Texaco

KLEINFELDER
An employee owned company

ENVIRONMENTAL PROTECTION
97 JUL -8 AM 8:48

GROUNDWATER MONITORING AND SAMPLING
FIRST QUARTER, 1997
FORMER TEXACO SERVICE STATION
SOUTHSHORE SHOPPING CENTER

This report presents the results of groundwater monitoring and sampling conducted by Kleinfelder, Inc. (Kleinfelder) on April 18, 1997 at the site referenced above (see Plate 1, Site vicinity Map). Based on groundwater level measurements, the hydraulic gradient was estimated to be 0.01 ft/ft south 30° west (see Plate 2, Groundwater Elevations). Table 1 presents the groundwater elevations and Table 2 list historical groundwater monitoring data and analytical results.

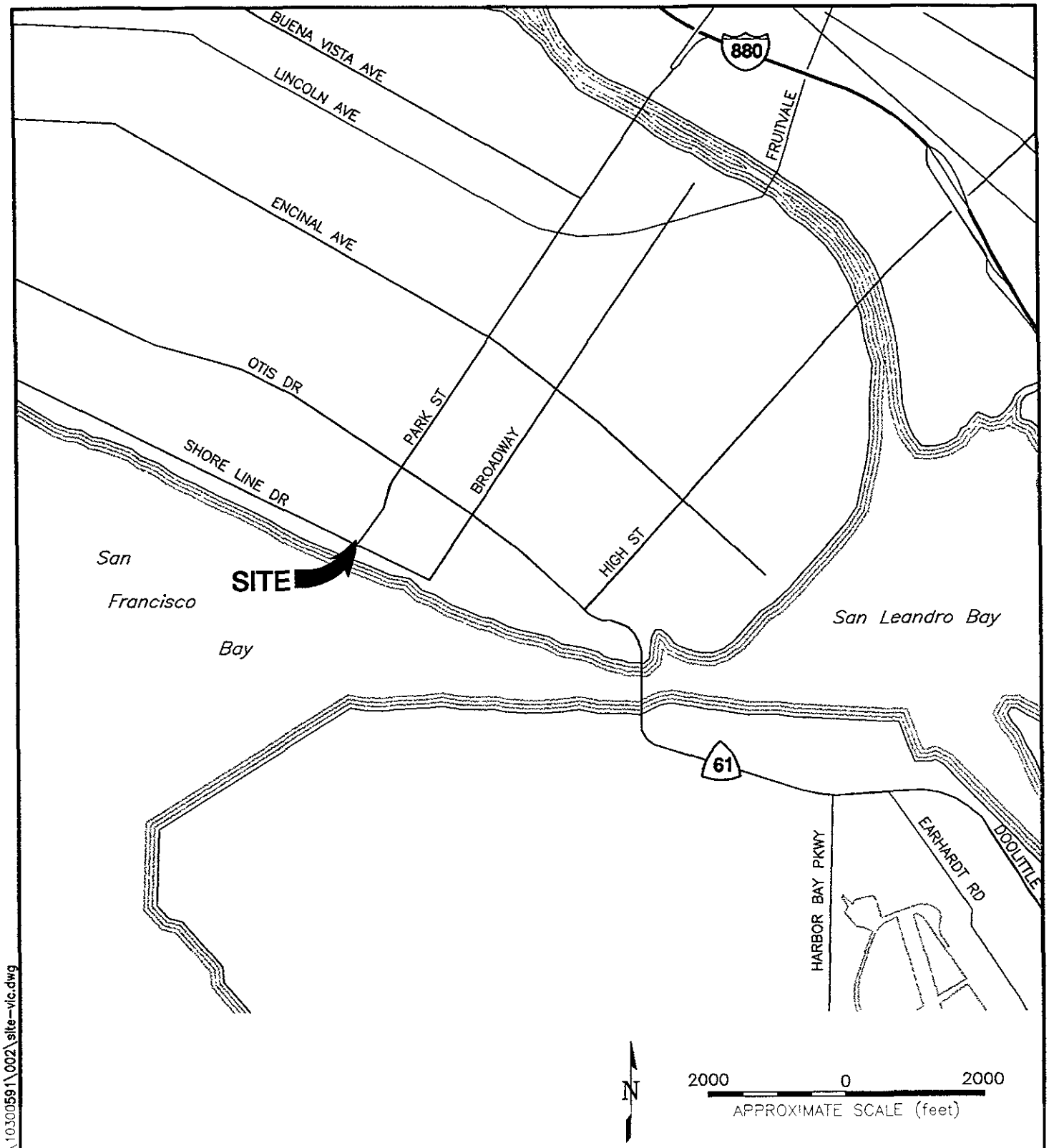
One 55-gallon drum of purge water was produced during the monitoring well sampling. IWM, Inc. of Milpitas, CA is properly disposing of the purge water.

The certified analytical report, chain-of-custody, field data sheets, and Texaco Environmental Services' Standard Operating Procedures are included in the Appendix.

If you have any questions please contact Alan Gibbs at 510-484-1700.

Alan D. Gibbs, R.G., C.H.G., R.E.A.
Environmental Manager

REGISTERED GEOLOGIST
ALAN D. GIBBS
expires
IL 30-97
NO. 4827
STATE OF CALIFORNIA



KLEINFELDER

SITE VICINITY MAP

FORMER TEXACO
SOUTH SHORE SHOPPING CENTER
SHORE LINE DRIVE AND PARK AVENUE
ALAMEDA, CALIFORNIA

PLATE 1

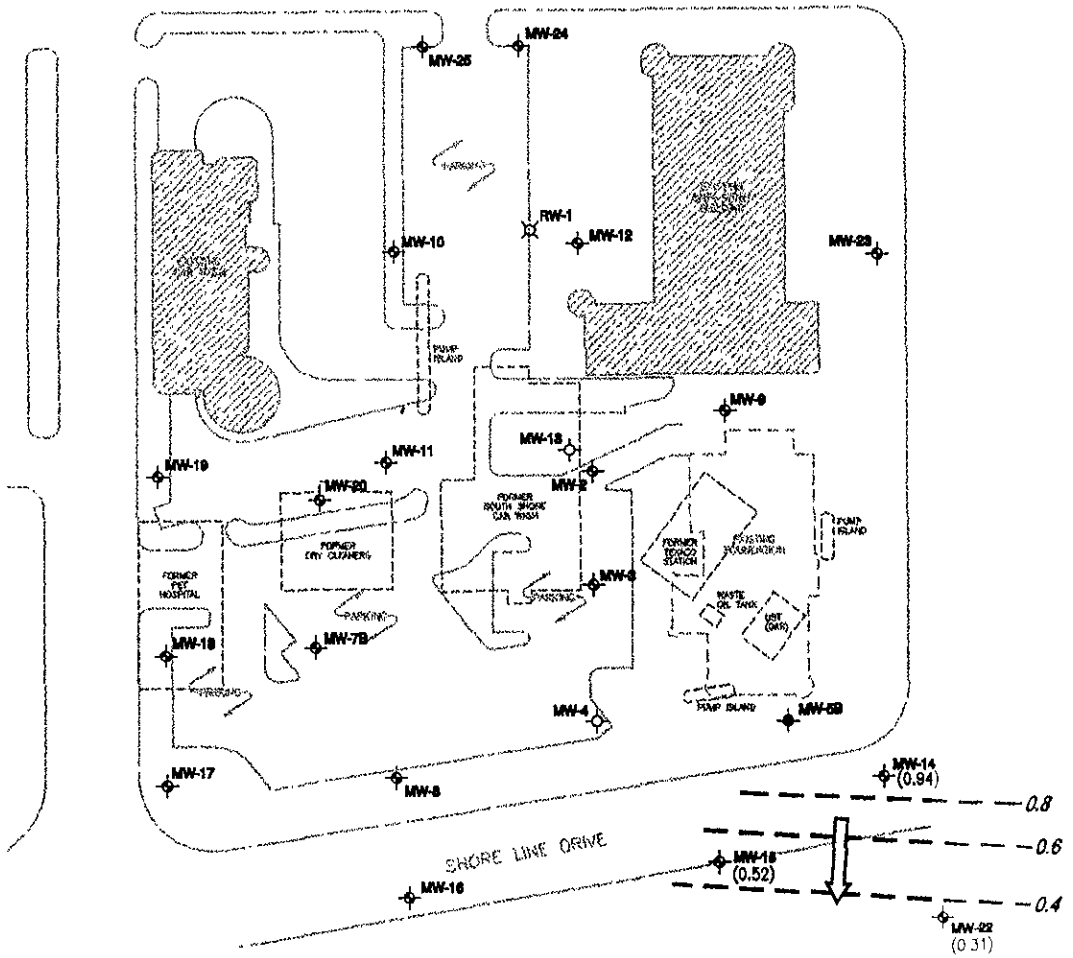
DRAFTED BY L. Sue	DATE 5-20-97
CHECKED BY: K. Powers	DATE. 5-20-97

PROJECT NO. 10-300591-002

CAD FILE C:_KA-PROJ\PLEAS\10300591\002\site-vic.dwg

LEGEND

- MONITORING WELL
- MONITORING/ VAPOR EXTRACTION WELL
- RECOVERY WELL
- MONITORING WELL (DAMAGED)
- (0.94) GROUNDWATER SURFACE ELEVATION (feet, above mean sea level)
- 0.4 — — GROUNDWATER SURFACE CONTOUR (feet, above mean sea level)
- INFERRED DIRECTION OF GROUNDWATER FLOW



80 0 80

APPROXIMATE SCALE (feet)

REFERENCE:
EVAX Technologies, Inc., "As-Built Site Map, 2375 Shore Line Drive, Alameda, California," dated 6-13-91.

KLEINFELDER

DRAFTED BY: L. Sue DATE: 5-20-97

CHECKED BY: K. Powers DATE: 5-20-97

GROUNDWATER ELEVATIONS: APRIL 18, 1997

FORMER TEXACO
SOUTH SHORE SHOPPING CENTER
SHORELINE DRIVE AND PARK AVENUE
ALAMEDA, CALIFORNIA

PROJECT NO. 10-300591-002

PLATE 2

CAD FILE: C:_KA-PROJ\PLEAS\10300591\002\GW_4-97.dwg

Table 1
Groundwater Elevations

Well I.D.	Date Measured	TOC Elevation (ft.)	Depth to Groundwater (ft. bgs)	Groundwater Elevation (ft.)
MW-14	4/18/97	5.76	4.82	+0.94
MW-15	4/18/97	4.47	3.95	+0.52
MW-22	4/18/97	7.81	7.50	+0.31

Notes:
TOC = top of casing
bgs = below ground surface

Table 2
Groundwater Analytical Data

MW-14					
Chemical	**4/91**	**7/91**	**2/93**	**4/94**	**4/97**
Benzene	2.9	0.8	ND	0.95	0.77
Toluene	ND	0.8	ND	<0.5	<0.5
Ethylbenzene	ND	<0.3	ND	3.3	0.73
Xylenes	0.5	0.8	ND	15	<0.5
1, 2 - DCA	4.6	6.6	3.4	8.4	1.4
1, 1 - DCE	0.5	<0.2		<2	<1
cis - 1, 2 - DCE	ND	<0.4			<1
trans - 1, 2 - DCE		<0.4		<1	<1
"DCE"	ND	<0.4	ND		
PCE	16	<0.5	ND	<1	<1
TCE	0.4	<0.3	ND	<2	<1
Chloroform					<1
1, 1, 2 - TCA		<0.6			<1
Bromoform		<0.7			<1
Chlorobenzene		<0.7		<1	<1
TPH - g					<50

770 ppb
730 ppb
1400 ppb

NOTES:

Blank cells mean that nothing was reported for the given chemical.

"NA" means that the chemical was reported as "Not Analyzed."

"ND" means the chemical was analyzed but "Not Detected."

"<" means the chemical was analyzed and reported below the given detection limit.

"DCE" means either total DCE, or DCE not differentiated into cis—or trans—isomers.

All values in ~~mg/L~~ ug/L.

Table 2
Groundwater Analytical Data

MW-15			
Chemical	**2/93**	**4/94**	**4/97**
Benzene	ND	<0.5	<0.5
Toluene	ND	<0.5	<0.5
Ethylbenzene	ND	<0.5	<0.5
Xylenes	ND	<0.5	<0.5
1, 2 - DCA	ND	<2	<1
1, 1 - DCE		<2	<1
cis - 1, 2 - DCE			<1
trans - 1, 2 - DCE		<1	<1
"DCE"	ND		
PCE	ND	<1	<1
TCE	ND	<2	<1
Chloroform			<1
1, 1, 2 - TCA			<1
Bromoform			<1
Chlorobenzene			<1
TPH - g			<50

NOTES:

Blank cells mean that nothing was reported for the given chemical.

"NA" means that the chemical was reported as "Not Analyzed."

"ND" means the chemical was analyzed but "Not Detected."

"<" means the chemical was analyzed and reported below the given detection limit.

"DCE" means either total DCE, or DCE not differentiated into cis—or trans—isomers.

All values in mg/L.

Table 2
Groundwater Analytical Data

MW-22							
Chemical	**2/93**	**4/94**	**10/94**	**2/95**	**5/95**	**11/95**	**4/97**
Benzene	ND	<0.5	<0.5	<0.5	<0.5	NA	<0.5
Toluene	ND	<0.5	<0.5	<0.5	<0.5	NA	<0.5
Ethylbenzene	ND	<0.5	<0.5	<0.5	<0.5	NA	<0.5
Xylenes	ND	<0.5	<0.5	<0.5	<0.5	NA	<0.5
1, 2 - DCA	22	15	14	8.2	11	NA	
1, 1 - DCE		<2					
cis - 1, 2 - DCE		NR	<0.5	<0.5	<0.5	NA	<1
trans - 1, 2 - DCE		<1	<0.5	<0.5	<0.5	NA	<1
"DCE"	ND						
PCE	ND	<1	<0.5	<0.5	<0.5	NA	<1
TCE	ND	<2	<0.5	<0.5	<0.5	NA	<1
Chloroform		<1	0.65	<0.5	<0.5	NA	<1
1, 1, 2 - TCA							<1
Bromoform							<1
Chlorobenzene		<1	<0.5	<0.5			<1
TPH - g							<50

NOTES:

Blank cells mean that nothing was reported for the given chemical.

"NA" means that the chemical was reported as "Not Analyzed."

"ND" means the chemical was analyzed but "Not Detected."

"<" means the chemical was analyzed and reported below the given detection limit.

"DCE" means either total DCE, or DCE not differentiated into cis—or trans—isomers.

All values in mg/L

APPENDIX A

ANALYTICAL REPORT

Our Quality Control Is Your Quality Assurance

LOG NO: G97-04-560
Received: 21 APR 97
Mailed: MAY 5 1997

Mr. Alan Gibbs
Kleinfelder
7133 Koll Center Parkway, Suite 100
Pleasanton, CA 94566

Requisition: 618571020
Project: 2375.SHORELINE

REPORT OF ANALYTICAL RESULTS

LOG NO	04-560-1	04-560-2	04-560-3
DATE SAMPLED	18 APR 97	18 APR 97	18 APR 97
SAMPLE DESCRIPTION	MW-22	MW-15	MW-14
AQUEOUS			
GRO (8015M.TX)			
Date Analyzed	04/30/97	05/01/97	05/01/97
Dilution Factor, Times	1	1	1
Benzene, ug/L	<0.5	<0.5	0.77
Toluene, ug/L	<0.5	<0.5	<0.5
Ethylbenzene, ug/L	<0.5	<0.5	0.73
Methyl-tert-butylether, ug/L	<30	<30	<30
Total Xylene Isomers, ug/L	<0.5	<0.5	<0.5
Carbon Range, .	C6-C12	C6-C12	C6-C12
TPH (Gasoline Range), ug/L	<50	<50	<50
Surrogates **			
a,a,a-Trifluorotoluene Rep., ug/L	44.3	48.9	48.1
a,a,a-Trifluorotoluene Th., ug/L	50.0	50.0	50.0

Deborah Pryor
2375 Shoreline Drive, Alameda
Alameda County

Mr. Alan Gibbs
Kleinfelder
7133 Koll Center Parkway, Suite 100
Pleasanton, CA 94566

Requisition: 618571020
Project: 2375.SHORELINE

REPORT OF ANALYTICAL RESULTS

LOG NO	04-560-1	04-560-2	04-560-3
DATE SAMPLED	18 APR 97	18 APR 97	18 APR 97
SAMPLE DESCRIPTION	MW-22	MW-15	MW-14
AQUEOUS			
2-Chloroethylvinylether, ug/L	<5	<5	<5
2-Hexanone, ug/L	<5	<5	<5
Acetone, ug/L	<20	<20	<20
Acrolein, ug/L	<100	<100	<100
Acrylonitrile, ug/L	<50	<50	<50
Bromodichloromethane, ug/L	<1	<1	<1
Bromomethane, ug/L	<1	<1	<1
Benzene, ug/L	<1	<1	<1
Bromoform, ug/L	<1	<1	<1
Chlorobenzene, ug/L	<1	<1	<1
Carbon Tetrachloride, ug/L	<1	<1	<1
Chloroethane, ug/L	<1	<1	<1
Chloroform, ug/L	<1	<1	<1

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REPORT OF ANALYTICAL RESULTS

LOG NO	04-560-1	04-560-2	04-560-3
DATE SAMPLED	18 APR 97	18 APR 97	18 APR 97
SAMPLE DESCRIPTION	MW-22	MW-15	MW-14
AQUEOUS			
Chloromethane, ug/L	<1	<1	<1
Carbon Disulfide, ug/L	<2	<2	<2
Dibromochloromethane, ug/L	<1	<1	<1
Ethylbenzene, ug/L	<1	<1	<1
Freon 113, ug/L	<2	<2	<2
Methyl ethyl ketone, ug/L	<10	<10	<10
Methyl isobutyl ketone, ug/L	<5	<5	<5
Methyl-tert-butylether, ug/L	<1	<1	<1
Methylene chloride, ug/L	<2	<2	<2
Styrene, ug/L	<1	<1	<1
Trichloroethene, ug/L	<1	<1	<1
Trichlorofluoromethane, ug/L	<1	<1	<1
Toluene, ug/L	<1	<1	<1

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LOG NO	04-560-1	04-560-2	04-560-3
DATE SAMPLED	18 APR 97	18 APR 97	18 APR 97
SAMPLE DESCRIPTION	MW-22	MW-15	MW-14
AQUEOUS			
Tetrachloroethene, ug/L	<1	<1	<1
Vinyl acetate, ug/L	<10	<10	<10
Vinyl chloride, ug/L	<1	<1	<1
Total Xylene Isomers, ug/L	<3	<3	<3
cis-1,2-Dichloroethene, ug/L	<1	<1	<1
cis-1,3-Dichloropropene, ug/L	<1	<1	<1
trans-1,2-Dichloroethene, ug/L	<1	<1	<1
trans-1,3-Dichloropropene, ug/L	<1	<1	<1
Surrogates **			
1,2-Dichloroethane-d4 Rep., ug/L	48.5	48.6	48.9
1,2-Dichloroethane-d4 Theo., ug/L	50.0	50.0	50.0
4-Bromofluorobenzene Rep., ug/L	50.0	49.9	51.3
4-Bromofluorobenzene Theo., ug/L	50.0	50.0	50.0

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REPORT OF ANALYTICAL RESULTS

LOG NO	04-560-1	04-560-2	04-560-3
DATE SAMPLED	18 APR 97	18 APR 97	18 APR 97
SAMPLE DESCRIPTION	MW-22	MW-15	MW-14
AQUEOUS			
Toluene-d8 Reported, ug/L	55.7	56.4	56.1
Toluene-d8 Theo., ug/L	50.0	50.0	50.0

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Requisition: 618571020
Project: 2375.SHORELINE

REPORT OF ANALYTICAL RESULTS

LOG NO	04-560-4
DATE SAMPLED	18 APR 97
SAMPLE DESCRIPTION	Trip Blank
AQUEOUS	
Volatile Organics/8240 (8240)	
Date Analyzed	04/28/97
Dilution Factor, Times	1
1,1,1-Trichloroethane, ug/L	<1
1,1,2,2-Tetrachloroethane, ug/L	<1
1,1,2-Trichloroethane, ug/L	<1
1,1-Dichloroethane, ug/L	<1
1,1-Dichloroethene, ug/L	<1
1,2-Dichloroethane, ug/L	<1
1,2-Dichlorobenzene, ug/L	<1
1,2-Dichloropropane, ug/L	<1
1,3-Dichlorobenzene, ug/L	<1
1,4-Dichlorobenzene, ug/L	<1

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Requisition: 618571020
Project: 2375.SHORELINE

REPORT OF ANALYTICAL RESULTS

LOG NO	04-560-4
DATE SAMPLED	18 APR 97
SAMPLE DESCRIPTION	Trip Blank
AQUEOUS	
2-Chloroethylvinylether, ug/L	<5
2-Hexanone, ug/L	<5
Acetone, ug/L	<20
Acrolein, ug/L	<100
Acrylonitrile, ug/L	<50
Bromodichloromethane, ug/L	<1
Bromomethane, ug/L	<1
Benzene, ug/L	<1
Bromoform, ug/L	<1
Chlorobenzene, ug/L	<1
Carbon Tetrachloride, ug/L	<1
Chloroethane, ug/L	<1
Chloroform, ug/L	<1

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LOG NO: G97-04-560

Received: 21 APR 97

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Requisition: 618571020
Project: 2375.SHORELINE

REPORT OF ANALYTICAL RESULTS

LOG NO	04-560-4
DATE SAMPLED	18 APR 97
SAMPLE DESCRIPTION	Trip Blank
AQUEOUS	
Chloromethane, ug/L	<1
Carbon Disulfide, ug/L	<2
Dibromochloromethane, ug/L	<1
Ethylbenzene, ug/L	<1
Freon 113, ug/L	<2
Methyl ethyl ketone, ug/L	<10
Methyl isobutyl ketone, ug/L	<5
Methyl-tert-butylether, ug/L	<1
Methylene chloride, ug/L	<2
Styrene, ug/L	<1
Trichloroethene, ug/L	<1
Trichlorofluoromethane, ug/L	<1
Toluene, ug/L	<1

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Requisition: 618571020
Project: 2375.SHORELINE

REPORT OF ANALYTICAL RESULTS

LOG NO	04-560-4
DATE SAMPLED	18 APR 97
SAMPLE DESCRIPTION	Trip Blank
AQUEOUS	
Tetrachloroethene, ug/L	<1
Vinyl acetate, ug/L	<10
Vinyl chloride, ug/L	<1
Total Xylene Isomers, ug/L	<3
cis-1,2-Dichloroethene, ug/L	<1
cis-1,3-Dichloropropene, ug/L	<1
trans-1,2-Dichloroethene, ug/L	<1
trans-1,3-Dichloropropene, ug/L	<1
Surrogates **	
1,2-Dichloroethane-d4 Rep., ug/L	49.7
1,2-Dichloroethane-d4 Theo., ug/L	50.0
4-Bromofluorobenzene Rep., ug/L	50.5
4-Bromofluorobenzene Theo., ug/L	50.0

Our Quality Control Is Your Quality Assurance

LOG NO: G97-04-560

Received: 21 APR 97

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Pleasanton, CA 94566

Requisition: 618571020
Project: 2375.SHORELINE

REPORT OF ANALYTICAL RESULTS

LOG NO	04-560-4
DATE SAMPLED	18 APR 97
SAMPLE DESCRIPTION	Trip Blank
AQUEOUS	
Toluene-d8 Reported, ug/L	56.2
Toluene-d8 Theo., ug/L	50.0

Greta Galoustian, Laboratory Director

ORDER PLACED FOR CLIENT: Kleinfelder 9704560 .
VOC ANALYTICAL : GLEN LAB : 11:55:37 05 MAY 1997 - P. 1 :

SAMPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE..... ANALYZED	METHOD.....	EQUIP.	BATCH..	ID.NO
9704560*1	MW-22	GAS.MTBE.TESNC	04.30.97	8015M.TX	536-23	975066	7424
		VOA.8240.TES	04.28.97	8240	537-01	971066	8659
9704560*2	MW-15	GAS.MTBE.TESNC	05.01.97	8015M.TX	536-21	976039	8866
		VOA.8240.TES	04.28.97	8240	537-01	971066	8659
9704560*3	MW-14	GAS.MTBE.TESNC	05.01.97	8015M.TX	536-21	976039	8866
		VOA.8240.TES	04.28.97	8240	537-01	971066	8659
9704560*4	Trip Blank	VOA.8240.TES	04.28.97	8240	537-01	971066	8659

***

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

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

VOC ANALYTICAL, GLENDALE
QC REPORT FOR 9704560
DATE PRINTED: 05 MAY 1997

AQUEOUS SAMPLES

		METHOD BLANK			LAB CONTROL								MATRIX QC								
					LCS		LCSD				RPD	RPD	MS		MSD				RPD	RPD	
	UNITS	RESULT	RDL	FLG	%REC	FLG	%REC	FLG	LCL	UCL	RPD	UCL	FLG	%REC	FLG	%REC	FLG	LCL	UCL	RPD	UCL	FLG
Batch: VOA*971066 Method: 8240 - GC/MS for Volatile Organics																						
1,1,1-Trichloroethane	ug/L	0	1	-	94	-	-	-	63	132	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	ug/L	0	1	-	93	-	-	-	51	157	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	ug/L	0	1	-	111	-	-	-	70	136	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	ug/L	0	1	-	85	-	-	-	72	125	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	ug/L	0	1	-	95	-	-	-	64	134	-	-	-	89	-	79	-	54	130	12	27	-
1,2-Dichloroethane	ug/L	0	1	-	91	-	-	-	78	122	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	ug/L	0	1	-	113	-	-	-	75	130	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	ug/L	0	1	-	87	-	-	-	78	123	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	ug/L	0	1	-	114	-	-	-	75	125	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ug/L	0	1	-	114	-	-	-	76	126	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinylether	ug/L	0	5	-	15	-	-	-	11	195	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	ug/L	0	5	-	84	-	-	-	4	228	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	ug/L	0	20	-	75	-	-	-	25	190	-	-	-	-	-	-	-	-	-	-	-	-
Acrolein	ug/L	0	100	-	124	-	-	-	30	183	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	ug/L	0	50	-	52	-	-	-	34	182	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	ug/L	0	1	-	103	-	-	-	79	123	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	ug/L	0	1	-	82	-	-	-	61	152	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	0.24	1	-	89	-	-	-	73	124	-	-	-	92	-	86	-	61	126	7	26	-
Bromoform	ug/L	0	1	-	109	-	-	-	58	148	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	ug/L	0	1	-	111	-	-	-	75	126	-	-	-	108	-	104	-	71	127	4	23	-
Carbon Tetrachloride	ug/L	0	1	-	114	-	-	-	70	132	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	ug/L	0	1	-	107	-	-	-	58	140	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	ug/L	0	1	-	90	-	-	-	74	124	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	ug/L	0	1	-	88	-	-	-	56	145	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulfide	ug/L	0	2	-	89	-	-	-	62	133	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	ug/L	0	1	-	112	-	-	-	73	131	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/L	0	1	-	106	-	-	-	72	131	-	-	-	-	-	-	-	-	-	-	-	-
Freon 113	ug/L	0	2	-	100	-	-	-	54	146	-	-	-	-	-	-	-	-	-	-	-	-
Methyl ethyl ketone	ug/L	0	10	-	76	-	-	-	21	198	-	-	-	-	-	-	-	-	-	-	-	-
Methyl isobutyl ketone	ug/L	0	5	-	85	-	-	-	8	215	-	-	-	-	-	-	-	-	-	-	-	-
Methyl-tert-butylether	ug/L	0	5	-	92	-	-	-	36	169	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride	ug/L	0.43	2	-	85	-	-	-	72	125	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	ug/L	0	1	-	110	-	-	-	72	130	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	ug/L	0	1	-	101	-	-	-	71	128	-	-	-	98	-	89	-	63	122	9	21	-
Trichlorofluoromethane	ug/L	0	1	-	103	-	-	-	45	149	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	ug/L	0.20	1	-	99	-	-	-	78	123	-	-	-	99	-	94	-	73	124	6	22	-
Tetrachloroethene	ug/L	0	1	-	120	-	-	-	73	127	-	-	-	-	-	-	-	-	-	-	-	-

VOC ANALYTICAL, GLENDALE
QC REPORT FOR 9704560
DATE PRINTED: 05 MAY 1997

AQUEOUS SAMPLES		------ METHOD BLANK ------			---------- LAB CONTROL ----------									---------- MATRIX QC ----------								
					LCS		LCSD					RPD	RPD	MS		MSD					RPD	RPD
	UNITS	RESULT	RDL	FLG	%REC	FLG	%REC	FLG	LCL	UCL	RPD	UCL	FLG	%REC	FLG	%REC	FLG	LCL	UCL	RPD	UCL	FLG
Batch: VOA*971066 Method: 8240 - GC/MS for Volatile Organics, con't																						
Vinyl acetate	ug/L	0	10	-	57	-	-	-	44	158	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	ug/L	0	1	-	89	-	-	-	56	144	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene Isomers	ug/L	0	3	-	113	-	-	-	72	133	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	ug/L	0	1	-	88	-	-	-	74	124	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	ug/L	0	1	-	100	-	-	-	79	124	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	ug/L	0	1	-	89	-	-	-	69	130	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	ug/L	0	1	-	85	-	-	-	70	133	-	-	-	-	-	-	-	-	-	-	-	-
[1,2-Dichloroethane-d4]	Percent	93	-	-	96	-	-	-	79	114	-	-	-	105	-	105	-	79	114	-	-	-
[4-Bromofluorobenzene]	Percent	101	-	-	101	-	-	-	85	111	-	-	-	105	-	105	-	85	111	-	-	-
[Toluene-d8]	Percent	111	-	Q	110	-	-	-	92	110	-	-	-	113	Q	113	Q	92	110	-	-	-
Batch: GAS*975066 Method: 8015M.TX - Modified 8015																						
Benzene	ug/L	0	0.5	-	108	-	-	-	76	155	-	-	-	95	-	97	-	70	153	2	25	-
Toluene	ug/L	0	0.5	-	108	-	-	-	72	121	-	-	-	76	-	77	-	69	119	1	25	-
Ethylbenzene	ug/L	0	0.5	-	112	-	-	-	72	115	-	-	-	92	-	93	-	68	116	1	25	-
Methyl-tert-butylether	ug/L	0	30	-	110	-	-	-	62	159	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene Isomers	ug/L	0	0.5	-	111	-	-	-	68	115	-	-	-	78	-	78	-	61	118	1	25	-
TPH (Gasoline Range)	ug/L	0	50	-	99	-	-	-	85	120	-	-	-	95	-	97	-	78	124	2	25	-
[a,a,a-Trifluorotoluene]	Percent	101	-	-	98	-	-	-	85	118	-	-	-	96	-	87	-	85	118	-	-	-
Batch: GAS*976039 Method: 8015M.TX - Modified 8015																						
Benzene	ug/L	0.263	0.5	-	102	-	-	-	76	155	-	-	-	79	-	88	-	70	153	11	25	-
Toluene	ug/L	0	0.5	-	105	-	-	-	72	121	-	-	-	82	-	89	-	69	119	9	25	-
Ethylbenzene	ug/L	0	0.5	-	103	-	-	-	72	115	-	-	-	80	-	89	-	68	116	10	25	-
Methyl-tert-butylether	ug/L	0	30	-	122	-	-	-	62	159	-	-	-	139	-	153	-	80	176	10	25	-
Total Xylene Isomers	ug/L	0	0.5	-	105	-	-	-	68	115	-	-	-	70	-	77	-	61	118	10	25	-
TPH (Gasoline Range)	ug/L	12.8	50	-	109	-	-	-	85	120	-	-	-	113	-	114	-	78	124	1	25	-
[a,a,a-Trifluorotoluene]	Percent	104	-	-	99	-	-	-	85	118	-	-	-	103	-	107	-	85	118	-	-	-

URROGATE RECOVERIES :
C ANALYTICAL : GLEN LAB : 11:56:26 05 MAY 1997 - P. 1 :

HOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
704560*1							
8015M.TX	a,a,a-Trifluorotoluene Re	975066	04/30/97	44.3	50.0	89	
8240	1,2-Dichloroethane-d4 Rep	971066	04/28/97	48.5	50.0	97	
	Toluene-d8	971066	04/28/97	55.7	50.0	111	
	4-Bromofluorobenzene Rep.	971066	04/28/97	50.0	50.0	100	
704560*2							
8015M.TX	a,a,a-Trifluorotoluene Re	976039	05/01/97	48.9	50.0	98	
8240	1,2-Dichloroethane-d4 Rep	971066	04/28/97	48.6	50.0	97	
	Toluene-d8	971066	04/28/97	56.4	50.0	113	
	4-Bromofluorobenzene Rep.	971066	04/28/97	49.9	50.0	100	
704560*3							
8015M.TX	a,a,a-Trifluorotoluene Re	976039	05/01/97	48.1	50.0	96	
8240	1,2-Dichloroethane-d4 Rep	971066	04/28/97	48.9	50.0	98	
	Toluene-d8	971066	04/28/97	56.1	50.0	112	
	4-Bromofluorobenzene Rep.	971066	04/28/97	51.3	50.0	103	
704560*4							
8240	1,2-Dichloroethane-d4 Rep	971066	04/28/97	49.7	50.0	99	
	Toluene-d8	971066	04/28/97	56.2	50.0	112	
	4-Bromofluorobenzene Rep.	971066	04/28/97	50.5	50.0	101	

KLEINFELDER

GET-94-960

PROJECT NO	PROJECT NAME
10-3005-91/002	Texaco Alameda.

LP NO / PO NO	SAMPLERS (Signature/Number)
	K BR

RECEIVING LAB: VOC LAB

	DATE MM/DD/YY	SAMPLE ID TIME HH-MM SS	SAMPLE I.D.	MATRIX	NO. OF CONTAINERS	TYPE OF CONTAINERS	ANALYSIS: TPH-g	BTEX	VOCs 8260 or 624 to be determined by lab.	INSTRUCTIONS/REMARKS
1	4-18-97	12:15	MW-22	H_2O	6	VOAs	x	x		VOAs preserved with HCl
2		13:25	MW-15	H_2O	6	VOAs	x	x		- Send Report to Alan Gibbs
3		14:20	MW-14	H_2O	6	VOAs	x	x		- Invoice to Debra Pryor @ Texaco.
4			Trip Blank	H_2O	1	VOA		x		
5										- Site location @ South Shore Shopping Center 2375 Shoreline Dr. Alameda CA.
6										
7										
8										
9										
10										
11										DRP 618571020
12										
13										ALAMEDA County
14										
15										
16										
17										
18										1664-5738
19										
20										

Relinquished by (Signature)	Date/Time	Received by: (Signature)
K BR	4/21/97 10:26	
Relinquished by (Signature)	Date/Time	Received by: (Signature)
Relinquished by (Signature)	Date/Time	Received for Laboratory by: (Signature)

Instructions/Remarks:
Standard T.A.T.
10 day

Send Results To:
KLEINFELDER
7133 KOLL CENTER PARKWAY
SUITE 100
PLEASANTON, CA 94566
(510) 484-1700
Attn: ~~Steve Walker~~ Alan Gibbs

White - Sampler
Canary - Return Copy To Shipper
Pink - Lab Copy

No 2380

KA KLEINFELDER

RECORD OF WATER LEVEL MEASUREMENTS

Date: 4-18-97 Weather: PC / Overcast Sheet 1 of 1

Project: Texaco Alameda Submitted By: TLBR Date:

Project No.: 10-3005-91/002 Reviewed By: Date:

Instrument Number: 11928

Well Number	Time (opened/measured)	Sensitivity Setting	Measuring Point	Measurement	Replicate Measurements (if requested)		Notes			(locked? ✓)
	(24-hr)	(est. %)	(M.P.)	1	2	3				
MW-5B		100	TOC							
MW-19				4.82						N
MW-15	13:00			3.95			H_2O in Box	christy		N
MW-22	11:15	↓	↓	7.50						Y

M.P.: TOC, GS, Cover ring, Other: All Wells Locked -- YES / NO

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-14

Date: 4-18-97 Weather: PC ≈ 69°F Sheet ___ of ___

Project: Texaco Alameda Submitted By: K BR Date:

Project Number: 10-3005-91/002 Reviewed By: Date:

Purpose of Log ☐ Development ☒ Sampling

Equipment & Decontamination

Purging Equipment	Bailer X3	Disposable Bailer	Suction Pump	Submers-able Pump	Dedicated Pump	Other:
Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	2" Submers-able Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.		90292	02154	
Calibration Date/Time		4-18-97	4-18-97	

Decontamination Methods	Wash	Rinse I	Rinse II	Rinse III
	DI Tap Other / Steam Hot Cold	DI Tap Other / Steam Hot Cold	DI Tap Other / Steam Hot Cold	DI Tap Other / Steam Hot Cold
TSP Alconox Other:		N A		
Vol. (gal):				
Water Source:				
Decon. Notes:				

Development / Purge Record

Well Security: good (fair) poor Well Integrity (good) fair poor Locked: yes (no)

Purge Volume (CV) T.D. − DTW X Factor 1 C.V. X 3 C.V.

Well Diam.: ☐ 2" ☒ 4" 14.00 ft. − 4.82 ft. X (4"=0.653) 6 X 18 feet thick

Free Product?: Odor: no yes Floating Product: none (sheen) film

									Replicate Goals
Time (24-hr)	1201.53	1407	1411	1415					
Gallons Purged	0	6	12	18					
pH	↑	7.84	7.65	7.63					±0.50
Temperature (°C)	S	21.0	20.9	20.8	Strong				±10%
Cond. (µmhos/cm)	T	2320	2490	2500					±10%
Salinity (‰)	A	1.0	1.1	1.2					±10%
Turbidity (NTU's)	R	>200	>200	→					<50 NTUs
Color	T	cloudy	dk brown	→					Colorless
Depth to Water	↓								

Reference Point: TOC Other:

Sample Log

Sample Number	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-14	1420	3	40ml	VOA	HCl	—	TPH-g/BTEX/MTBE	
		3	40ml	VOA	HCl	—	VOCs	
							8260	V
							or	O
							8240	C
								L
								A
								B

Misc

Other Observations: one bolt missing the other does not thread

Final Check: VOAs free of bubbles? (yes) / no / NA Well Locked? yes / (no) / NA

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-15

Sheet ___ of ___

Date: 4-18-97 Weather: PC / ≈ 69°F

Project: Texaco Alameda Submitted By: K. BR Date:

Project Number: 10-3005-91/002 Reviewed By: Date:

Purpose of Log ☐ Development ☒ Sampling

Equipment & Decontamination

Purging Equipment	Bailer ~~X~~ 2	Disposable Bailer	Suction Pump	Submers-able Pump	Dedicated Pump	Other:
Sampling Equipment	Bailer	Disposable Bailer 5	Suction Pump	2" Submers-able Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.		90292	02154	
Calibration Date/Time		4-18-97	4-18-97	

Decontamination Methods	Wash	Rinse I	Rinse II	Rinse III
	DI Tap Other / Steam Hot Cold	DI Tap Other / Steam Hot Cold	DI Tap Other / Steam Hot Cold	DI Tap Other / Steam Hot Cold
TSP Alconox Other:		NA		
Vol. (gal):				
Water Source:				
Decon. Notes:				

Development / Purge Record

Well Security: good (fair) poor Well Integrity: (good) fair poor Locked: (yes) no

Purge Volume (CV) T.D. – DTW X Factor 1 C.V. X 3 C.V.

Well Diam.: ☒ 2" ☐ 4" 20 ft. – 3.95 ft. X (r=0.125 r=0.663) 2.8 X ___

Free Product?: Odor: (no) yes Floating Product: (none) sheen film ___ feet thick

								Replicate Goals
Time (24-hr)	13:06	13:10	13:15	13:20				
Gallons Purged	0	2.8	5.6	8.4	11.2			
pH	↑	7.51	7.52	7.55				±0.50
Temperature (°C)	S	20.5	20.7	20.5	stable			±10%
Cond. (µmhos/cm)	T	2~~8~~80	2420	2580				±10%
Salinity (‰)	A	1.5	1.7	1.8				±10%
Turbidity (NTU's)	R	>200	→	→				<50 NTUs
Color	T	silty dk brown	→	→				Colorless
Depth to Water	↓							

Reference Point: TOC Other:

Sample Log

Sample Number	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-15	13:25	3	40ml	VOA	HCl	—	TPH-g/BTEX/MTBE	
		3	40ml	VOA	HCl	—	VOCs	
							8260	V
							or	O
							8240	C
								L
								A
								B

Misc

Other Observations: Lock cut off

Final Check: VOAs free of bubbles? (yes) / no / NA Well Locked? yes / (no) / NA

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-22

Date: 4-18-97 Weather: PC / Overcast ± 65°F Sheet ___ of ___

Project: Texaco Alameda Submitted By: K BR Date:

Project Number: 10-3005-91/002 Reviewed By: Date:

Purpose of Log ☐ Development ☒ Sampling

Equipment & Decontamination

Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submers-able Pump	Dedicated Pump	Other:
Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	2" Submers-able Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.		90292	02154	
Calibration Date/Time				

Decontamination Methods	Wash	Rinse I	Rinse II	Rinse III
TSP / Alconox / Other:	DI / Tap / Other; Steam / Hot / Cold	DI / Tap / Other; Steam / Hot / Cold	DI / Tap / Other; Steam / Hot / Cold	DI / Tap / Other; Steam / Hot / Cold
Vol. (gal):		N/A		
Water Source:				
Decon. Notes:				

Development / Purge Record

Well Security: good fair poor Well Integrity: good fair poor Locked: yes no

Purge Volume (CV) T.D. – DTW X Factor (2"=0.173, 4"=0.663) 1 C.V. X 3 C.V.

Well Diam.: ☒ 2" ☐ 4" 25 ft. – 7.50 ft. X none sheen 3.1 film ___ X 9.3 feet thick

Free Product?: Odor: no yes Floating Product:

								Replicate Goals
Time (24-hr)	11:42	11:47	11:53	11:58	12:05			
Gallons Purged	0	3.1	6.2	9.3	12.4			
pH	↑	7.55	7.57	7.62	7.64			±0.50
Temperature (°C)	S	17.6	17.2	17.3	17.4	stable		±10%
Cond. (µmhos/cm)	T	3030	3510	3750	3490			±10%
Salinity (‰)	A	2.1	2.4	2.6	2.4			±10%
Turbidity (NTU's)	R	>200	>200	>200	>200			<50 NTUs
Color	T	silty dk Brown	→	→	→			Colorless
Depth to Water	↓							

Reference Point: TOC Other:

Sample Log

Sample Number	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-22	12:05	3	40ml	VOA	HCl	—	TPH-g/BTEX/MTBE	
		3	40ml	VOA	HCl	—	VOCs	
							8260	V
							or	O
							8240	C
								L
								A
								B

Misc

Other Observations:

Final Check: VOAs free of bubbles? yes / no / NA Well Locked? yes / no / NA

3430 3583

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-5B

Date: 4-18-97 Weather: PC/overcast windy Sheet ___ of ___

Project: Texaco Alameda Submitted By: K BR Date:

Project Number: 10-3005-91/002 Reviewed By: Date:

Purpose of Log ☐ Development ☒ Sampling

Equipment & Decontamination

Purging Equipment	Bailer ~~3~~	Disposable Bailer	Suction Pump	Submers-able Pump	Dedicated Pump	Other:
Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	2" Submers-able Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.		90292	02154	
Calibration Date/Time		4-18-97	4-18-97	

Decontamination Methods	Wash	Rinse I	Rinse II	Rinse III
	DI Tap Other / Steam Hot Cold	DI Tap Other / Steam Hot Cold	DI Tap Other / Steam Hot Cold	DI Tap Other / Steam Hot Cold
TSP Alconox Other:		N A		
Vol. (gal):				
Water Source:				
Decon. Notes:				

Development / Purge Record

Well Security: (good) fair poor Well Integrity: (good) fair poor Locked: (yes) no

Purge Volume (CV) T.D. 12.7 ft. – DTW ___ ft. X Factor 2"=0.175 4"=0.663 1 C.V. ___ X ___ C.V.

Well Diam.: ☐ 2" ☒ 4" Free Product?: Odor: no yes Floating Product: none sheen film ___ feet thick

Time (24-hr)								Replicate Goals
Gallons Purged	0							
pH	↑							±0.50
Temperature (°C)	S							±10%
Cond. (µmhos/cm)	T							±10%
Salinity (‰)	A							±10%
Turbidity (NTU's)	R							<50 NTUs
Color	T							Colorless
Depth to Water	↓							

Not Sampled Obstruction

Reference Point: TOC Other:

Sample Log

Sample Number	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-5B		3	40ml	VOA	HCl	—	TPH-g/BTEX/MTBE	
		3	40ml	VOA	HCl	—	VOCs	
							8260	V
							or	O
							8240	C
								L
								A
								B

Misc

Other Observations: When taking DTW. Obstruction @ 5' cannot break through.

Final Check: VOAs free of bubbles? yes / no / NA Well Locked? yes / no / NA

KLEINFELDER

PROJECT NO	PROJECT NAME	NO. OF CONTAINERS	TYPE OF CONTAINERS	ANALYSIS: TPH-g / BTEX / MTBE	VOCs 8260 or 8240 to be determined by lab.	RECEIVING LAB:
10-3005-91/002	Texaco Alameda.					VOC LAB

L.P NO (PO NO):

SAMPLERS (Signature/Number): K BR 2

INSTRUCTIONS/REMARKS: VOAs preserved with HCl

	DATE MM/DD/YY	SAMPLE I.D. TIME HH-MM-SS	SAMPLE I.D.	MATRIX	NO. OF CONTAINERS	TYPE OF CONTAINERS	TPH-g/BTEX/MTBE	VOCs 8260 or 8240	INSTRUCTIONS/REMARKS
1	4-18-97	12:15	MW-22	H_2O	6	VOAS	X	X	
2	↓	13:25	MW-15	H_2O	6	VOAS	X	X	- Send Report to Alan Gibbs
3		14:20	MW-14	H_2O	6	VOAS	X	X	- Invoice to Debra Pryor
4	↓		Trip Blank	H_2O	1	VOA		X	@ Texaco.
5									
6									- Site location @
7									South Shore Shopping Center
8									2375 Shoreline Dr.
9									Alameda CA.
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Instructions/Remarks:	Send Results To:
KK BR	4/21/97 10:26	[signature]	Standard T.A.T. 10 day	KLEINFELDER 7133 KOLL CENTER PARKWAY SUITE 100 PLEASANTON, CA 94566 (510) 484-1700
Relinquished by: (Signature)	Date/Time	Received by: (Signature)		
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)		Attn. ~~Steve Walker~~ Alan Gibbs

M-60 White – Sampler Canary – Return Copy To Shipper Pink – Lab Copy

CHAIN OF CUSTODY

№ 2380

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.