PACIFIC
ENVIRONMENTAL
GROUP, INC.

Quarterly Groundwater Monitoring Report and Remedial System Performance Evaluation Second Quarter 1997

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

Prepared for

Mr. Paul Supple
ARCO Products Company

September 26, 1997

Prepared by

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

Project 330-106.2D

97 OCT -9 PM 4:46
ENVIRONMENTAL PROTECTION

Shaw Garakani
Project Engineer

Debra J. Moser
ARCO Program Manager
CEG 1293

REGISTERED GEOLOGIST
DEBRA J. MOSER
No. 1293
CERTIFIED
ENGINEERING
GEOLOGIST
9/98
STATE OF CALIFORNIA

Date: September 26, 1997
Quarter: 2Q97

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 2112 Address: 1260 Park Street at Encinal Avenue, Alameda
ARCO Environmental Engineer: Paul Supple
Consulting Co./Contact Person: Pacific Environmental Group, Inc./Shaw Garakani
Consultant Project No.: 330-106.2D
Primary Agency/Regulatory ID No.: Alameda County Health Care Services Agency

WORK PERFORMED THIS QUARTER (Second - 1997):

1. Performed second quarter 1997 groundwater monitoring event.
2. Prepared second quarter 1997 groundwater monitoring report.
3. Submitted first quarter 1997 groundwater monitoring report.
4. Removed remedial compound and equipment from site.
5. Pursued case closure for the site.

WORK PROPOSED FOR NEXT QUARTER (Third - 1997):

1. Discontinue groundwater monitoring program.
2. Submit second quarter 1997 groundwater monitoring report.
3. Pursue case closure for the site.

Current Phase of Project:	Monitoring	(Assmnt, Remed., etc.)
Frequency of Groundwater Sampling:	Quarterly/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:	None	(gallons)
Bulk Soil Removed This Quarter:	None	(cubic yards)
Bulk Soil Removed to Date:	1,950	(cubic yards)
Current Remediation Techniques:	Natural Attenuation	(SVE/Sparge/FP Removal, etc.)
Approximate Depth to Groundwater:	9.43 to 11.65	(Measure Feet)
Groundwater Gradient:	West	(Direction)
	0.008	(Magnitude)
Period TPPH-g/Benzene Removed:	0.0/0.0	(gallons)
Cumulative TPPH-g/Benzene Removed:	55/0.1	(gallons)

DISCUSSION:

- TPPH-g and benzene continue to be non-detect in all groundwater wells sampled.
- Based on ACHCSA's approval, the GWE system has been deactivated and the EBMUD sewer discharge permit relinquished. Plume appears stable.
- Site closure is in progress.
- ARCO received a letter dated May 2, 1997 from ACHCSA, indicating that the remedial system may be decommissioned. Therefore, removal of the remedial compound and equipment was completed during the second quarter 1997. The letter also indicates that verification of groundwater conditions have been completed, therefore the groundwater monitoring and reporting program will be terminated with this report.
- Remedial and groundwater monitoring wells have not been abandoned, pending case closure for the site.
- Please refer to PACIFIC's *Quarterly Groundwater Monitoring Report - Fourth Quarter 1996* for historical groundwater elevation and analytical data.

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 - Field and Laboratory Procedures
- Attachment B - Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets
- Attachment C - Remedial System Performance Evaluation

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

Table 1
Groundwater Sampling Schedule

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

Well Number	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Sampling Frequency
A-1	a	a	a	a	Quarterly
A-2	a	a	a	a	Quarterly
A-3			a		Annually
A-4			a		Annually
A-5	a	a	a	a	Quarterly
AR-1	a	a	a	a	Quarterly
AR-2	a	a	a	a	Quarterly

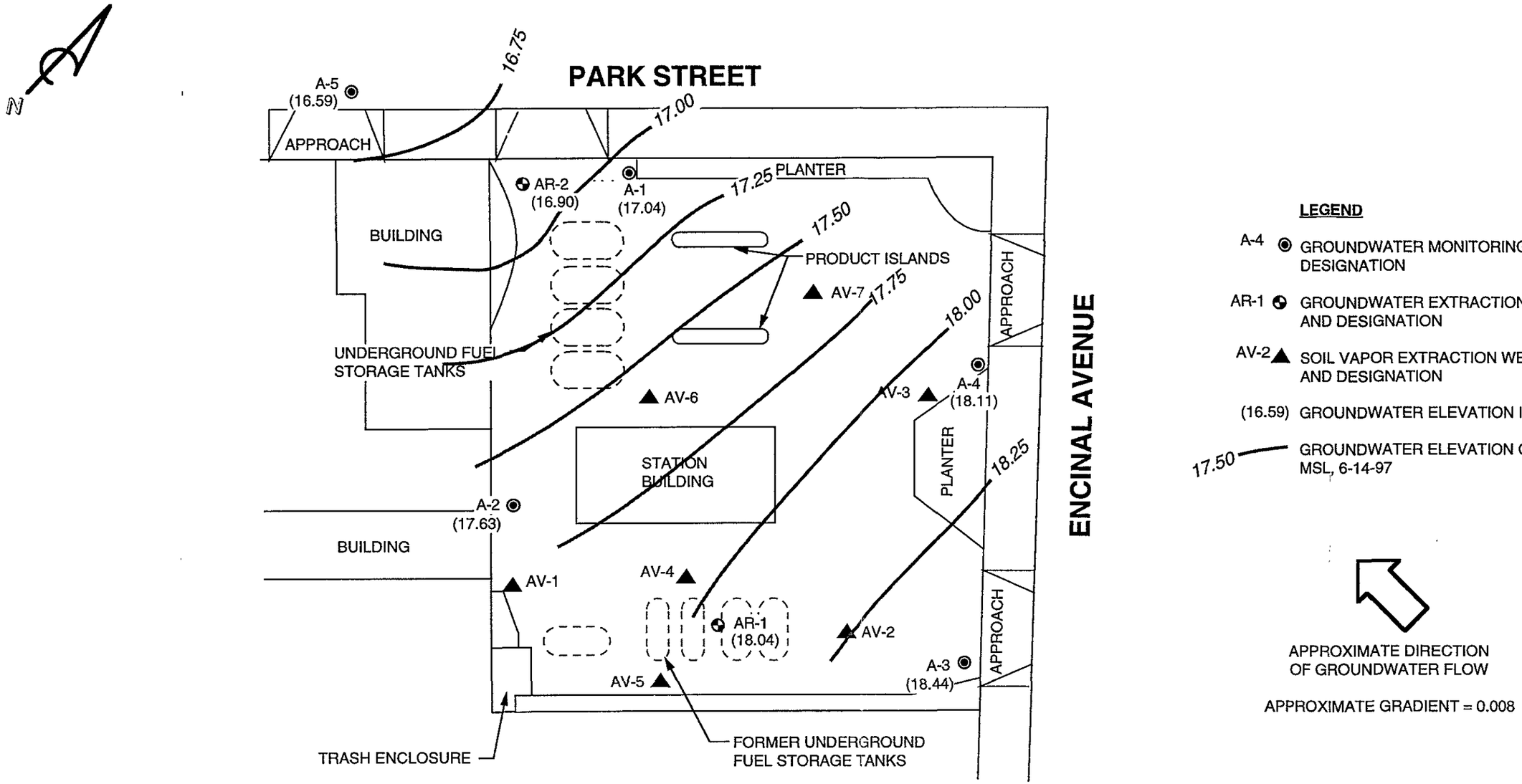
a. Samples analyzed for TPPH-g, BTEX compounds, and MtBE according to EPA Methods 8015 (modified) and 8020.

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

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, 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-1	01/15/96	28.39	11.18	17.21	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/08/96		10.61	17.78	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		11.28	17.11	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		11.70	16.69	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		10.98	17.41	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/14/97		11.35	17.04	<50	<0.50	<0.50	<0.50	<0.50	<2.5
A-2	01/15/96	29.28	11.17	18.11	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/08/96		10.45	18.83	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		11.40	17.88	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		12.10	17.18	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		11.05	18.23	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/14/97		11.65	17.63	<50	<0.50	<0.50	<0.50	<0.50	<2.5
A-3	01/15/96	27.87	8.66	19.21	---------- Well Sampled Annually ----------					
	04/08/96		7.86	20.01	---------- Well Sampled Annually ----------					
	07/02/96		9.03	18.84	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		9.88	17.99	---------- Well Sampled Annually ----------					
	04/08/97		8.55	19.32	---------- Well Sampled Annually ----------					
	06/14/97		9.43	18.44	---------- Well Sampled Annually ----------					
A-4	01/15/96	28.54	10.00	18.54	---------- Well Sampled Annually ----------					
	04/08/96		9.34	19.20	---------- Well Sampled Annually ----------					
	07/02/96		10.22	18.32	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		10.85	17.69	---------- Well Sampled Annually ----------					
	04/08/97		9.88	18.66	---------- Well Sampled Annually ----------					
	06/14/97		10.43	18.11	---------- Well Sampled Annually ----------					
A-5	01/15/96	27.29	10.61	16.68	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/08/96		10.59	16.70	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		10.73	16.56	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		10.84	16.45	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		10.68	16.61	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/14/97		10.70	16.59	<50	<0.50	<0.50	<0.50	<0.50	<2.5
AR-1	01/15/96	29.08	10.44	18.64	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/08/96		9.56	19.52	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		10.67	18.41	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		11.60	17.48	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		10.95	18.13	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/14/97		11.04	18.04	<50	<0.50	<0.50	<0.50	<0.50	<2.5
AR-2	01/15/96	28.20	11.00	17.20	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/08/96		9.71	18.49	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		11.15	17.05	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		11.62	16.58	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		10.38	17.82	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/14/97		11.30	16.90	<50	<0.50	<0.50	<0.50	<0.50	<2.5

MtBE = Methyl tert-butyl ether
MSL = Mean sea level
TOB = Top of box
ppb = Parts per billion
NA = Not analyzed



LEGEND

A-4 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

AR-1 ◔ GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

AV-2 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION

(16.59) GROUNDWATER ELEVATION IN FEET - MSL, 6-14-97

17.50 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 6-14-97

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.008

PACIFIC ENVIRONMENTAL GROUP, INC.

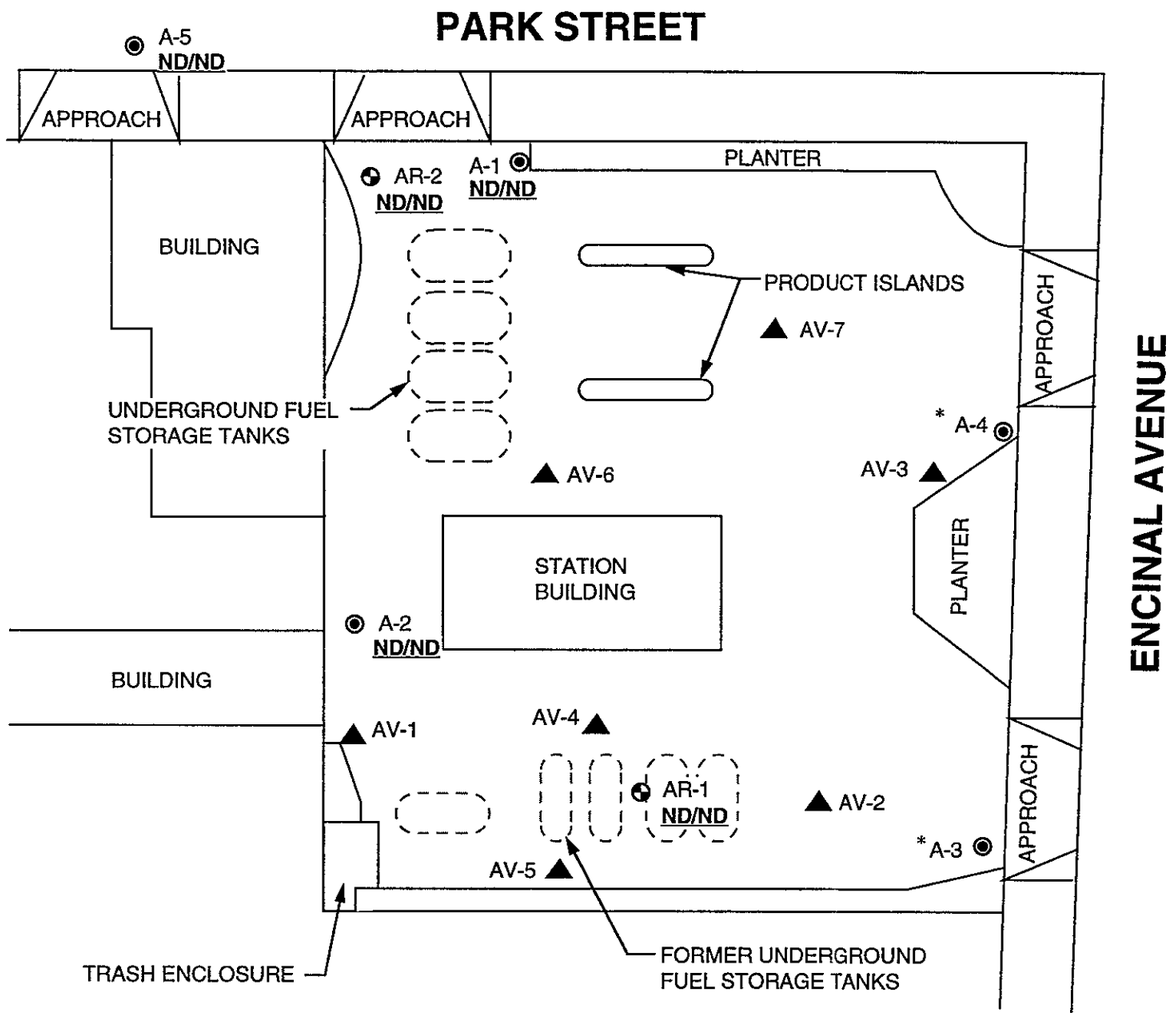
SCALE
0 30 60 FEET

ARCO SERVICE STATION 2112
1260 Park Street at Encinal Avenue
Alameda, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE: 1

PROJECT: 330-106.2D



LEGEND

A-4 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

AR-1 ◓ GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

AV-2 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION

ND/ND TPPH-g/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 6-14-97

ND NOT DETECTED

* WELL SAMPLED ANNUALLY

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

ARCO SERVICE STATION 2112
1260 Park Street at Encinal Avenue
Alameda, California

TPPH-g/BENZENE CONCENTRATION MAP

FIGURE: 2

PROJECT: 330-106.2D

ATTACHMENT A

FIELD AND LABORATORY PROCEDURES

ATTACHMENT A
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, and xylenes. 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 B.

ATTACHMENT B

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

6/14

RECEIVED
JUN 16 1997
PACIFIC ENVIRONMENTAL GROUP, INC

FIELD SERVICES / O & M REQUEST

SITE INFORMATION FORM

Project #:330-106.2k

Station #:2112

Site Address:1260 Park st
Alameda, California

County: Alameda

Project Manager: Shaw Garakani

Requestor: David Nanstad

Client: Arco
Prefield contacts:

☐ **1st time visit**

☐ **1st** ☒ **2nd** ☐ **3rd** ☐ **4th**

☐ **Monthly**

☐ **Semi-Monthly**

☐ **Weekly**

☐ **One time Event**

Other._____

Client P.O.C.: Paul Supple

Date of Request: 2q

Ideal Field Date:

Budget Hrs._____

Actual Hrs. 4

Mob de Mob 2

Purge Total 129 gallons

Field Tasks: For General Description
Second Quarter 1997 groundwater sampling event: DTW/DTL on all wells from TOB/TOC, Sample per attached protocol.
WA 21334 00

Comments, remarks, from Field Staff (include problems encountered

Gauged all wells, Sampled and purged 5 wells

Completed by: Don Waterman Date: 6/14/97

Checked by:_____

WELL SAMPLING REQUEST

SAMPLING PROTOCOL									
Project No.	**Station #**	**Project Name**	**SEQUENCE**	**Project Manager**	**Approval**	**Date/s**	**Laboratory:**		**Client Engineer:**
330-106.2k	2112	1260 Park st. Alameda	2q97	Shaw Garakani	9/12/96		Sequoia	21334 00	Paul Supple

Well Number	Ideal Sampling Order	Sample I.D.	Sampling Frequency	Analyses	TOB TOC	Well Depth	Casing Diameter	Well goes Dry?	Comments
A-1	1		QLY	GAS/BTEX/MtBE	TOB/TOC	30'	3"	N	
A-2	2		QLY	GAS/BTEX/MtBE	TOB/TOC	31'	3"	Y	
A-3	3		Annual/3Q	DTW ONLY	TOB/TOC	30.5'	3"	N	
A-4	4		Annual/3Q	DTW ONLY	TOB/TOC	30.5'	3"	N	
A-5	5		QLY	GAS/BTEX/MtBE	TOB/TOC	30.5	3"	N	
AR-1	6		QLY	GAS/BTEX/MtBE	TOB/TOC	30'	4"	N	
AR-2	7		QLY	GAS/BTEX/MtBE	TOB/TOC	30'	4"	N	
[redacted]			[redacted]	[redacted]					

FIELD REPORT

DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330106 7 LOCATION: 1760 PARK St DATE: 6/14/97

CLIENT/STATION NO.: ARCO 7117 FIELD TECHNICIAN: Don Hetenyi DAY OF WEEK: Saturday

PROBE TYPE/ID No.
- ☐ Oil/Water IF/ _____
- ☒ H_2O level indicator 3 1
- ☐ Other: _____

Dtw Order	Well ID	Time	Surface Seal	Lid Secure	Gasket	Lock	Expanding Cap	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	Weathered	Gas	Oil	VISCOSITY: Lite	Medium	Heavy	LIQUID REMOVED (gallons): SPH / H_2O
1	A-1	8:30	✓	✓	✓	✓	✓	30	11.35 / 10.95	11.35 / 10.95										/
2	A-2	8:37	✓	✓	✓	✓	✓	31	11.65 / 10.90	11.65 / 10.90										/
3	A-3	8:41	✓	✓	✓	✓	✓	30.4	9.43 / 8.95	9.43 / 8.95										/
4	A-4	8:45	✓	✓	✓	✓	✓	30.3	10.43 / 9.85	10.43 / 9.85										/
5	A-5	8:52	✓	✓	✓	✓	✓	25.5	10.70 / 10.25	10.70 / 10.25										/
6	AR-1	8:56	✓	✓	✓	✓	✓	29.5	11.04 / 10.33	11.04 / 10.33										/
7	AR-2	9:00	✓	✓	✓	✓	✓	29.5	11.30 / 10.41	11.30 / 10.41										/
									/	/										/
									/	/										/

Comments: _____

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330106.2K LOCATION: 1260 PARK St. ALAMEDA WELL ID #: A-1

CLIENT/STATION No.: 02112 ARCO FIELD TECHNICIAN: Don Waterpaugh

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 11.35 (TOB) 10.95 TOC
Total depth: 30 (TOB) ____ TOC
Date: 6/14/97 Time (2400): 8:30

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator 31
- ☐ 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 30 - DTW 10.95 = 19.05 x Gal/Linear Foot .38 = 7.23 x Number of Casings 3 = Calculated Purge 21.7

DATE PURGED: 6/14/97 START: 9:20 END (2400 hr): 9:30 PURGED BY: DM

DATE SAMPLED: 6/14/97 START: 9:33 END (2400 hr): 9:33 SAMPLED BY: DM

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
9:25	7.2	6.94	1020	67.2	Brown	Mod	none
9:27	14.4	6.89	640	68.4	Cloudy	light	none
9:30	22	6.98	640	68.8	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: 31
- ☐ Other: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 31-1
- ☐ Dedicated: ____
- ☐ Other: ____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-1	6/14/97	9:33	3	40ml	VOA	HCL	GAS/BTEX/MTBE

REMARKS: ____

SIGNATURE: Don Waterpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330106.2K LOCATION: 1760 PARK St. ALAMEDA WELL ID #: A-2

CLIENT/STATION No.: 0212 ARCO FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 11.65 (TOB) 10.90 TOC
Total depth: 31 (TOB) — TOC
Date: 6/14/97 Time (2400): 8:37

Probe Type and I.D. #: ☐ Oil/Water interface ☒ Electronic indicator 31 ☐ 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 31 - DTW 10.9 = 20.1 x Gal/Linear Foot .38 = 7.63 x Number of Casings 3 = Calculated Purge 23

DATE PURGED: 6/14/97 START: 9:40 END (2400 hr): 9:50 PURGED BY: Don
DATE SAMPLED: 6/14/97 START: 9:54 END (2400 hr): 9:54 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
9:44	7.6	7.03	1680	67.3	Brown	mod	none
9:47	15.2	6.91	1880	68.3	cloudy	light	none
9:50	23	7.11	1760	67.8	cloudy	light	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: 31
☐ Airlift Pump:
☐ Dedicated:
☐ Other:

SAMPLING EQUIPMENT/I.D. #

☒ Bailer: 31-2
☐ Dedicated:
☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-2	6/14/97	9:54	3	40ml	VOA	HCL	GRO/BTEX/MTBE

REMARKS:

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330106.7B LOCATION: 1760 PARK St. ALAMEDA WELL ID #: A-3

CLIENT/STATION No.: 0212 ARCO FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid:	— TOB	— TOC
Depth to water:	9.43 (TOB)	8.95 TOC
Total depth:	30.4 (TOB)	— TOC
Date:	6/14/97 Time (2400):	8:41

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator 3
- ☐ 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 3 = 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. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR

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: ____
- ☐ Dedicated: ____
- ☐ Other: ____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A			3	40ml	VOA	HCL	GRO/BTEX/MTBE

REMARKS: DTW only NO Sample taken

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330106.7K LOCATION: 1760 PARK St. ALAMEDA WELL ID #: A-4

CLIENT/STATION No.: 0212 ARCO FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 10.43 (TOB) 9.85 TOC
Total depth: 30.3 (TOB) ____ TOC
Date: 6/14/97 Time (2400): 8:45

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator 31
- ☐ 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 3 = 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

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: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____
- ☐ Other: ____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A			3	40ml	VOA	HCL	GRO/BTEX/MTBE

REMARKS: DTW only NO Sample taken

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330106.7K LOCATION: 1760 PARK St. ALAMEDA WELL ID #: A-5

CLIENT/STATION No.: 0212 ARCO FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 10.10 (TOB) 10.25 TOC
Total depth: 25.5 (TOB) — TOC
Date: 6/14/97 Time (2400): 8:52

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator 31
- ☐ 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 25.5 - DTW 10.25 = 15.25 x Gal/Linear Foot .38 = 5.79 x Number of Casings 3 = Calculated Purge 17.38

DATE PURGED: 6/14/97 START: 10:07 END (2400 hr): 10:19 PURGED BY: DW

DATE SAMPLED: 6/14/97 START: 11:15 END (2400 hr): 11:15 SAMPLED BY: DW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
10:14	5.8	7.47	710	69.1	Brown	Heavy	none
10:19	~~7.6~~	7.37	580	68.5	Brown	Heavy	none
	~~7.5~~						

Pumped dry (Yes) No @ 7.6 gallons

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		TOC					
10.62	(TOB)	7.17	720	78.0	Brown	Heavy	none

PURGING EQUIPMENT/I.D. #
- ☐ Bailer:
- ☒ Centrifugal Pump: 3
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 31-3
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-5	6/14/97	1115	3	40ml	VOA	HCL	GAS/BTEX/MTBE

REMARKS: Lots of Sand on bottom of well

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330106.7K LOCATION: 1760 PARK St. ALAMEDA WELL ID #: AR-1

CLIENT/STATION No.: 0212 ARCO FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 11.04 (TOB) 10.33 TOC
Total depth: 29.5 (TOB) — TOC
Date: 6/14/97 Time (2400): 8:56

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator 31
- ☐ 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 29.5 - DTW 10.33 = 19.17 x Gal/Linear Foot .66 = 12.65 x Number of Casings 3 = Calculated Purge 38

DATE PURGED: 6/14/97 START: 10:25 END (2400 hr): 10:37 PURGED BY: Don
DATE SAMPLED: 6/14/97 START: 10:40 END (2400 hr): 10:40 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
10:30	12.65	7.19	500	67.8	Cloudy	light	none
10:33	25.3	7.01	500	68.1	cloudy	light	none
10:37	38	6.87	490	67.7	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: 31
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 31-4
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
AR-1	6/14/97	10:40	3	40ml	VOA	HCL	GAS/BTEX/MTBE

REMARKS:

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330106.2K LOCATION: 1760 PARK St. ALAMEDA WELL ID #: AR-2

CLIENT/STATION No.: 0212 ARCO FIELD TECHNICIAN: Don Watanpaugh

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 11.30 (TOB) 10.41 TOC
Total depth: 29.5 (TOB) — TOC
Date: 6/14/97 Time (2400): 9:00

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator 31
- ☐ Other:

CASING DIAMETER / GAL/LINEAR FT.

	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 29.5 - DTW 10.41 = 19.09 x Gal/Linear Foot .66 = 12.6 x Number of Casings 3 = Calculated Purge 38

DATE PURGED: 6/14/97 START: 10:50 END (2400 hr): 11:05 PURGED BY: DW

DATE SAMPLED: 6/14/97 START: 11:07 END (2400 hr): 11:07 SAMPLED BY: DW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
10:53	12.6	6.98	820	73.8	Black	Heavy	none
10:57	25.2	7.15	1020	71.3	yellow	mod.	none
11:05	38	7.65	2117	81.2	Brown	Heavy	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: 31
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D.

- ☒ Bailer: 31-5
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
AR-2	6/14/97	11:07	3	40ml	VOA	HCL	GAS/BTEX/MTBE

REMARKS:

SIGNATURE: Don Watanpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

ARCO Products Company ◆ Division of AtlanticRichfieldCompany

330-106.2K **Task Order No.** WA 2133400

Chain of Custody

ARCO Facility no. 2112	City (Facility) 1260 Park St. Alameda	Project manager (Consultant) Shaw Gorakani	Laboratory name Sequoia
ARCO engineer Paul Supple	Telephone no. (ARCO)	Telephone no (Consultant) (408) 441-7500	Fax no. (Consultant) (408) 441 7539
Consultant name Pacific Env. Group Inc	Address (Consultant) 2025 Gateway Pl. Suite 440 San Jose CA 95110		Contract number 2133400

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-g/MTBE 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 ☐		
A-1		3		X		X	HCl	6/14/97	9:33		X											
A-2		↓		↓		↓	↓	↓	9:54		↓											
A-5									11:15													
AR-1									10:40													
AR-2		↓		↓		↓	↓	↓	11:07		↓											

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

Priority Rush 1 Business Day ☐

Rush 2 Business Days ☐

Expedited 5 Business Days ☐

Standard 10 Business Days ☒

Condition of sample:

Temperature received:

Relinquished by sampler Don Wakempaugh	Date 6/14/97	Time 13:30	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory / Date / Time

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

APPC-3292 (2-91)

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

RECEIVED
JUL 10 1997
PACIFIC ENVIRONMENTAL GROUP, INC.

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

Project: 330-106.2K/2112, Alameda

Enclosed are the results from samples received at Sequoia Analytical on June 16, 1997. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9706860 -01	LIQUID, A-1	06/14/97	MTBE_W Methyl t-Butyl Ethe
9706860 -01	LIQUID, A-1	06/14/97	TPHGBW Purgeable TPH/BTEX
9706860 -02	LIQUID, A-2	06/14/97	MTBE_W Methyl t-Butyl Ethe
9706860 -02	LIQUID, A-2	06/14/97	TPHGBW Purgeable TPH/BTEX
9706860 -03	LIQUID, A-5	06/14/97	MTBE_W Methyl t-Butyl Ethe
9706860 -03	LIQUID, A-5	06/14/97	TPHGBW Purgeable TPH/BTEX
9706860 -04	LIQUID, AR-1	06/14/97	MTBE_W Methyl t-Butyl Ethe
9706860 -04	LIQUID, AR-1	06/14/97	TPHGBW Purgeable TPH/BTEX
9706860 -05	LIQUID, AR-2	06/14/97	MTBE_W Methyl t-Butyl Ethe
9706860 -05	LIQUID, AR-2	06/14/97	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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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group	Client Proj. ID: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: A-1	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/18/97
Attention: Shaw Garakani	Lab Number: 9706860-01	Reported: 06/22/97

QC Batch Number: GC061897BTEX01A
Instrument ID: GCHP01

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	81

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: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: A-1	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 06/18/97
Attention: Shaw Garakani	Lab Number: 9706860-01	Reported: 06/22/97

QC Batch Number: GC061897BTEX01A
Instrument ID: GCHP01

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	81

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: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: A-2	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 06/19/97
Attention: Shaw Garakani	Lab Number: 9706860-02	Reported: 06/22/97

QC Batch Number: GC061997BTEX18A
Instrument ID: GCHP18

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	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: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: A-2	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/19/97
Attention: Shaw Garakani	Lab Number: 9706860-02	Reported: 06/22/97

QC Batch Number: GC061997BTEX18A
Instrument ID: GCHP18

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	94

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: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: A-5	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 06/18/97
Attention: Shaw Garakani	Lab Number: 9706860-03	Reported: 06/22/97

QC Batch Number: GC061897BTEX07A
Instrument ID: GCHP07

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	91

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: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: A-5	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/18/97
Attention: Shaw Garakani	Lab Number: 9706860-03	Reported: 06/22/97

QC Batch Number: GC061897BTEX07A
Instrument ID: GCHP07

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	91

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: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: AR-1	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 06/18/97
Attention: Shaw Garakani	Lab Number: 9706860-04	Reported: 06/22/97

QC Batch Number: GC061897BTEX07A
Instrument ID: GCHP07

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	79

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: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: AR-1	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/18/97
Attention: Shaw Garakani	Lab Number: 9706860-04	Reported: 06/22/97

QC Batch Number: GC061897BTEX07A
Instrument ID: GCHP07

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	79

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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	Client Proj. ID: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: AR-2	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 06/18/97
Attention: Shaw Garakani	Lab Number: 9706860-05	Reported: 06/22/97

QC Batch Number: GC061897BTEX07A
Instrument ID: GCHP07

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	86

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: 330-106.2K/2112, Alameda	Sampled: 06/14/97
2025 Gateway Place, Suite 440	Sample Descript: AR-2	Received: 06/16/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/18/97
Attention: Shaw Garakani	Lab Number: 9706860-05	Reported: 06/22/97

QC Batch Number: GC061897BTEX07A
Instrument ID: GCHP07

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	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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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 Garakani

Client Project ID: 330-106.2K/2112, Alameda
Matrix: Liquid
Work Order #: 9706860 -01-05
Reported: Jul 8, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC061897BTEX07A	GC061897BTEX07A	GC061897BTEX07A	GC061897BTEX07A	GC061897BTEX07A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Porter	A. Porter	A. Porter	A. Porter	A. Porter
MS/MSD #:	970663309	970663309	970663309	970663309	970663309
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	6/18/97	6/18/97	6/18/97	6/18/97	6/18/97
Analyzed Date:	6/18/97	6/18/97	6/18/97	6/18/97	6/18/97
Instrument I.D.#:	GCHP7	GCHP7	GCHP7	GCHP7	GCHP7
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	11	10	10	31	67
MS % Recovery:	110	100	100	103	112
Dup. Result:	9.8	9.6	9.6	29	62
MSD % Recov.:	98	96	96	97	103
RPD:	12	4.1	4.1	6.7	7.8
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK061897	BLK061897	BLK061897	BLK061897	BLK061897
Prepared Date:	6/18/97	6/18/97	6/18/97	6/18/97	6/18/97
Analyzed Date:	6/18/97	6/18/97	6/18/97	6/18/97	6/18/97
Instrument I.D.#:	GCHP7	GCHP7	GCHP7	GCHP7	GCHP7
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	10	10	10	10	64
LCS % Recov.:	100	100	100	100	107
MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	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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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garakani

Client Project ID: 330-106.2K/2112, Alameda
Matrix: Liquid
Work Order #: 9706860-01-05

Reported: Jul 8, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC061897BTEX01A	GC061897BTEX01A	GC061897BTEX01A	GC061897BTEX01A	GC061897BTEX01A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Porter	A. Porter	A. Porter	A. Porter	A. Porter
MS/MSD #:	970663310	970663310	970663310	970663310	970663310
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	6/18/97	6/18/97	6/18/97	6/18/97	6/18/97
Analyzed Date:	6/18/97	6/18/97	6/18/97	6/18/97	6/18/97
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	9.6	9.2	9.1	27	66
MS % Recovery:	96	92	91	90	110
Dup. Result:	9.6	9.0	8.9	26	66
MSD % Recov.:	96	90	89	87	110
RPD:	0.0	2.2	2.2	3.8	0.0
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK061897	BLK061897	BLK061897	BLK061897	BLK061897
Prepared Date:	6/18/97	6/18/97	6/18/97	6/18/97	6/18/97
Analyzed Date:	6/18/97	6/18/97	6/18/97	6/18/97	6/18/97
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	9.8	9.2	9.2	28	67
LCS % Recov.:	98	92	92	93	112
MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	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

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

Client Project ID: 330-106.2K/2112, Alameda
Matrix: Liquid
Work Order #: 9706860-01-05
Reported: Jul 8, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC061997BTEX18A	GC061997BTEX18A	GC061997BTEX18A	GC061997BTEX18A	GC061997BTEX18A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Porter	A. Porter	A. Porter	A. Porter	A. Porter
MS/MSD #:	970661313	970661313	970661313	970661313	970661313
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	6/19/97	6/19/97	6/19/97	6/19/97	6/19/97
Analyzed Date:	6/19/97	6/19/97	6/19/97	6/19/97	6/19/97
Instrument I.D.#:	GCHP18	GCHP18	GCHP18	GCHP18	GCHP18
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	8.8	9.3	9.7	30	64
MS % Recovery:	88	93	97	100	107
Dup. Result:	8.2	8.7	9.0	27	59
MSD % Recov.:	82	87	90	90	98
RPD:	7.1	6.7	7.5	11	8.1
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK061997	BLK061997	BLK061997	BLK061997	BLK061997
Prepared Date:	6/19/97	6/19/97	6/19/97	6/19/97	6/19/97
Analyzed Date:	6/19/97	6/19/97	6/19/97	6/19/97	6/19/97
Instrument I.D.#:	GCHP18	GCHP18	GCHP18	GCHP18	GCHP18
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	8.7	9.2	9.6	29	63
LCS % Recov.:	87	92	96	97	105
MS/MSD Control Limits	60-140	60-140	60-140	60-140	60-140
LCS Control Limits	70-130	70-130	70-130	70-130	70-130

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

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

Client Proj. ID: 330-106.2K/2112, Alameda

Lab Proj. ID: 9706860

Received: 06/16/97

Reported: 06/22/97

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 10 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

ARCO Products Company Division of AtlanticRichfieldCompany — 330-106.2K — **Task Order No.** WA 2133400 — **Chain of Custody**

ARCO Facility no. 2112	City (Facility) 1260 Park St. Alameda	Project manager (Consultant) Shaw Garakani	Laboratory name Sequoia
ARCO engineer Paul Supple	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 441-7500	Fax no. (Consultant) (408) 441 7539 — Contract number 2133400
Consultant name Pacific Env. Group Inc	Address (Consultant) 2025 Gateway Pl. Suite 440 San Jose CA 95110		Method of shipment 97068600

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	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
A-1	1	3		X		X	HCl	6/14/97	9:33		X											
A-2	2	↓		↓		↓	↓	↓	9:54		↓											
A-5	3								11:15													
AR-1	4								10:40													
AR-2	5	↓		↓		↓	↓	↓	11:07		↓											

Special detection Limit/reporting

Special QA/QC

Remarks — 16 11 32

Lab number

Turnaround time

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

Condition of sample:

Temperature received:

	Date	Time		Date	Time
Relinquished by sampler: Don Wakenpaugh	6/14/97	13:30	Received by: Krissy Flesoras		
Relinquished by: Krissy Flesoras	6/16/97	0910	Received by:		
Relinquished by:	6/16/97	1132	Received by laboratory: Sequoia	6-16-97	1132

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

APPC-3292 (2-91)

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: PEG
REC. BY (PRINT): LDC

WORKORDER: 9706860
DATE OF LOG-IN: 6-17-97

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: 6-16-97
12. Time Rec. at Lab: 1132
13. Temp Rec. at Lab: 14 °C

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC.)
1	A-C	A-1	3 VOA	liq	6-Jun-97	
2	↓	A-2	↓	↓	↓	
3		A-5				
4		AR-1				
5		AR-2				

accidental 6-16-97

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

Revision 9/10/96
RCPTLOG.XLS

ATTACHMENT C
REMEDIAL SYSTEM PERFORMANCE EVALUATION

ATTACHMENT C
REMEDIAL SYSTEM PERFORMANCE EVALUATION

Groundwater extraction (GWE) and soil vapor extraction (SVE) were performed during January 1993, and November 1994 to August 1995, respectively. Brief descriptions and performance evaluations of the remedial systems are presented below.

Groundwater Extraction System

The GWE system utilized ARO Model No. 666100 double-diaphragm total fluid pumps at Wells AR-1 and AR-2, and two 180-pound Westates Model No. ASC-200 liquid-phase granular activated carbon (GAC) vessels, arranged in series. The GWE system was permitted by East Bay Municipal Utility District (EBMUD) Wastewater Discharge Permit No. 502-65201. Based on authorization from the Alameda County Health Care Services Agency (ACHCSA) that GWE at the site was no longer required, the permit was relinquished during the second quarter 1996.

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

Soil Vapor Extraction System

The SVE system is comprised of eight SVE wells (A-1, and AV-1 through AV-7); a 5-horsepower, 230-volt Tuthill/M-D Pneumatics Earthvac Model No. 3210 skid-mounted blower; and three 2,000-pound Westates Model No. VSC-2000 vapor-phase GAC vessels. The SVE system in permitted by Bay Area Air Quality Management District (BAAQMD) Permit to Operation Condition I.D. No. 7974, which expires March 1, 1997. Operation of the SVE system was terminated due to low TPPH-g influent concentrations.

Historical SVE system performance data are presented in Table C-2; individual SVE well data are presented in Table C-3. Historical graphical presentations of SVE system TPPH-g and benzene mass removal and concentration data are shown on Figures C-3 and C-4, respectively.

Conclusions

ARCO received a letter dated May 2, 1997 from the ACHCSA indicating that the agency had no objection to the decommissioning of the remedial system at the site. Therefore, the treatment compounds and system were demobilized from the site during the second quarter 1997, while awaiting case closure for the site.

Attachments:
- Table C-1 - Historical Groundwater Extraction System Performance Data
- Table C-2 - Historical Soil Vapor Extraction System Performance Data
- Table C-3 - Historical Soil Vapor Extraction Well Data
- Figure C-1 - Historical Groundwater Extraction System Mass Removal Trend
- Figure C-2- Historical Groundwater Extraction System Hydrocarbon Concentrations
- Figure C-3 - Historical Soil Vapor Extraction System Mass Removal Trend
- Figure C-4 - Historical Soil Vapor Extraction System Hydrocarbon Concentrations

Table C-1
Historical Groundwater Extraction System Performance Data

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, 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 Remove (lbs)	Benzene: Removed to Date (lbs)	Primary Carbon Loading (percent)
INFL	06/28/94		741,520	N/A	1.3	ND	0.00	0.80	ND	0.000	0.133	1.0
INFL	11/04/94	a	782,881	41,361	N/A	ND	0.00	0.80	ND	0.000	0.133	1.0
INFL	03/07/95	b	804,954	22,073	N/A	NS	0.00	0.80	NS	0.000	0.133	1.0
INFL	04/20/95		826,131	21,177	0.3	ND	0.00	0.80	ND	0.000	0.133	1.0
INFL	05/03/95		836,000	9,869	0.5	NS	0.00	0.80	NS	0.000	0.133	1.0
INFL	06/06/95		898,000	62,000	1.3	NS	0.00	0.80	NS	0.000	0.133	1.0
INFL	07/06/95	c	945,200	47,200	1.1	74	0.01	0.81	13	0.003	0.135	1.0
INFL	08/03/95	d	945,200	0	0.0	ND	0.00	0.81	3.5	0.000	0.135	1.0
REPORTING PERIOD: 01/01/96 - 03/31/96												
TOTAL POUNDS REMOVED:								**0.81**			**0.135**	
TOTAL GALLONS REMOVED:								**0.13**			**0.018**	
PERIOD POUNDS REMOVED:							**0.00**			**0.000**		
PERIOD GALLONS REMOVED:							**0.00**			**0.000**		
TOTAL GALLONS EXTRACTED:						**945,200**						
PERIOD GALLONS EXTRACTED:						**0**						
PERIOD AVERAGE FLOW RATE (gpm):						**N/A**						

TPPH = Total purgeable petroleum hydrocarbons
gpm = Gallons per minute
µg/L = Micrograms per liter
lbs = Pounds
N/A = Not available or not applicable
ND = Not detected above the detection limit
NS = Not sampled (system influent sampled quarterly in January, April, July, and August)
a. System shut down for repair by Pacific Environmental Group, Inc. on November 4, 1994.
b System restarted March 7, 1995; continuous operation began on this date.
c. GWE system shut down for pulsing.
d. GWE system re-started for sampling, then temporarily shut down August 3, 1995.
Mass removed is an approximation calculated using averaged concentrations.
Pounds of hydrocarbons removed to date provided by prior consultant, GeoStrategies Incorporated.
Prior to June 1995, TPPH as gasoline was reported as TPH as gasoline.
See certified analytical reports for detection limits.

Table C-2
Historical Soil Vapor Extraction System Performance Data

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

Sample I.D.	Date Sampled	Hourmeter Reading (hours)	Hours of Operation (hours)	Vacuum (" H20)	Flow Rate (scfm)	TPPH as Gasoline: Influent Concentration (ppmv)	TPPH as Gasoline: Removal Rate (lbs/day)	TPPH as Gasoline: Removed to Date (lbs)	Benzene: Influent Concentration (ppmv)	Benzene: Removal Rate (lbs/day)	Benzene: Removed to Date (lbs)
INFL	11/04/94 a	N/A	N/A	N/A	210	N/A	N/A	276.7	N/A	N/A	0.18
INFL	11/14/94 a	N/A	15	68	210	38	3.0	278.6	0.72	0.05	0.22
INFL	11/16/94	N/A	38	42	210	54	4.3	284.4	0.89	0.06	0.30
INFL	11/17/94	N/A	12	42	290	43	4.7	286.7	0.46	0.04	0.32
INFL	11/30/94	N/A	39	40	240	28	2.6	292.6	0.37	0.03	0.38
INFL	12/02/94 b	N/A	36	50	240	28	2.6	296.4	ND	0.00	0.40
INFL	01/11/95 c	N/A	0	27	100	11	0.4	296.4	ND	0.00	0.40
INFL	02/02/95 d	N/A	528	38.5	170	20	0.3	304.2	ND	0.00	0.40
INFL	04/12/95 e	N/A	0	3.5 f	190	26	1.9	304.2	0.22	0.01	0.40
INFL	04/20/95	N/A	192	3.0 f	200	3.3	0.3	312.7	ND	0.00	0.45
INFL	05/03/95	0.0 g	312	4.0 f	200	ND	0.0	314.3	ND	0.00	0.45
INFL	06/06/95	764.0	764	44	210	5.9	0.5	321.8	0.092	0.01	0.55
INFL	07/06/95 h	1,201.7	438	45	210	12	0.9	334.6	0.092	0.01	0.66
INFL	08/03/95 i	1,203.3	2	43	215	11	0.9	334.6	0.18	0.01	0.66
TOTAL POUNDS REMOVED:								**334.6**			**0.66**
TOTAL GALLONS REMOVED:								**54.9**			**0.09**
PERIOD POUNDS REMOVED:							**0.0**			**0.00**	
PERIOD GALLONS REMOVED:							**0.0**			**0.00**	
PERIOD AVERAGE FLOW RATE:					**N/A**						
TOTAL HOURS OF OPERATION:					**2,375**						

TPPH = Total purgeable petroleum hydrocarbons
" H20 = Inches of water
scfm = Standard cubic feet per minute
ppmv = Parts per million by volume
lbs = Pounds
N/A = Not available or not applicable
ND = Not detected

a. System started, run approx. 7 hours 11/4/94 by PACIFIC; restarted on 11/14/94.
b. System shut down pending the BAAQMDs approval of a monthly monitoring schedule.
c. System restarted with BAAQMD's approval to monitor the system on a monthly basis.
d. System down; performance values estimated by averaging two previous values.
e. System restarted on 4/12/95.
f. Vacuum measured in inches of mercury rather than inches of water.
g. Hourmeter installed 5/3/95 (initial reading = 0.0 hours).
h. SVE system shut down for pulsing.
i. SVE system restarted for sampling, then temporarily shut down 8/3/95.

Mass removed is an approximation calculated using averaged instantaneous mass removal rates.
Pounds of hydrocarbons removed to date provided by prior consultant, GeoStrategies Incorporated.
Timer disconnected on November 15, 1994; continuous operation during week initiated, shutdown weekends.
Prior to June 1995, TPPH as gasoline was reported as TPH calculated as gasoline.
See certified analytical reports for detection limits.

Table C-3
Historical Soil Vapor Extraction Well Data

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

Date System Monitored	Well Number A-1 Status (O/C)	A-1 Vacuum (" H20) M	A-1 Vacuum (" H20) W	A-1 TPPH as Gasoline (ppmv)	A-1 Benzene (ppmv)	AV-1 Status (O/C)	AV-1 Vacuum (" H20) M	AV-1 Vacuum (" H20) W	AV-1 TPPH as Gasoline (ppmv)	AV-1 Benzene (ppmv)	AV-2 Status (O/C)	AV-2 Vacuum (" H20) M	AV-2 Vacuum (" H20) W	AV-2 TPPH as Gasoline (ppmv)	AV-2 Benzene (ppmv)	AV-3 Status (O/C)	AV-3 Vacuum (" H20) M	AV-3 Vacuum (" H20) W	AV-3 TPPH as Gasoline (ppmv)	AV-3 Benzene (ppmv)
11/15/94	O	68	68	180 *	N/A *	O	68	68	20 *	N/A *	O	68	66	ND *	N/A *	O	64	60	4.0 *	N/A *
11/16/94	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
11/17/94	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
12/01/95	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
12/02/95	O	40	N/A	200 *	N/A *	O	40	N/A	70 *	N/A *	O	40	N/A	15 *	N/A *	O	40	N/A	10 *	N/A *
01/11/95	O	37	N/A	6.1 +	0.06 +	O	37	N/A	ND +	ND +	O	36	N/A	ND +	ND +	O	36	N/A	ND +	ND +
04/20/95	O	48	48	14 +	0.15 +	O	48	48	ND +	ND +	O	48	48	ND +	ND +	O	48	48	ND +	ND +
05/03/95	O	55	48	35 *	N/A *	O	55	50	ND *	N/A *	O	55	50	ND *	N/A *	O	55	50	ND *	N/A *
06/06/95	O	43	40	55 *	N/A *	O	43	42	65 *	N/A *	O	43	42	6 *	N/A *	O	43	42	5.5 *	N/A *
07/06/95	O	45	41	50 +	ND +	O	45	43	6 +	0.03 +	O	45	43	ND +	ND +	O	45	43	18 +	0.2 +
08/03/95 a	O	43	39	11 *	N/A *	O	43	42	12 *	N/A *	O	43	42	10 *	N/A *	O	43	41	6 *	N/A *

Date System Monitored	Well Number AV-4 Status (O/C)	AV-4 Vacuum (" H20) M	AV-4 Vacuum (" H20) W	AV-4 TPPH as Gasoline (ppmv)	AV-4 Benzene (ppmv)	AV-5 Status (O/C)	AV-5 Vacuum (" H20) M	AV-5 Vacuum (" H20) W	AV-5 TPPH as Gasoline (ppmv)	AV-5 Benzene (ppmv)	AV-6 Status (O/C)	AV-6 Vacuum (" H20) M	AV-6 Vacuum (" H20) W	AV-6 TPPH as Gasoline (ppmv)	AV-6 Benzene (ppmv)	AV-7 Status (O/C)	AV-7 Vacuum (" H20) M	AV-7 Vacuum (" H20) W	AV-7 TPPH as Gasoline (ppmv)	AV-7 Benzene (ppmv)
11/15/94	O	64	62	300 *	N/A *	O	68	68	150 *	N/A *	O	64	64	60 *	N/A *	O	64	60	50 *	N/A *
11/16/94	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
11/17/94	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
12/01/95	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
12/02/95	O	40	N/A	175 *	N/A *	O	40	N/A	10 *	N/A *	O	40	N/A	15 *	N/A *	O	40	N/A	30 *	N/A *
01/11/95	O	33	N/A	3.7 +	0.22 +	O	36	N/A	0.03 +	ND +	O	35	N/A	3.0 +	0.31 +	O	35	N/A	165.5 +	ND +
04/20/95	O	48	N/A	26 +	0.04 +	O	48	48	ND +	ND +	O	48	46	ND +	ND +	O	48	46	5.9 +	ND +
05/03/95	O	55	N/A	N/A *	N/A *	O	55	47	ND *	N/A *	O	55	46	ND *	N/A *	O	55	48	10 *	N/A *
06/06/95	O	43	N/A	150 *	N/A *	O	43	40	20 *	N/A *	O	43	39	8 *	N/A *	O	43	40	8 *	N/A *
07/06/95	O	45	N/A	95 +	0.43 +	O	45	41	284 +	2 +	O	45	41	ND +	0.07 +	O	45	41	4 +	0.03 +
08/03/95 a	O	43	N/A	192 *	N/A *	O	43	40	21 *	N/A *	O	43	38	2 *	N/A *	O	43	39	3 *	N/A *

TPPH	= Total purgeable petroleum hydrocarbons	M	= Vacuum measured at manifold
O	= Valve open	W	= Vacuum measured at well head
C	= Valve closed	*	= Concentration readings obtained by flame-ionization detector (FID).
" H20	= Inches of water	+	= Air bag sampled analyzed by EPA Method 8015/8020.
ppmv	= Parts per million by volume; converted from micrograms per liter	N/A	= Not available or not applicable
Pacific Environmental Group, Inc. startup 11/4/94; prior consultant was GeoStrategies Inc.		ND	= Not detected above the detection limit
Prior to June 1995, TPPH as gasoline was reported as TPH as gasoline.		a.	Remediation systems temporarily shut down 8/3/95.

Figure C-1
Historical Groundwater Extraction System Mass Removal Trend

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

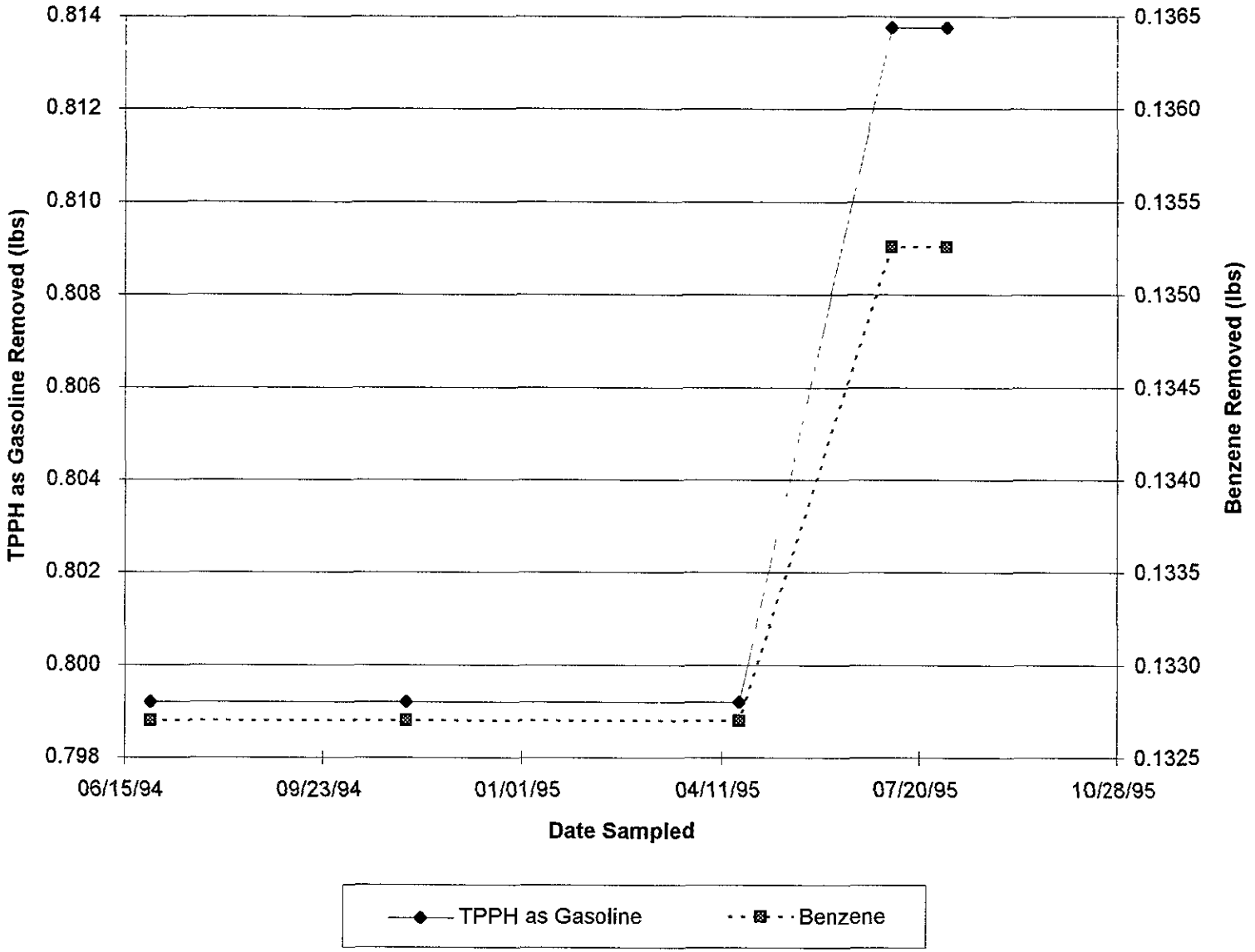

Figure C-2
Historical Groundwater Extraction System Hydrocarbon Concentrations

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

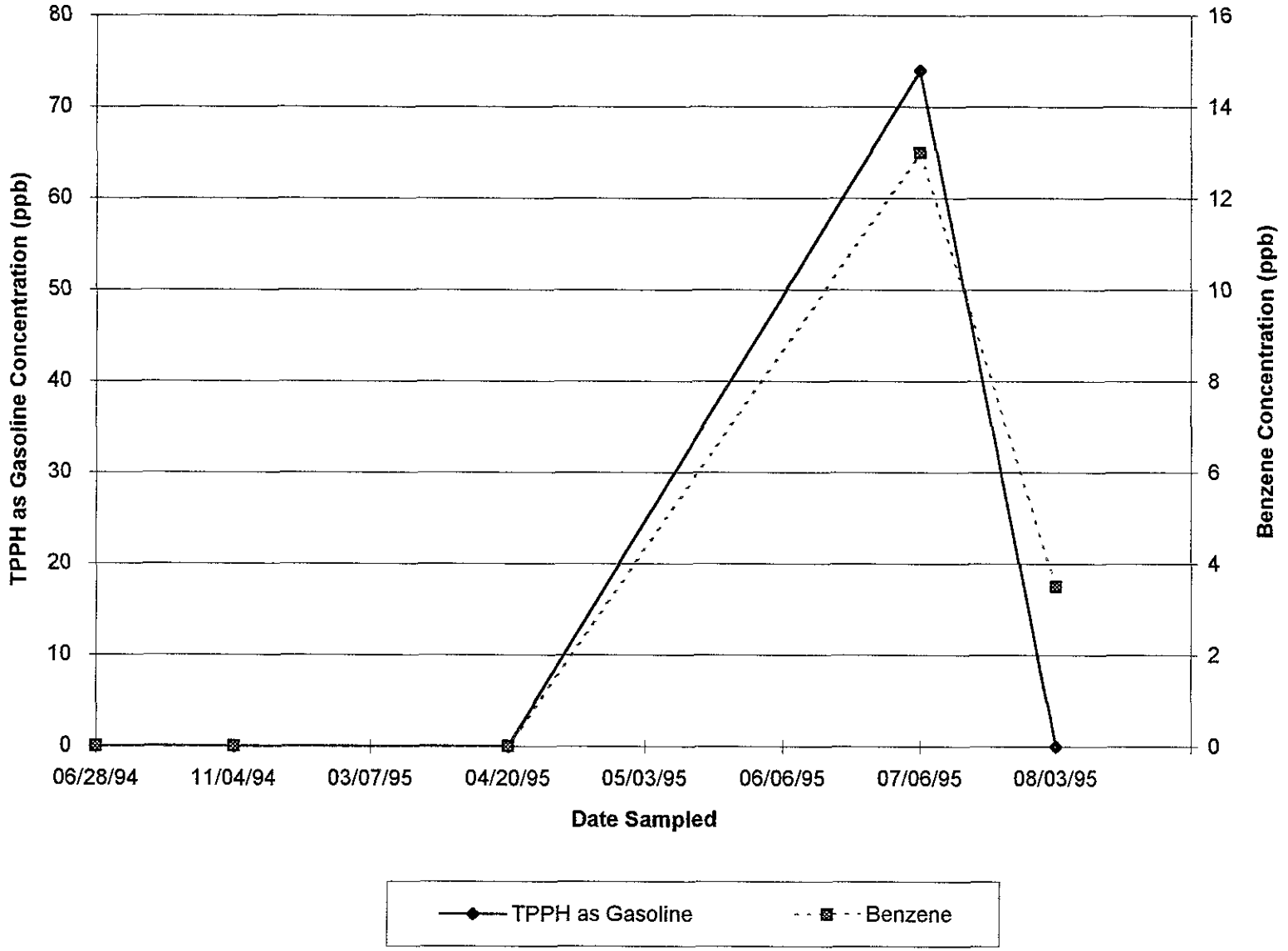

Figure C-3
Historical Soil Vapor Extraction System Mass Removal Trend

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

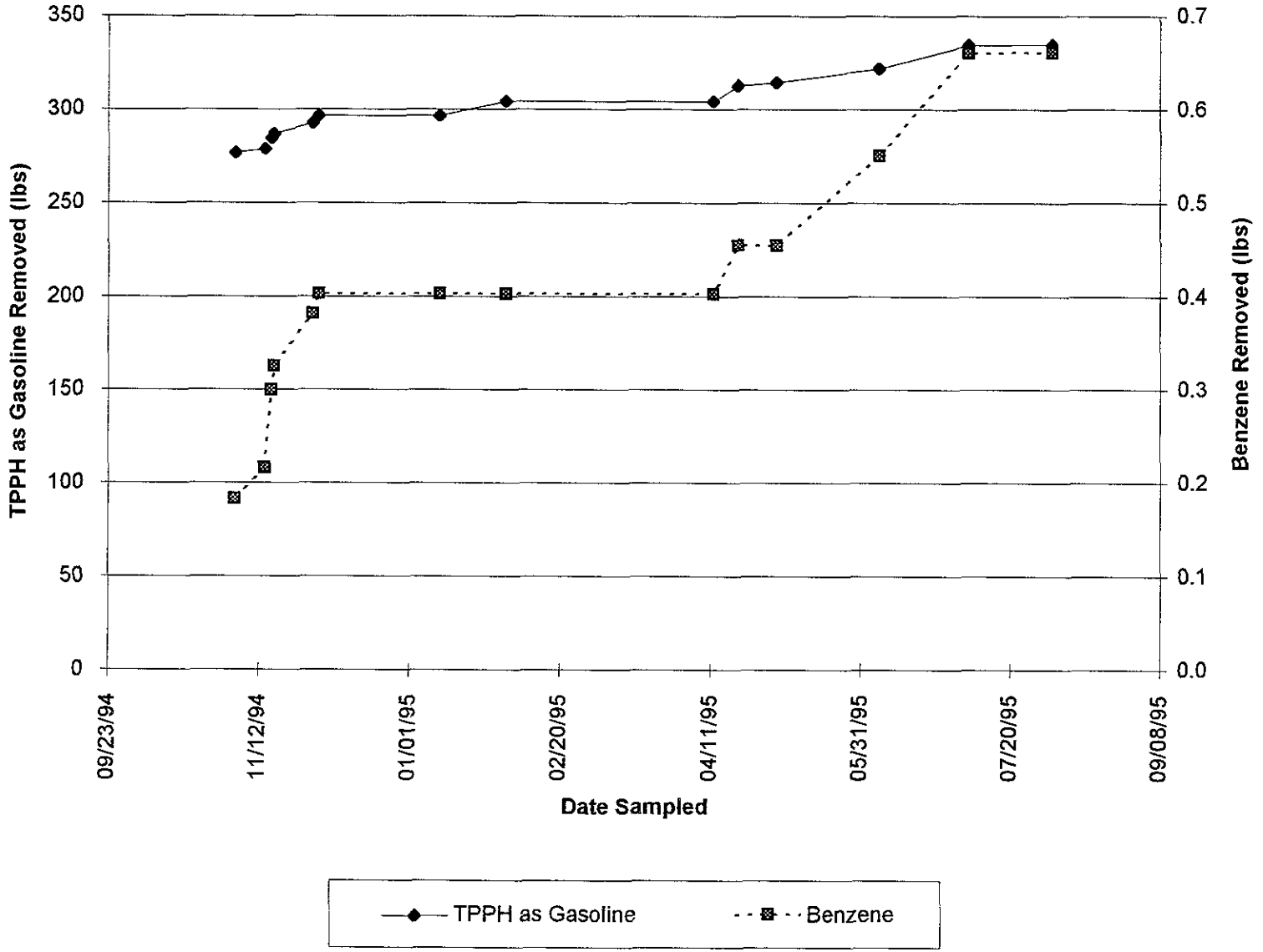

Figure C-4
Historical Soil Vapor Extraction System Hydrocarbon Concentrations

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California