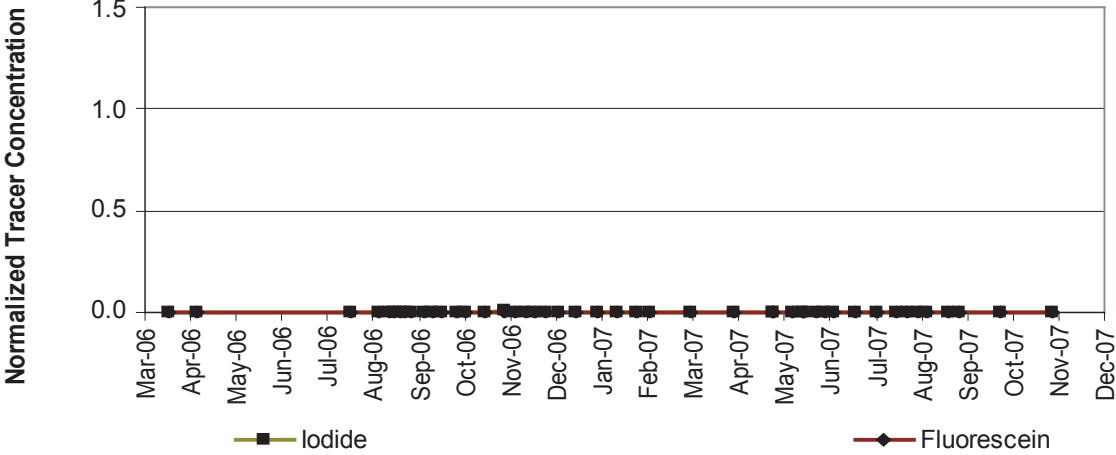
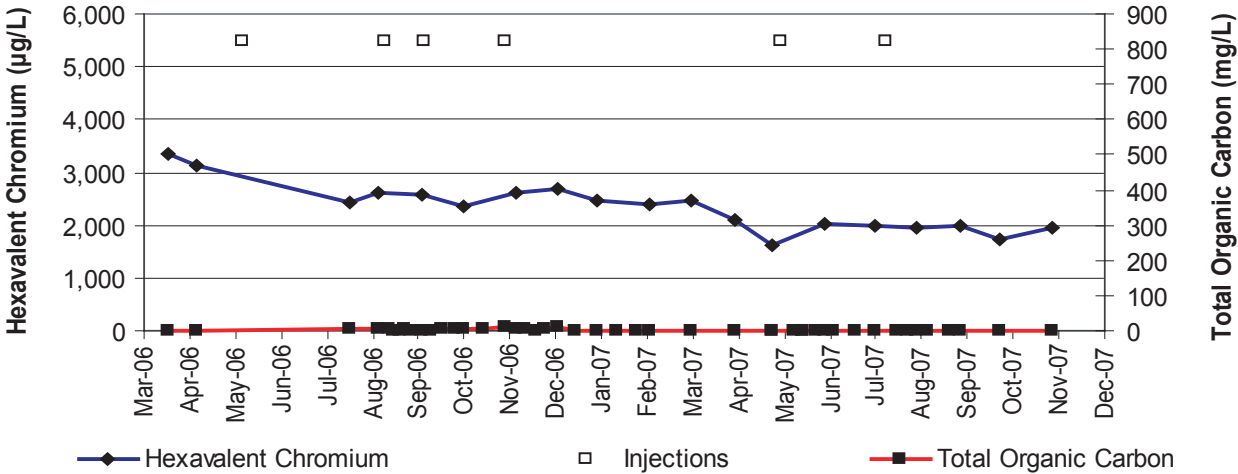
Notes: mg/L Milligrams per liter
 µg/L Micrograms per liter
 Nitrate-N Nitrate as Nitrogen
 Normalized Tracer Concentration= Concentration/(Concentration in Injection Solution)
 TOC Total Organic Carbon



Notes:

mg/L Milligrams per liter
µg/L Micrograms per liter
Nitrate-N Nitrate as Nitrogen
Normalized Tracer Concentration= Concentration/(Concentration in Injection Solution)
TOC Total Organic Carbon

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	Task Manager J. ELY	Technical Review J. GILLOW			Figure
	Drawing Date 13 FEB 08	Drawn By M. CHIU			15



Notes:

mg/L	Milligrams per liter
µg/L	Micrograms per liter
Nitrate-N	Nitrate as Nitrogen
Normalized Tracer Concentration	= Concentration/(Concentration in Injection Solution)
TOC	Total Organic Carbon

Project Manager	Area Manager
L. KELLOGG	J. PETERS
Task Manager	Technical Review
J. ELY	J. GILLOW
Drawing Date	Drawn By
13 FEB 08	M. CHIU



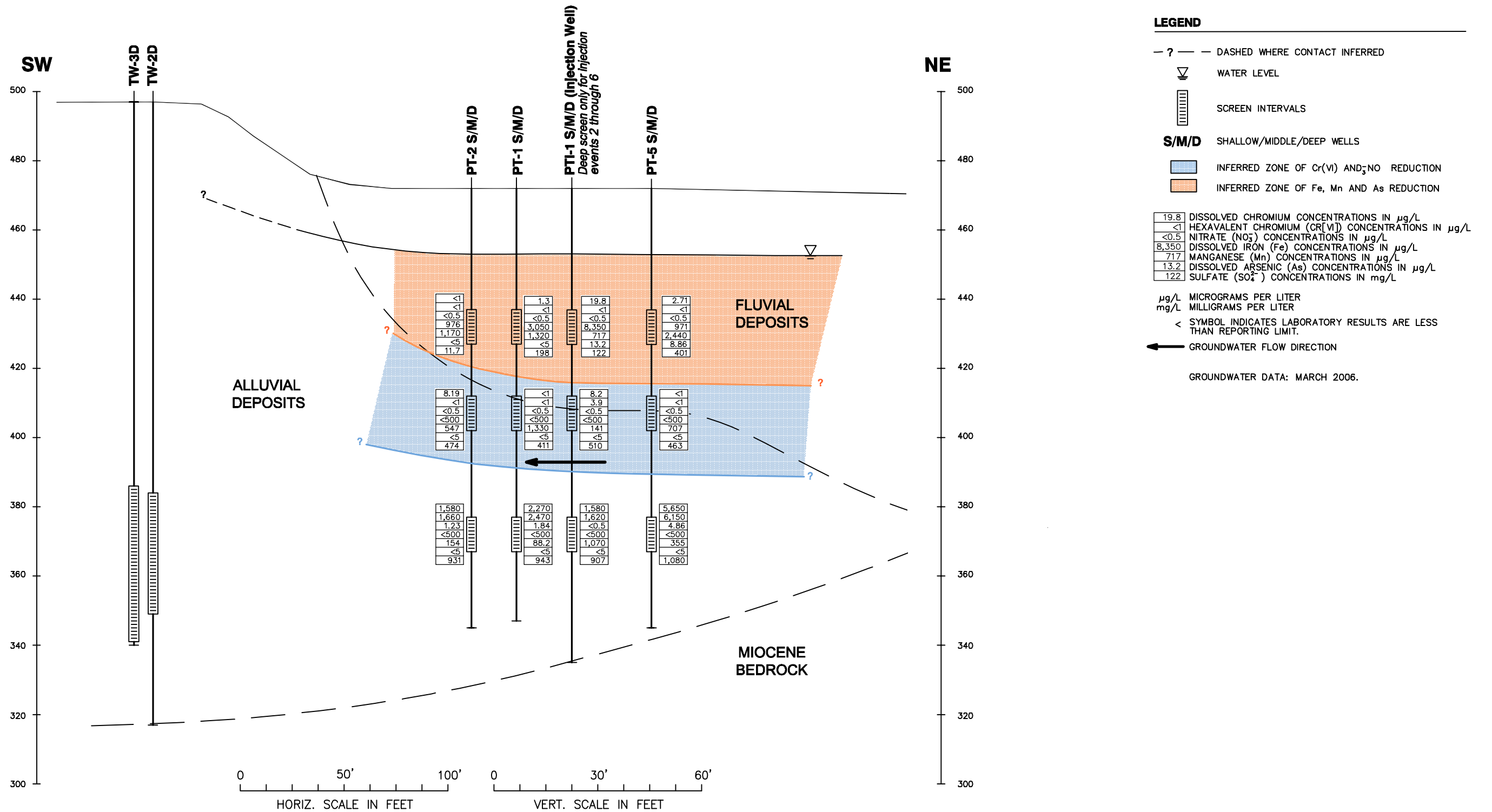
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PERFORMANCE MONITORING DATA FOR TW-3D
FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST
FINAL COMPLETION REPORT
PG&E TOPOCK FACILITY
NEEDLES, CALIFORNIA

Project Number
RC000689.0001

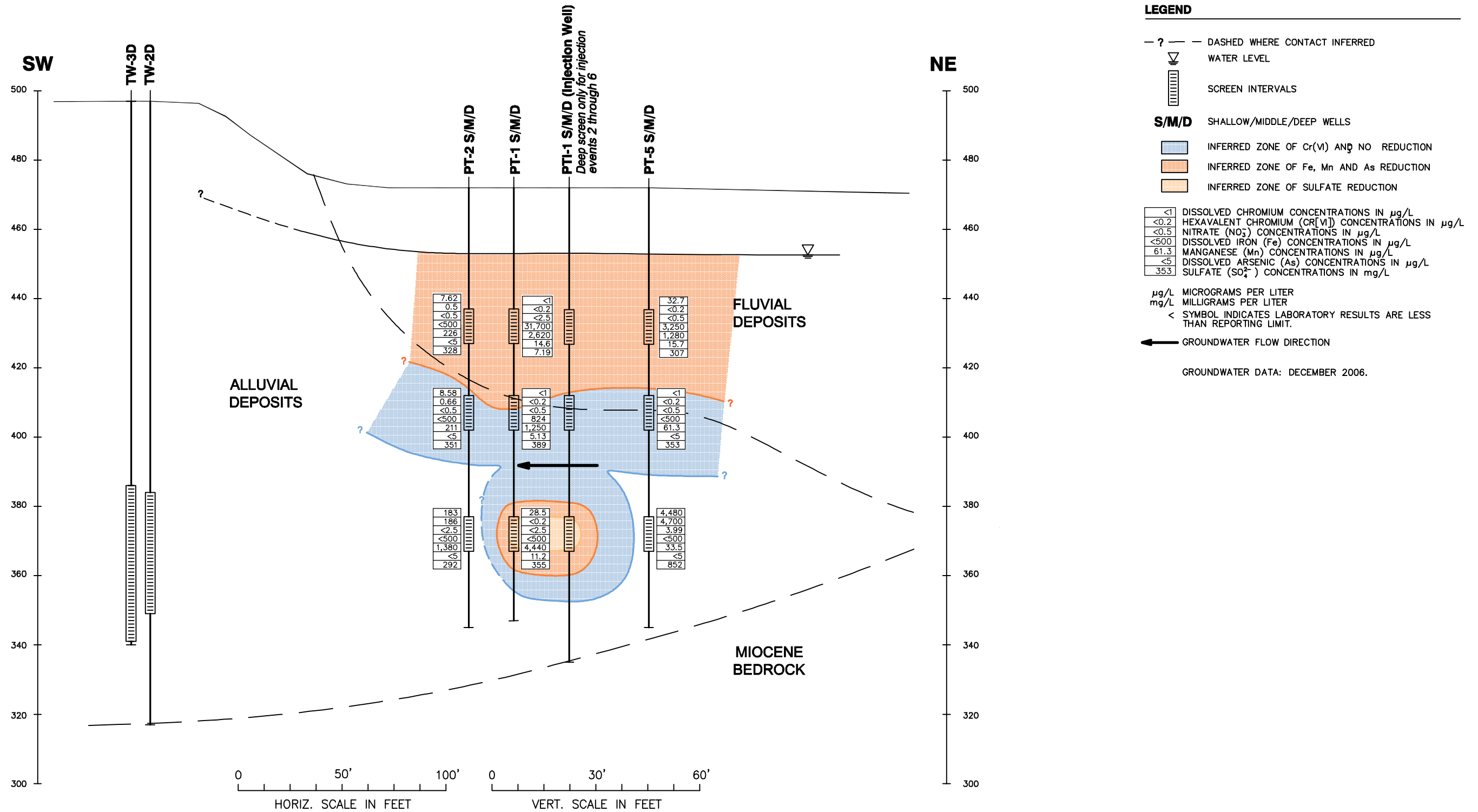
Figure
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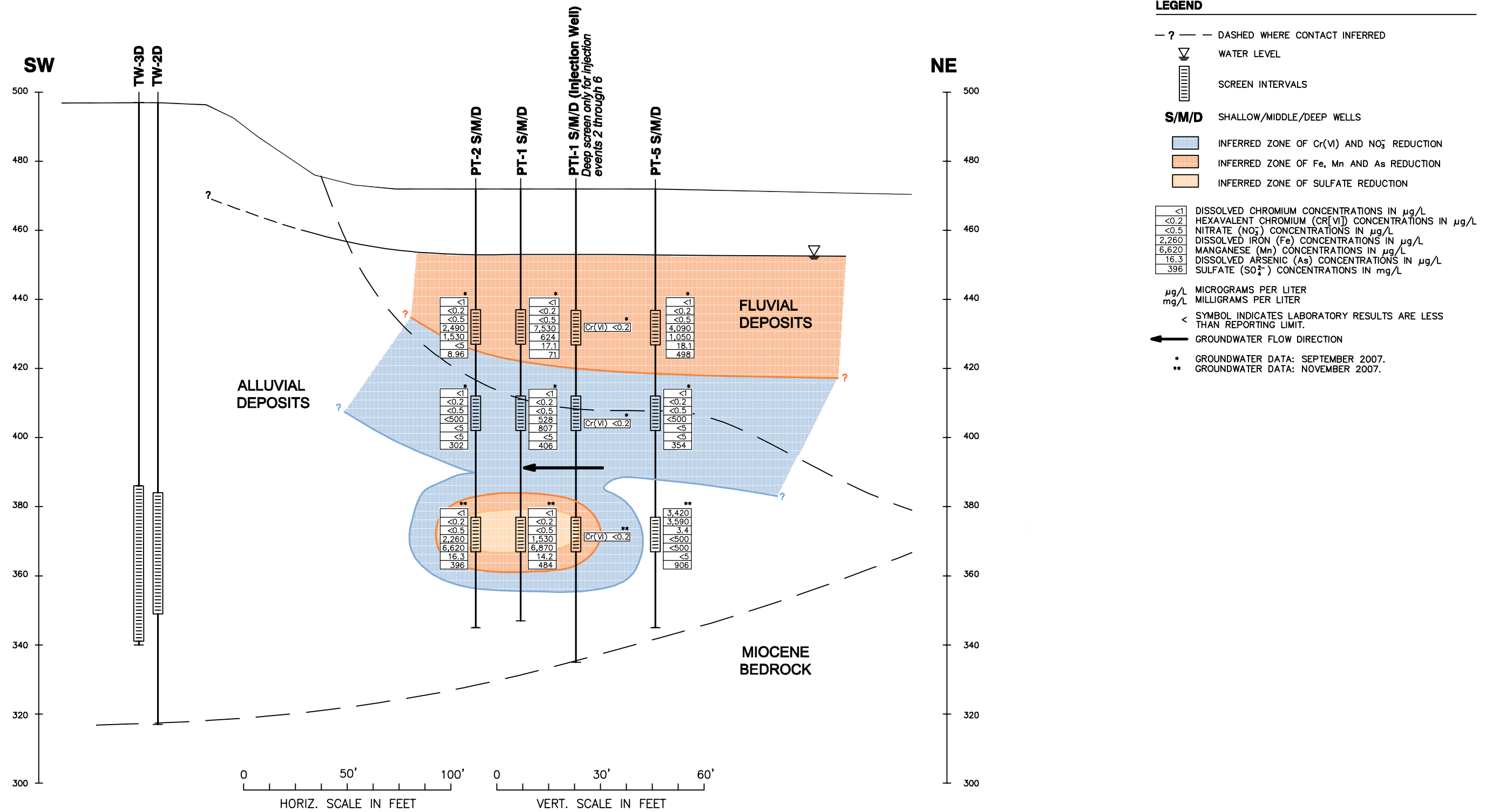


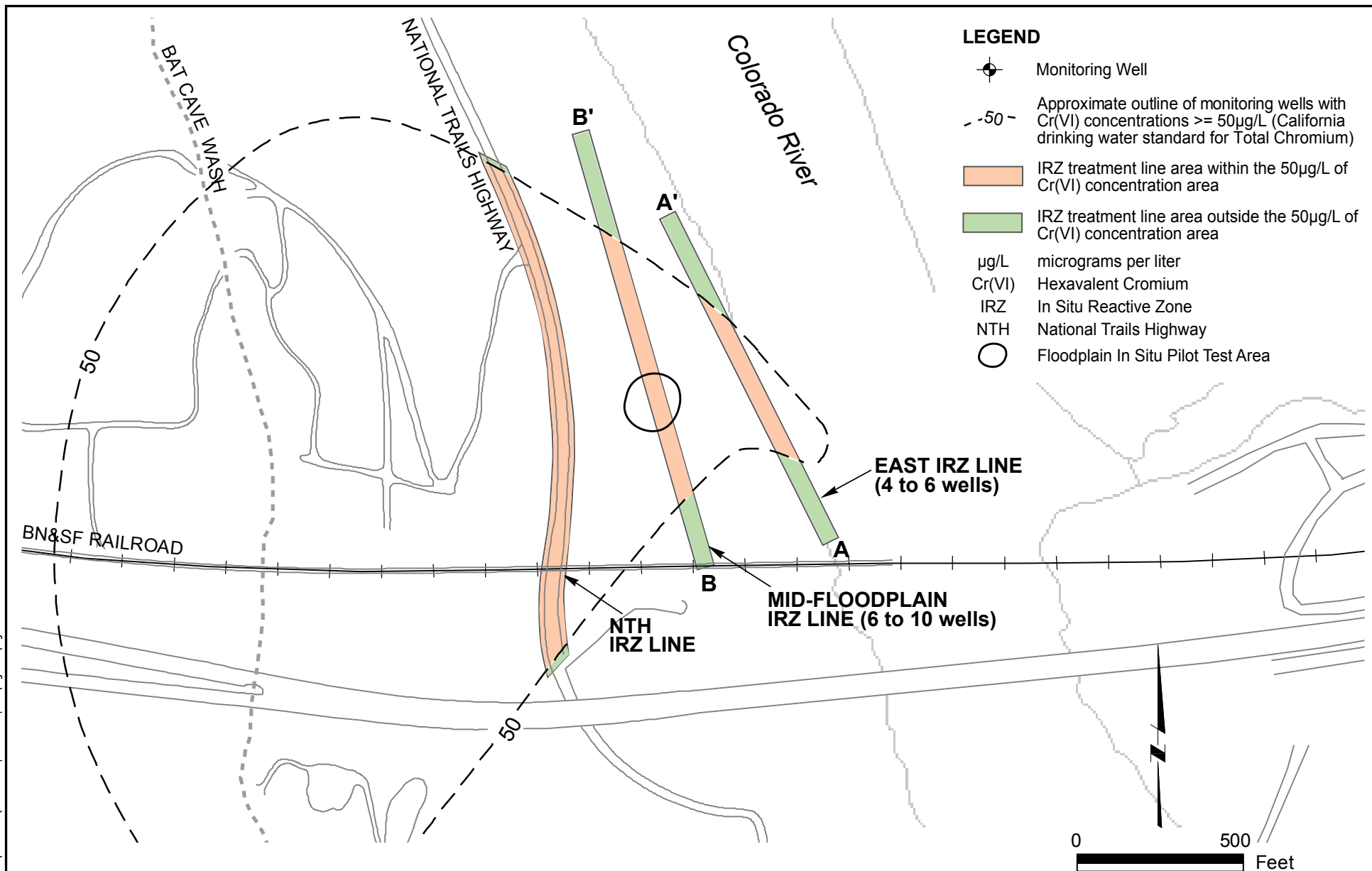
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	L. KELLOGG	J. PETERS				RC000689.0001
	Task Manager	Technical Review				Figure
	J. ELY	J. GILLOW				17
Drawing Date		Drawn By				
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	L. KELLOGG	J. PETERS				RC000689.0001
	Task Manager	Technical Review				Figure
	J. ELY	J. GILLOW				18
Drawing Date	Drawn By					
4 MAR 08	M. CHIU					





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L. KELLOGG	J. PETERS
Task Manager	Technical Review
J. ELY	J. GILLOW
Drawing Date	Drawn By
4 MAR 08	M. CHIU

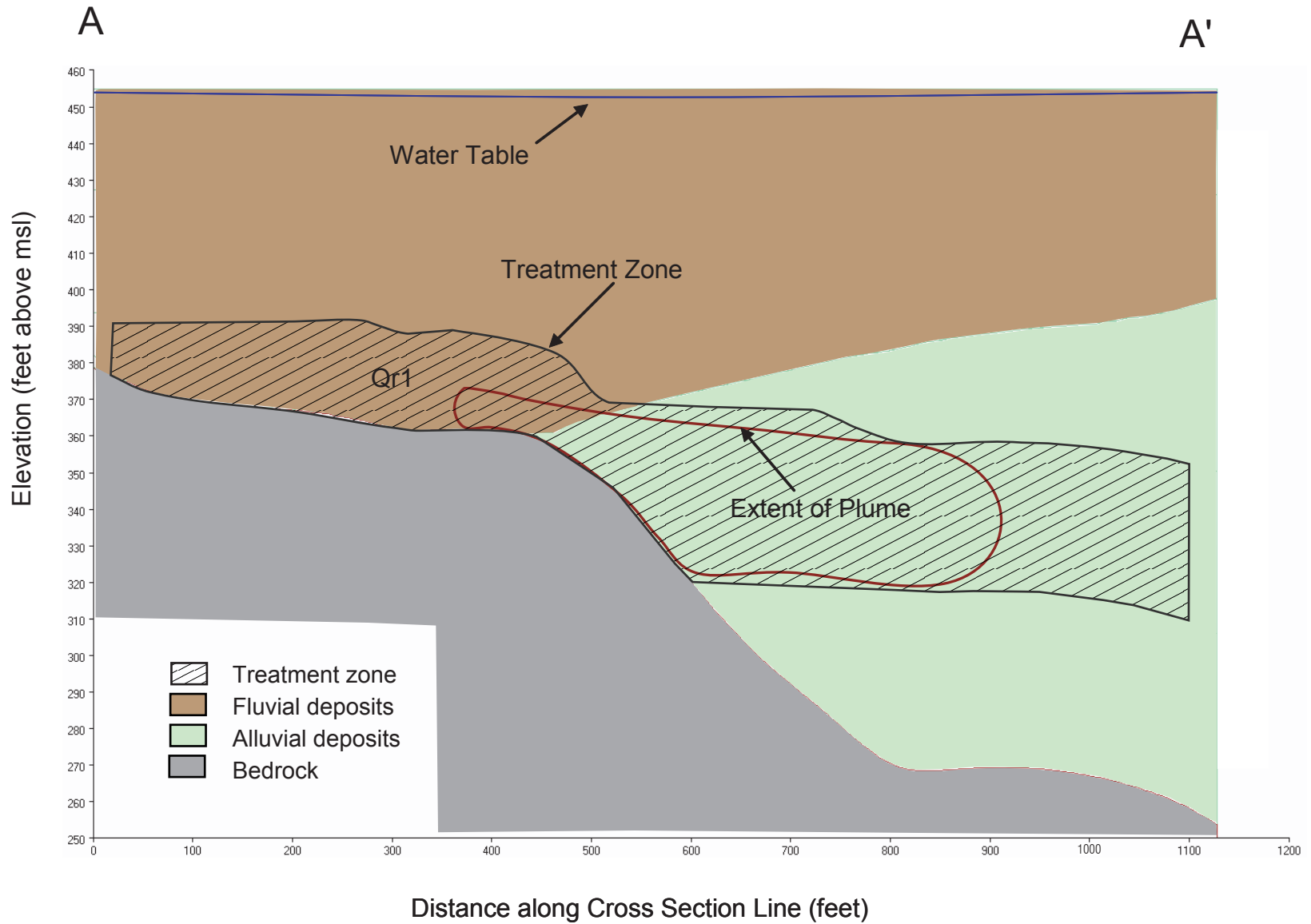


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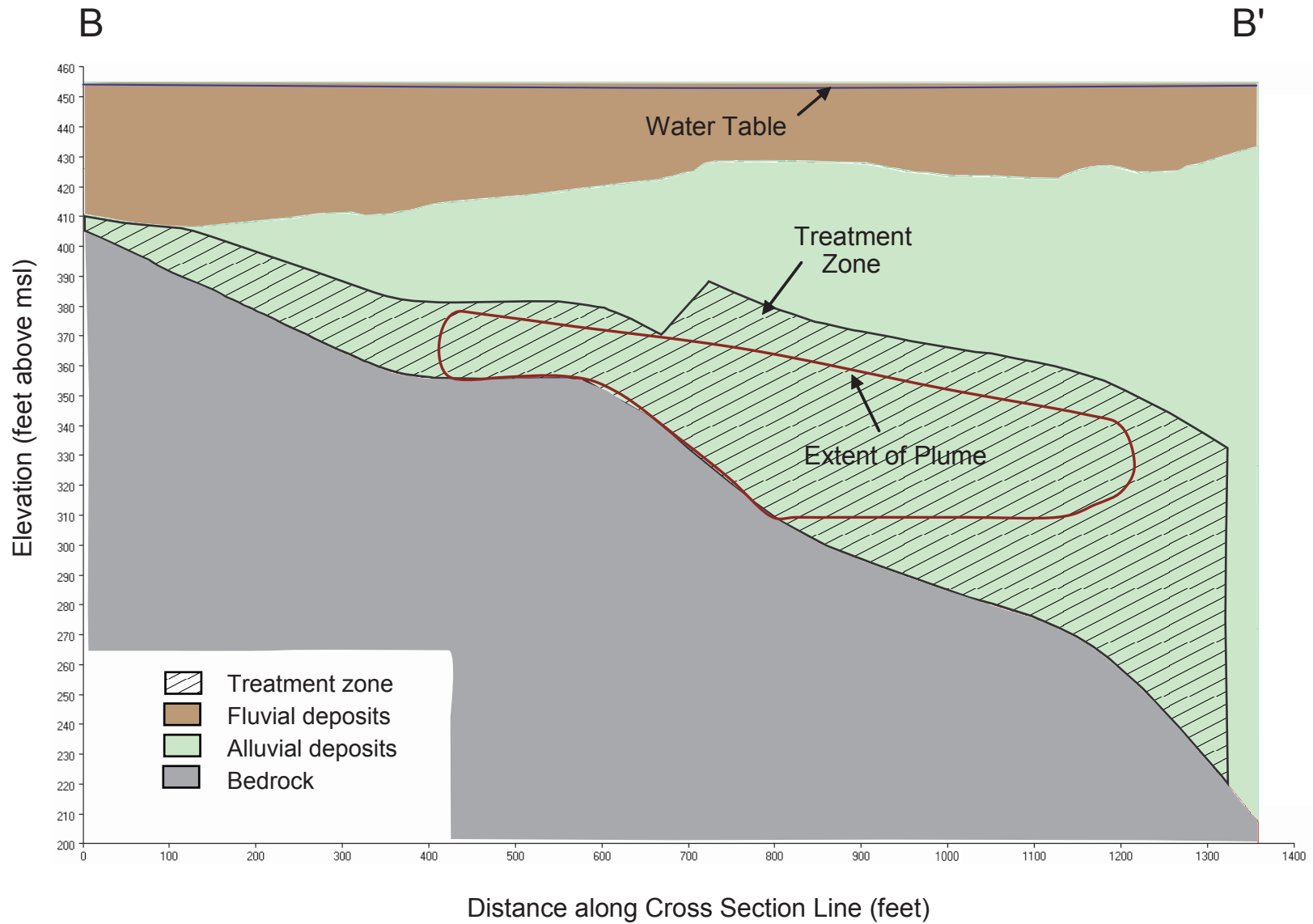
POTENTIAL FLOODPLAIN FULL SCALE IN SITU ALIGNMENTS
 FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST
 FINAL COMPLETION REPORT
 PG&E TOPOCK COMPRESSOR STATION
 NEEDLES, CALIFORNIA

Project Number
RC000689.0001
Figure
20

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	Task Manager J. ELY	Technical Review J. GILLOW			Figure 21
	Drawing Date 3 MAR 08	Drawn By M. CHIU			



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Project Director	Area Manager
L. KELLOGG	J. PETERS
Task Manager	Technical Review
J. ELY	J. GILLOW
Drawing Date	Drawn By
3 MAR 08	M. CHIU



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CROSS SECTION OF SATURATED ZONE ALONG MID-FLOODPLAIN IRZ LINE
 FLOODPLAIN REDUCTIVE ZONE IN-SITU PILOT TEST
 FINAL COMPLETION REPORT
 PG&E TOPOCK FACILITY
 NEEDLES, CALIFORNIA

Project Number
RC000689.0001
Figure
22