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

Rec'd 10/5/95 DK

Date September 29, 1995
Project 20805-135.003

To:

Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harborbay Parkway, Suite 250
Alameda, California 94502-6577

We are enclosing:

Copies	Description
1	Second quarter 1995 groundwater monitoring report for ARCO service station 6148, Oakland, California

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

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.

David Larsen
Project Coordinator

cc: Kevin Graves, RWQCB - SFBR
Michael Whelan, ARCO Products Company
David Larsen, EMCON
File

ARCO Products Company
Environmental Engineering
2155 South Bascom Avenue, Suite 202
Campbell, California 95008

Date: September 29, 1995

Re: ARCO Station # 6148 • 5131 Shattuck Avenue • Oakland, CA
Second Quarter 1995 Groundwater Monitoring Report

" 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:

Michael R. Whelan

Michael R. Whelan
Environmental Engineer

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

August 24, 1995
Project 20805-135.003

Mr. Michael Whelan
ARCO Products Company
2155 South Bascom Avenue, Suite 202
Campbell, California 95008

Re: Second quarter 1995 groundwater monitoring program results, ARCO service station 6148, Oakland, California

Dear Mr. Whelan:

This letter presents the results of the second quarter 1995 groundwater monitoring program at ARCO Products Company (ARCO) service station 6148, 5131 Shattuck Avenue, Oakland, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

BACKGROUND

Seven groundwater monitoring wells (MW-1 through MW-7), one air-sparge (AS) well (AS-1), two soil-vapor extraction (SVE) wells (VW-1 and VW-3), and one combination AS/SVE well (AS-2/VW-2) were installed as part of a comprehensive site assessment conducted at this site between December 1991 and July 1993. Please refer to *Report of Findings, Air Sparge Pilot Test at ARCO Station 6148, 5131 Shattuck Avenue, Oakland, California* (RESNA, June 7, 1994), and *First Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 6148, Oakland, California* (EMCON, May 1995) for more details.

MONITORING PROGRAM FIELD PROCEDURES

A program of quarterly groundwater monitoring was initiated during the first quarter of 1992 to provide information concerning water quality, flow direction, and gradient consistent with ACHCSA and Regional Water Quality Control Board (RWQCB) requirements for underground fuel tank investigations. Water levels are measured quarterly in wells MW-1 through MW-7. Well MW-7 is sampled semiannually, during the first and third quarters of the year. Wells MW-1 through MW-6 are sampled quarterly.

The second quarter 1995 groundwater monitoring event was performed by EMCON on June 6, 1995. Field work this quarter included (1) measuring depths to groundwater and subjectively analyzing groundwater for the presence of floating product in wells MW-1 through MW-7, (2) purging and subsequently sampling groundwater monitoring wells MW-1 through MW-6 for laboratory analysis, and (3) directing a state-certified laboratory to analyze the groundwater samples. Copies of all field data sheets from the second quarter 1995 groundwater monitoring event are included in Appendix A.

ANALYTICAL PROCEDURES

Groundwater samples collected during second quarter 1995 monitoring were analyzed for total petroleum hydrocarbons as gasoline (TPHG), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Groundwater samples were prepared for analysis by U.S. Environmental Protection Agency (USEPA) method 5030 (purge and trap). Groundwater was analyzed for TPHG by the methods accepted by the Department of Toxic Substances Control, California Environmental Protection Agency (Cal-EPA), and referenced in the *Leaking Underground Fuel Tank* (LUFT) *Field Manual* (State Water Resources Control Board, October 1989). Samples were analyzed for BTEX by USEPA method 8020, as described in *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (EPA SW-846, November 1986, third edition). Groundwater samples collected from well MW-3 were also analyzed for total recoverable petroleum hydrocarbons (TRPH) by USEPA method 418.1. These methods are recommended in *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites* (August 10, 1990) for analysis of samples from petroleum-hydrocarbon-impacted sites.

MONITORING PROGRAM RESULTS

Results of the second quarter 1995 groundwater monitoring event are summarized in Table 1 and illustrated in Figure 2. Historical groundwater elevation data, including top-of-casing elevations, depth-to-water measurements, calculated groundwater elevations, floating-product thickness measurements, and groundwater flow direction and gradient data, are summarized in Table 2. Table 3 summarizes historical laboratory data for TPHG, BTEX, and TRPH analyses. Table 4 summarizes historical laboratory data for volatile organic compound (VOC) and semivolatile organic compound (SVOC) analyses. Historical laboratory data for diesel and metals analyses are summarized in Table 5. Copies of the second quarter 1995 analytical results and chain-of-custody documentation are included in Appendix B.

Groundwater elevation collected data on June 6, 1995, indicate that groundwater beneath the site flows southwest with an approximate hydraulic gradient of 0.016 foot per foot. Figure 2 illustrates groundwater contours and analytical data for the second quarter of 1995.

Groundwater samples from wells MW-4 and MW-6 did not contain detectable concentrations of TPHG or BTEX. Groundwater samples from wells MW-1, MW-2, MW-3, and MW-5 contained concentrations of TPHG from 210 to 22,000 micrograms per liter (µg/L), and concentrations of benzene from 30 to 1,700 µg/L. Groundwater samples from well MW-3 contained 7.1 milligrams per liter (mg/L) of TRPH.

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, such a finding should not therefore be construed as a guarantee of the absence of such conditions at the site, but rather as the result of the scope, limitations, and cost of work performed during the monitoring event.

SITE STATUS UPDATE

This update reports the site activities performed during the second quarter of 1995 and those anticipated for the third quarter of 1995.

Second Quarter 1995 Activities

- Prepared and submitted quarterly groundwater monitoring report for first quarter 1995.
- Performed quarterly groundwater monitoring for second quarter 1995.
- Completed design and permitting of the interim SVE and AS remediation systems.

Work Anticipated for Third Quarter 1995

- Prepare and submit quarterly groundwater monitoring report for second quarter 1995.
- Perform quarterly groundwater monitoring for third quarter 1995.

- Install eight new SVE wells and four new AS wells.
- Begin construction of the interim SVE and AS remediation systems.
- Decommission well AS-1/VW-1.

Please call if you have questions.

Sincerely,

EMCON

David Larsen
Project Coordinator

Lynn A. Gallagher, R.G. 6090
Project Geologist

REGISTERED GEOLOGIST
LYNN A. GALLAGHER
RG6090
STATE OF CALIFORNIA

Attachments:

Table 1 -	Groundwater Monitoring Data, Second Quarter 1995
Table 2 -	Historical Groundwater Elevation Data
Table 3 -	Historical Groundwater Analytical Data (TPHG, BTEX, and TRPH)
Table 4 -	Historical Groundwater Analytical Data (VOCs and SVOCs)
Table 5 -	Historical Groundwater Analytical Data (Diesel and Metals)
Figure 1 -	Site Location
Figure 2 -	Groundwater Data, Second Quarter 1995
Appendix A -	Field Data Sheets, Second Quarter 1995 Groundwater Monitoring Event
Appendix B -	Analytical Results and Chain-of-Custody Documentation, Second Quarter 1995

cc: Susan Hugo, ACHCSA
Kevin Graves, RWQCB - SFBR

Table 1
Groundwater Monitoring Data
Second Quarter 1995

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 08-15-95
Project Number: 0805-135.03

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TOG or TRPH
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot		µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
MW-1	06-06-95	108.03	17.68	90.35	ND	SW	0.016	06-06-95	210	30	<0.5	7.3	16	NA
MW-2	06-06-95	107.43	17.43	90.00	ND	SW	0.016	06-06-95	1200	60	21	35	140	NA
MW-3	06-06-95	107.77	17.54	90.23	ND	SW	0.016	06-06-95	22000	450	54	380	1300	7.1
MW-4	06-06-95	106.58	15.70	90.88	ND	SW	0.016	06-06-95	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-5	06-06-95	106.68	16.61	90.07	ND	SW	0.016	06-06-95	6500	1700	<20	120	69	NA
MW-6	06-06-95	105.16	13.95	91.21	ND	SW	0.016	06-06-95	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	06-06-95	107.08	14.59	92.49	ND	SW	0.016	06-06-95	Not sampled: not scheduled for chemical analysis					

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
TPHG: total petroleum hydrocarbons as gasoline
TOG: total oil and grease measured by USEPA Method 5520 C&F
TRPH: total recoverable petroleum hydrocarbons measured by USEPA Method 418.1
µg/L: micrograms per liter
mg/L. milligrams per liter
ND: none detected
SW: southwest
NA: not analyzed

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 08-14-95
Project Number: 0805-135.03

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-1	12-23-91	108.03	18.26	89.77	Sheen	NR	NR
MW-1	01-07-92	108.03	17.44	90.59	Sheen	NR	NR
MW-1	01-19-92	108.03	17.17	90.86	ND	NR	NR
MW-1	02-19-92	108.03	16.52	91.51	ND	NR	NR
MW-1	03-18-92	108.03	16.81	91.22	ND	NR	NR
MW-1	04-20-92	108.03	17.56	90.47	ND	NR	NR
MW-1	05-15-92	108.03	17.96	90.07	ND	NR	NR
MW-1	06-12-92	108.03	18.16	89.87	ND	NR	NR
MW-1	07-15-92	108.03	18.32	89.71	ND	NR	NR
MW-1	08-07-92	108.03	18.34	89.69	ND	NR	NR
MW-1	09-14-92	108.03	18.46	89.57	ND	NR	NR
MW-1	10-07-92	108.03	18.52	89.51	ND	NR	NR
MW-1	11-12-92	108.03	18.11	89.92	ND	NR	NR
MW-1	12-09-92	108.03	17.10	90.93	ND	NR	NR
MW-1	01-21-93	108.03	15.44	92.59	ND	NR	NR
MW-1	02-22-93	108.03	16.54	91.49	ND	NR	NR
MW-1	03-25-93	108.03	17.05	90.98	ND	NR	NR
MW-1	04-14-93	108.03	17.45	90.58	ND	NR	NR
MW-1	05-22-93	108.03	17.78	90.25	ND	NR	NR
MW-1	06-17-93	108.03	17.90	90.13	ND	NR	NR
MW-1	07-27-93	108.03	18.10	89.93	ND	NR	NR
MW-1	08-29-93	108.03	18.31	89.72	ND	NR	NR
MW-1	09-30-93	108.03	18.24	89.79	ND	NR	NR
MW-1	11-16-93	108.03	18.17	89.86	ND	NR	NR
MW-1	02-02-94	108.03	17.31	90.72	ND	NR	NR
MW-1	04-29-94	108.03	17.31	90.72	ND	NR	NR
MW-1	08-02-94	108.03	17.95	90.08	ND	SW	0.017
MW-1	11-16-94	108.03	17.04	90.99	ND	SW	0.02
MW-1	03-20-95	108.03	15.75	92.28	ND	SW	0.02
MW-1	06-06-95	108.03	17.68	90.35	ND	SW	0.016

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 08-14-95
Project Number: 0805-135.03

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-2	12-23-91	107.43	17.98	89.45	Sheen	NR	NR
MW-2	01-07-92	107.43	17.15	90.28	Sheen	NR	NR
MW-2	01-19-92	107.43	17.47	89.96	ND	NR	NR
MW-2	02-19-92	107.43	16.28	91.15	ND	NR	NR
MW-2	03-18-92	107.43	16.52	90.91	ND	NR	NR
MW-2	04-20-92	107.43	17.27	90.16	ND	NR	NR
MW-2	05-15-92	107.43	17.62	89.81	ND	NR	NR
MW-2	06-12-92	107.43	^17.63	^89.80	0.05	NR	NR
MW-2	07-15-92	107.43	17.65	89.78	ND	NR	NR
MW-2	08-07-92	107.43	17.80	89.63	ND	NR	NR
MW-2	09-14-92	107.43	^18.09	^89.34	0.55	NR	NR
MW-2	10-07-92	107.43	^18.55	^88.88	0.31	NR	NR
MW-2	11-12-92	107.43	17.95	89.48	Sheen	NR	NR
MW-2	12-09-92	107.43	^16.85	^90.58	0.02	NR	NR
MW-2	01-21-93	107.43	^15.08	^92.35	0.01	NR	NR
MW-2	02-22-93	107.43	^16.20	^91.23	0.01	NR	NR
MW-2	03-25-93	107.43	^16.72	^90.71	0.01	NR	NR
MW-2	04-14-93	107.43	^17.15	^90.28	ND	NR	NR
MW-2	05-22-93	107.43	^17.44	^89.99	ND	NR	NR
MW-2	06-17-93	107.43	17.57	89.86	ND	NR	NR
MW-2	07-27-93	107.43	^17.71	^89.72	ND	NR	NR
MW-2	08-29-93	107.43	^18.20	^89.23	ND	NR	NR
MW-2	09-30-93	107.43	^18.14	^89.29	ND	NR	NR
MW-2	11-16-93	107.43	^17.85	^89.58	ND	NR	NR
MW-2	02-02-94	107.43	16.96	90.47	ND	NR	NR
MW-2	04-29-94	107.43	16.95	90.48	ND	NR	NR
MW-2	08-02-94	107.43	17.59	89.84	ND	SW	0.017
MW-2	11-16-94	107.43	16.73	90.70	ND	SW	0.02
MW-2	03-20-95	107.43	15.50	91.93	ND*	SW	0.02
MW-2	06-06-95	107.43	17.43	90.00	ND	SW	0.016

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 08-14-95
Project Number: 0805-135.03

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-3	12-23-91	107.77	18.14	89.63	Sheen	NR	NR
MW-3	01-07-92	107.77	17.26	90.51	Sheen	NR	NR
MW-3	01-19-92	107.77	17.63	90.14	ND	NR	NR
MW-3	02-19-92	107.77	16.34	91.43	ND	NR	NR
MW-3	03-18-92	107.77	16.62	91.15	ND	NR	NR
MW-3	04-20-92	107.77	17.38	90.39	ND	NR	NR
MW-3	05-15-92	107.77	17.80	89.97	ND	NR	NR
MW-3	06-12-92	107.77	18.01	89.76	ND	NR	NR
MW-3	07-15-92	107.77	18.17	89.60	ND	NR	NR
MW-3	08-07-92	107.77	18.23	89.54	ND	NR	NR
MW-3	09-14-92	107.77	18.36	89.41	ND	NR	NR
MW-3	10-07-92	107.77	18.90	88.87	Sheen	NR	NR
MW-3	11-12-92	107.77	18.00	89.77	Sheen	NR	NR
MW-3	12-09-92	107.77	16.85	90.92	Droplets	NR	NR
MW-3	01-21-93	107.77	15.24	92.53	ND	NR	NR
MW-3	02-22-93	107.77	16.36	91.41	ND	NR	NR
MW-3	03-25-93	107.77	16.89	90.88	ND	NR	NR
MW-3	04-14-93	107.77	17.29	90.48	ND	NR	NR
MW-3	05-22-93	107.77	17.64	90.13	ND	NR	NR
MW-3	06-17-93	107.77	17.75	90.02	ND	NR	NR
MW-3	07-27-93	107.77	17.98	89.79	ND	NR	NR
MW-3	08-29-93	107.77	18.14	89.63	ND	NR	NR
MW-3	09-30-93	107.77	18.14	89.63	ND	NR	NR
MW-3	11-16-93	107.77	18.30	89.47	ND	NR	NR
MW-3	02-02-94	107.77	17.16	90.61	ND	NR	NR
MW-3	04-29-94	107.77	17.14	90.63	ND	NR	NR
MW-3	08-02-94	107.77	17.81	89.96	ND	SW	0.017
MW-3	11-16-94	107.77	16.91	90.86	ND	SW	0.02
MW-3	03-20-95	107.77	15.60	92.17	ND	SW	0.02
MW-3	06-06-95	107.77	17.54	90.23	ND	SW	0.016

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 08-14-95
Project Number: 0805-135.03

Well Desig-nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-4	11-12-92	106.58	16.08	90.50	ND	NR	NR
MW-4	12-09-92	106.58	15.00	91.58	ND	NR	NR
MW-4	01-21-93	106.58	13.35	93.23	ND	NR	NR
MW-4	02-22-93	106.58	14.48	92.10	ND	NR	NR
MW-4	03-25-93	106.58	15.06	91.52	ND	NR	NR
MW-4	04-14-93	106.58	15.50	91.08	ND	NR	NR
MW-4	05-22-93	106.58	15.79	90.79	ND	NR	NR
MW-4	06-17-93	106.58	14.90	91.68	ND	NR	NR
MW-4	07-27-93	106.58	16.11	90.47	ND	NR	NR
MW-4	08-29-93	106.58	16.21	90.37	ND	NR	NR
MW-4	09-30-93	106.58	16.23	90.35	ND	NR	NR
MW-4	11-16-93	106.58	16.30	90.28	ND	NR	NR
MW-4	02-02-94	106.58	15.36	91.22	ND	NR	NR
MW-4	04-29-94	106.58	15.36	91.22	ND	NR	NR
MW-4	08-02-94	106.58	15.94	90.64	ND	SW	0.017
MW-4	11-16-94	106.58	14.99	91.59	ND	SW	0.02
MW-4	03-20-95	106.58	13.85	92.73	ND	SW	0.02
MW-4	06-06-95	106.58	15.70	90.88	ND	SW	0.016

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 08-14-95
Project Number: 0805-135.03

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-5	11-12-92	106.68	16.81	89.87	ND	NR	NR
MW-5	12-09-92	106.68	16.40	90.28	ND	NR	NR
MW-5	01-21-93	106.68	14.58	92.10	ND	NR	NR
MW-5	02-22-93	106.68	15.65	91.03	ND	NR	NR
MW-5	03-25-93	106.68	16.07	90.61	ND	NR	NR
MW-5	04-14-93	106.68	16.34	90.34	ND	NR	NR
MW-5	05-22-93	106.68	16.56	90.12	ND	NR	NR
MW-5	06-17-93	106.68	Not surveyed:				
MW-5	07-27-93	106.68	16.80	89.88	ND	NR	NR
MW-5	08-29-93	106.68	16.93	89.75	ND	NR	NR
MW-5	09-30-93	106.68	16.97	89.71	ND	NR	NR
MW-5	11-16-93	106.68	17.03	89.65	ND	NR	NR
MW-5	02-02-94	106.68	16.38	90.30	ND	NR	NR
MW-5	04-29-94	106.68	16.41	90.27	ND	NR	NR
MW-5	08-02-94	106.68	16.81	89.87	ND	SW	0.017
MW-5	11-16-94	106.68	16.12	90.56	ND	SW	0.02
MW-5	03-20-95	106.68	14.92	91.76	ND	SW	0.02
MW-5	06-06-95	106.68	16.61	90.07	ND	SW	0.016

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 08-14-95
Project Number: 0805-135.03

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-6	11-12-92	105.16	14.05	91.11	ND	NR	NR
MW-6	12-09-92	105.16	13.37	91.79	ND	NR	NR
MW-6	01-21-93	105.16	11.76	93.40	ND	NR	NR
MW-6	02-22-93	105.16	12.62	92.54	ND	NR	NR
MW-6	03-25-93	105.16	13.04	92.12	ND	NR	NR
MW-6	04-14-93	105.16	13.47	91.69	ND	NR	NR
MW-6	05-22-93	105.16	13.80	91.36	ND	NR	NR
MW-6	06-17-93	105.16	13.88	91.28	ND	NR	NR
MW-6	07-27-93	105.16	14.13	91.03	ND	NR	NR
MW-6	08-29-93	105.16	14.19	90.97	ND	NR	NR
MW-6	09-30-93	105.16	14.34	90.82	ND	NR	NR
MW-6	11-16-93	105.16	14.41	90.75	ND	NR	NR
MW-6	02-02-94	105.16	13.60	91.56	ND	NR	NR
MW-6	04-29-94	105.16	13.66	91.50	ND	NR	NR
MW-6	08-02-94	105.16	13.99	91.17	ND	SW	0.017
MW-6	11-16-94	105.16	13.11	92.05	ND	SW	0.02
MW-6	03-20-95	105.16	12.13	93.03	ND	SW	0.02
MW-6	06-06-95	105.16	13.95	91.21	ND	SW	0.016

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 08-14-95
Project Number: 0805-135.03

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-7	11-12-92	107.08	14.75	92.33	ND	NR	NR
MW-7	12-09-92	107.08	12.55	94.53	ND	NR	NR
MW-7	01-21-93	107.08	11.52	95.56	ND	NR	NR
MW-7	02-22-93	107.08	12.82	94.26	ND	NR	NR
MW-7	03-25-93	107.08	13.43	93.65	ND	NR	NR
MW-7	04-14-93	107.08	13.98	93.10	ND	NR	NR
MW-7	05-22-93	107.08	14.41	92.67	ND	NR	NR
MW-7	06-17-93	107.08	14.50	92.58	ND	NR	NR
MW-7	07-27-93	107.08	14.82	92.26	ND	NR	NR
MW-7	08-29-93	107.08	15.05	92.03	ND	NR	NR
MW-7	09-30-93	107.08	15.04	92.04	ND	NR	NR
MW-7	11-16-93	107.08	15.12	91.96	ND	NR	NR
MW-7	02-02-94	107.08	14.04	93.04	ND	NR	NR
MW-7	04-29-94	107.08	14.10	92.98	ND	NR	NR
MW-7	08-02-94	107.08	14.61	92.47	ND	SW	0.017
MW-7	11-16-94	107.08	13.37	93.71	ND	SW	0.02
MW-7	03-20-95	107.08	12.32	94.76	ND	SW	0.02
MW-7	06-06-95	107.08	14.59	92.49	ND	SW	0.016
AS-2	09-30-93	NR	18.31	NR	ND	NR	NR

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
NR: not reported; data not available
ND: none detected
SW: southwest
^: groundwater elevation (GWE) and depth to water (DTW) adjusted to include 80 percent of the floating product thickness (FPT):
[GWE: (TOC - DTW) + (FPT x 0.8)]
*: floating product entered the well during purging

Table 3
Historical Groundwater Analytical Data
(TPHG, BTEX, and TRPH)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 07-10-95
Project Number: 0805-135.03

Well Desig-nation	Water Sample Field Date	TPHG µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	TOG or TRPH mg/L
MW-1	03-18-92	790	310	26	12	44	<0.5 (1.4)
MW-1	06-12-92	1000	290	15	10	30	<0.5
MW-1	09-14-92	1000	370	6.5	6.5	17	0.9
MW-1	10-07-92	590	200	19	6.7	19	<0.5
MW-1	01-22-93	1200	370	57	18	39	NA
MW-1	04-14-93	140	46	<2.5	<2.5	<2.5	NA
MW-1	09-30-93	220	64	0.9	2.2	4	NA
MW-1	11-16-93	180	53	0.7	1.7	4.1	NA
MW-1	02-02-94	250	93	<0.5	1.9	1	NA
MW-1	04-29-94	350	99	1.3	3.9	11	NA
MW-1	08-02-94	210	82	<1	<1	2.5	NA
MW-1	11-16-94	650	260	38	6.1	15	NA
MW-1	03-20-95	830	140	5	41	110	NA
MW-1	06-06-95	210	30	<0.5	7.3	16	NA
MW-2	03-18-92	8400	1400	1000	220	870	1.2 (3.0)
MW-2	06-12-92	Not sampled: well contained floating product					
MW-2	09-14-92	Not sampled: well contained floating product					
MW-2	10-07-92	Not sampled: well contained floating product					
MW-2	01-22-93	Not sampled: well contained floating product					
MW-2	04-14-93	Not sampled: well contained floating product					
MW-2	09-30-93	Not sampled: well contained floating product					
MW-2	11-16-93	Not sampled: well contained floating product					
MW-2	02-02-94	16000	1300	2500	540	2700	NA
MW-2	04-29-94	11000	1400	1200	360	1400	NA
MW-2	08-02-94	4900	800	290	120	620	NA
MW-2	11-16-94	49000	3300	8300	1400	7200	NA
MW-2	03-20-95	Not sampled: floating product entered well during purging					NA
MW-2	06-06-95	1200	60	21	35	140	NA

Table 3
Historical Groundwater Analytical Data
(TPHG, BTEX, and TRPH)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 07-10-95
Project Number: 0805-135.03

Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TOG or TRPH
		µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
MW-3	03-18-92	20000	3200	560	380	1000	7.8 (8.1)
MW-3	06-12-92	46000	3400	4200	1300	5400	16
MW-3	09-14-92	53000	4300	5700	1300	7300	5.5
MW-3	10-07-92	Not sampled: well contained floating product					
MW-3	01-22-93	35000	2100	1400	1200	4400	31
MW-3	04-14-93	13000	1800	390	990	3500	26
MW-3	09-30-93	79000	2400	3400	1900	8100	23
MW-3	11-16-93	72000	1400	2100	1900	8300	38
MW-3	02-02-94	26000	1400	1200	1200	4400	7.7 (7.8)
MW-3	04-29-94	22000	1400	620	910	3400	10
MW-3	08-02-94	17000	530	410	720	2600	6.6
MW-3	11-16-94	18000	1400	560	790	2800	2.3
MW-3	03-20-95	29000	880	190	760	2000	16
MW-3	06-06-95	22000	450	54	380	1300	7.1
MW-4	11-12-92	77	32	<0.5	<0.5	<0.5	NA
MW-4	01-22-93	170	66	0.8	<0.5	1.5	NA
MW-4	04-14-93	<50	4.6	<0.5	<0.5	<0.5	NA
MW-4	09-30-93	52	13	<0.5	<0.5	<0.5	NA
MW-4	11-16-93	230	34	<0.5	<0.5	<0.5	NA
MW-4	02-02-94	<50	3.9	<0.5	<0.5	<0.5	NA
MW-4	04-29-94	<50	4.2	<0.5	<0.5	<0.5	NA
MW-4	08-02-94	<50	3.8	<0.5	<0.5	<0.5	NA
MW-4	11-16-94	110	31	<0.5	<0.5	<0.5	NA
MW-4	03-20-95	88	1	<0.5	<0.5	0.7	NA
MW-4	06-06-95	<50	<0.5	<0.5	<0.5	<0.5	NA

Table 3
Historical Groundwater Analytical Data
(TPHG, BTEX, and TRPH)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 07-10-95
Project Number: 0805-135.03

Well Designation	Water Sample Field Date	TPHG µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	TOG or TRPH mg/L
MW-5	11-12-92	2900	1300	12	67	18	NA
MW-5	01-22-93	17000	5000	780	260	330	NA
MW-5	04-14-93	12000	4600	<50	180	130	NA
MW-5	09-30-93	4500	1100	<10	39	16	NA
MW-5	11-16-93	3300	700	<10	22	<10	NA
MW-5	02-02-94	10000	3000	65	240	78	NA
MW-5	04-29-94	7600	2400	27	130	44	NA
MW-5	08-02-94	1900	680	<10	24	<10	NA
MW-5	11-16-94	17000	5900	700	440	320	NA
MW-5	03-20-95	21000	6900	450	800	1300	NA
MW-5	06-06-95	6500	1700	<20	120	69	NA
MW-6	11-12-92	51	2.6	<0.5	<0.5	<0.5	NA
MW-6	01-22-93	<50	1.2	<0.5	<0.5	<0.5	NA
MW-6	04-14-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-6	09-30-93	74	2	<0.5	<0.5	<0.5	NA
MW-6	11-16-93	72	2.6	<0.5	<0.5	<0.5	NA
MW-6	02-02-94	61	2.2	<0.5	<0.5	<0.5	NA
MW-6	04-29-94	<50	0.6	<0.5	<0.5	<0.5	NA
MW-6	08-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-6	11-16-94	<50	1.1	<0.5	<0.5	<0.5	NA
MW-6	03-20-95	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-6	06-06-95	<50	<0.5	<0.5	<0.5	<0.5	NA

Table 3
Historical Groundwater Analytical Data
(TPHG, BTEX, and TRPH)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 07-10-95
Project Number: 0805-135.03

Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TOG or TRPH
		µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
MW-7	11-12-92	<50	1.8	<0.5	<0.5	<0.5	NA
MW-7	01-22-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	04-14-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	09-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	11-16-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	02-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	04-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	08-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	11-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	03-20-95	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	06-06-95	Not sampled: not scheduled for chemical analysis					
AS-2	09-30-93	<50	1.2	<0.5	<0.5	<0.5	NA

TPHG: total petroleum hydrocarbons as gasoline
TOG: total oil and grease measured by USEPA Method 5520 C&F
TRPH: total recoverable petroleum hydrocarbons measured by USEPA Method 418.1
µg/L: micrograms per liter
mg/L: milligrams per liter
NA: not analyzed

Table 4
Historical Groundwater Analytical Data
(VOCs and SVOCs)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 07-10-95
Project Number: 0805-135.03

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds (VOCs) by EPA Method 5030/601						Semi-Volatile Organic Compounds (SVOCs) by EPA Method 3510/8270			
		PCE µg/L	TCE µg/L	Chloroform µg/L	cis-1,2-DCE µg/L	Vinyl Chloride µg/L	1,1-DCA µg/L	Naphthalene µg/L	2-Methylnaphthalene µg/L	Bis(2-ethylhexyl) Phthalate µg/L	Di-n-octyl Phthalate µg/L
MW-1	03-18-92	13	1.2	ND	ND	ND	ND	NA	NA	NA	NA
MW-1	06-12-92	18	1.4	ND	ND	ND	ND	NA	NA	NA	NA
MW-1	09-14-92	15	1.5	ND	ND	ND	ND	NA	NA	NA	NA
MW-1	10-07-92	23	1.5	0.6	ND	ND	ND	NA	NA	NA	NA
MW-1	01-22-93	11	0.9	ND	ND	ND	ND	ND	ND	ND	ND
MW-1	04-14-93	21	1.8	0.6	ND	ND	ND	NA	NA	NA	NA
MW-1	09-30-93	19	1.1	0.7	ND	ND	ND	NA	NA	NA	NA
MW-1	11-16-93	22	0.9	ND	ND	ND	ND	NA	NA	NA	NA
MW-1	02-02-94	11	1.1	ND	ND	ND	ND	NA	NA	NA	NA
MW-1	04-29-94	13	1.3	0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA
MW-1	08-02-94	15	1.4	0.7	0.7	<0.5	<0.5	NA	NA	NA	NA
MW-1	11-16-94	12	1.1	0.5	1.2	<0.5	<0.5	NA	NA	NA	NA
MW-1	03-20-95	Not analyzed: sampling for additional parameters was discontinued									
MW-2	03-18-92	19	2.22	ND	0.5	ND	ND	NA	NA	NA	NA
MW-2	06-12-92	Not sampled: well contained floating product									
MW-2	09-14-92	Not sampled: well contained floating product									
MW-2	10-07-92	Not sampled: well contained floating product									
MW-2	01-22-93	Not sampled: well contained floating product									
MW-2	04-14-93	Not sampled: well contained floating product									
MW-2	09-30-93	Not sampled: well contained floating product									
MW-2	11-16-93	Not sampled: well contained floating product									
MW-2	02-02-94	13	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-2	04-29-94	9.4	1.9	<0.5	2.2	<0.5	<0.5	NA	NA	NA	NA
MW-2	08-02-94	15	2	<0.5	2.9	<0.5	<0.5	NA	NA	NA	NA
MW-2	11-16-94	9.6	1.8	<0.5	2.1	<0.5	<0.5	NA	NA	NA	NA
MW-2	03-20-95	Not analyzed: sampling for additional parameters was discontinued									

Table 4
Historical Groundwater Analytical Data
(VOCs and SVOCs)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 07-10-95
Project Number: 0805-135.03

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds (VOCs) by EPA Method 5030/601						Semi-Volatile Organic Compounds (SVOCs) by EPA Method 3510/8270			
		PCE	TCE	Chloroform	cis-1,2-DCE	Vinyl Chloride	1,1-DCA	Naphthalene	2-Methylnaphthalene	Bis(2-ethylhexyl) Phthalate	Di-n-octyl Phthalate
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-3	03-18-92	2.7	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-3	06-12-92	1.9	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-3	09-14-92	2	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-3	10-07-92	Not sampled: well contained floating product									
MW-3	01-22-93	1.9	ND	ND	ND	ND	ND	440	350	280	13
MW-3	04-14-93	1.7	ND	ND	ND	ND	ND	130	100	250	14
MW-3	09-30-93	1.2	ND	ND	ND	ND	ND	480	320	ND	ND
MW-3	11-16-93	1.5	ND	ND	ND	ND	ND	590	640	ND	ND
MW-3	02-02-94	ND*	ND*	ND*	ND*	ND*	ND*	160	91	9	ND
MW-3	04-29-94	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	110	50	<10	<10
MW-3	08-02-94	1	<0.5	<0.5	<0.5	<0.5	<0.5	120	53	10	<10
MW-3	11-16-94	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	100	53	<10	<10
MW-3	03-20-95	Not analyzed: sampling for additional parameters was discontinued									
MW-4	11-12-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4	01-22-93	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	04-14-93	1.1	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-4	09-30-93	1.6	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-4	11-16-93	1.9	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-4	02-02-94	1.4	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-4	04-29-94	1.9	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA
MW-4	08-02-94	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA
MW-4	11-16-94	1.8	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA
MW-4	03-20-95	Not analyzed: sampling for additional parameters was discontinued									

Table 4
Historical Groundwater Analytical Data
(VOCs and SVOCs)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 07-10-95
Project Number: 0805-135.03

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds (VOCs) by EPA Method 5030/601						Semi-Volatile Organic Compounds (SVOCs) by EPA Method 3510/8270			
		PCE	TCE	Chloroform	cis-1,2-DCE	Vinyl Chloride	1,1-DCA	Naphthalene	2-Methylnaphthalene	Bis(2-ethylhexyl) Phthalate	Di-n-octyl Phthalate
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-5	11-12-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-5	01-22-93	11	4.7	ND	1.8	ND	ND	ND	ND	ND	ND
MW-5	04-14-93	7.9	2	ND	1.5	0.9	ND	NA	NA	NA	NA
MW-5	09-30-93	17	2.8	ND	2.9	0.8	ND	NA	NA	NA	NA
MW-5	11-16-93	19	5.1	ND	4	ND	ND	NA	NA	NA	NA
MW-5	02-02-94	2.7	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-5	04-29-94	10	2.7	<0.5	2.4	<0.5	<0.5	NA	NA	NA	NA
MW-5	08-02-94	13	5.4	<0.5	5.7	<0.5	<0.5	NA	NA	NA	NA
MW-5	11-16-94	1.1	1	<0.5	3.5	1.3	<0.5	NA	NA	NA	NA
MW-5	03-20-95	Not analyzed: sampling for additional parameters was discontinued									
MW-6	11-12-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-6	01-22-93	120	6.2	6.6	1.8	ND	ND	NA	NA	NA	NA
MW-6	04-14-93	120	5.8	ND	1.1	ND	6.3	NA	NA	NA	NA
MW-6	09-30-93	220	5.2	ND	2.7	ND	ND	NA	NA	NA	NA
MW-6	11-16-93	160	8.5	15	3.2	ND	ND	NA	NA	NA	NA
MW-6	02-02-94	100	ND	6.7	ND	ND	ND	NA	NA	NA	NA
MW-6	04-29-94	95	6.6	7.2	<2.5	<2.5	<2.5	NA	NA	NA	NA
MW-6	08-02-94	87	6.1	4.6	<2.5	<2.5	<2.5	NA	NA	NA	NA
MW-6	11-16-94	86	6.8	8.9	<2.5	<2.5	<2.5	NA	NA	NA	NA
MW-6	03-20-95	Not analyzed: sampling for additional parameters was discontinued									

Table 4
Historical Groundwater Analytical Data
(VOCs and SVOCs)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 07-10-95
Project Number: 0805-135.03

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds (VOCs) by EPA Method 5030/601						Semi-Volatile Organic Compounds (SVOCs) by EPA Method 3510/8270			
		PCE	TCE	Chloroform	cis-1,2-DCE	Vinyl Chloride	1,1-DCA	Naphthalene	2-Methylnaphthalene	Bis(2-ethylhexyl) Phthalate	Di-n-octyl Phthalate
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-7	11-12-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-7	01-22-93	6.8	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-7	04-14-93	4.3	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-7	09-30-93	2.5	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-7	11-16-93	4	ND	ND	ND	ND	ND	NA	NA	NA	NA
MW-7	02-02-94	3.4	ND	0.8	ND	ND	ND	NA	NA	NA	NA
MW-7	04-29-94	3.4	<0.5	1.1	<0.5	<0.5	<0.5	NA	NA	NA	NA
MW-7	08-02-94	3.3	<0.5	0.8	<0.5	<0.5	<0.5	NA	NA	NA	NA
MW-7	11-16-94	3.3	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA
MW-7	03-20-95	Not analyzed: sampling for additional parameters was discontinued									
AS-2	09-30-93	29	1.5	1	ND	ND	ND	NA	NA	NA	NA

PCE: tetrachloroethene
TCE: trichloroethene
cis-1,2-DCE: cis-1,2-dichloroethene
1,1-DCA. 1,1-dichloroethane
µg/L: micrograms per liter
ND: not detected
*: sample was analyzed for volatile organic compounds using USEPA Method 624 (only BTEX was detected)

Table 5
Historical Groundwater Analytical Data
(Diesel and Metals)

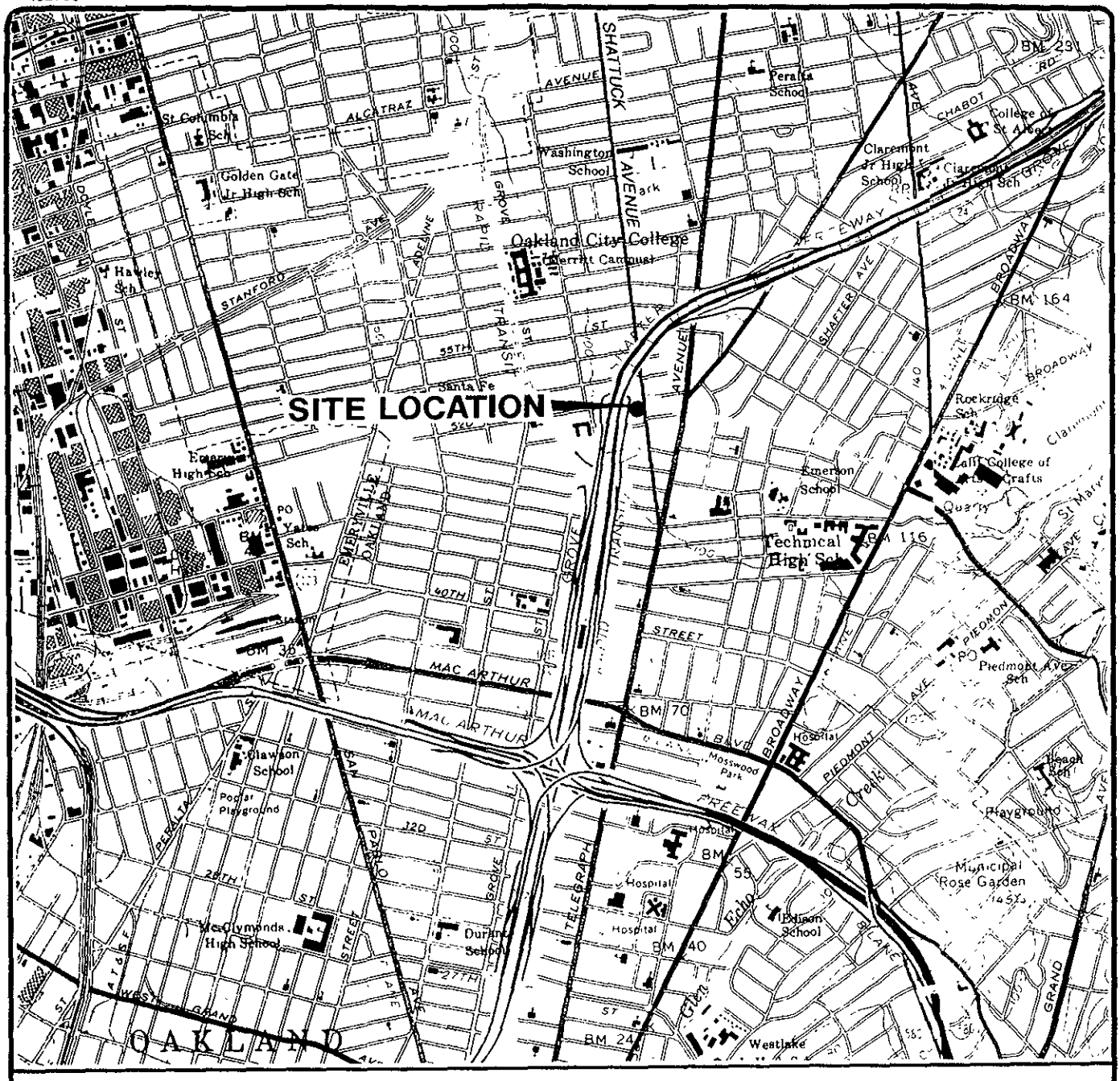
ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 07-10-95
Project Number: 0805-135.03

Well Desig-nation	Water Sample Field Date	TPHD	Cadmium by EPA 6010	Chromium by EPA 6010	Lead by EPA 7421	Zinc by EPA 6010	Nickel by EPA 6010
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	03-18-92	<50	<3	5	3	31	<20
MW-1	06-12-92	<50	NA	NA	NA	NA	NA
MW-1	09-14-92	<80	NA	NA	NA	NA	NA
MW-1	10-07-92	<50	NA	NA	NA	NA	NA
MW-1	01-22-93	NA	NA	NA	NA	NA	NA
MW-1	04-14-93	NA	<3	<5	3	25	<20
MW-1	09-30-93	Not analyzed: sampling for additional parameters was discontinued					
MW-2	03-18-92	230*	<3	21	9	54	38
MW-2	06-12-92	Not analyzed: sampling for additional parameters was discontinued					
MW-3	03-18-92	2800*	<3	67	27	156	113
MW-3	06-12-92	1600*	NA	NA	NA	NA	NA
MW-3	09-14-92	40000*	NA	NA	NA	NA	NA
MW-3	10-07-92	Not sampled: well contained floating product					
MW-3	01-22-93	13000*	<3	10	8	28	23
MW-3	04-14-93	<50	<3	<5	3	25	<20
MW-3	09-30-93	17000*	<5	50	26	100	70
MW-3	11-16-93	Not analyzed: sampling for additional parameters was discontinued					
MW-4	11-12-92	Not analyzed: sampling for additional parameters was not initiated					
MW-5	11-12-92	Not analyzed: sampling for additional parameters was not initiated					
MW-6	11-12-92	Not analyzed: sampling for additional parameters was not initiated					
MW-7	11-12-92	Not analyzed: sampling for additional parameters was not initiated					
AS-2	09-30-93	Not analyzed: sampling for additional parameters was not initiated					

TPHD: total petroleum hydrocarbons as diesel by USEPA Method 3510/California DHS LUFT Method
µg/L: micrograms per liter
NA: not analyzed
*: chromatogram does not match the typical diesel fingerprint, but appears to be weathered gasoline

152753



Base map from USGS 7.5' Quad. Maps:
Oakland East and Oakland West, California
Photorevised 1980.

N

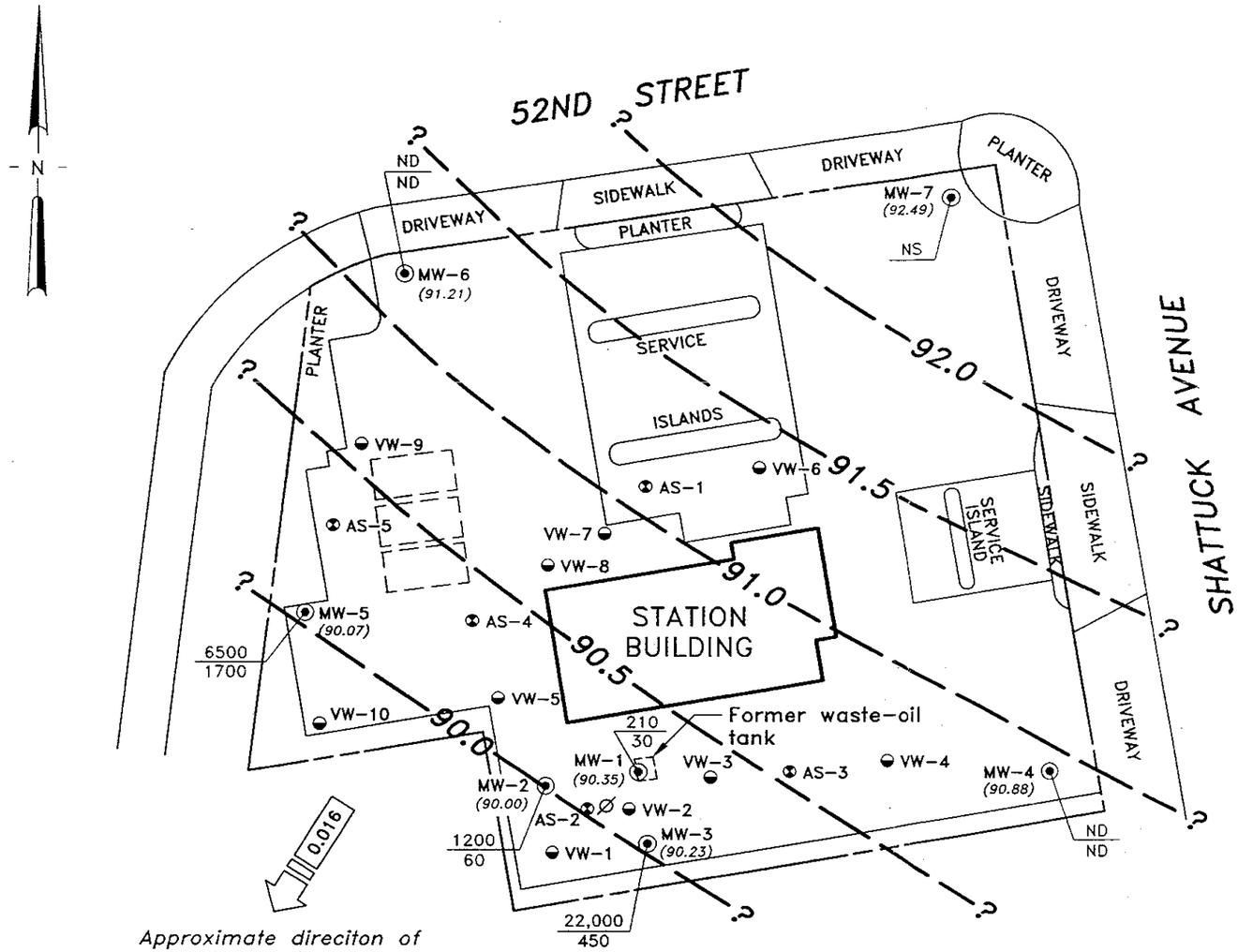
Scale : 0 2000 4000 Feet

emcon

ARCO PRODUCTS COMPANY
SERVICE STATION 6148, 5131 SHATTUCK AVENUE
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

SITE LOCATION

FIGURE
1
PROJECT NO.
805-135.03



EXPLANATION

⊙	Groundwater monitoring well
◒	Vapor extraction well
⊛	Air-sparge well
⌀	Decommissioned well
[ ]	Existing underground gasoline storage tank
(90.35)	Groundwater elevation (Ft.-MSL) measured 6/06/95
?	Groundwater elevation contour (Ft.-MSL)
210 / 30	TPHG, concentration in groundwater (ug/L); sampled 6/06/95 / Benzene concentration in groundwater (ug/L); sampled 6/06/95
NS	Not sampled; not scheduled for chemical analysis
ND	Not detected at or above the method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)

emcon

SCALE: 0 30 60 FEET
(Approximate)

ARCO PRODUCTS COMPANY
SERVICE STATION 6148, 5131 SHATTUCK AVENUE
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

GROUNDWATER DATA
SECOND QUARTER 1995

FIGURE NO.
2

PROJECT NO.
805-135.03

APPENDIX A

FIELD DATA SHEETS, SECOND QUARTER 1995 GROUNDWATER MONITORING EVENT

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 1775-250.01 STATION ADDRESS : 5131 Shattuck Avenue DATE : 6/6/95

ARCO STATION # : 6148 FIELD TECHNICIAN : Joe Williams DAY : Tuesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-6	OK	YES	YES	ARCO	YES	13.95	13.95	ND	ND	26.2	
2	MW-7	OK	YES	YES	ARCO	YES	14.59	14.59	ND	ND	26.9	
3	MW-4	OK	YES	YES	3209	YES	15.70	15.70	ND	ND	26.0	
4	MW-1	OK	YES	YES	3209	YES	17.68	17.68	ND	ND	25.8	
5	MW-5	OK	YES	YES	3209	YES	16.61	16.61	ND	ND	27.9	
6	MW-3	OK	YES	YES	3209	YES	17.54	17.54	ND	ND	25.8	
7	MW-2	OK	YES	YES	3209	YES	17.43	17.43	ND	ND	25.7	

SURVEY POINTS ARE TOP OF WELL CASINGS

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-250-01 SAMPLE ID: MW-1

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6148

SAMPLED BY: J WILLIAMS LOCATION: OAKLAND CA

TYPE: Ground Water ✓ Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 ✓ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 6.30

DEPTH TO WATER (feet): 17.68 CALCULATED PURGE (gal.): 15.91

DEPTH OF WELL (feet): 25.8 ACTUAL PURGE VOL. (gal.): 16.5

DATE PURGED: 06-06-95 Start (2400 Hr) 1318 End (2400 Hr) 1325

DATE SAMPLED: 06-06-95 Start (2400 Hr) — End (2400 Hr) 1330

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1321	5.5	6.57	436	73.8	BROWN	HEAVY
1323	10.5	6.62	434	73.1	BROWN	HEAVY
1325	16.5	6.66	438	73.4	"	"

D. O. (ppm): NR ODOR: None NR N/A

(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

✓ Centrifugal Pump ___ Bailer (PVC)

___ Submersible Pump ___ Bailer (Stainless Steel)

___ Well Wizard™ ___ Dedicated

Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump ✓ Bailer (Teflon®)

___ DDL Sampler ___ Bailer (Stainless Steel)

___ Dipper ___ Submersible Pump

___ Well Wizard™ ___ Dedicated

Other: ___

WELL INTEGRITY: OK LOCK #: 3209

REMARKS: ___

Meter Calibration: Date: 6-6-95 Time: ___ Meter Serial #: 9810 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: [signature] Page 1 of 6

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-250-01 SAMPLE ID: MW-2

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 614

SAMPLED BY: J WILLIAMS LOCATION: OAKLAND, CA

TYPE: Ground Water ✓ Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 ✓ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 6.40

DEPTH TO WATER (feet): 17.43 CALCULATED PURGE (gal.): 16.20

DEPTH OF WELL (feet): 25.7 ACTUAL PURGE VOL. (gal.): 12

DATE PURGED: 06-06-95 Start (2400 Hr) 1515 End (2400 Hr) 1521

DATE SAMPLED: 06-06-95 Start (2400 Hr) — End (2400 Hr) 1535

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1515	6	6.5	424	67.2	CLEAR	MOD
1521	12	6.51	433	69.3	BROWN	HEAVY
	WELL DRIED AFTER 12 GALLON 1521					
1533	Recharged	6.51	404	74.6	CLEAR	TRACE

D. O. (ppm): NR ODOR: STRONG

COLOR (COBALT 0 - 500): NR

TURBIDITY (NTU 0 - 200 or 0 - 1000): NR

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
✓ 2" Bladder Pump	Bailer (Teflon®)	2" Bladder Pump	✓ Bailer (Teflon®)
Centrifugal Pump	Bailer (PVC)	DDL Sampler	Bailer (Stainless Steel)
Submersible Pump	Bailer (Stainless Steel)	Dipper	Submersible Pump
Well Wizard™	Dedicated	Well Wizard™	Dedicated

Other: ___ Other: ___

WELL INTEGRITY: OK LOCK #: 3205

REMARKS: ___

Meter Calibration: Date: 6-6-95 Time: ___ Meter Serial #: ___ Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: [signature] Page 7 of 6

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-250-01 SAMPLE ID: MW-3

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6148

SAMPLED BY: J WILLIAMS LOCATION: OAKLAND, CA

TYPE: Ground Water ✓ Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 ✓ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 33?

DEPTH TO WATER (feet): 17.54 CALCULATED PURGE (gal.): 16.18

DEPTH OF WELL (feet): 25.8 ACTUAL PURGE VOL. (gal.): 10

DATE PURGED: 06-06-95 Start (2400 Hr) 1440 End (2400 Hr) 1446

DATE SAMPLED: 06-06-95 Start (2400 Hr) — End (2400 Hr) 1457

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1444	6	6.66	480	70.3	GRAY	MOD
	WELL DRIED AFTER 10 GALLONS TIME 1446					
1509	Perlers	6.65	573	70.3	GRAY	MOD

D. O. (ppm): NR ODOR: STRONG NR (COBALT 0 - 500) NR (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ Bailer (Teflon®)
✓ Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: 3207

REMARKS: ___

Meter Calibration: Date: 6-6-95 Time: ___ Meter Serial #: 9016 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: MW1-6

Signature: [signature] Reviewed By: SP Page 3 of 6

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-250-01 SAMPLE ID: MW-4

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6145

SAMPLED BY: J WILLIAMS LOCATION: OAKLAND, CA

TYPE: Ground Water ✓ Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 ✓ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 6.72

DEPTH TO WATER (feet): 15.70 CALCULATED PURGE (gal.): 20.15

DEPTH OF WELL (feet): 26.0 ACTUAL PURGE VOL. (gal.): 21

DATE PURGED: 06-06-95 Start (2400 Hr) 1227 End (2400 Hr) 1234

DATE SAMPLED: 06-06-95 Start (2400 Hr) — End (2400 Hr) 1240

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1230	7	6.53	428	75.0	BROWN	HEAVY
1232	14	6.55	466	174.1	"	"
1234	21	6.55	442	74.1	"	"

D. O. (ppm): NR ODOR: NONE COLOR: NR (COBALT 0 - 500) TURBIDITY: NR (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ Bailer (Teflon®)
✓ Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: GOOD LOCK #: 3209

REMARKS: ___

Meter Calibration: Date: 6-6-95 Time: ___ Meter Serial #: 9010 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: SA Page 4 of 6

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-250-01 SAMPLE ID: MW-5

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6148

SAMPLED BY: J WILLIAMS LOCATION: OAKLAND CA

TYPE: Ground Water ✓ Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 ✓ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL):	NA	VOLUME IN CASING (gal.):	5.41
DEPTH TO WATER (feet):	16.61	CALCULATED PURGE (gal.):	16.24
DEPTH OF WELL (feet):	24.9	ACTUAL PURGE VOL. (gal.):	10

DATE PURGED: 06-06-95 Start (2400 Hr) 1353 End (2400 Hr) 1358

DATE SAMPLED: 06-06-95 Start (2400 Hr) — End (2400 Hr) 1405

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1355	6	6.67	437	71.1	BROWN	HEAVY
	WELL PURGED AFTER 10 GALLON				TIME	1358
1410	Recharge	6.67	509	70.4	BROWN	MOD

D. O. (ppm): NR ODOR: STRONG NR (COBALT 0 - 500) NR (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR

Parameters field filtered at this well: NA

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ Bailer (Teflon®)
✓ Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 6-6-95 Time: ___ Meter Serial #: 9010 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: [signature] Page 5 of 6

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-250-01 SAMPLE ID: MW-6

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6148

SAMPLED BY: J WILLIAMS LOCATION: OAKLAND, CA

TYPE: Ground Water ✓ Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 ✓ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 8.26

DEPTH TO WATER (feet): 13.95 1.96 CALCULATED PURGE (gal.): 24.79

DEPTH OF WELL (feet): 26.6 ACTUAL PURGE VOL. (gal.): 25

DATE PURGED: 06-06-95 Start (2400 Hr) 1151 End (2400 Hr) 1158

DATE SAMPLED: 06-06-95 Start (2400 Hr) — End (2400 Hr) 1201 (26)

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1154	8.5	6.16	421	70.1	BROWN	HEAVY
1156	17	6.50	406	70.4		
1158	25	6.59	404	70.0		

D. O. (ppm): NA ODOR: ___ NA (COBALT 0 - 500) NA (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NA

Parameters field filtered at this well: NA

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)
✓ Centrifugal Pump ___ Bailer (PVC)
___ Submersible Pump ___ Bailer (Stainless Steel)
___ Well Wizard™ ___ Dedicated
Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump ✓ Bailer (Teflon®)
___ DDL Sampler ___ Bailer (Stainless Steel)
___ Dipper ___ Submersible Pump
___ Well Wizard™ ___ Dedicated
Other: ___

WELL INTEGRITY: OK LOCK #: 3209

REMARKS: ___

Meter Calibration: Date: 6-6-95 Time: 1130 Meter Serial #: 9010 Temperature °F: 77.6

(EC 1000 988 / 1000) (DI ___) (pH 7 6.78 / 7.00) (pH 10 1013 / 1000) (pH 4 399 / —)

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 6 of 6

APPENDIX B

ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY DOCUMENTATION, SECOND QUARTER 1995

Columbia Analytical Services, Inc.

June 20, 1995 Service Request No. S950711

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **ARCO Facility No. 6148 / EMCON Project No. 0805-135.03**

Dear Mr. Young:

Attached are the results of the water sample(s) submitted to our lab on June 7, 1995. For your reference, these analyses have been assigned our service request number S950711.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Steven L. Green
Project Chemist

Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

001

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
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
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is 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
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 MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	S950711
Project:	ARCO Facility No. 6148/EMCON Project No.0805-135.03	**Date Collected:**	6/6/95
Sample Matrix:	Water	**Date Received:**	6/7/95
		Date Extracted:	NA
		Date Analyzed:	6/15-16/95

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Analyte:	**TPH as Gasoline**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Xylenes, Total**
Units:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Method Reporting Limit:	50	0.5	0.5	0.5	0.5
Sample Name	**Lab Code**				
MW-6 (26)	S950711-001	ND	ND	ND	ND	ND
MW-4 (25)	S950711-002	ND	ND	ND	ND	ND
MW-1 (25)	S950711-003	210	30	ND	7.3	16
MW-5 (24)	S950711-004	6,500	1,700	<20*	120	69
MW-3 (25)	S950711-005	22,000	450	54	380	1,300
MW-2 (25)	S950711-006	1,200	60	21	35	140
Method Blank	S950615-WB1	ND	ND	ND	ND	ND
Method Blank	S950616-WB1	ND	ND	ND	ND	ND

* Raised MRL due to high analyte concentration requiring sample dilution.

Approved By: _____ Date: 6/20/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	S950711
Project:	ARCO Facility No. 6148/EMCON Project No.0805-135.03	**Date Collected:**	6/6/95
Sample Matrix:	Water	**Date Received:**	6/7/95
		Date Extracted:	NA
		Date Analyzed:	6/15-16/95

Matrix Spike/Duplicate Matrix Spike Summary
TPH as Gasoline
EPA Methods 5030/California DHS LUFT Method
Units: ug/L (ppb)

Sample Name: MW-1 (25)
Lab Code: S950711-003

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
Gasoline	1250	1250	208	1360	1350	92	91	67-121	1

Approved By: _____ Date: 6/29/95

DMS1S/060194
950711.XLS - wgasms 6/20/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Facility No. 6148/EMCON Project No.0805-135.03
Sample Matrix: Water

Service Request: S950711
Date Collected: 6/6/95
Date Received: 6/7/95
Date Extracted: NA
Date Analyzed: 6/15-16/95

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery α,α,α-Trifluorotoluene
MW-6 (26)	S950711-001	89
MW-4 (25)	S950711-002	90
MW-1 (25)	S950711-003	99
MW-5 (24)	S950711-004	96
MW-3 (25)	S950711-005	100
MW-2 (25)	S950711-006	101
MW-1 (25) (MS)	S950711-003MS	100
MW-1 (25) (DMS)	S950711-003DMS	100
Method Blank	S950615-WB1	95
Method Blank	S950616-WB1	91

CAS Acceptance Limits: 69-116

Approved By: _____ Date: 6/20/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	S950711
Project:	ARCO Facility No. 6148/EMCON Project No.0805-135.03	**Date Analyzed:**	6/15/95

Initial Calibration Verification (ICV) Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	24.5	98	85-115
Toluene	25	23.3	93	85-115
Ethylbenzene	25	23.9	96	85-115
Xylenes, Total	75	68.7	92	85-115
Gasoline	250	247	99	90-110

Approved By: _____ Date: 6/20/95

ICV25AL/060194
950711.XLS - wgbtxcal 6/20/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #6148/#0805-135.03
Sample Matrix: Water

Service Request: L952562
Date Collected: 6/6/95
Date Received: 6/9/95
Date Extracted: 6/9/95
Date Analyzed: 6/9/95

Total Recoverable Petroleum Hydrocarbons
EPA Method 418.1
Units: mg/L (ppm)

Sample Name	Lab Code	MRL	Result
MW-3 (25)	L952562-001	0.5	7.1
Method Blank	L952562-MB	0.5	ND

Approved By: Eydie Schwartz Date: 6/12/95

IAMRL/060194
Genlcs36 - 418w 6/12/95

6925 CANOGA AVENUE ■ CANOGA PARK, CA 91303 ■ 818 587-5550 ■ FAX 818 587-5555

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	L952562
Project:	ARCO Products Company #6148/#0805-135.03	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	6/9/95
		Date Analyzed:	6/9/95

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary*
Total Recoverable Petroleum Hydrocarbons (TRPH)
EPA Method 418.1
Units: mg/L (ppm)

	True Value		Result		Percent Recovery			
Analyte	LCS	DLCS	LCS	DLCS	LCS	DLCS	CAS Acceptance Limits	**Relative Percent Difference**
TRPH	2.03	2.03	1.68	1.72	83	85	75-125	2

* Sample quantity was insufficient to perform matrix spike and matrix spike duplicate. Three separate, replicate one liter samples are required to analyze sample and spikes.

Approved By: Eydie Schwartz Date: 6/12/95

6925 CANOGA AVENUE ■ CANOGA PARK, CA 91303 ■ 818 587-5550 ■ FAX 818 587-5555

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 17075.00

Chain of Custody

ARCO Facility no. 6148	City (Facility) Oakland	Project manager (Consultant) John Young	Laboratory name CAS
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Consultant name EMCON	Address (Consultant) 1921 Ringwood Ave San Jose, CA 95131		Contract number

	Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TOH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
1	MW-6(26)	2			X		X	HCL	6-6-95	1201		X											
2	MW-4(25)	2			X		X	HCL		1240		X											
3	MW-1(25)	2			X		X	HCL		1330		X											
4	MW-5(24)	2			X		X	HCL		1405		X											
5	MW-3(25)	4			X		X	HCL		1459		X			X								1
6	MW-2(25)	2			X		X	HCL		1530		X											

Method of shipment: Sampler will deliver

Special detection Limit/reporting: lowest possible

Special QA/QC: As Normal

0805-135.03

Remarks: 2 40ml HCL VOAs

Add: 2 liter glass HCL for MW-3

Lab number 495262 S95-0711

Turnaround time

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

Condition of sample: ok		Temperature received: good	
Relinquished by sampler: Joe Southern	Date 6-7-95 Time 0910	Received by: Steve Green	
Relinquished by	Date Time	Received by	
Relinquished by: Bonnie Brown	Date 6-8-95 Time 1630	Received by laboratory	Date 6-9-95 Time 1315

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

CAS-S GBTEX CAS-L: 418.1 Due 6/21