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

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Date May 25, 1995
Project 0805-134.02

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	First quarter 1995 groundwater monitoring report for ARCO service station 6113, Livermore, California

For your:	X	Use	Sent by:		Regular Mail
		Approval			Standard Air
		Review			Courier
		Information		X	Other Certified 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: Sum Arigala, RWQCB - SFBR
Danielle Stefani, LFD
Michael Whelan, ARCO Products Company
David Larsen, EMCON
File

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

Date: May 25, 1995

Re: ARCO Station # 6113 • 785 East Stanley Boulevard • Livermore, CA
First 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
Environmental Engineer

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

May 17, 1995
Project 0805-134.02

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

Re: First quarter 1995 groundwater monitoring program results, ARCO service station 6113, Livermore, California

Dear Mr. Whelan:

This letter presents the results of the first quarter 1995 groundwater monitoring program at ARCO Products Company (ARCO) service station 6113, 785 East Stanley Boulevard, Livermore, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

BACKGROUND

Between January and February 1989, one 280-gallon waste-oil tank was removed by Crosby and Overton. In September 1989, as part of the initial phase of subsurface environmental investigation, RESNA installed groundwater monitoring wells MW-1, MW-2, and MW-3. In February 1991, RESNA installed an additional groundwater monitoring well, MW-4, as part of a limited surface investigation.

Between June and August 1992, RESNA installed five additional groundwater monitoring wells, MW-5 through MW-9, and two vadose wells, VW-1 and VW-2, and conducted a soil-vapor extraction (SVE) pilot test as part of an additional subsurface investigation. Between December 1992 and March 1993, all product, vapor-return, and vent lines were removed and replaced by Wilkey's Engineering under the supervision of Roux Associates. During this phase of work, subgrade remediation piping for the interim SVE and groundwater remediation systems was also installed.

Between March and June 1993, RESNA installed three additional groundwater monitoring wells, MW-10, MW-11, and MW-12, and two additional vadose wells, VW-3 and VW-4.

RESNA submitted a remedial action plan (RAP) in July 1993, for installation of the proposed soil and groundwater remediation systems. The proposed SVE system was designed and construction completed in December 1993.

The SVE system has not yet been activated because of a rise in groundwater elevations, which submerged the available SVE well screen.

Groundwater monitoring and sampling at this site was initiated in June 1990. There are currently 12 groundwater monitoring wells and 4 vadose wells on site. For additional background information, please refer to the letter report, *Results of Vapor Extraction Well Installation at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California* (RESNA, June 2, 1994).

Water levels in wells MW-1 through MW-12 are measured quarterly. Wells MW-1, MW-2, MW-3, MW-8, MW-9 and MW-10 are sampled annually (fourth quarter). Wells MW-11 and MW-12 are sampled semiannually (second and fourth quarters). Wells MW-4 through MW-7 are sampled quarterly.

MONITORING PROGRAM FIELD PROCEDURES AND RESULTS

The first quarter 1995 groundwater monitoring event was performed by EMCON on March 23, 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-12, (2) purging and subsequently sampling groundwater monitoring wells MW-4 through MW-7 for laboratory analysis, and (3) directing a state-certified laboratory to analyze the groundwater samples. Copies of all field data sheets from the first quarter 1995 groundwater monitoring event are included in Appendix A.

ANALYTICAL PROCEDURES

Groundwater samples collected during first 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). These methods are recommended for samples from petroleum-hydrocarbon-impacted sites in the *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites* (August 10, 1990).

MONITORING PROGRAM RESULTS

Results of the first 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 halogenated volatile organic compounds (VOCs), total petroleum hydrocarbons as diesel (TPHD), and metals analyses. Copies of the first quarter 1995 analytical results and chain-of-custody documentation are included in Appendix B.

MONITORING PROGRAM EVALUATION

Groundwater elevation data collected on March 23, 1995, illustrate that groundwater beneath the site flows northwest at an approximate hydraulic gradient of 0.035 foot per foot. Figure 2 illustrates groundwater contours and analytical data for the first quarter of 1995.

Groundwater samples collected from well MW-7 did not contain detectable concentrations of TPHG or BTEX. Groundwater samples collected from wells MW-4 and MW-5 contained 210 and 68 micrograms per liter (µg/L) TPHG, and 2.1 and 4.2 µg/L benzene, respectively. Groundwater samples collected from well MW-6 contained 1.5 µg/L benzene, but did not contain detectable concentrations of TPHG.

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 site activities performed during the first quarter of 1995 and the anticipated site activities for the second quarter of 1995.

First Quarter 1995 Activities

- Prepared and submitted quarterly groundwater monitoring report for fourth quarter 1994.

- Performed quarterly groundwater monitoring for first quarter 1995. Based on six or more consecutive quarters of nondetectable TPHG and BTEX analytical results in monitoring wells MW-1, MW-2, MW-3, and MW-8 through MW-12, ARCO began sampling wells MW-11 and MW-12 semiannually (second and fourth quarters) and wells MW-1, MW-2, MW-3, MW-8, MW-9, and MW-10 annually (fourth quarter). Wells MW-4 through MW-7 will be sampled quarterly. Water levels will be measured in all wells quarterly.

Work Anticipated for Second Quarter 1995

- Prepare and submit quarterly groundwater monitoring report for first quarter 1995.

- Perform quarterly groundwater monitoring for second quarter 1995.

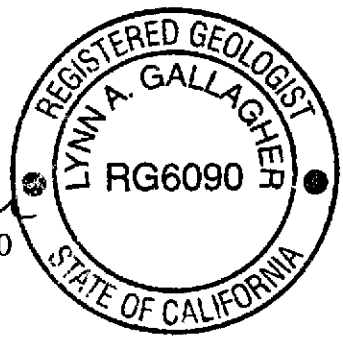
Please call if you have questions.

Sincerely,

EMCON

David Larsen
Project Coordinator

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



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Attachments:

Table 1 -	Groundwater Monitoring Data, First 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, TPHD, and Metals)
Figure 1 -	Site Location
Figure 2 -	Groundwater Data, First Quarter 1995
Appendix A -	Field Data Sheets, First Quarter 1995 Groundwater Monitoring Event
Appendix B -	Analytical Results and Chain-of-Custody Documentation, First Quarter 1995

cc: Susan Hugo, ACHCSA
Sum Arigala, RWQCB - SFBR
Danielle Stefani, LFD

Table 1
Groundwater Monitoring Data
First Quarter 1995
Summary Report

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-05-95
Project Number: 0805-134.02

Well Desig-nation	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	µg/l
MW-1	03-23-95	457.04	14.12	442.92	ND	NW	0.035	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-2	03-23-95	457.74	14.15	443.59	ND	NW	0.035	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-3	03-23-95	456.97	14.13	442.84	ND	NW	0.035	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-4	03-23-95	456.55	15.39	441.16	ND	NW	0.035	03-23-95	210	2.1	0.6	0.8	2.1	NA
MW-5	03-23-95	455.84	13.97	441.87	ND	NW	0.035	03-23-95	68	4.2	3.4	2.3	12	NA
MW-6	03-23-95	454.93	13.38	441.55	ND	NW	0.035	03-23-95	<50	1.5	<0.5	<0.5	0.9	NA
MW-7	03-23-95	454.92	13.29	441.63	ND	NW	0.035	03-23-95	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	03-23-95	456.97	11.55	445.42	ND	NW	0.035	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-9	03-23-95	456.18	13.18	443.00	ND	NW	0.035	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-10	03-23-95	456.85	14.86	441.99	ND	NW	0.035	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-11	03-23-95	455.07	17.34	437.73	ND	NW	0.035	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-12	03-23-95	455.04	15.54	439.50	ND	NW	0.035	03-23-95	Not analyzed: well was not scheduled for sampling					

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
ND = None detected
NW = Northwest
NA = Not analyzed

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Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-05-95
Project Number: 0805-134.02

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-1	09-20-89	457.04	21.03	436.01	ND	NR	NR
MW-1	10-12-89	457.04	19.64	437.40	ND	NR	NR
MW-1	06-21-90	457.04	21.72	435.32	ND	NR	NR
MW-1	09-20-90	457.04	19.79	437.25	ND	NR	NR
MW-1	12-18-90	457.04	19.28	437.76	ND	NR	NR
MW-1	02-21-91	457.04	22.45	434.59	ND	NR	NR
MW-1	03-20-91	457.04	19.87	437.17	ND	NR	NR
MW-1	04-10-91	457.04	19.42	437.62	ND	NR	NR
MW-1	05-20-91	457.04	25.95	431.09	ND	NR	NR
MW-1	06-20-91	457.04	32.55	424.49	ND	NR	NR
MW-1	07-25-91	457.04	38.22	418.82	ND	NR	NR
MW-1	08-13-91	457.04	40.74	416.30	ND	NR	NR
MW-1	09-12-91	457.04	43.16	413.88	ND	NR	NR
MW-1	10-22-91	457.04	DRY	DRY	ND	DRY	DRY
MW-1	11-13-91	457.04	DRY	DRY	ND	DRY	DRY
MW-1	12-21-91	457.04	DRY	DRY	ND	DRY	DRY
MW-1	01-18-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	02-21-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	03-19-92	457.04	36.16	420.88	ND	NR	NR
MW-1	04-24-92	457.04	38.14	418.90	ND	NR	NR
MW-1	05-20-92	457.04	40.74	416.30	ND	NR	NR
MW-1	06-29-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	07-28-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	08-26-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	09-11-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	10-29-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	11-11-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	12-14-92	457.04	Not surveyed: inaccessible due to construction activities				
MW-1	01-27-93	457.04	30.10	426.94	ND	NR	NR
MW-1	02-26-93	457.04	24.72	432.32	ND	NR	NR
MW-1	03-30-93	457.04	20.87	436.17	ND	NR	NR
MW-1	04-30-93	457.04	19.46	437.58	ND	NR	NR
MW-1	05-14-93	457.04	19.27	437.77	ND	NR	NR
MW-1	06-17-93	457.04	19.21	437.83	ND	NR	NR
MW-1	07-27-93	457.04	19.95	437.09	ND	NR	NR
MW-1	08-30-93	457.04	20.72	436.32	ND	NR	NR
MW-1	11-04-93	457.04	20.61	436.43	ND	NR	NR
MW-1	03-25-94	457.04	17.54	439.50	ND	NR	NR
MW-1	06-02-94	457.04	21.30	435.74	ND	NR	NR
MW-1	09-16-94	457.04	19.98	437.06	ND	N	0.014
MW-1	11-29-94	457.04	19.12	437.92	ND	N	0.025
MW-1	03-23-95	457.04	14.12	442.92	ND	NW	0.035

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-05-95
Project Number: 0805-134.02

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-2	09-20-89	457.74	20.67	437.07	ND	NR	NR
MW-2	10-12-89	457.74	18.98	438.76	ND	NR	NR
MW-2	06-21-90	457.74	21.88	435.86	ND	NR	NR
MW-2	09-20-90	457.74	19.90	437.84	ND	NR	NR
MW-2	12-18-90	457.74	19.32	438.42	ND	NR	NR
MW-2	02-21-91	457.74	23.02	434.72	ND	NR	NR
MW-2	03-20-91	457.74	20.01	437.73	ND	NR	NR
MW-2	04-10-91	457.74	19.81	437.93	ND	NR	NR
MW-2	05-20-91	457.74	26.62	431.12	ND	NR	NR
MW-2	06-20-91	457.74	33.15	424.59	ND	NR	NR
MW-2	07-25-91	457.74	37.10	420.64	ND	NR	NR
MW-2	08-13-91	457.74	37.20	420.54	ND	NR	NR
MW-2	09-12-91	457.74	DRY	DRY	ND	DRY	DRY
MW-2	10-22-91	457.74	DRY	DRY	ND	DRY	DRY
MW-2	11-13-91	457.74	DRY	DRY	ND	DRY	DRY
MW-2	12-21-91	457.74	DRY	DRY	ND	DRY	DRY
MW-2	01-18-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	02-21-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	03-19-92	457.74	35.82	421.92	ND	NR	NR
MW-2	04-24-92	457.74	36.64	421.10	ND	NR	NR
MW-2	05-20-92	457.74	37.23	420.51	ND	NR	NR
MW-2	06-29-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	07-28-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	08-26-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	09-11-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	10-29-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	11-11-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	12-14-92	457.74	Not surveyed: inaccessible due to construction activities				
MW-2	01-27-93	457.74	32.87	424.87	ND	NR	NR
MW-2	02-26-93	457.74	Not surveyed: inaccessible due to construction activities				
MW-2	03-30-93	457.74	20.47	437.27	ND	NR	NR
MW-2	04-30-93	457.74	19.02	438.72	ND	NR	NR
MW-2	05-14-93	457.74	18.65	439.09	ND	NR	NR
MW-2	06-17-93	457.74	18.21	439.53	ND	NR	NR
MW-2	07-27-93	457.74	17.95	439.79	ND	NR	NR
MW-2	08-30-93	457.74	18.43	439.31	ND	NR	NR
MW-2	11-04-93	457.74	19.73	438.01	ND	NR	NR
MW-2	03-25-94	457.74	17.26	440.48	ND	NR	NR
MW-2	06-02-94	457.74	21.23	436.51	ND	NR	NR
MW-2	09-16-94	457.74	19.64	438.10	ND	N	0.014
MW-2	11-29-94	457.74	18.89	438.85	ND	N	0.025
MW-2	03-23-95	457.74	14.15	443.59	ND	NW	0.035

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-05-95
Project Number: 0805-134.02

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	09-20-89	456.97	20.98	435.99	ND	NR	NR
MW-3	10-12-89	456.97	19.66	437.31	ND	NR	NR
MW-3	06-21-90	456.97	21.72	435.25	ND	NR	NR
MW-3	09-20-90	456.97	19.72	437.25	ND	NR	NR
MW-3	12-18-90	456.97	19.21	437.76	ND	NR	NR
MW-3	02-21-91	456.97	22.36	434.61	ND	NR	NR
MW-3	03-20-91	456.97	19.79	437.18	ND	NR	NR
MW-3	04-10-91	456.97	19.35	437.62	ND	NR	NR
MW-3	05-20-91	456.97	25.86	431.11	ND	NR	NR
MW-3	06-20-91	456.97	32.45	424.52	ND	NR	NR
MW-3	07-25-91	456.97	38.06	418.91	ND	NR	NR
MW-3	08-13-91	456.97	38.40	418.57	ND	NR	NR
MW-3	09-12-91	456.97	DRY	DRY	ND	DRY	DRY
MW-3	10-22-91	456.97	DRY	DRY	ND	DRY	DRY
MW-3	11-13-91	456.97	DRY	DRY	ND	DRY	DRY
MW-3	12-21-91	456.97	DRY	DRY	ND	DRY	DRY
MW-3	01-18-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	02-21-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	03-19-92	456.97	36.03	420.94	ND	NR	NR
MW-3	04-24-92	456.97	37.92	419.05	ND	NR	NR
MW-3	05-20-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	06-29-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	07-28-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	08-26-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	09-11-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	10-29-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	11-11-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	12-14-92	456.97	Not surveyed: inaccessible due to construction activities				
MW-3	01-27-93	456.97	30.36	426.61	ND	NR	NR
MW-3	02-26-93	456.97	24.96	432.01	ND	NR	NR
MW-3	03-30-93	456.97	21.45	435.52	ND	NR	NR
MW-3	04-30-93	456.97	19.43	437.54	ND	NR	NR
MW-3	05-14-93	456.97	19.37	437.60	ND	NR	NR
MW-3	06-17-93	456.97	19.38	437.59	ND	NR	NR
MW-3	07-27-93	456.97	20.10	436.87	ND	NR	NR
MW-3	08-30-93	456.97	20.98	435.99	ND	NR	NR
MW-3	11-04-93	456.97	20.91	436.06	ND	NR	NR
MW-3	03-25-94	456.97	17.57	439.40	ND	NR	NR
MW-3	06-02-94	456.97	21.30	435.67	ND	NR	NR
MW-3	09-16-94	456.97	20.03	436.94	ND	N	0.014
MW-3	11-29-94	456.97	19.13	437.84	ND	N	0.025
MW-3	03-23-95	456.97	14.13	442.84	ND	NW	0.035

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-05-95
Project Number: 0805-134.02

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-4	02-21-91	456.55	22.01	434.54	ND	NR	NR
MW-4	03-20-91	456.55	20.31	436.24	ND	NR	NR
MW-4	04-10-91	456.55	19.55	437.00	ND	NR	NR
MW-4	05-20-91	456.55	25.24	431.31	ND	NR	NR
MW-4	06-20-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	07-25-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	08-13-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	09-12-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	10-22-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	11-13-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	12-21-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	01-18-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	02-21-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	03-19-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	04-24-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	05-20-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	06-29-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	07-28-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	08-26-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	09-11-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	10-29-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	11-11-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	12-14-92	456.55	Not surveyed: inaccessible due to construction activities				
MW-4	01-27-93	456.55	DRY	DRY	ND	DRY	DRY
MW-4	02-26-93	456.55	23.60	432.95	ND	NR	NR
MW-4	03-30-93	456.55	20.87	435.68	ND	NR	NR
MW-4	04-30-93	456.55	19.73	436.82	ND	NR	NR
MW-4	05-14-93	456.55	19.75	436.80	ND	NR	NR
MW-4	06-17-93	456.55	19.69	436.86	ND	NR	NR
MW-4	07-27-93	456.55	20.40	436.15	ND	NR	NR
MW-4	08-30-93	456.55	21.10	435.45	ND	NR	NR
MW-4	11-04-93	456.55	21.60	434.95	ND	NR	NR
MW-4	03-25-94	456.55	18.59	437.96	ND	NR	NR
MW-4	06-02-94	456.55	21.41	435.14	ND	NR	NR
MW-4	09-16-94	456.55	20.51	436.04	ND	N	0.014
MW-4	11-29-94	456.55	19.77	436.78	ND	N	0.025
MW-4	03-23-95	456.55	15.39	441.16	ND	NW	0.035

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-05-95
Project Number: 0805-134.02

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-5	06-29-92	455.84	50.53	405.31	ND	NR	NR
MW-5	07-28-92	455.84	54.92	400.92	ND	NR	NR
MW-5	08-26-92	455.84	59.58	396.26	ND	NR	NR
MW-5	09-11-92	455.84	60.88	394.96	ND	NR	NR
MW-5	10-29-92	455.84	DRY	DRY	ND	DRY	DRY
MW-5	11-11-92	455.84	DRY	DRY	ND	DRY	DRY
MW-5	12-14-92	455.84	Not surveyed: inaccessible due to construction activities				
MW-5	01-27-93	455.84	29.08	426.76	ND	NR	NR
MW-5	02-26-93	455.84	23.56	432.28	ND	NR	NR
MW-5	03-30-93	455.84	20.32	435.52	ND	NR	NR
MW-5	04-30-93	455.84	19.57	436.27	ND	NR	NR
MW-5	05-14-93	455.84	19.29	436.55	ND	NR	NR
MW-5	06-17-93	455.84	18.66	437.18	ND	NR	NR
MW-5	07-27-93	455.84	20.16	435.68	ND	NR	NR
MW-5	08-30-93	455.84	Not surveyed:				
MW-5	11-04-93	455.84	21.05	434.79	ND	NR	NR
MW-5	03-25-94	455.84	17.95	437.89	ND	NR	NR
MW-5	06-02-94	455.84	21.32	434.52	ND	NR	NR
MW-5	09-16-94	455.84	20.41	435.43	ND	N	0.014
MW-5	11-29-94	455.84	19.72	436.12	ND	N	0.025
MW-5	03-23-95	455.84	13.97	441.87	ND	NW	0.035
MW-6	06-29-92	454.93	49.72	405.21	ND	NR	NR
MW-6	07-28-92	454.93	54.63	400.30	ND	NR	NR
MW-6	08-26-92	454.93	59.45	395.48	ND	NR	NR
MW-6	09-11-92	454.93	^60.73	^394.20	0.04	NR	NR
MW-6	10-29-92	454.93	62.14	392.79	ND	NR	NR
MW-6	11-11-92	454.93	^62.42	^392.51	0.03	NR	NR
MW-6	12-14-92	454.93	Not surveyed: inaccessible due to construction activities				
MW-6	01-27-93	454.93	Not surveyed: inaccessible due to construction activities				
MW-6	02-26-93	454.93	22.73	432.20	ND	NR	NR
MW-6	03-30-93	454.93	19.53	435.40	ND	NR	NR
MW-6	04-30-93	454.93	18.76	436.17	ND	NR	NR
MW-6	05-14-93	454.93	^19.19	^435.74	0.01	NR	NR
MW-6	06-17-93	454.93	18.54	436.39	ND	NR	NR
MW-6	07-27-93	454.93	19.47	435.46	ND	NR	NR
MW-6	08-30-93	454.93	^20.33	^434.60	0.01	NR	NR
MW-6	11-04-93	454.93	^20.33	^434.60	0.01	NR	NR
MW-6	03-25-94	454.93	17.13	437.80	ND	NR	NR
MW-6	06-02-94	454.93	20.45	434.48	ND	NR	NR
MW-6	09-16-94	454.93	19.62	435.31	ND	N	0.014
MW-6	11-29-94	454.93	18.89	436.04	ND	N	0.025
MW-6	03-23-95	454.93	13.38	441.55	ND	NW	0.035

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-05-95
Project Number: 0805-134.02

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	06-29-92	454.92	49.57	405.35	ND	NR	NR
MW-7	07-28-92	454.92	54.60	400.32	ND	NR	NR
MW-7	08-26-92	454.92	59.60	395.32	ND	NR	NR
MW-7	09-11-92	454.92	60.74	394.18	ND	NR	NR
MW-7	10-29-92	454.92	62.23	392.69	ND	NR	NR
MW-7	11-11-92	454.92	62.69	392.23	ND	NR	NR
MW-7	12-14-92	454.92	Not surveyed: inaccessible due to construction activities				
MW-7	01-27-93	454.92	27.97	426.95	ND	NR	NR
MW-7	02-26-93	454.92	22.57	432.35	ND	NR	NR
MW-7	03-30-93	454.92	19.29	435.63	ND	NR	NR
MW-7	04-30-93	454.92	18.79	436.13	ND	NR	NR
MW-7	05-14-93	454.92	18.35	436.57	ND	NR	NR
MW-7	06-17-93	454.92	18.36	436.56	ND	NR	NR
MW-7	07-27-93	454.92	19.49	435.43	ND	NR	NR
MW-7	08-30-93	454.92	20.26	434.66	ND	NR	NR
MW-7	11-04-93	454.92	20.33	434.59	ND	NR	NR
MW-7	03-25-94	454.92	16.91	438.01	ND	NR	NR
MW-7	06-02-94	454.92	20.31	434.61	ND	NR	NR
MW-7	09-16-94	454.92	19.47	435.45	ND	N	0.014
MW-7	11-29-94	454.92	18.73	436.19	ND	N	0.025
MW-7	03-23-95	454.92	13.29	441.63	ND	NW	0.035
MW-8	06-29-92	456.97	50.40	406.57	ND	NR	NR
MW-8	07-28-92	456.97	55.79	401.18	ND	NR	NR
MW-8	08-26-92	456.97	60.79	396.18	ND	NR	NR
MW-8	09-11-92	456.97	61.97	395.00	ND	NR	NR
MW-8	10-29-92	456.97	63.51	393.46	ND	NR	NR
MW-8	11-11-92	456.97	64.21	392.76	ND	NR	NR
MW-8	12-14-92	456.97	Not surveyed: inaccessible due to construction activities				
MW-8	01-27-93	456.97	25.57	431.40	ND	NR	NR
MW-8	02-26-93	456.97	19.86	437.11	ND	NR	NR
MW-8	03-30-93	456.97	16.69	440.28	ND	NR	NR
MW-8	04-30-93	456.97	15.83	441.14	ND	NR	NR
MW-8	05-14-93	456.97	15.79	441.18	ND	NR	NR
MW-8	06-17-93	456.97	15.79	441.18	ND	NR	NR
MW-8	07-27-93	456.97	16.80	440.17	ND	NR	NR
MW-8	08-30-93	456.97	17.37	439.60	ND	NR	NR
MW-8	11-04-93	456.97	17.60	439.37	ND	NR	NR
MW-8	03-25-94	456.97	15.04	441.93	ND	NR	NR
MW-8	06-02-94	456.97	18.43	438.54	ND	NR	NR
MW-8	09-16-94	456.97	17.02	439.95	ND	N	0.014
MW-8	11-29-94	456.97	16.83	440.14	ND	N	0.025
MW-8	03-23-95	456.97	11.55	445.42	ND	NW	0.035

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6113 — Date: 05-05-95
785 East Stanley Boulevard, Livermore, California — Project Number: 0805-134.02

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-9	06-29-92	456.18	50.29	405.89	ND	NR	NR
MW-9	07-28-92	456.18	55.53	400.65	ND	NR	NR
MW-9	08-26-92	456.18	60.62	395.56	ND	NR	NR
MW-9	09-11-92	456.18	61.67	394.51	ND	NR	NR
MW-9	10-29-92	456.18	63.17	393.01	ND	NR	NR
MW-9	11-11-92	456.18	63.68	392.50	ND	NR	NR
MW-9	12-14-92	456.18	Not surveyed: inaccessible due to construction activities				
MW-9	01-27-93	456.18	26.48	429.70	ND	NR	NR
MW-9	02-26-93	456.18	Not surveyed: inaccessible due to construction activities				
MW-9	03-30-93	456.18	17.77	438.41	ND	NR	NR
MW-9	04-30-93	456.18	17.01	439.17	ND	NR	NR
MW-9	05-14-93	456.18	16.55	439.63	ND	NR	NR
MW-9	06-17-93	456.18	16.68	439.50	ND	NR	NR
MW-9	07-27-93	456.18	17.77	438.41	ND	NR	NR
MW-9	08-30-93	456.18	18.74	437.44	ND	NR	NR
MW-9	11-04-93	456.18	18.72	437.46	ND	NR	NR
MW-9	03-25-94	456.18	15.78	440.40	ND	NR	NR
MW-9	06-02-94	456.18	19.03	437.15	ND	NR	NR
MW-9	09-16-94	456.18	17.84	438.34	ND	N	0.014
MW-9	11-29-94	456.18	17.32	438.86	ND	N	0.025
MW-9	03-23-95	456.18	13.18	443.00	ND	NW	0.035
MW-10	03-30-93	456.85	21.33	435.52	ND	NR	NR
MW-10	04-30-93	456.85	20.51	436.34	ND	NR	NR
MW-10	05-14-93	456.85	20.26	436.59	ND	NR	NR
MW-10	06-17-93	456.85	20.30	436.55	ND	NR	NR
MW-10	07-27-93	456.85	20.29	436.56	ND	NR	NR
MW-10	08-30-93	456.85	22.19	434.66	ND	NR	NR
MW-10	11-04-93	456.85	22.11	434.74	ND	NR	NR
MW-10	03-25-94	456.85	18.84	438.01	ND	NR	NR
MW-10	06-02-94	456.85	22.40	434.45	ND	NR	NR
MW-10	09-16-94	456.85	21.25	435.60	ND	N	0.014
MW-10	11-29-94	456.85	20.50	436.35	ND	N	0.025
MW-10	03-23-95	456.85	14.86	441.99	ND	NW	0.035

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-05-95
Project Number: 0805-134.02

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-11	03-30-93	455.07	20.78	434.29	ND	NR	NR
MW-11	04-30-93	455.07	20.71	434.36	ND	NR	NR
MW-11	05-14-93	455.07	20.01	435.06	ND	NR	NR
MW-11	06-17-93	455.07	20.18	434.89	ND	NR	NR
MW-11	07-27-93	455.07	21.31	433.76	ND	NR	NR
MW-11	08-30-93	455.07	21.09	433.98	ND	NR	NR
MW-11	11-04-93	455.07	21.40	433.67	ND	NR	NR
MW-11	03-25-94	455.07	18.28	436.79	ND	NR	NR
MW-11	06-02-94	455.07	21.78	433.29	ND	NR	NR
MW-11	09-16-94	455.07	20.98	434.09	ND	N	0.014
MW-11	11-29-94	455.07	20.67	434.40	ND	N	0.025
MW-11	03-23-95	455.07	17.34	437.73	ND	NW	0.035
MW-12	03-30-93	455.04	21.33	433.71	ND	NR	NR
MW-12	04-30-93	455.04	20.23	434.81	ND	NR	NR
MW-12	05-14-93	455.04	19.97	435.07	ND	NR	NR
MW-12	06-17-93	455.04	20.00	435.04	ND	NR	NR
MW-12	07-27-93	455.04	20.94	434.10	ND	NR	NR
MW-12	08-30-93	455.04	21.79	433.25	ND	NR	NR
MW-12	11-04-93	455.04	21.95	433.09	ND	NR	NR
MW-12	03-25-94	455.04	18.74	436.30	ND	NR	NR
MW-12	06-02-94	455.04	22.21	432.83	ND	NR	NR
MW-12	09-16-94	455.04	21.62	433.42	ND	N	0.014
MW-12	11-29-94	455.04	20.82	434.22	ND	N	0.025
MW-12	03-23-95	455.04	15.54	439.50	ND	NW	0.035

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
ND = None detected
NR = Not reported; data not available
DRY = Dry well; groundwater was not detected
N = North
NW = Northwest
^ = 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)]

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

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 04-11-95
Project Number: 0805-134.02

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	µg/l
MW-1	09-20-89	80	3	1	0.7	1	<5000
MW-1	06-21-90	<20	<0.5	0.66	<0.5	<0.5	13000
MW-1	09-20-90	<50	<0.5	1	<0.5	1.8	<5000
MW-1	12-18-90	<50	<0.5	1.8	<0.5	1.7	NA
MW-1	02-21-91	<50	1.2	2.3	<0.5	2.2	NA
MW-1	05-20-91	<30	<0.3	<0.3	<0.3	<0.3	NA
MW-1	08-13-91	Not sampled: dry well					
MW-1	11-13-91	Not sampled: dry well					
MW-1	03-19-92	400	<3.5	<1.2	<0.8	<1.0	NA
MW-1	06-29-92	Not sampled: dry well					
MW-1	09-11-92	Not sampled: dry well					
MW-1	11-12-92	Not sampled: dry well					
MW-1	03-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-1	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	120000
MW-1	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	900
MW-1	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	2900
MW-1	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	<600
MW-1	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	<500
MW-1	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	<500
MW-1	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	<500
MW-1	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-2	09-20-89	<50	<0.5	<0.5	<0.5	1	<5000
MW-2	06-21-90	<20	<0.5	<0.5	<0.5	<0.5	<5000
MW-2	09-20-90	<50	<0.5	0.7	<0.5	1.4	<5000
MW-2	12-18-90	<50	0.6	1.5	<0.5	1.9	<5000
MW-2	02-21-91	<50	<0.5	<0.5	<0.5	<0.5	<5000
MW-2	05-20-91	<30	<0.3	<0.3	<0.3	<0.3	<75000
MW-2	08-13-91	Not sampled: dry well					
MW-2	11-13-91	Not sampled: dry well					
MW-2	03-19-92	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	06-29-92	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	09-11-92	Not sampled: dry well					
MW-2	11-12-92	Not sampled: dry well					
MW-2	03-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-2	03-23-95	Not analyzed: well was not scheduled for sampling					

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

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 04-11-95
Project Number: 0805-134.02

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	µg/l
MW-3	09-20-89	170	8.9	0.6	1.1	<1	<5000
MW-3	06-21-90	<20	<0.5	1	<0.5	<0.5	10000
MW-3	09-20-90	<50	<0.5	1	<0.5	1.9	<5000
MW-3	12-18-90	<50	<0.5	1.7	<0.5	2	<5000
MW-3	02-21-91	<50	<0.5	<0.5	<0.5	<0.5	<5000
MW-3	05-20-91	97	1.3	1.1	6.2	8.4	<75000
MW-3	08-13-91	Not sampled: dry well					
MW-3	11-13-91	Not sampled: dry well					
MW-3	03-19-92	220	<1.1	<1.9	<0.6	<0.8	<5000
MW-3	06-29-92	Not sampled: dry well					
MW-3	09-11-92	Not sampled: dry well					
MW-3	11-12-92	Not sampled: dry well					
MW-3	03-30-93	200*	<4.0	<0.5	<0.5	<0.5	NA
MW-3	05-14-93	72*	<3.0	<0.5	<0.5	<0.5	NA
MW-3	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-3	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-3	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-3	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-3	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-3	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-3	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-4	02-21-91	3500	410	7.6	30	47	<5000
MW-4	05-20-91	1400	150	6	4.4	3.1	<75000
MW-4	08-13-91	Not sampled: dry well					
MW-4	11-13-91	Not sampled: dry well					
MW-4	03-19-92	Not sampled: dry well					
MW-4	06-29-92	Not sampled: dry well					
MW-4	09-11-92	Not sampled: dry well					
MW-4	11-12-92	Not sampled: dry well					
MW-4	03-31-93	680	110	5.2	3	7.4	NA
MW-4	05-14-93	1200	200	6.2	15	9.2	NA
MW-4	08-30-93	620	22	0.9	3.6	2.1	NA
MW-4	11-04-93	320	11	<0.5	1.3	0.9	NA
MW-4	03-25-94	480	5.4	<0.5	1.6	1.7	NA
MW-4	06-02-94	270	4.2	<0.5	1	<1.7	NA
MW-4	09-16-94	250	1	<0.5	<0.6	<1	NA
MW-4	11-29-94	280	1.8	<0.5	<1.2	<0.8	NA
MW-4	03-23-95	210	2.1	0.6	0.8	2.1	NA

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

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 04-11-95
Project Number: 0805-134.02

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	µg/l
MW-5	06-29-92	8900	1700	640	310	1100	NA
MW-5	09-11-92	13000	2200	1500	130	930	NA
MW-5	11-12-92	Not sampled: dry well					
MW-5	03-31-93	9700	1700	430	220	880	NA
MW-5	05-14-93	9800	1300	820	270	1100	NA
MW-5	08-30-93	Not sampled: well inaccessible					
MW-5	11-04-93	41000	3500	3100	890	5400	NA
MW-5	03-25-94	780	36	1.5	4.8	5.7	NA
MW-5	06-02-94	500	25	7.4	6	33	NA
MW-5	09-16-94	1500	370	28	110	120	NA
MW-5	11-29-94	1100	280	11	82	31	NA
MW-5	03-23-95	68	4.2	3.4	2.3	12	NA
MW-6	06-29-92	8600	1800	460	52	450	NA
MW-6	09-11-92	Not sampled: well contained floating product					
MW-6	11-12-92	Not sampled: well contained floating product					
MW-6	03-31-93	Not sampled: well contained floating product					
MW-6	05-14-93	Not sampled: well contained floating product					
MW-6	08-30-93	Not sampled: well contained floating product					
MW-6	11-04-93	Not sampled: well contained floating product					
MW-6	03-25-94	530	<2.5	<2.5	<2.5	4.6	NA
MW-6	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-6	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-6	11-29-94	<50	1.3	<0.5	<0.5	<0.5	NA
MW-6	03-23-95	<50	1.5	<0.5	<0.5	0.9	NA
MW-7	06-29-92	270	38	3.7	1.1	4.4	NA
MW-7	09-11-92	420	20	0.7	<0.5	<0.5	NA
MW-7	11-12-92	470	31	1	<0.5	0.8	NA
MW-7	03-31-93	190	20	1	<0.5	<0.5	NA
MW-7	05-14-93	170	17	0.6	<0.5	0.5	NA
MW-7	08-30-93	<50	1.8	<0.5	<0.5	0.5	NA
MW-7	11-04-93	<50	6.6	<0.5	<0.5	0.8	NA
MW-7	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	03-23-95	<50	<0.5	<0.5	<0.5	<0.5	NA

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

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 04-11-95
Project Number: 0805-134.02

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	µg/l
MW-8	06-29-92	<50	<0.5	<0.5	<0.5	<0.5	<500
MW-8	09-11-92	<50	<0.5	<0.5	<0.5	<0.5	<500
MW-8	11-12-92	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	03-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-8	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-9	06-29-92	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	09-11-92	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	11-12-92	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	03-31-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-9	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-10	03-31-93	230*	<0.5	<0.5	<1	0.6	NA
MW-10	05-14-93	440*	<10	<0.6	<0.9	<0.5	NA
MW-10	08-30-93	280*	<4	<0.5	<1.3	0.6	NA
MW-10	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-10	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-10	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-10	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-10	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-10	03-23-95	Not analyzed: well was not scheduled for sampling					

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

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 04-11-95
Project Number: 0805-134.02

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	µg/l
MW-11	03-31-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-11	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-11	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-11	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-11	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-11	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-11	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-11	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-11	03-23-95	Not analyzed: well was not scheduled for sampling					
MW-12	03-31-93	150	20	<0.5	<0.5	<0.5	NA
MW-12	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-12	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-12	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-12	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-12	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-12	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-12	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-12	03-23-95	Not analyzed: well was not scheduled for sampling					

TPHG = Total petroleum hydrocarbons as gasoline
TOG = Total oil and grease measured by EPA Method 5520 C&F
TRPH = Total recoverable petroleum hydrocarbons measured by EPA Method 418.1
µg/l = Micrograms per liter
NA = Not analyzed
* = Chromatogram does not match the typical gasoline fingerprint.

Table 4
Historical Groundwater Analytical Data
(VOCs, TPHD, and Metals)

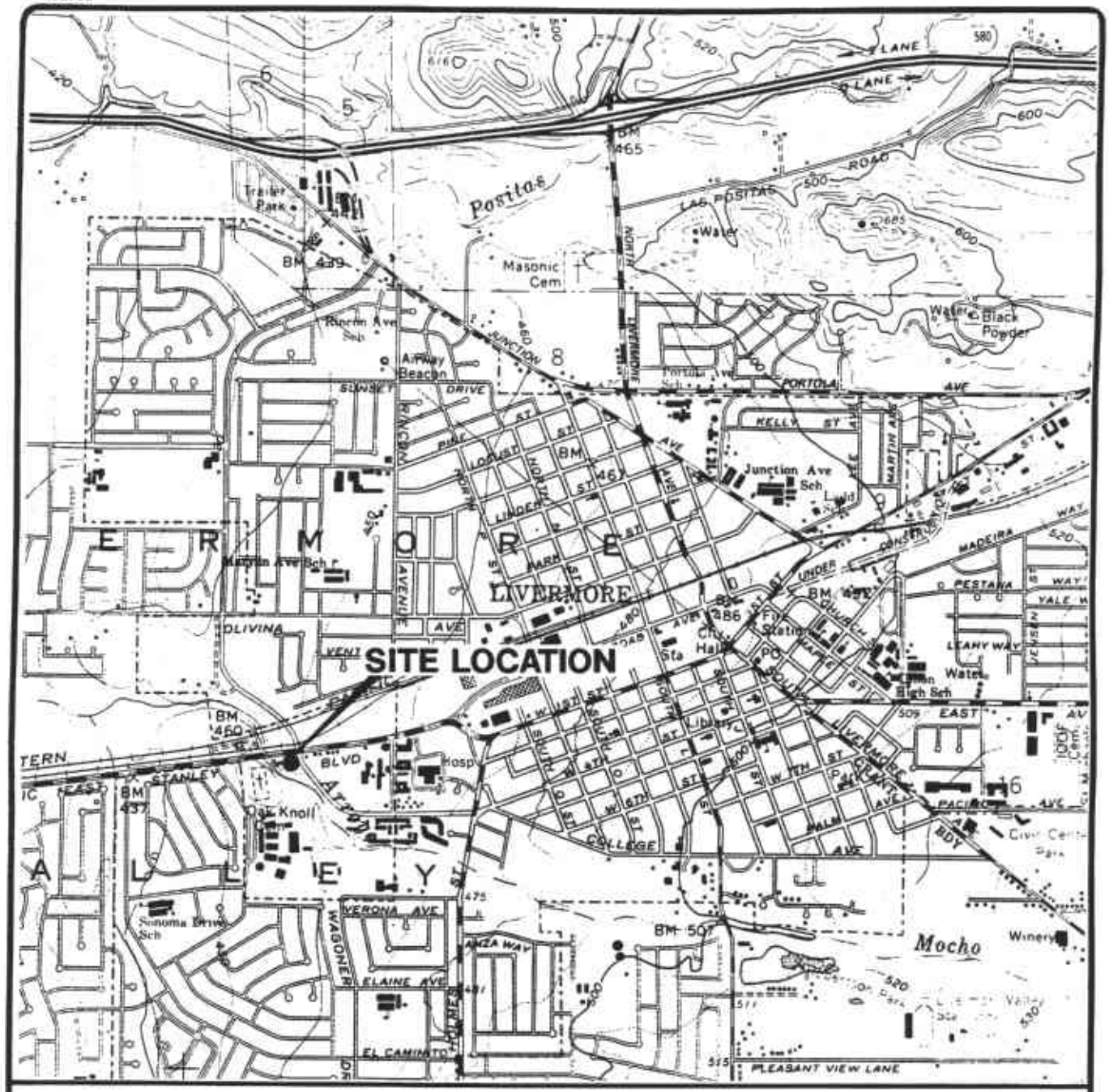
ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 04-11-95
Project Number: 0805-134.02

Well Desig-nation	Water Sample Field Date	Total VOCs	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	µg/l
MW-1	09-20-89	NA	<50	NA	NA	NA	NA	NA
MW-1	06-21-90	NA	<100	NA	NA	NA	NA	NA
MW-1	09-20-90	NA	<50	NA	NA	NA	NA	NA
MW-1	12-18-90	NA	<5000	NA	NA	NA	NA	NA
MW-1	02-21-91	NA	<5000	NA	NA	NA	NA	NA
MW-1	05-20-91	NA	<75000	NA	NA	NA	NA	NA
MW-1	08-13-91	Not analyzed: sampling for additional parameters was discontinued						
MW-2	09-20-89	NA	<50	NA	NA	NA	NA	NA
MW-2	06-21-90	NA	<100	NA	NA	NA	NA	NA
MW-2	09-20-90	NA	<50	NA	NA	NA	NA	NA
MW-2	12-18-90	Not analyzed: sampling for additional parameters was discontinued						
MW-3	09-20-89	NA	<50	NA	NA	NA	NA	NA
MW-3	06-21-90	NA	<100	NA	NA	NA	NA	NA
MW-3	09-20-90	NA	<50	NA	NA	NA	NA	NA
MW-3	12-18-90	NA	NA	NA	NA	NA	NA	NA
MW-3	02-21-91	NA	NA	NA	NA	NA	NA	NA
MW-3	05-20-91	NA	NA	NA	NA	NA	NA	NA
MW-3	08-13-91	Not sampled: dry well						
MW-3	11-13-91	Not sampled: dry well						
MW-3	03-19-92	NA	<50	NA	NA	NA	NA	NA
MW-3	06-29-92	Not analyzed: sampling for additional parameters was discontinued						
MW-8	06-29-92	ND	<50	<3	1780	143	1310	5100
MW-8	09-11-92	NA	<50	13	3580	308	2620	10300
MW-8	11-12-92	NA	NA	28	3440	221	2550	9840
MW-8	03-30-93	Not analyzed: sampling for additional parameters was discontinued						
MW-9	06-29-92	NA	NA	NA	NA	NA	NA	NA
MW-9	09-11-92	NA	NA	NA	NA	NA	NA	NA
MW-9	11-12-92	NA	NA	10	1080	101	859	3070
MW-9	03-31-93	Not analyzed: sampling for additional parameters was discontinued						

VOCs = Halogenated volatile organic compounds by EPA Method 5030/601
TPHD = Total petroleum hydrocarbons as diesel by EPA Method 3510/California DHS LUFT Method
µg/l = Micrograms per liter
NA = Not analyzed
ND = Not detected (31 compounds tested for VOCs were nondetectable)

152753



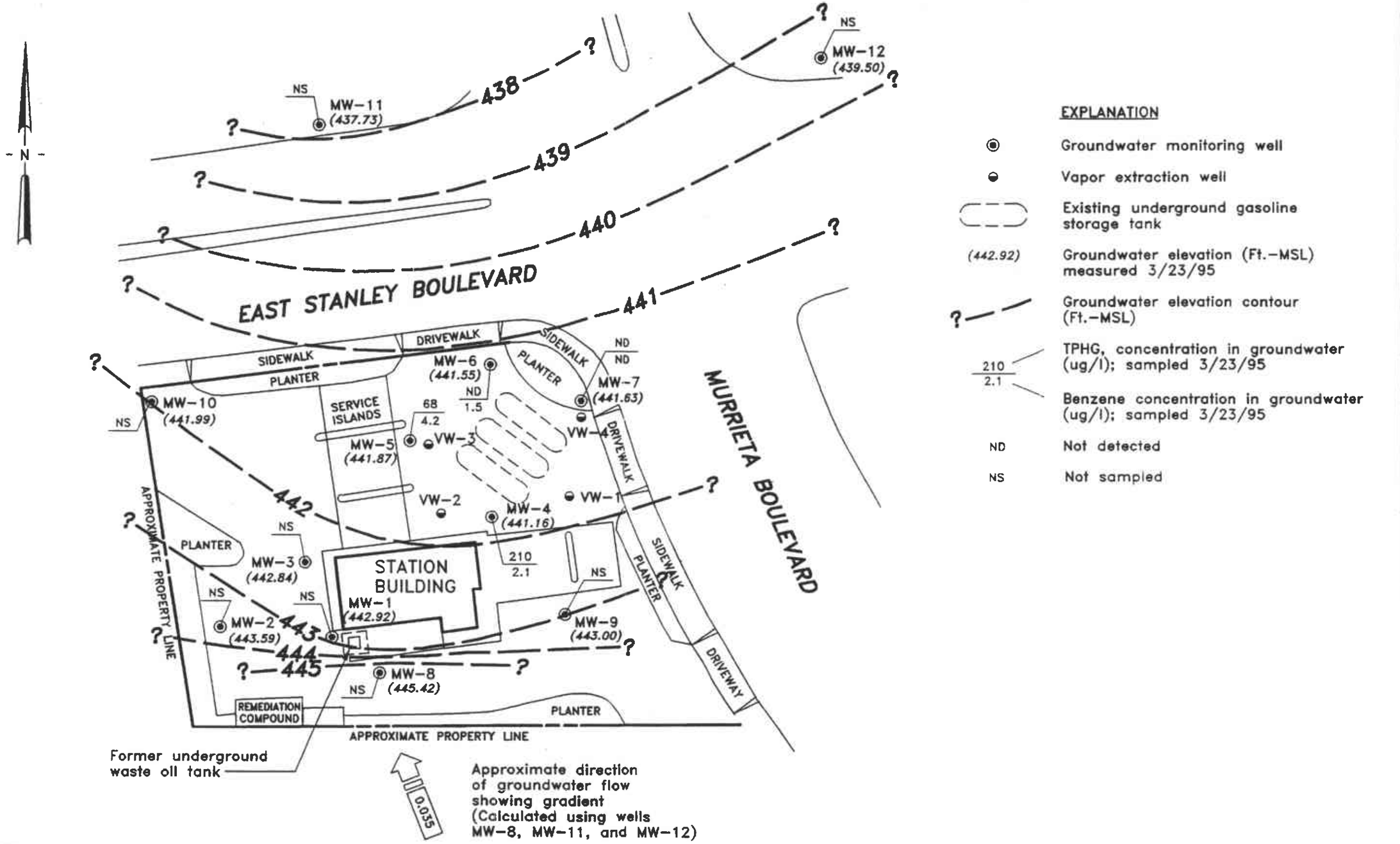
EMCON Associates

ARCO PRODUCTS COMPANY
SERVICE STATION 6113, 785 E. STANLEY BLVD.
QUARTERLY GROUNDWATER MONITORING
LIVERMORE, CALIFORNIA

SITE LOCATION

FIGURE 1

PROJECT NO. 805-134.01



EMCON

SCALE: 0 40 80 FEET
(Approximate)

ARCO PRODUCTS COMPANY
SERVICE STATION 6113, 785 E. STANLEY BLVD.
QUARTERLY GROUNDWATER MONITORING
LIVERMORE, CALIFORNIA

GROUNDWATER DATA
FIRST QUARTER 1995

FIGURE NO.
2

PROJECT NO.
805-134.02

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 1775-248.01 STATION ADDRESS : 785 East Stanley Blvd. DATE : 3/23/95

ARCO STATION # : 6113 FIELD TECHNICIAN : Mike ROSS DAY : THURSDAY

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-1	OK	Yes	Yes	Yes	Yes	14.12	14.12	NONE	NONE	44.9	
2	MW-2	↓	↓	↓	↓	↓	14.15	14.15	↓	↓	38.6	UNDER PRESSURE
3	MW-3						14.13	14.13			39.0	WATER IN BOX
4	MW-8						11.55	11.55			66.6	
5	MW-9						13.18	13.18			67.9	UNDER PRESSURE
6	MW-10						14.86	14.86			49.5	
7	MW-11						17.34	17.34			44.5	UNDER PRESSURE
8	MW-12				↓	↓	15.54	15.54			32.7	UNDER PRESSURE / WATER IN BOX
9	MW-7				NO	BROKEN	13.29	13.29			67.5	
10	MW-6				Yes	Yes	13.38	13.38			66.5	
11	MW-4				↓	↓	15.39	15.39			26.7	
12	MW-5	↓	↓	↓	*NO	SLIP CAP	13.97	13.97	↓	↓	62.3	

SURVEY POINTS ARE TOP OF WELL CASINGS

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248.01 SAMPLE ID: MW-4

PURGED BY: M. ROSS CLIENT NAME: ARCO 6113

SAMPLED BY: M. ROSS LOCATION: LIVERMORE, 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.):	7.38
DEPTH TO WATER (feet):	15.39	CALCULATED PURGE (gal.):	22.16
DEPTH OF WELL (feet):	26.7	ACTUAL PURGE VOL. (gal.):	7.50

DATE PURGED: 3/23/95 Start (2400 Hr) 1530 End (2400 Hr) 1545

DATE SAMPLED: 3/23/95 Start (2400 Hr) 1550 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1536	7.5	7.35	761	60.7	clr	clr
1540	15.0	7.09	782	62.2	"	"
1545	22.5	7.01	801	62.5	"	"

D. O. (ppm): NA ODOR: NONE

COLOR: NA (COBALT 0 - 500)

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

Field QC samples collected at this well: NA

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: GOOD LOCK #: 2KA

REMARKS: ___

Meter Calibration: Date: 3/23/95 Time: 1155 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-7

Signature: Mike Ross Reviewed By: JB Page 1 of 4

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248.01 SAMPLE ID: MW-5

PURGED BY: M. ROSS CLIENT NAME: AREO 6113

SAMPLED BY: M. ROSS LOCATION: LIVERMORE, 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.):	31.57
DEPTH TO WATER (feet):	13.97	CALCULATED PURGE (gal.):	94.72
DEPTH OF WELL (feet):	62.3	ACTUAL PURGE VOL. (gal.):	95.0

DATE PURGED: 3/23/95 Start (2400 Hr) 1418 End (2400 Hr) 1452

DATE SAMPLED: 3/23/95 Start (2400 Hr) 1500 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1431	32.0	7.24	807	61.7	clr	clr
1441	63.5	7.05	801	61.2	"	"
1452	95.0	7.12	813	61.6	"	"

D. O. (ppm): NA ODOR: NONE

COLOR: NA (COBALT 0 - 500)

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

Field QC samples collected at this well: FB-1

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: GOOD LOCK #: 2KA

REMARKS: ___

Meter Calibration: Date: 3/23/95 Time: 1155 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-7

Signature: Mike Ross Reviewed By: JB Page 2 of 4

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248.01 SAMPLE ID: MW-6

PURGED BY: M. ROSS CLIENT NAME: ARCO 6113

SAMPLED BY: M. ROSS LOCATION: LIVERMORE, 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.): 34.70

DEPTH TO WATER (feet): 13.38 CALCULATED PURGE (gal.): 104.11

DEPTH OF WELL (feet): 66.5 ACTUAL PURGE VOL. (gal.): 104.5

DATE PURGED: 3/23/95 Start (2400 Hr) 1310 End (2400 Hr) 1351

DATE SAMPLED: 3/23/95 Start (2400 Hr) 1355 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1326	35.0	7.13	766	59.1	clr	clr
1338	70.0	7.11	791	61.7	"	"
1351	104.5	7.17	767	62.2	"	"

D. O. (ppm): NA ODOR: NONE

COLOR (COBALT 0 - 500): NA

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

Field QC samples collected at this well: NA

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: GOOD LOCK #: 2KA

REMARKS: ___

Meter Calibration: Date: 3/23/95 Time: 1155 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-7

Signature: Mike Ross Reviewed By: JB Page 3 of 4

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248.01 SAMPLE ID: MW-7

PURGED BY: M. ROSS CLIENT NAME: ARCO 6113

SAMPLED BY: M. ROSS LOCATION: LIVERMORE, 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.): 35.41

DEPTH TO WATER (feet): 13.29 CALCULATED PURGE (gal.): 106.25

DEPTH OF WELL (feet): 67.5 ACTUAL PURGE VOL. (gal.): 106.5

DATE PURGED: 3/23/95 Start (2400 Hr) 1200 End (2400 Hr) 1251

DATE SAMPLED: 3/23/95 Start (2400 Hr) 1255 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1220	35.5	6.69	755	64.8	clr	clr
1236	71.0	6.88	733	63.3	"	"
1251	106.5	6.91	752	62.7	"	"

D. O. (ppm): NA ODOR: Slight

COLOR (COBALT 0 - 500): NA

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

Field QC samples collected at this well: NA

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: GOOD LOCK #: 3476

REMARKS: REPLACED BROKEN WELL CAP WITH NEW ONE - ADDED NEW LOCK

Meter Calibration: Date: 3/23/95 Time: 1155 Meter Serial #: 9210 Temperature °F: 56.5

(EC 1000 1013 / 1000) (DI —) (pH 7 705 / 700) (pH 10 993 / 1000) (pH 4 404 / —)

Location of previous calibration: ___

Signature: Mike Ross Reviewed By: JB Page 4 of 4

ARCO 6113

Columbia Analytical Services inc.

April 6, 1995 Service Request No. S950365

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **ARCO Facility No. 6113 / EMCON Project No.** ~~1775-248.01~~ 20805-134.002

Dear Mr. Young:

Attached are the results of the water sample(s) submitted to our lab on March 23, 1995. For your reference, these analyses have been assigned our service request number S950365.

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
tr	Trace level is the concentration of an analyte that is less than the PQL, but greater than or equal to the MDL

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	S950365
Project:	ARCO Facility No. 6113 / EMCON Project No. 1775-248.01	**Date Collected:**	3/23/95
Sample Matrix:	Water	**Date Received:**	3/23/95
		Date Extracted:	NA
		Date Analyzed:	4/3,4/95

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-4 (26)	S950365-001	210	2.1	0.6	0.8	2.1
MW-5 (62)	S950365-002	68	4.2	3.4	2.3	12
MW-6 (66)	S950365-003	ND	1.5	ND	ND	0.9
MW-7 (67)	S950365-004	ND	ND	ND	ND	ND
FB-1	S950365-005	ND	ND	ND	ND	ND
Method Blank	S950403-WB	ND	ND	ND	ND	ND
Method Blank	S950404-WB	ND	ND	ND	ND	ND

Approved By: _____ Date: 4/6/95

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003

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	S950365
Project:	ARCO Facility No. 6113 / EMCON Project No. 1775-248.01	**Date Collected:**	3/23/95
Sample Matrix:	Water	**Date Received:**	3/23/95
		Date Extracted:	NA
		Date Analyzed:	4/3,4/95

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-4 (26)	S950365-001	106
MW-5 (62)	S950365-002	101
MW-6 (66)	S950365-003	99
MW-7 (67)	S950365-004	100
FB-1	S950365-005	99
MW-7 (67) MS	S950365-004MS	101
MW-7 (67) DMS	S950365-004DMS	100
Method Blank	S950403-WB	97
Method Blank	S950404-WB	98

CAS Acceptance Limits: 69-116

Approved By: _____ Date: 4/6/95

SUR1/062994

004

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Facility No. 6113 / EMCON Project No. 1775-248.01

Service Request: S950365
Date Analyzed: 4/3/95

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	25.2	101	85-115
Toluene	25	24.4	98	85-115
Ethylbenzene	25	24.7	99	85-115
Xylenes, Total	75	72.8	97	85-115
Gasoline	250	240	96	90-110

Approved By: _____ Date: 4/6/95

ICV25AL/060194

005

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	S950365
Project:	ARCO Facility No. 6113 / EMCON Project No. 1775-248.01	**Date Collected:**	3/23/95
Sample Matrix:	Water	**Date Received:**	3/23/95
		Date Extracted:	NA
		Date Analyzed:	4/3/95

Matrix Spike/Duplicate Matrix Spike Summary
BTE
EPA Methods 5030/8020
Units: ug/L (ppb)

Sample Name: MW-7 (67)
Lab Code: S950365-004

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
Benzene	25	25	ND	24.9	25.1	100	100	75-135	1
Toluene	25	25	ND	24.4	24.6	98	98	73-136	1
Ethylbenzene	25	25	ND	24.5	24.8	98	99	69-142	1

Approved By: _____ Date: 4/6/95

DMS1S/060194

006

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 17075.00

Chain of Custody

ARCO Facility no. 6113	City (Facility) Livermore	Project manager (Consultant) John Young	Laboratory name CAS
ARCO engineer Michael Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 453-7300	Fax no. (Consultant) 453-0452
Consultant name EMCON	Address (Consultant) 1921 Ringwood Avenue San Jose		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/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-4(62)	1	2		X		X	HCl	3/23/95	1550		X											
MW-5(62)	2	↓		X		X	HCl	↓	1500		X											
MW-6(62)	3			X		X	HCl		1355		X											
MW-7(61)	4			X		X	HCl		1255		X											
FB-1	5	↓		X		X	HCL	↓	1500		X											

Method of shipment: sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 1775-248.01

Lab number: 595-0365

Turnaround time

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

Condition of sample:		Temperature received:	
Relinquished by sampler: Mike Rose	Date: 3/23/95 Time: 16:50	Received by: Steve Mee	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date Time

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

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