



PACIFIC  
ENVIRONMENTAL  
GROUP, INC.

ENVIRONMENTAL  
GROUP, INC.  
5000 15th St  
San Jose, CA 95128

February 14, 1996  
Project 330-107.2B

Mr. Michael Whelan  
ARCO Products Company  
P.O. Box 612530  
San Jose, California 95161

Re: Quarterly Report - Fourth Quarter 1995  
ARCO Service Station 2162  
15135 Hesperian Boulevard at Ruth Court  
San Leandro, California

Dear Mr. Whelan:

This letter, prepared by Pacific Environmental Group, Inc. (PACIFIC) on behalf of ARCO Products Company, presents the results of the fourth quarter 1995 groundwater monitoring at the site referenced above. In addition, a summary of work performed and anticipated at the site is included.

#### **QUARTERLY GROUNDWATER MONITORING RESULTS**

Groundwater samples were collected by PACIFIC on November 22, 1995, and analyzed for the presence of total purgeable petroleum hydrocarbons calculated as gasoline (TPPH-g), benzene, toluene, ethylbenzene, xylenes (BTEX compounds), and total methyl t-butyl ether. The certified analytical report, chain-of-custody documentation, and field data sheets are presented as Attachment A. Field and laboratory procedures are presented as Attachment B.

Depth to water data collected during the November 22, 1995 sampling event indicate that groundwater levels across the site have decreased an average of 0.70 foot since August 23, 1995. Groundwater flow was to the southwest with an approximate gradient of 0.01. This flow direction and gradient are consistent with historical data. Groundwater elevation data are presented in Table 1. A groundwater elevation contour map based on the November 1995 data is shown on Figure 1.

Results of groundwater monitoring this quarter are generally consistent with previous results. Well MW-3 was non-detect for TPPH-g and benzene. TPPH-g concentrations in Wells MW-1, MW-2, and MW-4 ranged from 70 to 88 parts per billion (ppb). Benzene was below detection limits in Wells MW-1, MW-2, and MW-3. The benzene concentration in Well MW-4 was 6.2 ppb. Separate-phase hydrocarbons have never been observed in any site well. Groundwater analytical data are presented in Tables 2 and 3. A TPPH-g and benzene concentration map is shown on Figure 2.

## **SUMMARY OF WORK**

### **Work Performed Fourth Quarter 1995**

- Prepared and submitted third quarter 1995 groundwater monitoring report.
- Performed fourth quarter 1995 groundwater monitoring event. Groundwater sampling was performed by PACIFIC.
- Prepared fourth quarter 1995 groundwater monitoring report.

### **Work Anticipated First Quarter 1996**

- Prepare and submit fourth quarter 1995 groundwater monitoring report.
- Perform first quarter 1996 groundwater monitoring event. Groundwater sampling to be performed by PACIFIC.
- Prepare first quarter 1996 groundwater monitoring report.

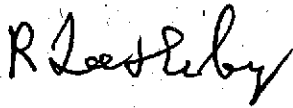
If there are any questions regarding the contents of this letter, please call.

Sincerely,

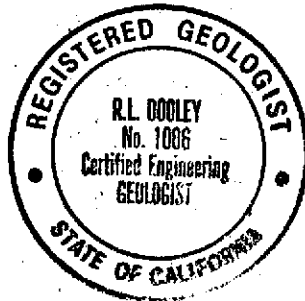
**Pacific Environmental Group, Inc.**



Kelly C. Brown  
Project Manager



R. Lee Dooley  
Senior Geologist  
CEG 1006



Attachments:

- Table 1 - Groundwater Elevation Data
- Table 2 - Groundwater Analytical Data - Total Purgeable Petroleum Hydrocarbons (TPPH as Gasoline and BTEX Compounds)
- Table 3 - Groundwater Analytical Data - Total Methyl t-Butyl Ether
- Figure 1 - Groundwater Elevation Contour Map
- Figure 2 - TPPH-g/Benzene Concentration Map
- Attachment A - Certified Analytical Report, Chain-of-Custody Documentation, and Field Data Sheets
- Attachment B - Field and Laboratory Procedures

cc: Mr. John Jang, Regional Water Quality Control Board - S.F. Bay Region  
Mr. Mike Bakaldin, City of San Leandro Fire Department, Hazardous Materials Division  
Mr. Scott Seery, Alameda County Health Care Services Agency

Table 1  
Groundwater Elevation Data

ARCO Service Station 2162  
15135 Hesperian Boulevard at Ruth Court  
San Leandro, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)
MW-1	09/30/92	31.19	10.68	20.51
	10/16/92		10.83	20.36
	01/14/93		7.25	23.94
	02/24/93		7.23	23.96
	03/30/93		7.58	23.61
	04/14/93		7.96	23.23
	05/19/93		8.26	22.93
	06/17/93		8.42	22.77
	07/28/93		8.68	22.51
	08/11/93		9.07	22.12
	09/28/93		9.60	21.59
	10/15/93		9.51	21.68
	11/16/93		--- Well Inaccessible ---	
	12/16/93		8.70	22.49
	02/15/94		8.51	22.68
	03/18/94		8.46	22.73
	05/05/94		8.66	22.53
	08/05/94		9.50	21.69
	11/21/94		8.83	22.36
	02/24/95		7.90	23.29
05/31/95		7.86	23.33	
08/23/95		8.74	22.45	
11/22/95		9.50	21.69	
MW-2	09/30/92	30.38	9.74	20.64
	10/16/92		9.91	20.47
	01/14/93		6.56	23.82
	02/24/93		6.67	23.71
	03/30/93		6.76	23.62
	04/14/93		7.10	23.28
	05/19/93		7.40	22.98
	06/17/93		7.51	22.87
	07/28/93		7.73	22.65
	08/11/93		8.11	22.27
	09/28/93		8.57	21.81
	10/15/93		8.56	21.82
	11/16/93		8.87	21.51
	12/16/93		7.92	22.46
	02/15/94		7.62	22.76
	03/18/94		7.57	22.81
	05/05/94		7.75	22.63
08/05/94		8.53	21.85	
11/21/94		7.92	22.46	
02/24/95		6.98	23.40	
05/31/95		6.97	23.41	
08/23/95		7.83	22.55	
11/22/95		8.54	21.84	
MW-3	09/30/92	30.30	9.93	20.37
	10/16/92		10.13	20.17
	01/14/93		6.71	23.59
	02/24/93		6.82	23.48
	03/30/93		7.07	23.23
	04/14/93		7.41	22.89
	05/19/93		7.72	22.58
	06/17/93		7.86	22.44
	07/25/93		8.13	22.17

Table 1 (continued)  
Groundwater Elevation Data

ARCO Service Station 2162  
15135 Hesperian Boulevard at Ruth Court  
San Leandro, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)
MW-3	08/11/93		8.45	21.85
(cont.)	09/28/93		8.96	21.34
	10/15/93		8.85	21.45
	11/16/93		9.09	21.21
	12/16/93		8.10	22.20
	02/15/94		7.88	22.42
	03/18/94		7.88	22.42
	05/05/94		8.08	22.22
	08/05/94		8.82	21.48
	11/21/94		8.17	22.13
	02/24/95		7.40	22.90
	05/31/95		7.35	22.95
	08/23/95		8.15	22.15
	11/22/95		8.84	21.46
MW-4	09/30/92	30.39	11.15	19.24
	10/16/92		11.33	19.06
	01/14/93		7.49	22.90
	02/24/93		7.57	22.82
	03/30/93		8.06	22.33
	04/14/93		8.48	21.91
	05/19/93		7.80	22.59
	06/17/93		8.94	21.45
	07/25/93		9.28	21.11
	05/11/93		9.61	20.78
	09/25/93		10.14	20.25
	10/15/93		10.00	20.39
	11/16/93		10.22	20.17
	12/16/93		9.11	21.28
	02/15/94		8.97	21.42
	03/15/94		8.99	21.40
	05/05/94		9.21	21.18
	08/05/94		10.02	20.37
	11/21/94		9.30	21.09
	02/24/95		8.46	21.93
	05/31/95		8.41	21.98
	08/23/95		9.32	21.07
	11/22/95		9.98	20.41
MSL = Mean sea level				
TOC = Top of casing				

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

ARCO Service Station 2162  
 15135 Hesperian Boulevard at Ruth Court  
 San Leandro, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)
MW-1	09/30/92	1,100	6.2	<0.50	6.9	<0.50
	10/16/92	790	3.0	0.8	5.6	2.9
	01/14/93	660	1.2	<1 a	15	4.6
	04/14/93	310	<1 a	<1 a	<1 a	
	08/11/93	660	0.8	<0.7	9.0	<1 b
	10/15/93	620	0.7	<0.5	5.9	2.2
	02/15/94	650	1.9	<0.5	4.5	4.9 b
	05/05/94	510	<0.5	<0.5	<1	1.6
	08/05/94	310	<0.5	<0.5	1.5	1.2
	11/21/94	330	<0.5	<0.5	1.5	1.1
	02/24/95	120	<0.50	<0.50	<0.50	<0.50
	05/31/95	<50	<0.50	<0.50	<0.50	<0.50
	08/23/95	160	<0.50	<0.50	<0.50	<0.50
	11/22/95	70	<0.50	<0.50	<0.50	<0.50
MW-2	09/30/92	1,000	9.6	<0.50	45	110
	10/16/92	630	8	<1 a	37	64
	01/14/93	7,800	33	5	340	920
	04/14/93	1,600	7	<5 a	220	520
	08/11/93	1,600	4.3	<1 a	80	120
	10/15/93	1,100	1.7	<1 a	62	70
	02/15/94	490	1.8	1.5	49	37
	05/05/94	360	<0.5	<0.5	27	18
	08/05/94	660	<0.5	<0.5	42	37
	11/21/94	500	<0.5	<0.5	40	25
	02/24/95	650	<0.50	<0.50	52	48
	05/31/95	450	<0.50	<0.50	33	33
	08/23/95	180	<0.50	<0.50	12	9.5
	11/22/95	88	<0.50	<0.50	2.1	1.3
MW-3	09/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/16/92	<50	<0.50	<0.50	<0.50	<0.50
	01/14/93	52	<0.50	<0.50	<0.50	<0.50
	04/14/93	360	86	2.1	5.1	4.0
	08/11/93	69	1.1	<0.5	<0.5	<0.5
	10/15/93	<50	<0.5	<0.5	<0.5	<0.5
	02/15/94	<50	<0.5	<0.5	<0.5	<0.5
	05/05/94	<50	<0.5	<0.5	<0.5	<0.5
	08/05/94	<50	<0.5	<0.5	<0.5	<0.5
	11/21/94	<50	<0.5	<0.5	<0.5	<0.5
	02/24/95	<50	0.93	<0.50	<0.50	<0.50
	05/31/95	120	24	<0.50	<0.50	<0.50
	08/23/95	85	<0.5	<0.5	<0.5	<0.5
	11/22/95	<50	<0.50	<0.50	<0.50	<0.50
MW-4	09/30/92	330	81	<0.50	<0.50	<0.50
	10/16/92	250	44	<0.50	<0.50	0.7
	01/14/93	260	29	0.6	<0.50	1.1
	04/14/93	NS	NS	NS	NS	NS
	08/11/93	150	21	<0.5	<0.5	<0.5
	10/15/93	190	12	<0.5	<0.5	<0.5
	02/15/94	<50	2.0	<0.5	<0.5	<0.5
	05/05/94	160	17	<0.5	<0.5	0.6
	08/05/94	120	10	<0.5	<0.5	<0.5
	11/21/94	120	17	<0.5	<0.5	0.6

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

ARCO Service Station 2162  
 15135 Hesperian Boulevard at Ruth Court  
 San Leandro, California

Well Number	Date Sampled	TPPH as			Ethyl- benzene (ppb)	Xylenes (ppb)
		Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)		
MW-4	02/24/95	110	14	<0.50	<0.50	<0.50
(cont.)	05/31/95	97	11	<0.50	<0.50	<0.50
	08/23/95	110	16	<0.50	<0.50	<0.50
	11/22/95	71	6.2	<0.50	<0.50	<0.50
ppb	= Parts per million					
NS	= Not sampled, separate-phase hydrocarbon entered well during purging.					
a.	Raised MRL due to high analyte concentration requiring sample dilution					
b.	Raised MRL due to matrix interference					

Table 3  
Groundwater Analytical Data  
Total Methyl t-Butyl Ether

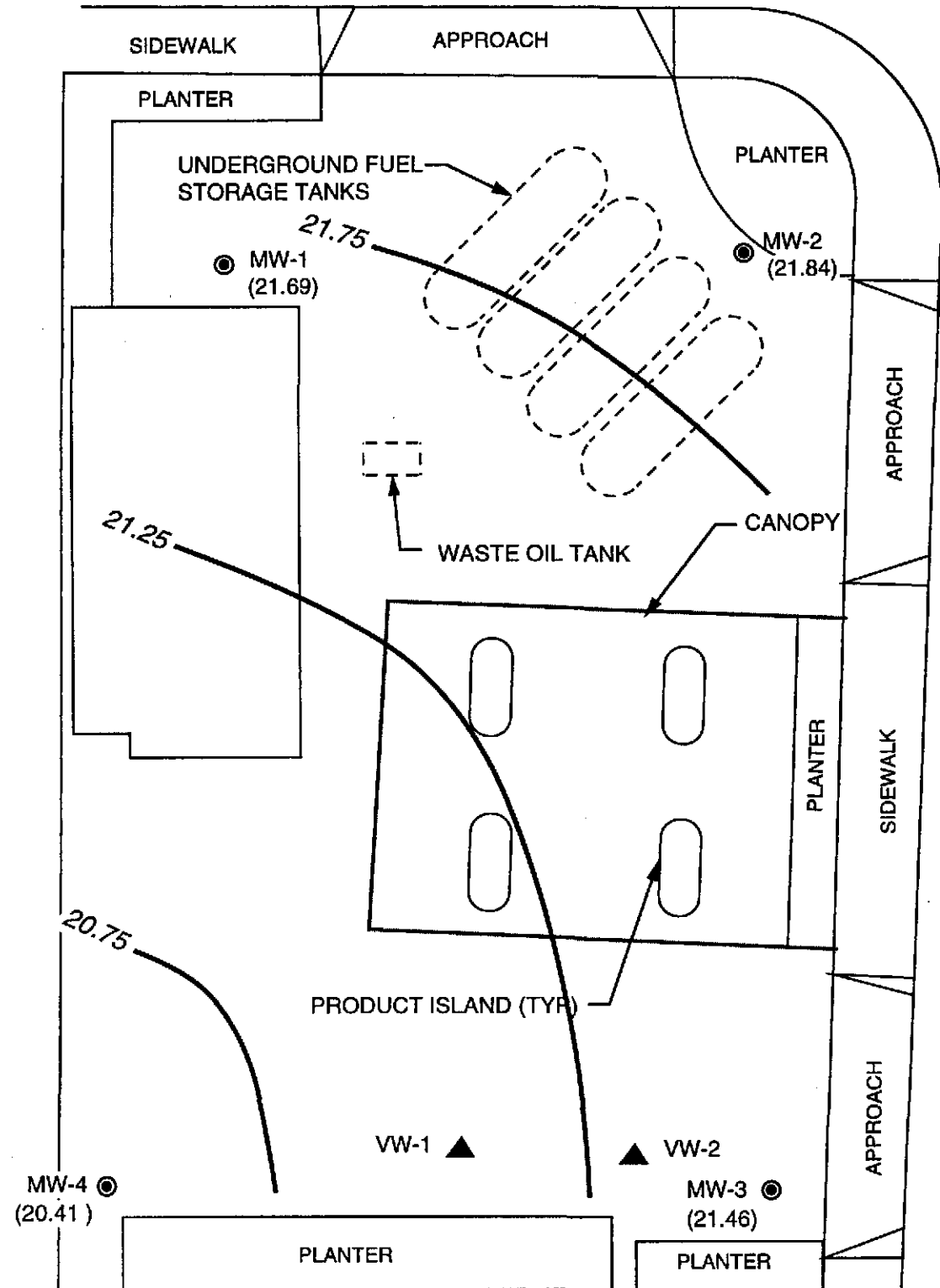
ARCO Service Station 2162  
15135 Hesperian Boulevard at Ruth Court  
San Leandro, California

Well Number	Date Sampled	Methyl t-Butyl Ether (ppb)
MW-1	8/23/95	<2.5
MW-2	8/23/95	<2.5
MW-3	8/23/95	41
MW-4	8/23/95	<2.5

ppb = Parts per billion



# RUTH COURT



**HESPERIAN BOULEVARD**

### LEGEND

- MW-4 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- VW-1 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
- (21.84) GROUNDWATER ELEVATION IN FEET - MSL, 11-22-95
- 21.25 — GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 11-22-95



APPROXIMATE DIRECTION OF GROUNDWATER FLOW  
APPROXIMATE GRADIENT = 0.01

SOURCE: MAP BY RESNA



PACIFIC ENVIRONMENTAL GROUP, INC.

### SCALE

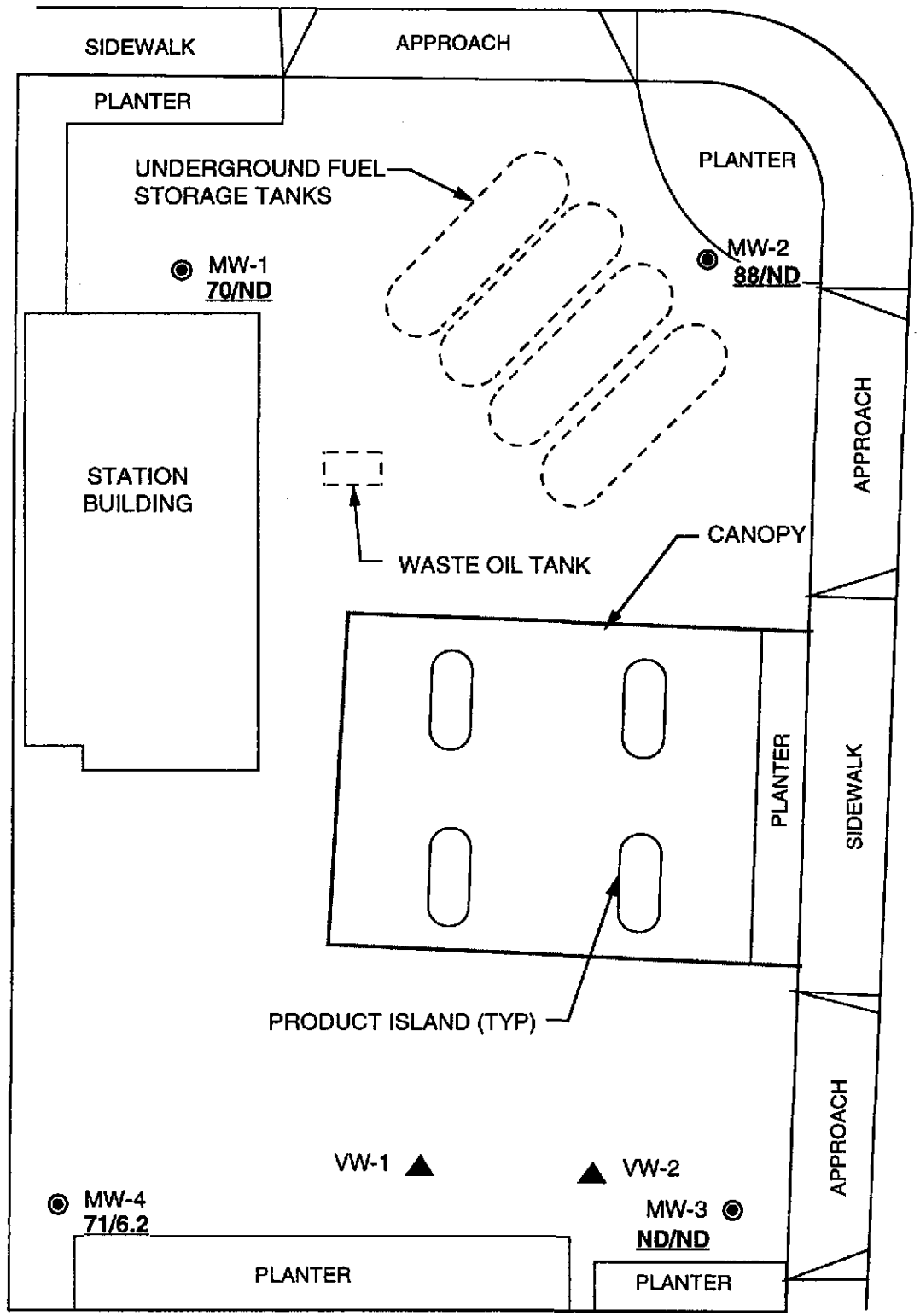


**ARCO SERVICE STATION 2162**  
15135 Hesperian Boulevard at Ruth Court  
San Leandro, California

**GROUNDWATER ELEVATION CONTOUR MAP**

FIGURE:  
**1**  
PROJECT:  
330-107.2B

**RUTH COURT**



**LEGEND**

- MW-4 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- VW-1 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
- 88/ND** TPPH-g/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 11-22-95
- ND** NOT DETECTED



APPROXIMATE DIRECTION OF GROUNDWATER FLOW

SOURCE: MAP BY RESNA



PACIFIC ENVIRONMENTAL GROUP, INC.

**SCALE**



**ARCO SERVICE STATION 2162**  
 15135 Hesperian Boulevard at Ruth Court  
 San Leandro, California

**TPPH-g/BENZENE CONCENTRATION MAP**

FIGURE:  
**2**  
 PROJECT:  
 330-107.2B

**ATTACHMENT A**

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



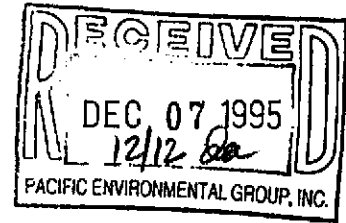
**Sequoia  
Analytical**

680 Chesapeake Drive  
404 N. Wiget Lane  
819 Striker Avenue, Suite 8

Redwood City, CA 94063  
Walnut Creek, CA 94598  
Sacramento, CA 95834

(415) 364-9600  
(510) 988-9600  
(916) 921-9600

FAX (415) 364-9233  
FAX (510) 988-9673  
FAX (916) 921-0100



Pacific Environmental Group  
2025 Gateway Place, Suite 440  
San Jose, CA 95110  
Attention: Maree Doden

Project: 330-107.2G/2162, San Leandro

Enclosed are the results from samples received at Sequoia Analytical on November 27, 1995.  
The requested analyses are listed below:

<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DATE COLLECTED</u>	<u>TEST METHOD</u>
9511H85 -01	LIQUID, MW-1	11/22/95	TPHGBW Purgeable TPH/BTEX
9511H85 -02	LIQUID, MW-2	11/22/95	TPHGBW Purgeable TPH/BTEX
9511H85 -03	LIQUID, MW-3	11/22/95	TPHGBW Purgeable TPH/BTEX
9511H85 -04	LIQUID, MW-4	11/22/95	TPHGBW Purgeable TPH/BTEX
9511H85 -05	LIQUID, TB-1	11/22/95	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**

*B Fletcher*

Brucie Fletcher  
Project Manager

*[Signature]*

Quality Assurance Department



Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110	Client Proj. ID: 330-107.2G/2162, San Leandro Sample Descript: MW-1 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9511H85-01	Sampled: 11/22/95 Received: 11/27/95 Analyzed: 11/29/95 Reported: 12/05/95
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QC Batch Number: GC112995BTEX20A  
Instrument ID: GCHP20

### Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	70
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-C12
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70                      130	99

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

SEQUOIA ANALYTICAL - ELAP #1210

Bruce Fletcher  
Project Manager



Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110	Client Proj. ID: 330-107.2G/2162, San Leandro Sample Descript: MW-2 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9511H85-02	Sampled: 11/22/95 Received: 11/27/95 Analyzed: 11/29/95 Reported: 12/05/95
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QC Batch Number: GC112995BTEX20A  
Instrument ID: GCHP20

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	88
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	2.1
Xylenes (Total)	0.50	1.3
Chromatogram Pattern:		Gas

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

Brucie Fletcher  
Project Manager



Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110	Client Proj. ID: 330-107.2G/2162, San Leandro Sample Descript: MW-3 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9511H85-03	Sampled: 11/22/95 Received: 11/27/95 Analyzed: 11/29/95 Reported: 12/05/95
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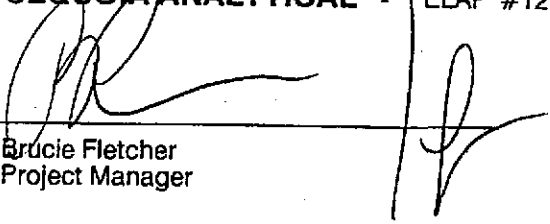
QC Batch Number: GC112995BTEX20A  
Instrument ID: GCHP20

**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:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	99

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

**SEQUOIA ANALYTICAL** - ELAP #1210



Bruce Fletcher  
Project Manager



Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110	Client Proj. ID: 330-107.2G/2162, San Leandro Sample Descript: MW-4 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9511H85-04	Sampled: 11/22/95 Received: 11/27/95 Analyzed: 11/29/95 Reported: 12/05/95
Attention: Maree Doden		

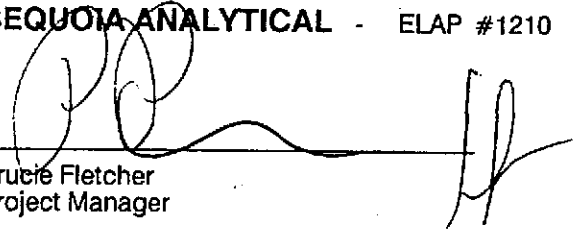
QC Batch Number: GC112995BTEX20A  
Instrument ID: GCHP20

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	71
Benzene	0.50	6.2
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern: Weathered Gas		< C8
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	97

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

**SEQUOIA ANALYTICAL** - ELAP #1210

  
Bruce Fletcher  
Project Manager





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

Client Proj. ID: 330-107.2G/2162, San Leandro  
Sample Descript: TB-1  
Matrix: LIQUID  
Analysis Method: 8015Mod/8020  
Lab Number: 9511H85-05

Sampled: 11/22/95  
Received: 11/27/95  
Analyzed: 11/29/95  
Reported: 12/05/95

Attention: Maree Doden

QC Batch Number: GC112995BTEX20A  
Instrument ID: GCHP20

**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:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	97

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Bruce Fletcher  
Project Manager



Pacific Environmental Group Client Project ID: 330-107.2G/2162, San Leandro  
 2025 Gateway Place, Suite 440 Matrix: LIQUID  
 San Jose, CA 95110  
 Attention: Maree Doden Work Order #: 9511H85 01-05 Reported: Dec 6, 1995

**QUALITY CONTROL DATA REPORT**

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC112995BTEX20A	GC112995BTEX20A	GC112995BTEX20A	GC112995BTEX20A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	J. Woo	J. Woo	J. Woo	J. Woo
MS/MSD #:	9511D5705	9511D5705	9511D5705	9511D5705
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	11/29/95	11/29/95	11/29/95	11/29/95
Analyzed Date:	11/29/95	11/29/95	11/29/95	11/29/95
Instrument I.D.#:	GCHP20	GCHP20	GCHP20	GCHP20
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	9.1	9.4	9.1	27
MS % Recovery:	91	94	91	90
Dup. Result:	8.5	8.7	8.5	25
MSD % Recov.:	85	87	85	83
RPD:	6.8	7.7	6.8	7.7
RPD Limit:	0-50	0-50	0-50	0-50

LCS #:	BLK112995	BLK112995	BLK112995	BLK112995
Prepared Date:	11/29/95	11/29/95	11/29/95	11/29/95
Analyzed Date:	11/29/95	11/29/95	11/29/95	11/29/95
Instrument I.D.#:	GCHP20	GCHP20	GCHP20	GCHP20
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
LCS Result:	9.6	9.7	9.6	29
LCS % Recov.:	96	97	96	97

MS/MSD LCS Control Limits	71-133	72-128	72-130	71-120
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Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

*B Fletcher*  
 Bruce Fletcher  
 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): JB

WORKORDER: 9511485  
 DATE OF LOG-IN: 11-28-95

CIRCLE THE APPROPRIATE RESPONSE		LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION(ETC.)
1. Custody Seal(s)	Present / <u>Absent</u> Intact / Broken*	1	A-C	MW-1	3 VOAS	LI	11-22-95	
2. Custody Seal Nos.:	Put in Remarks Section	2	↓	MW-2	↓	↓	↓	
3. Chain-of-Custody Records:	<u>Present</u> / Absent*	3	↓	MW-3	↓	↓	↓	
4. Traffic Reports or Packing List:	Present / <u>Absent</u>	4	↓	MW-4	↓	↓	↓	
5. Airbill:	Airbill / Sticker Present / <u>Absent</u>	5	A,B	TB-1	2 VOAS	↓	↓	
6. Airbill No.:								
7. Sample Tags:	<u>Present</u> / Absent*							
8. Sample Condition:	<u>Intact</u> / Broken* / Leaking*							
9. Does information on custody reports, traffic reports and sample tags agree?	<u>Yes</u> / No*							
10. Proper preservatives used:	<u>Yes</u> / No*							
11. Date Rec. at Lab:	<u>11-27-95</u>							
12. Temp. Rec. at Lab:	<u>14°</u>							
13. Time Rec. at Lab:	<u>1142</u>							

\* If Circled, contact Project manager and attach record of resolution

ARCO Facility no. **2162** City (Facility) **San Leandro** Project manager (Consultant) **Kelly Brown**  
 ARCO engineer **Mike Whelan** Telephone no. (ARCO) Telephone no. (Consultant) **(408) 441-7500** Fax no. (Consultant) **(408) 441-7539**  
 Consultant name **Pacific Environmental Group** Address (Consultant) **2025 Gateway Pl. # 440 San Jose, CA 95110**

Laboratory name **Sequoia**  
Contract number

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	GAS BTEX/TPH EPA 1602/8020/8015	TPH Modified 8015 Gas Diesel	Oil and Grease 413.1 413.2	TPH EPA 418.1/SM430E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals VOA VOA	Semi Metals VOA VOA	Cadmium EPA 601/7000	TLC STLC	Lead Org./DHS Lead EPA 7420/7421	Method of shipment				
			Soil	Water	Other	Ice	Acid																				
✓ MW-1	1	3		X		X	HCl	11/22/95	1235		X													courier			
✓ MW-2	2	3		↓		↓			1210																Special detection Limit/reporting <b>9511H85</b>		
✓ MW-3	3	3		↓		↓			1120																	Special QA/QC	
✓ MW-4	4	3		↓		↓			1145																		Remarks
✓ TB-1	5	2		↓		↓			NA																		

Condition of sample:

Relinquished by sampler **Steve Metz** Date **11/22/95** Time **1435**

Relinquished by **M. D. Dod** Date **11/27/95** Time **0915**

Relinquished by **[Signature]** Date **11/27/95** Time

Temperature received:

Received by **M. D. Dod** Date **11/22/95** Time **1435**

Received by **[Signature]** Date **11/27/95** Time **1142**

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

# FIELD REPORT

## DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330-107.26 LOCATION: 15135 Mesquite Blvd. San Leandro DATE: 11-22-95  
 CLIENT/STATION NO.: ARCO/2162 FIELD TECHNICIAN: S. Metz DAY OF WEEK: Wednesday

PROBE TYPE/ID No.  
 Oil/Water IF/ \_\_\_\_\_  
 H<sub>2</sub>O level indicator 3  
 Other: \_\_\_\_\_

D/w 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)	Fresh	Weathered	Gas	Oil	VISCOSITY			LIQUID REMOVED (gallons) SPH / H <sub>2</sub> O			
																	Light	Medium	Heavy				
										COLOR													
4	MW-1	1035	-	-	-	-	-	15.90	9.50 2.50	9.71 9.71													
3	MW-2	1028	-	-	-	-	-	15.96	8.54 8.54	8.88 8.88													
2	MW-4	1015	-	-	-	-	-	17.70	9.98 9.98	10.26 10.26													
1	MW-3	1005	-	-	-	-	-	14.74	<del>8.52</del> 8.97 8.97	<del>8.85</del> 9.07 9.07													

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# FIELD DATA SHEET

## WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-107.2G LOCATION: 15135 Hesperian Blvd. <sup>San</sup> Leandro WELL ID #: MW-1

CLIENT/STATION No.: ARCO/2162 FIELD TECHNICIAN: S. Metz

### WELL INFORMATION

Depth to Liquid: \_\_\_\_\_ TOB \_\_\_\_\_ TOC \_\_\_\_\_  
 Depth to water: \_\_\_\_\_ TOB 9.50 (TOC)  
 Total depth: \_\_\_\_\_ TOB 15.90 (TOC)  
 Date: 11-22-95 Time (2400): 0950

Probe Type and I.D. #  
 Oil/Water interface \_\_\_\_\_  
 Electronic indicator \_\_\_\_\_  
 Other: \_\_\_\_\_

### CASING

DIAMETER	GAL/	LINEAR FT.
<input type="checkbox"/> 2	_____	<u>0.17</u>
<input type="checkbox"/> 3	_____	<u>0.38</u>
<input checked="" type="checkbox"/> 4	_____	<u>0.66</u>
<input type="checkbox"/> 4.5	_____	<u>0.83</u>
<input type="checkbox"/> 5	_____	<u>1.02</u>
<input type="checkbox"/> 6	_____	<u>1.5</u>
<input type="checkbox"/> 8	_____	<u>2.6</u>

### SAMPLE TYPE

Groundwater  
 Duplicate  
 Extraction well  
 Trip blank  
 Field blank  
 Equipment blank  
 Other: \_\_\_\_\_

TD 15.90 - DTW 9.50 = 6.4 Gal/Linear x Foot 0.66 = 4.2 x Casings 3 = Calculated = Purge 12.7

DATE PURGED: 11-22-95 START: 1220 END (2400 hr): 1227 PURGED BY: Sm

DATE SAMPLED: 11-22-95 START: 1230 END (2400 hr): 1235 SAMPLED BY: Sm

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>1220</u>	<u>4</u>	<u>7.26</u>	<u>686</u>	<u>72.7</u>	<u>cldy</u>	<u>light</u>	<u>none</u>
<u>1223</u>	<u>8</u>	<u>7.23</u>	<u>675</u>	<u>72.7</u>	<u>clr</u>	<u>light</u>	<u>none</u>
<u>1227</u>	<u>12</u>	<u>7.24</u>	<u>692</u>	<u>72.6</u>	<u>clr</u>	<u>light</u>	<u>none</u>

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: \_\_\_\_\_  
 Dedicated: \_\_\_\_\_  
 Other: \_\_\_\_\_

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>MW-1</u>	<u>11-22-95</u>	<u>1235</u>	<u>3</u>	<u>40ml</u>	<u>VDA</u>	<u>HCl</u>	<u>Gas / BTEX</u>

REMARKS: \_\_\_\_\_

# FIELD DATA SHEET

## WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-107.26 LOCATION: 15135 Haspian Blvd. <sup>Sas</sup> Leandro WELL ID #: MW-2

CLIENT/STATION No.: ARCO/2162 FIELD TECHNICIAN: S. Metz

### WELL INFORMATION

Depth to Liquid:        TOB        TOC         
 Depth to water:        TOB 8.54 TOC 8.54  
 Total depth:        TOB 15.96 TOC 15.96  
 Date: 11-22-95 Time (2400): 0950

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

CASING DIAMETER	GAL/ LINEAR FT.
<input type="checkbox"/> 2	<u>0.17</u>
<input type="checkbox"/> 3	<u>0.38</u>
<input checked="" type="checkbox"/> 4	<u>0.66</u>
<input type="checkbox"/> 4.5	<u>0.83</u>
<input type="checkbox"/> 5	<u>1.02</u>
<input type="checkbox"/> 6	<u>1.5</u>
<input type="checkbox"/> 8	<u>2.6</u>

SAMPLE TYPE

Groundwater  
 Duplicate  
 Extraction well  
 Trip blank  
 Field blank  
 Equipment blank  
 Other:       

TD 15.96 - DTW 8.54 = 7.42 Gal/Linear Foot 0.66 = 4.9 x Number of Casings 3 = Calculated Purge 14.7

DATE PURGED: 11-22-95 START: 1155 END (2400 hr): 1205 PURGED BY: Sm  
 DATE SAMPLED: 11-22-95 START: 1206 END (2400 hr): 1210 SAMPLED BY: Sm

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>1155</u>	<u>5</u>	<u>7.45</u>	<u>652</u>	<u>70.4</u>	<u>clr</u>	<u>light</u>	<u>none</u>
<u>1200</u>	<u>10</u>	<u>7.47</u>	<u>655</u>	<u>71.5</u>	<u>clr</u>	<u>light</u>	<u>none</u>
<u>1205</u>	<u>15</u>	<u>7.49</u>	<u>660</u>	<u>72.3</u>	<u>clr</u>	<u>light</u>	<u>none</u>

Pumped dry Yes /  No

	Cobach 0-100 Clear Cloudy Yellow Brown	NTU 0-200 Heavy Moderate Light Trace	Strong Moderate Faint None
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FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW:        TOB/TOC       

<p><u>PURGING EQUIPMENT/I.D. #</u></p> <input type="checkbox"/> Bailer: <u>      </u> <input checked="" type="checkbox"/> Centrifugal Pump: <u>      </u> <input type="checkbox"/> Other: <u>      </u>	<p><u>SAMPLING EQUIPMENT/I.D. #</u></p> <input checked="" type="checkbox"/> Bailer: <u>      </u> <input type="checkbox"/> Dedicated: <u>      </u> <input type="checkbox"/> Other: <u>      </u>
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SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE <u>40 ml</u>	CONTAINER <u>VCA</u>	PRESERVE <u>HCl</u>	ANALYTICAL PARAMETER <u>Gas / BTEX</u>
<u>MW-2</u>	<u>11-22-95</u>	<u>1210</u>	<u>3</u>	<u>40 ml</u>	<u>VCA</u>	<u>HCl</u>	<u>Gas / BTEX</u>

REMARKS:

# FIELD DATA SHEET

## WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-107.26 LOCATION: 15135 Hesperian Blvd. <sup>San</sup> Leandro WELL ID #: MW-3

CLIENT/STATION No.: ARCO / 2162 FIELD TECHNICIAN: S. Metz

### WELL INFORMATION

Depth to Liquid: \_\_\_\_\_ TOB \_\_\_\_\_ TOC \_\_\_\_\_  
 Depth to water: \_\_\_\_\_ TOB 8.84 TOC TOC  
 Total depth: \_\_\_\_\_ TOB 14.94 TOC TOC  
 Date: 11-22-95 Time (2400): 0950

Probe Type and I.D. #  
 Oil/Water interface \_\_\_\_\_  
 Electronic Indicator \_\_\_\_\_  
 Other: \_\_\_\_\_

CASING DIAMETER	GAL/ LINEAR FT.
<input type="checkbox"/> 2	_____ 0.17
<input type="checkbox"/> 3	_____ 0.38
<input checked="" type="checkbox"/> 4	_____ 0.66
<input type="checkbox"/> 4.5	_____ 0.83
<input type="checkbox"/> 5	_____ 1.02
<input type="checkbox"/> 6	_____ 1.5
<input type="checkbox"/> 8	_____ 2.6

**SAMPLE TYPE**

Groundwater  
 Duplicate  
 Extraction well  
 Trip blank  
 Field blank  
 Equipment blank  
 Other: \_\_\_\_\_

TD 14.94 - DTW 8.84 = 6.1 Gal/Linear x Foot 0.66 = 4.03 Number of Casings 3 Calculated = Purge 12

DATE PURGED: 11-22-95 START: 1100 END (2400 hr): 1110 PURGED BY: SM

DATE SAMPLED: 11-22-95 START: 1115 END (2400 hr): 1120 SAMPLED BY: Sm

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>1100</u>	<u>4</u>	<u>7.10</u>	<u>726</u>	<u>73.9</u>	<u>cldy</u>	<u>light</u>	<u>none</u>
<u>1105</u>	<u>8</u>	<u>7.22</u>	<u>703</u>	<u>74.1</u>	<u>clr</u>	<u>lt.</u>	<u>none</u>
<u>1110</u>	<u>12</u>	<u>7.18</u>	<u>712</u>	<u>74.5</u>	<u>clr</u>	<u>lt.</u>	<u>none</u>

Pumped dry Yes  No

Cobalt 0-100 Clear Cloudy Yellow Brown	NTU 0-200 Heavy Moderate Light Trace	Strong Moderate Faint None
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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
<u>MW-3</u>	<u>11-22-95</u>	<u>1120</u>	<u>3</u>	<u>40 ml</u>	<u>VOA</u>	<u>HCl</u>	<u>Gas / BTEX</u>

REMARKS: \_\_\_\_\_



# FIELD DATA SHEET

## WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-107.26 LOCATION: 15135 Hesperian Blvd. <sup>San</sup> Leandro WELL ID #: MW-4

CLIENT/STATION No.: ARCO / 2162 FIELD TECHNICIAN: S. Metz

### WELL INFORMATION

Depth to Liquid:      TOB      TOC       
 Depth to water:      TOB 9.98 TOC 100  
 Total depth:      TOB 17.70 TOC 100  
 Date: 11-22-95 Time (2400): 0955

CASING DIAMETER	GAL/ LINEAR FT.
<input type="checkbox"/> 2	0.17
<input type="checkbox"/> 3	0.38
<input checked="" type="checkbox"/> 4	0.66
<input type="checkbox"/> 4.5	0.83
<input type="checkbox"/> 5	1.02
<input type="checkbox"/> 6	1.5
<input type="checkbox"/> 8	2.6

### SAMPLE TYPE

Groundwater  
 Duplicate  
 Extraction well  
 Trip blank  
 Field blank  
 Equipment blank  
 Other:     

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

TD 17.70 - DTW 9.98 = 7.72 Gal/Linear Foot 0.66 = 5.1 x Casings 3 = Calculated Purge 15.3

DATE PURGED: 11-22-95 START: 1130 END (2400 hr): 1138 PURGED BY: SM  
 DATE SAMPLED: 11-22-95 START: 1140 END (2400 hr): 1145 SAMPLED BY: SM

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>1130</u>	<u>5</u>	<u>7.36</u>	<u>749</u>	<u>73.2</u>	<u>cldy</u>	<u>light</u>	<u>none</u>
<u>1134</u>	<u>10</u>	<u>7.25</u>	<u>745</u>	<u>72.7</u>	<u>cldy</u>	<u>light</u>	<u>none</u>
<u>1138</u>	<u>15</u>	<u>7.20</u>	<u>745</u>	<u>72.4</u>	<u>clr</u>	<u>light</u>	<u>none</u>

Pumped dry Yes / No

Cobalt 0-100 Clear Cloudy Yellow Brown	NTU 0-200 Heavy Moderate Light Trace	Strong Moderate Faint None
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FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW:      TOB/TOC     

<b>PURGING EQUIPMENT/I.D. #</b> <input type="checkbox"/> Bailer: <u>    </u> <input checked="" type="checkbox"/> Centrifugal Pump: <u>    </u> <input type="checkbox"/> Other: <u>    </u>	<b>SAMPLING EQUIPMENT/I.D. #</b> <input checked="" type="checkbox"/> Bailer: <u>    </u> <input type="checkbox"/> Dedicated: <u>    </u> <input type="checkbox"/> Other: <u>    </u>
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SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>MW-4</u>	<u>11/22/95</u>	<u>1145</u>	<u>3</u>	<u>40ml</u>	<u>VOA</u>	<u>HCl</u>	<u>Gas/BTEX</u>

REMARKS:

# FIELD DATA SHEET

## WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-107.26 LOCATION: 15135 Hesperian Blvd. WELL ID #: TB-1  
San Leandro  
 CLIENT/STATION No.: ARCO/2162 FIELD TECHNICIAN: S. Metz

### 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 3 = Calculated Purge

DATE PURGED: 11-22-95 START:        END (2400 hr):        PURGED BY:         
 DATE SAMPLED: 11-22-95 START:        END (2400 hr):        SAMPLED BY:       

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

Pumped dry Yes / No       

Cobalt 0-100 Clear Cloudy Yellow Brown	NTU 0-200 Heavy Moderate Light Trace	Strong Moderate Faint None
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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	11-22-95	NA	2	40 mL	VOA	HCl	Gas/BTEX

REMARKS:

**ATTACHMENT B**  
**FIELD AND LABORATORY PROCEDURES**

## **ATTACHMENT B**

### **FIELD AND LABORATORY PROCEDURES**

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#### **Sampling Procedures**

The sampling procedure for each well consists of first measuring the water level and checking for the presence of separate-phase hydrocarbons (SPH) using either an electronic indicator and a clear Teflon<sup>®</sup> bailer or an oil-water interface probe. Wells not containing SPH are then purged of approximately three 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<sup>®</sup> 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), 8020, and 5030 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 A.