

3/96 report

~~Exxon~~

ARCO

712 Lewelling

San Leandro



EMCON

ENVIRONMENTAL
PROTECTION
96 MAR 21 PM 2:32



**EMCON**

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

Date March 31, 1996
Project 20805-121.002

To:

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

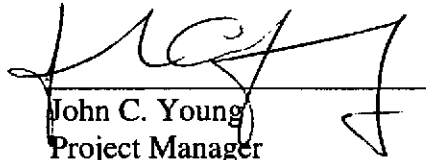
We are enclosing:

Copies	Description
<u>1</u>	<u>Fourth quarter 1995 groundwater monitoring results</u>
	<u>for ARCO service station 601, San Leandro, California</u>
<u>1</u>	<u>John Sullivan letter</u>

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

Comments:

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


John C. Young
Project Manager

cc: Kevin Graves, RWQCB - SFBR
Mike Bakaldin, SLFD
Michael Whelan, ARCO Products Company
Ivy Inouye, EMCON
File

06 MAR 21 PM 2:32
AIR
PROTECTION
ENVIRONMENTAL



Date:

March 31, 1996

Re: ARCO Station #

601 • 712 Lewelling Boulevard • San Leandro, CA
Fourth Quarter 1995 Groundwater Monitoring Results

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

Submitted by:

A handwritten signature in black ink, reading "Michael R. Whelan". The signature is written in a cursive, flowing style.

Michael R. Whelan
Environmental Engineer



EMCON

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

March 14, 1996
Project 20805-121.002

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

Re: Fourth quarter 1995 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 fourth quarter of 1995. These wells are located at Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California. The groundwater samples were collected on November 27, 1995, during quarterly sampling of the ARCO Products Company service station 601, 712 Lewelling Boulevard, San Leandro. The laboratory analytical results indicate that the groundwater sample concentrations were not detectable for total petroleum hydrocarbons as gasoline, and the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes.

Please call if you have questions.

Sincerely,

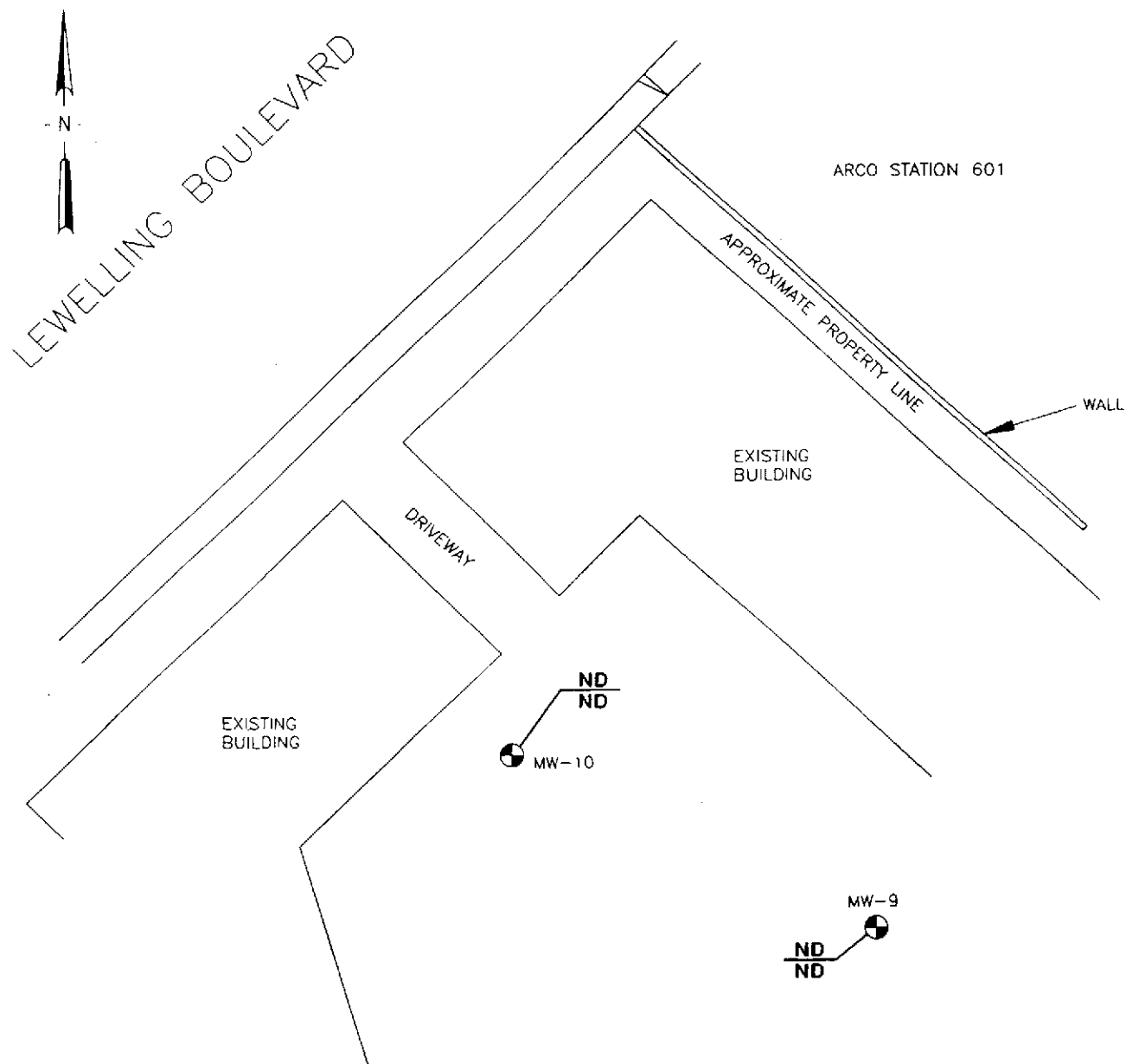
EMCON


John C. Young
Project Manager

Attachments: Figure 1 - Generalized Site Plan
Copy of Analytical Results and Chain-of-Custody Documentation,
Wells MW-9 and MW-10, Fourth Quarter 1995

cc: Scott Seery, ACHCSA
Kevin Graves, RWQCB - SFBR
Mike Whelan, ARCO Products Company
Ivy Inouye, EMCON
File





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

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

GENERALIZED SITE PLAN

FIGURE

1

PROJECT NO.
805-121.02



December 11, 1995

Service Request No: S9501493

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **0805-121.02 / TO# 17075.00 / 601 San Leandro**

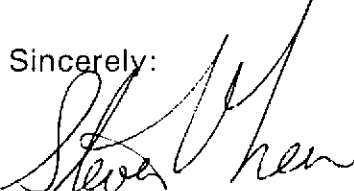
Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on November 27, 1995. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above - to help expedite our service please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 7, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely:


Steven L. Green
Project Chemist


Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

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

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501493
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/5/95

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

Analyte:	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	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	Ethylbenzene	Xylenes, Total
MW-9 (16)	S9501493-001	ND	ND	ND	ND	ND
MW-10 (18)	S9501493-002	ND	ND	ND	ND	ND
Method Blank	S951205-WB	ND	ND	ND	ND	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501493
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/5/95

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

Sample Name	Lab Code	PID Detector	FID Detector
		Percent Recovery 4-Bromofluorobenzene	Percent Recovery α,α,α -Trifluorotoluene
MW-9 (16)	S9501493-001	93	98
MW-10 (18)	S9501493-002	94	103
MW-9 (16) MS	S9501493-001MS	96	102
MW-9 (16) DMS	S9501493-001DMS	95	96
Method Blank	S951205-WB	94	100

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro

Service Request: S9501493
Date Analyzed: 12/5/95

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

Analyte	True Value	Result	Percent Recovery	CAS
				Percent Recovery Acceptance Limits
Benzene	25	24.5	98	85-115
Toluene	25	24.5	98	85-115
Ethylbenzene	25	24.4	98	85-115
Xylenes, Total	75	74.9	100	85-115
Gasoline	250	262	105	90-110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501493
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/5/95

Matrix Spike/Duplicate Matrix Spike Summary

BTE

EPA Methods 5030/8020

Units: ug/L (ppb)

Sample Name: MW-9 (16)
Lab Code: S9501493-001

Percent Recovery

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
Benzene	25	25	ND	24.4	24.1	98	96	75-135	1
Toluene	25	25	ND	24.5	24.2	98	97	73-136	1
Ethylbenzene	25	25	ND	24.4	24.1	98	96	69-142	1

601

City
(Facility)

San Leandro

Project manager
(Consultant)

John Young

Mike Whelan

Telephone no.
(ARCO)

Telephone no.
(Consultant)

408) 453-7300

Fax no.

1981) 40

EMCON

Address
(Consultant)

1921 Rincwood Ave. San Jose CA 95131

CAS

Contract number

Sampler
will
deliver

Lowest Possible

As Normal

Please report
MW-9 & MW-10
on a separate
CAR.

89501493

Turnaround time

Priority Rush

1 Business Day

Rush

2 Business Days

Expedited

5 Business Days

Standard

10 Business Day

Relinquished by sampler

Relinquished by

Relinquished by

Temperature received:

Received by

Received by

Received by laboratory

Date _____

Time

**EMCON**

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

March 14, 1996
Project 20805-121.002

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

Re: Fourth quarter 1995 groundwater monitoring program results, ARCO service station 601, San Leandro, California

Dear Mr. Whelan:

This letter presents the results of the fourth quarter 1995 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.

MONITORING PROGRAM FIELD PROCEDURES

A program of quarterly groundwater monitoring was initiated during the third quarter of 1990 to provide information concerning water quality, flow direction, and gradient consistent with ACHCSA and Regional Water Quality Control Board (RWQCB) requirements for underground fuel tank investigations. Water levels are measured quarterly in wells MW-1 through MW-15. Wells MW-13 and MW-14 are sampled annually, during the first quarter of the year. Wells MW-12 and MW-15 are sampled semiannually, during the first and third quarters of the year. Wells MW-1 through MW-11 are sampled quarterly.

Beginning with the first quarter of 1996, wells MW-2, MW-7, MW-11, MW-12, MW-13, and MW-14 will be sampled annually, during the first quarter of the year. Wells MW-9, MW-10, and MW-15 will be sampled semiannually, during the first and third quarters of the year. Wells MW-1, MW-3, MW-4, MW-5, MW-6, and MW-8 will be sampled quarterly. Water levels will be measured in all wells quarterly.

EMCON performed the fourth quarter 1995 groundwater monitoring event on November 27, 1995. Field work this quarter included (1) measuring depths to groundwater and subjectively analyzing groundwater for the presence of floating product in wells MW-1 through MW-15, (2) purging and subsequently sampling groundwater monitoring wells MW-1 through MW-11 for laboratory analysis, and (3) directing a state-certified laboratory to analyze the groundwater samples. Floating product was observed in wells MW-1 (sheen) and MW-3 (0.01 foot thick) on November 27, 1995, however these wells were sampled during the fourth quarter of 1995. Copies of all field



data sheets from the fourth quarter 1995 groundwater monitoring event are included in Appendix A.

MONITORING PROGRAM RESULTS

Results of the fourth quarter 1995 groundwater monitoring event are summarized in Table 1 and illustrated in Figure 2. Historical groundwater elevation data are summarized in Table 2. Table 3 summarizes historical analytical data for analysis of petroleum hydrocarbons and their constituents. Table 4 summarizes historical analytical data for metals analyses. Historical analytical data for volatile organic compound (VOC) and semivolatile organic compound (SVOC) analyses for wells MW-1, 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 fourth quarter 1995 analytical results and chain-of-custody documentation are included in Appendix B.

Groundwater elevation data collected on November 27, 1995, indicate that groundwater beneath the site flows south-southwest with an approximate hydraulic gradient of 0.004 foot per foot. Figure 2 illustrates groundwater contours and analytical data for the fourth quarter of 1995.

LIMITATIONS

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

SITE STATUS UPDATE

This update reports the site activities performed during the fourth quarter of 1995 and those anticipated for the first quarter of 1996.

Fourth Quarter 1995 Activities

- Prepared and submitted quarterly groundwater monitoring report for third quarter 1995.
- Performed quarterly groundwater monitoring for fourth quarter 1995.

Mr. Michael Whelan
March 14, 1996
Page 3

Project 20805-121.002

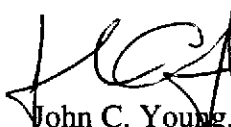
Work Anticipated for First Quarter 1996

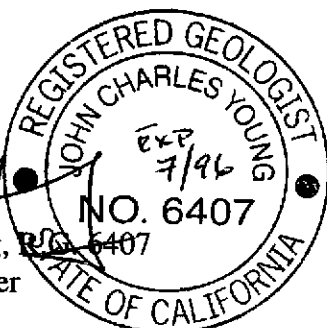
- Prepare and submit quarterly groundwater monitoring report for fourth quarter 1995.
- Perform quarterly groundwater monitoring for first quarter 1996.
- Evaluate feasibility of installing oxygen releasing compounds (ORCs) into groundwater.

Please call if you have questions.

Sincerely,

EMCON


John C. Young, R.G. 6407
Project Manager



Attachments: Table 1 - Groundwater Monitoring Data, Fourth Quarter 1995
Table 2 - Historical Groundwater Elevation Data
Table 3 - Historical Groundwater Analytical Data, Petroleum Hydrocarbons and Their Constituents
Table 4 - Historical Groundwater Analytical Data, Metals
Table 5 - Historical Groundwater Analytical Data, Volatile and Semivolatile Organic Compounds
Table 6 - Approximate Cumulative Floating Product Recovered, Monitoring Well MW-1
Figure 1 - Site Location
Figure 2 - Groundwater Data, Fourth Quarter 1995
Appendix A - Field Data Sheets, Fourth Quarter 1995 Groundwater Monitoring Event
Appendix B - Analytical Results and Chain-of-Custody Documentation, Fourth Quarter 1995

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

Table 1
Groundwater Monitoring Data
Fourth Quarter 1995

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

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	11-27-95	22.26	8.42	13.84	Sheen	SSW	0.004	11-27-95	310000	4600	770	5700	21000	--	--	--	--
MW-2	11-27-95	21.33	7.39	13.94	ND	SSW	0.004	11-27-95	3200	230	12	77	90	--	--	--	--
MW-3	11-27-95	20.11	6.76	** 13.36	0.01	SSW	0.004	11-27-95	150000	5100	8800	3900	21000	--	--	--	--
MW-4	11-27-95	20.75	7.87	12.88	ND	SSW	0.004	11-27-95	3800	890	130	130	550	--	--	--	--
MW-5	11-27-95	20.90	7.13	13.77	ND	SSW	0.004	11-27-95	43000	7900	3300	950	4900	--	--	--	--
MW-6	11-27-95	22.08	8.21	13.87	ND	SSW	0.004	11-27-95	6700	1800	<20*	480	230	--	--	--	--
MW-7	11-27-95	22.89	9.15	13.74	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	0.9	<0.5	--	--	--	--
MW-8	11-27-95	20.97	7.60	13.37	ND	SSW	0.004	11-27-95	620	<0.5	<0.5	<0.5	0.5	--	560	900	510^
MW-9	11-27-95	20.89	8.38	12.51	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	11-27-95	21.12	8.38	12.74	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	11-27-95	22.38	8.48	13.90	ND	SSW	0.004	11-27-95	340	<0.5	<0.5	2.2	1.6	--	--	--	--
MW-12	11-27-95	22.77	8.95	13.82	ND	SSW	0.004	11-27-95	Not sampled; not scheduled for chemical analysis								
MW-13	11-27-95	22.45	7.98	14.47	ND	SSW	0.004	11-27-95	Not sampled; not scheduled for chemical analysis								
MW-14	11-27-95	22.99	9.19	13.80	ND	SSW	0.004	11-27-95	Not sampled; not scheduled for chemical analysis								
MW-15	11-27-95	19.19	6.42	12.77	ND	SSW	0.004	11-27-95	Not sampled; not scheduled for chemical analysis								

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

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

ft/ft: foot per foot

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

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: methyl-tert-butyl ether

TRPH: total recoverable petroleum hydrocarbons

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

SSW: south-southwest

-- : not analyzed

ND: none detected

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

* : method reporting limit was raised due to high analyte concentration requiring sample dilution

^ : chromatogram fingerprint is not characteristic of diesel

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient 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
MW-1	11-20-94	22.26	7.81	14.45	Sheen	SW	0.002
MW-1	03-17-95	22.26	6.57	15.69	ND	WSW	0.006
MW-1	06-01-95	22.26	7.87	14.39	ND	SW	0.003
MW-1	08-31-95	22.26	8.12	** 14.15	0.01	SSW	0.005
MW-1	11-27-95	22.26	8.42	13.84	Sheen	SSW	0.004

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient 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
MW-2	11-20-94	21.33	6.86	14.47	ND	SW	0.002
MW-2	03-17-95	21.33	6.12	15.21	ND	WSW	0.006
MW-2	06-01-95	21.33	6.56	14.77	ND	SW	0.003
MW-2	08-31-95	21.33	7.18	14.15	ND	SSW	0.005
MW-2	11-27-95	21.33	7.39	13.94	ND	SSW	0.004

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
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
MW-3	11-20-94	20.11	5.88	14.23	ND	SW	0.002
MW-3	03-17-95	20.11	5.46	14.65	ND	WSW	0.006
MW-3	06-01-95	20.11	6.34	13.77	ND	SW	0.003
MW-3	08-31-95	20.11	6.60	** 13.52	0.02	SSW	0.005
MW-3	11-27-95	20.11	6.76	** 13.36	0.01	SSW	0.004

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
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
MW-4	11-20-94	20.75	7.73	13.02	ND	SW	0.002
MW-4	03-17-95	20.75	6.65	14.10	ND	WSW	0.006
MW-4	06-01-95	20.75	7.25	13.50	ND	SW	0.003
MW-4	08-31-95	20.75	7.75	13.00	ND	SSW	0.005
MW-4	11-27-95	20.75	7.87	12.88	ND	SSW	0.004

Table 2
Historical Groundwater Elevation Data

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

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
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
MW-5	11-20-94	20.90	6.34	14.56	ND	SW	0.002
MW-5	03-17-95	20.90	5.51	15.39	ND	WSW	0.006
MW-5	06-01-95	20.90	6.55	14.35	ND	SW	0.003
MW-5	08-31-95	20.90	6.80	14.10	ND	SSW	0.005
MW-5	11-27-95	20.90	7.13	13.77	ND	SSW	0.004

Table 2
Historical Groundwater Elevation Data

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

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
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
MW-6	11-20-94	22.08	7.41	14.67	ND	SW	0.002
MW-6	03-17-95	22.08	6.66	15.42	ND	WSW	0.006
MW-6	06-01-95	22.08	7.60	14.48	ND	SW	0.003
MW-6	08-31-95	22.08	7.92	14.16	ND	SSW	0.005
MW-6	11-27-95	22.08	8.21	13.87	ND	SSW	0.004

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 601

712 Levee Boulevard, San Leandro, California

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
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
MW-7	11-20-94	22.89	8.72	14.17	ND	SW	0.002
MW-7	03-17-95	22.89	7.68	15.21	ND	WSW	0.006
MW-7	06-01-95	22.89	8.40	14.49	ND	SW	0.003
MW-7	08-31-95	22.89	9.09	13.80	ND	SSW	0.005
MW-7	11-27-95	22.89	9.15	13.74	ND	SSW	0.004

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
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
MW-8	11-20-94	20.97	6.78	14.19	ND	SW	0.002
MW-8	03-17-95	20.97	6.14	14.83	ND	WSW	0.006
MW-8	06-01-95	20.97	6.50	14.47	ND	SW	0.003
MW-8	08-31-95	20.97	7.35	13.62	ND	SSW	0.005
MW-8	11-27-95	20.97	7.60	13.37	ND	SSW	0.004

Table 2
Historical Groundwater Elevation Data

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

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
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-9	11-20-94	20.89	6.83	14.06	ND	SW	0.002
MW-9	03-17-95	20.89	6.94	13.95	ND	WSW	0.006
MW-9	06-01-95	20.89	8.15	12.74	ND	SW	0.003
MW-9	08-31-95	20.89	8.10	12.79	ND	SSW	0.005
MW-9	11-27-95	20.89	8.38	12.51	ND	SSW	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-10	11-20-94	21.12	7.05	14.07	ND	SW	0.002
MW-10	03-17-95	21.12	6.26	14.86	ND	WSW	0.006
MW-10	06-01-95	21.12	7.63	13.49	ND	SW	0.003
MW-10	08-31-95	21.12	8.17	12.95	ND	SSW	0.005
MW-10	11-27-95	21.12	8.38	12.74	ND	SSW	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
MW-11	11-20-94	22.38	7.73	14.65	ND	SW	0.002
MW-11	03-17-95	22.38	6.94	15.44	ND	WSW	0.006
MW-11	06-01-95	22.38	7.90	14.48	ND	SW	0.003
MW-11	08-31-95	22.38	8.18	14.20	ND	SSW	0.005
MW-11	11-27-95	22.38	8.48	13.90	ND	SSW	0.004

Table 2
Historical Groundwater Elevation Data

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

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient 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-12	11-20-94	22.77	8.06	14.71	ND	SW	0.002
MW-12	03-17-95	22.77	7.09	15.68	ND	WSW	0.006
MW-12	06-01-95	22.77	8.40	14.37	ND	SW	0.003
MW-12	08-31-95	22.77	8.55	14.22	ND	SSW	0.005
MW-12	11-27-95	22.77	8.95	13.82	ND	SSW	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
MW-13	11-20-94	22.45	7.68	14.77	ND	SW	0.002
MW-13	03-17-95	22.45	6.91	15.54	ND	WSW	0.006
MW-13	06-01-95	22.45	7.72	14.73	ND	SW	0.003
MW-13	08-31-95	22.45	7.58	14.87	ND	SSW	0.005
MW-13	11-27-95	22.45	7.98	14.47	ND	SSW	0.004

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 02-14-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient 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-14	11-20-94	22.99	8.66	14.33	ND	SW	0.002
MW-14	03-17-95	22.99	8.17	14.82	ND	WSW	0.006
MW-14	06-01-95	22.99	8.57	14.42	ND	SW	0.003
MW-14	08-31-95	22.99	9.05	13.94	ND	SSW	0.005
MW-14	11-27-95	22.99	9.19	13.80	ND	SSW	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
MW-15	11-20-94	19.19	5.31	13.88	ND	SW	0.002
MW-15	03-17-95	19.19	5.21	13.98	ND	WSW	0.006
MW-15	06-01-95	19.19	5.84	13.35	ND	SW	0.003
MW-15	08-31-95	19.19	6.18	13.01	ND	SSW	0.005
MW-15	11-27-95	19.19	6.42	12.77	ND	SSW	0.004

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 x 0.8)]

^^: anomalous data

SW: southwest

WSW: west-southwest

SSW: south-southwest

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

DRY: dry well; groundwater was not detected

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

Well Designation	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-1	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-1	11-20-94	Not sampled: well contained floating product								
MW-1	03-17-95	120000	5300	370	1500	13000	--	--	48000	6200^
MW-1	06-01-95	250000	7100	950	3500	21000	--	--	38000	190000^
MW-1	08-31-95	Not sampled: well contained floating product								
MW-1	11-27-95	310000	4600	770	5700	21000	--	--	--	--
MW-2	07-18-90	35000	3800	2900	690	3600	--	--	<5000	850^
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	--	--	<5000	--
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	--	--	--	--
MW-2	11-20-94	4900	170	150	120	390	--	--	--	--
MW-2	03-17-95	10000	460	77	260	550	--	--	--	--
MW-2	06-01-95	13000	400	78	210	410	--	--	--	--
MW-2	08-31-95	5000	280	18	120	140	<50*	--	--	--
MW-2	11-27-95	3200	230	12	77	90	--	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

Well Designation	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-3	07-18-90	--	--	--	--	--	--	--	<5000	--
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-3	11-20-94	80000	4700	9700	2400	15000	--	--	--	--
MW-3	03-17-95	370000	4800	12000	5800	34000	--	--	--	--
MW-3	06-01-95	270000	6000	11000	5200	28000	--	--	--	--
MW-3	08-31-95	Not sampled: well contained floating product								
MW-3	11-27-95	150000	5100	8800	3900	21000	--	--	--	--
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	--	--	--	--
MW-4	11-20-94	<50	2.9	0.5	<0.5	1.4	--	--	--	--
MW-4	03-17-95	16000	1800	970	310	2500	--	--	--	--
MW-4	06-01-95	16000	2800	870	380	2700	--	--	--	--
MW-4	08-31-95	9000	2000	270	270	1400	<100*	--	--	--
MW-4	11-27-95	3800	890	130	130	550	--	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

Well Designation	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-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-5	11-20-94	33000	5700	1800	720	4700	--	--	--	--
MW-5	03-17-95	48000	6400	2000	740	5100	--	--	--	--
MW-5	06-01-95	76000	11000	5400	1400	7700	--	--	--	--
MW-5	08-31-95	53000	12000	1600	1000	6000	<500*	--	--	--
MW-5	11-27-95	43000	7900	3300	950	4900	--	--	--	--
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								
MW-6	11-20-94	30000	11000	<100*	1200	2300	--	--	--	--
MW-6	03-17-95	45000	9300	<100*	1900	3600	--	--	--	--
MW-6	06-01-95	23000	5600	<50*	1300	1900	--	--	--	--
MW-6	08-31-95	26000	8000	<100*	1900	900	<500*	--	--	--
MW-6	11-27-95	6700	1800	<20*	480	230	--	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

Well Designation	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-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-7	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	08-31-95	<50	<0.5	<0.5	0.6	<0.5	<3	--	--	--
MW-7	11-27-95	<50	<0.5	<0.5	0.9	<0.5	--	--	--	--
MW-8	06-10-91	5800	73	7.2	150	21	--	--	<5000	--
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*	--	--	--	460^
MW-8	11-16-92	2600	4	<2.5*	21	5.2	--	--	1200	1100^
MW-8	02-16-93	8700	<5*	<5*	200	<5*	--	--	150000	5300^
MW-8	05-13-93	2300	<5*	<5*	42	<5*	--	--	2000	2300^
MW-8	08-17-93	1700	1.8	<1.3*	16	1.2	--	--	1200	1000^
MW-8	11-08-93	1200	2.4	<1*	19	2.3	--	--	4200	<1000
MW-8	02-14-94	3600	3	<1*	72	<1*	--	--	2000	3900^
MW-8	05-05-94	2100	<2.5*	<2.5*	8.3	<2.5*	--	--	700	440^
MW-8	08-04-94	1200	1.5	<1*	6.7	<1*	--	--	700	<50
MW-8	11-20-94	2300	1.2	1.1	20	2.2	--	--	<500	2100^
MW-8	03-17-95	5400	<5*	<5*	35	<5*	--	--	--	--
MW-8	06-01-95	2600	<2.5*	<2.5*	15	<2.5*	--	--	--	--
MW-8	08-31-95	1400	<3*	<3*	5	<3*	520	--	900	--
MW-8	11-27-95	620	<0.5	<0.5	<0.5	0.5	--	560	900	510^

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

Well Designation	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-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-9	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-9	11-27-95	<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-10	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	11-27-95	<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-11	11-20-94	1300	1.3	0.5	1.5	21	--	--	--	--
MW-11	03-17-95	100	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	06-01-95	210	<0.5	<0.5	0.9	0.7	--	--	--	--
MW-11	08-31-95	680	<0.5	<0.5	4	1.8	<3	--	--	--
MW-11	11-27-95	340	<0.5	<0.5	2.2	1.6	--	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

Well Designation	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-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	--	--	--	--
MW-12	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	06-01-95	Not sampled: not scheduled for chemical analysis								
MW-12	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	11-27-95	Not sampled: not scheduled for chemical analysis								
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-13	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-13	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-13	06-01-95	Not sampled: not scheduled for chemical analysis								
MW-13	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-13	11-27-95	Not sampled: not scheduled for chemical analysis								
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-14	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-14	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-14	06-01-95	Not sampled: not scheduled for chemical analysis								
MW-14	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-14	11-27-95	Not sampled: not scheduled for chemical analysis								

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

Well Designation	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-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	--	--	--	--
MW-15	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-15	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-15	06-01-95	Not sampled: not scheduled for chemical analysis								
MW-15	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-15	11-27-95	Not sampled: not scheduled for chemical analysis								

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

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl-tert-butyl ether

TRPH: total recoverable petroleum hydrocarbons

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

--: not analyzed

^: chromatogram fingerprint is not characteristic of diesel

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

Table 4
Historical Groundwater Analytical Data
Metals

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 02-14-96

Well Designation	Water Sample Field Date	Cadmium EPA 6010 µg/L	Chromium EPA 6010 µg/L	Lead EPA 7421 µg/L	Nickel EPA 6010 µg/L	Zinc EPA 6010 µg/L
MW-1	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-1	11-20-94	Not sampled: well contained floating product				
MW-1	03-17-95	<5	20	20	<40	60
MW-1	06-01-95	<5	20	22	70	100
MW-1	08-31-95	Not sampled: well contained floating product				
MW-1	11-27-95	Not sampled: well contained floating product				
MW-2	07-18-90	<20	<50	50	--	120
MW-2	10-15-90	--	--	--	--	--
MW-2	01-09-91	--	--	--	--	--
MW-2	04-16-91	--	--	--	--	--
MW-2	06-10-91	--	--	--	--	--
MW-2	10-10-91	<10	<10	11	72	91
MW-2	03-23-92	Not analyzed: sampling for additional parameters was discontinued				
MW-3	07-18-90	--	--	--	--	--
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 analyzed: sampling for additional parameters was discontinued				
MW-4	06-10-91	Not analyzed: sampling for additional parameters was not initiated				

Table 4
Historical Groundwater Analytical Data
Metals

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

Date: 02-14-96

Well Designation	Water Sample Field Date	Cadmium EPA 6010 µg/L	Chromium EPA 6010 µg/L	Lead EPA 7421 µg/L	Nickel EPA 6010 µg/L	Zinc EPA 6010 µg/L
MW-5	06-10-91	--	--	--	--	--
MW-5	10-10-91	Not sampled: well contained floating product				
MW-5	03-23-92	--	--	--	--	--
MW-5	06-08-92	Not analyzed: sampling for additional parameters was discontinued				
MW-6	06-10-91	Not analyzed: sampling for additional parameters was not initiated				
MW-7	06-10-91	Not analyzed: sampling for additional parameters was not initiated				
MW-8	06-10-91	--	--	--	--	--
MW-8	10-10-91	--	--	--	--	--
MW-8	03-23-92	--	--	--	--	--
MW-8	06-08-92	--	--	--	--	--
MW-8	09-15-92	ND	59	18	78	128
MW-8	11-16-92	7	42	20	69	123
MW-8	02-16-93	<3	7	4	24	54
MW-8	05-13-93	<3	17	10	31	49
MW-8	08-17-93	<5	16	7	<40	180
MW-8	11-08-93	<5	50	25	60	100
MW-8	02-14-94	<5	<10	4	<40	20
MW-8	05-05-94	<3	<5	4	<20	60
MW-8	08-04-94	<3	6	3	<20	27
MW-8	11-20-94	<3	<5	<2	<20	14
MW-8	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	08-31-95	<5	40	16	50	90
MW-8	11-27-95	<5	130	77	170	280
MW-9	06-11-93	Not analyzed: sampling for additional parameters was not initiated				
MW-10	06-11-93	Not analyzed: sampling for additional parameters was not initiated				
MW-11	11-16-92	Not analyzed: sampling for additional parameters was not initiated				
MW-12	11-16-92	Not analyzed: sampling for additional parameters was not initiated				
MW-13	11-16-92	Not analyzed: sampling for additional parameters was not initiated				
MW-14	09-15-92	Not analyzed: sampling for additional parameters was not initiated				
MW-15	05-13-93	Not analyzed: sampling for additional parameters was not initiated				

EPA: United States Environmental Protection Agency
µg/L: micrograms per liter
-- : not analyzed
ND: none detected at or above the method reporting limit

Table 5
Historical Groundwater Analytical Data
Volatile and Semivolatile Organic Compounds

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

Date: 02-14-96

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270				
		Methylene Chloride µg/L	1,2-Dichloro-ethane µg/L	1,1-Dichloro-ethane µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	Naphthalene µg/L	2-Methyl-naphthalene µg/L	Bis (2-ethylhexyl) Phthalate µg/L	Phenol µg/L	2,4-Di-methyl-phenol µg/L
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-1	11-20-94	Not sampled: well contained floating product											
MW-1	03-17-95	--	--	--	--	--	--	--	1300	730	<50	ND	150
MW-1	06-01-95	--	--	--	--	--	--	--	2200	1700	<100	240	<100
MW-1	08-31-95	Not sampled: well contained floating product											
MW-1	11-27-95	Not sampled: well contained floating product											

Table 5
Historical Groundwater Analytical Data
Volatile and Semivolatile Organic Compounds

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

Date: 02-14-96

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270				
		Methylene Chloride µg/L	1,2-Dichloroethane µg/L	1,1-Dichloroethane µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	Naphthalene µg/L	2-Methylnaphthalene µg/L	Bis (2-ethylhexyl) Phthalate µg/L	Phenol µg/L	2,4-Di-methylphenol µg/L
MW-2	07-18-90	39	ND	ND	3200	2400	270	2900	340	170	ND	ND	ND
MW-2	10-15-90	18	ND	ND	--	--	--	--	--	--	--	--	--
MW-2	01-09-91	ND	6.5	ND	1700	1200	370	2400	--	--	--	--	--
MW-2	04-16-91	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	06-10-91	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	10-10-91	ND	1.7	ND	--	--	--	--	--	--	--	--	--
MW-2	03-23-92	Not analyzed: sampling for additional parameters was discontinued											

Table 5
Historical Groundwater Analytical Data
Volatile and Semivolatile Organic Compounds

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

Date: 02-14-96

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270				
		Methylene Chloride µg/L	1,2-Dichloro-ethane µg/L	1,1-Dichloro-ethane µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	Naphthalene µg/L	2-Methyl-naphthalene µg/L	Bis (2-ethylhexyl) Phthalate µg/L	Phenol µg/L	2,4-Di-methyl-phenol µg/L
MW-8	06-10-91	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	10-10-91	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	03-23-92	ND	ND	ND	23	<5.0*	450	23	--	--	--	--	--
MW-8	06-08-92	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	09-15-92	ND	ND	ND	--	--	--	--	ND	ND	6	ND	ND
MW-8	11-16-92	ND	ND	ND	--	--	--	--	32	ND	ND	ND	ND
MW-8	02-16-93	ND	ND	ND	--	--	--	--	730	130	ND	ND	ND
MW-8	05-13-93	ND	ND	ND	--	--	--	--	97	20	ND	ND	ND
MW-8	08-17-93	ND	ND	ND	--	--	--	--	26	ND	ND	ND	ND
MW-8	11-08-93	ND	ND	ND	--	--	--	--	20	ND	19	ND	ND
MW-8	02-14-94	--	--	--	--	--	--	--	350	65	ND	ND	ND
MW-8	05-05-94	<0.5	<0.5	0.7	--	--	--	--	23	<10	<10	ND	ND
MW-8	08-04-94	--	--	--	--	--	--	--	11	<10	10	ND	ND
MW-8	12-13-94	--	--	--	--	--	--	--	14	<10	14	ND	ND
MW-8	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	08-31-95	--	--	--	--	--	--	--	62	8	<5	<5	<5
MW-8	11-27-95	--	--	--	--	--	--	--	15	<5	<5	<5	<5

EPA: United States Environmental Protection Agency

µg/L: micrograms per liter

-- : not analyzed

ND: not detected at or above the method detection limit

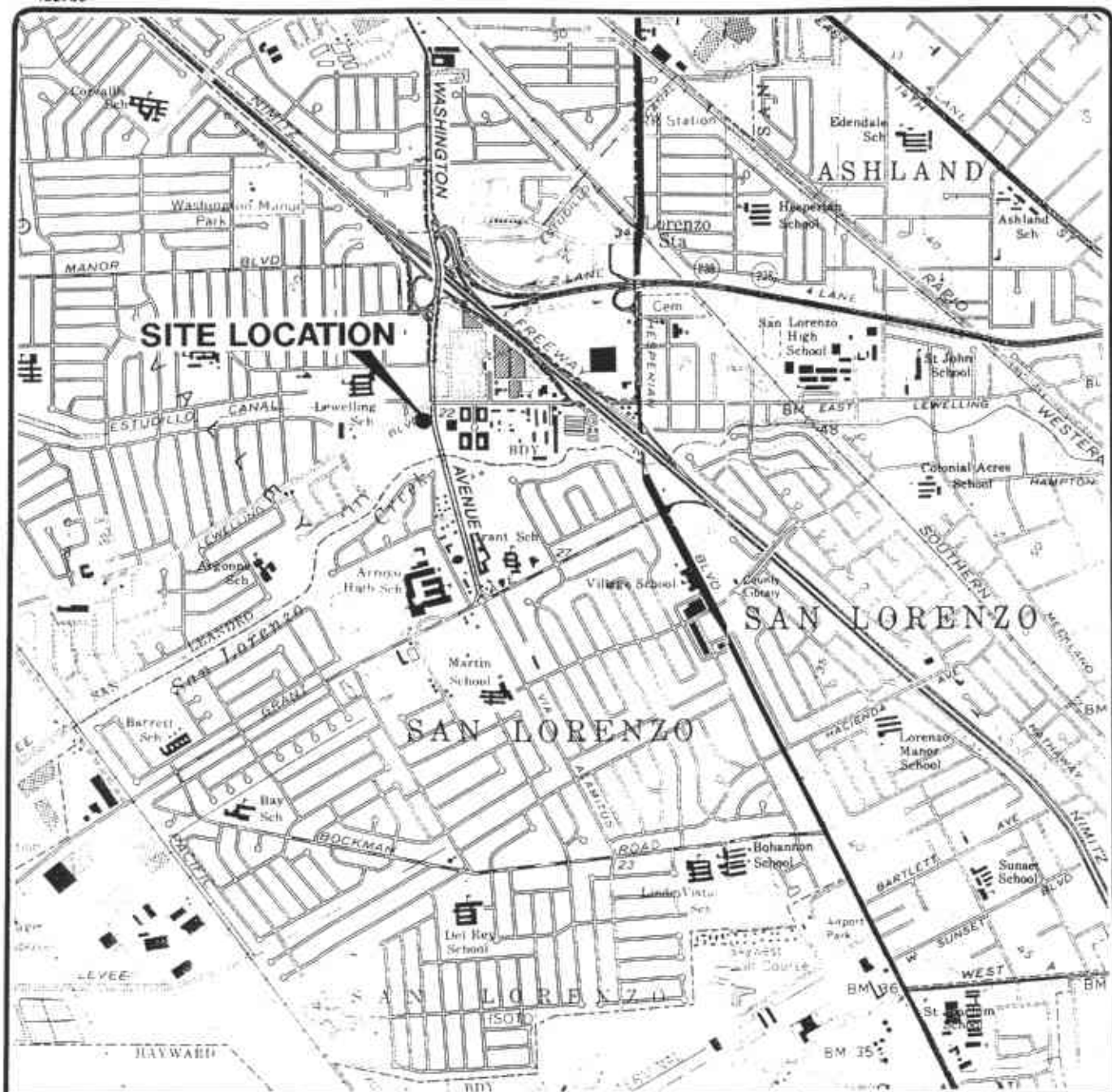
*: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

Table 6
Approximate Cumulative Floating Product Recovered

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

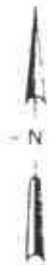
Date: 02-14-96

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



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

Scale : 0 2000 4000 Feet



emcon

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

SITE LOCATION

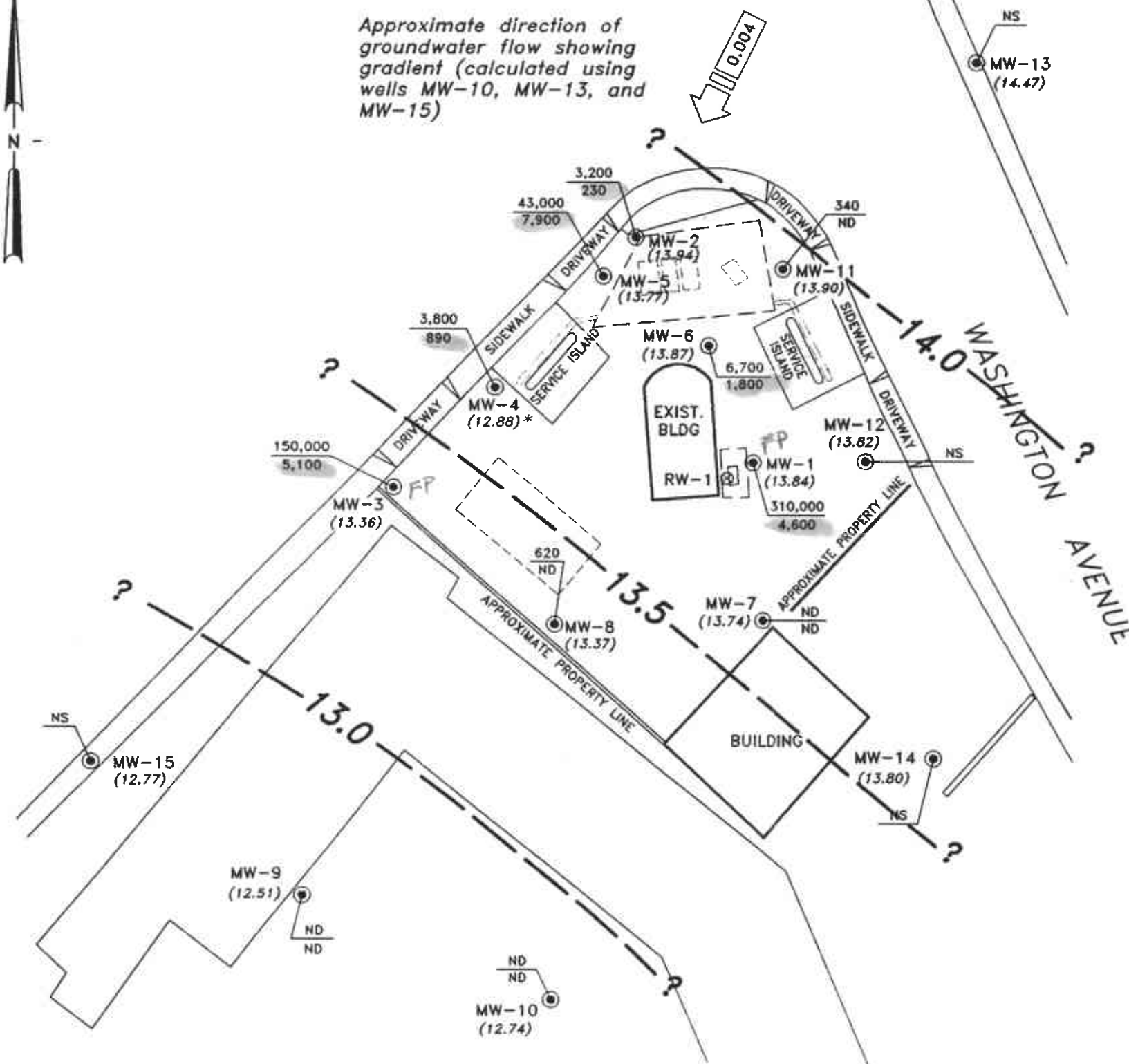
FIGURE

1

PROJECT NO.
805-121.02



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



EXPLANATION

- Groundwater monitoring well
- Vapor extraction well
- Former underground gasoline storage tank
- Existing underground gasoline storage tank
- Approximate limit of gasoline tank excavation
- === Former product line
- (13.77) Groundwater elevation (Ft.-MSL) measured 11/27/95
- ? Groundwater elevation contour (Ft.-MSL)
- 43,000 / 7,900 TPHG, concentration in groundwater (ug/L); sampled 11/27/95
- 43,000 / 7,900 Benzene concentration in groundwater (ug/L); sampled 11/27/95
- * The groundwater elevation for well MW-4 was not used in contouring
- ND Not detected at or above the method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)
- NS Not sampled; not scheduled for chemical analysis



SCALE: 0 50 100 FEET
(Approximate)

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

GROUNDWATER DATA
FOURTH QUARTER 1995

FIGURE NO.

2

PROJECT NO.
805-121.02

APPENDIX A

**FIELD DATA SHEETS, FOURTH QUARTER 1995
GROUNDWATER MONITORING EVENT**

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 1775-208.01

STATION ADDRESS : 712 Lewelling Blvd.

DATE : 11-27-95

ARCO STATION # : 601

FIELD TECHNICIAN : M. ROSS / D. Gumbelin

DAY : MONDAY

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-7	OK	Yes	Yes	Yes	Yes	9.15	9.15	NA	NA	9.5	
2	MW-9	OK	Yes	Yes	Yes	Yes	8.38	8.38	NA	NA	16.8	
3	MW-10	OK	Yes	Yes	Yes	Yes	8.38	8.38	NA	NA	18.8	
4	MW-12	OK	Yes	Yes	Yes	Yes	8.95	8.95	NA	NA	11.6	
5	MW-13	OK	Yes	Yes	Yes	Yes	7.98	7.98	NA	NA	12.9	
6	MW-14	OK	Yes	Yes	Yes	Yes	9.19	9.19	NA	NA	13.0	
7	MW-15	OK	Yes	Yes	Yes	Yes	6.42	6.42	NA	NA	10.0	
8	MW-11	OK	Yes	Yes	Yes	Yes	8.48	8.48	NA	NA	11.8	
9	MW-8	OK	Yes	Yes	Yes	Yes	7.60	7.60	NA	NA	10.0	
10	MW-2	OK	Yes	Yes	Yes	Yes	7.39	7.39	NA	NA	12.2	
11	MW-4	OK	Yes	Yes	Yes	Yes	7.87	7.87	NA	NA	8.5	
12	MW-6	OK	Yes	Yes	Yes	Yes	8.21	8.21	NA	NA	8.6	
13	MW-5	OK	Yes	Yes	Yes	Yes	7.13	7.13	NA	NA	10.0	
14	MW-1	OK	Yes	Yes	Yes	Yes	8.42	8.42	SHELV	SHELV	12.0	
15	MW-3	OK	Yes	Yes	Yes	Yes	6.76	6.76	NA 6.75	NA .01	11.9	

SURVEY POINTS ARE TOP OF WELL CASINGS



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 1778-207-001

SAMPLE ID: MW-1

PURGED BY: M. Ross / D. Campbell

CLIENT NAME: ARCO 601

SAMPLED BY: M. Ross / D. Campbell

LOCATION: San Leandro, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): NA

VOLUME IN CASING (gal.): 2.33

DEPTH TO WATER (feet): 8.42

CALCULATED PURGE (gal.): 7.01

DEPTH OF WELL (feet): 12.0

ACTUAL PURGE VOL. (gal.): 7.5

DATE PURGED: 11-27-95

Start (2400 Hr) 1505

End (2400 Hr) 1515

DATE SAMPLED: 11-27-95

Start (2400 Hr) 1520

End (2400 Hr)

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1528</u>	<u>2.5</u>	<u>6.71</u>	<u>1961</u>	<u>68.5</u>	<u>Yellow</u>	<u>MSP</u>
<u>1510</u>	<u>5.0</u>	<u>6.77</u>	<u>2060</u>	<u>71.2</u>	<u>11</u>	<u>11</u>
<u>1515</u>	<u>7.5</u>	<u>6.73</u>	<u>2060</u>	<u>72.1</u>	<u>11</u>	<u>11</u>

D. O. (ppm): NA

ODOR: Strong

NA

NA

Field QC samples collected at this well:

NA

Parameters field filtered at this well:

NA

(COBALT 0 - 500)

(NTU 0 - 200
or 0 - 1000)

PURGING EQUIPMENT

- ☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ Centrifugal Pump ☐ Bailer (PVC)
☐ Submersible Pump ☐ Bailer (Stainless Steel)
☐ Well Wizard™ ☐ Dedicated

Other:

SAMPLING EQUIPMENT

- ☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ DDL Sampler ☐ Bailer (Stainless Steel)
☐ Dipper ☐ Submersible Pump
☐ Well Wizard™ ☐ Dedicated

Other:

WELL INTEGRITY: Good

LOCK #: ARCO

REMARKS: SHOWN - Floating product on pumped water

Meter Calibration: Date: 11-27-95 Time: 1135 Meter Serial #: 9240 Temperature °F:
 (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)

Location of previous calibration: MW-7

Signature: M. Ross

Reviewed By: 77

Page 1 of 11



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

1.96

PROJECT NO: 1775-208 101

SAMPLE ID: MW-2

PURGED BY: M. ROSS / D. Gambelin

CLIENT NAME: ARCO 601

SAMPLED BY: M. ROSS / D. Gambelin

LOCATION: San Leandro, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): <u>NA</u>	VOLUME IN CASING (gal.): <u>3.14</u>
DEPTH TO WATER (feet): <u>7.39</u>	CALCULATED PURGE (gal.): <u>9.42</u>
DEPTH OF WELL (feet): <u>12.2</u>	ACTUAL PURGE VOL. (gal.): <u>9.5</u>

DATE PURGED: <u>11-27-95</u>	Start (2400 Hr) <u>1340</u>	End (2400 Hr) <u>1357</u>
DATE SAMPLED: <u>11-27-95</u>	Start (2400 Hr) <u>1405</u>	End (2400 Hr) <u>—</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (μmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1351</u>	<u>3.5</u>	<u>6.79</u>	<u>1441</u>	<u>66.9</u>	<u>dr</u>	<u>dr</u>
<u>1354</u>	<u>7.0</u>	<u>6.81</u>	<u>1431</u>	<u>69.6</u>	<u>11</u>	<u>11</u>
<u>1357</u>	<u>9.5</u>	<u>6.80</u>	<u>1505</u>	<u>70.4</u>	<u>11</u>	<u>11</u>

D. O. (ppm): NA ODOR: STRONG COLOR: NA TURBIDITY: NA

Field QC samples collected at this well: NA Parameters field filtered at this well: NA

PURGING EQUIPMENT

☐ 2" Bladder Pump
☐ Centrifugal Pump
☐ Submersible Pump
☐ Well Wizard™
☐ Bailer (Teflon®)
☒ Bailer (PVC)
☐ Bailer (Stainless Steel)
☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump
☐ DDL Sampler
☐ Dipper
☐ Well Wizard™
☒ Bailer (Teflon®)
☐ Bailer (Stainless Steel)
☐ Submersible Pump
☐ Dedicated

Other:

WELL INTEGRITY: Good LOCK #: ARCO

REMARKS: SLIGHT SHEEN

Meter Calibration: Date: 11-27-95 Time: 1135 Meter Serial #: 9210 Temperature °F:

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

Location of previous calibration: ARCO MW-7

Signature: M. Ross Reviewed By: SA Page 2 of 11



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 1775-208.01

SAMPLE ID: MW-3

PURGED BY: M. Ross / D. Gumbelin

CLIENT NAME: ARLO 601

SAMPLED BY: M. Ross / D. Gumbelin

LOCATION: San Leandro, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): NA VOLUME IN CASING (gal.): 3.35
DEPTH TO WATER (feet): 6.76 CALCULATED PURGE (gal.): 10.07
DEPTH OF WELL (feet): 11.9 ACTUAL PURGE VOL. (gal.): 10.5

DATE PURGED: 11-27-95 Start (2400 Hr) 1525 End (2400 Hr) 1536
DATE SAMPLED: 11-27-95 Start (2400 Hr) 1540 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1531</u>	<u>3.5</u>	<u>6.72</u>	<u>942</u>	<u>67.1</u>	<u>chr</u>	<u>chr</u>
<u>1533</u>	<u>7.0</u>	<u>6.70</u>	<u>923</u>	<u>67.6</u>	<u>11</u>	<u>11</u>
<u>1536</u>	<u>10.5</u>	<u>6.73</u>	<u>966</u>	<u>67.7</u>	<u>11</u>	<u>11</u>

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

Field QC samples collected at this well: NA Parameters field filtered at this well: NA
(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

PURGING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ Centrifugal Pump ☐ Bailer (PVC)
☐ Submersible Pump ☐ Bailer (Stainless Steel)
☐ Well Wizard™ ☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ DDL Sampler ☐ Bailer (Stainless Steel)
☐ Dipper ☐ Submersible Pump
☐ Well Wizard™ ☐ Dedicated

Other:

WELL INTEGRITY: Good LOCK #: ARLO

REMARKS: SHEEN noticed on purge water

Meter Calibration: Date: 11-27-95 Time: 1135 Meter Serial #: 9210 Temperature °F:

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

Location of previous calibration: MW-7

Signature: Mike Ross Reviewed By: SGT Page 3 of 11



Rev. 3, 2/94

1.96

SAMPLE ID: MW-4

PURGED BY: M. ROSS / D. Gamrelin CLIENT NAME: ARLD 6001

SAMPLED BY: M. ROSS / D. Gambelin LOCATION: San Leandro, CA

TYPE: Ground Water ✓ Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2___ 3___ 4[✓]___ 4.5___ 6___ Other___

CASING ELEVATION (feet/MSL): NA VOLUME IN CASING (gal): .41

DEPTH TO WATER (feet): 7.87 CALCULATED PURGE (gal): 1.23

DEPTH OF WELL (feet): 8.5 ACTUAL PURGE VOL. (gal.): 0.50

DATE PURGED: 11-27-95 Start (2400 Hr) 1417 End (2400 Hr) 1420

DATE SAMPLED: 11-27-95 Start (2400 Hr) 1425 End (2400 Hr) 1425

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (μ mhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1420	0.5	7.19	1230	67.5	hr	hr

1420 DRY at 0.5 gallons

1425	Recharge	7.26	1171	66.0	dr	dr
------	----------	------	------	------	----	----

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

Field QC samples collected at this well: Parameters field filtered at this well: (COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

SAMPLING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)	☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ Centrifugal Pump	☐ Bailer (PVC)	☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Submersible Pump	☐ Bailer (Stainless Steel)	☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated	☐ Well Wizard™	☐ Dedicated

Other: _____ Other: _____

WELL INTEGRITY: 6-200 LOCK #: APC

REMARKS: Day @ 0.5 gallons

Meter Calibration: Date: 11-27-95 Time: 1135 Meter Serial #: 9210 Temperature °F: _____

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

Location of previous calibration: MW-7

Signature: M. R. Reviewed By: ST Page 4 of 11



WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 1775-208.001SAMPLE ID: MW-5PURGED BY: M. ROSS / D. GumpelinCLIENT NAME: ARCO 601SAMPLED BY: M. ROSS / D. GumpelinLOCATION: San Leandro, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>1.87</u>
DEPTH TO WATER (feet):	<u>7.13</u>	CALCULATED PURGE (gal.):	<u>5.62</u>
DEPTH OF WELL (feet):	<u>10.0</u>	ACTUAL PURGE VOL. (gal.):	<u>4.0</u>

DATE PURGED:	<u>11-27-95</u>	Start (2400 Hr)	<u>1447</u>	End (2400 Hr)	<u>1455</u>
DATE SAMPLED:	<u>11-27-95</u>	Start (2400 Hr)	<u>1500</u>	End (2400 Hr)	<u> </u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1450</u>	<u>2.0</u>	<u>6.80</u>	<u>1548</u>	<u>67.7</u>	<u>clr</u>	<u>clr</u>
<u>1455</u>	<u>4.0</u>	<u>6.79</u>	<u>1569</u>	<u>69.4</u>	<u>clr</u>	<u>clr</u>
<u>1455</u>	<u>Dry @</u>	<u>4.0</u>	<u>9.45</u>	<u> </u>	<u> </u>	<u> </u>
<u>1500</u>	<u>Recharge</u>	<u>6.75</u>	<u>1547</u>	<u>70.0</u>	<u>clr</u>	<u>clr</u>

D. O. (ppm):	<u>NA</u>	ODOR:	<u>STRONG</u>		<u>NA</u>	<u>NA</u>
--------------	-----------	-------	---------------	--	-----------	-----------

Field QC samples collected at this well:	Parameters field filtered at this well:	(COBALT 0 - 500)	(NTU 0 - 200 or 0 - 1000)
<u>NA</u>	<u>NA</u>		

PURGING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ Centrifugal Pump	☐ Bailer (PVC)
☐ Submersible Pump	☐ Bailer (Stainless Steel)
☐ Well Wizard™	☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: WELL INTEGRITY: Good LOCK #: ARCOREMARKS: Dry at 4.0 gallonsMeter Calibration: Date: 11-27-95 Time: 1135 Meter Serial #: 9210 Temperature °F: (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)Location of previous calibration: MW-7Signature: M. Ross Reviewed By: SGA Page 5 of 11



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 1775-208.001

SAMPLE ID: MW-6

PURGED BY: M. ROSS / D. Gambelin

CLIENT NAME: ARCO 601

SAMPLED BY: M. ROSS / D. Gambelin

LOCATION: San Leandro, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

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

CASING ELEVATION (feet/MSL): NA

VOLUME IN CASING (gal.): 0.25

DEPTH TO WATER (feet): 8.21

CALCULATED PURGE (gal.): 0.76

DEPTH OF WELL (feet): 8.6

ACTUAL PURGE VOL. (gal.): 0.25

DATE PURGED: 11-27-95

Start (2400 Hr) 1430

End (2400 Hr) 1434

DATE SAMPLED: 11-27-95

Start (2400 Hr) 1440

End (2400 Hr)

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1434</u>	<u>0.25</u>	<u>7.04</u>	<u>1206</u>	<u>66.2</u>	<u>clr</u>	<u>clr</u>
<u>1434</u>	<u>DRY at</u>	<u>.25 gallons</u>				
<u>1440</u>	<u>Recharge</u>	<u>7.10</u>	<u>1203</u>	<u>65.7</u>	<u>dr</u>	<u>clr</u>
D. O. (ppm):	<u>NA</u>	ODOR:	<u>SLIGHT</u>		<u>NA</u>	<u>NA</u>
Field QC samples collected at this well:			Parameters field filtered at this well:			(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)
<u>NA</u>			<u>NA</u>			

PURGING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ Centrifugal Pump ☐ Bailer (PVC)
☐ Submersible Pump ☐ Bailer (Stainless Steel)
☐ Well Wizard™ ☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ DDL Sampler ☐ Bailer (Stainless Steel)
☐ Dipper ☐ Submersible Pump
☐ Well Wizard™ ☐ Dedicated

Other:

WELL INTEGRITY: GOOD

LOCK #: ARCO

REMARKS: DRY @ .25 gallons

Meter Calibration: Date: 11-27-95 Time: 1135

Meter Serial #: 9810

Temperature °F:

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

Location of previous calibration: MW-7

Signature: Mike Ross

Reviewed By: SA

Page 6 of 11



SAMPLE ID: *ML-7*

CLIENT NAME: ARC 601

LOCATION: San Leandro, CA

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

DEPTH OF WELL (feet): 9.5 ACTUAL PURGE VOL. (gal): .25

End (2400 Hr) 1144

End (2400 Hr)

INSUFFICIENT amount of water To take a
recharge Reading

Field QC samples collected at this well: Parameters field filtered at this well: (COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

SAMPLING EQUIPMENT

Other: _____ Other: _____

REMARKS: Dry at .25 gallons

Location of previous calibration: _____

Signature: M. A. K. K. K. Reviewed By: S. H. Page 7 of 11



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

1.96

PROJECT NO: 1775-208.01

SAMPLE ID: MW-8

PURGED BY: M. ROSS / D. Gambelin

CLIENT NAME: ARCO 6001

SAMPLED BY: M. ROSS / D. Gambelin

LOCATION: San Leandro, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): <u>NA</u>	VOLUME IN CASING (gal.): <u>1.56</u>
DEPTH TO WATER (feet): <u>7.60</u>	CALCULATED PURGE (gal.): <u>4.70</u>
DEPTH OF WELL (feet): <u>10.0</u>	ACTUAL PURGE VOL. (gal.): <u>3.5</u>

DATE PURGED: 11-27-95

Start (2400 Hr) 1315

End (2400 Hr) 1319

DATE SAMPLED: 11-27-95

Start (2400 Hr) 1330

End (2400 Hr)

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (Visual)	TURBIDITY (Visual)
<u>1318</u>	<u>2.0</u>	<u>6.93</u>	<u>6722</u>	<u>67.0</u>	<u>Bwn</u>	<u>Heavy</u>
<u>1319</u>	<u>DRY</u>	<u>@ 3.5</u>	<u>9 GALLONS</u>			
		<u>6.88</u>				
<u>1330</u>	<u>Recharge</u>	<u>7.07</u>	<u>707</u>	<u>67.3</u>	<u>Bwn</u>	<u>Heavy</u>
D. O. (ppm): <u>NA</u>	ODOR: <u>SLIGHT</u>				<u>NA</u>	<u>NA</u>

Field QC samples collected at this well:

Parameters field filtered at this well:

(COBALT 0 - 500)

(NTU 0 - 200
or 0 - 1000)

PURGING EQUIPMENT

☐ 2" Bladder Pump
☐ Centrifugal Pump
☐ Submersible Pump
☐ Well Wizard™
☐ Bailer (Teflon®)
☒ Bailer (PVC)
☐ Bailer (Stainless Steel)
☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump
☐ DDL Sampler
☐ Dipper
☐ Well Wizard™
☒ Bailer (Teflon®)
☐ Bailer (Stainless Steel)
☐ Submersible Pump
☐ Dedicated

Other:

WELL INTEGRITY: Good

LOCK #: ARCO

REMARKS: DRY @ 3.5 GALLONS

Meter Calibration: Date: 11-27-95 Time: 1135 Meter Serial #: 9210 Temperature °F:

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

Location of previous calibration: MW-7

Signature: Mike Ross

Reviewed By: SA

Page 8 of 11



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 1775-208.01

SAMPLE ID: MW-9

PURGED BY: M. ROSS / D. BAMBOLIN

CLIENT NAME: ARCO 601

SAMPLED BY: M. ROSS / D. BAMBOLIN

LOCATION: SAN LEANDRO, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☒ 3 ☐ 4 ☐ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): <u>NA</u>	VOLUME IN CASING (gal.): <u>1.27</u>
DEPTH TO WATER (feet): <u>8.38</u>	CALCULATED PURGE (gal.): <u>3.83</u>
DEPTH OF WELL (feet): <u>16.2</u>	ACTUAL PURGE VOL. (gal.): <u>4.00</u>

DATE PURGED: 11-27-95

Start (2400 Hr) 1200

End (2400 Hr) 1206

DATE SAMPLED: 11-27-95

Start (2400 Hr) 1210

End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1203</u>	<u>1.5</u>	<u>6.70</u>	<u>1011</u>	<u>71.1</u>	<u>clr</u>	<u>clr</u>
<u>1205</u>	<u>3.0</u>	<u>6.91</u>	<u>1012</u>	<u>70.5</u>	<u>"</u>	<u>"</u>
<u>1206</u>	<u>4.0</u>	<u>6.93</u>	<u>1014</u>	<u>70.4</u>	<u>"</u>	<u>"</u>

D. O. (ppm): NA

ODOR: NONE

NA

Field QC samples collected at this well:

Parameters field filtered at this well:

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

PURGING EQUIPMENT

☐ 2" Bladder Pump
☒ Centrifugal Pump
☐ Submersible Pump
☐ Well Wizard™
 Other: _____

☒ Bailer (Teflon®)
☒ Bailer (PVC)
☐ Bailer (Stainless Steel)
☐ Dedicated

SAMPLING EQUIPMENT

☐ 2" Bladder Pump
☐ DDL Sampler
☐ Dipper
☐ Well Wizard™
☒ Bailer (Teflon®)
☐ Bailer (Stainless Steel)
☐ Submersible Pump
☐ Dedicated

WELL INTEGRITY: Good LOCK #: ARCO

REMARKS: _____

Meter Calibration: Date: 11-27-95 Time: 1135 Meter Serial #: 9210 Temperature °F: 71.1
 (EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-7

Signature: Mike Ross

Reviewed By: SAH Page 9 of 11



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 1775-228.01

SAMPLE ID: MW-10

PURGED BY: M. ROSS / D. Gumbelin

CLIENT NAME: ARCO 1601

SAMPLED BY: M. ROSS / D. Gumbelin

LOCATION: San Leandro, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

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

CASING ELEVATION (feet/MSL): <u>NA</u>	VOLUME IN CASING (gal.): <u>1.70</u>
DEPTH TO WATER (feet): <u>8.38</u>	CALCULATED PURGE (gal.): <u>5.10</u>
DEPTH OF WELL (feet): <u>19.8</u>	ACTUAL PURGE VOL (gal.): <u>5.5</u>

DATE PURGED: 11-27-95

Start (2400 Hr) 1215

End (2400 Hr) 1220

DATE SAMPLED: 11-27-95

Start (2400 Hr) 1225

End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1216</u>	<u>2.0</u>	<u>6.99</u>	<u>1118</u>	<u>69.1</u>	<u>BROWN</u>	<u>Heavy</u>
<u>1218</u>	<u>4.0</u>	<u>7.03</u>	<u>1120</u>	<u>69.0</u>	<u>"</u>	<u>"</u>
<u>1220</u>	<u>5.5</u>	<u>7.07</u>	<u>1130</u>	<u>69.7</u>	<u>"</u>	<u>"</u>

D. O. (ppm): NA

ODOR: NONE

Field QC samples collected at this well:

Parameters field filtered at this well:

NA
(COBALT 0 - 500)

NA
(NTU 0 - 200
or 0 - 1000)

PURGING EQUIPMENT

☐ 2" Bladder Pump
☐ Centrifugal Pump
☐ Submersible Pump
☐ Well Wizard™
☒ Bailer (Teflon®)
☐ Bailer (PVC)
☐ Bailer (Stainless Steel)
☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump
☐ DDL Sampler
☐ Dipper
☐ Well Wizard™
☒ Bailer (Teflon®)
☐ Bailer (Stainless Steel)
☐ Submersible Pump
☐ Dedicated

Other:

WELL INTEGRITY: Good

LOCK #: ARCO

REMARKS:

Meter Calibration: Date: 11-27-95 Time: 1135 Meter Serial #: 9210 Temperature °F:
 (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)

Location of previous calibration: MW-7

Signature: M. Ross

Reviewed By: SA

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EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

1.96

PROJECT NO: 1775-208.001

SAMPLE ID: MW-11

PURGED BY: M. ROSS / D. Bamberlin

CLIENT NAME: ARCO 601

SAMPLED BY: M. ROSS / D. Bamberlin

LOCATION: San Leandro, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): NA

VOLUME IN CASING (gal.): 2.16

DEPTH TO WATER (feet): 8.48

CALCULATED PURGE (gal.): 6.50

DEPTH OF WELL (feet): 11.8

ACTUAL PURGE VOL. (gal.): 6.5

DATE PURGED: 11-27-95

Start (2400 Hr) 1255

End (2400 Hr) 1303

DATE SAMPLED: 11-27-95

Start (2400 Hr) 1310

End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1259</u>	<u>2.5</u>	<u>6.86</u>	<u>1492</u>	<u>69.4</u>	<u>GREY</u>	<u>Heavy</u>
<u>1301</u>	<u>4.5</u>	<u>6.89</u>	<u>1503</u>	<u>70.6</u>	<u>"</u>	<u>"</u>
<u>1303</u>	<u>6.5</u>	<u>6.90</u>	<u>1489</u>	<u>70.9</u>	<u>"</u>	<u>"</u>

D. O. (ppm): NA

ODOR: NONE

NA

NA

Field QC samples collected at this well:

Parameters field filtered at this well:

(COBALT 0 - 500)

(NTU 0 - 200
or 0 - 1000)

NA

NA

PURGING EQUIPMENT

- ☐ 2" Bladder Pump
☐ Centrifugal Pump
☐ Submersible Pump
☐ Well Wizard™
☐ Bailer (Teflon®)
☒ Bailer (PVC)
☐ Bailer (Stainless Steel)
☐ Dedicated

Other:

SAMPLING EQUIPMENT

- ☐ 2" Bladder Pump
☐ DDL Sampler
☐ Dipper
☐ Well Wizard™
☒ Bailer (Teflon®)
☐ Bailer (Stainless Steel)
☐ Submersible Pump
☐ Dedicated

Other:

WELL INTEGRITY: GOOD

LOCK #: ARCO

REMARKS:

Meter Calibration: Date: 11-27-95

Time: 1135

Meter Serial #: 9010

Temperature °F:

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

Location of previous calibration: MW-7

Signature: Mike Ross

Reviewed By: SJA

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APPENDIX B

**ANALYTICAL RESULTS AND CHAN-OF-CUSTODY
DOCUMENTATION, FOURTH QUARTER 1995**

**Columbia
Analytical
Services^{INC.}**

December 11, 1995

Service Request No: S9501491

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: 0805-121.02 / TO# 17075.00 / 601 San Leandro

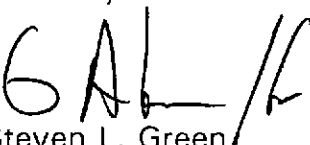
Dear Mr. Young:

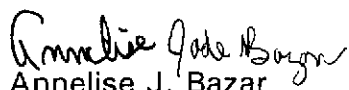
The following pages contain analytical results for sample(s) received by the laboratory on November 27, 1995. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above - to help expedite our service please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 26, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely:


Steven L. Green
Project Chemist


Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

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

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501491
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/5-7/95

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

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

Sample Name	Lab Code	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes, Total
MW-7 (9)	S9501491-001	ND	ND	ND	0.9	ND
MW-11 (11)	S9501491-002	340	ND	ND	2.2	1.6
MW-8 (10)	S9501491-003	620	ND	ND	ND	0.5
MW-2 (12)	S9501491-004	3,200	230	12	77	90
MW-4 (8)	S9501491-005	3,800	890	130	130	550
MW-6 (8)	S9501491-006	6,700	1,800	<20 *	480	230
MW-5 (10)	S9501491-007	43,000	7,900	3,300	950	4,900
MW-1 (12)	S9501491-008	310,000	4,600	770	5,700	21,000
MW-3 (11)	S9501491-009	150,000	5,100	8,800	3,900	21,000
Method Blank	S951205-WB	ND	ND	ND	ND	ND
Method Blank	S951207-WB	ND	ND	ND	ND	ND

* Raised MRL due to high analyte concentration.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501491
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: 11/29/95
Date Analyzed: 11/30/95

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

Sample Name	Lab Code	MRL	Result
MW-8 (10)	S9501491-003	50	510 *
Method Blank	S951129-WB	50	ND

* This sample contains components eluting in the diesel range, quantified as diesel. The chromatogram does not match the typical diesel fingerprint.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#0805-121.02
Sample Matrix: Water

Service Request: L9504158
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: 12/4/95
Date Analyzed: 12/4/95

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

Sample Name	Lab Code	MRL	Result
MW-8 (10)	L9504158-001	0.5	0.9
Method Blank	L9504158-MB	0.5	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501491
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8240
Units: ug/L (ppb)

Sample Name:	MW-8 (10)	Method Blank
Lab Code:	S951491-003	S951201-WB
Date Analyzed:	12/1/95	12/1/95

Analyte

MRL

Methyl-tert-butyl Ether

1

560

ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
 Project: ARCO Products Company #601/#0805-121.02
 Sample Matrix: Water

Service Request: L9504158
 Date Collected: 11/27/95
 Date Received: 11/27/95
 Date Extracted: 11/29/95

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 Units: ug/L (ppb)

Sample Name:	MW-8 (10)	Method Blank
Lab Code:	L9504158-001	L9504158-MB
Date Analyzed:	12/1/95	12/1/95

Base Neutral Analyte	MRL		
N-Nitrosodimethylamine	5	ND	ND
Aniline	5	ND	ND
Bis(2-chloroethyl) Ether	5	ND	ND
1,2-Dichlorobenzene	5	ND	ND
1,3-Dichlorobenzene	5	ND	ND
1,4-Dichlorobenzene	5	ND	ND
Bis(2-chloroisopropyl) Ether	5	ND	ND
N-Nitrosodi-n-propylamine	5	ND	ND
Hexachloroethane	5	ND	ND
Nitrobenzene	5	ND	ND
Isophorone	5	ND	ND
Bis(2-chloroethoxy)methane	5	ND	ND
1,2,4-Trichlorobenzene	5	ND	ND
Naphthalene	5	15	ND
4-Chloroaniline	5	ND	ND
Hexachlorobutadiene	5	ND	ND
2-Methylnaphthalene	5	ND	ND
Hexachlorocyclopentadiene	10	ND	ND
2-Chloronaphthalene	5	ND	ND
2-Nitroaniline	20	ND	ND
Dimethyl Phthalate	5	ND	ND
Acenaphthylene	5	ND	ND
3-Nitroaniline	20	ND	ND
Acenaphthene	5	ND	ND
Dibenzofuran	5	ND	ND
2,4-Dinitrotoluene	5	ND	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#0805-121.02
Sample Matrix: Water

Service Request: L9504158
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: 11/29/95

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 Units: ug/L (ppb)

Sample Name:	MW-8 (10)	Method Blank
Lab Code:	L9504158-001	L9504158-MB
Date Analyzed:	12/1/95	12/1/95

Base Neutral Analyte	MRL		
2,6-Dinitrotoluene	5	ND	ND
Diethyl Phthalate	5	ND	ND
4-Chlorophenyl Phenyl Ether	5	ND	ND
Fluorene	5	ND	ND
4-Nitroaniline	20	ND	ND
N-Nitrosodiphenylamine	5	ND	ND
4-Bromophenyl Phenyl Ether	5	ND	ND
Hexachlorobenzene	5	ND	ND
Phenanthrene	5	ND	ND
Anthracene	5	ND	ND
Di-n-butyl Phthalate	5	ND	ND
Fluoranthene	5	ND	ND
Pyrene	5	ND	ND
Butylbenzyl Phthalate	5	ND	ND
3,3'-Dichlorobenzidine	20	ND	ND
Benzo(a)anthracene	5	ND	ND
Bis(2-ethylhexyl) Phthalate	5	ND	ND
Chrysene	5	ND	ND
Di-n-octyl Phthalate	5	ND	ND
Benzo(b)fluoranthene	5	ND	ND
Benzo(k)fluoranthene	5	ND	ND
Benzo(a)pyrene	5	ND	ND
Indeno(1,2,3-c.d)pyrene	5	ND	ND
Dibenz(a,h)anthracene	5	ND	ND
Benzo(g,h,i)perylene	5	ND	ND
Pyridine	10	ND	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#0805-121.02
Sample Matrix: Water

Service Request: L9504158
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: 11/29/95

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 Units: ug/L (ppb)

Sample Name:	MW-8 (10)	Method Blank
Lab Code:	L9504158-001	L9504158-MB
Date Analyzed:	12/1/95	12/1/95

Acid Analyte	MRL		
Phenol	5	ND	ND
2-Chlorophenol	5	ND	ND
Benzyl Alcohol	10	ND	ND
2-Methylphenol	5	ND	ND
3- and 4-Methylphenol ^a	5	ND	ND
2-Nitrophenol	5	ND	ND
2,4-Dimethylphenol	5	ND	ND
Benzoic Acid	50	ND	ND
2,4-Dichlorophenol	5	ND	ND
4-Chloro-3-methylphenol	5	ND	ND
2,4,6-Trichlorophenol	5	ND	ND
2,4,5-Trichlorophenol	5	ND	ND
2,4-Dinitrophenol	50	ND	ND
4-Nitrophenol	50	ND	ND
2-Methyl-4,6-dinitrophenol	20	ND	ND
Pentachlorophenol	30	ND	ND

^a Quantified as 4-Methylphenol.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#0805-121.02
Sample Matrix: Water

Service Request: L9504158
Date Collected: 11/27/95
Date Received: 11/27/95
Date Digested: 11/29-12/1/95

Total Metals
Units: mg/L (ppm)

Sample Name: MW-8 (10) **Method Blank**
Lab Code: L9504158-001 L9504158-MB
Date Analyzed: 11/29-12/4/95 11/29-12/4/95

Analyte	EPA Method	MRL		
Cadmium	3010/6010	0.005	ND	ND
Chromium	3010/6010	0.01	0.13	ND
Lead	3020/7421	0.002	0.077	ND
Nickel	3010/6010	0.04	0.17	ND
Zinc	3010/6010	0.01	0.28	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501491
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/5-7/95

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

Sample Name	Lab Code	PID Detector	FID Detector
		Percent Recovery 4-Bromofluorobenzene	Percent Recovery α,α,α -Trifluorotoluene
MW-7 (9)	S9501491-001	95	96
MW-11 (11)	S9501491-002	95	102
MW-8 (10)	S9501491-003	82	98
MW-2 (12)	S9501491-004	95	103
MW-4 (8)	S9501491-005	91	95
MW-6 (8)	S9501491-006	91	96
MW-5 (10)	S9501491-007	93	94
MW-1 (12)	S9501491-008	91	103
MW-3 (11)	S9501491-009	94	98
MS	S9501493-001MS	96	102
DMS	S9501493-001DMS	95	96
Method Blank	S951205-WB	94	100
Method Blank	S951207-WB	93	92

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro

Service Request: S9501491
Date Analyzed: 12/5/95

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

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	24.5	98	85-115
Toluene	25	24.5	98	85-115
Ethylbenzene	25	24.4	98	85-115
Xylenes, Total	75	74.9	100	85-115
Gasoline	250	262	105	90-110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501491
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/5-7/95

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

Sample Name: Batch QC
Lab Code: S9501493-001

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery			Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS	CAS	
								Acceptance Limits	
Benzene	25	25	ND	24.4	24.1	98	96	75-135	1
Toluene	25	25	ND	24.5	24.2	98	97	73-136	1
Ethylbenzene	25	25	ND	24.4	24.1	98	96	69-142	1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501491
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: 11/29/95
Date Analyzed: 11/30/95

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

Sample Name	Lab Code	Percent Recovery p-Terphenyl
MW-8 (10)	S9501491-003	98
MS	S951500-001MS	87
DMS	S951500-001DMS	99
Method Blank	S951129-WB	112

CAS Acceptance Limits: 66-123

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro

Service Request: S9501491
Date Analyzed: 11/30/95

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	1,000	970	97	90-110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501491
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: 11/29/95
Date Analyzed: 11/30/95

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: S951500-001

Analyte							Percent Recovery		Relative Percent Difference
	Spike Level		Sample Result	Spike Result		CAS Acceptance Limits			
	MS	DMS		MS	DMS	MS	DMS		
TPH as Diesel	5,240	5,240	ND	6,480	6,500	124	124	61-141	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#0805-121.02
LCS Matrix: Water

Service Request: L9504158
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 12/4/95

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

Analyte	True Value		Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	LCS	DLCS	LCS	DLCS	LCS	DLCS		
TRPH	2.05	2.05	2.14	2.03	104	99	75-125	5

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501491
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/1/95

Surrogate Recovery Summary
 Volatile Organic Compounds
 EPA Method 8240

Sample Name	Lab Code	P e r c e n t R e c o v e r y		
		1,2-Dichloroethane-D ₄	Toluene-D ₈	4-Bromofluorobenzene
MW-8 (10)	S951491-003	99	105	100
MS	S951496-002MS	104	104	93
DMS	S951496-002DMS	102	104	93
Method Blank	S951201-WB	97	101	90

CAS Acceptance Limits: 76-114 88-110 86-115

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro

Service Request: S9501491
Date Analyzed: 11/28/95

Initial Calibration Verification (ICV) Summary
Volatile Organic Compounds
EPA Method 8240
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Methyl-tert-butyl Ether	50	63.7	127	70-130

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501491
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/1/95

Matrix Spike/Duplicate Matrix Spike Summary
 Volatile Organic Compounds
 EPA Method 8240
 Units: ug/L (ppb)

Sample Name: Batch QC
Lab Code: S9501496-002

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
						MS	DMS		
Methyl-tert-butyl Ether	10,000	10,000	15,000	26,000	27,000	110	120	NE	4

NE Not established

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#0805-121.02
Sample Matrix: Water

Service Request: L9504158
Date Collected: NA
Date Received: NA
Date Extracted: 11/29/95
Date Analyzed: 12/1/95

Surrogate Recovery Summary
 Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270

Sample Name	Lab Code	2FP	P e r c e n t		R e c o v e r y		
			PHL	TBP	NBZ	FBP	TPH
MW-8 (10)	L9504158-001	36	23	42	82	87	93
Method Blank	L9504158-MB	63	42	86	94	89	112
Laboratory Control Sample	L9504158-LCS	59	39	95	91	92	84
Duplicate Laboratory Control Sample	L9504158-LCS DUP	59	40	92	92	92	86

CAS Acceptance Limits: 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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
 Project: ARCO Products Company #601/#0805-121.02
 LCS Matrix: Water

Service Request: L9504158
 Date Collected: NA
 Date Received: NA
 Date Extracted: 11/29/95
 Date Analyzed: 12/1/95

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary*
 Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 Units: ug/L (ppb)

Analyte	True Value		Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	LCS	DLCS	LCS	DLCS	LCS	DLCS		
Phenol	50.0	50.0	21.8	21.5	44	43	26-90	1
2-Chlorophenol	50.0	50.0	46.3	47.0	93	94	25-102	2
1,4-Dichlorobenzene	50.0	50.0	41.4	41.0	83	82	28-104	1
N-Nitrosodi-n-propylamine	50.0	50.0	39.8	40.3	80	81	41-126	1
1,2,4-Trichlorobenzene	50.0	50.0	42.6	42.3	85	85	38-107	1
4-Chloro-3-methylphenol	50.0	50.0	45.1	46.3	90	93	26-103	3
Acenaphthene	50.0	50.0	43.7	44.9	87	90	31-137	3
4-Nitrophenol	50.0	50.0	10.7	11.2	21	22	11-114	5
2,4-Dinitrotoluene	50.0	50.0	47.4	48.9	**	**	28-89	3
Pentachlorophenol	50.0	50.0	51.8	54.5	104	109	17-109	5
Pyrene	50.0	50.0	45.0	46.5	90	93	35-142	3

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

** Outside acceptance criteria. 2,4-Dinitrotoluene typically produces low spike recovery and has acceptance criteria that allows for this; however, if extraction efficiency is greater than expected recoveries near 100 percent are approved.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#0805-121.02
LCS Matrix: Water

Service Request: L9504158
Date Collected: NA
Date Received: NA
Date Analyzed: 11/29-12/4/95

Laboratory Control Sample Summary
Total Metals
Units: mg/L (ppm)

Analyte	EPA Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Cadmium	3010/6010	0.100	0.094	94	75-125
Chromium	3010/6010	0.500	0.477	95	75-125
Lead	3020/7421	0.0400	0.0377	94	75-125
Nickel	3010/6010	0.500	0.474	95	75-125
Zinc	3010/6010	0.500	0.464	93	75-125

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#0805-121.02
Sample Matrix: Water

Service Request: L9504158
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 12/4/95

Matrix Spike/Duplicate Matrix Spike Summary
Total Metals
Units: mg/L (ppm)

Sample Name: BATCH QC
Lab Code: L9504183-001

Analyte	MRL	Spike Level	Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
				MS	DMS	MS	DMS		
Cadmium	0.005	0.100	ND	0.092	0.091	92	91	75-125	1
Chromium	0.01	0.500	ND	0.475	0.467	95	93	75-125	2
Nickel	0.04	0.500	ND	0.475	0.461	95	92	75-125	3
Zinc	0.01	0.500	0.020	0.472	0.468	90	90	75-125	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#0805-121.02
Sample Matrix: Water

Service Request: L9504158
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 11/29/95

Matrix Spike/Duplicate Matrix Spike Summary

Total Metals

Units: mg/L (ppm)

Sample Name: BATCH QC
Lab Code: L9504111-002

Analyte	MRL	Spike Level	Sample Result	Spike Result		Percent Recovery		CAS	Relative Percent Difference
				MS	DMS	MS	DMS	Acceptance Limits	
Lead	0.002	0.0400	ND	0.0315	0.0316	79	79	75-125	<1

Division of Atlantic Richfield Company

Task Order No.

Chain of Custody

Due 12/11

**Columbia
Analytical
Services^{INC.}**

December 11, 1995

Service Request No: S9501493

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **0805-121.02 / TO# 17075.00 / 601 San Leandro**

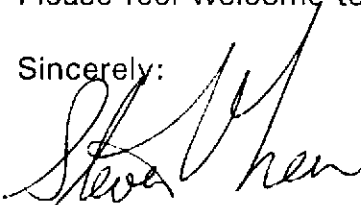
Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on November 27, 1995. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above - to help expedite our service please refer to this number when contacting the laboratory.

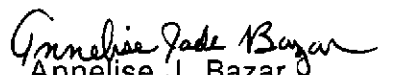
Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 7, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely:



Steven L. Green
Project Chemist



Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

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

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501493
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/5/95

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 (16)	S9501493-001	ND	ND	ND	ND	ND
MW-10 (18)	S9501493-002	ND	ND	ND	ND	ND
Method Blank	S951205-WB	ND	ND	ND	ND	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501493
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/5/95

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

Sample Name	Lab Code	PID Detector	FID Detector
		Percent Recovery 4-Bromofluorobenzene	Percent Recovery α,α,α -Trifluorotoluene
MW-9 (16)	S9501493-001	93	98
MW-10 (18)	S9501493-002	94	103
MW-9 (16) MS	S9501493-001MS	96	102
MW-9 (16) DMS	S9501493-001DMS	95	96
Method Blank	S951205-WB	94	100

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro

Service Request: S9501493
Date Analyzed: 12/5/95

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

Analyte	True Value	Result	Percent Recovery	CAS
				Percent Recovery Acceptance Limits
Benzene	25	24.5	98	85-115
Toluene	25	24.5	98	85-115
Ethylbenzene	25	24.4	98	85-115
Xylenes, Total	75	74.9	100	85-115
Gasoline	250	262	105	90-110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-121.02 / TO# 17075.00 / 601 San Leandro
Sample Matrix: Water

Service Request: S9501493
Date Collected: 11/27/95
Date Received: 11/27/95
Date Extracted: NA
Date Analyzed: 12/5/95

Matrix Spike/Duplicate Matrix Spike Summary

BTE

EPA Methods 5030/8020

Units: ug/L (ppb)

Sample Name: MW-9 (16)
Lab Code: S9501493-001

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery			Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS	CAS	
								Acceptance Limits	
Benzene	25	25	ND	24.4	24.1	98	96	75-135	1
Toluene	25	25	ND	24.5	24.2	98	97	73-136	1
Ethylbenzene	25	25	ND	24.4	24.1	98	96	69-142	1

ARCO Facility no.

601

City
(Facility)

San Leandro

Project manager
(Consultant)

John Young

ARCO engineer

Mike Whelan

Telephone no.
(ARCO)Telephone no.
(Consultant)

(408) 453-7300

Fax no.

(Consultant) (40)

Consultant name

EMCON

Address
(Consultant)

1921 Ringwood Ave. San Jose CA 95131

Laboratory name

CAS

Contract number

Method of shipment

Sampler
will
deliverSpecial detection
Limit/reportingLowest
Possible

Special QA/QC

As Normal

Remarks #0605-121.02

Please report
MW-9 + MW-10
on a separate
CAR.

Lab number

S9501493

Turnaround time

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

Condition of sample:

Temperature received:

Relinquished by sampler

Mike Rose

Date

11-27-95

Time

1640

Received by

E. Whelan

Relinquished by

Date

Time

Received by

Relinquished by

Date

Time

Received by laboratory

Date

Time