Texaco Refining
and Marketing Inc

108 Cutting Boulevard
Richmond CA 94804

April 18, 1995

ENV - STUDIES, SURVEYS, & REPORTS
500 Grand Avenue
Oakland, California

Ms. Susan Hugo
Alameda County Environmental
Health Department
80 Swan Way, Room 200
Oakland, CA 94621

Dear Ms. Hugo:

This letter presents the results of groundwater monitoring and sampling conducted by Blaine Tech Services, Inc. on January 31, 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-southeast (see Plate 2, Groundwater Gradient Map). TPHg and benzene concentrations are shown on Plate 3. Tables 1 and 2 list historical groundwater monitoring data and analytical results, respectively.

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, Tom Hargett at (818) 505-2733.

Best Regards,

Rebecca Digerness
Environmental Assistant

Tom Hargett, R. G.
Project Coordinator
Texaco Environmental Services

REGISTERED GEOLOGIST
THOMAS W. HARGETT
No. 5510
Exp. 9/95
STATE OF CALIFORNIA

RBD:hs
P:\GWMP\QMR\500G\QMR.LET

Enclosures

CC: Mr. Richard Hiett
CRWQCB - San Francisco Bay Region
2101 Webster St., Suite 500
Oakland, CA 94612

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

PR: KEP

FIRST-QUARTER 1995 PROGRESS REPORT
500 GRAND AVENUE
OAKLAND, CALIFORNIA

HISTORY OF INVESTIGATIVE AND REMEDIAL ACTIONS

The site is the former location of a Texaco service station location. Currently the site is a fenced, vacant lot. A site preliminary subsurface investigation was conducted in May 1988. During the initial investigation, a soil gas survey was conducted, 15 soil borings were drilled, and 5 on-site groundwater monitoring wells were installed. In 1989, five off-site wells were installed. The initial five on-site wells have been abandoned and replaced by two wells located at the southern perimeter of the site.

Over 2,400 cubic yards of hydrocarbon-impacted soil have been excavated and removed from within the property boundaries. The waste oil tank, tank backfill material, and impacted soil were excavated and disposed of in September 1990. Clay sewer pipes and contaminated soil from an abandoned utility trench near the former waste oil tank were removed from the site in early 1991. Three underground storage tanks, dispenser islands and associated piping, stockpiled soils, and site structures were removed from the site in April 1992. The excavated area was backfilled and compacted using clean imported material.

WORK PERFORMED FIRST QUARTER 1995

Groundwater monitoring was conducted during the quarter. Results are provided in a separate groundwater monitoring report.

PROPOSED INVESTIGATIONS OR REMEDIATION PLANS

All petroleum impacted soils underlying the site, with a possible exception of a very narrow band along the Grand Avenue sidewalk, have been removed by the extensive soil excavation activities. No further investigation or remediation of the vadose-zone soils is proposed.

Groundwater at the site has been affected by gasoline, diesel, and hydrocarbons above the range of diesel. Since the removal of on-site contaminated soils, significant reductions in TPH-g and TPH-d concentrations in groundwater have been reported for samples taken from on- and off-site wells. It is proposed that downgradient wells continue to be monitored to document the biodegradation of the remaining dissolved-phase hydrocarbons in the groundwater.

METHOD AND LOCATION OF DISPOSAL

Ground water purged during the quarterly monitoring was transported to the Texaco Terminal in Richmond, California, for disposal.

LUST FILES

94612	460 Grand Ave	Gulf
94612	2225 Telegraph	Texaco/Exxon
94612	2250 Telegraph	Daves Station
94612	500 Grand	Texaco
94612	434 25th St	Catering By Andre
94612	230 Bay St	Bill Cox Cadillac
94612	2630 Broadway	Chevron
94612	2630 Telegraph	Sears

Groundwater Monitoring and Sampling
First Quarter, 1995
at the
Former Texaco Station
500 Grand Avenue
Oakland, CA

SOURCE

1993 THE THOMAS GUIDE
ALAMEDA COUNTY, PAGE 9 (D4)

N

0 1/4 1/2 3/4 1

MILE

1" = 2200'

TEXACO

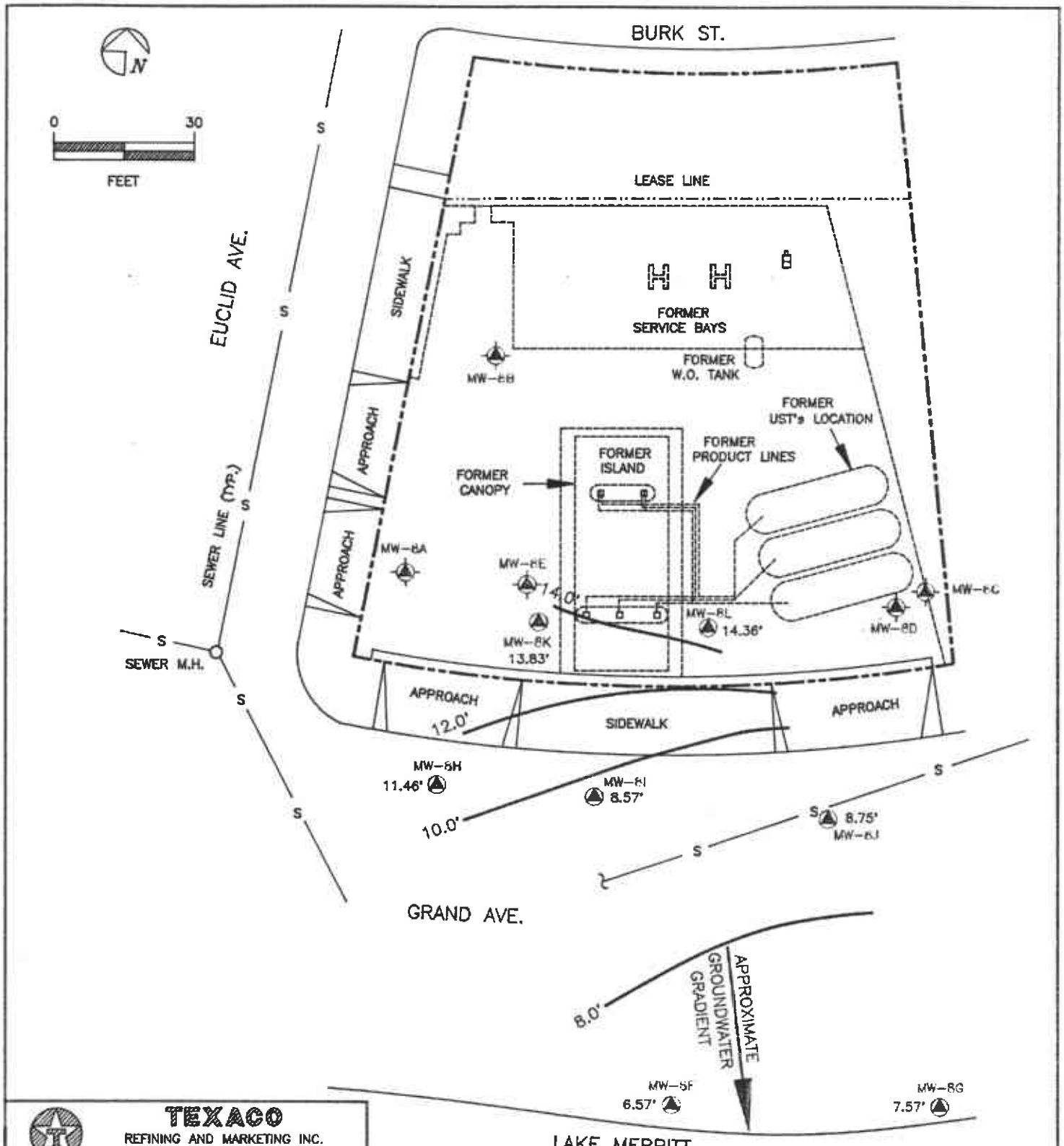
REFINING AND MARKETING, INC.
TEXACO ENVIRONMENTAL SERVICES

PLATE 1

SITE VICINITY MAP

FORMER TEXACO SERVICE STATION

500 GRAND AVE. / EUCLID AVE.,
OAKLAND, CALIFORNIA



TEXACO
REFINING AND MARKETING INC.
TEXACO ENVIRONMENTAL SERVICES

PLATE 2 : GROUNDWATER GRADIENT MAP
(01/31/1995)

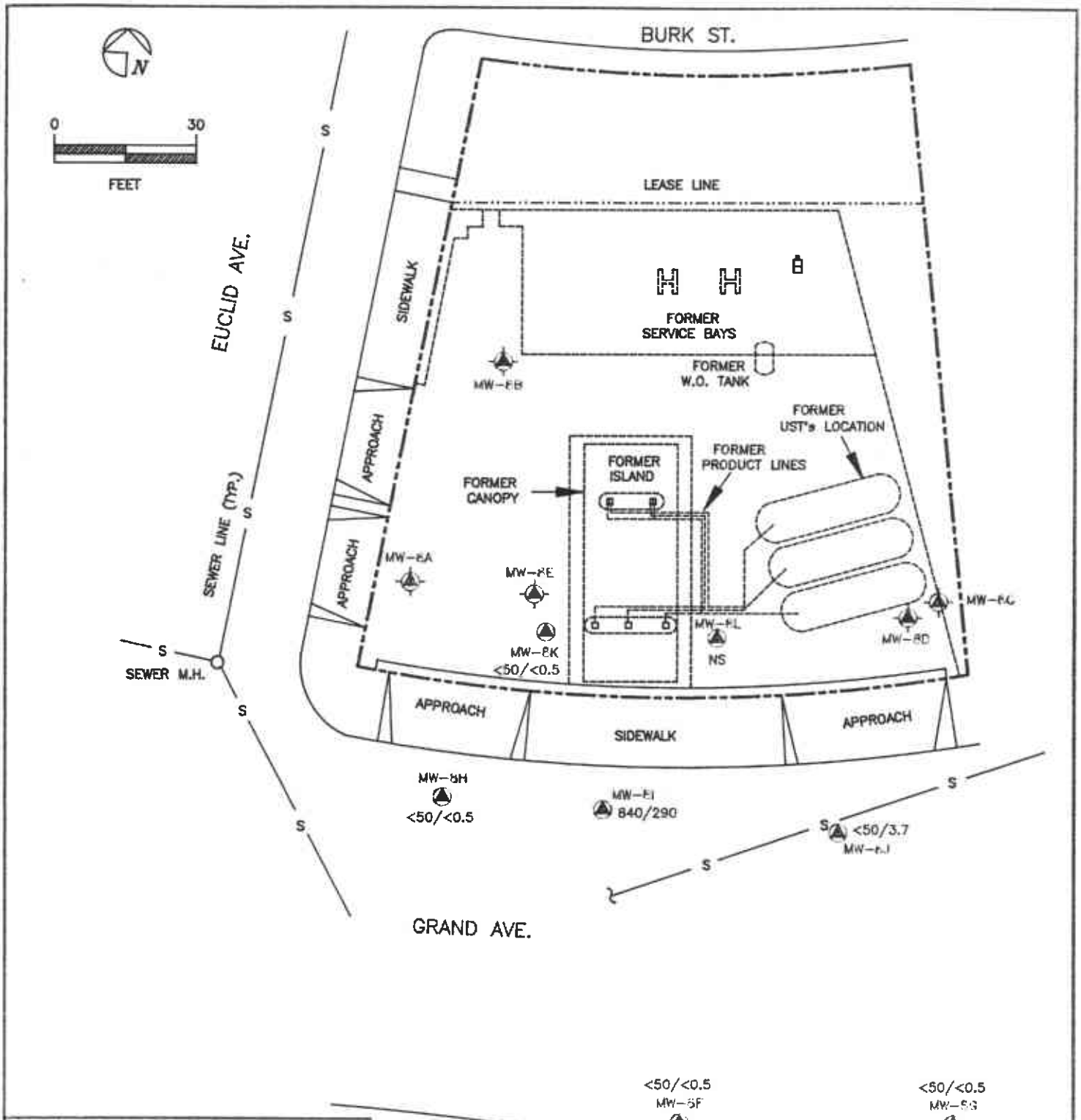
FORMER TEXACO SERVICE STATION

500 GRAND AVE. / EUCLID AVE.,
OAKLAND, CALIFORNIA

SCALE	1"=30'-0"	LOCATION #	62-488-0235
DRAWN BY	AMA	DATE	04/12/1995
CHECKED BY	RD	DATE	4/17/95
DRAWING NO.	(OAKLAND) GR-EU-OK.DWG		

LEGEND :

MW-8F	GROUNDWATER MONITORING WELL LOCATION, AND WELL NUMBER
MW-8A	ABANDONED GROUNDWATER MONITORING WELL LOCATION, AND WELL NUMBER
	GROUNDWATER CONTOUR LINE
8.57'	GROUNDWATER ELEVATION (ABOVE MSL)



TEXACO
REFINING AND MARKETING INC.
TEXACO ENVIRONMENTAL SERVICES

PLATE 3 : TPHg/BENZENE CONCENTRATION IN GROUNDWATER
(01/31/1995)

FORMER TEXACO SERVICE STATION

500 GRAND AVE. / EUCLID AVE.,
OAKLAND, CALIFORNIA

SCALE	1"=30'-0"	LOCATION #	62-488-0235
DRAWN BY	AMA	DATE	04/12/1995
CHECKED BY	RD	DATE	4/15/95
DRAWING NO.	(OAKLAND) GR-EU-OK.DWG		

LEGEND :

MW-EF	GROUNDWATER MONITORING WELL LOCATION, AND WELL NUMBER
MW-EA	ABANDONED GROUNDWATER MONITORING WELL LOCATION, AND WELL NUMBER
<50/<0.5	TPHg/BENZENE CONCENTRATION IN GROUNDWATER (ppb)
NS	WELL NOT SAMPLED

Table 1
Groundwater Elevation Data
500 Grand Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet, MSL)	Depth to Water (feet, TOC)	Elevation of Groundwater (feet, MSL)
MW-8A	03/29/91	99.72		
	01/23/92		2.57	97.15
	02/28/92		2.48	97.24
	03/26/92		2.13	97.59
	04/30/92		2.10	97.62
	08/03/92		----- Well Properly Abandoned -----	
MW-8B	03/29/91	101.11		
	01/23/92		0.54	100.57
	02/28/92		0.29	100.82
	03/26/92		0.07	101.04
	04/30/92		0.60	100.51
	09/28/92		---------- Not Monitored ----------	
	11/19/92		---------- Not Monitored ----------	
	02/12/93		---------- Not Monitored ----------	
	04/01/93		----- Well Properly Abandoned -----	
MW-8C	03/29/91	98.41		
	01/23/92		6.88	91.53
	02/28/92		6.69	91.72
	03/26/92		6.69	91.72
	04/30/92		5.90	92.51
	09/28/92		---------- Not Monitored ----------	
	11/19/92		---------- Not Monitored ----------	
	02/12/93		---------- Not Monitored ----------	
	04/01/93		----- Well Properly Abandoned -----	
MW-8D			----- Well Properly Abandoned -----	
MW-8E	03/29/91	99.38		
	01/23/92		3.57	95.81
	02/28/92		3.35	96.03
	03/26/92		3.01	96.37
	04/30/92		3.76	95.62
	08/03/92		----- Well Properly Abandoned -----	

Table 1
Groundwater Elevation Data
500 Grand Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet, MSL)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet, MSL)
MW-8F	03/29/91	97.94			
	01/23/92			10.24	87.70
	02/28/92			9.93	88.01
	03/26/92			8.78	89.16
	04/30/92			9.36	88.58
	09/28/92			11.83	86.11
	11/19/92			11.22	86.72
	02/12/93			9.66	88.28
	05/06/93			8.83	89.11
	08/16/93	14.04	*	10.16	3.88
	10/12/93			10.60	3.44
	02/03/94			9.29	4.75
	05/31/94			9.34	4.70
	08/25/94			10.14	3.90
	11/02/94			10.42	3.62
	01/31/95			7.47	6.57
MW-8G	04/23/91	97.24			
	01/23/92			11.30	85.94
	02/28/92			10.83	86.41
	03/26/92			9.20	88.04
	04/30/92			9.00	88.24
	09/28/92			13.32	83.92
	11/19/92			-------- Well Inaccessible --------	
	02/12/93			-------- Well Inaccessible --------	
	05/06/93			11.18	86.06
	08/16/93	13.32	*	9.51	3.81
	10/12/93			10.93	2.39
	02/03/94			9.69	3.63
	05/31/94			9.24	4.08
	08/25/94			9.74	3.58
	11/02/94			10.08	3.24
	01/31/95			5.75	7.57

Table 1
Groundwater Elevation Data
500 Grand Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet, MSL)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet, MSL)
MW-8H	03/29/91	98.90			
	01/23/92			3.74	95.16
	02/28/92			4.44	94.46
	03/26/92			4.21	94.69
	04/30/92			3.46	95.44
	09/28/92			-------- Well Inaccessible --------	
	11/19/92			3.75	95.15
	02/12/93			4.12	94.78
	05/06/93			3.85	95.05
	08/16/93	15.04	*	3.88	11.16
	10/12/93			3.80	11.24
	02/03/94			3.71	11.33
	05/31/94			3.80	11.24
	08/25/94			3.89	11.15
	11/02/94			3.64	11.40
	01/31/95			3.58	11.46
MW-8I	03/29/91	98.27			
	01/23/92			6.33	91.94
	02/28/92			6.55	91.72
	03/26/92			6.45	91.82
	04/30/92			6.48	91.79
	09/28/92			-------- Well Inaccessible --------	
	11/19/92			6.37	91.90
	02/12/93			6.44	91.83
	05/06/93			6.36	91.91
	08/16/93	14.40	*	6.35	8.05
	10/12/93			5.99	8.41
	02/03/94			5.84	8.56
	05/31/94			6.25	8.15
	08/25/94			6.31	8.09
	11/02/94			6.10	8.30
	01/31/95			5.83	8.57

Table 1
Groundwater Elevation Data
500 Grand Avenue, Oakland, CA

Well Number	Date Gauged	Top of Casing Elevation (feet, MSL)		Depth to Water (feet, TOC)	Elevation of Groundwater (feet, MSL)
MW-8J	03/29/91	97.69			
	01/23/92			6.31	91.38
	02/28/92			6.28	91.41
	03/26/92			6.20	91.49
	04/30/92			6.48	91.21
	09/28/92			--------- Well Inaccessible ---------	
	11/19/92			6.55	91.14
	02/12/93			7.46	90.23
	05/06/93			6.21	91.48
	08/16/93	13.82	*	6.29	7.53
	10/12/93			5.87	7.95
	02/03/94			5.98	7.84
	05/31/94			6.10	7.72
	08/25/94			6.01	7.81
	11/02/94			5.90	7.92
	01/31/95			5.07	8.75
MW-8K	08/16/93	15.18	*	2.08	13.10
	10/12/93			1.95	13.23
	02/03/94			1.48	13.70
	05/31/94			1.59	13.59
	08/25/94			2.00	13.18
	11/02/94			2.10	13.08
	01/31/95			1.35	13.83
MW-8L	08/16/93	14.44	*	2.47	11.97
	10/12/93			2.36	12.08
	02/03/94			2.82	11.62
	05/31/94			2.66	11.78
	08/25/94			2.34	12.10
	11/02/94			--------- Well Obstructed ---------	
	01/31/95			0.08	14.36

* = New well elevation survey performed on August 16, 1993 based on mean sea level (MSL). Prior data based on arbitrary site data.

TOC = Top of casing

Table 2
Groundwater Analytical Data
500 Grand Avenue, Oakland, CA

Well Number	Date Sampled	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TPHd (ppm)	TPH as Other* (ppm)
MW-8A	01/23/92	<50	<0.5	<0.5	<0.5	<0.5	0.7	NA
	04/30/92	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<500
	08/03/92	---------- Well Properly Abandoned ----------						
MW-8B	01/23/92	<50	<0.5	<0.5	<0.5	<0.5	0.55	NA
	04/30/92	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<500
	09/28/92	---------- Not Sampled ----------						
	11/19/92	---------- Not Sampled ----------						
	02/12/93	---------- Not Sampled ----------						
	04/01/93	---------- Well Properly Abandoned ----------						
MW-8C	01/23/92	<50	1.2	<0.5	<0.5	<0.5	0.84	NA
	04/30/92	<50	<0.5	<0.5	<0.5	<0.5	0.15	<500
	09/28/92	---------- Not Sampled ----------						
	11/19/92	---------- Not Sampled ----------						
	02/12/93	---------- Not Sampled ----------						
	04/01/93	---------- Well Properly Abandoned ----------						
MW-8D		---------- Well Properly Abandoned ----------						
MW-8E	01/23/92	38,000	3,800	2,800	610	4,800	9.8	NA
	04/23/92	41,000	20,000	3,700	500	3,900	9.6	<500
	08/03/92	---------- Well Properly Abandoned ----------						
MW-8F	01/23/92	<50	4.0	1.3	<0.5	1.9	1.3	NA
	04/30/92	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<500
	09/28/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	11/19/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.5	NA
	05/06/93	<50	<0.5	<0.5	<0.5	<0.5	<0.1	<50
	08/16/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	10/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	05/31/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	0.53
	08/25/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	1.4
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	0.52	<5
	01/31/95	<50	<0.5	<0.5	<0.5	<0.5	0.29	<5

Table 2
Groundwater Analytical Data
500 Grand Avenue, Oakland, CA

Well Number		Date Sampled	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TPHd (ppm)	TPH as Other* (ppm)
MW-8G	**	01/24/92	<50	<0.5	<0.5	<0.5	<0.5	0.98	NA
		04/30/92	<50	1.7	<0.5	<0.5	<0.5	<0.05	<500
		09/28/92	---------- Well Dry ----------						
		11/19/92	---------- Well Inaccessible ----------						
		02/12/93	---------- Well Inaccessible ----------						
		04/29/93	<50	<0.5	<0.5	<0.5	<0.5	0.06	<250
		08/16/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		10/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		05/31/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<0.2
		08/25/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	0.86
		11/02/94	<50	<0.5	<0.5	<0.5	<0.5	0.53	<5
		01/31/95	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<5
MW-8H		01/23/92	110	7.2	1.2	4.7	3.2	<0.06	NA
		04/30/92	190	11	1.5	5.6	3.6	0.09	<500
		09/28/92	---------- Well Inaccessible ----------						
		11/19/92	130	6.8	<0.5	1.1	1.5	NA	NA
		02/12/93	73	5.9	<0.5	0.8	<0.5	NA	NA
		05/06/93	57	1.7	<0.5	<0.5	<0.5	<0.1	<50
		08/16/93	<50	0.5	<0.5	0.5	1.4	<0.05	<50
		10/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
		05/31/94	<50	0.79	<0.5	<0.5	<0.5	<0.05	1.6
		08/25/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	4.0
		11/02/94	<50	<0.5	<0.5	<0.5	<0.5	0.76	<5
		01/31/95	<50	<0.5	<0.5	<0.5	<0.5	0.19	<5
MW-8I		01/23/92	820	420	7	27	20	0.21	NA
		04/30/92	2,200	1,800	19	180	25	0.43	<500
		09/28/92	---------- Well Inaccessible ----------						
		11/19/92	720	120	1.1	29	13	NA	NA
		02/12/93	4,000	970	9.2	52	36	NA	NA
		05/06/93	1,400	370	2.4	40	8.4	<0.01	<50
		08/16/93	<50	3.1	<0.5	6	<0.5	<0.05	<50
		10/12/93	<50	1.4	<0.5	<0.5	<0.5	<0.05	<50
		02/03/94	1,000	270	3.2	51	14	<0.05	<50
		05/31/94	1,400	330	4.6	52	16	<0.05	0.33
		08/25/94	540	14	0.58	30	4.3	<0.05	0.73
		11/02/94	310	5.7	0.74	20	<0.5	0.37	<5
		01/31/95	840	290	4.5	45	1.6	0.91	<5

Table 2
Groundwater Analytical Data
500 Grand Avenue, Oakland, CA

Well Number	Date Sampled	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TPHd (ppm)	TPH as Other* (ppm)
MW-8J	01/23/92	<50	1	<0.5	<0.5	<0.5	<0.05	NA
	04/30/92	<50	2	<0.5	<0.5	<0.5	<0.05	<500
	09/28/92	---------- Well Inaccessible ----------						
	11/19/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/12/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	05/06/93	<50	<0.5	<0.5	<0.5	<0.5	<0.01	<50
	08/16/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	10/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	05/31/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<0.2
	08/25/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	1.0
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<5
	01/31/95	<50	3.7	<0.5	<0.5	<0.5	<0.05	<5
MW-8K	05/21/93	54	12	<0.5	<0.5	<0.5	<0.05	<50
	08/16/93	<50	<0.5	<0.5	1.0	<0.5	<0.05	<50
	10/24/93	<50	4.2	<0.5	<0.5	<0.5	<0.05	<50
	02/03/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<50
	05/31/94	<50	1.0	0.57	<0.5	<0.5	<0.05	<0.2
	08/25/94	<50	0.78	<0.5	<0.5	<0.5	<0.05	0.98
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<5
	01/31/95	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<5
MW-8L	05/21/93	76	1.1	<0.5	<0.5	6	<0.05	<50
	08/16/93	<50	<0.5	<0.5	0.7	1.1	<0.05	<50
	10/12/93	110	13	<0.5	6	<0.5	<0.05	<50
	02/03/94	590	61	2.4	<0.5	110	<0.05	<50
	05/31/94	410	77	<0.5	20	1.1	<0.05	<0.2
	08/25/94	260	16	<0.5	2.5	<0.5	<0.05	1.1
	11/02/94	---------- Not Sampled ----------						
	01/31/95	---------- Not Sampled ----------						
EB	08/25/94	69	<0.5	<0.5	<0.5	<0.5	<0.05	0.71
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	<0.05	<5

Table 2
Groundwater Analytical Data
500 Grand Avenue, Oakland, CA

Well Number	Date Sampled	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TPHd (ppm)	TPH as Other* (ppm)
TB	08/25/94	52	<0.5	<0.5	<0.5	<0.5	NA	NA
	11/02/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
EB = Equipment Blank								
TB = Trip Blank								
ppb = parts per billion								
ppm = parts per million								
NA = Not Analyzed								
< = Less than the detection limit for the specified method of analysis.								
* = Includes "heavy" petroleum hydrocarbons such as waste oil, mineral spirits, jet fuel, or fuel oil.								
** = Non-diesel mix >C16. The certified analytical report for sample MW-8G was revised on 10/21/93.								

B C Analytical

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

ANALYTICAL REPORT

LOG NO: G95-02-024

Received: 01 FEB 95

Mailed: FEB 17 1995

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

Purchase Order: 94-1446346+4370

Requisition: 624880235
Project: FKEP1014L

REPORT OF ANALYTICAL RESULTS

AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TPH/BTEX (CADHS/8020)							TRPH (CADHS/418.1)	TPH (CADHS/3510)
		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	mg/L	Date Extracted Date
RDL			1		0.5	0.5	0.5	0.5		
1*MW-8F	01/31/95	02/08/95	1	<50	<0.5	<0.5	<0.5	<0.5	<5	02/07/95
2*MW-8G	01/31/95	02/08/95	1	<50	<0.5	<0.5	<0.5	<0.5	<5	02/07/95
3*MW-8H	01/31/95	02/08/95	1	<50	<0.5	<0.5	<0.5	<0.5	<5	02/07/95
4*MW-8I	01/31/95	02/08/95	1	840	290	4.5	45	1.6	<5	02/07/95
5*MW-8J	01/31/95	02/08/95	1	<50	3.7	<0.5	<0.5	<0.5	<5	02/10/95
6*MW-8K	01/31/95	02/08/95	1	<50	<0.5	<0.5	<0.5	<0.5	<5	02/07/95
7*EB	01/31/95	02/08/95	1	<50	<0.5	<0.5	<0.5	<0.5	<5	02/07/95
8*TB	01/31/95	02/08/95	1	<50	<0.5	<0.5	<0.5	<0.5	---	---

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ANALYTICAL REPORT

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

Purchase Order: 94-1446346+4370

Requisition: 624880235
Project: FKEP1014L

REPORT OF ANALYTICAL RESULTS

AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TPH (CADHS/3520) Date Analyzed Date	Dilution Factor Times	TPH-d mg/L
RDL				0.05
1*MW-8F	01/31/95	02/09/95	1	0.29
2*MW-8G	01/31/95	02/09/95	1	<0.05
3*MW-8H	01/31/95	02/09/95	1	0.19
4*MW-8I	01/31/95	02/09/95	1	0.91
5*MW-8J	01/31/95	02/13/95	1	<0.05
6*MW-8K	01/31/95	02/09/95	1	<0.05
7*EB	01/31/95	02/09/95	1	<0.05
8*TB	01/31/95	---	---	---

Tom Hargett
500 Grand Ave., Oakland
Alameda County

Mark A. Valentini, PhD, Laboratory Director

BC ANALYTICAL

ORDER QC REPORT FOR G9502024

DATE REPORTED : 02/16/95

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 C5021463*1						
Date Analyzed	02.08.95	958094	02/08/95	02/08/95	Date	N/A
Benzene	02.08.95	958094	16.4	12.5	ug/L	131
Toluene	02.08.95	958094	58.1	55.5	ug/L	105
Ethylbenzene	02.08.95	958094	13.1	12.5	ug/L	105
Total Xylene Isomers	02.08.95	958094	67.4	66.5	ug/L	101
TPH (as Gasoline)	02.08.95	958094	1060	1000	ug/L	106
2. Oil&Grease/SM5520F C502748*1	02.07.95	9525	3.69	2.55	mg/L	145
3. Oil&Grease/SM5520F C502749*1	02.07.95	9525	3.48	2.55	mg/L	136
4. TPH - (8015M/3520) C5021032*1						
Date Analyzed	02.09.95	959	02/09/95	02/09/95	Date	N/A
Date Extracted	02.09.95	959	02/07/95	02/07/95	Date	N/A
TPH (as diesel)	02.09.95	959	1.00	1.00	mg/L	100
5. TPH - (8015M/3520) C5021033*1						
Date Analyzed	02.09.95	959	02/09/95	02/09/95	Date	N/A
Date Extracted	02.09.95	959	02/07/95	02/07/95	Date	N/A
TPH (as diesel)	02.09.95	959	1.00	1.00	mg/L	100

: ORDER PLACED FOR CLIENT: Texaco Environmental Services 9502024 :
: BC ANALYTICAL : GLEN LAB : 13:18:14 16 FEB 1995 - P. 1 :

SAMPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE..... ANALYZED	METHOD.....	EQUIP.	BATCH..	ID.NO
9502024*1	MW-8F	GAS.BTX.TESNC	02.08.95	8015M.TX	516-20	958094	8658
		IR.PET.TESNC	02.07.95	418.1	533-17	9525	8106
		DIESEL.3520.TES	02.09.95	8015M	536-25	959	7325
9502024*2	MW-8G	GAS.BTX.TESNC	02.08.95	8015M.TX	516-20	958094	8658
		IR.PET.TESNC	02.07.95	418.1	533-17	9525	8106
		DIESEL.3520.TES	02.09.95	8015M	536-25	959	7325
9502024*3	MW-8H	GAS.BTX.TESNC	02.08.95	8015M.TX	516-20	958094	8658
		IR.PET.TESNC	02.07.95	418.1	533-17	9525	8106
		DIESEL.3520.TES	02.09.95	8015M	536-25	959	7325
9502024*4	MW-8I	GAS.BTX.TESNC	02.08.95	8015M.TX	516-20	958094	8658
		IR.PET.TESNC	02.07.95	418.1	533-17	9525	8106
		DIESEL.3520.TES	02.09.95	8015M	536-25	959	7325
9502024*5	MW-8J	GAS.BTX.TESNC	02.08.95	8015M.TX	516-20	958094	8658
		IR.PET.TESNC	02.07.95	418.1	533-17	9525	8106
		DIESEL.3520.TES	02.13.95	8015M	536-25	959	7325
9502024*6	MW-8K	GAS.BTX.TESNC	02.08.95	8015M.TX	516-20	958094	8658
		IR.PET.TESNC	02.07.95	418.1	533-17	9525	8106
		DIESEL.3520.TES	02.09.95	8015M	536-25	959	7325
9502024*7	EB	GAS.BTX.TESNC	02.08.95	8015M.TX	516-20	958094	8658
		IR.PET.TESNC	02.07.95	418.1	533-17	9525	8106
		DIESEL.3520.TES	02.09.95	8015M	536-25	959	7325
9502024*8	TB	GAS.BTX.TESNC	02.08.95	8015M.TX	516-20	958094	8658

***

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

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

BC ANALYTICAL

ORDER QC REPORT FOR G9502024

DATE REPORTED : 02/16/95

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	9502024*2						
Date Analyzed		02.09.95	958094	02/09/95	02/08/95	Date	N/A
Benzene		02.09.95	958094	15.1	15.2	ug/L	1
Toluene		02.09.95	958094	62.1	63.0	ug/L	1
Ethylbenzene		02.09.95	958094	14.2	14.9	ug/L	5
Total Xylene Isomers		02.09.95	958094	71.5	71.7	ug/L	0
TPH (as Gasoline)		02.09.95	958094	1030	1000	ug/L	3
2. Oil&Grease/SM5520F	9502024*1	02.07.95	9525	4.88	4.77	mg/L	2
3. TRPH (418.1)	9502060*2	02.07.95	9525	12.6	17.1	mg/L	30

BC ANALYTICAL

ORDER QC REPORT FOR G9502024

DATE REPORTED : 02/16/95

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	9502024*2							
Benzene		02.08.95	958094	121	122	12.5	ug/L	
Toluene		02.08.95	958094	112	114	55.5	ug/L	
Ethylbenzene		02.08.95	958094	114	119	12.5	ug/L	
Total Xylene Isomers		02.08.95	958094	108	108	66.5	ug/L	
TPH (as Gasoline)		02.08.95	958094	103	100	1000	ug/L	
2. Oil&Grease/SM5520F	9502024*1	02.07.95	9525	106	104	4.61	mg/L	
3. Oil&Grease/SM5520F	9502060*2	02.07.95	9525	NC	NC	13.9	mg/L	NC

BC ANALYTICAL

ORDER QC REPORT FOR G9502024

DATE REPORTED : 02/16/95

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 B502768*1						
Date Analyzed	02.07.95	958094	02/07/95	NA	Date	8015M.TX
Benzene	02.07.95	958094	0.22	0.5	ug/L	8015M.TX
Toluene	02.07.95	958094	0.48	0.5	ug/L	8015M.TX
Ethylbenzene	02.07.95	958094	0	0.5	ug/L	8015M.TX
Total Xylene Isomers	02.07.95	958094	0.78	0.5	ug/L	8015M.TX
TPH (as Gasoline)	02.07.95	958094	36	50	ug/L	8015M.TX
2. Oil&Grease/SM5520F B502385*1	02.07.95	9525	0	NA	mg/L	418.1
3. TPH - (8015M/3520) B502540*1						
Date Analyzed	02.09.95	959	02/09/95	NA	Date	8015M
Date Extracted	02.09.95	959	02/07/95	NA	Date	8015M
TPH (as diesel)	02.09.95	959	0	0.05	mg/L	8015M

: SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 13:18:51 16 FEB 1995 - P. 1 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9502024*1							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	45.6	50.0	91	
8015M	Napthalene reported	959	02/09/95	0.0440	0.0500	88	
9502024*2							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	44.8	50.0	90	
8015M	Napthalene reported	959	02/09/95	0.0445	0.0500	89	
9502024*3							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	45.3	50.0	91	
8015M	Napthalene reported	959	02/09/95	0.0418	0.0500	84	
9502024*4							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	49.0	50.0	98	
8015M	Napthalene reported	959	02/09/95	0.0620	0.0500	124	
9502024*5							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	45.2	50.0	90	
8015M	Napthalene reported	959	02/13/95	0.0332	0.0500	66	
9502024*6							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	44.6	50.0	89	
8015M	Napthalene reported	959	02/09/95	0.0430	0.0500	86	
9502024*7							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	44.7	50.0	89	
8015M	Napthalene reported	959	02/09/95	0.0459	0.0500	92	
9502024*8							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	44.7	50.0	89	

: SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 13:18:55 16 FEB 1995 - P. 1 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9502024*2*R1							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	44.8	50.0	90	
9502024*2*S1							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/09/95	44.7	50.0	89	
9502024*2*S2							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	43.0	50.0	86	
9502024*2*T							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	50.0	50.0	100	
9502060*2*R1							
624	1,2-Dichloroethane-d4	95720	02/06/95	48.1	50.0	96	
	Toluene-d8	95720	02/06/95	49.9	50.0	100	
	4-Bromofluorobenzene	95720	02/06/95	48.0	50.0	96	
625	2-Fluorophenol	9526	02/08/95	58.0	75.0	77	
	Phenol-d5	9526	02/08/95	65.2	75.0	87	
	Nitrobenzene-d5	9526	02/08/95	38.3	50.0	77	
	2-Fluorobiphenyl	9526	02/08/95	39.2	50.0	78	
	2,4,6-Tribromophenol	9526	02/08/95	67.2	75.0	90	
	Terphenyl-d14	9526	02/08/95	38.5	50.0	77	
608	Tetrachloro-meta-xylene	R9521	02/08/95	0.379	0.250	152	
	Decachlorobiphenyl	9521	02/08/95	0.370	0.250	148	
9502060*2*S1							
624	1,2-Dichloroethane-d4	95720	02/06/95	49.2	50.0	98	
	Toluene-d8	95720	02/06/95	49.9	50.0	100	
	4-Bromofluorobenzene	95720	02/06/95	50.2	50.0	100	
625	2-Fluorophenol	9526	02/08/95	48.5	75.0	65	
	Phenol-d5	9526	02/08/95	55.7	75.0	74	
	Nitrobenzene-d5	9526	02/08/95	34.0	50.0	68	
	2-Fluorobiphenyl	9526	02/08/95	35.3	50.0	71	
	2,4,6-Tribromophenol	9526	02/08/95	64.1	75.0	85	
	Terphenyl-d14	9526	02/08/95	26.1	50.0	52	
608	Tetrachloro-meta-xylene	R9521	02/08/95	0.324	0.250	130	
	Decachlorobiphenyl	9521	02/08/95	0.303	0.250	121	
9502060*2*S2							
624	1,2-Dichloroethane-d4	95720	02/06/95	49.4	50.0	99	
	Toluene-d8	95720	02/06/95	50.6	50.0	101	
	4-Bromofluorobenzene	95720	02/06/95	49.6	50.0	99	
625	2-Fluorophenol	9526	02/08/95	48.0	75.0	64	
	Phenol-d5	9526	02/08/95	56.3	75.0	75	
	Nitrobenzene-d5	9526	02/08/95	33.0	50.0	66	
	2-Fluorobiphenyl	9526	02/08/95	34.4	50.0	69	
	2,4,6-Tribromophenol	9526	02/08/95	57.9	75.0	77	
	Terphenyl-d14	9526	02/08/95	36.0	50.0	72	
608	Tetrachloro-meta-xylene	R9521	02/08/95	0.407	0.250	163	

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
	Decachlorobiphenyl	9521	02/08/95	0.379	0.250	152	
9502060*2*T							
624	1,2-Dichloroethane-d4	95720	02/06/95	50.0	50.0	100	
	Toluene-d8	95720	02/06/95	50.0	50.0	100	
	4-Bromofluorobenzene	95720	02/06/95	50.0	50.0	100	
625	2-Fluorophenol	9526	02/08/95	75.0	75.0	100	
	Phenol-d5	9526	02/08/95	75.0	75.0	100	
	Nitrobenzene-d5	9526	02/08/95	50.0	50.0	100	
	2-Fluorobiphenyl	9526	02/08/95	50.0	50.0	100	
	2,4,6-Tribromophenol	9526	02/08/95	75.0	75.0	100	
	Terphenyl-d14	9526	02/08/95	50.0	50.0	100	
608	Tetrachloro-meta-xylene	R9521	02/08/95	0.250	0.250	100	
	Decachlorobiphenyl	9521	02/08/95	0.250	0.250	100	
B502540*1*MB							
8015M	Napthalene reported	959	02/09/95	0.0414	0.0500	83	
B502768*1*MB							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/07/95	46.2	50.0	92	
C5021032*1*LC							
8015M	Napthalene reported	959	02/09/95	0.0615	0.0500	123	
C5021032*1*LT							
8015M	Napthalene reported	959	02/09/95	0.0500	0.0500	100	
C5021033*1*LC							
8015M	Napthalene reported	959	02/09/95	0.0610	0.0500	122	
C5021033*1*LT							
8015M	Napthalene reported	959	02/09/95	0.0500	0.0500	100	
C5021463*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	49.1	50.0	98	
C5021463*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	958094	02/08/95	50.0	50.0	100	

G 9502-024

Chain-of-Custody

Texaco Environmental Services
108 Cutting Boulevard
Richmond, California 94804
Phone: (510) 236-3541
FAX: (510) 237-7821

624880235
Alameda
TWH FK9810146

Forward Results to the Attention of Rebecca Digerness
Texaco Project Corordinator: Tom Hargett

Site Name: Texaco Loc# 624880235
Site Address: 500 Grand Ave. Oakland, CA
Contractor Project Number: 950131-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: 1/31/95

Sample Number	Lab Sample Number	Date/Time Collected	No. of Containers	Type of Containers	Sample Matrix	Preservative	TPH gas/BTEX	TPH Diesel	O&G/TRPH (418.1)	TPH Ex. (C8-C36 +)	VOCs 8240/624	P. Halocarbons 8010/60	P. Aromatics 8020/602	Organic Lead	Waste Oil (EPA 3550 / SM 5520)		Comments
MW8F		1/31/1615	7		W		X	X								–	1
MW8G		1555	↓		↓		X	X								–	2
MW8H		1445	↓		↓		X	X								–	3
MW8I		1505	↓		↓		X	X								–	4
MW8J		1315	↓		↓		X	X								–	5
MW8K		1530	↓		↓		X	X								–	6
EB		—	↓		↓		X	X								–	7
TB		—	2		↓		X	X								–	8 only VOA vials rec'd no diesel or waste oil bottles – 2/1/95

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	2/1/95	1320	Bill Lyons	2-1-95	1330
Bill Lyons	2-1-95	4:55	Jan Winter	2/1/95	455

Method of Shipment:

Lab Comments:

P:\GWMP\FORMS\TEX-COC.XLS

WELL HEAD INSPECTION CHECKLIST AND REPAIR ORDER

Client Tex   Site # 62 488 0235   Inspection date: 1/31/95

Site address 500 Grand Ave,   Inspected by: KCB

Oakland, Ca   BTS Event # 950131-K1

1. Lid on the box? Yes No	5. Water standing in the well box?	7. Can cap be pulled loose?
2. Lid whole?	5a. Standing above well top?	8. Can cap seal out water?
3. Lid secure?	5b. Standing below well top?	9. Padlock present?
4. Lid seal intact?	5c. Water even with top of well cap?	10. Padlock found locked?
	6. Well cap/plug present?	11. Padlock functional?

☐ Check box if *no deficiences* were found.   Note below deficiencies you were able to correct.

Well I.D.	Deficiency	Corrective Action Taken
MW8F	} 5a	} Removed Water
8G		
8H		
8I		
85		
8K		
8L		

Note below all deficiences that could not be corrected and *still need to be corrected.*

Well I.D.	Persisting Deficiency	BTS Office assigns or defers Correction to:	Date assigned	Date corrected
MW8L	- Break in Well	Karey Petryna	2/1/95	
		@ TES		
		FYI		
	0.78' - can not			
	get bailer past			
	this point			
2.46	← sounder goes this			
- 2ft mud	far - silt mud bottom felt.			

Office review and assignments made by [signature]   date 2/1/95

Blaine Tech Services, Inc. File WELLCHK.s

Well Gauging Data

Project Name: 500 Grand Ave
Project Number: 950131-101

Date: 1/31/95
Recorded By: KCB

Well ID	TOC Elev.	DTB (ft. TOC)	Well Dia. (in.)	DTP (ft.)	DTW (ft.)	PT (ft.)	Comments
MW8F		1444	4		747**		
MW8G		1445	4		575		
MW8H		1480	4		358**		
MW8E		1445	4		583		
MW8S	-	1425	4		507		
MW8K		1670	2		1.35		
MW8L		246*	2		0.08		

TOC = Top of casing
DTB = Depth to bottom in feet below TOC
DTP = Depth to product in feet below TOC
DTW = Depth to water in feet below TOC
PT = Product thickness in feet

Groundwater Sampling Form

Project Name: 500 Grant
Project Number: 950131-K1
Recorded By: KCS
Well No.: MW-8F
Well Type: ☒ Monitor ☐ Extraction ☐ Other
Sampled by: KCS
Date: 1/31

WELL PURGING

PURGE VOLUME

Well casing diameter
☐ 2-inch ☒ 4-inch ☐ Other
Well Total Depth (TD, ft. below TOC): 14.44
Depth to Water (WL, ft. below TOC): 7.47 W
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: Geo
☐ Other

PUMP INTAKE

☐ Near top Depth (ft)
☒ Near Bottom Depth (ft): 14.00
☐ Other
Pumping Rate: gpm

PURGE VOLUME CALCULATION

6.97 (Water Column Length) x .66 (Multiplier) x 3 (No. Vols) = 13.5 gals CALCULATED PURGE VOLUME

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

5.0 gals ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT

Meter Type

Time/Gallons	pH	Cond. (uomhos/cm)	Temp ☐ deg C ☐ deg F	Turbidity (NTU)	Color/Odor
1405 / 5	7.88	2400	64.4	44.9	odor
/					
/					
/	Well Dewatered at 5.0 g				
/					
/					
/					
/					

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

WELL SAMPLING

SAMPLING METHOD

Date/Time Sampled: 1/31 / 1615
Bailer - Type ☒: S.S
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
1604 / 1/31 / 1110 / 148%	7.4	2700	63.1	68.9	

SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
MW8F	VOAs	Conv BTEX	HCl	BCM	
	Amber L	TPHD	NaOH		
	Amber L	O&G	H_2SO_4		

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: 500 Grant
Project Number: 950131-K1
Recorded By: KW
Well No.: MW86
Well Type: [x] Monitor [ ] Extraction [ ] Other
Sampled by: KW
Date: 1/31

WELL PURGING

PURGE VOLUME

Well casing diameter
[ ] 2-inch [x] 4-inch [ ] Other
Well Total Depth (TD, ft. below TOC): 14.45
Depth to Water (WL, ft. below TOC): 5.75
Depth to free phase hydrocarbons (FP, ft. below TOC):
Number of well volumes to be purged
[x] 3 [ ] 10 [ ] Other

PURGE METHOD

[ ] Bailer - Type
[x] Pump - Type: ES
[ ] Other

PUMP INTAKE

[ ] Near Top Depth (ft)
[x] Near Bottom Depth (ft): 14
[ ] Other
Pumping Rate: gpm

PURGE VOLUME CALCULATION

8.7 (Water Column Length) x 66 (Multiplier) x 3 (No. Vols) = 5.7 / 17.1 gals (CALCULATED PURGE VOLUME)

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

60 gals (ACTUAL PURGE VOLUME)

GROUNDWATER PARAMETER MEASUREMENT

Meter Type: Myron

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1352 / 6	7.4	2200	6.3		88.1	
/						
/ Well Developed at 60 gals						
/						
/						
/						
/						
/						

Comments during well purge:
Well Pumped dry: (YES) NO
Purge water storage/disposal: [ ] Drummed onsite [x] Other

WELL SAMPLING

SAMPLING METHOD

Date/Time Sampled: 1/31 / 1558
Bailer - Type [x]: SS
Sample port [ ]
Other [ ]

GROUNDWATER SAMPLE PARAMETER MEASUREMENTS

Meter Type: Myron

Date/Time/% Recharge	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1/31 / 1546 / 152%	7.2	3800	62.2		191.4	

SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
MW86	10 VOAs	Gas/BTEX	HCl	PEA	
	Amber Liter	TPH D	NONE		
	Amber Liter	O&G	H_2SO_4		

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.
Trip	
Rinsate	EB-1340
Transfer	
Other:	

Groundwater Sampling Form

Project Name 500 Grant
Project Number 950131-IC1
Recorded By [illegible]
Well No. MW8H
Well Type ☒ Monitor ☐ Extraction ☐ Other
Sampled by [illegible]
Date 1/31

WELL PURGING

PURGE VOLUME

Well casing diameter
☐ 2-inch ☒ 4-inch ☐ Other
Well Total Depth (TD, ft. below TOC) 14.80
Depth to Water (WL, ft. below TOC) 3.58
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 ESP
☐ Other

PUMP INTAKE

☐ Near Top Depth (ft)
☒ Near Bottom Depth (ft) 14.00
☐ Other
Pumping Rate ____ gpm

PURGE VOLUME CALCULATION

11.22 (Water Column Length) X 0.66 (Multiplier) X 3 (No. Vols) = 22.26 gals CALCULATED PURGE VOLUME

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

22 gals ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT

Meter Type

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
1428 / 8	7.8	1000	66.4		181.2	clear
1429 / 15	7.8	1000	65.2		44.6	
1432 / 22	7.8	1000	65.5		89.3	
/						
/						
/						
/						
/						

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

WELL SAMPLING

SAMPLING METHOD

Date/Time Sampled 1/31 / 1445
Bailer - 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
/ /						

SAMPLING PROGRAM

Sample No.	Container #/Volume	Analysis	Preservatives	Laboratory	Comments
MW8H	VOAs	6200 BTEX	HCl	BCM	
	Amber L	TPH D	NONE		
	Amber L	O&G	H2SO4		

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: 500 Grand
Project Number: 450131-101
Recorded By: ICES
Well No.: MW8E
Well Type: ☒ Monitor ☐ Extraction ☐ Other
Sampled by: ICES
Date: 1/31

WELL PURGING

PURGE VOLUME

Well casing diameter
☐ 2-inch ☒ 4-inch ☐ Other
Well Total Depth (TD, ft. below TOC): 1455
Depth to Water (WL, ft. below TOC): 583
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: ESI
☐ Other

PUMP INTAKE

☐ Near top Depth (ft)
☒ Near Bottom Depth (ft): 1400
☐ Other
Pumping Rate: ____ gpm

PURGE VOLUME CALCULATION

8.72 (Water Column Length) x .66 (Multiplier) x 3 (No. Vols) = 5.6 / 16.8 gals — CALCULATED PURGE VOLUME

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

18.0 gals — ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT

Meter Type:

Time/Gallons	pH	Cond. (uomhos/cm)	Temp (deg C / deg F)	Turbidity (NTU)	Color/Odor
1450 / 6	8.0	1000	67.0	34.8	
1452 / 12	7.8	1000	66.8	48.8	
1455 / 18	7.8	1000	66.6	41.5	
/					
/					
/					
/					
/					

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

WELL SAMPLING

SAMPLING METHOD

Bailer - Type ☒ S.S.
Date/Time Sampled: 1/31 / 1505
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
MW8E	VOAs	Ben BTEX	HCl	BCA	
	Amber L	TPHD	NONE		
	Amber L	O&G	H2SO4		

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: 500 Grand
Well No.: MW 8S
Project Number: 950131-1(
Well Type: [x] Monitor [ ] Extraction [ ] Other
Recorded By: KGB
Sampled by: KGB
Date: 1/31

WELL PURGING

PURGE VOLUME

Well casing diameter
[ ] 2-inch [x] 4-inch [ ] Other

Well Total Depth (TD, ft. below TOC) 14.75
Depth to Water (WL, ft. below TOC) 5.07
Depth to free phase hydrocarbons (FP, ft. below TOC)
Number of well volumes to be purged
[x] 3 [ ] 10 [ ] Other

PURGE METHOD

[ ] Bailer - Type
[ ] Pump - Type ES
[x] Other

PUMP INTAKE

[ ] Near top Depth (ft)
[x] Near Bottom Depth (ft) 14
[ ] Other

Pumping Rate ______ gpm

PURGE VOLUME CALCULATION

9.68 (Water Column Length) x .65 (Multiplier) x 3 (No. Vols) = 6.3 / 18.9 gals CALCULATED PURGE VOLUME

21 gals ACTUAL PURGE VOLUME

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

GROUNDWATER PARAMETER MEASUREMENT Meter Type: Myron

Time/Gallons	pH	Cond. (uomhos/cm)	Temp [ ] deg C [x] deg F	Turbidity (NTU)	Color/Odor
1300 / 7	6.8	1000	60.2	7200	grayish
1303 / 14	6.6	1000	62.0	7200	Brown
1305 / 21	6.8	1000	66.8	7200	
/					
/					
/					
/					
/					

Comments during well purge

Well Pumped dry: YES / NO (circled: NO)

Purge water storage/disposal [ ] Drummed onsite [ ] Other

WELL SAMPLING

SAMPLING METHOD Date/Time Sampled 1/31 / 1315

Bailer - Type [x] S.S 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
MW 8S	VOAS	Gas BTEX	HCl	BCA	
	Amber	TPH D	None		
	Amber	O&G	H2SO4		

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 950131-1C1 Well No. MW8K
Project Number 500 Grant Well Type ☒ Monitor ☐ Extraction ☐ Other
Recorded By KCB Sampled by KCB Date 1/31

WELL PURGING

PURGE VOLUME

Well casing diameter
☐ 2-inch ☐ 4-inch ☐ Other
Well Total Depth (TD, ft. below TOC) 1570
Depth to Water (WL, ft. below TOC) 135
Depth to free phase hydrocarbons (FP, ft. below TOC)
Number of well volumes to be purged
☒ 3 ☐ 10 ☐ Other

PURGE METHOD

☒ Bailer - Type Teflon
☐ Pump - Type
☐ Other

PUMP INTAKE

☐ Near top Depth (ft)
☐ Near Bottom Depth (ft)
☐ Other
Pumping Rate gpm

PURGE VOLUME CALCULATION

1535 (Water Column Length) x 0.19 (Multiplier) x 3 (No. Vols) = 2.6 / 2.8 gals CALCULATED PURGE VOLUME

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

8 gals ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT Meter Type

Time/Gallons	pH	Cond. (uomhos/cm)	Temp ☐ deg C ☐ deg F	Turbidity (NTU)	Color/Odor
1511 / 3	7.8	1200	61.4	>200	Light brown
1515 / 5	7.6	1200	65.8	>200	cloudy
1519 / 8	7.6	1200	66.1	>200	
/					
/					
/					
/					
/					

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

WELL SAMPLING

SAMPLING METHOD Date/Time Sampled 1/31 / 1530
Bailer - 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
MW8K	VOAs	BTEX	HCl	BCM	
	Amber L	TPHD	HCl		
	Amber L	O&G	H2SO4		

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: 500 Ground
Project Number: 950131-101
Recorded By: CGS
Well No.: MW8L
Well Type: [X] Monitor [ ] Extraction [ ] Other
Sampled by: CGS
Date: 1/31/95

WELL PURGING

PURGE VOLUME

Well casing diameter
[X] 2-inch [ ] 4-inch [ ] Other
Well Total Depth (TD, ft. below TOC): 246
Depth to Water (WL, ft. below TOC): .08
Depth to free phase hydrocarbons (FP, ft. below TOC)
Number of well volumes to be purged
[ ] 3 [X] 10 [ ] Other

PURGE METHOD

[X] Bailer - Type: Teflon
[ ] Pump - Type:
[ ] Other:

PUMP INTAKE

[ ] Near top Depth (ft):
[ ] Near Bottom Depth (ft):
[ ] Other:
Pumping Rate: gpm

PURGE VOLUME CALCULATION

Water Column Length X Multiplier X No. Vols = gals CALCULATED PURGE VOLUME

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

gals ACTUAL PURGE VOLUME

GROUNDWATER PARAMETER MEASUREMENT

Meter Type:

Time/Gallons	pH	Cond. (uomhos/cm)	Temp	deg C / deg F	Turbidity (NTU)	Color/Odor
Attempted Bailing Well @ Obstructed at 0.78' Ft / Casing appears to have slipped / bent - sounder feets mud at 2.46' - Not Sampled -						

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

WELL SAMPLING

SAMPLING METHOD

Date/Time Sampled:
Bailer - Type [ ]
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
Not Sampled.					

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.
Trip	
Rinsate	
Transfer	
Other:	

Chain-of-Custody

Texaco Environmental Services
108 Cutting Boulevard
Richmond, California 94804
Phone: (510) 236-3541
FAX: (510) 237-7821

Forward Results to the Attention of Rebecca Digerness

Texaco Project Coordinator: Tom Hargett

Site Name: Texaco Loc# 624880235
Site Address: 500 Grand Ave. Oakland, CA
Contractor Project Number: 950131-1C1
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:
Date Samples Collected: 1/31/95

Sample Number	Lab Sample Number	Date/Time Collected	No. of Containers	Type of Containers	Sample Matrix	Preservative	TPH gas/BTEX	TPH Diesel	O&G/TRPH (418.1)	TPH Ex. (C8-C36+)	VOCs 8240/624	P. Halocarbons 8010/60	P. Aromatics 8020/602	Organic Lead	Waste Oil (EPA 3550 5445520)	Comments
MW8I		1/31/1615	7		W		X	X							X	
MW8G		1555					X	X							X	
MW8H		1445					X	X							X	
MW8F		1505					X	X							X	
MW8J		1315					X	X							X	
MW8K		1530					X	X							X	
EB		—					X	X							X	
TB		—	2				X	X							X	

Relinquished by: (Signature) — Date: 2/1/95 — Time: 1320
Relinquished by: (Signature) — Date: — Time:
Relinquished by: (Signature) — Date: — Time:
Method of Shipment:

Received by: (Signature) — Date: 2-1-95 — Time: 1340
Received by: (Signature) — Date: — Time:
Received by: (Signature) — Date: — Time:
Lab Comments:

P:\GWMP\FORMS\TEX-COC.XLS

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 #: 6248802.35
Address: 500 Grand
City, State, ZIP: Oakland

Well I.D.	Gals.	Well I.D.	Gals.
	/		/
MW8E	/		/
	/		/
	/		/
	/		/
MW8L	/		/
	/		/
	/ 80		/
	/		/
	/		/

Total gals. 80

added rinse water 10

Total Gals. Recovered ✓

Job #: 950131-1C1
Date 1/31
Time 1630
Signature:

REC'D AT: BFS
Date: 1/31
Time: 1730
Signature:

P:\GW\MP\FORMS\TEX-BOL.WK4

FOURTH-QUARTER 1994 PROGRESS REPORT
500 GRAND AVENUE
OAKLAND, CALIFORNIA

HISTORY OF INVESTIGATIVE AND REMEDIAL ACTIONS

The site is the former location of a Texaco service station location. Currently the site is a fenced, vacant lot. A site preliminary subsurface investigation was conducted in May 1988. During the initial investigation, a soil gas survey was conducted, 15 soil borings were drilled, and 5 on-site groundwater monitoring wells were installed. In 1989, five off-site wells were installed. The initial five on-site wells have been abandoned and replaced by two wells located at the southern perimeter of the site.

Over 2,400 cubic yards of hydrocarbon-impacted soil have been excavated and removed from within the property boundaries. The waste oil tank, tank backfill material, and impacted soil were excavated and disposed of in September 1990. Clay sewer pipes and contaminated soil from an abandoned utility trench near the former waste oil tank were removed from the site in early 1991. Three underground storage tanks, dispenser islands and associated piping, stockpiled soils, and site structures were removed from the site in April 1992. The excavated area was backfilled and compacted using clean imported material.

WORK PERFORMED FOURTH QUARTER 1994

Ground-water monitoring was conducted during the quarter. Results are provided in a separate ground-water monitoring report.

PROPOSED INVESTIGATIONS OR REMEDIATION PLANS

All petroleum impacted soils underlying the site, with a possible exception of a very narrow band along the Grand Avenue sidewalk, have been removed by the extensive soil excavation activities. No further investigation or remediation of the vadose-zone soils is proposed.

Ground water at the site has been affected by gasoline, diesel, and hydrocarbons above the range of diesel. Since the removal of on-site contaminated soils, significant reductions in TPH-g and TPH-d concentrations in groundwater have been reported for samples taken from on- and off-site wells. It is proposed that downgradient wells continue to be monitored to document the biodegradation of the remaining dissolved-phase hydrocarbons in the ground water.

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 complied 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.