PACIFIC
ENVIRONMENTAL
GROUP, INC.

Quarterly Groundwater Monitoring Report and Remedial System Performance Evaluation Fourth Quarter 1996

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Prepared for

Mr. Paul Supple
ARCO Products Company

March 19, 1997

Prepared by

Pacific Environmental Group, Inc.
2025 Gateway Place, Suite 440
San Jose, California 95110

Project 330-109.2C

Shaw Garakani
Project Engineer

Michael Hurd
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CHG 0068

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CERTIFIED
HYDROGEOLOGIST
EXP. 7/98
STATE OF CALIFORNIA

Date: March 19, 1997
Quarter: 4Q96

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 4931 Address: 731 West Boulevard at West Street
Oakland, California
ARCO Environmental Engineer: Paul Supple
Consulting Co./Contact Person: Pacific Environmental Group, Inc./Shaw Garakani
Consultant Project No.: 330-109.2C
Primary Agency/Regulatory ID No.: Alameda County Health Care Services Agency

WORK PERFORMED THIS QUARTER (Fourth - 1996):

1. Submitted third quarter 1996 groundwater monitoring report.
2. Performed fourth quarter 1996 groundwater monitoring event.
3. Prepared fourth quarter 1996 groundwater monitoring report.
4. Continued intrinsic bioremediation enhancement program.
5. Performed intrinsic bioremediation evaluation

WORK PROPOSED FOR NEXT QUARTER (First - 1997):

1. Submit fourth quarter 1996 groundwater monitoring report.
2. Perform first quarter 1997 groundwater monitoring event.
3. Prepare first quarter 1997 groundwater monitoring report.
4. Continue bioremediation enhancement program.

Current Phase of Project:	Monitoring/Remediation	(Assmnt, Remed., etc.)
Frequency of Groundwater Sampling:	Quarterly, Semiannually, and Annually	(Quarterly, etc.)
Frequency of Groundwater Monitoring:	Quarterly	(Monthly, etc.)
Is Free Product (FP) Present On-Site:	No	(Yes/No)
FP Recovered this Quarter:	None	(gallons)
Cumulative FP Recovered to Date:	Unknown	(gallons)
Bulk Soil Removed This Quarter:	None	(cubic yards)
Bulk Soil Removed to Date:	Unknown	(cubic yards)
Current Remediation Techniques:	Intrinsic Bioremediation Enhancement	(SVE/Sparge/FP Removal, etc.)
Approximate Depth to Groundwater:	43.87 to 49.95	(Measure Feet)
Groundwater Gradient:	Southwest	(Direction)
	0.03	(Magnitude)
Period TPPH- g/Benzene Removed:	0.0/0.0	(gallons)
Cumulative TPPH-g/Benzene Removed:	0.45/0.06	(gallons)

DISCUSSION:

- Hydrocarbon concentrations in Wells A-3 and A-5 were measurably higher than historical non detectable levels. Well A-12 had low but measurable concentration of 85 parts per billion (ppb) total petroleum hydrocarbons calculated as gasoline (TPPH-g), for the first time. Benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) remained non-detectable in Well A-12. PACIFIC will conduct additional sampling of Well A-12 during first quarter 1997 to confirm the current results.
- Hydrocarbon concentrations in other groundwater monitoring wells were within historic levels.
- Based on Alameda County Health Care Service Agency (ACHCSA) approval, the groundwater extraction (GWE) system has been deactivated and EBMUD sewer discharge permit relinquished. Plume appears stable.
- Intrinsic bioremediation enhancement program utilizing ORC units is in progress (Attachment D).
- Well A-13 was not sampled due to being asphalted over.
- Groundwater sampling frequency at Wells A-8 and A-9 has been changed from annually to semiannually (second and fourth quarters), to accommodate bioremedation enhancement program at these wells. (Please refer to Attachment D for details.)
- Groundwater sampling frequency at Well A-13 has been reduced from quarterly to annually during fourth quarter.
- Wells AR-1 and AR-2 have been removed from the sampling program.

ATTACHMENTS:

- Table 1 - Groundwater Sampling Schedule
- Table 2 - Groundwater Elevation and Analytical Data
- Figure 1 - Groundwater Elevation Contour Map
- Figure 2 - TPPH-g/Benzene Concentration Map
- Attachment A - Historical Liquid Surface Elevation and Groundwater Analytical Data Tables
- Attachment B - Field and Laboratory Procedures
- Attachment C - Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets
- Attachment D - Remedial System Performance Evaluation

cc: Mr. Kevin Graves, Regional Water Quality Control Board - San Francisco Bay Region
Ms. Susan Hugo, Alameda County Health Care Services Agency

Table 1
Groundwater Sampling Schedule

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Sampling Frequency
A-1	---------- Well Destroyed ----------				
A-2	a	a	a	a	Quarterly
A-3		a		a	Semiannually
A-4	a	a	a	a	Quarterly
A-5		a		a	Semiannually
A-6	a	a	a	a	Quarterly
A-7		a			Annually
A-8		a		a	Semiannually
A-9		a		a	Semiannually
A-10	---------- Removed from Sampling Program ----------				
A-11		a		a	Semiannually
A-12		a		a	Semiannually
A-13				a	Annually
AR-1	---------- Removed from Sampling Program ----------				
AR-2	---------- Removed from Sampling Program ----------				
AR-3	---------- Removed from Sampling Program ----------				

a. Groundwater samples analyzed for the presence of TPPH-g, BTEX compounds, and MtBE according to EPA Methods 8015 (modified) and 8020.

Table 2
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MtBE)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

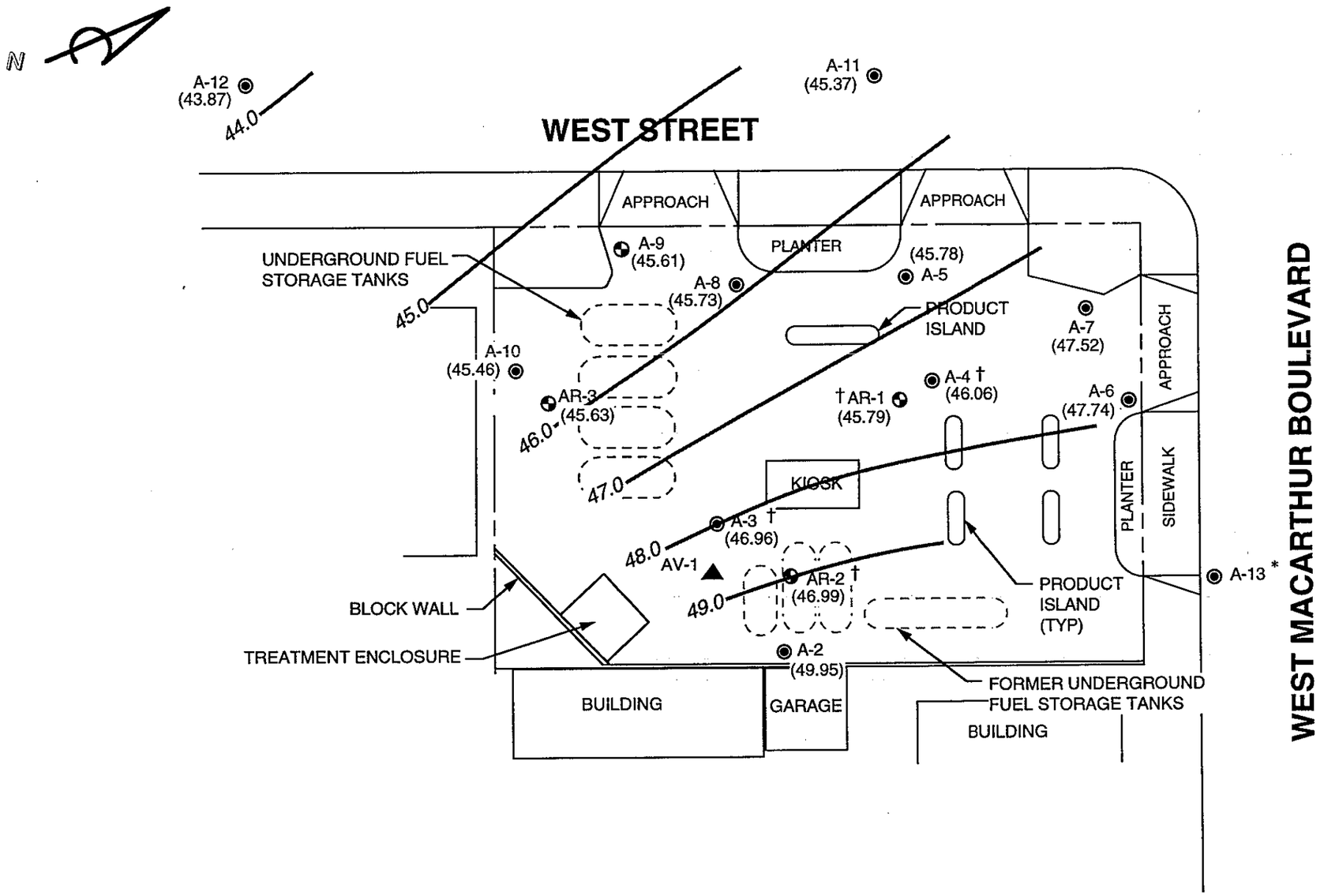
Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
A-2	03/26/96	55 48	5.37	50.11	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/22/96		5.25	50.23	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		10 45	45.03	<50	1.1	1.8	<0.50	1.3	<2.5
	12/19/96		5.53	49 95	<50	<0.50	<0.50	<0.50	<0 50	2.7
A-3	03/26/96	54.66	7.20	47.46	---------- Well Sampled Semiannually ----------					
	05/22/96		7.70	46.96	<50	1.2	1.9	0.70	1.3	NA
	08/22/96		10.88	43.78	---------- Well Sampled Semiannually ----------					
	12/19/96		7.70	46.96	5,900	<25	<25	<25	<25	5,300
A-4	03/26/96	54 73	7.95	46.78	8,900	1,200	21	200	220	NA
	05/22/96		8.35	46.38	5,300	700	<10	170	130	NA
	08/22/96		11.03	43.70	3,000	480	<5.0	75	26	150
	12/19/96		8.67	46.06	<2,000	<20	<20	<20	<20	15,000
A-5	03/26/96	54.17	7.93	46.24	---------- Well Sampled Semiannually ----------					
	05/22/96		8.20	45.97	<50	<0 50	<0.50	<0.50	<0.50	NA
	08/22/96		10.70	43.47	---------- Well Sampled Semiannually ----------					
	12/19/96		8.39	45.78	9,900	1,100	330	230	700	24
A-6	03/26/96	55.17	7.15	48.02	52	2.7	<0.50	1.1	2.0	NA
	05/22/96		7.35	47.82	<50	2.4	<0.50	0.88	1.7	NA
	08/22/96		10.12	45.05	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	12/19/96		7.43	47.74	<50	1.7	<0.50	0.78	1.5	<2.5
A-7	03/26/96	54.71	6.90	47.81	---------- Well Sampled Semiannually ----------					
	05/22/96		8.27	46 44	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		9.80	44.91	---------- Well Sampled Semiannually ----------					
	12/19/96		7.19	47.52	---------- Well Sampled Annually ----------					
A-8 a	03/26/96	53.77	7.10	46.67	48,000	2,600	<100	650	1,100	NA
	05/22/96		7.20	46.57	14,000	2,800	160	320	190	NA
	08/22/96		11.57	42.20	8,000	1,000	76	150	96	4,300
	12/19/96		8.04	45.73	12,000	450	110	210	230	<500
A-9 b	03/26/96	53.04	7.05	45.99	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/22/96		7.20	45.84	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		9.68	43.36	<50	<0.50	<0.50	<0.50	<0.50	8.5
	12/19/96		7.43	45.61	<50	<0.50	<0.50	<0.50	<0.50	2.6
A-10	03/26/96	54.26	8.28	45.98	---------- Well Removed from Sampling Program ----------					
	05/22/96		8.60	45.66	---------- Well Removed from Sampling Program ----------					
	08/22/96		10.98	43.28	---------- Well Removed from Sampling Program ----------					
	12/19/96		8.80	45.46	---------- Well Removed from Sampling Program ----------					
A-11	03/26/96	53.74	8.10	45.64	---------- Well Sampled Semiannually ----------					
	05/22/96		8.25	45.49	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		10.58	43.16	---------- Well Sampled Semiannually ----------					
	12/19/96		8.37	45.37	<50	<0.50	<0.50	<0.50	<0.50	<2.5
A-12	03/26/96	52.05	7.83	44.22	---------- Well Sampled Semiannually ----------					
	05/22/96		7.80	44.25	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		9.97	42.08	---------- Well Sampled Semiannually ----------					
	12/19/96		8.18	43.87	85	<0.50	<0.50	<0.50	<0.50	170
A-13	03/26/96	55.11	---------- Well Inaccessible ----------							
	05/22/96		---------- Well Inaccessible ----------							
	08/22/96		---------- Well Sampled Annually ----------							
	12/19/96		---------- Well Inaccessible ----------							

Table 2 (continued)
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MtBE)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
AR-1	03/26/96	54.72	8.13	46.59	6,200	110	64	38	520	NA
	05/22/96		8.57	46.15	NS	NS	NS	NS	NS	NS
	08/22/96		10.97	43.75	5,600	100	28	29	310	960
	12/19/96		8.93	45.79	-------- Well Removed from Sampling Program --------					
AR-2	03/26/96	54.77	4.93	49.84	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/22/96		5.65	49.12	NS	NS	NS	NS	NS	NS
	08/22/96		7.27	47.50	<50	<0.50	<0.50	<0.50	<0.50	200
	12/19/96		7.78	46.99	-------- Well Removed from Sampling Program --------					
AR-3	03/26/96	54.19	7.95	46.24	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/22/96		8.30	45.89	NS	NS	NS	NS	NS	NS
	08/22/96		10.84	43.35	-------- Well Removed from Sampling Program --------					
	12/19/96		8.56	45.63	-------- Well Removed from Sampling Program --------					

MSL = Mean sea level
TOB = Top of box
ppb = Parts per billion
< = Denotes laboratory detection limit
NA = Not analyzed
NS = Not sampled
a. = Bioremediation enhancement at this well has been in progress since 05/22/96.
b. = Bioremediation enhancement at this well has been in progress since 11/17/95.



LEGEND

A-7 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

AR-3 ⊕ GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

AV-1 ▲ SOIL VAPOR WELL LOCATION AND DESIGNATION

(45.78) GROUNDWATER ELEVATION IN FEET - MSL, 12-19-96

45.0 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 12-19-96

* WELL INACCESSIBLE

† NOT USED IN CONTOURING

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.03

SOURCE: MAP FROM GEO STRATEGIES INC. DATED 6-94

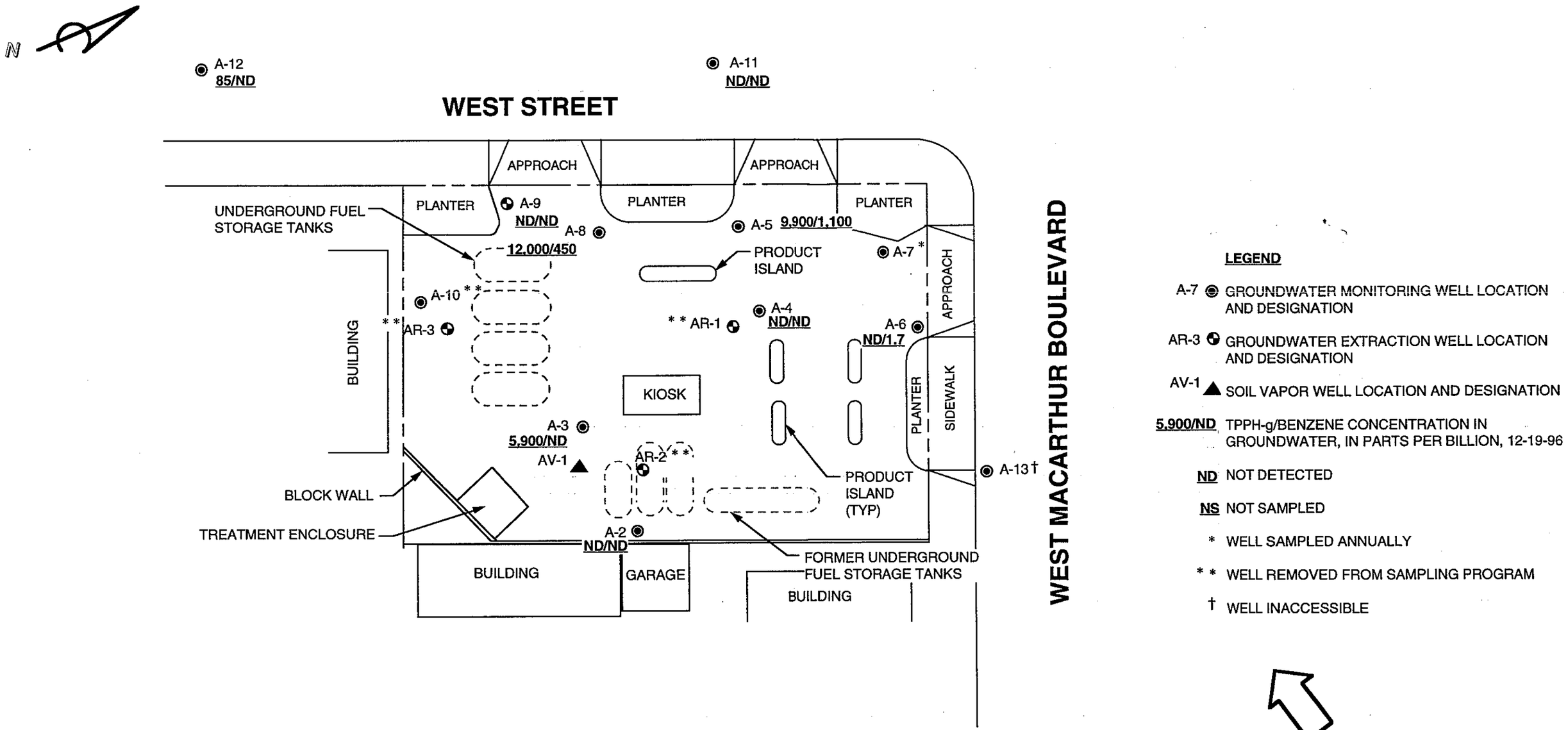
PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

ARCO SERVICE STATION 4931
731 West MacArthur Boulevard at West Street
Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE: 1
PROJECT: 330-109.2C



SOURCE: MAP FROM GEO STRATEGIES INC. DATED 6-94

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

ARCO SERVICE STATION 4931
731 West MacArthur Boulevard at West Street
Oakland, California

TPPH-g/BENZENE CONCENTRATION MAP

FIGURE: **2**
PROJECT: 330-109.2C

ATTACHMENT A

HISTORICAL LIQUID SURFACE ELEVATION AND GROUNDWATER ANALYTICAL DATA TABLES

Table A-1
Historical Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-2	03/20/89	55.38	3.45	3.45	0.00	51 93
	05/24/89		6.80	6 80	0.00	48.58
	08/18/89		10.82	10.82	0 00	44.56
	10/27/89		8.25	8 25	0.00	47.13
	01/15/90		4.87	4.87	0.00	50.51
	04/04/90		7.03	7.03	0.00	48.35
	07/30/90		10.01	10.01	0.00	45.37
	10/29/90		11 60	11.60	0 00	43.78
	01/16/91		9.43	9 43	0.00	45.95
	04/12/91		3.65	3.65	0.00	51.73
	07/10/91		9.57	9.57	0.00	45.81
	10/21/91		11.54	11.54	0.00	43.84
	02/01/92		11.20	11.20	0.00	44.18
	04/29/92		7.18	7.18	0.00	48.20
	07/29/92	55.48	11.81	11.81	0.00	43.67
	10/29/92		11.91	11.91	0.00	43.57
	01/26/93		5.06	5.06	0.00	50.42
	04/01/93		5.15	5.15	0.00	50.33
	08/06/93		15.33	15.33	0 00	40.15
	10/14/93		15.74	15.74	0.00	39.74
	11/16/93		14.61	14.61	0.00	40.87
	12/16/93		5.80	5.80	0.00	49.68
	02/10/94		4.88	4.88	0.00	50.60
	03/21/94		4.94	4.94	0.00	50.54
	05/06/94		---------- Well Inaccessible ----------			
	08/09/94		12.51	12.51	0.00	42.97
	11/17/94		5.24	5.24	0.00	50.24
	02/09/95		6.55	6.55	0.00	48.93
	05/08/95		6.08	6.08	0.00	49.40
	08/08/95		11.50	11.50	0.00	43.98
	11/03/95		10.92	10.92	0.00	44.56
A-3	03/20/89	54.48	7.51	7.51	0.00	46.97
	05/24/89		10.29	10.29	0.00	44.19
	08/18/89		11.60	11.60	0.00	42.88
	10/27/89		10.16	10.16	0.00	44.32
	01/15/90		8.55	8.55	0.00	45.93
	04/04/90		10.66	10.66	0.00	43.82
	07/30/90		11.26	11.26	0.00	43.22
	10/29/90		11.86	11.86	0.00	42.62
	01/16/91		11.46	11.46	0.00	43.02
	04/12/91		9.28	9.28	0.00	45.20
	07/10/91		11.29	11.29	0.00	43 19
	10/21/91		11.51	11.51	0.00	42.97
	02/02/92		---------- Well Inaccessible ----------			
	04/29/92		---------- Well Inaccessible ----------			
	07/29/92	54.66	11.59	11.59	0.00	43.07
	10/28/92		12.00	12.00	0.00	42.66
	01/26/93		9.82	9.82	0.00	44.84
	04/01/93		10.61	10.61	0.00	44.05
	08/06/93		14.90	14.90	0.00	39.76
	10/14/93		15.11	15.11	0.00	39.55
	11/16/93		14.72	14.72	0.00	39.94
	12/16/93		13.37	13.37	0.00	41.29
	02/10/94		9.20	9.20	0.00	45.46
	05/06/94		10.34	10.34	0.00	44.32
	08/09/94		12.09	12.09	0.00	42.57
	11/17/94		5.85	5.85	0.00	48.81
	02/09/95		9.93	9.93	0.00	44.73

Table A-1 (continued)
Historical Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-3	05/08/95		11 32	11.32	0.00	43 34
(cont.)	08/08/95		9.80	9.80	0.00	44.86
	11/03/95		10.26	10.26	0.00	44.40
A-4	03/21/86	54.62	NM	NM	3.50	NM
	01/07/88		NM	NM	0.02	NM
	03/20/89		8.13	8.13	0.00	46.49
	05/24/89		11.40	11.40	0.00	43.22
	08/18/89		11.90	11.91	0.01	42 72
	10/27/89		11.36	11.37	0.01	43.26
	01/15/90		9.73	9.74	0.01	44.89
	04/04/90		11.19	11.19	0.00	43 43
	07/30/90		11.70	11.71	0.01	42.92
	10/29/90		12.18	12.21	0 03	42.44
	01/16/91		11.88	11.89	0.01	42.74
	04/12/91		9.54	9.54	0.00	45.08
	07/10/91		11.55	11.55	0.00	43.07
	09/20/91		12.12	12.12	0.00	42.50
	10/21/91		11.73	11.76	0.03	42.89
	02/02/92		11.16	11.18	0.02	43.46
	04/29/92		10.76	10.78	0.02	43.86
	07/29/92	54.73	11.70	11.74	0.04	43.03
	10/28/92		11.90	11.93	0.03	42.83
	01/26/93		10.55	10.59	0.04	44.18
	04/01/93		10.15	10.17	0.02	44.58
	08/06/93		15.09	15.12	0.03	39.64
	10/14/93		15.37	15.37	0.00	39.36
	11/16/93		14.86	14.86	0.00	39.87
	12/16/93		13.41	13.41	0.00	41.32
	02/10/94		9.30	9.30	0.00	45.43
	05/06/94		10.02	10.02	0.00	44.71
	08/09/94		12.28	12.28	0.00	42.45
	11/17/94		9.44	9.44	0.00	45.29
	02/09/95		10.95	10.95	0.00	43.78
	05/08/95		11.29	11.29	0.00	43.44
	08/08/95		9.81	9.81	0.00	44.92
	11/03/95		10 42	10.42	0.00	44 31
A-5	03/20/89	54.15	8.09	8.09	0.00	46.06
	05/24/89		11.13	11.13	0.00	43.02
	08/18/89		11.58	11.58	0.00	42.57
	10/27/89		10.68	10.68	0.00	43.47
	01/15/90		9.24	9.24	0.00	44.91
	04/04/90		10.93	10.93	0.00	43.22
	07/30/90		11.48	11.48	0.00	42.67
	10/29/90		11.77	11.77	0.00	42.38
	01/16/91		11.36	11.36	0.00	42.79
	04/12/91		9.64	9.64	0.00	44.51
	07/10/91		11.30	11.30	0.00	42.85
	10/21/91		11.48	11.48	0.00	42.67
	02/02/92		10.73	10.73	0.00	43.42
	04/29/92		10.58	10.58	0.00	43.57
	07/29/92	54.17	11.46	11.46	0.00	42.71
	10/28/92		11 55	11.55	0.00	42.62
	01/26/93		10.32	10.32	0.00	43.85
	04/01/93		10.36	10.36	0.00	43.81
	08/06/93		14.82	14.82	0.00	39.35
	10/14/93		14.99	14.99	0.00	39.18
	11/16/93		14.47	14.47	0.00	39.70
	12/16/93		12.94	12.94	0.00	41.23
	02/10/94		8.94	8.94	0.00	45.23

Table A-1 (continued)
Historical Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-5	05/06/94		10.48	10.48	0.00	43.69
(cont.)	08/09/94		11.86	11.86	0.00	42.31
	11/17/94		9.49	9.49	0.00	44.68
	02/09/95		10.50	10.50	0.00	43 67
	05/08/95		11.15	11.15	0.00	43.02
	08/08/95		9 39	9.39	0.00	44.78
	11/03/95		10.00	10.00	0.00	44.17
A-6	03/20/89	55.13	6.43	6.43	0.00	48.70
	05/24/89		9.43	9.43	0.00	45.70
	08/18/89		10.10	10.10	0.00	45.03
	10/27/89		9.16	9.16	0.00	45 97
	01/15/90		8 02	8.02	0.00	47.11
	04/04/90		9.29	9.29	0.00	45.84
	07/30/90		9.93	9.93	0 00	45.20
	10/29/90		10.42	10.42	0 00	44.71
	01/16/91		10.15	10.15	0.00	44.98
	04/12/91		8.05	8.05	0.00	47.08
	07/10/91		10.03	10.03	0.00	45 10
	10/21/91		10 30	10.30	0.00	44.83
	02/02/92		9 81	9.81	0.00	45.32
	04/29/92		---------- Well Inaccessible ----------			
	07/29/92	55.17	10.40	10.40	0.00	44.77
	10/28/92		10.55	10.55	0.00	44.62
	01/26/93		7.50	7.50	0.00	47.67
	04/01/93		7.59	7.59	0.00	47.58
	08/06/93		12.32	12.32	0.00	42.85
	10/14/93		12.82	12.82	0.00	42.35
	11/16/93		12.34	12.34	0.00	42.83
	12/16/93		10.40	10.40	0.00	44.77
	02/10/94		7.53	7.53	0 00	47.64
	05/06/94		8.71	8.71	0.00	46.46
	08/09/94		10.57	10.57	0.00	44.60
	11/17/94		7.91	7.91	0.00	47.26
	02/09/95		8.13	8.13	0.00	47.04
	05/08/95		8.85	8.85	0.00	46.32
	08/08/95		8.98	8.98	0.00	46.19
	11/03/95		9.64	9.64	0.00	45.53
A-7	03/20/89	54.67	6.29	6.29	0.00	48.38
	05/24/89		9.26	9.26	0.00	45.41
	08/18/89		9.97	9.97	0.00	44.70
	10/27/89		9.02	9.02	0.00	45.65
	01/15/90		7.90	7.90	0.00	46.77
	04/04/90		9.15	9.15	0.00	45.52
	07/30/90		9.80	9.80	0.00	44.87
	10/29/90		10.30	10.30	0.00	44.37
	01/16/91		11.35	11.35	0.00	43.32
	04/12/91		7.90	7.90	0.00	46.77
	07/10/91		9.82	9.82	0.00	44.85
	10/21/91		10.12	10.12	0.00	44.55
	02/02/92		9.28	9.28	0.00	45.39
	04/29/92		8.85	8.85	0.00	45.82
	07/29/92	54.71	10.09	10.09	0.00	44.62
	10/28/92		10.31	10.31	0.00	44.40
	01/26/93		7.33	7.33	0.00	47.38
	04/01/93		7.35	7.35	0.00	47.36
	08/06/93		12.67	12.67	0.00	42.04
	10/14/93		12.52	12.52	0.00	42.19
	11/16/93		12.13	12.13	0.00	42.58
	12/16/93		10.18	10.18	0.00	44.53

Table A-1 (continued)
Historical Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-7	02/10/94		7.40	7 40	0.00	47.31
(cont.)	05/06/94		8.41	8.41	0.00	46.30
	08/09/94		10.57	10.57	0.00	44 14
	11/17/94		7.91	7.91	0.00	46.80
	02/09/95		7 85	7.85	0.00	46.86
	05/08/95		8 36	8.36	0.00	46.35
	08/08/95		8.66	8 66	0.00	46.05
	11/03/95		9.25	9.25	0.00	45.46
A-8	03/21/86	53.61	---------- Well Inaccessible ----------			
	01/07/88		---------- Well Inaccessible ----------			
	03/20/89		7.55	8.21	0.66	46.06
	05/24/89		10.21	11 41	1.20	43.40
	08/18/89		10.11	10.88	0.77	43.50
	10/27/89		10.35	11.66	1.31	43.26
	01/15/90		8.97	9.84	0.87	44.64
	04/04/90		11 10	11.35	0 25	42.51
	07/30/90		8.73	10.48	1.75	44.88
	10/29/90		11.29	11.39	0.10	42.32
	01/16/91		11.10	11.11	0.01	42.51
	04/12/91		9.15	9.16	0.01	44.46
	07/10/91		10.72	10.73	0.01	42.89
	10/21/91		10.87	10.98	0.11	42.74
	02/02/92		9.40	10.80	1.40	44.21
	04/29/92		9.85	11.15	1.30	43.76
	07/29/92	53.77	11.27	11.33	0.06	42.50
	10/28/92		---------- Well Dry ----------			
	01/26/93		---------- Well Dry ----------			
	04/01/93		9.38	9.38	0.00	44.39
	08/06/93		---------- Well Dry ----------			
	10/14/93		13 10	13.10	0.00	40.67
	11/16/93		---------- Well Dry ----------			
	12/16/93		13.40	13.40	0.00	40.37
	02/10/94		8.93	8.94	0.01	44.84
	05/06/94		8.38	8.80	0.42	45.39
	08/09/94		10.13	10.46	0.33	43.64
	11/17/94		9.09	9.41	0.32	44.68
	02/09/95		9.07	9.07	0.00	44.70
	05/08/95		10.60	10.60	<0.01	43.17
	08/08/95		8.87	8.87	0.00	44.90
	11/03/95		9.59	9.60	0.01	44.18
A-9	03/20/89	52.96	6.28	6.28	0.00	46.68
	05/24/89		10.12	10.12	0.00	42.84
	08/18/89		9.51	9.51	0.00	43.45
	10/27/89		8.56	8.56	0.00	44.40
	01/15/90		7.20	7.20	0.00	45.76
	04/04/90		8.78	8.78	0.00	44.18
	07/30/90		10.16	10 16	0.00	42.80
	10/29/90		10.71	10.71	0.00	42.25
	01/16/91		10.44	10.44	0.00	42.52
	04/12/91		8.69	8.69	0.00	44.27
	07/10/91		10.23	10.23	0 00	42.73
	09/20/91		10.47	10.47	0.00	42.49
	10/21/91		10.39	10.39	0.00	42.57
	02/02/92		9.05	9.05	0.00	43.91
	04/29/92		9.56	9.56	0.00	43.40
	07/29/92	53.04	10.43	10.43	0.00	42.61
	10/28/92		---------- Well Inaccessible ----------			
	01/26/93		---------- Well Inaccessible ----------			
	04/01/93		---------- Well Inaccessible ----------			

Table A-1 (continued)
Historical Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-9	08/06/93		---------- Well Inaccessible ----------			
(cont.)	10/14/93		---------- Well Inaccessible ----------			
	11/16/93		---------- Well Inaccessible ----------			
	12/16/93		12.10	12.10	0.00	40.94
	02/10/94		8.00	8.00	0.00	45 04
	03/21/94		9.62	9.62	0.00	43.42
	05/06/94		9.41	9.41	0.00	43.63
	08/09/94		10.81	10 81	0.00	42.23
	11/17/94		9 89	9.89	0.00	43.15
	02/09/95		9.97	9.97	0.00	43.07
	05/08/95		10.28	10 28	0.00	42.76
	08/08/95		8.33	8.33	0.00	44.71
	11/03/95		9.00	9.00	0.00	44.04
A-10	03/20/89	54.16	8.52	8.52	0.00	45.64
	05/24/89		11.31	11 31	0.00	42.85
	08/18/89		11.82	11.82	0.00	42.34
	10/27/89		10 94	10.94	0.00	43.22
	01/15/90		9.58	9.58	0 00	44.58
	04/04/90		---------- Well Inaccessible ----------			
	07/30/90		11.57	11.57	0.00	42.59
	10/29/90		12.11	12.11	0.00	42.05
	01/16/91		11.60	11.60	0.00	42.56
	04/12/91		10.04	10.04	0.00	44.12
	07/10/91		11.55	11.55	0.00	42.61
	10/21/91		11.79	11.79	0.00	42.37
	02/02/92		---------- Well Inaccessible ----------			
	04/29/92		10.85	10.85	0.00	43.31
	07/29/92	54.26	11.84	11.84	0 00	42.42
	10/28/92		11.89	11.89	0.00	42.37
	01/26/93		10.81	10.81	0.00	43.45
	04/01/93		10.85	10.85	0.00	43.41
	08/06/93		15.06	15.06	0 00	39.20
	10/14/93		15.22	15.22	0.00	39.04
	11/16/93		14.70	14.70	0.00	39.56
	12/16/93		13.22	13.22	0.00	41.04
	02/10/94		9.61	9.61	0.00	44.65
	05/06/94		10.81	10.81	0.00	43.45
	08/09/94		12.24	12.24	0.00	42.02
	11/17/94		9.89	9.89	0.00	44.37
	02/09/95		11.00	11.00	0.00	43.26
	05/08/95		11.60	11.60	0.00	42.66
	08/08/95		9.65	9.65	0.00	44.61
	11/03/95		10.28	10.28	0.00	43.98
A-11	03/20/89	53.75	8.11	8.11	0.00	45.64
	05/24/89		10.92	10.92	0.00	42.83
	08/18/89		11.52	11.52	0.00	42.23
	10/27/89		10.63	10.63	0.00	43.12
	01/15/90		9.22	9.22	0.00	44.53
	04/04/90		10.85	10.85	0.00	42.90
	07/30/90		11.29	11.29	0.00	42.46
	10/29/90		11.66	11.66	0.00	42.09
	01/16/91		11.31	11.31	0.00	42.44
	04/12/91		9.55	9.55	0.00	44.20
	07/10/91		11.18	11.18	0.00	42.57
	10/21/91		11.24	11.24	0.00	42.51
	02/02/92		10.70	10.70	0.00	43.05
	04/29/92		10.57	10.57	0.00	43.18
	07/29/92	53.74	11.33	11.33	0.00	42.41
	10/28/92		11.54	11.54	0.00	42.20

Table A-1 (continued)
Historical Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-11	01/26/93		9 90	9 90	0.00	43.84
(cont.)	04/01/93		10.11	10.11	0.00	43.63
	08/06/93		14.43	14.43	0 00	39.31
	10/14/93		14.72	14.72	0.00	39.02
	11/16/93		NM	NM	NM	NM
	12/16/93		NM	NM	NM	NM
	02/10/94		9.30	9.30	0.00	44.44
	05/06/94		9.94	9.94	0.00	43.80
	08/09/94		11.67	11.67	0.00	42.07
	11/17/94		9.32	9.32	0 00	44.42
	02/09/95		10.20	10.20	0.00	43.54
	05/08/95		10.88	10.88	0.00	42.86
	08/08/95		9.37	9.37	0.00	44.37
	11/03/95		10.10	10.10	0 00	43.64
A-12	03/20/89	52.05	8.00	8 00	0.00	44.05
	05/24/89		10.35	10.35	0.00	41.70
	08/18/89		10.75	10.75	0.00	41.30
	10/27/89		10.06	10 06	0 00	41.99
	01/15/90		8.88	8 88	0 00	43.17
	04/04/90		10.30	10.30	0.00	41.75
	07/30/90		10.66	10.66	0.00	41.39
	10/29/90		10.90	10.90	0.00	41.15
	01/16/91		10.60	10.60	0.00	41.45
	04/12/91		9.45	9.45	0.00	42.60
	07/10/91		10.56	10.56	0 00	41.49
	10/21/91		10.62	10.62	0.00	41.43
	02/02/92		10.10	10.10	0.00	41.95
	04/29/92		10.19	10.19	0.00	41.86
	07/29/92		10.81	10.81	0.00	41.24
	10/28/92		10.81	10.81	0.00	41.24
	01/26/93		9.48	9.48	0.00	42.57
	04/01/93		10.67	10.67	0.00	41.38
	08/06/93		12.95	12.95	0 00	39.10
	10/14/93		13.28	13.28	0.00	38.77
	11/16/93		NM	NM	NM	NM
	12/16/93		NM	NM	NM	NM
	02/10/94		8.66	8.66	0.00	43.39
	05/06/94		9.89	9.89	0.00	42.16
	08/09/94		11.07	11.07	0.00	40.98
	11/17/94		9.17	9.17	0.00	42.88
	02/09/95		9.90	9.90	0.00	42.15
	05/08/95		10.27	10.27	0.00	41.78
	08/08/95		8.47	8.47	0.00	43.58
	11/03/95		9.10	9.10	0.00	42.95
A-13	07/01/92	55.11	9.93	9 93	0.00	45.18
	07/29/92		11 12	11.12	0 00	43.99
	10/28/92		10.84	10.84	0.00	44.27
	01/26/93		8.99	8.99	0.00	46.12
	04/01/93		9.18	9.18	0.00	45.93
	08/06/93		13.70	13.70	0.00	41.41
	10/14/93		14.02	14.02	0.00	41.09
	11/16/93		NM	NM	NM	NM
	12/16/93		NM	NM	NM	NM
	02/10/94		9.64	9.64	0.00	45.47
	05/06/94		10.29	10.29	0.00	44.82
	08/09/94		11.45	11.45	0.00	43.66
	11/17/94		9.67	9.67	0.00	45.44
	02/09/95		9.38	9.38	0.00	45.73
	05/08/95		10.32	10.32	0.00	44.79

Table A-1 (continued)
Historical Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-13	08/08/95		----------	Well Inaccessible	----------	
(cont.)	11/03/95		----------	Well Inaccessible	----------	
AR-1	07/01/92	54.72	10.27	10.27	0.00	44.45
	07/29/92		11.32	11.32	0.00	43.40
	10/28/92		----------	Well Inaccessible	----------	
	01/26/93		----------	Well Inaccessible	----------	
	04/01/93		----------	Well Inaccessible	----------	
	08/06/93		17 42	17 42	0.00	37.30
	10/14/93		----------	Well Inaccessible	----------	
	11/16/93		13.76	13 76	0.00	40.96
	12/16/93		19.44	19.44	0.00	35.28
	02/10/94		9.00	9.00	0.00	45.72
	03/21/94		9.99	10.00	0.01	44.73
	05/06/94		19.61	19.61	0.00	35.11
	08/09/94		17.51	17.59	0.08	37.21
	11/17/94		17.39	17.39	sheen	37.33
	02/09/95		18.83	18.83	0.00	35.89
	05/08/95		10.96	10.96	0.00	43.76
	08/08/95		9.70	9 70	0.00	45.02
	11/03/95		10.32	10.32	0.00	44.40
AR-2	07/01/92	54.77	11.33	11.33	0.00	43.44
	07/29/92		11.90	11.90	0.00	42.87
	10/28/92		----------	Well Inaccessible	----------	
	01/26/93		----------	Well Inaccessible	----------	
	04/01/93		----------	Well Inaccessible	----------	
	08/06/93		17.16	17.16	0.00	37.61
	10/14/93		18.11	18 11	0.00	36.66
	11/16/93		17.92	17.92	0.00	36.85
	12/16/93		18.02	18.02	0.00	36.75
	02/10/94		9.32	9.32	0.00	45.45
	03/21/94		10.36	10.36	0.00	44.41
	05/06/94		15.14	15.14	0.00	39.63
	08/09/94		18.25	18.25	0.00	36.52
	11/17/94		18.10	18.10	0.00	36.67
	02/09/95		17.10	17.10	0.00	37.67
	05/08/95		18.25	18.25	0.00	36.52
	08/08/95		10.20	10.20	0.00	44.57
	11/03/95		10.27	10.27	0.00	44.50
AR-3	07/01/92	54.19	10.11	10.11	0.00	44.08
	07/29/92		11.55	11.55	0.00	42.64
	10/28/92		----------	Well Inaccessible	----------	
	01/26/93		----------	Well Inaccessible	----------	
	04/01/93		----------	Well Inaccessible	----------	
	08/06/93		16.12	16.12	0.00	38.07
	10/14/93		----------	Well Inaccessible	----------	
	11/16/93		16.38	16.38	0.00	37.81
	12/16/93		----------	Well Inaccessible	----------	
	02/10/94		9.20	9.20	0.00	44.99
	03/21/94		10.80	10.80	0.00	43.39
	05/06/94		10.54	10.54	0.00	43.65
	08/09/94		11.92	11.92	0.00	42.27
	11/17/94		9.62	9.62	0.00	44.57
	02/09/95		15.90	15.90	0.00	38.29
	05/08/95		17.75	17.75	0.00	36.44
	08/08/95		9.47	9.47	0.00	44.72
	11/03/95		10.05	10.05	0.00	44.14

MSL = Mean sea level
TOB = Top of box
NM = Not measured

Table A-2
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-2	03/21/86	31,000	NA	NA	NA	NA
	01/07/88	12,000	920	1,500	--	4,000
	03/20/89	22,000	1,200	1,800	1,200	7,700
	05/24/89	9,000	460	260	250	2,400
	08/18/89	14,000	900	200	<200	1,300
	10/27/89	16,000	1,200	340	90	3,100
	01/15/90	9,900	1,100	460	150	2,900
	04/04/90	16,000	1,100	400	380	3,900
	07/30/90	16,000	1,400	340	290	3,600
	07/30/90	16,000	1,400	340	290	3,600
	10/29/90	14,000	1,100	210	66	2,700
	01/16/91	15,000	1,200	800	190	4,600
	04/12/91	16,000	640	290	280	2,600
	10/21/91	26,000	1,100	560	81	3,900
	02/02/92	11,000	150	13	91	94
	04/29/92	5,400	120	16	129	19
	07/30/92	590	10	<2.0	<2.0	9
	10/29/92	77	0.56	<0.50	<0.50	0.51
	01/26/93	390	0.87	<0.50	<0.50	4.3
	04/01/93	16,000	<10	<10	<10	<10
	08/06/93	---------- Well Dry ----------				
	10/14/93	350	<0.5	<0.5	<0.5	<0.5
	02/10/94	---------- Well Dry ----------				
	03/21/94	66	<0.5	<0.5	<0.5	<0.5
	05/06/94	---------- Well Inaccessible ----------				
	08/09/94	<50	1.1	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	50	1.7	2.0	<0.5	1.6
	05/08/95	<50	1.4	1.4	<0.50	0.50
	08/08/95	<50	<0.50	<0.50	<0.50	<0.50
	11/03/95	<50	<0.50	<0.50	<0.50	<0.50
A-3	03/21/86	1,000	NA	NA	NA	NA
	01/07/88	250	2.3	8	NA	21
	03/20/89	230	1.6	<1	3	3
	05/24/89	170	0.9	2	1	<3
	08/18/89	180	0.7	1	<1	<3
	10/27/89	120	<0.5	<0.5	<0.5	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	88	1.2	2.0	0.8	4
	07/30/90	120	8.3	2.9	2.3	12
	10/29/90	780	10	27	18	85
	01/16/91	69	2.0	3.5	<0.5	9.6
	04/12/91	<30	<0.30	<0.30	<0.30	<0.30
	07/10/91	59	<0.30	<0.30	0.50	0.51
	10/21/91	56	0.44	0.77	0.41	1.3
	02/01/92	---------- Well Inaccessible ----------				
	04/29/92	---------- Well Inaccessible ----------				
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0 5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5

Table A-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-3	11/17/94	<50	<0 5	<0.5	<0.5	<0.5
(cont.)	02/09/95	90	0 9	<0.5	0.7	1.3
	05/08/95	<50	<0.50	<0.50	<0.50	<0 50
	08/08/95	NS	NS	NS	NS	NS
	11/03/95	<50	<0 50	<0.50	<0.50	<0.50
A-4	03/21/86	---------- 3.50 feet of Separate-Phase Hydrocarbons ---------				
	01/07/88	---------- 0.02 foot of Separate-Phase Hydrocarbons ---------				
	03/20/89	360,000	1,500	3,700	6,500	35,000
	05/24/89	1,500,000	1,000	2,000	6,000	23,000
	08/18/89	---------- 0.01 foot of Separate-Phase Hydrocarbons ---------				
	10/27/89	---------- 0.01 foot of Separate-Phase Hydrocarbons ---------				
	01/15/90	---------- 0.01 foot of Separate-Phase Hydrocarbons ---------				
	04/04/90	40,000	680	320	1,400	4,900
	07/30/90	---------- 0.01 foot of Separate-Phase Hydrocarbons ---------				
	10/29/90	---------- 0.03 foot of Separate-Phase Hydrocarbons ---------				
	01/16/91	---------- 0.01 foot of Separate-Phase Hydrocarbons ---------				
	04/12/91	1,800	<60	90	650	1,700
	07/10/91	61,000	2,700	8,500	1,700	8,200
	09/20/91	NA	1,200	5,300	1,500	11,000
	02/01/92	---------- 0.02 foot of Separate-Phase Hydrocarbons ---------				
	04/29/92	---------- 0.02 foot of Separate-Phase Hydrocarbons ---------				
	07/29/92	---------- 0.04 foot of Separate-Phase Hydrocarbons ---------				
	10/28/92	---------- 0.03 foot of Separate-Phase Hydrocarbons ---------				
	01/26/93	---------- 0.04 foot of Separate-Phase Hydrocarbons ---------				
	04/01/93	---------- 0.02 foot of Separate-Phase Hydrocarbons ---------				
	08/06/93	---------- 0.03 foot of Separate-Phase Hydrocarbons ---------				
	10/14/93	160,000	1,200	<250	4,100	950
	02/10/94	56,000	220	68	790	700
	05/06/94	18,000	210	<30	200	101
	08/09/94	20,000	800	<20	200	270
	11/17/94	3,900	420	11	38	92
	02/09/95	14,000	2,900	7.5	420	440
	05/08/95	5,100	700	<10 b	79	160
	08/08/95	4,200	240	17	88	110
	11/03/95	1,200	22	<0.50	6.4	3.7
A-5	03/21/86	88	NA	NA	NA	NA
	01/07/88	<50	0 5	1	NA	4
	03/20/89	60	0.5	1	2	10
	05/24/89	<50	0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.50	<0.50	<0.50	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	<50	<0.5	<0.5	<0.5	<1
	07/30/90	<50	<0.5	<0.5	<0.5	<0.5
	10/29/90	280	<0.5	<0.5	<0.5	<0.5
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	<0.30	<0.30	<0.30	0.84
	07/10/91	<30	<0.30	<0.30	<0.30	<0.30
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/01/92	<30	1.7	<0.30	<0.30	<0.30
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5

Table A-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-5	02/10/94	<50	<0.5	<0.5	<0 5	<0.5
(cont.)	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0 5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	<50	<0.5	<0.5	<0.5	<0 5
	05/08/95	<50	<0.50	<0.50	<0 50	<0.50
	08/08/95	NS	NS	NS	NS	NS
	11/03/95	<50	<0.50	<0.50	<0.50	<0.50
A-6	03/21/86	<10	NA	NA	NA	NA
	01/07/88	390	54	89	NA	110
	03/20/89	220	33	21	9	39
	05/24/89	110	13	6	3	13
	08/18/89	<50	2.1	1	<1	<3
	10/27/89	55	3.8	1.6	1.7	6
	01/15/90	100	12	2.5	5.5	18
	04/04/90	100	17	7.1	5.5	18
	07/30/90	<50	2.6	<0.5	<0.5	1.2
	10/29/90	<50	0 7	<0.5	<0.5	<0.5
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	430	24	5.1	9.4	32
	07/10/91	<30	1.4	0.39	0.47	1.5
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/01/92	<30	2.0	0.40	0.58	1.7
	04/29/92	---------- Well Inaccessible ----------				
	07/30/92	<50	0.64	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	1,600	4.8	1.2	14	46
	04/01/93	310	4.8	0.74	3.3	8.7
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	140	2.8	<0 5	2.4	5.6
	05/06/94	61	1.7	<0.5	0.6	1.4
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	53	<0.5	<0.5	<0.5	<0.5
	02/09/95	90	17	0.8	1.2	6.0
	05/08/95	100	7.9	<0.50	4.1	8.6
	08/08/95	<50	<0.50	<0.50	<0.50	<0.50
	11/03/95	<50	<0.50	<0.50	<0.50	<0.50
A-7	01/07/88	<50	<0.5	1	NA	4
	03/20/89	<50	0.9	<1	<1	<3
	05/24/89	<50	<0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.5	<0.5	<0.5	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	<50	<0.5	<0.5	<0.5	<1
	07/30/90	<50	<0.5	<0.5	<0.5	<0.5
	10/29/90	<50	2.7	7.6	1.1	3.0
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	<0.30	<0.30	<0.30	0.48
	07/10/91	<30	<0.30	0.49	<0.30	1.2
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/01/92	<30	<0.30	<0.30	<0.30	<0.30
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/29/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50

Table A-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-7	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
(cont.)	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	<50	3.7	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	NS	NS	NS	NS	NS
	11/03/95	---------- Well Sampled Annually ----------				
A-8	03/21/86	---------- Well Inaccessible ----------				
	01/07/88	---------- Well Inaccessible ----------				
	03/20/89	---------- 0.66 foot of Separate-Phase Hydrocarbons ----------				
	05/24/89	---------- 1.20 feet of Separate-Phase Hydrocarbons ----------				
	08/18/89	---------- 0.77 foot of Separate-Phase Hydrocarbons ----------				
	10/27/89	---------- 1.31 feet of Separate-Phase Hydrocarbons ----------				
	01/15/90	---------- 0.87 foot of Separate-Phase Hydrocarbons ----------				
	04/04/90	---------- 0.25 foot of Separate-Phase Hydrocarbons ----------				
	07/30/90	---------- 1.75 feet of Separate-Phase Hydrocarbons ----------				
	10/29/90	---------- 0.10 foot of Separate-Phase Hydrocarbons ----------				
	01/16/91	---------- 0.01 foot of Separate-Phase Hydrocarbons ----------				
	04/12/91	---------- 0.01 foot of Separate-Phase Hydrocarbons ----------				
	07/10/91	---------- 0.01 foot of Separate-Phase Hydrocarbons ----------				
	10/21/91	---------- 0.11 foot of Separate-Phase Hydrocarbons ----------				
	02/01/92	---------- 1.40 feet of Separate-Phase Hydrocarbons ----------				
	04/29/92	---------- 1.30 feet of Separate-Phase Hydrocarbons ----------				
	07/29/92	---------- 0.06 foot of Separate-Phase Hydrocarbons ----------				
	10/28/92	---------- Well Dry ----------				
	01/26/93	---------- Well Dry ----------				
	04/01/93	---------- Well Inaccessible ----------				
	08/06/93	---------- Well Dry ----------				
	10/14/93	---------- Well Inaccessible ----------				
	12/10/93	29,000,000	16,000	12,000	19,000	99,000
	02/10/94	NS	NS	NS	NS	NS
	05/06/94	NS	NS	NS	NS	NS
	08/09/94	---------- 0.33 foot of Separate-Phase Hydrocarbons ----------				
	11/17/94	---------- 0.32 foot of Separate-Phase Hydrocarbons ----------				
	02/09/95	68,000	2,400	500	960	5,000
	05/08/95	23,000	3,600	560	520	2,100
	08/08/95	20,000	2,700	140	730	1,600
	11/03/95	---------- 0.01 foot of Separate-Phase Hydrocarbons ----------				
A-9	01/07/88	300	45	14	NA	43
	03/21/89	50	2.8	1	1	3
	05/24/89	120	26	12	4	79
	08/18/89	14,000	400	800	400	2,000
	10/27/89	1,700	150	36	30	110
	01/15/90	860	140	58	38	140
	04/04/90	620	36	13	9.4	32
	07/30/90	180	77	1.6	2.1	4.2
	10/29/90	110	30	3.7	4.1	8.3
	01/16/91	<50	15	<0.5	<0.5	0.6
	04/12/91	130	52	0.83	5.3	6.0
	07/10/91	<30	7.8	<0.30	<0.30	<0.30
	09/20/91	NA	21	<2.0	<2.0	<0.20
	10/21/91	240	63	0.65	5.1	1.6
	02/01/92	320	77	0.95	11	6.5
	04/29/92	170	52	<0.30	5.6	1.4

Table A-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-9	07/30/92	<50	14	<0 50	1.7	6 0
(cont.)	10/28/92	---------- Well Inaccessible ----------				
	01/26/93	---------- Well Inaccessible ----------				
	04/01/93	---------- Well Inaccessible ----------				
	08/06/93	---------- Well Inaccessible ----------				
	10/14/93	---------- Well Inaccessible ----------				
	12/10/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	---------- Well Inaccessible ----------				
	03/21/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0 5	<0 5	<0.5
	11/17/94	<50	2.5	<0 5	0.9	3.3
	02/09/95	<50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	80	2.6	<0 50	<0.50	<0.50
	11/03/95	NS	NS	NS	NS	NS
A-10	01/07/88	<50	0.6	11	NA	4
	03/20/89	<50	<0.5	<1	<1	<3
	05/24/89	<50	<0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.5	<0 5	<0.5	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	---------- Well Inaccessible ----------				
	07/30/90	<50	<0.5	<0.5	<0.5	<0.5
	10/29/90	<50	2.3	6.9	1.2	3.0
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	0.67	0.55	<0.30	0.90
	07/10/91	<30	<0.30	<0.30	<0.30	<0.30
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/02/92	---------- Well Inaccessible ----------				
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/29/92	<50	25	<0.50	<0.50	1.8
	10/28/92	<50	<0.50	<0.50	<05.0	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	60	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	---------- Well Removed from Sampling Program ----------				
A-11	01/07/88	<50	1.1	2	NA	5
	03/20/89	<50	<0.5	<1	<1	<3
	05/24/89	<50	<0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.5	<0.5	<0.5	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	<50	<0.5	<0.5	<0.5	<1
	07/30/90	<50	<0.5	0.6	<0.5	0.5
	10/29/90	<50	0.6	2.4	0.6	1.5
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	<0.30	0.37	<0.30	<0.30
	07/10/91	<30	0.61	0.46	<0.30	1.0

Table A-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-11	10/21/91	<30	<0.30	<0 30	<0.30	<0 30
(cont.)	02/01/92	<30	<0.30	<0.30	<0.30	<0.30
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0 50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	01/04/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0 5	<0.5	<0.5	<0 5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0 5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	<50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0 50	<0 50	<0.50
	08/08/95	NS	NS	NS	NS	NS
	11/03/95	<50	<0.50	<0.50	<0.50	<0.50
A-12	01/07/88	<50	<0.5	2	NA	<4
	03/20/89	<50	<0.5	<1	<1	<3
	05/24/89	<50	<0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.5	<0 5	<0.5	<1
	01/15/90	<50	<0.5	<0 5	<0.5	<1
	04/04/90	<50	<0.5	<0.5	<0.5	<1
	07/30/90	<50	<0.5	<0.5	<0.5	<0.5
	10/29/90	<50	<0.5	<0.5	<0.5	<0.5
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	<0.30	<0.30	<0.30	<0.30
	07/10/91	<30	<0.30	<0 30	<0.30	<0.30
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/01/92	<30	<0.30	<0.30	<0.30	<0.30
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0 5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	<50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	NS	NS	NS	NS	NS
	11/03/95	<50	<0.50	<0.50	<0.50	<0.50
A-13	07/01/92	<50	<0.50	<0.50	<0.50	<0.50
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0 50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5

Table A-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-13	02/09/95	<50	<0.5	<0 5	<0.5	<0.5
(cont.)	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	---------- Well Inaccessible ----------				
	11/03/95	---------- Well Inaccessible ----------				
AR-1	07/01/92	2,300	260	150	38	470
	07/29/92	1,600	340	180	52	320
	10/28/92	---------- Well Inaccessible ----------				
	01/26/93	---------- Well Inaccessible ----------				
	04/01/93	---------- Well Inaccessible ----------				
	08/06/93	---------- Well Inaccessible ----------				
	10/14/93	---------- Well Inaccessible ----------				
	12/10/93	3,400	<25	<25	<25	250
	02/10/94	---------- Well Inaccessible ----------				
	03/21/94	NS	NS	NS	NS	NS
	05/06/94	NS	NS	NS	NS	NS
	08/09/94	--------- 0.08 foot of Separate-Phase Hydrocarbons ---------				
	11/17/94	---------- Sheen of Separate-Phase Hydrocarbons ----------				
	02/09/95	670	1 5	1.0	0.7	33
	05/08/95	3,700	19	<2 5 b	5.7	47
	08/08/95	12,000	560	180	82	1,000
	11/03/95	7,400	130	41	18	370
AR-2	07/01/92	<50	<0.50	<0.50	<0.50	<0.50
	07/29/92	350	130	8.5	<10	<10
	10/28/92	---------- Well Inaccessible ----------				
	01/26/93	---------- Well Inaccessible ----------				
	04/01/93	---------- Well Inaccessible ----------				
	08/06/93	---------- Well Inaccessible ----------				
	10/14/93	---------- Well Inaccessible ----------				
	12/10/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	---------- Well Inaccessible ----------				
	03/21/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0 5	<0.5	<0.5
	02/09/95	60	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	<50	<0.50	<0.50	<0.50	<0.50
	11/03/95	<50	<0.50	<0.50	<0.50	<0.50
AR-3	07/01/92	<50	1.8	0.86	<0.50	2.2
	07/29/92	<50	1.6	<0.50	<0.50	<0.50
	10/28/92	---------- Well Inaccessible ----------				
	01/26/93	---------- Well Inaccessible ----------				
	04/01/93	---------- Well Inaccessible ----------				
	08/06/93	---------- Well Inaccessible ----------				
	10/14/93	---------- Well Inaccessible ----------				
	12/10/93	<50	<0.5	<0.50	<0.50	<0.50
	02/10/94	---------- Well Inaccessible ----------				
	03/21/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<1.3 a	<0.5	<0.5	<0.5
	02/09/95	50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50

Table A-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
AR-3	08/08/95	<50	<0.50	<0.50	<0.50	<0.50
(cont.)	11/03/95	<50	<0.50	<0.50	<0.50	<0.50

ppb = Parts per billion
NA = Not analyzed
NS = Not sampled
a. = Laboratory raised MRL due to matrix interference
b. = Laboratory raised MRL due to high analyte concentration requiring sample dilution.
Prior to June 1995, TPPH as gasoline was reported as TPH as gasoline.

Table A-3
Historical Groundwater Analytical Data
Total Methyl t-Butyl Ether

ARCO Service Station 4931
731 West MacArtur Boulevard at West Street
Oakland, California

Well I.D.	Date Sampled	Methyl t-Butyl Ether (ppb)
A-2	08/08/95	<2.5
	11/03/95	NS
A-3	08/08/95	NS
	11/03/95	<2.5
A-4	08/08/95	210
	11/03/95	NS
A-5	08/08/95	NS
	11/03/95	<2.5
A-6	08/08/95	<2.5
	11/03/95	NS
A-7	08/08/95	NS
	11/03/95	NS
A-8	08/08/95	1,200
	11/03/95	NS
A-9	08/08/95	17
	11/03/95	NS
A-10	08/08/95	NS
	11/03/95	NS
A-11	08/08/95	NS
	11/03/95	<2.5
A-12	08/08/95	NS
	11/03/95	<2.5
A-13	08/08/95	NS
	11/03/95	NS
AR-1	08/08/95	220
	11/03/95	NS
AR-2	08/08/95	<2.5
	11/03/95	NS
AR-3	08/08/95	<2.5
	11/03/95	NS

ppb = Parts per billion
NS = Not sampled

ATTACHMENT B

FIELD AND LABORATORY PROCEDURES

ATTACHMENT B
FIELD AND LABORATORY PROCEDURES

Sampling Procedures

The sampling procedure for each well consists first of measuring the water level and checking for the presence of separate-phase hydrocarbons (SPH), using either an electronic indicator and a clear Teflon® bailer or an oil-water interface probe. Wells not containing SPH are then purged of approximately four casing volumes of water (or to dryness) using a centrifugal pump, gas displacement pump, or bailer. Equipment used for the current sampling event is noted on the attached field data sheets. During purging, temperature, pH, and electrical conductivity are monitored in order to document that these parameters are stable prior to collecting samples. After purging, water levels are allowed to partially recover. Groundwater samples are collected using a Teflon® bailer, placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported on ice to a California State-certified laboratory.

Laboratory Procedures

The groundwater samples were analyzed for the presence of total purgeable petroleum hydrocarbons calculated as gasoline, benzene, toluene, ethylbenzene, xylenes, and methyl tert-butyl ether. The analyses were performed according to EPA Methods 8015 (modified) and 8020 utilizing a purge-and-trap extraction technique. Final detection was by gas chromatography using flame- and photo-ionization detectors. The methods of analysis for the groundwater samples are documented in the certified analytical report. The certified analytical report, chain-of-custody documentation, and field data sheets are presented as Attachment C.

ATTACHMENT C

CERTIFIED ANALYTICAL REPORT, CHAIN-OF-CUSTODY DOCUMENTATION, AND FIELD DATA SHEETS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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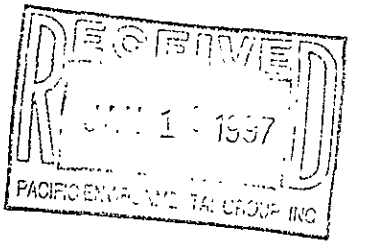
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100



Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garkani

Project: Arco, 330-109.2l/4931,Oakland

Enclosed are the results from samples received at Sequoia Analytical on December 20, 1996. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9612F10 -01	LIQUID, A-2	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -01	LIQUID, A-2	12/19/96	TPHGBW Purgeable TPH/BTEX
9612F10 -02	LIQUID, A-3	12/19/96	MTBEMW Methyl t-Butyl Ethe
9612F10 -02	LIQUID, A-3	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -02	LIQUID, A-3	12/19/96	TPHGBW Purgeable TPH/BTEX
9612F10 -03	LIQUID, A-4	12/19/96	MTBEMW Methyl t-Butyl Ethe
9612F10 -03	LIQUID, A-4	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -03	LIQUID, A-4	12/19/96	TPHGBW Purgeable TPH/BTEX
9612F10 -04	LIQUID, A-5	12/19/96	MTBEMW Methyl t-Butyl Ethe
9612F10 -04	LIQUID, A-5	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -04	LIQUID, A-5	12/19/96	TPHGBW Purgeable TPH/BTEX
9612F10 -05	LIQUID, A-6	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -05	LIQUID, A-6	12/19/96	TPHGBW Purgeable TPH/BTEX
9612F10 -06	LIQUID, A-8	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -06	LIQUID, A-8	12/19/96	TPHGBW Purgeable TPH/BTEX
9612F10 -07	LIQUID, A-9	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -07	LIQUID, A-9	12/19/96	TPHGBW Purgeable TPH/BTEX
9612F10 -08	LIQUID, A-11	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -08	LIQUID, A-11	12/19/96	TPHGBW Purgeable TPH/BTEX
9612F10 -09	LIQUID, A-12	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -09	LIQUID, A-12	12/19/96	TPHGBW Purgeable TPH/BTEX

SEQUOIA ANALYTICAL

Sequoia Analytical

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SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9612F10 -10	LIQUID, TB-1	12/19/96	MTBE_W Methyl t-Butyl Ethe
9612F10 -10	LIQUID, TB-1	12/19/96	TPHGBW Purgeable TPH/BTEX

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Project Manager

Quality Assurance Department

Sequoia Analytical

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-2	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-01	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	2.7

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	90

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-2	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-01	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	90

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-3	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8260	Analyzed: 01/03/97
Attention: Shaw Garkani	Lab Number: 9612F10-02	Reported: 01/06/97

QC Batch Number: MS010297MTBEF2A
Instrument ID: F2

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	100	5300

Surrogates	Control Limits %		% Recovery
1,2-Dichloroethane-d4	76	114	101

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-3	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 12/31/96
Attention: Shaw Garkani	Lab Number: 9612F10-02	Reported: 01/06/97

QC Batch Number: GC123196BTEX17A
Instrument ID: GCHP17

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	125	-

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	83

Analytes reported as N.D. were not present above the stated limit of detection.

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Tod Granicher
Project Manager

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Shaw Garkani

Client Proj. ID: Arco, 330-109.2I/4931,Oakland
Sample Descript: A-3
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612F10-02

Sampled: 12/19/96
Received: 12/20/96

Analyzed: 12/31/96
Reported: 01/06/97

QC Batch Number: GC123196BTEX17A
Instrument ID: GCHP17

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**2500**	**5900**
Benzene	25	N.D.
Toluene	25	N.D.
Ethyl Benzene	25	N.D.
Xylenes (Total)	25	N.D.
Chromatogram Pattern:		
Unidentified HC		**C6-C8**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	83

Analytes reported as N.D. were not present above the stated limit of detection.

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Tod Granicher
Project Manager

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2l/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-4	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8260	Analyzed: 01/06/97
Attention: Shaw Garkani	Lab Number: 9612F10-03	Reported: 01/06/97

QC Batch Number: MS010296MTBEF2A
Instrument ID: F2

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	200	15000

Surrogates	Control Limits %		% Recovery
1,2-Dichloroethane-d4	76	114	98

Analytes reported as N.D. were not present above the stated limit of detection.

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-4	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 12/31/96
Attention: Shaw Garkani	Lab Number: 9612F10-03	Reported: 01/06/97

QC Batch Number: GC123196BTEX17A
Instrument ID: GCHP17

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	100	-

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-4	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 12/31/96
Attention: Shaw Garkani	Lab Number: 9612F10-03	Reported: 01/06/97

QC Batch Number: GC123196BTEX17A
Instrument ID: GCHP17

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	2000	N.D.
Benzene	20	N.D.
Toluene	20	N.D.
Ethyl Benzene	20	N.D.
Xylenes (Total)	20	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-5	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8260	Analyzed: 01/03/97
Attention: Shaw Garkani	Lab Number: 9612F10-04	Reported: 01/06/97

QC Batch Number: MS010297MTBEF2A
Instrument ID: F2

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.0	24

Surrogates	Control Limits %		% Recovery
1,2-Dichloroethane-d4	76	114	105

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-5	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 12/31/96
Attention: Shaw Garkani	Lab Number: 9612F10-04	Reported: 01/06/97

QC Batch Number: GC123196BTEX17B
Instrument ID: GCHP17

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	100	-

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	89

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Shaw Garkani

Client Proj. ID: Arco, 330-109.2I/4931,Oakland
Sample Descript: A-5
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612F10-04

Sampled: 12/19/96
Received: 12/20/96

Analyzed: 12/31/96
Reported: 01/06/97

QC Batch Number: GC123196BTEX17A
Instrument ID: GCHP17

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	2000	9900
Benzene	20	1100
Toluene	20	330
Ethyl Benzene	20	230
Xylenes (Total)	20	700
Chromatogram Pattern:		
Gas & Unidentified HC		C6-C8

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	89

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-6	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-05	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	N.D.

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Shaw Garkani

Client Proj. ID: Arco, 330-109.2I/4931,Oakland
Sample Descript: A-6
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612F10-05

Sampled: 12/19/96
Received: 12/20/96

Analyzed: 12/27/96
Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	**0.50**	**1.7**
Toluene	0.50	N.D.
Ethyl Benzene	**0.50**	**0.78**
Xylenes (Total)	**0.50**	**1.5**
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-8	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-06	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	500	N.D.

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	86

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-8	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-06	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	10000	12000
Benzene	100	450
Toluene	100	110
Ethyl Benzene	100	210
Xylenes (Total)	100	230
Chromatogram Pattern:		
Gas & Unidentified HC		C6-C8

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	86

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-9	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-07	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	2.6

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	92

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-9	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-07	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	92

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-11	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-08	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	N.D.

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2l/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-11	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-08	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

Analytes reported as N.D. were not present above the stated limit of detection.

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Tod Granicher
Project Manager

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Shaw Garkani

Client Proj. ID: Arco, 330-109.2I/4931,Oakland
Sample Descript: A-12
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9612F10-09

Sampled: 12/19/96
Received: 12/20/96

Analyzed: 12/27/96
Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	170

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	94

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: A-12	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-09	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**50**	**85**
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
Unidentified HC		**C6-C8**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	94

Analytes reported as N.D. were not present above the stated limit of detection.

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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2I/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: TB-1	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-10	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	N.D.

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

Analytes reported as N.D. were not present above the stated limit of detection.

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Tod Granicher
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Pacific Environmental Group	Client Proj. ID: Arco, 330-109.2l/4931,Oakland	Sampled: 12/19/96
2025 Gateway Place, Suite 440	Sample Descript: TB-1	Received: 12/20/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 12/27/96
Attention: Shaw Garkani	Lab Number: 9612F10-10	Reported: 01/06/97

QC Batch Number: GC122696BTEX21B
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garkani

Client Proj. ID: Arco, 330-109.2I/4931,Oakland
Lab Proj. ID: 9612F10

Received: 12/20/96
Reported: 01/06/97

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 32 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

Sequoia Analytical

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garkani

Client Project ID: Arco, 330-109.2l/4931, Oakland
Matrix: Liquid
Work Order #: 9612F10 -01-10

Reported: Jan 7, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC122696BTEX21B	GC122696BTEX21B	GC122696BTEX21B	GC122696BTEX21B
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	G. Fish	G. Fish	G. Fish	G. Fish
MS/MSD #:	9612A4302	9612A4302	9612A4302	9612A4302
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	12/26/96	12/26/96	12/26/96	12/26/96
Analyzed Date:	12/26/96	12/26/96	12/26/96	12/26/96
Instrument I.D.#:	GCHP21	GCHP21	GCHP21	GCHP21
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	9.7	9.3	9.8	30
MS % Recovery:	97	93	98	100
Dup. Result:	11	11	12	36
MSD % Recov.:	110	110	120	120
RPD:	13	17	20	18
RPD Limit:	0-25	0-25	0-25	0-25

LCS #:	BLK122696	BLK122696	BLK122696	BLK122696
Prepared Date:	12/26/96	12/26/96	12/26/96	12/26/96
Analyzed Date:	12/26/96	12/26/96	12/26/96	12/26/96
Instrument I.D.#:	GCHP21	GCHP21	GCHP21	GCHP21
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
LCS Result:	10	9.9	10	31
LCS % Recov.:	100	99	100	103

MS/MSD	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130
Control Limits				

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garkani

Client Project ID: Arco, 330-109.2l/4931, Oakland
Matrix: Liquid
Work Order #: 9612F10-01-10
Reported: Jan 7, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC123196BTEX17A	GC123196BTEX17A	GC123196BTEX17A	GC123196BTEX17A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	D. Jirsa	D. Jirsa	D. Jirsa	D. Jirsa
MS/MSD #:	9612C4901	9612C4901	9612C4901	9612C4901
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	12/31/96	12/31/96	12/31/96	12/31/96
Analyzed Date:	12/31/96	12/31/96	12/31/96	12/31/96
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	8.6	8.7	9.0	26
MS % Recovery:	86	87	90	87
Dup. Result:	8.4	8.3	8.5	25
MSD % Recov.:	84	83	85	83
RPD:	2.4	4.7	5.7	3.9
RPD Limit:	0-25	0-25	0-25	0-25

LCS #:	BLK123196	BLK123196	BLK123196	BLK123196
Prepared Date:	12/31/96	12/31/96	12/31/96	12/31/96
Analyzed Date:	12/31/96	12/31/96	12/31/96	12/31/96
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
LCS Result:	7.4	7.5	7.8	23
LCS % Recov.:	74	75	78	77

MS/MSD	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130
Control Limits				

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garkani

Client Project ID: Arco, 330-109.2l/4931, Oakland
Matrix: Liquid
Work Order #: 9612F10-01-10
Reported: Jan 7, 1997

QUALITY CONTROL DATA REPORT

Analyte:	MTBE
QC Batch#:	MS010297MTBEF2A
Analy. Method:	EPA 8020
Prep. Method:	N.A.

Analyst:	L. Zhu
MS/MSD #:	9612A2803
Sample Conc.:	N.D.
Prepared Date:	-
Analyzed Date:	1/2/97
Instrument I.D.#:	MS-F2
Conc. Spiked:	50 µg/L
Result:	47
MS % Recovery:	94
Dup. Result:	45
MSD % Recov.:	90
RPD:	4.3
RPD Limit:	0-25

LCS #:	VDB010396
Prepared Date:	1/3/97
Analyzed Date:	1/3/97
Instrument I.D.#:	MS-F2
Conc. Spiked:	50 µg/L
LCS Result:	45
LCS % Recov.:	90

MS/MSD	60-140
LCS	70-130
Control Limits	

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garkani

Client Project ID: Arco, 330-109.2I/4931, Oakland
Matrix: Liquid
Work Order #: 9612F10-01-10
Reported: Jan 7, 1997

QUALITY CONTROL DATA REPORT

Analyte:	MTBE
QC Batch#:	MS010697MTBE
Analy. Method:	EPA 8260
Prep. Method:	N.A.
Analyst:	M. Williams
MS/MSD #:	
Sample Conc.:	
Prepared Date:	
Analyzed Date:	
Instrument I.D.#:	
Conc. Spiked:	
Result:	
MS % Recovery:	
Dup. Result:	
MSD % Recov.:	
RPD:	
RPD Limit:	

LCS #:	VDB010696
Prepared Date:	-
Analyzed Date:	1/6/97
Instrument I.D.#:	F2
Conc. Spiked:	50 µg/L
LCS Result:	45
LCS % Recov.:	110

MS/MSD	60-140
LCS	70-130
Control Limits	

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: PEG
REC. BY (PRINT): Rick Herling
WORKORDER: 9612F10
DATE OF LOG-IN: 12/26/96

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal(s): Present / (Absent) Intact / Broken*
2. Custody Seal #: Put in Remarks Section
3. Chain-of-Custody: (Present) / Absent*
4. Traffic Reports or Packing List: Present / (Absent)
5. Airbill: Airbill / Sticker Present / (Absent)
6. Airbill #:
7. Sample Tags: (Present) / Absent
   Sample Tags #s: (Listed) / Not Listed on Chain-of-Custody
8. Sample Condition: (Intact) / Broken* / Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? (Yes) / No*
10. Proper Preservatives used: (Yes) / No*
11. Date Rec. at Lab: 12/20/96
12. Time Rec. at Lab: 1741
13. Temp Rec. at Lab: 11°C

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC.)
1	A-C	A2	(3) 40 ml	Liq	12/19/96	
2	|	A4	|	|	|	DID NOT
3	|	A5	|	|	|	RECEIVE
4	|	A6	|	|	|	A.3
5	|	A8	|	|	|	
6	|	A9	|	|	|	
7	|	A11	|	|	|	
8	|	A12	|	|	|	
9	A,B	TB-1	(2) VOA	|	|	

12/20/96

*if Circled, contact Project Manager and attach record of resolution.

Revision 9/10/96
RCPTLOG1.XLS

ARCO Products Company
Division of AtlanticRichfieldCompany

730-10.2I **Task Order No.** 73480 G612F10

Chain of Custody

ARCO Facility no. 1731	City (Facility) 731 Richardson Blvd Richmond	Project manager (Consultant)	Laboratory name Sequoia
ARCO engineer	Telephone no. (ARCO)	Telephone no. (Consultant) (510) 441-7500	Fax no. (Consultant) (510) 551-7888
Consultant name Blaine Environmental Group	Address (Consultant) 2025 Gateway Place Suite 400 San Jose CA 95110		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid HCL	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH/Gas/Nitrate EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
B-2'	1	3		X		X	X	12/19/96	12:55		Y									
B-3	2								14:40											
B-4	3								6:00											
B-1	4								13:20											
A-6'	5								15:40											
B 3'	6								16:20											
A-1'	7								15:25											
A 11'	8								13:45											
B-12	9								14:11											
TB-1	10	2		V					17/19											

Condition of sample:

Temperature received:

	Date	Time		Date	Time
Relinquished by sampler	12/20/96	10:30	Received by W. Alarcon	12/20/96	10:30
Relinquished by W. Alarcon	12/20/96	3:15	Received by	12/20/96	3:15
Relinquished by	12/20/96		Received by laboratory	12/20/96	1941

Remarks
Take Chain To Tom Grunicke

Special detection Limit/reporting

Special QA/QC

Lab number

Turnaround time
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☑

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

ARPC-3292 (2-91)

FIELD SERVICES / O & M REQUEST

SITE INFORMATION FORM

Project #:330-109.21

Station #:4931

Site Address:731 McArthur Blvd. Oakland, California

County: Alameda

Project Manager: Kelly Brown

Requestor: Denise Alarcon

☐ 1st time visit

☐ 1st ☐ 2nd ☐ 3rd ☒ 4th

☐ Monthly

☐ Semi-Monthly

☐ Weekly

☐ One time Event

☐ Other._____

Date of Request: 4Q

Ideal Field Date:

Budget Hrs._____

Actual Hrs. 7 hrs

Mob de Mob ~~3hrs~~ 3hrs

Purge Total 271.25 Gal

Client: Arco

Client P.O.C.: Paul Supple

Prefield contacts:

Field Tasks: For General Description

Fourth Quarter 1996 groundwater sampling event: DTW/DTL from TOB/TOC; sample all wells for GAS/BTEX.

WA# 19348 00

Comments, remarks, from Field Staff (include problems encountered

Completed by: W Peck Date: 12/19/96

Checked by:_____

WELL SAMPLING REQUEST

SAMPLING PROTOCOL								
Project No.	Station #	Project Name	SEQUENCE	Project Manager	Approval	Date/s	Laboratory:	Client Engineer:
330-109.2I	4931	731 McArthur BL Oakland	4Q96	Kelly Brown	KB	11/20/96 9/23/96	Sequoia	Paul Supple

Well Number	Ideal Sampling Order	Sample I.D.	Sampling Frequency	Analyses	TOB TOC	Well Depth	Casing Diameter	Well goes Dry?	Comments
A-2	1		QLY	GAS/BTEX/MtBE	TOB/TOC	20	4"	yes	
A-3	11		Semiannual 2Q/4	GAS/BTEX/MtBE	TOB/TOC	17	4"	yes	
A-4	16		QLY	GAS/BTEX/MtBE	TOB/TOC	20	4"	yes	
A-5	2		Semiannual 2Q/4	GAS/BTEX/MtBE	TOB/TOC	24.5	3"	no	
A-6	14		QLY	GAS/BTEX/MtBE	TOB/TOC	25.5	3"	no	
A-7	13		Annually 2Q	DTW	TOB/TOC	23	3"	no	
A-8	17		QLY	GAS/BTEX/MtBE	TOB/TOC	18	3"	no	
A-9	12		QLY	GAS/BTEX/MtBE	TOB/TOC	19	6"	no	
A-10	3		REMOVED	DTW ONLY	TOB/TOC	?	?	?	
A-11	6		Semiannual 2Q/4	GAS/BTEX/MtBE	TOB/TOC	28	3"	no	
A-12	7		Semiannual 2Q/4	GAS/BTEX/MtBE	TOB/TOC	30	3"	no	
A-13	8		ANNUAL 2Q	DTW ONLY	TOB/TOC	29.5	3"	no	
AR-1	15		REMOVED	DTW	TOB/TOC	31.5	6"	no	
AR-2	9		REMOVED	DTW	TOB/TOC	27.5	6"	no	
AR-3	10		REMOVED	DTW	TOB/TOC	27	6"	no	
TB-1			QLY	GAS/BTEX/MtBE					

ARCO Products Company
Division of AtlanticRichfieldCompany

330109.21 **Task Order No.** 173480

Chain of Custody

ARCO Facility no. 4931	City (Facility) 731 MacArthur Blvd Oakland	Project manager (Consultant) Shaw Garakani	Laboratory name Sequoia
ARCO engineer	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 441 7500	Fax no. (Consultant) (408) 441 7539
Consultant name Pacific Environmental Group	Address (Consultant) 2025 Gateway Place Suite 440 San Jose CA 95110		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid HCL	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH (Gas) EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
A-2		3		X		X	X	12/19/96	12:55		X											
A-3									14:40													
A-4									16:00													
A-5									13:20													
A-6									15:40													
A-8									16:20													
A-9									15:25													
A-11									13:45													
A-12		↓							14:15													
TB-1		2		↓		↓	↓	↓	N/A		↓											

Condition of sample:

Temperature received:

Relinquished by sampler: Walter Kwok	Date 12/20/96 Time 10:30	Received by
Relinquished by	Date Time	Received by
Relinquished by	Date Time	Received by laboratory / Date / Time

Remarks

Lab number

Turnaround time

- Priority Rush 1 Business Day [ ]
- Rush 2 Business Days [ ]
- Expedited 5 Business Days [ ]
- Standard 10 Business Days [X]

Special detection Limit/reporting

Special QA/QC

Method of shipment

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APPC-3292 (2-91)

FIELD REPORT

PTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330 10921 LOCATION: 731 McArthur Blvd Oakland DATE: 12/19/96

CLIENT/STATION NO.: Arco #9931 FIELD TECHNICIAN: J. Reed DAY OF WEEK: Thurs

PROBE TYPE/ID No.
- ☐ Oil/Water IF/ _____
- ☒ H_2O level indicator _____
- ☐ Other: _____

Casing 5.72

Dtw Order	Well ID	Time	Surface Seal	Lid Secure	Gasket	Lock	Expanding Cap	TOC Total Depth (feet)	First Depth to Water (feet) TOB/TOC	Second Depth to Water (feet) TOB/TOC	SEPARATE-PHASE HYDROCARBONS (SPH) SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	COLOR: Fresh	COLOR: Weathered	COLOR: Gas	COLOR: Oil	VISCOSITY: Lite	VISCOSITY: Medium	VISCOSITY: Heavy	LIQUID REMOVED (gallons) SPH / H_2O
1	A-2	11:25	Y	Y				19.45	5.53 / 5.18	5.53 / 5.18										
11	A-3	12:01	Y	Y		Y	Y	16.22	7.70 / 6.74	7.70 / 6.74										
16	A-4	12:20						19.60	8.63 / 8.08	8.63 / 8.08										
2	A-5	11:29	Y	Y		Y		24.67	8.39 / 7.75	8.39 / 7.75										
14	A-6	12:12	Y	Y		Y		24.90	7.43 / 6.77	7.43 / 6.77										
3	A-7	12:09	Y	Y		Y			7.19 / 6.68	7.19 / 6.68										
17	A-8	12:26						21.70	8.04 / 7.63	8.04 / 7.63										
12	A-9	12:05	Y	Y			Y	37.80	7.43 / 6.99	7.43 / 6.99										
3	A-10	11:35	Y	Y					8.80 / 8.38	8.80 / 8.38										

Comments: _____

FIELD REPORT

PUMP TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330 10921 LOCATION: 731 McArthur Blvd Oakland DATE: 12/19/96

CLIENT/STATION NO.: Arco #4931 FIELD TECHNICIAN: J. Reed DAY OF WEEK: Thurs

PROBE TYPE/ID No.
- ☐ Oil/Water IF/ _____
- ☒ H_2O level indicator _____
- ☐ Other: _____

Casing size

Dtw Order	Well ID	Time	Surface Seal	Lid Secure	Gasket	Lock	Expanding Cap	Total Depth (feet) TOC	First Depth to Water (feet) TOB/TOC	Second Depth to Water (feet) TOB/TOC	SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	SEPARATE-PHASE HYDROCARBONS (SPH) COLOR: Fresh	Weathered	Gas	Oil	VISCOSITY: Lite	Medium	Heavy	LIQUID REMOVED (gallons) SPH / H_2O
6	A-11	11:41	Y	Y		Y		29.78	8.37 / 8.24	8.37 / 8.24										/
7	A-12	11:47	Y	Y		Y		29.80	8.18 / 7.60	8.18 / 7.00										/
8	A-13	~	~						Covered w/ As		Sand									/
15	AR-1	12:17	Y	Y			Y	29.68	8.93 / 8.20	8.93 / 8.20										/
9	AR-2	11:53	Y	Y			Y	26.55	7.78 / 6.65	7.78 / 6.65										/
10	AR3	11:57	Y	Y				26.80	8.56 / 7.83	8.56 / 7.83										/
									/	/										/
									/	/										/
									/	/										/

Comments: _____

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 109 2 LOCATION: 731 MacArthur Blvd Oakland WELL ID #: A-2

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 5.53 TOB 5.18 TOC
Total depth: — TOB 19.45 TOC
Date: 12/19/96 Time (2400): 12:35

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator
- ☐ Other:

CASING DIAMETER / GAL/LINEAR FT.

☐	2	0.17
☐	3	0.38
☒	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE

- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other:

TD 19.45 - DTW 5.18 = 14.27 x Gal/Linear Foot .66 = 9.41 x Number of Casings 3 = Calculated Purge 28.25

DATE PURGED: 12/19/96 START: 12:35 END (2400 hr): 12:44 PURGED BY: W Peck

DATE SAMPLED: 12/19/96 START: 12:50 END (2400 hr): 12:55 SAMPLED BY: W Peck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
12:42	9.50	6.99	490	66.8	Cloudy	light	None
12:44	10.50	6.40	430	66.4	Cloudy	light	None
		DRY AT 1050	Gal				

Pumped dry (Yes) No

Color: Cobalt 0-100, Clear, Cloudy, Yellow, Brown
Turbidity: NTU 0-200, Heavy, Moderate, Light, Trace
Odor: Strong, Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW	TOB/(TOC)	pH	E.C.	TEMPERATURE	COLOR	TURBIDITY	ODOR
18.73	(TOC)	6.91	570	65.2	Brown	Mod	None

PURGING EQUIPMENT/I.D.

- ☐ Bailer:
- ☒ Centrifugal Pump:
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

SAMPLING EQUIPMENT/I.D.

- ☒ Bailer: G-6
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-2	12/19/96	12:55	3	40ml	VOA	HCL	Gas/Btex/MTBE
	/ /						/ /

REMARKS:

SIGNATURE: Walter J Peck

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 109 2 LOCATION: 731 MacArthur Blvd Oakland WELL ID #: A-3

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 7.70 TOB 6.74 TOC
Total depth: — TOB 16.22 TOC
Date: 12/19/96 Time (2400): 12:01

Probe Type and I.D. #
- [ ] Oil/Water interface
- [x] Electronic indicator
- [ ] Other:

CASING DIAMETER		GAL/ LINEAR FT.
[ ]	2	0.17
[x]	3	0.38
[ ]	4	0.66
[ ]	4.5	0.83
[ ]	5	1.02
[ ]	6	1.5
[ ]	8	2.6

SAMPLE TYPE
- [x] Groundwater
- [ ] Duplicate
- [ ] Extraction well
- [ ] Trip blank
- [ ] Field blank
- [ ] Equipment blank
- [ ] Other:

TD 16.22 - DTW 6.74 = 9.48 x Gal/Linear Foot .38 = 3.60 x Number of Casings 3 = Calculated Purge 10.80

DATE PURGED: 12/19/96 START: 14:20 END (2400 hr): 14:27 PURGED BY: W Peck
DATE SAMPLED: 12/19/96 START: 14:35 END (2400 hr): 14:40 SAMPLED BY: W Peck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
14:23	3.75	7.10	320	67.2	Brown	Mod	None
14:27	7.50	6.70	340	67.4	Brown	Mod	None
			DRY AT 7.50 Gal				

Cobalt 0-100: Clear, Cloudy, Yellow, Brown
NTU 0-200: Heavy, Moderate, Light, Trace
Strong, Moderate, Faint, None

Pumped dry (Yes) / No

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: 14.65 TOB (TOC)

PURGING EQUIPMENT/I.D. #
- [ ] Bailer:
- [x] Centrifugal Pump:
- [ ] Other:
- [ ] Airlift Pump:
- [ ] Dedicated:

SAMPLING EQUIPMENT/I.D. #
- [x] Bailer: G-6
- [ ] Dedicated:
- [ ] Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-3	12/19/96	14:40	3	40ml	VOA	HCL	Gas/BTEX/MTBE

REMARKS: DRY AT 7.50 Gal.

SIGNATURE: Walter J Peck

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 109 2 LOCATION: 731 MacArthur Blvd Oakland WELL ID #: A-4

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 8.07 TOB 8.08 TOC
Total depth: _____ TOB 19.60 TOC
Date: 12/19/96 Time (2400): 12 20

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator _____
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☐	3	0.38
☒	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD 19.60 - DTW 8.08 = 11.52 x Gal/Linear Foot .66 = 7.60 x Number of Casings 3 = Calculated Purge 22.80

DATE PURGED: 12/19/96 START: 15:45 END (2400 hr): 15:54 PURGED BY: W Peck

DATE SAMPLED: 12/19/96 START: 15:54 END (2400 hr): 16:00 SAMPLED BY: W Peck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
15:50	7.75	6.53	610	59.2	Brown	mod	Faint
15:54	14.0	6.63	740	60.3			
		DRY AT 14.0					

Cobalt 0-100: Clear, Cloudy, Yellow, Brown
NTU 0-200: Heavy, Moderate, Light, Trace
Strong, Moderate, Faint, None

Pumped dry (Yes) / No

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: 18.26 TOB/TOC 6.98 760 58.5 Brown Mod Faint

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: _____
- ☐ Airlift Pump: _____
- ☑ Centrifugal Pump: _____
- ☐ Dedicated: _____
- ☐ Other: _____

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: Gil
- ☐ Dedicated: _____
- ☐ Other: _____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-4	12/19/96	16.00	3	40ml	VOA	HCL	Gas/Btex/MTBE
"	"	"	1	1L	Plastic	ND	nitrate Sulfate CO2
"	"	"	3	40ml	VOA	NP	CH4 (Methane)

REMARKS: DRY AT 14.0 Gal Broken sheen on H2O

SIGNATURE: Walter Peck

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 109 2 LOCATION: 731 MacArthur Blvd Oakland WELL ID #: A-5

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: WPeak

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 5.39 TOB 7.75 TOC
Total depth: — TOB 24.67 TOC
Date: 12/19/96 Time (2400): 11:25

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator
- ☐ Other;

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☒	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other;

TD 24.67 - DTW 7.75 = 16.92 x Gal/Linear Foot .38 = 6.42 x Number of Casings 3 = Calculated Purge 19.28

DATE PURGED: 12/19/96 START: 13100 END (2400 hr): 13:16 PURGED BY: WPeak

DATE SAMPLED: 12/19/96 START: 13:16 END (2400 hr): 13:20 SAMPLED BY: WPeak

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
13:07	6.50	6.64	600	62.7	Brown	Mod	None
13:12	13.0	6.54	580	65.0	Brown	Mod	None
13:16	19.50	6.50	580	65.7	Brown	Mod	None

Pumped dry Yes (No)

Cobalt 0-100, Clear, Cloudy, Yellow, Brown | NTU 0-200, Heavy, Moderate, Light, Trace | Strong, Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: — TOB/TOC —

PURGING EQUIPMENT/I.D. #
- ☐ Bailer:
- ☐ Airlift Pump:
- ☒ Centrifugal Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 15-1
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-5	12/19/96	13:20	3	40ml	VOA	HCL	Gas/BTEX/MTBE
	/ /						

REMARKS:

SIGNATURE: Walter J Peak

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 109 2 LOCATION: 731 MacArthur Blvd Oakland WELL ID #: A-6

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: WPeel

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 7.43 TOB 6.77 TOC
Total depth: ____ TOB 24.90 TOC
Date: 12/19/96 Time (2400): 10:12

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator ____
- ☐ Other; ____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☒	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; ____

TD 24.90 - DTW 6.77 = 18.13 x Gal/Linear Foot .38 = 6.88 x Number of Casings 3 = Calculated Purge 20.64

DATE PURGED: 12/19/96 START: 15:25 END (2400 hr): 15:36 PURGED BY: WPeel
DATE SAMPLED: 12/19/96 START: 15:36 END (2400 hr): 15:40 SAMPLED BY: WPeel

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
15:29	7.0	7.37	360	60.3	Brown	Mod	None
15:33	14.0	6.91	390	62.2	Brown	Mod	None
15:36	21.0	6.77	480	63.8	Brown	Mod	None

Pumped dry Yes / (No)

Cobalt 0-100 Clear Cloudy Yellow Brown | NTU 0-200 Heavy Moderate Light Trace | Strong Moderate Faint None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: ____ TOB/TOC ____

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: ____
- ☑ Centrifugal Pump: ____
- ☐ Other: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: G-3
- ☐ Dedicated: ____
- ☐ Other: ____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-6	12/19/96	15:40	3	40ml	VOA	HCL	Gas/Btex/MTBE
	/ /						

REMARKS: ____

SIGNATURE: ____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 109 2 LOCATION: 731 Mc Arthur Blvd Oakland WELL ID #: A-8

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: W Peel

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 6.04 TOB 7.63 TOC
Total depth: _____ TOB 21.70 TOC
Date: 12/19/96 Time (2400): 12:26

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator _____
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☒	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD 21.70 - DTW 7.63 = 14.07 x Gal/Linear Foot .38 = 5.34 x Number of Casings 3 = Calculated Purge 16.03

DATE PURGED: 12/19/96 START: 16:05 END (2400 hr): 16:11 PURGED BY: W Peel

DATE SAMPLED: 12/19/96 START: 16:15 END (2400 hr): 16:20 SAMPLED BY: W Peel

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
16:09	5.50	6.94	770	60.5	Brown	Heavy	Mod
16:11	7.50	6.95	760	62.1	Brown	Heavy	Mod
			DRY AT 7.50 Gal.				

Pumped dry (Yes) / No

Cobalt 0-100, Clear, Cloudy, Yellow, Brown | NTU 0-200, Heavy, Moderate, Light, Trace | Strong, Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW:	TOB/TOC				COLOR	TURBIDITY	ODOR
9.42	TOB/(TOC)	7.33	650	58.6	Brown	Heavy	Mod

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: _____
- ☒ Centrifugal Pump: _____
- ☐ Other: _____
- ☐ Airlift Pump: _____
- ☐ Dedicated: _____

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: _____
- ☐ Dedicated: _____
- ☐ Other: _____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-8	12/19/96	16:20	3	40ml	VOA	HCL	Gas/Btex/MTBE
			1	1L	Plastic	NP	Nitrate Sulfate CO2
			3	40ml	VOA	NP	CH4 (Methane)
			3	40ml	VOA	H2SO4	COD
			1	1-L	Plastic	NP	BOD
			1	100ml	Plastic	NP	Heterotrophic Plate Count

REMARKS: Broken Sheen on H2O

SIGNATURE: Walter J Peel

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 109 2 LOCATION: 731 MacArthur Blvd Oakland WELL ID #: A-9

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 7.43 TOB 6.59 TOC
Total depth: — TOB 37.80 TOC
Date: 12/19/96 Time (2400): 12:05

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator
- ☐ Other:

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☐	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other:

TD 37.80 - DTW 6.59 = 31.21 x Gal/Linear Foot 1.5 = 46.81 x Number of Casings 3 = Calculated Purge 140.44

DATE PURGED: 12/19/96 START: 14:45 END (2400 hr): 15:18 PURGED BY: W Peck
DATE SAMPLED: 12/19/96 START: 15:18 END (2400 hr): 15:25 SAMPLED BY: W Peck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
14:58	47.0	6.87	470	59.5	Cloudy	Light	None
15:10	94.0	6.85	480	61.9	Clear	Trace	None
15:18	141.0	6.87	470	61.6	Clear	Trace	None

Pumped dry Yes / No

Cobalt 0-100: Clear, Cloudy, Yellow, Brown
NTU 0-200: Heavy, Moderate, Light, Trace
Strong, Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: ____ TOB/TOC

PURGING EQUIPMENT/I.D. #
- ☐ Bailer:
- ☑ Centrifugal Pump:
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: G-2
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-9	12/19/96	15:25	3	40ml	VOA	HCL	GAS/BTEX/MTBE
	/ /						

REMARKS:

SIGNATURE: W Peck

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 109 2 LOCATION: 731 Mc Arthur Blvd Oakland WELL ID #: MW-11

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: W Reed

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 8.37 TOB 8.24 TOC
Total depth: ____ TOB 29.78 TOC
Date: 12/19/96 Time (2400): 11:41

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator ____
- ☐ Other: ____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☒	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other: ____

TD 29.78 - DTW 8.24 = 21.54 x Gal/Linear Foot .38 = 8.18 x Number of Casings 3 = Calculated Purge 24.55

DATE PURGED: 12/19/96 START: 13:25 END (2400 hr): 13:41 PURGED BY: W Reed

DATE SAMPLED: 12/19/96 START: 13:41 END (2400 hr): 13:45 SAMPLED BY: W Reed

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
13:32	8.25	7.17	500	64.9	Brown	Mod	None
13:37	16.50	6.81	510	66.3	Cloudy	Light	None
13:41	24.75	7.47	510	67.4	Clear	Trace	None

Cobalt 0-100 Clear Cloudy Yellow Brown | NTU 0-200 Heavy Moderate Light Trace | Strong Moderate Faint None

Pumped dry Yes (No)

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: TOB/TOC

PURGING EQUIPMENT/I.D.

- ☐ Bailer: ____
- ☐ Airlift Pump: ____
- ☒ Centrifugal Pump: ____
- ☐ Dedicated: ____
- ☐ Other: ____

SAMPLING EQUIPMENT/I.D.

- ☒ Bailer: 298
- ☐ Dedicated: ____
- ☐ Other: ____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-11	12/19/96	1345	3	40ml	VOA	HCL	Gas/BTEX/MTBE
	/ /						/ /

REMARKS: ____

SIGNATURE: Walter Reed

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 109 U LOCATION: 731 Mc Arthur Blvd Oakland WELL ID #: G-12

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: W Pel

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 8.18 TOB 7.60 TOC
Total depth: — TOB 29.80 TOC
Date: 12/19/96 Time (2400): 11:17

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator
- ☐ Other:

	CASING DIAMETER	GAL/ LINEAR FT.
☐	2	0.17
☒	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other:

TD 29.80 - DTW 7.60 = 22.2 x Gal/Linear Foot .38 = 8.43 x Number of Casings 3 = Calculated Purge 25.30

DATE PURGED: 12/19/96 START: 13:55 END (2400 hr): 14:11 PURGED BY: W Pel
DATE SAMPLED: 12/19/96 START: 14:11 END (2400 hr): 14:15 SAMPLED BY: W Pel

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
14:00	8.50	7.20	510	66.3	Brown	Mod	None
14:06	17.0	6.83	510	68.5	Cloudy	Light	None
14:11	25.50	7.18	510	68.4	Clear	Trace	None
					Cobalt 0-100 Clear Cloudy Yellow Brown	NTU 0-200 Heavy Moderate Light Trace	Strong Moderate Faint None

Pumped dry Yes / (No)

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: — TOB/TOC

PURGING EQUIPMENT/I.D. #
- ☐ Bailer:
- ☒ Centrifugal Pump:
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: G 12
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
G-12	12/19/96	14:15	3	40ml	VOA	HCL	Gas/Btex/MTBE
↓	↓	↓	1	1L	Plastic	NP	Nitrate Sulfate CO2
↓	↓	↓	3	40ml	VOA	NP	CH4 (Methane)

REMARKS:

SIGNATURE: Walter J Pel

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.21 LOCATION: BLM Parcel East Oakland WELL ID #: TB-1

CLIENT/STATION No.: Arco #4931 FIELD TECHNICIAN: CW Reed

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: _____ TOB _____ TOC
Total depth: _____ TOB _____ TOC
Date: _____ Time (2400): _____

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☐ Electronic indicator _____
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☐	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☐ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☑ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD _____ - DTW _____ = _____ x Gal/Linear Foot _____ = _____ x Number of Casings _____ = Calculated Purge _____

DATE PURGED: _____ START: _____ END (2400 hr): _____ PURGED BY: _____

DATE SAMPLED: _____ START: _____ END (2400 hr): _____ SAMPLED BY: _____

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
			TRIP BLANK				

Cobalt 0-100 Clear Cloudy Yellow Brown | NTU 0-200 Heavy Moderate Light Trace | Strong Moderate Faint None

Pumped dry Yes / No

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: _____
- ☐ Airlift Pump: _____
- ☐ Centrifugal Pump: _____
- ☐ Dedicated: _____
- ☐ Other: _____

SAMPLING EQUIPMENT/I.D. #
- ☐ Bailer: _____
- ☐ Dedicated: _____
- ☐ Other: _____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
TB-1	10/19/06	N/A	2	40ml	VOA	HCL	Gas/Btex/MTBE

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

ATTACHMENT D

REMEDIAL SYSTEM PERFORMANCE EVALUATION

ATTACHMENT D
REMEDIAL SYSTEM PERFORMANCE EVALUATION

GWE System

Groundwater extraction (GWE) was conducted intermittently between November 10, 1992, and July 5, 1995. The GWE system was comprised of electric GWE pumps in Wells A-9, AR-1, AR-2, and AR-3, and three 1,500-pound granular activated carbon vessels arranged in series. The GWE system was permitted by East Bay Municipal Utility District Permit Account Number 502-62131. Based on Alameda County Health Care Services Agency authorization that GWE at the site was no longer required, the permit was relinquished during second quarter 1996. No evidence of plume migration has been observed since system deactivation. Overall, 4.6 million gallons of groundwater were extracted and less than 0.06 gallon of benzene removed.

Historical GWE system performance and analytical data are presented in Tables D-1 and D-2. Graphical presentations of total purgeable petroleum hydrocarbons calculated as gasoline (TPPH-g) and benzene mass removal and concentration data are shown on Figures D-1 and D-2, respectively.

Bioremediation Enhancement Program

At the request of ARCO Products Company, Pacific Environmental Group, Inc. (PACIFIC) initiated an in-situ bioremediation enhancement program consisting of installation of oxygen releasing compound (ORC) units in select wells beginning November 1995. ORC is a formulation of very fine, insoluble magnesium peroxide that releases oxygen at a slow, controlled rate when hydrated. ORC product literature was presented in PACIFIC's fourth quarter 1995 report. ORC units are periodically replaced, if collected data indicates that dissolved oxygen concentration at the ORC containing well has diminished to below 10 parts per million. ORC units are currently installed in Wells A-8 and A-9. Bioremediation enhancement program data are presented in Table D-3. Since the start of the program, BTEX compounds concentrations in Well A-8 have consistently decreased. ORC installation in Well A-8 is meant to serve as a barrier, reducing further impact migration.

Intrinsic Bioremediation Evaluation

At the request of ARCO, PACIFIC monitored intrinsic bioremediation indicator parameters (bioparameters) during the fourth quarter 1996 groundwater monitoring event. Groundwater samples from Wells A-4, A-8, and A-12 were analyzed for biological oxygen demand (BOD), carbon dioxide (CO_2), chemical oxygen demand (COD), methane, nitrate, sulfate, dissolved oxygen (DO), and ferrous iron. Wells A-4 and A-8 are located within the plume; Well A-12 is located outside the plume. Although fourth quarter 1996 monitoring results indicate non-detectable concentrations of TPPH-g and BTEX compounds in Well A-4, this well was considered as an inter-plume well, based on third quarter 1996 monitoring results (TPPH-g and benzene concentrations of 3,000 and 480 parts per million (ppm), respectively). The parameters monitored and the associated values are presented in Table D-3.

In general, depleted concentrations of electron acceptors (DO, nitrate, and sulfate) and elevated concentrations of bioremediation byproducts (ferrous iron, CO_2, and methane) within the impacted plume compared to background, indicate that intrinsic bioremediation is occurring. Evaluation of collected data from Wells A-4 and A-8 demonstrates a pattern that is indicative of intrinsic bioremediation at the site. Additionally, the ratio between COD and BOD at Well A-8 appears to be within an acceptable range, indicating that bioremediation can benefit from oxygen enhancement. Bioparameters are presented in Table D-3. Graphical presentation of bioparameters vs. total BTEX compounds are shown on Figures D-3 through D-8. Field data sheets are presented as Attachment D-A.

Conclusions

The oxygen enhancement program will continue during first quarter 1997.

Attachments:

Table D-1 - Historical Groundwater Extraction System Performance Data
Table D-2 - Historical Groundwater Extraction System Analytical Data
Table D-3 - Bioremediation Enhancement Program Data
Figure D-1 - Historical Groundwater Extraction System Mass Removal Trend
Figure D-2 - Historical Groundwater Extraction System Hydrocarbon Concentrations
Figure D-3 Total BTEX vs. Dissolved Oxygen Concentrations
Figure D-4 Total BTEX vs. Nitrate as Nitrate Concentrations
Figure D-5 Total BTEX vs. Ferrous Iron Concentrations
Figure D-6 Total BTEX vs.Sulfate Concentrations
Figure D-7 Total BTEX vs.Carbon Dioxide Concentrations
Figure D-8 Total BTEX vs.Methane Concentrations
Attachment D-A - Field Data Sheets

Table D-1
Historical Groundwater Extraction System Performance Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Sample I.D.	Date Sampled	Totalizer Reading (gallons)	Net Volume (gallons)	Average Flow Rate (gpm)	TPPH as Gasoline: Influent Concentration (µg/L)	TPPH as Gasoline: Net Removed (lbs)	TPPH as Gasoline: Removed to Date (lbs)	Benzene: Influent Concentration (µg/L)	Benzene: Net Removed (lbs)	Benzene: Removed to Date (lbs)	Primary Carbon Loading (percent)
INFL	06/28/94 a	4,120,050	N/A	0.9	740	0.000	1.61	38	0.000	0.38	2.0
INFL	07/15/94	4,143,150	23,100	0.9	ND	0 071	1 68	ND	0.004	0 38	2.1
INFL	08/18/94	4,175,310	32,160	0.7	NS	0.099	1.78	NS	0 005	0.39	2.2
INFL	09/30/94	4,243,295 b	67,985	1 1	NS	0.210	1.99	NS	0.011	0.40	2.5
INFL	10/31/94 c	4,311,280	67,985	1.5	ND	0 000	1 99	ND	0.000	0 40	2.5
INFL	11/04/94	4,330,500	19,220	3.3	56	0 004	2.00	ND	0.000	0.40	2.5
INFL	12/16/94	4,352,780	22,280	0 4	NS d	0 005	2.00	NS d	0 000	0.40	2.5
INFL	01/05/95	4,382,610	29,830	1.0	1,000	0 131	2.13	87	0 011	0 41	2 7
INFL	02/07/95	4,430,130 e	47,520	1.0 e	NS d	0.209	2.34	NS d	0.017	0 43	2.9
INFL	03/03/95	4,464,690 e	34,560	1.0 e	NS d	0.152	2.49	NS d	0.013	0.44	3.1
INFL	04/13/95	23 f	59,040	1.0 e	ND	0.246	2.74	ND	0.021	0.46	3.4
INFL	05/01/95	12,138	12,115	0.5	ND	0.000	2.74	ND	0.000	0.46	3.4
INFL	06/09/95	36,412	24,274	0.4	ND	0.000	2.74	ND	0.000	0.46	3.4
INFL	07/05/95 g	121,199	84,787	2.3	ND	0.000	2.74	0.59	0.000	0.46	3.4

REPORTING PERIOD:	**09/30/96 - 12/31/96 (g)**				
TOTAL POUNDS REMOVED:			**2.74**		**0.46**
TOTAL GALLONS REMOVED:			**0.45**		**0.06**
PERIOD POUNDS REMOVED:		**0.00**		**0.00**	
PERIOD GALLONS REMOVED:		**0.00**		**0.00**	
TOTAL GALLONS EXTRACTED:	**4,643,696 (e)**				
PERIOD GALLONS EXTRACTED:	**N/A**				
PERIOD AVERAGE FLOW RATE (gpm):	**N/A**				
PRIMARY BED CAPACITY REMAINING (%):	**96.6**				

TPPH = Total purgeable petroleum hydrocarbons
gpm = Gallons per minute
µg/L = Micrograms per liter
lbs = Pounds
N/A = Not available
ND = Not detected
NS = Not sampled

a. Data prior to October 1, 1994 provided by prior consultant.
b. No operational or analytical data available; totalizer reading, flow rate, and sample estimated from prior event July 15, 1994.
c. Pacific Environmental Group, Inc. became consultant for the site as of October 1, 1994.
d. Sampled quarterly; concentrations assumed from prior sampling event.
e. Totalizer broken; volume estimated using 1.0 gpm based on prior sampling event.
f. Totalizer replaced and recalibrated on April 13, 1995.
g System shut down on 07/05/95 for review, due to low concentrations and removal rates.

Carbon loading assumes an 8% isotherm.
Mass removed is an approximation calculated using averaged concentrations.
Pounds of hydrocarbons removed to date provided by prior consultant.
Prior to June 1995, TPPH as gasoline was reported as TPH calculated as gasoline.
See certified analytical reports for detection limits.

Table D-2
Historical Groundwater Extraction System Analytical Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Sample I.D.	Date Sampled	TPPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)
INFL	10/31/94	ND	ND	ND	ND	ND
	11/09/94	56	ND	ND	ND	2.7
	01/05/95	1,000	87	9	ND	160
	04/13/95	ND	ND	ND	ND	ND
	05/01/95	ND	ND	ND	ND	ND
	06/09/95	ND	ND	ND	ND	ND
	07/05/95	ND	0.59	ND	ND	ND
MID-1	11/09/94	ND	ND	ND	ND	ND
	01/05/95	ND	ND	ND	ND	ND
	04/13/95	ND	ND	ND	ND	ND
	05/01/95	ND	ND	ND	ND	ND
MID-2	11/09/94	ND	ND	ND	ND	ND
	01/05/95	ND	ND	ND	ND	ND
	04/13/95	ND	ND	ND	ND	ND
	05/01/95	ND	ND	ND	ND	ND
	06/09/95	ND	ND	ND	ND	ND
	07/05/95	ND	ND	ND	ND	ND
EFFL	10/31/94	ND	ND	ND	ND	ND
	11/09/94	ND	ND	ND	ND	ND
	01/05/95	ND	ND	ND	ND	ND
	04/13/95	ND	ND	ND	ND	ND
	05/01/95	ND	ND	ND	ND	ND
	06/09/95	ND	ND	ND	ND	ND
	07/05/95	ND	ND	ND	ND	ND

TPPH = Total purgeable petroleum hydrocarbons
µg/L = Micrograms per liter
ND = Not detected above detection limits
Pacific Environmental Group, Inc. became consultant to site 10/01/94.
Prior to June 1995, TPPH as gasoline was reported as TPH calculated as gasoline.
GWE system was deactivated on 07/05/95.
See certified analytical reports for detection limits

Table D-3
Bioremediation Enhancement Program Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

		Field Analyses					Laboratory Analyses									
Well	Date Sampled	Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	DO (mg/L)	Ferrous Iron (mg/L)	Nitrite as Nitrite (mg/L)	Nitrate as Nitrate (mg/L)	Carbon Dioxide (%)	Methane (%)	Sulfate (mg/L)	B.O.D. (mg/L)	C.O.D. (mg/L)	TPPH as Gasoline (µg/L)	Benzene (µg/L)	Total BTEX (µg/L)
A-4	12/19/96	60.3	6.63	740	0.4	7.0	NS	<1.0	6.7	0.50	<1 0	NS	NS	<2,000	<20	<80
A-8	05/22/96 a	71.1	6.46	1,045	0.3	0.3	0.17	18	NS	NS	NS	NS	NS	14,000	2,800	3,470
	12/19/96 a	62.1	6.95	760	0.20	10	NS	26	3.7	0.35	43	30	350	12,000	450	1,000
A-9	11/17/95 b	69.3	6.39	560	0.7	0.7	<1.0	22	NS	NS	NS	NS	NS	NS	NS	NS
	05/22/96 c	76.0	6.69	720	3.8	3.8	<1.0	41	NS	NS	NS	NS	NS	ND	<0.50	ND
	12/19/96 b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
A-12	12/19/96	68.4	7.18	510	3.06	0.0	NS	33	1.6	<0.020	54	NS	NS	85	<0.50	<2 0

deg F = Degrees Fahrenheit
µmhos = Microhmos
DO = Dissolved oxygen measured prior to renewal of ORC units
B.O.D. = Biochemical oxygen demand
C.O.D. = Chemical oxygen demand
TPPH = Total purgeable petroleum hydrocarbons
BTEX = Benzene, toluene, ethylbenzene, and xylenes
mg/L = Milligrams per liter

µg/L = Micrograms per liter
ND = Not detected above the method detection limit
NS = Not sampled
NA = Not analyzed
a. Thirteen 2-inch diameter ORC units installed in Well A-8.
b. Eight 2-inch diameter ORC units installed in Well A-9.
c. ORC units replaced with the same number originally installed

All data collected before original or any subsequent ORC installation, following standard purging protocol.

Figure D-1
Historical Groundwater Extraction System Mass Removal Trend
ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

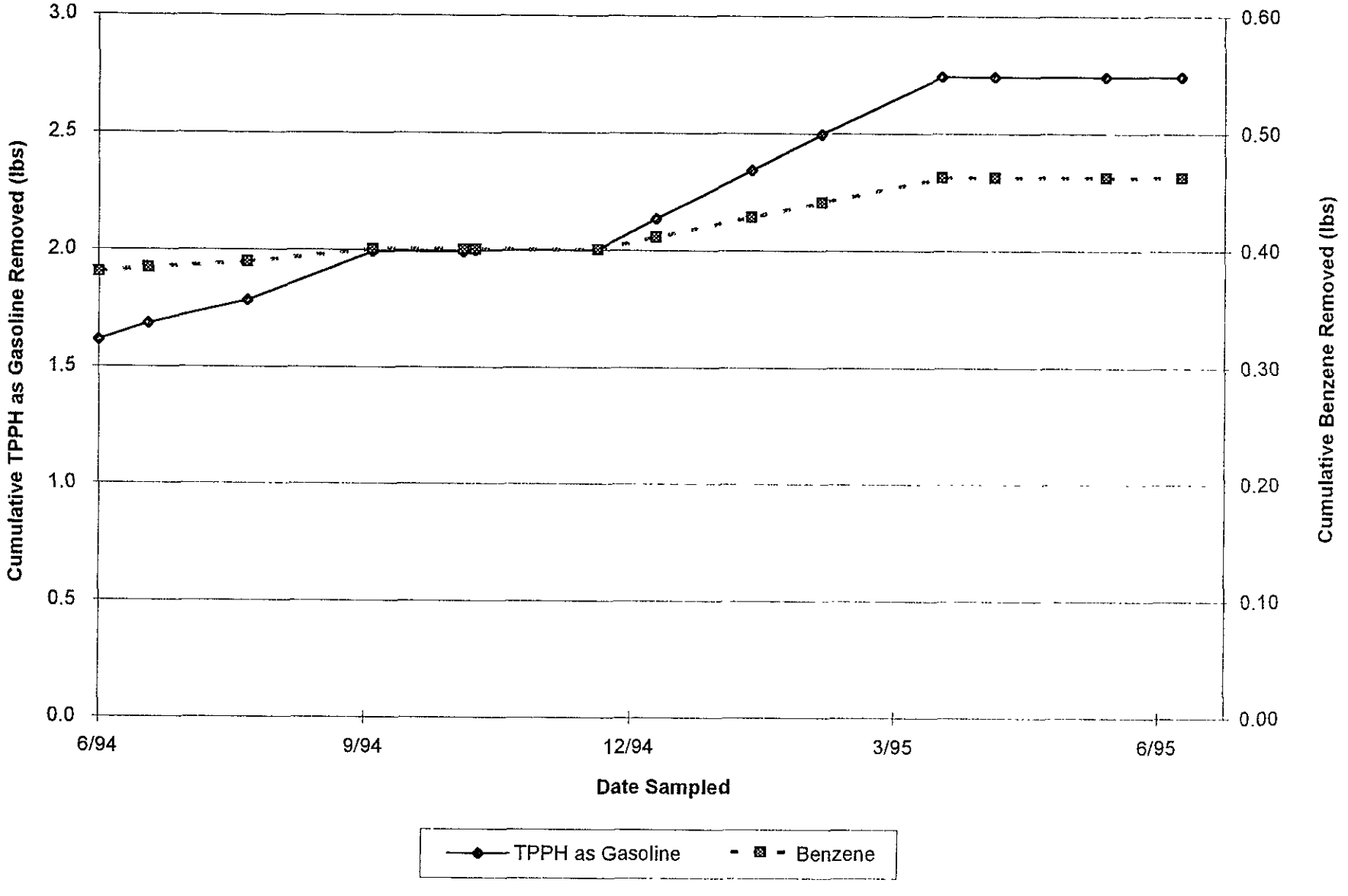


Figure D-2
Historical Groundwater Extraction System Hydrocarbon Concentrations

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

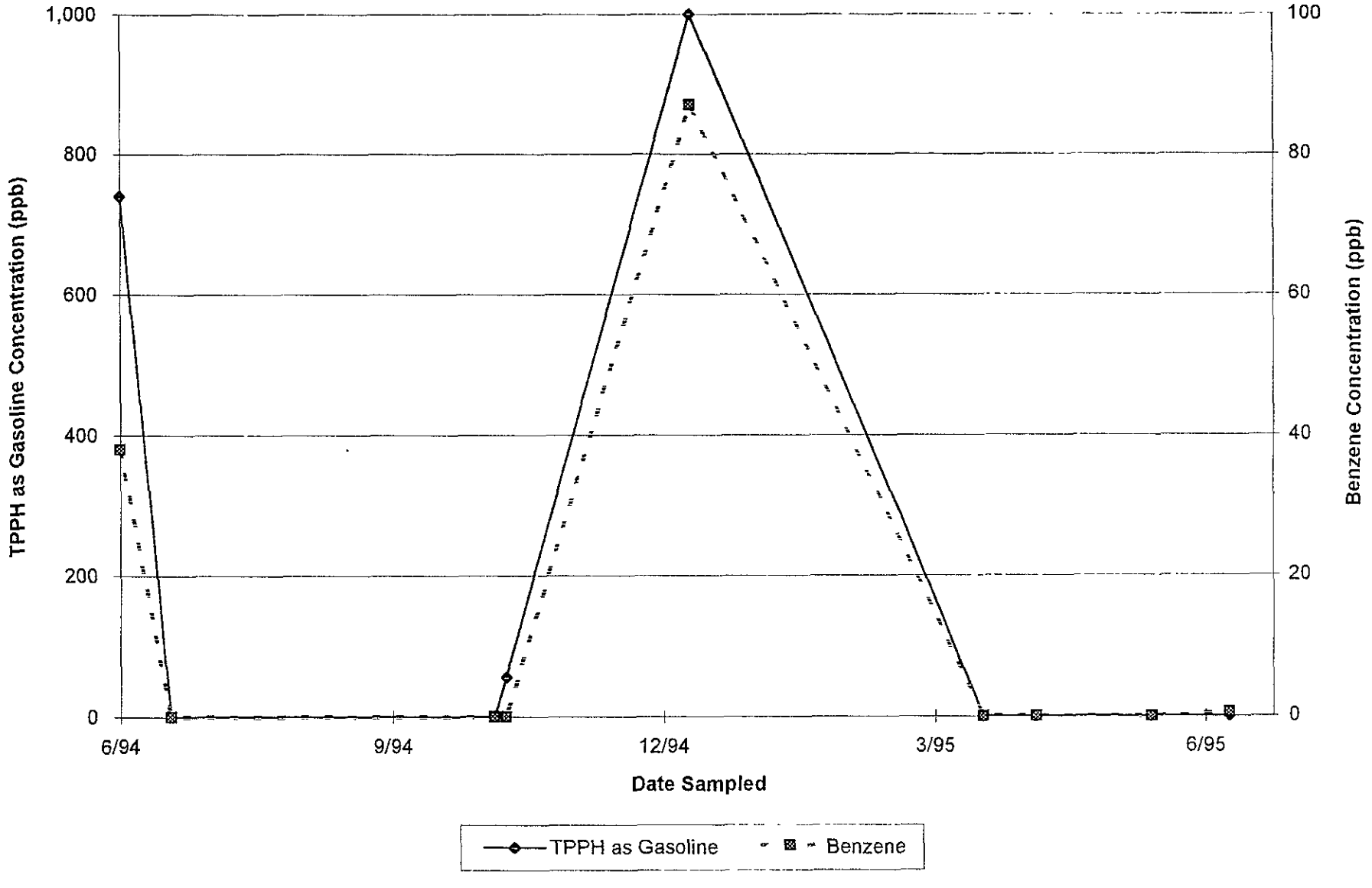


Figure D-3
Total BTEX vs. Dissolved Oxygen Concentrations
December 19, 1996

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

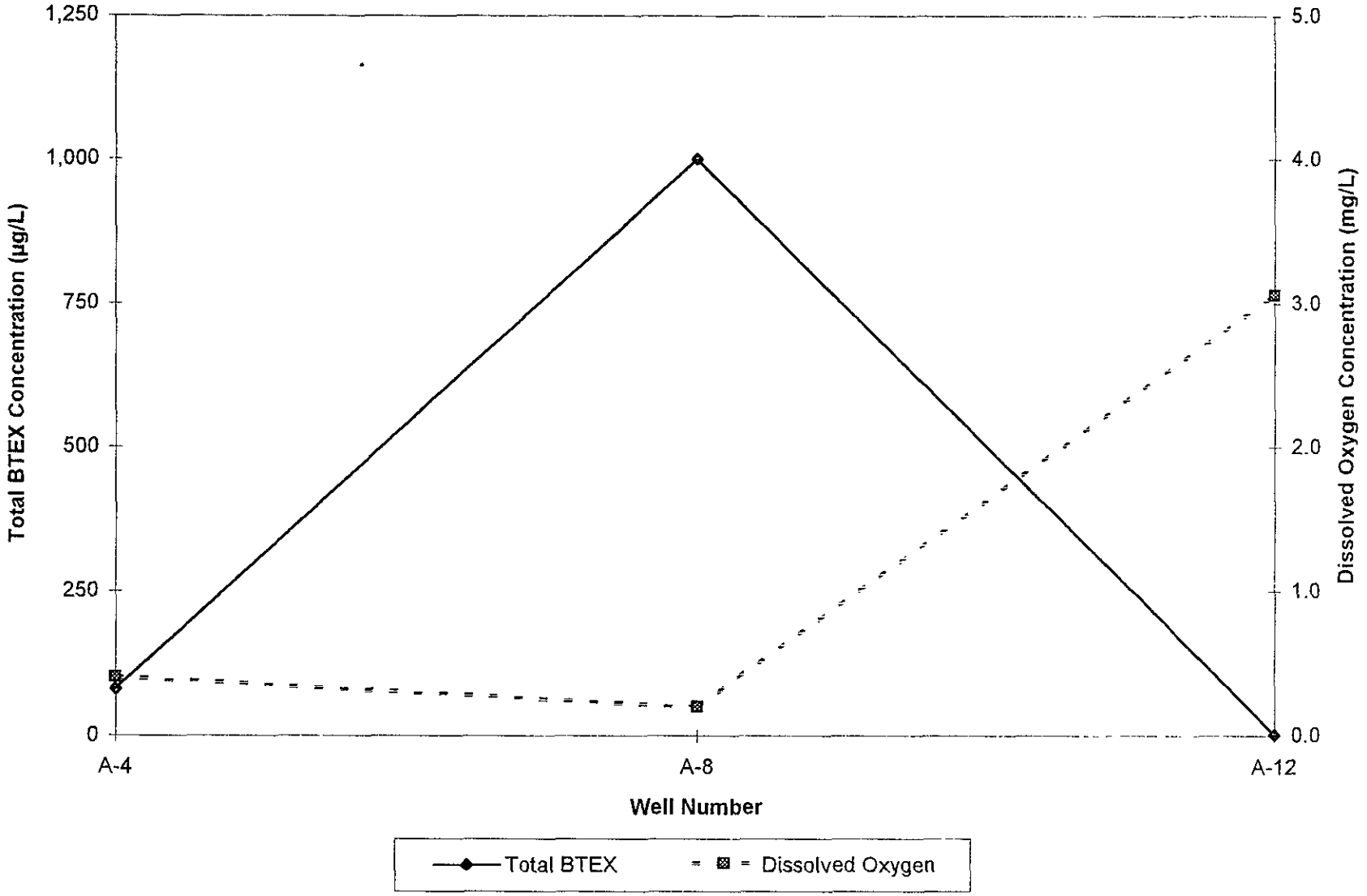


Figure D-4
Total BTEX vs. Nitrate as Nitrate Concentrations
December 19, 1996

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

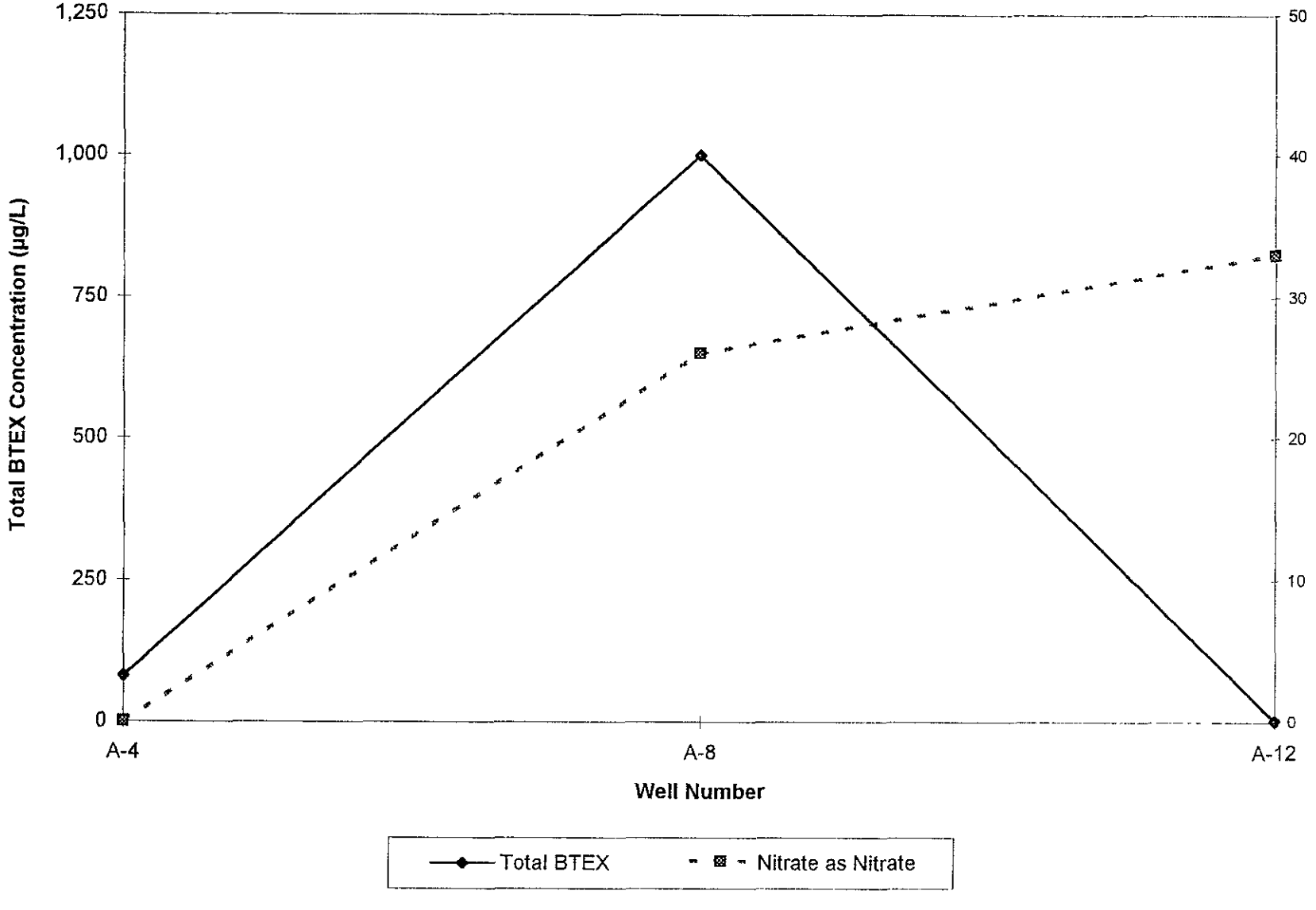


Figure D-5
Total BTEX vs. Ferrous Iron Concentrations
December 19, 1996

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

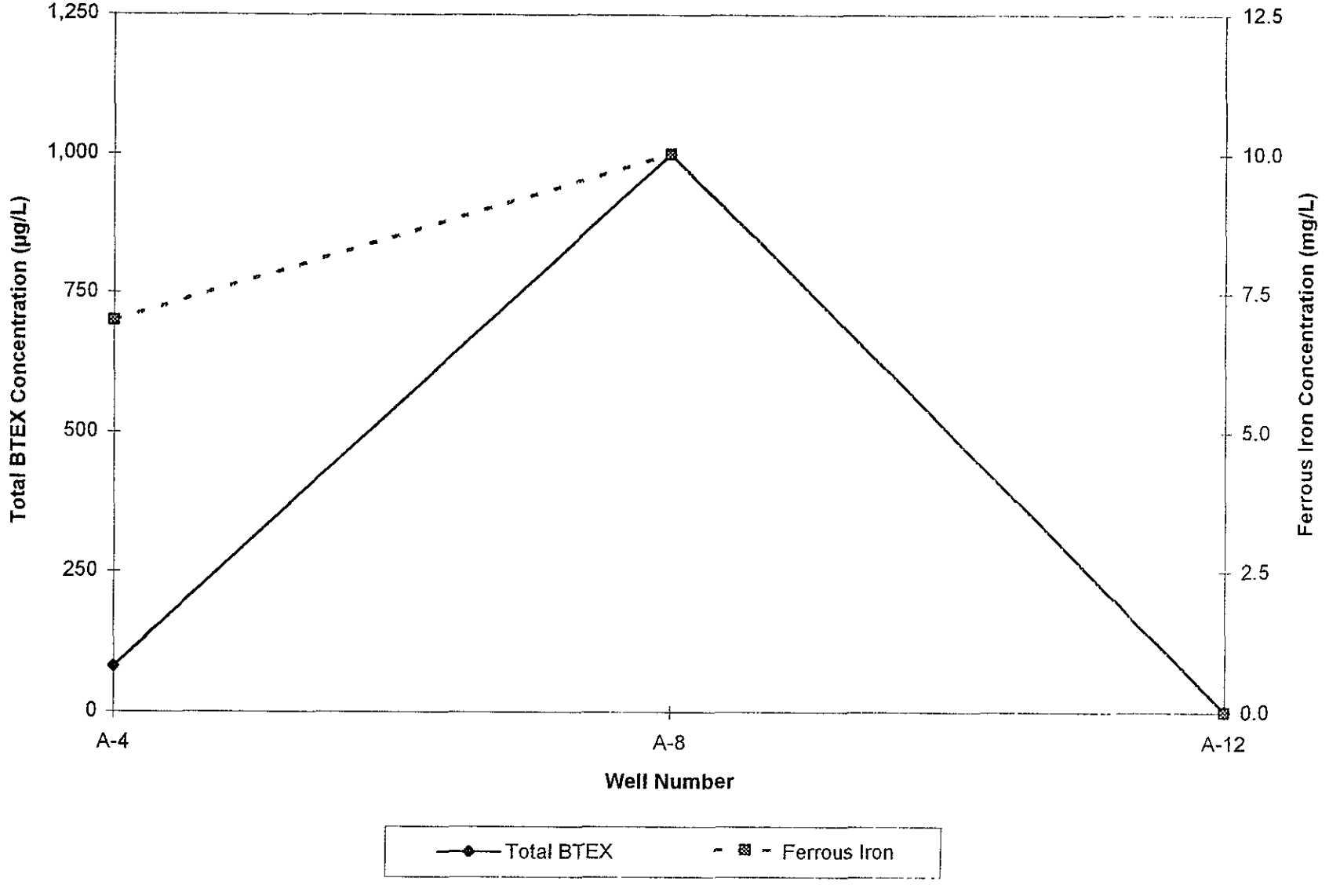


Figure D-6
Total BTEX vs. Sulfate Concentrations
December 19, 1996

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

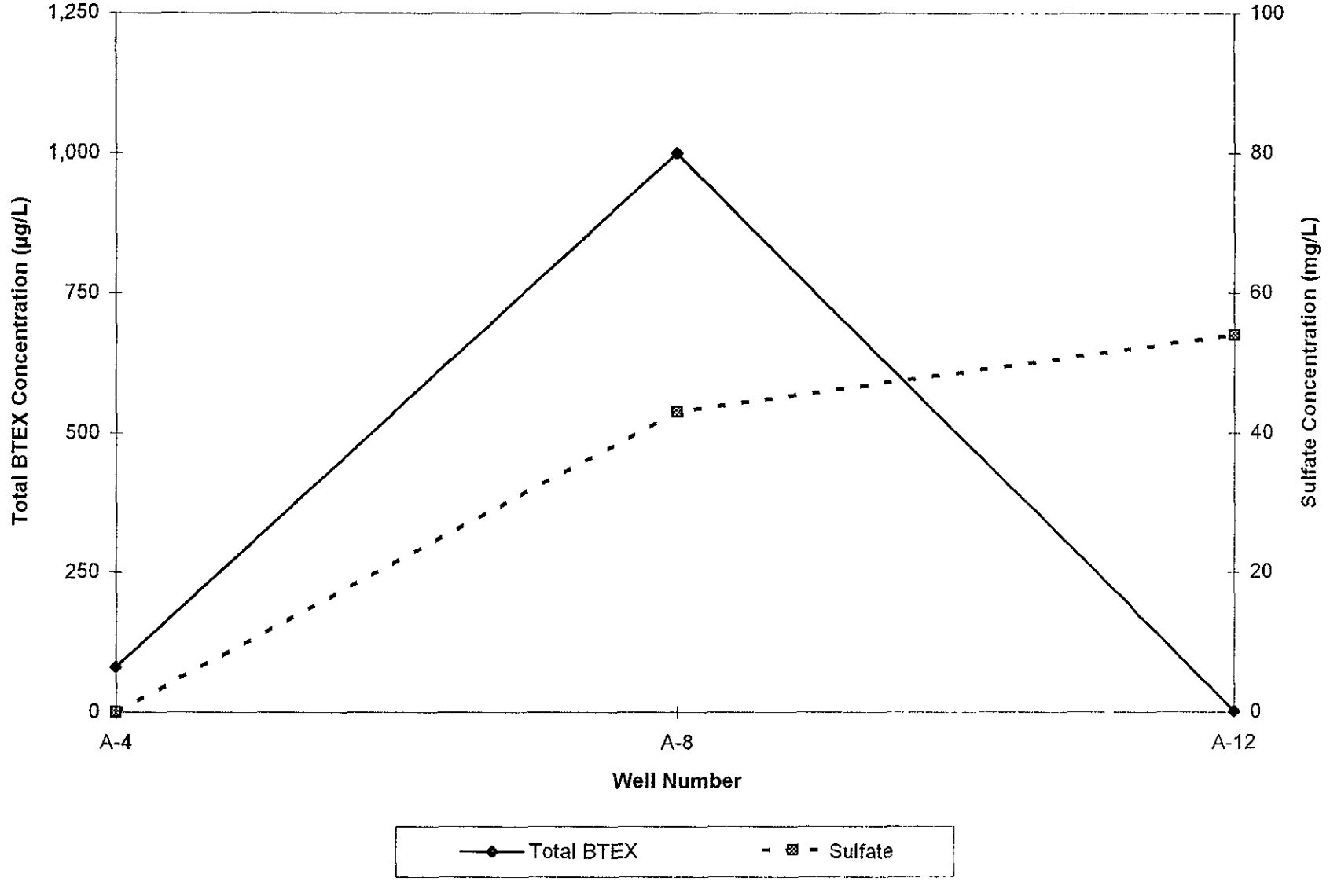


Figure D-7
Total BTEX vs. Carbon Dioxide Concentrations
December 19, 1996

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

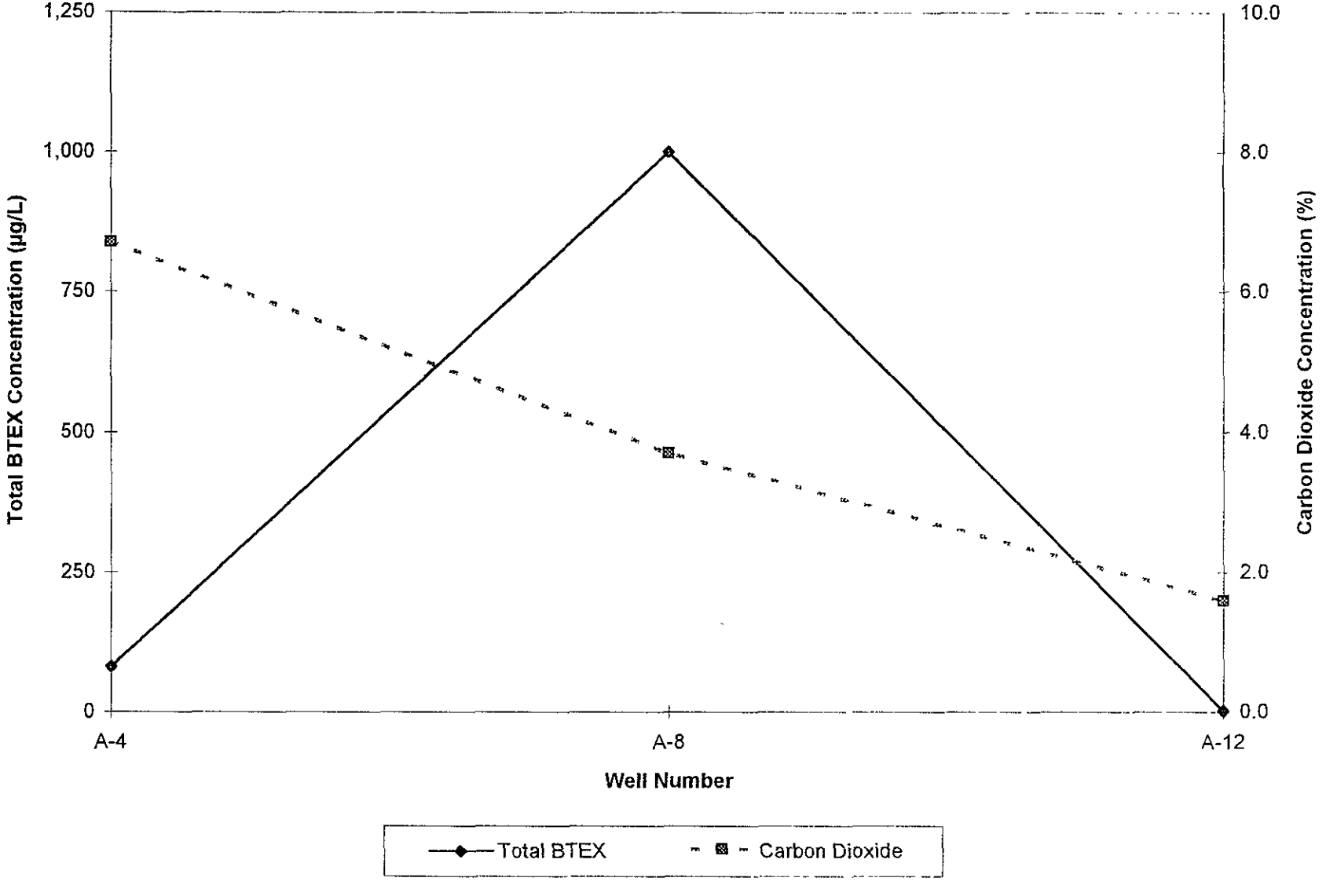
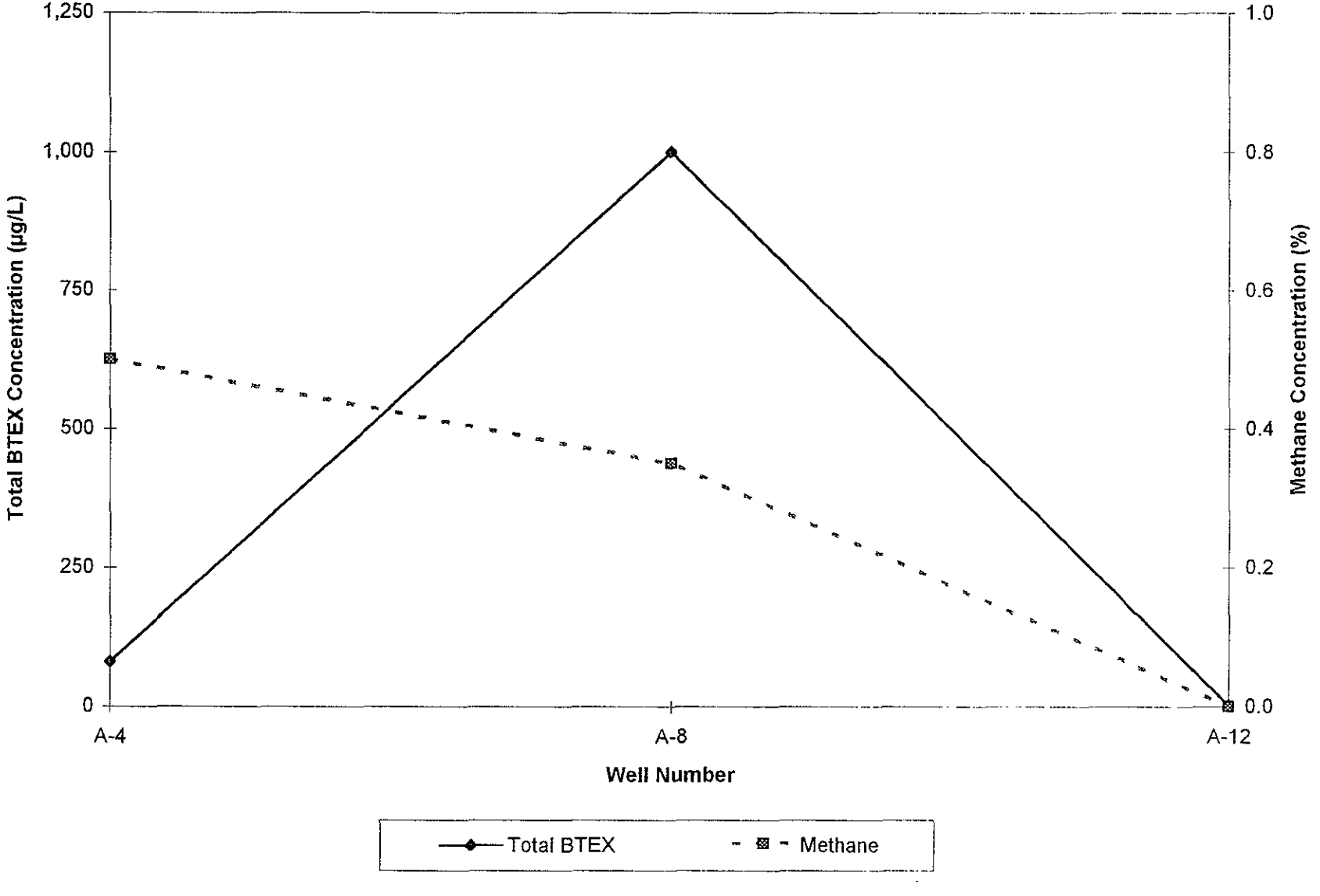


Figure D-8
Total BTEX vs. Methane Concentrations
December 19, 1996

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California



ATTACHMENT D-A
FIELD DATA SHEETS

(10)

FIELD SERVICES REQUEST

SITE INFORMATION FORM

Identification

Project # 330-109.5C
Station ID #4931
Site Address: 731 MacArthur Blvd./Oakland
Lab: Sequoia
County:
Project Manager: Shaw Garakani
Requester: David S. Nanstad
Client: ARCO
Client P.O.C: MIKE WHELAN
Date of Request: November 12, 1996

Project Type

☒ Operation & Maintenance
☐ Sampling
☐ 1st time visit
☐ Quarterly
☐ 1st ☐ 2nd ☐ 3rd ☐ 4th
X Monthly
☐ Semi-Monthly
☐ Weekly
☐ One time event
☐ Other:
Ideal field date: w/4q96 event

Check Appropriate Category

X In Budget Site Visit
☐ Out of Budget Site Visit

Budget Hours: +1.5
Actual Hours: 2.5 hrs
Mob de Mob: .5 hrs

Site Safety Concerns

STANDARD

Field Tasks General Description

OBJECTIVE: Perform the attached biomonitoring schedule during the 4q96 event. Measure DO in wells A-8 and A-9 before purging. CALL ENGINEER W/ D.O AND FERROUSE IRON DATA

Comments, remarks from field staff

A-13 covered over w/ asfault unable to sample
Called Dave Nanstad to make sure ~~Bob~~ O.K.

Completed By: W Peck Date: 12/19/96

Pacific Environmental Group, Inc.

PART A: WELL DATA
MATERIALS
PLEASE CHECK OFF THE FOLLOWING BEFORE LEAVING OFFICE!

DO METER		PROBE AND REEL	
CALIBRATION BOTTLE		KCL SOLUTION	/
SPARE MEMBRANES		6 SPARE D BATTERIES	/
BUCKET		PAPER TOWEL	/
INSTRUCTION BINDER		SPARE O-RINGS	/
SCISSORS	/	SPARE DATA SHEETS	/
ALCONOX	/	STICK	/
WATER BOTTLE	/	WATER LEVEL INDICATOR	/

BEFORE MEASUREMENTS

INSPECT MEMBRANE (DAMAGED OR 1/8"BUBBLES)?	U YES	WARM UP UNIT FOR 20 MINUTES?	Yes

CALIBRATION

INSPECT MEMBRANE (DAMAGED OR 1/8"BUBBLES)?	Yes	CALIBRATE UNIT?	Yes
4a. CALIBRATION TEMPERATURE (C)	22.8	4b. CALIBRATION DO READING (mg/L)	8.62

COMPARED TO CALIBRATION DO TABLE VALUE?	Yes	4d. CALIBRATION BOTTLE READING (mg/L)	8.62

FIELD MEASUREMENTS

WELL A-4

DISSOLVED OXYGEN (mg/L). HYDROGEN SULFIDE and FERROUS IRON

		D.O. Before P	Hydrogen Sulfide	Ferrous Iron	D.O. W/AMPOULE
2' From top	Allow 2 minute minimum stabilization time	.77 / After .90	NA	7.0	N/A
PROBE & CORD RINSED?		Yes			
DO READING STABILIZED?		Yes			

4th Quarter Intrinsic Groundwater Bioremediation Enhancement Program Monitoring Schedule

ARCO Service Station 4931
731 McArther.
Oakland, CA

Well	O.R.P. Before Purging	O.R.P. After Purging	Hydro-gen Sulfide	D O. Before Purging	D.O. After Purging	Ferrous Iron	Laboratory Analyses: Nitrate as Nitrate	Sulfate	Nitrogen as Ammonia	Total Iron	Hetero-trophic Plate Count: B.O.D.	Plate Count	C.O.D.	CO2	CH4
A-4	N	N	N	N	Y	Y	Y	Y	~~N~~	N	~~N~~	~~N~~	~~N~~	Y	Y
A-8	N	N	N	Y	Y	Y	Y	Y	~~N~~	N	Y	Y	Y	Y	Y
A-12	N	N	N	Y	Y	Y	Y	Y	~~N~~	N	~~N~~	~~N~~	~~N~~	Y	Y
A-13	N	N	N	N	Y	Y	Y	Y	~~N~~	N	Y	Y	Y	Y	Y

O.R.P. = Oxidation reduction potential
D.O. = Dissolved oxygen
B.O.D.. = Biological oxygen demand
C.O.D. = Chemical oxygen demand
ORC = Oxygen releasing compound
Y/N = Monitor/Don't monitor
CH4 = Carbon Dioxide
CO2 = Methane

Bioremediation Assessment Field and Laboratory Procedures

Field Procedures

Parameter	Instrument or Technique
Color	Manually
Odor	Manually
Oxidation Reduction Potential (ORP)	YSI Model 3560 water quality monitoring system with YSI Model 3540 ORP electrode assembly
Turbidity	Nepholemetric turbidity unit or manually
Hydrogen Sulfide	HACH hydrogen sulfide test kit Model HS-C, catalog No. 25378-00
Dissolved Oxygen	YSI Model 50 in-situ dissolved oxygen meter
Ferrous Iron	HACH TPTZ iron reagent method, Model IR-21, catalog No. 22993-00 and ferrous iron Powder Pillows Catalog No. 1037-69

Laboratory Procedures

Analysis	Method	Bottle
TPPH-g & BTEX Compounds	EPA Methods 8015 (modified), 8020, and 5030	Voa, cool, HCL; no head-space
*Nitrate as Nitrate	EPA Method 300	G or P, keep cool, 100ml, 24 hr hold;NP
*Sulfate	EPA Method 300	G or P, keep cool, 100ml, 28 day hold:NP
Nitrogen as Ammonia	EPA Method 350.3	G or P, 500 ml with H_2SO4, keep cool, 28 day hold time
B.O.D.	EPA Method 405.1	P, 1L, 48 hour hold, NP, keep cool
C.O.D.	EPA Method 410.4	VOA w/ H_2SO_4, 28 day hold time, keep cool
Heterotrophic Plate Count	SM 907	P, 100ml, $NA_2S_2O_3$, keep cool, 30 hour hold; or non-preserved: keep cool, 12 hour hold time
Total Iron	EPA Method 6010	P, G, C, 200ml, HNO_3 6 month hold, keep cool
*Alkalinity	EPA Method 310.1	P or G, 100 ml, cool, NP, 14d
*CO_2	SM406C	P or G, 100 ml, cool, NP, immediately
Methane (CH4)	fill NP air tight voa half full	Air tight VOA, NP, immediately

ese analyses can all be extracted from the same 1 liter bottle. Be sure to collect 1 backup bottle.

WELL A-8

DISSOLVED OXYGEN (mg/L). HYDROGEN SULFIDE and FERROUS IRON

		D.O.	Hydrogen Sulfide	Ferrous Iron	DO W/AMPOULE
2' From top	Allow 2 minute minimum stabilization time	Before .14 : 20	NA	10.0	11/19
PROBE & CORD RINSED?		Yes			
DO READING STABILIZED?		Yes			

WELL A-12

DISSOLVED OXYGEN (mg/L). HYDROGEN SULFIDE and FERROUS IRON

		D.O.	Hydrogen Sulfide	Ferrous Iron	DO W/AMPOULE
2' From top	Allow 2 minute minimum stabilization time	Before .93 After 3.06	NA	0.0	N/A
PROBE & CORD RINSED?		Yes			
DO READING STABILIZED?		Yes			

WELL A-13

DISSOLVED OXYGEN (mg/L). HYDROGEN SULFIDE and FERROUS IRON

		D.O.	Hydrogen Sulfide	Ferrous Iron	DO W/AMPOULE
2' From top	Allow 2 minute minimum stabilization time	Before .4	NA		
PROBE & CORD RINSED?					
DO READING STABILIZED?					

Bioremediation Enhancement Program
Bottle Schedule

ARCO Service Station 4931
731 McArther.
Oakland, CA

	BOTTLE TYPE (VOLUME, PRESERVATIVE)						
Well	VOA (40ml.HCL)	Plastic (1L.NP)	Plastic (500ml. H_2SO_4)	VOA (40ml. H_2SO_4)	VOA (40ml.NP)	Plastic (500ml.$NA_2S_2O_3$)	Plastic (500ml.HNO_3)
A-4	0	2	1	3	3	1	0
A-8	0	2	1	3	3	1	0
A-12	0	2	1	3	3	1	0
A-13	0	2	1	3	3	1	0
TOTAL	**0**	**8**	**4**	**12**	**12**	**4**	**0**

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. [illegible]

Chain of Custody

ARCO Facility no. [illegible]	City (Facility) [illegible]	Project manager (Consultant) [illegible]	Laboratory name Sequoia
ARCO engineer [illegible]	Telephone no. (ARCO)	Telephone no. (Consultant) [illegible] / Fax no. (Consultant) [illegible]	Contract number
Consultant name [illegible] Environmental Group		Address (Consultant) [illegible] Parkway Place Suite [illegible] San Jose CA [illegible]	

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	~~EPA 601/8010~~ [illegible]	~~EPA 624/8240~~ [illegible]	~~EPA 625/8270~~ [illegible]	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	[illegible]	[illegible]
[illegible]		[illegible]				\	X	[illegible]	[illegible]												X	X
[illegible]		[illegible]		|		|	|	|	[illegible]						X	X	X				X	X
[illegible]		[illegible]		|		|	|	|	[illegible]												X	X

Special detection Limit/reporting

Special QA/QC

Method of shipment

Remarks

Lab number

Condition of sample:

Temperature received:

Relinquished by sampler [illegible]	Date [illegible]	Time [illegible]	Received by [illegible]	Date [illegible]	Time [illegible]
Relinquished by	Date	Time	Received by		
Relinquished by	Date	Time	Received by laboratory	Date	Time

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant
APPC-3292 (2-91)

FIELD SERVICES REQUEST

SITE INFORMATION FORM

Identification

Project # 330-109 (charge 3300845c)
Station ID #4931
Site Address: 731 MacArthur Blvd./Oakland
Lab: Sequoia
County:
Project Manager: Shaw Garakani
Requester: David S. Nanstad
Client: ARCO
Client P.O.C: MIKE WHELAN
Date of Request: August 26, 1996

Project Type

☒ Operation & Maintenance
☐ Sampling
☐ 1st time visit
☐ Quarterly
☐ 1st ☐ 2nd ☐ 3rd ☐ 4th
X Monthly
☐ Semi-Monthly
☐ Weekly
☐ One time event
☐ Other:
Ideal field date: asap

Check Appropriate Category

X In Budget Site Visit
☐ Out of Budget Site Visit

Budget Hours: 1.5
Actual Hours: ~~2.5~~ 2.5
Mob de Mob: 1.5

Site Safety Concerns

STANDARD

Field Tasks General Description

6" 6" AR-3 - 6"

OBJECTIVE: Go to the referenced site and remove GWE pumps from Wells AR-1, AR-2 and A-9. Make sure power is turned off to pumps. Leave well boxes neat and cleanly "buttoned up". Lable pumps ARCO #4931 and store in boneyard.

6"

Comments, remarks from field staff

Arrived 12:40
Leave ~~1:45~~ 2:30

Completed By: [signature] Date: 10/4/96

Pacific Environmental Group, Inc.

FIELD SERVICES REQUEST

SITE INFORMATION FORM

Identification

Project # 330-109.5C

Station ID #4931

Site Address: 731 MacArthur Blvd./Oakland

Lab: Sequoia

County:

Project Manager: Shaw Garakani

Requester: David S. Nanstad

Client: ARCO

Client P.O.C: MIKE WHELAN

Date of Request: November 15, 1996

Project Type

☒ Operation & Maintenance

☐ Sampling

☐ 1st time visit

☐ Quarterly

☐ 1st ☐ 2nd ☐ 3rd ☐ 4th

X Monthly

☐ Semi-Monthly

☐ Weekly

☒ One time event

☐ Other:

MUST BE DONE ON NOV. 27, 1996

Ideal field date: w/4q96 event

Check Appropriate Category

X In Budget Site Visit

☐ Out of Budget Site Visit

Budget Hours: ~~+1.5~~ sampling

Actual Hours: 1.5 / 1.5 ORC's

~~Mob de Mob:~~

Site Safety Concerns

STANDARD

Field Tasks General Description

OBJECTIVE: Perform the attached biomonitoring schedule during the 4q96 event. Measure DO in wells A-8 and A-9 before purging. Call engineer with DO and Ferrouse data.

1. After performing biomonitoring, install 8 new 4 inch ORC's in well A-9 and ~~15~~ 11 new 2 inch ORC's in well A-8. Be sure anchor system is solid. ORC's are located by DaveN's office. frost posted to Sat 12/24/96

Comments, remarks from field staff

Sampling completed on 12/24/96 ORC's installed ~~[illegible]~~

Completed By: W Peck Date: 12/24/96

Pacific Environmental Group, Inc.