TES

Alameda County
AUG 0 3 2003
Environmental Health

Report

2003 Annual
Groundwater Monitoring

Oakland Power Plant
50 Martin Luther King Jr. Way
Oakland, California

August 1, 2003

Prepared by

Technical and Ecological Services

Report No.: 402.331.03.74

Pacific Gas and Electric Company
Technical and Ecological Services
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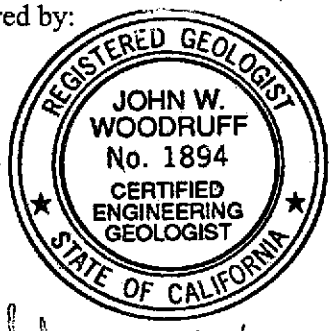

John W. Woodruff
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Approved by:

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Supervisor, Land and Water Quality Unit

Pacific Gas and Electric Company

Technical and Ecological Services 3400 Crow Canyon Road
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925.820.2000

August 1, 2003

Ms. Eva Chu
Hazardous Materials Specialist
Alameda County Department of Environmental Protection
UST Local Oversight Program
1131 Harbor Way Parkway, 2nd Floor
Alameda, CA 94502-6577

Subject: 2003 Annual Groundwater Monitoring Report, Oakland Power Plant,
50 Martin Luther King Jr. Way, Oakland, California

Dear Ms. Chu:

Enclosed is a copy of the *2003 Annual Groundwater Monitoring Report for Oakland Power Plant at 50 Martin Luther King Jr. Way, Oakland, California*. This report presents the results of annual groundwater monitoring of three monitoring wells at the plant. The monitoring was performed on February 25 2003, and consisted of collecting water level measurements, collecting groundwater samples, and analyzing the samples for total extractable petroleum hydrocarbons as diesel (TEPH-D).

Groundwater was measured at a depth of about 4.5 feet below the surface. The groundwater gradient was calculated to be about 0.004 foot per foot toward the north-northwest. As with all past samples collected since monitoring began in June 1993, floating product was not observed on any of the groundwater samples from the three wells.

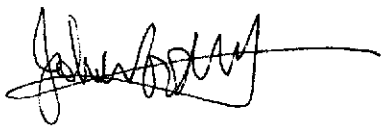
The analytical results show that TEPH-D was detected in the groundwater samples collected from all three wells. Following is a list of those concentrations, as well as average concentrations of all analyzed samples since monitoring began. The presence of fine organic material observed in the MW-1-3 sample during the 2003 sampling may have contributed to the unusually high TEPH-D concentration in that sample.

Monitoring Well	February 25 2003 TEPH-D Concentration	Average concentration of 19 samples since 1993
MW-1-2	140 ug/L	556 ug/L
MW-1-3	3,100 ug/L	401 ug/L
MW-2-3	99 ug/L	250 ug/L

Based on the absence of floating product observed in any of the samples collected from the three wells since monitoring began nearly ten years ago, as well as low concentrations of TEPH-D reported in 19 samples collected from each well to date, PG&E believes that additional monitoring is not warranted at this site. PG&E respectfully requests that the Alameda County Department of Environmental Protection consider the issuance of a no-further-action letter.

Feel free to contact me at 925.866.5883 or by email at jxwf@pge.com if you have any questions or concerns.

Sincerely,



JOHN W. WOODRUFF
Registered Geologist

JWW(925.866.5883): ngc
402.331.03.74

pc: Garth White, Department of Toxic Substances Control
Luis Medina, Duke Energy North America

Enclosure

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FIGURES

TABLES

1 INTRODUCTION AND BACKGROUND

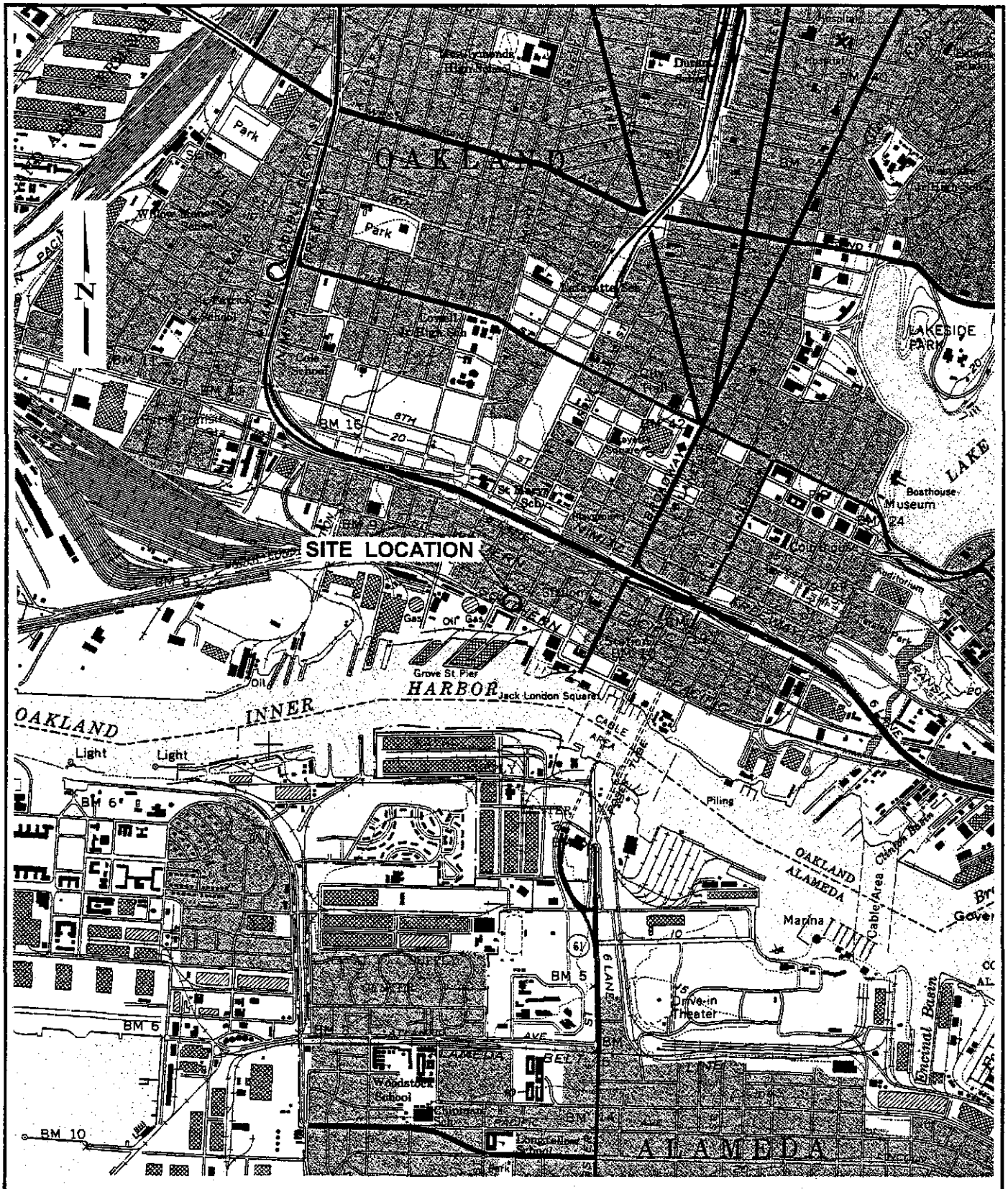
This report presents the results of the 2003 annual groundwater monitoring of three monitoring wells at Oakland Power Plant. The plant is located at 50 Martin Luther King Jr. Way in Oakland, California (Figure 1) at an elevation of about 15 feet above mean sea level (AMSL). The monitoring wells, designated MW-1-2, MW-1-3, and MW-2-3, are located in a triangular configuration in the vicinity of two diesel dump tanks, Diesel Dump Tank Nos. 2 and 3 (Figure 2). This groundwater monitoring program is performed under the oversight of Alameda County Department of Environmental Protection (ACDEP). The 2003 annual monitoring was performed on February 25, 2003, and consisted of measuring groundwater levels, collecting groundwater samples, and analyzing the samples for total extractable petroleum hydrocarbons as diesel (TEPH-D).

2 BACKGROUND

Diesel Dump Tank Nos. 2 and 3, as well as the third diesel dump tank at the plant, Diesel Dump Tank No. 1 (Figure 2), were installed in November 1991. They consist of double-wall underground tanks contained in sealed concrete vaults. These tanks replaced three original 75-gallon underground tanks that were in place at the same locations. During the removal and replacement of the three tanks, 77 cubic yards of soil impacted by diesel fuel was excavated and transported to Kettleman Hills Facility for disposal.

Laboratory results of confirmation soil samples collected from the bottom of the Tank No. 1 excavation and associated soil stockpile did not indicate detectable diesel, and for that reason, a groundwater monitoring well was not installed at that location. However, residual diesel was detected in the soil samples collected from the bottoms of the excavations and associated stockpiles from Tank Nos. 2 and 3. In June 1993, the three monitoring wells were installed as a triangular configuration to monitor water quality and to provide groundwater gradient information in the vicinity of Tank Nos. 2 and 3.

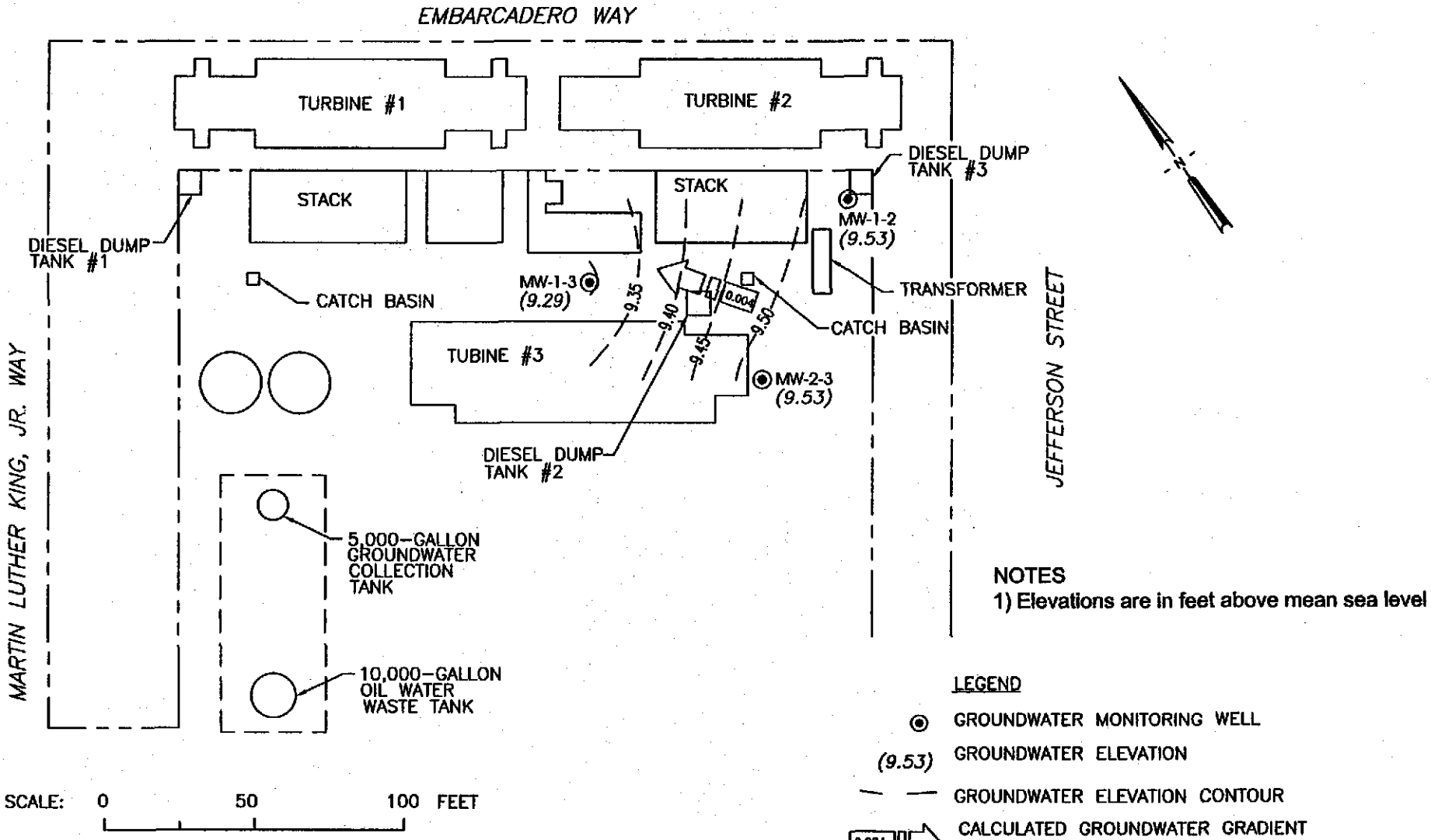
The three monitoring wells have been sampled 19 times since their installation in June 1993. From 1993 to 1995, the wells were sampled quarterly. In 1996, the wells were sampled two times. Since 1997, the wells have been sampled annually.



Base map from U.S. Geological Survey 7.5 minute series.
Quadrangle: Oakland West, Calif.

Figure 1. Site Location Map of Oakland Power Plant.

gmdwtr/serv-ctr/Oakland PP



NOTES

1) Elevations are in feet above mean sea level

LEGEND

- ⊙ GROUNDWATER MONITORING WELL
- (9.53) GROUNDWATER ELEVATION
- — — GROUNDWATER ELEVATION CONTOUR
- 0.004 ⇨ CALCULATED GROUNDWATER GRADIENT SHOWING DOWNGRADIENT DIRECTION (ARROW) AND MAGNITUDE (FOOT PER FOOT)

PG&E

Oakland Power Plant
Groundwater Contour Map -February 25, 2003

TECHNICAL AND ECOLOGICAL SERVICES

DRN:LKE	DATE : 4-17-03
CHK:JWW	SCALE: AS_SHOWN
APR:JWW	SHEET OAKLAND_PP

FIGURE 2

REV.
REV.

3 GROUNDWATER LEVELS AND GRADIENT

Groundwater levels were measured in the monitoring wells using an electronic water level meter. The measurements were recorded in the field on a monitoring well survey form (Appendix A). Groundwater elevations ranged from a low of 9.29 feet AMSL in well MW-1-3 to a high of 9.53 feet AMSL, recorded in both of the other wells. The calculated groundwater gradient was determined to be approximately 0.004 foot per foot toward the north-northwest (Figure 2). The groundwater elevations and hydraulic gradient information from the 2003 monitoring, as well as past monitoring events, are summarized in Table 1.

4 GROUNDWATER SAMPLING PROCEDURES

Before the collection of groundwater samples, the three monitoring wells were purged according to the monitoring well purging protocol presented in Figure 3. The purged water volume, temperature, conductivity, and pH, were recorded on the purging and sampling log sheets (Appendix A). Groundwater samples were collected in one-liter glass bottles using disposable bailers. An equipment blank consisting of distilled water poured through a new disposable bailer was also collected in the field.

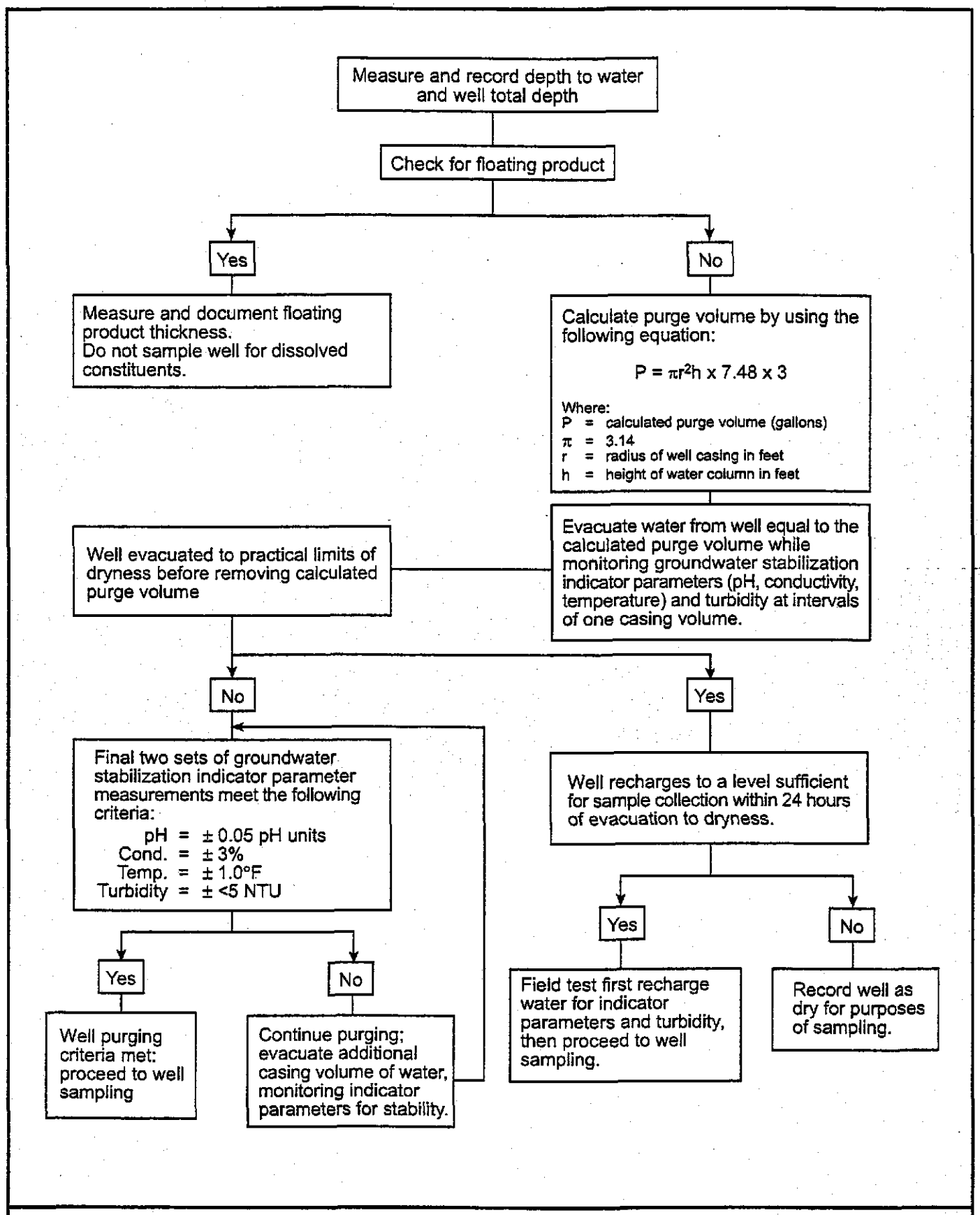


Figure 3. Monitoring Well Purging Protocol

grndwtr/protocol

Table 1. Groundwater gradients from three monitoring wells
Oakland Power Plant, 50 Martin Luther King Jr. Way, Oakland, CA

	Sample Date	Monitoring Well	Total Depth of Well (feet)	Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet)	Groundwater Elevation (feet AMSL)	Groundwater Gradient		
							Direction	Bearing	Magnitude
1	06/22/93	MW-1-2	13.6	13.95	5.05	8.90	WNW	290	0.003
		MW-1-3	7.3	14.01	5.15	8.86			
		MW-2-3	13.4	13.91	5.00	8.91			
2	09/22/93	MW-1-2			5.91	8.04	E	80	0.005
		MW-1-3			5.57	8.44			
		MW-2-3			5.50	8.41			
3	12/28/93	MW-1-2			4.77	9.18	NNW	330	0.005
		MW-1-3			5.13	8.88			
		MW-2-3			4.74	9.17			
4	04/11/94	MW-1-2			4.66	9.29	W	260	0.004
		MW-1-3			5.01	9.00			
		MW-2-3			5.62	8.29			
5	04/20/94	MW-1-2			4.86	9.09	NW	320	0.003
		MW-1-3			5.09	8.92			
		MW-2-3			5.83	8.08			
6	06/29/94	MW-1-2			5.18	8.77	NW	325	0.001
		MW-1-3			5.30	8.71			
		MW-2-3			5.14	8.77			
7	10/07/94	MW-1-2			4.55	9.40	WSW	250	0.01
		MW-1-3			5.69	8.32			
		MW-2-3			5.50	8.41			
8	01/03/95	MW-1-2			4.11	9.84	NW	320	0.007
		MW-1-3			4.62	9.39			
		MW-2-3			4.11	9.80			
9	03/24/95	MW-1-2			3.57	10.38	NNW	335	0.006
		MW-1-3			3.91	10.10			
		MW-2-3			3.47	10.44			
10	06/30/95	MW-1-2			4.69	9.26	NW	325	0.002
		MW-1-3			4.89	9.12			
		MW-2-3			4.66	9.25			
11	10/12/95	MW-1-2			5.35	8.60	N	350	0.0005
		MW-1-3			5.43	8.58			
		MW-2-3			5.30	8.61			
12	01/18/96	MW-1-2			4.19	9.76	NNW	330	0.007
		MW-1-3			4.72	9.29			
		MW-2-3			4.15	9.76			
13	02/19/96	MW-1-2			4.03	9.92	NW	315	0.007
		MW-1-3			4.41	9.60			
		MW-2-3			3.97	9.94			
14	02/28/97	MW-1-2			4.73	9.22	SSE	165	0.009
		MW-1-3			4.90	9.11			
		MW-2-3			4.70	9.21			
15	02/24/98	MW-1-2			3.50	10.45	NNW	330	0.007
		MW-1-3			3.82	10.19			
		MW-2-3			3.40	10.51			
16	02/17/99	MW-1-2			3.33	10.62	NW	320	0.009
		MW-1-3			4.10	9.91			
		MW-2-3			3.31	10.60			
17	02/16/00	MW-1-2			3.42	10.53	NNW	335	0.007
		MW-1-3			3.80	10.21			
		MW-2-3			3.27	10.64			
18	03/01/01	MW-1-2			4.00	9.95	NW	320	0.004
		MW-1-3			4.28	9.73			
		MW-2-3			3.93	9.98			
19	02/20/02	MW-1-2			4.13	9.82	NW	325	0.006
		MW-1-3			4.68	9.33			
		MW-2-3			4.13	9.78			
20	02/25/03	MW-1-2			4.42	9.53	NNW	335	0.004
		MW-1-3			4.72	9.29			
		MW-2-3			4.38	9.53			

ABBREVIATIONS
AMSL = Above Mean Sea Level

5 CHEMICAL LABORATORY ANALYSES

The three groundwater samples and the equipment blank were analyzed for TEPH-D using U.S. Environmental Protection Agency (USEPA) Method 3510/8015.

Some of the early groundwater samples were tested for benzene, toluene, methylbenzene, and xylenes (BTEX). The analysis for BTEX was eliminated for MW-2-3 and equipment blank samples were eliminated since 1996 as per Jennifer Eberle, the Hazardous Materials Specialist with the Alameda County Department of Environmental Protection in a letter dated January 11, 1996. The analysis for BTEX was eliminated for wells MW-1-2 and MW-1-3 since the second quarter of 1994.

The February 2003 analytical results as well as historical results are summarized in Table 2 and Figure 4. The chemical laboratory report and the chain-of-custody are included in Appendix B. The analytical results show that TEPH-D was detected in the groundwater samples collected from all three wells. Following are those concentrations as well as average concentrations of all analyzed samples since monitoring began.

Monitoring Well	February 25 2003 TEPH-D Concentration	Average concentration of 19 samples since 1993
MW-1-2	140 ug/L	556 ug/L
MW-1-3	3,100 ug/L	401 ug/L
MW-2-3	99 ug/L	250 ug/L

The presence of black particulates and sulfur smell observed during the purging and sampling of MW-1-3 (as noted on the Groundwater Purging and Sampling Log in Appendix A) may originate from organic deposits in the soil. These particulates may have contributed to the unusually high TEPH-D concentration in that sample because heavy hydrocarbons have a tendency to adhere to particles. Neither black particulates nor sulfur odor was observed during the purging and sampling of the other two wells.

It also should be noted that most of the reported TEPH-D concentrations have been flagged by the laboratory as "Hydrocarbon reported does not match the pattern of the diesel standard" or "Unknown hydrocarbon in diesel range quantified as diesel" (Table 2).

Table 2. Analytical results of groundwater samples from three monitoring wells
Oakland Power Plant, 50 Martin Luther King Jr. Way, Oakland, CA

Sample ID	Top of Casing Elevation (feet AMSL)	Sample Event No.	Sample Date	Depth to Groundwater (feet)	Groundwater Elevation (feet AMSL)	TEPH-D (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	Notes
MW-1-2	13.95	1	06/22/93	5.05	8.90	1,500	<0.5	<0.5	<0.5	<0.5	1
		2	09/22/93	5.91	8.04	240	<0.5	<0.5	<0.5	<0.5	
		3	12/28/93	4.77	9.18	200	<0.5	<0.5	<0.5	<0.5	
		4	04/11/94	4.66	9.29	--	<0.5	<0.5	<0.5	<0.5	7
			04/20/94	4.86	9.09	600	--	--	--	--	7
		5	06/29/94	5.18	8.77	520	--	--	--	--	
		6	10/07/94	4.55	9.40	590	--	--	--	--	
		7	01/03/95	4.11	9.84	650	--	--	--	--	1
		8	03/24/95	3.57	10.38	740	--	--	--	--	1
		9	06/30/95	4.69	9.26	540	--	--	--	--	
		10	10/12/95	5.35	8.60	230	--	--	--	--	1
		11	01/18/96	4.19	9.76	600	--	--	--	--	1
		12	02/19/96	4.03	9.92	670	--	--	--	--	1
		13	02/28/97	4.73	9.22	1,800	--	--	--	--	1
		14	02/24/98	3.50	10.45	430	--	--	--	--	1
		15	02/17/99	3.33	10.62	130	--	--	--	--	1, 5
		16	02/16/00	3.42	10.53	710	--	--	--	--	1
		17	03/01/01	4.00	9.95	140	--	--	--	--	1
		18	02/20/02	4.13	9.82	130	--	--	--	--	1
		19	02/25/03	4.42	9.53	140	--	--	--	--	1, 5
			Averages	**4.4**	**9.5**	**556**					6
MW-1-3	14.01	1	06/22/93	5.15	8.86	160	<0.5	<0.5	<0.5	<0.5	1
		2	09/22/93	5.57	8.44	430	<0.5	<0.5	<0.5	<0.5	
		3	12/28/93	5.13	8.88	<50	<0.5	<0.5	<0.5	<0.5	
		4	04/11/94	5.01	9.00	--	<0.5	<0.5	<0.5	<0.5	7
			04/20/94	5.09	8.92	<50	--	--	--	--	7
		5	06/29/94	5.30	8.71	280	--	--	--	--	1
		6	10/07/94	5.69	8.32	160	--	--	--	--	1
		7	01/03/95	4.62	9.39	210	--	--	--	--	1
		8	03/24/95	3.92	10.09	<50	--	--	--	--	
		9	06/30/95	4.89	9.12	231	--	--	--	--	1
		10	10/12/95	5.43	8.58	190	--	--	--	--	1
		11	01/18/96	4.72	9.29	240	--	--	--	--	1
		12	02/19/96	4.41	9.60	290	--	--	--	--	1
		13	02/28/97	4.90	9.11	1,500	--	--	--	--	1
		14	02/24/98	3.82	10.19	160	--	--	--	--	1
		15	02/17/99	4.10	9.91	<50	--	--	--	--	5
		16	02/16/00	3.80	10.21	150	--	--	--	--	1
		17	03/01/01	4.28	9.73	<50	--	--	--	--	
		18	02/20/02	4.68	9.33	260	--	--	--	--	1
		19	02/25/03	4.72	9.29	3,100	--	--	--	--	1, 5
			Averages	**4.8**	**9.2**	**401**					6
MW-2-3	13.91	1	06/22/93	5.00	8.91	560	3	<0.5	<0.5	<0.5	2
		2	09/22/93	5.50	8.41	460	<0.5	<0.5	<0.5	<0.5	
		3	12/28/93	4.74	9.17	<50	<0.5	<0.5	<0.5	<0.5	3
		4	04/11/94	5.62	8.29	--	<0.5	<0.5	<0.5	<0.5	7
			04/20/94	5.83	8.08	<50	--	--	--	--	7
		5	06/29/94	5.14	8.77	920	<0.5	<0.5	<0.5	<0.5	1, 4
		6	10/07/94	5.50	8.41	<50	16	13	6	24	
		7	01/03/95	4.11	9.80	190	<0.5	<0.5	<0.5	<0.5	1
		8	03/24/95	3.47	10.44	110	<0.5	<0.5	<0.5	<0.5	1
		9	06/30/95	4.66	9.25	187	<0.5	<0.5	<0.5	<0.5	1
		10	10/12/95	5.30	8.61	290	<0.5	<0.5	<0.5	<0.5	1
		11	01/18/96	4.15	9.76	370	--	--	--	--	1
		12	02/19/96	3.97	9.94	320	--	--	--	--	1
		13	02/28/97	4.70	9.21	610	--	--	--	--	1
		14	02/24/98	3.40	10.51	140	--	--	--	--	1
		15	02/17/99	3.31	10.60	<50	--	--	--	--	5
		16	02/16/00	3.27	10.64	190	--	--	--	--	1
		17	03/01/01	3.93	9.98	<50	--	--	--	--	
		18	02/20/02	4.13	9.78	<50	--	--	--	--	
		19	02/25/03	4.38	9.53	99	--	--	--	--	1, 5
			Averages	**4.5**	**9.4**	**250**					6

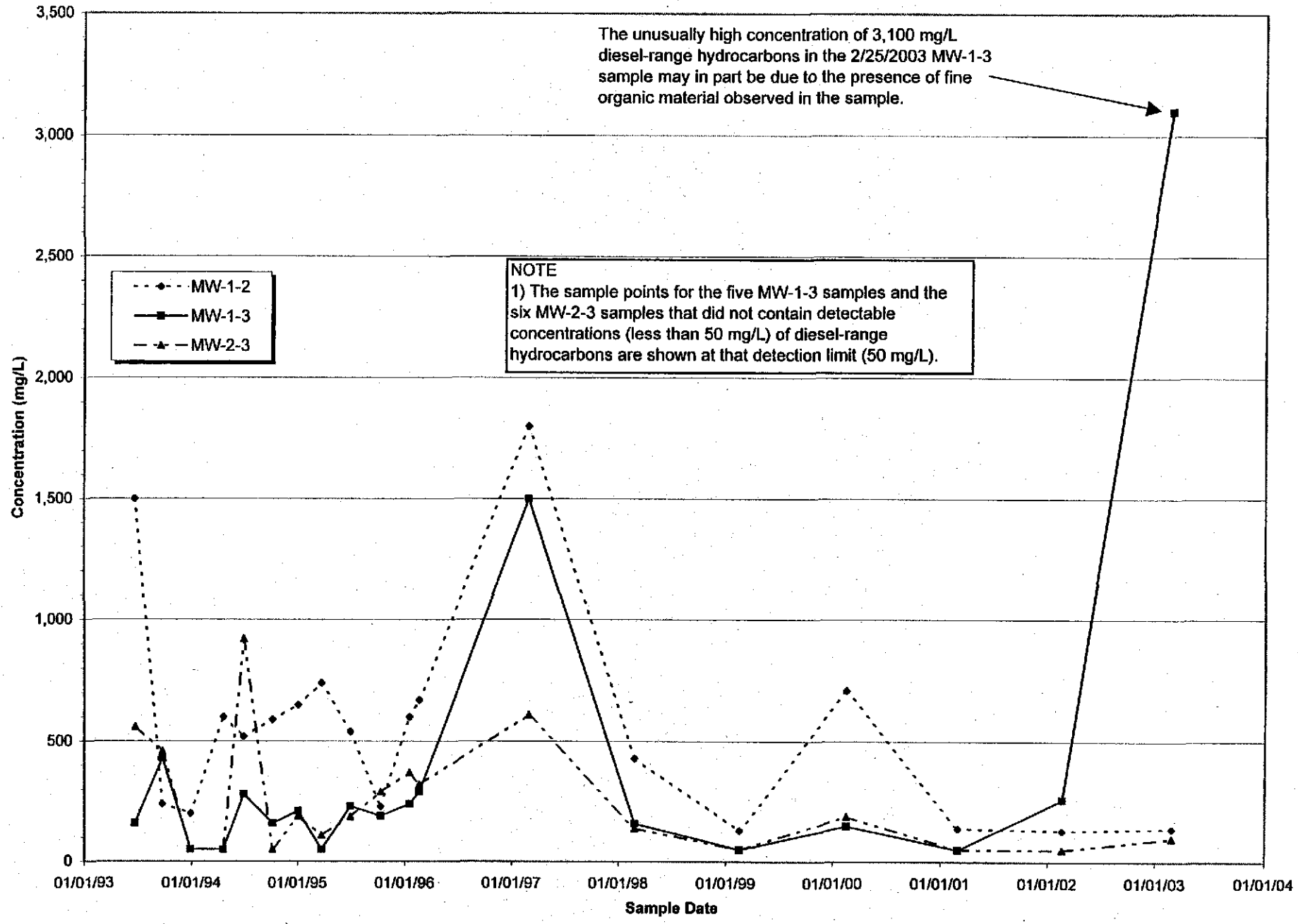
Table 2. Analytical results of groundwater samples from three monitoring wells
Oakland Power Plant, 50 Martin Luther King Jr. Way, Oakland, CA

Sample ID	Top of Casing Elevation (feet AMSL)	Sample Event No.	Sample Date	Depth to Groundwater (feet)	Groundwater Elevation (feet AMSL)	TEPH-D (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	Notes
Dup (MW-1-2)			09/22/93			--	<0.5	<0.5	<0.5	<0.5	
			12/28/93			--	<0.5	<0.5	<0.5	<0.5	
			04/11/94			--	<0.5	<0.5	<0.5	<0.5	
			06/30/95			--	<0.5	<0.5	<0.5	<0.5	
Travel Blank			09/22/93			--	<0.5	<0.5	<0.5	<0.5	
			12/28/93			--	<0.5	<0.5	<0.5	<0.5	
			04/11/94			--	<0.5	<0.5	<0.5	<0.5	
			01/03/95			--	<0.5	<0.5	<0.5	<0.5	
			03/24/95			--	<0.5	0.5	<0.5	<0.5	
			06/30/95			--	<0.5	<0.5	<0.5	<0.5	
			10/12/95			--	<0.5	<0.5	<0.5	<0.5	
			01/18/96			<50	--	--	--	--	
Equipment Blank			02/19/96			<50	--	--	--	--	
			02/28/97			<50	--	--	--	--	
			02/24/98			<50	--	--	--	--	
			02/17/99			<50	--	--	--	--	
			02/16/00			<50	--	--	--	--	
			03/01/01			<50	--	--	--	--	
			02/20/02			<50	--	--	--	--	
			02/25/03			<50	--	--	--	--	

ABBREVIATIONS
AMSL = Above Mean Sea Level
TEPH-D = Total Extractable Petroleum Hydrocarbons as Diesel
ug/L = micrograms per liter
< = below the indicated detection limit
-- = not analyzed
Dup = Duplicate sample from well indicated in parantheses.

NOTES
1 Lab flag: "Hydrocarbon reported does not match the pattern of the our diesel standard." or "Unknown hydrocarbon in diesel range quantified as diesel."
2 Motor oil at a concentration of 3.1 milligrams per liter was detected in sample.
3 Motor oil at a concentration of 2.9 milligrams per liter was detected in sample.
4 Unknown hydrocarbon in motor oil range was also observed in sample.
5 Sample preparation for TEPH-D included silica gel clean-up.
6 Average TEPH-D concentrations were calculated by assuming that concentrations below the detection limit equaled the detection limit (50 ug/L).
7 The two sample dates, 4/11/1994 and 4/20/1994, are considered to comprise the same sample event.

Figure 4. Diesel Concentrations versus Time in Groundwater Samples from Monitoring Wells, Oakland Power Plant



6 FIELD AND LABORATORY QUALITY CONTROL RESULTS

Analytical data were evaluated for accuracy and precision based on field and laboratory quality control (QC). The field QC consisted of collecting one equipment blank and analyzing it for TEPH-D to assess the possible effect of sampling equipment and decontamination procedures on the analytical results and to identify false positives. TEPH-D was not detected in the field blank.

The laboratory QC consisted of adherence to holding times and evaluating method blanks and matrix spike (MS) results. Holding times are established by the USEPA and refer to the maximum time allowed between sample collection and analysis by the laboratory. These limits assist in determining data validity. The method blank results are used to assess the effect of the laboratory environment on the analytical results. The MS recoveries are used to assess analysis accuracy.

All analyses were done within the holding times specified by the USEPA. TEPH-D was not detected in the daily method blanks. Recoveries of MS were within the laboratory acceptance limits.

The field and laboratory QC results indicate that the analytical data are of acceptable quality.

Appendix A

MONITORING WELL SURVEY FORM
AND
PURGING AND SAMPLING LOGS

TES
GROUNDWATER SAMPLING AND ANALYSIS REQUEST FORM

PROJECT NAME: Oakland PP
STREET ADDRESS: 50 Martin Luther King Jr. Way
Oakland, CA
SCHEDULED DATE: February 11, 2003

Revised 2-4-03

SPECIAL INSTRUCTIONS / CONSIDERATIONS:
2003 Annual Groundwater Monitoring Event

Bring two drums and field blank water.
May be slowly recharging wells. Use standard criteria for purge volume, ie, if recharge rate allows, purge 3 volumes. If recharge rate is very slow, purge one or two volumes and sample when sufficient water enters well to fill sample bottles.

Call Mr Medina several days prior to arainge site access.
Use full size van. Plan to purge water to drum in van, transport purge water to the Oakland MGP purge water storage area and leave it there with test pending labels. Be sure to label it Oakland Power Plant purge water with well numbers. Fill out a drum inventory data sheet and return that with the field data sheets to Elizabeth.

TES Site Lead: Korbin Creek
Telephone No: 866-5882
Swims Number: 00531 OPP
Originals to: [redacted] Jer/N
Sampler: Dawson Wright

Well Lock Numbers
P 569

Site Contact: Lou Medina Phone Number: (510) 251-[redacted]or 6860

Well Number or Source	Casing Diameter (inches)	Casing Length (feet)	Depth to Water (2/24/98)	ANALYSES REQUESTED
MW1-2	4	13.5	3.50	TPH-D (EPA 3510/8015m) (2, 1 liter G, NP) **Field Parameters:** pH, Cond, Temperature
MW1-3	4	7.1	3.82	
MW2-3	4	13.3	3.40	
QA Samples QCEB (field blank)				same as above

Laboratory and Lab QC Instructions:
STL
1220 Quarry Lane
Pleasanton, CA 94566
(925) 484-1919

10 day Turn Around Time (TAT)
Please FAX results to Elizabeth Frantz at (925) 866-5681
Request Silica gel cleanup on TPH analyses.

Note on COC: State Tank Fund Site, Global ID No. T0600100992, valid field_pt_names are the same as sample number. Please produce EDD files and e-mail them to emk1@pge.com

FIELD REPORT
WATER LEVEL / FLOATING PRODUCT SURVEY
PACIFIC GAS & ELECTRIC COMPANY - TES

Site location: OAKLAND PP

Survey date: 2/25/03

Sampler: DAWSON WALKER

Well ID	Casing elevation (ft, MSL)	Time of level	Total depth (ft)	Depth to water (ft)	Depth to floating product (ft)	Floating product thickness (ft)	Dissolved oxygen (mg/L	Temp. (°C)	Comments
MW1-2		0805	13.58	4.42	N/A				
MW1-3		0815	7.25	4.72	N/A				
MW2-3		0820	13.41	4.38	N/A				

Comments: TOTAL DEPTHS ACTUALLY RECORDED TODAY

Signature

LEVELDAT.xls

Pacific Gas & Electric Co. - TES
Groundwater Purging and Sampling Log

Site: OAKLAND PP | Job ID: | Well ID: MW1-2
Purge date: 2/25/03 | Sampler: DLWRIGHT | Weather: SUNNY
Sample date: 2/25/03 | Sampler: DLW

Depth measurements and purge volume calculation

Measuring point: TOC @
Depth of well (DTB): 13.58 ft
Depth to water (DTW): 4.42 ft
Total water depth (TD): 9.16 ft
Measurement method: solinst slope indicator
Hydrocarbon odor: yes (no)
Thickness:

TD		casing factor		gal. per vol.		volumes		total purge volume (gal)
9.16	x	.66	=	6	x	3	=	18

Casing factor: for 2" dia. = 0.17 gallons per ft.
for 3" dia. = 0.38 gallons per ft.
~~for 4" dia. = 0.66 gallons per ft.~~
for 6" dia. = 1.47 gallons per ft.

Purge water data

Time Start	Time End	Cumulative volume (gal.)	pH	Conductivity (umho/cm)	Turbidity	Temp. (deg. C)	Comments
1005	1010	6	7.51	1875	CLEAR	17.0	
1015	1020	12	7.34	1350	"	16.7	
1025	1030	18	7.40	1225	CLOUDY	16.2	SULFUR ODOR

Methods

(circle methods used)

Discharge disposal: (around) (barrel) pond treatment system
Purging: ~~surface pump~~ bailer submersible
Sampling: ~~disp. bailer~~ bailer dedicated pump
Decontamination: (soap/DI) pressure wash dedicated equip.

Calibration

calibrated (yes) no
temp. corrected (yes) no

pH meter: Corning 313
pH 4 = 4.00
pH 7 = 7.00
pH 10 = 10.11

Cond. meter: MYRON L
std. 1,000 = 1010
std. 10,000 =

Samples

Sample time: 1115
Lab analyses: TPH-D

Remarks

Pacific Gas & Electric Co. - TES
Groundwater Purging and Sampling Log

Site: OAKLAND PP | Job ID: | Well ID: MW1-3
Purge date: 2/25/03 | Sampler: D. WRIGHT | Weather: Sunny
Sample date: 2/25/03 | Sampler: DLW

Depth measurements and purge volume calculation

Measuring point: TOC @
Depth of well (DTB): 7.25 ft
Depth to water (DTW): 4.72 ft
Total water depth (TD): 2.53 ft
Measurement method: solinst slope indicator

Hydrocarbon odor (yes) no
Thickness: BLACK PARTICULATE ~~SUSPENDED~~ + SHEEN

TD		casing factor		gal. per vol.		volumes		total purge volume (gal)
2.53	x	.66	=	1.6	x	3	=	4.8

Casing factor: for 2" dia. = 0.17 gallons per ft.
for 3" dia. = 0.38 gallons per ft.
for 4" dia. = 0.66 gallons per ft.
for 6" dia. = 1.47 gallons per ft.

Purge water data

Time Start	Time End	Cumulative volume (gal.)	pH	Conductivity (umho/cm)	Turbidity	Temp. (deg. C)	Comments
0915	0920	1.5	6.91	2650		16.4	SULFUR SMELL
0935	0935	3.0	7.15	2200		16.4	FUEL ODOR
0945	0950	4.5	7.23	2125		16.3	" "

Methods

(circle methods used)

Discharge disposal: ground (barrel) pond treatment system
Purging: surface pump (bailer) submersible
Sampling: (disp. bailer) bailer dedicated pump
Decontamination: (soap/DI) pressure wash dedicated equip.

Calibration

calibrated (yes) no
temp. corrected (yes) no

pH meter: CORNING 313
pH 4 = 4.00
pH 7 = 7.03
pH 10 = 10.11

Cond. meter: MYRON L
std. 1,000 = 1010
std. 10,000 =

Samples

Sample time: 1130
Lab analyses: TPH-D

Remarks

Pacific Gas & Electric Co. - TES
Groundwater Purging and Sampling Log

Site: OAKLAND PP | Job ID: | Well ID: MW2-3
Purge date: 3/25/03 | Sampler: DURHAM | Weather: SUNNY
Sample date: 3/25/03 | Sampler: DW

Depth measurements and purge volume calculation

Measuring point: TOC @
Depth of well (DTB): 13.41 ft
Depth to water (DTW): 4.38 ft
Total water depth (TD): 9.03 ft
Measurement method: solinst slope indicator
Hydrocarbon odor: yes (no)
Thickness:

TD		casing factor		gal. per vol.		volumes		total purge volume (gal)
9.03	x	.66	=	5.9	x	3	=	17.7

Casing factor: for 2" dia. = 0.17 gallons per ft.
for 3" dia. = 0.38 gallons per ft.
for 4" dia. = 0.66 gallons per ft.
for 6" dia. = 1.47 gallons per ft.

Purge water data

Time Start	Time End	Cumulative volume (gal.)	pH	Conductivity (umho/cm)	Turbidity	Temp. (deg. C)	Comments
1050	1055	6	7.46	2150	LIGHT	17.9	SLOW RECHARGE
1120	1124	10	7.57	2050	CLEAR	18.9	SLOW RECHARGE
1143	1145	12.75	7.56	2050	CLEAR	18.6	WELL PURGED DRY

Methods

(circle methods used)

Discharge disposal:	ground	barrel	pond	treatment system
Purging:	surface pump	bailer	submersible	
Sampling:	disp. bailer	bailer	dedicated pump	
Decontamination:	soap/DI	pressure wash	dedicated equip.	

Calibration

calibrated: yes no
temp. corrected: yes no

pH meter: CORNING 313
pH 4 = 4.00
pH 7 = 7.03
pH 10 = 10.11

Cond. meter: MYRON L
std. 1,000 = 1010
std. 10,000 =

Samples

Sample time: 1200
Lab analyses: TPH-D

Remarks

Appendix B

ANALYTICAL LABORATORY REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION

SEVERN TRENT STL

Submission#: 2003-02-0540

P.G.& E TES

March 13, 2003

3400 Crow Canyon Road
San Ramon, CA 94583-1393
Attn.: John Woodruff
Project: Oakland PP

Dear Mr. Woodruff:

Attached is our report for your samples received on 02/27/2003 13:30
This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after 04/13/2003 unless you have requested otherwise.
We appreciate the opportunity to be of service to you. If you have any questions,

You can also contact me via email. My email address is: ssidhu@stl-inc.com

Sincerely,

Surinder Sidhu

Surinder Sidhu
Project Manager

SEVERN TRENT STL

Submission #: 2003-02-0540

Diesel with Silica Gel Clean-up

P.G.& E TES
Attn.: John Woodruff

3400 Crow Canyon Road
San Ramon, CA 94583-1393
Phone: (925) 866-5883 Fax: (925) 866-5681

Project: Oakland PP

Received: 02/27/2003 13:30

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
QCEB	02/25/2003 11:00	Water	1
MW-1-2	02/25/2003 11:15	Water	2
MW-1-3	02/25/2003 11:30	Water	3
MW-2-3	02/25/2003 12:00	Water	4

Diesel with Silica Gel Clean-up

P.G.& E TES
Attn.: John Woodruff

3400 Crow Canyon Road
San Ramon, CA 94583-1393
Phone: (925) 866-5883 Fax: (925) 866-5681

Project: Oakland PP

Received: 02/27/2003 13:30

Prep(s): 3510/8015M
Sample ID: **QCEB**
Sampled: 02/25/2003 11:00
Matrix: Water

Test(s): 8015M
Lab ID: 2003-02-0540 - 1
Extracted: 2/27/2003 12:31
QC Batch#: 2003/02/27-02.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	ND	50	ug/L	1.00	03/03/2003 16:55	
Surrogates(s)						
o-Terphenyl	98.0	60-130	%	1.00	03/03/2003 16:55	

Diesel with Silica Gel Clean-up

P.G.& E TES
Attn.: John Woodruff

3400 Crow Canyon Road
San Ramon, CA 94583-1393
Phone: (925) 866-5883 Fax: (925) 866-5681

Project: Oakland PP

Received: 02/27/2003 13:30

Prep(s): 3510/8015M
Sample ID: **MW-1-2**
Sampled: 02/25/2003 11:15
Matrix: Water

Test(s): 8015M
Lab ID: 2003-02-0540 - 2
Extracted: 2/27/2003 12:31
QC Batch#: 2003/02/27-02.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	140	50	ug/L	1.00	03/03/2003 17:33	ndp
Surrogates(s)						
o-Terphenyl	101.1	60-130	%	1.00	03/03/2003 17:33	

Diesel with Silica Gel Clean-up

P.G.& E TES
Attn.: John Woodruff

3400 Crow Canyon Road
San Ramon, CA 94583-1393
Phone: (925) 866-5883 Fax: (925) 866-5681

Project: Oakland PP

Received: 02/27/2003 13:30

Prep(s): 3510/8015M
Sample ID: **MW-1-3**
Sampled: 02/25/2003 11:30
Matrix: Water

Test(s): 8015M
Lab ID: 2003-02-0540 - 3
Extracted: 2/27/2003 12:31
QC Batch#: 2003/02/27-02.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	3100	50	ug/L	1.00	03/03/2003 18:10	ndp
Surrogates(s)						
o-Terphenyl	100.8	60-130	%	1.00	03/03/2003 18:10	

Diesel with Silica Gel Clean-up

P.G.& E TES
Attn.: John Woodruff

3400 Crow Canyon Road
San Ramon, CA 94583-1393
Phone: (925) 866-5883 Fax: (925) 866-5681

Project: Oakland PP

Received: 02/27/2003 13:30

Prep(s):	3510/8015M	Test(s):	8015M
Sample ID:	**MW-2-3**	Lab ID:	2003-02-0540 - 4
Sampled:	02/25/2003 12:00	Extracted:	2/27/2003 12:31
Matrix:	Water	QC Batch#:	2003/02/27-02.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	99	50	ug/L	1.00	03/03/2003 18:47	ndp
Surrogates(s)						
o-Terphenyl	84.7	60-130	%	1.00	03/03/2003 18:47	

Diesel with Silica Gel Clean-up

P.G.& E TES
Attn.: John Woodruff

3400 Crow Canyon Road
San Ramon, CA 94583-1393
Phone: (925) 866-5883 Fax: (925) 866-5681

Project: Oakland PP

Received: 02/27/2003 13:30

Batch QC Report

Prep(s): 3510/8015M
Method Blank
MB: 2003/02/27-02.10-003

Water

Test(s): 8015M
QC Batch # 2003/02/27-02.10
Date Extracted: 02/27/2003 12:31

Compound	Conc.	RL	Unit	Analyzed	Flag
Diesel	ND	50	ug/L	02/28/2003 04:30	
Surrogates(s)					
o-Terphenyl	99.9	60-130	%	02/28/2003 04:30	

Diesel with Silica Gel Clean-up

P.G.& E TES
Attn.: John Woodruff

3400 Crow Canyon Road
San Ramon, CA 94583-1393
Phone: (925) 866-5883 Fax: (925) 866-5681

Project: Oakland PP

Received: 02/27/2003 13:30

Batch QC Report

Prep(s): 3510/8015M

Test(s): 8015M

Laboratory Control Spike **Water** **QC Batch # 2003/02/27-02.10**

LCS 2003/02/27-02.10-001 Extracted: 02/27/2003 Analyzed: 02/28/2003 03:16

LCSD 2003/02/27-02.10-002 Extracted: 02/27/2003 Analyzed: 02/28/2003 03:16

Compound	Conc. ug/L		Exp.Conc.	Recovery		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Diesel	1190	1250	1250	95.2	100.0	4.9	60-130	25		
Surrogates(s)										
o-Terphenyl	23.1	20.8	20.0	115.3	104.2		60-130	0		

Diesel with Silica Gel Clean-up

P.G.& E TES
Attn.: John Woodruff

3400 Crow Canyon Road
San Ramon, CA 94583-1393
Phone: (925) 866-5883 Fax: (925) 866-5681

Project: Oakland PP

Received: 02/27/2003 13:30

Legend and Notes

Result Flag

ndp

Hydrocarbon reported does not match the pattern of our Diesel standard

Pacific Gas and Electric Company

Chain of Custody Record

2003-02-0540

62-1174 (Rev 2/99)
Environmental Affairs

72295

From: Pacific Gas & Electric Company ☒ PG&E Facility ☐ Sample Site
Address or Location: 3400 CROW CANYON RD.
City: SAN RAMON, CA (Zip) 94583
Contact Name/Phone No.: JOHN WOODRUFF (925) 866-5683

Ship To: Lab Name: STL SF
Address:
City: , CA (Zip)
Phone No.
Contact Name:

Turnaround Time
☒ NORMAL (10 days or less) ☐ RUSH Due Date & Time ☒ OTHER, Specify 10 DAY TAT
☐ TELEPHONE ☒ FAX Give Results to: JOHN WOODRUFF 866-5681 Name PM/FAX

Project Name: OAKLAND PP
Project Supervisor (Name/Phone No.): KONKY CREEK 866-5682
Sampled by: (Signature) (Print Name) DANSON L. WRIGHT

Analysis Requested: TPH-D (EPA 3510/8015M WITH SILICA GEL CLEAN UP)

Sample No./ Equipment Serial No.	Sampled Date	Sampled Time	Sample Type/Description	Containers No.	Containers Size	Analysis	Remarks
1. QCEB	2/25	1100	H2O	2	1L	X	NOTE: STATE TANK FUND SITE, GLOBAL ID No. T0600100992, VALID FIELD PT. NAMES ARE SAME AS SAMPLE NUMBER. PLEASE PROVIDE EDD FILES AND E-MAIL TO: emk1@pge.com
2. MW1-2	↓	1115	↓	2	↓	X	
3. MW1-3		1130		2		X	
4. MW2-3		1200		2		X	
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							

Relinquished by (Name&Dept.):	Date&Time:	Received by (Name&Dept.):	Date&Time:	Ship Via:
	2/26/03 1400		2-27-03 1000	
Relinquished by (Name&Dept.):	Date&Time: 2-27-03 1330	Received by (Name&Dept.): Denise Harrington	Date&Time: 3/27/03 @ 1330	Bill of Lading/Airbill No.:
Relinquished by (Name&Dept.):	Date&Time:	Received by (Name&Dept.):	Date&Time:	

SAP Accounting Data: | Billing Contact: | Billing Address:

Notes:
1. Samples are discarded by the laboratory 90 days after results are reported unless other arrangements are made.
2. File a copy of this Chain of Custody Record, complete with appropriate laboratory signatures, with the test analysis results.
3. The first "Relinquished by/Date" is the shipping date unless otherwise noted.
4. The final PCB results will be the cumulative results added together for each PCB.
5. When this form is computer-generated, send the completed original to the laboratory, and make copies for the originator and sampler.

Distribution (See note #5)
White: Laboratory
Canary: Originator
Pink: Sampler

©PG&E November, 1998

SEVERN TRENT STL

STL San Francisco

Sample Receipt Checklist

Submission #:2003- 02 - 0540

Checklist completed by: (initials) NK Date: 02/27/03

Courier name: ☑ STL San Francisco ☐ Client _____

Custody seals intact on shipping container/samples	Yes___ No___	Not Present ✓
Chain of custody present?	Yes ✓ No___	
Chain of custody signed when relinquished and received?	Yes ✓ No___	
Chain of custody agrees with sample labels?	Yes ✓ No___	
Samples in proper container/bottle?	Yes ✓ No___	
Sample containers intact?	Yes ✓ No___	
Sufficient sample volume for indicated test?	Yes ✓ No___	
All samples received within holding time?	Yes ✓ No___	
Container/Temp Blank temperature in compliance (4° C ± 2)?	Temp: 3.6 °C Yes ✓ No___	
Water - VOA vials have zero headspace?	No VOA vials submitted ✓ Yes___ No___	

(if bubble is present, refer to approximate bubble size and itemize in comments as S (small ~O), M (medium ~ O) or L (large ~ O)

Water - **pH acceptable upon receipt?** ☐ Yes ☐ No

☐ **pH adjusted**– Preservative used: ☐ HNO_3 ☐ HCl ☐ H_2SO_4 ☐ NaOH ☐ ZnOAc

For any item check-listed "No", provided detail of discrepancy in comment section below:

Comments:

Project Management [Routing for instruction of indicated discrepancy(ies)]

Project Manager: (initials) _____ Date: _____/_____/03

Client contacted: ☐ Yes ☐ No

Summary of discussion:

Corrective Action (per PM/Client):