



EMCON Associates

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

Date December 29, 1994

Project 0805-121.01

To:

Mr. Scott Seery
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

We are enclosing:

Copies	Description
<u>1</u>	<u>Third quarter 1994 groundwater monitoring report</u>
	<u>for ARCO service station 601, San Leandro, California</u>
<u>1</u>	<u>John Sullivan letter</u>

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

Comments:

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

David Larsen

85 JAN-5 PM 3:25

MAILED





Emcon Associates

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

Date December 30, 1994
Project 0805-121.01

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

We are enclosing:

Copies	Description
<u>1</u>	<u>Third quarter 1994 laboratory analytical results</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

For your: X Use Sent by: X Regular Mail

Comments:

The enclosed laboratory analytical results are being sent to you per the request of ARCO Products Company. Please call if you have any questions or comments.

David Larsen 





December 30, 1994
Project 0805-121.01

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

Re: Third quarter 1994 laboratory analytical results, groundwater samples, Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California

Dear Mr. Sullivan:

Enclosed please find copies of the laboratory analytical results for groundwater samples collected from wells MW-9 and MW-10 during the third quarter of 1994. These wells are located at Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California. The groundwater samples were collected on August 4, 1994, during quarterly sampling of ARCO Station 601, located at 712 Lewelling Boulevard in San Leandro. The laboratory analytical results indicate that concentrations of total petroleum hydrocarbons as gasoline, and the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes, were not detected.

Please call if you have questions.

Sincerely,

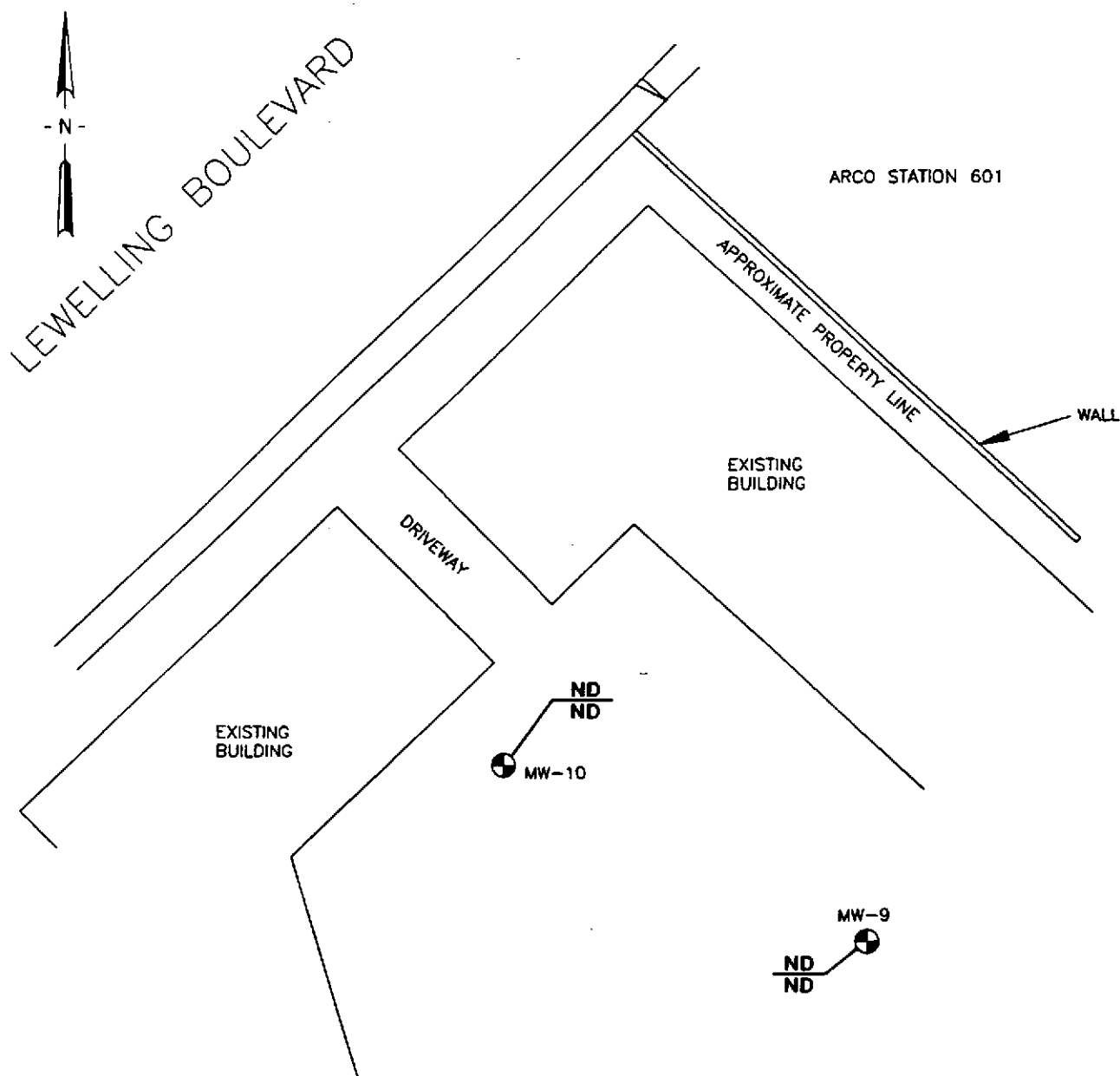
EMCON Associates

David Larsen
Sampling Coordinator

Attachments: Figure 1 - Generalized Site Plan
Copy of Certified Analytical Report and Chain-of-Custody
Documentation, Wells MW-9 and MW-10, Third Quarter 1994

cc: Mike Whelan, ARCO Products Company
John Meck, ARCO Products Company
Gary Grimm, RWQCB
John Jang, RWQCB
Scott Seery, ACHCSA





EXPLANATION



Groundwater monitoring well

ND
ND

TPHG concentration in groundwater (ppb)

Benzene concentration in groundwater (ppb)

ND = Not detected

SCALE: 0 40 FEET
(Approximate)

Base map modified from RESNA, 1994.



Emcon
Associates

CHATEAU MANOR APARTMENTS
724 LEWELLING BLVD.
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

GENERALIZED SITE PLAN

FIGURE

1

PROJECT NO.
805-121.01



August 19, 1994

Service Request No. S940871

Gina Austin
Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: ARCO Facility No. 601

Dear Ms. Austin/Mr. DeLon:

Attached are the results of the water samples submitted to our lab on August 5, 1994. For your reference, these analyses have been assigned our service request number S940871.

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.


Keoni A. Murphy
Laboratory Manager


Annelise J. Bazar
Regional QA Coordinator

KAM/ajb

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
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
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
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
NR	Not Requested
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
VPH	Volatile Petroleum Hydrocarbons

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: NA
Date Analyzed: 8/12,13/94

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

Analyte:	TPH as					
Units:	Gasoline	Benzene	Toluene	Ethyl-	Xylenes,	
Method Reporting Limit:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	benzene	Total	
	50	0.5	0.5	ug/L (ppb)	ug/L (ppb)	0.5

Sample Name

Lab Code

MW-9 (9.7)	S940871-012	ND	ND	ND	ND	ND
MW-10 (9.9)	S940871-013	ND	ND	ND	ND	ND
Method Blank	S940812-WB	ND	ND	ND	ND	ND

Approved By: _____

5ABTXGAS/061694

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: NA
Date Analyzed: 8/12,13/94

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-9 (9.7)	S940871-012	96
MW-10 (9.9)	S940871-013	95
MS	S940871-008MS	104
DMS	S940871-008DMS	104
Method Blank	S940812-WB	93

CAS Acceptance Limits: 69-116

Approved By: _____

Date: _____

SUR1/062994

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601

Service Request: S940871
Date Analyzed: 8/12/94

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	27.2	109	85-115
Toluene	25	26.0	104	85-115
Ethylbenzene	25	26.1	104	85-115
Xylenes, Total	75	76.5	102	85-115
Gasoline	250	238	95	90-110

Approved By: _____

ICV25AL/060194

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: NA
Date Analyzed: 8/12.13/94

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

Sample Name: Batch QC
Lab Code: S940871-008

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery			Relative Percent Difference
	MS	DMS		MS	DMS	CAS			
						Acceptance Limits			
Gasoline	250	250	ND	238	234	95	94	67-121	2

Approved By: _____

DMSIS/060194

Date: _____

ARCO Products Company
2000 Alameda de las Pulgas
Mailing Address: Box 5811
San Mateo, California 94402
Telephone 415 571 2400



Date:
December 29, 1994

Re: ARCO Station # 601 • 712 Lewelling Boulevard • San Leandro, CA
Third Quarter 1994 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



December 20, 1994
Project 0805-121.01

Mr. Michael Whelan
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Re: Third quarter 1994 groundwater monitoring program results, ARCO service station
601, San Leandro, California

Dear Mr. Whelan:

This letter presents the results of the third quarter 1994 groundwater monitoring program at ARCO Products Company (ARCO) service station 601, 712 Lewelling Boulevard, San Leandro, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

BACKGROUND

In August 1989, Applied Geo Systems (AGS) performed a preliminary subsurface environmental investigation to evaluate the removal of underground storage tanks (USTs) from the site. This investigation included drilling five borings to evaluate the potential for hydrocarbons in soil in the vicinity of the USTs.

In January 1990, GeoSstrategies, Inc. (GSI) observed the removal of gasoline USTs and a waste oil tank. During the tank removal process, soil samples were collected from the tank pit to assess the presence of hydrocarbon-impacted soil beneath the former USTs. In June 1990, RESNA/AGS conducted an initial phase of subsurface environmental investigation which included the installation of three groundwater monitoring wells (MW-1 through MW-3) at the site.

Between May and June 1991, a second phase of investigation was conducted by RESNA which included: 1) installation of four groundwater monitoring wells (MW-4 through MW-8), 2) performing a soil-vapor extraction (SVE) test, and 3) conducting a records survey to identify wells and potential offsite sources of hydrocarbons in groundwater within 0.5 mile of the site.

In October 1992, RESNA conducted an initial off site subsurface investigation to delineate the extent of gasoline hydrocarbons discovered by Pacific Gas and Electric



during gas line replacement activities in a utility trench adjacent to the site. This investigation included drilling nine soil borings in the vicinity of the utility trench.

Between August 1992 and June 1993, a third phase of investigation was conducted by RESNA which included : 1) additional onsite and initial offsite subsurface investigation in August 1992 (installation of four additional monitoring wells MW-11 through MW-14), and, 2) additional offsite subsurface investigation (installation of monitoring well MW-15 during April 1993 and monitoring wells MW-9 and MW-10 during June 1993).

Groundwater monitoring at this site was initiated in July 1992. For additional background information, please refer to "Additional Subsurface Investigation at ARCO Station 601, 712 Lewelling Boulevard San Leandro, California," RESNA Report 69034.10, dated March 3, 1993.

Wells MW-1 through MW-15 are monitored quarterly.

MONITORING PROGRAM FIELD PROCEDURES AND RESULTS

The third quarter 1994 groundwater monitoring event was performed by Integrated Wastestream Management, Inc. (IWM), on August 4, 1994. Field work performed by IWM during this quarter included (1) measuring depths to groundwater and subjectively analyzing groundwater for the presence of floating product in wells MW-1 through MW-15, (2) purging and subsequently sampling groundwater monitoring wells MW-1 through MW-15 for laboratory analysis, and (3) directing a state-certified laboratory to analyze the groundwater samples. Because well MW-1 contained floating product and wells MW-6 and MW-7 were dry, these wells were not sampled during third quarter 1994. The results of IWM's field work were transmitted to EMCON in a report dated August 26, 1994. These data are presented in Appendix A.

ANALYTICAL PROCEDURES

Groundwater samples collected during third quarter 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 (EPA) method 5030 (purge and trap). Groundwater was analyzed for TPHG by the methods accepted by the Department of Toxic Substances Control, California EPA (Cal-EPA), and referenced in the *Leaking Underground Fuel Tank (LUFT) Field Manual* (State Water Resources Control Board, May 1988, revised October 1989). Samples were analyzed for BTEX by EPA 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-8 were also analyzed for semivolatile organic compounds (SVOC) by EPA method 3520/8270; total recoverable petroleum hydrocarbons (TRPH) by EPA method 418.1; total petroleum hydrocarbons as diesel (TPHD) by EPA method 3510/California DHS LUFT method; cadmium, chromium, nickel, and zinc by EPA method 6010A; and lead by EPA method 7421. 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 third quarter 1994 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 and BTEX analyses. Table 4 summarizes historical laboratory data for TRPH, TPHD, and metals analyses for wells MW-2, MW-3, MW-5, and MW-8. Historical laboratory data for volatile organic compound (VOC) and SVOC analyses for wells MW-2 and MW-8 are summarized in Table 5. Historical floating product recovery data for well MW-1 are summarized in Table 6. Copies of the third quarter 1994 certified analytical report and chain-of-custody documentation are included in Appendix B.

MONITORING PROGRAM EVALUATION

Groundwater elevation data collected on August 4, 1994, illustrate that groundwater beneath the site flows southwest at an approximate hydraulic gradient of 0.004 foot per foot. Figure 2 illustrates groundwater contours and analytical data for the third quarter of 1994.

Groundwater samples collected from wells MW-9, MW-10, and MW-12 through MW-15 did not contain detectable concentrations of TPHG or BTEX. Groundwater samples collected from wells MW-2, MW-3, MW-4, MW-5, and MW-8 contained concentrations of TPHG from 1,200 to 64,000 parts per billion (ppb) and concentrations of benzene from 1.5 to 14,000 ppb. Groundwater samples collected from well MW-11 contained 390 ppb TPHG, but did not contain detectable concentrations of benzene (<0.5 ppb). Groundwater samples collected from well MW-8 contained 0.7 ppb TRPH, 6 ppb chromium, 3 ppb lead, 27 ppb zinc, 11 ppb naphthalene, and 10 ppb bis (2-ethylhexyl) phthalate. Similar analytical results were reported for these wells during previous monitoring events. The levels of chromium, lead, and zinc reported for well MW-8 are below the published

maximum contaminant levels (MCLs) for these metals. EMCON believes the 10 ppb of bis (2-ethylhexyl) phthalate reported for well MW-8 is most likely due to laboratory contamination. Well MW-1 contained a sheen of floating product and was not sampled. Wells MW-6 and MW-7 were dry during third quarter 1994.

LIMITATIONS

Field procedures were performed by, and field data were acquired from, IWM. EMCON does not warrant the accuracy of data supplied by IWM. EMCON's scope of work was limited to interpreting field data, which included evaluating trends in the groundwater gradient, groundwater flow direction, and dissolved-petroleum-hydrocarbon concentrations beneath the site.

No monitoring event is thorough enough to describe all geologic/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 third quarter of 1994 and the anticipated site activities for the fourth quarter of 1994.

Third Quarter 1994 Activities

- Prepared and submitted quarterly groundwater monitoring report for second quarter 1994.
- Performed quarterly groundwater monitoring for third quarter 1994.

Work Anticipated Fourth Quarter 1994

- Prepare and submit quarterly groundwater monitoring report for third quarter 1994.
- Perform quarterly groundwater monitoring for fourth quarter 1994.

Please call if you have questions.

Mr. Michael Whelan
December 20, 1994
Page 5

Project 0805-121.01

Sincerely,

EMCON Associates


David Larsen
Sampling Coordinator


Mark Smolley, R.G. 4650
Senior Project Geologist



Attachment: Table 1 - Groundwater Monitoring Data, Third Quarter 1994
Table 2 - Historical Groundwater Elevation Data
Table 3 - Historical Groundwater Analytical Data (TPHG and BTEX)
Table 4 - Historical Groundwater Analytical Data (TRPH, TPHD, and Metals)
Table 5 - Historical Groundwater Analytical Data (VOCs and SVOCs)
Table 6 - Approximate Cumulative Floating Product Recovered (Well MW-1)
Figure 1 - Site Location
Figure 2 - Groundwater Data, Third Quarter 1994
Appendix A - Field Data Report, Integrated Wastestream Management, August 26, 1994
Appendix B - Certified Analytical Report and Chain-of-Custody Documentation, Third Quarter 1994

Table 1
Groundwater Monitoring Data
Third Quarter 1994
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Design- ation	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	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethyl- benzene ppb	Total Xylenes ppb
MW-1	08-04-94	22.26	8.72	13.54	Sheen	SW	0.004	08-04-94	Not sampled: well contained floating product				
MW-2	08-04-94	21.33	8.00	13.33	ND	SW	0.004	08-04-94	2300	180	<2.5*	<2.5*	230
MW-3	08-04-94	20.11	7.31	12.80	ND	SW	0.004	08-04-94	64000	4200	7600	1700	12000
MW-4	08-04-94	20.75	7.83	12.92	ND	SW	0.004	08-04-94	1300	360	17	<5*	190
MW-5	08-04-94	20.90	7.83	13.07	ND	SW	0.004	08-04-94	57000	14000	3200	1200	7200
MW-6	08-04-94	22.08	DRY	DRY	ND	DRY	DRY	08-04-94	Not sampled: dry well				
MW-7	08-04-94	22.89	DRY	DRY	ND	DRY	DRY	08-04-94	Not sampled: dry well				
MW-8	08-04-94	20.97	8.17	12.80	ND	SW	0.004	08-04-94	1200	1.5	<1*	6.7	<1*
MW-9	08-04-94	20.89	8.78	12.11	ND	SW	0.004	08-04-94	<50	<0.5	<0.5	<0.5	<0.5
MW-10	08-04-94	21.12	8.84	12.28	ND	SW	0.004	08-04-94	<50	<0.5	<0.5	<0.5	<0.5
MW-11	08-04-94	22.38	9.13	13.25	ND	SW	0.004	08-04-94	390	<0.5	<0.7*	1.9	2.2
MW-12	08-04-94	22.77	9.57	13.20	ND	SW	0.004	08-04-94	<50	<0.5	<0.5	<0.5	<0.5
MW-13	08-04-94	22.45	8.78	13.67	ND	SW	0.004	08-04-94	<50	<0.5	<0.5	<0.5	<0.5
MW-14	08-04-94	22.99	10.11	12.88	ND	SW	0.004	08-04-94	<50	<0.5	<0.5	<0.5	<0.5
MW-15	08-04-94	19.19	6.84	12.35	ND	SW	0.004	08-04-94	<50	<0.5	<0.5	<0.5	<0.5

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

ppb = Parts per billion or micrograms per liter (µg/l)

SW = Southwest

ND = None detected

DRY = Dry well; groundwater was not detected

Table 2
Historical Groundwater Elevation Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

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	07-17-90	22.98	9.03	13.95	Emulsion	NR	NR
MW-1	08-07-90	22.98	9.19	13.79	ND	NR	NR
MW-1	10-15-90	22.98	^9.85	^13.13	0.25	NR	NR
MW-1	11-20-90	22.98	^9.79	^13.19	0.46	NR	NR
MW-1	12-21-90	22.98	9.18	13.80	Sheen	NR	NR
MW-1	01-09-91	22.98	^9.47	^13.51	0.02	NR	NR
MW-1	02-27-91	22.98	^9.31	^13.67	0.03	NR	NR
MW-1	03-20-91	22.98	^^7.81	^^15.17	Sheen	NR	NR
MW-1	04-16-91	22.98	6.12	16.86	Sheen	NR	NR
MW-1	05-16-91	22.98	^8.60	^13.66	0.01	NR	NR
MW-1	06-10-91	22.26	9.00	13.26	Sheen	NR	NR
MW-1	07-18-91	22.26	^9.33	^12.93	0.01	NR	NR
MW-1	08-22-91	22.26	^9.49	^12.77	0.04	NR	NR
MW-1	09-18-91	22.26	^9.63	^12.63	0.04	NR	NR
MW-1	10-10-91	22.26	^9.73	^12.53	0.04	NR	NR
MW-1	11-21-91	22.26	^8.40	^13.86	0.01	NR	NR
MW-1	12-24-91	22.26	^9.68	^13.30	0.13	NR	NR
MW-1	01-19-92	22.26	8.84	13.42	ND	NR	NR
MW-1	02-20-92	22.26	7.22	15.04	ND	NR	NR
MW-1	03-23-92	22.26	7.40	14.86	Sheen	NR	NR
MW-1	04-21-92	22.26	8.30	13.96	ND	NR	NR
MW-1	05-15-92	22.26	^8.77	^13.49	0.01	NR	NR
MW-1	06-08-92	22.26	^9.08	^13.18	0.02	NR	NR
MW-1	07-15-92	22.26	9.40	12.86	ND	NR	NR
MW-1	08-25-92	22.26	8.21	14.05	ND	NR	NR
MW-1	09-15-92	22.26	^8.18	^14.08	0.02	NR	NR
MW-1	10-28-92	22.26	8.62	13.64	ND	NR	NR
MW-1	11-16-92	22.26	^9.09	^13.17	0.02	NR	NR
MW-1	12-16-92	22.26	^8.10	^14.16	0.02	NR	NR
MW-1	01-15-93	22.26	6.53	15.73	ND	NR	NR
MW-1	02-16-93	22.26	^7.03	^15.23	0.01	NR	NR
MW-1	03-30-93	22.26	6.86	15.40	ND	NR	NR
MW-1	04-28-93	22.26	^6.77	^15.49	0.01	NR	NR
MW-1	05-13-93	22.26	^8.08	^14.18	0.01	NR	NR
MW-1	06-17-93	22.26	^8.48	^13.78	0.01	NR	NR
MW-1	07-28-93	22.26	^8.80	^13.46	0.01	NR	NR
MW-1	08-17-93	22.26	^8.81	^13.45	0.01	NR	NR
MW-1	11-08-93	22.26	^9.22	^13.04	0.01	NR	NR
MW-1	02-14-94	22.26	7.72	14.54	Sheen	NR	NR
MW-1	05-05-94	22.26	8.47	13.79	Sheen	NR	NR
MW-1	08-04-94	22.26	8.72	13.54	Sheen	SW	0.004

Table 2
Historical Groundwater Elevation Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

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	07-17-90	22.06	7.86	14.20	ND	NR	NR
MW-2	08-07-90	22.06	8.03	14.03	ND	NR	NR
MW-2	10-15-90	22.06	8.61	13.45	ND	NR	NR
MW-2	11-20-90	22.06	8.76	13.30	ND	NR	NR
MW-2	12-21-90	22.06	8.28	13.78	ND	NR	NR
MW-2	01-09-91	22.06	8.43	13.63	ND	NR	NR
MW-2	02-27-91	22.06	8.28	13.78	ND	NR	NR
MW-2	03-20-91	22.06	7.26	14.80	ND	NR	NR
MW-2	04-16-91	22.06	6.97	15.09	ND	NR	NR
MW-2	05-16-91	22.06	7.52	14.54	ND	NR	NR
MW-2	06-10-91	21.33	7.91	13.42	ND	NR	NR
MW-2	07-18-91	21.33	8.30	13.03	ND	NR	NR
MW-2	08-22-91	21.33	8.50	12.83	ND	NR	NR
MW-2	09-18-91	21.33	8.63	12.70	ND	NR	NR
MW-2	10-10-91	21.33	8.82	12.51	ND	NR	NR
MW-2	11-21-91	21.33	8.46	12.87	ND	NR	NR
MW-2	12-24-91	21.33	8.72	12.61	ND	NR	NR
MW-2	01-19-92	21.33	7.96	13.37	ND	NR	NR
MW-2	02-20-92	21.33	6.55	14.78	ND	NR	NR
MW-2	03-23-92	21.33	6.86	14.47	ND	NR	NR
MW-2	04-21-92	21.33	7.15	14.18	ND	NR	NR
MW-2	05-15-92	21.33	7.61	13.72	ND	NR	NR
MW-2	06-08-92	21.33	7.95	13.38	ND	NR	NR
MW-2	07-15-92	21.33	8.45	12.88	ND	NR	NR
MW-2	08-25-92	21.33	8.53	12.80	ND	NR	NR
MW-2	09-15-92	21.33	8.71	12.62	ND	NR	NR
MW-2	10-28-92	21.33	8.89	12.44	ND	NR	NR
MW-2	11-16-92	21.33	7.93	13.40	ND	NR	NR
MW-2	12-16-92	21.33	7.44	13.89	ND	NR	NR
MW-2	01-15-93	21.33	6.13	15.20	ND	NR	NR
MW-2	02-16-93	21.33	6.02	15.31	ND	NR	NR
MW-2	03-30-93	21.33	5.98	15.35	ND	NR	NR
MW-2	04-28-93	21.33	6.58	14.75	ND	NR	NR
MW-2	05-13-93	21.33	6.99	14.34	ND	NR	NR
MW-2	06-17-93	21.33	7.40	13.93	ND	NR	NR
MW-2	07-28-93	21.33	7.79	13.54	ND	NR	NR
MW-2	08-17-93	21.33	7.85	13.48	ND	NR	NR
MW-2	11-08-93	21.33	8.12	13.21	ND	NR	NR
MW-2	02-14-94	21.33	6.88	14.45	ND	NR	NR
MW-2	05-05-94	21.33	7.51	13.82	ND	NR	NR
MW-2	08-04-94	21.33	8.00	13.33	ND	SW	0.004

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MW-3	07-17-90	20.84	7.03	13.81	Sheen	NR	NR
MW-3	08-07-90	20.84	7.21	13.63	ND	NR	NR
MW-3	10-15-90	20.84	^8.19	^12.65	0.75	NR	NR
MW-3	11-20-90	20.84	^7.98	^12.85	1.08	NR	NR
MW-3	12-21-90	20.84	^7.22	^13.62	0.01	NR	NR
MW-3	01-09-91	20.84	^7.46	^13.38	0.30	NR	NR
MW-3	02-27-91	20.84	^7.37	^13.47	0.02	NR	NR
MW-3	03-20-91	20.84	^^5.79	^^15.05	Sheen	NR	NR
MW-3	04-16-91	20.84	7.95	12.89	Sheen	NR	NR
MW-3	05-16-91	20.84	7.50	13.34	ND	NR	NR
MW-3	06-10-91	20.11	7.14	12.97	Sheen	NR	NR
MW-3	07-18-91	20.11	7.55	12.56	ND	NR	NR
MW-3	08-22-91	20.11	7.64	12.47	Sheen	NR	NR
MW-3	09-18-91	20.11	^7.89	^12.22	0.12	NR	NR
MW-3	10-10-91	20.11	^7.82	^12.29	0.26	NR	NR
MW-3	11-21-91	20.11	^7.59	^12.52	0.04	NR	NR
MW-3	12-24-91	20.11	^8.74	^11.37	0.01	NR	NR
MW-3	01-19-92	20.11	6.98	13.13	0.01	NR	NR
MW-3	02-20-92	20.11	5.05	15.06	0.01	NR	NR
MW-3	03-23-92	20.11	5.75	14.36	Sheen	NR	NR
MW-3	04-21-92	20.11	6.55	13.56	ND	NR	NR
MW-3	05-15-92	20.11	^7.11	^13.00	0.03	NR	NR
MW-3	06-08-92	20.11	^7.52	^12.59	0.02	NR	NR
MW-3	07-15-92	20.11	7.92	12.19	ND	NR	NR
MW-3	08-25-92	20.11	8.00	12.11	ND	NR	NR
MW-3	09-15-92	20.11	^8.01	^12.10	0.02	NR	NR
MW-3	10-28-92	20.11	8.66	11.45	ND	NR	NR
MW-3	11-16-92	20.11	7.11	13.00	Sheen	NR	NR
MW-3	12-16-92	20.11	6.62	13.49	ND	NR	NR
MW-3	01-15-93	20.11	4.44	15.67	ND	NR	NR
MW-3	02-16-93	20.11	^5.93	^14.18	0.01	NR	NR
MW-3	03-30-93	20.11	5.48	14.63	ND	NR	NR
MW-3	04-28-93	20.11	^6.02	^14.09	0.01	NR	NR
MW-3	05-13-93	20.11	^6.37	^13.74	0.01	NR	NR
MW-3	06-17-93	20.11	^6.52	^13.59	0.01	NR	NR
MW-3	07-28-93	20.11	6.95	13.16	ND	NR	NR
MW-3	08-17-93	20.11	^7.00	^13.11	0.01	NR	NR
MW-3	11-08-93	20.11	7.31	12.80	ND	NR	NR
MW-3	02-14-94	20.11	5.81	14.30	ND	NR	NR
MW-3	05-05-94	20.11	6.81	13.30	ND	NR	NR
MW-3	08-04-94	20.11	7.31	12.80	ND	SW	0.004

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MW-4	06-10-91	20.75	DRY	DRY	ND	DRY	DRY
MW-4	07-18-91	20.75	7.86	12.89	ND	NR	NR
MW-4	08-22-91	20.75	7.85	12.90	ND	NR	NR
MW-4	09-18-91	20.75	7.84	12.91	ND	NR	NR
MW-4	10-10-91	20.75	DRY	DRY	ND	DRY	DRY
MW-4	11-21-91	20.75	DRY	DRY	ND	DRY	DRY
MW-4	12-24-91	20.75	DRY	DRY	ND	DRY	DRY
MW-4	01-19-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	02-20-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	03-23-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	04-21-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	05-15-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	06-08-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	07-15-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	08-25-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	09-15-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	10-28-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	11-16-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	12-16-92	20.75	DRY	DRY	ND	DRY	DRY
MW-4	01-15-93	20.75	7.48	13.27	ND	NR	NR
MW-4	02-16-93	20.75	7.10	13.65	ND	NR	NR
MW-4	03-30-93	20.75	7.51	13.24	ND	NR	NR
MW-4	04-28-93	20.75	7.10	13.65	ND	NR	NR
MW-4	05-13-93	20.75	7.02	13.73	ND	NR	NR
MW-4	06-17-93	20.75	7.98	12.77	ND	NR	NR
MW-4	07-28-93	20.75	7.90	12.85	ND	NR	NR
MW-4	08-17-93	20.75	7.85	12.90	ND	NR	NR
MW-4	11-08-93	20.75	DRY	DRY	ND	DRY	DRY
MW-4	02-14-94	20.75	DRY	DRY	ND	DRY	DRY
MW-4	05-05-94	20.75	7.73	13.02	ND	NR	NR
MW-4	08-04-94	20.75	7.83	12.92	ND	SW	0.004

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MW-5	06-10-91	20.90	7.58	13.32	ND	NR	NR
MW-5	07-18-91	20.90	7.97	12.93	ND	NR	NR
MW-5	08-22-91	20.90	8.18	12.72	ND	NR	NR
MW-5	09-18-91	20.90	8.31	12.59	ND	NR	NR
MW-5	10-10-91	20.90	8.51	12.39	Sheen	NR	NR
MW-5	11-21-91	20.90	8.13	12.77	ND	NR	NR
MW-5	12-24-91	20.90	8.32	12.58	ND	NR	NR
MW-5	01-19-92	20.90	7.50	13.40	ND	NR	NR
MW-5	02-20-92	20.90	5.97	14.93	ND	NR	NR
MW-5	03-23-92	20.90	6.06	14.84	ND	NR	NR
MW-5	04-21-92	20.90	6.90	14.00	ND	NR	NR
MW-5	05-15-92	20.90	7.32	13.58	ND	NR	NR
MW-5	06-08-92	20.90	7.66	13.24	ND	NR	NR
MW-5	07-15-92	20.90	8.34	12.56	ND	NR	NR
MW-5	08-25-92	20.90	8.18	12.72	ND	NR	NR
MW-5	09-15-92	20.90	8.40	12.50	ND	NR	NR
MW-5	10-28-92	20.90	8.83	12.07	ND	NR	NR
MW-5	11-16-92	20.90	7.70	13.20	ND	NR	NR
MW-5	12-16-92	20.90	6.92	13.98	ND	NR	NR
MW-5	01-15-93	20.90	5.52	15.38	ND	NR	NR
MW-5	02-16-93	20.90	5.64	15.26	ND	NR	NR
MW-5	03-30-93	20.90	5.56	15.34	ND	NR	NR
MW-5	04-28-93	20.90	6.28	14.62	ND	NR	NR
MW-5	05-13-93	20.90	6.68	14.22	ND	NR	NR
MW-5	06-17-93	20.90	7.07	13.83	ND	NR	NR
MW-5	07-28-93	20.90	7.41	13.49	ND	NR	NR
MW-5	08-17-93	20.90	7.49	13.41	ND	NR	NR
MW-5	11-08-93	20.90	7.93	12.97	ND	NR	NR
MW-5	02-14-94	20.90	6.49	14.41	ND	NR	NR
MW-5	05-05-94	20.90	7.18	13.72	ND	NR	NR
MW-5	08-04-94	20.90	7.83	13.07	ND	SW	0.004

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MW-6	06-10-91	22.08	DRY	DRY	ND	DRY	DRY
MW-6	07-18-91	22.08	DRY	DRY	ND	DRY	DRY
MW-6	08-22-91	22.08	DRY	DRY	ND	DRY	DRY
MW-6	09-18-91	22.08	DRY	DRY	ND	DRY	DRY
MW-6	10-10-91	22.08	DRY	DRY	ND	DRY	DRY
MW-6	11-21-91	22.08	DRY	DRY	ND	DRY	DRY
MW-6	12-24-91	22.08	DRY	DRY	ND	DRY	DRY
MW-6	01-19-92	22.08	DRY	DRY	ND	DRY	DRY
MW-6	02-20-92	22.08	7.28	14.80	ND	NR	NR
MW-6	03-23-92	22.08	7.45	14.63	ND	NR	NR
MW-6	04-21-92	22.08	7.74	14.34	ND	NR	NR
MW-6	05-15-92	22.08	DRY	DRY	ND	DRY	DRY
MW-6	06-08-92	22.08	DRY	DRY	ND	DRY	DRY
MW-6	07-15-92	22.08	DRY	DRY	ND	DRY	DRY
MW-6	08-25-92	22.08	DRY	DRY	ND	DRY	DRY
MW-6	09-15-92	22.08	DRY	DRY	ND	DRY	DRY
MW-6	10-28-92	22.08	DRY	DRY	ND	DRY	DRY
MW-6	11-16-92	22.08	DRY	DRY	ND	DRY	DRY
MW-6	12-16-92	22.08	DRY	DRY	ND	DRY	DRY
MW-6	01-15-93	22.08	7.22	14.86	ND	NR	NR
MW-6	02-16-93	22.08	6.79	15.29	ND	NR	NR
MW-6	03-30-93	22.08	6.68	15.40	ND	NR	NR
MW-6	04-28-93	22.08	7.28	14.80	ND	NR	NR
MW-6	05-13-93	22.08	7.73	14.35	ND	NR	NR
MW-6	06-17-93	22.08	8.15	13.93	ND	NR	NR
MW-6	07-28-93	22.08	DRY	DRY	ND	DRY	DRY
MW-6	08-17-93	22.08	DRY	DRY	ND	DRY	DRY
MW-6	11-08-93	22.08	DRY	DRY	ND	DRY	DRY
MW-6	02-14-94	22.08	7.78	14.30	ND	NR	NR
MW-6	05-05-94	22.08	8.24	13.84	ND	NR	NR
MW-6	08-04-94	22.08	DRY	DRY	ND	DRY	DRY

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MW-7	06-10-91	22.89	DRY	DRY	ND	DRY	DRY
MW-7	07-18-91	22.89	DRY	DRY	ND	DRY	DRY
MW-7	08-22-91	22.89	DRY	DRY	ND	DRY	DRY
MW-7	09-18-91	22.89	DRY	DRY	ND	DRY	DRY
MW-7	10-10-91	22.89	DRY	DRY	ND	DRY	DRY
MW-7	11-21-91	22.89	DRY	DRY	ND	DRY	DRY
MW-7	12-24-91	22.89	DRY	DRY	ND	DRY	DRY
MW-7	01-19-92	22.89	DRY	DRY	ND	DRY	DRY
MW-7	02-20-92	22.89	8.74	14.15	ND	NR	NR
MW-7	03-23-92	22.89	8.20	14.69	ND	NR	NR
MW-7	04-21-92	22.89	8.86	14.03	ND	NR	NR
MW-7	05-15-92	22.89	DRY	DRY	ND	DRY	DRY
MW-7	06-08-92	22.89	DRY	DRY	ND	DRY	DRY
MW-7	07-15-92	22.89	DRY	DRY	ND	DRY	DRY
MW-7	08-25-92	22.89	DRY	DRY	ND	DRY	DRY
MW-7	09-15-92	22.89	DRY	DRY	ND	DRY	DRY
MW-7	10-28-92	22.89	10.38	12.51	ND	NR	NR
MW-7	11-16-92	22.89	DRY	DRY	ND	DRY	DRY
MW-7	12-16-92	22.89	DRY	DRY	ND	DRY	DRY
MW-7	01-15-93	22.89	8.37	14.52	ND	NR	NR
MW-7	02-16-93	22.89	7.84	15.05	ND	NR	NR
MW-7	03-30-93	22.89	8.03	14.86	ND	NR	NR
MW-7	04-28-93	22.89	8.33	14.56	ND	NR	NR
MW-7	05-13-93	22.89	8.56	14.33	ND	NR	NR
MW-7	06-17-93	22.89	9.30	13.59	ND	NR	NR
MW-7	07-28-93	22.89	DRY	DRY	ND	DRY	DRY
MW-7	08-17-93	22.89	DRY	DRY	ND	DRY	DRY
MW-7	11-08-93	22.89	DRY	DRY	ND	DRY	DRY
MW-7	02-14-94	22.89	8.80	14.09	ND	NR	NR
MW-7	05-05-94	22.89	9.11	13.78	ND	NR	NR
MW-7	08-04-94	22.89	DRY	DRY	ND	DRY	DRY

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MW-8	06-10-91	20.97	7.80	13.17	ND	NR	NR
MW-8	07-18-91	20.97	8.36	12.61	ND	NR	NR
MW-8	08-22-91	20.97	8.53	12.44	ND	NR	NR
MW-8	09-18-91	20.97	8.68	12.29	ND	NR	NR
MW-8	10-10-91	20.97	8.87	12.10	ND	NR	NR
MW-8	11-21-91	20.97	8.43	12.54	ND	NR	NR
MW-8	12-24-91	20.97	8.68	12.29	ND	NR	NR
MW-8	01-19-92	20.97	7.73	13.24	ND	NR	NR
MW-8	02-20-92	20.97	5.57	15.40	ND	NR	NR
MW-8	03-23-92	20.97	5.81	15.16	ND	NR	NR
MW-8	04-21-92	20.97	7.05	13.92	ND	NR	NR
MW-8	05-15-92	20.97	7.79	13.18	ND	NR	NR
MW-8	06-08-92	20.97	8.01	12.96	ND	NR	NR
MW-8	07-15-92	20.97	8.46	12.51	ND	NR	NR
MW-8	08-25-92	20.97	8.64	12.33	ND	NR	NR
MW-8	09-15-92	20.97	8.80	12.17	ND	NR	NR
MW-8	10-28-92	20.97	8.80	12.17	ND	NR	NR
MW-8	11-16-92	20.97	8.19	12.78	ND	NR	NR
MW-8	12-16-92	20.97	6.66	14.31	ND	NR	NR
MW-8	01-15-93	20.97	5.18	15.79	ND	NR	NR
MW-8	02-16-93	20.97	5.84	15.13	ND	NR	NR
MW-8	03-30-93	20.97	4.98	15.99	ND	NR	NR
MW-8	04-28-93	20.97	6.17	14.80	ND	NR	NR
MW-8	05-13-93	20.97	6.93	14.04	ND	NR	NR
MW-8	06-17-93	20.97	7.36	13.61	ND	NR	NR
MW-8	07-28-93	20.97	7.80	13.17	ND	NR	NR
MW-8	08-17-93	20.97	7.87	13.10	ND	NR	NR
MW-8	11-08-93	20.97	8.31	12.66	ND	NR	NR
MW-8	02-14-94	20.97	7.00	13.97	ND	NR	NR
MW-8	05-05-94	20.97	7.46	13.51	ND	NR	NR
MW-8	08-04-94	20.97	8.17	12.80	ND	SW	0.004

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MW-9	06-11-93	20.89	8.15	12.74	ND	NR	NR
MW-9	07-28-93	20.89	8.49	12.40	ND	NR	NR
MW-9	08-17-93	20.89	8.53	12.36	ND	NR	NR
MW-9	11-08-93	20.89	8.87	12.02	ND	NR	NR
MW-9	02-14-94	20.89	7.47	13.42	ND	NR	NR
MW-9	05-05-94	20.89	8.04	12.85	ND	NR	NR
MW-9	08-04-94	20.89	8.78	12.11	ND	SW	0.004
MW-10	06-11-93	21.12	8.14	12.98	ND	NR	NR
MW-10	07-28-93	21.12	8.43	12.69	ND	NR	NR
MW-10	08-17-93	21.12	8.54	12.58	ND	NR	NR
MW-10	11-08-93	21.12	8.70	12.42	ND	NR	NR
MW-10	02-14-94	21.12	7.13	13.99	ND	NR	NR
MW-10	05-05-94	21.12	8.08	13.04	ND	NR	NR
MW-10	08-04-94	21.12	8.84	12.28	ND	SW	0.004
MW-11	11-16-92	22.38	9.02	13.36	ND	NR	NR
MW-11	12-16-92	22.38	8.48	13.90	ND	NR	NR
MW-11	01-15-93	22.38	7.14	15.24	ND	NR	NR
MW-11	02-16-93	22.38	7.11	15.27	ND	NR	NR
MW-11	03-30-93	22.38	7.01	15.37	ND	NR	NR
MW-11	04-28-93	22.38	7.62	14.76	ND	NR	NR
MW-11	05-13-93	22.38	8.04	14.34	ND	NR	NR
MW-11	06-17-93	22.38	8.44	13.94	ND	NR	NR
MW-11	07-28-93	22.38	8.80	13.58	ND	NR	NR
MW-11	08-17-93	22.38	8.78	13.60	ND	NR	NR
MW-11	11-08-93	22.38	9.23	13.15	ND	NR	NR
MW-11	02-14-94	22.38	7.94	14.44	ND	NR	NR
MW-11	05-05-94	22.38	8.55	13.83	ND	NR	NR
MW-11	08-04-94	22.38	9.13	13.25	ND	SW	0.004

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

Date: 12-13-94
Project Number: 0805-121.01

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-12	11-16-92	22.77	9.65	13.12	ND	NR	NR
MW-12	12-16-92	22.77	8.71	14.06	ND	NR	NR
MW-12	01-15-93	22.77	7.19	15.58	ND	NR	NR
MW-12	02-16-93	22.77	7.88	14.89	ND	NR	NR
MW-12	03-30-93	22.77	7.43	15.34	ND	NR	NR
MW-12	04-28-93	22.77	8.22	14.55	ND	NR	NR
MW-12	05-13-93	22.77	8.63	14.14	ND	NR	NR
MW-12	06-17-93	22.77	8.98	13.79	ND	NR	NR
MW-12	07-28-93	22.77	9.32	13.45	ND	NR	NR
MW-12	08-17-93	22.77	9.30	13.47	ND	NR	NR
MW-12	11-08-93	22.77	9.72	13.05	ND	NR	NR
MW-12	02-14-94	22.77	8.24	14.53	ND	NR	NR
MW-12	05-05-94	22.77	8.97	13.80	ND	NR	NR
MW-12	08-04-94	22.77	9.57	13.20	ND	SW	0.004
MW-13	11-16-92	22.45	9.02	13.43	ND	NR	NR
MW-13	12-16-92	22.45	8.23	14.22	ND	NR	NR
MW-13	01-15-93	22.45	6.89	15.56	ND	NR	NR
MW-13	02-16-93	22.45	7.14	15.31	ND	NR	NR
MW-13	03-30-93	22.45	7.01	15.44	ND	NR	NR
MW-13	04-28-93	22.45	7.57	14.88	ND	NR	NR
MW-13	05-13-93	22.45	7.95	14.50	ND	NR	NR
MW-13	06-17-93	22.45	8.32	14.13	ND	NR	NR
MW-13	07-28-93	22.45	8.59	13.86	ND	NR	NR
MW-13	08-17-93	22.45	8.57	13.88	ND	NR	NR
MW-13	11-08-93	22.45	8.86	13.59	ND	NR	NR
MW-13	02-14-94	22.45	7.78	14.67	ND	NR	NR
MW-13	05-05-94	22.45	8.38	14.07	ND	NR	NR
MW-13	08-04-94	22.45	8.78	13.67	ND	SW	0.004

Table 2
Historical Groundwater Elevation Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

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-14	09-15-92	22.99	10.66	12.33	ND	NR	NR
MW-14	10-28-92	22.99	10.91	12.08	ND	NR	NR
MW-14	11-16-92	22.99	10.33	12.66	ND	NR	NR
MW-14	12-16-92	22.99	9.20	13.79	ND	NR	NR
MW-14	01-15-93	22.99	7.06	15.93	ND	NR	NR
MW-14	02-16-93	22.99	8.18	14.81	ND	NR	NR
MW-14	03-30-93	22.99	7.97	15.02	ND	NR	NR
MW-14	04-28-93	22.99	8.63	14.36	ND	NR	NR
MW-14	05-13-93	22.99	9.05	13.94	ND	NR	NR
MW-14	06-17-93	22.99	9.55	13.44	ND	NR	NR
MW-14	07-28-93	22.99	9.89	13.10	ND	NR	NR
MW-14	08-17-93	22.99	9.90	13.09	ND	NR	NR
MW-14	11-08-93	22.99	10.25	12.74	ND	NR	NR
MW-14	02-14-94	22.99	8.80	14.19	ND	NR	NR
MW-14	05-05-94	22.99	9.49	13.50	ND	NR	NR
MW-14	08-04-94	22.99	10.11	12.88	ND	SW	0.004
MW-15	04-28-93	19.19	5.51	13.68	ND	NR	NR
MW-15	05-13-93	19.19	5.91	13.28	ND	NR	NR
MW-15	06-17-93	19.19	6.18	13.01	ND	NR	NR
MW-15	07-28-93	19.19	6.45	12.74	ND	NR	NR
MW-15	08-17-93	19.19	6.54	12.65	ND	NR	NR
MW-15	11-08-93	19.19	6.98	12.21	ND	NR	NR
MW-15	02-14-94	19.19	5.44	13.75	ND	NR	NR
MW-15	05-05-94	19.19	6.18	13.01	ND	NR	NR
MW-15	08-04-94	19.19	6.84	12.35	ND	SW	0.004

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 or not measurable

ND = None detected

^ = Groundwater elevation (GWE) and depth to water (DTW) adjusted to include 80 percent of the floating product thickness (FPT):

$$[GWE = (TOC - DTW) + (FPT \times 0.8)]$$

^^ = Anomalous data

SW = Southwest

DRY = Dry well; groundwater was not detected

Table 3
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Designation	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethyl- benzene ppb	Total Xylenes ppb
MW-1	07-18-90	Not sampled: well contained floating product				
MW-1	10-15-90	Not sampled: well contained floating product				
MW-1	01-09-91	Not sampled: well contained floating product				
MW-1	04-16-91	Not sampled: well contained floating product				
MW-1	06-10-91	Not sampled: well contained floating product				
MW-1	10-10-91	Not sampled: well contained floating product				
MW-1	03-23-92	Not sampled: well contained floating product				
MW-1	06-08-92	Not sampled: well contained floating product				
MW-1	09-15-92	Not sampled: well contained floating product				
MW-1	11-16-92	Not sampled: well contained floating product				
MW-1	02-16-93	Not sampled: well contained floating product				
MW-1	05-13-93	Not sampled: well contained floating product				
MW-1	08-17-93	Not sampled: well contained floating product				
MW-1	11-08-93	Not sampled: well contained floating product				
MW-1	02-14-94	Not sampled: well contained floating product				
MW-1	05-05-94	Not sampled: well contained floating product				
MW-1	08-04-94	Not sampled: well contained floating product				
MW-2	07-18-90	35000	3800	2900	690	3600
MW-2	10-15-90	6400	650	290	110	560
MW-2	01-09-91	13000	1500	970	390	1500
MW-2	04-16-91	54000	5200	9000	1500	7700
MW-2	06-10-91	26000	3000	2500	880	4200
MW-2	10-10-91	10000	1600	910	280	1400
MW-2	03-23-92	33000	4100	5000	1100	5300
MW-2	06-08-92	18000	1200	980	330	1800
MW-2	09-15-92	13000	430	500	340	1800
MW-2	11-16-92	13000	900	940	300	1400
MW-2	02-16-93	20000	1800	1200	530	2700
MW-2	05-13-93	13000	1000	470	370	1900
MW-2	08-17-93	9100	770	160	310	1500
MW-2	11-08-93	9200	380	62	130	630
MW-2	02-14-94	8700	670	370	50	1400
MW-2	05-05-94	5600	390	140	120	480
MW-2	08-04-94	2300	180	<2.5*	<2.5*	230

Table 3
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Designation	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethyl- benzene ppb	Total Xylenes ppb
MW-3	07-18-90	NA	NA	NA	NA	NA
MW-3	10-15-90	Not sampled: well contained floating product				
MW-3	01-09-91	Not sampled: well contained floating product				
MW-3	04-16-91	Not sampled: well contained floating product				
MW-3	06-10-91	Not sampled: well contained floating product				
MW-3	10-10-91	Not sampled: well contained floating product				
MW-3	03-23-92	Not sampled: well contained floating product				
MW-3	06-08-92	Not sampled: well contained floating product				
MW-3	09-15-92	Not sampled: well contained floating product				
MW-3	11-16-92	Not sampled: well contained floating product				
MW-3	02-16-93	Not sampled: well contained floating product				
MW-3	05-13-93	Not sampled: well contained floating product				
MW-3	08-17-93	Not sampled: well contained floating product				
MW-3	11-08-93	430000	4100	14000	6400	37000
MW-3	02-14-94	85000	4200	12000	2500	16000
MW-3	05-05-94	560000	4600	14000	5300	40000
MW-3	08-04-94	64000	4200	7600	1700	12000
MW-4	06-10-91	Not sampled: dry well				
MW-4	10-10-91	15000	5300	1500	470	1300
MW-4	03-23-92	24000	5600	4000	580	3100
MW-4	06-08-92	5700	2000	170	92	270
MW-4	09-15-92	Not sampled: dry well				
MW-4	11-16-92	Not sampled: dry well				
MW-4	02-16-93	12000	920	1100	130	750
MW-4	05-13-93	19000	2900	2800	360	1900
MW-4	08-17-93	8100	1600	1300	170	730
MW-4	11-08-93	2000	540	110	10	240
MW-4	02-14-94	Not sampled: dry well				
MW-4	05-05-94	1900	510	78	31	150
MW-4	08-04-94	1300	360	17	<5*	190

Table 3
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Designation	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethyl- benzene ppb	Total Xylenes ppb
MW-5	06-10-91	100000	25000	20000	2600	12000
MW-5	10-10-91	Not sampled: well contained floating product				
MW-5	03-23-92	150000	24000	31000	4400	23000
MW-5	06-08-92	120000	17000	13000	2400	11000
MW-5	09-15-92	Not sampled: floating product entered the well during purging				
MW-5	11-16-92	110000	16000	16000	3200	18000
MW-5	02-16-93	150000	12000	15000	3000	17000
MW-5	05-13-93	Not sampled: floating product entered the well during purging				
MW-5	08-17-93	87000	15000	8500	1900	11000
MW-5	11-08-93	87000	12000	8300	2000	12000
MW-5	02-14-94	46000	7300	5300	940	5200
MW-5	05-05-94	54000	9700	4700	1000	6400
MW-5	08-04-94	57000	14000	3200	1200	7200
MW-6	06-10-91	Not sampled: dry well				
MW-6	10-10-91	Not sampled: dry well				
MW-6	03-23-92	75000	19000	10000	1600	8600
MW-6	06-08-92	Not sampled: dry well				
MW-6	09-15-92	Not sampled: dry well				
MW-6	11-16-92	Not sampled: dry well				
MW-6	02-16-93	65000	14000	3500	1300	6100
MW-6	05-13-93	36000	8200	870	1000	5200
MW-6	08-17-93	Not sampled: dry well				
MW-6	11-08-93	Not sampled: dry well				
MW-6	02-14-94	47000	14000	390	1000	5100
MW-6	05-05-94	45000	14000	<200*	1300	4500
MW-6	08-04-94	Not sampled: dry well				

Table 3
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Designation	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethyl- benzene ppb	Total Xylenes ppb
MW-7	06-10-91	Not sampled: dry well				
MW-7	10-10-91	Not sampled: dry well				
MW-7	03-23-92	270	10	0.5	3	13
MW-7	06-08-92	Not sampled: dry well				
MW-7	09-15-92	Not sampled: dry well				
MW-7	11-16-92	Not sampled: dry well				
MW-7	02-16-93	120	3.6	<0.5	<0.5	1.2
MW-7	05-13-93	<50	0.8	<0.5	<0.5	<0.5
MW-7	08-17-93	Not sampled: dry well				
MW-7	11-08-93	Not sampled: dry well				
MW-7	02-14-94	<50	<0.5	<0.5	<0.5	<0.5
MW-7	05-05-94	<50	<0.5	<0.5	<0.5	<0.5
MW-7	08-04-94	Not sampled: dry well				
MW-8	06-10-91	5800	73	7.2	150	21
MW-8	10-10-91	2800	31	6.1	4.5	3.9
MW-8	03-23-92	8000	18	<5.0*	320	42
MW-8	06-08-92	4000	<10*	<10*	110	<10*
MW-8	09-15-92	4200	6.4	<5*	120	<5*
MW-8	11-16-92	2600	4	<2.5*	21	5.2
MW-8	02-16-93	8700	<5*	<5*	200	<5*
MW-8	05-13-93	2300	<5*	<5*	42	<5*
MW-8	08-17-93	1700	1.8	<1.3*	16	1.2
MW-8	11-08-93	1200	2.4	<1*	19	2.3
MW-8	02-14-94	3600	3	<1*	72	<1*
MW-8	05-05-94	2100	<2.5*	<2.5*	8.3	<2.5*
MW-8	08-04-94	1200	1.5	<1*	6.7	<1*

Table 3
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Designation	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethyl- benzene ppb	Total Xylenes ppb
MW-9	06-11-93	<50	<0.5	<0.5	<0.5	<0.5
MW-9	08-17-93	<50	<0.5	<0.5	<0.5	<0.5
MW-9	11-08-93	<50	<0.5	<0.5	<0.5	<0.5
MW-9	02-14-94	<50	<0.5	<0.5	<0.5	<0.5
MW-9	05-05-94	<50	<0.5	<0.5	<0.5	<0.5
MW-9	08-04-94	<50	<0.5	<0.5	<0.5	<0.5
MW-10	06-11-93	<50	<0.5	<0.5	<0.5	<0.5
MW-10	08-17-93	<50	<0.5	<0.5	<0.5	<0.5
MW-10	11-08-93	<50	<0.5	<0.5	<0.5	<0.5
MW-10	02-14-94	<50	<0.5	<0.5	<0.5	<0.5
MW-10	05-05-94	<50	<0.5	<0.5	<0.5	<0.5
MW-10	08-04-94	<50	<0.5	<0.5	<0.5	<0.5
MW-11	11-16-92	7000	21	<10*	18	230
MW-11	02-16-93	2200	<10*	<10*	11	<10*
MW-11	05-13-93	1600	<2.5*	<2.5*	41	6.8
MW-11	08-17-93	830	1.4	<1.0*	25	15
MW-11	11-08-93	370	<1.0*	<1.0*	2.5	2.1
MW-11	02-14-94	650	<1*	<1*	2	4
MW-11	05-05-94	210	<0.5	<0.5	2.5	0.6
MW-11	08-04-94	390	<0.5	<0.7*	1.9	2.2
MW-12	11-16-92	<50	<0.5	<0.5	<0.5	<0.5
MW-12	02-16-93	<50	<0.5	<0.5	<0.5	<0.5
MW-12	05-13-93	<50	<0.5	<0.5	<0.5	<0.5
MW-12	08-17-93	<50	<0.5	<0.5	<0.5	<0.5
MW-12	11-08-93	<50	<0.5	<0.5	<0.5	<0.5
MW-12	02-14-94	<50	<0.5	<0.5	<0.5	<0.5
MW-12	05-05-94	<50	<0.5	<0.5	<0.5	<0.5
MW-12	08-04-94	<50	<0.5	<0.5	<0.5	<0.5

Table 3
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Designation	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethyl- benzene ppb	Total Xylenes ppb
MW-13	11-16-92	<50	<0.5	<0.5	<0.5	<0.5
MW-13	02-16-93	<50	<0.5	<0.5	<0.5	<0.5
MW-13	05-13-93	<50	<0.5	<0.5	<0.5	<0.5
MW-13	08-17-93	<50	<0.5	<0.5	<0.5	<0.5
MW-13	11-08-93	<50	<0.5	<0.5	<0.5	<0.5
MW-13	02-14-94	<50	<0.5	<0.5	<0.5	<0.5
MW-13	05-05-94	<50	<0.5	<0.5	<0.5	<0.5
MW-13	08-04-94	<50	<0.5	<0.5	<0.5	<0.5
MW-14	09-15-92	<50	<0.5	<0.5	<0.5	<0.5
MW-14	11-16-92	<50	<0.5	<0.5	<0.5	<0.5
MW-14	02-16-93	<50	<0.5	<0.5	<0.5	<0.5
MW-14	05-13-93	<50	<0.5	<0.5	<0.5	<0.5
MW-14	08-17-93	<50	<0.5	<0.5	<0.5	<0.5
MW-14	11-08-93	<50	<0.5	<0.5	<0.5	<0.5
MW-14	02-14-94	<50	<0.5	<0.5	<0.5	<0.5
MW-14	05-05-94	<50	<0.5	<0.5	<0.5	<0.5
MW-14	08-04-94	<50	<0.5	<0.5	<0.5	<0.5
MW-15	05-13-93	<50	<0.5	<0.5	<0.5	<0.5
MW-15	08-17-93	<50	<0.5	<0.5	<0.5	<0.5
MW-15	11-08-93	<50	<0.5	<0.5	<0.5	<0.5
MW-15	02-14-94	<50	<0.5	<0.5	<0.5	<0.5
MW-15	05-05-94	<50	<0.5	<0.5	<0.5	<0.5
MW-15	08-04-94	<50	<0.5	<0.5	<0.5	<0.5

TPHG = Total petroleum hydrocarbons as gasoline

ppb = Parts per billion or micrograms per liter (µg/l)

NA = Not analyzed

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

Table 4
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Design- ation	Water Sample Field Date	TRPH	TPHD	Cadmium by EPA 6010	Chromium by EPA 6010	Lead by EPA 7421	Nickel by EPA 6010	Zinc by EPA 6010
		ppb	ppb	ppb	ppb	ppb	ppb	ppb
MW-2	07-18-90	<5000	850*	<20	<50	50	NA	120
MW-2	10-15-90	NA	NA	NA	NA	NA	NA	NA
MW-2	01-09-91	NA	NA	NA	NA	NA	NA	NA
MW-2	04-16-91	NA	NA	NA	NA	NA	NA	NA
MW-2	06-10-91	NA	NA	NA	NA	NA	NA	NA
MW-2	10-10-91	<5000	NA	<10	<10	11	72	91
MW-2	03-23-92	NA	NA	NA	NA	NA	NA	NA
MW-2	06-08-92	NA	NA	NA	NA	NA	NA	NA
MW-2	09-15-92	NA	NA	NA	NA	NA	NA	NA
MW-2	11-16-92	NA	NA	NA	NA	NA	NA	NA
MW-2	02-16-93	NA	NA	NA	NA	NA	NA	NA
MW-2	05-13-93	NA	NA	NA	NA	NA	NA	NA
MW-2	08-17-93	NA	NA	NA	NA	NA	NA	NA
MW-2	11-08-93	NA	NA	NA	NA	NA	NA	NA
MW-2	02-14-94	NA	NA	NA	NA	NA	NA	NA
MW-2	05-05-94	NA	NA	NA	NA	NA	NA	NA
MW-2	08-04-94	NA	NA	NA	NA	NA	NA	NA
MW-3	07-18-90	<5000	NA	NA	NA	NA	NA	NA
MW-3	10-15-90	Not sampled: well contained floating product						
MW-3	01-09-91	Not sampled: well contained floating product						
MW-3	04-16-91	Not sampled: well contained floating product						
MW-3	06-10-91	Not sampled: well contained floating product						
MW-3	10-10-91	Not sampled: well contained floating product						
MW-3	03-23-92	Not sampled: well contained floating product						
MW-3	06-08-92	Not sampled: well contained floating product						
MW-3	09-15-92	Not sampled: well contained floating product						
MW-3	11-16-92	Not sampled: well contained floating product						
MW-3	02-16-93	Not sampled: well contained floating product						
MW-3	05-13-93	Not sampled: well contained floating product						
MW-3	08-17-93	Not sampled: well contained floating product						
MW-3	11-08-93	NA	NA	NA	NA	NA	NA	NA
MW-3	02-14-94	NA	NA	NA	NA	NA	NA	NA
MW-3	05-05-94	NA	NA	NA	NA	NA	NA	NA
MW-3	08-04-94	NA	NA	NA	NA	NA	NA	NA

Table 4
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Designation	Water Sample Field Date	TRPH	TPHD	Cadmium by EPA 6010	Chromium by EPA 6010	Lead by EPA 7421	Nickel by EPA 6010	Zinc by EPA 6010
		ppb	ppb	ppb	ppb	ppb	ppb	ppb
MW-5	06-10-91	NA	NA	NA	NA	NA	NA	NA
MW-5	10-10-91	Not sampled: well contained floating product						
MW-5	03-23-92	NA	NA	NA	NA	28	NA	NA
MW-5	06-08-92	NA	NA	NA	NA	NA	NA	NA
MW-5	09-15-92	Not sampled: floating product entered the well during purging						
MW-5	11-16-92	NA	NA	NA	NA	NA	NA	NA
MW-5	02-16-93	NA	NA	NA	NA	NA	NA	NA
MW-5	05-13-93	Not sampled: floating product entered the well during purging						
MW-5	08-17-93	NA	NA	NA	NA	NA	NA	NA
MW-5	11-08-93	NA	NA	NA	NA	NA	NA	NA
MW-5	02-14-94	NA	NA	NA	NA	NA	NA	NA
MW-5	05-05-94	NA	NA	NA	NA	NA	NA	NA
MW-5	08-04-94	NA	NA	NA	NA	NA	NA	NA
MW-8	06-10-91	<5000	NA	NA	NA	NA	NA	NA
MW-8	10-10-91	NA	NA	NA	NA	NA	NA	NA
MW-8	03-23-92	NA	NA	NA	NA	NA	NA	NA
MW-8	06-08-92	NA	NA	NA	NA	NA	NA	NA
MW-8	09-15-92	NA	460*	ND	59	18	78	128
MW-8	11-16-92	1200	1100*	7	42	20	69	123
MW-8	02-16-93	150000	5300*	<3	7	4	24	54
MW-8	05-13-93	2000	2300*	<3	17	10	31	49
MW-8	08-17-93	1200	1000*	<5	16	7	<40	180
MW-8	11-08-93	4200	<1000	<5	50	25	60	100
MW-8	02-14-94	2000	3900*	<5	<10	4	<40	20
MW-8	05-05-94	0.7	440*	<3	<5	4	<20	60
MW-8	08-04-94	0.7	<50	<3	6	3	<20	27

TRPH = Total recoverable petroleum hydrocarbons by EPA Method 418.1

TPHD = Total petroleum hydrocarbons as diesel by EPA Method 3510/California DHS LUFT Method

ppb = Parts per billion or micrograms per liter (µg/l)

* = Chromatogram does not match the typical diesel fingerprint

NA = Not analyzed

ND = None detected at or above the method reporting limit

Table 5
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270		
		Methylene Chloride ppb	1,2- Dichloro- ethane ppb	1,1- Dichloro- ethane ppb	Benzene ppb	Toluene ppb	Ethyl- benzene ppb	Total Xylenes ppb	Naphthalene ppb	2-Methyl- naphthalene ppb	Bis (2- ethylhexyl) Phthalate ppb
MW-2	07-18-90	39	ND	ND	3200	2400	270	2900	340	170	ND
MW-2	10-15-90	18	ND	ND	NA	NA	NA	NA	NA	NA	NA
MW-2	01-09-91	ND	6.5	ND	1700	1200	370	2400	NA	NA	NA
MW-2	04-16-91	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	06-10-91	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	10-10-91	ND	1.7	ND	NA	NA	NA	NA	NA	NA	NA
MW-2	03-23-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	06-08-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	09-15-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	11-16-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	02-16-93	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	05-13-93	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	08-17-93	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	11-08-93	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	02-14-94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	05-05-94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	08-04-94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5
Historical Groundwater Analytical Data
Summary Report

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

Date: 12-13-94
Project Number: 0805-121.01

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270		
		Methylene Chloride ppb	1,2- Dichloro- ethane ppb	1,1- Dichloro- ethane ppb	Benzene ppb	Toluene ppb	Ethyl- benzene ppb	Total Xylenes ppb	Naphthalene ppb	2-Methyl- naphthalene ppb	Bis (2- ethylhexyl) Phthalate ppb
MW-8	06-10-91	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-8	10-10-91	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-8	03-23-92	ND	ND	ND	23	<5.0*	450	23	NA	NA	NA
MW-8	06-08-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-8	09-15-92	ND	ND	ND	NA	NA	NA	NA	ND	ND	6
MW-8	11-16-92	ND	ND	ND	NA	NA	NA	NA	32	ND	ND
MW-8	02-16-93	ND	ND	ND	NA	NA	NA	NA	730	130	ND
MW-8	05-13-93	ND	ND	ND	NA	NA	NA	NA	97	20	ND
MW-8	08-17-93	ND	ND	ND	NA	NA	NA	NA	26	ND	ND
MW-8	11-08-93	ND	ND	ND	NA	NA	NA	NA	20	ND	19
MW-8	02-14-94	NA	NA	NA	NA	NA	NA	NA	350	65	ND
MW-8	05-05-94	<0.5	<0.5	0.7	NA	NA	NA	NA	23	<10	<10
MW-8	08-04-94	NA	NA	NA	NA	NA	NA	NA	11	<10	10

ppb = Parts per billion or micrograms per liter (µg/l)

ND = Not detected at or above the method detection limit

NA = Not analyzed

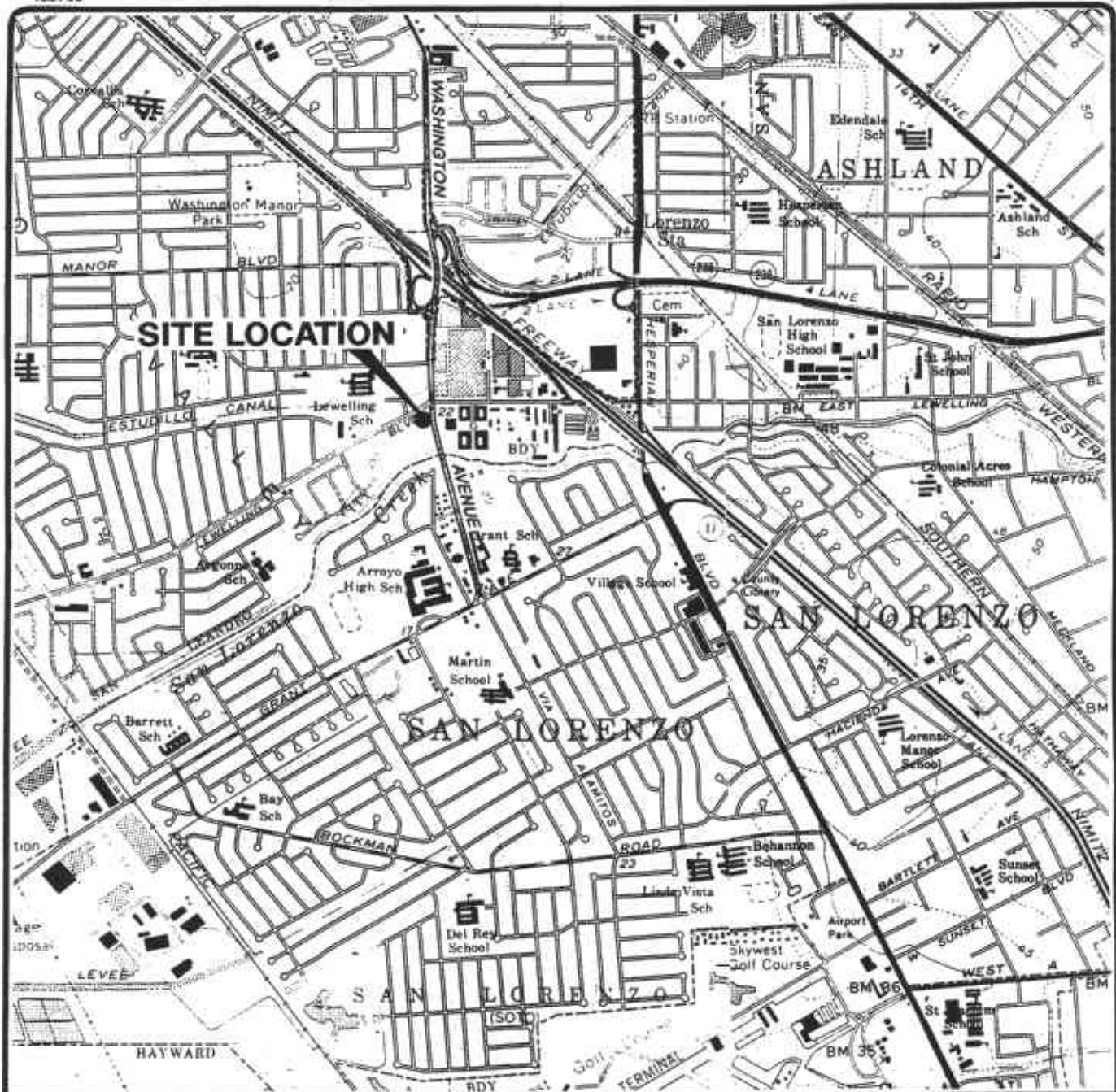
* = Method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

Table 6
Approximate Cumulative Floating Product Recovered
Summary Report

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

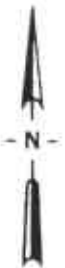
Date: 12-13-94
Project Number: 0805-121.01

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



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

Scale : 0 2000 4000 Feet



EMCON
Associates

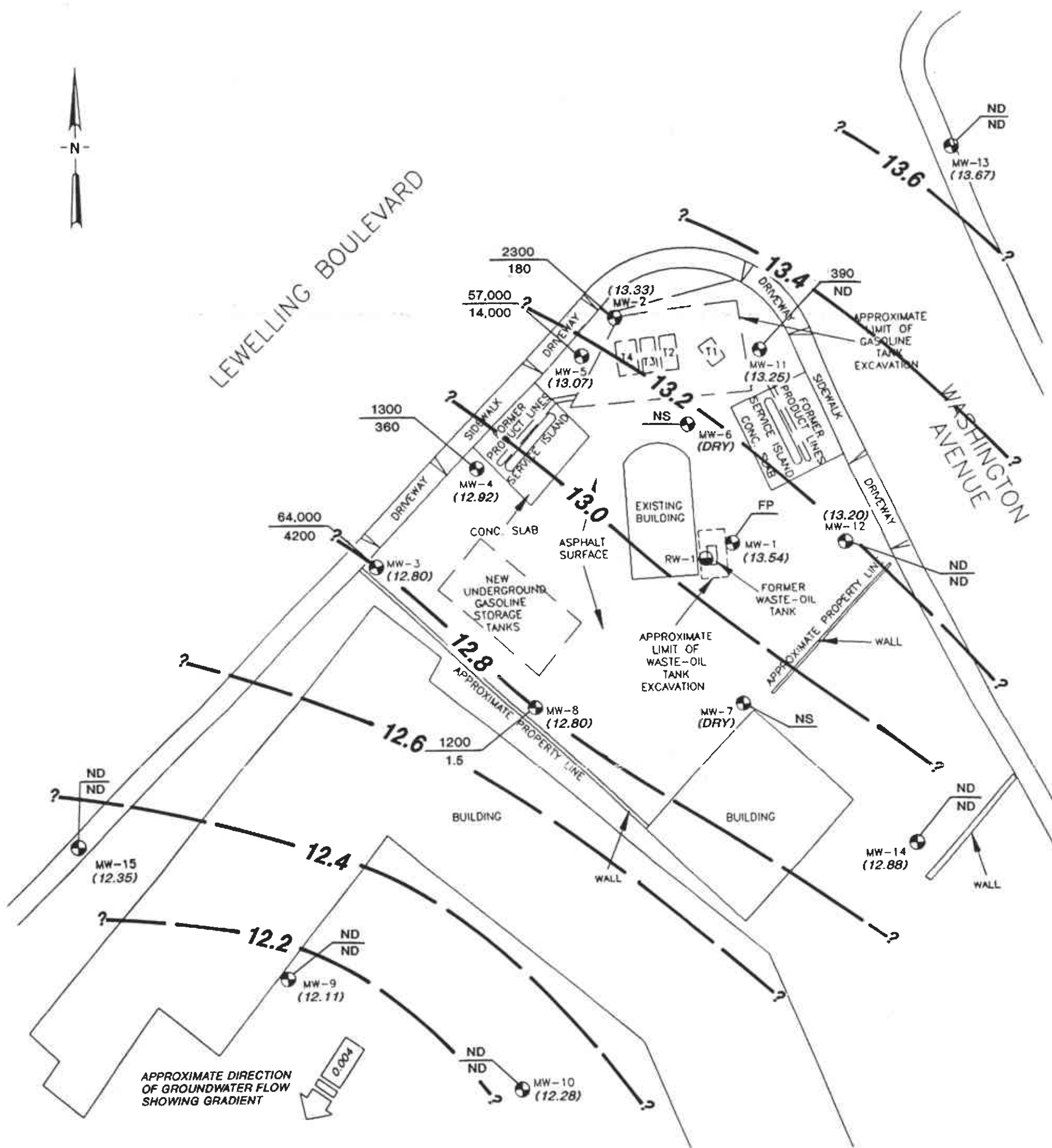
ARCO PRODUCTS COMPANY
SERVICE STATION 601, 712 LEWELLING BLVD.
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

SITE LOCATION

FIGURE

1

PROJECT NO.
805-121.01



EXPLANATION

- Groundwater monitoring well
- Recovery well
- Former underground gasoline storage tank
- (12.28) Groundwater elevation (Ft.-MSL); measured 8/4/94
- 2300 — TPHG concentration in groundwater (ppb)
- 180 — Benzene concentration in groundwater (ppb)
- ND = Not detected
- NS = Not sampled
- FP = Floating product

? — Groundwater elevation contour (Ft. -MSL)

Well contained product sheen, therefore groundwater elevation was not used in contouring

SCALE: 0 40 FEET
(Approximate)

Base map modified from RESNA, 1994.

12/94



ARCO PRODUCTS COMPANY
SERVICE STATION 801, 712 LEWELLING BLVD.
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

GROUNDWATER DATA
THIRD QUARTER 1994

FIGURE

2

PROJECT NO.
805-121.01

APPENDIX A

**FIELD DATA REPORT, INTEGRATED WASTESTREAM
MANAGEMENT, AUGUST 26, 1994**

I NTEGRATED
W ASTESTREAM
M ANAGEMENT, INC.

August 26, 1994

Mr. John Young
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Dear Mr. Young:

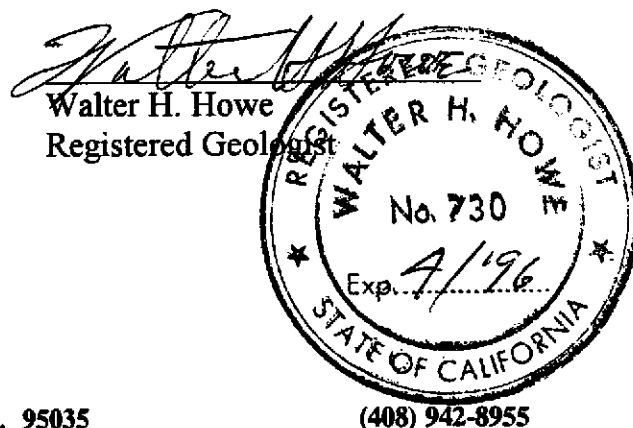
Attached are the field data sheets and analytical results for quarterly ground water sampling at ARCO Facility No. A-601 in San Leandro, California. Integrated Wastestream Management measured the depth to water and collected samples from wells at this site on August 4, 1994.

Sampling was carried out in accordance with the protocols described in the "Request for Bid for Quarterly Sampling at ARCO Facilities in Northern California".

Please call us if you have any questions.

Sincerely,
Integrated Wastestream Management


Tom DeLon
Project Manager



I NTEGRATED
W ASTESTREAM
M ANAGEMENT

A0601Q3.XLS

Summary of Ground Water Sample Analyses for ARCO Facility A-601, San Leandro, California

WELL NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
DATE SAMPLED	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94	8/4/94
DEPTH TO WATER	8.72	8.00	7.31	7.83	7.83	DRY	DRY	8.17	8.78	8.84	9.13	9.57	8.78	10.11	6.84
SHEEN	HEAVY	NONE	NONE	NONE	NONE	NA	NA	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
PRODUCT THICKNESS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPHg	NA	2,300	64,000	1,300	57,000	NA	NA	1,200	ND	ND	390	ND	ND	ND	ND
BTEX															
BENZENE	NA	180	4,200	360	14,000	NA	NA	1.5	ND	ND	ND	ND	ND	ND	ND
TOLUENE	NA	<2.5	7,600	17	3,200	NA	NA	<1	ND	ND	<0.7	ND	ND	ND	ND
ETHYLBENZENE	NA	<2.5	1,700	<5	1,200	NA	NA	6.7	ND	ND	1.9	ND	ND	ND	ND
XYLENES	NA	230	12,000	190	7,200	NA	NA	<1	ND	ND	2.2	ND	ND	ND	ND
EPA 418.1															
PETROLEUM HYDROCARBONS	NA	NA	NA	NA	NA	NA	NA	0.7	NA	NA	NA	NA	NA	NA	NA
EPA 3510															
DIESEL	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
TOTAL METALS															
CADMIUM	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	27	NA	NA	NA	NA	NA	NA	NA
EPA 3520/8270															
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	11	NA	NA	NA	NA	NA	NA	NA
BIS (2-ethylhexyl) PHTHALATE	NA	NA	NA	NA	NA	NA	NA	10	NA	NA	NA	NA	NA	NA	NA

FOOTNOTES:

Concentrations reported in ug/L (ppb)

TPHg = Total Purgeable Petroleum Hydrocarbons (USEPA Method 8015 Modified)

BTEX Distinction (USEPA Method 8020)

PCE = Tetrachloroethene (USEPA Method 8010)

* = Well inaccessible

** = Not sampled per consultant request

DCE = cis-1, 2-Dichloroethene (USEPA Method 8010)

TCE = Trichloroethene (USEPA Method 8010)

ND = Not Detected

NA = Not applicable

FP = Floating product

FIELD REPORT

Depth To Water / Floating Product Survey

Site Arrival Time: 645

Site Departure Time: 1330

Weather Conditions: Sunny
Clear

DTW: Well Box or Well Casing (circle one)

Project No.: _____

Location: 712 Lerwelling Blvd.

Date: Aug 4, 1994

Client / Station#: Arco 601

Field Technician: Vince/Cisco

Day of Week: Thursday

DTW ORDER	WELL ID	SURFACE SEAL	LID SECURE	GASKET	LOCK	EXPANDING CAP	TOTAL DEPTH (Feet)	FIRST DEPTH TO WATER (Feet)	SECOND DEPTH TO WATER (Feet)	DEPTH TO FLOATING PRODUCT (Feet)	FLOATING PRODUCT THICKNESS (Feet)	SHEEN (Y=YES, N=NO) FP=FLOATING PRODUCT	COMMENTS	MATERIALS
14	mw-1	OK	Yes	OK	OK	OK	N/A	8.72	8.72	N/A	N/A	Y	4" Heavy sheen observed during 1500 Subj eval - no sample	15/16
10	mw-2	OK	Yes	OK	OK	OK	12.40	8.00+	8.00+	N/A	N/A	N	4"	15/16
13	mw-3	OK	Yes	OK	OK	OK	12.00	7.31	7.31	N/A	N/A	N	4"	15/16
8	mw-4	OK	Yes	OK	OK	OK	8.60	7.83	7.83	N/A	N/A	N	4"	15/16
12	mw-5	OK	Yes	OK	OK	OK	10.40	7.83	7.83	N/A	N/A	N	4"	15/16
11	mw-6	OK	Yes	OK	OK	OK	8.63	DRY	DRY	N/A	N/A	N	4" DRY well no sample	15/16
7	mw-7	OK	Yes	OK	OK	OK	9.72	DRY	DRY	N/A	N/A	N	4" DRY well no sample	15/16
9	mw-8	OK	Yes	OK	OK	OK	10.30	8.17	8.17	N/A	N/A	N	4"	15/16
1	mw-9	OK	Yes	OK	OK	OK	16.40	8.78	8.78	N/A	N/A	N	2"	15/16
2	mw-10	OK	Yes	OK	OK	OK	19.60	8.84+	8.84+	N/A	N/A	N	2"	15/16
1	mw-11	OK	Yes	OK	OK	OK	12.00	9.13	9.13	N/A	N/A	N	4"	15/16
3	mw-12	OK	Yes	OK	OK	OK	11.90	9.57	9.57	N/A	N/A	N	4"	15/16
4	mw-13	OK	Yes	OK	OK	OK	13.31	8.78	8.78	N/A	N/A	N	2"	15/16
5	mw-14	OK	Yes	OK	OK	OK	13.11	10.11	10.11	N/A	N/A	N	2"	15/16
6	mw-15	OK	Yes	OK	OK	OK	10.45	6.84+	6.84+	N/A	N/A	N	2"	15/16

WELL ID: MW-8 TD 10.30 DTW 8.17 X 0.66 X 3 = 2.21
Linear Ft. Volume Purge

DATE PURGED: 8-4-94 START (2400 HR): 1048 END (2400 HR): 1050
 DATE SAMPLED: 8-4-94 TIME (2400 HR): 1109 DTW: 9.6

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1048</u>	<u>1</u>	<u>7.18</u>	<u>0.79</u>	<u>71.5</u>	<u>clear</u>
<u>1048</u>	<u>2</u>	<u>7.16</u>	<u>0.6A</u>	<u>70.9</u>	<u>clear</u>
<u>1050</u>	<u>3</u>	<u>7.15</u>	<u>0.6A</u>	<u>70.5</u>	<u>clear</u>

Total purge: 3

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS: well pumped dry at 3 gallons

WELL ID: _____ TD _____ DTW _____ X _____ X _____ = _____
Linear Ft. Volume Purge

DATE PURGED: _____ START (2400 HR): _____ END (2400 HR): _____
 DATE SAMPLED: _____ TIME (2400 HR): _____ DTW: _____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge: _____

PURGING EQUIP.: _____ Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS: _____

WELL ID: _____ TD _____ DTW _____ X _____ X _____ = _____
Linear Ft. Volume Purge

DATE PURGED: _____ START (2400 HR): _____ END (2400 HR): _____
 DATE SAMPLED: _____ TIME (2400 HR): _____ DTW: _____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge: _____

PURGING EQUIP.: _____ Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS: _____

WELL ID: _____ TD _____ DTW _____ X _____ X _____ = _____
Linear Ft. Volume Purge

DATE PURGED: _____ START (2400 HR): _____ END (2400 HR): _____
 DATE SAMPLED: _____ TIME (2400 HR): _____ DTW: _____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge: _____

PURGING EQUIP.: _____ Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS: _____

PRINT NAME: Vince Valdes SIGNATURE: [Signature]

CASING DIAMETER (inches): 2 3 4 6 8 12 Other: _____
 GALLON/LINEAR FOOT: 0.17 0.38 0.66 1.5 2.6 5.8 Other: _____

ADDRESS: 712 Lewelling Blvd.

WELL ID: MW-5 TD 10.40 DTW 7.83 x 0.66 x 3 5.08
Linear Ft. Volume Purge

DATE PURGED: 8-4-94 START (2400 HR): 1220 END (2400 HR): 1223
DATE SAMPLED: 8-4-94 TIME (2400 HR): 1227 DTW: 9.4

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1221</u>	<u>1</u>	<u>7.07</u>	<u>0.81</u>	<u>73.1</u>	<u>CLEAR</u>
<u>1223</u>	<u>3</u>	<u>7.09</u>	<u>0.78</u>	<u>72.7</u>	<u>CLEAR</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Total purge:

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS: Well pumped dry at 3 gallons

WELL ID: <u>MW-3</u>		ID <u>62.0</u>	DTW <u>7.31</u>	x	<u>0.66</u> Gal.	x	<u>3</u> Casing	=	<u>9.28</u> Calculated	-	<u>9.28</u> Purge
DATE PURGED: <u>8-4-94</u>		START (2400 HR): <u>1245</u>		END (2400 HR): <u>1250</u>							
DATE SAMPLED: <u>8-4-94</u>		TIME (2400 HR): <u>1255</u>		DTW: <u>11.1</u>							
TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)						
<u>1246</u>	<u>2</u>	<u>7.25</u>	<u>0.45</u>	<u>72.7</u>	<u>CLEAR</u>						
<u>1246</u>	<u>4</u>	<u>7.23</u>	<u>0.45</u>	<u>72.1</u>	<u>CLEAR</u>						
<u>1250</u>	<u>6</u>	<u>7.21</u>	<u>0.47</u>	<u>71.3</u>	<u>CLEAR</u>						
Total purge: <u>6</u>											
PURGING EQUIP.: <u>Centrifugal Pump</u>		Bailer Disp. <u> </u>		SAMPLING EQUIP. <u> </u>		Bailer Disp. <u> </u>					
REMARKS: <u>WELL PUMPED DRY AT 6 GALLONS</u>											

WELL ID: _____	TD _____	-	DTW _____	X	Gal. _____	X	Casing _____	=	Calculated _____
					Linear Ft.		Volume		Purge

DATE PURGED: _____	START (2400 HR): _____	END (2400 HR): _____
DATE SAMPLED: _____	TIME (2400 HR): _____	DTW: _____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Total purge: _____

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS: _____

WELL ID: MW-4 8.6 7.83 0.66 3 1.52
 ID DTW X Gal. X Casing = Calculated

Linear Ft. Volume Purge

DATE PURGED: 8-4-94 START (2400 HR): 1235 END (2400 HR): 1238
 DATE SAMPLED: 8-4-94 TIME (2400 HR): 1240 DTW: 8-1

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1236</u>	<u>.50</u>	<u>7.16</u>	<u>0.65</u>	<u>70.9</u>	<u>clear</u>
<u>1238</u>	<u>1</u>	<u>7.15</u>	<u>0.66</u>	<u>70.4</u>	<u>clear</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Total purge: 1

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS: WELL BAILED DRY AT 1 GALLON

Francisco Benguer

Francisco Bungea

CASING DIAMETER (inches): 2 3 4 6 8 12 Other: _____

GALLON/LINEAR FOOT: **0.17** **0.38** **0.66** **1.5** **2.6** **5.8** **Other:** _____

WELL ID: MW-9 TD 16.40 DTW 8.78 X 0.17 Gal. X 3 Casing Volume - 3.88 Calculated Purge

DATE PURGED: 8-4-94 START (2400 HR): 1115 END (2400 HR): 1116
 DATE SAMPLED: 8-4-94 TIME (2400 HR): 1120 DTW: 9.7

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1115</u>	<u>1</u>	<u>7.04</u>	<u>0.59</u>	<u>71.6</u>	<u>clear</u>
<u>1115</u>	<u>2</u>	<u>7.09</u>	<u>0.54</u>	<u>71.4</u>	<u>clear</u>
<u>1116</u>	<u>4</u>	<u>7.07</u>	<u>0.52</u>	<u>71.4</u>	<u>clear</u>

Total purge: 4
 PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
 REMARKS:

WELL ID: MW-10 TD 19.60 DTW 8.84 X 0.17 Gal. X 3 Casing Volume - 5.48 Calculated Purge

DATE PURGED: 8-4-94 START (2400 HR): 1130 END (2400 HR): 1132
 DATE SAMPLED: 8-4-94 TIME (2400 HR): 1135 DTW: 9.9

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1131</u>	<u>1.5</u>	<u>7.20</u>	<u>0.55</u>	<u>71.6</u>	<u>cloudy</u>
<u>1131</u>	<u>3</u>	<u>7.29</u>	<u>0.54</u>	<u>70.6</u>	<u>cloudy</u>
<u>1132</u>	<u>5</u>	<u>7.28</u>	<u>0.52</u>	<u>70.1</u>	<u>cloudy</u>

Total purge: 5
 PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
 REMARKS:

WELL ID: MW-15 TD 10.45 DTW 6.84 X 0.17 Gal. X 3 Casing Volume - 1.84 Calculated Purge

DATE PURGED: 8-4-94 START (2400 HR): 1140 END (2400 HR): 1144
 DATE SAMPLED: 8-4-94 TIME (2400 HR): 1150 DTW: 8.2

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1141</u>	<u>.50</u>	<u>7.17</u>	<u>0.45</u>	<u>70.1</u>	<u>clear</u>
<u>1144</u>	<u>2</u>	<u>7.16</u>	<u>0.47</u>	<u>69.8</u>	<u>clear</u>

Total purge: 2
 PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
 REMARKS:

WELL ID: MW-11 TD 12.0 DTW 9.13 X 0.66 Gal. X 3 Casing Volume - 5.68 Calculated Purge

DATE PURGED: 8-4-94 START (2400 HR): 1200 END (2400 HR): 1207
 DATE SAMPLED: 8-4-94 TIME (2400 HR): 1210 DTW: 10.5

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1202</u>	<u>1.5</u>	<u>7.04</u>	<u>0.73</u>	<u>72.1</u>	<u>clear</u>
<u>1204</u>	<u>3</u>	<u>7.07</u>	<u>0.68</u>	<u>71.8</u>	<u>cloudy</u>
<u>1207</u>	<u>5</u>	<u>7.08</u>	<u>0.65</u>	<u>70.7</u>	<u>cloudy</u>

Total purge: 5
 PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
 REMARKS:

PRINT NAME: Franco Abungen SIGNATURE: Franco Abungen

CASING DIAMETER (inches): 2 3 4 6 8 12 Other: _____
 GALLON/LINEAR FOOT: 0.17 0.38 0.66 1.5 2.6 5.8 Other: _____

WELL ID: MW-11 TD 13.11 DTW 10.11 x 0.17 Gal. x 3 Casing - 1.53 Calculated
Linear Ft. Volume Purge

DATE PURGED: 8-4-94 START (2400 HR): 1000 END (2400 HR): 1004
DATE SAMPLED: 8-4-94 TIME (2400 HR): 1008 DTW: 12

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1001</u>	<u>.50</u>	<u>7.09</u>	<u>0.70</u>	<u>70.5</u>	<u>clear</u>
<u>1002</u>	<u>1.0</u>	<u>7.11</u>	<u>0.72</u>	<u>69.5</u>	<u>clear</u>
<u>1004</u>	<u>1.5</u>	<u>7.12</u>	<u>0.69</u>	<u>69.7</u>	<u>clear</u>

Total purge: 1.5
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
REMARKS: _____

WELL ID: MW-12 TD 11.9 DTW 9.57 x 0.66 Gal. x 3 Casing - 4.61 Calculated
Linear Ft. Volume Purge

DATE PURGED: 8-4-94 START (2400 HR): 1012 END (2400 HR): 1013
DATE SAMPLED: 8-4-94 TIME (2400 HR): 1016 DTW: 10.9

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1012</u>	<u>1</u>	<u>7.23</u>	<u>0.55</u>	<u>70.8</u>	<u>clear</u>
<u>1013</u>	<u>3</u>	<u>7.22</u>	<u>0.56</u>	<u>70.1</u>	<u>clear</u>

Total purge: 3
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
REMARKS: well pumped dry at 3 gallons.

WELL ID: MW-2 TD 12.40 DTW 8.0 x 0.66 Gal. x 3 Casing - 8.71 Calculated
Linear Ft. Volume Purge

DATE PURGED: 8-4-94 START (2400 HR): 1025 END (2400 HR): 1029
DATE SAMPLED: 8-4-94 TIME (2400 HR): 1034 DTW: 10.6

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1026</u>	<u>2</u>	<u>7.10</u>	<u>0.57</u>	<u>70.8</u>	<u>clear</u>
<u>1027</u>	<u>4</u>	<u>7.15</u>	<u>0.56</u>	<u>70.0</u>	<u>clear</u>
<u>1029</u>	<u>5</u>	<u>7.14</u>	<u>0.55</u>	<u>69.9</u>	<u>clear</u>

Total purge: 5
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
REMARKS: well pumped dry at 5 gallons

WELL ID: MW-13 TD 13.31 DTW 8.78 x 0.17 Gal. x 3 Casing - 2.31 Calculated
Linear Ft. Volume Purge

DATE PURGED: 8-4-94 START (2400 HR): 945 END (2400 HR): 948
DATE SAMPLED: 8-4-94 TIME (2400 HR): 955 DTW: 11.1

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>948</u>	<u>1</u>	<u>7.08</u>	<u>0.60</u>	<u>71.0</u>	<u>clear</u>
<u>948</u>	<u>1.5</u>	<u>7.07</u>	<u>0.59</u>	<u>70.5</u>	<u>clear</u>
<u>950</u>	<u>2</u>	<u>7.06</u>	<u>0.59</u>	<u>70.0</u>	<u>clear</u>

Total purge: 2
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
REMARKS: _____

PRINT NAME: Vince Valdes SIGNATURE: [Signature]

CASING DIAMETER (inches): 2 3 4 6 8 12 Other: _____
GALLON/LINEAR FOOT: 0.17 0.38 0.66 1.5 2.6 5.8 Other: _____

APPENDIX B

**CERTIFIED ANALYTICAL REPORT AND CHAIN-OF-CUSTODY
DOCUMENTATION, THIRD QUARTER 1994**



August 19, 1994

Service Request No. S940871

Gina Austin
Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: **ARCO Facility No. 601**

Dear Ms. Austin/Mr. DeLon:

Attached are the results of the water samples submitted to our lab on August 5, 1994. For your reference, these analyses have been assigned our service request number S940871.

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.


Keoni A. Murphy
Laboratory Manager


Annelise J. Bazar
Regional QA Coordinator

KAM/ajb



Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
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
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
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
NR	Not Requested
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
VPH	Volatile Petroleum Hydrocarbons

COLUMBIA ANALYTICAL SERVICES, INC.



Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: NA
Date Analyzed: 8/12,13/94

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	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes, Total
MW-9 (9.7)	S940871-012	ND	ND	ND	ND	ND
MW-10 (9.9)	S940871-013	ND	ND	ND	ND	ND
Method Blank	S940812-WB	ND	ND	ND	ND	ND

Approved By: _____

Date: _____

5ABTXGAS/061694

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report



Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: NA
Date Analyzed: 8/12,13/94

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-9 (9.7)	S940871-012	96
MW-10 (9.9)	S940871-013	95
MS	S940871-008MS	104
DMS	S940871-008DMS	104
Method Blank	S940812-WB	93

CAS Acceptance Limits: 69-116

Approved By: _____

Date: _____

SUR1/062994

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601

Service Request: S940871
Date Analyzed: 8/12/94

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	27.2	109	85-115
Toluene	25	26.0	104	85-115
Ethylbenzene	25	26.1	104	85-115
Xylenes, Total	75	76.5	102	85-115
Gasoline	250	238	95	90-110

Approved By: Frederic Murphy

Date: August 19, 1994

ICV25AL/060194

COLUMBIA ANALYTICAL SERVICES, INC.



QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: NA
Date Analyzed: 8/12,13/94

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

Sample Name: Batch QC
Lab Code: S940871-008

Analyte	Percent Recovery								Relative Percent Difference
	Spike Level		Sample Result	Spike Result		CAS		Acceptance Limits	
	MS	DMS		MS	DMS	MS	DMS		
Gasoline	250	250	ND	238	234	95	94	67-121	2

Approved By: _____

DMS1S/060194

Date: _____

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No.

Iwm - 94-5CC

Chain of Custody

ARCO Facility no.

A601

City

(Facility)

San Leandro

Project manager

(Consultant)

Tom De Sen

ARCO engineer

M.W

Telephone no.

(ARCO) 415 571 2434

Telephone no.

(Consultant) 408/942 8955

Fax no.

(Consultant) 408/942 1499

Consultant name

I.W.M.

Address

(Consultant)

950 Ames av. Milp. CA 95035

Laboratory name

Columbia

Contract number

07077

Method of shipment

 CAS
courier

Special detection

Limit/reporting

Special QA/QC

Remarks

 OK
on
FB-1
USE T.B.
AS 601

Lab number

5940871

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:

cool

Relinquished by sampler

John Saldi

Date

8/5/94

Time

1400

Received by

Relinquished by

Date

Time

Received by

Relinquished by

Date

Time

Received by Laboratory

Date

8-5-94

Time

1400

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

APPC-3292 (2-91)

20F2



August 19, 1994

Service Request No. S940871

Gina Austin
Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: **ARCO Facility No. 601**

Dear Ms. Austin/Mr. DeLon:

Attached are the results of the water samples submitted to our lab on August 5, 1994. For your reference, these analyses have been assigned our service request number S940871.

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.

A handwritten signature in dark ink, appearing to read "Keoni A. Murphy", is written over the printed name.

Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Regional QA Coordinator

KAM/ajb

COLUMBIA ANALYTICAL SERVICES, Inc.



Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
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
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
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
NR	Not Requested
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
VPH	Volatile Petroleum Hydrocarbons

COLUMBIA ANALYTICAL SERVICES, INC.



Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: 8/11/94
Date Analyzed: 8/12/94

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

Sample Name	Lab Code	MRL	Result
MW-8 (9.6)	S940871-006	0.5	0.7
Method Blank	S940811-WB	0.5	ND

Approved By: _____

Date: _____

August 19, 1994

1AMRL/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: 8/15/94
Date Analyzed: 8/15/94

TPH as Diesel
EPA Method 3510/California DHS LUFT Method
Units: ug/L (ppb)

Sample Name	Lab Code	MRL	Result
MW-8 (9.6)	S940871-006	50	ND
Method Blank	S940815-WB	50	ND

Approved By: _____

IAMRL/060194

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: NA
Date Analyzed: 8/12-15/94

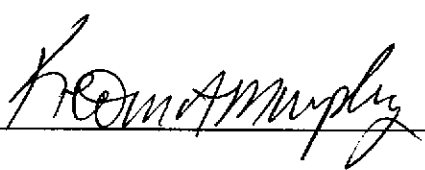
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

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-2 (10.6)	S940871-002	2,300	180	<2.5 *	<2.5 *	230
MW-3 (11.1)	S940871-003	64,000	4,200	7,600	1,700	12,000
MW-4 (8.1)	S940871-004	1,300	360	17	<5 *	190
MW-5 (9.4)	S940871-005	57,000	14,000	3,200	1,200	7,200
MW-8 (9.6)	S940871-006	1,200	1.5	<1 *	6.7	<1 *
MW-11 (10.5)	S940871-007	390	ND	<0.7 **	1.9	2.2
MW-12 (10.9)	S940871-008	ND	ND	ND	ND	ND
MW-13 (11.1)	S940871-009	ND	ND	ND	ND	ND
MW-14 (12)	S940871-010	ND	ND	ND	ND	ND
MW-15 (8.2)	S940871-011	ND	ND	ND	ND	ND
Method Blank	S940812-WB	ND	ND	ND	ND	ND
Method Blank	S940815-WB	ND	ND	ND	ND	ND

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

** Raised MRL due to matrix interference.

Approved By: 

Date: August 19, 1994

5ABTXGAS/061694

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601

Service Request: S940871
Date Analyzed: 8/12/94

Initial Calibration Verification (ICV) Summary
Total Recoverable Petroleum Hydrocarbons
EPA Method 418.1
Units: ppm

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Hydorcarbon Mixture	40	43.1	108	90-110

Approved By: _____

Date: _____

ICV25AL/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: 8/11/94
Date Analyzed: 8/12/94

Matrix Spike/Duplicate Matrix Spike Summary
Total Recoverable Petroleum Hydrocarbons
EPA Method 418.1
Units: mg/L (ppm)

Sample Name: MW-8 (9.6)
Lab Code: S940871-006

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
Hydrocarbon Mixture	8.0	8.0	0.7	6.69	7.28	75	82	57-127	8

Approved By: *K. Murphy*Date: *Aug 19, 1994*

DMSIS/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: 8/15/94
Date Analyzed: 8/15/94

Surrogate Recovery Summary
TPH as Diesel
EPA Method 3510/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery p-Terphenyl
MW-8 (9.6)	S940871-006	91
MS	S940874-011MS	90
DMS	S940874-011DMS	76
Method Blank	S940815-WB	93

CAS Acceptance Limits: 66-123

Approved By: _____

Date: _____

SUR1/062994

COLUMBIA ANALYTICAL SERVICES, INC.



QA/QC Report

Client: IWM
Project: ARCO Facility No. 601

Service Request: S940871
Date Analyzed: 8/15/94

Initial Calibration Verification (ICV) Summary
TPH as Diesel
California DHS LUFT Method
Units: ppm

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
TPH as Diesel	500	471	94	90-110

Approved By: _____

Date: _____

ICV25AL/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

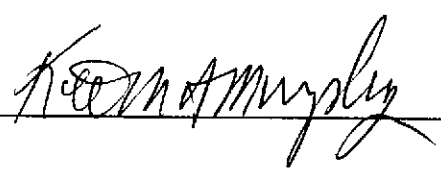
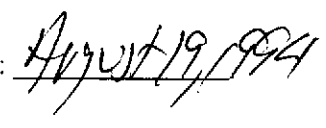
Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: 8/15/94
Date Analyzed: 8/15/94

Matrix Spike/Duplicate Matrix Spike Summary
TPH as Diesel
EPA Method 3510/California DHS LUFT Method
Units: ug/L (ppb)

Sample Name: Batch QC
Lab Code: S940874-011

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
						MS	DMS		
	MS	DMS		MS	DMS				
TPH as Diesel	4,000	4,000	ND	4,360	4,390	109	110	61-141	<1

Approved By: Date: 

DMSIS/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: NA
Date Analyzed: 8/12-15/94

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-2 (10.6)	S940871-002	104
MW-3 (11.1)	S940871-003	101
MW-4 (8.1)	S940871-004	87
MW-5 (9.4)	S940871-005	98
MW-8 (9.6)	S940871-006	107
MW-11 (10.5)	S940871-007	91
MW-12 (10.9)	S940871-008	94
MW-13 (11.1)	S940871-009	96
MW-14 (12)	S940871-010	95
MW-15 (8.2)	S940871-011	96
MW-12 (10.9) MS	S940871-008MS	104
MW-12 (10.9) DMS	S940871-008DMS	104
Method Blank	S940812-WB	93
Method Blank	S940815-WB	95

CAS Acceptance Limits: 69-116

Approved By: 

Date: August 19, 1994

SUR1/062994

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report



Client: IWM
Project: ARCO Facility No. 601

Service Request: S940871
Date Analyzed: 8/12/94

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	27.2	109	85-115
Toluene	25	26.0	104	85-115
Ethylbenzene	25	26.1	104	85-115
Xylenes, Total	75	76.5	102	85-115
Gasoline	250	238	95	90-110

Approved By: _____

Date: _____

ICV25AL/060194

COLUMBIA ANALYTICAL SERVICES, INC.



QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Service Request: S940871
Date Collected: 8/4/94
Date Received: 8/5/94
Date Extracted: NA
Date Analyzed: 8/12/94

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

Sample Name: MW-12 (10.9)
Lab Code: S940871-008

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery			Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS	CAS Acceptance Limits	
Gasoline	250	250	ND	238	234	95	94	67-121	2

Approved By: _____

DMSIS/060194

Date: _____

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No.

Twm-94-522

Chain of Custody

ARCO Facility no. A 601	City (Facility) San Leandro	Project manager (Consultant) Tom De Sen	Laboratory name Columbia
ARCO engineer M.W.	Telephone no. (ARCO) 415 512434	Telephone no. (Consultant) 408/942 8955	Contract number 07077
Consultant name Twm	Address (Consultant) 950 Ames av. Milp CA 95035		Method of shipment CAS courier

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M802/8020/8015	TPH Modified 8015 Gas Diesel	Oil and Grease 413.1 413.2	TPH EPA 418.1/MS03E	EPA 601/8010	EPA 824/8240	EPA 8270/270	TCIP Metals ☐ VOA ☐ VOC ☐	CAN Metals EPA 8210/7000	ITLC ☐ STLC ☐	Lead Org./OHS ☐ Lead EPA 7420/7421 ☒	TPH Diesel
			Soil	Water	Other	Ice	Acid HCL															
FB-1	1	2		✓		✓	✓	8-4-94	700		✓	✓										
MW-2	2	2		✓		✓	✓		1034		✓	✓										
MW-3	3	2		✓		✓	✓		1255		✓	✓										
MW-4	4	2		✓		✓	✓		1240		✓	✓										
MW-5	5	2		✓		✓	✓		1227		✓	✓										
MW-8	6	10		✓		✓	✓		1109		✓	✓		✓		✓		✓	✓	✓		
MW-11	7	2		✓		✓	✓		1210		✓	✓										
MW-12	8	2		✓		✓	✓		1016		✓	✓										
MW-13	9	2		✓		✓	✓		955		✓	✓										
MW-14	10	2		✓		✓	✓		1008		✓	✓										
MW-15	11	2		✓		✓	✓	00	1150		✓	✓										

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

Priority Rush 1 Business Day ☐

Rush 2 Business Days ☐

Expedited 5 Business Days ☐

Standard 10 Business Days ☒

Condition of sample:	Temperature received:
Relinquished by sampler John Valdez	Received by
Relinquished by	Received by
Relinquished by	Received by laboratory

Date 8-5-94 Time 1400

Date Time

Date Time

Cool

Received by

Received by

Received by laboratory

Date 8-5-94 Time 1400

RECEIVED AUG 22 1994



August 19, 1994

Service Request No.: K944784S

Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: ARCO A601 Project/SJ940871

Dear Tom:

Enclosed are the results of the sample(s) submitted to our laboratory on August 9, 1994. For your reference, these analyses have been assigned our service request number K944784S.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (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. My extension is 239.

Respectfully submitted,

Columbia Analytical Services, Inc.

A handwritten signature in dark ink, appearing to read "Howard Boorse", is written over a horizontal line.

Howard Boorse
Project Chemist

HB/td

Page 1 of 16

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
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
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
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

00002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
Project: ARCO A601
Matrix: Water

Date Received: 8/9/94
Work Order No.: K944784S

Total Metals
 $\mu\text{g/L}$ (ppb)

Sample Name: MW-8 **Method Blank**
Lab Code: K478401 K4784MB

Analyte	EPA Method	MRL		
Cadmium	6010A	3	ND	ND
Chromium	6010A	5	6	ND
Lead	7421	2	3	ND
Nickel	6010A	20	ND	ND
Zinc	6010A	10	27	ND

MET.GW(1,2,3)03-13-92

Approved: 

Date: 8/19/94 Page No.:

00003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
 Project: ARCO A601
 Sample Matrix: Water

Date Received: 08/09/94
 Date Extracted: 08/10/94
 Date Analyzed: 08/16/94
 Service Request No.: K944784S

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3520/8270
 $\mu\text{g/L}$ (ppb)

Sample Name: MW-8
 Lab Code: K944784-001

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	25	ND	2,6-Dinitrotoluene	10	ND
Aniline	25	ND	Diethyl Phthalate	10	ND
Bis(2-chloroethyl) Ether	10	ND	4-Chlorophenyl Phenyl Ether	10	ND
1,2-Dichlorobenzene	10	ND	Fluorene	10	ND
1,3-Dichlorobenzene	10	ND	4-Nitroaniline	25	ND
1,4-Dichlorobenzene	10	ND	N-Nitrosodiphenylamine	10	ND
Bis(2-chloroisopropyl) Ether	10	ND	4-Bromophenyl Phenyl Ether	10	ND
N-Nitrosodi-n-propylamine	10	ND	Hexachlorobenzene	10	ND
Hexachloroethane	10	ND	Phenanthrene	10	ND
Nitrobenzene	10	ND	Anthracene	10	ND
Isophorone	10	ND	Di-n-butyl Phthalate	10	ND
Bis(2-chloroethoxy)methane	10	ND	Fluoranthene	10	ND
1,2,4-Trichlorobenzene	10	ND	Pyrene	10	ND
Naphthalene	10	11	Butylbenzyl Phthalate	10	ND
4-Chloroaniline	10	ND	3,3'-Dichlorobenzidine	25	ND
Hexachlorobutadiene	10	ND	Benz(a)anthracene	10	ND
2-Methylnaphthalene	10	ND	Bis(2-ethylhexyl) Phthalate	10	10
Hexachlorocyclopentadiene	10	ND	Chrysene	10	ND
2-Chloronaphthalene	10	ND	Di-n-octyl Phthalate	10	ND
2-Nitroaniline	25	ND	Benzo(b)fluoranthene	10	ND
Dimethyl Phthalate	10	ND	Benzo(k)fluoranthene	10	ND
Acenaphthylene	10	ND	Benzo(a)pyrene	10	ND
3-Nitroaniline	25	ND	Indeno(1,2,3-c,d)pyrene	10	ND
Acenaphthene	10	ND	Dibenz(a,h)anthracene	10	ND
Dibenzofuran	10	ND	Benzo(g,h,i)perylene	10	ND
2,4-Dinitrotoluene	10	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	10	ND	2,4-Dichlorophenol	10	ND
2-Chlorophenol	10	ND	4-Chloro-3-methylphenol	10	ND
Benzyl Alcohol	10	ND	2,4,6-Trichlorophenol	10	ND
2-Methylphenol	10	ND	2,4,5-Trichlorophenol	10	ND
3- and 4-Methylphenol*	10	ND	2,4-Dinitrophenol	25	ND
2-Nitrophenol	10	ND	4-Nitrophenol	25	ND
2,4-Dimethylphenol	10	ND	2-Methyl-4,6-dinitrophenol	25	ND
Benzoic Acid	25	ND	Pentachlorophenol	25	ND

* Quantified as 4-methylphenol.

Approved by



Date

8/19/94

00001

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
 Project: ARCO A601
 Sample Matrix: Water

Date Received: NA
 Date Extracted: 08/10/94
 Date Analyzed: 08/16/94
 Service Request No.: K944784S

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3520/8270
 $\mu\text{g/L}$ (ppb)

Sample Name: Method Blank
 Lab Code: K940810-WB1

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	25	ND	2,6-Dinitrotoluene	10	ND
Aniline	25	ND	Diethyl Phthalate	10	ND
Bis(2-chloroethyl) Ether	10	ND	4-Chlorophenyl Phenyl Ether	10	ND
1,2-Dichlorobenzene	10	ND	Fluorene	10	ND
1,3-Dichlorobenzene	10	ND	4-Nitroaniline	25	ND
1,4-Dichlorobenzene	10	ND	N-Nitrosodiphenylamine	10	ND
Bis(2-chloroisopropyl) Ether	10	ND	4-Bromophenyl Phenyl Ether	10	ND
N-Nitrosodi-n-propylamine	10	ND	Hexachlorobenzene	10	ND
Hexachloroethane	10	ND	Phenanthrene	10	ND
Nitrobenzene	10	ND	Anthracene	10	ND
Isophorone	10	ND	Di-n-butyl Phthalate	10	ND
Bis(2-chloroethoxy)methane	10	ND	Fluoranthene	10	ND
1,2,4-Trichlorobenzene	10	ND	Pyrene	10	ND
Naphthalene	10	ND	Butylbenzyl Phthalate	10	ND
4-Chloroaniline	10	ND	3,3'-Dichlorobenzidine	25	ND
Hexachlorobutadiene	10	ND	Benz(a)anthracene	10	ND
2-Methylnaphthalene	10	ND	Bis(2-ethylhexyl) Phthalate	10	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	10	ND
2-Chloronaphthalene	10	ND	Di-n-octyl Phthalate	10	ND
2-Nitroaniline	25	ND	Benzo(b)fluoranthene	10	ND
Dimethyl Phthalate	10	ND	Benzo(k)fluoranthene	10	ND
Acenaphthylene	10	ND	Benzo(a)pyrene	10	ND
3-Nitroaniline	25	ND	Indeno(1,2,3-c,d)pyrene	10	ND
Acenaphthene	10	ND	Dibenz(a,h)anthracene	10	ND
Dibenzofuran	10	ND	Benzo(g,h,i)perylene	10	ND
2,4-Dinitrotoluene	10	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	10	ND	2,4-Dichlorophenol	10	ND
2-Chlorophenol	10	ND	4-Chloro-3-methylphenol	10	ND
Benzyl Alcohol	10	ND	2,4,6-Trichlorophenol	10	ND
2-Methylphenol	10	ND	2,4,5-Trichlorophenol	10	ND
3- and 4-Methylphenol*	10	ND	2,4-Dinitrophenol	25	ND
2-Nitrophenol	10	ND	4-Nitrophenol	25	ND
2,4-Dimethylphenol	10	ND	2-Methyl-4,6-dinitrophenol	25	ND
Benzoic Acid	25	ND	Pentachlorophenol	25	ND

* Quantified as 4-methylphenol.

Approved by



Date

8/19/94

00005

APPENDIX A
LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO A601
Matrix: Water

Date Received: 8/9/94
Work Order No.: K944784S

Duplicate Summary
Total Metals
µg/L (ppb)

Sample Name: MW-8
Lab Code: K478401

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Cadmium	6010A	3	ND	ND	ND	-
Chromium	6010A	5	6	ND	NC	NC
Lead	7421	2	3	4	4	25
Nickel	6010A	20	ND	ND	ND	-
Zinc	6010A	10	27	24	26	12

METD.GW/03-13-92

Approved: 

Date: 8/19/94

Page No.:

00007

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO A601
Matrix: Water

Date Received: 8/9/94
Work Order No.: K944784S

Matrix Spike Summary
Total Metals
µg/L (ppb)

Sample Name: MW-8
Lab Code: K478401

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Cadmium	3	50	ND	49	98	75-125
Chromium	5	200	6	201	98	75-125
Lead	2	20	3	25	110	75-125
Nickel	20	500	ND	505	101	75-125
Zinc	10	500	27	501	95	75-125

METMS.W/03-13-92

Approved: _____



Date: 8/19/94

Page No.:

00003

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO A601
LCS Matrix: Water

Work Order No.: K944784S

Laboratory Control Sample Summary
Total Metals
µg/L (ppb)

Source: CAS Spike Solution

Analyte	EPA Method	True Value	Result	Percent Recovery	CAS
					Percent Recovery Acceptance Criteria
Cadmium	6010A	50	48.8	98	80-120
Chromium	6010A	200	208	104	80-120
Lead	7421	20	20.1	101	80-120
Nickel	6010A	500	524	105	80-120
Zinc	6010A	500	511	102	80-120

Approved: 

Date: 8/19/94 Page No.:

00009

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO A601

Service Request: K944784S

Initial Calibration Verification (ICV) Summary
Units: µg/L (ppb)

Analyte	EPA Method	True Value	Result	Percent Recovery
Cadmium	6010A	1250	1310	105
Chromium	6010A	500	521	104
Lead	7421	25.0	25.6	102
Nickel	6010A	1250	1310	105
Zinc	6010A	1250	1300	104

ICV Source: Inorganic Ventures ICV

Approved By: 

Date: 8/19/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO A601
Sample Matrix: Water

Date Received: 08/09/94
Date Extracted: 08/10/94
Date Analyzed: 08/16/94
Service Request No.: K944784S

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3520/8270

Sample Name	Lab Code	P e r c e n t R e c o v e r y					TPH
		2FP	PHL	TBP	NBZ	FBP	
Method Blank	K940810-WB1	76	84	78	69	73	92
Laboratory Control Sample	K940810-WL1	73	85	89	71	74	95
MW-8	K944784-001	63	71	74	68	74	44

EPA Acceptance Criteria	21-100	10-94	10-123	35-114	43-116	33-141
-------------------------	--------	-------	--------	--------	--------	--------

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

Approved by _____



Date _____

8/16/94

00011

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO A601
Sample Matrix: Water

Date Received: NA
Date Extracted: 08/10/94
Date Analyzed: 08/16/94
Service Request No.: K944784S

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3520/8270

Sample Name	Lab Code	P e r c e n t R e c o v e r y					TPH
		2FP	PHL	TBP	NBZ	FBP	
Batch QC	K944745-001	79	87	87	77	73	88
Batch QC	K944745-001MS	73	84	90	72	75	86
Batch QC	K944745-001DMS	78	42	91	76	76	87

EPA Acceptance Criteria	21-100	10-94	10-123	35-114	43-116	33-141
-------------------------	--------	-------	--------	--------	--------	--------

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

Approved by _____

Date _____

00012

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO A601
Sample Matrix: Water

Date Received: NA
Date Extracted: 08/10/94
Date Analyzed: 08/16/94
Service Request No.: K944784S

Matrix Spike/Duplicate Matrix Spike Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3520/8270
 $\mu\text{g/L}$ (ppb)

Sample Name: Batch QC
Lab Code: K9444745-001

Percent Recovery

Analyte	Spike Level		Sample Result	Spike Result				EPA Acceptance Criteria	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
Phenol	400	400	ND	220	210	55	52	12-89	5
2-Chlorophenol	400	400	ND	230	220	58	55	27-123	4
1,4-Dichlorobenzene	200	200	ND	130	150	65	75	36-97	14
N-Nitrosodi-n-propylamine	200	200	ND	130	88	65	44	41-116	39
1,2,4-Trichlorobenzene	200	200	ND	130	140	65	70	39-98	7
4-Chloro-3-methylphenol	400	400	ND	260	290	65	72	23-97	11
Acenaphthene	200	200	ND	160	170	80	85	46-118	6
4-Nitrophenol	400	400	ND	260	300	65	75	10-80	14
2,4-Dinitrotoluene	200	200	ND	140	150	70	75	24-96	7
Pentachlorophenol	400	400	ND	270	310	68	78	9-103	14
Pyrene	200	200	ND	170	170	85	85	26-127	<1

Approved by



Date

8/19/94

00013

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO A601
LCS Matrix: Water

Date Extracted: 08/10/94
Date Analyzed: 08/16/94
Service Request No.: K944784S

Laboratory Control Sample Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3520/8270
 $\mu\text{g/L}$ (ppb)

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Phenol	100	65	65	5-112
2-Chlorophenol	100	66	66	23-134
1,4-Dichlorobenzene	100	74	74	20-124
N-Nitrosodi-n-propylamine	100	73	73	D-230
1,2,4-Trichlorobenzene	100	73	73	44-142
4-Chloro-3-methylphenol	100	67	67	22-147
Acenaphthene	100	86	86	47-145
4-Nitrophenol	100	57	57	D-132
2,4-Dinitrotoluene	100	73	73	39-139
Pentachlorophenol	100	30	30	14-176
Pyrene	100	102	102	52-115

D Detected; result must be greater than zero.

Approved by _____

Date

8/19/94

00014

APPENDIX B
CHAIN OF CUSTODY INFORMATION

ARCO Products Company

Division of AtlanticRichfield Company

Task Order No.

Twm-94-5CC

Chain of Custody

ARCO Facility no.

A 601

City
(Facility)

San Leandro

Project manager
(Consultant)

Tom De San

ARCO engineer

M.W.

Telephone no.
(ARCO)

415 5112434

Telephone no.
(Consultant)

408/942 8955

Fax no.
(Consultant)

408/942 1499

Consultant name

Twm

Address
(Consultant)

950 Ames av. Milp CA 95035

Laboratory name

Columbia

Contract number

07077

Method of shipment

CAS
CourierSpecial detection
Limit/reporting

Special QA/QC

Remarks

Pbld
on
PB-1

Lab number

5940871

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 sample:

Date

Time

Received by

Relinquished by

Date

Time

Received by

Relinquished by

Date

Time

Received by laboratory

Date

Time

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

APPC-3292 (2-91)

10F7.

00016