



Texaco Refining  
and Marketing Inc

108 Cutting Boulevard  
Richmond CA 94804

May 17, 1995

**ENV - STUDIES, SURVEYS & REPORTS**  
2225 Telegraph Ave., Oakland, California

Mr. Thomas Peacock  
Alameda County Environmental Health Department  
80 Swan Way, Room 200  
Oakland, CA 94621

Dear Mr. Peacock:

This letter presents the results of groundwater monitoring and sampling conducted by Blaine Tech Services, Inc. on February 27, 1995,, at the site referenced above (see Plate 1, Site Vicinity Map). Based on groundwater level measurements, the areal hydraulic gradient was estimated to be south (see Plate 2, Groundwater Gradient Map). The gradient map has been reviewed by a registered professional. TPHg and benzene concentrations are shown on Plate 3. Tables 1 and 2 list historical groundwater monitoring data and analytical results, respectively.

The groundwater treatment system on site ran continuously throughout the reporting period.

The certified analytical report, chain-of-custody, field data sheets, bill of lading, and quarterly summary report are in the Appendix, along with Texaco Environmental Services' Standard Operating Procedures.

If you have any questions or comments regarding this site, please call the Texaco Environmental Services' site Project Coordinator, Ms. Karen E. Petryna at (510) 236-9139.

Best Regards,

Rebecca Digerness  
Environmental Assistant

Karen E. Petryna  
Engineer  
Texaco Environmental Services

*operators  
Sve  
Station*

OPERATIONS  
ENVIRONMENTAL  
SERVICES

RBD:hs  
C:\QMR\2225T\QMR.LET

Enclosures

cc: Mr. Richard Hiatt  
CRWQCB - San Francisco Bay Region  
2101 Webster Street, Suite 500  
Oakland, CA 94612

Mr. Michael Faber  
Exxon Company, USA  
2300 Clayton Road, Suite 1250  
Concord, CA 94524-2032

RAOFile-UCPFile (w/enclosures) RACoughlin-RRZielinski (w/o enclosures)

PR: REP



Texaco Refining  
and Marketing Inc

108 Cutting Boulevard  
Richmond CA 94604

ENVIRONMENTAL  
PROTECTION  
95 MAR 22 PM 2:07

March 16, 1995

**ENV - STUDIES, SURVEYS, & REPORTS**

**2225 Telegraph Ave., Oakland, CA 94612; Exxon #7-0235 (Former Texaco)**

Mr. Thomas Peacock  
Alameda County Health Care Services Agency  
Department of Environmental Health  
1131 Harbor Bay Parkway, 2nd Floor  
Alameda, CA 94502-6577

Dear Mr. Peacock:

This letter is written to address your questions in your letter dated September 22, 1994, regarding the above referenced site.

1. Remediation activities at the site currently consist of groundwater extraction from two recovery wells (RW-1 and RW-2), and treatment through liquid-phase carbon canisters before being discharged. Based on the results of a vapor extraction pilot test performed in 1992, Texaco is planning to begin additional water table depression from recovery well RW-3A, install two vapor extraction points (adding to the three existing points), and begin soil vapor extraction at the site.

- vapor extraction has  
been promised since  
1991

2. Based on the results of 1989 slug tests, the estimated lateral radius of influence in the vicinity of recovery wells RW-1 and RW-2 is at least 45 feet. This estimated lateral capture radius includes the area of monitoring well MW-6H which is approximately 25 feet from RW-1.

The installation of additional wells to the north and east of the site has been restricted due to the presence of the Bay Area Rapid Transit (BART) tunnel that lies beneath the northeast corner of the site (Figure 1).

not to the south,  
the usual flow  
direction

Previously, the depths to water in the recovery wells have not been consistently measured. Because of the presence of recovery pumps in the wells, as well as the fluctuating groundwater elevations in these wells, depths to groundwater cannot readily be measured. The recovery wells are constructed of four inch diameter pipes and have a yield of approximately 0.25 to 0.4 gpm. Because of the low flow of these

Mr. Thomas Peacock  
March 16, 1995  
Page 2

wells, pneumatic pumps are used for groundwater extraction and they do not run continuously, only as groundwater is present to be extracted. In future monitoring and sampling reports, the approximate elevation of the water intake on the pumps will be presented on groundwater gradient maps which will show the cones of depression around the wells.

I am the new project coordinator for this site, so if you have any questions or comments please call me at (510) 236-9139.

Best Regards,



Karen E. Petryna  
Engineer  
Texaco Environmental Services

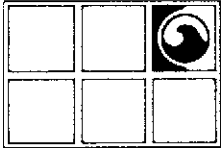
KEP:hs

U:\...2225\ACRESP.TP

cc: Michael Faber  
Exxon Company, U. S. A.  
2300 Clayton Rd., Ste. 1250  
Concord, CA 94524-2032

RAOFile-UCPFile-RACoughlin-RRZielinski

PR: 



**GROUNDWATER  
TECHNOLOGY, INC.**

ENVIRONMENTAL  
PROTECTION

95 MAR 22 PM 2: 14

1401 Halyard Drive, Suite 140, West Sacramento, CA 95691, (916) 372-4700

FAX (916) 372-8781

March 21, 1995

Alameda County Environmental Health Department  
Environmental Protection Division  
1131 Harbor Bay Parkway  
Alameda, CA 94502-6577

Attention: Mr. Thomas Peacock

Subject: Self-Monitoring Report 7/14/94 to 12/3/94  
Former Texaco Service Station  
2225 Telegraph Avenue  
Oakland, California  
GTI Project 02070-0008

Dear Mr. Peacock:

Groundwater Technology wishes to thank you for your comments on the subject report. Attached is a revised self-monitoring report. Groundwater Technology hopes that you have not been inconvenienced.

If you need additional information or have any questions, please feel free to call our West Sacramento office @ (916) 372-4700.

Sincerely,  
**Groundwater Technology, Inc.**  
Submitted by:

David Little  
Staff Geologist

**Groundwater Technology, Inc.**  
Approved by:

Brian H. Garber  
Environmental Geologist  
Project Manager

c: Karen Petryna - Texaco Environmental Services

Attachment:  
1. Self-Monitoring Report

**GENERAL NPDES PERMIT NO. CA0024660  
SEW MONITORING REPORT SUMMARY**

Reporting Period: 07/14/94 to 12/31/94  
 Permittee: Texaco Environmental Services  
 Site Name: Former Texaco Service Station  
 Site Address: 2225 Telegraph, Oakland, CA

Due Date: 01/31/95  
 EBUD File No: 502-27801

Company Contact: Karen Petryna  
 Mailing Address: 108 Cutting Boulevard  
Richmond, CA 94804  
 Phone Number: (510) 236-9139

Consultant: Groundwater Technology, Inc.  
 Address: 1401 Halyard Drive, Suite 140  
West Sacramento, CA 95691  
 Contact: Brian Garber  
 Phone Number: (916) 372-4700

Any violation of waste discharge requirement during this period? Yes \_\_\_\_\_ No X  
 If yes, include attachment describing violation and corrective actions taken.

**GROUNDWATER DISCHARGE DATA**

Sample Location	Date	Flow Rate (gpm)	Totalizer Readings (gallons)	Cumulative Volume (gallons)
Effluent	14-Jul-94	2.3	338080	153470
	04-Aug-94	3.0	352696	168086
	16-Aug-94	2.6	353239	168629
	05-Sep-94	3.4	373220	188610
	23-Sep-94	3.2	373927	189317
	05-Oct-94	3.3	373976	189366
	20-Oct-94	OFF	374003	189393
	03-Nov-94	2.6	389908	205298
	23-Nov-94	2.5	409593	224983
	01-Dec-94	2.8	423355	238745
	21-Dec-94	2.6	455430	270820

Combined Average Flow Rate from 07/14/94 to 12/31/94: 0.51

Total Volume of Discharged Groundwater as of 12/31/94: 270820

**SEMI-ANNUAL REPORTING**

Sample Location	Date	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	TPH-G (ppm)
Influent	07/14/94	2.3	0.37	0.11	0.55	5.7
	08/04/94	1.1	0.18	0.032	0.44	5.2
	09/05/94	0.29	0.037	0.0084	0.18	2.3
	10/05/94	0.19	0.041	0.01	0.15	2.9
	11/03/94	0.41	0.54	0.18	0.34	3.7
	12/01/94	2.4	0.42	0.11	0.73	7.9
Effluent	07/14/94	ND	ND	ND	ND	ND
	08/04/94	NA	NA	NA	NA	NA
	09/05/94	NA	NA	NA	NA	NA
	10/05/94	ND	ND	ND	ND	ND
	11/03/94	---	---	---	---	---
	12/01/94	---	---	---	---	---
BT-2	07/14/94	ND	ND	ND	ND	ND
	08/04/94	ND	ND	ND	ND	ND
	09/05/94	ND	ND	ND	1.3	ND
	10/05/94	ND	ND	ND	ND	ND
	11/03/94	ND	ND	ND	ND	ND
	12/01/94	ND	ND	ND	ND	ND

BT-2 = Sample port between carbon drums.

**Explanation:**

TPG-G = Total petroleum hydrocarbons-as-gasoline

--- = Not Analyzed

gpm = Gallons per minute

pgd = Gallons per day

NM = Not measured

ppb = Parts per billion

N/A = Not applicable

umhos/cm = Micromhos per centimeter

g/day = Grams per day

ND = Not detected

Company : Groundwater Technology, Inc.

Signature: \_\_\_\_\_

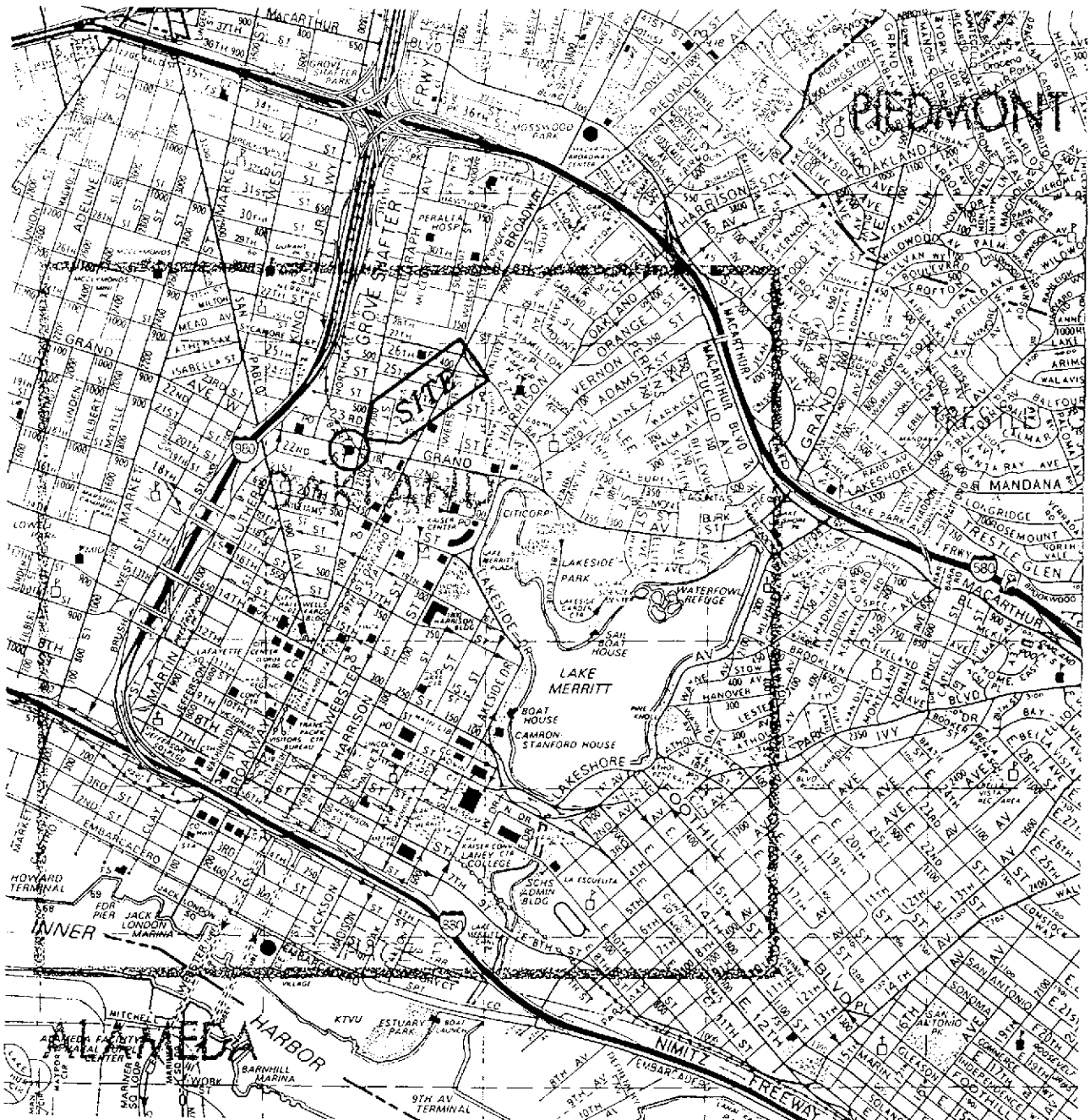
**Brian H. Garber**  
Project Manager

Date: \_\_\_\_\_

H20694.WK3 (TES-47)

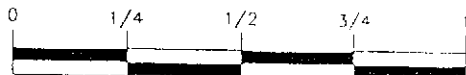
**Groundwater Monitoring and Sampling  
First Quarter, 1995  
at the  
Former Texaco Station  
2225 Telegraph Avenue  
Oakland, CA**





SOURCE:

1993 THE THOMAS GUIDE  
ALAMEDA COUNTY, PAGE 9 (B3)



MILE

1" = 2200



**TEXACO**

REFINING AND MARKETING, INC.  
TEXACO ENVIRONMENTAL SERVICES

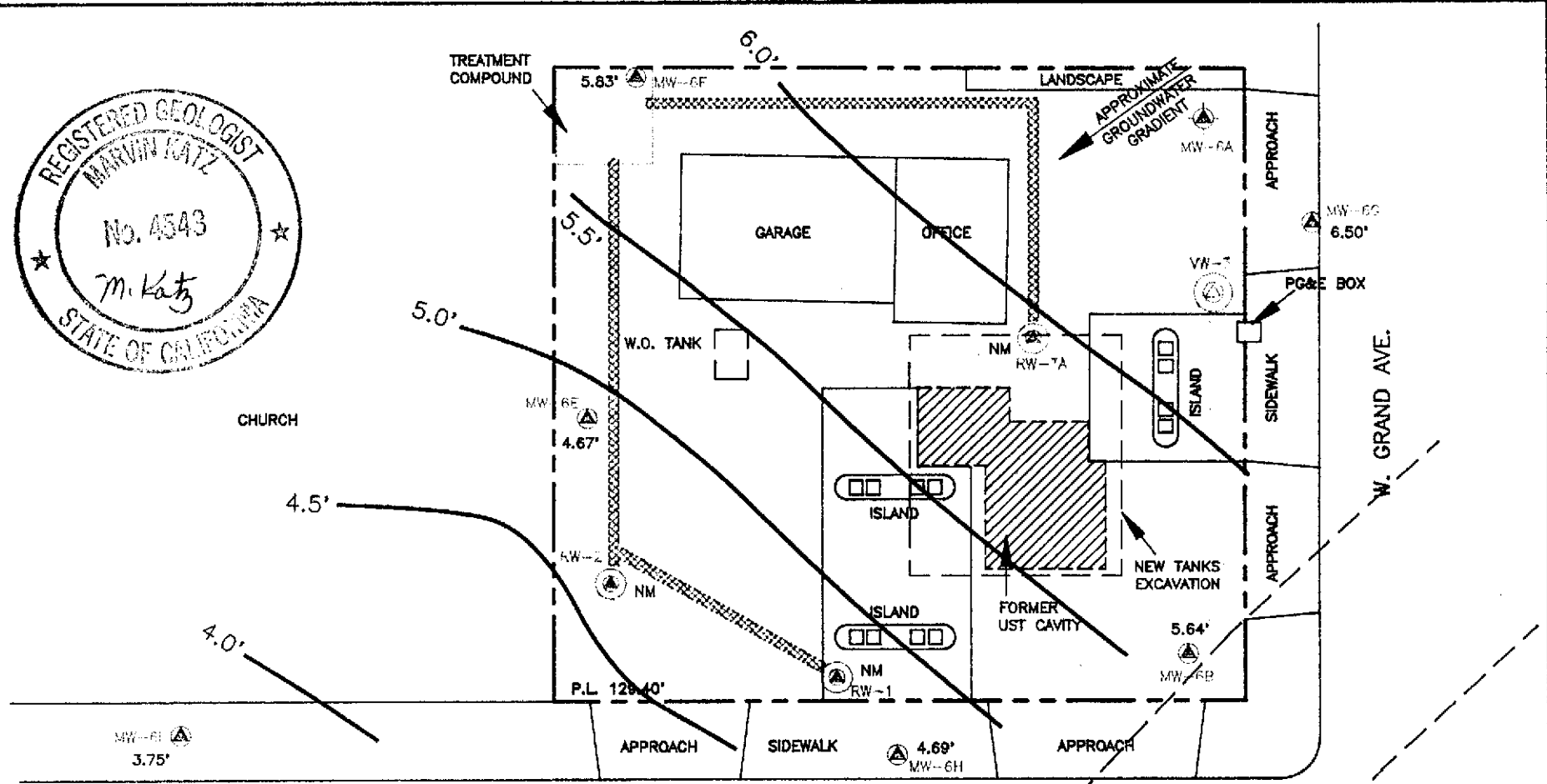
PLATE 1

SITE VICINITY MAP

FORMER TEXACO SERVICE STATION

2225 TELEGRAPH AVE. / GRAND AVE.,

OAKLAND, CALIFORNIA



**LEGEND :**

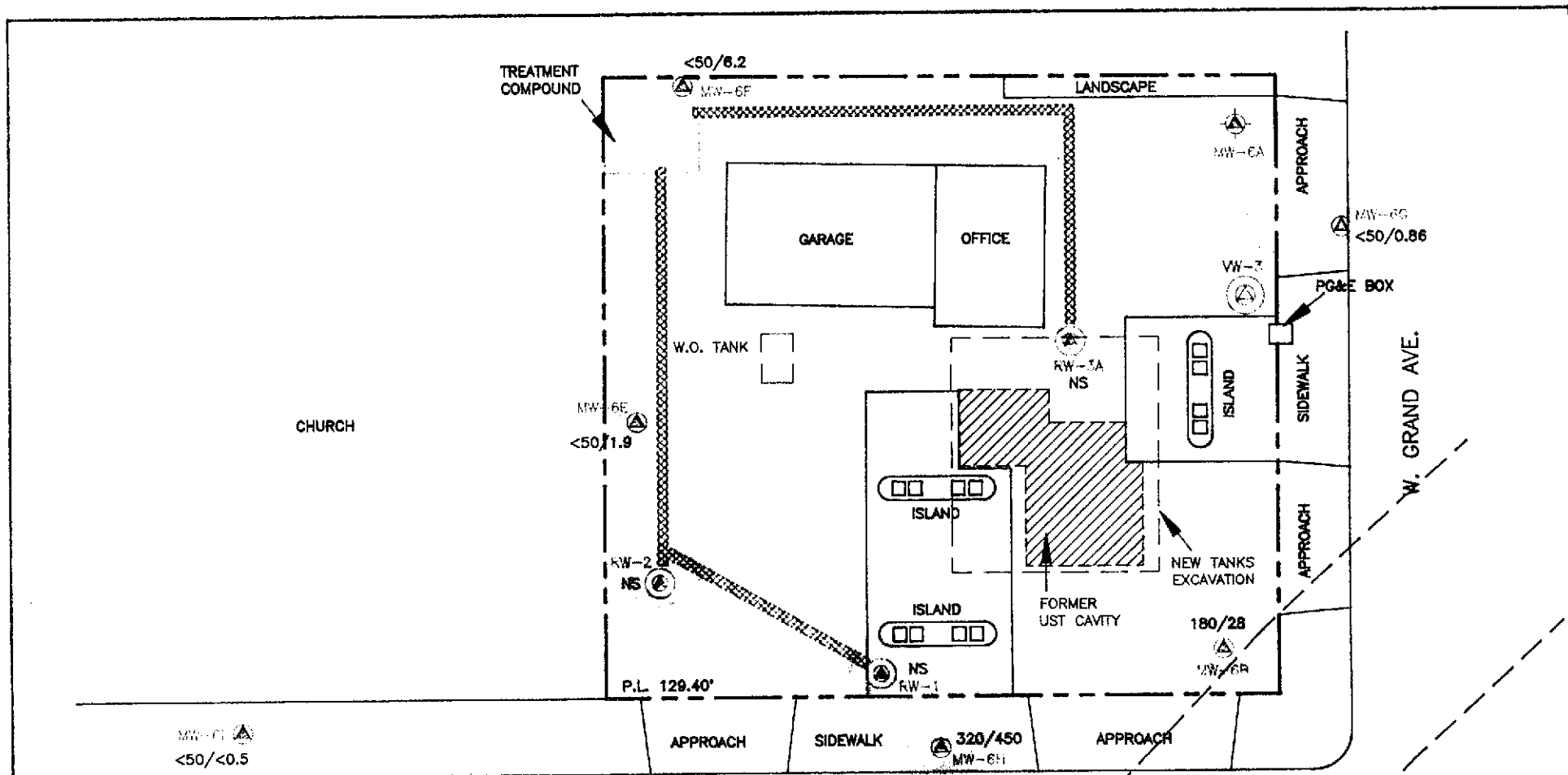
- VAPOR EXTRACTION WELL LOCATION AND WELL NUMBER
- PROPERLY ABANDONED WELL LOCATION AND WELL NUMBER
- GROUNDWATER MONITORING WELL LOCATION AND WELL NUMBER
- GROUNDWATER REMEDIATION/EXTRACTION WELL LOCATION AND WELL NUMBER
- TEXACO REMEDIATION/EXTRACTION TRENCH WITH 1" PVC VAPOR EXTRACTION LINE
- GROUNDWATER CONTOUR LINE
- 4.67' GROUNDWATER ELEVATION (ABOVE MSL)
- NM WELL NOT MONITORED

TELEGRAPH AVE.

APPROXIMATE LOCATION OF BART TUNNEL

SOURCE : MATTESON ENGINEERING CONDUCTED SURVEY ON 08/04/1994

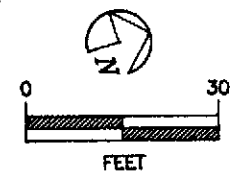
<b>TEXACO</b>	
REFINING AND MARKETING INC. TEXACO ENVIRONMENTAL SERVICES	
PLATE 2 : GROUNDWATER GRADIENT MAP ( 02/27/1995 )	
FORMER TEXACO SERVICE STATION 2225 TELEGRAPH AVE. / GRAND AVE., OAKLAND, CALIFORNIA	
SCALE 1"=30'-0"	LOCATION # 62-488-0195
DRAWN BY AMA	DATE 05/11/1995
CHECKED BY RD	DATE 5/11/95
DIVISION NO. (OAKLAND) TE-GR-OK.DWG	



**LEGEND :**

- WATER EXTRACTION WELL LOCATION AND WELL NUMBER
  - PROPERLY ABANDONED WELL LOCATION AND WELL NUMBER
  - GROUNDWATER MONITORING WELL LOCATION AND WELL NUMBER
  - GROUNDWATER RECOVERY/WATER EXTRACTION WELL LOCATION AND WELL NUMBER
  - TEXACO REMEDIATION SYSTEM TRENCH WITH 12" P.V. WATER EXTRACTION LINE
- <50/<0.5 TPHg/BENZENE CONCENTRATION IN GROUNDWATER (ppb)
- NS WELL NOT SAMPLED

SOURCE : MATTESON ENGINEERING CONDUCTED SURVEY ON 08/04/1994



<b>TEXACO</b>	
REFINING AND MARKETING INC. TEXACO ENVIRONMENTAL SERVICES	
PLATE 3 : TPHg/BENZENE CONCENTRATION IN GROUNDWATER ( 02/27/1995 )	
FORMER TEXACO SERVICE STATION 2225 TELEGRAPH AVE. / GRAND AVE., OAKLAND, CALIFORNIA	
SCALE 1"=30'-0"	LOCATION # 62-466-0195
DRAWN BY AMA	DATE 05/11/1995
CHECKED BY R.A.	DATE 05/15/95
DRAWING NO. (OAKLAND) TE-OR-OK.DWG	

Table 1  
Groundwater Elevation Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet)
MW-6A	12/30/91				Well Destroyed
MW-6B	12/15/88	98.81	*		
	2/25/92			11.81	87.00
	3/25/92			11.58	87.23
	6/16/92	15.34	**	12.54	2.80
	9/8/92			12.87	2.47
	11/5/92			12.70	2.64
	12/14/92			12.19	3.15
	1/28/93			11.39	3.95
	2/11/93			11.70	3.64
	3/9/93			11.70	3.64
	4/14/93			11.87	3.47
	5/11/93			12.22	3.12
	6/17/93			12.46	2.88
	7/26/93			12.72	2.58
	8/10/93			12.82	2.52
	9/21/93			13.08	2.26
	10/27/93			13.18	2.16
	11/23/93			13.07	2.27
	12/17/93			NA	NA
	2/16/94			12.07	3.27
	5/31/94			12.42	2.92
	8/30/94	17.48	***	13.02	4.46
	11/11/94			11.72	5.76
	2/27/95			11.84	5.64



Table 1  
Groundwater Elevation Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet)
MW-6E	12/15/88	98.99	*		
	2/25/92			13.16	85.83
	3/25/92			12.15	86.84
	6/16/92	15.23	**	13.54	1.69
	9/8/92			14.78	0.45
	11/5/92				Not Monitored
	12/14/92				Not Monitored
	1/28/93			11.62	3.61
	2/11/93			12.85	2.38
	3/9/93			12.83	2.40
	4/14/93				Not Monitored
	5/11/93			13.59	1.64
	6/17/93			13.74	1.49
	7/26/93			14.01	1.22
	8/10/93			14.13	1.10
	9/21/93			14.20	1.03
	10/27/93			14.34	0.89
	11/23/93			13.97	1.26
	12/17/93			13.08	2.15
	2/16/94			13.34	1.89
	5/31/94			13.82	1.41
	8/30/94	17.63	***	14.32	3.31
	11/11/94			13.92	3.71
	2/27/95			12.96	4.67



Table 1  
Groundwater Elevation Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet)
MW-6F	12/15/88	99.91	*		
	2/25/92			12.68	87.23
	3/25/92			11.93	87.98
	6/16/92	16.46	**	14.34	2.12
	9/8/92			14.75	1.71
	11/5/92			14.35	2.11
	12/14/92			12.90	3.56
	1/28/93			11.60	4.86
	2/11/93			12.25	4.21
	3/9/93			12.50	3.96
	4/14/93			12.71	3.75
	5/11/93			13.63	2.83
	6/17/93			14.02	2.44
	7/26/93				Not Monitored
	8/10/93				Not Monitored
	9/21/93			14.80	1.66
	10/27/93			14.85	1.61
	11/23/93			Not Monitored - Inaccessible	
	12/17/93			13.86	2.60
	2/16/94			13.08	3.38
	5/31/94			14.06	2.40
	8/30/94	18.58	***	14.84	3.74
	11/11/94			12.60	5.98
	2/27/95			12.75	5.83



Table 1  
Groundwater Elevation Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet)
MW-6G	12/15/88	99.16	*		
	2/25/92			10.32	88.84
	3/25/92			9.93	89.23
	6/16/92	14.71	**	11.88	2.83
	9/8/92			12.20	2.51
	11/5/92			12.02	2.69
	12/14/92			10.95	3.76
	1/28/93			9.56	5.15
	2/11/93			10.04	4.67
	3/9/93			10.10	4.61
	4/14/93			10.43	4.28
	5/11/93			11.05	3.66
	6/17/93			11.49	3.22
	7/26/93			11.98	2.73
	8/10/93			12.17	2.54
	9/21/93			12.42	2.29
	10/27/93			13.47	1.24
	11/23/93			12.48	2.23
	12/17/93			11.19	3.52
	2/16/94			10.62	4.09
	5/31/94			11.40	3.31
	8/30/94	16.82	***	12.32	4.50
	11/11/94			11.06	5.76
	2/27/95			10.32	6.50



Table 1  
Groundwater Elevation Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet)
MW-6H	12/15/88	97.93	*		
	2/25/92			12.17	85.76
	3/25/92			11.65	86.28
	6/16/92	14.47	**	12.12	2.35
	9/8/92			12.30	2.17
	11/5/92			12.05	2.42
	12/14/92			11.65	2.82
	1/28/93			11.57	2.90
	2/11/93			12.22	2.25
	3/9/93			12.02	2.45
	4/14/93			12.02	2.45
	5/11/93			12.35	2.12
	6/17/93			12.22	2.25
	7/26/93			12.32	2.15
	8/10/93			12.30	2.17
	9/21/93			12.79	1.68
	10/27/93			13.93	0.54
	11/23/93			12.46	2.01
	12/17/93			12.08	2.39
	5/31/94			12.46	2.01
	8/30/94	16.58	***	12.72	3.86
	11/11/94			11.98	4.60
	2/27/95			11.89	4.69





Table 1  
Groundwater Elevation Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet)
MW-6I	12/15/88	97.60	*		
	2/25/92			12.45	85.15
	3/25/92			12.12	85.48
	6/16/92	14.14	**	12.75	1.39
	9/8/92			12.84	1.30
	11/5/92			12.75	1.39
	12/14/92			12.40	1.74
	1/28/93			12.20	1.94
	2/11/93			12.40	1.74
	3/9/93			12.45	1.69
	4/14/93			12.43	1.71
	5/11/93			12.73	1.41
	6/17/93			12.78	1.36
	7/26/93			12.92	1.22
	8/10/93			12.97	1.17
	9/21/93			13.02	1.12
	10/27/93			13.10	1.04
	11/23/93			13.02	1.12
	12/17/93			12.65	1.49
	2/16/94			12.66	1.48
	5/31/94			12.90	1.24
	8/30/94	16.26	***	13.06	3.20
	11/11/94			15.20	1.06
	2/27/95			12.51	3.75



Table 1  
Groundwater Elevation Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet)
RW-1	10/16/90	97.89	*		
	2/25/92			14.40	83.49
	3/25/92			NA	NA
	6/16/92	14.42	**	12.37	2.05
	9/8/92				Not Monitored
	11/5/92				Not Monitored
	12/14/92				Not Monitored
	1/18/93				Not Monitored
	2/11/93				Not Monitored
	3/9/93				Not Monitored
	4/14/93				Not Monitored
	5/11/93				Not Monitored
	6/17/93				Not Monitored
	7/26/93				Not Monitored
	8/10/93				Not Monitored
	9/21/93				Not Monitored
	10/27/93				Not Monitored
	11/23/93				Not Monitored
	12/17/93				Not Monitored
	2/16/94				Not Monitored
	5/31/94				Not Monitored
	8/30/94	16.79	***		Not Monitored
	11/11/94				Not Monitored
	2/27/95				Not Monitored

Table 1  
Groundwater Elevation Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet)
RW-2 (formerly MW-6D)	10/16/90	98.11	*		
	2/25/92			16.27	81.84
	3/25/92				Not Monitored
	6/16/92	14.61	**	12.86	1.75
	9/8/92				Not Monitored
	11/5/92				Not Monitored
	12/14/92				Not Monitored
	1/28/93				Not Monitored
	2/11/93				Not Monitored
	3/9/93				Not Monitored
	4/14/93				Not Monitored
	5/11/93				Not Monitored
	6/17/93				Not Monitored
	8/10/93				Not Monitored
	9/21/93				Not Monitored
	10/27/93				Not Monitored
	11/23/93				Not Monitored
	12/17/93				Not Monitored
	2/16/94				Not Monitored
	5/31/94				Not Monitored
8/30/94		17.02	***		Not Monitored
11/11/94					Not Monitored
2/27/95					Not Monitored
RW-3 (formerly MW-6C)	8/30/94	18.04	***		Not Monitored
	11/11/94				Not Monitored
	2/27/95				Not Monitored
* = Based on assigned benchmark with elevation arbitrarily set at 100 feet.					
** = Elevation relative to mean sea level (MSL).					
*** = Wells resurveyed 8/4/94, Benchmark is City of Oakland #37J; Elevation 17.68 @ intersection of Telegraph & 23rd St. jobsite.					
NA = Not Available					

Table 2  
Groundwater Analytical Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Sampled	TPH as gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-6A			Well Destroyed			
MW-6B	3/25/92	190	31	8.6	84	8.6
	6/16/92	1,700	44	1.7	7.2	230
	9/8/92	2,900	35	8.3	110	330
	11/5/92	1,400	29	<0.5	75	190
	2/11/93	210	1.2	<0.5	2.8	4.3
	5/11/93	570	54	2.4	37	36
	8/10/93	1,300	48	2.4	28	44
	10/27/93	1,300	23	1.7	25	250
	2/16/94	300	16	<0.5	3.5	2.4
	5/31/94	690	21	3.9	11	36
	8/30/94	260	4	0.62	0.82	4
	11/11/94	300	60	2	1.2	2.4
	2/27/95	180	28	2.6	0.65	1.6
MW-6E	3/25/92	830	41	1	3.8	16
	6/16/92	3,400	300	23	68	510
	9/8/92	480	27	<0.5	3.6	21
	11/5/92		Not Sampled			
	2/11/93	270	15	<0.5	<0.5	8.7
	5/11/93	<50	2.3	<0.5	1.4	3.2
	8/10/93	1,700	130	2.7	23	140
	10/27/93	100	6	<0.5	<0.5	<0.5
	2/16/94	640	45	<0.5	12	15
	5/31/94	52	1.5	0.97	<0.5	<0.5
	8/30/94	920	22	0.98	5.2	33
	11/11/94	910	13	2.4	13	2.5
	2/27/95	<50	1.9	1.3	<0.5	0.83
MW-6F	3/25/92	ND	ND	<0.5	<0.5	<0.5
	6/16/92	ND	ND	<0.5	<0.5	<0.5
	9/8/92	<50	<0.5	<0.5	<0.5	<0.5
	11/5/92	<50	<0.5	<0.5	<0.5	<0.5
	2/11/93	<50	<0.5	<0.5	<0.5	<0.5
	5/11/93	<50	<0.5	<0.5	<0.5	<0.5
	8/10/93		Not Sampled			
	10/27/93	<50	<0.5	<0.5	<0.5	<0.5
	2/16/94	<50	<0.5	<0.5	<0.5	<0.5
	5/31/94	<50	<0.5	<0.5	<0.5	<0.5
	8/30/94	<50	<0.5	<0.5	<0.5	<0.5
	11/11/94	<50	<0.5	0.54	<0.5	<0.5
	2/27/95	<50	0.2	3.0	0.82	3.5

Table 2  
Groundwater Analytical Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Sampled	TPH as gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-6G <i>WJ</i>	3/25/92	ND	ND	<0.5	<0.5	<0.5
	6/16/92	ND	ND	<0.5	<0.5	<0.5
	9/8/92	<50	<0.5	<0.5	<0.5	<0.5
	11/5/92	<50	<0.5	<0.5	<0.5	<0.5
	2/11/93	<50	<0.5	<0.5	<0.5	<0.5
	5/11/93	<50	<0.5	<0.5	<0.5	<0.5
	8/10/93	<50	<0.5	<0.5	<0.5	<0.5
	10/27/93	<50	<0.5	<0.5	<0.5	<0.5
	2/16/94	<50	<0.5	<0.5	<0.5	<0.5
	5/31/94	<50	<0.5	<0.5	<0.5	<0.5
	8/30/94	<50	<0.5	<0.5	<0.5	<0.5
	11/11/94	58	0.58	1.6	<0.5	1.6
	2/27/95	<50	0.86	0.99	<0.5	0.51
MW-6H <i>Jan</i>	3/25/92	920	170	52	25	54
	6/16/92	460	31	11	6.8	16
	9/8/92	780	69	23	17	18
	11/5/92	3,400	500	260	85	160
	2/11/93	2,500	410	170	28	130
	5/11/93	4,200	490	270	80	210
	8/10/93	650	83	22	14	29
	10/27/93	1,600	130	90	29	130
	2/16/94	<50	<0.5	<0.5	<0.5	2.9
	5/31/94	1,800	370	220	65	210
	8/30/94	1,900	130	90	19	86
	11/11/94	13,000	1,700	1,400	260	1,800
	2/27/95	320	450	120	28	79
MW-6I <i>Jan</i>	3/25/92	ND	ND	<0.5	<0.5	<0.5
	6/16/92	ND	ND	<0.5	<0.5	<0.5
	9/8/92	<50	<0.5	<0.5	<0.5	<0.5
	11/5/92	<50	<0.5	<0.5	<0.5	<0.5
	2/11/93	<50	<0.5	<0.5	<0.5	<0.5
	5/11/93	<50	<0.5	<0.5	<0.5	<0.5
	8/10/93	<50	<0.5	<0.5	<0.5	<0.5
	10/27/93	<50	<0.5	<0.5	<0.5	1.1
	2/16/94	<50	<0.5	<0.5	<0.5	<0.5
	5/31/94	<50	<0.5	<0.5	<0.5	<0.5
	8/30/94	<50	<0.5	<0.5	<0.5	<0.5
	11/11/94	53	0.62	1.8	<0.5	2.0
	2/27/95	<50	<0.5	<0.5	<0.5	<0.5

Table 2  
Groundwater Analytical Data  
2225 Telegraph Avenue, Oakland, CA

Well Number	Date Sampled	TPH as gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
RW-1	6/16/92	6,200	620	1,400	240	1,400
	9/8/92			Not Sampled		
	11/5/92			Not Sampled		
	2/11/93			Not Sampled		
	2/16/94			Not Sampled		
	5/31/94			Not Sampled		
	8/30/94			Not Sampled		
	11/11/94			Not Sampled		
	2/27/95			Not Sampled		
RW-2 (formerly MW-6D)	3/25/92	NA	NA	NA	NA	NA
	6/16/92	28,000	2,900	1,000	120	2,700
	9/8/92			Not Sampled		
	11/5/92			Not Sampled		
	5/11/93			Not Sampled		
	8/10/93			Not Sampled		
	10/27/93			Not Sampled		
	2/16/94			Not Sampled		
	5/31/94			Not Sampled		
	8/30/94			Not Sampled		
RW-3 (formerly MW-6C)	8/30/94			Not Sampled		
	11/11/94			Not Sampled		
	2/27/95			Not Sampled		
ppb = parts per billion						
TPHg = Total Petroleum Hydrocarbons as gasoline.						
< = Less than the detection limit for the specified method of analysis.						
NA = Not Analyzed						
ND = Not detectable at or above method detection limit.						

801 Western Avenue  
 Glendale, CA 91201  
 818/247-5737  
 Fax: 818/247-9797

LOG NO: G95-03-018  
 Received: 01 MAR 95  
 Mailed : 15 MAR 95

Ms. Rebecca Digerness  
 Texaco Environmental Services  
 108 Cutting Boulevard  
 Richmond, CA 94804

Purchase Order: 94-1446346+4370  
 Requisition: 624880195  
 Project: FKEP1015L

REPORT OF ANALYTICAL RESULTS

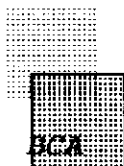
Page 1

AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TPH/BTEX (CADHS/8020)	Date Analyzed Date	Dilution Factor Times	TPH-g ug/L	Benzene ug/L	Toluene ug/L	Ethyl-Benzene ug/L	Total Xylenes Isomers ug/L
1*MW 6B	02/27/95	03/03/95		1	180	28	2.6	0.65	1.6
2*MW 6E	02/27/95	03/03/95		1	<50	1.9	1.3	<0.5	0.83
3*MW 6F	02/27/95	03/03/95		1	<50	6.2	3.0	0.82	3.5
4*MW 6G	02/27/95	03/03/95		1	<50	0.86	0.99	<0.5	0.51
5*MW 6H	02/27/95	03/06/95		5	320	450	120	28	79
6*MW 6I	02/27/95	03/06/95		1	<50	<0.5	<0.5	<0.5	<0.5
7*EB	02/27/95	03/03/95		1	<50	0.61	1.4	<0.5	<0.5
8*TB	02/27/95	03/03/95		1	<50	0.64	0.73	<0.5	<0.5

Karen Petryna  
 2225 Telegraph Ave., Oakland  
 Alameda County

*Mark A. Valentini*  
 Mark A. Valentini, PhD, Laboratory Director



## ORDER QC REPORT: Definitions and Terms



Accuracy	The ability of a procedure to determine the "true" concentration of an analyte.
Precision	The reproducibility of a procedure demonstrated by the agreement between analyses performed on either duplicates of the same sample or a pair of duplicate spikes.
Batch	A group of twenty samples or less, of similar matrix type, prepped together or analyzed together if no sample preparation is required, under the same conditions and with the same reagents. The batch must include a method blank, LCS and matrix QC.
Laboratory Control Standard (LCS)	A blank that is spiked with a known amount of analyte and subjected to the same procedures as the samples. The LCS indicates the accuracy of the analytical method. It also serves to double-check the calibration because it is prepared from a different source than the standard used to calibrate the instrument.
Matrix QC	Quality control performed on actual client samples. The matrix spike is a client's sample spiked with a known amount of analyte. For most analyses, the laboratory performs matrix spikes in duplicate (duplicate spikes).
Method Blank	A sample that contains no analyte. For water analysis, organic-free or deionized water is used. For solids analysis, analyte-free solvent is used. The method blank serves to measure contamination associated with laboratory storage, preparation or instrumentation.
Batch Number	Numeric designation for a batch of samples and the associated QC. The batch number sequence is unique for each determination.
LC Result	Laboratory result of an LCS analysis.
LT Result	Expected result, or true value, of the LCS analysis.
Percent Recovery	The percentage of analyte recovered. For LCS, the percent recovery calculation is: $\text{LC/LT} \times 100$
LC1, LC2 Result	Result of analyzing two separately prepared LCSs; used to determine precision.
R1, R2 Result	Result of analyzing replicate aliquots of a sample, with R1 indicating the first analysis of the sample and R2 its corresponding duplicate; used to determine precision.
S1, S2 Result	Result of the analysis of replicate spiked aliquots, with S1 indicating one spike of the sample and S2 the second spike; used to determine precision and accuracy.
Relative Percent Difference (RPD)	Calculated using one of the following: $\frac{ LC1 - LC2  \times 100}{(LC1 + LC2) \div 2} \quad \frac{ R1 - R2  \times 100}{(R1 + R2) \div 2} \quad \frac{ S1 - S2  \times 100}{(S1 + S2) \div 2}$
S1, S2 Recovery	The percentage of analyte recovered. The percent recovery calculation is: S1 Recovery: $\frac{(S1 - R1)}{(\text{True} - R1)} \times 100$ S2 Recovery: $\frac{(S2 - R1)}{(\text{True} - R1)} \times 100$
True Value	The theoretical, or expected, result of a spike sample analysis.
NC Flag	Indicates that the spike recovery was not calculated due to high sample concentration relative to the amount of spike added.
Q Flag	Indicates that the quality control measurement is outside the specified control limits.
Blank Result	Laboratory result of analysis of the method blank.
Reporting Detection Limit (RDL)	BCA-assigned limit based on, but not the same as, method detection limits (MDLs) determined using EPA guidelines. Sample RDLs may differ from the blank RDL if the samples were diluted.



: ORDER PLACED FOR CLIENT: Texaco Environmental Services 9503018 :  
: BC ANALYTICAL : GLEN LAB : 10:02:25 14 MAR 1995 - P. 1 :  
=====

SAMPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE.....	METHOD.....	EQUIP.	BATCH..	ID.NO
			ANALYZED				
9503018*1	MW 6B	GAS.BTX.TESNC	03.03.95	8015M.TX	536-21	95176	8042
9503018*2	MW 6E	GAS.BTX.TESNC	03.03.95	8015M.TX	536-21	95176	8042
9503018*3	MW 6F	GAS.BTX.TESNC	03.03.95	8015M.TX	536-21	95176	8042
9503018*4	MW 6G	GAS.BTX.TESNC	03.03.95	8015M.TX	536-21	95176	8042
9503018*5	MW 6H	GAS.BTX.TESNC	03.06.95	8015M.TX	536-23	95523	1004
9503018*6	MW 6I	GAS.BTX.TESNC	03.06.95	8015M.TX	536-23	95523	1004
9503018*7	EB	GAS.BTX.TESNC	03.03.95	8015M.TX	536-21	95176	8042
9503018*8	TB	GAS.BTX.TESNC	03.03.95	8015M.TX	536-21	95176	8042

\*\*\*

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.

ID.NO = BC Analytical employee identification number of analyst.

DATE REPORTED : 03/14/95

Page 1

LABORATORY CONTROL STANDARDS  
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
1. TPH-gas/BTEX (CADHS/80 C503427*1)						
Date Analyzed	03.03.95	95176	03/03/95	03/03/95	Date	N/A
Benzene	03.03.95	95176	15.4	15.2	ug/L	101
Toluene	03.03.95	95176	79.9	97.4	ug/L	82
Ethylbenzene	03.03.95	95176	18.3	20.4	ug/L	90
Total Xylene Isomers	03.03.95	95176	104	119	ug/L	87
TPH (as Gasoline)	03.03.95	95176	775	1100	ug/L	70
2. TPH-gas/BTEX (CADHS/80 C503428*1)						
Date Analyzed	03.03.95	95176	03/03/95	03/03/95	Date	N/A
Benzene	03.03.95	95176	14.3	15.2	ug/L	94
Toluene	03.03.95	95176	74.7	97.4	ug/L	77
Ethylbenzene	03.03.95	95176	16.1	20.4	ug/L	79
Total Xylene Isomers	03.03.95	95176	92.6	119	ug/L	78
TPH (as Gasoline)	03.03.95	95176	725	1100	ug/L	66
3. TPH-gas/BTEX (CADHS/80 C503837*1)						
Date Analyzed	03.06.95	95523	03/06/95	03/06/95	Date	N/A
Benzene	03.06.95	95523	16.8	15.2	ug/L	111
Toluene	03.06.95	95523	94.3	97.4	ug/L	97
Ethylbenzene	03.06.95	95523	19.8	20.4	ug/L	97
Total Xylene Isomers	03.06.95	95523	107	119	ug/L	90
TPH (as Gasoline)	03.06.95	95523	1010	1100	ug/L	92
4. TPH-gas/BTEX (CADHS/80 C503838*1)						
Date Analyzed	03.06.95	95523	03/06/95	03/06/95	Date	N/A
Benzene	03.06.95	95523	17.2	15.2	ug/L	113
Toluene	03.06.95	95523	97.0	97.4	ug/L	100
Ethylbenzene	03.06.95	95523	20.6	20.4	ug/L	101
Total Xylene Isomers	03.06.95	95523	111	119	ug/L	93
TPH (as Gasoline)	03.06.95	95523	1330	1100	ug/L	121

BC ANALYTICAL

ORDER QC REPORT FOR G9503018

DATE REPORTED : 03/14/95

Page 1

ADDITIONAL LCS PRECISION (DUPLICATES)  
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	LC1 RESULT	LC2 RESULT	UNIT	RELATIVE % DIFF
1. TPH-gas/BTEX (CADHS/80)							
Date Analyzed		03.03.95	95176	03/03/95	03/03/95	Date	N/A
Benzene		03.03.95	95176	15.4	14.3	ug/L	7
Toluene		03.03.95	95176	79.9	74.7	ug/L	7
Ethylbenzene		03.03.95	95176	18.3	16.1	ug/L	13
Total Xylene Isomers		03.03.95	95176	104	92.6	ug/L	12
TPH (as Gasoline)		03.03.95	95176	775	725	ug/L	7
2. TPH-gas/BTEX (CADHS/80)							
Date Analyzed		03.06.95	95523	03/06/95	03/06/95	Date	N/A
Benzene		03.06.95	95523	16.8	17.2	ug/L	2
Toluene		03.06.95	95523	94.3	97.0	ug/L	3
Ethylbenzene		03.06.95	95523	19.8	20.6	ug/L	4
Total Xylene Isomers		03.06.95	95523	107	111	ug/L	4
TPH (as Gasoline)		03.06.95	95523	1010	1330	ug/L	27 Q

BC ANALYTICAL

ORDER QC REPORT FOR G9503018

DATE REPORTED : 03/14/95

MATRIX QC ACCURACY (SPIKES)  
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS %	MSD %	TRUE RESULT	UNIT	
1. TPH-gas/BTEX (CADHS/80 9503018*4)								
Benzene		03.03.95	95176	143 Q	160 Q	16.1	ug/L	Q
Toluene		03.03.95	95176	98	110	98.4	ug/L	
Ethylbenzene		03.03.95	95176	104	108	20.4	ug/L	
Total Xylene Isomers		03.03.95	95176	101	104	120	ug/L	
TPH (as Gasoline)		03.03.95	95176	92	105	1100	ug/L	
2. TPH-gas/BTEX (CADHS/80 9503017*6)								
Benzene		03.06.95	95523	94	95	15.2	ug/L	
Toluene		03.06.95	95523	83	84	97.4	ug/L	
Ethylbenzene		03.06.95	95523	87	89	20.4	ug/L	
Total Xylene Isomers		03.06.95	95523	78	79	119	ug/L	
TPH (as Gasoline)		03.06.95	95523	114	113	1100	ug/L	

BC ANALYTICAL

ORDER QC REPORT FOR G9503018

DATE REPORTED : 03/14/95

Page 1

MATRIX QC ACCURACY (SPIKES)  
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS %	MSD %	TRUE RESULT	UNIT	
1. TPH-gas/BTEX (CADHS/80 9503018*4)								
Benzene		03.03.95	95176	143 Q	160 Q	16.1	ug/L	Q
Toluene		03.03.95	95176	98	110	98.4	ug/L	
Ethylbenzene		03.03.95	95176	104	108	20.4	ug/L	
Total Xylene Isomers		03.03.95	95176	101	104	120	ug/L	
TPH (as Gasoline)		03.03.95	95176	92	105	1100	ug/L	
2. TPH-gas/BTEX (CADHS/80 9503017*6)								
Benzene			95523	94	95	15.2	ug/L	
Toluene			95523	83	84	97.4	ug/L	
Ethylbenzene			95523	87	89	20.4	ug/L	
Total Xylene Isomers			95523	78	79	119	ug/L	
TPH (as Gasoline)			95523	114	113	1100	ug/L	

BC ANALYTICAL

ORDER QC REPORT FOR G9503018

DATE REPORTED : 03/14/95

Page 1

MATRIX QC PRECISION (DUPLICATE SPIKES)  
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS RESULT	MSD RESULT	UNIT	RELATIVE % DIFF
1. TPH-gas/BTEX (CADHS/80 9503018*4)							
Date Analyzed		03.03.95	95176	03/03/95	03/03/95	Date	N/A
Benzene		03.03.95	95176	22.7	25.2	ug/L	10
Toluene		03.03.95	95176	96.7	108	ug/L	11
Ethylbenzene		03.03.95	95176	21.3	22.1	ug/L	4
Total Xylene Isomers		03.03.95	95176	121	125	ug/L	3
TPH (as Gasoline)		03.03.95	95176	1010	1160	ug/L	14
2. TPH-gas/BTEX (CADHS/80 9503017*6)							
Date Analyzed		03.07.95	95523	03/07/95	03/07/95	Date	N/A
Benzene		03.07.95	95523	14.3	14.5	ug/L	1
Toluene		03.07.95	95523	80.6	82.1	ug/L	2
Ethylbenzene		03.07.95	95523	17.8	18.1	ug/L	2
Total Xylene Isomers		03.07.95	95523	92.3	94.0	ug/L	2
TPH (as Gasoline)		03.07.95	95523	1250	1240	ug/L	1

## BC ANALYTICAL

ORDER QC REPORT FOR G9503018

DATE REPORTED : 03/14/95

Page 1

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)  
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT	METHOD
1. TPH-gas/BTEX (CADHS/80 B503241*1)						
Date Analyzed	03.03.95	95176	03/03/95	NA	Date	8015M.TX
Benzene	03.03.95	95176	0	0.5	ug/L	8015M.TX
Toluene	03.03.95	95176	0.20	0.5	ug/L	8015M.TX
Ethylbenzene	03.03.95	95176	0	0.5	ug/L	8015M.TX
Total Xylene Isomers	03.03.95	95176	0.26	0.5	ug/L	8015M.TX
TPH (as Gasoline)	03.03.95	95176	0	50	ug/L	8015M.TX
2. TPH-gas/BTEX (CADHS/80 B503456*1)						
Date Analyzed	03.06.95	95523	03/06/95	NA	Date	8015M.TX
Benzene	03.06.95	95523	0	0.5	ug/L	8015M.TX
Toluene	03.06.95	95523	0	0.5	ug/L	8015M.TX
Ethylbenzene	03.06.95	95523	0	0.5	ug/L	8015M.TX
Total Xylene Isomers	03.06.95	95523	0	0.5	ug/L	8015M.TX
TPH (as Gasoline)	03.06.95	95523	0	50	ug/L	8015M.TX

: SURROGATE RECOVERIES :  
: BC ANALYTICAL : GLEN LAB : 10:01:57 14 MAR 1995 - P. 1 :  
=====

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9503018*1							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	51.8	50.0	104	
9503018*2							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	53.5	50.0	107	
9503018*3							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	51.6	50.0	103	
9503018*4							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	52.6	50.0	105	
9503018*5							
8015M.TXa	a,a-Trifluorotoluene	95523	03/06/95	50.0	50.0	100	
9503018*6							
8015M.TXa	a,a-Trifluorotoluene	95523	03/06/95	50.8	50.0	102	
9503018*7							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	52.8	50.0	106	
9503018*8							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	52.9	50.0	106	



METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9503017*6*R1							
8015M.TXa	a,a-Trifluorotoluene	95523	03/06/95	51.5	50.0	103	
9503017*6*S1							
8015M.TXa	a,a-Trifluorotoluene	95523	03/07/95	54.2	50.0	108	
9503017*6*S2							
8015M.TXa	a,a-Trifluorotoluene	95523	03/07/95	53.0	50.0	106	
9503017*6*T							
8015M.TXa	a,a-Trifluorotoluene	95523	03/07/95	50.0	50.0	100	
9503018*4*R1							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	52.6	50.0	105	
9503018*4*S1							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	52.0	50.0	104	
9503018*4*S2							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	53.1	50.0	106	
9503018*4*T							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	50.0	50.0	100	
B503241*1*MB							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	50.8	50.0	102	
B503456*1*MB							
8015M.TXa	a,a-Trifluorotoluene	95523	03/06/95	46.3	50.0	93	
C503427*1*LC							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	42.7	50.0	85	
C503427*1*LT							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	50.0	50.0	100	
C503428*1*LC							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	50.0	50.0	100	
C503428*1*LT							
8015M.TXa	a,a-Trifluorotoluene	95176	03/03/95	50.0	50.0	100	

: SURROGATE RECOVERIES :  
: BC ANALYTICAL : GLEN LAB : 10:02:01 14 MAR 1995 - P. 2 :  
=====

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
C503837*1*LC							
8015M.TXa	a,a,a-Trifluorotoluene	95523	03/06/95	50.4	50.0	101	
C503837*1*LT							
8015M.TXa	a,a,a-Trifluorotoluene	95523	03/06/95	50.0	50.0	100	
C503838*1*LC							
8015M.TXa	a,a,a-Trifluorotoluene	95523	03/06/95	50.2	50.0	100	
C503838*1*LT							
8015M.TXa	a,a,a-Trifluorotoluene	95523	03/06/95	50.0	50.0	100	

G9503018

**Chain-of-Custody**

**Texaco Environmental Services**  
 108 Cutting Boulevard  
 Richmond, California 94804  
 Phone: (510) 238-3541  
 FAX: (510) 237-7821  
 Forward Results to the Attention of Rebecca Digerness  
 Texaco Project Coordinator Karen Petryna

Site Name: Texaco Loc# 624280195  
 Site Address: 2225 Telegraph Ave. Oakland, CA  
 Contractor Project Number: 950227-K1  
 Contractor Name: Blaine Tech Services, Inc.  
 Address: 985 Timothy Dr., San Jose, CA 95133  
 Project Contact: Don Weltz  
 Phone/FAX: (408) 995-5535 / (408) 293-8773

Laboratory: B C Analytical  
 Turn Around Time: normal (10 day)  
 Samplers (PRINT NAME): Keith Brown  
 Sampler Signature: [Signature]  
 Date Samples Collected: \_\_\_\_\_

ANALYSIS										Comments
TPH gas/BTEX	TPH Diesel	O&G/TRPH (419.1)	TPH Ex. (C8-C36 +)	VOCs 8240/624	P. Halocarbons 8010/60	P. Aromatics 8020/602	Organic Lead			
X										- 1
X										- 2
X										- 3
X										- 4
X										- 5
X										- 6
X										- 7
X										- 8

Sample Number	Lab Sample Number	Date/Time Collected	No. of Containers	Type of Containers	Sample Matrix	Preservative
MW6B		2/27 1130	3	VOL	W	HCl
MW6E		1155	↓	↓	↓	
MW6F		1010	↓	↓	↓	
MW6G		1110	↓	↓	↓	
MW6H		1220	↓	↓	↓	
MW6I		1045	↓	↓	↓	
EB		-	↓	↓	↓	
TB		-	2	↓	↓	

Relinquished by: <u>[Signature]</u> (Signature)	Date: <u>3/1/95</u> Time: <u>1330</u>	Received by: <u>[Signature]</u> (Signature)	Date: <u>3-1-95</u> Time: <u>130</u>
Relinquished by: <u>[Signature]</u> (Signature)	Date: <u>3/1-95</u> Time: <u>4:00</u>	Received by: <u>[Signature]</u> (Signature)	Date: <u>3-1-95</u> Time: <u>4:10</u>
Relinquished by: <u>[Signature]</u> (Signature)	Date: <u>3/1/95</u> Time: <u>430</u>	Received by: _____ (Signature)	Date: _____ Time: _____
Method of Shipment: _____		Lab Comments: _____	



# Groundwater Sampling Form

Project Name Telegraph Well No. NW 6 B  
 Project Number 950227-1C1 Well Type  Monitor  Extraction  Other  
 Recorded By KUB Sampled by KUB Date 2/27

## WELL PURGING

### PURGE VOLUME

Well casing diameter  
 2-inch  4-inch  Other

Well Total Depth (TD, ft. below TOC) 1184

Depth to Water (WL, ft. below TOC) 1785

Depth to free phase hydrocarbons (FP, ft. below TOC)

Number of well volumes to be purged  
 3  10  Other

### PURGE VOLUME CALCULATION

$$\frac{6.01}{\text{Water Column Length}} \times \frac{0.17}{\text{Multiplier}} \times \frac{3}{\text{No. Vols}} =$$

MULTIPLIER (Casing Dia. [inches] = Gallons/linear ft.)  
 2 = 0.173 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.83 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

### PURGE METHOD

Bailor - Type Teflon  
 Pump - Type  
 Other

### PUMP INTAKE

Near top Depth (ft)  
 Near Bottom Depth (ft)  
 Other

Pumping Rate 10 gpm  
 CALCULATED PURGE VOLUME 3 gals

ACTUAL PURGE VOLUME 3 gals

### GROUNDWATER PARAMETER MEASUREMENT

Meter Type Hydron

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1120   1	7.2	1000	64.2		200	grey
1122   2	7.2	1000	64.6		200	slight
1125   3	7.3	1000	64.4		200	
/						
/						
/						
/						
/						

Comments during well purge

Well Pumped dry: YES  NO  Purge water storage/disposal  Drummed onsite  Other BSL

## WELL SAMPLING

### SAMPLING METHOD

Date/Time Sampled 2/27 1130

Bailor - Type  Teflon Sample port  Other

### GROUNDWATER SAMPLE PARAMETER MEASUREMENTS

Meter Type

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
/						

### SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
<u>NW 6 B</u>	<u>200 40</u>	<u>GEN</u>	<u>HCL</u>	<u>BCN</u>	
		<u>BSL</u>			

### QUALITY CONTROL SAMPLES

#### Duplicate Samples

Original Sample No.	Duplicate Sample No.

#### Blank Samples

Type	Sample No.
Trip	
Rinsale	
Transfer	
Other:	

# Groundwater Sampling Form

Project Name Telegraph Well No. MW8E  
 Project Number 950227-1-1 Well Type  Monitor  Extraction  Other  
 Recorded By KUS Sampled by KUS Date 2/27

## WELL PURGING

### PURGE VOLUME

Well casing diameter  
 2-inch  4-inch  Other

Well Total Depth (TD, ft. below TOC) 1908

Depth to Water (WL, ft. below TOC) 1296

Depth to free phase hydrocarbons (FP, ft. below TOC)

Number of well volumes to be purged  
 3  10  Other

### PURGE VOLUME CALCULATION

$$\frac{6.12}{\text{Water Column Length}} \times \frac{0.66}{\text{Multiplier}} \times \frac{3}{\text{No. Vols}} =$$

MULTIPLIER (Casing Dia. [inches] = Gallons/linear ft)  
 2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.83 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

### PURGE METHOD

Bailor - Type  
 Pump - Type E.S.  
 Other

### PUMP INTAKE

Near top Depth (ft)  
 Near Bottom Depth (ft) 19  
 Other

Pumping Rate \_\_\_\_\_ gpm  
4.0 / 12.0 gals  
**CALCULATED PURGE VOLUME**

120 gals  
**ACTUAL PURGE VOLUME**

### GROUNDWATER PARAMETER MEASUREMENT

Time/Gallons	pH	Cond. (uomhos/cm)	Temp (deg C / deg F)	Turbidity (NTU)	Color/Odor
1137 1 4	7.2	460	62.6	20.5	Clear
1140 1 8	7.0	420	63.0	10.9	
1144 1 12	7.1	420	63.6	7.8	
1					
1					
1					
1					

Comments during well purge  
 Well Pumped dry: YES  NO  Purge water storage/disposal  Drummed onsite  Other BSS

## WELL SAMPLING

SAMPLING METHOD \_\_\_\_\_ Date/Time Sampled 2/27 1155

Bailer - Type  SS Sample port  Other

### GROUNDWATER SAMPLE PARAMETER MEASUREMENTS

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp (deg C / deg F)	Turbidity (NTU)	Color/Odor
1 1					

### SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
<u>MW8E</u>	<u>VOL 40</u>	<u>Gas</u> <u>BTX</u>	<u>HCl</u>	<u>BCA</u>	

### QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Duplicate Sample No.

Blank Samples	
Type	Sample No.
Trip	
Rinsate	
Transfer	
Other:	

# Groundwater Sampling Form

Project Name Telegraph Well No. NW6F  
 Project Number 950227-1C1 Well Type  Monitor  Extraction  Other  
 Recorded By ICW Sampled by KEB Date 2/22

## WELL PURGING

### PURGE VOLUME

Well casing diameter  
 2-inch  4-inch  Other

Well Total Depth (TD, ft. below TOC) 1934

Depth to Water (WL, ft. below TOC) 1275

Depth to free phase hydrocarbons (FP, ft. below TOC) \_\_\_\_\_

Number of well volumes to be purged  
 3  10  Other \_\_\_\_\_

### PURGE VOLUME CALCULATION

$$\frac{659}{\text{Water Column Length}} \times \frac{0.66}{\text{Multiplier}} \times \frac{3}{\text{No. Vols}} =$$

MULTIPLIER (Casing Dia. [inches] = Gallons/linear ft.)  
 2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.83 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

### PURGE METHOD

Bailor - Type \_\_\_\_\_  
 Pump - Type E.S.  
 Other \_\_\_\_\_

### PUMP INTAKE

Near top Depth (ft) \_\_\_\_\_  
 Near Bottom Depth (ft) 19  
 Other \_\_\_\_\_

Pumping Rate \_\_\_\_\_ gpm  
4.3 / 12.9 gals  
**CALCULATED PURGE VOLUME**

15.0 gals  
**ACTUAL PURGE VOLUME**

### GROUNDWATER PARAMETER MEASUREMENT

Meter Type Hydra

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
951 1 5	7.2	1000	62.8		24.5	Clear
954 1 10	6.8	800	63.8		13.4	
959 1 15	6.9	810	63.8		10.1	
1						
1						
1						
1						
1						

Comments during well purge \_\_\_\_\_

Well Pumped dry: YES  NO

Slow Recharge  
 Purge water storage/disposal  Drummed onsite  Other BYS

## WELL SAMPLING

SAMPLING METHOD \_\_\_\_\_ Date/Time Sampled 2/27 11010

Bailor - Type  SS Sample port  Other

### GROUNDWATER SAMPLE PARAMETER MEASUREMENTS

Meter Type \_\_\_\_\_

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1 1 1						

### SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
<u>NW6F</u>	<u>VOH 40</u>	<u>Gas</u> <u>BTEX</u>	<u>HCl</u>	<u>NCA</u>	

### QUALITY CONTROL SAMPLES

#### Duplicate Samples

Original Sample No.	Duplicate Sample No.

#### Blank Samples

Type	Sample No.
Trip	
Rinsate	
Transfer	
Other	

# Groundwater Sampling Form

Project Name Telegraph Well No. NW 66  
 Project Number 950127-101 Well Type  Monitor  Extraction  Other  
 Recorded By KLB Sampled by KLB Date 2/27

## WELL PURGING

### PURGE VOLUME

Well casing diameter  
 2-inch  4-inch  Other  
 Well Total Depth (TD, ft. below TOC) 1939  
 Depth to Water (WL, ft. below TOC) 1032  
 Depth to free phase hydrocarbons (FP, ft. below TOC) \_\_\_\_\_  
 Number of well volumes to be purged  
 3  10  Other \_\_\_\_\_

### PURGE METHOD

Bailor - Type \_\_\_\_\_  
 Pump - Type F.S.  
 Other \_\_\_\_\_

### PUMP INTAKE

Near top Depth (ft) \_\_\_\_\_  
 Near Bottom Depth (ft) 19  
 Other \_\_\_\_\_

### PURGE VOLUME CALCULATION

$$\frac{907}{\text{Water Column Length}} \times \frac{0.66}{\text{Multiplier}} \times \frac{3}{\text{No. Vols}} =$$

MULTIPLIER (Casing Dia. [inches] = Gallons/linear ft)  
 2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.83 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

Pumping Rate \_\_\_\_\_ gpm  
5.9 / 12.7 gals  
**CALCULATED PURGE VOLUME**  
18.0 gals  
**ACTUAL PURGE VOLUME**

### GROUNDWATER PARAMETER MEASUREMENT

Time/Gallons	pH	Cond. (uomhos/cm)	Temp (deg F)	deg C	Turbidity (NTU)	Color/Odor
1052 1 6	7.2	930	66.0		19.9	
1056 1 12	7.1	920	66.0		19.0	
1102 1 18	7.1	920	66.2		15.4	
1						
1						
1						
1						
1						

Comments during well purge \_\_\_\_\_  
 Well Pumped dry: YES  NO   
 Purge water storage/disposal  Drummed onsite  Other BVS

## WELL SAMPLING

SAMPLING METHOD \_\_\_\_\_ Date/Time Sampled 2/27 1110  
 Bailor - Type  S.S. Sample port  Other

### GROUNDWATER SAMPLE PARAMETER MEASUREMENTS

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp (deg F)	deg C	Turbidity (NTU)	Color/Odor
1 1						

### SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
<u>NW 66</u>	<u>1034 40</u>	<u>Gas</u> <u>PTX</u>	<u>HCl</u>	<u>BCH</u>	

### QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Duplicate Sample No.

Blank Samples	
Type	Sample No.
Trip	
Rinsate	
Transfer	
Other:	



# Groundwater Sampling Form

Project Name Telegraph Well No. MW6H  
 Project Number 250229-1A Well Type  Monitor  Extraction  Other  
 Recorded By KCP Sampled by KCP Date 2/27

## WELL PURGING

### PURGE VOLUME

Well casing diameter  
 2-inch  4-inch  Other  
 Well Total Depth (TD, ft. below TOC) 1928  
 Depth to Water (WL, ft. below TOC) 1189  
 Depth to free phase hydrocarbons (FP, ft. below TOC) \_\_\_\_\_  
 Number of well volumes to be purged  
 3  10  Other \_\_\_\_\_

### PURGE METHOD

Bailor - Type \_\_\_\_\_  
 Pump - Type E.S.  
 Other \_\_\_\_\_

### PUMP INTAKE

Near top Depth (ft) \_\_\_\_\_  
 Near Bottom Depth (ft) 19  
 Other \_\_\_\_\_

### PURGE VOLUME CALCULATION

$$\frac{739}{\text{Water Column Length}} \times \frac{0.66}{\text{Multiplier}} \times \frac{3}{\text{No. Vols}} =$$

MULTIPLIER (Casing Dia. [inches] = Gallons/linear ft)  
 2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.83 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

Pumping Rate \_\_\_\_\_ gpm  
4.8 / 19.4 gals  
**CALCULATED PURGE VOLUME**

15 gals  
**ACTUAL PURGE VOLUME**

### GROUNDWATER PARAMETER MEASUREMENT

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1159 / 5	6.9	820	66.0		30.1	Strong gas
1205 / 10	6.9	840	66.6		15.6	odor
1210 / 15	6.8	840	66.8		11.9	clear
/						
/						
/						
/						
/						

Comments during well purge \_\_\_\_\_

Well Pumped dry: YES  NO  Purge water storage/disposal  Drummed onsite  Other BFS

## WELL SAMPLING

SAMPLING METHOD \_\_\_\_\_ Date/Time Sampled 2/27 / 1220  
 Bailer - Type  \_\_\_\_\_ S.S. Sample port  Other

### GROUNDWATER SAMPLE PARAMETER MEASUREMENTS

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
/ / /						

### SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
<u>MW6H</u>	<u>VDA 40</u>	<u>Gas</u> <u>BTEX</u>	<u>HCl</u>	<u>BCPA</u>	

### QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Duplicate Sample No.

Blank Samples	
Type	Sample No.
Trip	
Rinsate	
Transfer	
Other:	

# Groundwater Sampling Form

Project Name Telegraph Well No. NW61  
 Project Number 450227-141 Well Type  Monitor  Extraction  Other  
 Recorded By KCB Sampled by KCB Date 2/27

## WELL PURGING

### PURGE VOLUME

Well casing diameter  
 2-inch  4-inch  Other  
 Well Total Depth (TD, ft. below TOC) 196  
 Depth to Water (WL, ft. below TOC) 1251  
 Depth to free phase hydrocarbons (FP, ft. below TOC)  
 Number of well volumes to be purged  
 3  10  Other

### PURGE METHOD

Bailer - Type  
 Pump - Type E.S.  
 Other

### PUMP INTAKE

Near top Depth (ft)  
 Near Bottom Depth (ft) 19  
 Other

### PURGE VOLUME CALCULATION

$$\frac{6.65}{\text{Water Column Length}} \times \frac{0.66}{\text{Multiplier}} \times \frac{3}{\text{No. Vols}} =$$

MULTIPLIER (Casing Dia. inches) = Gallons/linear ft.  
 2 = 0.17 | 3 = 0.38 | 4 = 0.66 | 4.5 = 0.83 | 5 = 1.02 | 6 = 1.5 | 8 = 2.6

Pumping Rate \_\_\_\_\_ gpm  
4.3 / 12.9 gals  
**CALCULATED PURGE VOLUME**  
13.0 gals  
**ACTUAL PURGE VOLUME**

### GROUNDWATER PARAMETER MEASUREMENT

Meter Type Myron

Time/Gallons	pH	Cond. (uomhcs/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1024 / 5	7.3	500	65.0		10.9	Clear
1029 / 9	7.0	640	65.8		13.5	
1035 / 13	7.0	660	66.4		14.6	
/						
/						
/						
/						
/						

Comments during well purge Slow Recharge  
 Well Pumped dry: YES  NO  Purge water storage/disposal  Drummed onsite  Other RFS

## WELL SAMPLING

### SAMPLING METHOD

Date/Time Sampled 2/27 1 1045  
 Bailer - Type  S.S. Sample port  Other

### GROUNDWATER SAMPLE PARAMETER MEASUREMENTS

Meter Type \_\_\_\_\_

Date/Time/% Recharge	pH	Cond. (uomhcs/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
/ /						

### SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
<u>NW61</u>	<u>10A 40</u>	<u>Gas</u> <u>BTEX</u>	<u>HCl</u>	<u>BCIA</u>	

### QUALITY CONTROL SAMPLES

#### Duplicate Samples

Original Sample No.	Duplicate Sample No.

#### Blank Samples

Type	Sample No.
Trip	
Rinsate	<u>FB-1020</u>
Transfer	
Other:	

**SOURCE RECORD BILL OF LADING**  
 FOR NON-HAZARDOUS PURGEWATER RECOVERED FROM  
 GROUNDWATER WELLS AT TEXACO FACILITIES IN THE  
 STATE OF CALIFORNIA. THE NON-HAZARDOUS PURGE-  
 WATER WHICH HAS BEEN RECOVERED FROM GROUND-  
 WATER WELLS IS COLLECTED BY THE CONTRACTOR,  
 MADE UP INTO LOADS OF APPROPRIATE SIZE AND  
 HAULED TO THE DESTINATION DESIGNATED BY TEXACO  
 ENVIRONMENTAL SERVICES (TES).

Contractor: Blaine Tech Services, Inc.  
 Address: 985 Timothy Drive  
 City, State, ZIP: San Jose, CA 95133  
 Phone: (408) 995-5535

is authorized by Texaco Environmental Services to recover, collect, apportion into loads, and haul the NON-HAZARDOUS WELL PURGEWATER that is drawn from wells at the Texaco facility listed below and to deliver that purgewater to an appropriate destination designated by TEXACO ENVIRONMENTAL SERVICES in either Redwood City, California or in Richmond, California. Transport routing of the Non-Hazardous Well Purgewater may be directed from one Texaco facility to the designated desitnation point; from one Texaco facility to the designated destination point via another Texaco facility; from a Texaco facility via the contractor's facility, or any combination thereof. The Non-Hazardous Well Purgewater is and remains the property of Texaco Environmental Services (TES).

This SOURCE RECORD BILL OF LADING was initiated to cover the recovery of Non-Hazardous Well Purgewater from wells at the Texaco facility described below:

TEXACO #: 024880195  
 Address: 2225 Telegraph  
 City, State, ZIP: Oakland

Well I.D.	Gals.	Well I.D.	Gals.
<u>MW6B 1</u>			
<u>↓</u>	<u>1</u>		<u>1</u>
<u>↓</u>	<u>1</u>		<u>1</u>
	<u>1</u>		<u>1</u>
<u>MW6I 1</u>			
	<u>1 76</u>		<u>1</u>
	<u>1</u>		<u>1</u>
	<u>1</u>		<u>1</u>
	<u>1</u>		<u>1</u>
	<u>1</u>		<u>1</u>
	<u>1</u>		<u>1</u>
Total gals.	<u>5</u>		
Total Gals. Recovered	<u>81</u>		
			<u>added rinse water</u>
Job #:	<u>950227-K1</u>		
Date	<u>2/27</u>		
Time	<u>1230</u>		
Signature:	<u>[Signature]</u>		
REC'D AT:	<u>1375</u>		
Date:	<u>2/27</u>		
Time:	<u>1830</u>		
Signature:	<u>[Signature]</u>		

## **QUARTERLY SUMMARY REPORT**

Former Texaco/Current Exxon Service Station  
2225 Telegraph Avenue, Oakland, California  
Alameda County  
Fourth Quarter, 1994

### **HISTORY OF INVESTIGATIVE AND REMEDIAL ACTIONS**

A preliminary subsurface investigation and a sensitive receptor survey were conducted in May, 1988. Nine shallow monitoring wells (MW-6A through MW-6I) were installed on site and seven soil borings were drilled near the pump islands and tanks. Two vapor wells were installed in the tank pit backfill, and an additional vapor extraction well (VE-3) was installed on site. Recovery well RW-1 was installed into soil boring B-3. Two of the on-site monitoring wells (MW-6 and MW-6D) were converted to groundwater recovery wells (RW-3 and RW-2, respectively) when the groundwater treatment system was installed at the site in 1990. The underground storage tanks, lines, and dispensers were replaced in late 1991. RW-3 was destroyed in 1991 and replaced by RW-3A in 1992. MW-6A was destroyed in 1992 due to damage.

### **WORK PERFORMED DURING THIS QUARTER**

Quarterly groundwater monitoring and sampling was performed. Operation and maintenance of the groundwater treatment system was conducted.

### **CHARACTERIZATION STATUS**

The extent of petroleum hydrocarbons in soil and groundwater has not been delineated.

### **REMEDIATION STATUS**

A groundwater treatment system is in operation at the site which extracts groundwater from two recovery wells using air displacement pumps and three liquid phase carbon canisters to treat the groundwater prior to discharge.

### **WORK TO BE PERFORMED NEXT QUARTER**

Continue quarterly monitoring and sampling to record fluctuations in groundwater elevation and hydrocarbon concentrations and continue operation and maintenance of the groundwater treatment system. **Texaco will also put out to bid installation of a vapor extraction system to compliment the groundwater extraction system.**

**COMPANY CONTACT:** Karen Petryna (510) 236-9139

**Texaco Environmental Services**  
**Standard Operating Procedures**  
**for Groundwater Monitoring and Sampling**

The following are routine procedures to be followed by personnel obtaining field information concerning petroleum product thickness and samples of groundwater during the monitoring and sampling of Texaco sites. These procedures are designed to assure that:

- Information and samples are properly collected.
- Samples are identified, preserved and transported in a manner such that they are representative of field conditions.
- Monitoring and sampling results are reproducible.

**Water Level Measurements**

Water level measurements are needed to document groundwater flow directions and calculate gradient. By gauging the level of water in a groundwater monitoring well and comparing the compiled data, calculations can be made that determine the direction the groundwater at the monitored well is flowing and the groundwater gradient between successive monitoring wells.

- An interface probe or electronic probe is generally used to gauge the level of water in a monitoring well. When using either probe, it is slowly lowered into the well until the oscillating alarm indicating water is heard. Raise the interface probe above the water level and lower it back into the water at least three times to verify that the true depth to water is measured. The depth to water should always be measured from the same spot on the top of the well casing. The designated "Top of Casing" mark should be at the North side of the casing. Without moving the probe, read the numbers on the tape to determine the distance to water from the top of the well casing. A chalked, steel add-tape may also be used to gauge the level of water in a monitoring well. When using the steel tape, it is slowly lowered into the well until the chalked portion of the tape encounters water. Read the numbers on the tape to determine the distance from the predetermined top of the well casing. Raise the tape to the surface grade, re-chalk and lower it back into the water at least two times to verify that the true depth to water is measured. Record the depth to water on the Well Gauging Form and Groundwater Sampling Form.

**Petroleum Product Thickness Measurements.**

If free phase petroleum hydrocarbons (product) are observed floating on the groundwater surface during the water level measurement, the thickness of the product will be measured in each appropriate well. Groundwater samples will not be collected for chemical analysis from wells containing product (even a sheen) unless specifically requested by the Project Coordinator. If the Project Coordinator requests that wells containing product be sampled, only those wells with product thickness of less than 0.01 foot will be sampled. Arrangements to bail, store, and dispose of product must be made separately. When product is stored, according to Texaco policy, it will be double-contained and disposed of within 90 days of generation. Product thicknesses will be measured using interface probes, and/or acrylic (clear plastic) bailers. The procedures for obtaining level and thickness measurements using each instrument are:

- The level of the top of the product will be measured with an interface probe. When product is suspected but not measurable with the interface probe, a visual evaluation can be made using clear bailers. A bailer will be lowered into the water/product surface so that the top of the bailer is NOT submerged; the bailer is then removed from the well and the thickness of the product visually measured and documented on the Well Gauging Form.
- When the interface probe contacts liquid, the visual/audible alarm on the reel will be activated. An oscillating alarm indicates water, a continuous alarm indicates hydrocarbon\*. To determine the exact thickness of a hydrocarbon layer, the probe should be slowly lowered to the air/hydrocarbon interface until the alarm is activated. With the probe at the exact point where the alarm comes on, read the numbers on the tape to determine the distance from the top of casing elevation mark. Next, lower the probe through the hydrocarbon layer and well into the water. An oscillating alarm will be obtained. The probe should then be raised slowly to the hydrocarbon/water interface until the point where the alarm changes from oscillating to continuous. The thickness of the hydrocarbon layer is determined by subtracting the first reading from the second reading. Record the calculated value on the Well Gauging Form and Groundwater Sampling Form.

\* The process described here is equipment specific. Follow the procedures applicable for your monitoring equipment.

### Groundwater Sampling

Groundwater samples will be collected from selected groundwater monitoring wells to provide data which will be statistically representative of local groundwater conditions at the site. Groundwater samples will be collected as follows:

- All measuring and sampling equipment will be decontaminated prior to sample collection from each well and documented on the Groundwater Sampling Form.
- Prior to sampling activity, the water level in the well will be measured and the minimum purge volume of each well will be calculated using the purge volume calculation portion of the Groundwater Sampling Form. A minimum of three casing volumes will be purged prior to sample collection. The actual total volume purged will be recorded on Groundwater Sampling Form.
- Prior to sampling, a submersible pump, centrifugal pump, peristaltic pump, or a Teflon or stainless steel bailer will be used to purge a minimum of three casing volumes from each well. Purge volumes will be estimated using a flow meter or a stopwatch and a bucket to estimate flow rate, from which a time to purge the required volume will be calculated. The pump will be lowered to a depth of two to three feet from bottom of the well. When bailers are used for purging, the bailer should be gently lowered into the water and allowed to fill, then removed. Purged water may be placed into 5-gallon buckets to determine the volume of groundwater removed. Care should be taken to not agitate the water which could release volatile organics.
- Whenever possible, groundwater parameters pH, temperature (in degrees Celsius [C]), specific conductance (in micromhos per centimeters squared [umhos]), and turbidity (in

National Turbidity Units [NTU]) will be monitored and recorded on the Groundwater Sampling Form.

- If a well is purged dry before three casing volumes have been removed, the sample will be taken after the well has recovered to at least 80 percent of the static water level prior to purging or after 4 hours when sufficient water volume is available to meet analytical requirements, whichever comes first. Reasonable efforts will be made to avoid dewatering wells by using low-yield pumps as necessary.
- Water samples will be collected with a stainless steel or Teflon bailer. To reduce potential cross contamination, sampling should take place in order from least to most contaminated wells. Bailer strings should be replaced between each well to avoid cross contamination from a bailer string which has absorbed contamination.
- Sample containers will be filled directly from the bailer.
- Use only sample containers prepared and provided by an analytical laboratory. Preservatives are required for some types of samples. Sample containers containing preservatives should be supplied by an analytical laboratory.
- For volatile organics analysis, each sample vial will be filled with sample water so that water stands above the lip of the vial. The cap should then be quickly placed on the vial and tightened securely. The vial should then be checked to ensure that no air bubbles are present prior to labeling the sample.
- Take site blank samples (trip and rinsate) using distilled water or laboratory supplied water from a known uncontaminated source. One trip blank and one rinsate blank sample for each site will be analyzed for each site sampling event.
- Once collected and labeled, all samples will be stored in a cooler maintained at 4 degrees Celsius using frozen water ice.

#### **Sample Custody Procedures**

Sample custody procedures will be followed through sample collection, transfer, analysis and ultimate disposal. The purpose of these procedures is to assure that the integrity of samples is maintained during their collection and transfer. Sample quantities, types and locations will be determined before the actual field work begins. As few people as possible will handle samples. The field sampler is personally responsible for the care and custody of the collected samples until they are properly transferred.

Each sample will be labeled and sealed properly immediately after collection. Sample identification documents will be carefully prepared so that identification and chain-of-custody records can be maintained and sample disposition can be controlled. Forms will be filled out with waterproof ink. The following are sample identification documents that will be utilized during the field operations.

- Sample Identification Label
- Chain-of Custody

Each separate sample will be identified using a label obtained from the laboratory. The sampler will complete all information, using a black waterproof pen, as follows:

The Site ID This is the name assigned to the particular sampling station.

The Sample Source. This will be the name of the well location.

The Analysis Required. This will be indicated for each sample using proper EPA reference number indicating analytical method.

The Date Taken. This will be the date the sample was collected, using the format MM-DD-YY.  
Example: 06-15-91

Noting the Time. The time the sample was collected will be given in military time.  
Example: 1430

The Method of Preservation. Preservation methods will be provided, specifying the type of preservation. For non-acidified samples, "ice" will be indicated.

The Sampler's Name. This will be printed in the "Sampled By" section. The sampler's signature will be written in the "Signed" section.

There is the potential that samples and analyses could be of an evidentiary nature. Therefore, the possession of samples must be traceable from the time samples are collected in the field until the analysis is completed and the data are entered as evidence. The tracing of the samples through the laboratory is accomplished by "chain-of-custody" procedures. Chain-of-Custody Forms will be completed for each set of samples. The sampler will sign the first "Relinquished By" line at the bottom of the chain of custody record, and will indicate the date and time of the custody transfer. Samples will not leave custody of the field technician until relinquished to another party. Custody is defined by the following criteria.

In the Actual Physical Possession. When field personnel have sample in possession, they have "custody".

In View. The samples are in the field personnel's view, after being in their physical possession.

Special Areas. Sample is kept in a locked area after being in physical possession.

Designated Area. Sample is in a designated, locked-storage area.

Transfer of samples to an analytical laboratory will be done by use of a common carrier or personal delivery. Carrier personnel will personally secure samples and sample containers in such a way that no containers can be opened in transit. The person to whom custody is being transferred will sign on the first "Received By" line of the chain-of-custody record, indicating that custody is being accepted by the carrier for all the samples listed on the sheet. For subsequent transfers of custody, the succeeding relinquish and receipt lines will be used.

#### **Equipment Decontamination**



All equipment that comes in contact with potentially contaminated soil or water will be decontaminated prior to and after each use (for example, after each sampling event). All purging and sampling equipment will be decontaminated with an Alconox wash and rinsed with deionized water. Decontamination water generated will be added to the purge water.

## **QUARTERLY SUMMARY REPORT**

Former Texaco/Current Exxon Service Station  
2225 Telegraph Avenue, Oakland, California  
Alameda County  
Second Quarter, 1995

### **HISTORY OF INVESTIGATIVE AND REMEDIAL ACTIONS**

A preliminary subsurface investigation and a sensitive receptor survey were conducted in May, 1988. Nine shallow monitoring wells (MW-6A through MW-6I) were installed on site and seven soil borings were drilled near the pump islands and tanks. Two vapor wells were installed in the tank pit backfill, and an additional vapor extraction well (VE-3) was installed on site. Recovery well RW-1 was installed into soil boring B-3. Two of the on-site monitoring wells (MW-6 and MW-6D) were converted to groundwater recovery wells (RW-3 and RW-2, respectively) when the groundwater treatment system was installed at the site in 1990. The underground storage tanks, lines, and dispensers were replaced in late 1991. RW-3 was destroyed in 1991 and replaced by RW-3A in 1992. MW-6A was destroyed in 1992 due to damage.

### **WORK PERFORMED DURING THIS QUARTER**

Quarterly groundwater monitoring and sampling was performed. Operation and maintenance of the groundwater treatment system was conducted. A consultant was selected to install the soil vapor extraction (Baker Furnace) portion of the remediation system. Minor modifications were made to the groundwater treatment system.

### **CHARACTERIZATION STATUS**

The extent of petroleum hydrocarbons in soil and groundwater has not been delineated.

### **REMEDICATION STATUS**

A groundwater treatment system is in operation at the site which extracts groundwater from two recovery wells using air displacement pumps and three liquid phase carbon canisters to treat the groundwater prior to discharge. A Baker furnace will be installed next quarter to compliment the groundwater extraction system and utilize the vapor extraction well that has been installed.

### **WORK TO BE PERFORMED NEXT QUARTER**

Continue quarterly monitoring and sampling to record fluctuations in groundwater elevation and hydrocarbon concentrations and continue operation and maintenance of the groundwater treatment system. Begin installation of the Baker Furnace.

**COMPANY CONTACT:** Karen Petryna (510) 236-9139