

**EMCON**

1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

Date September 30, 1997
Project 20805-121.005

To:

Mr. Scott Seery
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harborbay Parkway, Suite 250
Alameda, California 94502

EMCON
PRODUCTION
97 SEP 30 AM 9:19

We are enclosing:

Copies	Description
<u>1</u>	<u>Second quarter 1997 groundwater monitoring results</u>
	<u>for ARCO service station 601, San Leandro, California</u>
<u>1</u>	<u>John Sullivan letter</u>

For your:	<u>X</u>	Use	Sent by:	<u>X</u>	Regular Mail
		Approval			Standard Air
		Review			Courier
		Information			Other: <u>Cert. Mail</u>

Comments:

The enclosed groundwater monitoring report is being sent to you per the request of ARCO Products Company. Please call if you have questions or comments.



Gary P. Messerotes
Project Manager

cc: Kevin Graves, RWQCB - SFBR
Mike Bakaldin, SLFD
Paul Supple, ARCO Products Company
File





Date: September 30, 1997

Re: ARCO Station #

601 • 712 Lewelling Boulevard • San Leandro, CA
Second Quarter 1997 Groundwater Monitoring Results

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached proposal or report are true and correct."

Submitted by:

A handwritten signature in black ink, appearing to read "Paul Supple". The signature is fluid and cursive, with the first name "Paul" and last name "Supple" clearly distinguishable.

Paul Supple
Environmental Engineer



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1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

September 2, 1997
Project 20805-121.003

Mr. John Sullivan
17760 Sweetbriar Place
Castro Valley, California 94546

Re: Second quarter 1997 laboratory analytical results, groundwater samples, Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California

Dear Mr. Sullivan:

Groundwater samples were not collected from wells MW-9 and MW-10 during the second quarter of 1997. These wells are located at Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California. During the first and third quarters of the year the groundwater samples for wells MW-9 and MW-10 are collected during sampling of the ARCO Products Company service station 601, 712 Lewelling Boulevard, San Leandro.

Please call if you have questions.

Sincerely,

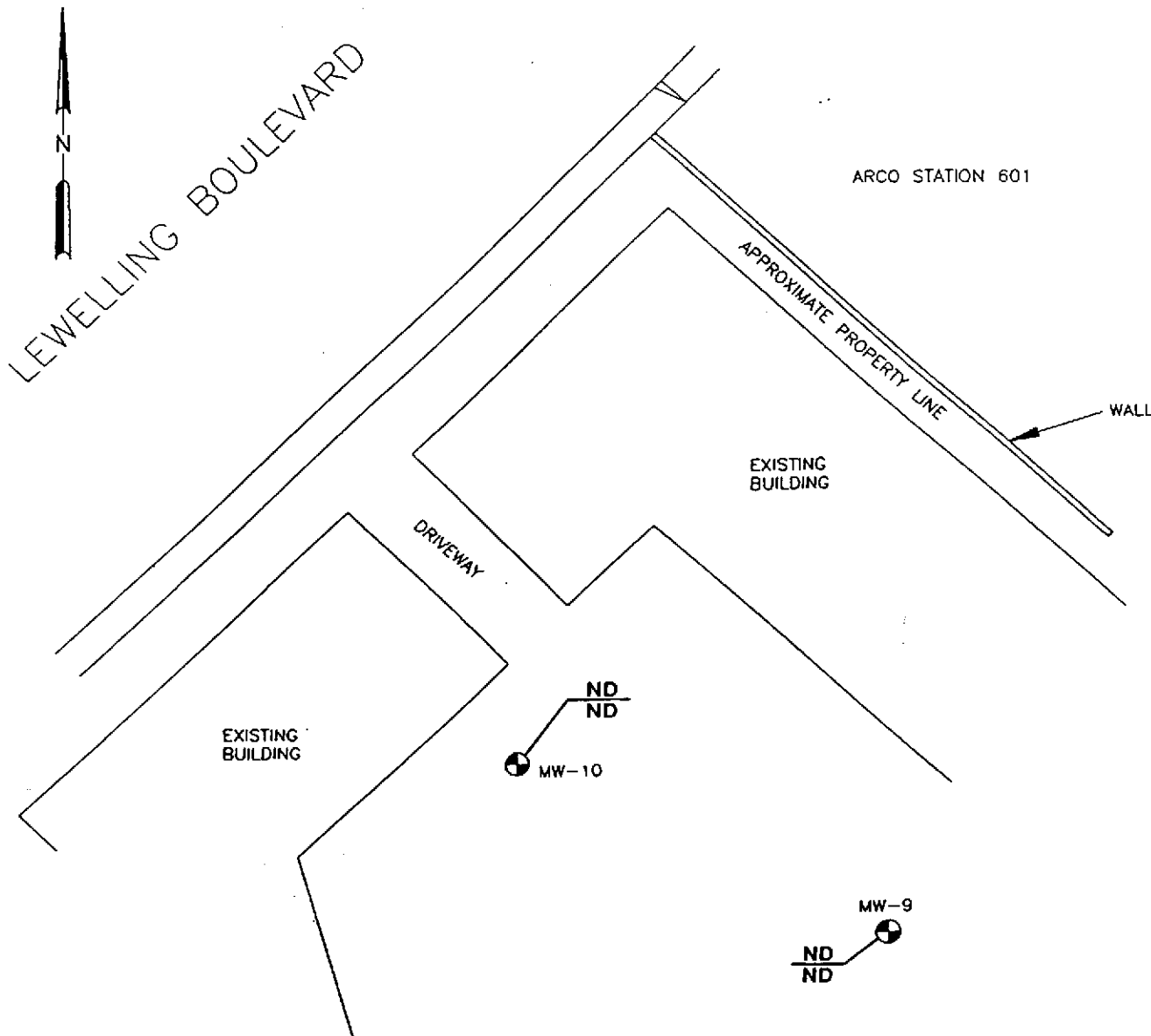
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Gary P. Messerotes
Project Manager

Attachments: Figure 1 -Generalized Site Plan

cc: Scott Seery, ACHCSA
Kevin Graves, RWQCB - SFBR
Paul Supple, ARCO Products Company
File





EXPLANATION

-  Groundwater monitoring well
-  TPHG concentration in groundwater (ppb)
-  Benzene concentration in groundwater (ppb)
-  Not detected

0 40 80

 SCALE IN FEET (APPROX.)

Base map modified from RESNA, 1994.



DATE JUNE 1997
 DWN KMM
 APP
 REV 0
 PROJECT NO.
 20805-121.005

FIGURE 1
CHATEAU MANOR APARTMENTS
724 LEWELLING BLVD.
SAN LEANDRO, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING
GENERALIZED SITE PLAN



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1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

August 29, 1997
Project 20805-121.005

Mr. Paul Supple
ARCO Products Company
P.O. Box 6549
Moraga, California 94570

Re: Second quarter 1997 groundwater monitoring program results, ARCO service station 601, San Leandro, California

Dear Mr. Supple:

This letter presents the results of the second quarter 1997 groundwater monitoring program at ARCO Products Company (ARCO) service station 601, 712 Lewelling Boulevard, San Leandro, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

LIMITATIONS

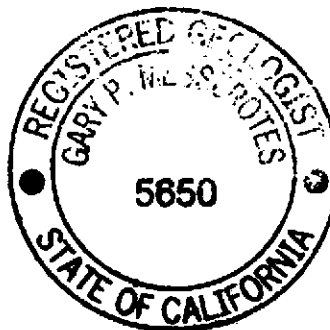
No monitoring event is thorough enough to describe all geologic and hydrogeologic conditions of interest at a given site. If conditions have not been identified during the monitoring event, results should not be construed as a guarantee of the absence of such conditions at the site, but rather as the product of the scope, and limitations, of work performed during the monitoring event.

Please call if you have questions.

Sincerely,

EMCON


Gary P. Messerotes, R.G. 5650
Project Manager



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ARCO QUARTERLY REPORT

Station No.: 601 Address: 712 Lewelling Boulevard, San Leandro, California
 EMCON Project No. 20805-121.005
 ARCO Environmental Engineer/Phone No.: Paul Supple /(510) 299-8891
 EMCON Project Manager/Phone No.: Gary P. Messerotes /(408) 453-7300
 Primary Agency/Regulatory ID No.: ACHCSA /Scott Seery

WORK PERFORMED THIS QUARTER (Second- 1997):

1. Prepared and submitted quarterly groundwater monitoring report for first quarter 1997.
2. Performed quarterly groundwater monitoring for second quarter 1997.
3. Stimulated natural biodegradation with oxygen releasing compounds (ORCs) in groundwater monitoring well MW-8.

WORK PROPOSED FOR NEXT QUARTER (Third- 1997):

1. Prepare and submit quarterly groundwater monitoring report for second quarter 1997.
2. Perform quarterly groundwater monitoring and sampling for third quarter 1997.
3. Continue to monitor dissolved oxygen in groundwater monitoring wells MW-2, MW-3, MW-5, and MW-8.
4. Evaluate potential off-site plume migration.

QUARTERLY MONITORING:

Current Phase of Project:	<u>Quarterly Groundwater Monitoring</u>
Frequency of Sampling:	<u>Quarterly (groundwater)</u>
Frequency of Monitoring:	<u>Quarterly (groundwater)</u>
Is Floating Product (FP) Present On-site:	☐ Yes ☒ No
Cumulative FP Recovered to Date :	<u>3.45 gallons, Well MW-1</u>
FP Recovered This Quarter :	<u>None</u>
Bulk Soil Removed to Date :	<u>1,565 cubic yards of TPH impacted soil</u>
Bulk Soil Removed This Quarter :	<u>None</u>
Water Wells or Surface Waters within 2000 ft., impacted by site:	<u>None</u>
Current Remediation Techniques:	<u>Enhanced bioremediation</u>
Average Depth to Groundwater:	<u>8.16 feet</u>
Groundwater Gradient (Average):	<u>0.014</u> ft/ft toward <u>southeast</u>

ATTACHED:

- Table 1 - Groundwater Monitoring Data, Second Quarter 1997
- Table 2 - Historical Groundwater Elevation and Analytical Data, Petroleum Hydrocarbons and Their Constituents
- Table 3 - Historical Groundwater Analytical Data, Metals
- Table 4 - Historical Groundwater Analytical Data, Volatile and Semivolatile Organic Compounds
- Table 5 - Approximate Cumulative Floating Product Recovered, Monitoring Well MW-1
- Figure 1 - Site Location
- Figure 2 - Groundwater Data, Second Quarter 1997

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- Appendix A - Analytical Results and Chain of Custody Documentation, Second Quarter 1997
Groundwater Monitoring Event

cc: Scott Seery, ACHCSA
Kevin Graves, RWQCB-SFBR
Mike Bakaldin, SLFD

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Table 1
Groundwater Monitoring Data
Second Quarter 1997

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	05-23-97	19.19	8.42	10.77	ND	SE	0.014	05-23-97	83000	6200	84	2500	9000	<300 [^]	--	--	--
MW-2	05-23-97	21.12	7.44	13.68	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-3	05-23-97	22.99	6.98	16.01	ND	SE	0.014	05-23-97	130000	2100	4300	3500	19000	<700 [^]	--	--	--
MW-4	05-23-97	22.38	7.80	14.58	ND	SE	0.014	05-23-97	9000	1300	240	200	1600	<60 [^]	--	--	--
MW-5	05-23-97	22.45	7.42	15.03	ND	SE	0.014	05-23-97	29000	6600	1700	400	1500	<600 [^]	--	--	--
MW-6	05-23-97	22.77	8.17	14.60	ND	SE	0.014	05-23-97	16000	4300	<50 [^]	1400	180	<300 [^]	--	--	--
MW-7	05-23-97	22.89	9.26	13.63	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-8	05-23-97	20.89	7.55	13.34	ND	SE	0.014	05-23-97	730	<5 [^]	<5 [^]	<5 [^]	<5 [^]	630	--	--	--
MW-9	05-23-97	22.26	8.28	13.98	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-10	05-23-97	21.33	8.33	13.00	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-11	05-23-97	20.97	8.48	12.49	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-12	05-23-97	20.11	8.92	11.19	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-13	05-23-97	20.75	8.16	12.59	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-14	05-23-97	20.90	9.61	11.29	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-15	05-23-97	22.08	6.25	15.83	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters								

ft-MSL: elevation in feet, relative to mean sea level

MWN: ground-water flow direction and gradient apply to the entire monitoring well network

ft/ft: foot per foot

TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl tert-butyl ether

TRPH: total recoverable petroleum hydrocarbons

TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method

ESE: east-southeast

--: not analyzed

ND: none detected

[^]: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-1	03-17-95	22.26	6.57	15.69	ND	WSW	0.006	03-17-95	120000	5300	370	1500	13000	--	--	48000	6200*
MW-1	06-01-95	22.26	7.87	14.39	ND	SW	0.003	06-01-95	250000	7100	950	3500	21000	--	--	38000	190000*
MW-1	08-31-95	22.26	8.12	** 14.15	0.01	SSW	0.005	08-31-95	Not sampled: well contained floating product								
MW-1	11-27-95	22.26	8.42	13.84	Sheen	SSW	0.004	11-27-95	310000	4600	770	5700	21000	--	--	--	--
MW-1	02-22-96	22.26	6.01	** 16.26	0.01	NW	0.007	03-14-96	100000	6200	320	2500	12000	<1000*	--	--	--
MW-1	05-20-96	22.26	7.03	15.23	ND	SW	0.007	05-21-96	340000	6600	240	4500	22000	<1000^	--	150	<2500*
MW-1	08-26-96	22.26	8.16	14.10	ND	SSW	0.004	08-26-96	210000	7900	320	3400	15000	<1000^	--	--	--
MW-1	11-20-96	22.26	7.84	14.42	ND	SSE	0.004	11-20-96	62000	5900	77	2000	7700	<300^	--	--	--
MW-1	03-24-97	19.19	8.05	11.14	ND	SE	0.013	03-24-97	170000	6500	<200^	2400	9900	<1000^	--	--	--
MW-1	05-23-97	19.19	8.42	10.77	ND	SE	0.014	05-23-97	83000	6200	84	2500	9000	<300^	--	--	--
MW-2	03-17-95	21.33	6.12	15.21	ND	WSW	0.006	03-17-95	10000	460	77	260	550	--	--	--	--
MW-2	06-01-95	21.33	6.56	14.77	ND	SW	0.003	06-01-95	13000	400	78	210	410	--	--	--	--
MW-2	08-31-95	21.33	7.18	14.15	ND	SSW	0.005	08-31-95	5000	280	18	120	140	<50^	--	--	--
MW-2	11-27-95	21.33	7.39	13.94	ND	SSW	0.004	11-27-95	3200	230	12	77	90	--	--	--	--
MW-2	02-22-96	21.33	5.78	15.55	ND	NW	0.007	03-14-96	11000	290	67	190	330	<50^	--	--	--
MW-2	05-20-96	21.33	6.27	15.06	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter								
MW-2	08-26-96	21.33	7.30	14.03	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter								
MW-2	11-20-96	21.33	7.28	14.05	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter								
MW-2	03-24-97	21.12	7.11	14.01	ND	SE	0.013	03-24-97	4800	570	6	71	32	67	--	--	--
MW-2	05-23-97	21.12	7.44	13.68	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								

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Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHC LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TPPH EPA 418.1	TPHD LUFT Method		
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
MW-3	03-17-95	20.11	5.46	14.65	ND	WSW	0.006	03-17-95	370000	4800	12000	5800	34000	--	--	--	--		
MW-3	06-01-95	20.11	6.34	13.77	ND	SW	0.003	06-01-95	270000	6000	11000	5200	28000	--	--	--	--		
MW-3	08-31-95	20.11	6.60	** 13.52	0.02	SSW	0.005	08-31-95	Not sampled; well contained floating product									--	--
MW-3	11-27-95	20.11	6.76	** 13.36	0.01	SSW	0.004	11-27-95	150000	5100	8800	3900	21000	--	--	--	--		
MW-3	02-22-96	20.11	5.14	** 14.98	0.01	NW	0.007	03-14-96	150000	4400	7600	4100	22000	<3000^	--	--	--		
MW-3	05-20-96	20.11	5.17	14.94	ND	SW	0.007	05-21-96	410000	4700	8000	6300	36000	<3000^	--	--	--		
MW-3	08-26-96	20.11	7.04	13.07	ND	SSW	0.004	08-26-96	260000	4000	6100	4200	24000	<2000^	--	--	--		
MW-3	11-20-96	20.11	6.26	13.85	ND	SSE	0.004	11-20-96	190000	3200	5800	3300	20000	<1000^	--	--	--		
MW-3	03-24-97	22.99	6.94	16.05	ND	SE	0.013	03-24-97	430000	2700	7600	7000	39000	<5000^	--	--	--		
MW-3	05-23-97	22.99	6.98	16.01	ND	SE	0.014	05-23-97	130000	2100	4300	3500	19000	<700^	--	--	--		
MW-4	03-17-95	20.75	6.65	14.10	ND	WSW	0.006	03-17-95	16000	1800	970	310	2500	--	--	--	--		
MW-4	06-01-95	20.75	7.25	13.50	ND	SW	0.003	06-01-95	16000	2800	870	380	2700	--	--	--	--		
MW-4	08-31-95	20.75	7.75	13.00	ND	SSW	0.005	08-31-95	9000	2000	270	270	1400	<100^	--	--	--		
MW-4	11-27-95	20.75	7.87	12.88	ND	SSW	0.004	11-27-95	3800	890	130	130	550	--	--	--	--		
MW-4	02-22-96	20.75	7.29	13.46	ND	NW	0.007	03-14-96	940	150	82	19	130	<20^	--	--	--		
MW-4	05-20-96	20.75	7.30	13.45	ND	SW	0.007	05-21-96	6700	1100	330	120	1100	<100^	--	--	--		
MW-4	08-26-96	20.75	7.57	13.18	ND	SSW	0.004	08-26-96	14000	2400	510	350	2100	<100^	--	--	--		
MW-4	11-20-96	20.75	7.89	12.86	ND	SSE	0.004	11-20-96	420	55	17	11	62	<3	--	--	--		
MW-4	03-24-97	22.38	6.90	15.48	ND	SE	0.013	03-24-97	6800	620	150	81	1300	<50^	--	--	--		
MW-4	05-23-97	22.38	7.80	14.58	ND	SE	0.014	05-23-97	9000	1300	240	200	1600	<60^	--	--	--		

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Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TPPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-5	03-17-95	20.90	5.51	15.39	ND	WSW	0.006	03-17-95	48000	6400	2000	740	5100	--	--	--	--
MW-5	06-01-95	20.90	6.55	14.35	ND	SW	0.003	06-01-95	76000	11000	5400	1400	7700	--	--	--	--
MW-5	08-31-95	20.90	6.80	14.10	ND	SSW	0.005	08-31-95	53000	12000	1600	1000	6000	<500 ^A	--	--	--
MW-5	11-27-95	20.90	7.13	13.77	ND	SSW	0.004	11-27-95	43000	7900	3300	950	4900	--	--	--	--
MW-5	02-22-96	20.90	5.12	15.78	ND	NW	0.007	03-14-96	52000	9100	3300	940	5000	<500 ^A	--	--	--
MW-5	05-20-96	20.90	5.87	15.03	ND	SW	0.007	05-21-96	55000	9300	3800	1100	5400	<500 ^A	--	--	--
MW-5	08-26-96	20.90	7.15	13.75	ND	SSW	0.004	08-26-96	47000	5300	2100	780	3200	<300 ^A	--	--	--
MW-5	11-20-96	20.90	6.88	14.02	ND	SSE	0.004	11-20-96	53000	8700	5700	920	4400	<500 ^A	--	--	--
MW-5	03-24-97	22.45	7.13	15.32	ND	SE	0.013	03-24-97	39000	8200	3200	720	3100	<500 ^A	--	--	--
MW-5	05-23-97	22.45	7.42	15.03	ND	SE	0.014	05-23-97	29000	6600	1700	400	1500	<600 ^A	--	--	--
MW-6	03-17-95	22.08	6.66	15.42	ND	WSW	0.006	03-17-95	45000	9300	<100 ^A	1900	3600	--	--	--	--
MW-6	06-01-95	22.08	7.60	14.48	ND	SW	0.003	06-01-95	23000	5600	<50 ^A	1300	1900	--	--	--	--
MW-6	08-31-95	22.08	7.92	14.16	ND	SSW	0.005	08-31-95	26000	8000	<100 ^A	1900	900	<500 ^A	--	--	--
MW-6	11-27-95	22.08	8.21	13.87	ND	SSW	0.004	11-27-95	6700	1800	<20 ^A	480	230	--	--	--	--
MW-6	02-22-96	22.08	6.21	15.87	ND	NW	0.007	03-14-96	17000	3100	69	810	1500	<300 ^A	--	--	--
MW-6	05-20-96	22.08	7.07	15.01	ND	SW	0.007	05-21-96	16000	3700	<50 ^A	1100	1100	<300 ^A	--	--	--
MW-6	08-26-96	22.08	7.93	14.15	ND	SSW	0.004	08-26-96	23000	5800	<50 ^A	2000	560	<300 ^A	--	--	--
MW-6	11-20-96	22.08	8.02	14.06	ND	SSE	0.004	11-20-96	11000	3300	<50 ^A	480	370	<300 ^A	--	--	--
MW-6	03-24-97	22.77	7.95	14.82	ND	SE	0.013	03-24-97	9700	1900	<20 ^A	800	270	<100 ^A	--	--	--
MW-6	05-23-97	22.77	8.17	14.60	ND	SE	0.014	05-23-97	16000	4300	<50 ^A	1400	180	<300 ^A	--	--	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method		
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
MW-7	03-17-95	22.89	7.68	15.21	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-7	06-01-95	22.89	8.40	14.49	ND	SW	0.003	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-7	08-31-95	22.89	9.09	13.80	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	0.6	<0.5	<3	--	--	--		
MW-7	11-27-95	22.89	9.15	13.74	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	0.9	<0.5	--	--	--	--		
MW-7	02-22-96	22.89	7.44	15.45	ND	NW	0.007	03-14-96	110	1.4	<0.5	3.8	3	<3	--	--	--		
MW-7	05-20-96	22.89	8.47	14.42	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter										
MW-7	08-26-96	22.89	8.81	14.08	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter										
MW-7	11-20-96	22.89	9.17	13.72	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter										
MW-7	03-24-97	22.89	8.31	14.58	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-7	05-23-97	22.89	9.26	13.63	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter										
MW-8	03-17-95	20.97	6.14	14.83	ND	WSW	0.006	03-17-95	5400	<5^	<5^	35	<5^	--	--	--	--		
MW-8	06-01-95	20.97	6.50	14.47	ND	SW	0.003	06-01-95	2600	<2.5^	<2.5^	15	<2.5^	--	--	--	--		
MW-8	08-31-95	20.97	7.35	13.62	ND	SSW	0.005	08-31-95	1400	<3^	<3^	5	<3^	520	--	900	--		
MW-8	11-27-95	20.97	7.60	13.37	ND	SSW	0.004	11-27-95	620	<0.5	<0.5	<0.5	0.5	--	560	900	510*		
MW-8	02-22-96	20.97	5.35	15.62	ND	NW	0.007	03-14-96	5800	<5^	<5^	28	<5^	110	--	1900	6800*		
MW-8	05-20-96	20.97	5.92	15.05	ND	SW	0.007	05-21-96	6100	<5^	<5^	26	<5^	240	--	--	--		
MW-8	08-26-96	20.97	7.08	13.89	ND	SSW	0.004	08-26-96	970	<1^	<1^	3	<1^	710	--	--	--		
MW-8	11-20-96	20.97	7.01	13.96	ND	SSE	0.004	11-20-96	3900	<2.5^	<2.5^	12	<2.5^	930	--	--	--		
MW-8	03-24-97	20.89	7.33	13.56	ND	SE	0.013	03-24-97	1400	<10^	<10^	<10^	12	1300	--	--	--		
MW-8	05-23-97	20.89	7.55	13.34	ND	SE	0.014	05-23-97	730	<5^	<5^	<5^	<5^	630	--	--	--		

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHC LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TPPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-9	03-17-95	20.89	6.94	13.95	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	06-01-95	20.89	8.15	12.74	ND	SW	0.003	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	08-31-95	20.89	8.10	12.79	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-9	11-27-95	20.89	8.38	12.51	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	02-22-96	20.89	7.36	13.53	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-9	05-20-96	20.89	7.81	13.08	ND	SW	0.007	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-9	08-26-96	20.89	8.00	12.89	ND	SSW	0.004	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-9	11-20-96	20.89	7.06	13.83	ND	SSE	0.004	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-9	03-24-97	22.26	7.74	14.52	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-9	05-23-97	22.26	8.28	13.98	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-10	03-17-95	21.12	6.26	14.86	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	06-01-95	21.12	7.63	13.49	ND	SW	0.003	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	08-31-95	21.12	8.17	12.95	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	11-27-95	21.12	8.38	12.74	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	02-22-96	21.12	5.41	15.71	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	05-20-96	21.12	6.78	14.34	ND	SW	0.007	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-10	08-26-96	21.12	8.00	13.12	ND	SSW	0.004	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	11-20-96	21.12	7.81	13.31	ND	SSE	0.004	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-10	03-24-97	21.33	7.87	13.46	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	05-23-97	21.33	8.33	13.00	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters								

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TPPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-11	03-17-95	22.38	6.94	15.44	ND	WSW	0.006	03-17-95	100	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	06-01-95	22.38	7.90	14.48	ND	SW	0.003	06-01-95	210	<0.5	<0.5	0.9	0.7	--	--	--	--
MW-11	08-31-95	22.38	8.18	14.20	ND	SSW	0.005	08-31-95	680	<0.5	<0.5	4	1.8	<3	--	--	--
MW-11	11-27-95	22.38	8.48	13.90	ND	SSW	0.004	11-27-95	340	<0.5	<0.5	2.2	1.6	--	--	--	--
MW-11	02-22-96	22.38	6.63	15.75	ND	NW	0.007	03-14-96	150	<0.5	<0.5	<0.8^	0.8	<3	--	--	--
MW-11	05-20-96	22.38	7.25	15.13	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter								
MW-11	08-26-96	22.38	8.22	14.16	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter								
MW-11	11-20-96	22.38	8.37	14.01	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter								
MW-11	03-24-97	20.97	8.15	12.82	ND	SE	0.013	03-24-97	63	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-11	05-23-97	20.97	8.48	12.49	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-12	03-17-95	22.77	7.09	15.68	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	06-01-95	22.77	8.40	14.37	ND	SW	0.003	06-01-95	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-12	08-31-95	22.77	8.55	14.22	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	11-27-95	22.77	8.95	13.82	ND	SSW	0.004	11-27-95	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-12	02-22-96	22.77	6.81	15.96	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	05-20-96	22.77	7.56	15.21	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter								
MW-12	08-26-96	22.77	8.63	14.14	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter								
MW-12	11-20-96	22.77	8.38	14.39	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter								
MW-12	03-24-97	20.11	8.75	11.36	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	05-23-97	20.11	8.92	11.19	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method		
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
MW-13	03-17-95	22.45	6.91	15.54	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-13	06-01-95	22.45	7.72	14.73	ND	SW	0.003	06-01-95	Not sampled: well sampled annually, during the first quarter										
MW-13	08-31-95	22.45	7.58	14.87	ND	SSW	0.005	08-31-95	Not sampled: well sampled annually, during the first quarter										
MW-13	11-27-95	22.45	7.98	14.47	ND	SSW	0.004	11-27-95	Not sampled: well sampled annually, during the first quarter										
MW-13	02-22-96	22.45	6.71	15.74	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-13	05-20-96	22.45	6.98	15.47	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter										
MW-13	08-26-96	22.45	7.85	14.60	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter										
MW-13	11-20-96	22.45	7.76	14.69	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter										
MW-13	03-24-97	20.75	7.85	12.90	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-13	05-23-97	20.75	8.16	12.59	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter										
MW-14	03-17-95	22.99	8.17	14.82	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-14	06-01-95	22.99	8.57	14.42	ND	SW	0.003	06-01-95	Not sampled: well sampled annually, during the first quarter										
MW-14	08-31-95	22.99	9.05	13.94	ND	SSW	0.005	08-31-95	Not sampled: well sampled annually, during the first quarter										
MW-14	11-27-95	22.99	9.19	13.80	ND	SSW	0.004	11-27-95	Not sampled: well sampled annually, during the first quarter										
MW-14	02-22-96	22.99	6.52	16.47	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-14	05-20-96	22.99	7.88	15.11	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter										
MW-14	08-26-96	22.99	8.83	14.16	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter										
MW-14	11-20-96	22.99	8.95	14.04	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter										
MW-14	03-24-97	20.90	8.98	11.92	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-14	05-23-97	20.90	9.61	11.29	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter										

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TPRH EPA 418.1	TPHD LUFT Method		
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
MW-15	03-17-95	19.19	5.21	13.98	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-15	06-01-95	19.19	5.84	13.35	ND	SW	0.003	06-01-95	Not sampled: well sampled semi-annually, during the first and third quarters									--	--
MW-15	08-31-95	19.19	6.18	13.01	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-15	11-27-95	19.19	6.42	12.77	ND	SSW	0.004	11-27-95	Not sampled: well sampled semi-annually, during the first and third quarters									--	--
MW-15	02-22-96	19.19	4.84	14.35	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	12	--	--	--		
MW-15	05-20-96	19.19	5.31	13.88	ND	SW	0.007	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									--	--
MW-15	08-26-96	19.19	6.05	13.14	ND	SSW	0.004	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	8	--	--	--		
MW-15	11-20-96	19.19	5.46	13.73	ND	SSE	0.004	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters									--	--
MW-15	03-24-97	22.08	6.00	16.08	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	15	--	--	--		
MW-15	05-23-97	22.08	6.25	15.83	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters									--	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L

ft-MSL: elevation in feet, relative to mean sea level

MWN: ground-water flow direction and gradient apply to the entire monitoring well network

ft/ft: foot per foot

TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl tert-butyl ether

TRPH: total recoverable petroleum hydrocarbons

TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method

ND: none detected

ESE: east-southeast

SW: southwest

WSW: west-southwest

SSW: south-southwest

SSE: south-southeast

NW: northwest

--: not analyzed

^: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

*: chromatogram fingerprint is not characteristic of diesel

**: [corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

***: For previous historical groundwater elevation and analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

Table 3
Historical Groundwater Analytical Data
Metals*
1994 - Present**

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Sample Field Date	Cadmium EPA 6010 µg/L	Chromium EPA 6010 µg/L	Lead EPA 7421 µg/L	Nickel EPA 6010 µg/L	Zinc EPA 6010 µg/L
MW-1	03-17-95	<5	20	20	<40	60
MW-1	06-01-95	<5	20	22	70	100
MW-1	08-31-95	Not sampled: well contained floating product				
MW-1	11-27-95	Not sampled: well contained floating product				
MW-1	03-14-96	Not sampled: well contained floating product				
MW-1	05-21-96	0.006	<0.01	<0.005	<0.02	<0.02
MW-1	08-26-96	--	--	--	--	--
MW-1	11-20-96	--	--	--	--	--
MW-1	03-24-97	--	--	--	--	--
MW-1	05-23-97	Not analyzed: well MW-8 was sampled for additional parameters in lieu of well MW-1				
MW-2	03-23-92	Not analyzed: sampling for additional parameters was discontinued				
MW-3	03-23-92	Not analyzed: sampling for additional parameters was discontinued				
MW-4	06-10-91	Not analyzed: sampling for additional parameters was not initiated				
MW-5	06-08-92	Not analyzed: sampling for additional parameters was discontinued				
MW-6	06-10-91	Not analyzed: sampling for additional parameters was not initiated				
MW-7	06-10-91	Not analyzed: sampling for additional parameters was not initiated				
MW-8	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	08-31-95	<5	40	16	50	90
MW-8	11-27-95	<5	130	77	170	280
MW-8	03-14-96	<5	30	7	40	60
MW-8	05-21-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	08-26-96	--	--	--	--	--
MW-8	11-20-96	--	--	--	--	--
MW-8	03-24-97	--	--	--	--	--
MW-8	05-23-97	<5	<10	<5	<20	<20
MW-9	06-11-93	Not analyzed: sampling for additional parameters was not initiated				
MW-10	06-11-93	Not analyzed: sampling for additional parameters was not initiated				
MW-11	11-16-92	Not analyzed: sampling for additional parameters was not initiated				
MW-12	11-16-92	Not analyzed: sampling for additional parameters was not initiated				
MW-13	11-16-92	Not analyzed: sampling for additional parameters was not initiated				
MW-14	09-15-92	Not analyzed: sampling for additional parameters was not initiated				
MW-15	05-13-93	Not analyzed: sampling for additional parameters was not initiated				

EPA: United States Environmental Protection Agency

µg/L: micrograms per liter

-- : not analyzed

*: Historically samples were analyzed for total metals. Since March 14, 1996, the samples were filtered and analyzed for dissolved metals.

**: For previous historical analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

Table 4
Historical Groundwater Analytical Data
Volatile and Semivolatile Organic Compounds
1995 - Present*

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270				
		Methylene Chloride	1,2-Dichloro-ethane	1,1-Dichloro-ethane	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene	2-Methyl-naphthalene	Bis (2-ethylhexyl) Phthalate	Phenol	2,4-Di-methyl-phenol
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	03-17-95	--	--	--	--	--	--	--	1300	730	<50	ND	150
MW-1	06-01-95	--	--	--	--	--	--	--	2200	1700	<100	240	<100
MW-1	08-31-95	Not sampled: well contained floating product											
MW-1	11-27-95	Not sampled: well contained floating product											
MW-1	03-14-96	Not sampled: well contained floating product											
MW-1	05-21-96	--	--	--	--	--	--	--	1200	860	<50	<50	<50
MW-1	08-26-96	--	--	--	--	--	--	--	2300	1800	<500	<500	<1000
MW-1	11-20-96	--	--	--	--	--	--	--	590	250	91	<50^	<100^
MW-1	03-24-97	--	--	--	--	--	--	--	730	610	<50^	<50^	<100^
MW-1	05-23-97	Not analyzed: well MW-8 was sampled for additional parameters in lieu of well MW-1											
MW-8	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	08-31-95	--	--	--	--	--	--	--	62	8	<5	<5	<5
MW-8	11-27-95	--	--	--	--	--	--	--	15	<5	<5	<5	<5
MW-8	03-14-96	--	--	--	--	--	--	--	400	55	<50	<50	<50
MW-8	05-21-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	08-26-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	11-20-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	03-24-97	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	05-23-97	--	--	--	--	--	--	--	26	<5	<5	<5	<10

Table 4
Historical Groundwater Analytical Data
Volatile and Semivolatile Organic Compounds
1995 - Present*

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-29-97

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270				
		Methylene Chloride µg/L	1,2-Dichloro- ethane µg/L	1,1-Dichloro- ethane µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	Naphthalene µg/L	2-Methyl- naphthalene µg/L	Bis (2-ethylhexyl) Phthalate µg/L	Phenol µg/L	2,4-Di-methyl- phenol µg/L

EPA: United States Environmental Protection Agency

µg/L: micrograms per liter

- : not analyzed

^: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

*: For previous historical analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

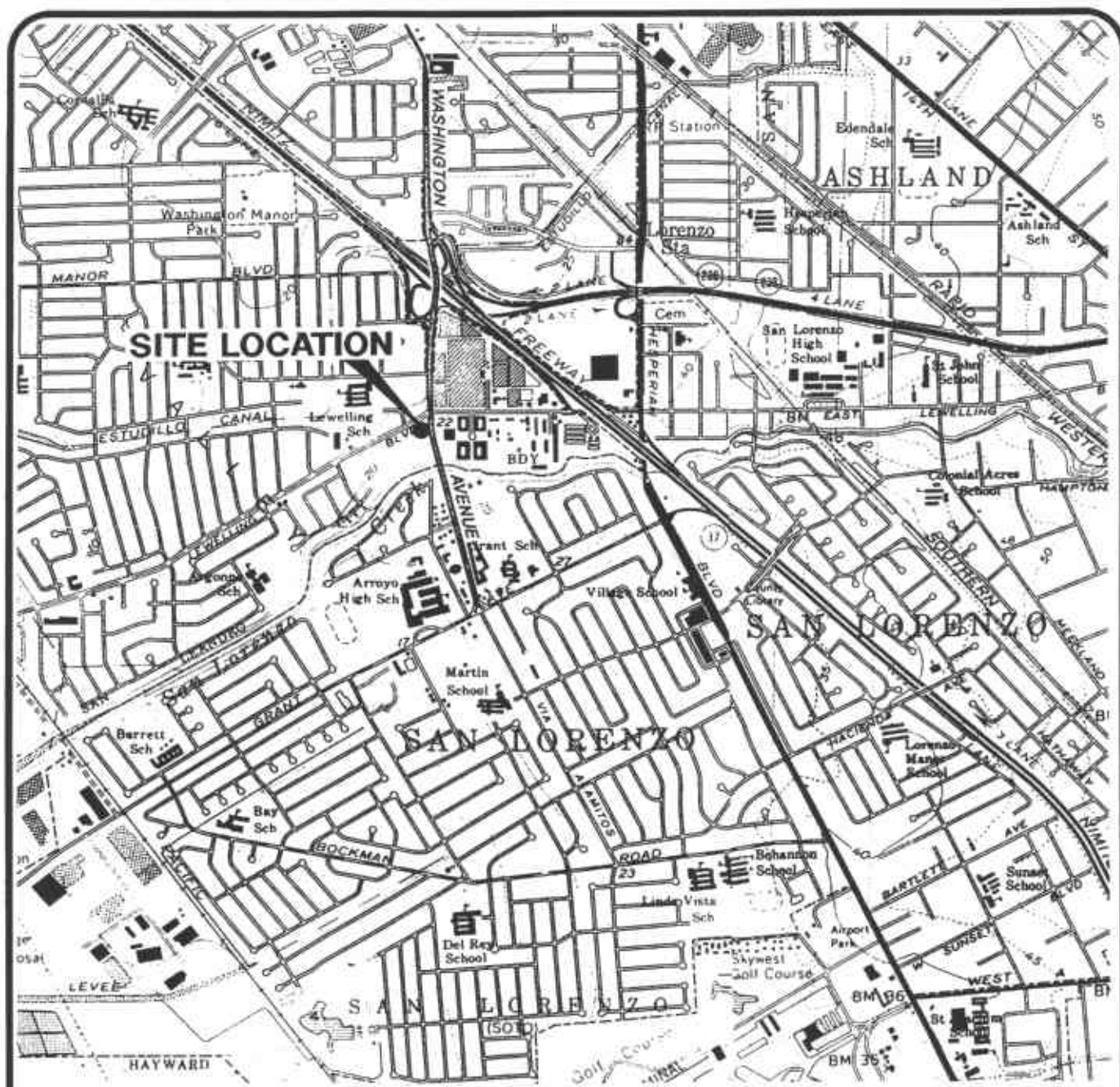
Table 5
Approximate Cumulative Floating Product Recovered

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 08-21-97

Well Desig- nation	Date	Floating Product Recovered gallons
MW-1	1991	3.43
MW-1	1992	0.02
MW-1	1993	0.00
MW-1	1994	0.00
MW-1	1995	0.00
MW-1	1996	0.00
MW-1	1997	0.00
1991 to 1997 Total:		3.45

EA-SANJOSE-CAD/DRAWINGS: I:\DZ002\SITELOC.dwg Xrefs: <NONE>
Scale: 1 = 1.00 DimScale: 1 = 1.00 Date: 3/12/97 Time: 5:19 PM Operator: KAJ

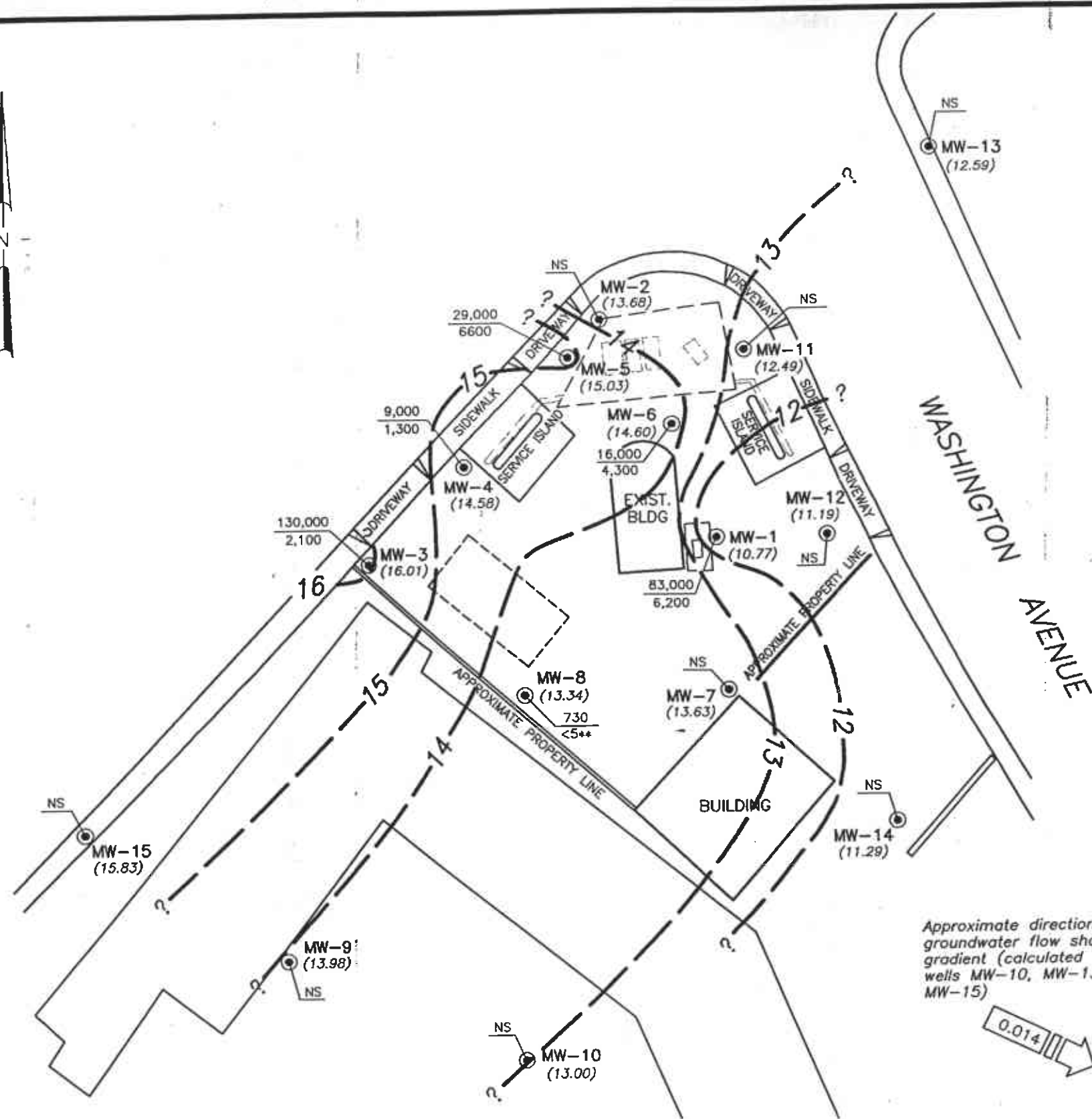
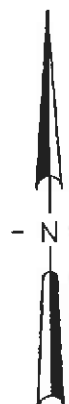


Base map from USGS 7.5' Quad. Maps:
Hayward and San Leandro, California.
Photorevised 1980.



DATE APR. 1997
DWN KAJ
APP
REV
PROJECT NO.
805-121.005

FIGURE 1
ARCO PRODUCTS COMPANY
SERVICE STATION 601, 712 LEWELLING BLVD.
SAN LEANDRO, CALIFORNIA
**QUARTERLY GROUNDWATER MONITORING
SITE LOCATION**



EXPLANATION

- Groundwater monitoring well
- Vapor extraction well
- Former underground gasoline storage tank
- Existing underground gasoline storage tank
- Approximate limit of gasoline tank excavation
- === Former product line
- (12.59) Groundwater elevation (Ft.-MSL) measured 5/23/97
- ?- Groundwater elevation contour (Ft.-MSL)
- 130,000 / 2,100 TPHG, concentration in groundwater (ug/L); sampled 5/23/97
- 130,000 / 2,100 Benzene concentration in groundwater (ug/L); sampled 5/23/97
- ND Not detected at or above the method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)
- NS Not sampled; not scheduled for chemical analysis
- ** Raised method reporting limit due to high analyte concentration requiring sample dilution

Approximate direction of groundwater flow showing gradient (calculated using wells MW-10, MW-13, and MW-15)

0.014



0 50 100
SCALE IN FEET
(Approximate)

DATE AUG. 1997
DWN KAJ
APP
REV
PROJECT NO.
805-121.005

FIGURE 2
ARCO PRODUCTS COMPANY
SERVICE STATION 601,712 LEWELLING BLVD.
SAN LEANDRO, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING
GROUNDWATER DATA - 2ND QUARTER 1997

APPENDIX A

ANALYTICAL RESULTS AND CHAIN OF CUSTODY DOCUMENTATION, SECOND QUARTER 1997 GROUNDWATER MONITORING EVENT



June 7, 1997

Service Request No.: S9700960

Ms. Ivy Inouye
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-121.005/TO#21133.00/601 SAN LEANDRO

Dear Ms. Inouye:

The following pages contain analytical results for sample(s) received by the laboratory on May 23, 1997. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 23, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,

A handwritten signature in black ink, appearing to read 'Steven L. Green', is written over a large, stylized, handwritten 'A' shape that is part of the company's branding.

Steven L. Green
Project Chemist

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCs	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

ACRONYST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

ARCO Products Company
20805-121.005/TO#21133.00/601 SAN LEANDRO
Water

Service Request: S9700960
Date Collected: 5/23/97
Date Received: 5/23/97

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: MW-8 (10)
Lab Code: S9700960-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Aniline	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Bis(2-chloroethyl) Ether	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Phenol	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2-Chlorophenol	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
1,3-Dichlorobenzene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
1,4-Dichlorobenzene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
1,2-Dichlorobenzene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Benzyl Alcohol	EPA 3510	8270	10	1	5/28/97	5/30/97	ND	
Bis(2-chloroisopropyl) Ether	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2-Methylphenol	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Hexachloroethane	EPA 3510	8270	10	1	5/28/97	5/30/97	ND	
N-Nitrosodi-n-propylamine	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
3- and 4-Methylphenol*	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Nitrobenzene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Isophorone	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2-Nitrophenol	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2,4-Dimethylphenol	EPA 3510	8270	10	1	5/28/97	5/30/97	ND	
Bis(2-chloroethoxy)methane	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2,4-Dichlorophenol	EPA 3510	8270	50	1	5/28/97	5/30/97	ND	
Benzoic Acid	EPA 3510	8270	50	1	5/28/97	5/30/97	ND	
1,2,4-Trichlorobenzene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Naphthalene	EPA 3510	8270	5	1	5/28/97	5/30/97	26	
4-Chloroaniline	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Hexachlorobutadiene	EPA 3510	8270	10	1	5/28/97	5/30/97	ND	
4-Chloro-3-methylphenol	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2-Methylnaphthalene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Hexachlorocyclopentadiene	EPA 3510	8270	10	1	5/28/97	5/30/97	ND	
2,4,6-Trichlorophenol	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2,4,5-Trichlorophenol	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2-Chloronaphthalene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2-Nitroaniline	EPA 3510	8270	20	1	5/28/97	5/30/97	ND	
Acenaphthylene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Dimethyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
2,6-Dinitrotoluene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Acenaphthene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
3-Nitroaniline	EPA 3510	8270	20	1	5/28/97	5/30/97	ND	
2,4-Dinitrophenol	EPA 3510	8270	50	1	5/28/97	5/30/97	ND	
Dibenzofuran	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
4-Nitrophenol	EPA 3510	8270	50	1	5/28/97	5/30/97	ND	
2,4-Dinitrotoluene	EPA 3510	8270	50	1	5/28/97	5/30/97	ND	
Fluorene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
4-Chlorophenyl Phenyl Ether	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	

* Quantified as 4-methylphenol.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: 5/23/97
Date Received: 5/23/97

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: MW-8 (10)
Lab Code: S9700960-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diethyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
4-Nitroaniline	EPA 3510	8270	20	1	5/28/97	5/30/97	ND	
2-Methyl-4,6-dinitrophenol	EPA 3510	8270	20	1	5/28/97	5/30/97	ND	
N-Nitrosodiphenylamine	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
4-Bromophenyl Phenyl Ether	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Hexachlorobenzene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Pentachlorophenol	EPA 3510	8270	30	1	5/28/97	5/30/97	ND	
Phenanthrene	EPA 3510	8270	30	1	5/28/97	5/30/97	ND	
Anthracene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Di-n-butyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Fluoranthene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Pyrene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Butylbenzyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
3,3'-Dichlorobenzidine	EPA 3510	8270	20	1	5/28/97	5/30/97	ND	
Benz(a)anthracene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Chrysene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Di-n-octyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Benzo(b)fluoranthene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Benzo(k)fluoranthene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Benzo(a)pyrene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Indeno(1,2,3-cd)pyrene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Dibenz(a,h)anthracene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	
Benzo(g,h,i)perylene	EPA 3510	8270	5	1	5/28/97	5/30/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9700960
 Date Collected: NA
 Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Method Blank
 Lab Code: S970528-WB1
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Aniline	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Bis(2-chloroethyl) Ether	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Phenol	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2-Chlorophenol	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
1,3-Dichlorobenzene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
1,4-Dichlorobenzene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
1,2-Dichlorobenzene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Benzyl Alcohol	EPA 3510	8270	10	1	5/28/97	5/29/97	ND	
Bis(2-chloroisopropyl) Ether	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2-Methylphenol	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Hexachloroethane	EPA 3510	8270	10	1	5/28/97	5/29/97	ND	
N-Nitrosodi-n-propylamine	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
3- and 4-Methylphenol*	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Nitrobenzene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Isophorone	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2-Nitrophenol	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2,4-Dimethylphenol	EPA 3510	8270	10	1	5/28/97	5/29/97	ND	
Bis(2-chloroethoxy)methane	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2,4-Dichlorophenol	EPA 3510	8270	50	1	5/28/97	5/29/97	ND	
Benzoic Acid	EPA 3510	8270	50	1	5/28/97	5/29/97	ND	
1,2,4-Trichlorobenzene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Naphthalene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
4-Chloroaniline	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Hexachlorobutadiene	EPA 3510	8270	10	1	5/28/97	5/29/97	ND	
4-Chloro-3-methylphenol	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2-Methylnaphthalene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Hexachlorocyclopentadiene	EPA 3510	8270	10	1	5/28/97	5/29/97	ND	
2,4,6-Trichlorophenol	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2,4,5-Trichlorophenol	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2-Chloronaphthalene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2-Nitroaniline	EPA 3510	8270	20	1	5/28/97	5/29/97	ND	
Acenaphthylene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Dimethyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
2,6-Dinitrotoluene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Acenaphthene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
3-Nitroaniline	EPA 3510	8270	20	1	5/28/97	5/29/97	ND	
2,4-Dinitrophenol	EPA 3510	8270	50	1	5/28/97	5/29/97	ND	
Dibenzofuran	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
4-Nitrophenol	EPA 3510	8270	50	1	5/28/97	5/29/97	ND	
2,4-Dinitrotoluene	EPA 3510	8270	50	1	5/28/97	5/29/97	ND	
Fluorene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
4-Chlorophenyl Phenyl Ether	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	

* Quantified as 4-methylphenol.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: NA
Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Method Blank
Lab Code: S970528-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diethyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
4-Nitroaniline	EPA 3510	8270	20	1	5/28/97	5/29/97	ND	
2-Methyl-4,6-dinitrophenol	EPA 3510	8270	20	1	5/28/97	5/29/97	ND	
N-Nitrosodiphenylamine	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
4-Bromophenyl Phenyl Ether	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Hexachlorobenzene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Pentachlorophenol	EPA 3510	8270	30	1	5/28/97	5/29/97	ND	
Phenanthrene	EPA 3510	8270	30	1	5/28/97	5/29/97	ND	
Anthracene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Di-n-butyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Fluoranthene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Pyrene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Butylbenzyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
3,3'-Dichlorobenzidine	EPA 3510	8270	20	1	5/28/97	5/29/97	ND	
Benz(a)anthracene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Chrysene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Di-n-octyl Phthalate	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Benzo(b)fluoranthene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Benzo(k)fluoranthene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Benzo(a)pyrene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Indeno(1,2,3-cd)pyrene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Dibenz(a,h)anthracene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	
Benzo(g,h,i)perylene	EPA 3510	8270	5	1	5/28/97	5/29/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: 5/23/97
Date Received: 5/23/97

Dissolved Metals

Sample Name: MW-8 (10)
Lab Code: S9700960-001
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes
Cadmium	EPA 3005	6010A	0.005	1	5/29/97	5/30/97	ND	
Chromium	EPA 3005	6010A	0.01	1	5/29/97	5/30/97	ND	
Lead	EPA 3005	7421	0.005	1	5/29/97	5/30/97	ND	
Nickel	EPA 3005	6010A	0.02	1	5/29/97	5/30/97	ND	
Zinc	EPA 3005	6010A	0.02	1	5/29/97	5/30/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.**Analytical Report**

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: NA
Date Received: NA

Dissolved Metals

Sample Name: Method Blank
Lab Code: S970529-MB
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes
Cadmium	EPA 3005	6010A	0.005	1	5/29/97	5/30/97	ND	
Chromium	EPA 3005	6010A	0.01	1	5/29/97	5/30/97	ND	
Lead	EPA 3005	7421	0.005	1	5/29/97	5/30/97	ND	
Nickel	EPA 3005	6010A	0.02	1	5/29/97	5/30/97	ND	
Zinc	EPA 3005	6010A	0.02	1	5/29/97	5/30/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: 5/23/97
Date Received: 5/23/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-8 (10)
Lab Code: S9700960-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	10	NA	6/3/97	730	
Benzene	EPA 5030	8020	0.5	10	NA	6/3/97	<5	C1
Toluene	EPA 5030	8020	0.5	10	NA	6/3/97	<5	C1
Ethylbenzene	EPA 5030	8020	0.5	10	NA	6/3/97	<5	C1
Xylenes, Total	EPA 5030	8020	0.5	10	NA	6/3/97	<5	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	10	NA	6/3/97	630	

C1

The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: 5/23/97
Date Received: 5/23/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-4 (8)
Lab Code: S9700960-002
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	20	NA	6/2/97	9000	
Benzene	EPA 5030	8020	0.5	20	NA	6/2/97	1300	
Toluene	EPA 5030	8020	0.5	20	NA	6/2/97	240	
Ethylbenzene	EPA 5030	8020	0.5	20	NA	6/2/97	200	
Xylenes, Total	EPA 5030	8020	0.5	20	NA	6/2/97	1600	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	20	NA	6/2/97	<60	C1

C1

The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: 5/23/97
Date Received: 5/23/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-6 (8)
Lab Code: S9700960-003
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	100	NA	6/3/97	16000	
Benzene	EPA 5030	8020	0.5	100	NA	6/3/97	4300	
Toluene	EPA 5030	8020	0.5	100	NA	6/3/97	<50	C1
Ethylbenzene	EPA 5030	8020	0.5	100	NA	6/3/97	1400	
Xylenes, Total	EPA 5030	8020	0.5	100	NA	6/3/97	180	
Methyl tert-Butyl Ether	EPA 5030	8020	3	100	NA	6/3/97	<300	C1

C1

The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 2^805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: 5/23/97
Date Received: 5/23/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-5 (10)
Lab Code: S9700960-004
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	200	NA	6/3/97	29000	
Benzene	EPA 5030	8020	0.5	200	NA	6/3/97	6600	
Toluene	EPA 5030	8020	0.5	200	NA	6/3/97	1700	
Ethylbenzene	EPA 5030	8020	0.5	200	NA	6/3/97	400	
Xylenes, Total	EPA 5030	8020	0.5	200	NA	6/3/97	1500	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	200	NA	6/3/97	<600	C1

C1 The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: 5/23/97
Date Received: 5/23/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-1 (11)
Lab Code: S9700960-005
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	100	NA	6/3/97	83000	
Benzene	EPA 5030	8020	0.5	100	NA	6/3/97	6200	
Toluene	EPA 5030	8020	0.5	100	NA	6/3/97	84	
Ethylbenzene	EPA 5030	8020	0.5	100	NA	6/3/97	2500	
Xylenes, Total	EPA 5030	8020	0.5	100	NA	6/3/97	9000	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	100	NA	6/3/97	<300	C1

C1

The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: 5/23/97
Date Received: 5/23/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-3 (12)
Lab Code: S9700960-006
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	200	NA	6/3/97	130000	
Benzene	EPA 5030	8020	0.5	200	NA	6/3/97	2100	
Toluene	EPA 5030	8020	0.5	200	NA	6/3/97	4300	
Ethylbenzene	EPA 5030	8020	0.5	200	NA	6/3/97	3500	
Xylenes, Total	EPA 5030	8020	0.5	200	NA	6/3/97	19000	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	200	NA	6/3/97	<700	M1

M1

The MRL was elevated because of matrix interferences.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S970602-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	6/2/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	6/2/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	6/2/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	6/2/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	6/2/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	6/2/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S970603-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	6/3/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	6/3/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	6/3/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	6/3/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	6/3/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	6/3/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
 Base Neutral/Acid Semivolatile Organic Compounds

Prep Method: EPA 3510
Analysis Method: 8270

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	P e r c e n t R e c o v e r y					
			2FP	PHL	NBZ	FBP	TBP	TPH
MW-8 (10)	S9700960-001		0.1	0.4	41 L	44 L	0.5	51
BATCH QC	S9700957-001MS		20	13	58	54	42	51
BATCH QC	S9700957-001DMS		15	12	55	53	42	54
Method Blank	S970528-WB1		14	12	54	53	23	50

CAS Acceptance Limits: D-50 D-58 47-100 53-85 D-119 50-107

2FP 2-Fluorophenol
 PHL Phenol-D6
 NBZ Nitrobenzene-D5
 FBP 2-Fluorobiphenyl
 TBP 2,4,6-Tribromophenol
 TPH Terphenyl-D14

L Outside of acceptance limits because of matrix effects. The sample produced an emulsion during the preparation steps.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9700960

Date Collected: NA

Date Received: NA

Date Extracted: 5/28/97

Date Analyzed: 5/29/97

Matrix Spike/Duplicate Matrix Spike Summary
 Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: BATCH QC
 Lab Code: S9700957-001MS, S9700957-001DMS
 Test Notes:

Units: ug/L (ppb)

Basis: NA

Percent Recovery

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference	Result Notes
				MS	DMS		MS	DMS	MS	DMS			
Phenol	EPA 3510	8270	5	200	200	ND	34	34	17	17	12-89	<1	
2-Chlorophenol	EPA 3510	8270	5	200	200	ND	96	87	48	44	27-123	10	
1,4-Dichlorobenzene	EPA 3510	8270	5	100	100	ND	62	60	62	60	36-97	3	
N-Nitrosodi-n-propylamine	EPA 3510	8270	5	100	100	ND	52	51	52	51	41-116	2	
1,2,4-Trichlorobenzene	EPA 3510	8270	5	100	100	ND	62	64	62	64	39-98	3	
4-Chloro-3-methylphenol	EPA 3510	8270	5	200	200	ND	74	74	37	37	23-97	<1	
Acenaphthene	EPA 3510	8270	5	100	100	ND	64	64	64	64	46-118	<1	
4-Nitrophenol	EPA 3510	8270	50	200	200	ND	33	37	17	19	10-80	11	
2,4-Dinitrotoluene	EPA 3510	8270	50	100	100	ND	74	71	74	71	24-96	4	
Pentachlorophenol	EPA 3510	8270	30	200	200	ND	46	65	23	33	9-103	34	
Pyrene	EPA 3510	8270	5	100	100	ND	55	59	55	59	26-127	7	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: NA
Date Received: NA
Date Digested: 5/29/97
Date Analyzed: 5/30/97

Matrix Spike/Duplicate Matrix Spike Summary
Dissolved Metals

Sample Name: MW-8 (10)
Lab Code: S9700960-001MS, S9700960-001DMS
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Units	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery				Relative Percent Difference	Result Notes
				MS	DMS		MS	DMS	MS	DMS	CAS Acceptance Limits			
Cadmium	mg/L (ppm)	6010A	0.005	0.50	0.50	ND	0.50	0.50	100	100	75-125	<1		
Chromium	mg/L (ppm)	6010A	0.01	0.50	0.50	ND	0.50	0.50	100	100	75-125	<1		
Lead	mg/L (ppm)	7421	0.005	0.040	0.040	ND	0.046	0.046	115	115	75-125	<1		
Nickel	mg/L (ppm)	6010A	0.02	0.50	0.50	ND	0.52	0.50	104	100	75-125	4		
Zinc	mg/L (ppm)	6010A	0.02	0.50	0.50	ND	0.51	0.52	102	104	75-125	2		

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

**Surrogate Recovery Summary
 BTEX, MTBE and TPH as Gasoline**

Prep Method: EPA 5030
Analysis Method: 8020 CA/LUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-8 (10)	S9700960-001		102	99
MW-4 (8)	S9700960-002		96	99
MW-6 (8)	S9700960-003		99	94
MW-5 (10)	S9700960-004		100	96
MW-1 (11)	S9700960-005		96	115
MW-3 (12)	S9700960-006		98	109
BATCH QC	S9701010-003MS		103	101
BATCH QC	S9701010-003DMS		103	98
Method Blank	S970602-WB1		101	96
Method Blank	S970603-WB1		98	89

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700960
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 6/3/97

Matrix Spike/Duplicate Matrix Spike Summary
 BTE

Sample Name: BATCH QC
Lab Code: S9701010-003MS, S9701010-003DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Percent Recovery

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Spike Result				CAS	Relative Percent Difference
				MS	DMS		MS	DMS	MS	DMS	Acceptance Limits	
Benzene	EPA 5030	8020	0.5	25	25	ND	26	27	104	108	75-135	4
Toluene	EPA 5030	8020	0.5	25	25	ND	26	26	104	104	73-136	<1
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	26	27	104	108	69-142	4

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO

Service Request: S9700960

Date Analyzed: 6/2/97

Initial Calibration Verification (ICV) Summary
BTEX, MTBE and TPH as Gasoline

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	250	240	96	
Benzene	EPA 5030	8020	25	26	104	
Toluene	EPA 5030	8020	25	25	100	
Ethylbenzene	EPA 5030	8020	25	26	104	
Xylenes, Total	EPA 5030	8020	75	80	107	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	26	104	

