



Linda S. Adams  
Secretary for  
Environmental Protection




## Department of Toxic Substances Control

Maureen F. Gorsen, Director  
5796 Corporate Avenue  
Cypress, California 90630



Arnold Schwarzenegger  
Governor

TO: Aaron Yue  
Project Manager  
Geology and Remediation Engineering

FROM: Chris Guerre, CHG   
Senior Engineering Geologist  
Geological Services Unit, Cypress Office

DATE: June 18, 2008

SUBJECT: Field Report: White Powder Occurrences in the East Ravine -  
Area of Concern (AOC) 10, Pacific Gas and Electric (PG&E) Company  
Topock Compressor Station, Needles, California  
PCA 22120 WP 540015-48/36 WR 640233

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### INTRODUCTION

The Geological Services Unit (GSU) of the Department of Toxic Substances Control (DTSC) conducted a field visit at the Topock Compressor Station on January 18, 2008 and May 21, 2008. This memorandum documents field observations and sampling activities conducted during the January 18, 2008 site visit and presents analytical results of several white powder samples. Observations of the East Ravine made on May 21, 2008 are also included in this memorandum. Questions regarding this memorandum should be directed to Chris Guerre at (714) 484-5422 or by email at [cguerre@dtsc.ca.gov](mailto:cguerre@dtsc.ca.gov).

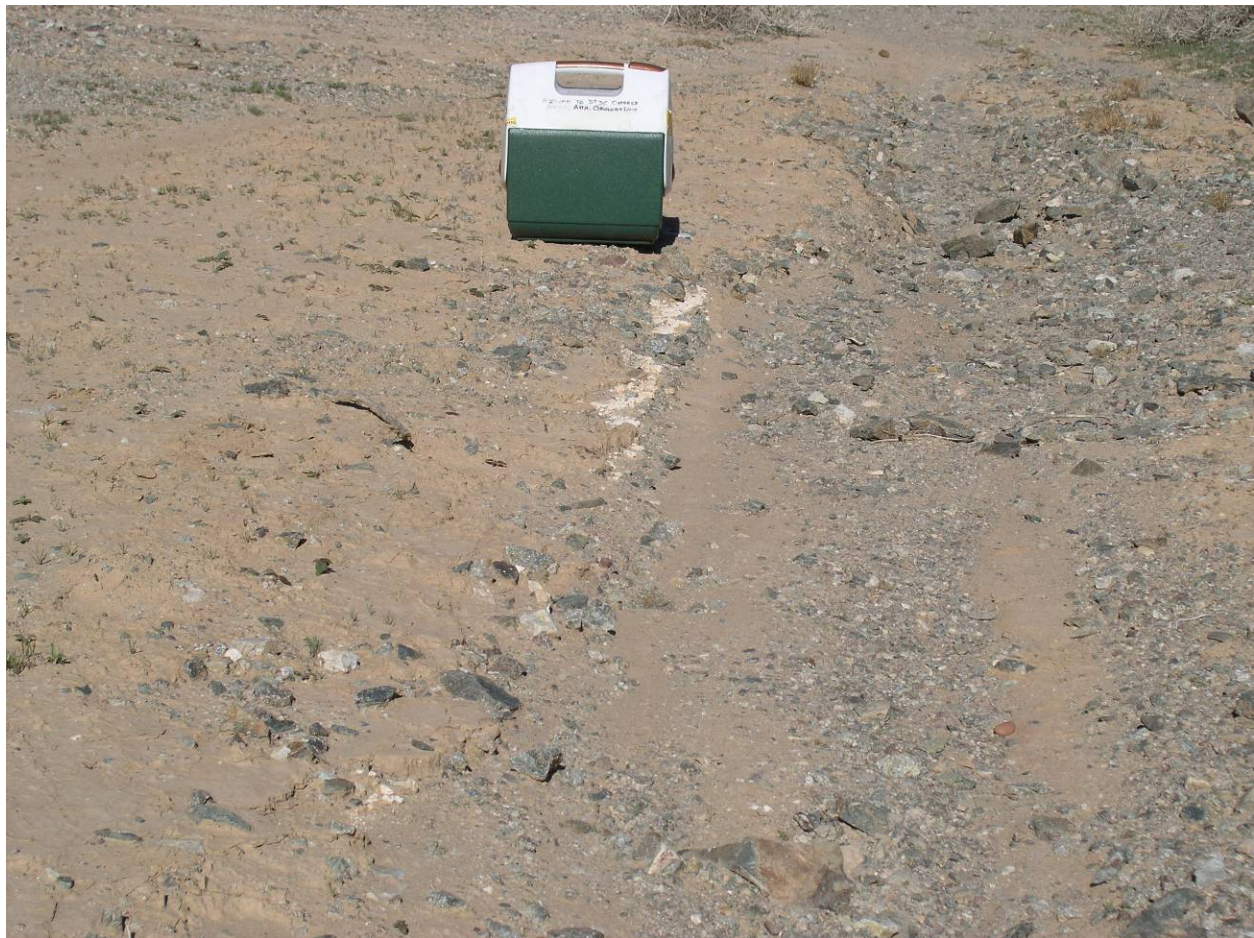
**White Powder Occurrences in East Ravine:** GSU staff walked the East Ravine wash, also known as AOC 10, and observed white powdery material on the floor of the wash. The presence of white powder at the surface of the wash had not been documented in PG&E reports reviewed by the GSU. On January 18, 2008, white powder was observed on the floor of the East Ravine wash at three locations northeast of the large embankment/dam that retains fine grained soils within subarea AOC 10c (see Figure 6-16 from PG&E's 2006 Part A soil sampling work plan attached to this memorandum). The three locations were identified as DTSC AOC10d-1, 2 and 3 and occur within and upstream of the subarea referred to as AOC 10d (see Figure 6-16). Location DTSC AOC10d-1 occurred in the upper portion of the AOC 10d subarea approximately 50 feet north of a wooden survey stake identified as "AOC10d-1" (see Figures 1 to 3). This

stake had been previously located by PG&E's consultants to identify proposed soil sampling locations associated with the Part A work plan. Location DTSC AOC10d-2 (see Figures 4 to 6) occurred between AOC-10d and 10c subareas approximately 40 feet up the wash from the "AOC10d-1" stake. Location DTSC AOC10d-3 (see Figures 4, 7 and 8) occurred between the AOC-10d and 10c subareas approximately 25 feet up the wash from the DTSC AOC10d-2 sample location. The fine white powdery material encountered at location DTSC AOC10d-1 and 2 was approximately ¼ inch thick. Larger and slightly thicker chunks of the white powder were noted at location DTSC AOC10d-3. On May 21, 2008, GSU staff noted several more occurrences of the white powder on the surface of the wash between sample locations DTSC AOC10d-2 and DTSC AOC10d-3.



**Figure 1. East Ravine. Northerly view showing general location of sample DTSC AOC10d-1 adjacent to the green and white ice chest in the background.**





**Figure 2. East Ravine. Close up of Figure 1. Northerly view showing the thin white powder layer at the surface of the wash. Sample DTSC AOC10d-1 area.**

**White Powder Sample Collection:** On January 18, 2008, GSU staff collected three white powder samples from locations DTSC AOC10d-1, 2 and 3 for laboratory analysis. Only white material was collected using new, disposable plastic scoops at each location. The white powder was transferred into glass jars that were then stored in an ice chest. New, disposable gloves were donned at each sample location (See Figure 9).

For comparison purposes, two additional white powder samples were collected from two different areas where white powder has been identified at the Topock Compressor Station area: SMWU<sup>1</sup> 1/AOC 1 Former Percolation Bed, and AOC 14 – Railroad Debris Site. A sample of white powder was collected from SMWU 1/AOC 1 Former Percolation Bed on the east side of Bat Cave Wash close to location “WP-NEW-2” identified on

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<sup>1</sup> Solid Waste Management Unit

PG&E's revised Figure 6-8 (December 2006) for the Part A soil sampling workplan (see Figure 10). This sample was identified as DTSC WP-NEW-2. The other white sample was collected from the north side of U. S. Interstate 40 within the Railroad Debris Site. A sample of white powder was collected from the bank of the freeway cut and identified as sample DTSC AOC 14 – Roadcut (see Figure 11). The appearance of these two white powdery samples was similar to the samples collected in the East Ravine.

**Sample Analyses and Results:** PG&E had the three East Ravine samples analyzed at Truesdail Laboratories, Inc. for metals, hexavalent chromium, general minerals and pH. DTSC had three samples (DTSC AOC10d-3, DTSC WP-NEW-2, and DTSC AOC 14 – Roadcut) analyzed at the Test America, Inc. laboratory for metals, hexavalent chromium, general minerals and pH. PG&E prepared two attachments summarizing the results for samples DTSC AOC10d-1, 2 and 3 and are attached to this memorandum. Attachment 3 summarizes detected constituents, while Attachment 4 includes the results for all analytes. These attachments were received by DTSC on April 2, 2008 via email. The Test America's laboratory package is also attached to this memorandum. This lab report was received by DTSC on February 28, 2008 via email.

PG&E's Attachments 3 and 4 indicate that the white powder in the East Ravine contains a great deal of calcium along with elevated concentrations of magnesium, iron, potassium and sodium. When compared to provisional soil background values specified in CH2M Hill's 2006 Part A soil sampling workplan, the following trace metals appear elevated: arsenic, barium, chromium, copper, and zinc. Chromium concentrations ranged from 224 to 652 mg/kg, while hexavalent chromium ranged in concentration from 4.38 to 31.5 mg/kg. Test America's results for sample DTSC AOC10d-3 compared favorably with the PG&E's summary results with one exception: calcium. The PG&E result of 22,500 mg/kg calcium is significantly lower than the 170,000 mg/kg reported by Test America. The 22,500 mg/kg calcium for sample DTSC AOC10d-3 also appears anomalously low when compared to results for the other East Ravine white powder samples.

Test America results for the white powder samples from Bat Cave Wash and Railroad Debris Site indicate that they also contain high concentrations of calcium along with elevated concentrations of sodium, iron, and potassium. However, unlike the East Ravine samples, these samples did not contain elevated trace metals other than chromium (290 mg/kg) in sample DTSC WP-NEW-2. Additionally, anion results on page 7 of the Test America report indicate that the Bat Cave Wash and Railroad Debris Site samples contain chloride, nitrate, and sulfate concentrations above those detected in the East Ravine sample.

**Conclusions:** White powder has been found to occur at the surface of the East Ravine wash which contains elevated metals, including chromium, within subarea AOC 10d and between subareas AOC 10d and AOC 10c. This is the first documented occurrence of white powder at the surface in the East Ravine. Ecology and Environment's (E&E's) 2004 RCRA Facility Investigation Report has documented the occurrence of a white fine-grained material at a depth of less than one foot within the AOC10d area that contained chromium up to 379 mg/kg and hexavalent chromium up to 9.4 mg/kg (Samples L-3-2 at 0.5 feet bgs<sup>2</sup> and L-3 at 1 foot bgs) similar to the concentrations detected in the January 2008 East Ravine samples. In summary, white powder is now known to occur from the sample DTSC AOC10d-3 location down the wash to proposed sample location AOC10d-3 (see Figure 6-16 attached).

E&E (2004) also documents a thin (less than one inch thick) greenish gray layer that contains total and hexavalent chromium concentrations up to 3,360 and 99 mg/kg respectively (at proposed sample locations AOC10c-3 and AOC10c-4 pictured in Figure 6-16) within the AOC10c subarea. This is noted as the location of the greenish grey layer has been inappropriately described as occurring in the AOC10b subarea in the in the 2005 and 2007 RFI/RI Report, Volume I (CH2M Hill, 2005 and 2007). Additionally, the RFI/RI Part A Soils Workplan (CH2M Hill, 2006) and 2005 RFI/RI Report, Volume I (CH2M Hill, 2005) inappropriately described white powder as occurring in the AOC10c subarea instead of AOC 10d.

The white powdery material sampled from the East Ravine is similar in appearance to the white powders already identified in Bat Cave Wash and the Railroad Debris Site and, therefore, is assumed to represent a PG&E waste product associated with former compressor station operations.

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<sup>2</sup> below ground surface





**Figure 3. East Ravine. Close up of Figure 2. The white powder layer is approximately one quarter to one eighth inch thick. The pen is 5.5 inches long. Sample DTSC AOC10d-1 was collected from the white material only.**





**Figure 4 East Ravine. Northwesterly view showing the general location of sample DTSC AOC10d-2 and DTSC AOC10d-3 located adjacent to the black camera case and green and white ice chest respectively.**





**Figure 5. East Ravine. Close up of the camera case in Figure 4 showing the area where chunks of white powder occur at the surface of the wash. Sample DTSC AOC10d-2 area.**





**Figure 6. East Ravine. Close up of Figure 5 showing chunks of white powder at the surface of the wash (pen is 5.5 inches long). Sample DTSC AOC10d-2 area. The white powder was stained brown at its surface making the white material difficult to locate.**





**Figure 7. East Ravine. Close up of the ice chest in Figure 4 showing the area where chunks of white powder occur at the surface of the wash. Sample DTSC AOC10d-3 area.**





**Figure 8. East Ravine. Close up of Figure 7 showing chunks of white powder at the surface of the wash (pen is 5.5 inches long). Sample DTSC AOC10d-3 area. The white powder was stained brown at its surface making the white material difficult to locate.**





**Figure 9. East Ravine. Close up of Figure 2. All samples, including sample DTSC AOC10d-1 shown here, were collected from the white material only with a plastic scoop and placed in a glass jar.**





**Figure 10. East side of Bat Cave Wash showing the white powder layer at the base of the wash (pen on top of plastic scoop is 5.5 inches long). The white layer is approximately three inches thick and large cracks in the layer are filled with dark reddish soil. Sample DTSC WP-NEW-2 area. The sample was collected from white material only. Note: PG&E's Part A soil sample stake in the background was labeled "WP-NEW-2".**





**Figure 11. Northwesterly view of the Railroad Debris Site (AOC 14). A white layer is visible on the north side of the I-40. The I-40 is in the foreground while the IM-3 treatment plant is visible in the background.**



## REFERENCES

CH2M Hill, August 10, 2007. Revised Final RCRA Facility Investigation and Remedial Investigation Report. PG&E Topock Compressor Station, Needles, California. Volume I, Site Background and History.

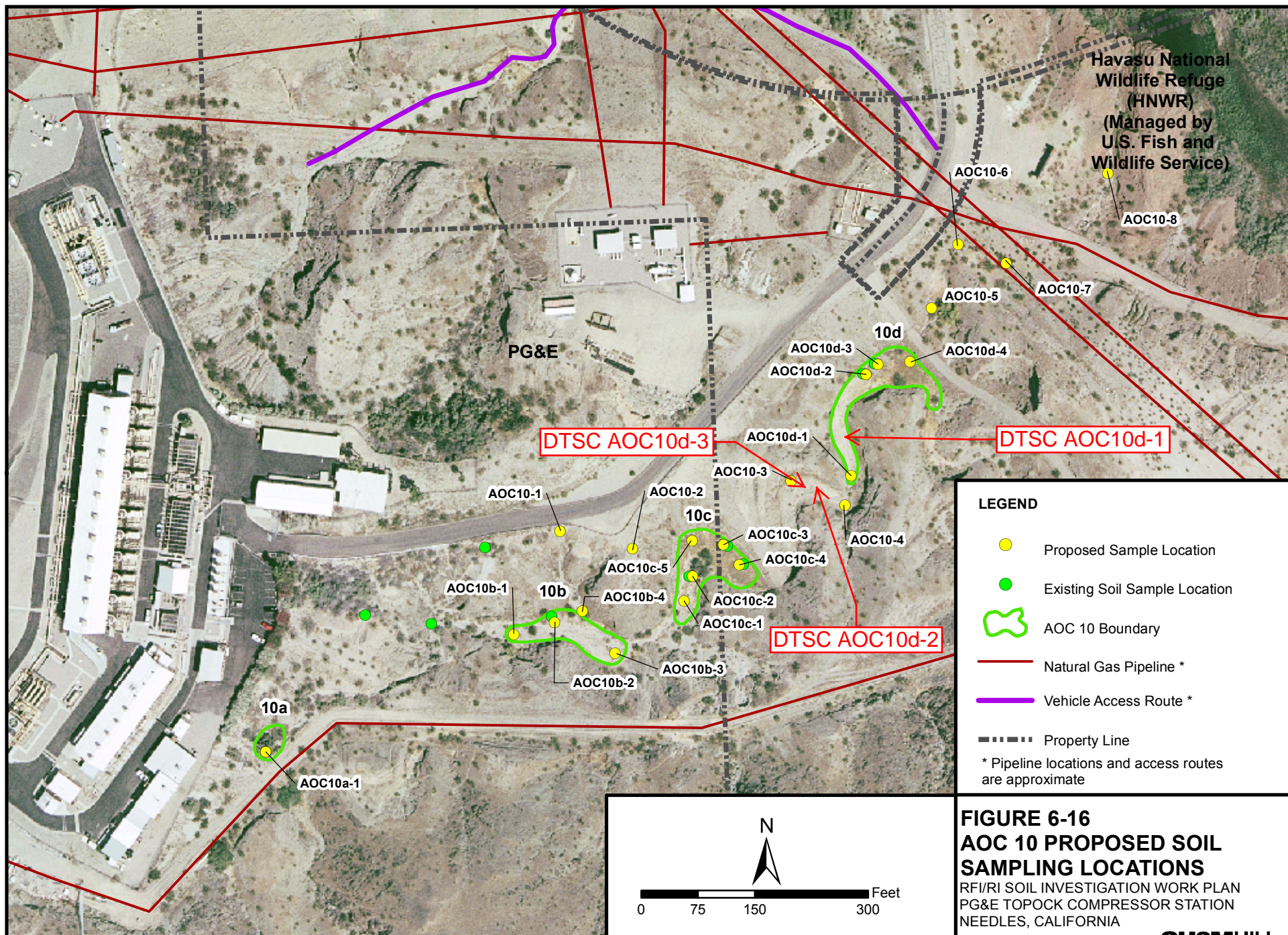
CH2M Hill, November 16, 2006. Draft RCRA Facility Investigation/Remedial Investigation Soil Investigation Work Plan. Part A. PG&E Topock Compressor Station, Needles, California.

CH2M Hill, February 28, 2005. Draft RCRA Facility Investigation and Remedial Investigation Report. PG&E Topock Compressor Station, Needles, California. Volumes 1 to 3.

Ecology and Environment, Inc., February 2004. RCRA Facility Investigation (RFI) Report, Bat Cave Wash Area, Pacific Gas and Electric Company's Topock Compressor Station, Needles, California. Volumes I and II.









## ATTACHMENT 3

Summary of Detected Analytes for Soil Samples Collected at East Ravine  
PG&E Topock Groundwater and Surface Water Monitoring Program

Sample ID	Matrix	Sample Date	Depth	Method	Analyte	Result	RL	Qualifier	Units
<b>East Ravine</b>									
DTSC-AOC10d-1	Soil	01-18-2008	NA	2320B	Alkalinity, total as CaCO <sub>3</sub>	35.1	5.00		mg/kg
				2320B	Bicarbonate	40.4	5.00		mg/kg
				300	Chloride	7.02	4.01		mg/kg
				300	Sulfate	15.7	10.0		mg/kg
				6010B	Arsenic	8.28	4.41		mg/kg
				6010B	Barium	163	2.50		mg/kg
				6010B	Calcium	265,000	8,840		mg/kg
				6010B	Chromium	652	4.41		mg/kg
				6010B	Copper	137	4.41		mg/kg
				6010B	Iron	8,680	442		mg/kg
				6010B	Lead	14.3	8.83		mg/kg
				6010B	Magnesium	14,300	2,210		mg/kg
				6010B	Potassium	1,730	88.3		mg/kg
				6010B	Sodium	2,790	88.3		mg/kg
				6010B	Vanadium	39.5	4.41		mg/kg
				6010B	Zinc	134	22.1		mg/kg
				7199	Hexavalent chromium	31.5	4.01		mg/kg
				SM4500-HB	pH	7.7	2.00		pH units
DTSC-AOC10d-2	Soil	01-18-2008	NA	2320B	Alkalinity, total as CaCO <sub>3</sub>	35.5	5.00		mg/kg
				2320B	Bicarbonate	38.3	5.00		mg/kg
				300	Chloride	5.9	4.06		mg/kg
				300	Sulfate	27.4	10.1		mg/kg
				6010B	Arsenic	7.36	4.89		mg/kg
				6010B	Barium	595	4.89		mg/kg
				6010B	Calcium	234,000	9,790		mg/kg
				6010B	Chromium	243	4.89		mg/kg
				6010B	Copper	66.5	4.89		mg/kg
				6010B	Iron	14,000	489		mg/kg
				6010B	Lead	13.1	9.79		mg/kg
				6010B	Magnesium	13,200	2,450		mg/kg
				6010B	Potassium	2,120	97.8		mg/kg
				6010B	Sodium	1,780	97.8		mg/kg
				6010B	Vanadium	36.2	4.89		mg/kg
				6010B	Zinc	147	24.4		mg/kg
				7199	Hexavalent chromium	6.03	4.06		mg/kg
				SM4500-HB	pH	8.46	2.00		pH units
DTSC-AOC10d-3	Soil	01-18-2008	NA	2320B	Alkalinity, total as CaCO <sub>3</sub>	35.4	5.00		mg/kg
				2320B	Bicarbonate	38.2	5.00		mg/kg
				300	Sulfate	13.3	10.1		mg/kg
				6010B	Arsenic	5.87	4.65		mg/kg
				6010B	Barium	264	4.65		mg/kg
				6010B	Calcium	22,500	9,300		mg/kg
				6010B	Chromium	224	4.65		mg/kg
				6010B	Copper	46.5	4.65		mg/kg
				6010B	Iron	14,200	465		mg/kg
				6010B	Lead	12	9.30		mg/kg
				6010B	Magnesium	12,800	2,320		mg/kg
				6010B	Potassium	2,640	93.0		mg/kg
				6010B	Sodium	1,820	93.0		mg/kg



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*PG&E Topock Groundwater and Surface Water Monitoring Program*

Sample ID	Matrix	Sample Date	Depth	Method	Analyte	Result	RL	Qualifier	Units
<b>East Ravine</b>									
DTSC-AOC10d-3	Soil	01-18-2008	NA	6010B	Vanadium	34.5	4.65		mg/kg
				6010B	Zinc	197	23.2		mg/kg
				7199	Hexavalent chromium	4.38	4.04		mg/kg
				SM4500-HB	pH	8.48	2.00		pH units

**Notes:**

NA Depth not provided  
 ND Parameter not detected at specified reporting limit  
 RL Reporting limit  
 U Laboratory qualifier signifies that sample was not detected at specified reporting limit  
 µg/kg micrograms per kilogram  
 mg/kg milligrams per kilogram

## ATTACHMENT 4

Summary of All Analytes for Soil Samples Collected at East Ravine  
*PG&E Topock Groundwater and Surface Water Monitoring Program*

Sample ID	Matrix	Sample Date	Depth	Method	Analyte	Result	RL	Qualifier	Units
<b>East Ravine</b>									
DTSC-AOC10d-1	Soil	01-18-2008	NA	2320B	Alkalinity, total as CaCO <sub>3</sub>	35.1	5.00		mg/kg
				2320B	Bicarbonate	40.4	5.00		mg/kg
				2320B	Carbonate	ND	5.00	U	mg/kg
				300	Chloride	7.02	4.01		mg/kg
				300	Sulfate	15.7	10.0		mg/kg
				6010B	Arsenic	8.28	4.41		mg/kg
				6010B	Barium	163	2.50		mg/kg
				6010B	Beryllium	ND	4.41	U	mg/kg
				6010B	Cadmium	ND	8.83	U	mg/kg
				6010B	Calcium	265,000	8,840		mg/kg
				6010B	Chromium	652	4.41		mg/kg
				6010B	Cobalt	ND	4.41	U	mg/kg
				6010B	Copper	137	4.41		mg/kg
				6010B	Iron	8,680	442		mg/kg
				6010B	Lead	14.3	8.83		mg/kg
				6010B	Magnesium	14,300	2,210		mg/kg
				6010B	Molybdenum	ND	2.50	U	mg/kg
				6010B	Nickel	ND	4.41	U	mg/kg
				6010B	Potassium	1,730	88.3		mg/kg
				6010B	Sodium	2,790	88.3		mg/kg
				6010B	Thallium	ND	8.83	U	mg/kg
				6010B	Vanadium	39.5	4.41		mg/kg
				6010B	Zinc	134	22.1		mg/kg
				6020A	Antimony	ND	4.42	U	mg/kg
				6020A	Selenium	ND	4.42	U	mg/kg
				6020A	Silver	ND	4.42	U	mg/kg
				7199	Hexavalent chromium	31.5	4.01		mg/kg
				7471A	Mercury	ND	0.0193	U	mg/kg
				SM4500-HB	pH	7.7	2.00		pH units
DTSC-AOC10d-2	Soil	01-18-2008	NA	2320B	Alkalinity, total as CaCO <sub>3</sub>	35.5	5.00		mg/kg
				2320B	Bicarbonate	38.3	5.00		mg/kg
				2320B	Carbonate	ND	5.00	U	mg/kg
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				6010B	Cadmium	ND	9.78	U	mg/kg
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				6010B	Magnesium	13,200	2,450		mg/kg
				6010B	Molybdenum	ND	4.89	U	mg/kg
				6010B	Nickel	ND	4.89	U	mg/kg
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Sample ID	Matrix	Sample Date	Depth	Method	Analyte	Result	RL	Qualifier	Units
<b>East Ravine</b>									
DTSC-AOC10d-2	Soil	01-18-2008	NA	6010B	Thallium	ND	9.78	U	mg/kg
				6010B	Vanadium	36.2	4.89		mg/kg
				6010B	Zinc	147	24.4		mg/kg
				6020A	Antimony	ND	4.89	U	mg/kg
				6020A	Selenium	ND	4.89	U	mg/kg
				6020A	Silver	ND	4.89	U	mg/kg
				7199	Hexavalent chromium	6.03	4.06		mg/kg
				7471A	Mercury	ND	0.0192	U	mg/kg
				SM4500-HB	pH	8.46	2.00		pH units
DTSC-AOC10d-3	Soil	01-18-2008	NA	2320B	Alkalinity, total as CaCO <sub>3</sub>	35.4	5.00		mg/kg
				2320B	Bicarbonate	38.2	5.00		mg/kg
				2320B	Carbonate	ND	5.00	U	mg/kg
				300	Chloride	ND	4.04	U	mg/kg
				300	Sulfate	13.3	10.1		mg/kg
				6010B	Arsenic	5.87	4.65		mg/kg
				6010B	Barium	264	4.65		mg/kg
				6010B	Beryllium	ND	4.65	U	mg/kg
				6010B	Cadmium	ND	9.30	U	mg/kg
				6010B	Calcium	22,500	9,300		mg/kg
				6010B	Chromium	224	4.65		mg/kg
				6010B	Cobalt	ND	4.65	U	mg/kg
				6010B	Copper	46.5	4.65		mg/kg
				6010B	Iron	14,200	465		mg/kg
				6010B	Lead	12	9.30		mg/kg
				6010B	Magnesium	12,800	2,320		mg/kg
				6010B	Molybdenum	ND	4.65	U	mg/kg
				6010B	Nickel	ND	4.65	U	mg/kg
				6010B	Potassium	2,640	93.0		mg/kg
				6010B	Sodium	1,820	93.0		mg/kg
				6010B	Thallium	ND	9.30	U	mg/kg
				6010B	Vanadium	34.5	4.65		mg/kg
				6010B	Zinc	197	23.2		mg/kg
				6020A	Antimony	ND	4.65	U	mg/kg
				6020A	Selenium	ND	4.65	U	mg/kg
				6020A	Silver	ND	4.65	U	mg/kg
				7199	Hexavalent chromium	4.38	4.04		mg/kg
				7471A	Mercury	ND	0.0198	U	mg/kg
				SM4500-HB	pH	8.48	2.00		pH units

**Notes:**

NA Depth not provided  
 ND Parameter not detected at specified reporting limit  
 RL Reporting limit  
 U Laboratory qualifier signifies that sample was not detected at specified reporting limit  
 µg/kg micrograms per kilogram  
 mg/kg milligrams per kilogram

28 February, 2008

Chris Guerre  
Dept. of Toxic Substances Control-Cypress  
5796 Corporate Ave.  
Cypress, CA 90630

RE: PG&E Topock  
Work Order: MRB0280

Enclosed are the results of analyses for samples received by the laboratory on 02/08/08 12:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Tim Rhiney  
Project Manager

CA ELAP Certificate # 2682

The Chain(s) of Custody, 4 pages, are included and are an integral part of this report.

The report shall not be reproduced except in full, without the written approval of the laboratory. The client, by accepting this report, also agrees not to alter any reports whether in the hard copy or electronic format and to use reasonable efforts to preserve the reports in the form and substance originally provided by TestAmerica.

For Volatile Analysis a trip blank is required to be provided. If trip blank results are not included in the report, then either the trip blank was not submitted or requested to be analyzed.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.



Dept. of Toxic Substances Control-Cypress  
5796 Corporate Ave.  
Cypress CA, 90630

Project: PG&E Topock  
Project Number: 07TA0301  
Project Manager: Chris Guerre

MRB0280  
**Reported:**  
02/28/08 11:07

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DTSC-A0C10d-3	MRB0280-01	Soil	01/18/08 11:00	02/08/08 12:10
DTSC-WP-NEW-2	MRB0280-02	Soil	01/18/08 11:00	02/08/08 12:10
DTSC-AOC14-Roadcu	MRB0280-03	Soil	01/18/08 11:00	02/08/08 12:10

Dept. of Toxic Substances Control-Cypress  
5796 Corporate Ave.  
Cypress CA, 90630

Project: PG&E Topock  
Project Number: 07TA0301  
Project Manager: Chris Guerre

MRB0280  
**Reported:**  
02/28/08 11:07

## Metals Scan by ICP

### TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>DTSC-A0C10d-3 (MRB0280-01) Soil Sampled: 01/18/08 11:00 Received: 02/08/08 12:10</b>									
<b>Silver</b>	<b>0.79</b>	0.50	mg/kg	1	8B13019	02/13/08	02/21/08	ICP Scan	
Antimony	ND	5.0	"	"	"	"	"	"	
<b>Sodium</b>	<b>1200</b>	25	"	"	"	"	"	"	
Arsenic	ND	10	"	"	"	"	"	"	
<b>Barium</b>	<b>200</b>	5.0	"	"	"	"	"	"	
Beryllium	ND	0.50	"	"	"	"	"	"	
<b>Calcium</b>	<b>170000</b>	120	"	10	"	"	02/22/08	"	
Cadmium	ND	0.20	"	1	"	"	02/21/08	"	
<b>Cobalt</b>	<b>4.1</b>	0.50	"	"	"	"	"	"	
<b>Copper</b>	<b>36</b>	4.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>160</b>	5.0	"	"	"	"	"	"	
<b>Iron</b>	<b>12000</b>	10	"	"	"	"	"	"	
<b>Lead</b>	<b>9.9</b>	2.5	"	5	"	"	02/27/08	"	
<b>Manganese</b>	<b>210</b>	10	"	1	"	"	02/21/08	"	
<b>Molybdenum</b>	<b>1.0</b>	1.0	"	"	"	"	"	"	
<b>Nickel</b>	<b>9.4</b>	5.0	"	"	"	"	"	"	
<b>Potassium</b>	<b>2100</b>	25	"	"	"	"	"	"	
Selenium	ND	10	"	"	"	"	"	"	C
Thallium	ND	5.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>28</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>130</b>	5.0	"	"	"	"	"	"	
<b>DTSC-WP-NEW-2 (MRB0280-02) Soil Sampled: 01/18/08 11:00 Received: 02/08/08 12:10</b>									
Silver	ND	0.50	mg/kg	1	8B13019	02/13/08	02/21/08	ICP Scan	
Antimony	ND	5.0	"	"	"	"	"	"	
<b>Sodium</b>	<b>10000</b>	25	"	"	"	"	"	"	
Arsenic	ND	10	"	"	"	"	"	"	
<b>Barium</b>	<b>90</b>	5.0	"	"	"	"	"	"	
Beryllium	ND	0.50	"	"	"	"	"	"	
<b>Calcium</b>	<b>210000</b>	620	"	50	"	"	02/26/08	"	
Cadmium	ND	0.20	"	1	"	"	02/21/08	"	
<b>Cobalt</b>	<b>0.64</b>	0.50	"	"	"	"	"	"	
Copper	ND	4.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>290</b>	5.0	"	"	"	"	"	"	
<b>Iron</b>	<b>2900</b>	10	"	"	"	"	"	"	
Lead	ND	5.0	"	"	"	"	"	"	C
<b>Manganese</b>	<b>26</b>	10	"	"	"	"	"	"	
<b>Molybdenum</b>	<b>3.6</b>	1.0	"	"	"	"	"	"	

TestAmerica Morgan Hill

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Dept. of Toxic Substances Control-Cypress  
5796 Corporate Ave.  
Cypress CA, 90630

Project: PG&E Topock  
Project Number: 07TA0301  
Project Manager: Chris Guerre

MRB0280  
**Reported:**  
02/28/08 11:07

## Metals Scan by ICP

### TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>DTSC-WP-NEW-2 (MRB0280-02) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
Nickel	ND	5.0	mg/kg	1	8B13019	02/13/08	02/21/08	ICP Scan	
<b>Potassium</b>	<b>460</b>	25	"	"	"	"	"	"	
Selenium	ND	10	"	"	"	"	"	"	C
Thallium	ND	5.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>8.3</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>8.3</b>	5.0	"	"	"	"	"	"	
<b>DTSC-AOC14-Roadcu (MRB0280-03) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
Silver	ND	0.50	mg/kg	1	8B13019	02/13/08	02/21/08	ICP Scan	
Antimony	ND	5.0	"	"	"	"	"	"	
<b>Sodium</b>	<b>3700</b>	25	"	"	"	"	"	"	
Arsenic	ND	10	"	"	"	"	"	"	
<b>Barium</b>	<b>120</b>	5.0	"	"	"	"	"	"	
Beryllium	ND	0.50	"	"	"	"	"	"	
<b>Calcium</b>	<b>310000</b>	620	"	50	"	"	02/26/08	"	
Cadmium	ND	0.20	"	1	"	"	02/21/08	"	
<b>Cobalt</b>	<b>0.73</b>	0.50	"	"	"	"	"	"	
Copper	ND	4.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>14</b>	5.0	"	"	"	"	"	"	
<b>Iron</b>	<b>1200</b>	10	"	"	"	"	"	"	
Lead	ND	5.0	"	"	"	"	"	"	C
<b>Manganese</b>	<b>22</b>	10	"	"	"	"	"	"	
Molybdenum	ND	1.0	"	"	"	"	"	"	
Nickel	ND	5.0	"	"	"	"	"	"	
<b>Potassium</b>	<b>220</b>	25	"	"	"	"	"	"	
Selenium	ND	10	"	"	"	"	"	"	C
Thallium	ND	5.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>8.2</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>7.4</b>	5.0	"	"	"	"	"	"	

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**Reported:**  
02/28/08 11:07

## Total Metals by EPA 6000/7000 Series Methods TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>DTSC-A0C10d-3 (MRB0280-01) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
Hexavalent Chromium	3.0	0.80	mg/kg	1	8B14022	02/12/08	02/12/08	EPA 7196A	L2, A-01
<b>DTSC-WP-NEW-2 (MRB0280-02) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
Hexavalent Chromium	1.3	0.40	mg/kg	1	8B27029	02/27/08	02/27/08	EPA 7196A	H8
<b>DTSC-AOC14-Roadcu (MRB0280-03) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
Hexavalent Chromium	ND	0.40	mg/kg	1	8B27029	02/27/08	02/27/08	EPA 7196A	H8



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**Reported:**  
02/28/08 11:07

## Conventional Chemistry Parameters by APHA/EPA Methods

### TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>DTSC-A0C10d-3 (MRB0280-01) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
<b>pH</b>	<b>8.18</b>	1.00	pH Units	1	8B15004	02/11/08	02/11/08	EPA 9045C	HFT
<b>DTSC-WP-NEW-2 (MRB0280-02) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
<b>pH</b>	<b>8.21</b>	1.00	pH Units	1	8B15004	02/11/08	02/11/08	EPA 9045C	HFT
<b>DTSC-AOC14-Roadcu (MRB0280-03) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
<b>pH</b>	<b>8.99</b>	1.00	pH Units	1	8B15004	02/11/08	02/11/08	EPA 9045C	HFT

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**Reported:**  
02/28/08 11:07

## Anions by EPA Method 300.0

### TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>DTSC-A0C10d-3 (MRB0280-01) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
Bromide	ND	3.0	mg/kg	1	8B18019	02/14/08	02/14/08	EPA 300.0	
Chloride	11	10	"	"	"	"	"	"	
Fluoride	4.0	1.0	"	"	"	"	"	"	
Nitrate as NO3	19	5.0	"	"	"	"	"	"	H3
Nitrite as NO2	44	5.0	"	"	"	"	"	"	H3
Sulfate as SO4	38	5.0	"	"	"	"	"	"	
<b>DTSC-WP-NEW-2 (MRB0280-02) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
Bromide	8.6	3.0	mg/kg	1	8B18019	02/14/08	02/14/08	EPA 300.0	
Chloride	12000	1000	"	100	"	"	"	"	
Fluoride	21	1.0	"	1	"	"	"	"	
Nitrate as NO3	1900	50	"	10	"	"	"	"	H3
Nitrite as NO2	ND	5.0	"	1	"	"	"	"	H3
Sulfate as SO4	9600	500	"	100	"	"	"	"	
<b>DTSC-AOC14-Roadcu (MRB0280-03) Soil    Sampled: 01/18/08 11:00    Received: 02/08/08 12:10</b>									
Bromide	ND	3.0	mg/kg	1	8B18019	02/14/08	02/14/08	EPA 300.0	
Chloride	1400	100	"	10	"	"	"	"	
Fluoride	19	1.0	"	1	"	"	"	"	
Nitrate as NO3	320	50	"	10	"	"	"	"	H3
Nitrite as NO2	10	5.0	"	1	"	"	"	"	H3
Sulfate as SO4	770	50	"	10	"	"	"	"	



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**Reported:**  
02/28/08 11:07

## Metals Scan by ICP - Quality Control

### TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch 8B13019 - EPA 3050B / ICP Scan

##### Blank (8B13019-BLK1)

Prepared: 02/13/08 Analyzed: 02/21/08

Silver	ND	0.50	mg/kg
Antimony	ND	5.0	"
Arsenic	ND	10	"
Barium	ND	5.0	"
Beryllium	ND	0.50	"
Calcium	ND	12	"
Cadmium	ND	0.20	"
Cobalt	ND	0.50	"
Copper	ND	4.0	"
Chromium	ND	5.0	"
Iron	ND	10	"
Lead	ND	5.0	"
Manganese	ND	10	"
Molybdenum	ND	1.0	"
Nickel	ND	5.0	"
Potassium	ND	25	"
Selenium	ND	10	"
Thallium	ND	5.0	"
Vanadium	ND	5.0	"
Zinc	ND	5.0	"

##### Blank (8B13019-BLK1)

Prepared: 02/13/08 Analyzed: 02/22/08

Sodium	ND	25	"
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##### Laboratory Control Sample (8B13019-BS1)

Prepared: 02/13/08 Analyzed: 02/21/08

Silver	46.8	0.50	mg/kg	50.0	94	80-115
Antimony	49.6	5.0	"	50.0	99	80-115
Sodium	502	25	"	500	100	85-115
Arsenic	49.0	10	"	50.0	98	75-115
Barium	49.2	5.0	"	50.0	98	85-115
Beryllium	50.6	0.50	"	50.0	101	85-115
Calcium	546	12	"	500	109	80-115
Cadmium	48.5	0.20	"	50.0	97	80-115
Cobalt	51.1	0.50	"	50.0	102	80-115
Copper	49.8	4.0	"	50.0	100	85-115
Chromium	51.4	5.0	"	50.0	103	85-115
Iron	52.2	10	"	50.0	104	80-120

TestAmerica Morgan Hill

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5796 Corporate Ave.  
Cypress CA, 90630

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MRB0280  
**Reported:**  
02/28/08 11:07

## Metals Scan by ICP - Quality Control

### TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch 8B13019 - EPA 3050B / ICP Scan

##### Laboratory Control Sample (8B13019-BS1)

Prepared: 02/13/08 Analyzed: 02/21/08

Lead	50.5	5.0	mg/kg	50.0		101	80-115			
Manganese	50.4	10	"	50.0		101	75-115			
Molybdenum	50.2	1.0	"	50.0		100	80-115			
Nickel	51.6	5.0	"	50.0		103	85-115			
Potassium	502	25	"	500		100	75-115			
Selenium	48.5	10	"	50.0		97	70-115			
Thallium	48.2	5.0	"	50.0		96	80-115			
Vanadium	50.2	5.0	"	50.0		100	85-115			
Zinc	50.0	5.0	"	50.0		100	80-115			

##### Matrix Spike (8B13019-MS1)

Source: MRB0194-AP

Prepared: 02/13/08 Analyzed: 02/21/08

Silver	44.5	0.50	mg/kg	50.0	0.895	87	80-120			
Antimony	11.7	5.0	"	50.0	1.13	21	80-120			M8
Sodium	1270	25	"	500	720	110	85-115			
Arsenic	51.4	10	"	50.0	6.42	90	80-120			
Barium	230	5.0	"	50.0	179	103	80-120			
Beryllium	45.5	0.50	"	50.0	0.375	90	80-120			
Calcium	5720	12	"	500	4330	278	80-115			M7
Cadmium	43.9	0.20	"	50.0	0.0900	88	80-120			
Cobalt	54.8	0.50	"	50.0	10.3	89	80-120			
Copper	71.8	4.0	"	50.0	25.0	94	80-120			
Chromium	84.1	5.0	"	50.0	32.0	104	80-120			
Lead	55.8	5.0	"	50.0	10.8	90	80-120			
Manganese	654	10	"	50.0	569	169	75-115			M7
Molybdenum	39.2	1.0	"	50.0	0.425	78	80-120			M8
Nickel	85.6	5.0	"	50.0	38.2	95	80-120			
Potassium	3530	25	"	500	2410	225	75-115			M7
Selenium	50.1	10	"	50.0	4.58	91	80-120			
Thallium	32.9	5.0	"	50.0	ND	66	80-120			M8
Vanadium	91.9	5.0	"	50.0	37.0	110	80-120			
Zinc	101	5.0	"	50.0	50.7	101	80-120			



Dept. of Toxic Substances Control-Cypress  
5796 Corporate Ave.  
Cypress CA, 90630

Project: PG&E Topock  
Project Number: 07TA0301  
Project Manager: Chris Guerre

MRB0280  
**Reported:**  
02/28/08 11:07

## Metals Scan by ICP - Quality Control

### TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch 8B13019 - EPA 3050B / ICP Scan

<b>Matrix Spike (8B13019-MS1)</b>	<b>Source: MRB0194-AP</b>			Prepared: 02/13/08		Analyzed: 02/26/08				
Iron	28200	50	mg/kg	50.0	24700	6860	80-120			M7

<b>Matrix Spike Dup (8B13019-MSD1)</b>	<b>Source: MRB0194-AP</b>			Prepared: 02/13/08		Analyzed: 02/21/08				
Silver	44.3	0.50	mg/kg	50.0	0.895	87	80-120	0.5	25	
Antimony	16.0	5.0	"	50.0	1.13	30	80-120	32	25	M8, R2
Sodium	1220	25	"	500	720	100	85-115	4	20	
Arsenic	49.1	10	"	50.0	6.42	85	80-120	5	25	
Barium	205	5.0	"	50.0	179	53	80-120	11	25	M8
Beryllium	45.4	0.50	"	50.0	0.375	90	80-120	0.1	25	
Calcium	5060	12	"	500	4330	144	80-115	12	40	M7
Cadmium	43.8	0.20	"	50.0	0.0900	87	80-120	0.3	25	
Cobalt	54.4	0.50	"	50.0	10.3	88	80-120	0.8	25	
Copper	69.4	4.0	"	50.0	25.0	89	80-120	3	25	
Chromium	79.3	5.0	"	50.0	32.0	95	80-120	6	25	
Lead	55.4	5.0	"	50.0	10.8	89	80-120	0.8	25	
Manganese	612	10	"	50.0	569	87	75-115	6	40	
Molybdenum	40.3	1.0	"	50.0	0.425	80	80-120	3	25	
Nickel	83.4	5.0	"	50.0	38.2	90	80-120	3	25	
Potassium	3020	25	"	500	2410	123	75-115	16	25	M7
Selenium	48.8	10	"	50.0	4.58	89	80-120	3	25	
Thallium	34.6	5.0	"	50.0	ND	69	80-120	5	25	M8
Vanadium	84.6	5.0	"	50.0	37.0	95	80-120	8	25	
Zinc	96.2	5.0	"	50.0	50.7	91	80-120	5	25	

<b>Matrix Spike Dup (8B13019-MSD1)</b>	<b>Source: MRB0194-AP</b>			Prepared: 02/13/08		Analyzed: 02/26/08				
Iron	25800	50	"	50.0	24700	2120	80-120	9	20	M7

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Cypress CA, 90630

Project: PG&E Topock  
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Project Manager: Chris Guerre

MRB0280  
**Reported:**  
02/28/08 11:07

## Total Metals by EPA 6000/7000 Series Methods - Quality Control

### TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch 8B14022 - General Preparation / EPA 7196A

##### Blank (8B14022-BLK1)

Prepared & Analyzed: 02/12/08

Hexavalent Chromium	ND	0.80	mg/kg							L2
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##### Laboratory Control Sample (8B14022-BS1)

Prepared & Analyzed: 02/12/08

Hexavalent Chromium	5.91	0.80	mg/kg	10.0		59	80-120			L2
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#### Batch 8B27029 - General Preparation / EPA 7196A

##### Blank (8B27029-BLK1)

Prepared & Analyzed: 02/27/08

Hexavalent Chromium	ND	0.80	mg/kg							
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##### Laboratory Control Sample (8B27029-BS1)

Prepared & Analyzed: 02/27/08

Hexavalent Chromium	10.3	0.80	mg/kg	10.0		103	80-120			
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##### Matrix Spike (8B27029-MS1)

Source: MRB0280-03

Prepared & Analyzed: 02/27/08

Hexavalent Chromium	9.92	0.80	mg/kg	10.0	0.312	96	75-125			
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##### Matrix Spike Dup (8B27029-MSD1)

Source: MRB0280-03

Prepared & Analyzed: 02/27/08

Hexavalent Chromium	9.01	0.80	mg/kg	10.0	0.312	87	75-125	10	20	
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**Reported:**  
02/28/08 11:07

**Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control**  
**TestAmerica Morgan Hill**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 8B15004 - General Preparation / EPA 9045C**

<b>Duplicate (8B15004-DUP1)</b>	<b>Source: MRB0280-03</b>		<b>Prepared &amp; Analyzed: 02/11/08</b>							
pH	9.03	1.00	pH Units		8.99			0.4	20	

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**Reported:**  
02/28/08 11:07

## Anions by EPA Method 300.0 - Quality Control

### TestAmerica Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch 8B18019 - General Preparation / EPA 300.0

##### Blank (8B18019-BLK1)

Prepared & Analyzed: 02/14/08

Chloride	ND	10	mg/kg
Bromide	ND	3.0	"
Sulfate as SO4	ND	5.0	"
Nitrite as NO2	ND	5.0	"
Nitrate as NO3	ND	5.0	"
Fluoride	ND	1.0	"

##### Laboratory Control Sample (8B18019-BS1)

Prepared & Analyzed: 02/14/08

Nitrate as NO3	104	5.0	mg/kg	100	104	90-110
Sulfate as SO4	104	5.0	"	100	104	90-110
Bromide	54.1	3.0	"	50.0	108	90-110
Fluoride	26.3	1.0	"	25.0	105	90-110
Chloride	104	10	"	100	104	90-110
Nitrite as NO2	53.6	5.0	"	50.0	107	90-110

##### Matrix Spike (8B18019-MS1)

Source: MRB0280-03

Prepared & Analyzed: 02/14/08

Chloride	999	100	mg/kg	100	1370	0	80-120	M8
Fluoride	31.0	1.0	"	25.0	18.9	48	80-120	M8
Nitrate as NO3	316	50	"	100	320	0	80-120	M8
Nitrite as NO2	50.9	5.0	"	50.0	10.4	81	80-120	
Sulfate as SO4	639	50	"	100	766	0	80-120	M8
Bromide	49.3	3.0	"	50.0	2.17	94	80-120	

##### Matrix Spike Dup (8B18019-MSD1)

Source: MRB0280-03

Prepared & Analyzed: 02/14/08

Bromide	50.2	3.0	mg/kg	50.0	2.17	96	80-120	2	20	
Fluoride	32.6	1.0	"	25.0	18.9	55	80-120	5	20	M8
Nitrate as NO3	401	50	"	100	320	81	80-120	24	20	M8
Nitrite as NO2	53.7	5.0	"	50.0	10.4	87	80-120	5	20	
Chloride	1420	100	"	100	1370	50	80-120	34	20	M8
Sulfate as SO4	830	50	"	100	766	64	80-120	26	20	M8



Dept. of Toxic Substances Control-Cypress  
5796 Corporate Ave.  
Cypress CA, 90630

Project: PG&E Topock  
Project Number: 07TA0301  
Project Manager: Chris Guerre

MRB0280  
**Reported:**  
02/28/08 11:07

## Notes and Definitions

R2 The RPD exceeded the acceptance limit.

M8 The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).

M7 The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).

L2 Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was below acceptance limits.

HFT The holding time for this test is immediate. It was analyzed in the laboratory as soon as possible after receipt.

H8 The sample was extracted past the holding time.

H3 Sample was received and analyzed past holding time.

C Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.

A-01 There are insufficient samples for re-run.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference